

## **Global Collaboration with ESM and NEESPI Communities:**

**Proposal:** a multiple model intercomparison focused on NEESPI but over northern high latitudes

**Justification:** quantify uncertainties and sensitivity of northern high latitudes biogeochemical feedbacks and interactions in northern high latitudes: crossing model scales of complexity

**Challenge:** using impact and ecological knowledge and infusing appropriately with models; Initial focus of a MIP: Carbon cycle, land use dynamics, emissions, vegetation (land cover change) hydrology

### **Protocol Ideas:**

Utilize existing Coupled Carbon Cycle-Climate MIP (C4MIP) global results from AR4 (cut out northern high latitudes/NEESPI

Build from Friedlingstein et al. (2006); a global analyses: ocean/land carbon, NPP  
11 models total 9: coupled AOGCM, 2 EMIC

New runs with developing C4MIP offline global land/biogeochemistry models with new implementations of organic soils

Regional Mesoscale models

Individual Based Models (IBM): Hank

Integrated Assessment Models (IAM): Socioeconomic

**Domain** – 45o and north? Other ideas?

### **Model and Dataset Activities, Issues:**

Model activities:

Hydrologic discharge analyses has happened with models like VIC,

Global models with various routing, dynamic vegetation and biogeochemistry schemes

C4MIP currently evaluating land cover (dynamic veg) schemes: LPJ, CASA

Data Opportunities:

Scatterometer/ others for changes in transition/sensitive zones

#### **Existing Data (just a start):**

Climatology; 50 year, 1° 3 hourly data for offline (in situ, satellite, re-analysis) 1950-2000: either or initial condition or verification

Soils: IIASA soils, circumpolar cryosols

Vegetation: improve derived from scatterometer for peats, lakes; connection to disturbance events

Sea Ice Dataset: Use satellite observations and NSIDC

**Proposal:** Using existing data to start for model init/eval AND/OR stage a data development activity and then modeling?

### **Process:**

1. within one week, draft and circulate 3-page concept to C4MIP, other modeling groups and NEESPI AGCI participants: by early December, gauge responses (Kathy Hibbard)
2. part of the draft concept paper should include a poll of meetings already committed to for efficient face-to-face (three weeks deadline)

3. AIMES to support the process for next three months: help with approaching main players; other programmes to help as available (Dec. 10 as a Check point at AGU the Fall Meeting)
4. Propose session at EGU; deadline September 15; other ideas: getting modeling communities together: perhaps also to NEESPI ST meeting: perhaps some EGU sessions that focus on C4MIP, etc communities, a follow on after session for breakout to discuss specifics. Design a session that attracts these communities. (Pavel Kabat and Kathy Hibbard and Pavel Groisman)
5. An electronic/telephone conference by end of year (07) for path forward

### **Communities to Involve:**

GEC Programmatic: C4MIP: AIMES, iLEAPS, GEWEX, CLiC, WGCM, SOLAS, MAIRS

International: IPY (IARC, others), IPCC,

Modeling: Global (C4MIP), Inverse, DGVM, IBM (LPJ, Echam, CASA), IAM

C4MIP: NCAR, IPSL, Hadley, MPI, LLNL, UMD, UVIC, FRCGC, CNRM

Regional MM: MM5, Rams, WRF, IRC, REM

EMIC: Climber, Bern, ???

IAM: MiniCAM, IMAGE, MESSAGE, MIT, AIM

Russian groups: Institute of Mathematics in Moscow; regional model in Vladimir's group

Agencies: NASA, NOAA, ESA, NSF (Polar programs), DOE, JXA, ???

Institutional Support: NCAR, MPI, IPSL, Hadley, GFDL, GISS, IIASA, others

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### **Opportunities:**

Sept 07 coupling obs/models ESA/AIMES

Around APRIL next year for a formal meeting at EGU: begin session proposal immediately

IGBP Congress in Capetown (May 08): Invite NEESPI; identify funding opps and key members (Anni Reissell and Kathy Hibbard)

Next steps on NEESPI collaboration with MAIRS (Pavel Kabat, Dennis Ojima, Yan Xiaodong (iLEAPS SSC), Jianguo Qi);

/\*MAIRS ST meeting in Beijing (07): discussion of overlap with NEESPI domain

Proposed by MAIRS to NEESPI: the area of overlap as a joint area/domain of interest:

letter from MAIRS to Dennis to be an SSC member for them\*/.

Int'l rangeland and Int'l grassland congress; inner Mongolia late June/early July; perhaps Chuluun as a liason [further discussions at Urumqi]

joint conference between iLEAPS and GEWEX ca November in Sydney 2009; propose a NEESPI (or regional studies) special session [Eric Wood and Pavel Kabat]

### **Future (near and far):**

- A position paper on integrating NEESPI to other global communities[connected to proces of modeling intercomparison]:
- A Next MPI Earth system modeling school: propose for next year at the August meeting; various modalities possible [Guy Brasseur and Pavel Kabat, next two weeks]; {from lecture to lab; if a go, take advantage of earth simulator, Fareast (Hank)}. May be a IIASA as an alternative (Eric Wood).

- IAM: anthropogenic scenarios: Participation; Carole Crumley for a northern high latitude anthropologist and IHOPE (Resilience Center Secretariat in Stockholm). A Workshop on this activity ~ May 2008 (Hibbard, Crumley,...; additional NEESPI participants: Velichko, Novenko, Olchev, Gershunov) link to the next item.
- Follow up the previous item (phase II) activity: New Group (Activity) within NEESPI: a scenarios activity: land use, industrial, energy, lead should come from an appropriate NEESPI institute; after an intercomparison, there is a need for plausible socio-economic scenarios (this is happening on the north American side); it's not just development, but land degradation (with climate and development as forcing agents). Perhaps a workshop in '09; PIK, IIASA (Gunter Fisher/Stan Nielsen), Chuluun, Sasha Olchev
- Also to perhaps involve: Mountain Research Initiative (MRI) domain, new activities developing on the Dynamics of Infectious Disease (Gershunov, Rodo, Greenwood, Ojima):
- A European proposal in preparation for next generation ESMs: S.America, India also propose to include NEESPI; ID 3-5 NEESPI points of contact to collaborate on proposal; call is out Oct/Nov (late fall) meeting of core group next week; deadline for submission, end of March, early April '08; ID: (Pavel Kabat, Hank Shugart, Irina Sokolik, Chris Schmallius, Sergey Venevsky and their Russian counterparts)
- Linking NEESPI to interests of NASA and ESA (Schmallius) for a few major experiments? Best to hope is specific field work that might be linked to a sensor: DESDynI; interferometric SAR and LIDAR; (Deformation, ecosystem structure and dynamics of ice); one of the 6 decadal review missions; (Ice = glaciers mostly) (Hank Shugart as contact; to consider, Peter Romanov, U. Maryland, snow). Supporting Managers: Garik Gutman, Gerard Begni, and Einar Herland.
- Links to CEOP for validation needs (Groisman and Leptoukh).