

APPENDIX 1 FIELD DESCRIPTIONS FOR EVENT DATABASE

GROUPED_ID

This field provides a unique id number for every “event” in the database.³³ The first part of the Grouped_ID # consists of a letter denoting the original dataset from which the event information came (C=COPDAB; G=GEDS; F=FBIS & WNC; L=Lexis/Nexis; T=TFDD Treaties; W=Wolf; Y=Yoffe). After the letter is a number unique to each event. If an event includes multiple country-pair interactions and/or multiple basins, the same Grouped_ID # may appear in multiple rows. It differs from the BAR_ID described below in that it does not include the letter denoting multiple country pair interactions or the “.#” code denoting multiple basins.

BAR_ID

The BAR_ID identifies “interactions” (events between country-pairs). Each row in the Master Events table has a unique id#. The first part of the id# is a letter denoting the original dataset from which the event information came (C=COPDAB; G=GEDS; F=FBIS & WNC; L=Lexis/Nexis; T=TFDD Treaties; W=Wolf; Y=Yoffe). After the letter is a number unique to each event, but not to each row, in the dataset. Rows containing information on the same event, but involving multiple country pairs will have a letter following the id’s number (A, B, C, ... AA, AB, AC ...). If the event involves multiple basins, the id’s number (and letter code if multiple country pairs are also involved) is followed by a period (“.”) and a number for each basin (“.1”, “.2”, “.3” ...).

Examples: “C125B.3” indicates that the event information is from COPDAB, the event number is 125, the row is the second of at least 2 country pairs involved in the event (A, B, ...), and there are at least three basins involved in the event (.3). There should be entries for C125B for the other basins. They would be designated as follows: “C125B.1”; “C125B.2”.

SOURCE_ID

This field contains the id# used by the original source for an event. In the case of FBIS and WNC data, for example, the id# denotes the number written on the paper copy of the article from which the event information was entered. These paper copies are stored in three ring binders in numerical order.

³³ “Events” and “Interactions”: If an incident involves multiple pairs of countries (referred to in the political science literature as “dyads”) and/or multiple basins, we can break the incident out by each country-pair and basin involved. These incidents are referred to as “**interactions**”, since there is a row in the dataset for each possible interaction between countries and basins involved in an incident. The other format used in our analyses groups these interactions into “**events**,” regardless of the number of countries involved in an incident. For each incident being considered as an event, rather than as a set of interactions, it is treated as if there were only one row in the dataset for that incident. For example, a treaty involving four countries would consist of nine sets of interactions (and therefore nine rows in the dataset), because there are nine possible country pairs and the interactions between the countries are mutual. The same treaty would consist of only one event for each basin it concerned. Because the grain of our study is the international basin, an event involving multiple basins is coded for all applicable basins.

DATE

This field indicates the date (or closest approximation thereof) of when an event occurred. All dates are entered in a month/day/year format (while the format of the date can easily be changed, for statistical purposes all dates should include a month, day, and year). For meetings or events covering a period of days, often the last date of the event is used, with additional date information covered in the event summary or comments fields. If only a year is available for the event date, it is still entered in the database in a month, day, year format and the convention 01/01/year is used. If only a month and year are available, the 1st or 15th of the month is used as the day. A note is placed in the comment field that the date is an approximation.

DYAD_CODE

This field is a concatenation of the fields CCode1 and CCode2, in that order. A “4” as part of the Dyad code indicates cases where an event is internal to a country. This country-coding convention was used in the COPDAB database. In cases where an event is internal to a country, but more than one actor in a country is involved, sometimes a name or code is used in the one of the CCode columns.

BCODE

A four letter code indicating the basin in which the event occurred. Each cell in this column should contain only 1 basin code.

#_OF_BASINS

The total number of basins associated with an event. A “0” indicates ‘not international basin’, a “99” indicates ‘basin not specified’.

LOCATION

More specific information (beyond the basin identification) of where an event occurred.

CCODE1 and CCODE2

These fields contain the three letter country codes for the entities (i.e., countries, international organizations, NGO’s...) involved in an event. For each pair of actors, the country code used in the CCode1 column is the one that comes first alphabetically, based on the country codes. See Appendix 10 (or the Master Codes List.xls file) for the key to the country codes. In cases where an event is internal to a country, the convention is to list the country code in CCode1 and the number “4” in the CCode2 column. This convention was used in the COPDAB database. In cases where an event is internal to a country, but more than one actor in a country is involved, sometimes a name or code is used in the one of the CCode columns. As the BAR project is expanded to include internal events, an option would be to adopt GEDS 3-letter non-state actor codes to use in the CCode column.

IRMO1 and IRMO2

These fields indicate the role of CCode1 and CCode2 in the event. “I” indicates the initiator of the event action. “R” indicates the recipient of the event action. “M” indicates that the event action is mutual between the pair of entities involved. “O”

indicates an entity related to an event, but not directly part of the event action. “O”s are always paired only with the Initiator of an action (or the Mutual countries, if the action is mutual). Rows in which one of the countries/entities is coded as an “O” in an IRMO column are not coded for the COPDAB scale, because Others are not directly part of the event. Entries with “O” in the IRMO column are coded as y-other or ExVar-other in the Event_Type field and are not included in statistical analyses of y-events or as part of the ExVar variable.

COUNTRY_LIST

Perhaps a more appropriate title for this column is entity_list. In this column are listed all the names of the countries or entities involved in an event (and not just the country pair for that row). Country names are spelled out and separated by a double dash (“--“). Information in () following a country names provides more specific identification information. For example, China (Yunnan Province); German Dem. Rep. (East Germany); Turkey (Kurdish rebels).

#_OF_COUNTRIES

The total number of entities associated with an event. The number of countries should match the number of entities in the Country_List column.

COPDAB_SCALE

A ranking of 1 to 15 indicating the level of cooperation or conflict between a pair of entities. For event rows involving entities coded as “O” in the IRMO columns, do not include a COPDAB Scale value for that row. This Scale is used to code international events only. See Table A1.1 below for a description of the scale categories.

BARSCALE

To make the COPDAB International Scale more intuitive, we first inverted it and then shifted it along the number line so that neutral events were centered on zero. Our basic scale then ranges from -7 to +7, with -7 denoting the most negative events, 0 denoting neutral events, and + 7 denoting the most positive events.

EVENT_TYPE

This field indicates if a row represents an “event” as defined by the BAR project. It is an important field for sorting data for analysis. See Table A1.2 below for a detailed list and full description of the event_type categories.

EVENT_SUMMARY

A detailed description of the event.

ISSUE_TYPE1 and ISSUE_TYPE2

This field contains a number indicating the main issue area of an event. The Issue_Type1 column is for the main issue area and the Issue_Type2 column is for additional issue areas. There should only be one Issue Area Code in the Issue_Type1 column (i.e., one category per cell). See Table A1.3 for a list and description of Issue Areas.

COMMENTS

This field is used to provide additional information or clarification regarding the coding of an event, raise questions or concerns, or provide information regarding the event's relationship to other events in the BAR Water Event Database.

SOURCE_BAR

Indicates where Basins At Risk obtained the event information, e.g., another database; electronic news files; historical compendiums. These sources are often not primary data sources.

SOURCE_SOURCE

Indicates the more specific source of the event data, often the primary data source from which the information was obtained.

FBIS_REGION

Indicates the world region for FBIS and WNC documents. Facilitates finding original source articles if searching FBIS electronic files.

DOC_DATE

Indicates the date a source article (or book, web page,...) was published or accessed.

FIELD_1

This field is left blank. It is included to facilitate some ACCESS database queries.

COPDAB and BAR Scales³⁴

The COPDAB International Conflict and Cooperation Scale is comprised of 15 values, ranging from level 1, representing the most highly cooperative events, to level 15, representing the most extremely conflictive events. Level 8 may be considered “neutral” or as the 0 point for the conflict scale and the cooperation scale. The scale is an “ordinal” means for discriminating events (i.e., events codes at level 16 are more conflictive than events codes at level 10 on the same scale). Water-specific terms – not part of the original COPDAB scale, but added for BAR coding purposes – are listed in italics alongside the original COPDAB wording for each category. In addition, category 13 and 14 were merged into one category, number 13. Category 14 took on the heading and description of category 15 (Extensive War Acts). Category 15 was changed to indicate a formal declaration of war. See Chapter 2, Table 2.6 for the values and descriptions of the COPDAB and BAR Scales.

³⁴ The original COPDAB Scale may be found in the COPDAB Coder's Manual, which is available through the Inter-University Consortium for Political and Social Science Research (ICPSR) website.

Table A1.2: Event Type Categories and Descriptions

Event Types	Description of Event Types
Y	an event between riparian nations concerning an international basin that they share, where water is involved as either a consumable resource or a quantity to be managed.
y-other	an entry for an event among riparian nations (concerning an international basin that they share and where water is involved as either a consumable resource or a quantity to be managed) where one of the actors coded in the row was not directly involved in the event, but is in some way associated with the event.
ExVar	an event involving an international basin that involves nation(s) that are not riparian to that basin, where water is considered as either a consumable resource or a quantity to be managed.
ExVar-other	an entry for event involving an international basin that involves nation(s) that are not riparian to that basin, where one of the actors coded for that row was not directly involved in the event, but is in some way associated with the event.
n/a-border	concerns border/boundary issues only and does not involve water as a consumable resource or quantity to be managed
n/a-navigation	refers to events involving shipping or trade, including the creation of port facilities, and does not involve water as a consumable resource or quantity to be managed
n/a-shipping	concerns navigational issues only and does not involve water as a consumable resource or quantity to be managed
n/a-territory	concerns territorial issues only and does not involve water as a consumable resource or quantity to be managed
n/a	event is not applicable for BAR purposes or article offer no information of value
ExVar-out of basin transfer	an event in which a nation that is riparian to an international basin is, or is offering, to transfer water to either a nation in another international basin (e.g., Turkey and Israel) or a nation that shares no international basins (e.g., Iraq and Kuwait)
n/a-weapon/target	concerns situations where water is used as a weapon or is a target for military purposes, but where the issue does not concern the sharing or managing of water in the basin

Table A1.2: Event Type Categories and Descriptions (cont.)

Event Types	Description of Event Types
n/a-victim	concerns situations where water quality or quantity is negatively affected as a side-effect of non-water related military activities
n/a-sea access	refers to events involving ability of a country to access the sea along river or canal routes -- a subset of navigation
n/a-embassy water supply	refers to incidents in which a country cuts off water supplies to other nations' embassies, but in which water as a shared, basin resource is not the issue of concern
n/a-not int'l basin	refers to incidents which occur in basins that are national, rather than international
n/a-econ. dev.	refers to incidents which concern overall economic development in a river basin, rather than water as a shared resource within the basin
n/a-aid for refugees	refers to aid for refugees, flood victims, etc., in which water as a shared basin resource is not the issue of concern
research required	indicates that further research is required before the information can be properly coded

Table A1.3: Description of Issue Areas

Issue Area #	Description of Issue Areas*	
1	Water Quality	Events relating to water quality or water-related environmental concerns
2	Water Quantity	Events relating to water quantity
3	Hydro-power/Hydro-electricity	Events relating to hydro-electricity or hydro-power facilities
4	Navigation	Events relating to navigation, shipping, ports
5	Fishing	Events relating to fishing
6	Flood Control/Relief	Events relating to flooding, flood control, flood damage, flood relief
7	Economic Development	General economic/regional development
8	Joint Management	Events involving joint management of basin or water resources, especially where the management concerns cover a range of issue areas
9	Irrigation	Events relating to irrigation of agricultural areas
10	Infrastructure/Development	Events relating to the infrastructure or development projects, including dams, barrages, draining of swamps for development purposes, canals.
11	Technical Cooperation/Assistance	Events relating to technical or economic cooperation or assistance, including project evaluations or river surveys and funds for improvements to water-related technology/infrastructure
12	Border issues	Events relating to rivers as shared borders/boundaries
13	Territorial issues	Events relating to territorial claims, where the territory is associated with a water body, e.g., a river island
*Note that not all issue areas listed are relevant "events".		

APPENDIX 2 CHANGES TO TFDD BASIN COVERAGES³⁵

DATA CAVEATS TO TFDD BASINS VERSION II, 2000

Below are the changes made to the basins coverage since the TFDD register was first published in 1999/2000.

Each basin was corrected using the U.S.G.S. Eros Data Center Hydro1k dataset. The Hydro1k data set was derived topographically and includes both basin (polygon) and stream (arc) coverages of the globe. The Hydro1k stream networks were the standard for accuracy of the TFDD basins. Dissolving the hydro1k basin polygons into six levels of sub-basin polygons and then choosing those sub-polygons that better defined the boundaries allowed us to redefine questionable basins yet still retain the association with the Hydro1k dataset. The correction procedure was run for each continent. In cases where the Hydro 1k did not provide enough information to correct the basin, discrepancies between the basin boundaries and the stream networks were resolved using *National Geographic's Atlas of the World* (7th ed.).

The basins that were changed and the Hydro1k levels used to redefine their boundaries are as follows: Asia-level 2, Ob, Amur; level 3, Indus, Hsi, Red, Karnafauli, Fenney; level 4, Oral, Saigon; level 5, Sulak, Samur; level 6, Asi; Africa-level 2, Dra; level 3, Benito; level 5, Medjerda; level 6, Atui, Tano, Umbeluzi; South America-level 6, Amacuro, Essequibo, Tumbes, Zarumilla; Europe-level 6, Gauja, L_Prespa, Lielupe, Venta; level 5, Vardar, Po, Parnu; North America- level 5, Negro; level 4, Alesek. The Ntem basin of Africa was merged with the Benito based on the NGS map and is now called the Benito-Ntem basin.

Adding new basins is an ongoing process that evolves as information and data is made available. Three recent additions are the Skagit River basin that crosses the border of the United States and Canada, the Wiedau River basin that makes up a portion of the border between Denmark and Germany, and the Glama basin of Norway that shares approximately 1% of its tributaries with Sweden. The basin total is now at 263.

Afghanistan has been added as riparian to the Aral Sea basin.

The Kura-Araks, Samur, Sulak, and Terek basins, which were listed under Europe, are now listed under Asia. They appear on both the Asia and Europe maps.

Basin-Name changes since 1999-2000 TFDD:

- St. John change to St. John (North America)
- Saint John changed to Saint John (Africa)
- Rio Grande changed to Rio Grande (North America)
- Rio Grande changed to Rio Grande (South America)

³⁵ The update of the Transboundary Freshwater Dispute Database (TFDD) basin coverages and the creation of the historical basin coverages was conducted by Greg Fiske, who provided much, but not all, of the material for this Appendix.

- Merauke changed to Tjeroaka-Wanggoe

DATA CAVEATS TO BAR TEMPORAL GIS

The historical international basins of the BAR project are broken into 9 time sections. Each year segment represents all changes in polity and political boundaries from the year indicated by its name to the day before the beginning of the following time year(s) segment. For example Time segment 55 represents all polity and boundary changes between the time 1/1/55 to 12/31/71.

Data Caveats to BAR Temporal GIS: Countries

The major political boundary changes occurred between the years of 1990 and 1993. They are depicted as accurately as possible within their respective time segment coverage name. Each nation is represented by its BAR Country Code (CCode). The spatial political boundary changes are as follows: 1972 East Pakistan separated from Pakistan and formed Bangladesh, therefore, changing CCode PAK for the Bangladesh area to BGD; 1990 German Democratic Republic (East Germany) and German Federal Republic (West Germany) united, therefore dissolving CCodes GDR and GFR to create DEU (Germany); 1990 Yemen Arab Republic (North Yemen) and Yemen People's Republic (South Yemen) united, therefore dissolving CCodes YAR and YPR to create YEM (Yemen); 1991 The breakup of the former Soviet Union, creating the CCodes ARM, AZE, BLR, GEO, KAZ, KGZ, MDA, RUS, TJK, TKM, UKR, UZB; 1992 The breakup of the former Yugoslavia, creating the CCodes BIH, HRV, MKD, SVN, YUG; 1992 The breakup of Czechoslovakia, creating CCodes CZE and SVK; 1993 Eritrea became an independent nation, created CCode ERI. See Appendix 10 for a listing of CCodes and country names.

Africa Boundary Changes Not Incorporated into Temporal GIS

The historical country coverage used by BAR missed a number of territorial changes in Africa. These territorial changes are therefore not accounted for in the BAR historical basin coverages. It should be noted, however, that the number of events for Africa during the earlier years of the BAR study are few, limiting the impact of these missing boundary changes.

The missing boundary changes mostly relate to decolonization, especially 1948-1960, as well as some scattered border conflicts and realignment of country alliances.

The majority of the missing changes are detailed below. Likely others will be found as information becomes available.

French West Africa and French Equatorial Africa formed a block of contiguous French colonial administrative units. In the BAR historical GIS coverages, these administrative units are not considered as one block under French colonial rule, but as the separate entities they then became at the time of their independence, which actually occurred some time after the year in which the BAR study begins (1948). In the change from French colonial rule to independent nations, the administrative unit boundaries became, with few exceptions, the national boundaries.

Tunisia (1956), Algeria (1962), Morocco (1956), Mauritania (1960), Senegal (1960), Gambia (1960), Mali (1960), Guinea (1958), Ivory Coast (1960), Volta (1960), Togo (1960), Dahomey (1960), Niger (1960), Chad (1960), Cameroon (1960), Central African Republic (1960), Gabon (1960), and Congo-Brazzaville (1960).

Also in that region of Africa were Spanish Morocco (1956), which merged with Morocco, and Spanish Sahara (1975), now referred to as Western Sahara and currently in dispute between Mauritania, Morocco, and local guerrilla fighters. Western Sahara is correctly considered as a separate territorial unit from 1948 on, but Spanish Sahara is not included in the pre-1956 GIS country coverages. We do not, however, have any water events for that region from that time period.

A second large set of contiguous colonial administrative units was that of the British, which ran north to south across the length of the African continent. These units became the following countries in the late 1950's and early 1960's. Although all these regions were under British rule until their independence, the BAR historical GIS considers them as separate spatial entities from 1948.

Egypt (1956), Sudan (1956), Uganda (1962), Kenya (1963), Tanzania (1961), Malawi* (1964), Zambia* (1964), Rhodesia* (1965), Botswana (1966), Namibia (1990 -- from South African Mandate), Swaziland (1968), Lesotho (1966).

*Southern Rhodesia (Zimbabwe), Northern Rhodesia (Zambia), and Nyasaland (Malawi) were a set of federated states and gained independence in 1964. Rhodesia unilaterally declared independence in 1965.

In 1952, Eritrea, which was under Italian colonial rule, became part of Ethiopia.

In 1966, Biafra announced secession from Nigeria. A civil war ensued until 1970, when Biafra essentially ceased to exist.

The Belgian Congo is treated as three separate territorial units from 1948, even though the countries concerned did not gain independence until the 1960's. These countries are Congo-Kinshasa (1960), Rwanda (1962), and Burundi (1962).

Sources:

Central Intelligence Agency. 2000. *World Factbook 2000*. USA: U.S. Central Intelligence Agency, <http://www.odci.gov/cia/publications/factbook/index.html>.
 Kasule, Samuel. 1998. *The History Atlas of Africa*. USA: Macmillan.
 NcEvedy, Colin. 1980. *Atlas of African History*. NY: Facts on File.

Data Caveats to BAR Temporal GIS: Basins

Based on the changes in country boundaries described above (excluding the above African boundary changes, which were not incorporated at the time of this publication), the following basin changes (deviation from the 2000 international basin coverage) were made for each time segment:

For 1946 to 1989, the inclusion of the Weser basin between East and West Germany and the Tiban basin shared by North and South Yemen; from 1946 to the present, the addition of basins labeled: BANN, BNGU, BRTA, CSTL, DNPR, DONX, DUGV, ELNK, ERNE, FANE, FLYR, FOYL, GUJA, KGNK, KRKA, LLUP, MIUS, NRTV, NRVA, ORAL, PNDR, PRNU, REZV, SALC, SAMR, SRTA, SULK, VENT, VLKA, VOLG. See Table A2.1.

TEMPORAL CHANGES TO BASIN COVERAGE

Table A2.1 indicates those basins that were either added or subtracted from the complete list of basins due to the status of the political boundaries during the respective year. Traveling through time from 1948 to the present, the dates that each basin began and ended its existence are also indicated.

Table A2.1: Temporal Changes to Basin Coverage

Basin Name	BCODE	Added	Removed
Bann	BANN	1992	n/a
Bangau	BNGU	1992	n/a
Barta	BRTA	1992	n/a
Castletown	CSTL	1992	n/a
Dnieper	DNPR	1992	n/a
Don	DONX	1992	n/a
Daugava	DUGV	1992	n/a

Table A2.1: Temporal Changes to Basin Coverage (cont.)

Basin Name	BCODE	Added	Removed
Elancik	ELNK	1992	n/a
Erne	ERNE	1992	n/a
Fane	FANE	1992	n/a
Flurry	FLRY	1992	n/a
Foyle	FOYL	1992	n/a
Gauja	GUJA	1992	n/a
Kogilnik	KGNK	1992	n/a
Krka	KRKA	1992	n/a
Lielupe	LLUP	1992	n/a
Mius	MIUS	1992	n/a
Neretva	NRTV	1992	n/a
Narva	NRVA	1992	n/a
Oral	ORAL	1992	n/a
Pandaruan	PNDR	1992	n/a
Parnu	PRNU	1992	n/a
Rezvaya	REZV	1992	n/a
Salaca	SALC	1992	n/a
Samur	SAMR	1992	n/a
Sarata	SRTA	1992	n/a
Sulak	SULK	1992	n/a
Venta	VENT	1992	n/a
Velaka	VLKA	1992	n/a
Volga	VOLG	1992	n/a
Weser	WESR	1946	1989
Tiban	TIBN	1946	1989

APPENDIX 3 GIS DATA CALCULATED BY BASIN

The tables below³⁶ provides a sampling of the data created as part of the Basins At Risk project. At the time of this publication, the full data are in the process of being made web-accessible, at <http://terra.geo.orst.edu/users/tfdd/>.

Table A3.1: Basin Level GIS Data

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Akpa Yafi	AKPA	0	No Data	1	4905	136162	27.76	0	No Data
Alsek	ALSK	0	6321	3	28365	536	0.02	0	9
Amacuro	AMCR	0	No Data	1	5638	10283	1.82	0	No Data
Amur	AMUR	59	186368	10	2085864	66087512	31.68	0.02829	366
Amazon	AMZN	2	2134664	23	5883357	24583020	4.18	0.00034	6627
An Nahr Al Kabir	ANAK	1	No Data	1	1287	88880	69.06	0.77700	No Data
Aral Sea (internal drainage)	ARAL	44	44828	14	1231389	40126840	32.59	0.03573	111
Asi	ASIX	6	4163	4	37900	4694289	123.86	0.15831	8
Artibonite	ATBN	1	No Data	4	8830	1093537	123.84	0.11325	No Data

³⁶ The data for these tables was derived by Greg Fiske.

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Astara Chay	ATCY	0	No Data	1	561	22441	40.00	0	No Data
Atrak	ATRK	0	605	4	34215	1160722	33.92	0	1
Atui	ATUI	0	No Data	1	32645	8808	0.27	0	No Data
Aviles	AVLS	0	No Data	1	257	643	2.50	0	No Data
Awash	AWSH	2	7326	7	154944	11766847	75.94	0.01291	18
Aysen	AYSN	0	No Data	1	13596	14499	1.07	0	No Data
Baker	BAKR	0	11522	2	30796	20168	0.65	0	25
Bann	BANN	0	No Data	1	5551	637028	114.76	0	No Data
Bidasoa	BDSO	0	No Data	1	525	43866	83.55	0	No Data
Benito Ntem	BENT	0	10852	2	45115	512316	11.36	0	26
Bia	BIAX	1	No Data	2	11062	567388	51.29	0.09040	No Data
Beilun	BLUN	0	No Data	1	915	155062	169.47	0	No Data
Belize	BLZE	0	No Data	4	11463	96946	8.46	0	No Data
Bangau	BNGU	0	No Data	1	63	381	6.05	0	No Data
Baraka	BRKA	0	76	2	66248	1864721	28.15	0	No Data
Barima	BRMA	0	No Data	1	2088	2216	1.06	0	No Data
Barta	BRTA	0	No Data	1	1766	58981	33.40	0	No Data
Buzi	BUZI	1	2464	2	27681	900512	32.53	0.03613	6
Ca (Song-Koi)	CAXX	3	6084	1	31028	3674502	118.43	0.09669	14
Candelaria	CDLR	0	No Data	2	12755	70793	5.55	0	No Data
Changuinola	CGNL	0	No Data	1	3204	31637	9.87	0	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Chico (Carmen Silva)	CHIC	0	No Data	1	1680	8065	4.80	0	No Data
Chira	CHIR	1	No Data	4	15705	448049	28.53	0.06367	No Data
Choluteca	CHLT	0	No Data	2	7400	1386452	187.36	0	No Data
Chiriqui	CHRQ	0	No Data	1	1735	41860	24.13	0	No Data
Chuy	CHUY	0	No Data	1	175	12402	70.87	0	No Data
Colorado	CLDO	68	7074	13	655030	7014887	10.71	0.10381	19
Chilkat	CLKT	0	No Data	1	3776	201	0.05	0	No Data
Columbia	CLMB	111	107307	10	668433	6355980	9.51	0.16606	221
Chiloango	CLNG	0	No Data	1	11644	752156	64.60	0	No Data
Cancoso (Lauca)	CNCS	0	No Data	2	23509	126222	5.37	0	No Data
Congo	CNGO	16	420499	10	3691027	60222852	16.32	0.00433	1249
Coco (Segovia)	COCO	0	9483	4	25389	611662	24.09	0	20
Comau	COMA	0	No Data	1	937	288	0.31	0	No Data
Corubal	CRBL	0	No Data	2	24004	518214	21.59	0	No Data
Cross	CROS	0	22013	3	52756	8286256	157.07	0	55
Courantyne (Corantijn)	CRTY	0	12035	1	41765	51101	1.22	0	37
Coruh	CRUH	0	No Data	3	22066	409916	18.58	0	No Data
Castletown	CSTL	0	No Data	1	381	29460	77.32	0	No Data
Cestos	CSTO	0	No Data	3	15012	610416	40.66	0	No Data
Coatan Achute	CTAT	0	No Data	1	1989	410759	206.52	0	No Data
Catatumbo	CTTB	0	5216	4	30970	1322650	42.71	0	24
Cullen	CULL	0	No Data	1	594	6526	10.99	0	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Cavally	CVLY	0	8977	3	30580	728609	23.83	0	17
Danube	DANU	57	95465	13	790119	80258360	101.58	0.07214	194
Daoura	DAUR	0	No Data	2	34479	402291	11.67	0	No Data
Dnieper	DNPR	69	27357	6	516281	31292984	60.61	0.13365	53
Dniester	DNSR	15	5961	4	62000	6458344	104.17	0.24194	8
Don	DONX	83	15498	7	425551	19618048	46.10	0.19504	31
Dra	DRAX	3	1	3	96368	866277	8.99	0.03113	No Data
Drin	DRIN	2	No Data	5	17917	1896715	105.86	0.11163	No Data
Dasht	DSHT	0	No Data	1	33353	340966	10.22	0	No Data
Daugava	DUGV	1	7478	2	58742	1814622	30.89	0.01702	13
Douro (Duero)	DURO	27	10071	4	98856	4340608	43.91	0.27312	19
Ebro	EBRO	49	9997	7	85787	2960721	34.51	0.57118	27
Elbe	ELBE	36	12203	5	132245	23291484	176.12	0.27222	22
Elancik	ELNK	0	No Data	1	924	6508	7.04	0	No Data
Erne	ERNE	0	No Data	1	4784	158730	33.18	0	No Data
Essequibo	ESQB	2	73611	4	239480	720069	3.01	0.00835	215
Etosha/Cuvelai	ETOS	1	303	5	167417	776842	4.64	0.00597	1
Fane	FANE	0	No Data	1	198	7064	35.68	0	No Data
Flurry	FLRY	0	No Data	1	61	6955	114.02	0	No Data
Fly	FLYX	0	46799	3	64616	310200	4.80	0	140
Fenney	FNNY	0	No Data	1	2783	478059	171.78	0	No Data
Foyle	FOYL	0	No Data	1	2917	141525	48.52	0	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Fraser	FRSR	4	49681	10	239735	1221582	5.10	0.01669	88
Firth	FRTH	0	No Data	2	6046	0	0.00	0	No Data
Gallegos	GALG	0	No Data	4	11597	17846	1.54	0	No Data
Gambia	GAMB	0	2886	2	69932	1413293	20.21	0	9
Ganges	GANG	222	442060	13	1634936	508719840	311.16	0.13579	1247
Gash	GASH	0	387	5	40045	2676104	66.83	0	1
Geba	GEBA	0	No Data	1	12784	410075	32.08	0	No Data
Grijalva	GJLV	3	35134	10	126790	6211205	48.99	0.02366	103
Glama	GLAM	0	10339	5	43002	650934	15.14	0	18
Golok	GLOK	0	No Data	1	1842	253430	137.58	0	No Data
Goascoran	GOSR	0	No Data	1	2785	245454	88.13	0	No Data
Garonne	GRON	9	8378	5	55783	3400137	60.95	0.16134	18
Great Scarcies	GSCR	0	No Data	3	12068	458384	37.98	0	No Data
Guadiana	GUDN	17	2363	1	67925	1677741	24.70	0.25028	5
Guir	GUIR	1	No Data	2	78913	326304	4.13	0.01267	No Data
Gauja	GUJA	0	No Data	4	11553	436658	37.80	0	No Data
Han	HANX	11	11915	5	35266	18065656	512.27	0.31192	24
Hari (Harirud)	HARI	2	2274	5	92593	4870661	52.60	0.02160	6
Helmand	HLMD	4	5009	6	353513	6991007	19.78	0.01132	15
Hondo	HOND	0	No Data	2	14590	182094	12.48	0	No Data
Har Us Nur	HRUN	0	716	7	185252	241744	1.30	0	2
Hsi	HSIX	60	93657	4	417755	79367008	189.98	0.14362	277

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Incomati	ICMT	3	1775	6	46729	1457973	31.20	0.06420	4
Ili (Kunes He)	ILIX	0	No Data	1	161221	4149595	25.74	0	7
Indus	INDU	28	58429	19	1138805	200078528	175.69	0.02459	146
Irrawaddy	IRWD	1	204433	9	404189	35008484	86.61	0.00247	504
Isonzo	ISNZ	0	No Data	2	3021	371742	123.05	0	No Data
Jacobs	JCBS	0	No Data	1	442	883	2.00	0	No Data
Jordan	JORD	2	736	4	34016	5153450	151.50	0.05880	2
Juba-Shibeli	JUBA	0	5101	13	803543	12431128	15.47	0	13
Jurado	JURD	0	No Data	1	665	4580	6.89	0	No Data
Kaladan	KALD	0	23439	3	30516	933627	30.59	0	62
Kemi	KEMI	1	15353	2	55732	98942	1.78	0.01794	17
Kogilnik	KGNK	9	No Data	2	6147	524750	85.37	1.46413	No Data
Komoe	KMOE	0	1386	2	78123	1963384	25.13	0	5
Karnaphuli	KNFL	1	No Data	2	12510	1932158	154.45	0.07994	No Data
Kowl-E-Namaksar	KOWL	0	171	2	36455	396751	10.88	0	1
Krka	KRKA	0	No Data	1	1254	104886	83.64	0	No Data
Klaralven	KRLV	0	11310	8	50960	1142571	22.42	0	17
Kunene	KUNE	3	5065	8	109991	1200370	10.91	0.02727	20
Kura-Araks	KURA	11	5964	13	193197	13349132	69.10	0.05694	15
Lava (Pregel)	LAVA	0	No Data	2	8578	755114	88.03	0	No Data
Lotagipi Swamp	LGPS	0	502	3	38749	191702	4.95	0	No Data
Lima	LIMA	1	No Data	1	2284	118077	51.70	0.43783	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Lake Chad	LKCH	1	40327	7	2388687	33139232	13.87	0.00042	93
Lake Fagnano	LKFN	0	No Data	1	3189	3751	1.18	0	No Data
Lake Natron	LKNT	0	942	8	55441	1225326	22.10	0	2
Lake Prespa	LKPP	2	No Data	2	9035	894761	99.03	0.22136	No Data
Lake Titicaca-Poopo System	LKTC	1	12783	8	111781	2119984	18.97	0.00895	34
Lake Turkana	LKTK	1	16646	8	206923	14768555	71.37	0.00483	56
Lake Ubsa-Nur	LKUN	0	781	5	62784	106628	1.70	0	2
Lielupe	LLUP	0	No Data	3	14351	422161	29.42	0	No Data
Lempa	LMPA	2	No Data	2	18040	3960724	219.55	0.11086	No Data
Limpopo	LMPO	38	3454	6	414798	13210817	31.85	0.09161	12
Lagoon Mirim	LMRM	0	10764	3	54957	548307	9.98	0	28
Loffa	LOFF	0	No Data	2	11402	159465	13.99	0	No Data
La Plata	LPTA	46	258199	16	2954460	57016904	19.30	0.01557	736
Little Scarcies	LSCR	0	No Data	3	18872	729853	38.67	0	No Data
Mana-Morro	MANA	0	No Data	1	6847	213945	31.25	0	No Data
Massacre	MASS	0	No Data	1	798	202670	253.97	0	No Data
Ma	MAXX	0	5340	1	30269	2418574	79.90	0	17
Mbe	MBEX	0	No Data	1	6981	21830	3.13	0	No Data
Medjerda	MDJD	2	2012	1	174816	2343374	13.40	0.01144	5
Mekong	MEKO	25	166550	10	787776	52446340	66.58	0.03173	492
Mino	MINO	13	5869	1	15089	1044297	69.21	0.86155	No Data
Mira	MIRA	0	No Data	2	12096	323366	26.73	0	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Mississippi	MISS	750	255926	17	3226293	69847144	21.65	0.23246	620
Mius	MIUS	0	No Data	1	2787	106189	38.10	0	No Data
Moa	MOAX	0	No Data	2	22510	1283346	57.01	0	No Data
Mono	MONO	0	No Data	2	23430	1451172	61.94	0	No Data
Motaqua	MOTQ	0	No Data	5	16088	3566074	221.66	0	No Data
Maputo	MPUT	3	1446	4	30656	1104265	36.02	0.09786	4
Murgab	MRGB	3	1428	6	60926	1237547	20.31	0.04924	3
Maroni	MRNI	0	19674	3	64999	10767	0.17	0	62
Maritsa	MRSA	30	5686	8	49643	3359028	67.66	0.60431	12
Mataje	MTJE	0	No Data	1	734	12254	16.69	0	No Data
Naatamo	NAAT	0	No Data	1	996	772	0.78	0	No Data
Negro	NEGR	0	No Data	2	5766	158764	27.53	0	No Data
Nelson-Saskatchewan	NELS	142	45993	11	1109407	5164532	4.66	0.12800	87
Niger	NGER	7	110480	7	2113244	71496680	33.83	0.00331	310
Nahr El Kebir	NHRK	0	No Data	1	1536	594630	387.13	0	No Data
Nile	NILE	12	107410	14	3031691	144982480	47.82	0.00396	324
Neman	NMAN	5	11660	2	90310	4614951	51.10	0.05536	19
Neretva	NRTV	0	No Data	2	5502	278296	50.58	0	No Data
Narva	NRVA	0	8249	3	52955	1126515	21.27	0	12
Nestos	NSTO	0	No Data	3	10190	272275	26.72	0	No Data
Nyanga	NYGA	0	No Data	1	12340	36495	2.96	0	No Data
Ob	OBXX	88	262023	11	2950834	31332128	10.62	0.02982	431

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Oued Bon Naima	ODBN	0	No Data	1	504	47599	94.44	0	No Data
Oder (Odra)	ODER	15	11049	6	122425	16783652	137.09	0.12252	20
Ogooue	OGOO	0	48951	4	222987	618835	2.78	0	149
Okavango	OKVG	1	10821	4	706879	1385033	1.96	0.00141	32
Olanga	OLNG	0	No Data	1	18831	71450	3.79	0	No Data
Oral	ORAL	64	9587	3	311001	3417159	10.99	0.20579	18
Orange	ORAN	32	2952	10	945475	13918971	14.72	0.03385	9
Orinoco	ORIN	2	328617	10	927430	10089300	10.88	0.00216	986
Oueme	OUEM	0	2221	2	59517	4641340	77.98	0	11
Oulu	OULU	0	7063	1	28681	206014	7.18	0	11
Oyupock (Oiapoque)	OYPK	0	No Data	2	23251	34875	1.50	0	No Data
Paz	PAZX	0	No Data	1	2170	485232	223.61	0	No Data
Pedernales	PDNL	0	No Data	1	358	52430	146.45	0	No Data
Pakchan	PKCN	0	No Data	1	3912	128069	32.74	0	No Data
Palena	PLNA	0	No Data	5	13336	8045	0.60	0	No Data
Pandaruan	PNDR	0	No Data	1	371	7612	20.52	0	No Data
Po	POXX	3	21951	7	87076	17313426	198.83	0.03445	50
Prohladnaja	PRLN	0	No Data	1	619	23431	37.85	0	No Data
Parnu	PRNU	0	No Data	1	5842	162531	27.82	0	No Data
Pascua	PSCU	0	No Data	1	13696	3477	0.25	0	No Data
Pasvik	PSVK	1	No Data	1	16015	43718	2.73	0.06244	No Data
Patia	PTIA	0	No Data	4	21289	1001301	47.03	0	No Data

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Puelo	PUEL	0	No Data	3	8404	5061	0.60	0	No Data
Pu-Lun-T'o	PULT	0	224	6	89004	418476	4.70	0	1
Rudkhaneh-ye (BahuKalat)	RDKH	0	No Data	2	18018	77881	4.32	0	No Data
Red	REDX	11	31507	2	157103	27153668	172.84	0.07002	90
Rezvaya	REZV	0	No Data	1	671	7573	11.29	0	No Data
Rio Grande	RGNA	67	No Data	10	656109	11484489	17.50	0.10212	3
Rio Grande	RGSA	0	No Data	1	8015	22590	2.82	0	No Data
Rhine	RHIN	16	39471	6	172945	53590904	309.87	0.09251	80
Rhone	RHON	6	24835	6	100219	9621311	96.00	0.05987	54
Roia	ROIA	0	No Data	1	647	29545	45.66	0	No Data
Ruvuma	RVMA	0	21536	3	174816	1746468	9.99	0	60
Sabi	SABI	5	4330	4	115695	3105723	26.84	0.04322	15
Saigon	SAIG	2	10190	2	25138	5411169	215.26	0.07956	25
Salaca	SALC	0	No Data	2	2086	49117	23.55	0	No Data
Salween	SALW	1	49287	9	244016	5013968	20.55	0.00410	124
Samur	SAMR	0	No Data	2	6772	34428	5.08	0	No Data
Sassandra	SASS	0	9635	2	68177	2715123	39.82	0	26
St. Croix	SCRO	1	No Data	1	4639	32239	6.95	0.21556	No Data
Seine	SEIN	5	8550	1	85749	16323425	190.36	0.05831	16
Senegal	SENG	0	8532	4	435979	4103053	9.41	0	22
Seno Union (Serrano)	SENO	0	No Data	3	6469	2293	0.35	0	No Data
Sepik	SEPK	0	31823	2	73361	764375	10.42	0	87

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Schelde	SHLD	1	No Data	1	17107	7507796	438.87	0.05846	No Data
Sixaola	SIOL	2	No Data	1	2873	17624	6.13	0.69614	No Data
St. John	SJAF	0	5546	2	15563	471178	30.28	0	No Data
Saint John	SJNA	1	13181	1	47719	458768	9.61	0.02096	29
San Juan	SJUA	6	13726	6	42166	2578821	61.16	0.14229	44
Skagit	SKAG	2	No Data	2	8021	58108	7.24	0.24935	No Data
St. Lawrence	SLAW	85	172648	13	1055163	45094216	42.74	0.08056	356
San Martin	SMAR	0	No Data	1	653	1786	2.74	0	No Data
Sembakung	SMBK	0	10497	1	15251	125300	8.22	0	No Data
St. Paul	SPAU	1	No Data	2	21232	652205	30.72	0.04710	No Data
Sarata	SRTA	1	No Data	1	1756	60348	34.37	0.56948	No Data
Sarstun	SRTU	0	No Data	1	2070	37749	18.24	0	No Data
Stikine	STKN	0	28310	2	50868	1950	0.04	0	39
Struma	STUM	1	No Data	3	14982	866392	57.83	0.06675	No Data
Suchiate	SUCT	0	No Data	1	1554	640859	412.39	0	No Data
Sujfun	SUJF	0	No Data	2	18269	664807	36.39	0	No Data
Sulak	SULK	0	No Data	2	15075	228092	15.13	0	No Data
Song Vam Co Dong	SVCD	0	4210	2	15300	4385538	286.64	0	No Data
Tafna	TAFN	0	No Data	2	9453	1434397	151.74	0	No Data
Tagus (Tejo)	TAGU	40	6532	3	77871	9160948	117.64	0.51367	19
Taku	TAKU	0	No Data	2	18145	12	0.00	0	No Data
Tami	TAMI	0	46146	2	89850	338061	3.76	0	113

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Tana	TANA	0	No Data	2	15633	6376	0.41	0	No Data
Tano	TANO	0	1185	2	15571	1043531	67.02	0	No Data
Terek	TERK	0	6010	5	38741	2344346	60.51	0	14
Tigris_Euphrates	TIGR	33	47447	9	789017	48110860	60.98	0.04182	125
Tijuana	TIJU	2	No Data	1	4390	841034	191.58	0.45558	No Data
Tjeroaka_Wanggoe	TJWA	0	No Data	2	6568	32165	4.90	0	No Data
Torne	TORN	0	4374	2	37316	85615	2.29	0	5
Tarim	TRIM	37	3199	12	1051614	7804121	7.42	0.03518	7
Tuloma	TULM	1	3272	2	25772	412293	16.00	0.03880	4
Tumbes	TUMB	0	No Data	1	4969	74654	15.02	0	No Data
Tumen	TUMN	0	1739	2	29118	2062230	70.82	0	4
Umbeluzi	UBLZ	1	No Data	3	10914	1560038	142.94	0.09163	No Data
Umba	UMBA	0	No Data	1	8185	512216	62.58	0	No Data
Utamboni	UTBN	0	No Data	1	7656	39472	5.16	0	No Data
Valdivia	VDVA	1	No Data	2	14971	1066300	71.22	0.06680	No Data
Venta	VENT	0	No Data	2	9526	570293	59.87	0	No Data
Vijose	VJSE	1	No Data	1	7169	513935	71.69	0.13949	No Data
Velaka	VLKA	0	No Data	1	695	10844	15.60	0	No Data
Volga	VOLG	135	179413	7	1554883	62319276	40.08	0.08682	310
Volta	VOLT	3	12417	4	412799	19097806	46.26	0.00727	39
Vardar	VRDR	2	2067	6	32373	3510334	108.43	0.06178	4
Vistula	VSTL	9	16757	4	194010	24015210	123.78	0.04639	34

Table A3.1: Basin Level GIS Data (cont.)

Basin Name	BCODE	Dams (# of)	Runoff (mm/yr)	Climate Zones (# of)	Basin Area (sq. km)	Population (total)	Population Density (pop/sq. km)	Dam Density (dams/(sq. km/1000))	Discharge (cu.km/yr)
Vuoksa	VUKS	0	14323	4	62748	653566	10.42	0	19
Wadi Al Izziyah	WADI	0	No Data	1	576	33340	57.88	0	No Data
Whiting	WHIT	0	No Data	1	2553	0	0.00	0	No Data
Wiedau	WIED	0	No Data	1	1126	65023	57.75	0	No Data
Yalu	YALU	10	9271	4	50865	6375738	125.35	0.19660	22
Yaqui	YAQU	3	41	4	74662	643180	8.61	0.04018	No Data
Yelcho	YELC	0	No Data	3	11139	7786	0.70	0	No Data
Yenisey (Jenisej)	YNSY	9	402987	9	2557825	8042464	3.14	0.00352	601
Yser	YSER	0	No Data	1	923	84695	91.76	0	No Data
Yukon	YUKN	3	154435	9	829732	104639	0.13	0.00362	174
Zambezi	ZAMB	30	105885	6	1385275	28135732	20.31	0.02166	333
Zapaleri	ZAPL	0	No Data	1	2636	8385	3.18	0	No Data
Zarumilla	ZARM	0	No Data	1	4311	567550	131.65	0	No Data

Table A3.2: Country Level GIS Data

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Aruba	ABW	200.33	64634	322.6	No Data	No Data	0	0
Afghanistan	AFG	642117.00	24785372	38.6	71.7	2894.3	4	0.00001
Angola	AGO	1252140.08	10463960	8.4	303.6	29013.9	10	0.00001
Anguilla	AIA	91.57	11293	123.3	No Data	No Data	0	0
Albania	ALB	28616.50	3294902	115.1	23.8	7220.5	8	0.00028
Andorra	AND	506.31	65451	129.3	No Data	No Data	0	0
Netherlands Antilles	ANT	791.73	174110	219.9	No Data	No Data	0	0
United Arab Emirates	ARE	70473.50	2187809	31.0	0.8	381.6	0	0
Argentina	ARG	2781196.47	36205064	13.0	242.5	6698.5	13	0
Armenia	ARM	29636.06	3420643	115.4	1.8	516.4	3	0.00010
American Samoa	ASM	164.36	13755	83.7	No Data	No Data	0	0
Antarctica	ATA	200995.29	0	0.0	No Data	No Data	0	0
French Southern & Antarctic Lands	ATF	7455.21	0	0.0	No Data	No Data	0	0
Antigua and Barbuda	ATG	538.64	51519	95.6	No Data	No Data	0	0
Australia	AUS	7701676.83	18281688	2.4	283.8	15523.3	60	0.00001

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Austria	AUT	83707.40	8088725	96.6	41.5	5131.1	0	0
Azerbaijan	AZE	85844.71	7819936	91.1	8.9	1135.6	5	0.00006
Burundi	BDI	27309.40	5644691	206.7	7.1	1258.7	0	0
Belgium	BEL	30542.20	10197549	333.9	9.9	971.6	1	0.00003
Benin	BEN	116660.00	6126811	52.5	22.6	3683.9	0	0
Burkina Faso	BFA	273396.00	11221887	41.0	14.6	1301.5	1	0
Bangladesh	BGD	138201.94	127093952	919.6	128.9	1014.2	1	0.00001
Bulgaria	BGR	110834.00	8199727	74.0	20.2	2469.3	39	0.00035
	BHR	641.48	520937	812.1	No Data	No Data	0	0
Bahamas, The	BHS	12165.62	238678	19.6	No Data	No Data	0	0
Bosnia and Herzegovina	BIH	51422.50	3332724	64.8	36.9	11069.6	1	0.00002
Byelarus	BLR	206859.00	10415724	50.4	34.0	3268.4	9	0.00004
Belgium/Luxembourg								
Belize	BLZ	22098.60	197615	8.9	No Data	No Data	0	0
Bermuda	BMU	19.80	9963	503.1	No Data	No Data	0	0
Bolivia	BOL	1090140.00	7809062	7.2	317.8	40699.1	2	0
Brazil	BRA	8504477.43	167213728	19.7	6790.7	40611.0	319	0.00004
Barbados	BRB	447.94	247405	552.3	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Brunei	BRN	5772.18	285877	49.5	No Data	No Data	0	0
Bhutan	BTN	39901.80	1895010	47.5	45.5	24035.6	0	0
Botswana	BWA	579826.00	1441759	2.5	3.7	2551.3	3	0.00001
Central African Republic	CAF	621267.00	3163966	5.1	117.9	37262.7	0	0
Canada	CAN	9901381.00	29083380	2.9	2456.0	84447.5	351	0.00004
Cocos (Keeling) Islands	CCK	18.01	155	8.6	No Data	No Data	0	0
Switzerland	CHE	41379.00	7260209	175.5	47.5	6547.0	4	0.00010
Chile	CHL	744103.22	14173216	19.0	343.3	24225.1	9	0.00001
China	CHN	9367296.70	1.235E+09	131.9	2080.8	1684.3	894	0.00010
Ivory Coast	CIV	322688.14	15029100	46.6	86.9	5782.1	2	0.00001
Cameroon	CMR	466784.00	14937038	32.0	268.2	17952.6	3	0.00001
Congo, Republic of the (Brazzaville)	COG	345560.00	2656441	7.7	141.1	53129.7	0	0
Cook Islands	COK	150.94	9468	62.7	No Data	No Data	0	0
Colombia	COL	1140079.51	38728872	34.0	1679.7	43370.0	11	0.00001
Comoros	COM	1722.90	303596	176.2	No Data	No Data	0	0
	CPV	4045.17	321017	79.4	No Data	No Data	0	0
Costa Rica	CRI	51260.10	3567351	69.6	70.4	19735.8	21	0.00041
Cuba	CUB	109476.24	10501331	95.9	19.5	1857.7	25	0.00023

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Christmas Island	CXR	124.47	580	4.7	No Data	No Data	0	0
Cayman Islands	CYM	209.24	19145	91.5	No Data	No Data	0	0
Cyprus	CYP	9137.23	715065	78.3	No Data	No Data	2	0.00022
Czech Republic	CZE	78490.40	10303657	131.3	14.6	1421.0	31	0.00039
Germany	DEU	355923.17	82019456	230.4	107.7	1313.4	33	0.00009
Djibouti	DJI	21519.60	219175	10.2	No Data	No Data	0	0
Dominica	DMA	767.00	34309	44.7	No Data	No Data	0	0
Denmark	DNK	42509.31	5020528	118.1	No Data	No Data	0	0
Dominican Republic	DOM	48515.79	7913613	163.1	10.6	1334.1	0	0
Algeria	DZA	2320970.00	30112646	13.0	13.9	461.8	9	0
Ecuador	ECU	256444.09	12304469	48.0	110.9	9010.1	2	0.00001
Egypt	EGY	1000220.00	64523500	64.5	No Data	No Data	2	0
Eritrea	ERI	121331.73	3823629	31.5	0.9	229.8	1	0.00001
Western Sahara	ESH	269562.00	197021	0.7	No Data	No Data	0	0
Spain	ESP	505594.66	38729244	76.6	101.3	2615.1	178	0.00035
Estonia	EST	45689.00	1402343	30.7	17.9	12785.8	0	0
Ethiopia	ETH	1132230.00	58316080	51.5	215.9	3703.0	3	0
Finland	FIN	333142.25	5065456	15.2	95.8	18906.2	1	0
Fiji	FJI	18091.73	460828	25.5	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Falkland Islands (Islas Malvinas)	FLK	11449.31	2512	0.2	No Data	No Data	0	0
France	FRA	546639.21	58126004	106.3	166.6	2867.0	44	0.00008
Faroe Islands	FRO	1474.64	37532	25.5	No Data	No Data	0	0
Federated States of Micronesia	FSM	518.48	33474	64.6	No Data	No Data	0	0
Gabon	GAB	261843.68	1162972	4.4	188.5	162121.7	0	0
United Kingdom	GBR	243298.48	57974716	238.3	104.4	1801.2	54	0.00022
Georgia	GEO	69847.80	5009220	71.7	26.3	5260.1	3	0.00004
Ghana	GHA	240041.00	18880412	78.7	40.4	2138.5	3	0.00001
Gibraltar	GIB	7.85	12195	1554.2	No Data	No Data	0	0
Guinea	GIN	246023.00	6895440	28.0	192.7	27950.6	3	0.00001
Guadeloupe	GLP	1657.45	350486	211.5	No Data	No Data	0	0
Gambia, The	GMB	10762.20	1211354	112.6	No Data	No Data	0	0
Guinea-Bissau	GNB	33287.61	1175331	35.3	35.5	30207.0	0	0
Equatorial Guinea	GNQ	27038.37	394245	14.6	23.8	60398.5	0	0
Greece	GRC	129901.37	10217959	78.7	26.9	2628.1	6	0.00005
Grenada	GRD	347.54	78276	225.2	No Data	No Data	0	0
Greenland	GRL	2143322.94	41029	0.0	40.8	995044.9	0	0
Guatemala	GTM	109387.00	12002093	109.7	134.5	11204.6	1	0.00001

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
French Guiana	GUF	83967.60	154621	1.8	115.0	743909.3	0	0
Guam	GUM	577.93	127454	220.5	No Data	No Data	0	0
Guyana	GUY	211511.00	599601	2.8	223.0	371919.0	0	0
Heard Island & McDonald Islands	HMD	398.57	0	0.0	No Data	No Data	0	0
Honduras	HND	112602.02	5722110	50.8	72.1	12608.0	1	0.00001
Croatia	HRV	55763.86	4476114	80.3	28.7	6422.3	3	0.00005
Haiti	HTI	27234.73	5651693	207.5	10.9	1920.7	1	0.00004
Hungary	HUN	92740.20	10211737	110.1	5.5	534.7	0	0
Indonesia	IDN	1901671.99	207784288	109.3	2210.7	10639.5	2	0
India	IND	3159708.19	980240832	310.2	1468.1	1497.7	463	0.00015
British Indian Ocean Territory	IOT	90.83	0	0.0	No Data	No Data	0	0
Ireland	IRL	69356.25	3536446	51.0	43.5	12296.8	0	0
Iran	IRN	1624128.11	67332224	41.5	119.7	1777.1	19	0.00001
Iraq	IRQ	436487.00	23053884	52.8	26.2	1137.2	14	0.00003
Iceland	ISL	102280.00	257599	2.5	65.6	254578.6	1	0.00001
Israel	ISR	26981.41	8401502	311.4	No Data	No Data	0	0
Italy	ITA	299482.49	55391116	185.0	114.1	2059.4	9	0.00003
Jamaica	JAM	11066.60	2461379	222.4	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Jordan	JOR	89290.50	4437094	49.7	0.7	149.9	1	0.00001
Japan	JPN	371029.80	122565104	330.3	334.1	2726.2	119	0.00032
Kazakhstan	KAZ	2715281.89	16868988	6.2	113.3	6715.9	76	0.00003
Kenya	KEN	584430.82	28371668	48.5	42.4	1493.5	10	0.00002
Kyrgyzstan	KGZ	199285.00	4493993	22.6	33.5	7447.5	10	0.00005
Cambodia (Kampuchea)	KHM	182438.00	11270101	61.8	119.5	10605.5	0	0
Kiribati	KIR	420.66	1585	3.8	No Data	No Data	0	0
St. Kitts and Nevis	KNA	196.25	35085	178.8	No Data	No Data	0	0
Korea	KOR	97209.89	45303440	466.0	53.6	1183.5	56	0.00058
Kuwait	KWT	16759.22	1445527	86.3	No Data	No Data	0	0
Laos, People's Democratic Republic of	LAO	230598.00	5310349	23.0	209.0	39347.9	2	0.00001
Lebanon	LBN	10217.30	3465249	339.2	No Data	No Data	1	0.00010
Liberia	LBR	96418.20	2670863	27.7	107.2	40126.7	1	0.00001
Libya	LBY	1620340.00	4810843	3.0	0.8	163.9	0	0
St. Lucia	LCA	637.64	129942	203.8	No Data	No Data	0	0
Liechtenstein	LIE	175.92	32451	184.5	No Data	No Data	0	0
Sri Lanka	LKA	66319.42	18564274	279.9	51.2	2759.2	3	0.00005
Lesotho	LSO	30552.90	1817408	59.5	6.7	3703.3	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Lithuania	LTU	64714.71	3608803	55.8	16.9	4686.1	1	0.00002
Luxembourg	LUX	2571.99	431448	167.7	No Data	No Data	1	0.00039
Latvia	LVA	64325.00	2372019	36.9	17.9	7564.3	1	0.00002
Macau	MAC	4.48	272926	60882.4	No Data	No Data	0	0
Morocco	MAR	403542.00	26795004	66.4	9.9	371.2	13	0.00003
Monaco	MCO	9.25	4733	511.5	No Data	No Data	0	0
Moldova	MDA	33595.10	4442628	132.2	1.0	232.6	41	0.00122
Madagascar	MDG	594749.34	14390306	24.2	365.4	25388.8	14	0.00002
Maldives	MDV	33.77	50509	1495.5	No Data	No Data	0	0
Mexico	MEX	1961264.74	99698816	50.8	306.2	3071.1	115	0.00006
Marshall Islands	MHL	31.87	2701	84.7	No Data	No Data	0	0
Macedonia	MKD	25426.10	2020533	79.5	4.7	2301.4	0	0
Mali	MLI	1256360.00	10126725	8.1	31.1	3072.3	0	0
Malta	MLT	294.36	350089	1189.3	No Data	No Data	0	0
Myanmar (Burma)	MMR	668863.54	46684256	69.8	873.5	18711.3	3	0
Mongolia	MNG	1558810.00	2522851	1.6	26.5	10514.6	0	0
Northern Mariana Islands	MNP	237.88	30369	127.7	No Data	No Data	0	0
	MON	13772.90	680340	49.4	No Data	No Data	1	0.00007

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Mozambique	MOZ	788867.69	18560296	23.5	169.6	9139.8	5	0.00001
Mauritania	MRT	1041437.11	2500873	2.4	0.6	253.5	0	0
Montserrat	MSR	112.95	5169	45.8	No Data	No Data	0	0
Martinique	MTQ	1151.94	392827	341.0	No Data	No Data	0	0
Mauritius	MUS	2151.04	1164063	541.2	No Data	No Data	2	0.00093
Malawi	MWI	118932.57	9799094	82.4	15.4	1571.3	0	0
Malaysia	MYS	329955.94	20060724	60.8	502.3	25038.3	8	0.00002
Mayotte	MYT	436.96	138446	316.8	No Data	No Data	0	0
Namibia	NAM	825725.00	1594516	1.9	0.7	444.9	3	0
New Caledonia	NCL	18895.02	170368	9.0	No Data	No Data	0	0
Niger	NER	1185840.00	9599165	8.1	3.4	353.9	0	0
Norfolk Island	NFK	49.05	2171	44.3	No Data	No Data	0	0
Nigeria	NGA	912245.12	109638592	120.2	350.8	3199.7	8	0.00001
Nicaragua	NIC	128594.00	4703224	36.6	149.0	31670.2	1	0.00001
Niue	NIU	250.25	1262	5.0	No Data	No Data	0	0
Netherlands	NLD	35426.44	15612527	440.7	6.2	397.8	1	0.00003
Norway	NOR	318907.37	4082835	12.8	224.0	54857.7	10	0.00003
Nepal	NPL	147380.00	23881958	162.0	151.4	6340.8	2	0.00001
Nauru	NRU	27.28	3536	129.6	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
New Zealand	NZL	268340.63	3459718	12.9	215.0	62157.7	3	0.00001
Oman	OMN	309591.69	1329679	4.3	0.9	663.5	2	0.00001
Pakistan	PAK	877532.00	134927984	153.8	25.2	186.9	22	0.00003
Panama	PAN	74381.40	2709214	36.4	105.7	39005.0	4	0.00005
Pitcairn Islands	PCN	48.23	0	0.0	No Data	No Data	0	0
Peru	PER	1296130.00	25146108	19.4	552.0	21950.4	3	0
Philippines	PHL	293543.30	69732904	237.6	217.1	3114.0	4	0.00001
Pacific Islands (Palau)	PLW	353.83	3855	10.9	No Data	No Data	0	0
Papua New Guinea	PNG	464460.28	4344240	9.4	674.6	155287.9	0	0
Poland	POL	310470.00	38532768	124.1	58.5	1517.3	16	0.00005
Puerto Rico	PRI	9176.22	3739470	407.5	No Data	No Data	0	0
Korea, Democratic People's Republic of (North)	PRK	122078.00	21014220	172.1	54.1	2573.2	51	0.00042
Portugal	PRT	91820.62	9691862	105.6	34.2	3524.4	43	0.00047
Paraguay	PRY	399762.00	5239306	13.1	65.8	12567.4	1	0
French Polynesia	PYF	2090.58	137972	66.0	No Data	No Data	0	0
Qatar	QAT	11118.70	655978	59.0	No Data	No Data	0	0
Glorioso Islands, Juan de Nova Island, Reunion	REU	2659.87	656681	246.9	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Romania	ROM	236801.00	22374524	94.5	31.4	1402.5	10	0.00004
Russia	RUS	16849714.28	146537920	8.7	3568.7	24353.4	400	0.00002
Rwanda	RWA	25246.60	8001503	316.9	3.9	484.7	0	0
Saudi Arabia	SAU	1958875.58	20357542	10.4	No Data	No Data	6	0
Sudan	SDN	2496000.00	33492672	13.4	132.4	3952.5	5	0
Senegal	SEN	196730.00	8771695	44.6	23.4	2669.9	0	0
Singapore	SNG	553.57	3322694	6002.3	No Data	No Data	0	0
South Georgia and the South Sandwich Islands	SGS	3701.77	0	0.0	No Data	No Data	0	0
St. Helena	SHN	130.93	3704	28.3	No Data	No Data	0	0
Svalbard and Jan Mayen	SJM	62375.67	1697	0.0	4.7	2791732.4	0	0
Solomon Islands	SLB	27096.62	295186	10.9	No Data	No Data	0	0
Sierra Leone	SLE	72789.17	4916672	67.5	120.2	24441.7	0	0
El Salvador	SLV	20646.50	5816424	281.7	No Data	No Data	2	0.00010
San Marino	SMR	59.75	22786	381.4	No Data	No Data	0	0
Singapore								
Somalia	SOM	639032.00	6853615	10.7	No Data	No Data	0	0
St. Pierre and Miquelon	SPM	222.34	4542	20.4	No Data	No Data	0	0
Sao Tome and Principe	STP	1147.16	146045	127.3	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Suriname	SUR	145634.00	426513	2.9	131.0	307055.1	3	0.00002
Slovakia	SVK	48774.40	5428999	111.3	13.9	2569.5	2	0.00004
Slovenia	SVN	20369.70	1980608	97.2	No Data	No Data	0	0
Sweden	SWE	443329.05	8548355	19.3	118.7	13880.8	1	0
Swaziland	SWZ	17141.10	964017	56.2	No Data	No Data	2	0.00012
Seychelles	SYC	379.31	64944	171.2	No Data	No Data	0	0
Syria	SYR	187984.00	16602527	88.3	6.3	382.0	11	0.00006
Turks and Caicos Islands	TCA	286.82	1970	6.9	No Data	No Data	0	0
Chad	TCD	1276260.00	7343361	5.8	46.5	6330.5	0	0
Togo	TGO	57357.00	4879306	85.1	9.4	1918.8	0	0
Thailand	THA	514051.61	59666440	116.1	217.6	3646.7	40	0.00008
Tajikistan	TJK	142325.00	6045902	42.5	27.0	4460.7	7	0.00005
Turkmenistan	TKM	471266.00	4296545	9.1	4.0	937.7	27	0.00006
Tonga	TON	457.74	86075	188.0	No Data	No Data	0	0
Trinidad and Tobago	TTO	5030.46	1002237	199.2	No Data	No Data	0	0
Tunisia	TUN	155406.01	8824201	56.8	5.1	572.5	4	0.00003
Turkey	TUR	779286.16	62472916	80.2	176.2	2821.1	51	0.00007
Tuvalu	TUV	29.13	3318	113.9	No Data	No Data	0	0
Taiwan	TWN	36259.92	21515752	593.4	49.8	2312.5	3	0.00008

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.km.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.km)
Tanzania, United Republic of	TZA	945442.51	30411468	32.2	123.1	4048.3	6	0.00001
Uganda	UGA	243156.00	22223644	91.4	23.6	1063.3	2	0.00001
Ukraine	UKR	595610.00	49892652	83.8	55.2	1106.5	132	0.00022
Howland, Johnston Atoll, Midway Islands, Wake Islands, Baker Island	UMI	37.59	234	6.2	No Data	No Data	0	0
Uruguay	URY	177958.00	3286231	18.5	63.6	19366.8	2	0.00001
United States	USA	9443329.40	265568144	28.1	2203.4	8296.9	1571	0.00017
Uzbekistan	UZB	445967.00	23784228	53.3	13.3	558.0	20	0.00004
St. Vincent and the Grenadines	VCT	343.52	94484	275.0	No Data	No Data	0	0
Venezuela	VEN	914729.87	22328188	24.4	770.3	34499.5	6	0.00001
British Virgin Islands	VGB	115.74	9445	81.6	No Data	No Data	0	0
Virgin Islands	VIR	218.95	43220	197.4	No Data	No Data	0	0
Vietnam	VNM	325300.61	74373360	228.6	241.3	3243.9	11	0.00003
Vanuatu	VUT	12307.27	154721	12.6	No Data	No Data	0	0
Wallis and Futuna	WLF	161.04	3239	20.1	No Data	No Data	0	0
Western Samoa	WSM	2948.49	182016	61.7	No Data	No Data	0	0

Table A3.2: Country Level GIS Data (cont.)

Country Name	CCODE	Area (sq.km.)	Population	Population Density (persons/sq.k m.)	Discharge (cu.km/yr)	Water Stress (cu.m./person)	# of dams	Dam Density (# of dams/sq.k m)
Yugoslavia (Serbia and Montenegro)	YUG	87959.80	10537752	119.8	15.1	1430.0	4	0.00005
Yemen	YEM	425172.95	16038857	37.7	No Data	No Data	2	0
South Africa	ZAF	1222991.15	42755892	35.0	39.8	930.5	71	0.00006
Congo, Democratic Republic of (Kinshasa)	ZAR	2336840.00	48960208	21.0	853.5	17432.6	14	0.00001
Zambia	ZMB	754730.00	9514623	12.6	254.7	26768.4	23	0.00003
Zimbabwe	ZWE	391043.00	11041112	28.2	39.7	3596.5	25	0.00006

Table A3.3: Basin-Country Polygon Level GIS Data

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density
AKPA_CM	3024	48951	0	16.19	0
AKPA_NG	1872	87274	0	46.62	0
ALSK_CA	26520	536	0	0.02	0
ALSK_US	1845	0	0	0.00	0
AMCR_GU	739	527	0	0.71	0
AMCR_VE	4899	9756	0	1.99	0
AMUR_CH	889076	61613833	59	69.30	0.06636
AMUR_MN	190582	262502	0	1.38	0
AMUR_PR	112	4937	0	44.08	0
AMUR_RU	1006094	4206287	1	4.18	0.00099
AMZN_BO	706693	4683516	1	6.63	0.00142
AMZN_BR	3670320	9414178	0	2.56	0
AMZN_CO	367828	875528	0	2.38	0
AMZN_EC	123792	1754587	0	14.17	0
AMZN_GU	27	4	0	0.15	0
AMZN_GU	14455	5285	0	0.37	0
AMZN_PE	956548	7844894	1	8.20	0.00105
AMZN_SU	1429	660	0	0.46	0
AMZN_VE	40261	4992	0	0.12	0
ANAK_LB	408	26762	0	65.59	0
ANAK_SY	870	66881	1	76.87	1.14943
ARAL_AF	104879	4583123	0	43.70	0
ARAL_CH	1852	2590	0	1.40	0
ARAL_KA	424384	2552566	14	6.01	0.03299
ARAL_KG	111741	2446824	3	21.90	0.02685
ARAL_PA	175	149	0	0.85	0
ARAL_TJ	135717	6038429	7	44.49	0.05158
ARAL_TK	69992	943845	0	13.49	0
ARAL_UZ	382649	23563848	20	61.58	0.05227
ASIX_LB	2176	105495	0	48.48	0
ASIX_SY	16796	2946400	6	175.42	0.35723
ASIX_TU	18928	1642546	2	86.78	0.10566
ATBN_DO	2256	175540	0	77.81	0
ATBN_HT	6567	916890	1	139.62	0.15228
ATCY_AZ	103	2027	0	19.68	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
ATCY_IRN	458	19814	0	43.26	0
ATRK_IRN	23561	1058471	0	44.92	0
ATRK_TKM	10654	101750	0	9.55	0
ATUI_ESH	11179	3459	0	0.31	0
ATUI_MRT	20536	5349	0	0.26	0
AVLS_ARG	228	537	0	2.36	0
AVLS_CHL	29	82	0	2.83	0
AWSH_DJI	10987	40945	0	3.73	0
AWSH_ETH	143702	11711707	2	81.50	0.01392
AYSN_ARG	534	177	0	0.33	0
AYSN_CHL	13062	14322	0	1.10	0
BAKR_ARG	9803	1798	0	0.18	0
BAKR_CHL	20987	18370	0	0.88	0
BANN_GBR	5392	634334	0	117.64	0
BANN_IRL	159	2176	0	13.69	0
BDSO_ESP	469	37752	0	80.49	0
BDSO_FRA	56	6012	0	107.36	0
BENT_CMR	18889	230907	0	12.22	0
BENT_GAB	10766	67480	0	6.27	0
BENT_GNQ	15390	216774	0	14.09	0
BIAX_CIV	4456	226003	2	50.72	0.44883
BIAX_GHA	6370	341622	0	53.63	0
BLUN_CHN	777	105560	0	135.86	0
BLUN_VNM	138	69861	0	506.24	0
BLZE_BLZ	6976	56627	0	8.12	0
BLZE_GTM	4487	40319	0	8.99	0
BNGU_BRN	29	135	0	4.66	0
BNGU_MYS	31	246	0	7.94	0
BRKA_ERI	41451	1668394	0	40.25	0
BRKA_SDN	24797	196780	0	7.94	0
BRMA_GUY	1066	1063	0	1.00	0
BRMA_VEN	999	1186	0	1.19	0
BRTA_LTU	666	21236	0	31.89	0
BRTA_LVA	1075	37289	0	34.69	0
BUZI MOZ	24456	638013	1	26.09	0.04089
BUZI_ZWE	3225	262640	0	81.44	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
CAXX_LAO	10888	121005	0	11.11	0
CAXX_VNM	20140	3554197	3	176.47	0.14896
CDLR_GTM	1498	5741	0	3.83	0
CDLR_MEX	11255	65097	0	5.78	0
CGNL_CRI	267	1097	0	4.11	0
CGNL_PAN	2925	30305	0	10.36	0
CHIC_ARG	1003	6386	0	6.37	0
CHIC_CHL	677	1760	0	2.60	0
CHIR_ECU	5847	91535	0	15.66	0
CHIR_PER	9773	357509	1	36.58	0.10232
CHLT_HND	7228	1383347	0	191.39	0
CHLT_NIC	172	3105	0	18.05	0
CHRQ_CRI	240	13513	0	56.30	0
CHRQ_PAN	1495	28347	0	18.96	0
CHUY_BRA	113	9839	0	87.07	0
CHUY_URY	57	2563	0	44.96	0
CLDO_MEX	10386	314183	1	30.25	0.09628
CLDO_USA	644593	6734986	65	10.45	0.10084
CLKT_CAN	1637	0	0	0.00	0
CLKT_USA	2137	201	0	0.09	0
CLMB_CAN	101877	470791	8	4.62	0.07853
CLMB_USA	566513	5886749	102	10.39	0.18005
CLNG_AGO	3809	84663	0	22.23	0
CLNG_COG	313	10572	0	33.78	0
CLNG_ZAR	7522	657291	0	87.38	0
CNCS_BOL	20152	111719	0	5.54	0
CNCS_CHL	3357	14477	0	4.31	0
CNGO_AGO	290614	1511127	3	5.20	0.01032
CNGO_BDI	14388	2300990	0	159.92	0
CNGO_CAF	400807	2254066	0	5.62	0
CNGO_CMR	85210	515146	0	6.05	0
CNGO_COG	248143	1486338	0	5.99	0
CNGO_GAB	499	630	0	1.26	0
CNGO_MWI	138	2887	0	20.92	0
CNGO_SDN	1376	4839	0	3.52	0
CNGO_TZA	166338	3321071	0	19.97	0
CNGO_UGA	65	45082	0	693.57	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
CNGO_ZAR	2302836	46348256	14	20.13	0.00608
CNGO_ZMB	175992	1017318	0	5.78	0
COCO_HND	7484	56891	0	7.60	0
COCO_NIC	17905	554735	0	30.98	0
COMA_ARG	81	4	0	0.05	0
COMA_CHL	856	284	0	0.33	0
CRBL_GIN	17454	451348	0	25.86	0
CRBL_GNB	6485	68010	0	10.49	0
CROS_CMR	12480	542589	0	43.48	0
CROS_NGA	40276	7743864	0	192.27	0
CRTY_BRA	80	101	0	1.26	0
CRTY_GUY	21742	50272	0	2.31	0
CRTY_SUR	19943	747	0	0.04	0
CRUH_GEO	1989	13026	0	6.55	0
CRUH_TUR	20046	397370	0	19.82	0
CSTL_GBR	290	9557	0	32.96	0
CSTL_IRL	91	17688	0	194.37	0
CSTO_CIV	2238	226580	0	101.24	0
CSTO_GIN	16	278	0	17.38	0
CSTO_LBR	12758	384433	0	30.13	0
CTAT_GTM	273	25522	0	93.49	0
CTAT_MEX	1716	385237	0	224.50	0
CTTB_COL	19559	1047636	0	53.56	0
CTTB_VEN	11380	276883	0	24.33	0
CULL_ARG	101	795	0	7.87	0
CULL_CHL	493	5731	0	11.62	0
CVLY_CIV	16550	375488	0	22.69	0
CVLY_GIN	1290	57249	0	44.38	0
CVLY_LBR	12740	296213	0	23.25	0
DANU_ALB	217	1913	0	8.82	0
DANU_AUT	81575	7775631	0	95.32	0
DANU_BGR	40881	3495036	6	85.49	0.14677
DANU_BIH	38193	2623277	1	68.68	0.02618
DANU_CHE	2521	63917	0	25.35	0
DANU_CZE	20464	2729595	1	133.39	0.04887
DANU_DEU	59036	9521449	4	161.28	0.06776
DANU_HRV	35856	3209321	0	89.51	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
DANU_HUN	92786	10211670	0	110.06	0
DANU_ITA	1205	38612	0	32.04	0
DANU_MDA	13936	1065457	23	76.45	1.65040
DANU_POL	742	29129	0	39.26	0
DANU_ROM	228548	21708374	9	94.98	0.03938
DANU_SVK	45571	5033456	1	110.45	0.02194
DANU_SVN	17232	1783803	0	103.52	0
DANU_UKR	29601	2669789	1	90.19	0.03378
DAUR_DZA	16300	3147	0	0.19	0
DAUR_MAR	18179	399144	0	21.96	0
DNPR_BLR	124874	6609227	6	52.93	0.04805
DNPR_RUS	92065	3659786	9	39.75	0.09776
DNPR_UKR	299293	21023554	55	70.24	0.18377
DNSR_MDA	15201	2876694	10	189.24	0.65785
DNSR_POL	28	227	0	8.11	0
DNSR_UKR	46771	3581596	6	76.58	0.12828
DONX_RUS	371206	12888577	72	34.72	0.19396
DONX_UKR	54321	6729625	13	123.89	0.23932
DRAX_DZA	20555	7393	0	0.36	0
DRAX_MAR	75789	858877	3	11.33	0.03958
DRIN_ALB	8133	712481	2	87.60	0.24591
DRIN_MKD	2182	112055	0	51.35	0
DSHT_IRN	7198	24630	0	3.42	0
DSHT_PAK	26155	316366	0	12.10	0
DUGV_BLR	28276	1101899	0	38.97	0
DUGV_LTU	808	19142	0	23.69	0
DUGV_LVA	20196	631397	1	31.26	0.04951
DUGV_RUS	9462	62061	0	6.56	0
DURO_ESP	80700	2325832	24	28.82	0.29740
DURO_PRT	18156	2014776	5	110.97	0.27539
EBRO_AND	408	61009	0	149.53	0
EBRO_ESP	85239	2892608	50	33.94	0.58659
EBRO_FRA	140	7104	0	50.74	0
ELBE_AUT	712	35369	0	49.68	0
ELBE_CZE	47641	5746833	29	120.63	0.60872
ELBE_DEU	83134	17366322	7	208.90	0.08420
ELBE_POL	740	147431	0	199.23	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
ELNK_RUS	659	4498	0	6.83	0
ELNK_UKR	265	2010	0	7.58	0
ERNE_GBR	1948	74657	0	38.32	0
ERNE_IRL	2836	85663	0	30.21	0
ESQB_BRA	170	136	0	0.80	0
ESQB_GUY	162053	560202	0	3.46	0
ESQB_SUR	24264	45714	2	1.88	0.08243
ESQB_VEN	52385	114034	0	2.18	0
ETOS_AGO	53314	153129	0	2.87	0
ETOS_NAM	114103	625255	1	5.48	0.00876
FANE_GBR	7	127	0	18.14	0
FANE_IRL	191	6937	0	36.32	0
FLRY_GBR	45	917	0	20.38	0
FLRY_IRL	16	6038	0	377.38	0
FLYX_IDN	4264	22700	0	5.32	0
FLYX_PNG	60352	287515	0	4.76	0
FNNY_BGD	951	281863	0	296.39	0
FNNY_IND	1832	196045	0	107.01	0
FOYL_GBR	1963	112385	0	57.25	0
FOYL_IRL	954	29336	0	30.75	0
FRSR_CAN	239110	1217461	4	5.09	0.01673
FRSR_USA	623	5662	0	9.09	0
FRTH_CAN	3845	0	0	0.00	0
FRTH_USA	2201	0	0	0.00	0
GALG_ARG	6976	9155	0	1.31	0
GALG_CHL	4621	9350	0	2.02	0
GAMB_GIN	13233	445483	0	33.66	0
GAMB_SEN	50685	498356	0	9.83	0
GANG_BGD	107130	107417509	0	1002.68	0
GANG_BTN	39907	1895010	0	47.49	0
GANG_CHN	321318	1397083	0	4.35	0
GANG_IND	1016710	374139859	224	367.99	0.22032
GANG_NPL	147358	23881956	2	162.07	0.01357
GASH_ERI	21381	942645	0	44.09	0
GASH_ETH	9019	986989	0	109.43	0
GASH_SDN	9645	761682	0	78.97	0
GEBA_GIN	54	1821	0	33.72	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
GEBA_GNB	8653	273846	0	31.65	0
GEBA_SEN	4075	135847	0	33.34	0
GJLV_BLZ	21	90	0	4.29	0
GJLV_GTM	47824	2364275	1	49.44	0.02091
GJLV_MEX	78927	3847877	2	48.75	0.02534
GLAM_NOR	42574	649340	0	15.25	0
GLAM_SWE	427	1615	0	3.78	0
GLOK_MYS	799	33618	0	42.08	0
GLOK_THA	1043	219812	0	210.75	0
GOSR_HND	1486	54870	0	36.92	0
GOSR_SLV	1299	191074	0	147.09	0
GRON_AND	42	3267	0	77.79	0
GRON_ESP	597	5100	0	8.54	0
GRON_FRA	55129	3391777	8	61.52	0.14511
GSCR_GIN	9046	247561	0	27.37	0
GSCR_SLE	3022	210823	0	69.76	0
GUDN_ESP	54895	1387267	9	25.27	0.16395
GUDN_PRT	13030	287861	8	22.09	0.61397
GUIR_DZA	61181	203165	1	3.32	0.01634
GUIR_MAR	17732	123186	0	6.95	0
GUJA_EST	1107	11173	0	10.09	0
GUJA_LVA	10446	422815	0	40.48	0
HANX_PRK	10109	783181	5	77.47	0.49461
HARI_AFG	41031	1292521	0	31.50	0
HARI_IRN	35439	3409900	0	96.22	0
HARI_TKM	16123	168337	2	10.44	0.12405
HLMD_AFG	288210	5798645	4	20.12	0.01388
HLMD_IRN	54877	1050192	0	19.14	0
HLMD_PAK	10426	142424	0	13.66	0
HOND_BLZ	1511	20096	0	13.30	0
HOND_GTM	4158	13717	0	3.30	0
HOND_MEX	8921	148597	0	16.66	0
HRUN_CHN	278	253	0	0.91	0
HRUN_MNG	179334	239343	0	1.33	0
HRUN_RUS	5640	2164	0	0.38	0
HSIX_CHN	407851	78223931	63	191.80	0.15447
HSIX_VNM	9827	1143029	0	116.32	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
ICMT MOZ	14578	495636	0	34.00	0
ICMT SWZ	2960	107330	1	36.26	0.33784
ICMT ZAF	29191	854831	2	29.28	0.06851
INDU AFG	72131	8335753	0	115.56	0
INDU CHN	85776	26023	0	0.30	0
INDU IND	383201	73044369	10	190.62	0.02610
INDU NPL	14	1	0	0.07	0
INDU PAK	597678	118672616	19	198.56	0.03179
IRWD CHN	18517	1981174	0	106.99	0
IRWD IND	15300	456960	0	29.87	0
IRWD MMR	368615	32582510	1	88.39	0.00271
ISNZ ITA	1211	323977	0	267.53	0
ISNZ SVN	1797	48457	0	26.97	0
JCBS NOR	301	502	0	1.67	0
JCBS RUS	141	381	0	2.70	0
JORD ISR	9190	199221	0	21.68	0
JORD JOR	19387	4195597	1	216.41	0.05158
JORD LBN	723	39249	0	54.29	0
JORD SYR	4545	720012	1	158.42	0.22002
JUBA ETH	367406	8093574	0	22.03	0
JUBA KEN	215271	1641449	0	7.63	0
JUBA SOM	220866	2696310	0	12.21	0
JURD COL	546	4172	0	7.64	0
JURD PAN	119	408	0	3.43	0
KALD BGD	2	254	0	127.00	0
KALD IND	7275	161749	0	22.23	0
KALD MMR	22859	771121	0	33.73	0
KEMI FIN	52679	96155	1	1.83	0.01898
KEMI NOR	8	0	0	0.00	0
KEMI RUS	3017	2787	0	0.92	0
KEMI SWE	4	0	0	0.00	0
KGNK MDA	3554	472645	6	132.99	1.68824
KGNK UKR	2593	52164	4	20.12	1.54261
KMOE BFA	16919	348451	0	20.60	0
KMOE CIV	58331	1423377	0	24.40	0
KMOE GHA	2224	173517	0	78.02	0
KMOE MLI	644	18833	0	29.24	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
KNFL_BGD	7353	1676951	1	228.06	0.13600
KNFL_IND	5146	255277	0	49.61	0
KNFL_MMR	11	332	0	30.18	0
KOWL_AFG	10523	171883	0	16.33	0
KOWL_IRN	25932	224928	0	8.67	0
KRKA_BIH	112	1754	0	15.66	0
KRKA_HRV	1123	103104	0	91.81	0
KRLV_NOR	7876	35360	0	4.49	0
KRLV_SWE	43084	1104065	0	25.63	0
KUNE_AGO	95340	1188257	3	12.46	0.03147
KUNE_NAM	14651	12253	0	0.84	0
KURA_ARM	34840	7719377	6	221.57	0.17222
KURA_AZE	56572	6594450	2	116.57	0.03535
KURA_GEO	34338	5636566	1	164.15	0.02912
KURA_IRN	39709	4191872	2	105.56	0.05037
KURA_RUS	64	176	0	2.75	0
KURA_TUR	27673	1733861	0	62.66	0
LAVA_POL	2045	102093	0	49.92	0
LAVA_RUS	6348	656102	0	103.36	0
LGPS_ETH	3224	22892	0	7.10	0
LGPS_KEN	20277	70625	0	3.48	0
LGPS_SDN	13197	80375	0	6.09	0
LGPS_UGA	2051	17918	0	8.74	0
LIMA_ESP	1162	34300	1	29.52	0.86059
LIMA_PRT	1120	84063	1	75.06	0.89286
LKCH_CAF	218577	903919	0	4.14	0
LKCH_CMR	46802	2112210	0	45.13	0
LKCH_DZA	90021	612	0	0.01	0
LKCH_LBY	4587	0	0	0.00	0
LKCH_NER	674209	1775827	0	2.63	0
LKCH_NGA	180198	19762942	4	109.67	0.02220
LKCH_SDN	82777	2029309	0	24.52	0
LKCH_TCD	1091516	6576793	0	6.03	0
LKFN_ARG	2716	3515	0	1.29	0
LKFN_CHL	473	248	0	0.52	0
LKNT_KEN	18298	424077	0	23.18	0
LKNT_TZA	37143	801503	0	21.58	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
LKPP_ALB	7966	875029	2	109.85	0.25107
LKPP_GRC	300	1349	0	4.50	0
LKPP_MKD	768	18450	0	24.02	0
LKTC_BOL	62960	1202931	1	19.11	0.01588
LKTC_CHL	827	4982	0	6.02	0
LKTC_PER	47994	912288	0	19.01	0
LKTK_ETH	113165	12328092	0	108.94	0
LKTK_KEN	89732	2399622	1	26.74	0.01114
LKTK_SDN	1522	8158	0	5.36	0
LKTK_UGA	2504	33741	0	13.47	0
LKUN_MNG	47579	89264	0	1.88	0
LKUN_RUS	15205	17390	0	1.14	0
LLUP_LTU	4767	159222	0	33.40	0
LLUP_LVA	9581	263525	0	27.50	0
LMPA_GTM	2804	415777	0	148.28	0
LMPA_HND	5774	377518	0	65.38	0
LMPA_SLV	9462	3168967	2	334.92	0.21137
LMPO_BWA	81492	881563	3	10.82	0.03681
LMPO_MOZ	87170	1107101	3	12.70	0.03442
LMPO_ZAF	183547	10419530	20	56.77	0.10896
LMPO_ZWE	62568	804353	13	12.86	0.20777
LMRM_BRA	23764	359981	0	15.15	0
LMRM_URY	31153	189068	0	6.07	0
LOFF_GIN	1297	31490	0	24.28	0
LOFF_LBR	10098	128031	0	12.68	0
LPTA_ARG	817873	9905745	4	12.11	0.00489
LPTA_BOL	245087	1465879	0	5.98	0
LPTA_BRA	1379308	39628028	41	28.73	0.02973
LPTA_PRY	400107	5288951	1	13.22	0.00250
LPTA_URY	111636	728353	2	6.52	0.01792
LSCR_GIN	5827	107575	0	18.46	0
LSCR_SLE	13045	622013	0	47.68	0
MANA_LBR	5672	159868	0	28.19	0
MANA_SLE	1175	54091	0	46.03	0
MASS_DOM	287	31257	0	108.91	0
MASS_HTI	495	164213	0	331.74	0
MAXX_LAO	13174	232561	0	17.65	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
MAXX_VNM	17095	2194230	0	128.36	0
MBEX_GAB	6490	16122	0	2.48	0
MBEX_GNQ	490	5691	0	11.61	0
MEKO_CHN	171660	5996705	0	34.93	0
MEKO_KHM	158368	9042172	0	57.10	0
MEKO_LAO	198031	4873451	2	24.61	0.01010
MEKO_THA	193944	22898775	24	118.07	0.12375
MEKO_VNM	38150	9037969	1	236.91	0.02621
MINO_ESP	14513	1014551	12	69.91	0.82684
MINO_PRT	558	29068	0	52.09	0
MIRA_COL	6153	149854	0	24.35	0
MIRA_ECU	5803	174253	0	30.03	0
MISS_CAN	49768	24656	21	0.50	0.42196
MISS_USA	3176517	69822488	736	21.98	0.23170
MIUS_RUS	1946	107640	0	55.31	0
MIUS_UKR	838	5487	0	6.55	0
MOAX_GIN	8825	338785	0	38.39	0
MOAX_LBR	2928	41777	0	14.27	0
MOAX_SLE	10757	905311	0	84.16	0
MONO_BEN	1126	196508	0	174.52	0
MONO_TGO	22304	1254813	0	56.26	0
MOTQ_GTM	14616	3521364	0	240.93	0
MOTQ_HND	1466	44521	0	30.37	0
MPUT_MOZ	1527	29294	0	19.18	0
MPUT_SWZ	10641	737565	0	69.31	0
MPUT_ZAF	18488	337835	3	18.27	0.16227
MRGB_AFG	36427	855447	0	23.48	0
MRGB_TKM	24499	379854	3	15.50	0.12245
MRNI_BRA	175	141	0	0.81	0
MRNI_GUF	27235	7885	0	0.29	0
MRNI_SUR	37466	2742	0	0.07	0
MRSA_BGR	33008	2510292	29	76.05	0.87857
MRSA_GRC	3746	100941	0	26.95	0
MRSA_TUR	12754	748534	1	58.69	0.07841
MTJE_COL	191	3868	0	20.25	0
MTJE_ECU	543	8379	0	15.43	0
NAAT_FIN	418	46	0	0.11	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
NAAT_NOR	575	723	0	1.26	0
NEGR_HND	904	28254	0	31.25	0
NEGR_NIC	4836	130891	0	27.07	0
NELS_CAN	951999	4486328	130	4.71	0.13655
NELS_USA	157405	678314	12	4.31	0.07624
NGER_BEN	45271	659860	0	14.58	0
NGER_BFA	82945	2077052	1	25.04	0.01206
NGER_CIV	22877	404689	0	17.69	0
NGER_CMR	88073	3015002	0	34.23	0
NGER_DZA	161286	1099	0	0.01	0
NGER_GIN	95875	1450434	0	15.13	0
NGER_MLI	540659	7286685	0	13.48	0
NGER_NER	497944	7823561	0	15.71	0
NGER_NGA	561870	48062953	6	85.54	0.01068
NGER_SLE	52	477	0	9.17	0
NGER_TCD	16392	716219	0	43.69	0
NHRK_SYR	1315	607696	0	462.13	0
NHRK_TUR	213	5160	0	24.23	0
NILE_BDI	12923	3342991	0	258.69	0
NILE_CAF	1151	1018	0	0.88	0
NILE_EGY	277000	41430404	2	149.57	0.00722
NILE_ERI	3542	56479	0	15.95	0
NILE_ETH	356004	22807284	1	64.06	0.00281
NILE_KEN	50873	11617062	2	228.35	0.03931
NILE_RWA	20733	6599214	0	318.30	0
NILE_SDN	1929341	29097898	5	15.08	0.00259
NILE_TZA	120152	6106219	0	50.82	0
NILE_UGA	238540	22120620	2	92.73	0.00838
NILE_ZAR	21431	1824470	0	85.13	0
NMAN_BLR	41656	2076530	3	49.85	0.07202
NMAN_LTU	39710	2174062	1	54.75	0.02518
NMAN_LVA	322	7965	0	24.74	0
NMAN_POL	3799	174499	0	45.93	0
NMAN_RUS	4788	187090	0	39.07	0
NRTV_BIH	5281	260356	0	49.30	0
NRTV_HRV	191	18177	0	95.17	0
NRVA_BLR	831	5573	0	6.71	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
NRVA_EST	18055	456766	0	25.30	0
NRVA_LVA	5896	168109	0	28.51	0
NRVA_RUS	28173	496123	0	17.61	0
NSTO_BGR	5465	142601	0	26.09	0
NSTO_GRC	4724	129725	0	27.46	0
NYGA_COG	795	1496	0	1.88	0
NYGA_GAB	11545	34999	0	3.03	0
OBXX_CHN	13902	112376	0	8.08	0
OBXX_KAZ	743790	6932384	30	9.32	0.04033
OBXX_MNG	154	576	0	3.74	0
OBXX_RUS	2192656	24295300	60	11.08	0.02736
ODBN_DZA	176	26654	0	151.44	0
ODBN_MAR	328	20586	0	62.76	0
ODER_CZE	10260	1808049	1	176.22	0.09747
ODER_DEU	7750	737548	1	95.17	0.12903
ODER_POL	103076	14182517	9	137.59	0.08731
ODER_SVK	1339	57077	1	42.63	0.74683
OGOO_GAB	189495	505118	0	2.67	0
OKVG_AGO	150082	456420	0	3.04	0
OKVG_NAM	176224	385417	0	2.19	0
OKVG_ZWE	22568	185600	1	8.22	0.04431
OLNG_FIN	2000	16999	0	8.50	0
OLNG_RUS	16830	54497	0	3.24	0
ORAL_KAZ	175505	768130	15	4.38	0.08547
ORAL_RUS	135496	2649114	12	19.55	0.08856
ORAN_BWA	121448	179479	0	1.48	0
ORAN_LSO	19901	1546443	0	77.71	0
ORAN_NAM	240178	156402	2	0.65	0.00833
ORAN_ZAF	563947	12036643	30	21.34	0.05320
ORIN_BRA	788	685	0	0.87	0
ORIN_COL	321672	1388481	1	4.32	0.00311
ORIN_VEN	604506	8700134	1	14.39	0.00165
OUEM_BEN	49388	3780168	0	76.54	0
OUEM_NGA	9695	849653	0	87.64	0
OUEM_TGO	434	11661	0	26.87	0
OULU_FIN	26731	197034	0	7.37	0
OULU_RUS	1944	8978	0	4.62	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
OYPK_BRA	9532	15181	0	1.59	0
OYPK_GUF	13700	19694	0	1.44	0
PAZX_GTM	1399	116016	0	82.93	0
PAZX_SLV	771	369320	0	479.01	0
PDNL_DOM	117	223	0	1.91	0
PDNL_HTI	241	52207	0	216.63	0
PKCN_MMR	1921	74562	0	38.81	0
PKCN_THA	1848	53915	0	29.17	0
PLNA_ARG	6019	2588	0	0.43	0
PLNA_CHL	7317	5606	0	0.77	0
PNDR_BRN	225	4344	0	19.31	0
PNDR_MYS	145	3184	0	21.96	0
POXX_AUT	88	355	0	4.03	0
POXX_CHE	4283	326158	1	76.15	0.23348
POXX_FRA	474	1747	0	3.69	0
POXX_ITA	82231	16995252	1	206.68	0.01216
PRLN_POL	143	9810	0	68.60	0
PRLN_RUS	476	14673	0	30.83	0
PRNU_EST	5833	162426	0	27.85	0
PRNU_LVA	9	93	0	10.33	0
PSCU_ARG	6363	138	0	0.02	0
PSCU_CHL	7329	3339	0	0.46	0
PSVK_FIN	12405	11295	0	0.91	0
PSVK_NOR	1023	1761	1	1.72	0.97752
PSVK_RUS	2587	30971	0	11.97	0
PTIA_COL	20781	863746	0	41.56	0
PTIA_ECU	507	135582	0	267.42	0
PUEL_ARG	5549	2482	0	0.45	0
PUEL_CHL	2855	2579	0	0.90	0
PULT_CHN	77784	410146	0	5.27	0
PULT_KAZ	33	0	0	0.00	0
PULT_MNG	11104	8476	0	0.76	0
PULT_RUS	83	0	0	0.00	0
RDKH_IRN	17988	77796	0	4.32	0
RDKH_PAK	30	85	0	2.83	0
REDX_CHN	84450	10521832	8	124.59	0.09473
REDX_LAO	1165	16101	0	13.82	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
REDX_VNM	71486	16616206	2	232.44	0.02798
REZV_BGR	170	1919	0	11.29	0
REZV_TUR	501	5833	0	11.64	0
RGSA_ARG	3987	13858	0	3.48	0
RGSA_CHL	4028	8741	0	2.17	0
RGSA_MEX	314270	8066645	33	25.67	0.10501
RGSA_USA	341837	3399167	36	9.94	0.10531
RHIN_AUT	1312	321005	0	244.67	0
RHIN_BEL	13883	2798345	0	201.57	0
RHIN_CHE	24296	5511664	1	226.85	0.04116
RHIN_DEU	97696	36059193	13	369.10	0.13307
RHIN_FRA	23070	3668942	1	159.04	0.04335
RHIN_ITA	66	236	0	3.58	0
RHIN_LIE	163	31688	0	194.40	0
RHIN_LUX	2521	391983	1	155.49	0.39667
RHIN_NLD	9938	4811753	0	484.18	0
RHON_CHE	10075	1330031	1	132.01	0.09926
RHON_FRA	90081	8291213	5	92.04	0.05551
RHON_ITA	50	67	0	1.34	0
ROIA_FRA	436	10980	0	25.18	0
ROIA_ITA	197	20332	0	103.21	0
RVMA_MOZ	99010	531239	0	5.37	0
RVMA_TZA	52228	1190602	0	22.80	0
SABI_MOZ	30251	282634	0	9.34	0
SABI_ZWE	85444	2823042	5	33.04	0.05852
SAIG_KHM	248	716	0	2.89	0
SAIG_VNM	24804	5411105	2	218.15	0.08063
SALC_EST	119	1257	0	10.56	0
SALC_LVA	1638	47303	0	28.88	0
SALW_CHN	127873	2482481	0	19.41	0
SALW_THA	9106	150286	0	16.50	0
SAMR_AZE	421	887	0	2.11	0
SAMR_RUS	6349	33548	0	5.28	0
SASS_CIV	59750	2553539	0	42.74	0
SASS_GIN	8427	163152	0	19.36	0
SCRO_CAN	1352	25241	0	18.67	0
SCRO_USA	3287	7041	1	2.14	0.30423

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
SEIN_BEL	1834	118957	0	64.86	0
SEIN_FRA	83845	16169597	7	192.85	0.08349
SEIN_LUX	68	34963	0	514.16	0
SENG_GIN	30834	534890	0	17.35	0
SENG_MLI	150814	1689533	0	11.20	0
SENG_MRT	219097	1393435	0	6.36	0
SENG_SEN	35234	487264	0	13.83	0
SENO_ARG	669	89	0	0.13	0
SENO_CHL	5688	2206	0	0.39	0
SEPK_IDN	2337	9813	0	4.20	0
SEPK_PNG	71024	754581	0	10.62	0
SHLD_BEL	8431	4318892	1	512.26	0.11861
SHLD_FRA	8559	3184936	0	372.12	0
SHLD_NLD	80	4864	0	60.80	0
SIOL_CRI	2547	15065	3	5.91	1.17786
SIOL_PAN	287	2264	0	7.89	0
SJAF_GIN	2639	125013	0	47.37	0
SJAF_LBR	12924	346687	0	26.83	0
SJNA_CAN	30302	386495	1	12.75	0.03300
SJNA_USA	17286	75413	0	4.36	0
SJUA_CRI	11775	118062	5	10.03	0.42463
SJUA_NIC	30369	2460758	1	81.03	0.03293
SKAG_CAN	926	176	0	0.19	0
SKAG_USA	7095	57997	2	8.17	0.28189
SLAW_CAN	559003	16960424	37	30.34	0.06619
SLAW_USA	496134	28133630	48	56.71	0.09675
SMAR_ARG	82	223	0	2.72	0
SMAR_CHL	571	1584	0	2.77	0
SMBK_IDN	8061	52610	0	6.53	0
SMBK_MYS	7190	72383	0	10.07	0
SPAU_GIN	9395	346991	0	36.93	0
SPAU_LBR	11836	305214	1	25.79	0.08449
SRTA_MDA	633	38469	1	60.77	1.57978
SRTA_UKR	1122	22122	0	19.72	0
SRTU_BLZ	256	665	0	2.60	0
SRTU_GTM	1814	37084	0	20.44	0
STKN_CAN	50015	1950	0	0.04	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
STKN_USA	853	0	0	0.00	0
STUM_BGR	8638	570447	0	66.04	0
STUM_GRC	3878	189050	1	48.75	0.25786
STUM_MKD	1831	97627	0	53.32	0
SUCT_GTM	1069	417134	0	390.21	0
SUCT_MEX	485	224892	0	463.69	0
SUJF_CHN	11777	343508	0	29.17	0
SUJF_RUS	6492	321296	0	49.49	0
SULK_AZE	57	56	0	0.98	0
SULK_GEO	1091	1419	0	1.30	0
SULK_RUS	13926	226620	0	16.27	0
SVCD_KHM	7532	1590168	0	211.12	0
SVCD_VNM	7754	2797102	0	360.73	0
TAFN_DZA	7032	822323	0	116.94	0
TAFN_MAR	2420	612142	0	252.95	0
TAGU_ESP	51445	5988700	28	116.41	0.54427
TAGU_PRT	26088	3172248	11	121.60	0.42165
TAKU_CAN	16347	3	0	0.00	0
TAKU_USA	1656	9	0	0.01	0
TAMI_IDN	87652	326805	0	3.73	0
TAMI_PNG	2198	11264	0	5.12	0
TANA_FIN	6289	893	0	0.14	0
TANA_NOR	9334	5483	0	0.59	0
TANO_CIV	1745	82226	0	47.12	0
TANO_GHA	13696	961165	0	70.18	0
TERK_GEO	1787	5168	0	2.89	0
TERK_RUS	36954	2339178	0	63.30	0
TIGR_IRN	155406	8769098	5	56.43	0.03217
TIGR_IRQ	319405	21278854	14	66.62	0.04383
TIGR_JOR	2007	6805	0	3.39	0
TIGR_SAU	84	225	0	2.68	0
TIGR_SYR	116259	7071236	2	60.82	0.01720
TIGR_TUR	195694	10985320	12	56.14	0.06132
TIJU_MEX	3098	627096	0	202.42	0
TIJU_USA	1292	482399	2	373.37	1.54799
TJWA_IDN	4044	27855	0	6.89	0
TJWA_PNG	2524	4332	0	1.72	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
TORN_FIN	10447	26893	0	2.57	0
TORN_NOR	1502	293	0	0.20	0
TORN_SWE	25367	58425	0	2.30	0
TRIM_AFG	59	125	0	2.12	0
TRIM_CHN	1021802	7749108	37	7.58	0.03621
TRIM_KGZ	21080	44732	0	2.12	0
TRIM_PAK	2040	2781	0	1.36	0
TRIM_TJK	6633	7475	0	1.13	0
TULM_FIN	2044	405	0	0.20	0
TULM_RUS	23671	411888	1	17.40	0.04225
TUMB_ECU	3559	46401	0	13.04	0
TUMB_PER	1410	28484	0	20.20	0
TUMN_CHN	20309	1492093	0	73.47	0
TUMN_PRK	8325	570762	0	68.56	0
TUMN_RUS	484	1957	0	4.04	0
UBLZ_MOZ	7189	1442292	0	200.62	0
UBLZ_SWZ	3541	117359	1	33.14	0.28241
UBLZ_ZAF	29	164	0	5.66	0
UMBA_KEN	1343	26286	0	19.57	0
UMBA_TZA	6841	485992	0	71.04	0
UTBN_GAB	4490	10395	0	2.32	0
UTBN_GNQ	3093	28947	0	9.36	0
VDVA_ARG	104	14	0	0.13	0
VDVA_CHL	14730	1066286	1	72.39	0.06789
VENT_LTU	3307	339842	0	102.76	0
VENT_LVA	6206	230534	0	37.15	0
VJSE_ALB	4648	473627	1	101.90	0.21515
VJSE_GRC	2485	40510	0	16.30	0
VLKA_BGR	662	10540	0	15.92	0
VLKA_TUR	26	294	0	11.31	0
VOLG_BLR	1269	9329	0	7.35	0
VOLG_KAZ	2202	8198	0	3.72	0
VOLG_RUS	1551293	62301717	128	40.16	0.08251
VOLT_BEN	14965	439398	0	29.36	0
VOLT_BFA	173549	8796615	0	50.69	0
VOLT_CIV	13488	191628	0	14.21	0
VOLT_GHA	166006	7586852	3	45.70	0.01807

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
VOLT_MLI	18814	566849	0	30.13	0
VOLT_TGO	25841	1509437	0	58.41	0
VRDR_BGR	2	38	0	19.00	0
VRDR_GRC	3866	265879	0	68.77	0
VRDR_MKD	20341	1780782	0	87.55	0
VSTL_BLR	9768	606620	0	62.10	0
VSTL_CZE	15	42	0	2.80	0
VSTL_POL	169654	21020688	7	123.90	0.04126
VSTL_SVK	1866	316127	0	169.41	0
VSTL_UKR	12705	2071892	1	163.08	0.07871
VUKS_FIN	54263	631840	0	11.64	0
VUKS_RUS	8485	21675	0	2.55	0
WADI_ISR	182	5852	0	32.15	0
WADI_LBN	393	27488	0	69.94	0
WHIT_CAN	2044	0	0	0.00	0
WHIT_USA	509	0	0	0.00	0
WIED_DEN	971	61950	0	63.80	0
WIED_DEU	150	2651	0	17.67	0
YALU_CHN	26781	3634184	7	135.70	0.26138
YALU_PRK	23813	2741586	5	115.13	0.20997
YAQU_MEX	70083	594336	3	8.48	0.04281
YAQU_USA	4579	52813	0	11.53	0
YELC_ARG	6922	4632	0	0.67	0
YELC_CHL	4217	3154	0	0.75	0
YNSY_MNG	327879	1449603	0	4.42	0
YNSY_RUS	2229761	6592848	9	2.96	0.00404
YSER_BEL	428	53007	0	123.85	0
YSER_FRA	495	35520	0	71.76	0
YUKN_CAN	333320	9376	2	0.03	0.00600
YUKN_USA	496412	95263	2	0.19	0.00403
ZAMB_AGO	254584	332831	0	1.31	0
ZAMB_BWA	18922	22755	0	1.20	0
ZAMB_MOZ	163543	2355844	1	14.41	0.00611
ZAMB_MWI	110352	8609824	0	78.02	0
ZAMB_NAM	17192	106878	0	6.22	0
ZAMB_TZA	27244	1283605	0	47.12	0
ZAMB_ZAR	1105	11590	0	10.49	0

Table A3.3: Basin-Country Polygon Level GIS Data (cont.)

BCCODE	Area (sq. km.)	Population	Dams	Population Density (people/sq. km.)	Dam Density (# of dams/(sq. km./1000))
ZAMB_ZMB	576855	8481536	23	14.70	0.03987
ZAMB_ZWE	215476	6931133	6	32.17	0.02785
ZAPL_ARG	518	1780	0	3.44	0
ZAPL_BOL	547	1220	0	2.23	0
ZAPL_CHL	1571	5344	0	3.40	0
ZARM_ECU	3393	485440	0	143.07	0
ZARM_PER	884	82194	0	92.98	0

APPENDIX 4 EVENTS BY BASIN

Table A4.1: Number of Events Per Basin (122 of 265 Basins)

Basin	# of Events	% Positive	Basin	# of Events	% Positive	Basin	# of Events	% Positive	Basin	# of Events	% Positive
Jordan	250	44%	Salween	8	63%	Chira	2	50%	Mius	1	100%
Tigris/Euphrates	202	48%	Yaqui	8	38%	Dnieper	2	100%	Narva	1	100%
Danube	172	55%	Ebro	7	71%	Dniester	2	100%	Oral	1	100%
Ganges-Brahmaputra	148	68%	Helmand	7	71%	Drin	2	50%	Orinoco	1	100%
La Plata	122	86%	Lima	7	86%	Har Us Nur	2	100%	Pakchan	1	100%
Mekong	87	94%	Cancoso	6	50%	Lake Titicaca	2	100%	Sabi	1	100%
Nile	78	76%	Hari	6	100%	Murgab	2	100%	Samur	1	100%
Indus	59	59%	Kunene	6	83%	Pasvik	2	100%	Sepik	1	100%
Aral Sea	29	90%	Ma	6	100%	Rezvaya	2	100%	Schelde	1	100%
Amur	23	87%	Ob	6	100%	Roia	2	100%	Skagit	1	100%
St. Lawrence	22	91%	Tarim	6	100%	Ruvuma	2	50%	Sarata	1	100%
Orange	17	82%	Tumen	6	100%	Saigon	2	100%	Struma	1	100%
Zambezi	17	88%	Vardar	6	33%	San Juan	2	50%	Sujfun	1	100%
Asi	16	44%	Ca	5	100%	Song Vam Co Dong	2	100%	Sulak	1	100%
Colorado	16	69%	Congo/Zaire	5	100%	Velaka	2	100%	Terek	1	100%
Kura-Araks	16	81%	Niger	5	100%	Akpa	1	0%	Tumbes-Poyango	1	100%

Table A4.1: Number of Events Per Basin (cont.)

Basin	# of Events	% Positive	Basin	# of Events	% Positive	Basin	# of Events	% Positive	Basin	# of Events	% Positive
Senegal	13	77%	Nestos	5	60%	Buzi	1	100%	Vijose	1	0%
Yalu	13	100%	Oder	5	100%	Chiloango	1	100%	Volga	1	100%
Tijuana	12	75%	Red	5	100%	Cross	1	0%	Vuoksa	1	100%
Guadiana	11	73%	Astara Chay	4	100%	Courantyne	1	0%	Zarumilla	1	100%
Han	11	36%	Maputo	4	100%	Catatumbo	1	100%			
Incomati	11	91%	Nahr El Kebir	4	50%	Don	1	100%			
Maritsa	11	91%	Pu-Lun-T'o	4	100%	Daugava	1	100%			
Douro	10	70%	Vistula	4	100%	Elancik	1	100%			
Karnaphuli	10	50%	Amazon	3	100%	Etosha/Cuvelai	1	100%			
Atrak	9	100%	Elbe	3	100%	Fly	1	100%			
Columbia	9	89%	Grijalva	3	67%	Goascoran	1	100%			
Fenney	9	56%	Irrawaddy	3	100%	Juba-Shibeli	1	100%			
Mino	9	67%	Lagoon Mirim	3	100%	Kaladan	1	100%			
Rhine	9	122%	Neman	3	67%	Kogilnik	1	100%			
Tagus	9	67%	Okavango	3	100%	Lempa	1	100%			
Ili	8	100%	Umbeluzi	3	100%	Medjerda	1	100%			
Rio Grande (N.A.)	8	75%	Volta	3	133%	Mississippi	1	100%			

Table A4.2: Basins With No Events (143 of 265 Basins)

Alsek	Glama	Palena
Amacuro	Golok	Pandaruan
An Nahr Al Kabir	Garonne	Po
Artibonite	Great Scarcies	Prohladnaja
Atui	Guir	Parnu
Aviles	Gauja	Pascua
Awash	Hondo	Patia
Aysen	Hsi (Bei Jiang)	Puelo
Baker	Isonzo	Rudkhaneh-ye (BahuKalat)
Bann	Jacobs	Rio Grande (South America)
Bidasoa	Jurado	Rhone
Bia	Kemi	Salaca
Beilun	Komoe	Sassandra
Belize	Kowl-E-Namaksar	St. Croix
Bangau	Krka	Seine
Benito/Ntem	Klaralven	Seno Union (Serrano)
Baraka	Lava (Pregel)	Sixaola
Barima	Lotagipi Swamp	St. John (Africa)
Barta	Lake Fagnano	St. John (North America)
Candelaria	Lake Natron	San Martin
Changuinola	Lake Prespa	Sembakung
Chico (Carmen Silva)	Lake Turkana	St. Paul
Choluteca	Lake Ubsa-Nur	Sarstun
Chiriqui	Lielupe	Stikine
Chuy	Loffa	Suchiate
Chilkat	Little Scarcies	Tafna
Coco (Segovia)	Mana-Morro	Taku
Comau	Massacre	Tami
Corubal	Mbe	Tana
Coruh	Mira	Tano
Castletown	Moa	Tiban
Cestos	Mono	Tjeroaka_Wanggoe
Coatan Achute	Motaqua	Torne (Tornealven)
Cullen	Maroni	Tuloma
Cavally	Mataje	Umba
Daoura	Naatamo	Utamboni
Dra	Negro	Valdivia
Dasht	Nelson-Saskatchewan	Venta

Table A4.2: Basins With No Events (cont.)

Erne	Neretva	Wadi Al Izziyah
Essequibo	Nyanga	Weser
Fane	Oued Bon Naima	Whiting
Flurry	Ogooue	Wiedau
Foyle	Olanga	Yelcho
Fraser	Oueme	Yenisey (Jenisej)
Firth	Oulu	Yser
Gallegos-Chico	Oyupock (Oiapoque)	Yukon
Gash	Paz	Zapaleri
Geba	Pedernales	

Table A4.3: Basins With Highly Conflictive Events (BAR Scale -6 to -4)

Basin	Total # of Events	Scale -6 (#)	Scale -5 (#)	Scale -4 (#)
Jordan	29	18	10	1
Nile	3	2		1
Tigris and Euphrates (Shatt al Arab)	3		2	1
Orange	2	1		1
Ganges-Brahmaputra-Meghna	1			1
Kura-Araks	1		1	
Karnaphuli	1		1	
Amur	1		1	
Aral Sea (internal drainage)	1			1
Senegal	1		1	

Table A4.4: Basins With Both Highly Cooperative and Conflictive Events

Amur
Aral Sea (internal drainage)
Ganges-Brahmaputra-Meghna
Jordan
Karnaphuli
Kura-Araks
Nile
Orange
Senegal
Tigris and Euphrates (Shatt al Arab)

Table A4.5: Basins With Highly Cooperative Events (BAR Scale 4 to 6)

Basin	Number of Events				Basin	Number of Events			
	Total	BAR	BAR	BAR		Total	BAR	Bar	BAR
		Scale 4	Scale 5	Scale 6			Scale 4	Scale 5	Scale 6
Danube	41	19	1	21	Senegal	2		2	
Ganges	34	22	1	11	Hari	2	2		
La Plata	34	27	3	4	Guadiana	2		2	
Mekong	21	17		4	Fenney	2	2		
Jordan	18	14		4	Gambia	2	1	1	
Nile	16	12		4	Yaqui	2	2		
Indus	14	11		3	Etosha	1		1	
Aral Sea	13	8		5	Fly	1		1	
St. Lawrence	12	4		8	Irrawaddy	1	1		
Zambezi	12	4		8	Grijalva	1	1		
Orange	10	7		3	Lagoon Mirim	1		1	
Rhine	9	1	1	7	Juba-Shibeli	1	1		
Tigris/Euphrates	8	6		2	Buzi	1		1	
Kura-Araks	8	6		2	Astara Chay	1	1		
Amur	8	6		2	Douro (Duero)	1		1	
Incomati	7	2		5	Chiloango	1		1	
Colorado	7	4		3	Catumbo	1	1		
Columbia	6	2		4	Congo/Zaire	1		1	
Tijuana	6	6			Song Vam...	1	1		
Atrak	5	3		2	Sepik	1		1	
Kunene	4	1		3	Schelde	1		1	
Limpopo	4	1		3	Skagit	1		1	
Ebro	4	3		1	Vuoksa	1		1	
Niger	4		1	3	Volta	1	1		
Ma	4	4			Tumen	1	1		
Maritsa	4	3		1	Salween	1	1		
Maputo	4			4	Neman	1	1		
Rio Grande NA	4	3		1	Nestos	1	1		
Helmand	3	3			Ob	1	1		
Ili (Kunes He)	3	3			Mississippi	1		1	
Ca (Song-Koi)	3	3			Pu-Lun-T'o	1		1	
Yalu	3	3			Ruvuma	1		1	
Umbeluzi	3	1		2	Sabi	1		1	
Red	3	3			Saigon	1	1		
Okavango	3	1		2	Pakchan	1	1		
Karnaphuli	2	2							

APPENDIX 5 EVENTS BY DYAD

Table A5.1: Dyads Listed By Number of Interactions

Country One	Country Two	#	% Positive	Country One	Country Two	#	% Positive
Canada	United States	462	91%	Swaziland	South Africa	39	100%
Syria	Turkey	453	32%	Kyrgyzstan	Tajikistan	38	100%
Bangladesh	India	306	53%	Brazil	Paraguay	37	92%
Spain	Portugal	235	72%	Angola	Namibia	36	89%
Mexico	United States	204	71%	Argentina	Brazil	36	78%
Laos	Vietnam	196	98%	Ethiopia	Sudan	36	67%
Turkey	Syria	152	32%	Moldova	Ukraine	36	100%
Israel	Jordan	140	45%	China	Korea, N.	33	100%
China	Russia	108	94%	Cameroon	Nigeria	32	50%
Cambodia	Vietnam	96	97%	China	Laos	32	88%
Iraq	Turkey	87	44%	India	Nepal	32	84%
Kazakhstan	Kyrgyzstan	78	96%	Thailand	Vietnam	32	94%
India	Pakistan	69	58%	Cambodia	Thailand	31	94%
Lebanon	Syria	69	78%	Argentina	Bolivia	30	93%
Argentina	Chile	68	50%	Bulgaria	Turkey	30	93%
Mozambique	South Africa	68	94%	Cambodia	Laos	30	97%
Jordan	Syria	66	73%	Kazakhstan	Tajikistan	30	100%
Myanmar	Thailand	66	77%	Ecuador	Peru	28	86%
China	Kazakhstan	65	100%	Bolivia	Chile	27	67%
China	Vietnam	60	87%	Mozambique	Swaziland	27	100%
Hungary	Slovakia	53	42%	Israel	Lebanon	26	31%
Brazil	Uruguay	51	82%	Byelarus	Russia	25	100%
Egypt	Sudan	49	76%	Israel	W. Bank/Gaza	24	46%
Israel	Syria	48	13%	Kyrgyzstan	Uzbekistan	23	83%
Laos	Thailand	44	91%	Argentina	Uruguay	21	86%
Mozambique	Zimbabwe	44	100%	Austria	Germany	21	100%
China	Thailand	42	90%	Austria	Germany	21	14%
China	Myanmar	40	90%	Guinea	Senegal	21	100%
Iraq	Syria	40	65%	Kenya	Tanzania	21	100%
Argentina	Paraguay	39	87%	Kenya	Uganda	21	100%
Spain	France	21	71%	Burundi	Tanzania	10	100%
Egypt	Ethiopia	20	85%	Croatia	Hungary	10	60%
China	Mongolia	18	100%	Egypt	Uganda	10	100%

Table A5.1: Dyads Listed By Number of Interactions (cont.)

Country One	Country Two	#	% Positive	Country One	Country Two	#	% Positive
Sudan	Uganda	18	100%	Guinea	Mali	10	80%
Austria	Hungary	16	81%	Ivory Coast	Guinea	10	100%
Bolivia	Brazil	16	100%	Kazakhstan	Turkmenistan	10	100%
China	Nepal	16	94%	Kyrgyzstan	Turkmenistan	10	100%
Kazakhstan	Russia	16	100%	Laos	Myanmar	10	90%
Kazakhstan	Uzbekistan	16	100%	Myanmar	Vietnam	10	90%
Russia	Ukraine	16	100%	Austria	Romania	9	100%
Tajikistan	Uzbekistan	16	100%	China	India	9	100%
Afghanistan	Iran	15	100%	China	Kyrgyzstan	9	100%
Botswana	Namibia	15	100%	Egypt	Israel	9	11%
Czech Rep.	Slovakia	15	40%	Ethiopia	Uganda	9	100%
Kenya	Sudan	15	100%	Germany	Poland	9	100%
Lesotho	South Africa	15	80%	Ivory Coast	Mali	9	100%
Malawi	Tanzania	15	80%	Romania	Yugoslavia	9	100%
China	Cambodia	14	86%	Angola	Botswana	8	100%
Bolivia	Paraguay	13	92%	Burundi	Rwanda	8	100%
Botswana	Zimbabwe	12	100%	Burundi	Congo (Kinshasa)	8	100%
Bulgaria	Greece	12	100%	Cameroon	Niger	8	100%
Colombia	Venezuela	12	75%	Cameroon	Chad	8	100%
Ethiopia	Kenya	12	100%	China	Pakistan	8	100%
Niger	Nigeria	12	100%	Czech Rep.	Poland	8	100%
Paraguay	Uruguay	12	83%	France	Italy	8	100%
Poland	Ukraine	12	100%	Ivory Coast	Ghana	8	100%
Tanzania	Congo (Kinshasa)	12	100%	Mali	Senegal	8	100%
Bolivia	Uruguay	11	91%	Rwanda	Tanzania	8	100%
Bulgaria	Romania	11	100%	Tanzania	Zambia	8	100%
Cambodia	Myanmar	11	91%	Austria	Bulgaria	7	100%
Tajikistan	Turkmenistan	11	100%	Bulgaria	Hungary	7	100%
Turkmenistan	Uzbekistan	11	100%	Egypt	Kenya	7	100%
Tanzania	Uganda	7	100%	Hungary	Slovenia	6	100%
Albania	Yugoslavia	6	67%	Hungary	Ukraine	6	100%
Angola	Malawi	6	100%	India	Myanmar	6	100%
Angola	Tanzania	6	100%	Jordan	Turkey	6	83%
Angola	Zambia	6	100%	Malawi	Zambia	6	100%
Armenia	Azerbaijan	6	33%	Mali	Mauritania	6	67%
Austria	Moldova	6	100%	Moldova	Romania	6	100%

Table A5.1: Dyads Listed By Number of Interactions (cont.)

Country One	Country Two	#	% Positive	Country One	Country Two	#	% Positive
Austria	Slovenia	6	100%	Mozambique	Tanzania	6	100%
Austria	Ukraine	6	24%	Niger	Chad	6	100%
Azerbaijan	Russia	6	100%	Nigeria	Chad	6	100%
Bangladesh	China	6	100%	Romania	Slovenia	6	100%
Benin	Burkina Faso	6	100%	Romania	Ukraine	6	100%
Benin	Mali	6	100%	Rwanda	Congo (Kinshasa)	6	100%
Bolivia	Peru	6	100%	Slovenia	Ukraine	6	100%
Botswana	Mozambique	6	100%	Switzerland	France	6	100%
Botswana	South Africa	6	100%	Zambia	Zimbabwe	6	67%
Bulgaria	Germany	6	100%	Austria	Croatia	5	100%
Bulgaria	Croatia	6	100%	Egypt	Rwanda	5	100%
Bulgaria	Moldova	6	100%	Egypt	Tanzania	5	80%
Bulgaria	Slovenia	6	100%	Finland	Norway	5	100%
Bulgaria	Ukraine	6	100%	Gambia	Senegal	5	100%
Burundi	Egypt	6	100%	Guinea	Gambia, The	5	100%
Byelarus	Ukraine	6	100%	Mongolia	Russia	5	100%
Croatia	Romania	6	100%	Angola	Zimbabwe	4	100%
Croatia	Slovenia	6	100%	Azerbaijan	Georgia	4	100%
Croatia	Ukraine	6	100%	Benin	Ivory Coast	4	100%
Georgia	Russia	6	100%	Bulgaria	Yugoslavia	4	50%
Germany	Croatia	6	100%	Burkina Faso	Ghana	4	100%
Germany	Hungary	6	100%	Burundi	Uganda	4	100%
Germany	Moldova	6	100%	Colombia	Ecuador	4	100%
Germany	Romania	6	100%	France	Netherlands	4	100%
Germany	Slovakia	6	100%	Guyana	Suriname	4	50%
Germany	Slovenia	6	100%	Guyana	Venezuela	4	100%
Germany	Ukraine	6	100%	Honduras	El Salvador	4	100%
Guinea	Guinea-Bissau	6	100%	Iran	Iraq	4	50%
Hungary	Moldova	6	100%				
Iran	Turkmenistan	4	100%	Rwanda	Sudan	3	100%
Namibia	Zimbabwe	4	100%	Sudan	Congo (Kinshasa)	3	100%
Rwanda	Uganda	4	100%	Uganda	Congo (Kinshasa)	3	100%
South Africa	Zimbabwe	4	100%	Albania	Greece	2	0%
Sudan	Tanzania	4	100%	Austria	Czech Rep.	2	100%
Austria	Switzerland	3	100%	Austria	Poland	2	100%
Austria	Germany	3	700%	Austria	Yugoslavia	2	100%

Table A5.1: Dyads Listed By Number of Interactions (cont.)

Country One	Country Two	#	% Positive	Country One	Country Two	#	% Positive
Austria	Germany	3	100%	Azerbaijan	Iran	2	100%
Bangladesh	Bhutan	3	100%	Belgium	Netherlands	2	100%
Bangladesh	Nepal	3	100%	Benin	Guinea	2	100%
Benin	Togo	3	100%	Benin	Niger	2	100%
Bhutan	India	3	100%	Benin	Chad	2	100%
Brazil	Guyana	3	100%	Botswana	Tanzania	2	100%
Brazil	Suriname	3	100%	Botswana	Zambia	2	100%
Burkina Faso	Ivory Coast	3	100%	Brazil	Venezuela	2	100%
Burkina Faso	Mali	3	100%	Byelarus	Lithuania	2	0%
Burundi	Ethiopia	3	100%	Byelarus	Poland	2	100%
Burundi	Kenya	3	100%	Cameroon	Guinea	2	100%
Burundi	Sudan	3	100%	Cameroon	Mali	2	100%
Czech Rep.	Germany	3	100%	China	Tajikistan	2	100%
Czech Rep.	Hungary	3	67%	Congo (Brazzaville)	Congo (Kinshasa)	2	100%
Eritrea	Sudan	3	100%	Congo (Kinshasa)	Zambia	2	100%
Ethiopia	Rwanda	3	100%	Costa Rica	Nicaragua	2	50%
Ethiopia	Tanzania	3	100%	Croatia	Yugoslavia	2	100%
Ethiopia	Congo (Kinshasa)	3	100%	Czech Rep.	Ukraine	2	100%
Guinea-Bissau	Senegal	3	100%	Eritrea	Ethiopia	2	100%
Iraq	Jordan	3	100%	Ethiopia	Somalia	2	100%
Ivory Coast	Liberia	3	100%	Germany	Luxembourg	2	100%
Kenya	Rwanda	3	100%	Germany	Netherlands	2	100%
Kenya	Congo (Kinshasa)	3	100%	Ghana	Mali	2	100%
Mauritania	Senegal	3	67%	Guinea	Nigeria	2	100%
Poland	Slovakia	3	0%	Guinea	Chad	2	100%
Guinea	Mauritania	2	100%	Botswana	Malawi	1	100%
Ivory Coast	Niger	2	100%	Brazil	Colombia	1	100%
Ivory Coast	Nigeria	2	100%	Brazil	Ecuador	1	100%
Ivory Coast	Chad	2	100%	Brazil	Peru	1	100%
Korea, N.	Russia	2	100%	Bulgaria	Czech Rep.	1	100%
Luxembourg	Netherlands	2	100%	Bulgaria	Slovakia	1	100%
Mali	Niger	2	100%	Burkina Faso	Togo	1	100%
Mali	Nigeria	2	100%	Burundi	Congo (Brazzaville)	1	100%
Mali	Chad	2	100%	Burundi	Eritrea	1	100%

Table A5.1: Dyads Listed By Number of Interactions (cont.)

Country One	Country Two	#	% Positive	Country One	Country Two	#	% Positive
Mongolia	Korea, N.	2	100%	Byelarus	Kazakhstan	1	100%
Mozambique	Zambia	2	100%	Colombia	Guyana	1	100%
Namibia	South Africa	2	100%	Colombia	Peru	1	100%
Slovakia	Ukraine	2	100%	Colombia	Suriname	1	100%
Switzerland	Luxembourg	2	100%	Congo (Brazzaville)	Tanzania	1	100%
Switzerland	Netherlands	2	100%	Congo (Kinshasa)	Zimbabwe	1	100%
Tanzania	Zimbabwe	2	100%	Croatia	Slovakia	1	100%
Algeria	Tunisia	1	100%	Czech Rep.	Croatia	1	100%
Angola	Mozambique	1	100%	Czech Rep.	Moldova	1	100%
Armenia	Georgia	1	100%	Czech Rep.	Romania	1	100%
Armenia	Iran	1	100%	Czech Rep.	Slovenia	1	100%
Austria	Slovakia	1	100%	Ecuador	Guyana	1	100%
Austria	Ukraine	1	100%	Ecuador	Suriname	1	100%
Austria	Ukraine	1	600%	Ecuador	Venezuela	1	100%
Benin	Cameroon	1	100%	Egypt	Eritrea	1	100%
Benin	Ghana	1	100%	Eritrea	Kenya	1	100%
Bhutan	Nepal	1	100%	Eritrea	Rwanda	1	100%
Bolivia	Colombia	1	100%	Eritrea	Tanzania	1	100%
Bolivia	Ecuador	1	100%	Eritrea	Uganda	1	100%
Bolivia	Guyana	1	100%	Eritrea	Congo (Kinshasa)	1	100%
Bolivia	Suriname	1	100%	Germany	France	1	100%
Bolivia	Venezuela	1	100%	Ghana	Togo	1	100%
Botswana	Lesotho	1	100%	Guyana	Peru	1	100%
Hungary	Poland	1	100%	Namibia	Zambia	1	100%
Hungary	Yugoslavia	1	100%	Niger	Sudan	1	100%
Ivory Coast	Togo	1	100%	Peru	Suriname	1	100%
Lesotho	Namibia	1	100%	Peru	Venezuela	1	100%
Lithuania	Poland	1	100%	Poland	Romania	1	100%
Malawi	Namibia	1	100%	Romania	Slovakia	1	100%
Malawi	Zimbabwe	1	100%	Saudi Arabia	Syria	1	100%
Mali	Togo	1	100%	Saudi Arabia	Turkey	1	100%
Moldova	Slovakia	1	100%	Slovakia	Slovenia	1	100%
Mozambique	Namibia	1	100%	Suriname	Venezuela	1	100%
Namibia	Tanzania	1	100%	Switzerland	Ukraine	1	100%
Namibia	Congo (Kinshasa)	1	100%				

Table A5.2: Dyads With Highly Cooperative Interactions

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Mexico	United States	21	4		17
Canada	United States	20	14		6
Laos	Vietnam	18	3		15
India	Nepal	17	8		9
India	Pakistan	16	3		13
Mozambique	South Africa	14	12		2
Bangladesh	India	13	2		11
Brazil	Paraguay	12	3	1	8
Israel	Jordan	12	2		10
Kazakhstan	Kyrgyzstan	12	5		7
Laos	Thailand	12	4		8
Swaziland	South Africa	11	9		2
Cambodia	Vietnam	10	3		7
Kazakhstan	Uzbekistan	10	5		5
Kyrgyzstan	Uzbekistan	10	5		5
Cambodia	Laos	9	3		6
Cambodia	Thailand	9	3		6
China	Nepal	9		1	8
Lesotho	South Africa	9	2		7
Tajikistan	Uzbekistan	9	3		6
Thailand	Vietnam	9	3		6
Kazakhstan	Tajikistan	8	3		5
Kyrgyzstan	Tajikistan	8	3		5
Mozambique	Swaziland	8	6		2
Angola	Namibia	7	5		2
Mozambique	Zimbabwe	7	5		2
Argentina	Paraguay	6	2		4
Egypt	Sudan	6	1		5
Romania	Yugoslavia	6	4		2
Turkmenistan	Uzbekistan	6	1		5
Botswana	Namibia	5	4		1
Bulgaria	Romania	5	2	1	2
China	Mongolia	5	3		2
Egypt	Ethiopia	5			5
Jordan	Syria	5	1		4
Kazakhstan	Turkmenistan	5	1		4

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Kyrgyzstan	Turkmenistan	5	1		4
Myanmar	Thailand	5			5
Tajikistan	Turkmenistan	5	1		4
Angola	Botswana	4	3		1
Argentina	Brazil	4	1		3
Austria	Hungary	4	3		1
Bolivia	Brazil	4	1	1	2
Botswana	Zimbabwe	4	4		
Bulgaria	Turkey	4	1		3
Cameroon	Chad	4	3	1	
Cameroon	Niger	4	4		
Cameroon	Nigeria	4	4		
Guinea	Mali	4	4		
Guinea	Senegal	4	3		1
Iraq	Syria	4			4
Kenya	Tanzania	4	1		3
Malawi	Tanzania	4	4		
Niger	Nigeria	4	4		
Spain	France	4	1		3
Tanzania	Uganda	4	1		3
Tanzania	Zambia	4	4		
Zambia	Zimbabwe	4	4		
Afghanistan	Iran	3			3
Angola	Malawi	3	3		
Angola	Tanzania	3	3		
Angola	Zambia	3	3		
Argentina	Bolivia	3			3
Argentina	Uruguay	3			3
Austria	Germany	3	3		
Benin	Mali	3	2		1
Bolivia	Paraguay	3		1	2
Bolivia	Peru	3	2		1
Botswana	Mozambique	3	3		
Brazil	Uruguay	3	1		2
China	Laos	3			3
Egypt	Uganda	3			3
Israel	West Bank and Gaza	3	1		2
Ivory Coast	Mali	3	2		1

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Jordan	Lebanon	3			3
Kenya	Uganda	3	1		2
Lebanon	Syria	3			3
Malawi	Zambia	3	3		
Mozambique	Tanzania	3	3		
Niger	Chad	3	3		
Nigeria	Chad	3	3		
Spain	Portugal	3	3		
Angola	Zimbabwe	2	2		
Austria	Bulgaria	2	2		
Austria	Romania	2	2		
Austria	Yugoslavia	2	2		
Benin	Burkina Faso	2	2		
Benin	Chad	2	2		
Benin	Guinea	2	2		
Benin	Ivory Coast	2	1		1
Benin	Niger	2	2		
Benin	Nigeria	2	2		
Bolivia	Chile	2			2
Bolivia	Uruguay	2		1	1
Botswana	South Africa	2	2		
Botswana	Tanzania	2	2		
Botswana	Zambia	2	2		
Bulgaria	Hungary	2	2		
Cameroon	Mali	2	2		
China	Kazakhstan	2			2
China	Myanmar	2			2
China	Vietnam	2			2
Colombia	Venezuela	2	1		1
Ethiopia	Sudan	2			2
France	Italy	2	1		1
France	Luxembourg	2	2		
France	Netherlands	2	2		
Gambia, The	Senegal	2	1		1
Germany	Luxembourg	2	2		
Germany	Netherlands	2	2		
Guatemala	Mexico	2			2
Guinea	Chad	2	2		
Guinea	Gambia, The	2	1		1

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Guinea	Mauritania	2	2		
Guinea	Niger	2	2		
Guinea	Nigeria	2	2		
Hungary	Romania	2	2		
Hungary	Slovakia	2			2
Ivory Coast	Chad	2	2		
Ivory Coast	Guinea	2	2		
Ivory Coast	Niger	2	2		
Ivory Coast	Nigeria	2	2		
Kenya	Sudan	2			2
Luxembourg	Netherlands	2	2		
Mali	Chad	2	2		
Mali	Mauritania	2	2		
Mali	Niger	2	2		
Mali	Nigeria	2	2		
Mali	Senegal	2	2		
Mauritania	Senegal	2	2		
Mozambique	Zambia	2	2		
Namibia	South Africa	2	2		
Namibia	Zimbabwe	2	2		
Paraguay	Uruguay	2			2
Switzerland	France	2	2		
Switzerland	Luxembourg	2	2		
Switzerland	Netherlands	2	2		
Tanzania	Zimbabwe	2	2		
Albania	Yugoslavia	1	1		
Angola	Mozambique	1	1		
Argentina	Chile	1			1
Armenia	Iran	1			1
Austria	Croatia	1	1		
Austria	Moldova	1	1		
Austria	Slovenia	1	1		
Austria	Switzerland	1	1		
Austria	Ukraine	1	1		
Azerbaijan	Iran	1			1
Bangladesh	Nepal	1			1
Belgium	France	1	1		
Belgium	Netherlands	1	1		
Benin	Cameroon	1	1		

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Benin	Ghana	1			1
Benin	Togo	1			1
Bhutan	India	1			1
Bhutan	Nepal	1			1
Bolivia	Colombia	1	1		
Bolivia	Ecuador	1	1		
Bolivia	Guyana	1	1		
Bolivia	Suriname	1	1		
Bolivia	Venezuela	1	1		
Botswana	Lesotho	1	1		
Botswana	Malawi	1	1		
Brazil	Colombia	1	1		
Brazil	Ecuador	1	1		
Brazil	Guyana	1	1		
Brazil	Peru	1	1		
Brazil	Suriname	1	1		
Brazil	Venezuela	1	1		
Bulgaria	Croatia	1	1		
Bulgaria	Germany	1	1		
Bulgaria	Greece	1			1
Bulgaria	Moldova	1	1		
Bulgaria	Slovenia	1	1		
Bulgaria	Ukraine	1	1		
Bulgaria	Yugoslavia	1	1		
Burkina Faso	Ghana	1			1
Burkina Faso	Ivory Coast	1			1
Burkina Faso	Mali	1			1
Burkina Faso	Togo	1			1
Burundi	Congo, Dem. Rep. of (Kinshasa)	1			1
Burundi	Egypt	1			1
Burundi	Ethiopia	1			1
Burundi	Kenya	1			1
Burundi	Rwanda	1			1
Burundi	Sudan	1			1
Burundi	Tanzania	1			1
Burundi	Uganda	1			1
Byelarus	Poland	1			1
Byelarus	Ukraine	1			1

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Cambodia	(Burma)	1			1
China	Cambodia	1			1
China	Korea, Dem. People's Rep. of	1			1
China	Pakistan	1			1
China	Thailand	1			1
Colombia	Ecuador	1	1		
Colombia	Guyana	1	1		
Colombia	Peru	1	1		
Congo, Dem. Rep. of (Kinshasa)	Zimbabwe	1			1
Croatia	Hungary	1	1		
Croatia	Moldova	1	1		
Croatia	Romania	1	1		
Croatia	Slovenia	1	1		
Croatia	Ukraine	1	1		
Croatia	Yugoslavia	1			1
Czech Rep.	Poland	1			1
Czech Rep.	Slovakia	1			1
Ecuador	Guyana	1	1		
Ecuador	Peru	1	1		
Ecuador	Suriname	1	1		
Ecuador	Venezuela	1	1		
Egypt	Congo, Dem. Rep. of (Kinshasa)	1			1
Egypt	Kenya	1			1
Egypt	Rwanda	1			1
Egypt	Tanzania	1			1
Ethiopia	Congo, Dem. Rep. of (Kinshasa)	1			1
Ethiopia	Kenya	1			1
Ethiopia	Rwanda	1			1
Ethiopia	Somalia	1			1
Ethiopia	Tanzania	1			1
Ethiopia	Uganda	1			1
Finland	Norway	1	1		
Germany	Croatia	1	1		
Germany	France	1	1		
Germany	Hungary	1	1		

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Germany	Moldova	1	1		
Germany	Romania	1	1		
Germany	Slovakia	1	1		
Germany	Slovenia	1	1		
Germany	Ukraine	1	1		
Ghana	Mali	1			1
Ghana	Togo	1			1
Guinea	Guinea-Bissau	1			1
Guinea-Bissau	Senegal	1			1
Guyana	Peru	1	1		
Guyana	Suriname	1	1		
Guyana	Venezuela	1	1		
Hungary	Moldova	1	1		
Hungary	Slovenia	1	1		
Hungary	Ukraine	1	1		
Hungary	Yugoslavia	1	1		
Iran	Iraq	1	1		
Iraq	Jordan	1			1
Iraq	Turkey	1			1
Ivory Coast	Ghana	1			1
Ivory Coast	Togo	1			1
Kazakhstan	Russia	1			1
Kenya	Congo, Dem. Rep. of (Kinshasa)	1			1
Kenya	Somalia	1			1
Korea, Dem. People's Rep. of	Russia	1			1
Laos	Myanmar	1			1
Lesotho	Namibia	1	1		
Lithuania	Poland	1			1
Malawi	Namibia	1	1		
Malawi	Zimbabwe	1	1		
Mali	Togo	1			1
Moldova	Romania	1	1		
Moldova	Slovenia	1	1		
Moldova	Ukraine	1	1		
Mongolia	Korea, Dem. People's Rep. of	1			1
Mongolia	Russia	1			1

Table A5.2: Dyads With Highly Cooperative Interactions (cont.)

Country One	Country Two	Number of Events			
		Total	BAR Scale 4	BAR Scale 5	BAR Scale 6
Mozambique	Namibia	1	1		
Myanmar	Vietnam	1			1
Namibia	Tanzania	1	1		
Namibia	Zambia	1	1		
Peru	Suriname	1	1		
Peru	Venezuela	1	1		
Poland	Ukraine	1			1
Romania	Slovenia	1	1		
Romania	Ukraine	1	1		
Rwanda	Congo, Dem. Rep. of (Kinshasa)	1			1
Rwanda	Sudan	1			1
Rwanda	Tanzania	1			1
Rwanda	Uganda	1			1
Slovenia	Ukraine	1	1		
South Africa	Zimbabwe	1	1		
Sudan	Congo, Dem. Rep. of (Kinshasa)	1			1
Sudan	Tanzania	1			1
Sudan	Uganda	1			1
Suriname	Venezuela	1	1		
Syria	Turkey	1			1
Tanzania	Congo, Dem. Rep. of (Kinshasa)	1			1
Uganda	Congo, Dem. Rep. of (Kinshasa)	1			1

Table A5.3: Dyads With Highly Conflictive Interactions

Country One	Country Two	Total # of Events	Scale -4 (#)	Scale -5 (#)	Scale -6 (#)
Israel	Jordan	12		4	8
Israel	Syria	12		5	7
Egypt	Israel	5			5
Bangladesh	India	2	1	1	
Iraq	Syria	2	1	1	
Lesotho	South Africa	2	1		1
Armenia	Azerbaijan	1		1	
Iran	Iraq	1		1	
Kyrgyzstan	Uzbekistan	1	1		
Mali	Mauritania	1		1	

Table A5.4: Dyads With Highly Cooperative and Conflictive Interactions

Country One	Country Two
Bangladesh	India
Iran	Iraq
Iraq	Syria
Israel	Jordan
Kyrgyzstan	Uzbekistan
Lesotho	South Africa
Mali	Mauritania

APPENDIX 6 APPROACH TO INITIAL INDICATOR SELECTION

DEVELOPMENT OF INITIAL LIST OF INDICATORS

Selection of indicators was based in large part on existing expertise, in addition to further research conducted specifically for this project. Background research on indicators relevant to freshwater resources and rivers specifically included investigations into water and conflict, water resource management, socio-economic development, and a detailed reading of the water treaties themselves, from which insights as to the relevant social, political, economic, and resource issues can be gained. From the background research, and based on expert knowledge in international environmental policy and resource management and socio-economic development, an initial list of the names of potential indicators was created. These indicators were divided into groups by whether they were spatially distributed information (i.e., maps), information derived from remote sensing imagery (which may or may not appear in map form), statistical information by country, statistical information by river basin, and miscellaneous. Also kept in mind was the need to have a broad range of indicators that covered multiple spheres -- economic, political, social, geographical, environmental, climatic, etc. The initial list of indicators was inclusive, rather than exclusive, because the list was considered part of a larger, brainstorming process.

SEARCH FOR AVAILABLE DATA, EXPANSION OF INDICATOR LIST

Searches were conducted, using books, statistical indices, and the world wide web, for possible sources for indicator data. Care was taken to obtain as much information as was readily available on the areas and years covered by the data, as well as relevant data caveats. This information was compiled into a Word table, with the following headings: Name of indicator; Info. type; Producer of data; Format of data; Data description; Additional comments; and, Location of data. Selection of data sources was guided by the following: the area of the data covered should be global; data should be from a respected source and where possible the original source of the data should be noted; and, the data should have some relevance with regards to river treaties. As searches for data were conducted, new indicators were added to the initial list.

METADATA METHODOLOGY

To manage such a large amount of data, a Metadata methodology was developed. Metadata is data that describes data. For all data obtained and used by the Basins At Risk project, project staff recorded the following information: the category of the data (to assist staff searching for specific data, the information regarding indicator data will be grouped by three categories: Biophysical, Socioeconomic, and Political); a name for the data (brief, but descriptive); a more detailed description of data and how it was derived; the source of the data, including publication/copyright information; data caveats, including our confidence level in the data (low, medium, high); any changes or adjustments (i.e., tweaking) that we made to the data (including who made the change and when); the name of the data file, file type, and file location (all contained in the name of the file); and, the formal citation to be used for the data. As data was obtained and modified for use in the project, or as new indicator data was created in-house, information regarding the changes made to the data, and who made the changes, was added to the metadata table. With this metadata, we have descriptive and bibliographical information for every file created for the TFDD project. The metadata information, currently maintained in an Excel spreadsheet, will eventually become part of an Access database containing all the BAR project data and will be made available on the TFDD website.

APPENDIX 7 LIST OF GIS AND OTHER DATA LAYERS

Table A7.1: BAR Data Layers

Category	GIS Layer	Coverage	Data Source
GeoPolitical	International Boundaries	Global	ESRI
GeoPolitical	Intra-national Administrative Boundaries	Global	ESRI
Biophysical	International Basins	Global	TFDD
Biophysical	Area of International Basins for 1999, total & by country	Global	TFDD
Biophysical	International Basins from 1950 to current	Global	TFDD
GeoPolitical	Intersection of Basins with Countries	Global	TFDD
GeoPolitical	International River Treaties	Global	TFDD
GeoPolitical	Basin Tributary Names	Global	TFDD
Biophysical	Riparian Position of Basin Countries	Global	TFDD
GeoPolitical	Water Conflict-Coop. Events 1948-1999	Global	COPDAB, GEDS, FBIS/WNC, Lexis-Nexus, TFDD
GeoPolitical	Additional Event Data (historical records, other sources)	Global	TFDD
GeoPolitical	Degree of democratization, by year from 1800	Global	Polity Data Archives
GeoPolitical	Date of change in government regime, by year	Global	Polity Data Archives
SocioEconomic	Gridded Population of the World	Global	Dobson, et al. LandScan 2000
SocioEconomic	Population by basin by year	Global	Dobson, et al. LandScan 2000, TFDD
SocioEconomic	Population by country by year	Global	Dobson, et al. LandScan 2000, TFDD
SocioEconomic	List and Location of Ethnic Minority Groups	Global	GEDS
SocioEconomic	Human Poverty Index	Global	UNDP

Table A7.1: BAR Data Layers (cont.)

Category	GIS Layer	Coverage	Data Source
SocioEconomic	Human Development Index	Global	UNDP
SocioEconomic	Future Major Dams or Water Development Projects	Global	TFDD
SocioEconomic	Major Dams or Development Projects by basin and year	Global	ICOLD, TFDD
SocioEconomic	Roads and Railways	Global	ESRI
SocioEconomic	Major Cities	Global	ESRI
SocioEconomic	Utilities, Electricity Grids	Global	ESRI
SocioEconomic	Hydroelectric Capacity and Production by Country, 1996	Global	WRI
SocioEconomic	Hydroelectric Production as Fraction of Total Energy Produced, by Country	Global	WRI
SocioEconomic	Commercial Electricity Production—Total, by Country and Year	Global	WRI
SocioEconomic	Commercial Electricity Production—Hydroelectric, by Country and Year	Global	WRI
SocioEconomic	Electricity Imports and Exports	Global	WRI
SocioEconomic	Desalination Capacity by Country, January 1, 1996	Global	WRI
SocioEconomic	Water Stress Index by country and by basin	Global	Fekete, et al., TFDD
SocioEconomic	Social Water Stress Index - 1975-1999, by basin & country	Global	Fekete, et al., Ohlsson, TFDD
SocioEconomic	Gross National Product	Global	WRI
SocioEconomic	Gross National Product Per Capita	Global	WRI
SocioEconomic	Mean Rate of Population Growth by Country	Global	WRI
SocioEconomic	Labor Force -- Percent in Agriculture	Global	WRI
SocioEconomic	Total Urban Population	Global	WRI
SocioEconomic	Urban Population Percent	Global	WRI
SocioEconomic	Urban Population Growth Rates	Global	WRI
SocioEconomic	Total Rural Population	Global	WRI
SocioEconomic	Rural Population Growth Rates	Global	WRI
SocioEconomic	Rural Population With Access to Safe Water	Global	WRI

Table A7.1: BAR Data Layers (cont.)

Category	GIS Layer	Coverage	Data Source
SocioEconomic	Urban Population With Access to Safe Water	Global	WRI
SocioEconomic	Population With Access to Safe Water: Urban and Rural	Global	WRI
SocioEconomic	Urban Population With Access to Adequate Sanitation	Global	WRI
SocioEconomic	Rural Population with Access to Adequate Sanitation	Global	WRI
SocioEconomic	Population With Access to Adequate Sanitation: Urban and Rural	Global	WRI
SocioEconomic	Total Forest Deforestation	Global	WRI
SocioEconomic	Total Freshwater Catch by Country	Global	WRI
SocioEconomic	Aquaculture Production – Freshwater Fish	Global	WRI
SocioEconomic	Technical Disasters by Country - Oil spill/Chemical Fires...	Global	USAID-CRED
Biophysical	Natural Disasters by Country - Flood/Drought...	Global	USAID-CRED
Biophysical	Renewable Freshwater Supply by Basin and by Country	Global	Gleick, Peter. The World's Water, 1998, Fekete, et al., TFDD
SocioEconomic	Freshwater Withdrawal by Country and Sector	Global	Gleick, Peter. The World's Water, 1998
Biophysical	USGS Land Use/Land Cover	Global	USGS
Biophysical	Global Assessment of Human Induced Soil Degradation	Global	UNEP/GRID – EROS Data Cntr.
Biophysical	Global Vegetation, Intensity of Cultivation	Global	UNEP/GRID – EROS Data Cntr.
Biophysical	Global Map of Irrigated Areas	Global	Petra Döll
SocioEconomic	Irrigated Area by Basin and by Country	Global	TFDD
Biophysical	Water pollution, runoff, sediment load (selected rivers)	80 Rivers	UNEP/GEMS
GeoPolitical	State of Water Management by Country	Limited	Gleick, Peter. The World's Water, 1998
SocioEconomic	Sources and Uses of Surface/Groundwater Resources	Global	Gleick, Peter. The World's Water, 1998
Biophysical	Wetlands of International Importance – Number/Area	Global	WRI
SocioEconomic	Distribution of Gross Domestic Product— Agric/Ind/Services/Manufact	Global	WRI

Table A7.1: BAR Data Layers (cont.)

Category	GIS Layer	Coverage	Data Source
SocioEconomic	Total Fertilizer Consumption	Global	WRI
Biophysical	Arable Land	Global	WRI
Biophysical	Land in Permanent Crops	Global	WRI
SocioEconomic	Fertilizer Production	Global	WRI
SocioEconomic	Fertilizer Imports	Global	WRI
SocioEconomic	Fertilizer Exports	Global	WRI
SocioEconomic	Annual fertilizer use	Global	WRI
SocioEconomic	Grain Fed to Livestock as % of Total Grain Consumption	Global	WRI
SocioEconomic	Labor Force -- Percent in Industry, Percent in Services	Global	WRI
SocioEconomic	Total Economically Active Population	Global	WRI
SocioEconomic	Number of Cholera Cases and Deaths from Cholera	Limited	Gleick, Peter. The World's Water, 1998
Biophysical	Land Area by Country	Global	WRI
Biophysical	Arable and Permanent Cropland	Global	WRI
SocioEconomic	Population Density by Country	Global	WRI
Biophysical	Permanent Pasture	Global	WRI
Biophysical	Forest and Woodland	Global	WRI
Biophysical	All Other Land	Global	WRI
Biophysical	Domesticated Land as a Percent of Land Area	Global	WRI
Biophysical	Natural Forest Extent and Change	Global	WRI
Biophysical	Extent of Plantations and Change	Global	WRI
Biophysical	Extent of Total Forest	Global	WRI
Biophysical	Hydrologic Network (Rivers)	Global	USGS-EROS-HYDRO1k, ESRI
Biophysical	River length	Global	ESRI, TFDD
Biophysical	Climatic Data (Temp, Precip)	Global	IPCC
Biophysical	Climatic Zones of basins	Global	UNFAO, TFDD
Biophysical	Digital Elevation Models	Global	USGS-EROS-GTOPO30
Biophysical	Slope in basin by percent area	Global	USGS-EROS-GTOPO30/LandScan,

Table A7.1: BAR Data Layers (cont.)

Category	GIS Layer	Coverage	Data Source
Biophysical	Global Soil Texture	Global	TFDD
Biophysical	River Discharge	Global	UNEP/GRID – EROS Data Cntr.
Biophysical	Flooding since 1995	Global	Vörösmarty, et al.
Biophysical	Annual river flows	Global	Dartmouth Flood Observatory
Biophysical	Freshwater Fish Species Information	Global	Fekete, et al., TFDD
GeoPolitical	Protected Areas	Global	WRI

TABLE ABBREVIATIONS

COPDAB: Azar, Edward E. *Conflict and Peace Data Bank (COPDAB), 1948-1978*. [Computer file]. 3rd release. College Park, MD: University of Maryland, Center for International Development and Conflict Management [producer], 1993. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 1993.

Dartmouth Flood Observatory: Dartmouth Flood Observatory – NASA supported. <http://www.dartmouth.edu/artsci/geog/floods/>.

Dobson, et al. *LandScan 2000*: Jerome E Dobson, Edward A. Bright, Phillip R. Coleman, Richard C. Durfee, and Brian A. Worley. *LandScan: A Global Population Database for Estimating Populations and Risk*. Photogrammetric Engineering & Remote Sensing Vol. 66 No.7 July 2000, pp 849-857.

Döll, P. and Siebert, S. (1999): A Digital Global Map of Irrigated Areas. Report A9901, Center for Environmental Systems Research, University of Kassel, 23 pp. + appendix.

ESRI: Environmental Systems Research Institute, <http://www.esri.com/>.

FBIS: Foreign Broadcast Information Service, US Central Intelligence Agency.

Fekete, et al. : Fekete, Balazs. Vorosmarty, Charles J. Grabs, Wolfgang. Global, Composite Runoff Fields Based on Observed River Discharge and Simulated Water Balances. February 4, 2000.

GEDS: Davies, John L. The Global Event-Data System: Coders' Manual, Center for International Development and Conflict Management and Department of Government and Politics, University of Maryland, College Park MD, August 1998 Revision, <http://geds.umd.edu/geds/>.

Gleick, Peter. *The World's Water*, 1998: The World's Water: The Biennial Report on Freshwater Resources, Peter H. Gleick (Island Press, Washington, D.C., 1998).

ICOLD: International Commission on Large Dams, *World Register of Dams*, 1998.

IPCC: Intergovernmental Panel on Climate Change; Leemans, Rik and Wolfgang P. Cramer, 1991. The IIASA Database for Mean Monthly Values of Temperature, Precipitation and Cloudiness of a Global Terrestrial Grid. IIASA, Laxenburg, Austria, RR-91-18, 62 pages. <http://ipcc-ddc.cru.uea.ac.uk/>.

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Polity Data Archives: McLaughlin, Sara; Scott Gates, Håvard Hegre, Ranveig Gissinger, and Nils Petter Gleditsch. 1998. "Polity 3D: The timing of polity changes" *Journal of Conflict Resolution*, April 1998.
<http://www.colorado.edu/IBS/GAD/spacetime/data/Polity.html>.

UNDP: United Nations Development Programme, *Human Development Report*,
<http://www.undp.org/hdro/indicators.html#developing>.

UNEP/GEMS: United Nations Environment Programme/Global Environment Monitoring System; Fraser, A. S., M. Meybeck, and E. D. Ongley. 1996. *Annotated Digital Atlas of Global Water Quality (computerized)*. UNEP GEMS/Water Collaborating Centre, Canada. Global Environment Monitoring System (GEMS/Water); <http://www.cciw.ca/gems/intro.html>.

UNEP/GRID – EROS: <http://grid2.cr.usgs.gov/>; <http://edcwww.cr.usgs.gov/>.

UNFAO: United Nations Food and Agriculture Programme; FAO's Environment and Natural Resources Service (SDRN) global climate maps series. - FAO-SDRN Agrometeorology Group - 1997. <http://www.fao.org/sd/eidirect/CLIMATE/EIsp0001.htm>.

USAID-CRED: US Agency for International Development, Office of US Foreign Disaster Assistance (OFDA) & the WHO Collaborative Center for Research on the Epidemiology of Disasters (CRED); EM-DAT: The OFDA/CRED International Disaster Database - www.md.ucl.ac.be/cred - Université Catholique de Louvain - Brussels – Belgium.

USGS-EROS-GTOPO30: US Geological Service – EROS Data Center, <http://edcdaac.usgs.gov/gtopo30/gtopo30.html>

USGS-EROS-HYDRO1k: US Geological Service – EROS Data Center, <http://edcdaac.usgs.gov/gtopo30/hydro/>.

Vörösmarty, et al.: Vörösmarty, C.J., B. Fekete, and B.A. Tucker. 1998. River Discharge Database, Version 1.1 (RivDIS v1.0 supplement). Available through the Institute for the Study of Earth, Oceans, and Space / University of New Hampshire, Durham NH (USA) at <http://pyramid.unh.edu/csdc/hydro/>. Vörösmarty, C.J., B. Fekete, and B.A. Tucker. 1996. River Discharge Database, Version 1.0 (RivDIS v1.0), Volumes 0 through 6. A contribution to IHP-V Theme 1. Technical Documents in Hydrology Series. UNESCO, Paris.

WNC: World News Connection, US Central Intelligence Agency.

WRI: World Resources 1998-1999 Database, World Resources Institute, 1998

APPENDIX 8 PRECIPITATION DATA METHODOLOGY³⁷

The Oregon Climate Service provided a dataset of monthly precipitation data derived from the Global Historical Climatology Network (GHCN) data set produced by the National Climatic Data Center (NCDC) in cooperation with the World Meteorological Organization (Vose, Schmoyer et al. 1992). The data was downloaded from NCDC's web site at www.ncdc.noaa.gov.

The first challenge was to fill in data voids, which are particularly problematic in the 1980s and 1990s. Data gaps were filled by computing average deviations from nearby stations and using these averages to estimate missing data. However, in cases where no comparable sites were available, or neighboring data was also missing, data gaps remained. These monthly data voids were filled using monthly averages in order to allow computation of an annual total. Data was then flagged to indicate the reliability of annual precipitation data depending on the number of months that had to be estimated.

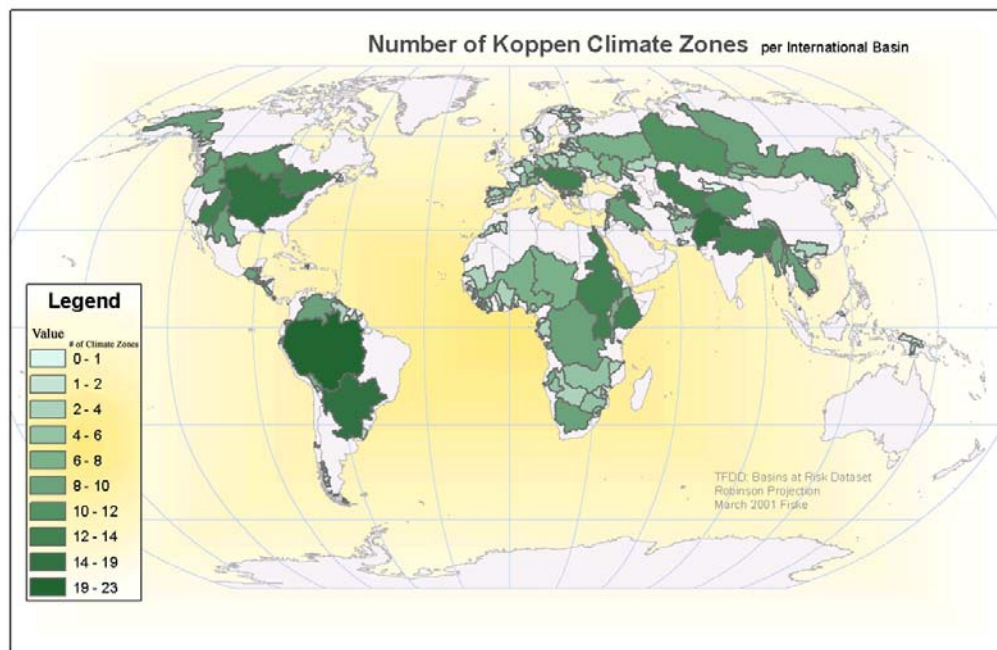
The next challenge was to combine individual station data in order to arrive at some indicator of whether the basin as a whole was above or below average in precipitation for any given year. Averaging the raw data over the basin would be misleading due to variation in climate regimes and sub-basin size. The data were therefore normalized by computing the percent of average for each station and averaging the results. Thus if station A had an average precipitation year, station B was 20% below average and station C 20% above average, the basin precipitation for that year would be average. However, if all stations were above average a wet year is indicated for the basin and if all stations are below average a dry year is indicated.

This enables the display of a graph showing the number of events or the level of cooperation/conflict in a basin each year compared to that basin's relative wetness or dryness.

³⁷ Jeanne Hoadley provided this methodological information, which describes her preparation of the precipitation data so that it could be used in statistical analyses.

APPENDIX 9 DERIVATION OF CLIMATE ZONES BY BASIN

A9.1 Number of Climate Zones Per Basin



A GIS NOTE REGARDING THE CLIMATE ZONE MAPS

It proved difficult to find a publicly available digitized map of the world's climate zones. BAR obtained its Koeppen climate classification map from FAO. A number of transformations were required to put the image into a GIS process-able format. The original format of the dataset, IDA, would not import into ESRI ArcInfo or ArcView, the GIS software used for the BAR project. While a program called WINDISP 5.0 claimed to export the dataset as an ArcView shapefile, the dataset would not export successfully. BAR imported the file into Adobe Photoshop and converted it from an IDA to a RAW datafile (binary format). IDRISI imaging software was used to give the datafile correct boundary coordinates and solve the projection problem. The file was then transferred to ERDAS Imagine software and saved as an image file that would be compatible with ArcInfo. Once in ArcInfo, the image was converted into a spatially analyzable grid file.

APPENDIX 10 CODES AND REGIONAL GROUPINGS

Table A10.1 Basin Codes

BCODE	BASIN NAME	BCODE	BASIN NAME
AKPA	Akpa	MASS	Massacre
ALSK	Alsek	MAXX	Ma
AMCR	Amacuro	MBEX	Mbe
AMUR	Amur	MDJD	Medjerda
AMZN	Amazon	MEKO	Mekong
ANAK	An Nahr Al Kabir	MINO	Mino
ARAL	Aral Sea (internal drainage)	MIRA	Mira
ASIX	Asi (Orontes)	MISS	Mississippi
ATBN	Artibonite	MIUS	Mius
ATCY	Astara Chay	MOAX	Moa
ATRK	Atrak	MONO	Mono
ATUI	Atui	MOTQ	Motaqua
AVLS	Aviles	MPUT	Maputo
AWSH	Awash	MRGB	Murgab
AYSN	Aysen	MRNI	Maroni
BAKR	Baker	MRSA	Maritsa
BANN	Bann	MTJE	Mataje
BDSO	Bidasoa	NAAT	Naatamo
BENT	Benito/Ntem	NEGR	Negro
BIAX	Bia	NELS	Nelson-Saskatchewan
BLUN	Beilun	NGER	Niger
BLZE	Belize	NHRK	Nahr El Kebir
BNGU	Bangau	NILE	Nile
BRKA	Baraka	NMAN	Neman
BRMA	Barima	NRTV	Neretva
BRTA	Barta	NRVA	Narva
BUZI	Buzi	NSTO	Nestos
CAXX	Ca (Song-Koi)	NYGA	Nyanga
CDLR	Candelaria	OBXX	Ob
CGNL	Changuinola	ODBN	Oued Bon Naima

Table A10.1 Basin Codes (cont.)

BCODE	BASIN NAME	BCODE	BASIN NAME
CHIC	Chico (Carmen Silva)	ODER	Oder (Odra)
CHIR	Chira	OGOO	Ogooue
CHLT	Choluteca	OKVG	Okavango
CHRQ	Chiriqui	OLNG	Olanga
CHUY	Chuy	ORAL	Oral (Ural)
CLDO	Colorado	ORAN	Orange
CLKT	Chilkat	ORIN	Orinoco
CLMB	Columbia	OUEM	Oueme
CLNG	Chiloango	OULU	Oulu
CNCS	Cancoso (Lauca)	OYPK	Oyupock (Oiapoque)
CNGO	Congo/Zaire	PAZX	Paz
COCO	Coco (Segovia)	PDNL	Pedernales
COMA	Comau	PKCN	Pakchan
CRBL	Corubal	PLNA	Palena
CROS	Cross	PNDR	Pandaruan
CRTY	Courantyne (Corantijn)	POXX	Po
CRUH	Coruh	PRLN	Prohladnaja
CSTL	Castletown	PRNU	Parnu
CSTO	Cestos	PSCU	Pascua
CTAT	Coatan Achute	PSVK	Pasvik
CTTB	Catatumbo	PTIA	Patia
CULL	Cullen	PUEL	Puelo
CVLY	Cavally	PULT	Pu-Lun-T'o
DANU	Danube	RDKH	Rudkhaneh-ye (BahuKalat)
DAUR	Daoura	REDX	Red (Song Hong)
DNPR	Dnieper	REZV	Rezvaya
DNSR	Dniester	RGNA	Rio Grande (North America)
DONX	Don	RGSA	Rio Grande (South America)
DRAX	Dra	RHIN	Rhine
DRIN	Drin	RHON	Rhone
DSHT	Dasht	ROIA	Roia
DUGV	Daugava	RVMA	Ruvuma
DURO	Douro (Duero)	SABI	Sabi
EBRO	Ebro	SAIG	Saigon
ELBE	Elbe	SALC	Salaca

Table A10.1 Basin Codes (cont.)

BCODE	BASIN NAME	BCODE	BASIN NAME
ELNK	Elancik	SALW	Salween
ERNE	Erne	SAMR	Samur
ESQB	Essequibo	SASS	Sassandra
ETOS	Etosha/Cuvelai	SCRO	St. Croix
FANE	Fane	SEIN	Seine
FLRY	Flurry	SENG	Senegal
FLYX	Fly	SENO	Seno Union (Serrano)
FNNY	Fenney	SEPK	Sepik
FOYL	Foyle	SHLD	Schelde
FRSR	Fraser	SIOL	Sixaola
FRTH	Firth	SJAF	St. John (Africa)
GALG	Gallegos-Chico	SJNA	St. John (North America)
GAMB	Gambia	SJUA	San Juan
GANG	Ganges-Brahmaputra-Meghna	SKAG	Skagit
GASH	Gash	SLAW	St. Lawrence
GEBA	Geba	SMAR	San Martin
GJLV	Grijalva	SMBK	Sembakung
GLAM	Glama	SPAU	St. Paul
GLOK	Golok	SRTA	Sarata
GOSR	Goascoran	SRTU	Sarstun
GRON	Garonne	STKN	Stikine
GSCR	Great Scarcies	STUM	Struma
GUDN	Guadiana	SUCT	Suchiate
GUIR	Guir	SUJF	Sujfun
GUJA	Gauja	SULK	Sulak
HANX	Han	SVCD	Song Vam Co Dong
HARI	Hari (Harirud)	TAFN	Tafna
HLMD	Helmand	TAGU	Tagus (Tejo)
HOND	Hondo	TAKU	Taku
HRUN	Har Us Nur	TAMI	Tami
HSIX	Hsi (Bei Jiang)	TANA	Tana
ICMT	Incomati	TANO	Tano
ILIX	Ili (Kunes He)	TERK	Terek
INDU	Indus	TIBN	Tiban
IRWD	Irrawaddy	TIGR	Tigris-Euphrates (Shatt al Arab)

Table A10.1 Basin Codes (cont.)

BCODE	BASIN NAME	BCODE	BASIN NAME
ISNZ	Isonzo	TIJU	Tijuana
JCBS	Jacobs	TJWA	Tjeroaka Wanggoe
JORD	Jordan	TORN	Torne (Tornealven)
JUBA	Juba-Shibeli	TRIM	Tarim
JURD	Jurado	TULM	Tuloma
KALD	Kaladan	TUMB	Tumbes-Poyango
KEMI	Kemi	TUMN	Tumen
KGNK	Kogilnik	UBLZ	Umbeluzi
KMOE	Komoe	UMBA	Umba
KNFL	Karnaphuli	UTBN	Utamboni
KOWL	Kowl-E-Namaksar	VDVA	Valdivia
KRKA	Krka	VENT	Venta
KRLV	Klaralven	VJSE	Vijose
KUNE	Kunene	VLKA	Velaka
KURA	Kura-Araks	VOLG	Volga
LAVA	Lava (Pregel)	VOLT	Volta
LGPS	Lotagipi Swamp	VRDR	Vardar
LIMA	Lima	VSTL	Vistula (Wista)
LKCH	Lake Chad	VUKS	Vuoksa
LKFN	Lake Fagnano	WADI	Wadi Al Izziyah
LKNT	Lake Natron	WESR	Weser
LKPP	Lake Prespa	WHIT	Whiting
LKTC	Lake Titicaca-Poopo System	WIED	Wiedau
LKTK	Lake Turkana	XXXX	None
LKUN	Lake Ubsa-Nur	YALU	Yalu
LLUP	Lielupe	YAQU	Yaqui
LMPA	Lempa	YELC	Yelcho
LMPO	Limpopo	YNSY	Yenisey (Jenisej)
LMRM	Lagoon Mirim	YSER	Yser
LOFF	Loffa	YUKN	Yukon
LPTA	La Plata	ZAMB	Zambezi
LSCR	Little Scarcies	ZAPL	Zapaleri
MANA	Mana-Morro	ZARM	Zarumilla

Table A10.2 Country Codes

CCODE	COUNTRY/ENTITY NAME	CCODE	COUNTRY/ENTITY NAME
ABW	Aruba	MAR	Morocco
AFG	Afghanistan	MCO	Monaco
AGO	Angola	MDA	Moldova
AIA	Anguilla	MDG	Madagascar
ALB	Albania	MDV	Maldives
AND	Andorra	MEX	Mexico
ANT	Netherlands Antilles	MGL	any multi-lateral group
ARE	United Arab Emirates	MHL	Marshall Islands
ARG	Argentina	MKD	Macedonia
ARL	Arab League	MLI	Mali
ARM	Armenia	MLT	Malta
ASM	American Samoa	MMR	Myanmar (Burma)
ATA	Antarctica	MNC	Multinational Corporations
ATF	French Southern & Antarctic Lands	MNG	Mongolia
ATG	Antigua and Barbuda	MNP	Northern Mariana Islands
AUS	Australia	MOZ	Mozambique
AUT	Austria	MRT	Mauritania
AZE	Azerbaijan	MSR	Montserrat
BDI	Burundi	MTQ	Martinique
BEL	Belgium	MUS	Mauritius
BEN	Benin	MWI	Malawi
BFA	Burkina Faso	MYS	Malaysia
BGD	Bangladesh	MYT	Mayotte
BGR	Bulgaria	NAM	Namibia
BHS	Bahamas, The	NCL	New Caledonia
BIH	Bosnia and Herzegovina	NER	Niger
BLR	Byelarus	NFK	Norfolk Island
BLX	Belgium/Luxemborg	NGA	Nigeria
BLZ	Belize	NIC	Nicaragua
BMU	Bermuda	NIU	Niue
BOL	Bolivia	NIV	Nive
BRA	Brazil	NLD	Netherlands
BRB	Barbados	NOR	Norway

Table A10.2 Country Codes (cont.)

CCODE	COUNTRY/ENTITY NAME	CCODE	COUNTRY/ENTITY NAME
BRN	Brunei	NPL	Nepal
BTN	Bhutan	NRU	Nauru
BWA	Botswana	NSC	Not Stated/Unidentified
CAF	Central African Republic	NZL	New Zealand
CAN	Canada	OAS	Organization of American States
CCK	Cocos (Keeling) Islands	OMN	Oman
CHE	Switzerland	OPC	Organization Petroleum Exporting Countries
CHL	Chile	PAK	Pakistan
CHN	China	PAL	West Bank and Gaza
CIV	Ivory Coast	PAN	Panama
CMR	Cameroon	PCN	Pitcairn Islands
COG	Congo, Republic of the (Brazzaville)	PER	Peru
COK	Cook Islands	PHL	Philippines
COL	Colombia	PLW	Pacific Islands (Palau)
COM	Comoros	PNG	Papua New Guinea
CRI	Costa Rica	POL	Poland
CUB	Cuba	PRI	Puerto Rico
CXR	Christmas Island	PRK	Korea, Democratic People's Rep. of (North)
CYM	Cayman Islands	PRT	Portugal
CYP	Cyprus	PRY	Paraguay
CZE	Czech Republic	PYF	French Polynesia
CZS	Czechoslovakia	QAT	Qatar
DEN	Denmark	REU	Glorioso, Juan de Nova, Reunion Islands
DEU	Germany	ROK	Korea, Republic of (South)
DJI	Djibouti	ROM	Romania
DMA	Dominica	RUS	Russia
DOM	Dominican Republic	RVN	Vietnam, Rep. of (South Vietnam)
DRV	Vietnam, Dem. Rep. (North Vietnam)	RWA	Rwanda
DZA	Algeria	SAK	Sudan Admini. By Kenya
ECU	Ecuador	SAU	Saudi Arabia
EGS	Egypt, Administered by Sudan	SDN	Sudan

Table A10.2 Country Codes (cont.)

CCODE	COUNTRY/ENTITY NAME	CCODE	COUNTRY/ENTITY NAME
EGY	Egypt	SEN	Senegal
ERI	Eritrea	SEO	S.E Asian Treaty Organization
ESH	Western Sahara	SGB	Senegambia
ESP	Spain	SGS	South Georgia and the South Sandwich Is
EST	Estonia	SHN	St. Helena
ETH	Ethiopia	SJM	Jan Mayer, Svalbard
FIN	Finland	SJM	Svalbard and Jan Mayen
FJI	Fiji	SLB	Solomon Islands
FLK	Falkland Islands (Islas Malvinas)	SLE	Sierra Leone
FRA	France	SLV	El Salvador
FRO	Faroe Islands	SMR	San Marino
FSM	Federated States of Micronesia	SNG	Singapore
GAB	Gabon	SOM	Somalia
GBR	United Kingdom	SPM	St. Pierre and Miquelon
GDR	German Dem. Rep.(East Germany)	STP	Sao Tome and Principe
GEO	Georgia	SUE	Sudan, Administered by Egypt
GFR	German Fed. Rep. (West Germany)	SUK	Sudan, Administered by Kenya
GHA	Ghana	SUR	Suriname
GIB	Gibraltar	SVK	Slovakia
GIN	Guinea	SVN	Slovenia
GLP	Guadeloupe	SWE	Sweden
GMB	Gambia, The	SWZ	Swaziland
GNB	Guinea-Bissau	SYC	Seychelles
GNQ	Equatorial Guinea	SYR	Syria
GRC	Greece	TCA	Turks and Caicos Islands
GRD	Grenada	TCD	Chad
GRL	Greenland	TGO	Togo
GTM	Guatemala	THA	Thailand
GUF	French Guiana	TJK	Tajikistan
GUM	Guam	TKL	Tokelau
GUY	Guyana	TKM	Turkmenistan
HKG	Hong Kong	TON	Tonga
HMD	Heard Island & McDonald Islands	TTO	Trinidad and Tobago

Table A10.2 Country Codes (cont.)

CCODE	COUNTRY/ENTITY NAME	CCODE	COUNTRY/ENTITY NAME
HND	Honduras	TUN	Tunisia
HRV	Croatia	TUR	Turkey
HTI	Haiti	TUV	Tuvalu
HUN	Hungary	TWN	Taiwan
IBK	World Bank and IMF	TZA	Tanzania, United Republic of
IDB	Inter-American Development Bank	UGA	Uganda
IDN	Indonesia	UKR	Ukraine
IGO	International Government Organization	UMI	Baker Island
IND	India	UMI	Howland, Johnston Atoll, Midway, Wake Islands
IOT	British Indian Ocean Territory	UNO	United Nations
IRL	Ireland	URY	Uruguay
IRN	Iran	USA	United States
IRQ	Iraq	USR	Soviet Union
ISL	Iceland	UZB	Uzbekistan
ISR	Israel	VCT	St. Vincent and the Grenadines
ISR	West Bank	VEN	Venezuela
ITA	Italy	VGB	British Virgin Islands
JAM	Jamaica	VIR	Virgin Islands
JOR	Jordan	VNM	Vietnam
JPN	Japan	VUT	Vanuatu
KAS	Kashmir (occupied by India, rest is in Pakistan)	WBE	West Berlin (FRG)
KAZ	Kazakhstan	WLF	Wallis and Futuna
KEN	Kenya	WSM	Western Samoa
KGZ	Kyrgyzstan	XB	Occupied by Israel
KHM	Cambodia (Kampuchea)	XG	Chinese Control Claimed by India
KIR	Kiribati	XGK	Guernsey
KNA	St. Kitts and Nevis	XH	Indian Control Claimed by China
KWT	Kuwait	XI	Indian Control Claimed by China
LAO	Laos, People's Democratic Republic of	XIM	Man, Isle of
LBN	Lebanon	XJE	Jersey
LBR	Liberia	XL	India, Claimed by China
LBY	Libya	XPF	Paracel Islands

Table A10.2 Country Codes (cont.)

CCODE	COUNTRY/ENTITY NAME	CCODE	COUNTRY/ENTITY NAME
LCA	St. Lucia	XPG	Spratly Islands
LIE	Liechtenstein	YAR	Yemen Arab Rep. (North Yemen)
LKA	Sri Lanka	YGF	Yugoslavia (Former)
LSO	Lesotho	YPR	Yemen People's Rep. (South Yemen)
LTU	Lithuania	YUG	Yugoslavia (Serbia and Montenegro)
LUX	Luxembourg	ZAF	South Africa
LVA	Latvia	ZAR	Congo, Democratic Republic of (Kinshasa)
LY	Chad, Claimed by Libya	ZMB	Zambia
MAC	Macau	ZWE	Zimbabwe

Basin Regions

The following are the current and historical basins included in each regional grouping.

East Asia (11): TRIM, PULT, AMUR, HRUN, TUMN, HSIX, BLUN, HANX, YALU, SUJF, LKUN.

Eastern Europe (14): DANU, VSTL, ODER, STUM, VRDR, MRSA, LKPP, DRIN, VLKA, NRTV, ISNZ, VJSE, NSTO, KRKA.

Soviet Union/FSU (30): ARAL, KURA, NMAN, DUGV, NRVA, ILIX, DNPR, DNSR, VOLG, SULK, OBXX, BRTA, TULM, OLNG, VENT, MIUS, ORAL, KGNK, TERK, SAMR, SALC, PRLN, PRNU, LAVA, SRTA, YNSY, ELNK, GUJA, LLUP, DONX.

Middle East/North Africa (21): JORD, TIGR, HLMD, HARI, ASIX, MDJD, KOWL, MRGB, CRUH, NHRK, GUIR, TIBN, DRAX, WADI, DAUR, ATRK, ATCY, ANAK, RDKH, REZV, TAFN.

North America (40): HOND, LMPA, CLDO, COCO, SRTU, STKN, NELS, TIJU, CLMB, SJUA, TAKU, CHRQ, CHLT, CGNL, CDLR, SUCT, SKAG, CLKT, SJNA, SIOL, CTAT, SCRO, GOSR, GJLV, MASS, RGNA, FRTH, PAZX, PDNL, FRSR, SLAW, BLZE, NEGR, MOTQ, WHIT, ALSK, YUKN, ATBN, MISS, YAQU.

South America (38): AMZN, LPTA, ZAPL, ESQB, CRTY, MRNI, LKTC, MIRA, OYPK, BRMA, JURD, ORIN, CHIC, CHIR, CHUY, TUMB, PSCU, CNCS, SENO, COMA, CULL, SMAR, CTTB, MTJE, BAKR, LMRM, VDVA, YELC, ZARM, AVLS, AYSN, GALG, RGSA, LKFN, AMCR, PUEL, PTIA, PLNA. *South Asia (5):* INDU, GANG, KNFL, DSHT, FNNY.

Southeast Asia (18): MEKO, IRWD, REDX, SALW, PNDR, GLOK, TJWA, SEPK, SMBK, CAXX, SAIG, FLYX, MAXX, BNGU, KALD, TAMI, SVCD, PKCN.

Sub-Saharan Africa (54): NILE, NGER, CNGO, ZAMB, LKCH, VOLT, LGPS, LKTK, LMPO, KMOE, ORAN, OKVG, OGOO, SENG, UBLZ, SJAF, MPUT, JUBA, RVMA, OUEM, MOAX, CVLY, CLNG, ICMT, BNTD, CSTO, GAMB, GASH, GEBA, AWSH, SABI, ATUI, CROS, NYGA, BIAX, SASS, BRKA, ODBN, AKPA, BUZI, KUNE, MONO, MBEX, LSCR, LOFF, LKNT, ETOS, MANA, GSCR, CRBL, UMBA, SPAU, TANO, UTBN.

Western Europe (34): RHIN, ELBE, POXX, GRON, EBRO, RHON, SEIN, KEMI, TORN, PSVK, SHLD, TANA, FOYL, GUDN, JCBS, TAGU, OULU, CSTL, ROIA, ERNE, GLAM, NAAT, FLRY, WIED, DURO, BDSO, WESR, VUKS, LIMA, KRLV, FANE, YSER, MINO, BANN.

Country Regions

The following are the current and historical countries included in each regional grouping. Only countries riparian to an international basin were considered.

East Asia (4): China, North and South Korea, Mongolia.

Eastern Europe (15): Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Czechoslovakia, German Dem. Rep. (East Germany), Hungary, Macedonia, Poland, Romania, Slovakia, Slovenia, Yugoslavia (Former), Yugoslavia (Serbia and Montenegro).

Former Soviet Union (16): Armenia, Azerbaijan, Byelarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Soviet Union, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

North Africa/Middle East (16): Afghanistan, Algeria, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Morocco, Saudi Arabia, Syria, Tunisia, Turkey, North and South Yemen, Yemen.

North and Central America (13): Belize, Canada, Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, United States.

South Asia (6): Bangladesh (East Pakistan), Bhutan, India, Nepal, Pakistan, Sri Lanka.

South America (13): Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela.

Southeast Asia (11): Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar (Burma), Papua New Guinea, Thailand, North and South Vietnam, Vietnam.

Sub-Saharan Africa (45): Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo (Kinshasa), Republic of the Congo (Brazzaville), Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

Western Europe (21): Andorra, Austria, Belgium, Denmark, Finland, France, West Germany, Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

APPENDIX 11 ACTIVE NATIONALIST MOVEMENTS

Figure A11.1 maps the countries in which there are active nationalist movements. These movements are divided into two categories:

- 1) Armed Self-Determination Conflicts in 2000 (shaded in red), as identified by Dr. Ted R. Gurr's Minorities at Risk Project, University of Maryland Center for International Development and Conflict Management (as of June 2000). These movements are drawn from the Minorities at Risk website at <http://www.bsos.umd.edu/cidcm/mar/autonomy.htm>, and are listed in Table A11.1.
- 2) Unrepresented nations and peoples, shaded in yellow, are drawn from the Unrepresented Nations and Peoples Organisations (UNPO) website. Participation in UNPO is open to all nations and peoples who

are inadequately represented as such at the United Nations and who declare adherence the Organization's Charter. Applicants must show that they constitute a "nation or people" as defined in the Covenant and that the organization applying for membership is representative of that nation or people (UNPO 2001).

Since these principles espouse non-violence, the conflict level associated with many of these movements is lower. These peoples are listed in Table A11.2. UNPO's website is <http://www.unpo.org/>.

A11.1 Map of Countries With Active Nationalist Movements

Countries with Active Nationalist Movements

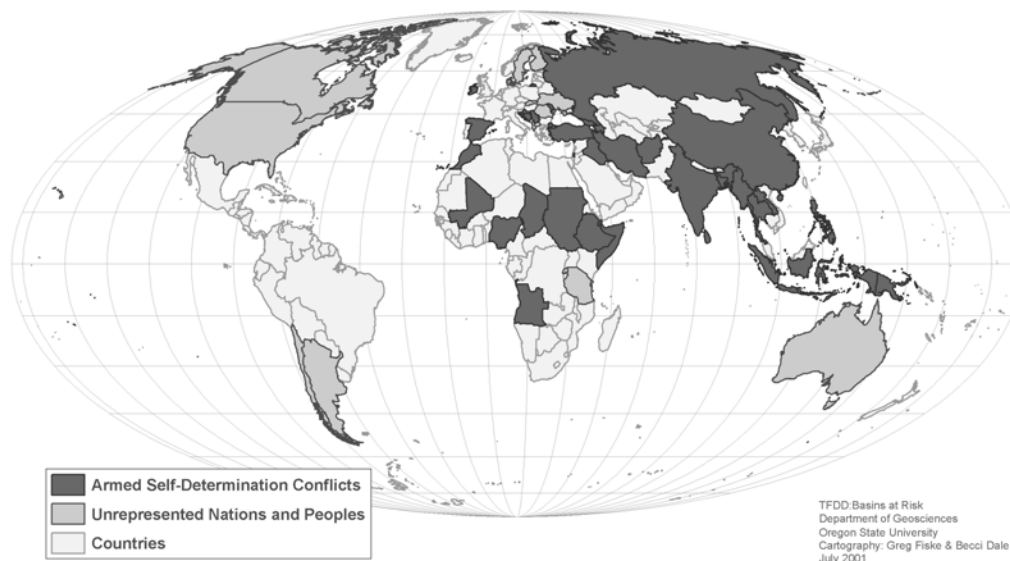


Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
Igorots in the Philippines	1976-93	Conventional mobilization since 1994	Tribal peoples attempt to protect ancestral lands and control economic development in traditional regions.
Kurds in Iran	1979-94	Conventional mobilization since 1996	Armed rebellion suppressed in the mid-1990s; some Kurdish rebels based in northern Iraq.

Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement (cont.)

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
Serbs in Croatia	1991-95	Conventional mobilization since 1996	Moderates victorious in January 2000 federal elections; many Serbs who fled in the early 1990s remain refugees.
Tibetans in China	1959-67	Militant mobilization since 1996	Escalating Chinese repression in Tibet since the mid-1990s; an increasing number of Tibetans favor a violent struggle.
Chin/Zomis in Burma	1985-93	Militant mobilization since 1993	Repression reported in Chin areas; one of the few groups yet to reach a ceasefire with the junta.
Karenni in Burma	1945-present	Low-level hostilities since 1995	Short-lived 1995 ceasefire agreement as the military resumes offensive against the Karenni.
Scheduled Tribes in India	1960-present	Low-level hostilities since 1960	Some tribals waging Marxist insurgency; others utilize conventional means to press for autonomy.
Somalis in Ethiopia	1963-present	Low-level hostilities since 1994	Some factions reject 1994 regional autonomy agreement instead seek independence.
Papuans in Indonesia	1964-96	Low-level hostilities since 1998	Independence campaign -- primarily in the form of protests and riots -- reignites after Suharto's fall and East Timor referendum.
Oromos in Ethiopia	1973-present	Low-level hostilities since 1992	1994 regional autonomy agreement rejected by major Oromo factions who seek an independent Oromia state.
Kurds in Turkey	1984-present	Low-level hostilities since 1999	Arrest and trial of PKK leader Ocalan coupled with severe repression deescalate conflict.
Uighers in China	1990-present	Low-level hostilities since 1990	Widespread Chinese repression since the mid-1990s; Muslim Uighers want separate East Turkestan state.
Cabindans in Angola	1991-present	Low-level hostilities since 1991	Four decade-long independence rebellion continues in the oil-rich enclave of Cabinda.
Muslims in Thailand	1995-98	Low-level hostilities since 2000	Thai military crackdown, along with minor concessions to reduce marginalization of southern Muslims, deflates movement.

Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement (cont.)

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
Karens in Burma	1945-present	High-level hostilities since 1949	New Karen leader offers to hold peace negotiations; Burmese military offensives in recent years seriously weaken Karen movement.
Tajiks in Afghanistan	1979-92 1996-present	High-level hostilities since 1996	UN mediation unsuccessful as civil war against the Taliban regime persists.
Tamils in Sri Lanka	1975-present	High-level hostilities since 1983	Insurgents reject all power-sharing and autonomy proposals.
Acehnese in Indonesia	1977-present	High-level hostilities since 1999	Rebellion resumes in 1999 as the Acehnese demand an independence referendum modeled on East Timor.
Tripuras in India	1967-72 1979-present	High-level hostilities since 1980	Separate state of Tripura created in 1972; tribespeople agitating for own state as influxes of Bengali settlers reduce them to minority status.
Southerners in Sudan	1956-72 1983-present	High-level hostilities since 1983	Rebellion which first began in 1956 resurfaces after the government abrogates a 1972 autonomy agreement and imposes Sharia law.
Nuba in Sudan	1985-present	High-level hostilities since 1985	Ethnic cleansing by government in Nuba areas in central Sudan; Nuba and southerners battle Islamic regime.
Kashmiri Muslims in India	1989-present	High-level hostilities since 1989	Violence escalated in mid-1999 after India-Pakistan border clashes; Kashmiri moderates elected to regional government in 1996.
Assamese in India	1990-present	High-level hostilities since 1990	Rebels continue campaign for independence after 1985 accord does not halt illegal immigration.
Chechens in Russia	1991-present	High-level hostilities since 1999	Resumption of armed conflict in 1999 as Russia launches major crackdown.
Uzbeks in Afghanistan	1996-present	High-level hostilities since 1999	Civil war against Taliban regime continues.
Shan in Burma	1962-present	Talk-fight since 2000	Major rebel faction holds talks with military junta after four-year major suppression campaign in Shan areas. Other rebel groups agreed to a 1996

Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement (cont.)

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
			ceasefire.
Moros in the Philippines	1972-present	Talk-fight since 1997	Former insurgents govern autonomous southern Muslim region; rebels who want an Islamic state continue armed attacks.
Bodos in India	1989-present	Talk-fight since 2000	Limited implementation of 1993 accord that created an autonomous Bodo region within Assam. Ceasefire reached with one major rebel group in March 2000.
Hmong in Laos	1945-79 1985-96	Cessation of open hostilities since 1998	Long-running anti-communist insurgency ended without settlement or serious repression.
Nagas in India	1952-64 1972-96	Cessation of open hostilities since 1997	Ceasefire and autonomy talks with major Naga factions underway since 1997. State of Nagaland created in 1963.
Saharawis in Morocco	1973-95	Cessation of open hostilities since 1991	UN referendum on independence repeatedly postponed by Morocco; referendum scheduled for July 2000.
Afars in Ethiopia	1975-1998	Cessation of open hostilities since 1998	Major factions declare ceasefire, agree to cooperate with government in war against Eritrea.
Kurds in Iraq	1980-92	Cessation of open hostilities since 1997	Autonomous Kurdish region in northern Iraq protected by the West since 1991.
Isaaqs in Somalia	1986-90	Cessation of open hostilities since 1991	De facto regional independence of Somaliland since 1991.
Armenians in Azerbaijan	1988-97	Cessation of open hostilities since 1997	OSCE-led negotiations between Armenia and Azerbaijan continue; de facto autonomy of Nagorno-Karabakh.
Casamancais in Senegal	1991-present	Cessation of open hostilities since 1999	Ceasefire reached in December 1999; talks expected to continue toward a final settlement.
Abkhaz in Georgia	1992-93, 1998	Cessation of open hostilities since 1998	Negotiations continue on the region's political status and the return of Georgian refugees; UN and Russian peacekeepers remain in Abkhazia.
South Ossetians in Georgia	1991-93	Disengagement since 1993	Some agreements reached on economic development and refugee return;

Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement (cont.)

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
			region's political status still subject to negotiations.
Kosovar Albanians in Serbia	1998-99	Disengagement since 1999	UN administration with NATO peacekeepers since 1999; region's final status to be determined.
Basques in Spain	1959-80	Contested agreement reached in 1979	Basque rebels end talks and year-old ceasefire in December 1999; sporadic bombings since reported.
Wa in Burma	1989-present	Contested agreement reached in 1989	Largest Wa group continues to abide by 1989 ceasefire agreement; minor Wa factions engage in sporadic anti-state violence.
Sikhs in India	1978-93	Contested agreement reached in 1992	Insurgency contained by 1993; Punjabi moderates win state elections in 1992 and 1997.
Rohingyas in Burma	1945-85 1991-94	Contested agreement reached in 1994	1995 ceasefire agreement reached with one faction; reports of widespread human rights abuses in Arakan province.
Catholics in Northern Ireland	1969-94	Contested agreement reached in 1998	Implementation of peace agreement stalls in February 2000 after Northern Ireland government is dissolved over dispute on IRA disarmament.
Palestinians in West Bank and Gaza	1968-93	Contested agreement reached in 1994	Partial transfer of West Bank and Gaza to Palestinian control; key issues remaining include the return of Palestinian refugees, the status of Jerusalem and Jewish settlements.
Chittagong Hill Peoples in Bangladesh	1975-96	Contested agreement reached in 1997	Regional council created in tribal areas; former rebels join political process; development plans and withdrawal of soldiers remain key issues.
Trans-Dniester Slavs in Moldova	1991-97	Contested agreement reached in 1997	Regional government opposes 1999 agreement for withdrawal of Russian troops by 2002; status of region still subject to negotiation.
East Timorese in Indonesia	1974-99	Contested agreement reached in 1999	UN-administered territory following 1999 pro-independence referendum and scorched-earth Indonesian withdrawal. Pro-Indonesian militias still active; many refugees remain in West Timor.

Table A11.1 Armed Self-Determination Conflicts in 2000: Mobilization, War, Negotiation, and Settlement (cont.)

GROUP AND COUNTRY	ARMED CONFLICT	CURRENT PHASE	STATUS IN SPRING 2000
Bougainvilleans in Papua New Guinea	1989-98	Contested agreement reached in 2000	Spring 2000 agreement provides greater autonomy along with possible future referendum on independence. Minor rebel faction remains opposed to accord.
Kachins in Burma	1961-94	Uncontested agreement reached in 1994	1994 ceasefire agreement allows Kachins to retain weapons and control some areas; developmental assistance was promised.
Serbs and Croats in Bosnia	1992-95	Uncontested agreement reached in 1995	Creation of confederal Bosnian state; local and national elections held 1996-2000; many refugees remain internally and externally displaced.
Tuaregs in Mali	1990-95	Uncontested agreement reached in 1995	Substantial implementation of peace agreement; rebels disarmed and integrated into army and most refugees returned.
Tuaregs in Niger	1988-97	Uncontested agreement reached in 1995	Disarmament completed and social reintegration of former rebels underway.
Mons in Burma	1975-97	Uncontested agreement reached in 1995	Last rebel faction surrendered in 1997; 1995 ceasefire agreement allows Mons to retain weapons and control some areas; developmental assistance was promised.
Southerners in Chad	1979-86 1992-98	Uncontested agreement reached 1994-97	Agreements allow most factions to become political parties; some rebels integrated in army.
Afars in Djibouti	1991-95	Uncontested agreement reached in 2000	Remaining rebel faction signs autonomy agreement in February 2000; the major faction, which is part of the ruling government, negotiated a settlement in 1995.
Eritreans in Ethiopia	1961-91	Implemented agreement reached in 1993	Independence achieved in 1993 by agreement with postrevolutionary Ethiopian government.
Gaguaz in Moldova	1991-92	Implemented agreement reached in 1994	Autonomous region created in 1995; regional elections held and rebels join armed forces.

Phases in Separatist Conflicts

Phase I. Mobilization

Ia. Conventional mobilization: A communal group pursues autonomy or independence by conventional political means including demonstrations.

Ib. Militant mobilization: A communal group pursues autonomy or independence using disruptive and potentially violent strategies, including threats of violence and declarations of independence.

Phase II. War

Iia. Low-level hostilities. A communal group makes limited, localized, and selective use of disruptive and violent strategies; the regime makes limited and selective use of reactive force. The communal group may simultaneously pursue its objectives by conventional means.

Iib. High-level hostilities. A communal group, or the regime, or both use intense, widespread, and organized armed violence against their opponent.

Phase III. Negotiation

IIIa. Talk-fight. Discussions and negotiations are pursued, or cease-fires are declared, while substantial armed violence continues. Fighting may be done by the principals (for example as a bargaining tactic) or by factions that reject negotiations or the terms of previous settlements.

IIIb. Cessation of open hostilities. Fighting has largely ceased but one or both principals remain prepared to resume armed violence.

IIIc. Disengagement. The principles disengage from open conflict (disarmament, demobilization, end of emergency rule, withdrawal of troops), usually under terms of interim or partial agreements. Some factions may oppose disengagement.

Phase IV. Settlement

IVa. Contested agreement. A final settlement or agreement is accepted by most parties and is being implemented. Some factions actively oppose the agreement.

IVb. Uncontested agreement. A final settlement or agreement is accepted by most parties and is being implemented. There is no open opposition to the agreement.

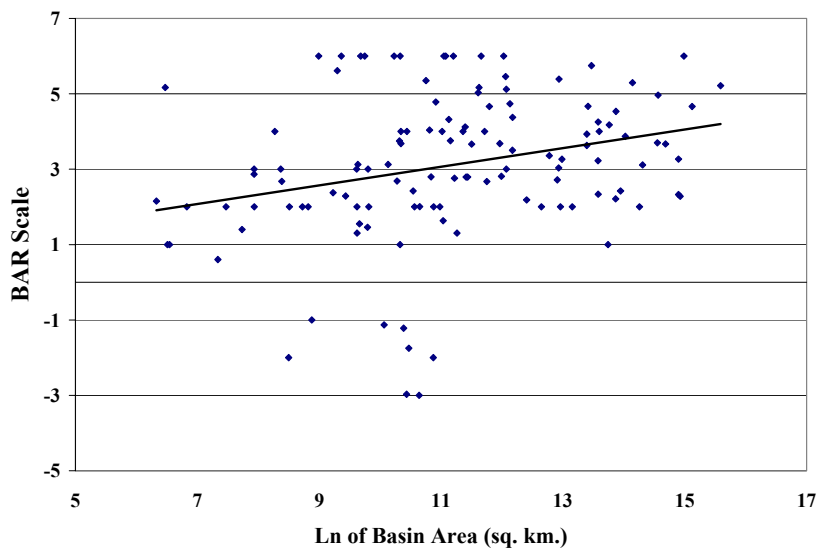
IVc. Implemented agreement. A final settlement or agreement has been fully implemented and open conflict has ended. Also classified here are instances in which a group has gained internationally recognized independence.

Table A11.2 Members of the Unrepresented Nations and Peoples Organisation

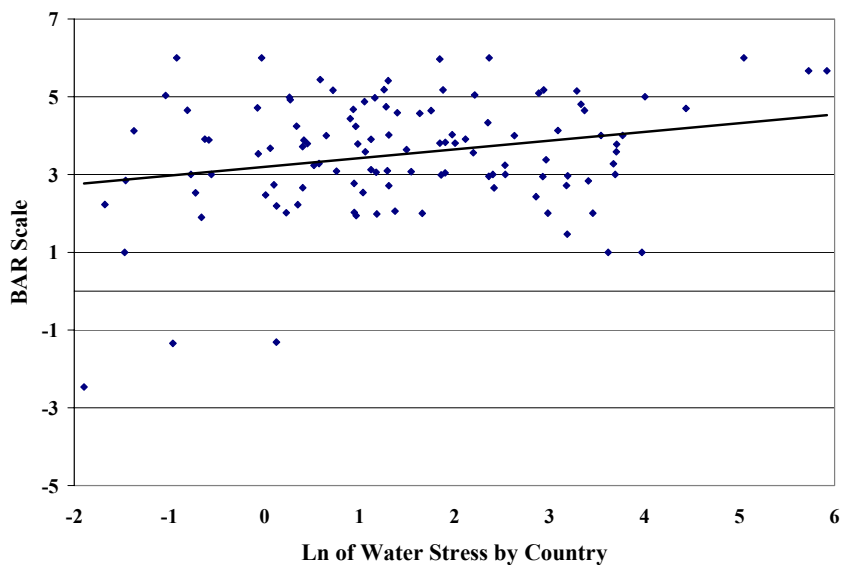
COUNTRY	CODE	PEOPLE/NATION
Angola	AGO	Cabinda
Albania	ALB	Greek Minority in Albania
Argentina	ARG	Mapuche
Australia	AUS	Aboriginals of Australia
Bangladesh	BGD	Chittagong Hill Tracts
Canada		Nuxalk Nation
Chile	CHL	Mapuche
China	CHN	East Turkestan, Tibet
Denmark	DNK	Scania
Finland	FIN	Inkeri
French Polynesia		Maohi People
Georgia	GEO	Abkhazia
Indonesia	IDN	Acheh/Sumatra, East Timor
India	IND	Nagaland
Iraq	IRQ	Assyria, Iraqi Turkoman, Kurdistan (Iraq)
Moldova	MDA	Gagauzia
Macedonia	MKD	Albanians in Macedonia
Myanmar (Burma)	MMR	Karenni State, Mon People, Shan State
Nigeria	NGA	Ogoni
Philippines	PHL	Cordilerra (Phillippines)
Papua New Guinea	PNG	Bougainville, West Papua
Romania	ROM	Hungarian Minority in Romania
Russia	RUS	Bashkortostan, Buryatia, Chechen Republic Ichkeria, Chuvash, Circassia, Ingushetia, Komi, Mari, Sakha Republic (Yakutia), Tatarstan, Tuva, Udmurt
Rwanda	RWA	Batwa (Rwanda)
Serbia	SRB	Kosova, Sanjak
Slovakia	SVK	Rusyn People
Sweden	SWE	Scania
Tanzania	TZA	Zanzibar
Ukraine	UKR	Crimea (Crimean Tatars), Rusyn People
United States	USA	Kalahui Hawaii, Lakota Nation

APPENDIX 12 STATISTICAL GRAPHS

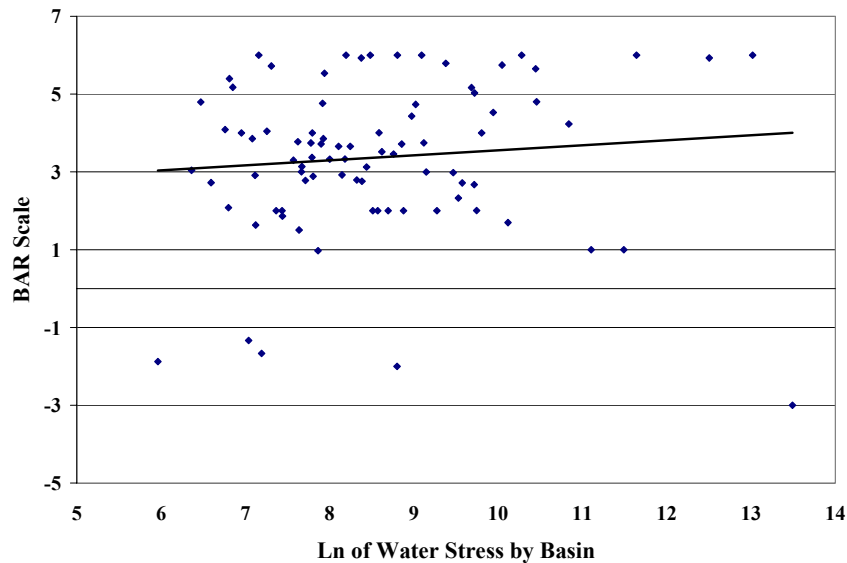
A12.1: Basin Area vs. BAR Scale (n = 122, R-square = 0.03, Coeff. = 3.47, p-value = 0.04)



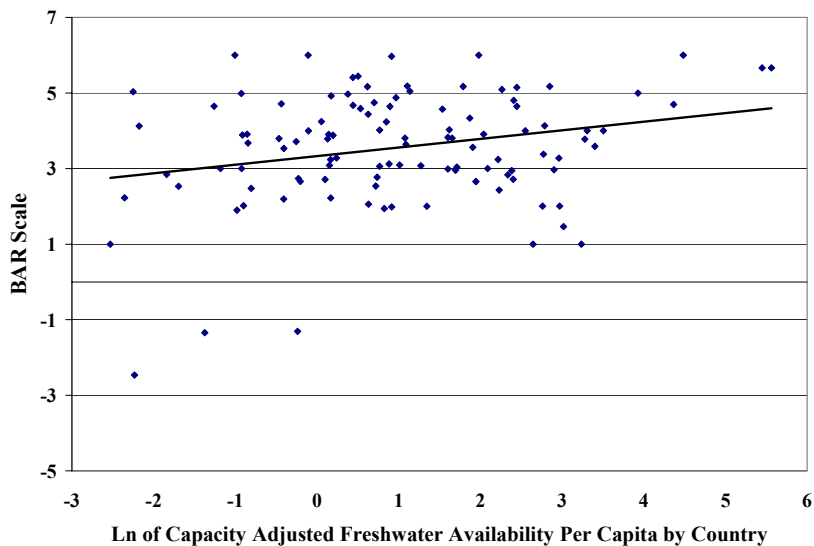
A12.2: Freshwater Availability Per Capita by Country vs. BAR Scale (n = 113, R-square = 0.04, Coeff. = 4.19, p-value = 0.03)



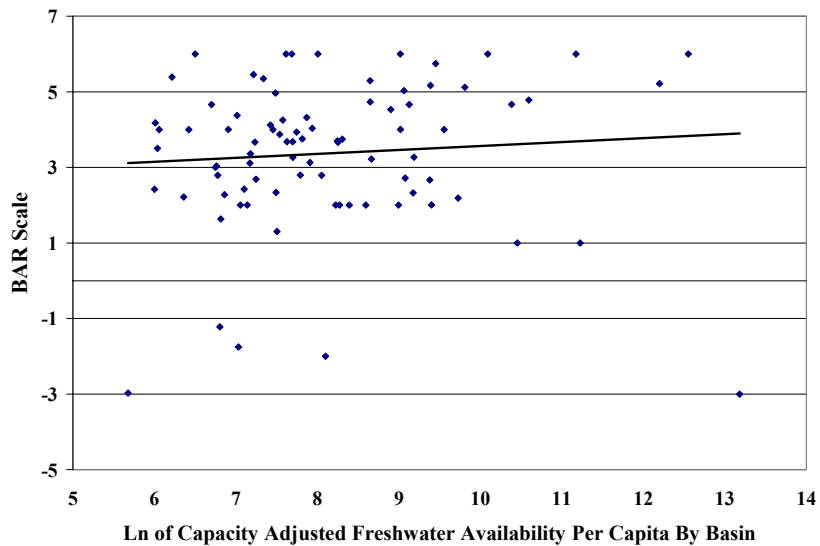
A12.3: Freshwater Availability Per Capita by Basin vs. BAR Scale (n = 86, R-square = 0.01, Coeff. = 6.56, p-value = 0.51)



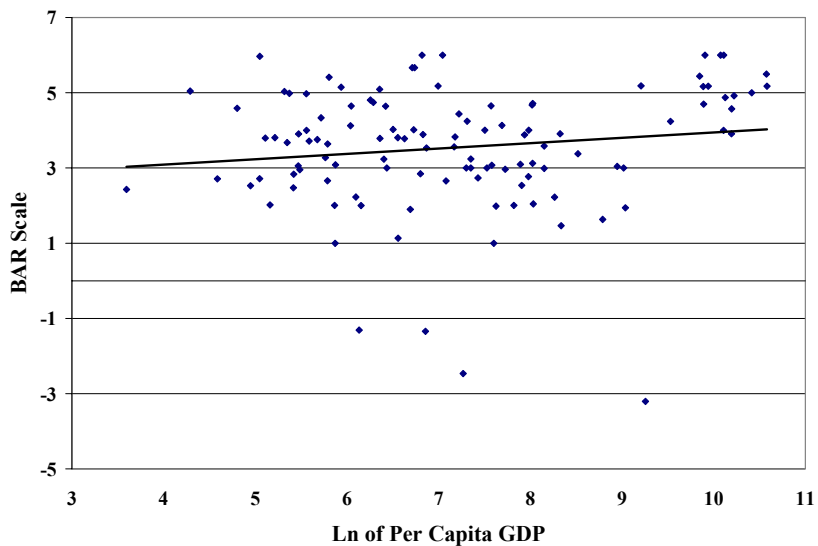
A12.4: Social Water Stress Index (modified) by Country vs. BAR Scale (n = 109, R-square = 0.05, Coeff. = 4.43, p-value = 0.02)



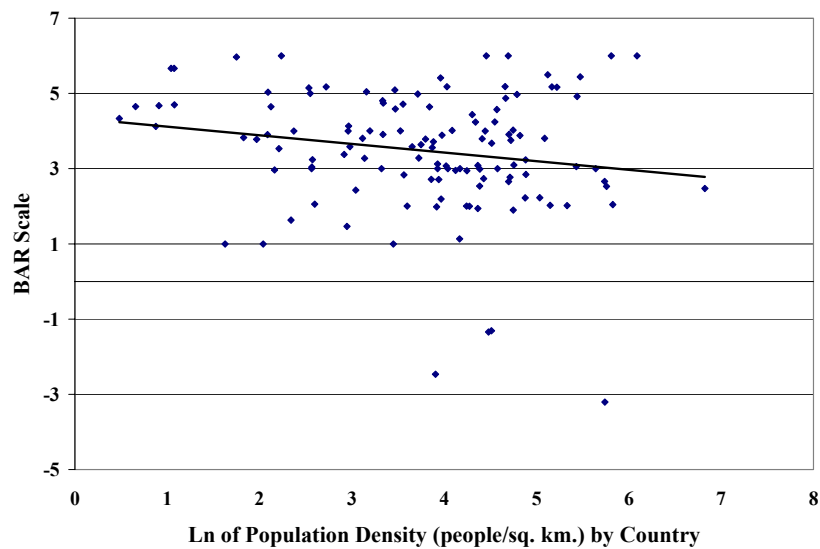
A12.5: Social Water Stress Index (modified) by Basin vs. Bar Scale (n = 85, R-square = 0.04, Coeff. = 5.66, p-value = 0.06)



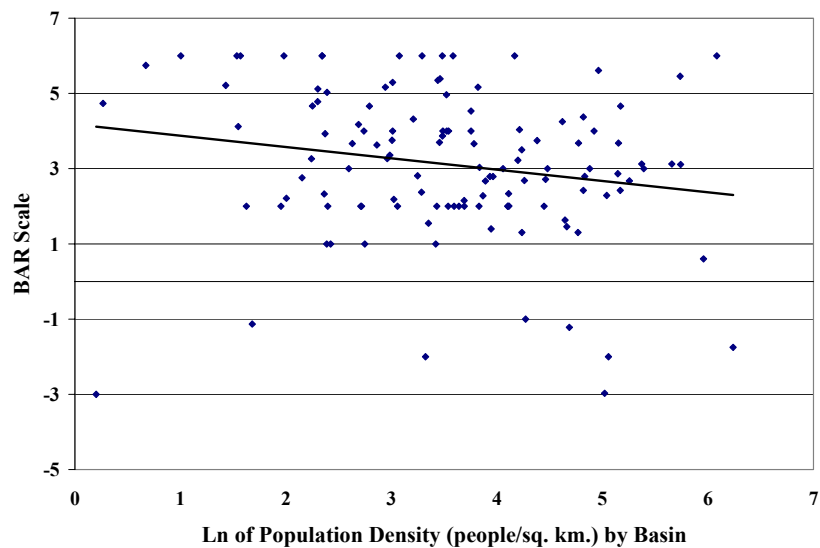
A12.6: Per Capita GDP vs. BAR Scale (n = 114, R-square = 0.05, Coeff. = 5.11, p-value = 0.01)



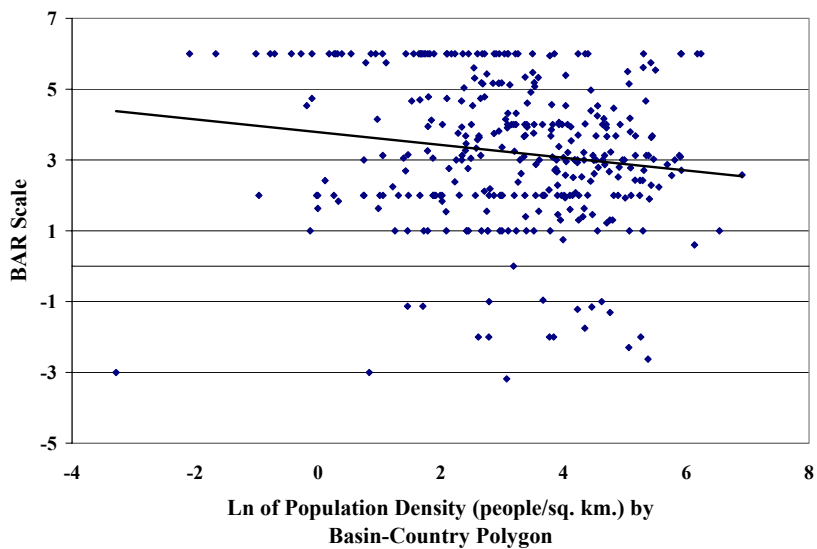
A12.7: Population Density by Country vs. BAR Scale (n = 123, R-square = 0.03, Coeff. = -.02, p-value = 0.04)



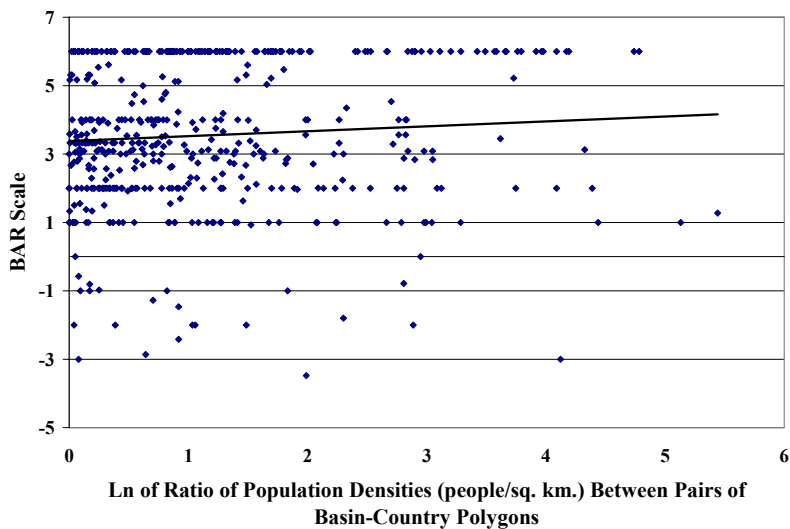
A12.8: Population Density by Basin vs. BAR Scale (n = 121, R-square = 0.04, Coeff. = -0.30, p-value = 0.04)



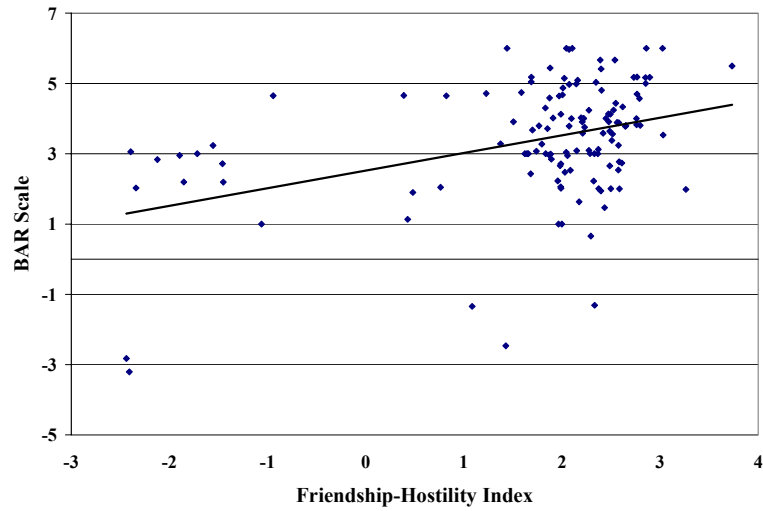
A12.9: Population Density by Basin-Country Polygon vs. BAR Scale (n = 344, R-square = 0.02, Coeff. = -0.19, p-value = 0.00)



A12.10: Ratio of Population Densities of Basin-Country Polygon Pairs vs. BAR Scale (n = 490, R-square = 0.02, Coeff. = 6.70, p-value = 0.00)



A12.11: Friendship/Hostility (excluding water events) by Country-Pair vs. BAR Scale (n = 130, R-square = 0.12, Coeff. = 1.74, p-value = .00)



APPENDIX 13 DATA TABLES IDENTIFYING BASINS AT RISK

Table A13.1 Basins With High Population Density

BASIN	RIPARIAN COUNTRIES	Pop./ Sq. Km.
Han	North Korea, South Korea	512.27
Schelde	Belgium, France, Netherlands	438.87
Nahir el Kebir	Syria, Turkey	387.13
Ganges	India, Bangladesh, China, Bhutan, Myanmar, Nepal	311.16
Rhine	Austria, Belgium, France, Germany, Italy, Liechtenstein, Luxembourg, Netherlands, Switzerland	309.87
Song Vam Co Dong	Cambodia, Vietnam	286.64
Lempa	El Salvador, Guatemala, Honduras	219.55
Saigon	Cambodia, Vietnam	215.26
Tijuana	Mexico, USA	191.58
Elbe	Austria, Czech Republic, Germany, Poland	176.12
Indus	Afghanistan, China, India, [Kashmir], Pakistan	175.69
Red	China, Laos, Vietnam	172.84
Fenney	Bangladesh, India	171.78
Cross	Cameroon, Nigeria	157.07
Karnaphuli	Bangladesh, India	154.45
Jordan	Israel, Jordan, Lebanon, [Palestinians], Syria	151.0
Umbeluzi	Mozambique, South Africa, Swaziland	142.4
Oder	Czech Republic, Germany, Poland, Slovakia	137.9
Zarumilla	Ecuador, Peru	131.5
Yalu	China, North Korea	125.5
Asi	Lebanon, Syria, Turkey	123.86
Vistula	Byelarus, Czech Republic, Poland, Slovakia, Ukraine	123.78
Ca	Laos, Vietnam	118.43
Tagus	Portugal, Spain	117.64
Vardar	Greece, Macedonia, Turkey, Serbia & Montenegro	108.43
Drin	Albania, Macedonia, Serbia & Montenegro	105.86
Dniester	Moldova, Poland, Ukraine	104.17

In terms of per capita GDP, the World Bank defines the lowest income countries as those with a capita GDP of \$765 or less (World Bank Report 1997). Countries with low per capita GDP, 1998 data (WRI 1998), include the following:

Table A13.2 Basins With Low Per Capita GDP

COUNTRY	BASIN	PC GDP
Afghanistan	Aral Sea	n/a
	Hari (Harirud)	
	Helmand	
	Indus	
	Kowl-E-Namaksar	
	Murgab	
Bosnia and Herzegovina	Danube	n/a
	Krka	
	Neretva	
Burma	Ganges	n/a
	Irrawaddy	
	Kaladan	
	Mekong	
	Pakchan	
	Salween	
Eritrea	Baraka	n/a
	Gash	
	Nile	
Iran	Astara Chay	n/a
	Atrak	
	Dasht	
	Hari (Harirud)	
	Helmand	
	Kowl-E-Namaksar	
	Kura-Araks	
	Rudkhaneh-ye (BahuKalat)	
	Tigris & Euphrates	
	Tigris & Euphrates	
Iraq	Amur	n/a
	Han	
	Tumen	
	Yalu	
Liberia	Cavally	n/a

COUNTRY	BASIN	PC GDP
	Cestos	
	Loffa	
	Mana-Morro	
	Moa	
	St. John (Africa)	
	St. Paul	
Somalia	Awash	n/a
	Juba-Shibeli	
Sudan	Baraka	n/a
	Gash	
	Lake Chad	
	Lake Turkana	
	Lotagipi Swamp	
	Nile	
Congo (Kinshasa)	Chiloango	36.44
	Congo/Zaire	
	Nile	
	Zambezi	

Table A13.2 Basins With Low Per Capita GDP (cont.)

COUNTRY	BASIN	PC GDP
Mozambique	Buzi	72.90
	Incomati	
	Limpopo	
	Maputo	
	Niger	
	Ruvuma	
	Sabi	
	Umbeluzi	
	Zambezi	
Ethiopia	Awash	98.120
	Gash	
	Juba-Shibeli	
	Lake Turkana	
	Lotagipi Swamp	
	Nile	
Tanzania	Congo/Zaire	121.76
	Lake Natron	
	Nile	
	Ruvuma	
	Umba	
	Zambezi	
Rwanda	Congo/Zaire	140.97
	Nile	
Bhutan	Ganges	155.67
Chad	Lake Chad	155.79
Malawi	Congo/Zaire	165.63
	Ruvuma	
	Zambezi	
Burundi	Congo/Zaire	174.32
	Nile	
Nepal	Ganges	183.86
Niger	Lake Chad	204.18
	Niger	
Uganda	Lake Turkana	210.05
	Lotagipi Swamp	

COUNTRY	BASIN	PC GDP
	Nile	
Burkina Faso	Komoe	215.38
	Niger	
	Volta	
Bangladesh	Fenney	225.02
	Ganges	
	Karnaphuli	
Guinea-Bissau	Corubal	225.47
	Geba	
Vietnam	Beilun	237.10
	Ca (Song-Koi)	
	Hsi (Bei Jiang)	
	Ma	
	Mekong	
	Red (Song Hong)	
	Saigon	
	Song Vam Co Dong	
Mali	Komoe	237.98
	Niger	
	Senegal	
	Volta	
Cambodia	Mekong	241.17
	Saigon	
	Song Vam Co Dong	
Nigeria	Akpa	259.13
	Cross	
	Lake Chad	
	Niger	
	Oueme	

Table A13.2 Basins With Low Per Capita GDP (cont.)

COUNTRY	BASIN	PC GDP
Togo	Mono	259.46
	Oueme	
India	Fenney	326.10
	Ganges	
	Indus	
	Irrawaddy	
	Kaladan	
	Karnaphuli	
Tajikistan	Aral Sea	326.83
	Tarim	
Benin	Mono	331.98
	Niger	
	Oueme	
	Volta	
Nicaragua	Choluteca	352.74
	Coco (Segovia)	
	Negro	
	San Juan	
Central African Republic	Congo/Zaire	354.93
	Lake Chad	
Ghana	Bia	355.82
	Komoe	
	Tano	
	Volta	
Zambia	Congo/Zaire	378.89
	Zambezi	
Mauritania	Atui	419.45
	Senegal	
Angola	Chiloango	422.59
	Congo/Zaire	
	Etosha/Cuvela i	
	Kunene	
	Okavango	
	Zambezi	
Pakistan	Dasht	444.62

COUNTRY	BASIN	PC GDP
	Helmand	
	Indus	
	Rudkhaneh-ye (BahuKalat)	
	Tarim	
Azerbaijan	Astara Chay	460.49
	Kura-Araks	
	Samur	
	Sulak	
Georgia	Coruh	470.73
	Kura-Araks	
	Sulak	
	Terek	
Guinea	Cavally	521.07
	Cestos	
	Corubal	
	Gambia	
	Geba	
	Great Scarcies	
	Little Scarcies	
	Loffa	
	Moa	
	Niger	
	Sassandra	
	Senegal	
	St. John (Africa)	
	St. Paul	
Zimbabwe	Buzi	537.36
	Limpopo	
	Okavango	
	Sabi	
	Zambezi	
	Volta	

Table A13.2 Basins With Low Per Capita GDP (cont.)

COUNTRY	BASIN	PC GDP
Kenya	Juba-Shibeli	267.27
	Lake Natron	
	Lake Turkana	
	Lotagipi Swamp	
	Nile	
	Umba	
	Gambia	Gambia
Mongolia	Amur	304.02
	Har Us Nur	
	Lake Ubsa-Nur	
	Pu-Lun-T'o	
	Yenisey (Jenisej)	
Laos	Ca (Song-Koi)	319
	Ma	
	Mekong	
	Red (Song Hong)	
Cameroon	Akpa	576.69
	Benito/Ntem	
	Congo/Zaire	
	Cross	
	Lake Chad	
	Niger	
	Ogooue	
Senegal	Gambia	578
	Geba	
	Senegal	
China	Amur	602.94
	Aral Sea	
	Beilun	
	Ganges	
	Har Us Nur	
	Hsi (Bei Jiang)	

COUNTRY	BASIN	PC GDP
	Ili (Kunes He)	
	Indus	
	Irrawaddy	
	Mekong	
	Ob	
	Pu-Lun-T'o	
	Red (Song Hong)	
	Salween	
	Sujfun	
	Tarim	
	Tumen	
	Yalu	
Ivory Coast	Bia	615.34
	Cavally	
	Cestos	
	Komoe	
	Niger	
	Sassandra	
	St. John (Africa)	
	Tano	
	Volta	
Honduras	Choluteca	623.20
	Coco (Segovia)	
	Goascoran	
	Lempa	
	Motaqua	
	Negro	
Albania	Danube	667.40
	Drin	
	Lake Prespa	
	Vijose	

A third exacerbating influence is the presence of overall hostile relations between dyads sharing a basin. The historically (1948-1994) most conflictive pairs of countries (BAR Scale ≤ -1.0) and the basins they share are:

Table A13.3 Basins With Unfriendly Riparian Relations

COUNTRY	COUNTRY	BASIN	BAR SCALE
Ivory Coast	Guinea	Niger	-10.05
		Sassandra	
		St. John (Africa)	
		Cestos	
Cambodia	Vietnam	Cavally	-5.26
		Song Vam Co Dong	
		Mekong	
Armenia	Azerbaijan	Saigon	-4.54
		Kura-Araks	
		Han	
North Korea	South Korea		-4.21
Laos	Vietnam	Ca (Song-Koi)	-4.17
		Mekong	
		Ma	
		Red (Song Hong)	
China	North Korea	Yalu	-4.10
		Amur	
		Tumen	
Iran	Iraq	Tigris & Euphrates	-3.80
Israel	Syria	Jordan	-3.65
Israel	Lebanon	Wadi Al Izziyah	-3.62
		Jordan	
Israel	Jordan	Jordan	-3.58
Switzerland	Liechtenstein	Rhine	-3.49
Egypt	Israel	Jordan	-3.48
Eritrea	Ethiopia	Nile	-3.45
		Gash	

Table A13.3 Basins With Unfriendly Riparian Relations (cont)

COUNTRY	COUNTRY	BASIN	BAR SCALE
Ethiopia	Somalia	Juba-Shibeli	-3.34
		Awash	
Guinea-Bissau	Senegal	Geba	-3.34
Azerbaijan	Georgia	Kura-Araks	-3.31
		Sulak	
Mozambique	Zimbabwe	Sabi	-3.13
		Limpopo	
		Buzi	
		Zambezi	
Bosnia & Herzegovina	Hungary	Danube	-3.00
Austria	Slovenia	Danube	-3.00
Namibia	South Africa	Orange	-2.85
India	Pakistan	Indus	-2.80
Cambodia	Thailand	Mekong	-2.72
China	India	Irrawaddy	-2.71
		Indus	
		Ganges	
Zambia	Zimbabwe	Zambezi	-2.66
Angola	Namibia	Kunene	-2.39
		Etosha/Cuvelai	
		Zambezi	
		Okavango	
Myanmar (Burma)	Thailand	Salween	-2.37
		Pakchan	
		Mekong	
Iraq	Saudi Arabia	Tigris & Euphrates	-2.26
Syria	Turkey	Asi (Orontes)	-2.15
		Tigris & Euphrates	
		Nahr El Kebir	
Tanzania	Uganda	Nile	-2.11
Libya	Chad	Lake Chad	-2.10
Botswana	Zimbabwe	Limpopo	-2.10
		Okavango	

Table A13.3 Basins With Unfriendly Riparian Relations (cont)

COUNTRY	COUNTRY	BASIN	BAR SCALE
		Zambezi	
Afghanistan	Tajikistan	Aral Sea	-2.07
Mozambique	South Africa	Maputo	-2.04
		Limpopo	
		Umbeluzi	
		Incomati	
Lebanon	Turkey	Asi (Orontes)	-2.00
Dominican Republic	Haiti	Artibonite	-1.88
		Massacre	
		Pedernales	
Angola	Congo (Kinshasa)	Congo/Zaire	-1.86
		Chiloango	
		Zambezi	
Botswana	South Africa	Orange	-1.71
		Limpopo	
Afghanistan	Pakistan	Helmand	-1.55
		Indus	
Latvia	Russia	Daugava	-1.55
		Neman	
		Narva	
Swaziland	South Africa	Umbeluzi	-1.52
		Incomati	
		Maputo	
Algeria	Morocco	Dra	-1.51
		Daoura	
		Oued Bon Naima	
		Guir	
		Tafna	
Bangladesh	Myanmar (Burma)	Ganges	-1.39
Honduras	El Salvador	Goascoran	-1.38
		Lempa	
Georgia	Russia	Terek	-1.38
		Sulak	
Lesotho	South Africa	Orange	-1.32

Table A13.3 Basins With Unfriendly Riparian Relations (cont)

COUNTRY	COUNTRY	BASIN	BAR SCALE
Armenia	Georgia	Kura-Araks	-1.26
Albania	Greece	Vijose	-1.24
		Lake Prespa	
Switzerland	Czech Republic	Danube	-1.19
Bulgaria	Turkey	Maritsa	-1.18
		Rezvaya	
		Velaka	
Greece	Turkey	Maritsa	-1.07
		Vardar	
Kenya	Somalia	Juba-Shibeli	-1.03
Bosnia & Herzegovina	Slovenia	Danube	-1.00
Byelarus	Lithuania	Neman	-1.00
		Daugava	

Table A13.4 Basins Negotiating Current Conflicts (Category 1)

Basin	Riparians
<i>Aral Sea</i>	Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
<i>Jordan</i>	Israel, Jordan, Lebanon, Palestinians, Syria
<i>Nile</i>	Burundi, Congo (Kinshasa), Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda
<i>Tigris-Euphrates</i>	Iran, Iraq, Jordan, Saudi Arabia, Syria, Turkey

Table A13.5 Basins At Risk – Categories 2 and 3

Basin	Riparians	Existing Water Tensions	Development Project(s)	Treaty	Treaty Includes all Riparians	Un-friendly Relations	Low Per Capita GDP	High Population Density	Nationalist Minority Groups	Other
CATEGORY 2										
<i>Asi-Orontes</i>	Lebanon, Syria, Turkey	Y	Y	Y – Syria, Lebanon	N	Y		Y		
<i>Ganges-Brahmaputra-Meghna</i>	Bangladesh, Bhutan, Burma, China, India, Nepal	Y	Y	Y	N – upstream riparians not included	Y	Y	Y	Y	Chittagong Hill peoples
<i>Han</i>	North and South Korea	Y	Y	N		Y	Y	Y		Dam as weapon; food shortages

Table A13.5 Basins At Risk – Categories 2 and 3 (cont.)

Basin	Riparians	Existing Water Tensions	Development Project(s)	Treaty	Treaty Includes all Riparians	Un-friendly Relations	Low Per Capita GDP	High Population Density	Nationalist Minority Groups	Other
<i>Indus</i>	Afghanistan, China, India, Pakistan	N	Y	Y – India, Pakistan	N	Y	Y	Y	Y	Kashmir, internal water pressures
<i>Kune</i>	Angola, Namibia		Y – joint projects	Y – lacks specific water-sharing provisions		Y	Y			Internal protests of proposed joint dam projects by indigenous groups
<i>Lake Chad</i>	Algeria, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria, Sudan	Y		Y	N	Y	Y			Weak treaty - dysfunctional basin commission. Degrading water quality.
<i>Okavango</i>	Angola, Botswana, Namibia, Zimbabwe	Y	Y	Y – treaty lacks specific water-sharing provisions		Y	Y			Protections of Okavango Delta
<i>Mekong</i>	Burma, Cambodia, China, Laos, Thailand, Vietnam		Y	Y	N – upstream riparian not included	Y	Y	Y		

Table A13.5 Basins At Risk – Categories 2 and 3 (cont.)

Basin	Riparians	Existing Water Tensions	Development Project(s)	Treaty	Treaty Includes all Riparians	Un-friendly Relations	Low Per Capita GDP	High Population Density	Nationalist Minority Groups	Other
<i>Senegal</i>	Guinea, Mali, Mauritania, Senegal	Y	Y	N		Y	Y			Communal water clashes along border
<i>Salween</i>	China, Burma, Thailand		Y	N		Y	Y	N		High population density in neighboring basins. Out-of-basin water transfers planned.
CATEGORY 3										
<i>Ca</i>	Laos and Vietnam			N		Y	Y	Y		General technical coop. agreements on irrigation and socio-econ. dev
<i>Chiloango</i>	Angola, Congo (Kinshasa), Congo (Brazzaville)			Y – general SADC protocol		Y – Angola and Congo (Kinshasa)	Y		Y	Cabindan nationalists in Angola; No specific water treaty
<i>Cross</i>	Cameroon, Nigeria			N			Y	Y		deforestation in Nigerian portion of basin
<i>Drin</i>	Albania, Macedonia, Serbia & Montenegro			N			Y	Y	Y	Pollution of Shkoder Lake is issue, discussions proposed.

Table A13.5 Basins At Risk – Categories 2 and 3 (cont.)

Basin	Riparians	Existing Water Tensions	Development Project(s)	Treaty	Treaty Includes all Riparians	Un-friendly Relations	Low Per Capita GDP	High Population Density	Nationalist Minority Groups	Other
<i>Irrawaddy</i>	Burma, China, India			N		Y	Y	Y	possible presence	
<i>Kura-Araks</i>	Armenia, Azerbaijan, Georgia, Iran, Turkey		Y – project status unclear	Y – Iran, USSR	N	Y	Y		Y	Nagorno-Karabakh, Water as weapon
<i>La Plata</i>	Argentina, Bolivia, Brazil, Paraguay, Uruguay	Y	Y	Y – multiple, project-specific treaties	N	N	N	N	N	
<i>Lempa</i>	El Salvador, Guatemala, Honduras			N		Y	Y	Y		
<i>Limpopo</i>	Botswana, Mozambique, South Africa, Zimbabwe			Y	N – except for general SADC protocols	Y	Y			Identified by SADC as requiring basin commission.
<i>Ob</i>	China, Kazakhstan, Russia	Y – internal tensions re. international projects	Y	Y – agreement to discuss border river issues			Y			Development projects under consideration include out-of-basin transfer to Aral. Also, China considering other out-of-basin water transfer.
<i>Song Vam Co Dong</i>	Cambodia, Vietnam		Y	N		Y	Y	Y		Only general water agreement

Table A13.5 Basins At Risk – Categories 2 and 3 (cont.)

Basin	Riparians	Existing Water Tensions	Development Project(s)	Treaty	Treaty Includes all Riparians	Un-friendly Relations	Low Per Capita GDP	High Population Density	Nationalist Minority Groups	Other
<i>Red</i>	China, Laos, Vietnam			N		Y – Laos, Vietnam	Y	Y		Technical coop. agreements between Laos and Vietnam.
<i>Saigon</i>	Cambodia, Vietnam			N		Y	Y	Y		General conservancy coop. agreement
<i>Yalu</i>	China, North Korea			N		Y	Y	Y		Joint China-Korea hydropower projects under discussion since 1980's
<i>Zambezi</i>	Angola, Botswana, Congo (Kinshasa), Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe		Y – unclear if unilateral or not	Y	N – except for general SADC protocols	Y	Y			Existing joint hydro-electricity projects issue of conflict in past (not necessarily water specific conflicts)

These other basins contain factors that would imply the potential for conflict, however other factors, such as overall friendly relations, the presence of freshwater treaties, or indications of ongoing cooperative water discussions made them less likely candidates for potential conflict than the basins listed above. It should be noted that, for many of these basins, the author lacks detailed, qualitative information about the political, socio-economic, or bio-physical conditions unique to that basin. Experts on particular regions may be aware of conditions that would change the listing of basins in this chapter.

Table A13.6 Other Basins Considered

Basin	Riparians	Indicators	Comments
<i>Fenney</i>	India, Bangladesh	Low per capita GDP; High population density	Agreements between India & Bangladesh on sharing waters of common rivers.
<i>Ili</i>	China, Kazakhstan, Kyrgyzstan	Low per capita GDP; Uighers in northwest China, who want separate East Turkestan State	Agreements for joint projects under discussion, diplomatic approaches actively in use.
<i>Incomati</i>	Mozambique, South Africa, Swaziland	Low per capita GDP (Mozambique); Unfriendly relations (South Africa, Swaziland)	Treaty between South Africa and Swaziland. Also SADC protocol signed by all riparians. Mozambique,, the downstream riparian, has complained about. South Africa's use of the water resources, however disputes likely to be solved diplomatically.
<i>Karnaphuli</i>	Bangladesh, India	Low per capita GDP; High population density	Agreements between India & Bangladesh on sharing waters of common rivers.
<i>Niger</i>	Algeria, Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria, Sierra Leone	Development projects planned; Low per capita GDP; Unfriendly relations between Ivory Coast and Guinea;	Treaties, but only from the 1960's. No recent treaties signed. Impact of planned development projects on riparians unclear. Disagreements in past solved through diplomacy.

Table A13.6 Other Basins Considered (cont.)

Basin	Riparians	Indicators	Comments
<i>Orange</i>	Botswana, Lesotho, Namibia, South Africa	Unfriendly relations; Development project planned/underway	Lesotho highlands project, but there is a Treaty between South Africa and Lesotho. Namibia and South Africa have water commission. SADC protocols signed by all riparians. Although South Africa & Botswana sent troops into Lesotho, it is unclear that issue was water-related.
<i>Orinoco-Caroppi</i>	Columbia, Venezuela	Development project planned; No treaty	Existing cooperation on trade of hydroelectricity
<i>Po</i>	Austria, France Italy, Switzerland	High population density; No treaties; Development project(s) planned	Countries have friendly relations and high per capita GDP. Disputes unlikely to escalate into violent conflict.
<i>Tarim</i>	China, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan	Low per capita GDP; High population density; Uighers in northwest China, who want separate East Turkestan State	No treaties, but joint projects under discussion.
<i>Tumen</i>	China, North Korea, Russia	Low per capita GDP; Unfriendly relations	Agreements on border rivers. Agreements on joint economic development of the Tumen basin.
<i>Volta</i>	Benin, Burkina Faso, Ghana, Ivory Coast, Mali, Togo	Development projects planned; Low per capita GDP	Treaty signed recently by all riparians on integrated basin management.