Global Water System Project

Open Science Conference

7-9 OCTOBER 2003

Convened and Sponsored by:
Global Environmental Change Programmes
(DIVERSITAS, IGBP, IHDP, WCRP)

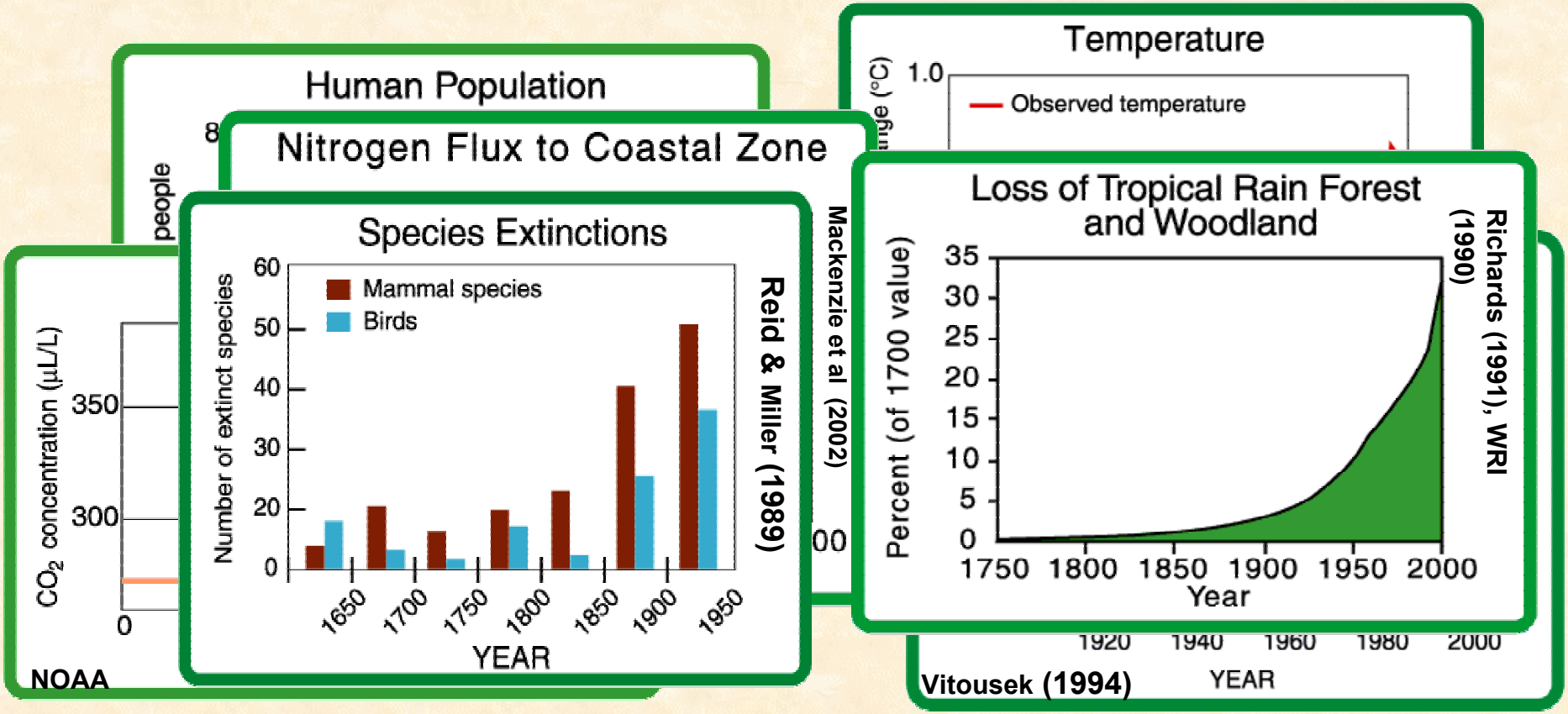
With financial support from:

Federal Ministry of Education and Research

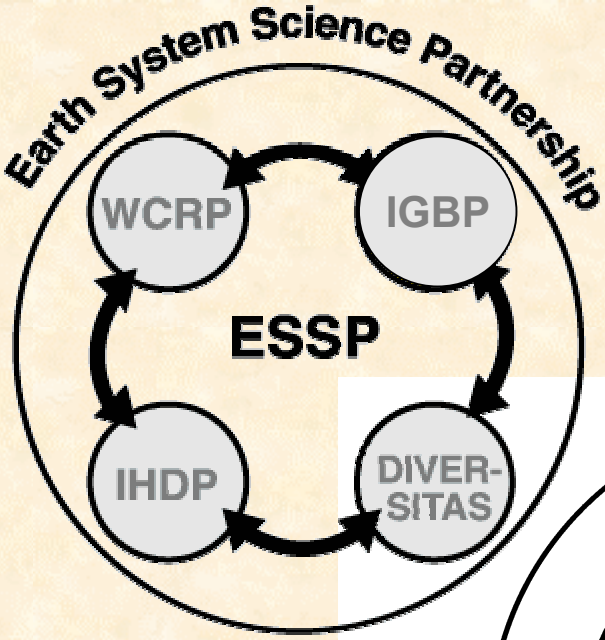
What is Global Change?

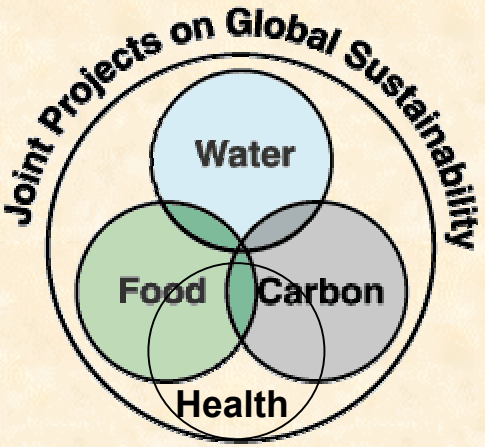
- Global Change is more than Global Climate Change
- It has natural PLUS human/social dimensions
- A constellation of changes, many global in domain

For example, we see large changes in:

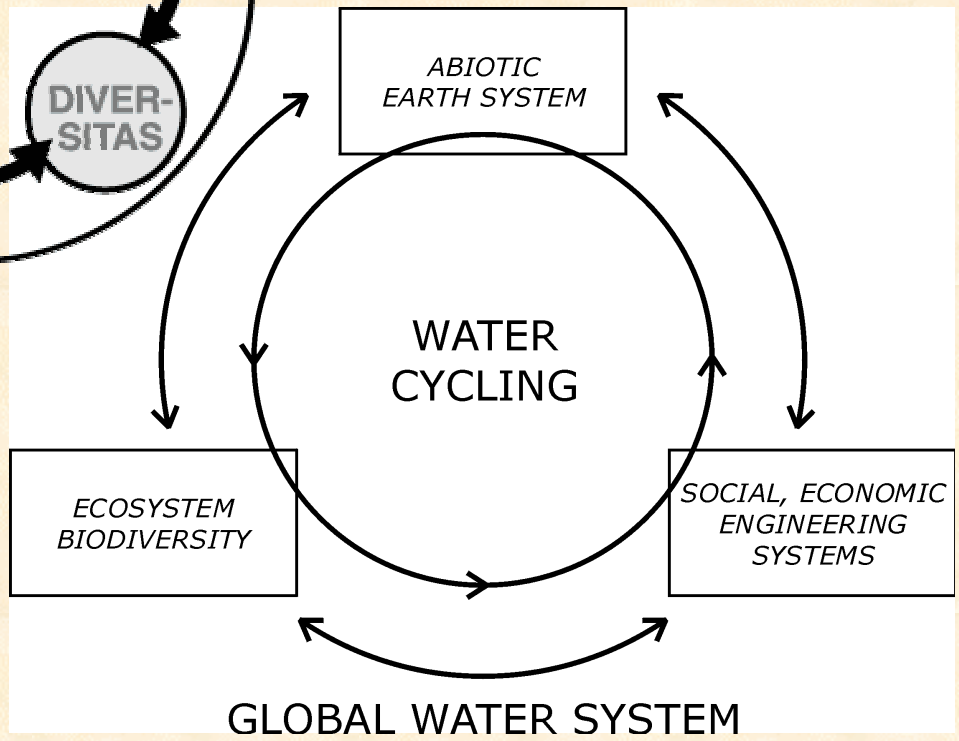


Global Water System Project (GWSP)





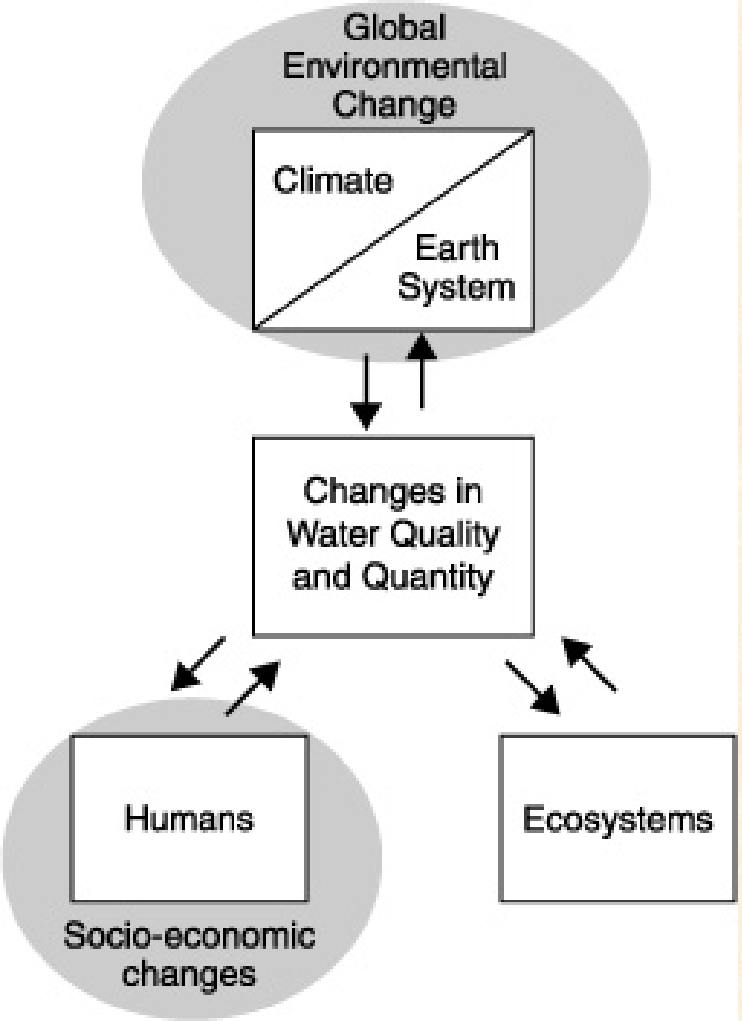
Earth System Science Partnership



Global Water System Project (GWSP)

Earth System Science Partnership

- Both Natural & Human Components
- Change to One Part of the GWS Reverberates Throughout
- Clear Need for Interdisciplinary Approach
- Clear Need for Partners



Earth System Science Partnership

Global Water System Project (GWSP)

-Brief Chronology & Noteworthy Developments-

- 2001: Initial discussions; Amsterdam Open Science Conference; Scoping Team established (Joint Water Project)
- 2002: Meetings in Reading, Paris; Drafts of "The Water Challenge"; encouragement of GECPs Chairs; presentations & announcements in GECPs publications; Science Framework document begun
- 2003: Regional meetings: Bethesda, Kyoto, Europe; Continued Science Framework Development; Announcements; International Project Office Established (Bonn, GERMANY); Open Science Conference (Portsmouth, New Hampshire USA)
- 2005: "Integrated Assessment and Management of Water Resources: A North-South Analysis" jointly organized by HELP/GWSP/GLOWA to be held in Bonn on 23 – 25 February 2005; Science Panel and Asian Meeting in Kyoto
- Future: 3rd Science Panel Meeting in Mexico in March 2006

GWSP OVERARCHING SCIENCE QUESTION

- ***How are human actions changing the global water system and what are the environmental and socio-economic feedbacks arising from the anthropogenic changes in the global water system?***

SUPPORTING SCIENCE QUESTIONS

- **Question 1:**
  - **What are the magnitudes of anthropogenic and environmental changes in the Global Water System and what are the key mechanisms by which they are induced?**
- **Question 2:**
  - **What are the main linkages and feedbacks within the Earth system arising from a changing Global Water System?**
- **Question 3:**
  - **How resilient and adaptable is the Global Water System to change, and what are sustainable management strategies?**

Earth System Science Partnership

GWSP: DEFINING THE NICHE

(i) Focus is on Global Environmental Change

(ii) Global in Its Perspective but Drawing from Regional and Case Studies

(iii) Integrative & Interdisciplinary

(iv) Past-Present-Future Time Domains

(v) Science Driven but Policy-Informing

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Cross-Cutting Activities to Support GWSP Science Questions

(1) Building the GWSP Information Base

(2) Integrating ESS and Socioeconomic Approaches

(3) Scaling from Region-to-Globe, Globe-to-Region

(4) Integrative GWSP Models

(5) Informing Policy and Management

GWSP Pilot Study ➔ Virtual Water Trade??

http://www.gwsp.org/

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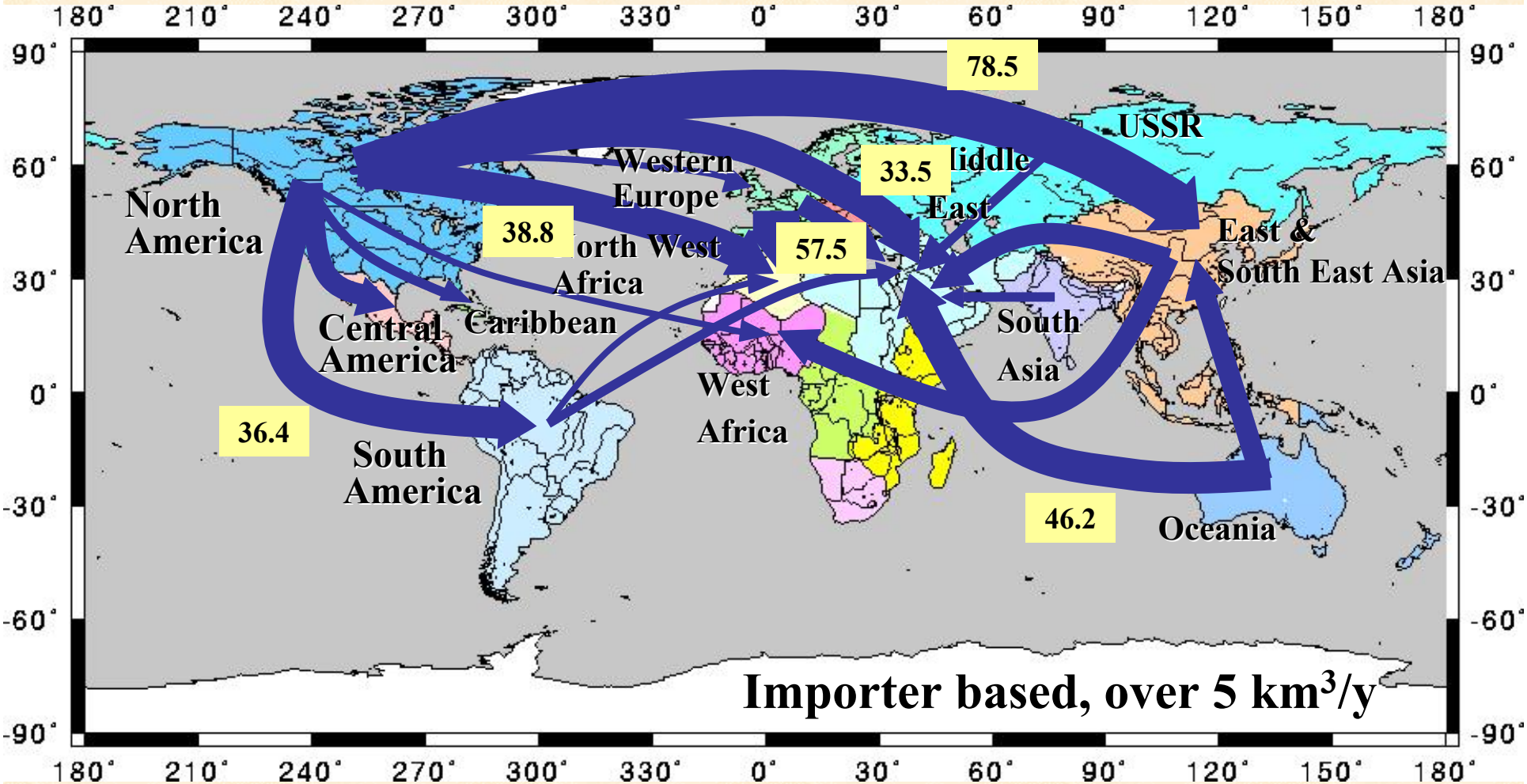
Output from Kyoto Meeting

- Cross-cutting Issues over ESSPs
  - Physical Water Flow
  - Biogeochemical flow
  - Human dimension
- Working Group Activities:
  - WG1: Dam basin (Sharad Kumar Jain)
  - WG2: Mega city in the coastal zone (Makoto Taniguchi)
  - WG3: Land use/cover changes in monsoon climate (Suppakorn Chinvanno)
- 2nd GWSP-Asia Meeting (June 2006?)

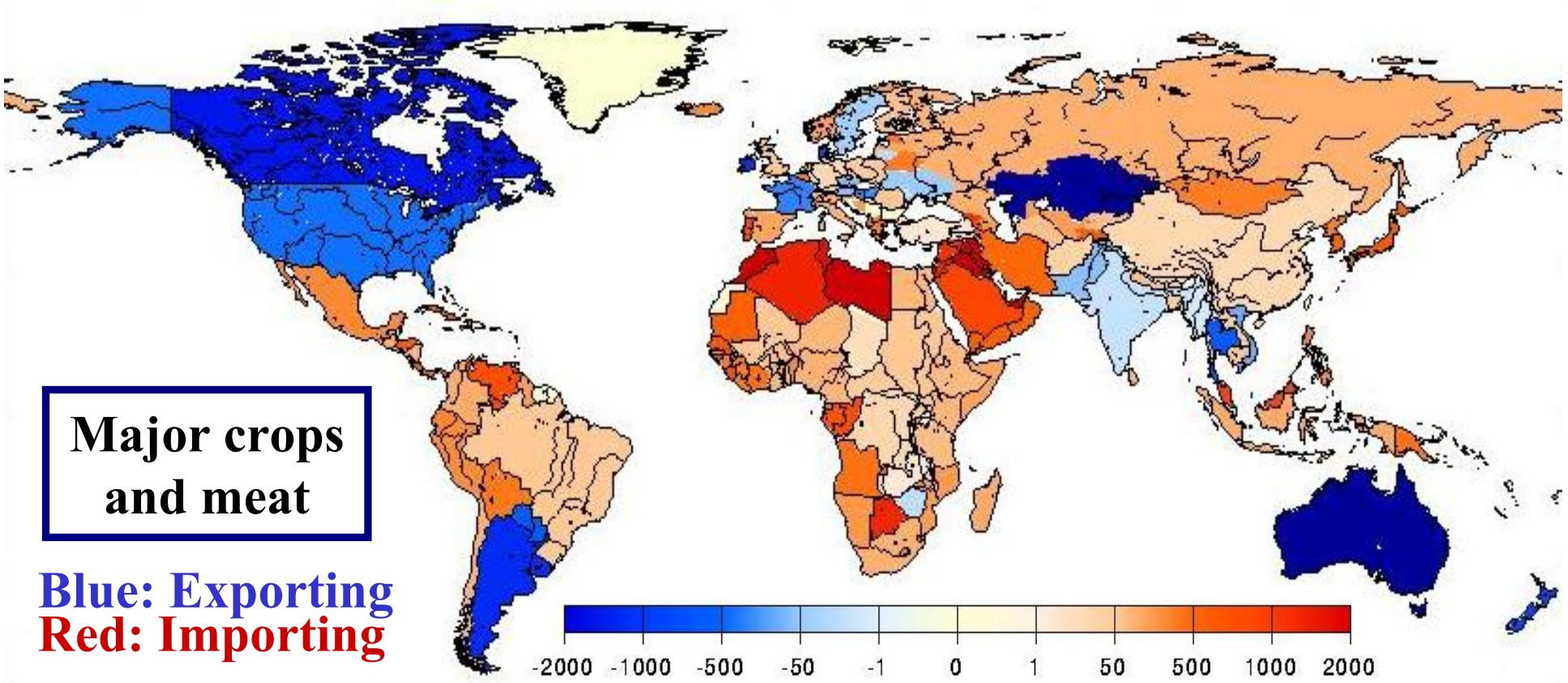
“Virtually Required Water” Trade between Regions in 2000 (cereals only)



(Oki and Kanae, 2004)

(Based on Statistics from FAO etc., for 2000)

Virtual Water Balance in Countries (m^3/c/y) in 2000

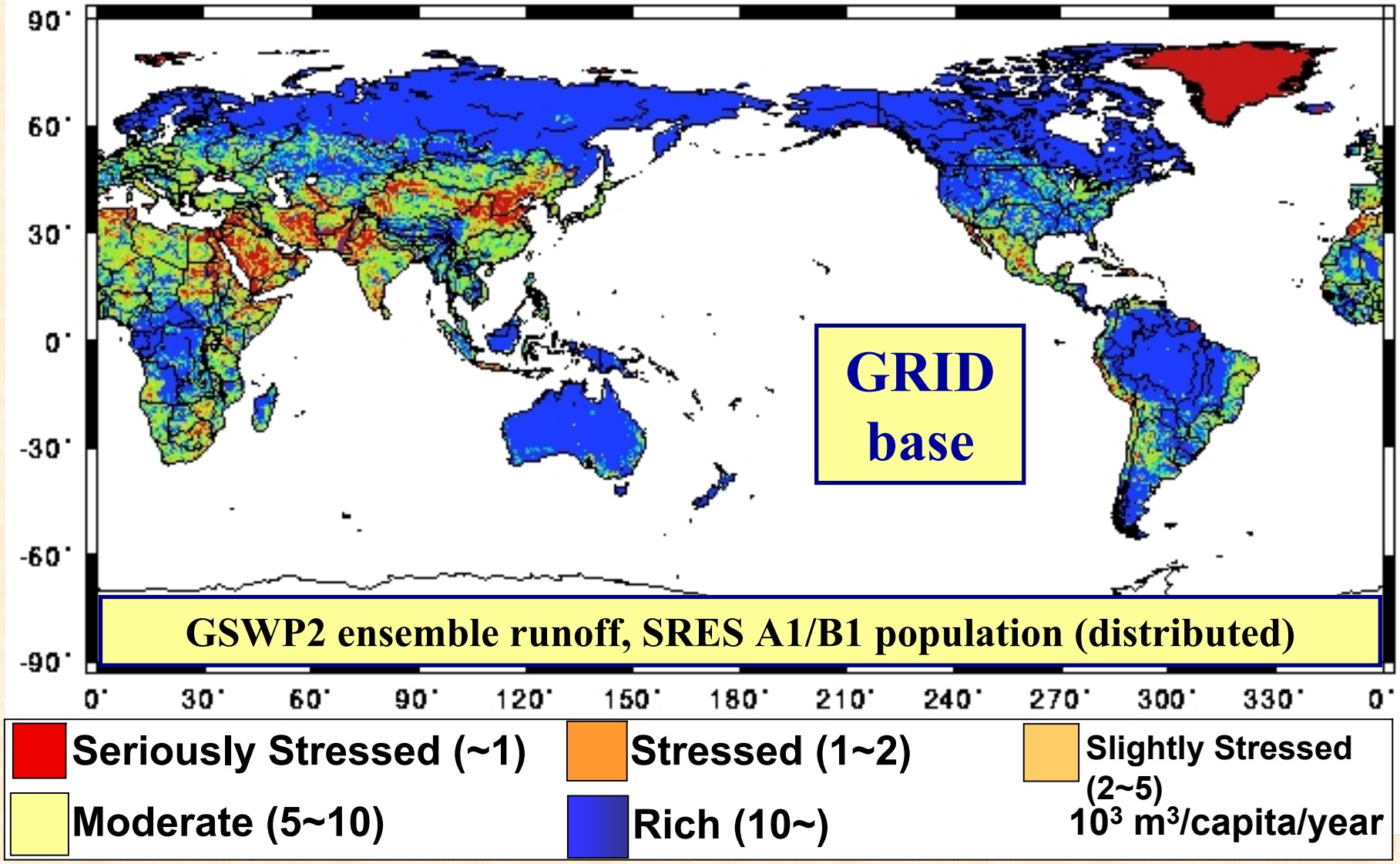


(Oki and Kanae, 2004)

- 7 out of top 10 importing countries are seriously poor in water resources.
- 7 out of top 10 exporting countries are rich in water resources.
- Denmark (10) and India (18) are water stressed but exporting *RW* in net.

Conventional Water Resources Assessment

Potentially Available Water Resources per Capita in 2000



Conventional Water Resources Assessment

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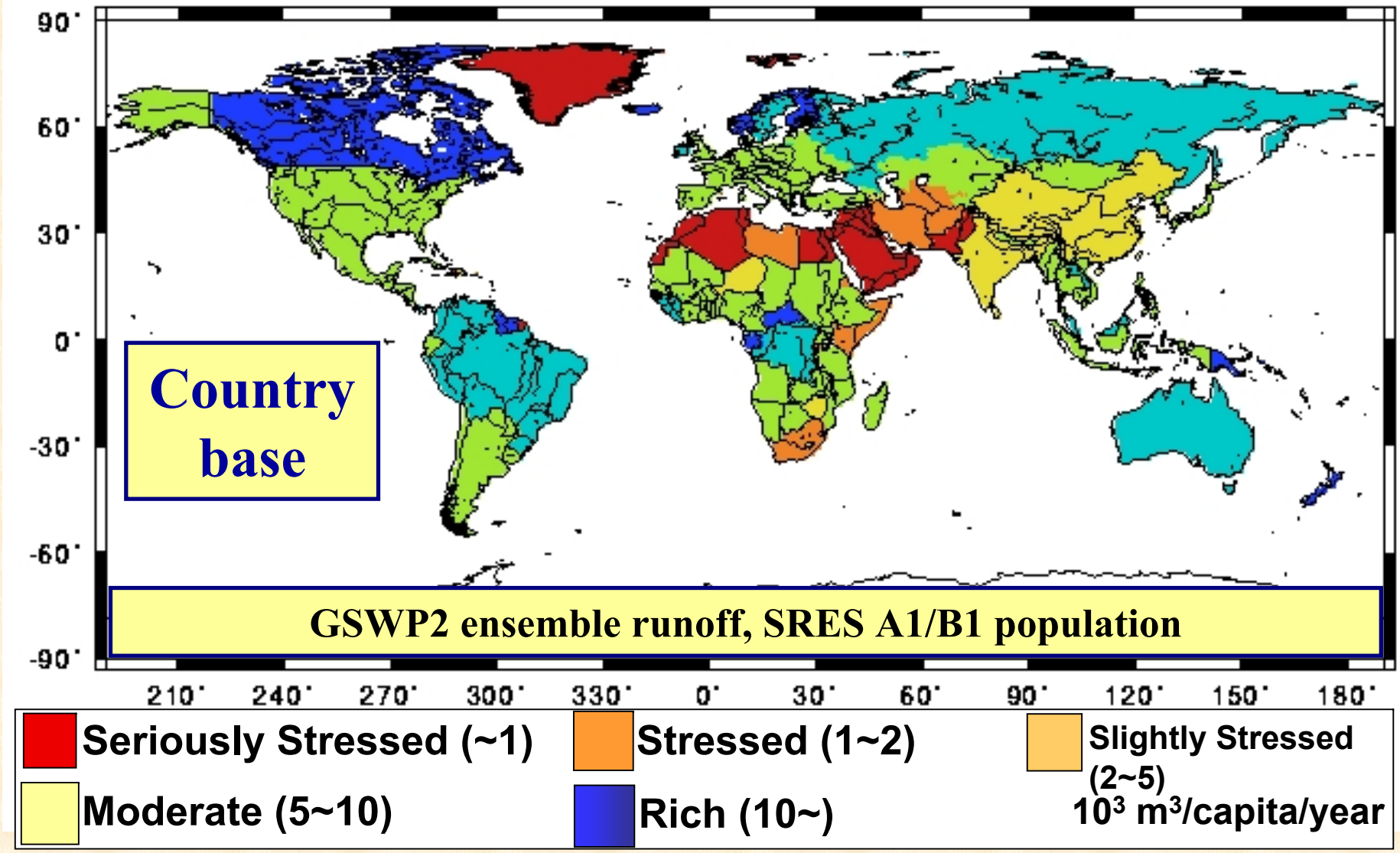
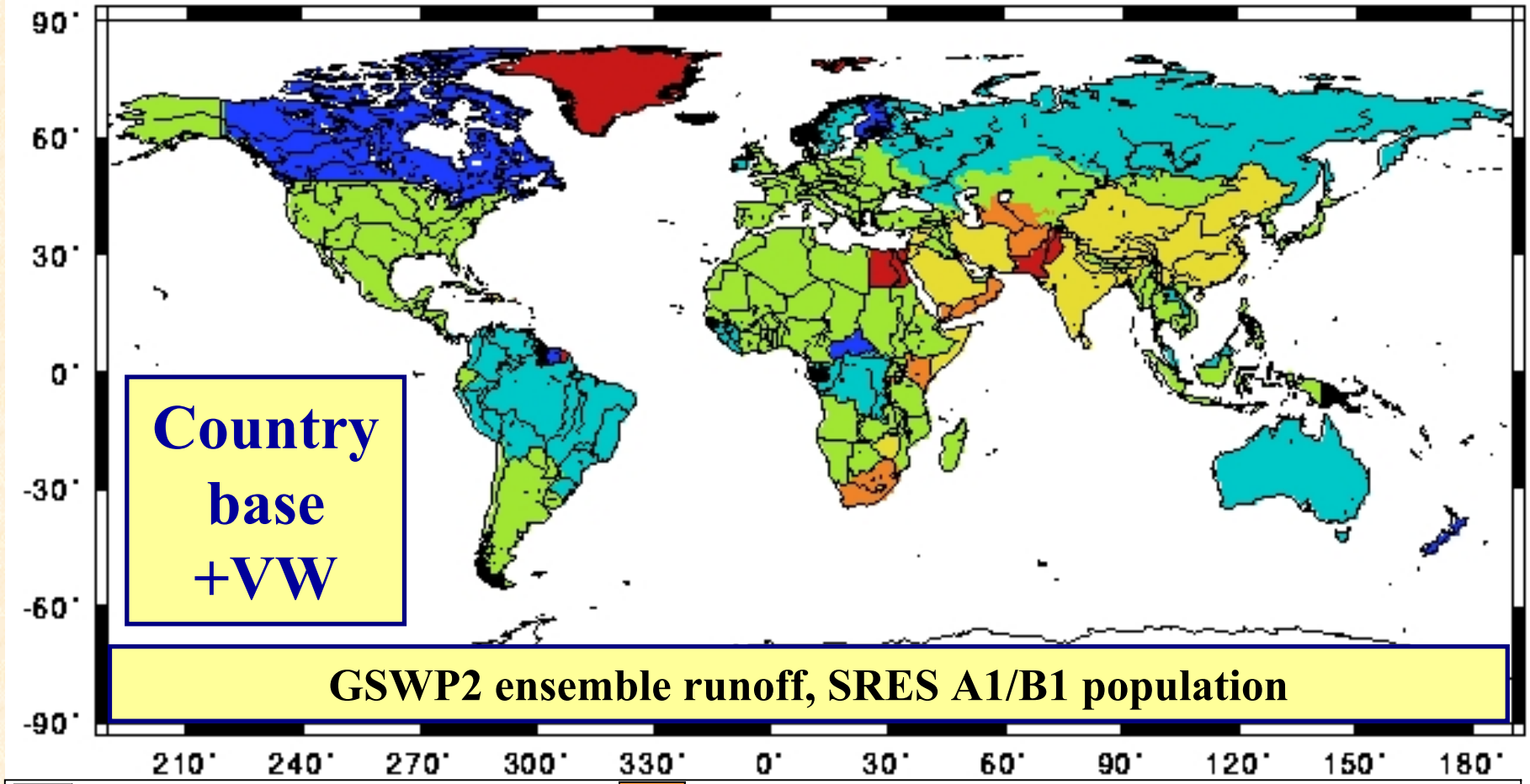


World Water Resources Considering Virtual Water Trade

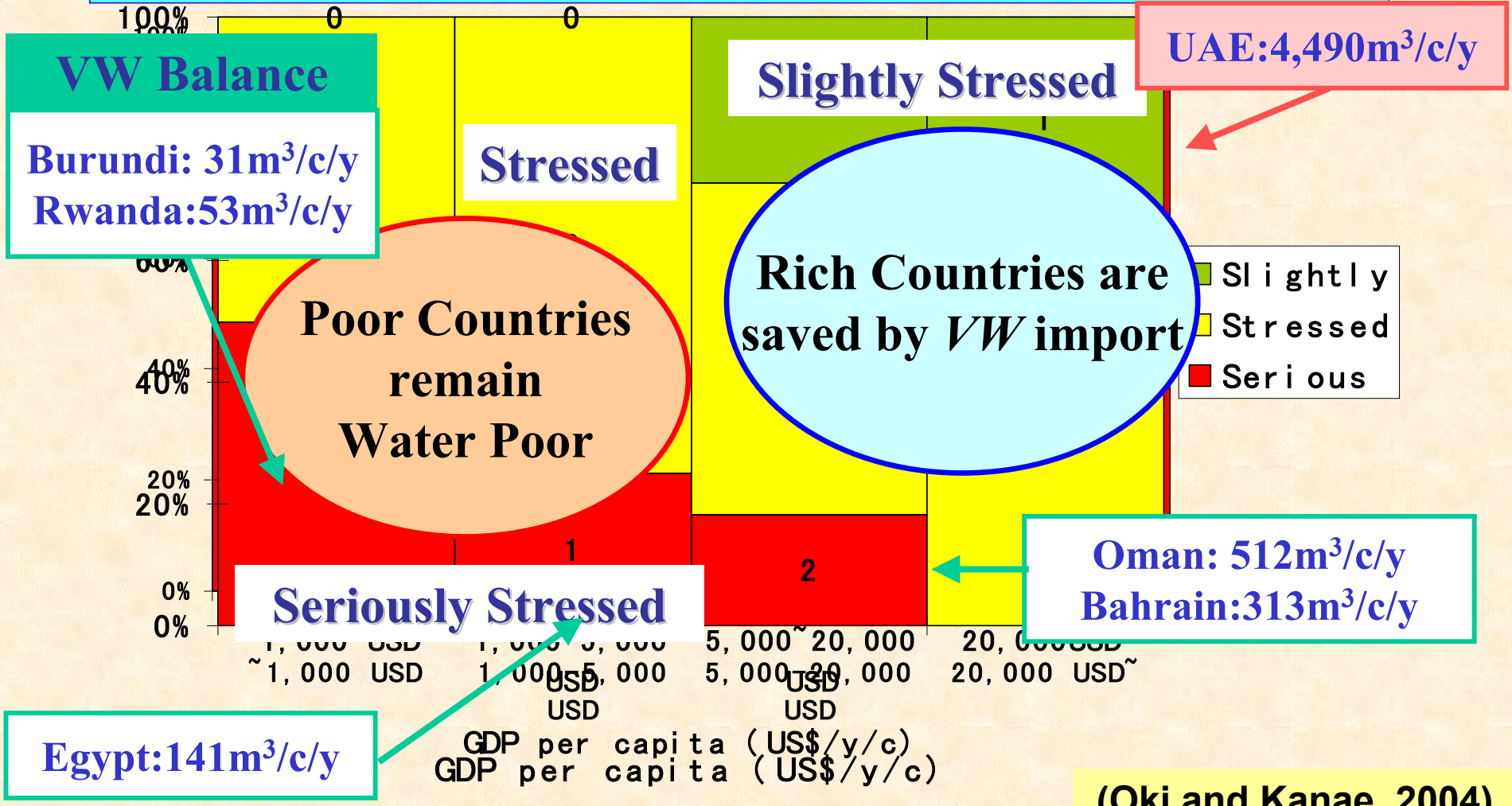
Potentially Available Water Resources per Capita in 2000



Water Resources Assesment Considering VW trade

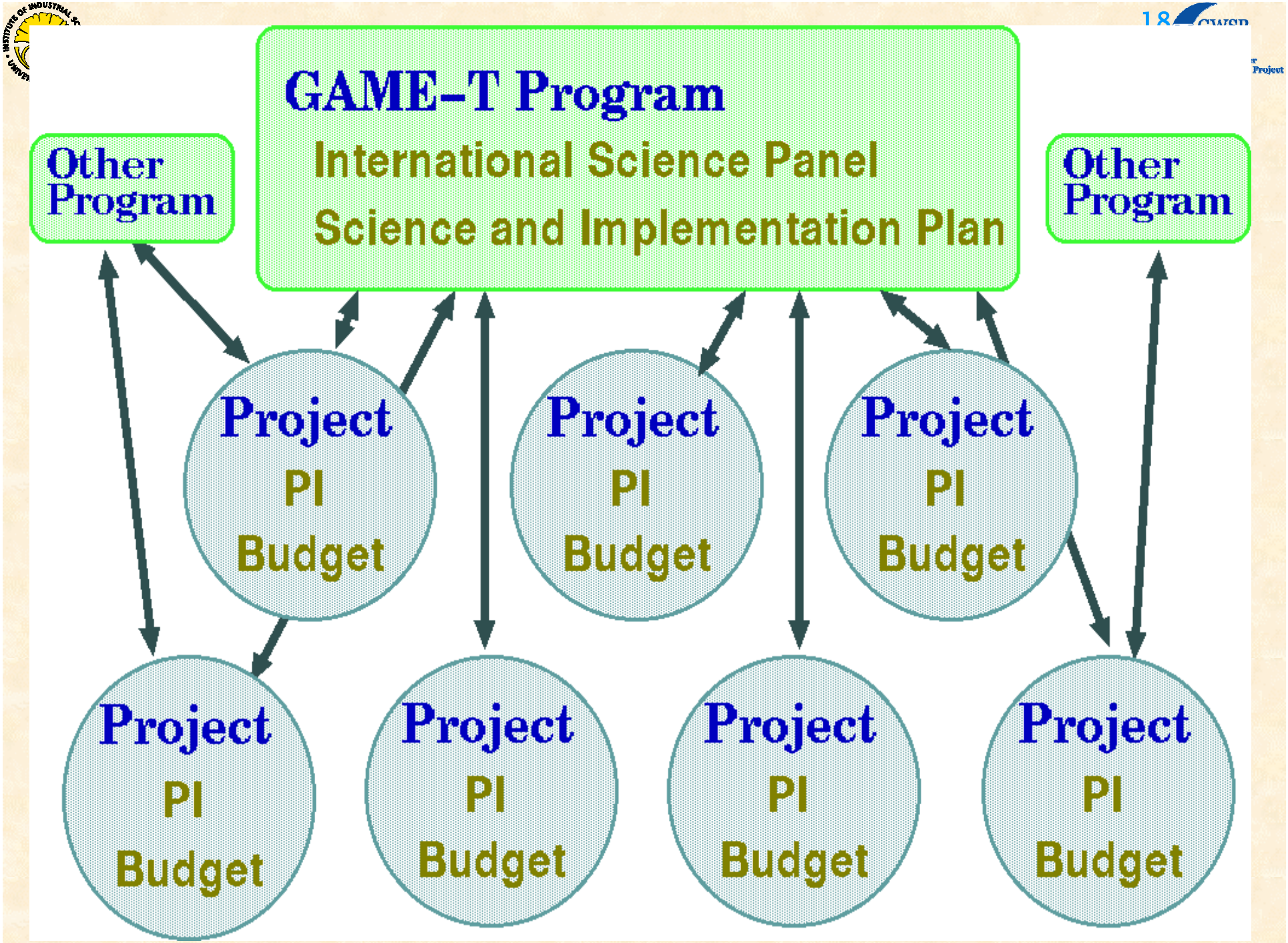
22 Countries were classified into “seriously stressed” in 2000 by conventional water resources assessment.

➔ +Virtual Water Import



(Oki and Kanae, 2004)


飲水思源
When you drink water,
think its origin.
飲食思水
When you eat,
think about water.
饮水区，禁止污染!
Drinking water part
No pollution !
Thank you.


GAME-T Program
International Science Panel
Science and Implementation Plan
Other Program
Other Program
Project PI Budget
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