

Prof. Dr. Ulrich Menzel

The Transboundary Freshwater Dispute Database

<http://www.transboundarywaters.orst.edu/database/>

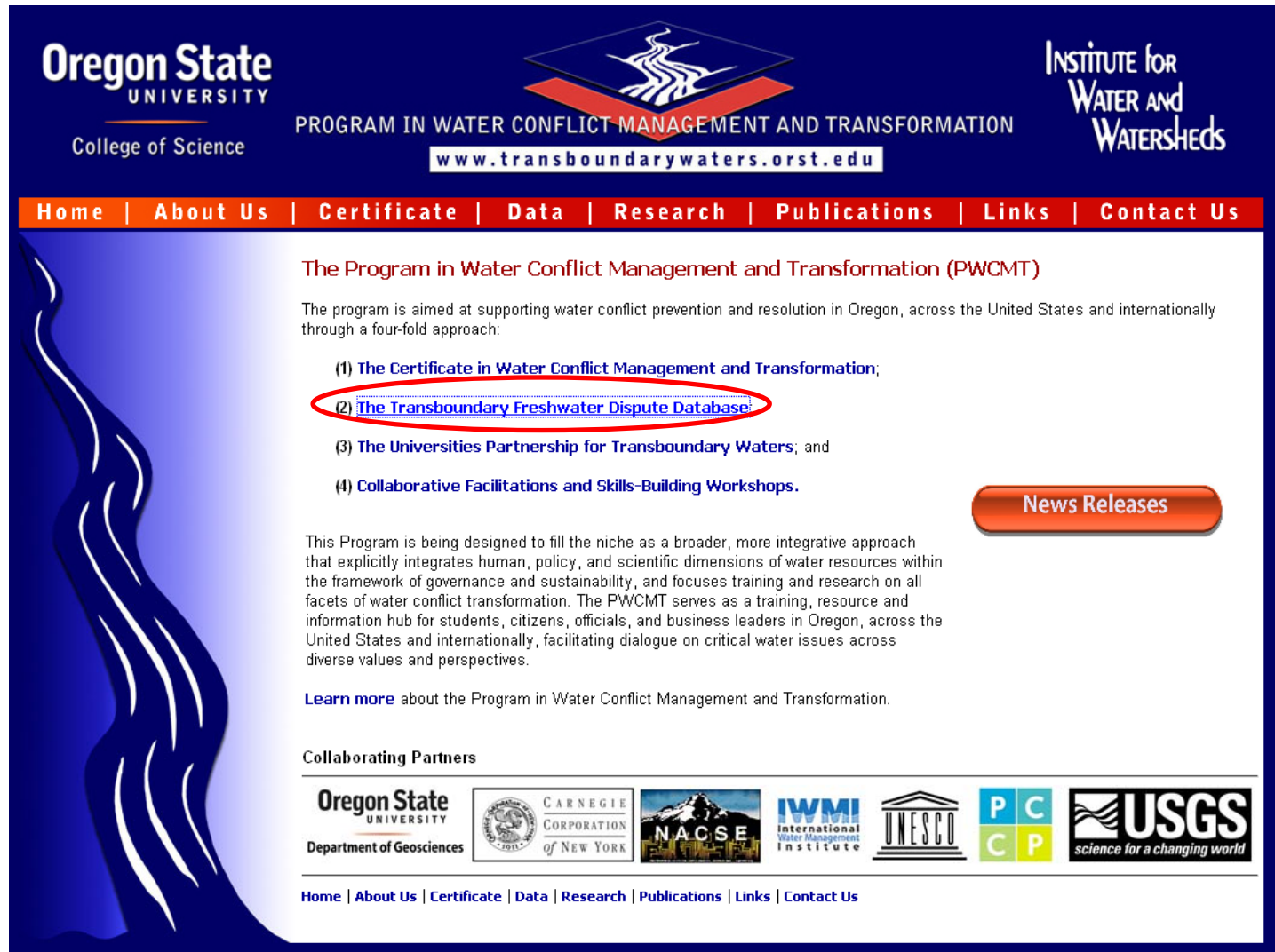
Summer School on Water and International Relations
Sept. 5 - Sept. 15, 2011 – Technical University of Braunschweig

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Oregon State UNIVERSITY
College of Science

PROGRAM IN WATER CONFLICT MANAGEMENT AND TRANSFORMATION
www.transboundarywaters.orst.edu

INSTITUTE FOR WATER AND WATERSHEDS

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The Program in Water Conflict Management and Transformation (PWCMT)

The program is aimed at supporting water conflict prevention and resolution in Oregon, across the United States and internationally through a four-fold approach:

- (1) [The Certificate in Water Conflict Management and Transformation](#);
- (2) [The Transboundary Freshwater Dispute Database](#);
- (3) [The Universities Partnership for Transboundary Waters](#); and
- (4) [Collaborative Facilitations and Skills-Building Workshops](#).


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This Program is being designed to fill the niche as a broader, more integrative approach that explicitly integrates human, policy, and scientific dimensions of water resources within the framework of governance and sustainability, and focuses training and research on all facets of water conflict transformation. The PWCMT serves as a training, resource and information hub for students, citizens, officials, and business leaders in Oregon, across the United States and internationally, facilitating dialogue on critical water issues across diverse values and perspectives.


[Learn more](#) about the Program in Water Conflict Management and Transformation.


Collaborating Partners


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Department of Geosciences


 **CARNEGIE CORPORATION of NEW YORK**

 **NACSE**

 **IWMI International Water Management Institute**

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The TFDD is comprised of six databases

TABULAR

WATER	MIDDLE m e EAST	COLLECTION
the life's work of Dr. Thomas Naff		

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Brief summaries of the processes of conflict resolution for 14 case studies of transboundary dispute resolution are offered here for comparative purposes.

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A searchable database of nearly 450 international, freshwater-related agreements, covering the years 1820 to **2007**.

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Water Conflict and Cooperation Bibliography - Completely new interface!
A searchable database of publications concerning water conflict and cooperation, with a focus on international freshwater resources.

Annotated Bibliographies - Coming soon!
This is a literature resource of references and publications related to national and international river basins.

SPATIAL

Transboundary Freshwater Spatial Database - New Basins and maps added
Biophysical, socioeconomic, and geopolitical data relating to the world's international river basins are accessible and searchable through spatial and tabular formats.

Atlas of International Freshwater Agreements:
Contains an historical overview of international river basin management; a detailed listing of more than 400 international freshwater

The Transboundary Freshwater Dispute Database

The TFDD comprises several datasets regarding transboundary freshwater resources:

- Spatial data of the about **270 international basins** of the world (International River Basin Register & Transboundary Freshwater Spatial Database)
- Full-text database of nearly **450 international, freshwater-related agreements**, covering the years 1820 to 2007 (International Freshwater Treaties Database)
- Dataset of approximately **6400 international water events** (cooperation and conflict) from 1948 to 2008 (International Water Event Database) and rated by the Water Event Intensity Scale
- Case study and bibliographical databases

The Transboundary Freshwater Dispute Database

- Transboundary Freshwater Spatial Database -

Spatial data of the about **270 international basins** in Africa, Asia, Europe, North America, South America (not yet completed)



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- Transboundary Freshwater Spatial Database -



Research Unit:
International Basins

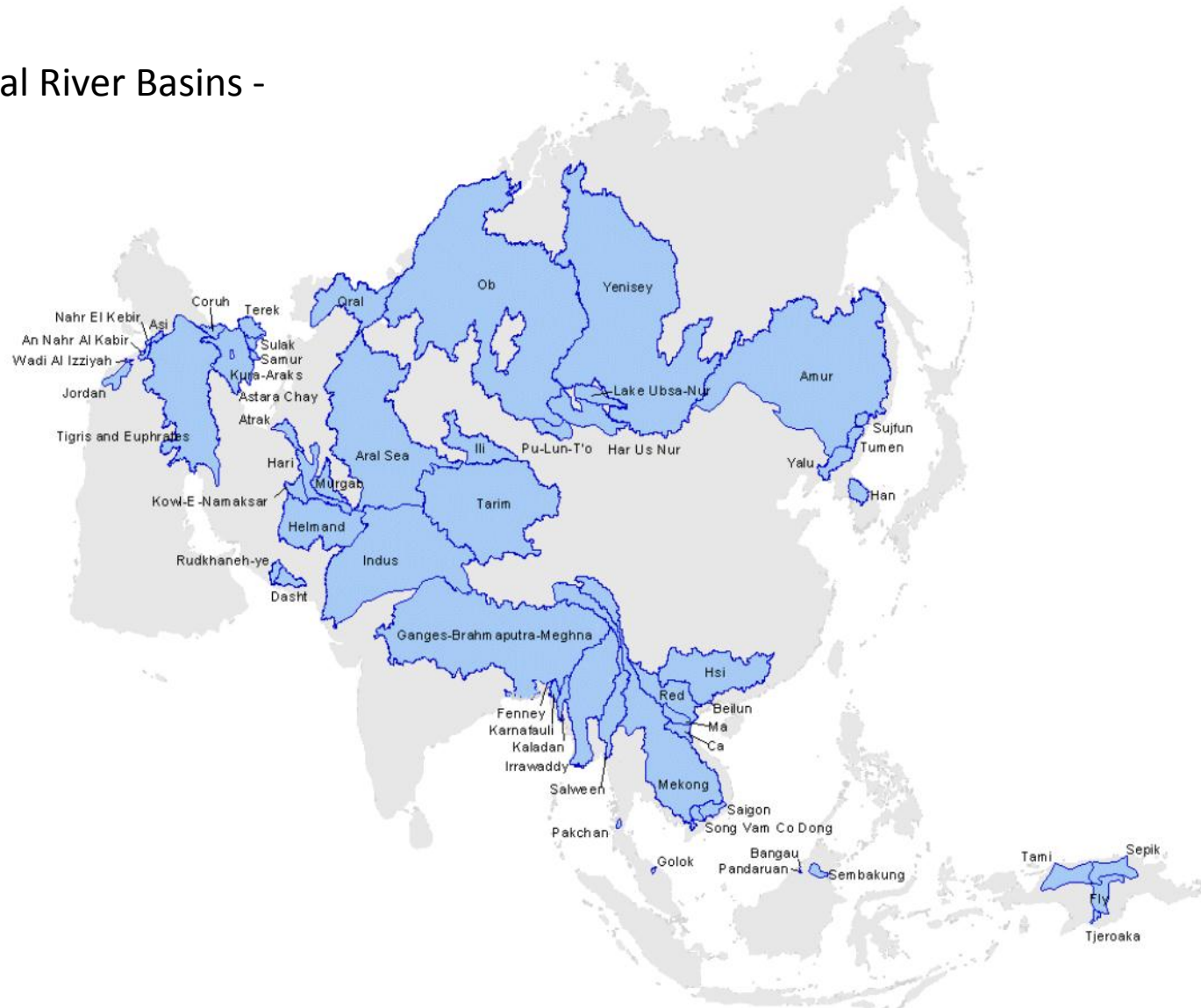
The Transboundary Freshwater Dispute Database

- Africa: International River Basin register -

Basin Name	Total area of basin (sq. km)	Country name	Area of country in basin (sq. km)	Percent area of country in basin (%)
Akpa	4,900	Cameroon	3,000	61.65
		Nigeria	1,900	38.17
Atui	32,600	Mauritania	20,500	62.91
		Western Sahara	11,200	34.24
Awash	154,900	Ethiopia	143,700	92.74
		Djibouti	11,000	7.09
		Somalia	300	0.16
Baraka	66,200	Eritrea	41,500	62.57
		Sudan	24,800	37.43
Benito/ Ntem	45,100	Cameroon	18,900	41.87
		Equatorial Guinea	15,400	34.11
		Gabon	10,800	23.86
Bia	11,100	Ghana	6,400	57.58
		Ivory Coast	4,500	40.28

The Transboundary Freshwater Dispute Database

- International River Basins -



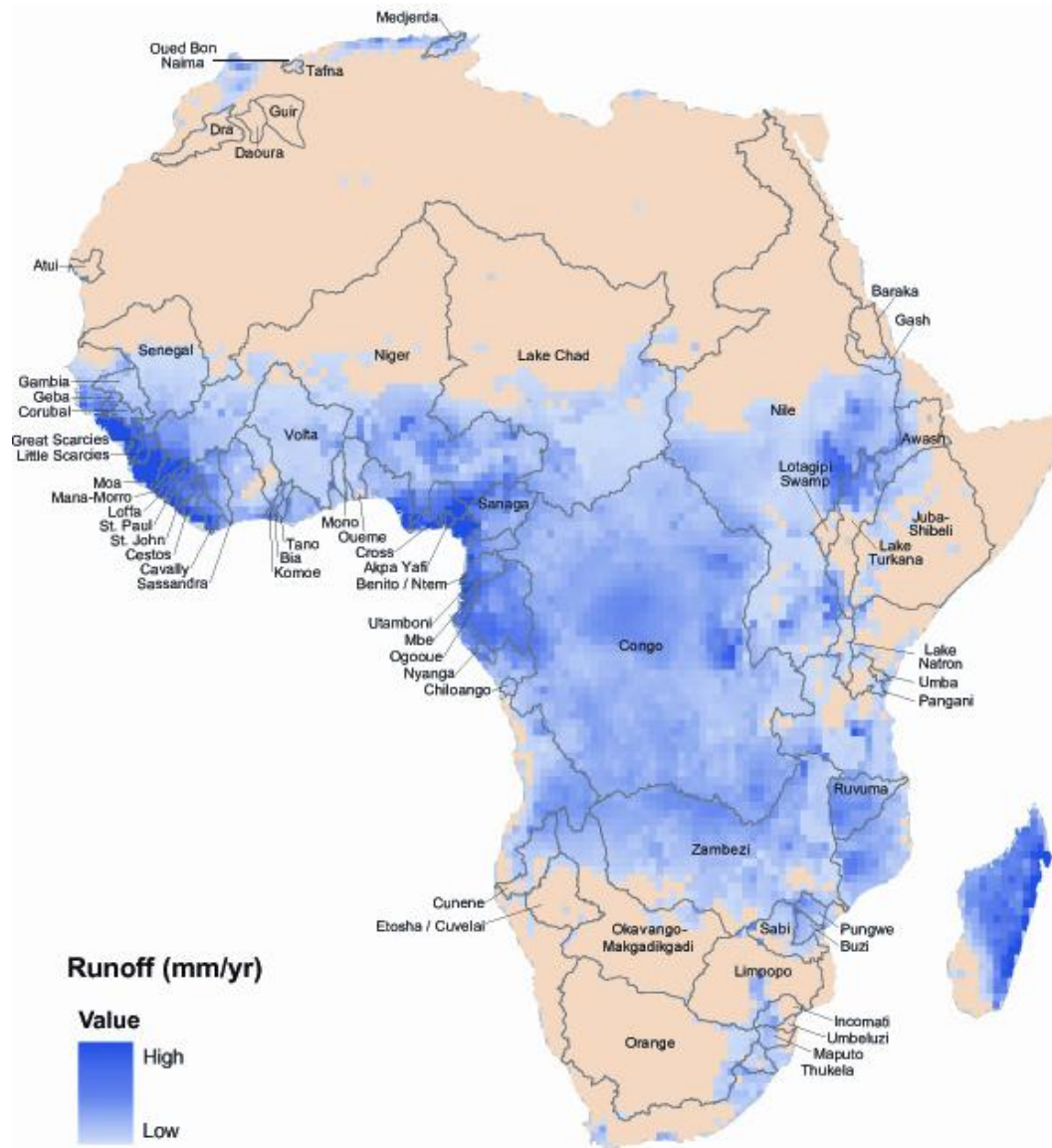
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- International River Basins in South America -



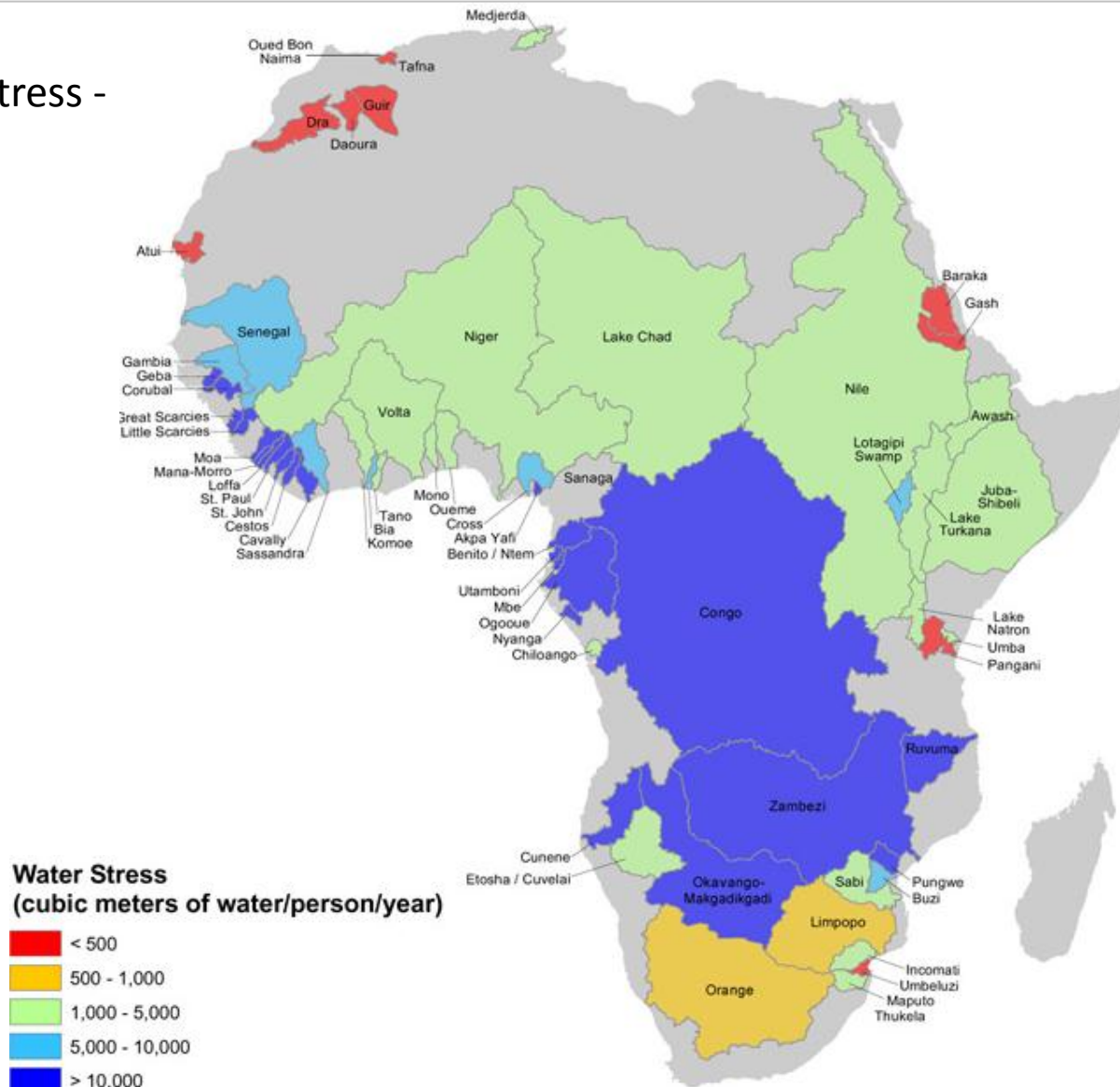
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- Runoff -



The Transboundary Freshwater Dispute Database

- Water Stress -



The Transboundary Freshwater Dispute Database

- International Freshwater Treaties Database -

Full-text database of nearly **450 international, freshwater-related agreements**, covering the years 1820 to 2007



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International Freshwater Treaties Database – A selection of treaties

Date	Name	Signatories	Issue Area	Treaty Basin
1820-03-28	Treaty of Limits Between France and the Netherlands concluded at Courtray	France, Netherlands	Border issues	Lys, Semoy, Meuse
1994-09-16	Agreement between the governments of the Republic of Angola, the Republic of Botswana, and the Republic of Namibia on the establishment of a permanent Okavango River Basin Water Commission (OKACOM)	Angola, Botswana, Namibia	Water quantity	Okavango
1994-09-20	Agreement between Lebanon and Syria on the distribution of water of Al-Asi River rising in Lebanon	Lebanon, Syria	Water quantity	Orontes, Al-Asi
1994-10-26	Treaty of peace between the state of Israel and the Hashemite Kingdom of Jordan, done at Arava/Araba crossing point	Israel, Jordan, Lebanon, Syria	Water quantity	Araba/Arava groundwater, Yarmuk, Jordan
1995-04-05	Agreement on the cooperation for the sustainable development of the Mekong River Basin	Cambodia (Kampuchea), Laos, P.D. Republic of, Thailand, Vietnam	Water quantity, Flood control/relief	Mekong
1996-02-12	Treaty between His Majesty's government of Nepal and the government of India concerning the integrated development of the Mahakali River including Sarada Barrage, Tanakpur Barrage, and Pancheshwar Project	India, Nepal	Water quantity, Hydro-power/ Hydro-electricity, Flood control/relief	Mahakali
1996-12-12	Treaty between the government of the Republic of India and the government of the People's Republic of Bangladesh on sharing of the Ganga/Ganges waters at Farakka	Bangladesh, India	Water quantity	Ganges
1997-05-06	Complementary settlement to the agreement of cooperation between the government of the Eastern Republic of Uruguay and the government of the Federal Republic of Brazil for the use of natural resources and the development of the Cuareim river basin	Brazil, Uruguay	Water quantity	Cuareim

The Transboundary Freshwater Dispute Database

Example: Bilateral agreement, Act No. 15 concerning the division of the water of Al-Asi River (Orontes) between the Syrian Arab Republic and the Lebanese Republic

Treaty Basin: Al-Asi,Orontes
Date: September 20, 1994
Signatories: Lebanon,Syria
Parties: Bilateral
Principal Issue Area: Water Quantity
Allocations: Annual Lebanese share is 80 mcm when amount of water in Lebanon is 400 mcm or greater. When the annual quantity of water is <400 mcm, the year will be considered a rainless year and the Lebanese share will be reduced by 20%.
Non-water Linkages: Not Available
Monitoring: Yes
Enforcement: No
Conflict Resolution: Not Available
Additonal Comments: The parties consider the water of the Orontes river that originate in Lebanon as being of common interest.

The Transboundary Freshwater Dispute Database

- Overview of International Freshwater Treaties -

- approx 450 treaties, acknowledgements and institutions (concerning the non-navigational uses of international watercourses)
- Covering only 50% of international basins
- First overview (from Wolf/Hamner 1998 based on 145 Treaties):
 - 86% are bilateral, only 14% multilateral
 - 39% about hydropower
 - 37% about the distribution of water
 - 54% with monitoring-measures
 - 30% with financial compensation
 - ...

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- International Water Event Database -

Dataset of approximately **6400 international water events** (cooperation and conflict) from 1948 to 2008 and **rated by the Water Event Intensity Scale**



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- Basins-at-Risk Water Event Intensity Scale (BAR-Scale) -

- 
- 7 Formal Declaration of War** (*for water-related reasons*)
 - 6 Extensive War Acts** causing deaths, dislocation or high strategic cost (*for water-related reasons*)
 - 5 Small scale military acts** (*for water-related reasons*)
 - 4 Political-military hostile actions** (*for water-related reasons*)
 - 3 Diplomatic-economic hostile actions** (*for water-related reasons, e.g. unilateral construction of water projects against another country's protests; reducing flow of water to another country, abrogation of a water agreement*)
 - 2 Strong verbal expressions displaying hostility in interaction - official interactions only** (*for water-related reasons*)
 - 1 Mild verbal expressions displaying discord in interaction - both unofficial and official, including diplomatic notes of protest** (*for water-related reasons*)

The Transboundary Freshwater Dispute Database

- Basins-at-Risk Water Event Intensity Scale (BAR-Scale) -

- 
- 0 Neutral or non-significant acts for the inter-nation situation**
 - 1 Minor official exchanges, talks or policy expressions--mild verbal support (*water-related*)**
 - 2 Official verbal support of goals, values, or regime (*water-related*)**
 - 3 Cultural or scientific agreement or support - non-strategic Agreements to set up cooperative working groups (*water-related*)**
 - 4 Non-military economic, technological or industrial agreement, legal, cooperative actions between nations that are not treaties (*water-related, e.g. cooperative projects for watershed management, irrigation, poverty-alleviation*)**
 - 5 Military economic or strategic support (*water-related*)**
 - 6 Major strategic alliance - regional or international (*water-related, e.g. Major International Freshwater Treaty*)**
 - 7 Voluntary unification into one nation**

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Water Events - Example: Euphrates/Tigris-Basin-Events 1998-1999

Countries	BAR-Scale	Issue Type	Date	Event Summary
Iraq-Syria	3.0	water use	Jun 22 1998	Iraqi irrigation Minister al-Ahmad said negotiations between Iraq & Syria on using Euphrates water, which springs from Turkey territory & passes through Syria before entering the Arab Gulf, are continuing....
Syria-Turkey	-1.0	water issue (from other issues --> quantity & quality)	Jul 2 1998	Doors for dialogue were opened to normalize relations between Turkey & Syria with a visit of 'Umran, Syria undersecretary of the Foreign Ministry, but no course was opened for Cem, Turkey Foreign Minister (visit to Damascus). 'Umran identified the PKK as ...
Syria-Turkey	-1.0	water sharing	Aug 16 1998	Syria Foreign Minister Shara said in order to resume negotiation with Israel, these should re-start from where they left off. In an interview with Lebanon tv network Sunday on the water problem with Turkey, Shara said the main problem lies in the fact that...
Iraq-Syria-Turkey	-3.0	water sharing	Oct 4 1998	Negotiations reached a deadlock because major points of disagreement - including Kurdistan Workers' Party, sharing Euphrates & Tigris water, & Turkey-Israel military alliance - remained without answers by either side...
Syria-Turkey	-1.0	water committees	Oct 6 1998	Syria Embassy in Ankara has said that escalation of tension between Turkey & Syria is caused by Turkey-Israel military cooperation, which it claims is a military pact, & by Turkey's boycott of negotiation committee on water & other issues...
Syria-Turkey	-1.0	water issue	Oct 6 1998	Virtue Party leader Kutan said that developments concerning Syria have constituted hottest issue on Turkey's agenda lately, adding: Syria has been extending moral & logistic support to Workers Party of Kurd. (PKK) terrorism for 14 years...
Syria-Turkey	1.0	water allocation	Apr 3 1999	Turkey President Demirel expressed hope that Turkey will emerge stable from 4/18 elections. Replying to reporters' questions in Qatar on whether talks will be held with Syria on water issue, Demirel said Turkey is always open to negotiations...
Jordan-Turkey	1.0	water supply	Jul 15 1999	Turkey Ambassador to Jordan, Topur, said he doesn't expect the issue of supplying Jordan with water from Turkey to come under discussion during present visit by President Demirel. However, he voiced Turkey's readiness to pursue dialogue on the subject...
Syria-Turkey	1.0	water	Jul 17 1999	Turkey Foreign Minister Cem was careful to reassure Arab states that relations between Turkey & Israel will not be at their expense. On Turkey-Syria relations, Cem noted that these relations have witnessed tangible improvements...
Iraq-Turkey	2.0	water sharing	Nov 8 1999	Iraq has asked Turkey to grant it a proper share of water from the Degla & Euphrates Rivers...