

IAEA's Water Resources Programme

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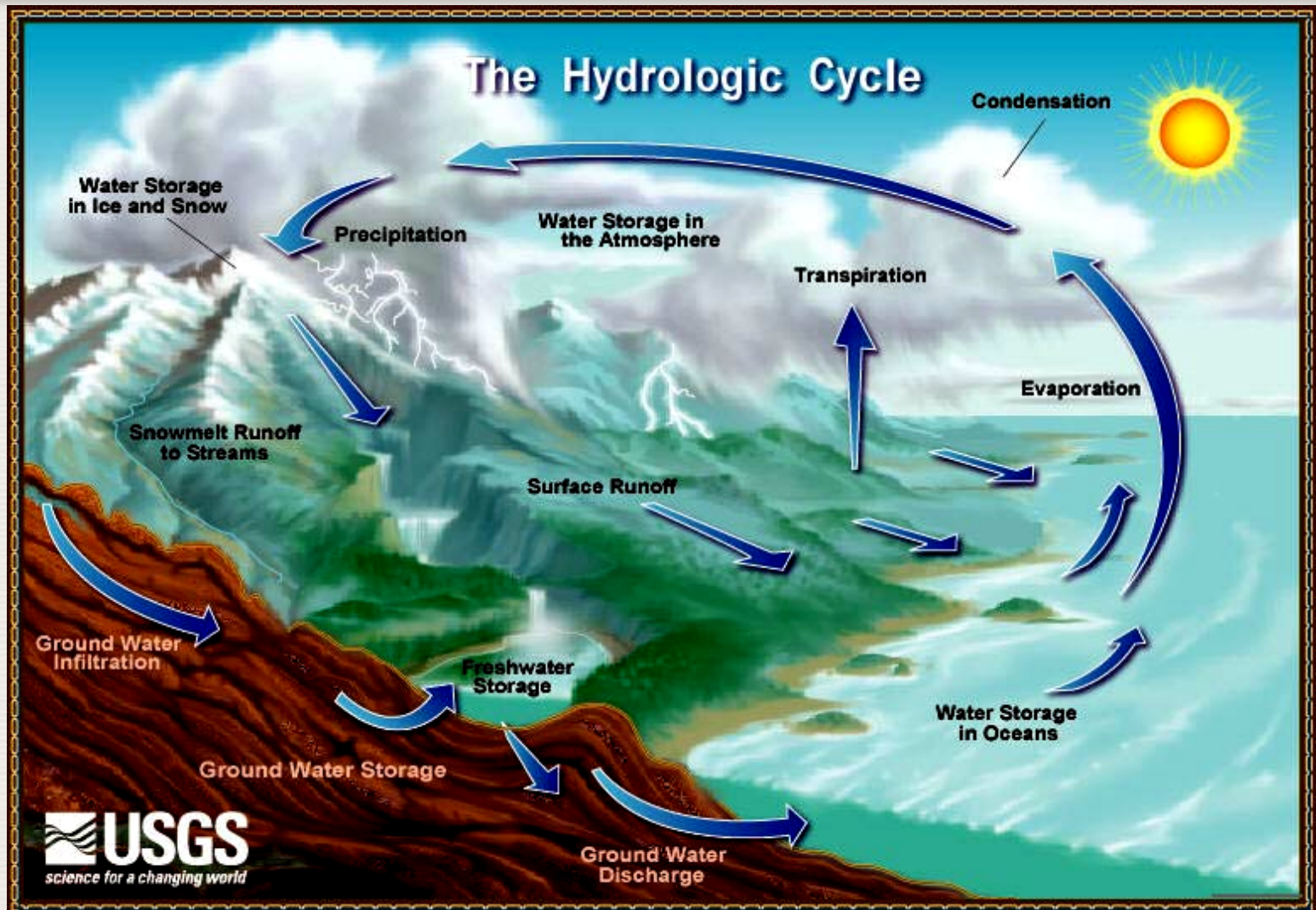
IAEA

International Atomic Energy Agency

Key Features

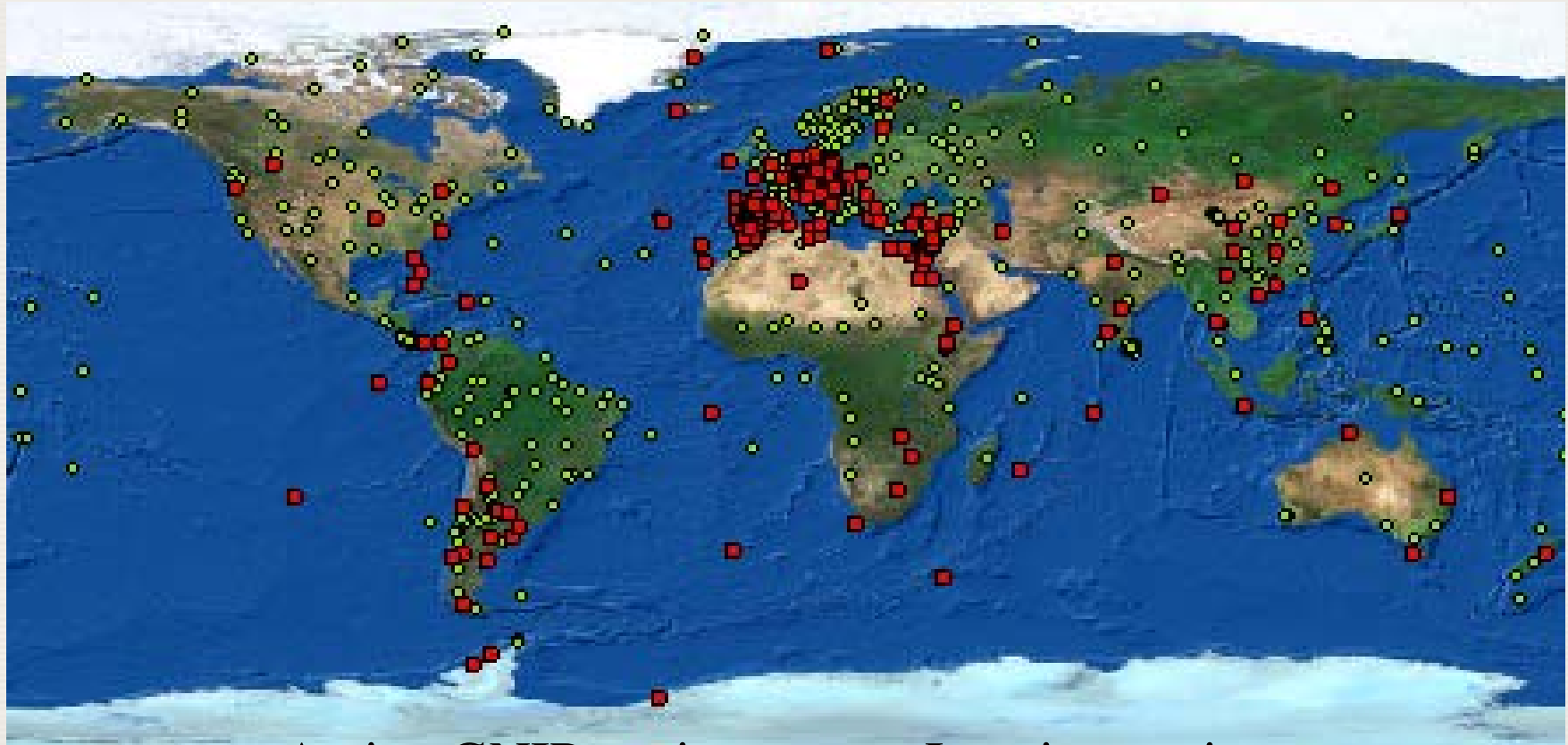
- Responds to scientific aspects of the international water agenda (Millennium Development Goals, World Summit on Sustainable Development):
 - Improved understanding of the water cycle
 - Sustainable exploitation of water resources
 - Improved data and capacity for monitoring the quantity and quality of water resources

IAEA water cycle projects address precipitation, air moisture, river flow, and groundwater



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GNIP - Global Network of Isotopes in Precipitation (jointly with WMO)

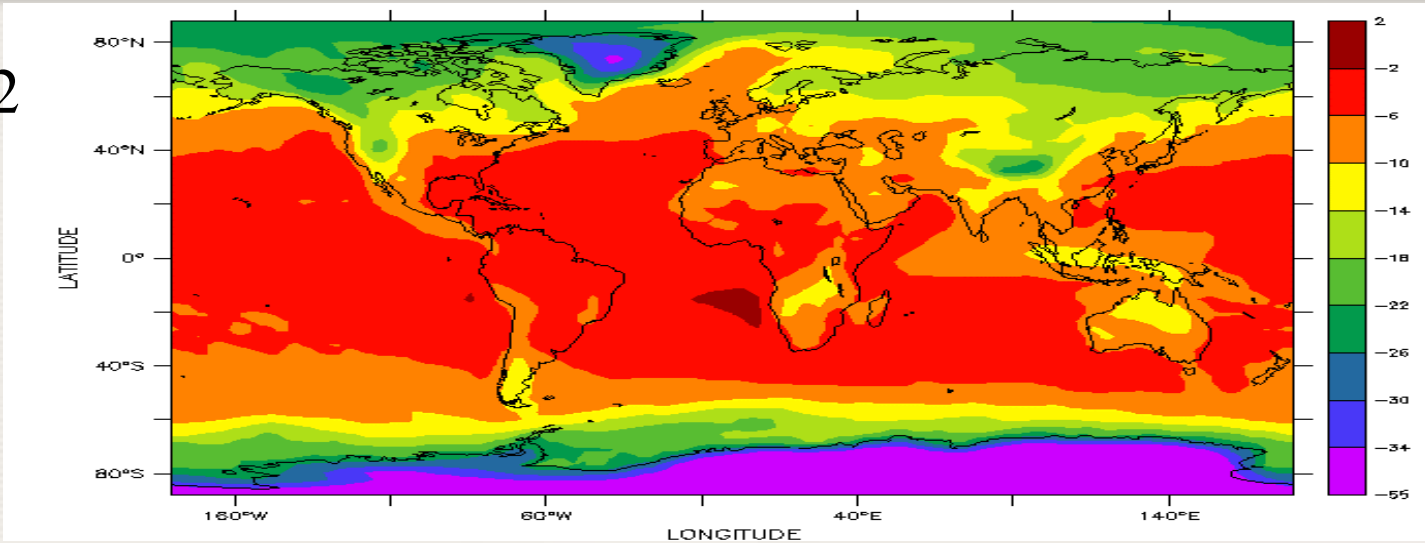


● Active GNIP stations

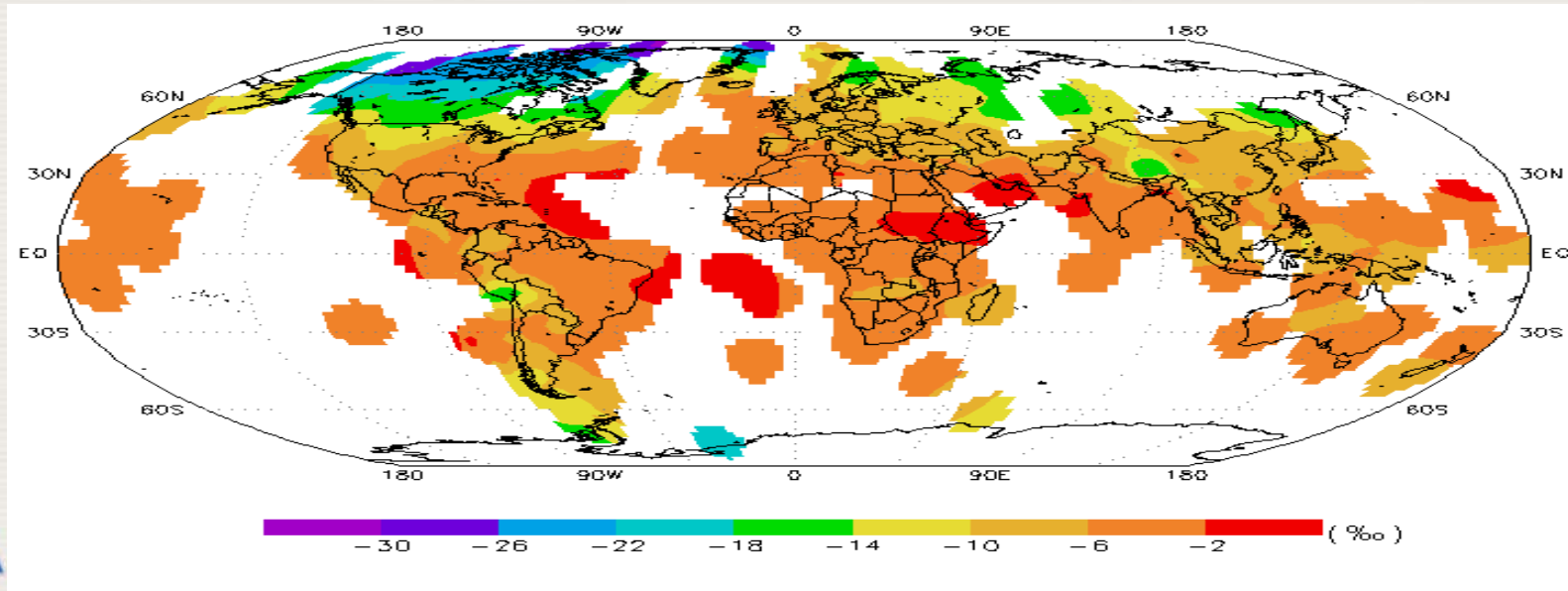
● Inactive stations

Simulation of Precipitation Oxygen and Hydrogen Isotopes in Climate Models

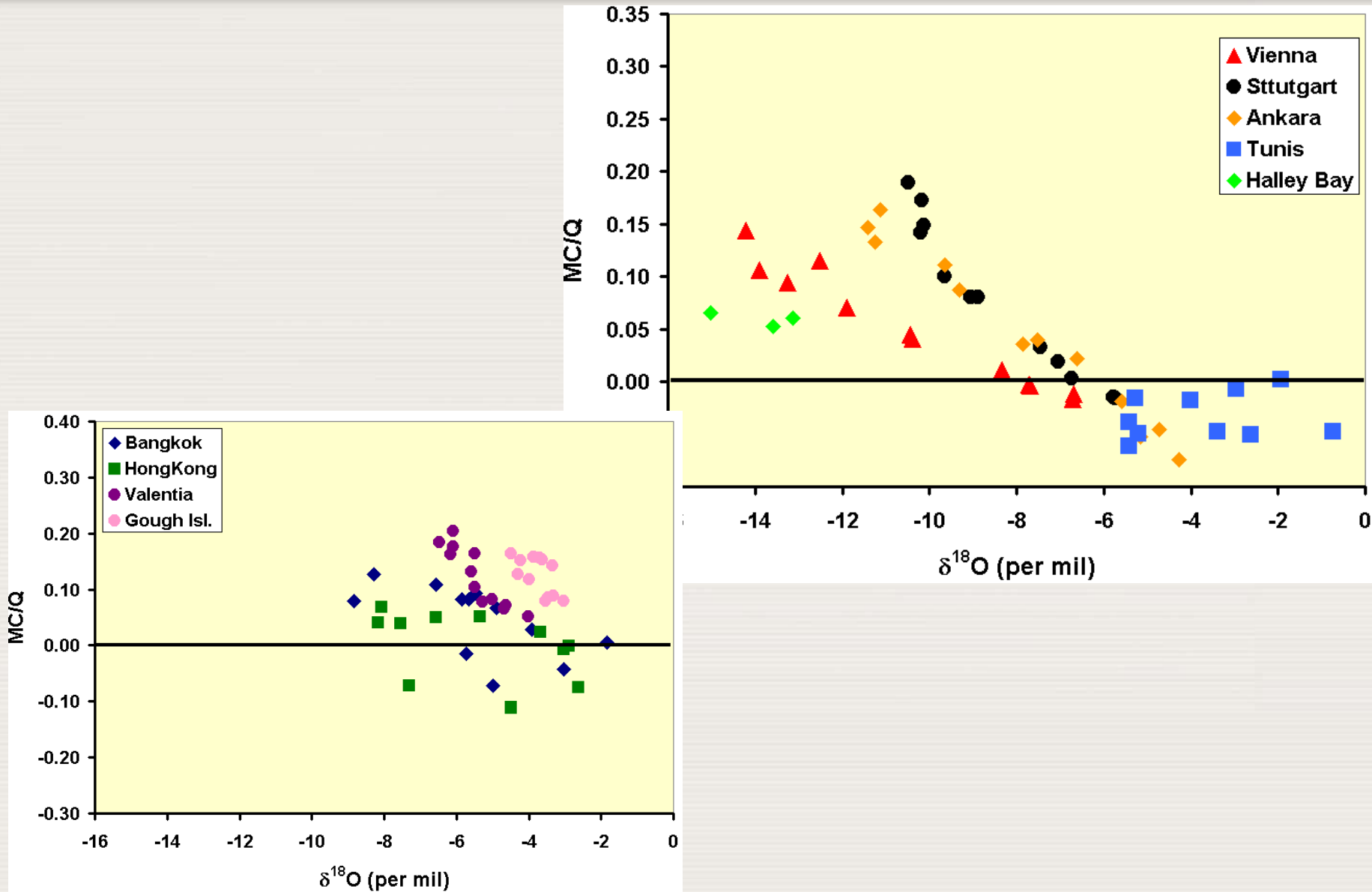
CAM2



GNIP
Obs.



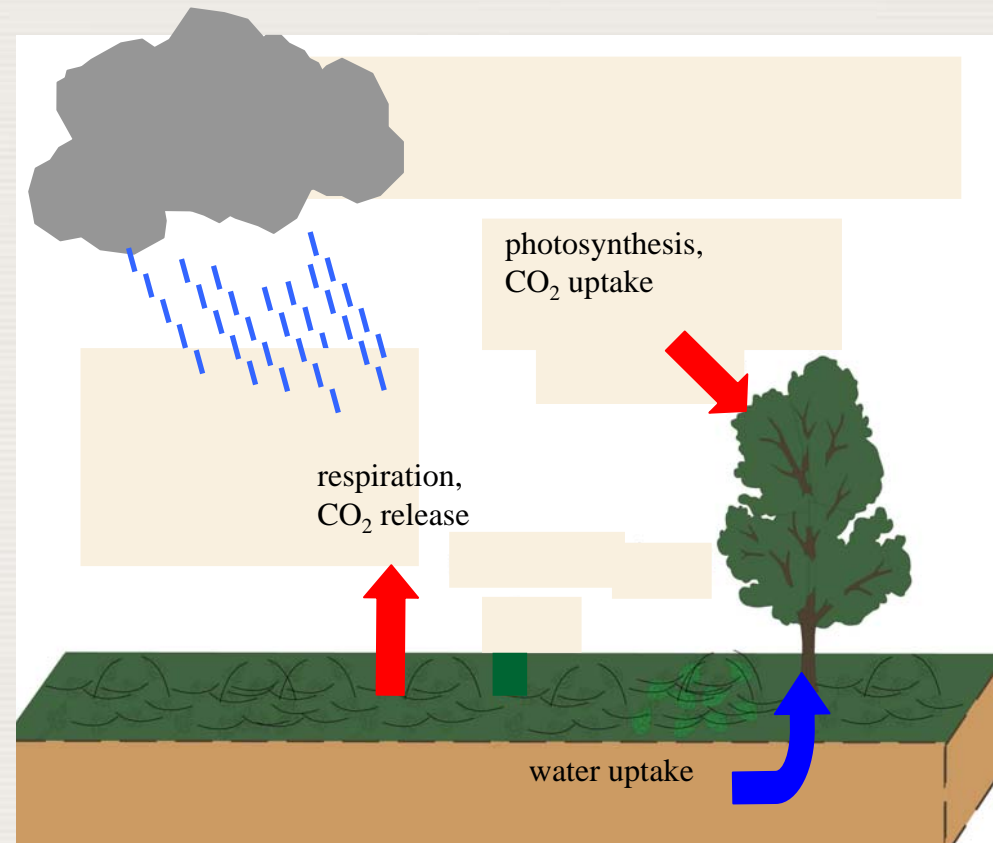
On a regional scale, isotopes provide moisture recycling information



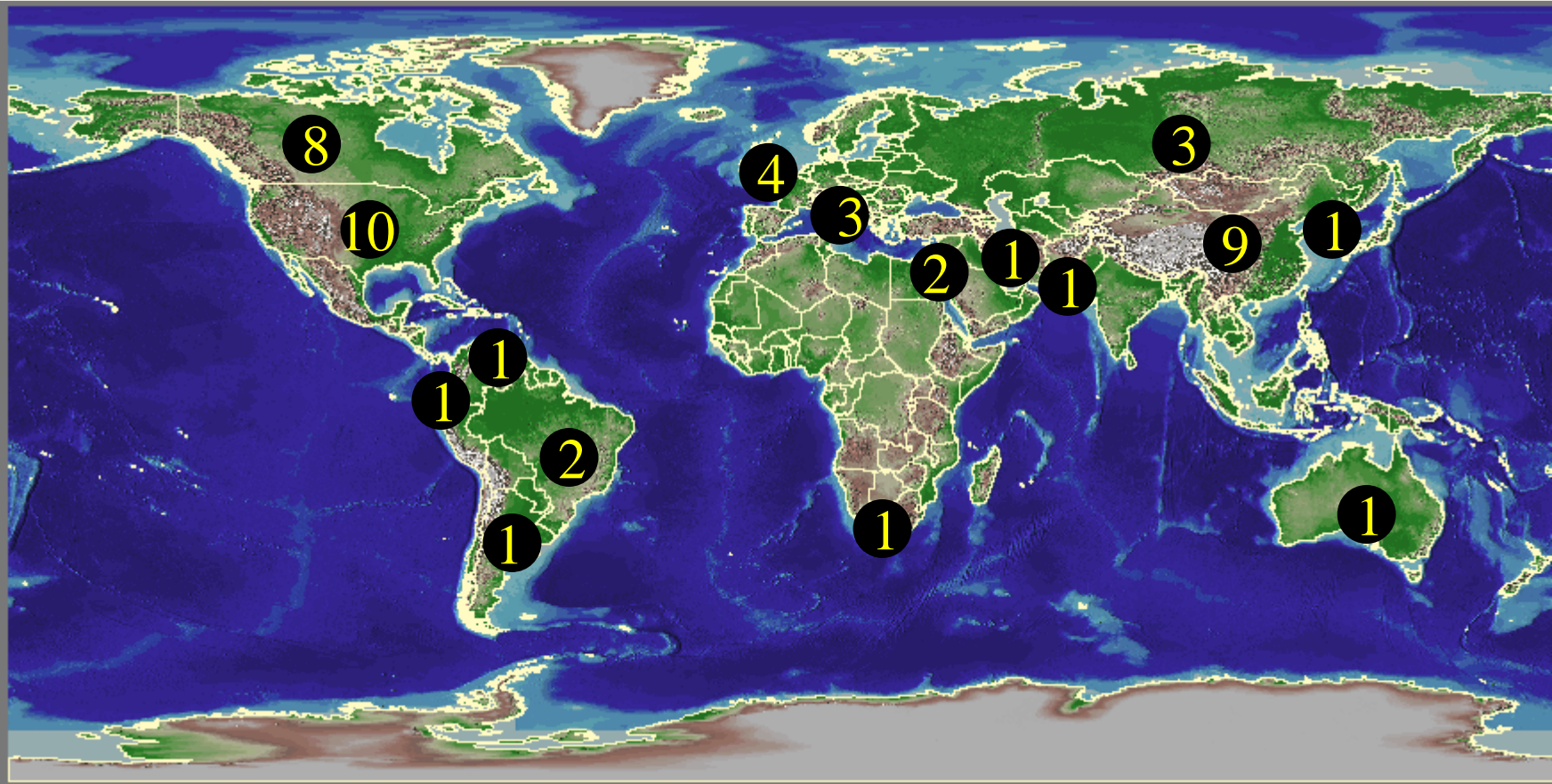
Moisture Isotopes in the Biosphere and Atmosphere (IAEA-MIBA)

A global network to sample water isotopes in:

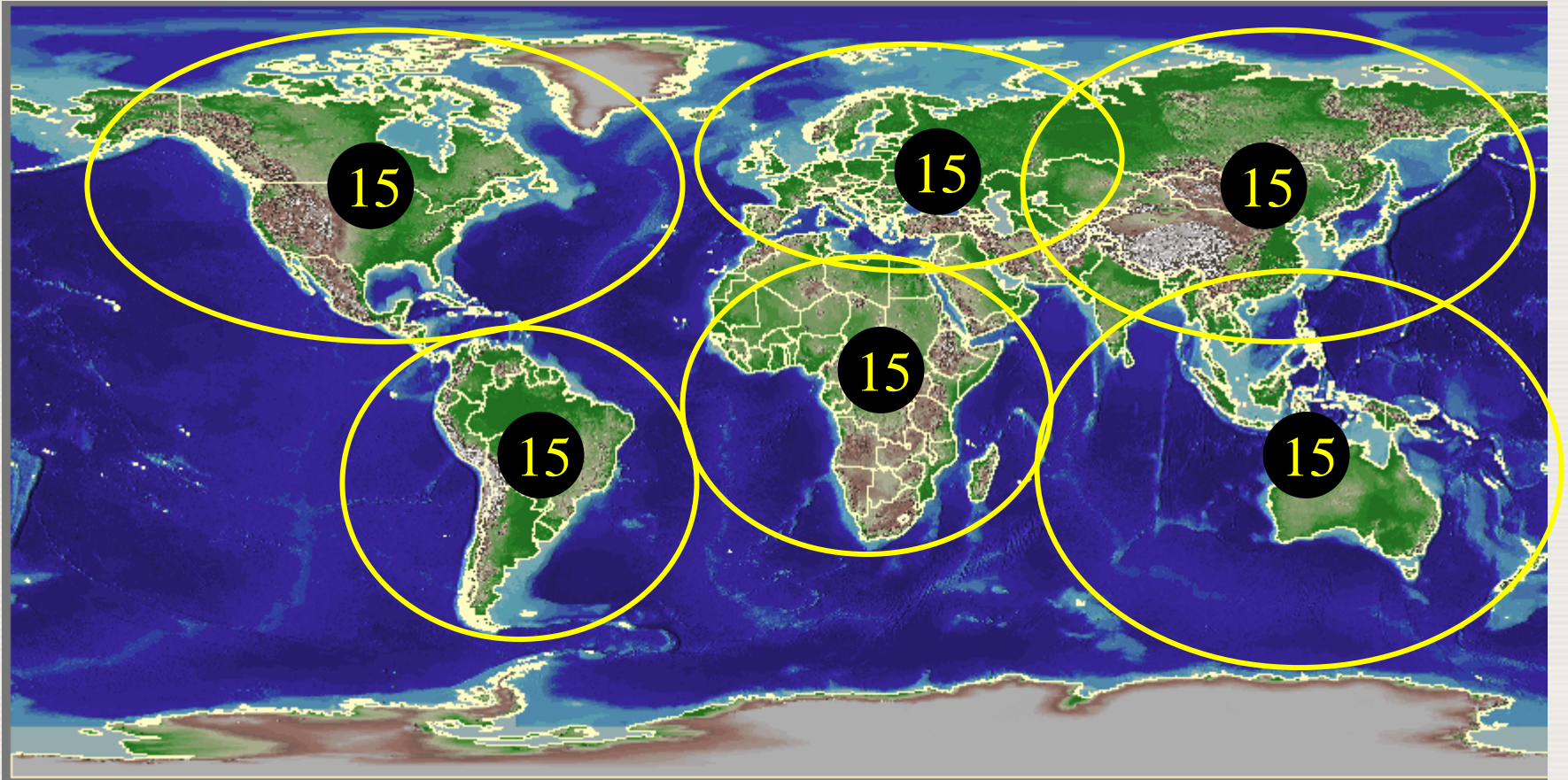
- Plant leaves
- Plant stems
- Soil water
- Atmospheric vapor



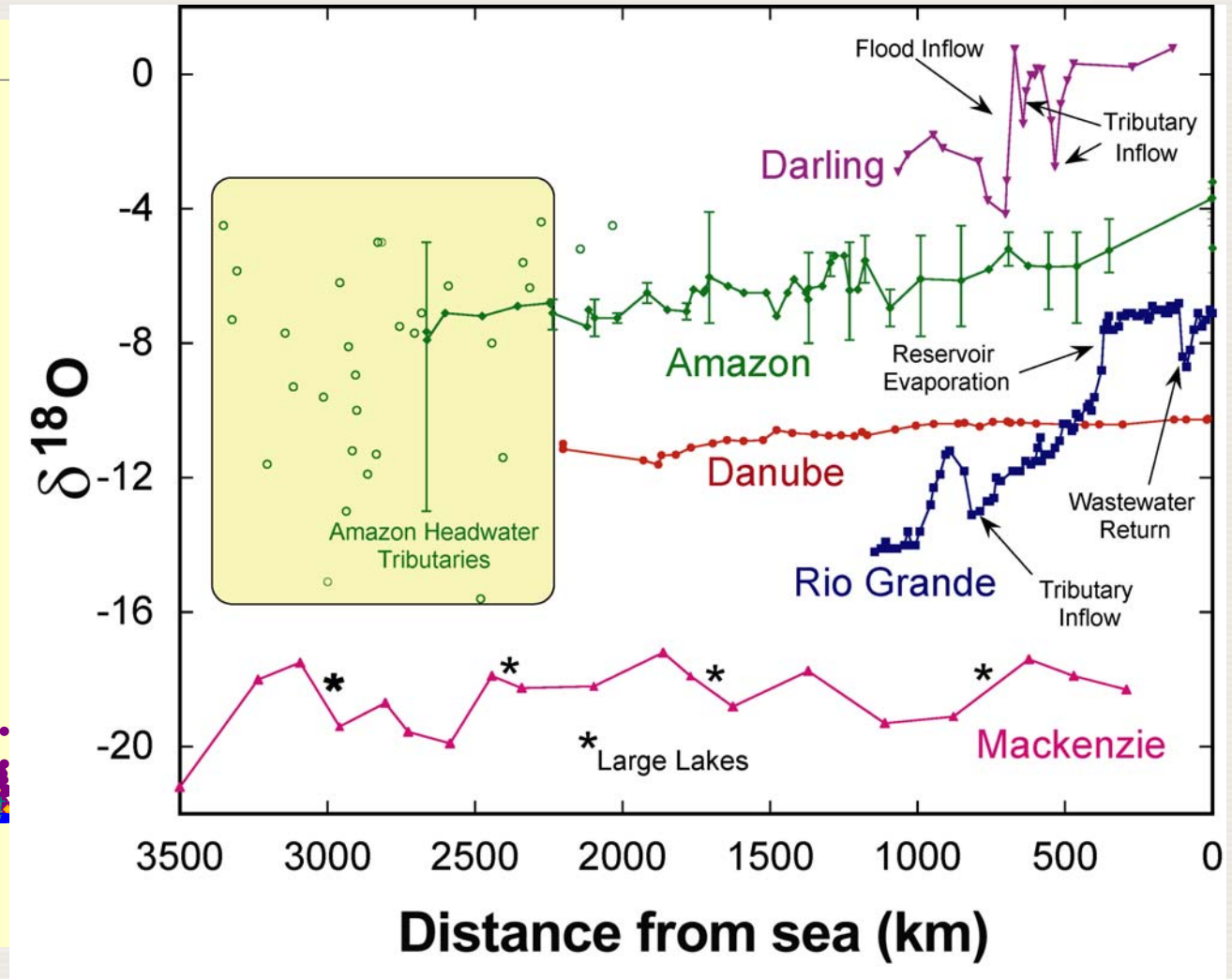
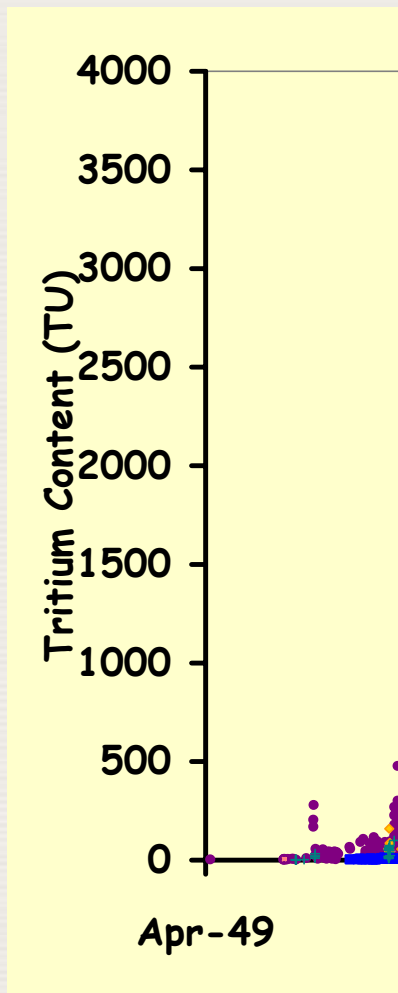
Stations in the Initial IAEA-MIBA Network



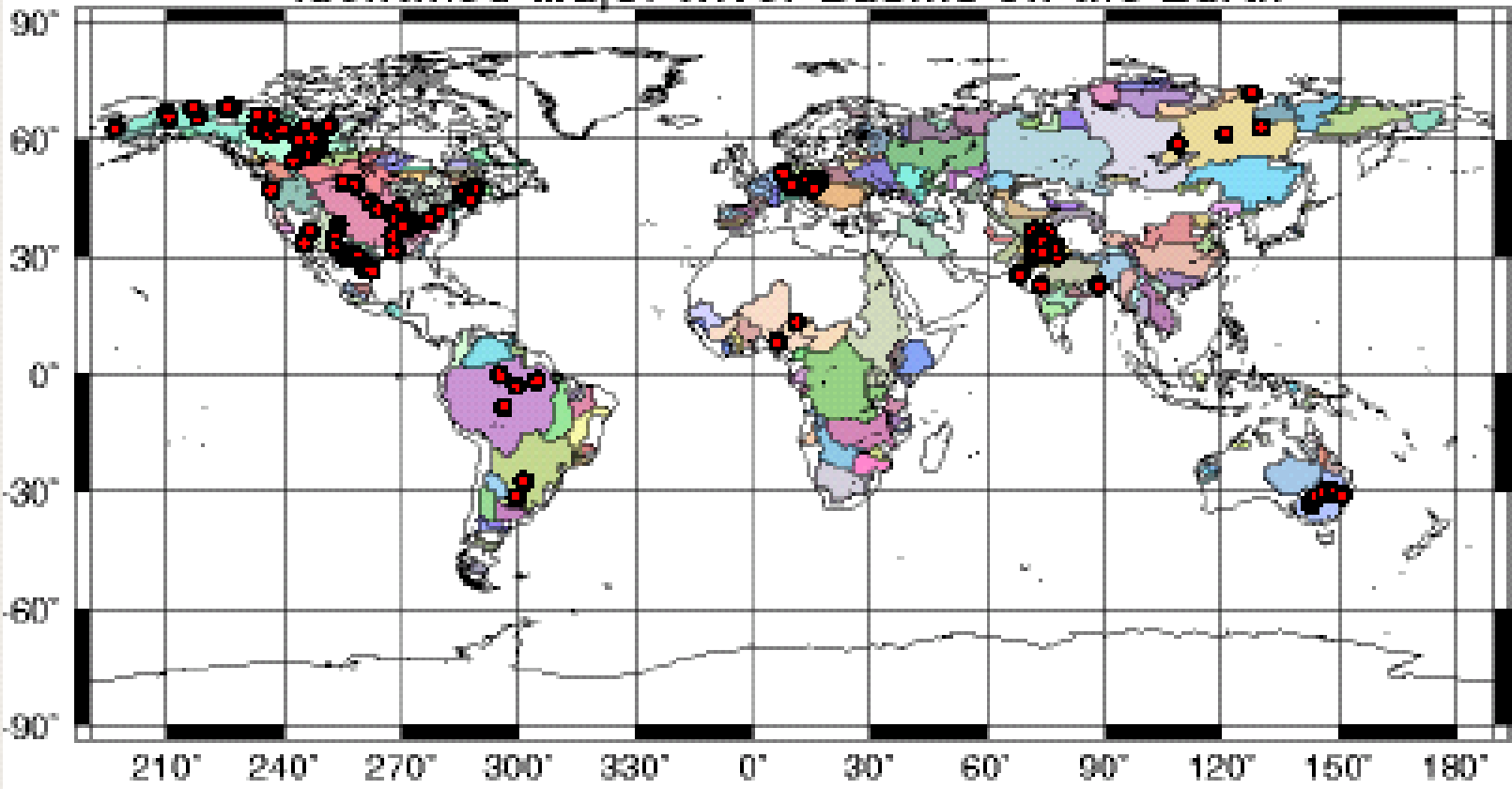
Objective - 100 sites
90 continental, 10 oceanic (water vapor)



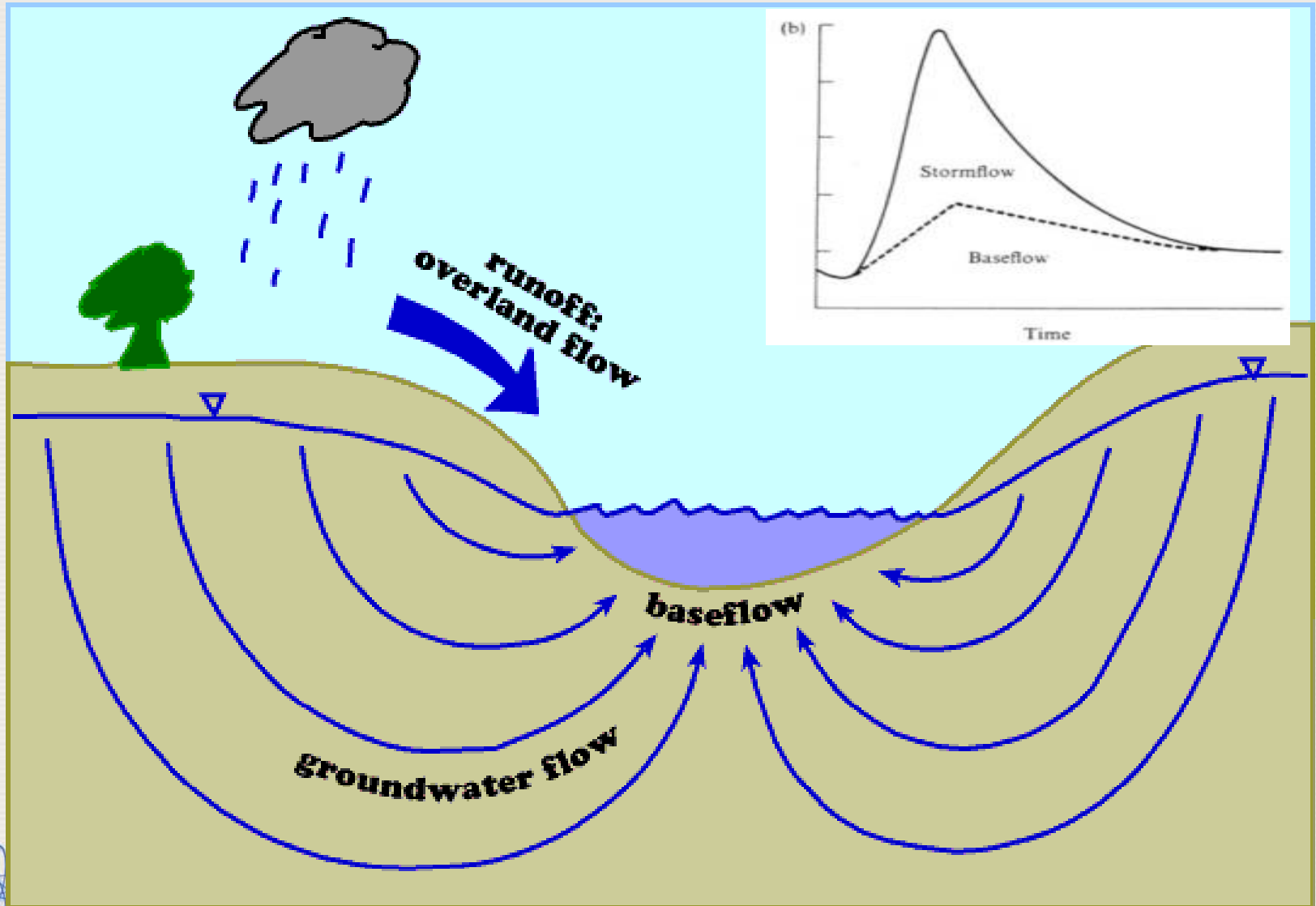
Isotopes in World Rivers



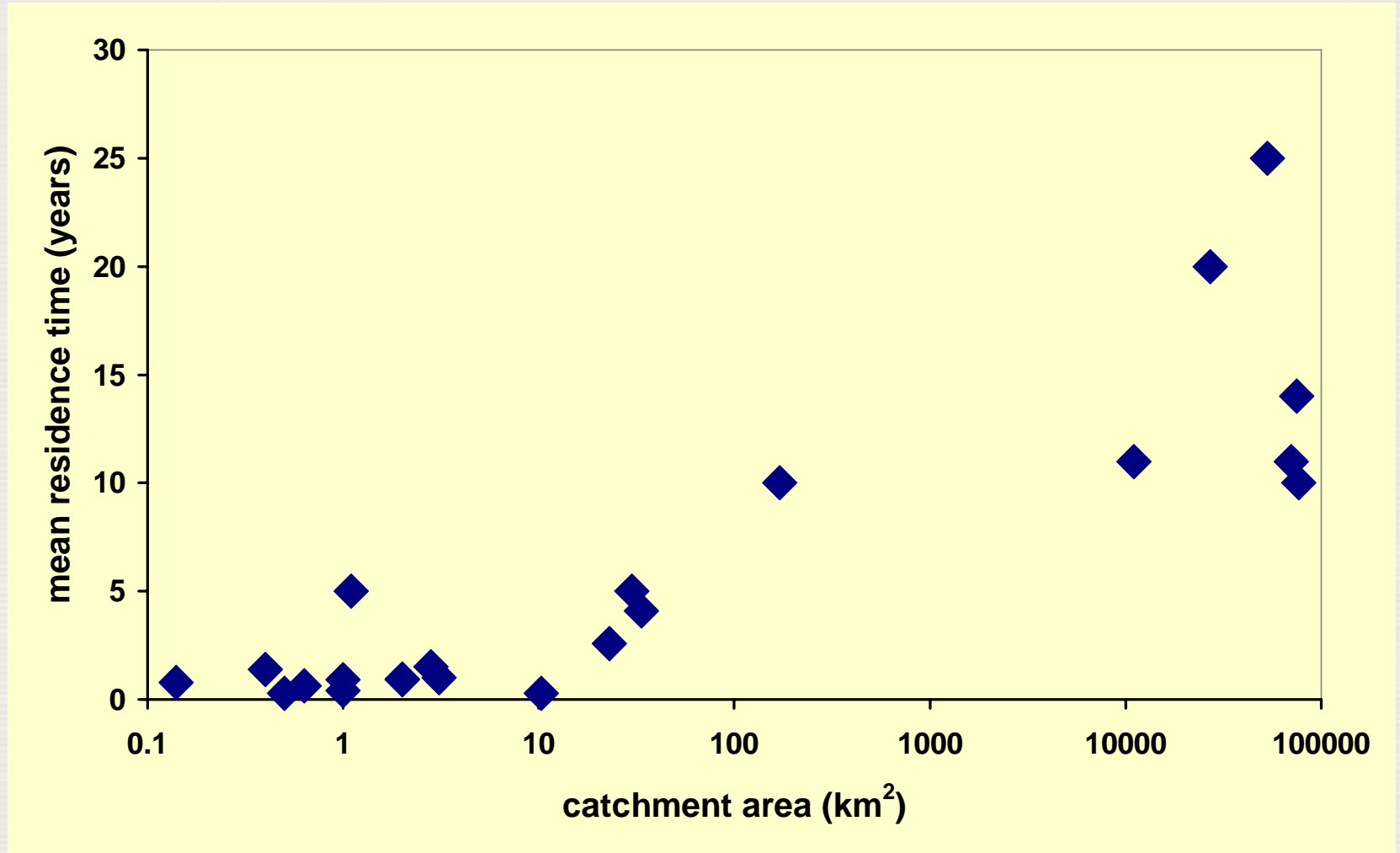
River Stations in IAEA Program



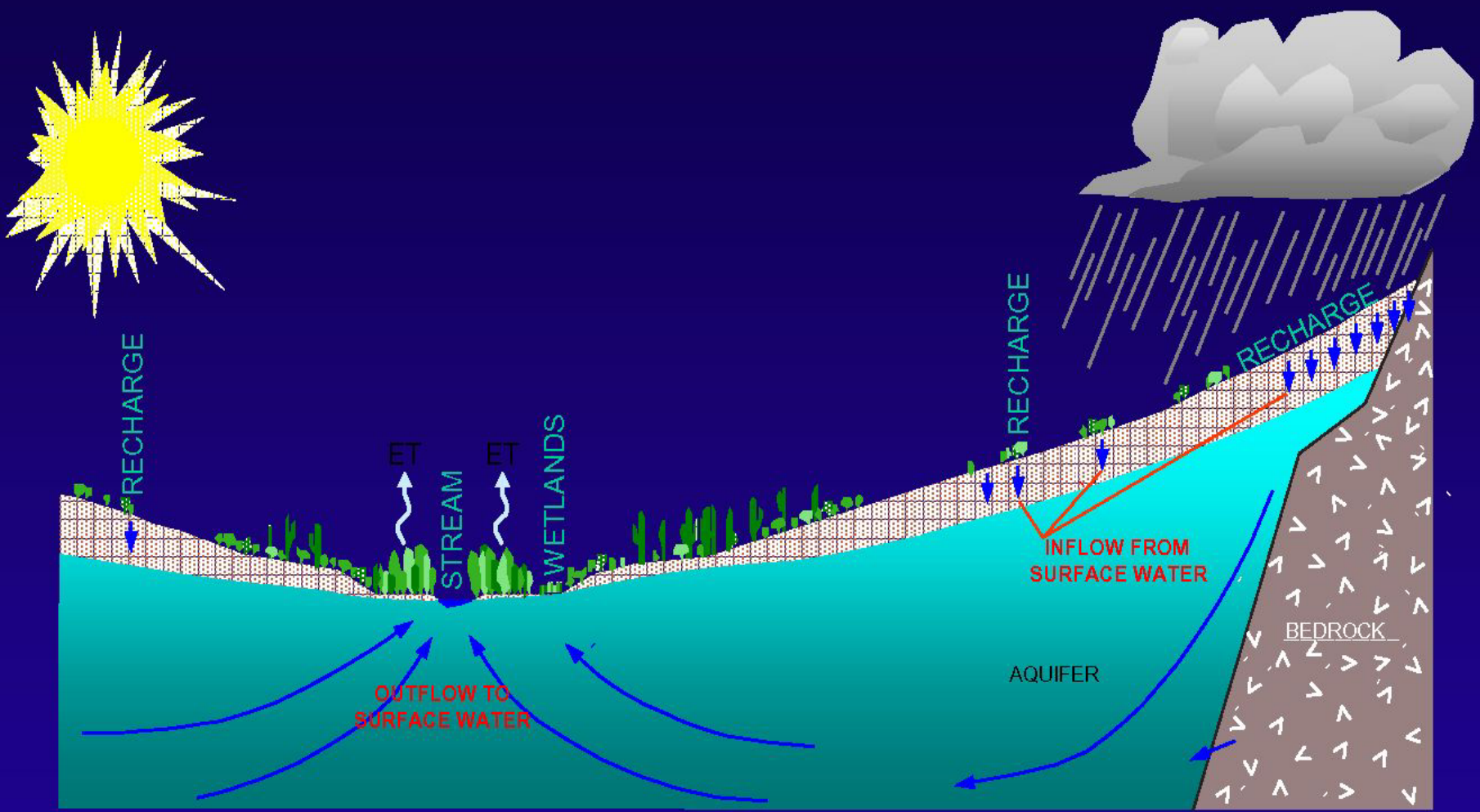
Determination of Groundwater Age from Tritium Decay



Mean Residence Time of Baseflow: Months to Years

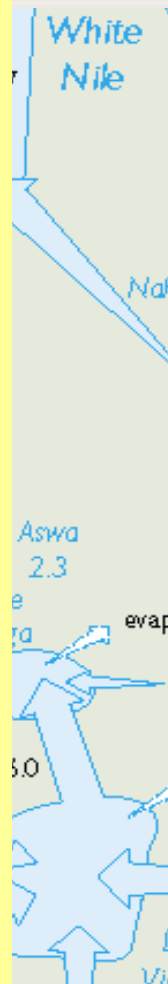
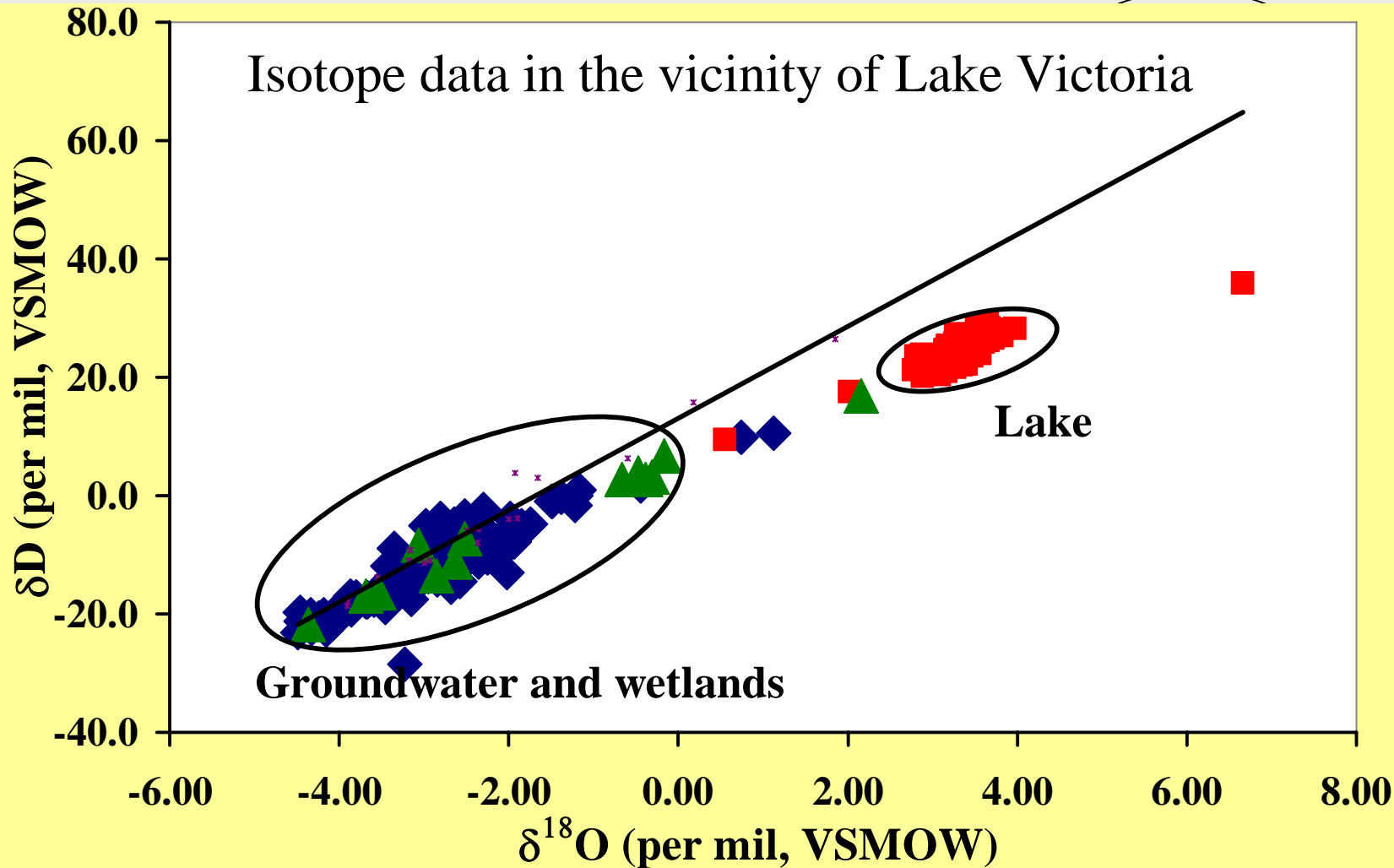


Flow system conceptual model:

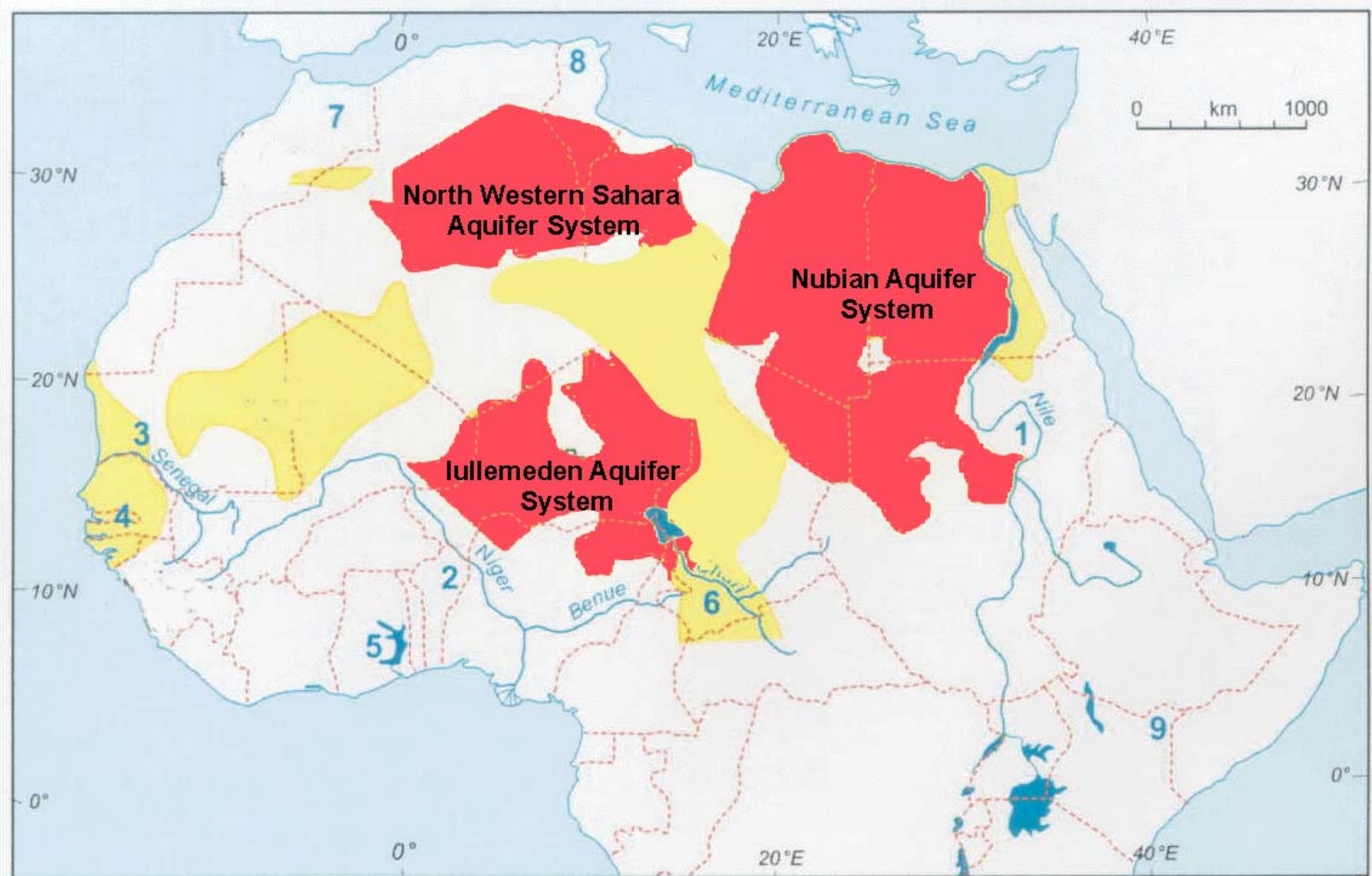


Water in Swamps and Wetlands

Is it part of the surface water budget?

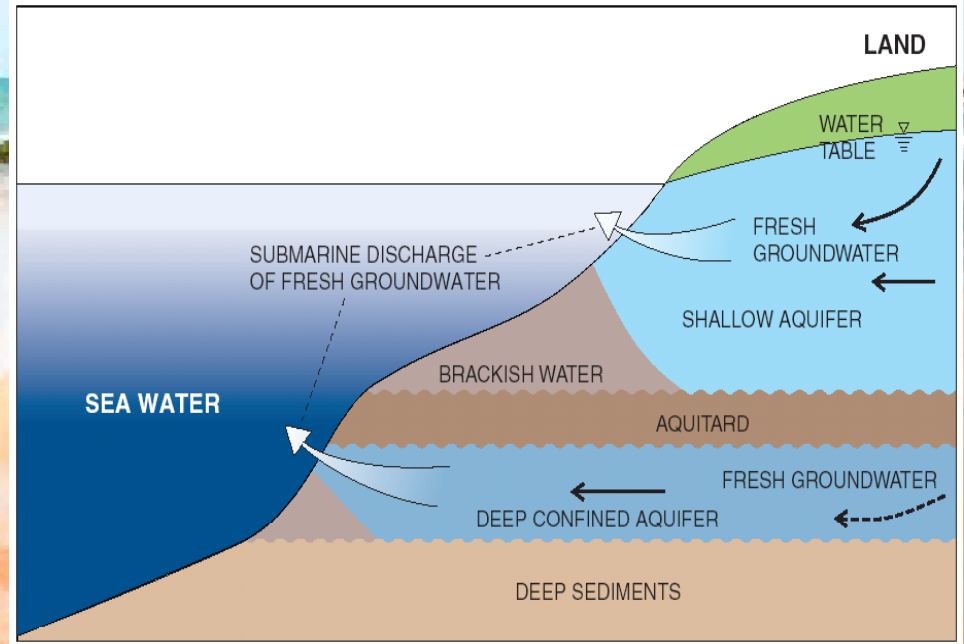


Major Aquifer Studies in Africa (IAEA or IAEA/GEF/UNESCO projects)



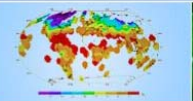

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Submarine g/w discharge: freshwater resource and source of pollution



Technical Cooperation - Education/Training and Field Applications

Isotope Hydrology
By P.K. Aggarwal¹, A. El-Kadi², W.G. Mook³, and M.A. Dillon⁴

Preface

Availability of freshwater has always been an overriding factor in human development. The basic need for water has fostered an intuitive skill within humans for managing water resources, as evidenced by practices such as rainwater harvesting which have been employed for more than four thousand years in different civilizations. In recent years, decreasing availability of easily exploitable and sustainable sources of freshwater has required more sophisticated scientific and systematic approaches for water resources assessment and management.

Hydrology, in its broadest interpretation, is the science that deals with the physical, chemical, and biological processes governing the occurrence, circulation, and distribution of water on the earth. Hydrology as a scientific discipline has been recognized only since the mid-1900s. Nuclear or isotope hydrology as a specialized branch of hydrology is even younger, and has reached a level of maturity and recognition only in the last about 20 years. The International Atomic Energy Agency (IAEA) has played a major role

Contents

- Textbooks
- NETPATH
- SOLMINEQ
- Transport Models
- Utilities
- Links

To view the Items under Documents you will need the Adobe Acrobat Reader.

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1 IAEA; 2 University of Hawaii; 3 University of Groeningen, Netherlands; 4 University of Chicago, USA.
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Environmental isotopes in the hydrological cycle
Principles and applications

Edited by W.G. Mook

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Editor W.G. Mook



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PH1

Documents in Hydrology | No. 39, Vol. III

me with
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Programa hidrológico internacional




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Field Applications

- About 72 active projects (funding ~\$5M/ yr)

