GLOBAL ENVIRONMENTAL CHANGE SCIENCE

GLOBAL SPATIAL DATA AND INFORMATION USER WORKSHOP
CIESIN, FAO, UNEP, WHO, and CGIAR
21-23 September 2004

IHDP

International Human Dimensions Programme
International Geosphere-Biosphere Programme

GLOBAL CHANGE

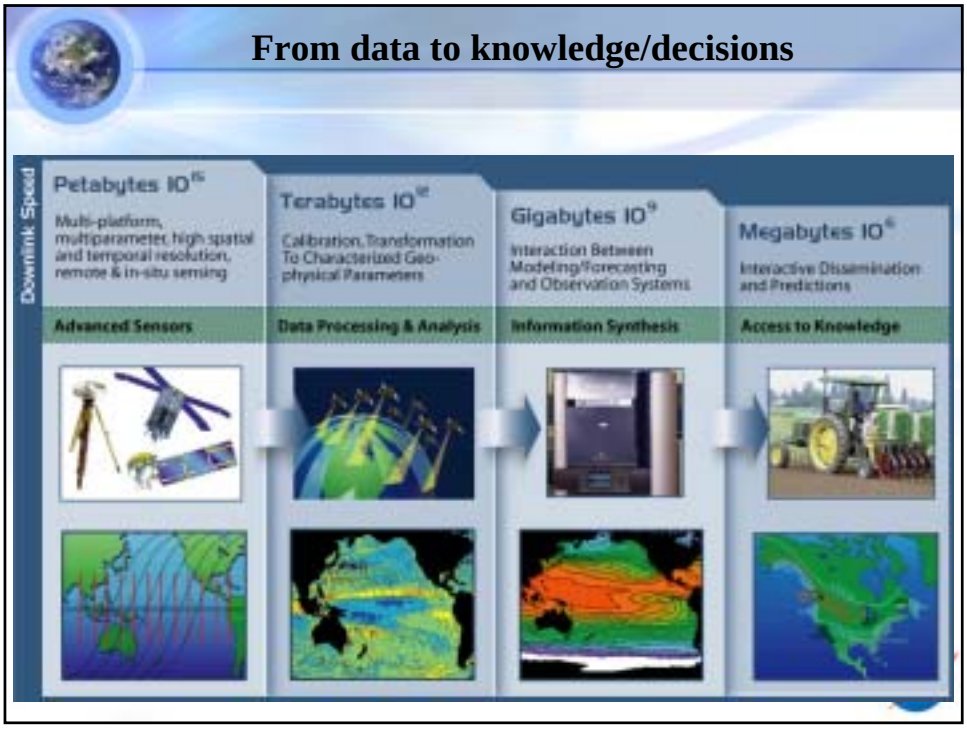
CHALLENGES and NEEDS OF GLOBAL ENVIRONMENTAL CHANGE

- Multiple Stresses
- Interactive Sectors
- Increasing Human Pressures

- Information Exchange to Multiple Publics
  - Science
  - Managers
  - Public
  - Policy Makers

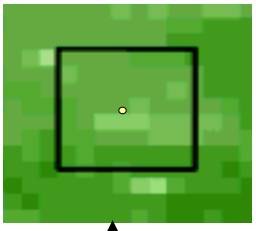
Information Needs

- RESEARCH NEEDS
  - BIOPHYSICAL
  - SOCIO-ECONOMIC
- PUBLIC NEEDS
  - RISK vs OPPORTUNITIES
  - THRESHOLDS
  - TRENDS
  - TRADE-OFFS



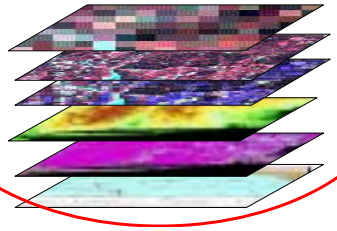
From points to pixels

?

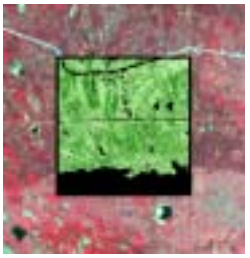


Create high res. products
by coupling high res. imagery
with field and tower data

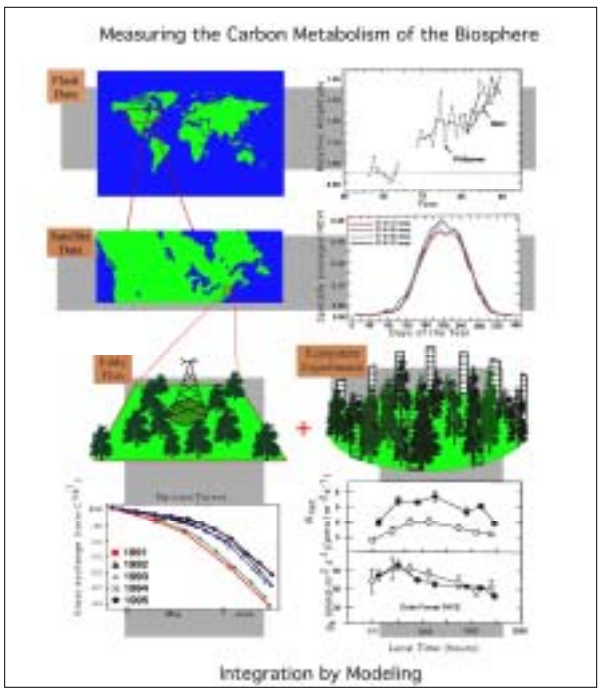
Correlate



Aggregate



Multiple use of airborne or high res. satellite data imply some efficiencies in coordinated activities/sites



Data-Model Fusion of Multiple streams of Datasets

Additional Information

- **Land Use**
- **Institutional**
- **Demographic**
- **Cultural**
- **Political**
- **Economic**
- **Technology**

Canadell et al. 2000

Combined Anthropogenic-Driven Activities

Global Terrestrial Datasets

- **REGIONAL AND PROCESS STUDIES**
- **FLUX TOWERS**
- **LAND USE AND INTENSITY STUDIES**
- **INVENTORY ANALYSIS**

Information Technology for Global Environmental Change Sciences

- Developing and testing theory and models requires integration of complex *in situ* process data with large gridded data sets.
- Required data are multi-scale, many formats, originating in multiple disciplines.
- Rapid prototyping and development cycle to maximize user control of information systems, implies incorporating existing state-of-the-art components rather than *de novo* development
- Data systems must allow user-driven, knowledge-based querying of multiple data types

SUMMARY

- Data is available in many cases
- Understanding is well formulated
- Mis-match of end-users NEEDS (eg Research vs Managers)
- Mis-match in ANALYTICAL TOOLS used by END USERS (eg integration of decision making tools with research models)
- Scaling information between observations and user needs inadequate