

NATO Security Science Forum on Environmental Security
NATO Headquarters, Brussels
12 March, 2008

Global Security Concerns: The case of water, global drivers and transboundary issues

András Szöllösi-Nagy

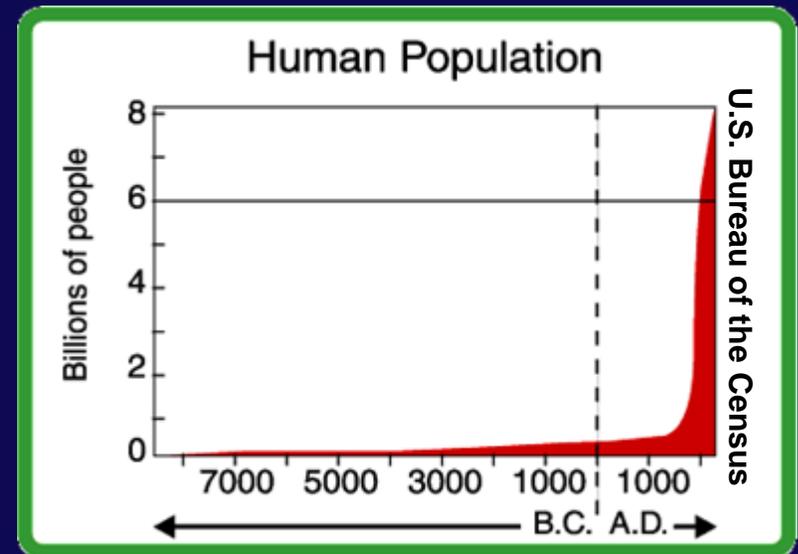
**Deputy Assistant Director General
Secretary,
International Hydrological Programme
UNESCO**



- The cycle is changing?
- Increased risks?
- Growing vulnerability?
- More disasters ?
- Less water for people?
- Crisis is looming?
- What crisis?
- Global or local?
- Transboundary issues?

Global change drivers

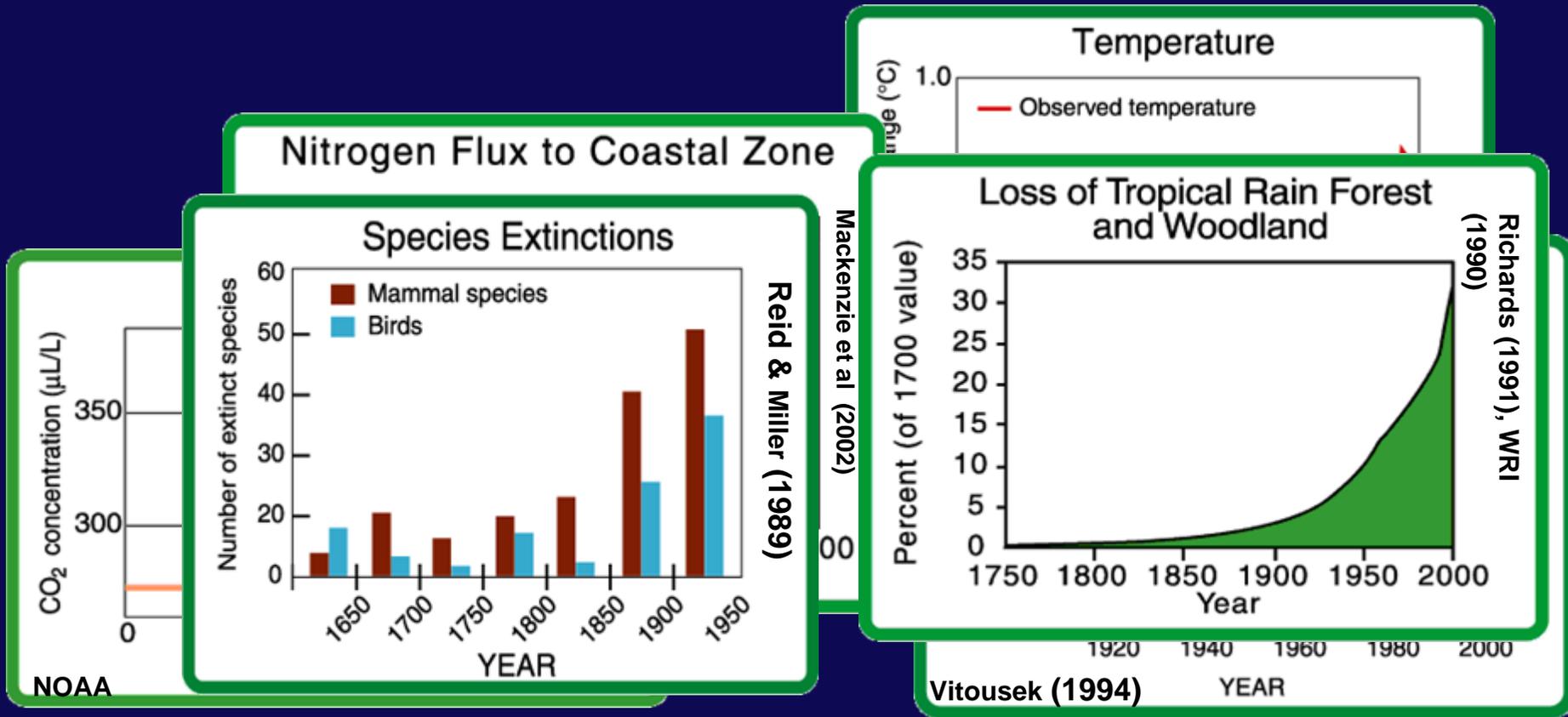
- Population growth, movement and age structures
- Economic growth
- Geo-political changes and realignments
- Trade and subsidies
- Resource competition
- Urbanization
- Land use change
- Technological changes
- Climate change

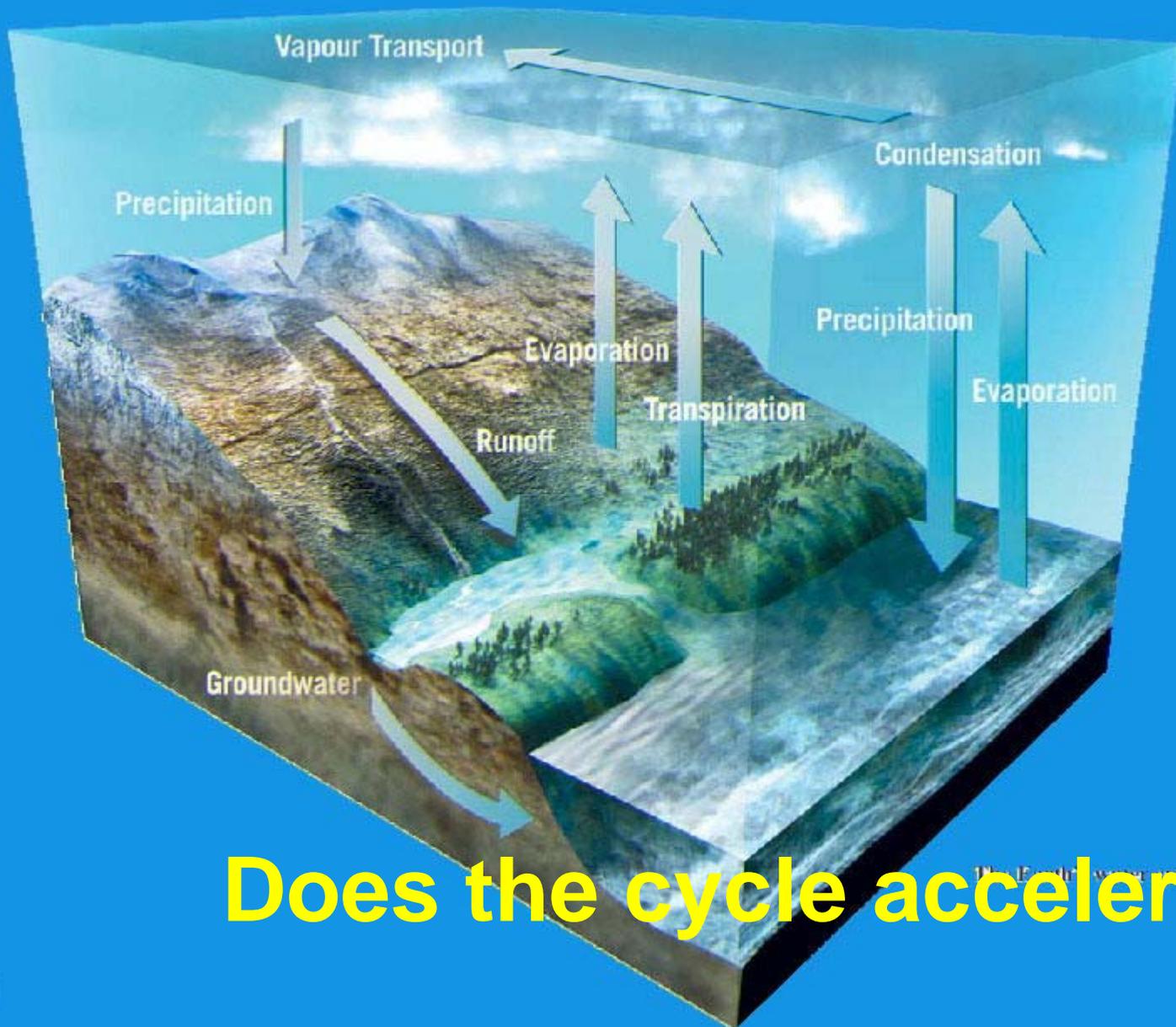


Global change impacts

- Global change is more than global climate variability/change
- It has natural PLUS human/social dimensions
- A constellation of changes, many global in domain

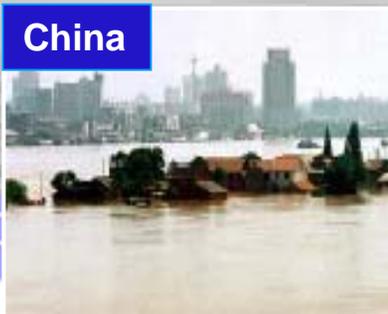
For example, we see large changes in:





Does the cycle accelerate?

Major floods and droughts worldwide in 2002



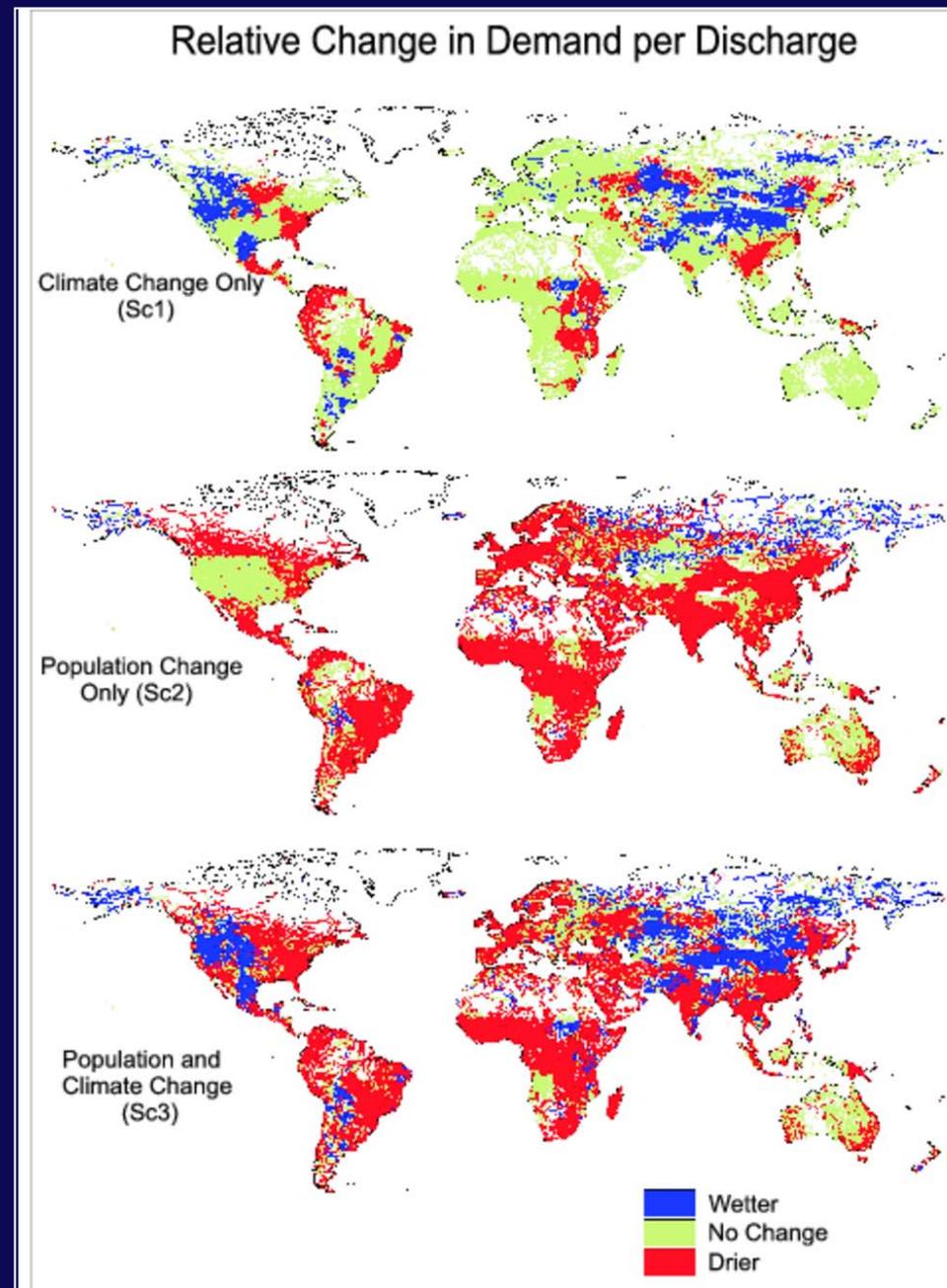
 Flood  Drought



There is pressing need to develop advanced risk management on water hazard in order to secure human life and ensure sustainable socio-economic development and poverty alleviation.

Water Stress Changes to 2025

- 80% of future stress from **population & development, not climate change!**
- Correct Priorities?
(E.g. 85% US global change research funding to climate and carbon)

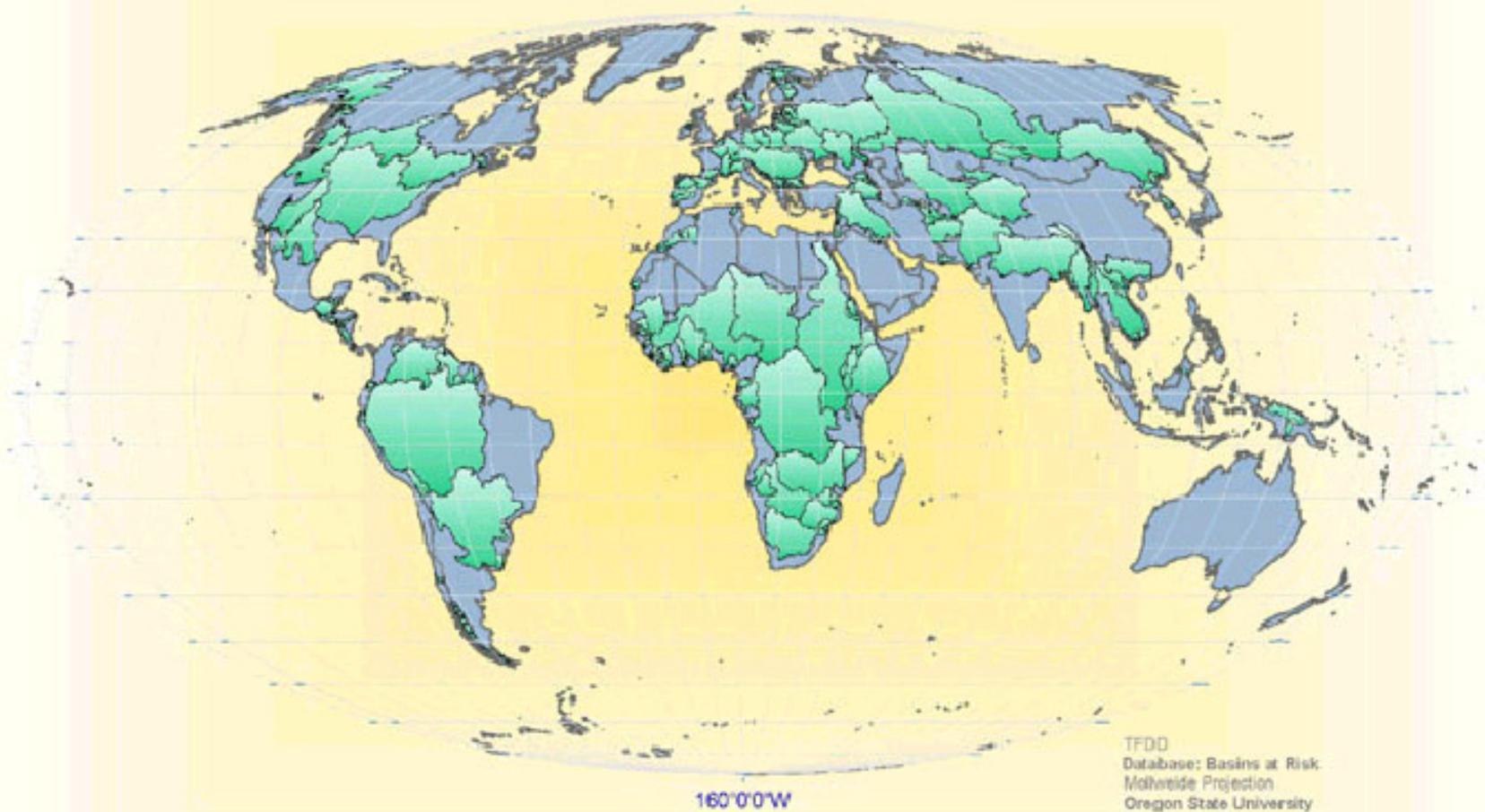


GLOBAL FRESHWATER RESOURCES

Relation between water availability and population



International Basins of the World



TFDD
Database: Basins at Risk
Mollweide Projection
Oregon State University
October 2000

States' surface within transboundary basins

145 States include territory within transboundary basins

21 States lie entirely within a transboundary basin

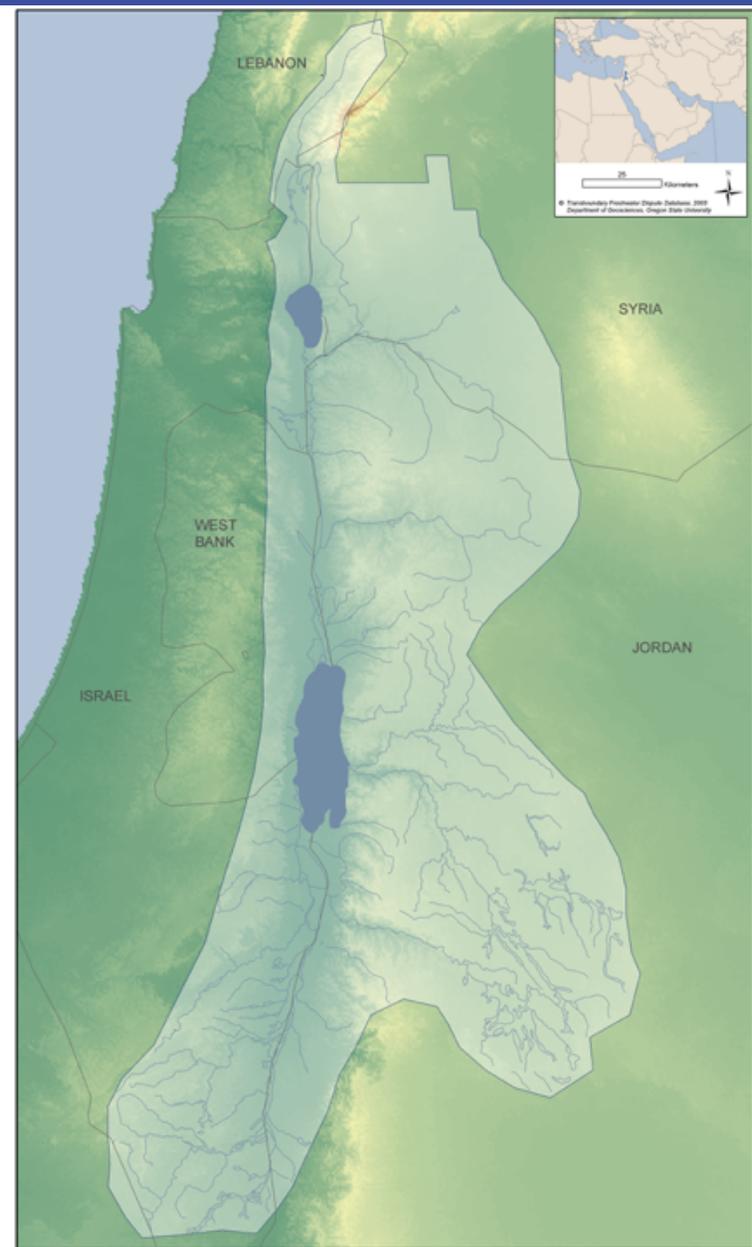
12 States have more than 95% of their territory within one or more transboundary basin(s)

WAR OVER WATER?

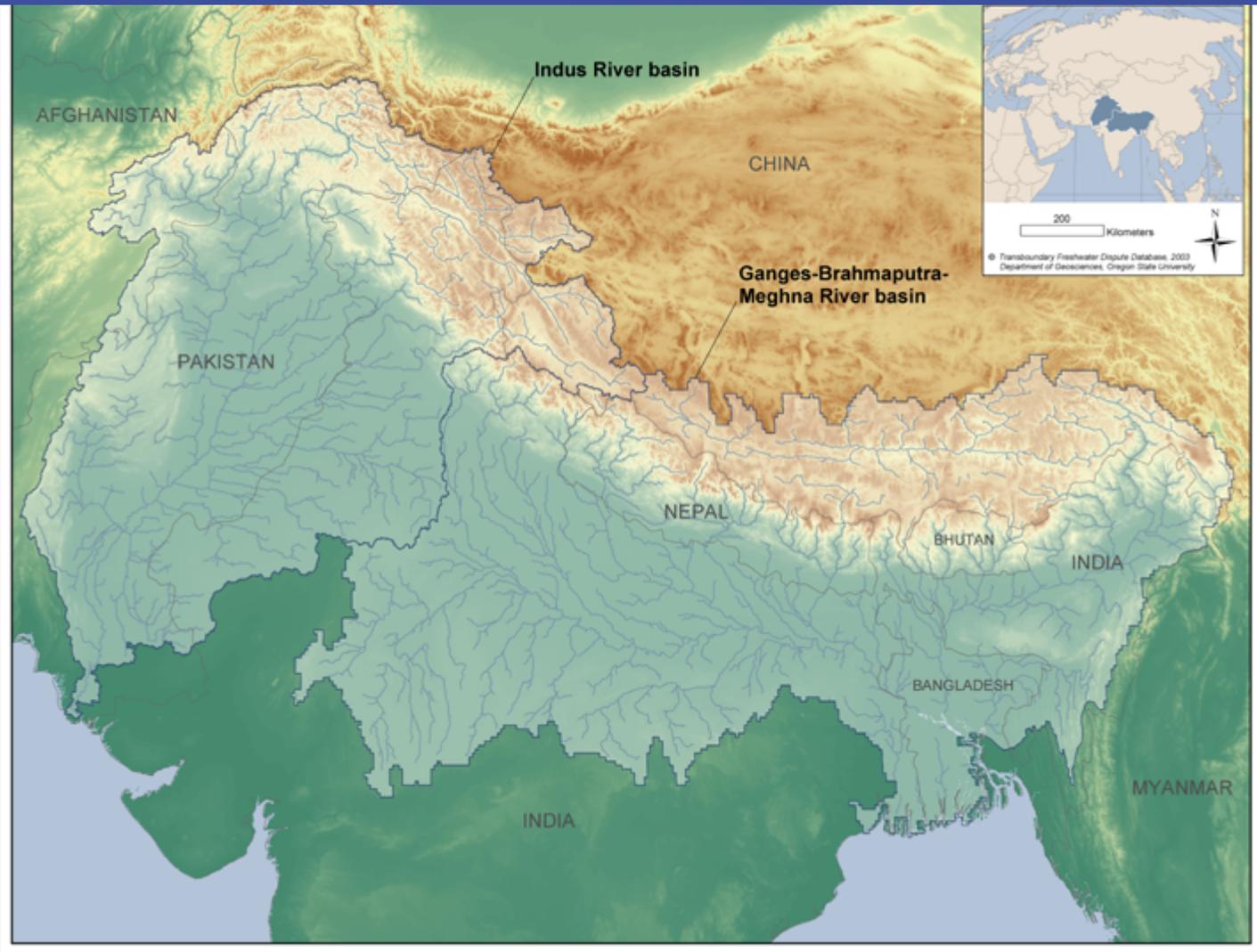
The Nile River basin



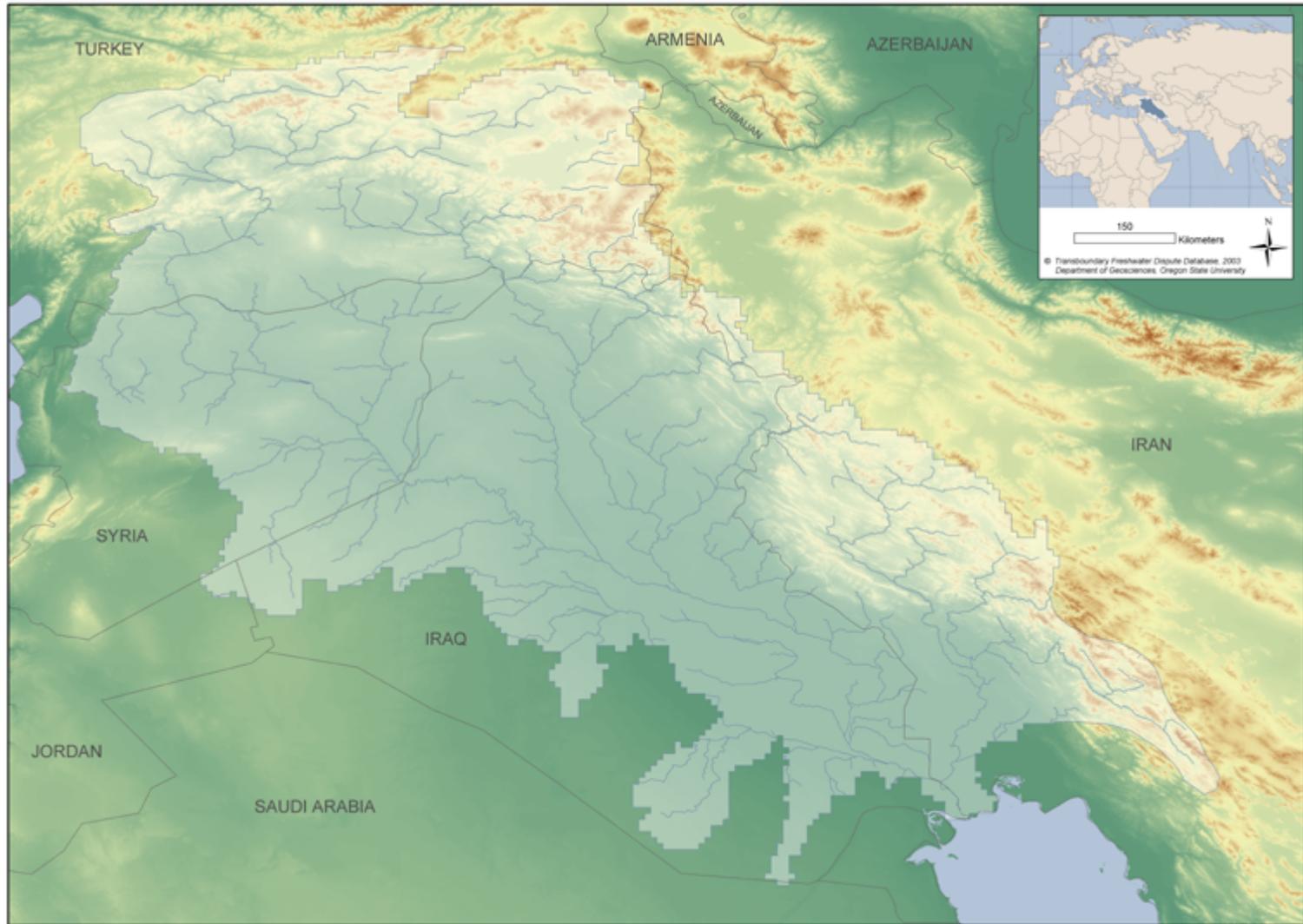
The Jordan River basin



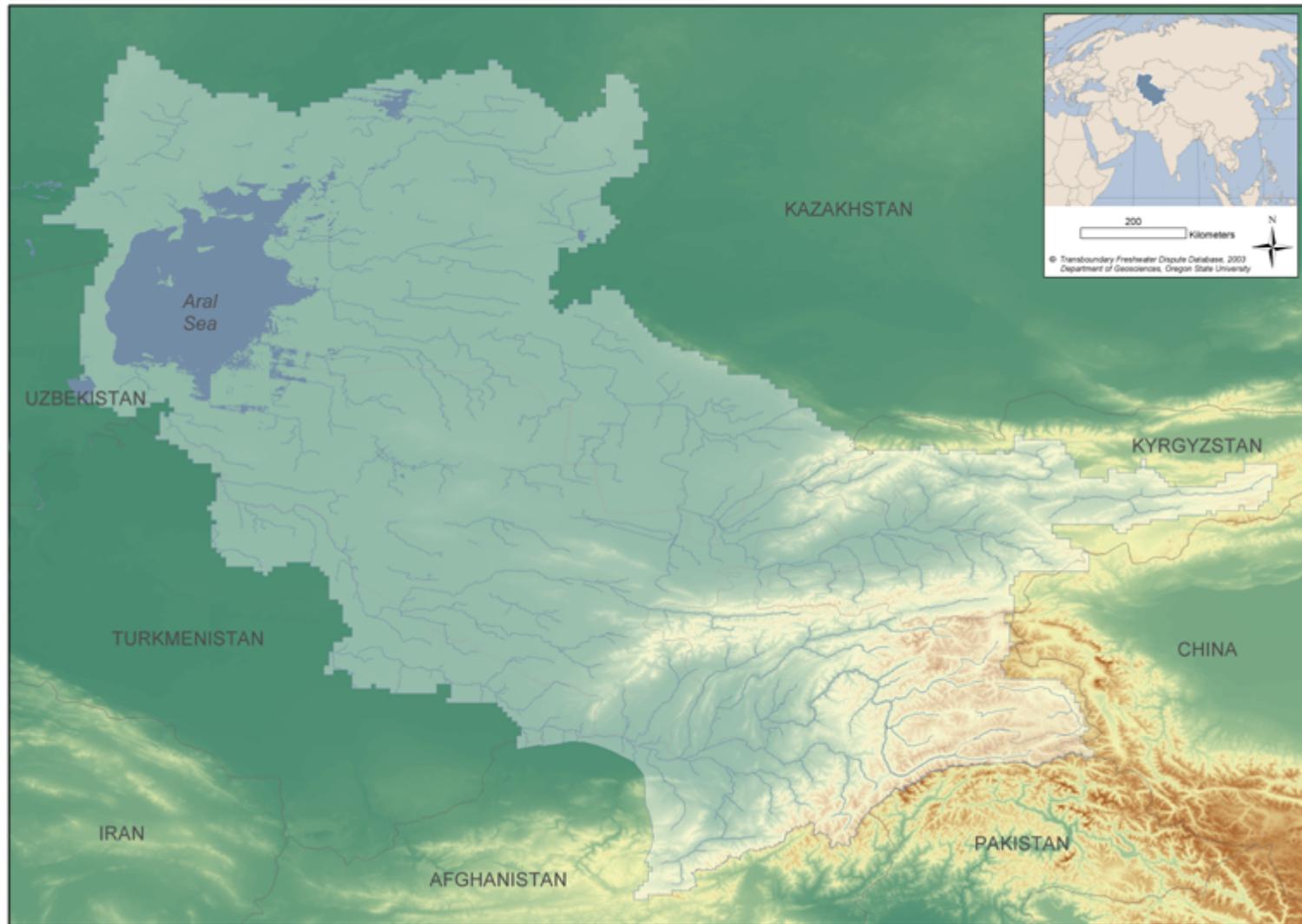
The Indus River and the Ganges Brahmaputra-Meghna River Basin



The Tigris Euphrates basin



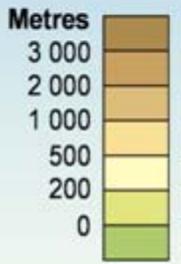
The Aral Sea basin



Water withdrawal and availability in the Aral Sea basin

km³ per year

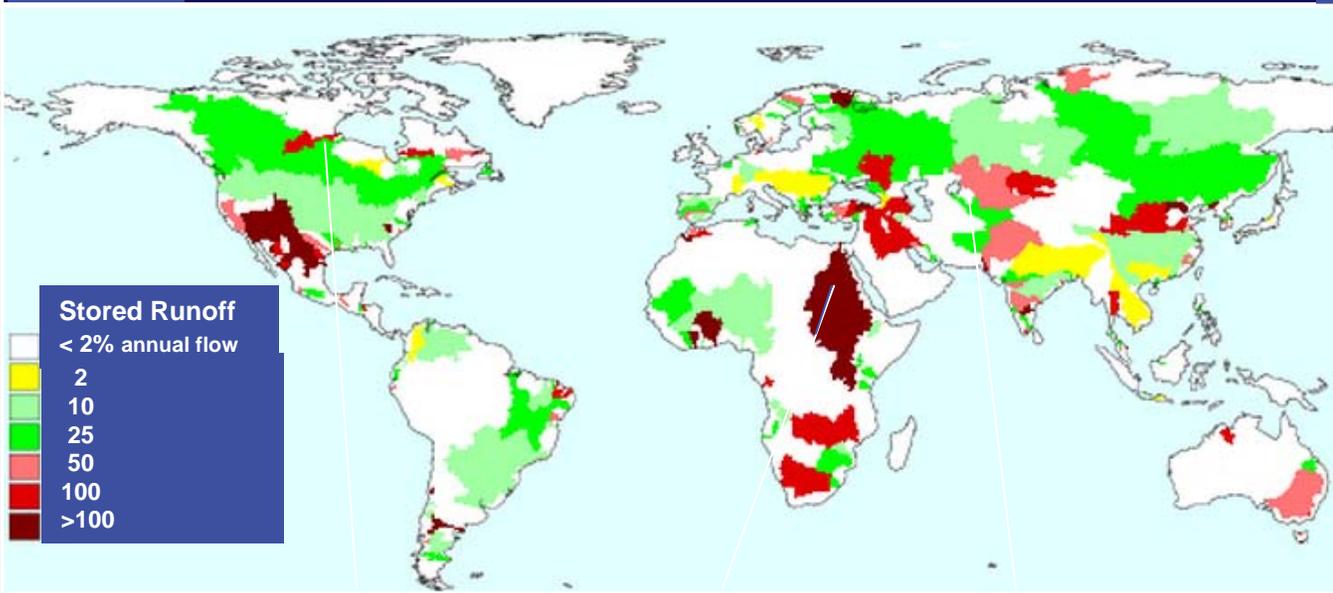
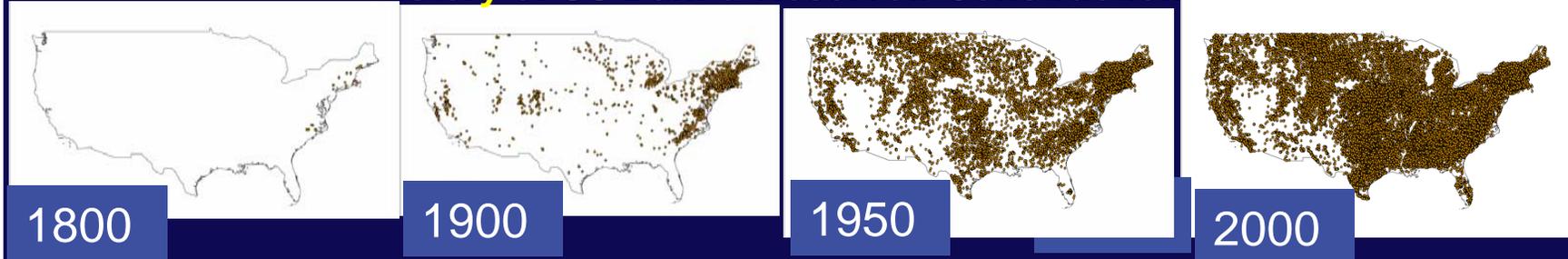
- █ Flow generation: water available in the country from rainfall and glacier melt
- █ Water abstraction: withdrawal from surface water sources (rivers, canals and lakes)



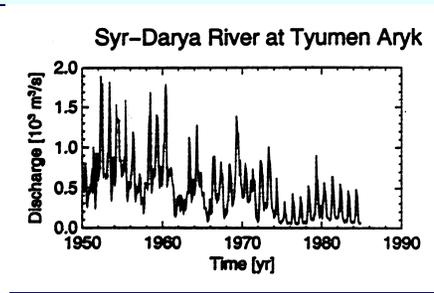
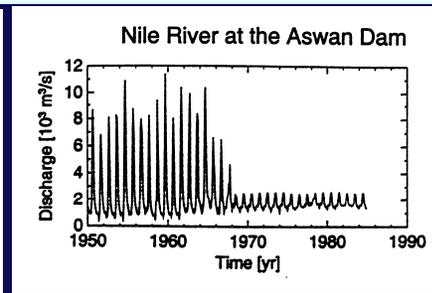
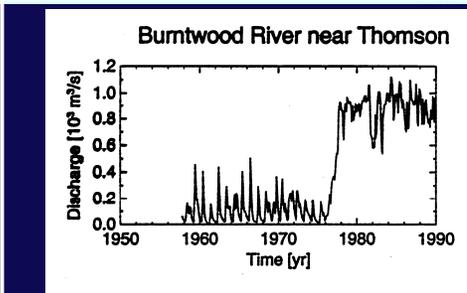
Source: Diagnostic Report on Water Resources in Central Asia, ICWC 2000.

THE MAP DOES NOT IMPLY THE EXPRESSION OF ANY OPINION ON THE PART OF THE AGENCIES CONCERNING THE LEGAL STATUS OF ANY COUNTRY, TERRITORY, CITY OR AREA OF ITS AUTHORITY, OR DELINEATION OF ITS FRONTIERS AND BOUNDARIES.

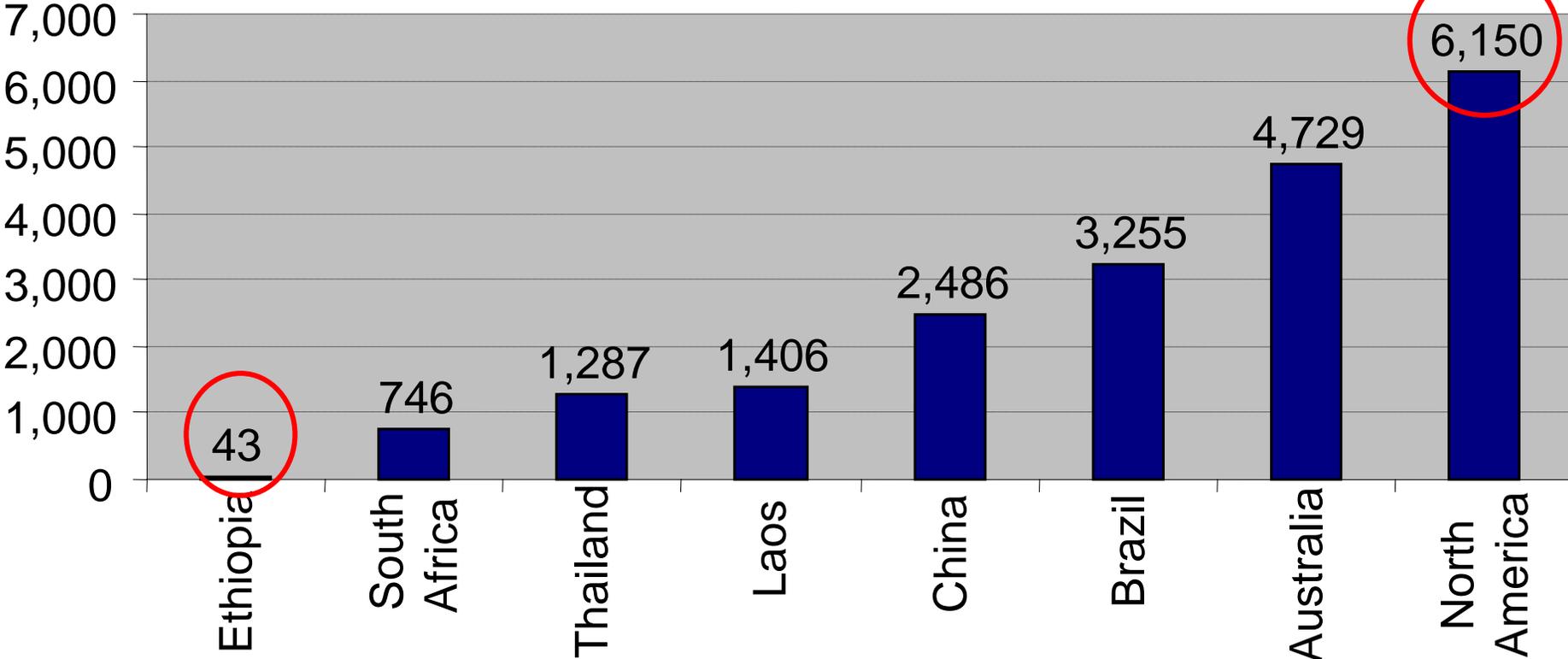
History of US Dam & Reservoir Construction



- 700% increase in water held by river systems
- Several years of residence time change in many basins
- Tripling of river runoff travel times globally (from 20 up to 60 days)
- Substantial impact on aquatic biodiversity
- Interception of 30% of continental TSS flux



Infrastructure gap: Water storage



UN Convention on the Law of Non-Navigational Uses of Transboundary Watercourses 1997

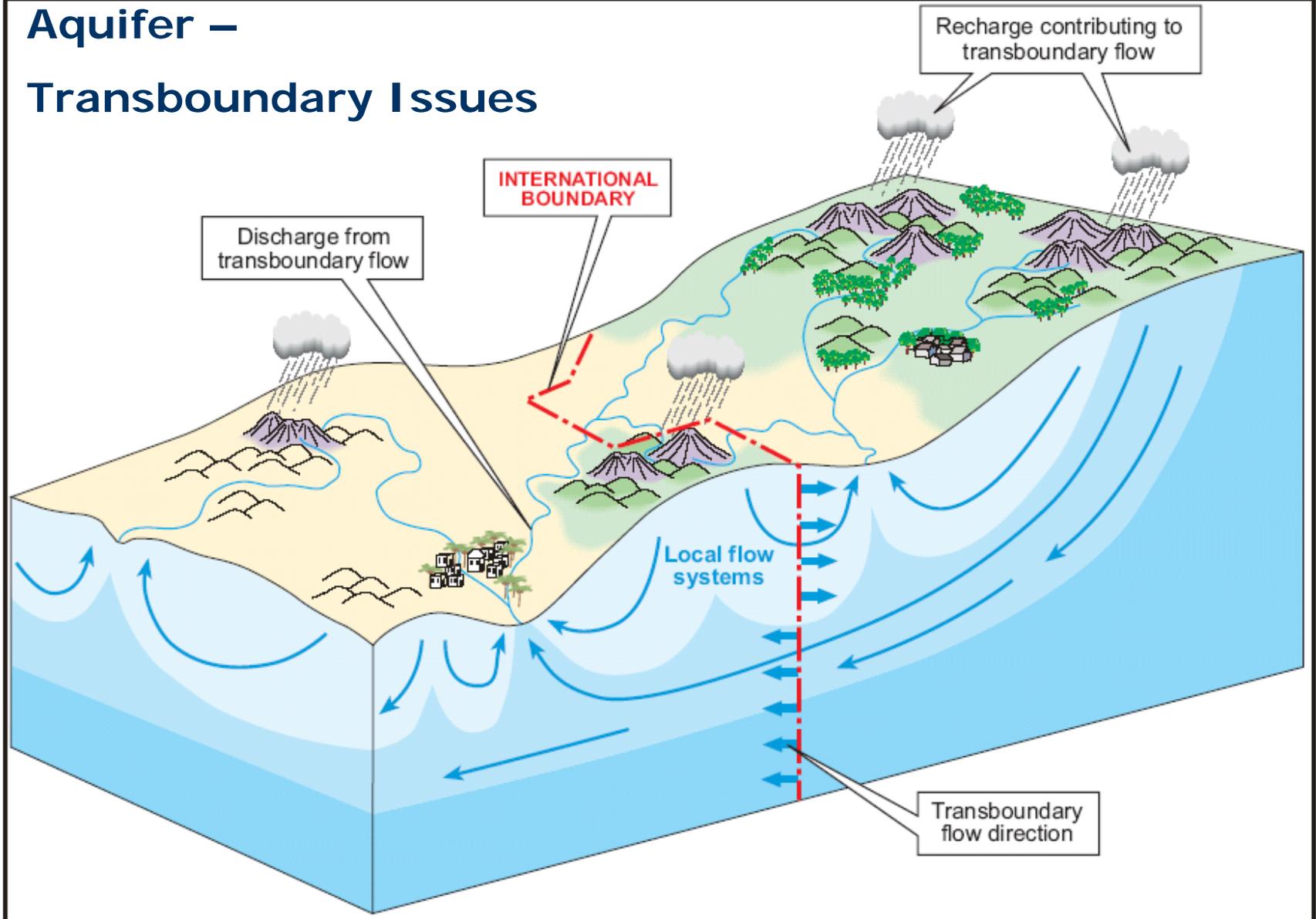
- Consistent with state practice
- Comprises earlier efforts of codification
- Adopted equitable utilization as leading principles of international water law, with a list of factors to be used for determination of equitability of share
- Adopted the principle of "no significant harm"
- Ratification process en route

Needed: 35

Obtained: 16

(Not yet in force after 27 years of negotiation)

Aquifer – Transboundary Issues



"The next war in the Middle East will be fought over water, not politics."

Boutros Boutros Ghali, former UN Secretary General in 1985

"The wars of the next century will be about water."

Ismail Serageldin, former vice president of the World Bank in 1999

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

Kofi Annan, former U.N. Secretary-General in 2001

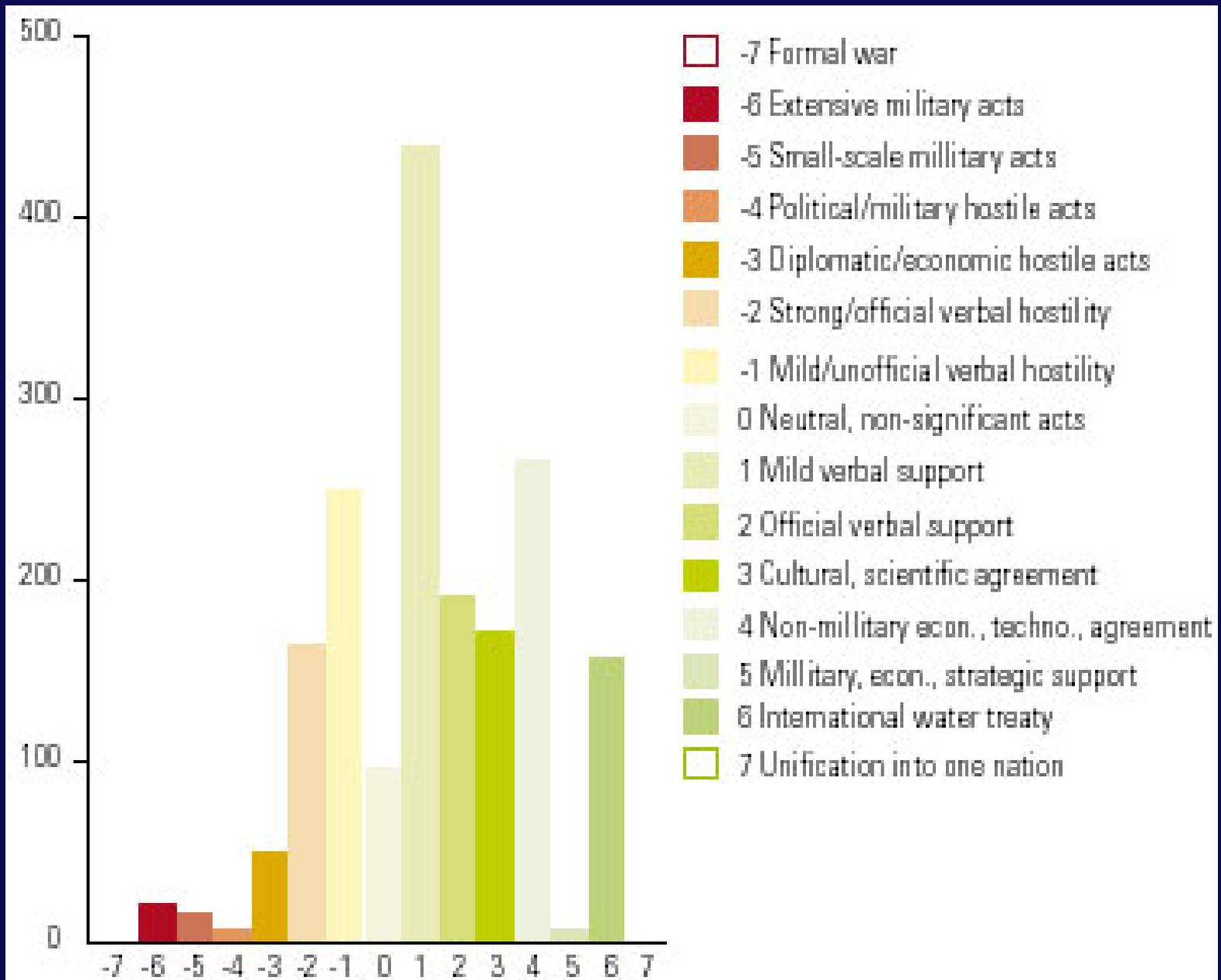
WAR OVER WATER?

ONE war over water:

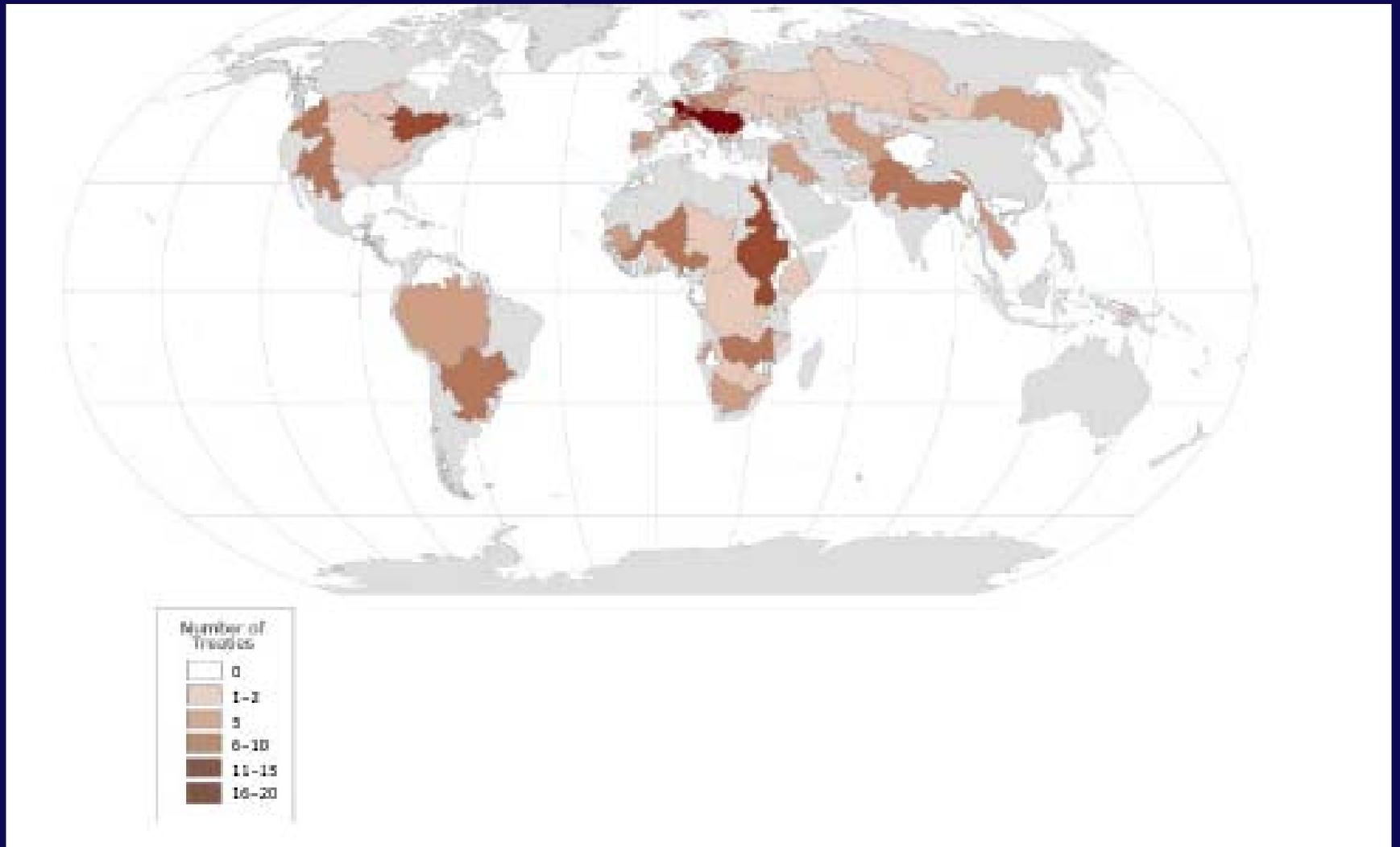
**Umma and Lagash in
Sumer**

(4500 years ago)

Events related to transboundary waters



Number of treaties per basin



“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

From Potential Conflict to Co-operation Potential



One of UNESCO's contributions to the
World Water Assessment Programme



World Water Assessment Programme

(WWAP)



The State of The World's Freshwater Resources



The challenge we all have

*How to put water in the minds
of people?*



“Anybody who can solve the problems of water will be worthy of two Nobel Prizes, one for peace and one for science”

(President J. F. Kennedy)