Water Resources: How much water is there and whose is it?

ENSC 407 Global Water Issues
Dr. H. Jamieson
Lecture 2 – Sept 16, 2004

A watery planet?

All streams flow into the sea
Yet the sea is not full.
To the place the streams came from,
There they return again.

Ecclesiastes 1:7

All the water there will be, is.
Anonymous

The World's Renewable Water Supply

From Postel, Last Oasis
The world’s major lakes and rivers

- 20% of world’s runoff from Amazon basin (4 rivers)
- Other major rivers: Asia (11), North America (5), Africa (3) and Europe (2)
- Major lakes are in glaciated areas: Baikal, Great Lakes in North America and Africa

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4000 m³/person/year


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16 000 m³/person/year

These and other values in this series from de Villiers, Water Wars

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35 000 m³/person/year

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6000 m³/person/year

Unevenly distributed
Do we have enough water? Evidence for water scarcity

- Level of Dead sea dropped 10 m in 20th century
- The Sahara is expanding
- Lake Chad is shrinking, the Aral sea is disappearing
- In northern China, water table is dropping ~1 m/year
- in Punjab and Bangladesh, it is dropping even faster
- Some Americans consider Canadian rivers are being “wasted” and push for water exports

Forecasting Water Needs

Making predictions is very difficult, especially about the future.

Casey Stengel

World Water Use by Sector

From Postel, Last Oasis quoting Shiklomanov, 1990

Predicted Water Withdrawals

Diamond: post-1995 projections
Circle: 1980-1995 projections
Asterisk: pre-1980 projections