GEOSS Symposium in Integrated Observation for Sustainable Development in the A-P Region

Themes and Subjects in the Session on "Monitoring of Ecosystem and Biodiversity"

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The University of Tokyo

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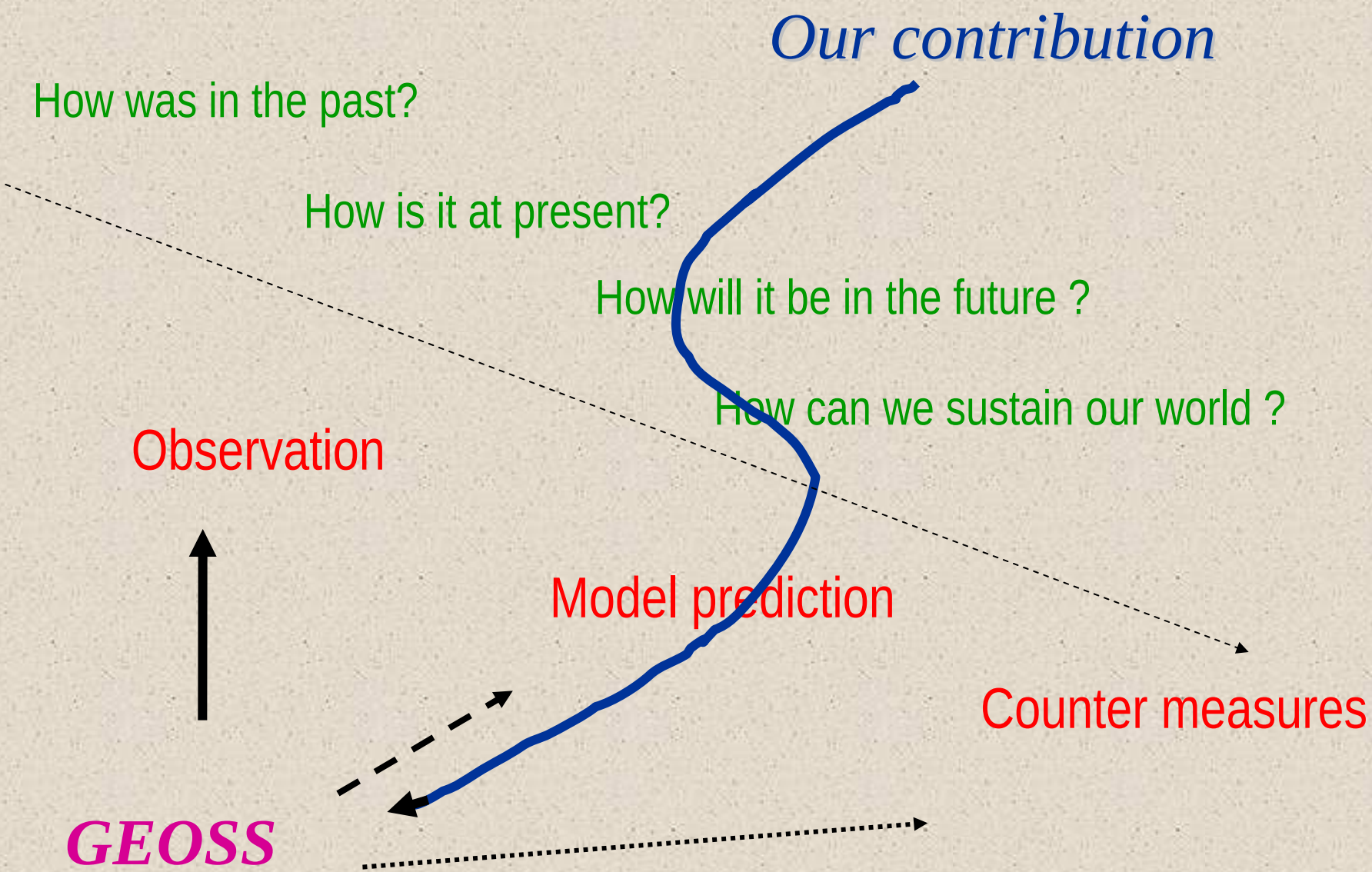
Missions of Monitoring of Ecosystem and Bio-diversity



Missions of the Session

to exchange of information and knowledge

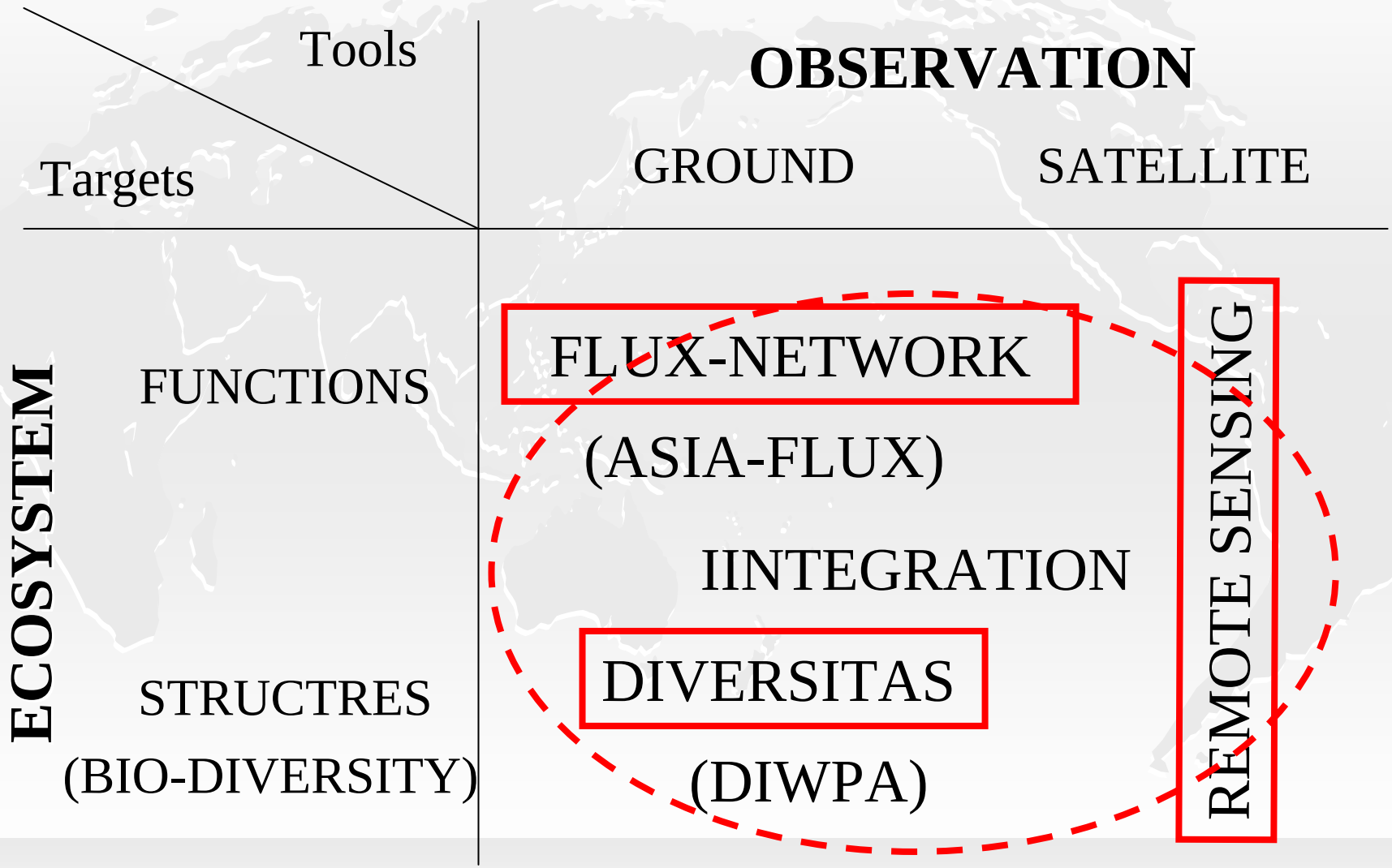
to identify scientific issues and difficulties

to investigate the steps for integrating observations, models and countermeasures

to investigate the steps for inputting to **GEOSS**

Themes and Subjects in the Session

Ecosystem and Biodiversity



Four Sub-session

 # REMOTE SENSING

Observation of spatial distribution of ecosystem variables

 # ASIA-FLUX

Observation of carbon budget in ecosystem

 # DIWPA (DIVERSITAS in Western Pacific and Asia)

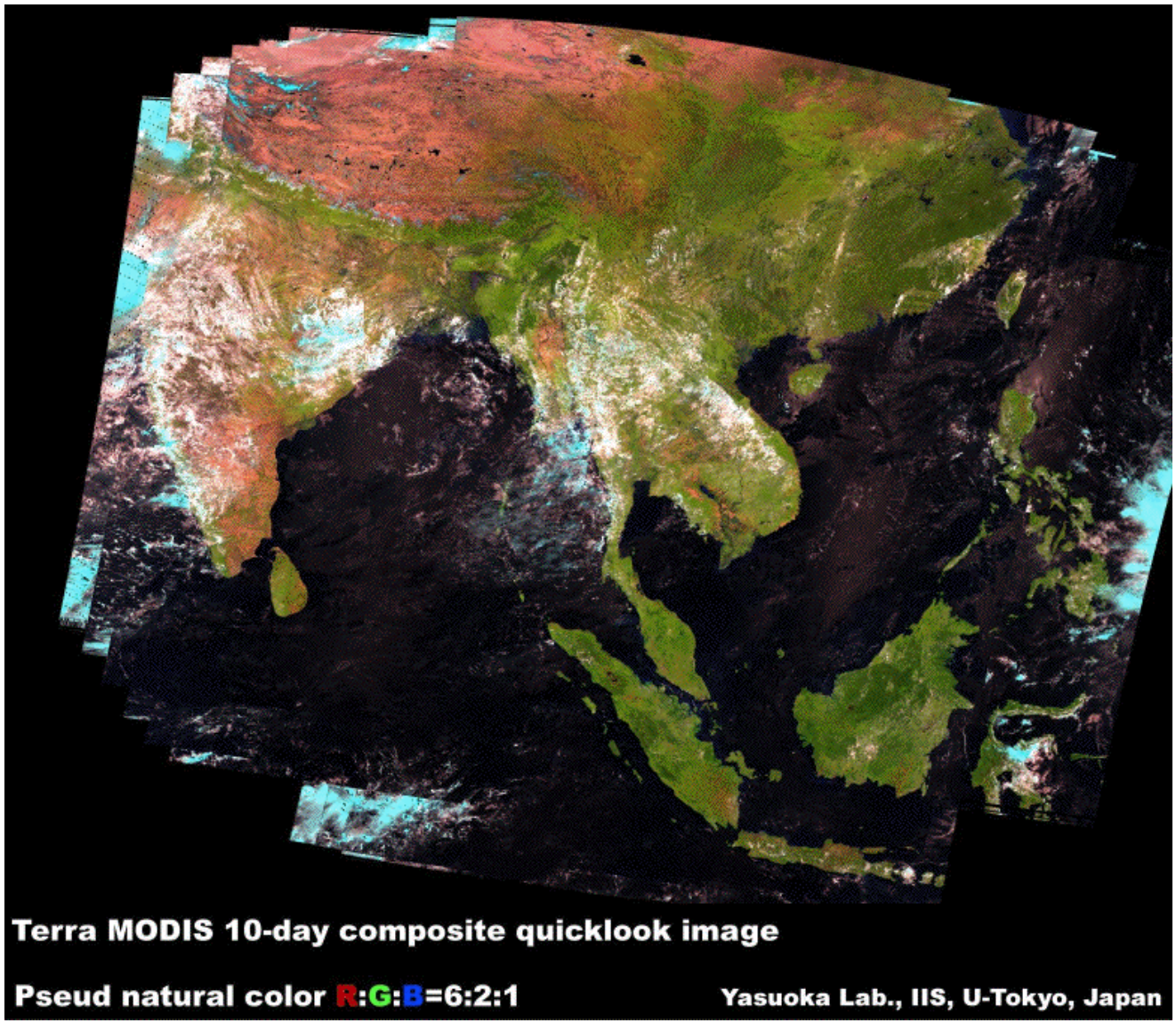
Observation of bio-diversity (ecosystem structures)

 # INTEGRATION

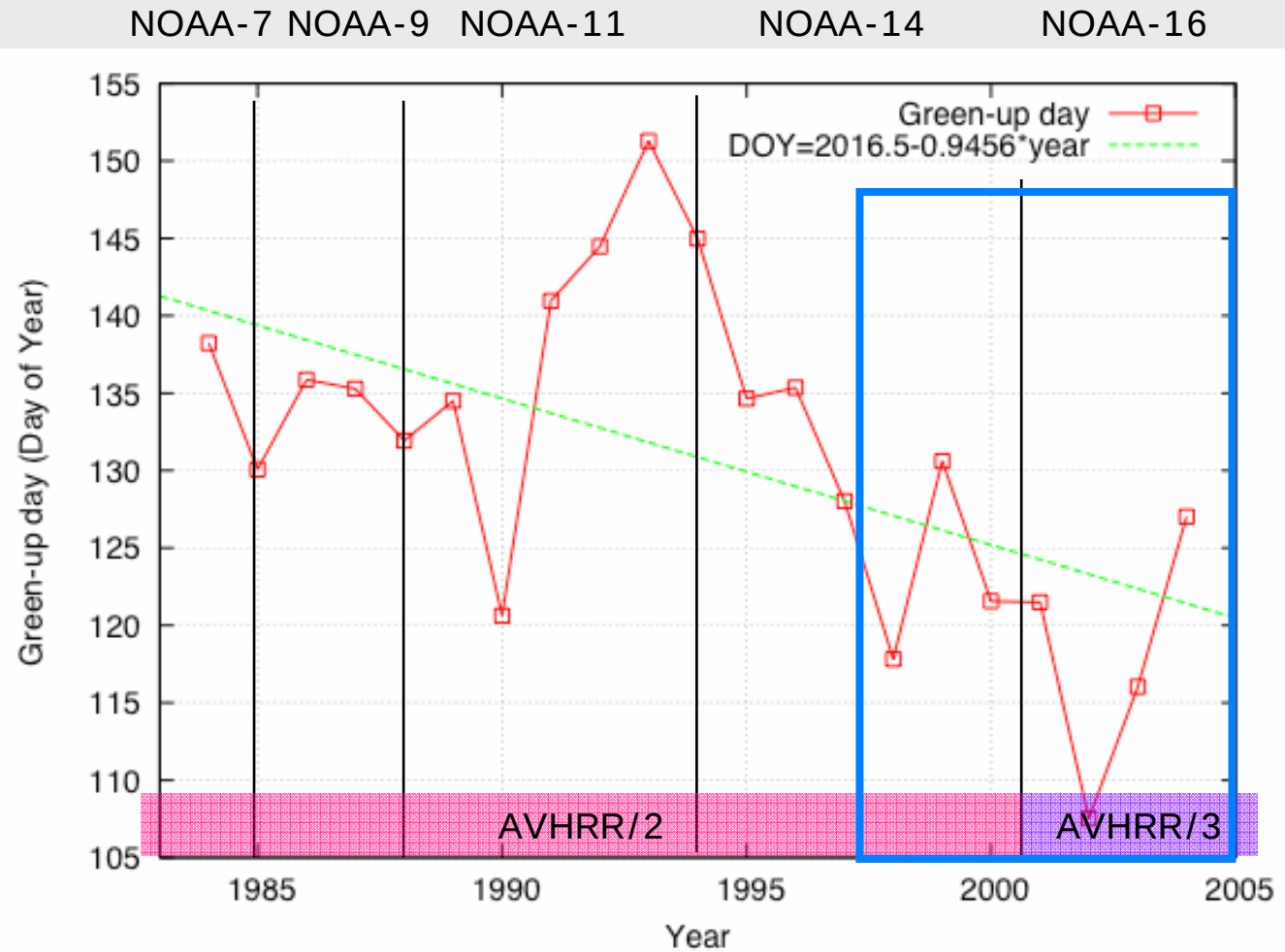
Scaling-up from local to regional/global

Coupling observation with modeling

1. REMOTE SENSING



Trend of Leaf Development in Spring (1984-2004)



−1day/year

Mr. Kei Ooyoshi

IIS/UT

Leaf development is getting earlier around 1day/year in East Asia.

1. REMOTE SENSING

Remote sensing; reports and discussions Chair: Dr. Y. Honda

(1) Remote sensing programs for ecosystem monitoring in Singapore

Dr. L. K. Kwoh

(2) Satellite derived Vegetation Index for ecosystem monitoring

Dr. A. Huete

(3) A challenge of global biomass estimation using satellite data

Dr. Y. Honda

(4) Satellite observation network for environmental monitoring in Asia

Dr. Y. Yasuoka and Dr. W. Takeuchi

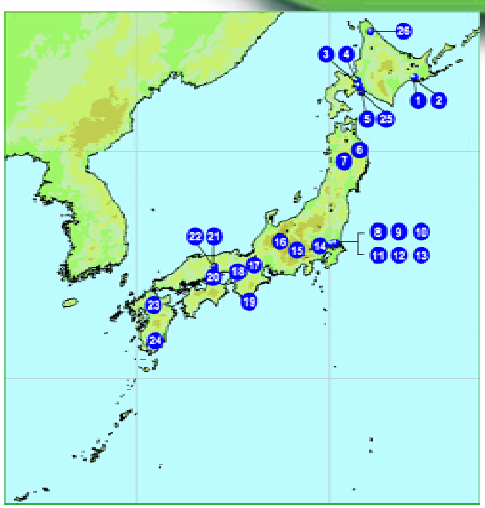
(5) JAXA's Challenge for Long Term Earth Observation System

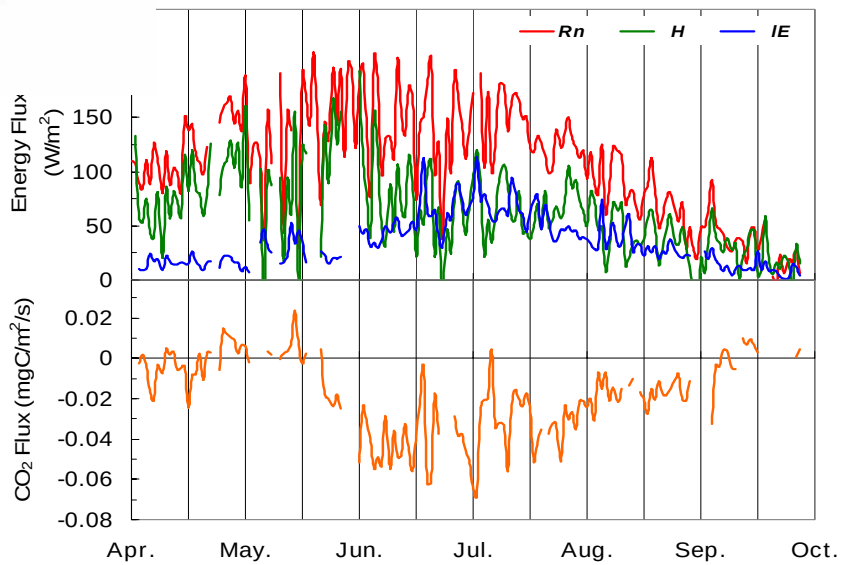
Dr. N. Matsuura

2. ASIA-FLUX

Ecosystem and Biodiversity

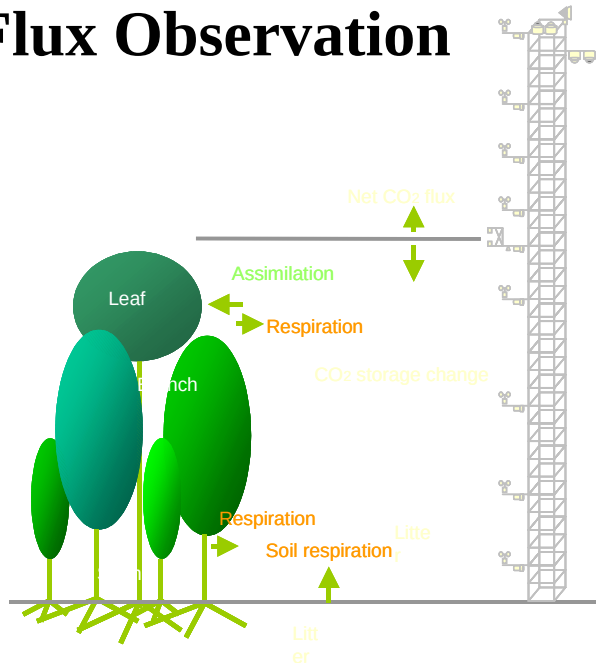
Siberia, Hokkaido Univ. site

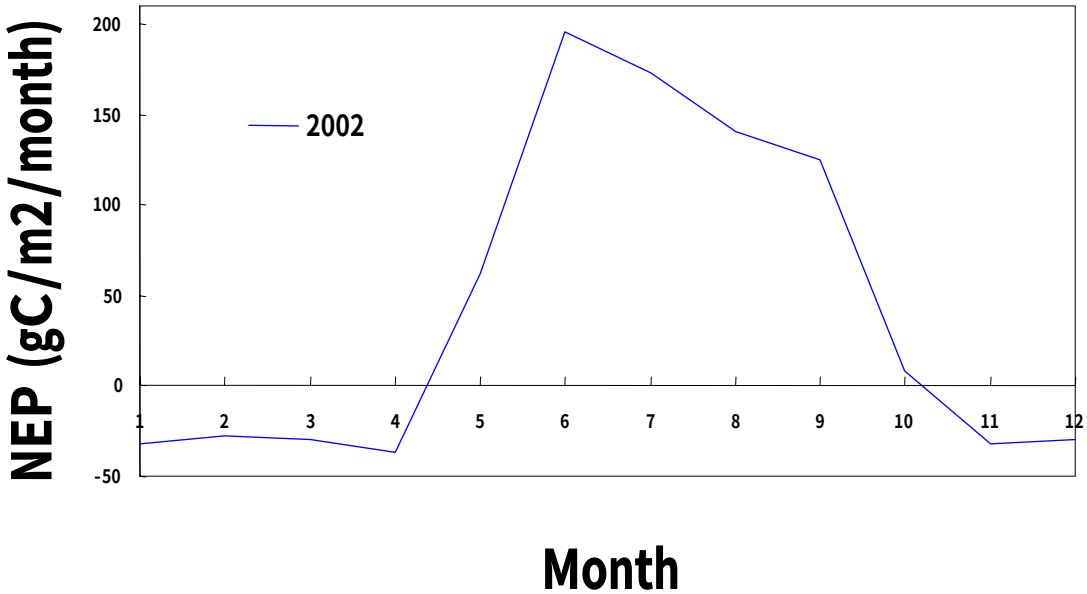




CO2 Budget (NEP Flux) at a flux site

Flux Observation





Hokkaido, FFPRI site

NEP = GPP- RE

Photosynthesis **Respiration**

2. ASIA-FLUX

Ecosystem and Biodiversity

Asia-Flux Network; reports and discussions Chair: Dr. Y. Ohtani

(1) AsiaFlux activities in relation to the carbon flux observations in Asia

Dr. Y. Ohtani

(2) Strategy to evaluate the Global Carbon Budget of Terrestrial Ecosystem

Dr. G. Inoue

(3) HydroKorea and CarboKorea: Cross-scale studies of ecohydrology and biogeochemistry in complex landscapes of Korea

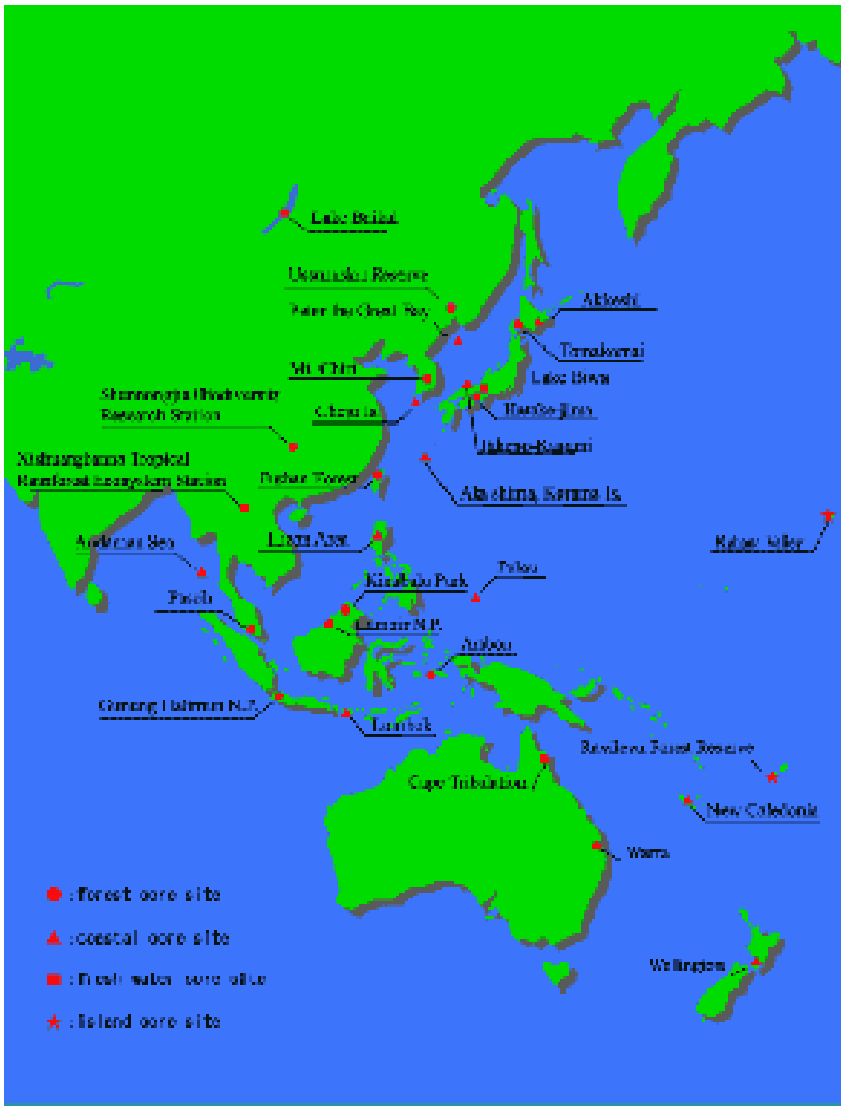
Dr. Joon Kim

(4) Situation of the terrestrial carbon/water observations in China

Dr. Yu Guirui

(5) Outline of "Integrated Research on Carbon Budget Management in Terrestrial Ecosystems of Asia in the 21st Century" Dr. T. Oikawa

3. DIWPA (DIVERSITAS in WPA)



3. DIWPA (DIVERSITAS in WPA)

DIVERSITUS;reports and discussions Dr. T. Nakashizuka and Dr. E. Wada

(1) Introduction Dr. E. Wada

(2) DIWPA and JaLTER activities Dr. T. Nakashizuka

(3) Activities on biodiversity-monitoring in China - On the Chinese forest biodiversity monitoring network Dr. K. Ma

(4) Activities on biodiversity-monitoring in Malaysia - Ecological monitoring of tropical peat swamp forest ecosystems Dr. A. R. Nik

(5) Activities on biodiversity-monitoring in Korea Dr. I. K. Lee

3. DIWPA (DIVERSITAS in WPA)

(6) Cross-cutting networks with emphasis on freshwater biodiversity

Dr. Z. Kawabata

(7) Global Land Project and other related activities in Japan

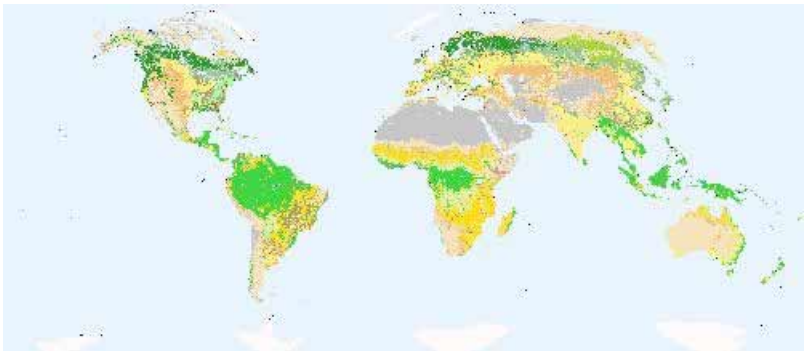
Dr. T. Kohyama

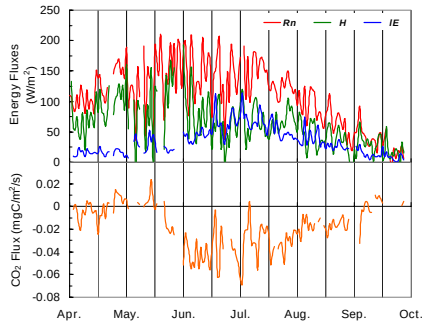
(8) Wireless LAN for large-scale observation of bio-diveristy and ecosystem

Dr. T. Yahara

4. INTEGRATION

Ecosystem and Biodiversity





Satellite Observation

@ extensive

 # less precise

 # not predictive

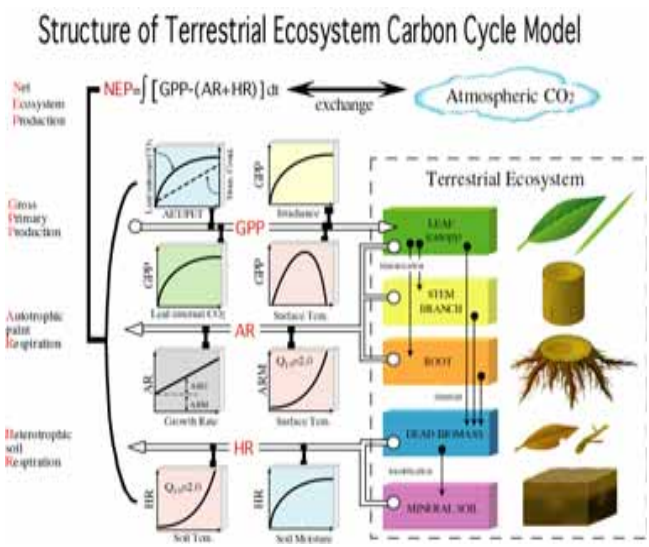
Integration

Ground observation

@ precise

 # point

 # not predictive



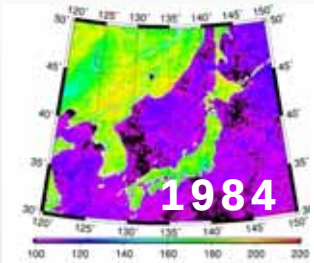
Modeling

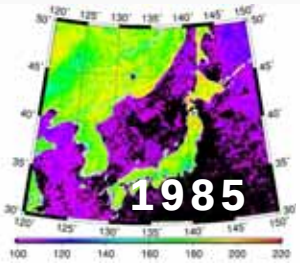
@ predictive

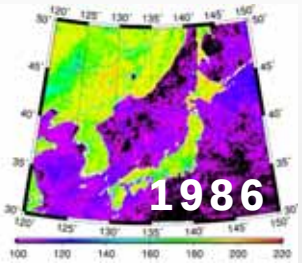
 # unknown processes

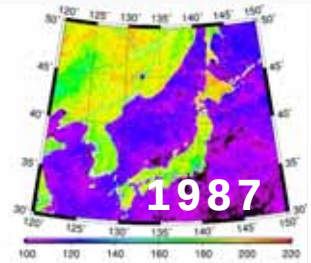
 # uncertain&error

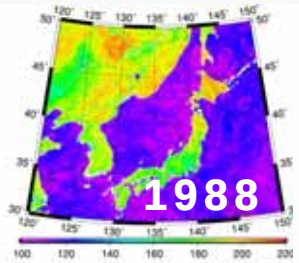
Time Series NDVI Pattern from 1984-2004
(10 days composite images:August 1 to10 for every year)

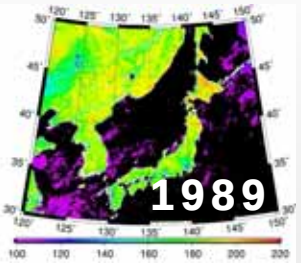


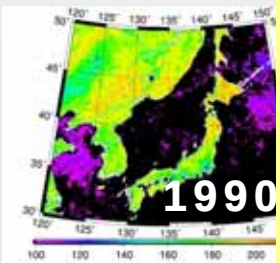






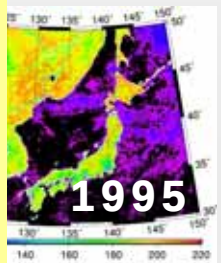


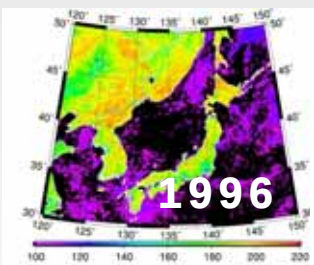


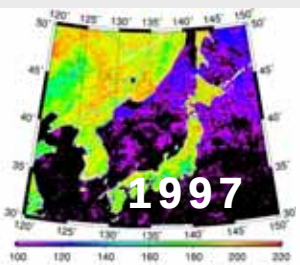


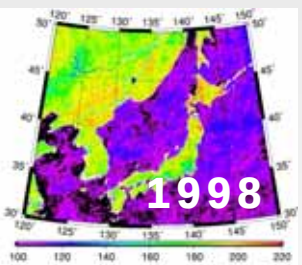
Is vegetation increasing ?

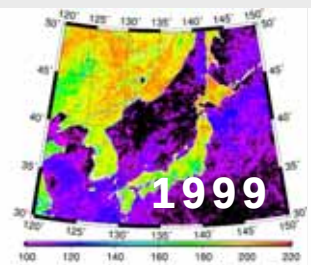
Is its species distribution changing ?

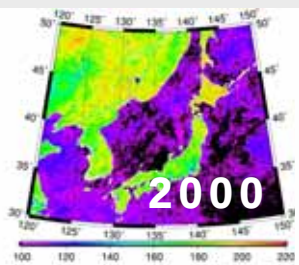


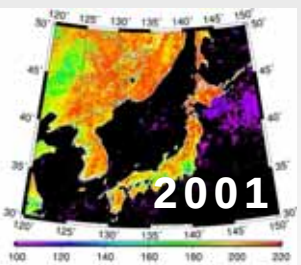


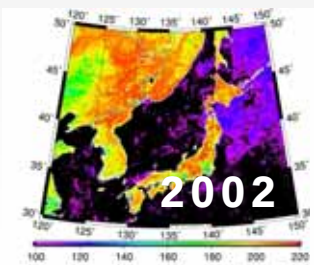


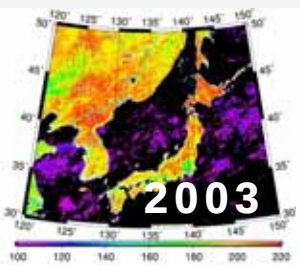


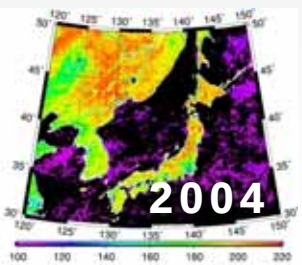








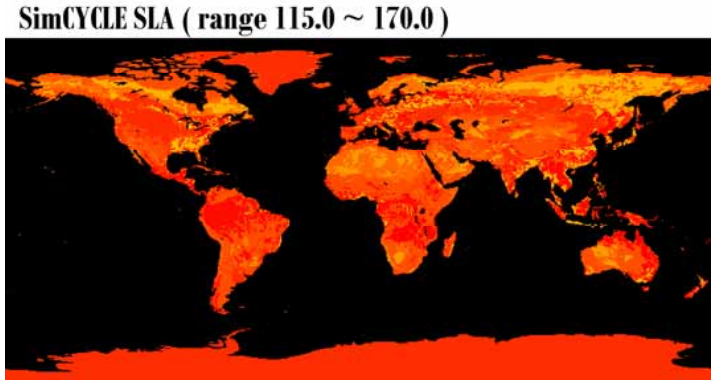




Sensor was changed to AVHRR3 after 2001

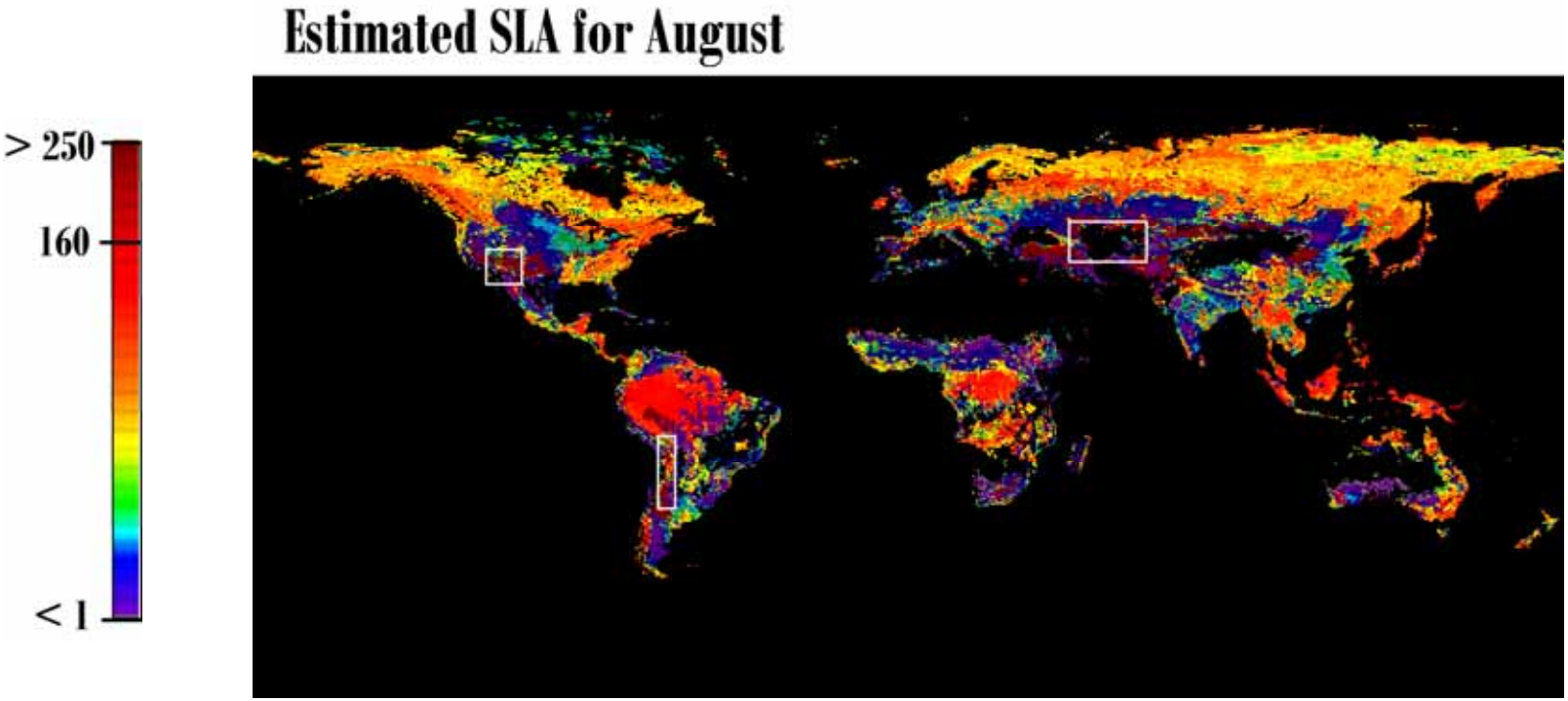
IIS/UT

SLA distribution for C3 vegetation



SLA used in Sim-CYCLE simulation (fixed values for each biome types)

SLA assimilated by Sim-CYCLE and MODIS-LAI (variable for biome types and seasons)



4. INTEGRATION

Integration of observation and modeling:; reports and discussions

Chair Dr. Y. Yasuoka

(1) ALOS Kyoto and carbon initiative - to the global detection of the forest biomass

Dr. M. Shimada and Dr. A. Roseqvist

(2) Coupling between observation and modeling for ecosystem

Dr. Y. Yasuoka

(3) Linking ecology, remote sensing and micrometeorology from plot to regional scales

Dr. H. Koizumi

Discussion Items in each sub-session

1. On-going and Planned International Programs
2. Major issues and difficulties
3. Steps to the joint collaboration and integration
4. Steps to GEOSS
5. Recommendations

Missions of the Session

to exchange of information and knowledge

to identify scientific issues and difficulties

to investigate the steps for integrating observations, models and countermeasures

to investigate the steps for inputting to **GEOSS**