

A satellite image of the Earth showing the Asia-Pacific region. The image is framed by a blue circular border. The text is overlaid on the image in yellow.

Need for common platform to  
share global monitoring system  
and decision-making support  
system in Asia-Pacific region

Masataka Watanabe  
National Institute for Environmental Studies  
Keio University

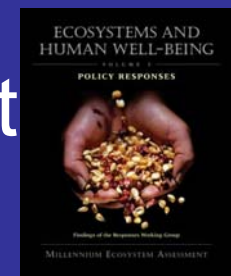
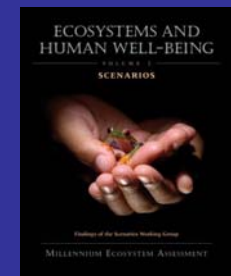
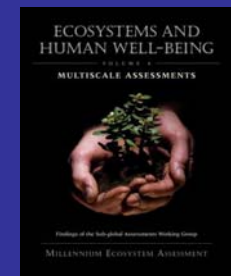
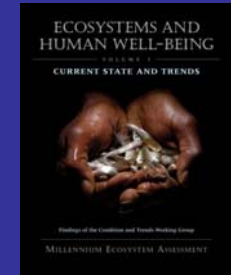
Image © 2006 TerraMetrics

Image © 2006 NASA

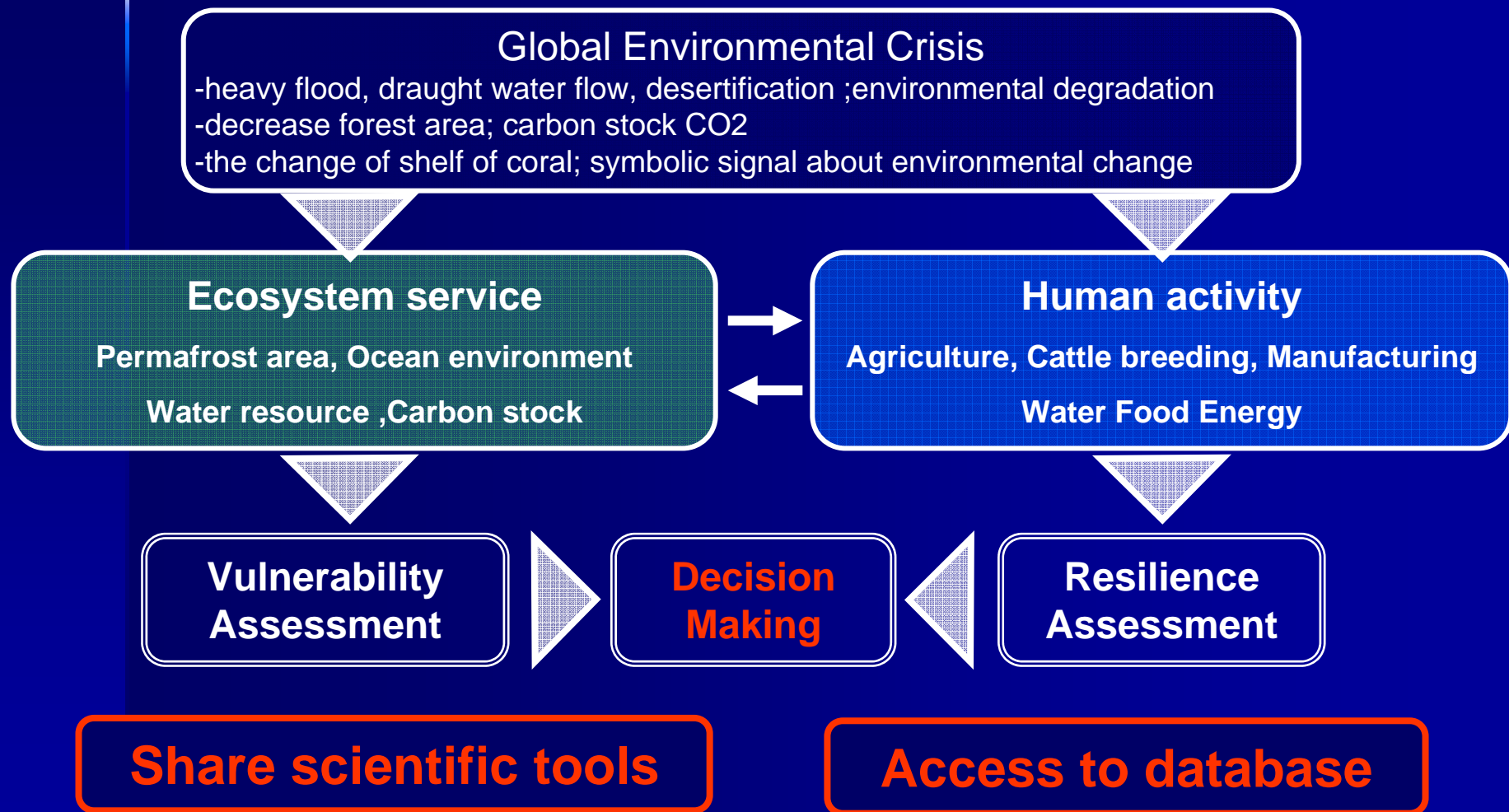


● Over 60 % of ecosystem services have been degraded and in particular the degradation in Asia was most serious and critical to sustainability in Asian countries. ~ UN Millennium Ecosystem Assessment, MA Report 2005 ~

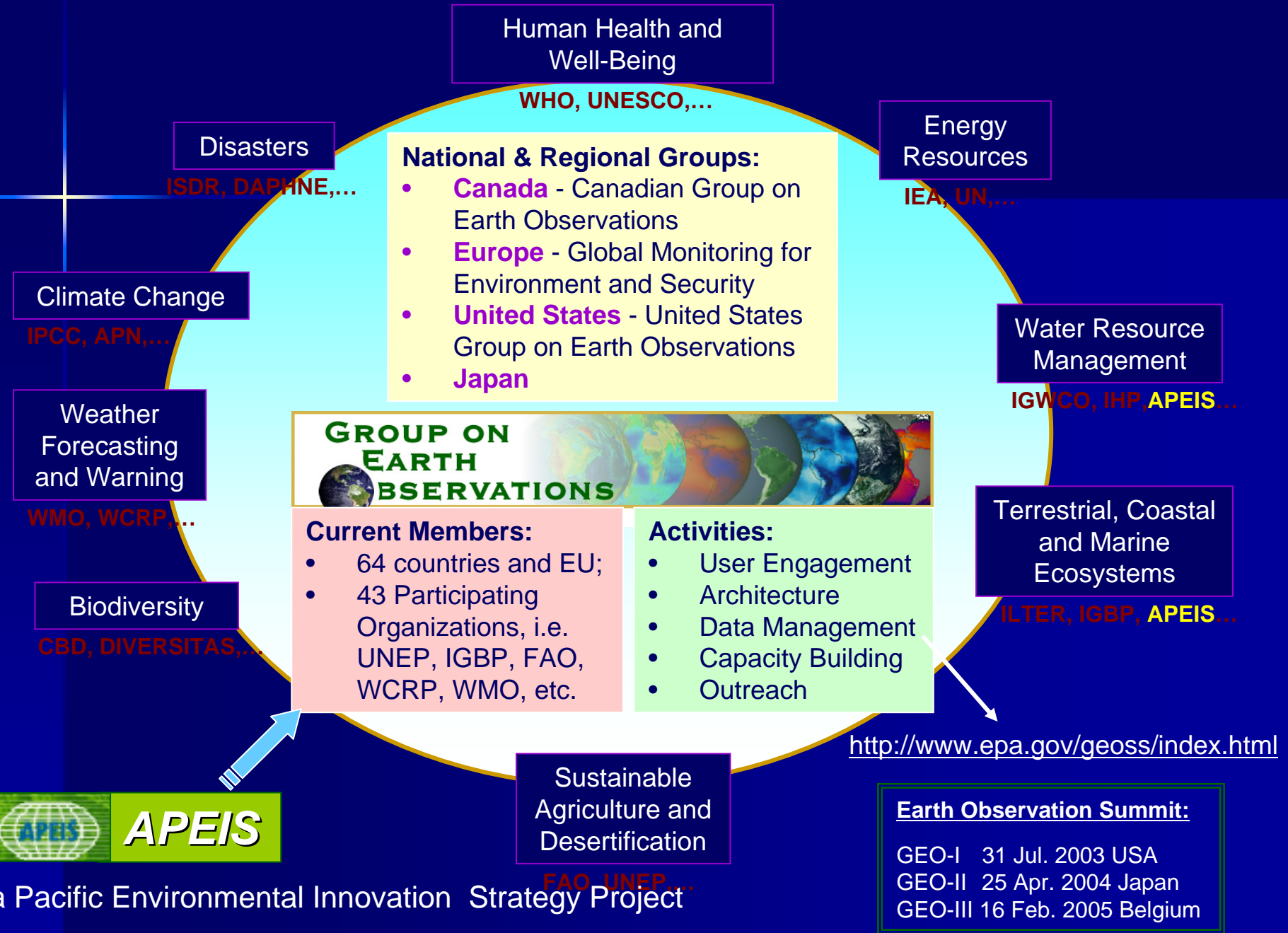
● Most of evaluations were rather qualitative or semi-quantitative , and quantitative evaluation of ecosystem services and predictive capability were strongly demanded for the management of global ecosystem services.



- The information on environmental crisis is important to extend business as well as to develop the environmental management capacity in Asia.
- Common platform to correct and analyze high quality and advanced type of environmental information in Asia-Pacific region are strongly demanded.

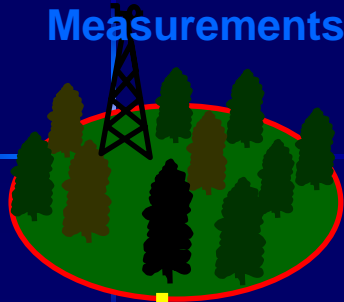


# Global Earth Observation System of Systems (GEOSS)



# APEIS Integrated Monitoring Network and Carbon Fixation by Vegetation using MODIS Data

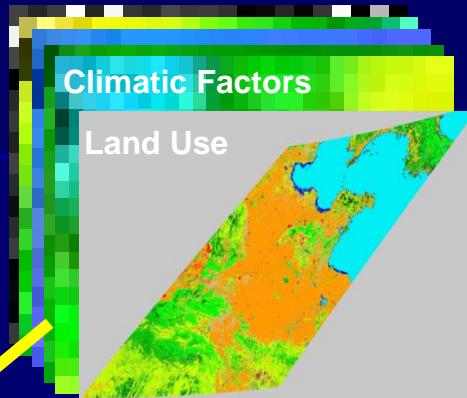
Measurements



Input

Climatic Factors

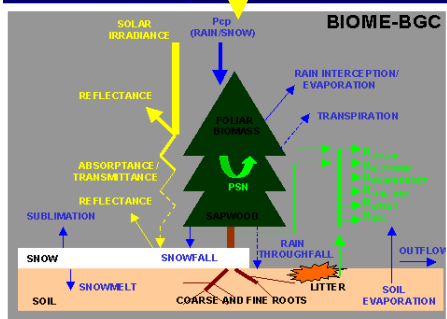
Land Use



GIS Input Layers

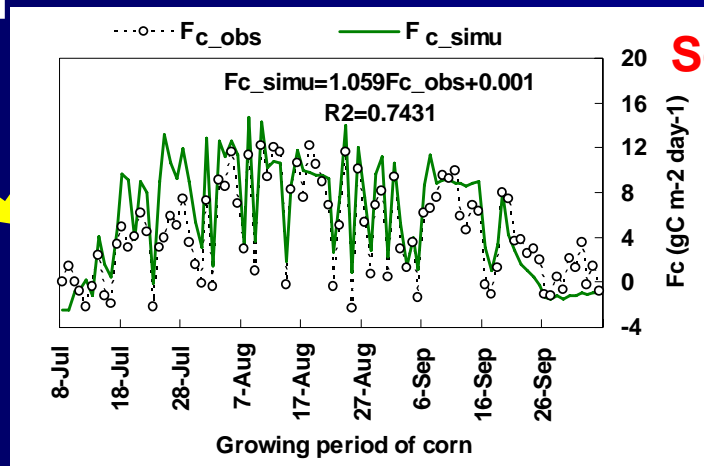


MODIS station in Urumuqi



Input

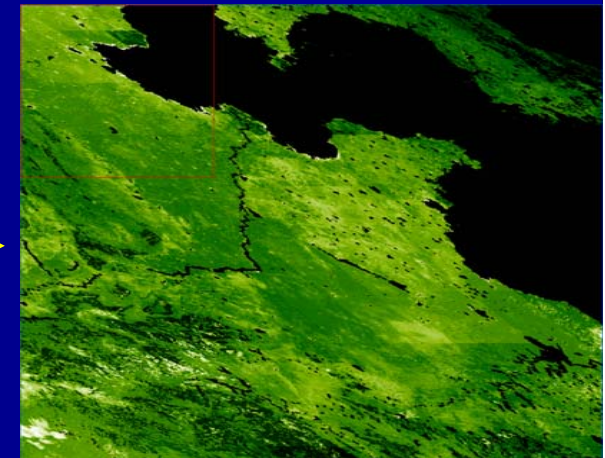
Simulation of CO2 Flux



Scale-up

Modeling

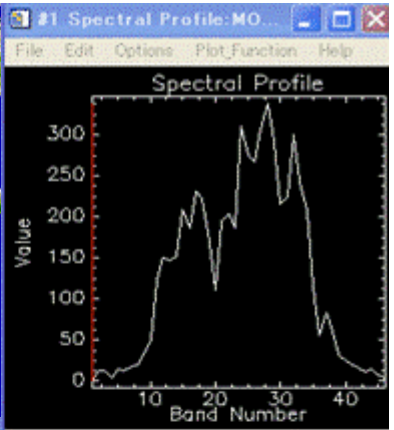
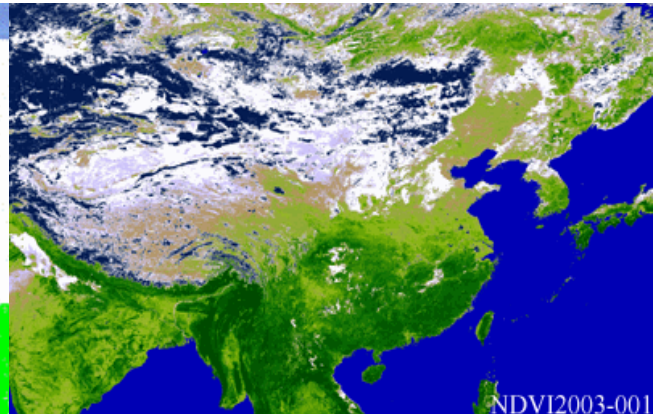
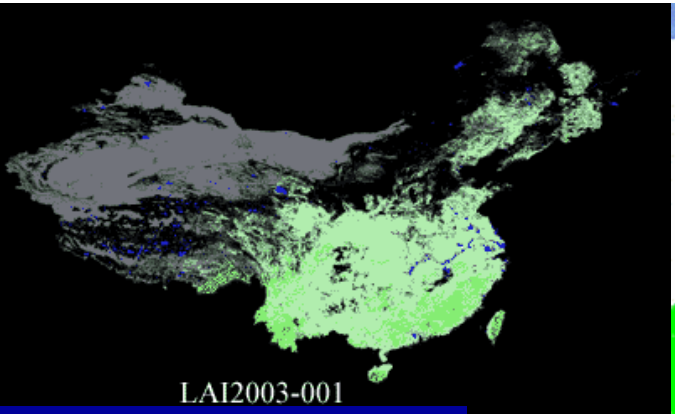
Validation



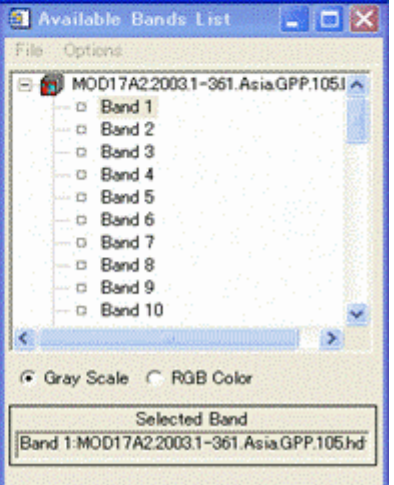
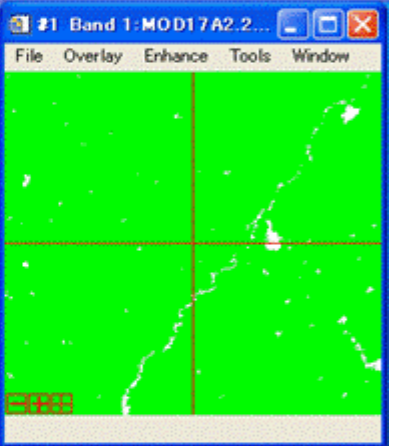
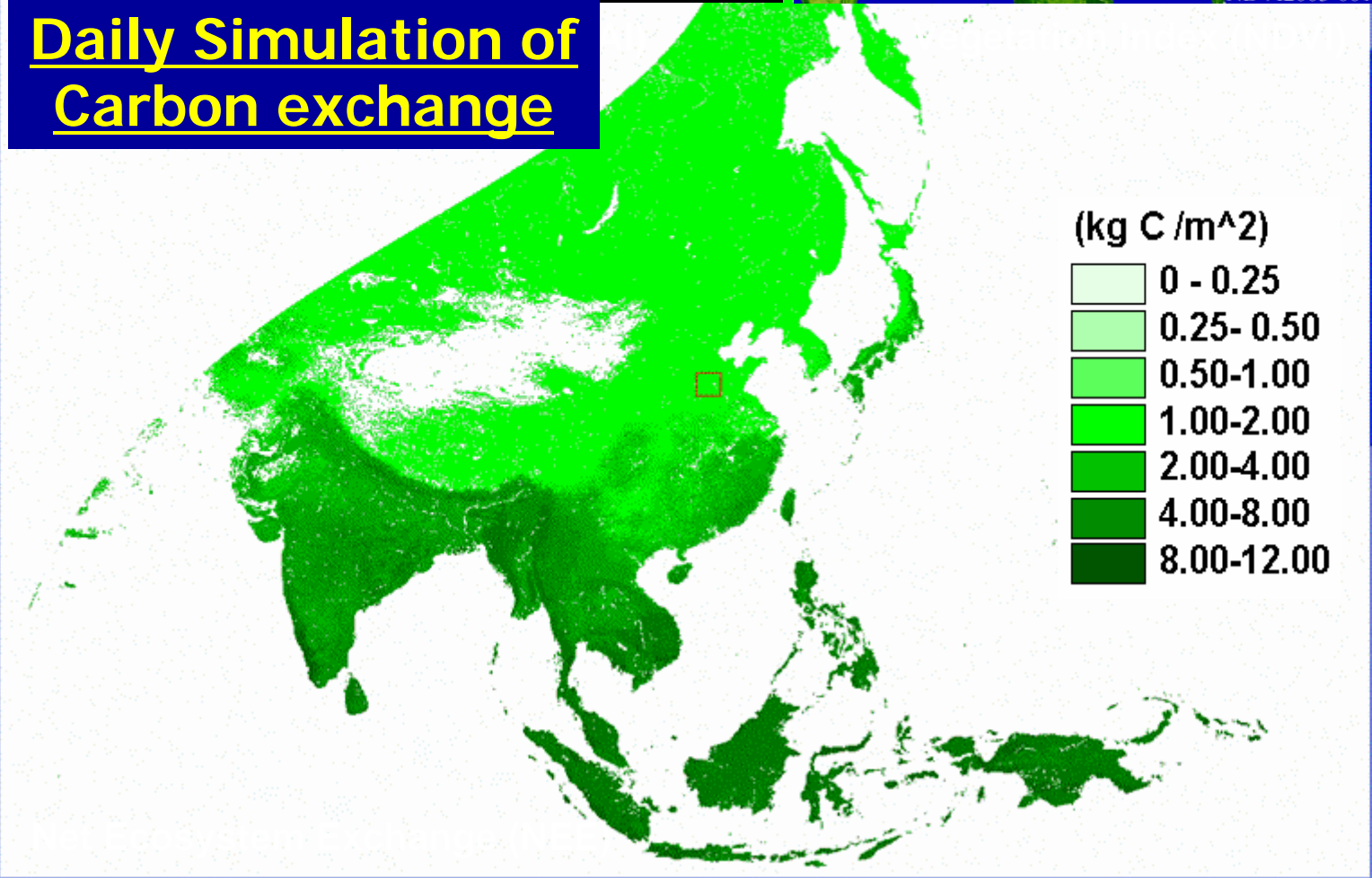
Carbon Fixation ( Mg C ha<sup>-1</sup> )

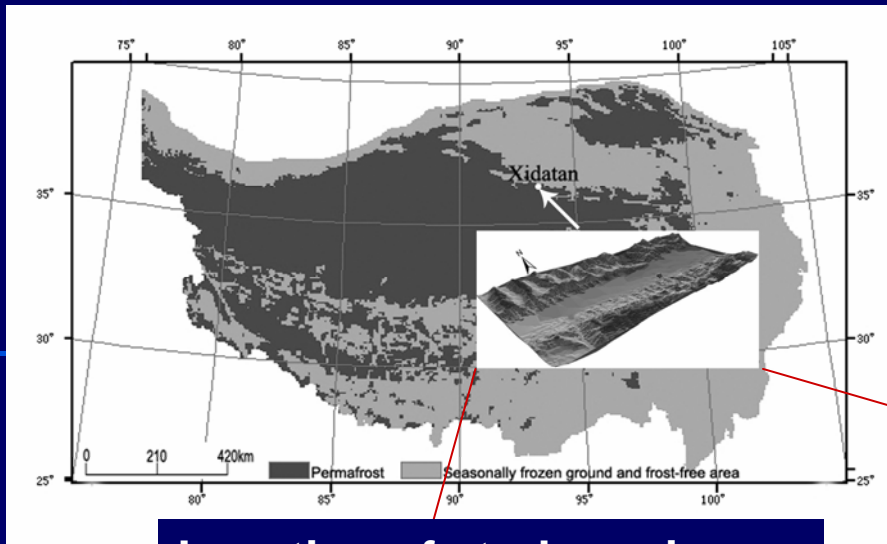
#1 Scroll 0.0762

2003/1/1

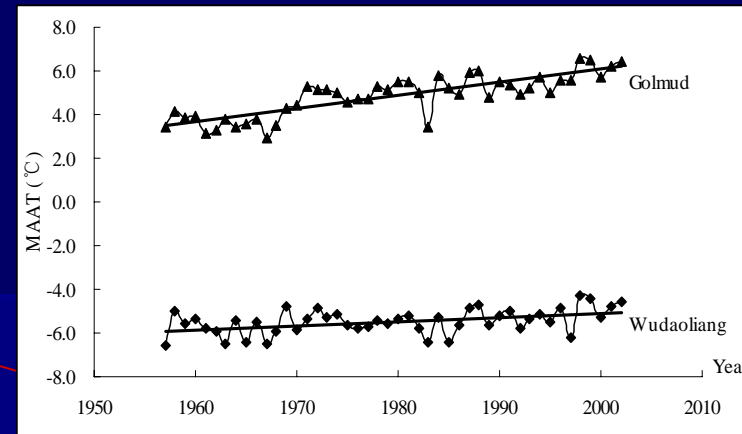


# Daily Simulation of Carbon exchange





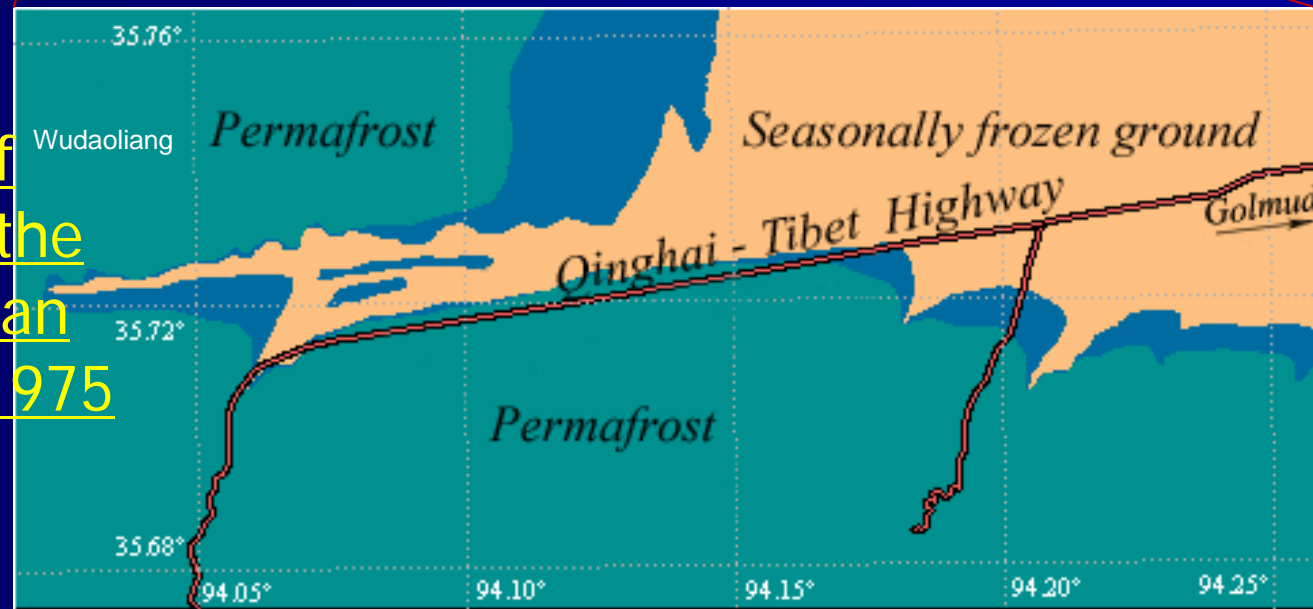
Location of study region



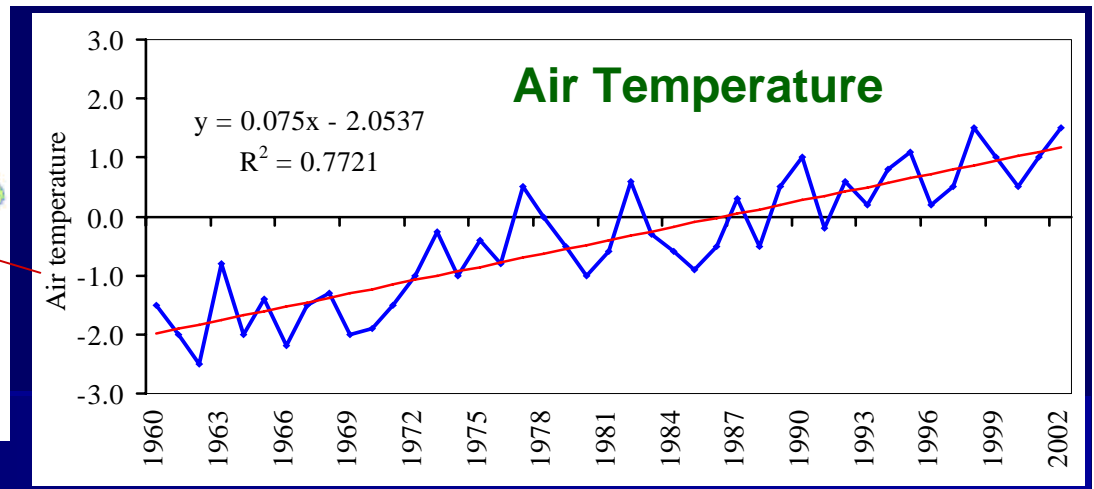
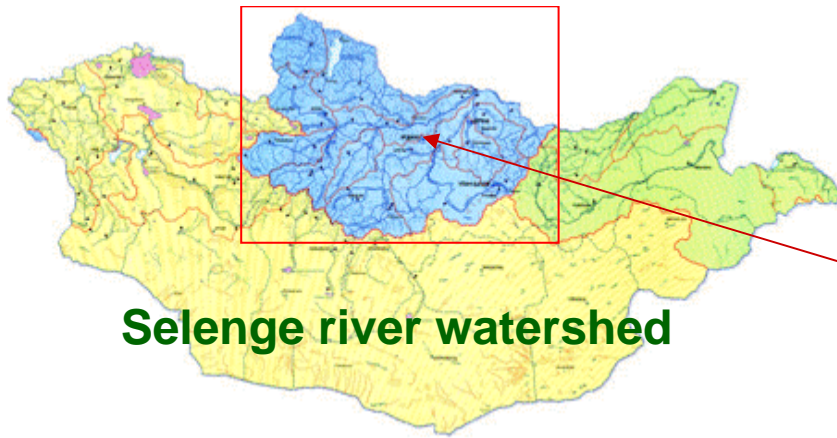
Climatic warming in the past 40 years

**Facts:**

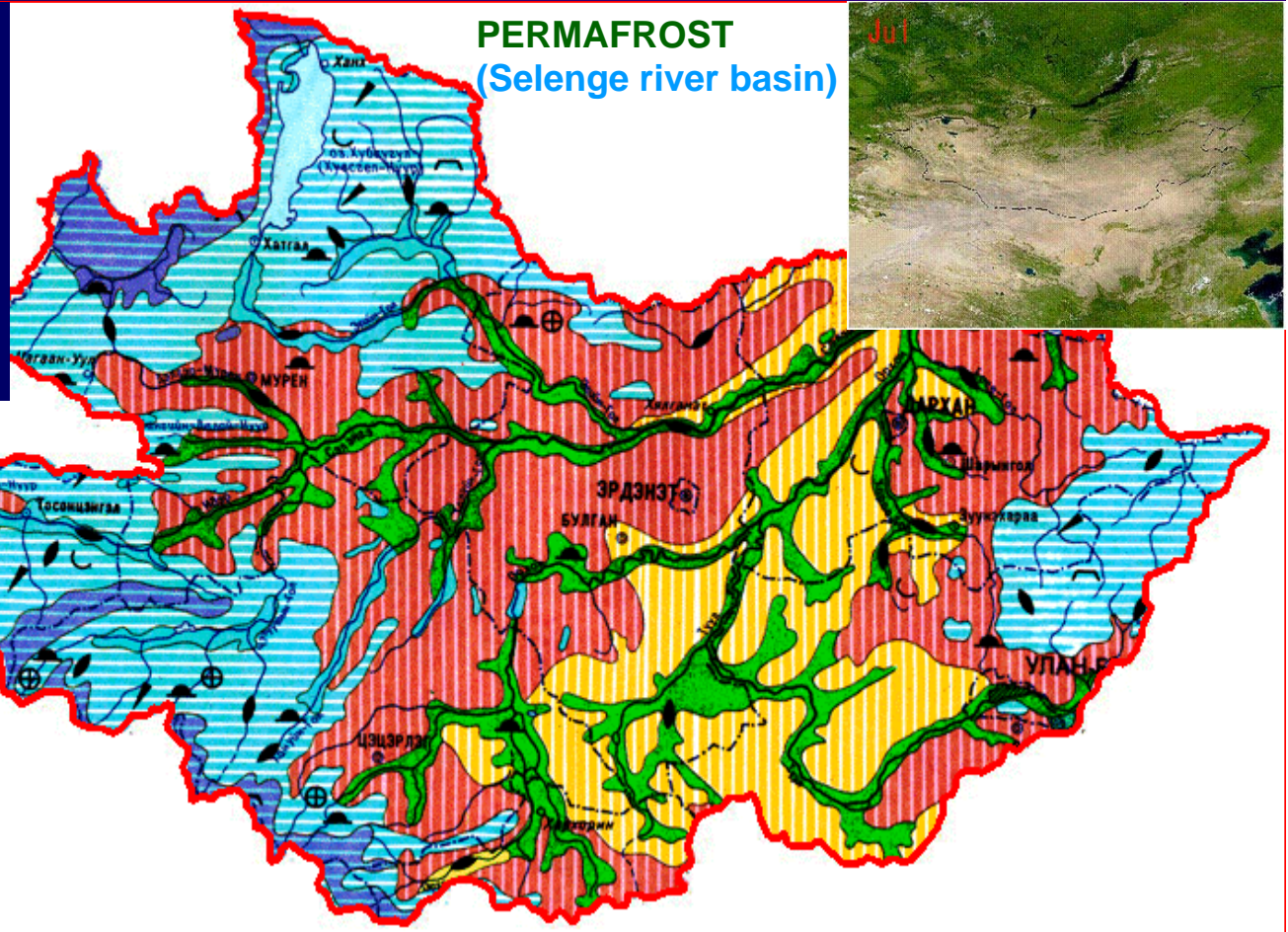
Degradation of permafrost in the northern Tibetan Plateau from 1975 to 2002



Permafrost regions
  Degraded Permafrost regions
  Non-Permafrost regions



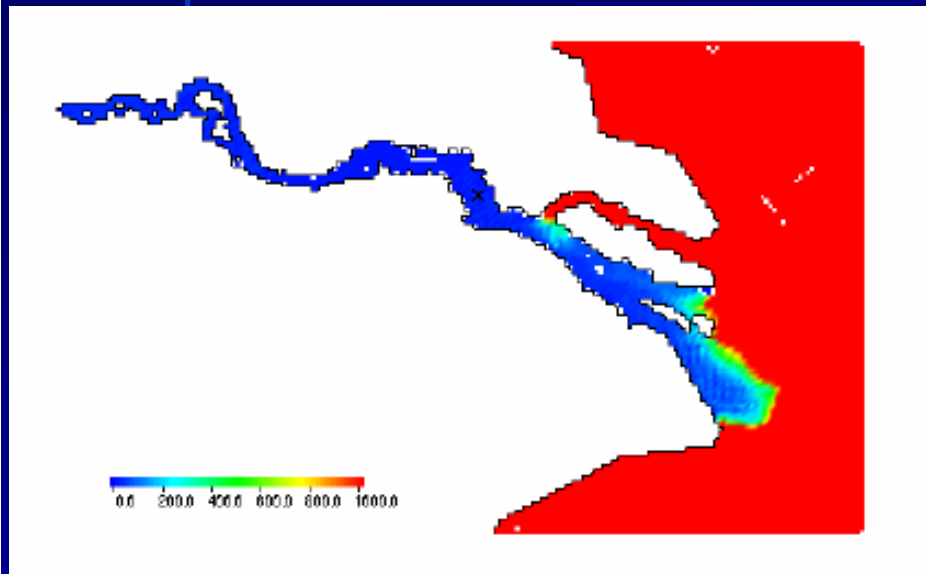
Expanding APEIS Network to Mongolia in order to detect the effect of global warming by observing dynamics of permafrost



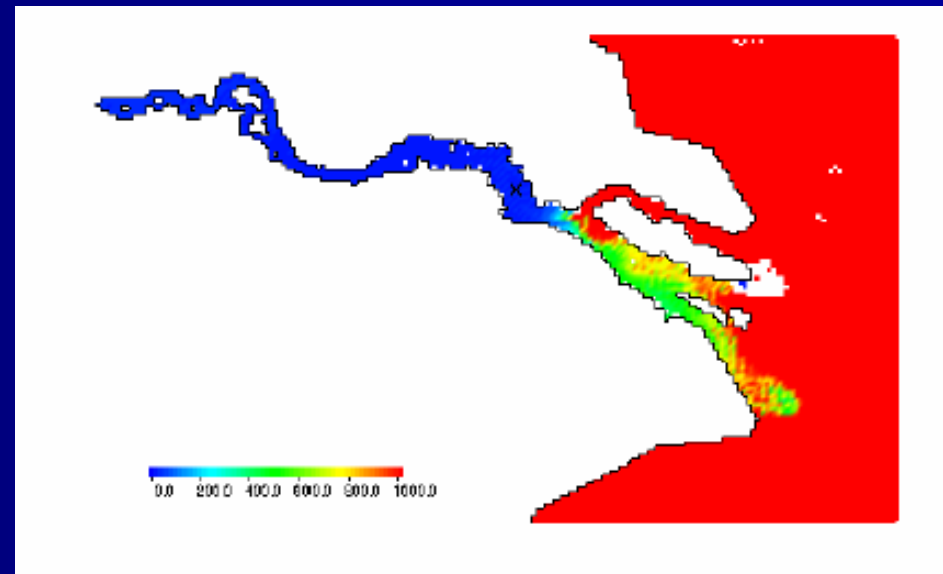


# Utilization of predictive assessment tool based on APEIS monitoring network

Proactive prevention measure according to apply the result of simulation to avoid saline water intake into paper mill factory



Observed: 27.Feb.1999  
Salinity distribution in the surface



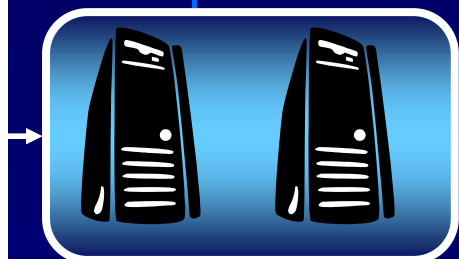
Salinity intrusion in the Changjiang river.  
Condition: Decrease flow rate of  $3000\text{m}^3/\text{sec}$  due to increase in water usage according with economical development in the Changjiang river catchment.

# Common platform in Asia-Pacific Region

Acquisition and accumulation of information

utilization of information in each country

Support to decision making and business



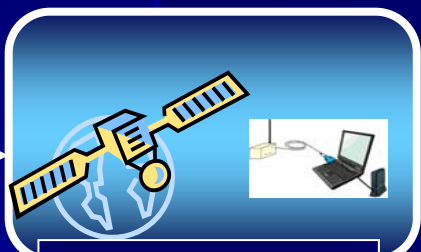
IT Network



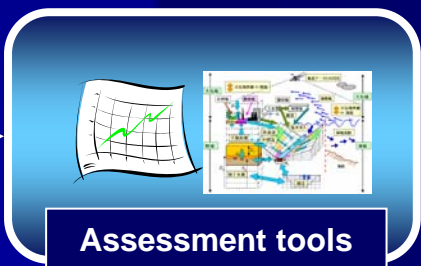
IT Network



- Clean development mechanism Carbon market
- Assessment for the green industrial development



Monitoring Data



Assessment tools

