SHARED WATER RESOURCES: CONFLICT, COOPERATION & CLIMATE

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Special Event of the
Economic and Financial Committee of the
United Nations General Assembly:
"Enhancing Governance on Water"

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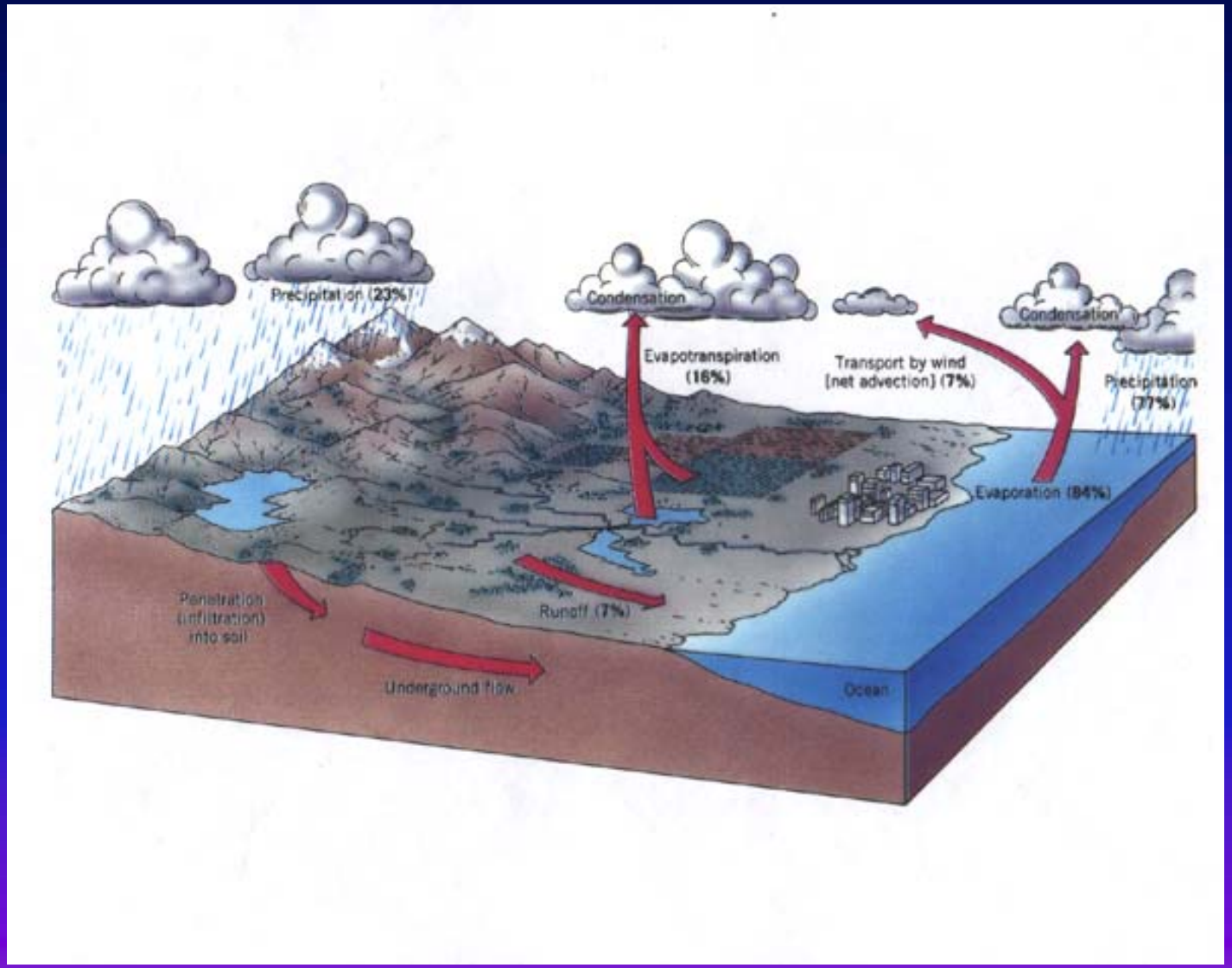
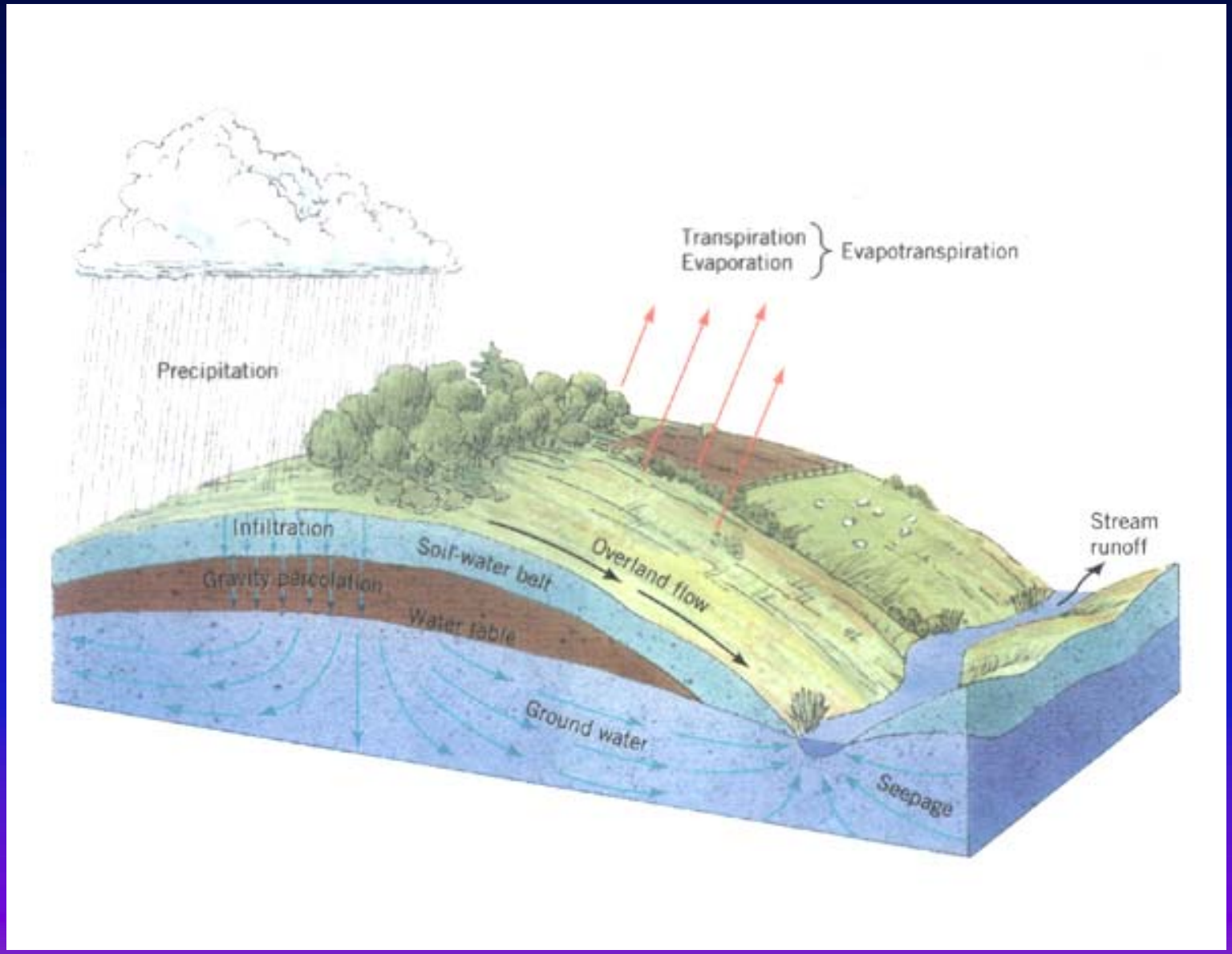
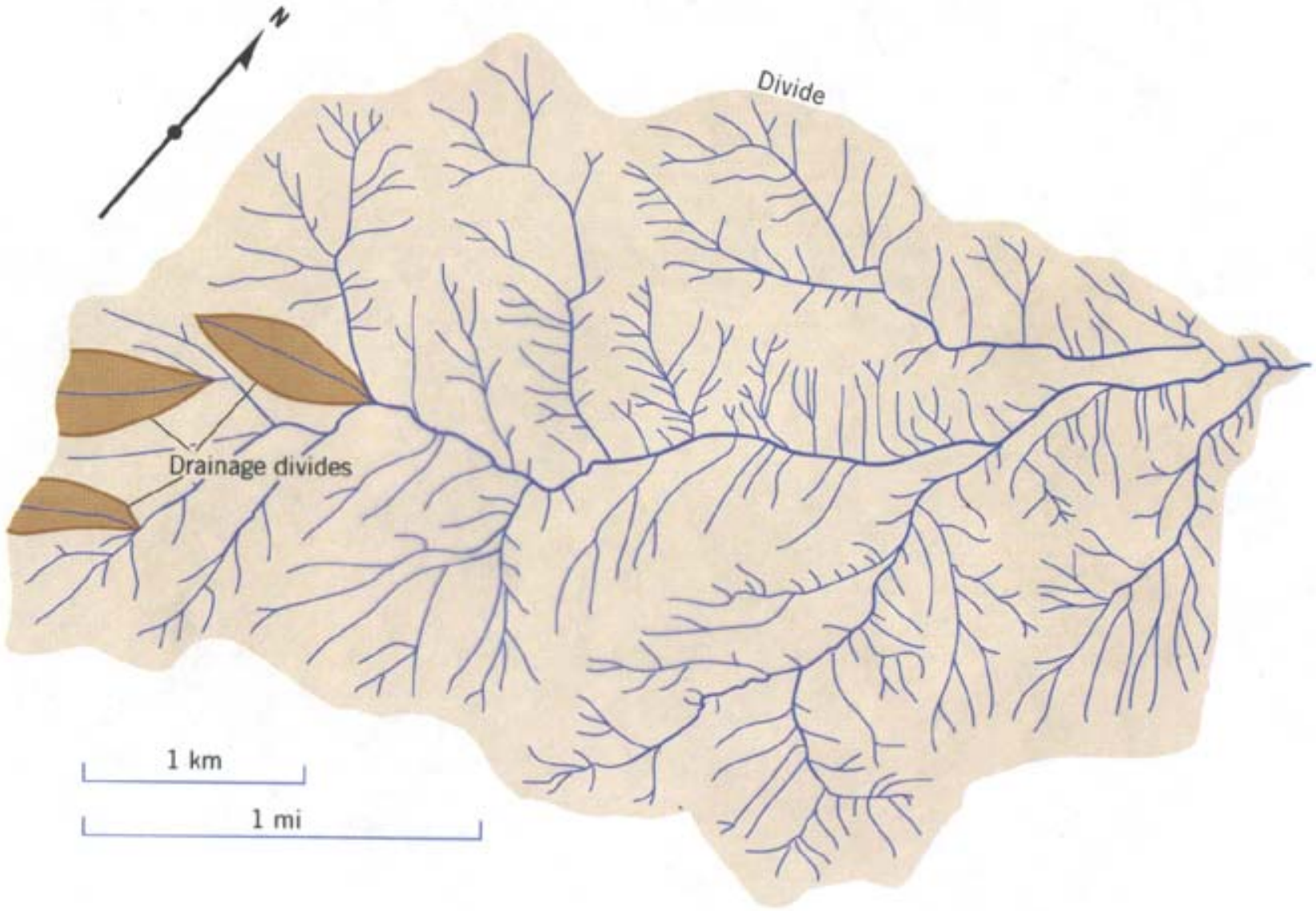
Global Water Crisis

- 2.4 billion people lack access to adequate sanitation
- >1 billion people lack access to safe drinking water
- At least 250 million illnesses result
- 2.2 to 5 million deaths
- 20% of irrigated lands are salt-laden

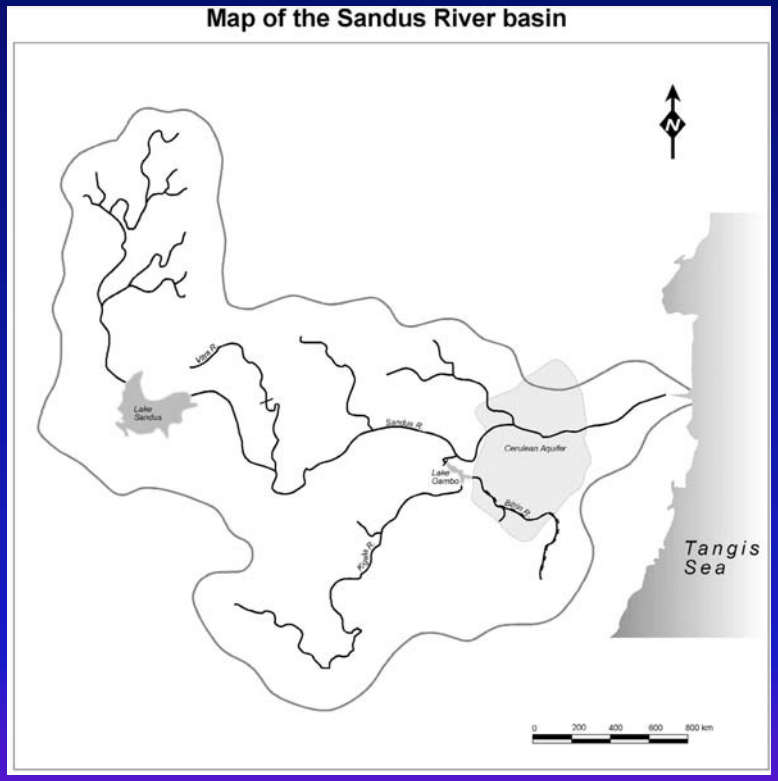
- Water-related disease costs US$125 billion/yr.
- Would “only” cost US$7-50 billion/yr. to resolve

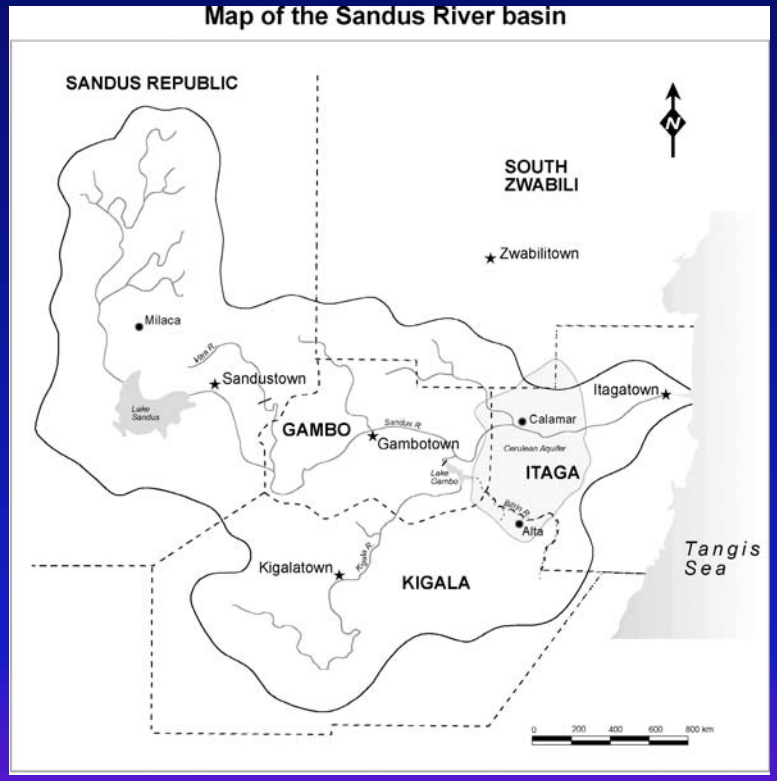

Precipitation (23%)
Condensation
Evapotranspiration (16%)
Transport by wind (net advection) (7%)
Condensation
Precipitation (77%)
Evaporation (84%)
Penetration (infiltration) into soil
Runoff (7%)
Underground flow
Ocean


Transpiration
Evaporation
Evapotranspiration
Precipitation
Infiltration
Gravity percolation
Soil-water belt
Water table
Overland flow
Stream runoff
Ground water
Seepage


N
Divide
Drainage divides
1 km
1 mi

What *is* International Water Conflict Management & Transformation??

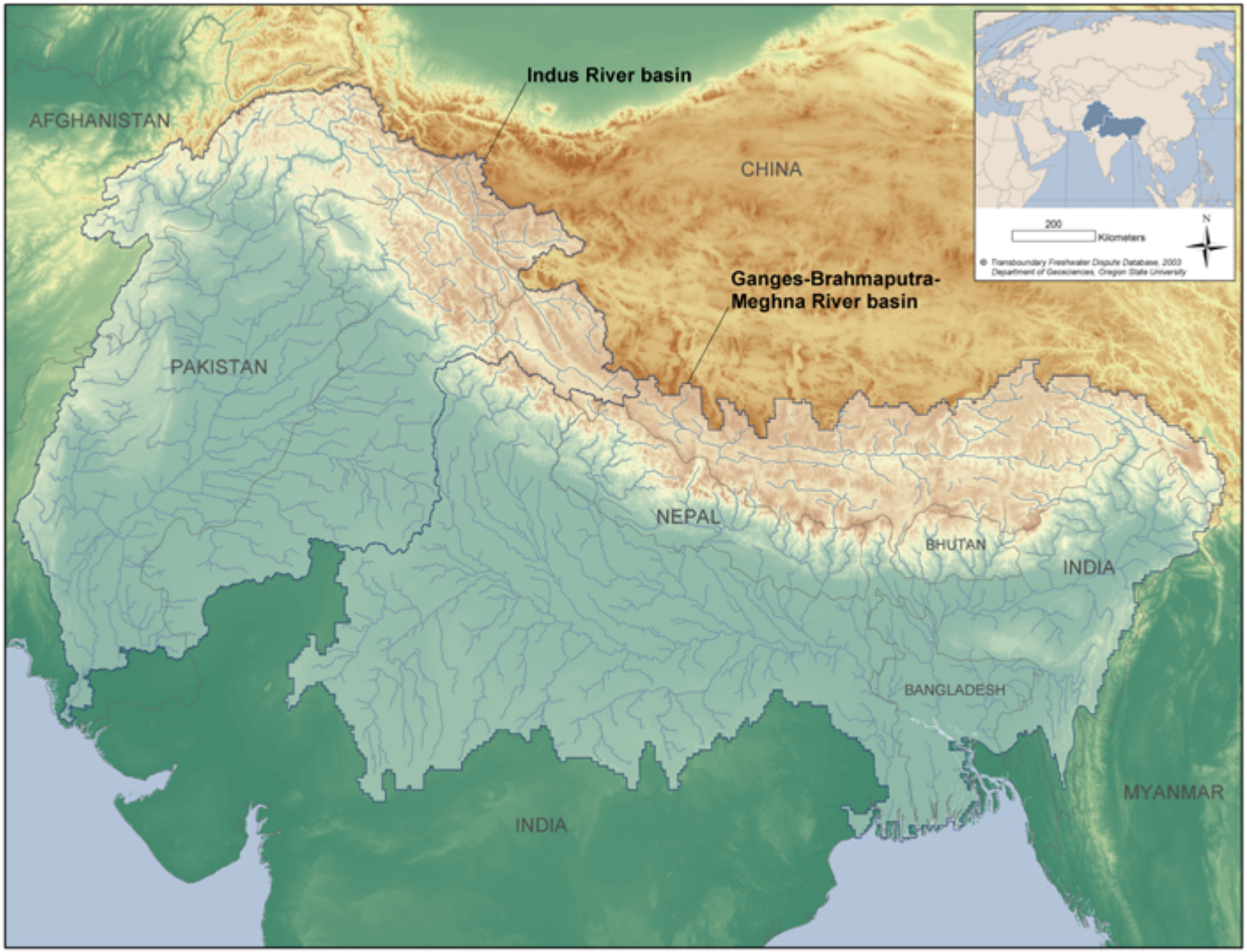




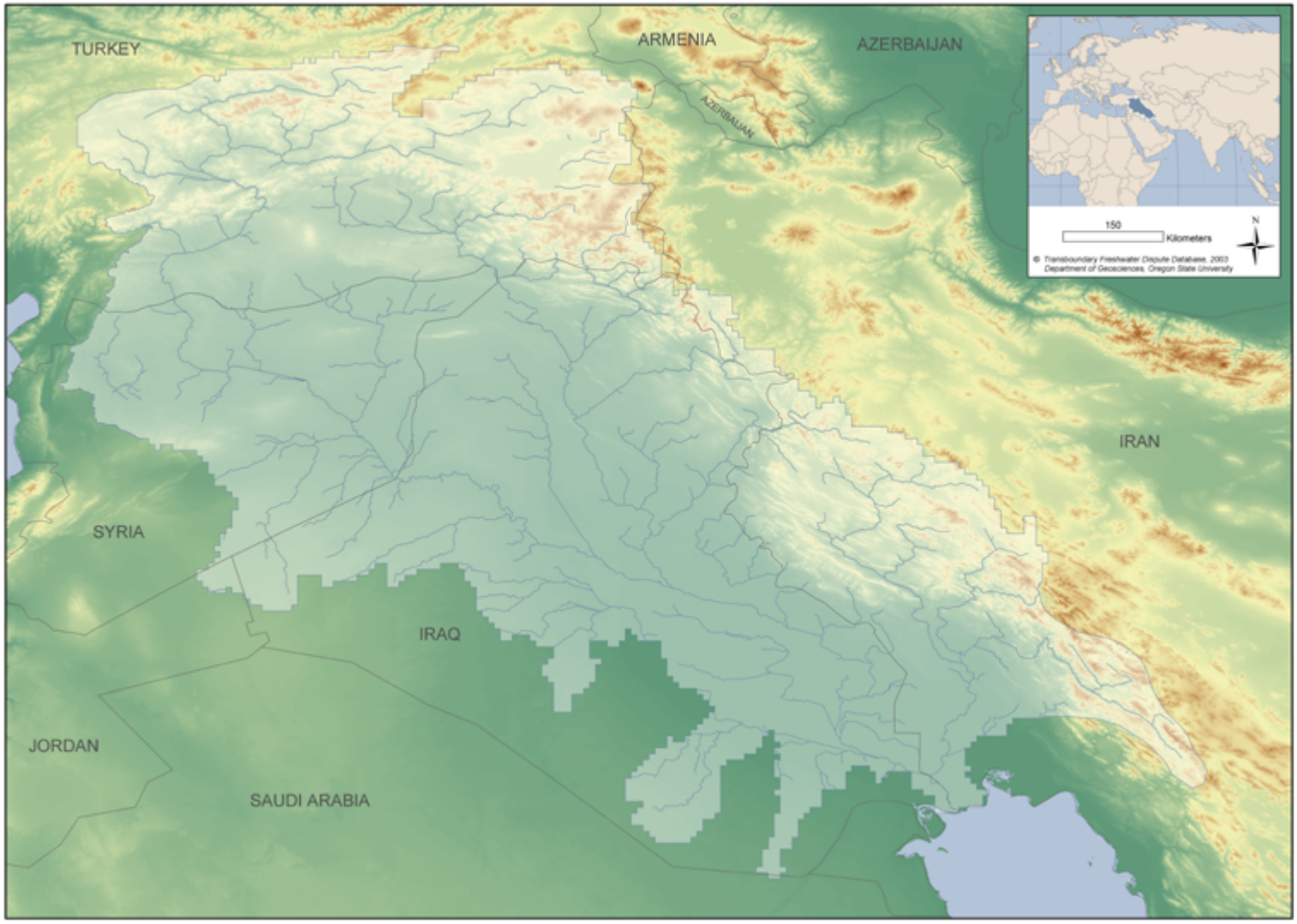
What changes when a border is present?

What capacity do we need to address the change?

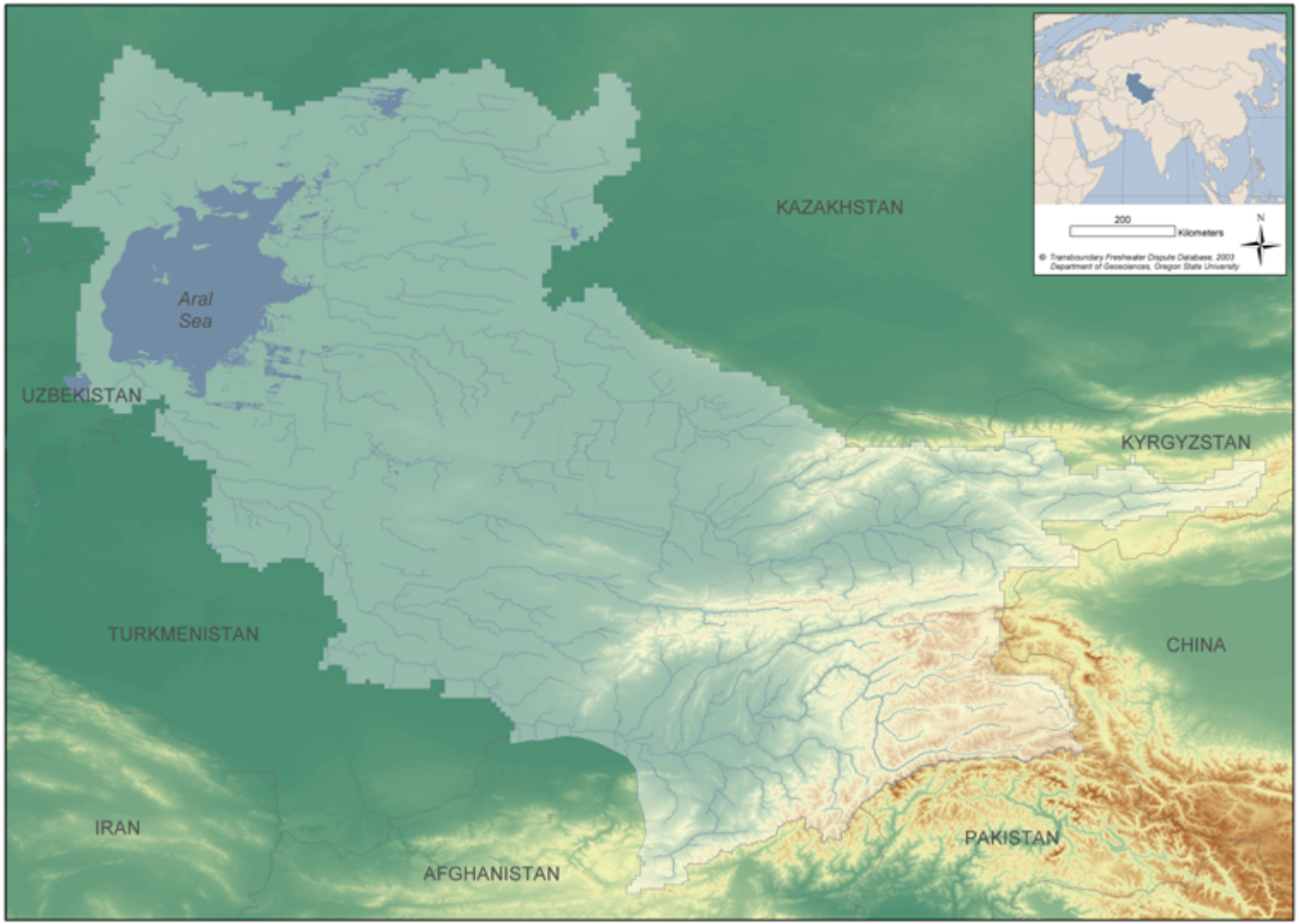
The Indus River and Ganges-Brahmaputra-Meghna River basins



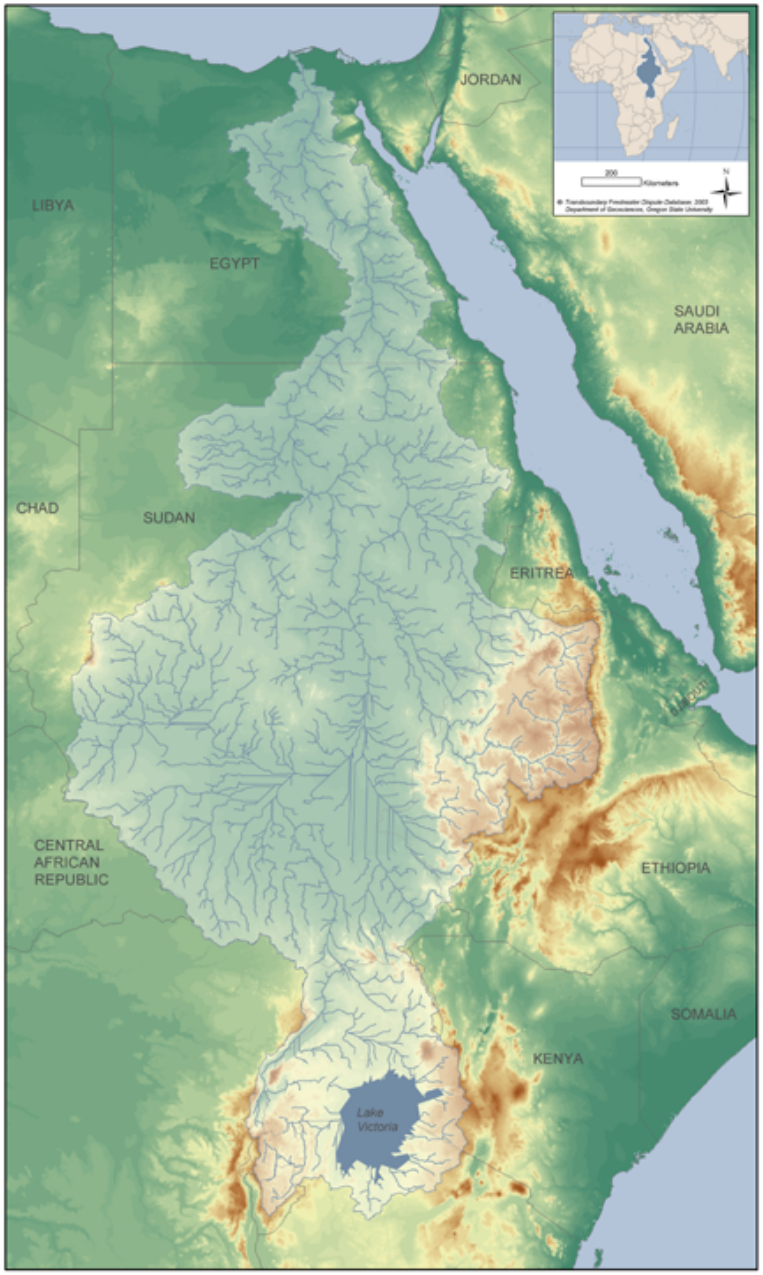
The Tigris-Euphrates River basin



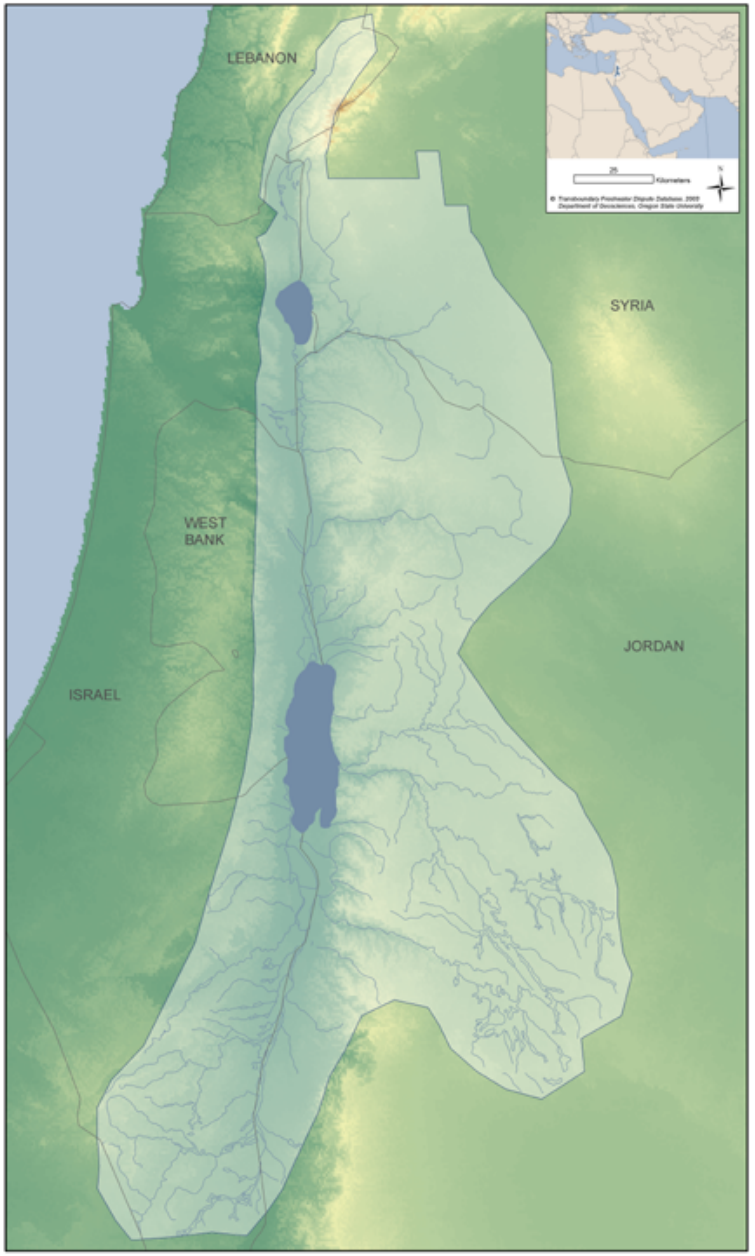
The Aral Sea basin



The Nile River basin



The Jordan River basin



Water and Conflict

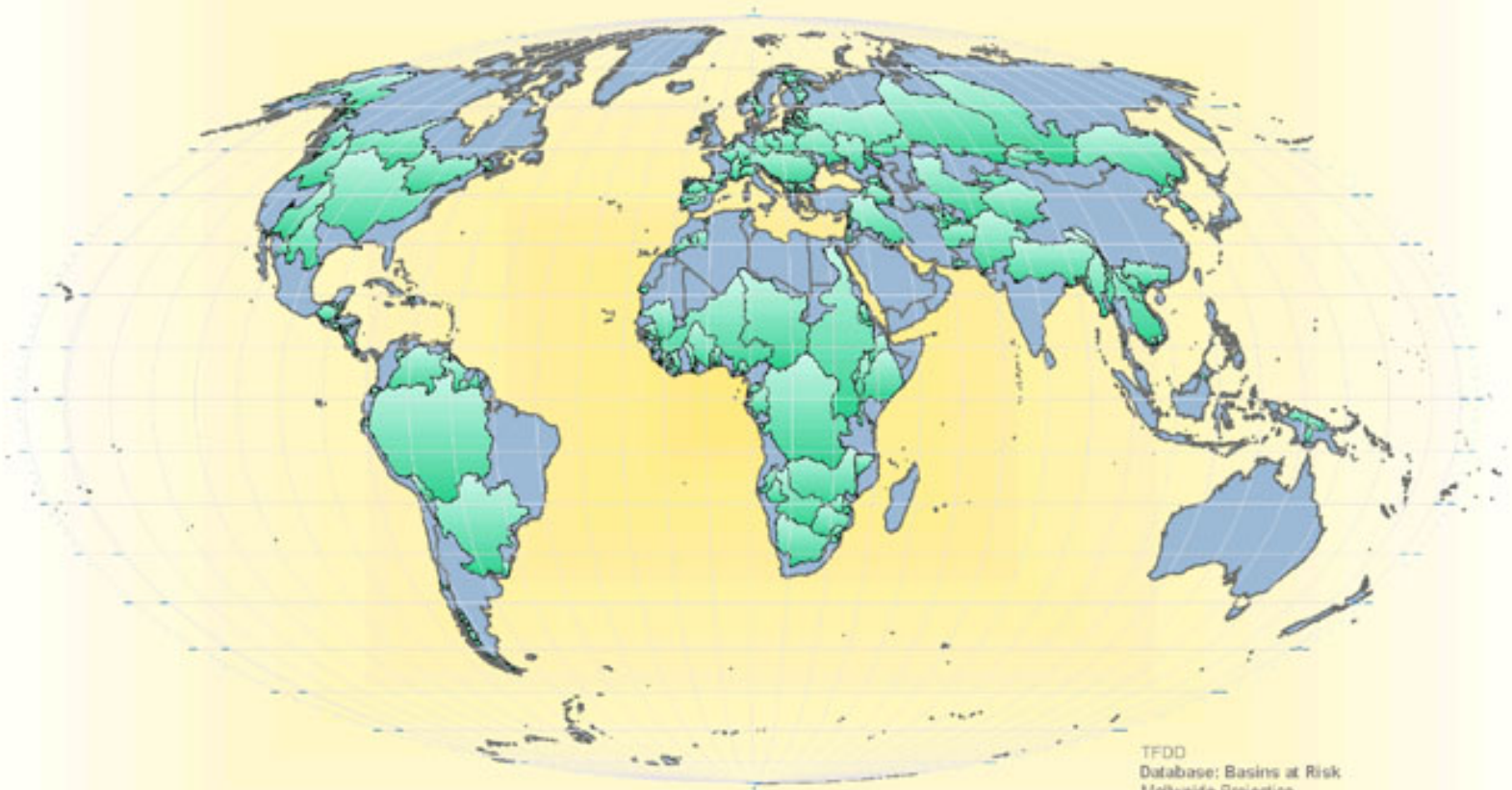
"Fierce competition for fresh water may well become a source of conflict and wars in the future."

- Kofi Annan, March 2001

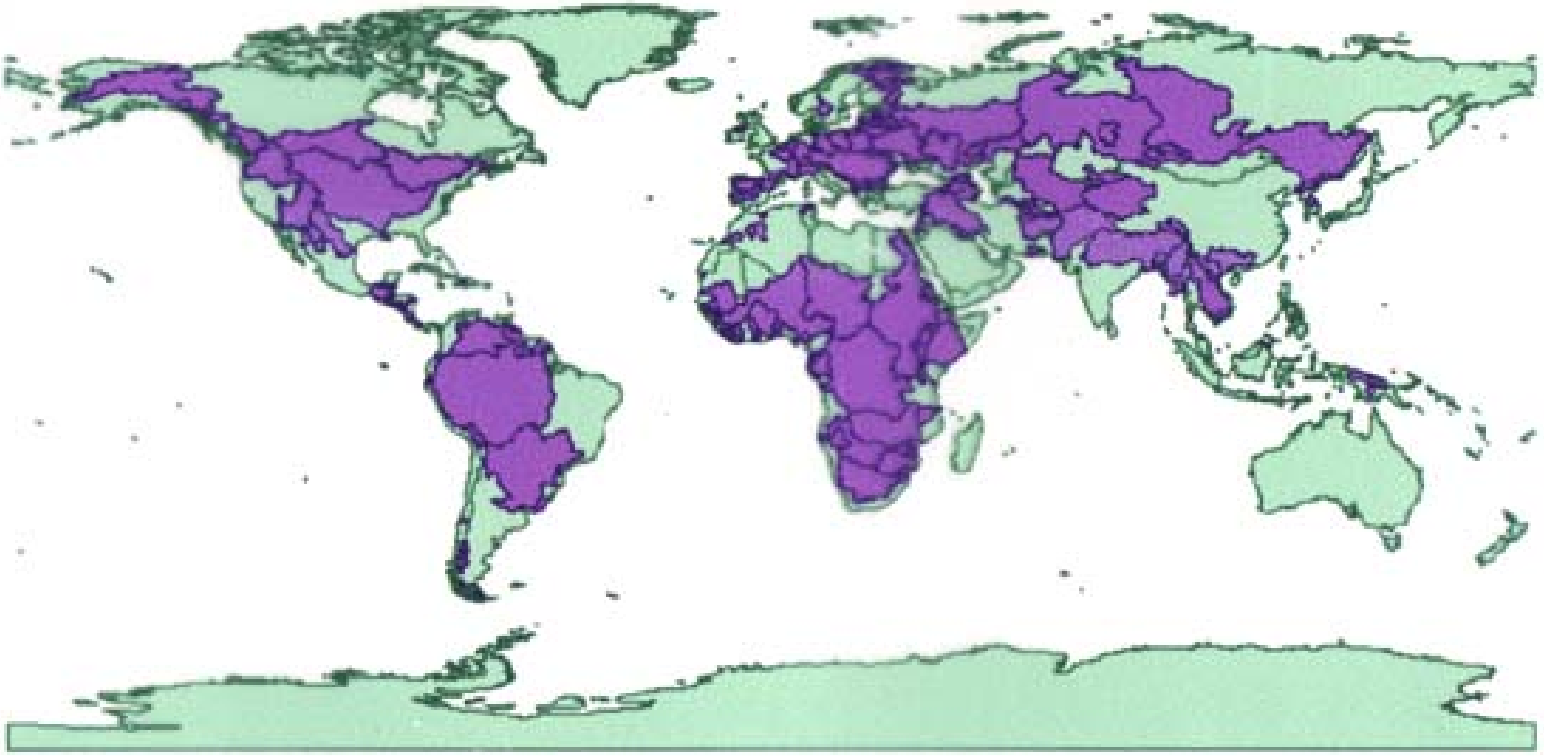
Water Myths and Water Facts

Myth 1:
Water Wars are Prevalent and Inevitable

International Basins of the World



Scale of Conflict



The Transboundary Freshwater Dispute Database

A Project of
Oregon State University
Department of Geosciences
and the Northwest Alliance for
Computational Science

- Reference to 3,600 water-related treaties (805-1997)
- Full-text of 400 treaties and 40 US compacts, entered in computer database
- Detailed negotiating notes (primary or secondary) from fourteen case-studies of water conflict resolution
- Annotated bibliography of "State of the Art" of water dispute resolution literature
- News files on cases of acute water-related disputes
- Indigenous methods of water dispute resolution

Interactive Search Interface

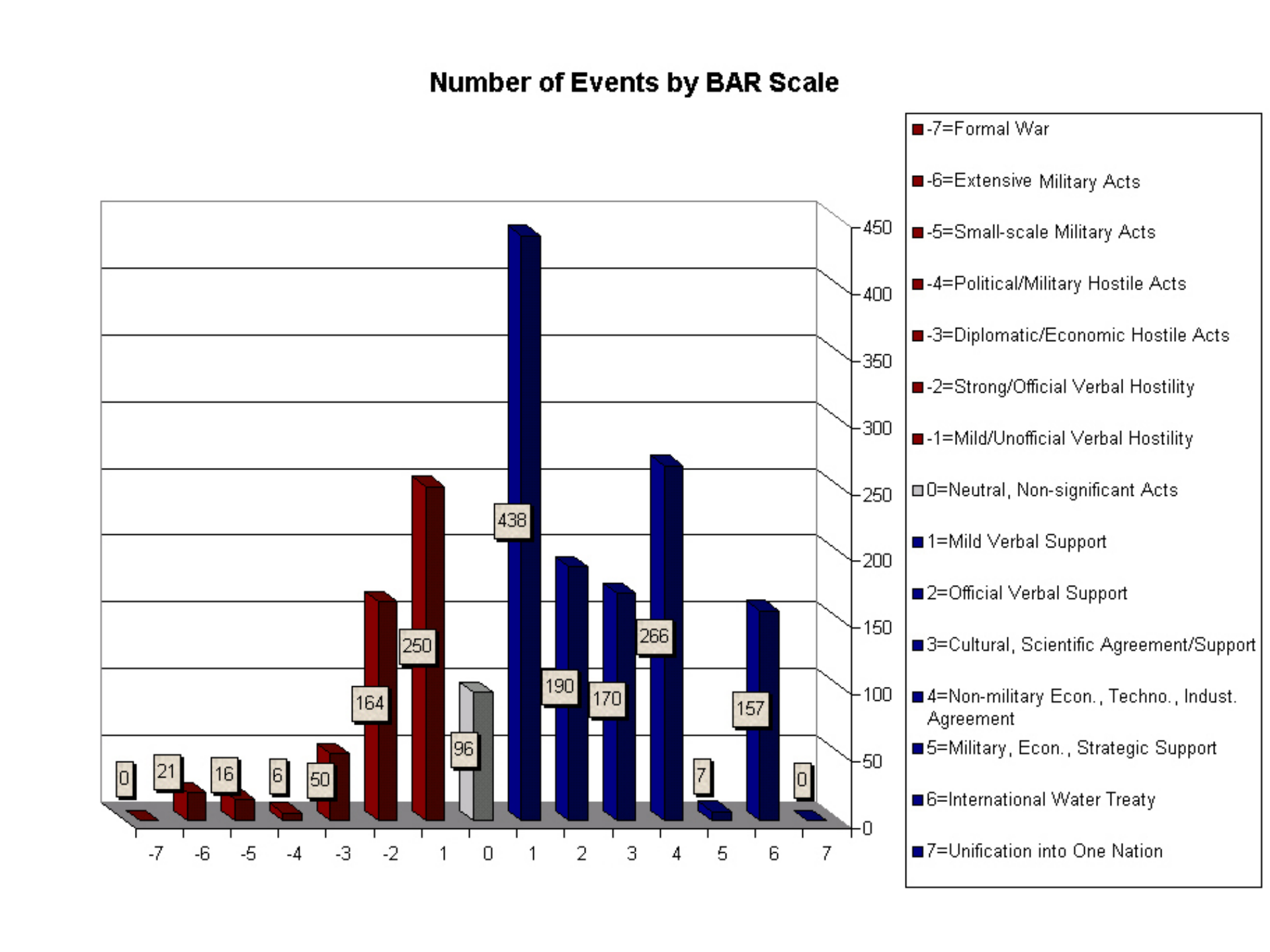
Bibliography

Treaties

www.transboundarywaters.orst.edu

DATE	BASIN	COUNTRIES	BAR SCALE	EVENT SUMMARY	ISSUE TYPE
12/5/73	La Plata	Argentina--Paraguay	4	PRY AND ARG AGREE TO BUILD 1B DAM, HYDROELECTRIC PROJECT	Infrastructure
1/1/76	Ganges	Bangladesh--India--United Nations	-2	Bangladesh lodges a formal protest against India with the United Nations, which adopts a consensus statement encouraging the parties to meet urgently, at the level of minister, to arrive at a settlement.	Quantity
7/3/78	Amazon	Bolivia--Brazil--Colombia--Ecuador--Guyana--Peru--Suriname--Venezuela	6	Treaty for Amazonian Cooperation	Economic Development
4/7/95	Jordan	Israel--Jordan	4	Pipeline from Israel storage at Beit Zera to Abdullah Canal (East Ghor Canal) begins delivering water stipulated in Treaty (20 MCM summer, 10 MCM winter). The 10 mcm replaces the 10 mcm of desalinated water stipulated Annex II, Article 2d until desalinization plant completed	Quantity
6/1/99	Senegal	Mali--Mauritania	-3	13 people died in communal clashes in 6/99 along border between Maur. & Mali; conflict started when herdsmen in Missira-Samoura village in w. Mali, refused to allow Maur. horseman to use watering hole; horseman returned w/ some of his clansmen, attacking village on 6/20/99, causing 2 deaths; in retaliation that followed, 11 more died.	Quantity

Events Database, Example


Number of Events by BAR Scale
-7=Formal War
-6=Extensive Military Acts
-5=Small-scale Military Acts
-4=Political/Military Hostile Acts
-3=Diplomatic/Economic Hostile Acts
-2=Strong/Official Verbal Hostility
-1=Mild/Unofficial Verbal Hostility
0=Neutral, Non-significant Acts
1=Mild Verbal Support
2=Official Verbal Support
3=Cultural, Scientific Agreement/Support
4=Non-military Econ., Techno., Indust. Agreement
5=Military, Econ., Strategic Support
6=International Water Treaty
7=Unification into One Nation
450
400
350
300
250
200
150
100
50
0
0
21
16
6
50
164
250
96
438
190
170
266
7
157
0
-7
-6
-5
-4
-3
-2
1
0
1
2
3
4
5
6
7

Institutional Resiliency Argument

Transboundary water institutions are resilient over time, even between hostile riparians, even as conflict is waged over other issues:

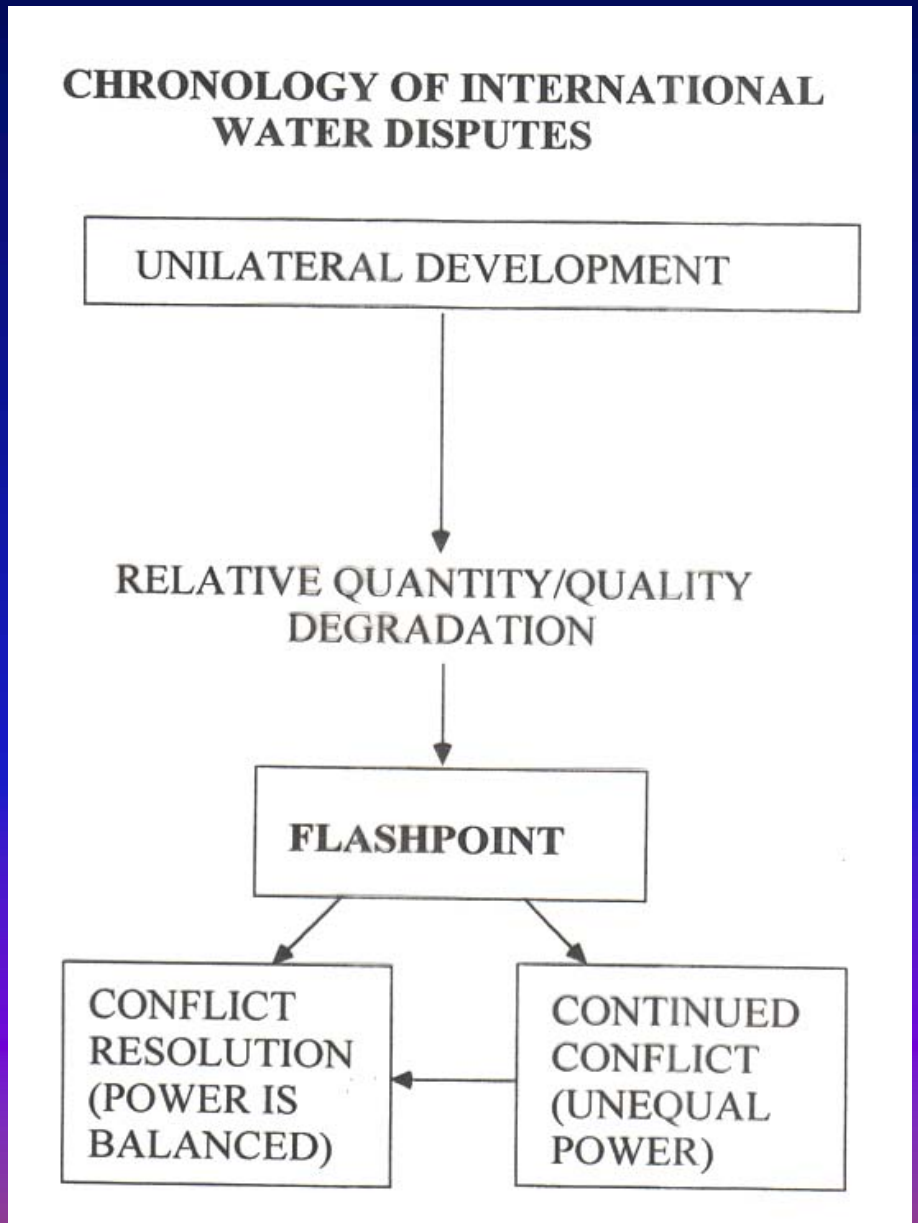
- **Picnic Table Talks**
- **Mekong Committee**
- **Indus River Commission**
- **Caucasus**
- **SADC Region**

Water Myths and Water Facts

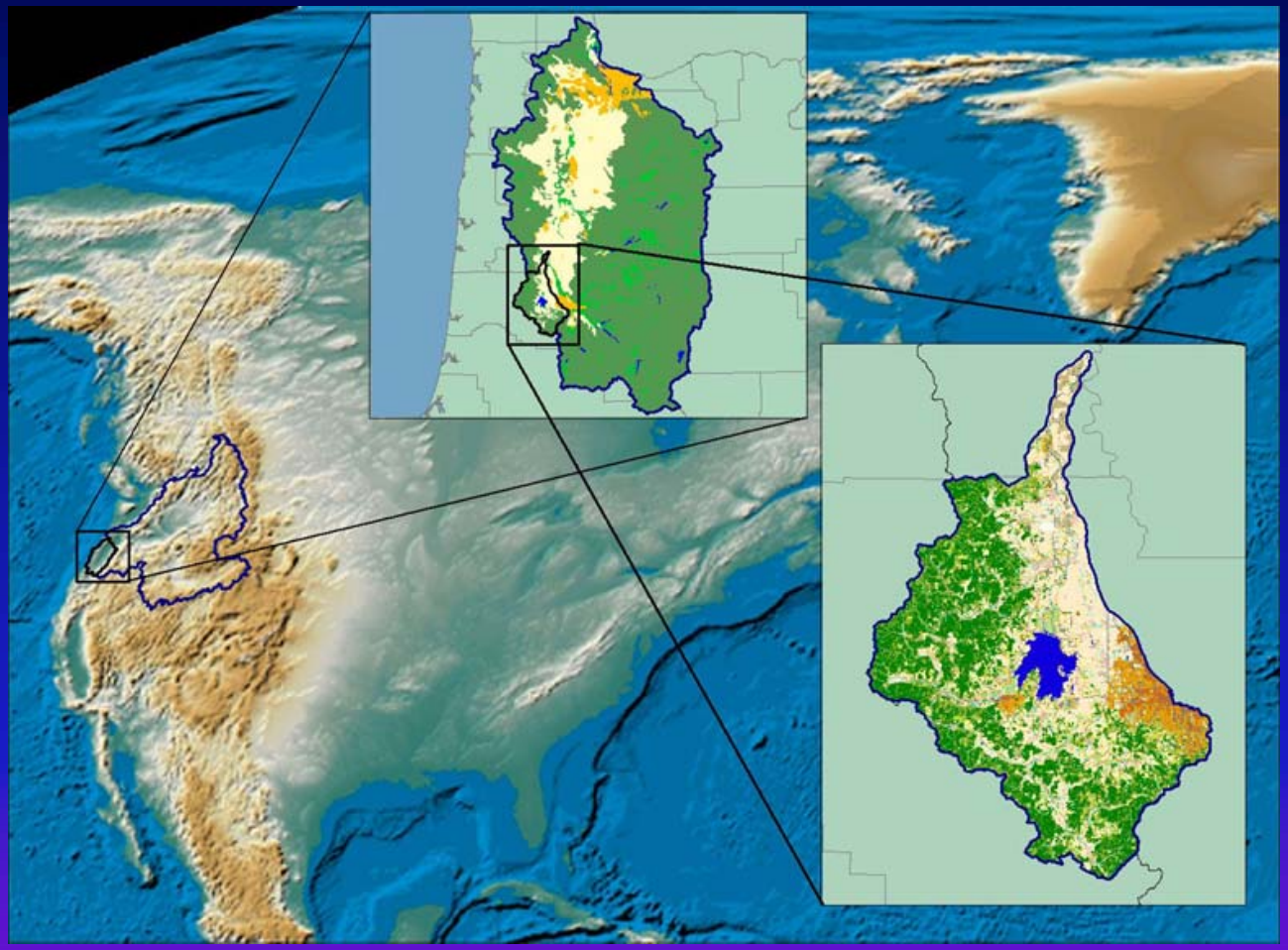
Myth 2:
Everything is OK

- Decades of tension, degradation, and inefficiency
- Conflict within and between multiple scales
- Regional instability in areas of security concern
- Climate change and its impacts on water resources

Decades of Tension, Degradation, and Inefficiency

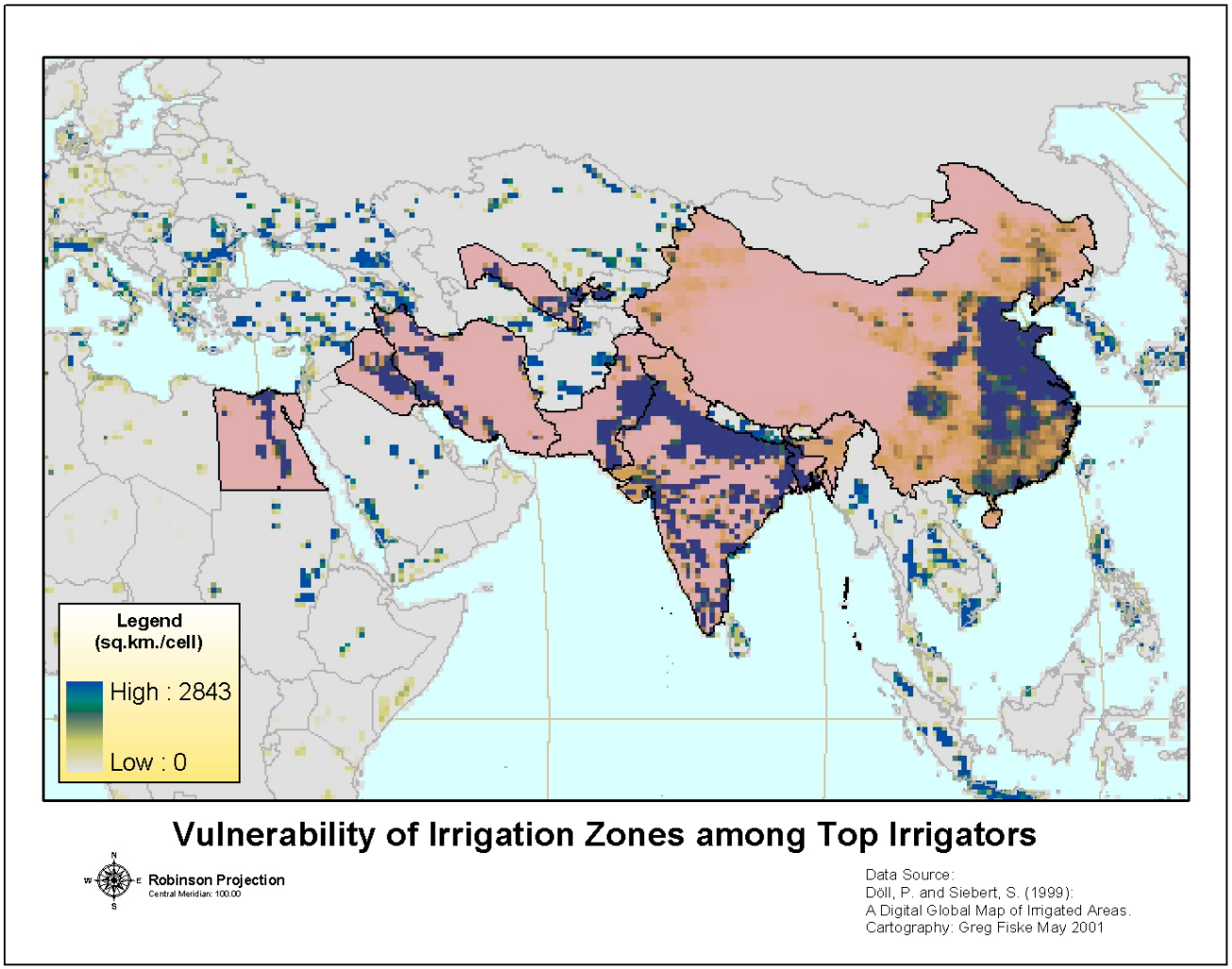


Conflict Within and Between Multiple Scales



The smaller the scale, the greater the likelihood of dispute.

Regional Instability in Areas of Security Concern



BASINS AT RISK: Working Hypothesis

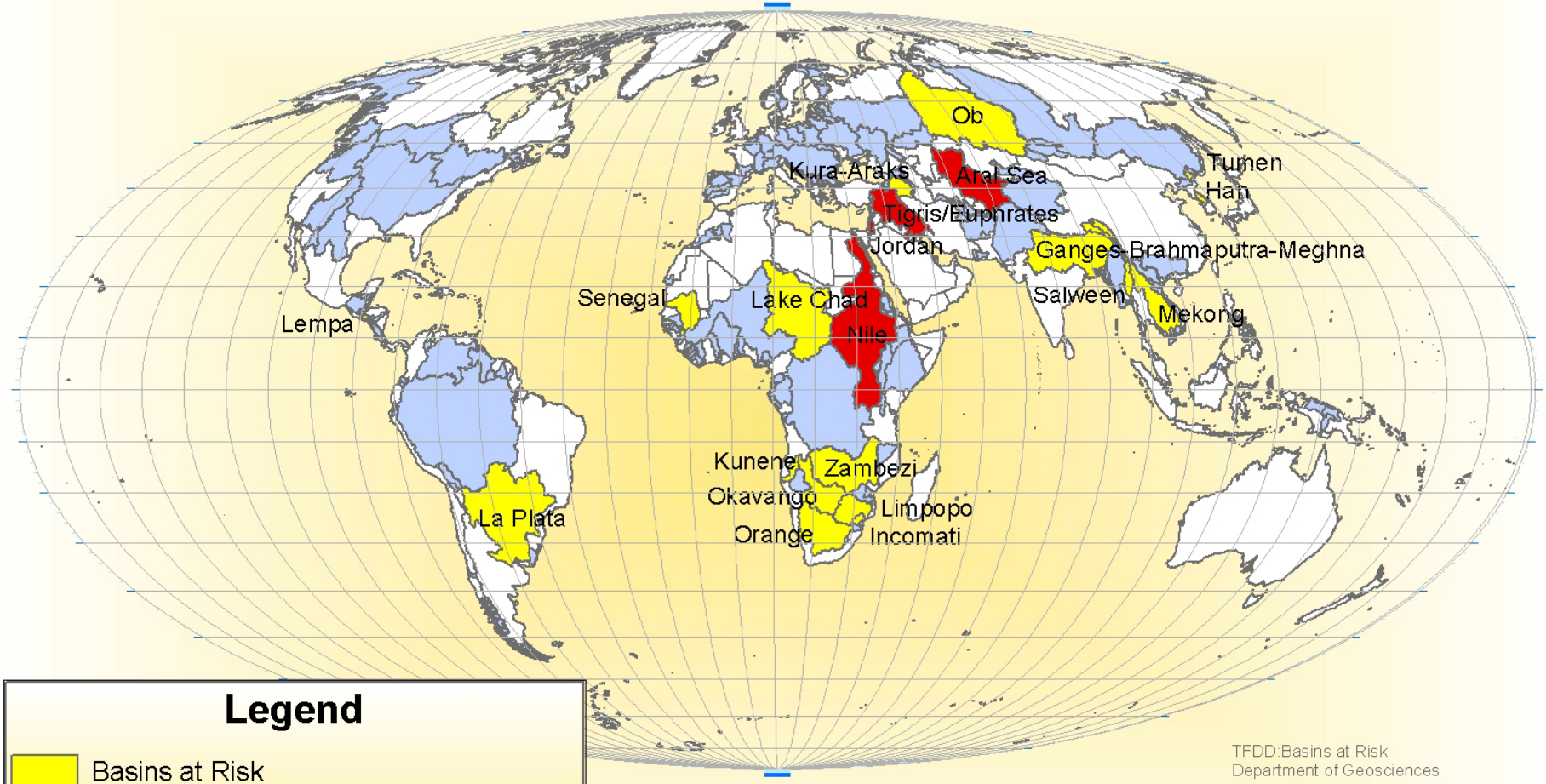
"The likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change."

What *are* indicators*?*

Sudden physical changes or lower institutional capacity are more conducive to disputes:

1) Uncoordinated development: a major project *in the absence* of a treaty or commission
2) "Internationalized basins"
3) General animosity

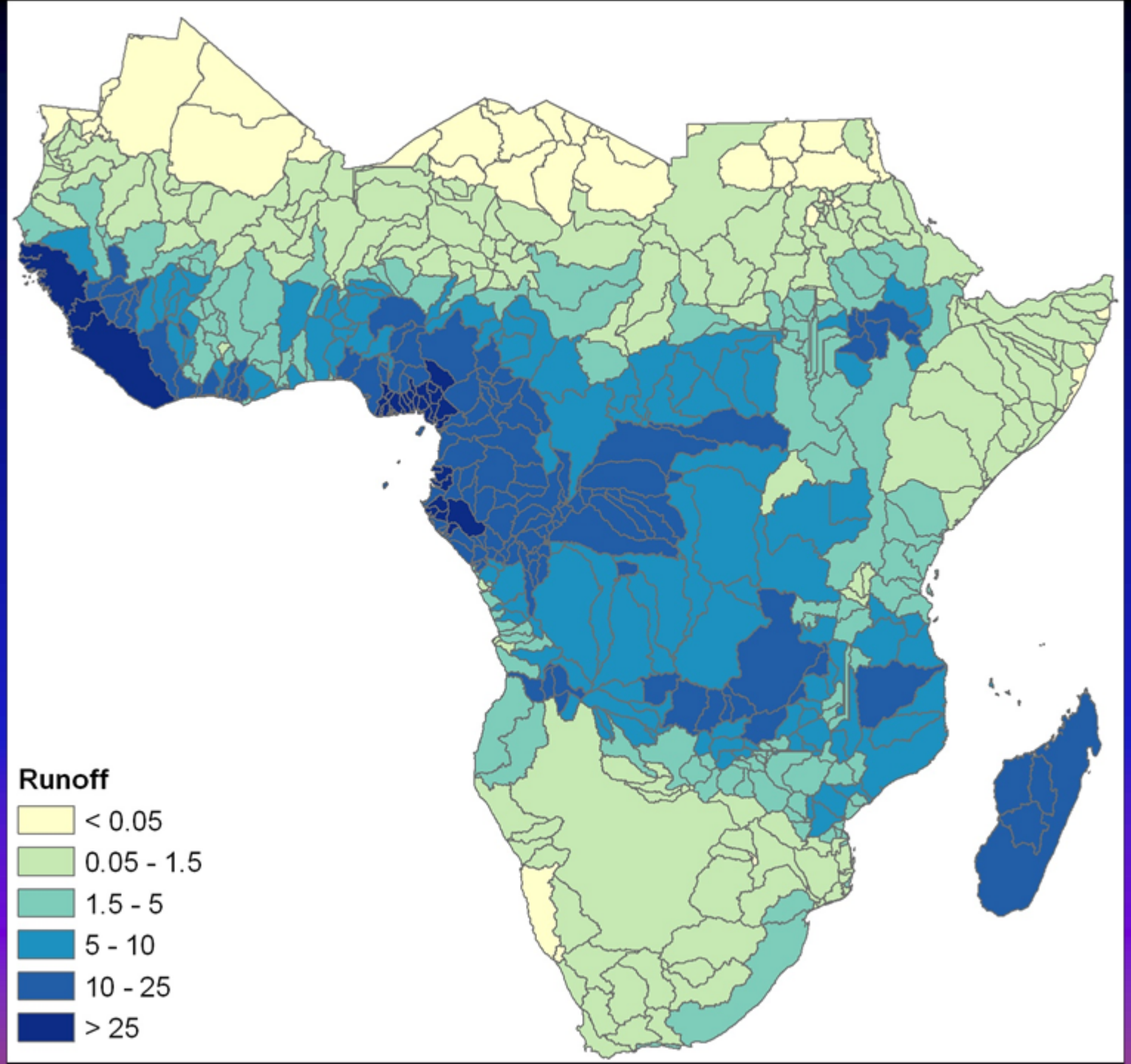
Basins at Risk

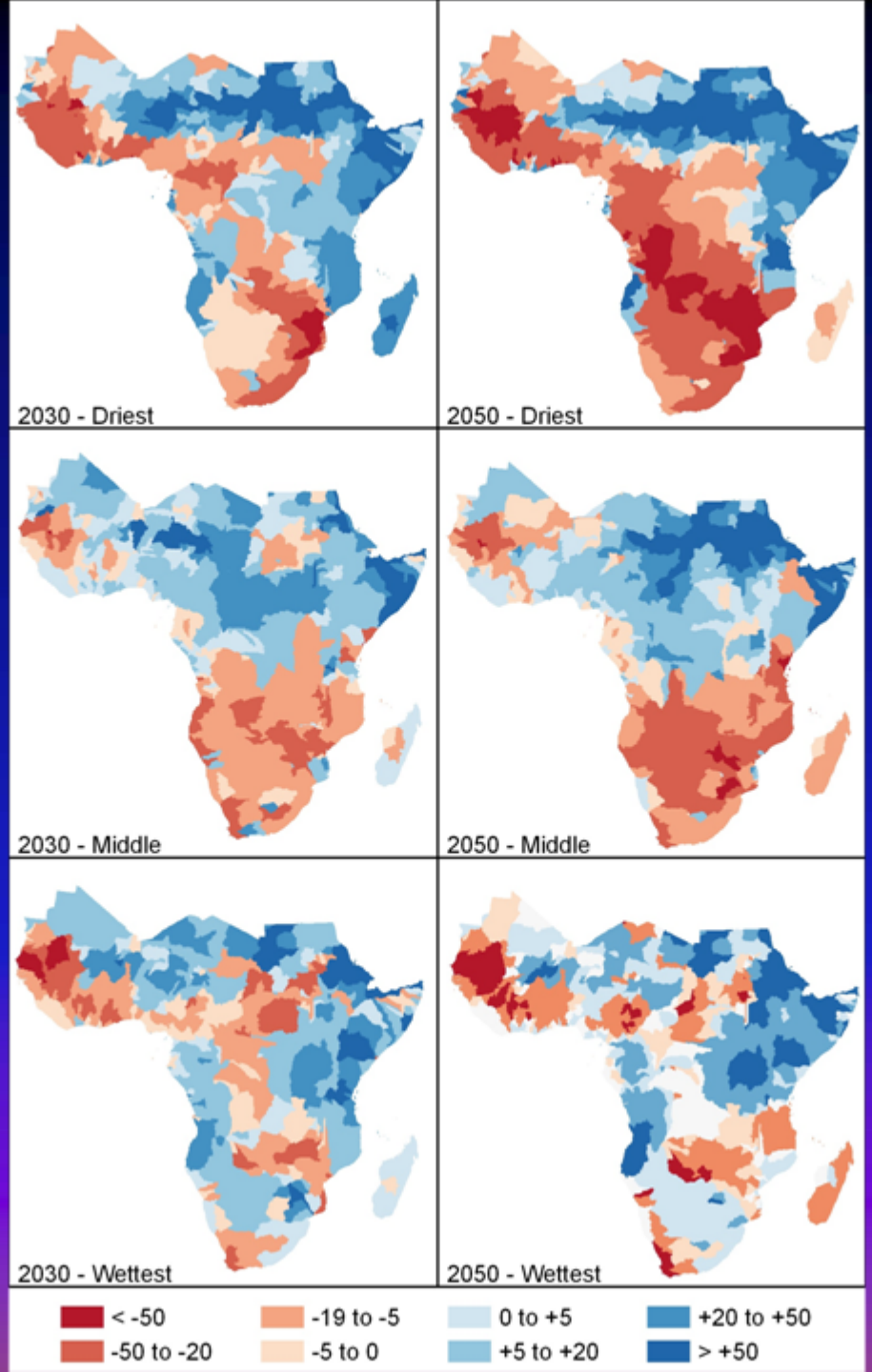


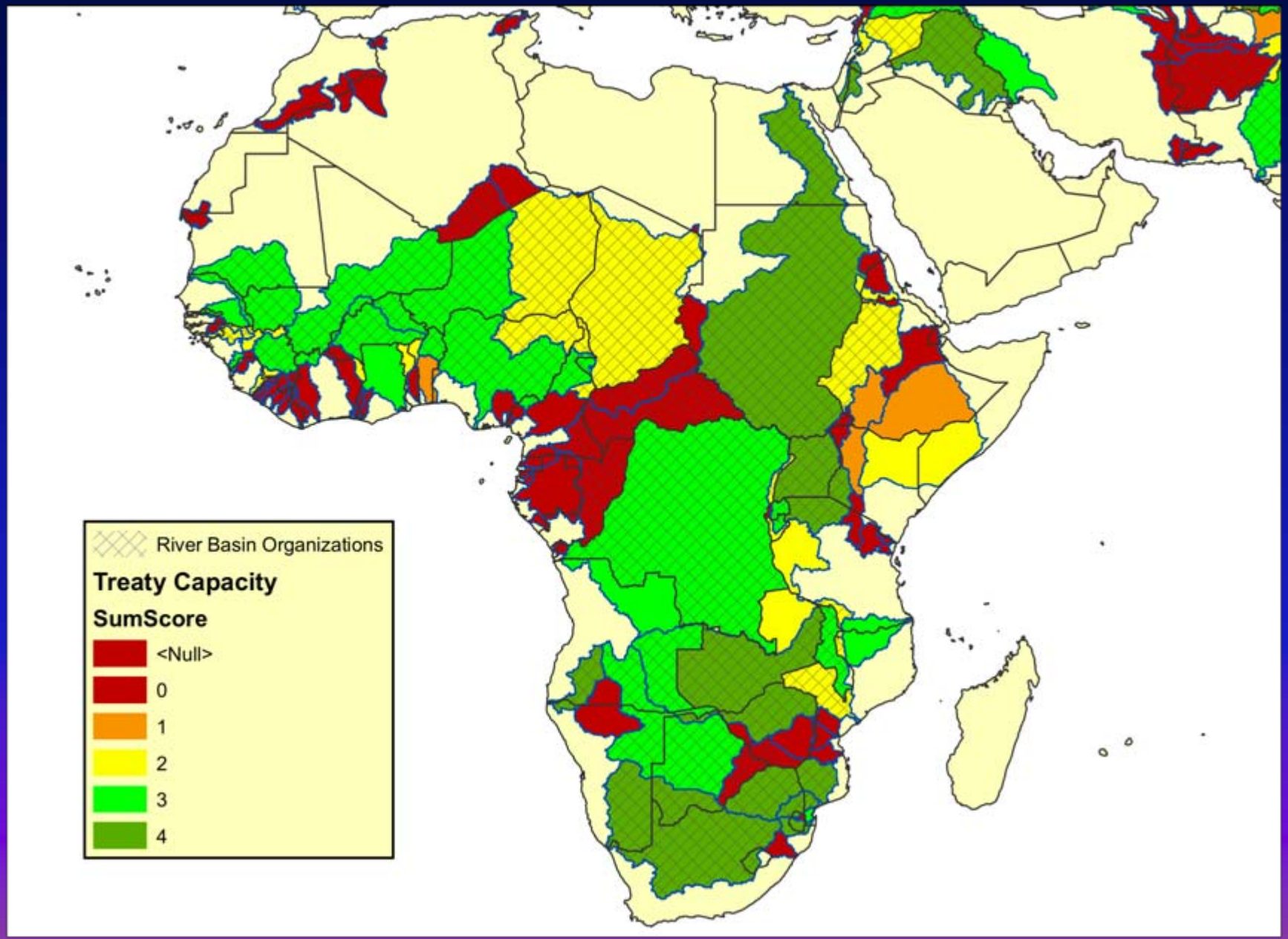
Legend

- Basins at Risk
- Political Boundaries
- International Basins
- Basins Currently in Dispute/Negotiations

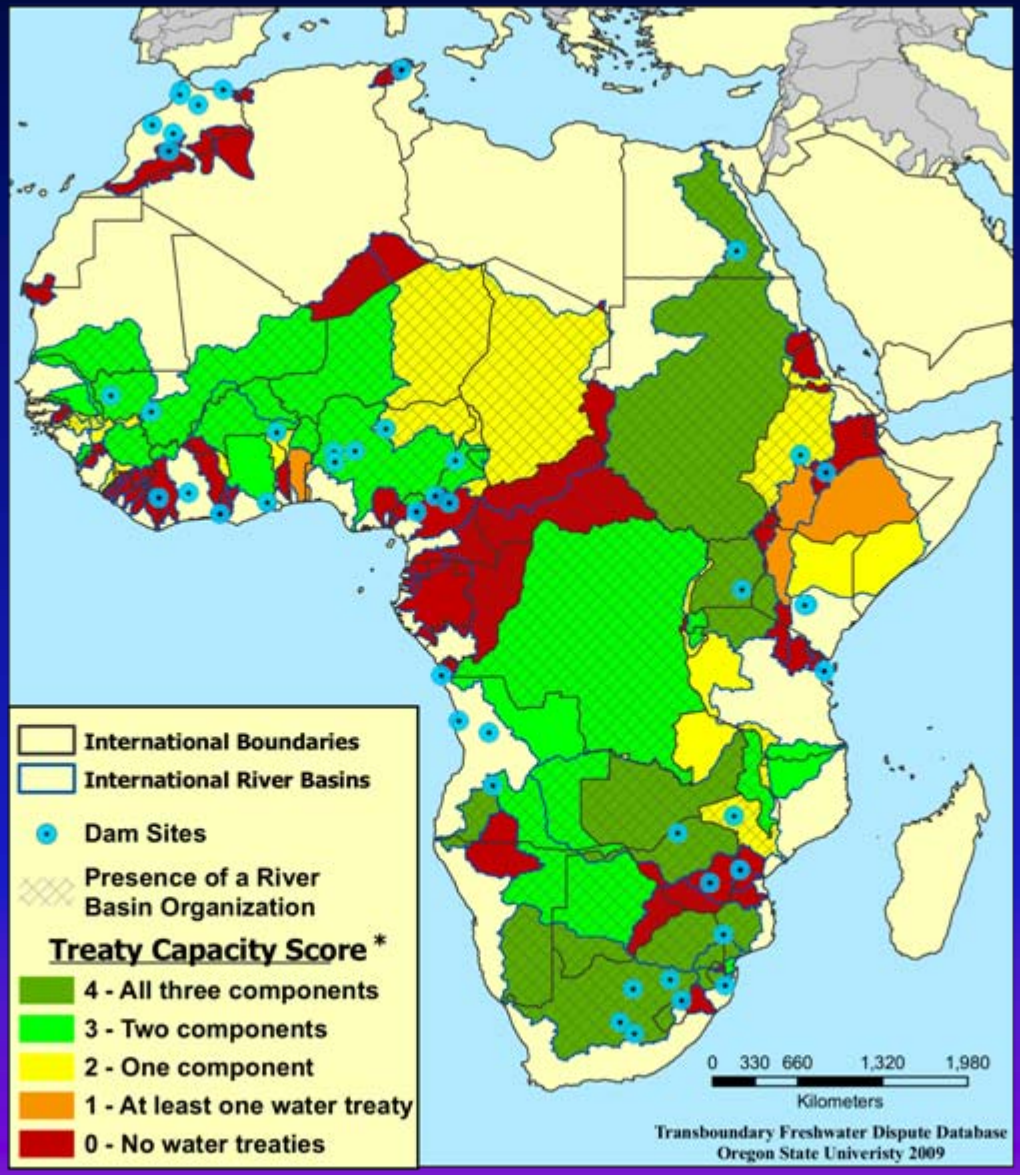
TFDD:Basins at Risk
Department of Geosciences
Oregon State University
Cartography: Greg Fiske
June 2001


Runoff
< 0.05
0.05 - 1.5
1.5 - 5
5 - 10
10 - 25
> 25


2030 - Driest
2050 - Driest
2030 - Middle
2050 - Middle
2030 - Wettest
2050 - Wettest
< -50
-50 to -20
-19 to -5
-5 to 0
0 to +5
+5 to +20
+20 to +50
> +50


River Basin Organizations
Treaty Capacity
SumScore
<Null>
0
1
2
3
4

River Basin Organizations and Treaty Capacity



*The treaty components considered for this analysis are:
- presence of water allocation formula(s)
- presence of provision(s) for dealing with variability
- presence of conflict resolution mechanism(s).

Draft Only - Do Not Cite
May 29, 2009

Water and Cooperation

"But the water problems of our world need not be only a cause of tension;
they can also be a catalyst for cooperation

....If we work together, a secure
and sustainable water future can be ours."

- Kofi Annan, February 2002