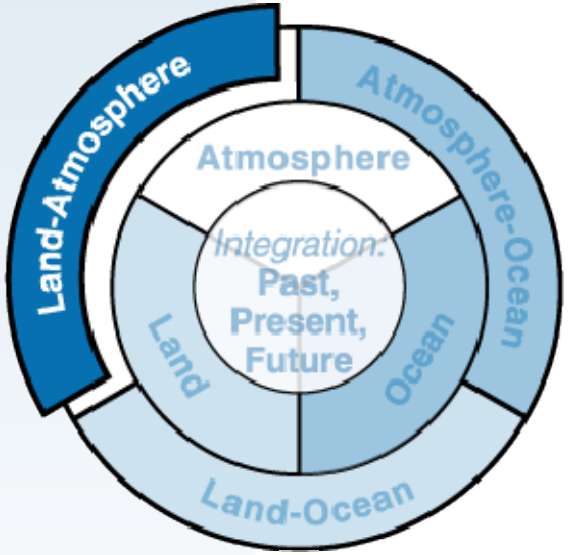
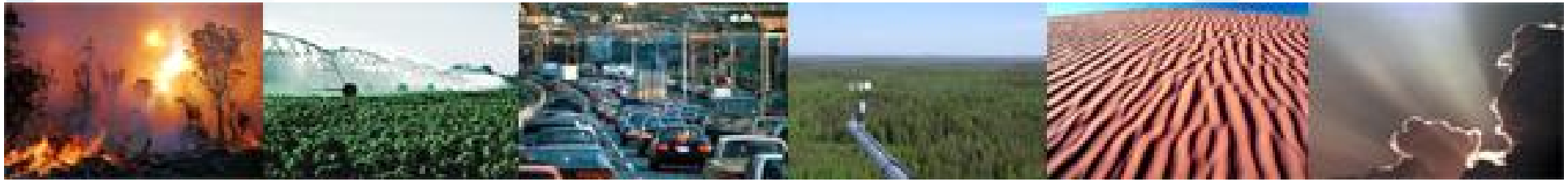
What is iLEAPS?

iLEAPS is the new international reseach project of the International Geosphere - Biosphere Programme (IGBP).



The objective is to study how interacting physical, chemical and biological processes transport and transform energy and matter through the land-atmosphere interface.



Focus 1

Land-atmosphere exchange of reactive and conservative compounds: Key feedbacks in the Earth System

- CO_2 fluxes at interlinked scales, controls, couplings
- Control of inter- annual variation of CH_4 fluxes
- Relationship of VOC fluxes to carbon exchange and Net Biome Production
- Feedbacks hydrology/aerosols/VOC
- Self-regulation of VOC fluxes
- Nitrogen species cycling

Focus 2A

Interactions and feedbacks between biogenic/ anthropogenic aerosol production, cloud processes, climate and the water cycle

What controls natural aerosol and CCN abundance

- How changes in aerosols (esp. CCN) affect the cycles of water, energy and chemical species
- Chemical/microphysical effect of terrestrial (biogenic, smoke, dust) aerosols?
- Dust: cloud effects, anthropogenic perturbation
- Aerosol/light interactions (absorption/scattering) in ecology and climate change
- Representation in climate models

Focus 2B

Surface-atmosphere exchanges and the self-cleansing mechanism of the atmosphere

Role of terrestrial biosphere in self-cleansing (NO_x, VOC, …)

- Effects of global change (land-use, climate) on biospheric inputs to self-cleansing
- Effects of changing self-cleansing on biosphere (via oxidants, UV, …)
- Effects of vegetation fires on self-cleansing

Focus 3

Feedbacks and teleconnections in the land surface vegetation - water - atmosphere system

Effects of land-use and vegetation dynamics on climate, including the water cycle

- Interactions of soil moisture with energy and water flux
- Multiple stable states, and what are the thresholds between them?
- Relative importance of human-induced changes (land-use, greenhouse gases, aerosols) on climate
- Effects of changing radiation fields

Focus 4

Transfer of materials and energy in the soil/canopy/boundary-layer system: Measurements and Modelling

- Surface flux measurements (validation, increase of accuracy)
- Boundary layer budget methods (validation, scaling)
- Aircraft flux measurements
- Remote sensing
- Turbulent fluxes and dry deposition
- Integration, model development and evaluation

What could ILEAPS actually do for NEESPI…(and vice-versa)

Initiate and partly facilitate a tri-lateral EU- Russia – US ***science to policy*** workshop towards a possible EU R&D dedicated call for an integrated research in Northern EuroAsia (in collaboration with major players in the region like MPI groups)……..