



CEOP-CliC Collaboration

based on discussions between core CEOP and CliC group

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and

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Four overall collaboration topics (in IPY proposal)

1. Convergence of Observation and Data Integration

Targets:

- Reference site/basin network in cryosphere
- Integrated satellite products in cold region

Strategy:

- (1) Sophistically integrated in-situ observation (super site) including isotope: new site involvement through focusing location, number, standard.
- (2) Common metadata and data policy
- (3) Data quality check and archiving system
- (4) Integrated satellite products validated by in-situ data: snow, snowfall, soil moisture, canopy snow, (vegetation)
- (5) Long term, comprehensive, quality observation at different spatial scales: regional-point in Northern Eurasia
- (6) Precipitation data applying various method

Red: These topics will be fully/partly implemented by cooperation between CEOP and CliC group in FRCGC/IORGC, JAMSTEC.

Blue: Data and modelling groups in CEOP and CliC.

Decrease the UNCERTAINTY in Solid Precipitation:

- Correction for past/present data and future monitoring.
- Integrated study from space and land.

(1)

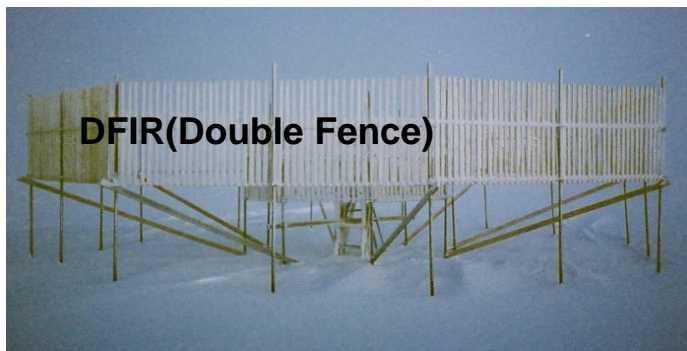


Observation at Tiksi, Barrow and/or others



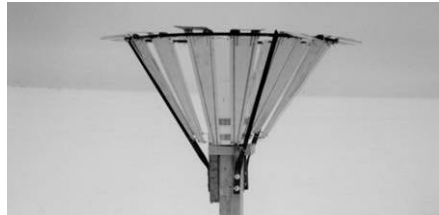
GPM

Precipitating snow

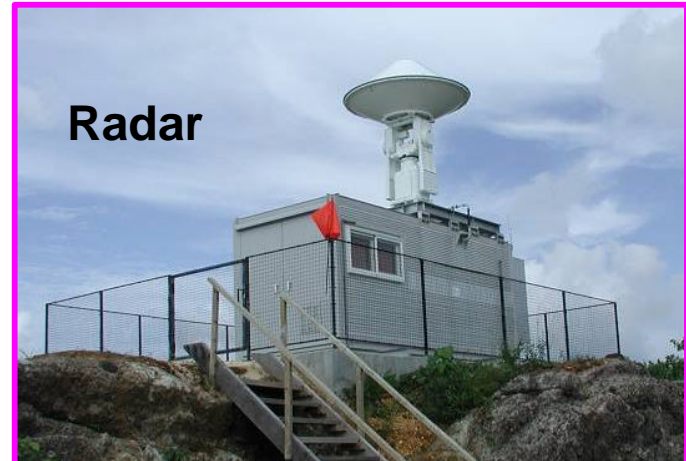


DFIR(Double Fence)

Trechakov(Russia, others)



Snow Particle Counter



Radar

- (1) Verification of remote sensing.
- (2) New precipitation data-set for high altitude.

2. Long-term Variation of Snow Distribution in the Northern High Latitude Region and Its Impacts on Atmospheric Circulation

Targets:

• Seasonal and Inter-annual Variation of Land Hydrological Conditions

Strategy: (Research based on long-term data)

- (1) Long-term snow (SWE) and soil moisture by the SSM/I: product, validation, impact analysis concerning atmosphere and hydrology
- (2) Model Analysis Inter-comparison
- (3) Land surface model improvement for regional climate modeling: better inclusion of frozen ground including permafrost

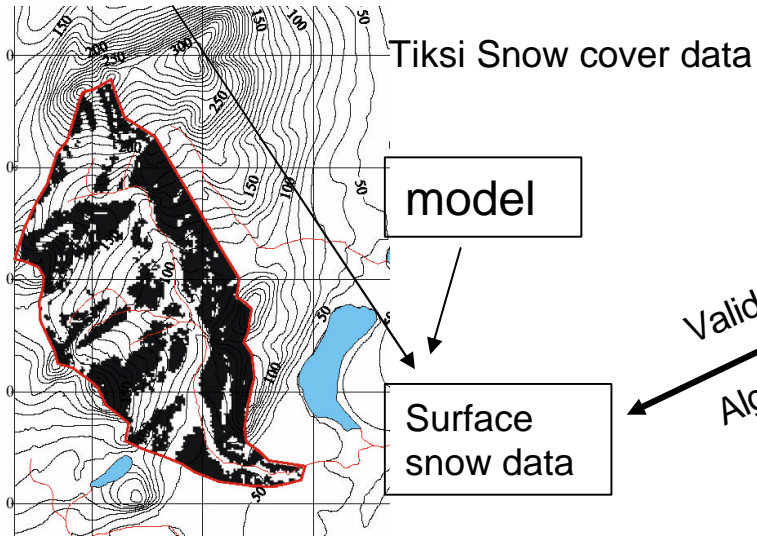
(2)

(Various experimental site)

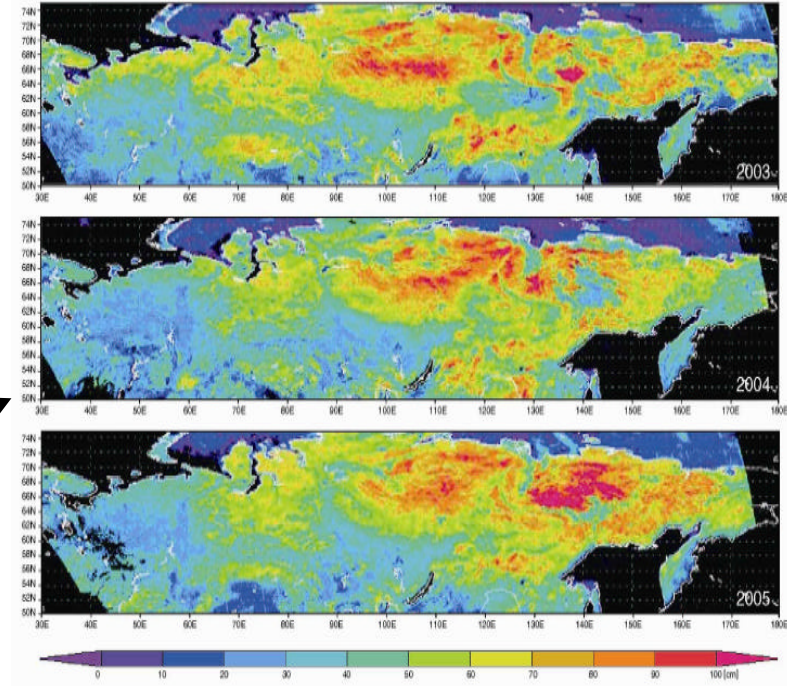
1996 ~ 2006

In-situ data (Snow, snow course data Russia)

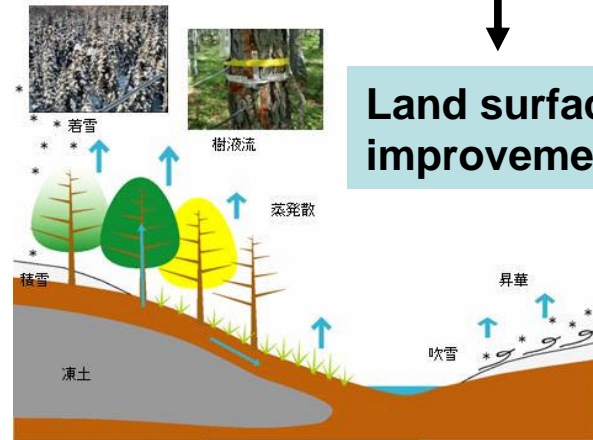
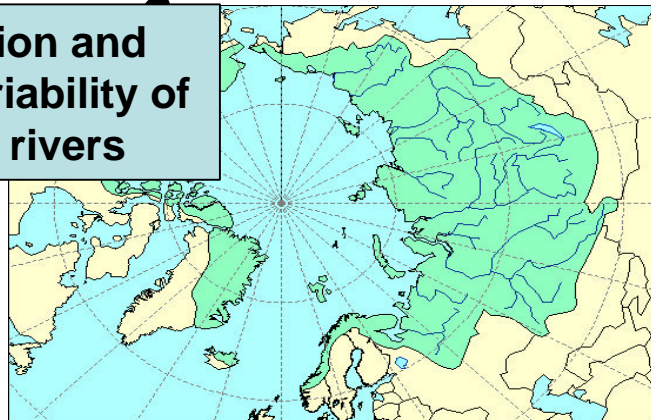
~ 2006



Snow cover deduction from 2003-2005, extending back to 1979 (Tsutsui)



Runoff simulation and understand variability of Arctic draining rivers



Land surface model improvement

3. Water and Energy Budgets (WEBs)

(Research for CEOP2 period)

Targets:

- Intercomparison among the large river basins facing to Arctic Sea, such as *Lena, Obi, Yenisey, and Mackenzie*
- Impacts of the WEB variation on the atmospheric circulation

Strategy:

(1) Data integration

(2) Atmosphere-land interaction

land processes: snow, permafrost, soil moisture, vegetation, fluxes, land water.

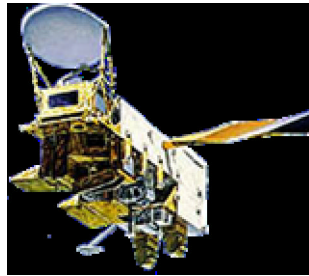
(3) Predictability Improvement of GCMs coupled with LDAS

(4) Down-scaling and A-L coupled DAS

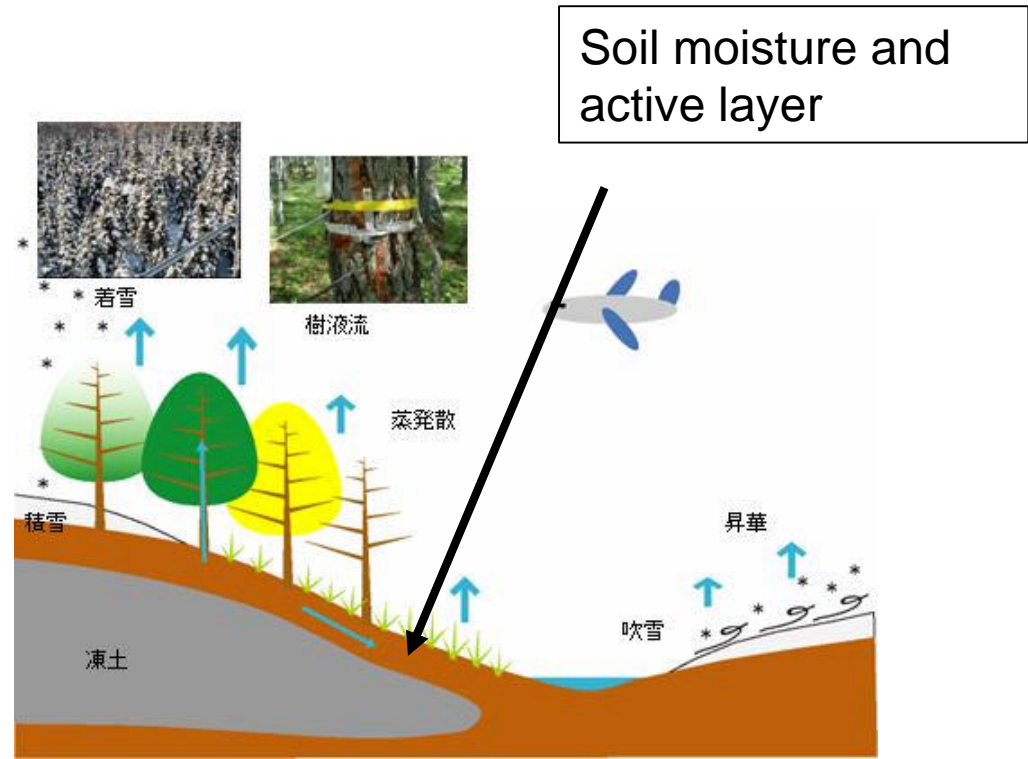
(5) River Runoff

(3)

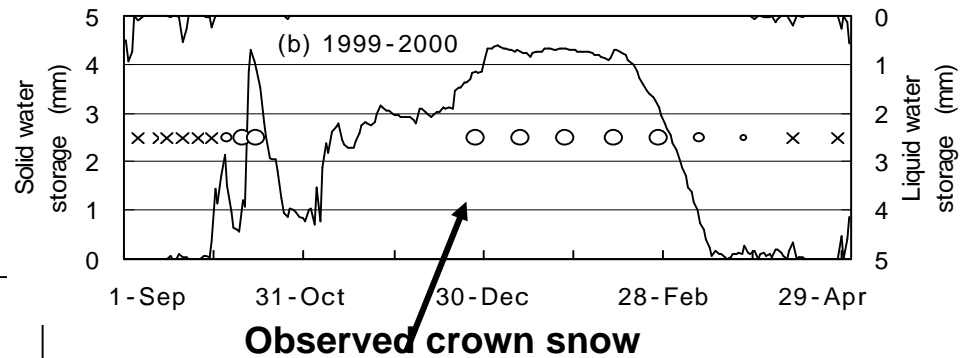
PROCESS: Snow on tree canopy, How does it behave? How much spatially



Understanding of this will improve snow cover estimation



Preliminary result of crown snow for winter Yakutsk



4. High Mountain Hydrology Including Glacier

Targets:

- From process study to application to water resources management

Strategy:

- (1) Enhanced collaborative research in reference basins
- (2) Intercomparison of impacts of climate change on water resources
- (3) Cooperation with “Semi-arid region study”

Still looking way and CliC group to implement this.

**DRAFT Preparation Form for Proposed IPY
Activity**

IPY: 2007-2008

Submitted: Jan. 31, 2006
with much help from Petra

1.0 PROPOSER INFORMATION

1.1 Title of Activity

Coordinated Enhanced Observing Period in the International Polar Year

1.2 Short Form Title of Proposed Activity

CEOP-IPY

1.3 Activity Leader Details

First Name Surname Toshio Koike Affiliation Country University of Tokyo Japan

Lead International Organisation(s) (if applicable)

World Climate Research Programme (WCRP) – Climate and Cryosphere project
(CliC) WCRP Coordinated Enhanced Observing Period

Other Countries involved in the activity

USA Canada Finland Russia Norway Germany Italy China Mongolia

Expression of Intent ID #'s brought together in the proposed activity (Lead first)

544414

Location of Field Activities (Arctic, Antarctic or Bipolar)

Arctic – initially, Antarctic to be considered

Which IPY themes are addressed (insert X where appropriate)

1. Current state of the environment X 4. Exploring new frontiers X 2. Change in the polar regions X 5. The polar regions as vantage points 3. Polar-global linkages/teleconnections X 6. The human dimension in polar regions

1.9 What is the main IPY target addressed by this activity (insert X for 1 choice)

1. Natural or social science X 3. Education, Outreach, Communication 2. Data management 4. Legacy

Stable isotope of water

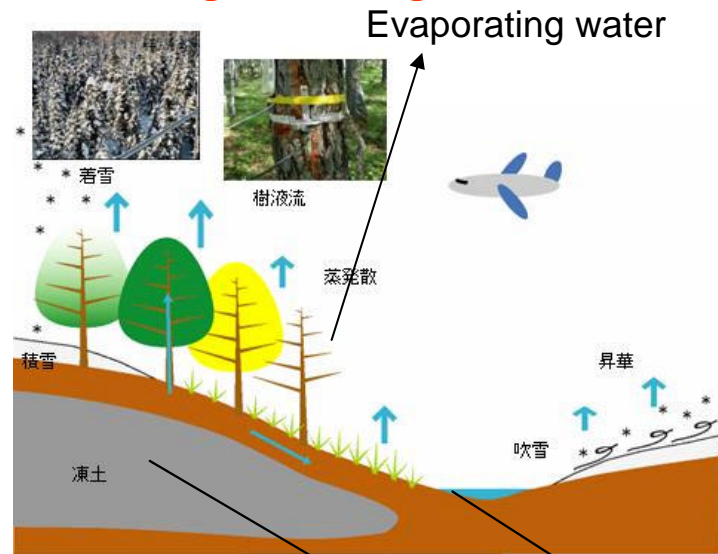
(values of accumulated and flowing snow, ice, water)

Will not CEOP modelling activity include stable isotope?

Cold region, one of the variable regions.
change in area/amount of boreal forest
change in sea-ice coverage.
Melting of old ice in the ground.

Atmospheric moisture

Indicator of global change



Melting of old ice
(low value)

Surface change appear in runoff water



Sampling network of SI

CABIN (tentative) A Program/project Contributing to CliC CPA1

Character: post-GAME project in the Northern Part of Eurasia, including other individual project. Shifting focus point of the study from “process” to “change”, strengthening the atmospheric part and regional data archive.

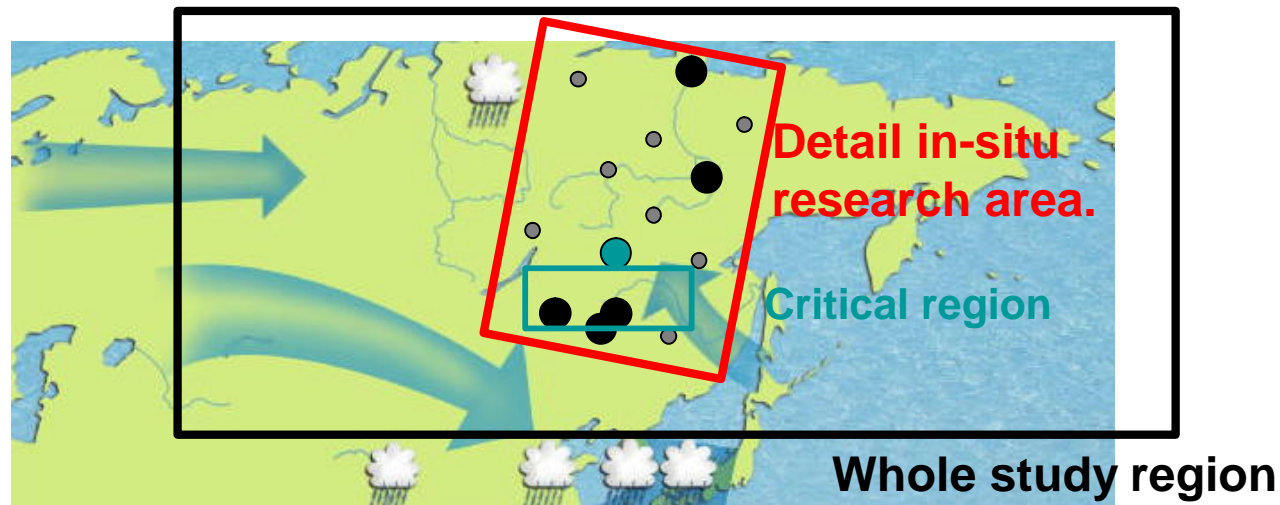
Target Region : Asian part of Northern Eurasia north of 40N.

Central topic: Cryosphere-Atmosphere-Biosphere Interaction and Changes in Northern Eurasia

- (1) Climate change and water cycle
- (2) Atmosphere-land interaction and atmospheric circulation
- (3) Vegetation
- (4) Snow and ice

Presently discussed in Japan by core members

This will have tight relation with CEOP





1st Asia CliC Symposium

- State and Fate of Asian Cryosphere -

Date: April 20-22, 2006.

Place: Yokohama Institute of JAMSTEC, Yokohama, Japan

Web-site:

<http://www.jamstec.go.jp/iorgc/sympo/asiaclic2006/>

Email: asiaclic2006@jamstec.go.jp

Objective: To discuss the present state of cryosphere in Asia and to establish the structure of international collaboration for implementing the CliC objectives, including cooperation with project such as CEOP.



Additional topics for consideration from CliC

- (1) Stable isotope climatology of high-altitude regions.
- (2) Frozen ground mapping and characteristic deductance from satellites.
- (3) Deduction of surface fluxes from satellites at needed spatial and temporal scale for cold regions.

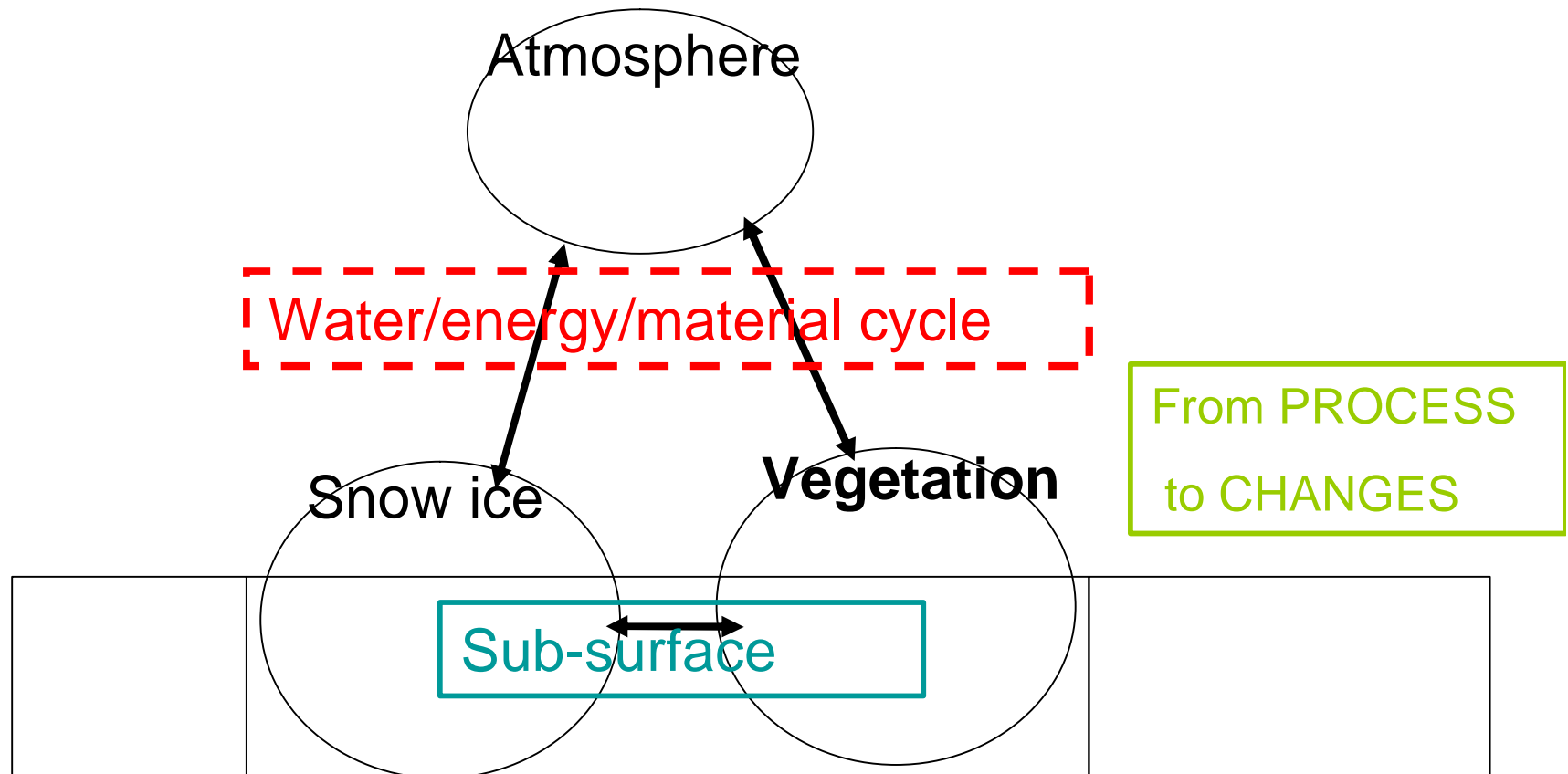
Main methodology from science aspect

- (1) Effective usage of existing and newly planned super-stations and employment of new techniques.
- (2) Better data-archive.
- (3) Effective integration between satellite and ground-based data and cooperation between scientists in both fields.
- (4)

CABIN (tentative) A Program/project Contributing to CliC CPA1

Target Region :Asian part of Northern Eurasia north of 40N.

Main methodology:



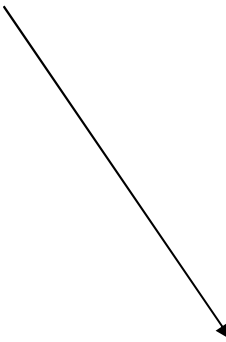
(2)

Better

Soil moisture product

Snow cover product

Atmospheric data



Atmospheric disturbance anomaly

- <Winter to spring>
 - Central Eurasian Snow cover
 - Soil moisture
- <summer>
 - Okhotsk high development differs

Main areas of cooperative science works between core group of CEOP (Univ. Tokyo) and CliC (JAMSTEC)

- (1) Renewing the precipitation climatology of high altitudes.
new ground-based techniques, radar, satellite.
- (2) Deducing long-term variation of snow cover SWE and
understanding the cause and resultant influence to
atmos- and hydro- variations.
- (3) Improving the understanding of land-surface processes
and reflecting them to the land surface models/schemes.
canopy snow under forested conditions.
active layer dynamics.
- (4) Atmosphere-land surface interaction in Northern Eurasia