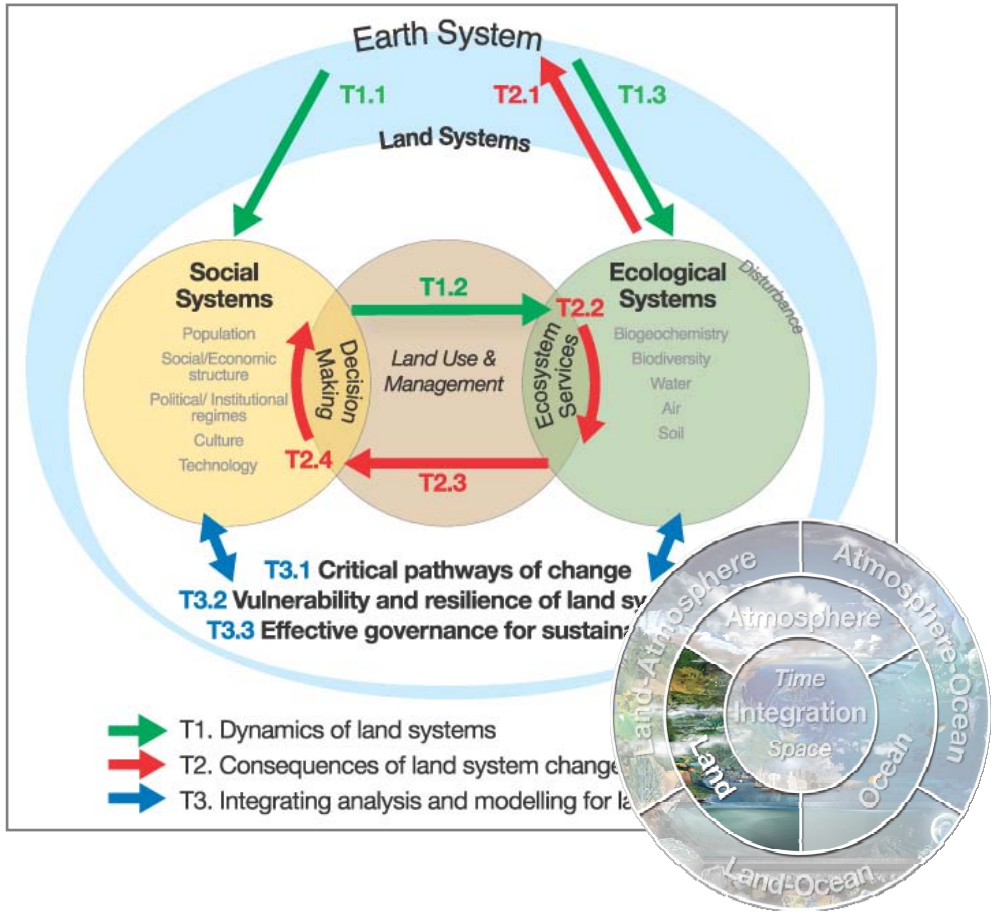
GLP

Global Land Project

- **The nature and causes of land system change.**
- **The consequences of land system change for ecosystem services and Earth System functioning.**
- **Support for sustainable use of land systems using integrated analysis and modelling.**



iLEAPS

Integrated Land Ecosystem - Atmosphere Processes Study

- **Land-atmosphere exchange of reactive and long-lived compounds: Interactions and feedbacks**
- **Feedbacks between land biota, aerosols and atmospheric composition in the climate system**
- **Feedbacks and teleconnections in the land surface, vegetation, water, atmosphere system**
- **Transfer of material and energy in the soil, canopy, boundary layer system: Measurements and modelling**

IGAC

International Global Atmospheric Chemistry

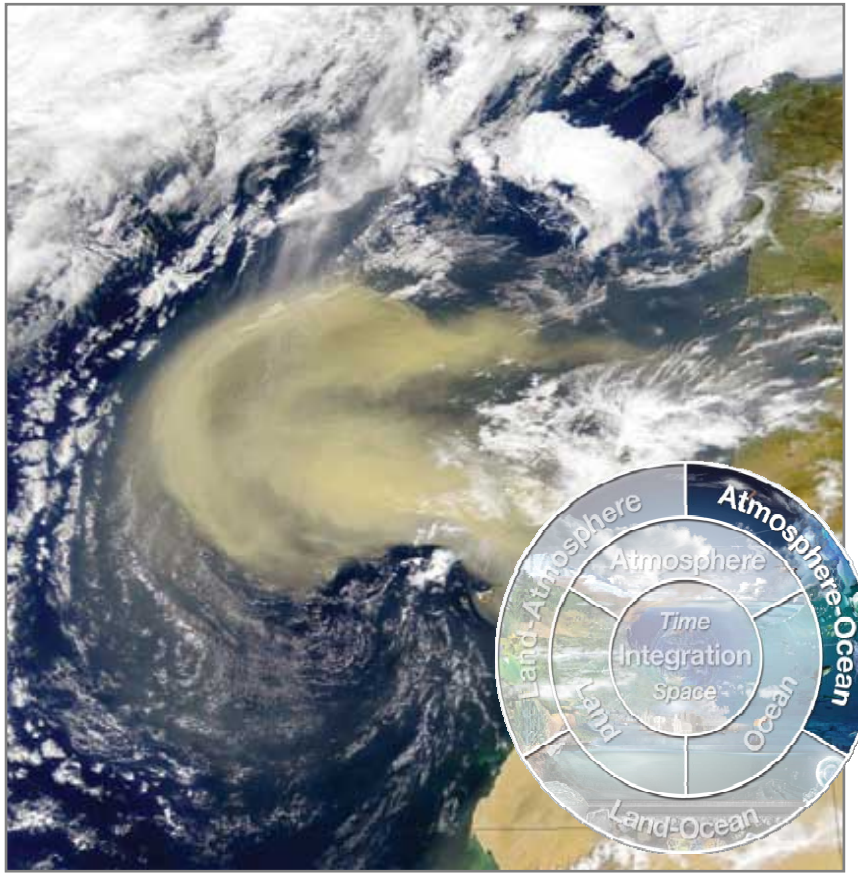
- **The role of atmospheric chemistry in amplifying or damping climate change.**
- **The effects of changing regional emissions and depositions, long-range transport, and transformations on tropospheric chemical composition and air quality.**

CACGP

SOLAS

Surface Ocean - Lower Atmosphere Study

- **Biogeochemical interactions and feedbacks between ocean and atmosphere**
- **Exchange processes at the air-sea interface and the role of transport and transformations in atmospheric and ocean boundary layers**
- **Air-sea flux of CO2 and other long-lived radiatively active gases**



SeaWIFS, NASA/GFSC & ORBIMAGE

CACGP WCRP International Council for Science Scientific Committee on Oceanic Research

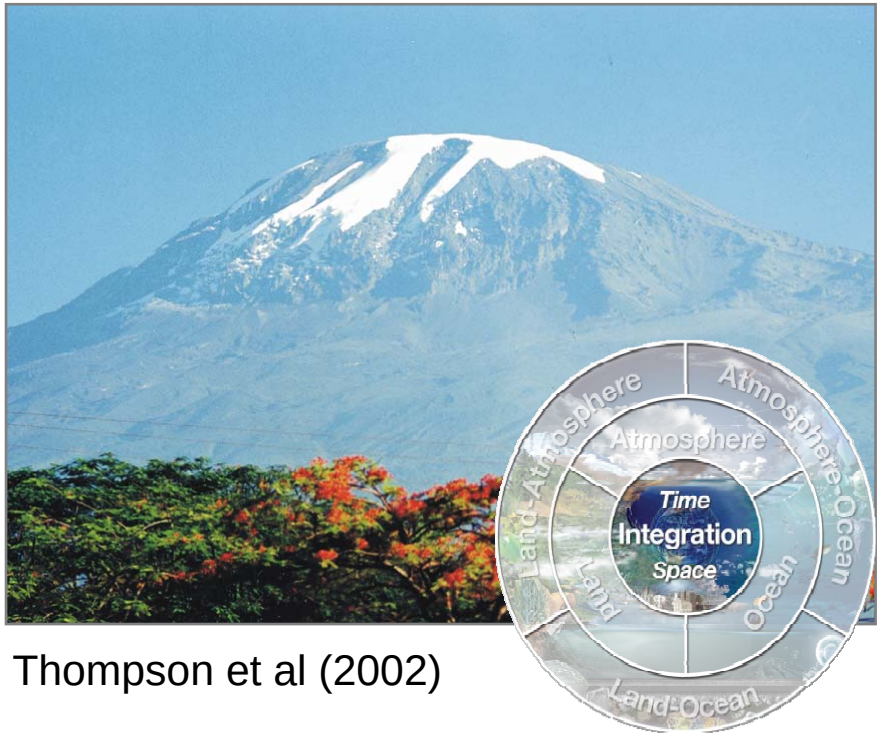
PAGES

Past Global Changes

Restructure (under development 2005)

- **Present-Past liaison**
- **Regional variability**
- **Human dimension eg. HITE**
- **Hydrological Cycle**
- **Polar Regions**
- **Greenhouse gases**
- **Interglacial variability**
- **Ocean acidification**

The ice cap on Kilimanjaro is melting so fast it may disappear by 2020

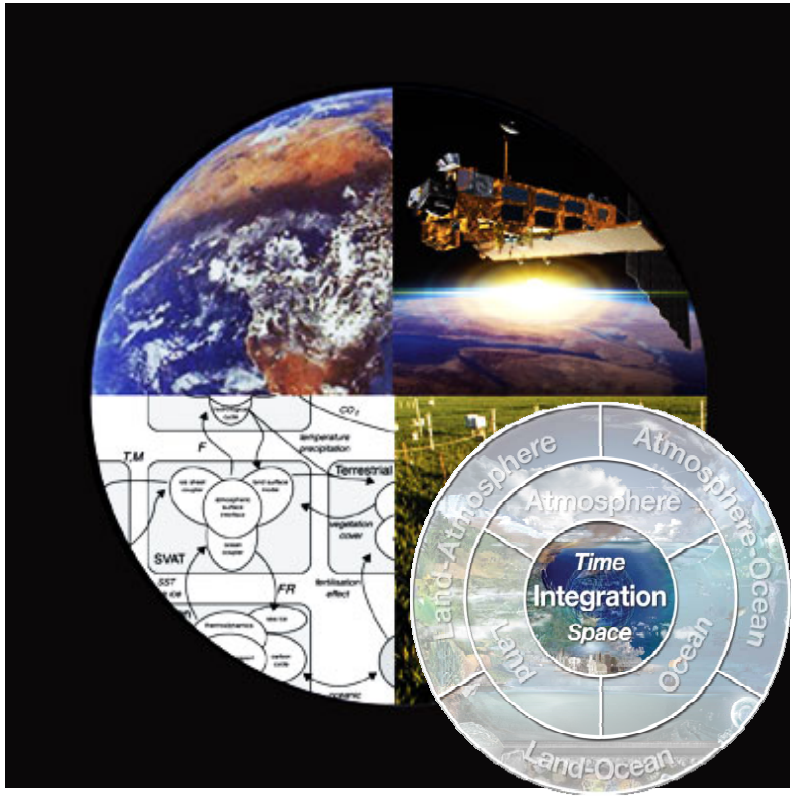


Thompson et al (2002)

AIMES

Analysis, Integration and Modeling of the Earth System

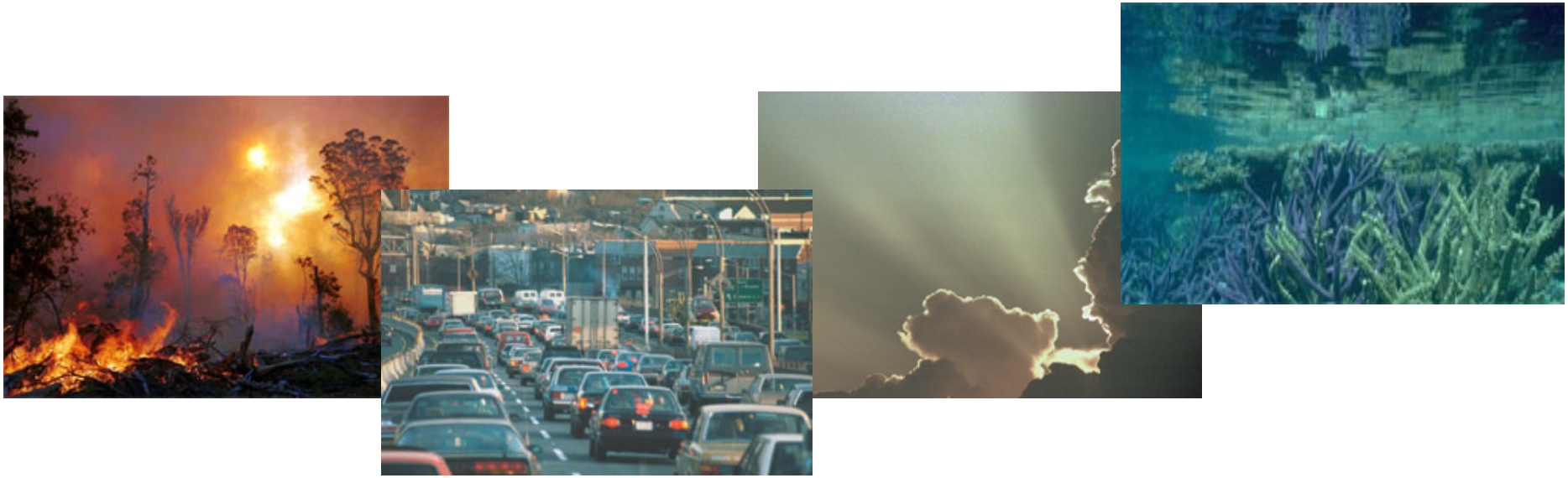
- **Earth System modelling at various complexities**
- **Systems-level analysis and integration**
- **Formalisation of the human dimensions in the Earth System**
- **Institutional network**
- **Postdoc Network**
- **Earth System Atlas, C4MIP, GEIA, IHOPE, EPICA….**



Earth System Science Partnership

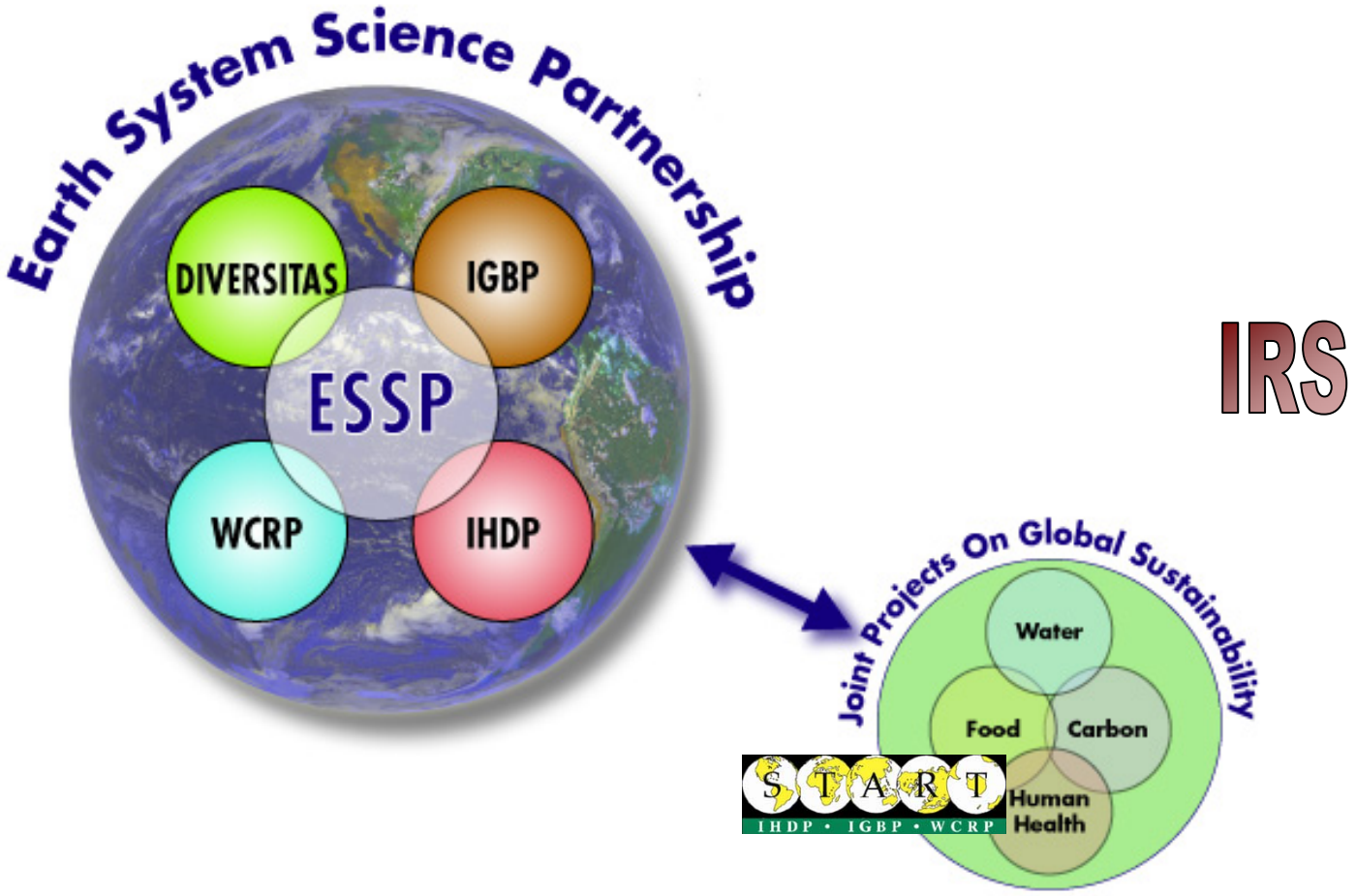
DIVERSITAS, IGBP, IHDP, WCRP

- **an integrated study of the Earth System,**
- **the changes occurring to the System, and**
- **the implications for global sustainability.**



Earth System Science Partnership

DIVERSITAS, IGBP, IHDP, WCRP



Human Health

(Under Development)

Project Goals:

- To determine the past, current, and future health impacts of global environmental change.

- To enrich the policy discussion about mitigation and adaption from a human health perspective.

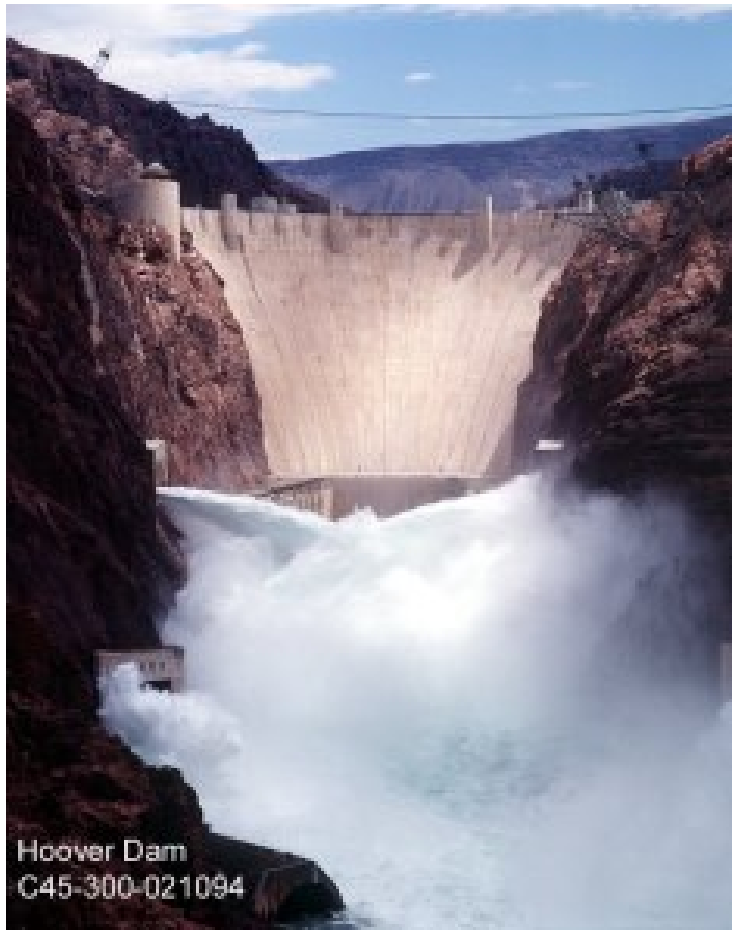
Carbon Cycle

http://www.globalcarbonproject.org/

- **Patterns and variability:** what are the geographical and temporal patterns of carbon sources and sinks?
- **Processes, controls and interactions:** what are the controls and feedback mechanisms - natural and anthropogenic - that determine the dynamics of the carbon cycle on scales of years to millennia?
- **Management of the carbon cycle:** what are the future dynamics of the carbon-climate system and what are the points of intervention and windows of opportunity for managing this system?

Water Resources

- What are the **relative magnitudes of changes** in the global water system (GWS) due to human activities and environmental factors?
- What are the social and Earth System **feedbacks** of human-driven change to the global water system?
- To what extent is the GWS **resilient** and **adaptable** to global change?



www.gwsp.org

Food Systems

A food-secure future for those most vulnerable to environmental stress

- How will global environmental change (GEC) affect the **vulnerability** of food systems in different regions?
- How can we **adapt** food systems to cope with GEC and improve food security?
- How will the various adaptation options **feed back** on environmental and socioeconomic conditions?

http://www.gecafs.org/

Integrated Regional Studies

- **assess the influence of regional processes on Earth System functioning (and vice-versa)**
- **be integrative (natural and social sciences, all components of the Earth System, planning to synthesis)**
- **contribute sound scientific understanding in support of sustainable development in the region**
- **be scientifically-driven by scientists in the region, with global collaboration**

Ongoing activities in Monsoon Asia region, possible new IRSs in Africa, Northern Eurasia

Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA)

- **80 research groups - 600 scientists**
- **how does Amazonia function as a regional entity (e.g. water, energy, aerosol, carbon, nutrient and trace-gas cycles)?**
- **how will changes in land use and climate affect the biological, chemical and physical functioning of Amazonia, including its sustainability and influence on global climate?**

SysTem for Analysis Research and Training

- Develop a system of **regional networks** of collaborating scientists and institutions.
- **Enhance scientific capacity** in developing countries, by strengthening and connecting existing institutions, training global change scientists and improving their access to data and results.
- Help **mobilise the resources** required to augment existing global change scientific capabilities, infrastructure and activities in developing countries.

IGBPの成果物

- Synthesis papers
- Journal special issues
- Books (e.g., IGBP Series)
- Science Plans

- Quarterly Newsletter
- Website
- Science Series
- Annual Report
- IGBP & project brochures
- Press releases, events
- Email bulletin
- PowerPoint presentations
- Information sheets
- IGBP Directory

www.igbp.net