Building capacity to access and use greenhouse gas observations

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START
global change SysTem for Analysis, Research & Training

Speech in COP21

Why do we need to support for climate change mitigation in developing countries?

"The fact is that even if every single American citizen biked to work, carpooled to school, used only solar panels to power their homes – if we each planted a dozen trees – if we somehow eliminated all of our domestic greenhouse gas emissions – guess what? That still wouldn't be enough to offset the carbon pollution coming from the rest of the world. If all the industrialized nations went down to zero emissions – remember what I just said – <u>all the industrial nations went down to zero emissions, it wouldn't be enough</u> – not when more than 65 percent of the world's carbon pollution comes from the developing world. Now, we're not pointing fingers. This isn't a question of blame. This is something that reflects practices that began in the Industrial Revolution that everybody's adopted, but we're here to change it. No matter how much half the world does to clean up its act, if similar steps aren't taken by the rest of the world, Earth still has a problem."

-John Kerry, Secretary of State (Paris, Dec. 9)

(DOS)

Speech in COP21

Why do we need to support for climate change mitigation in developing countries?

"Eighteen years ago, the Kyoto Protocol, an important step to counter global warming, was adopted. Global average temperature, however, has been on the gradual rise ever since. We have witnessed frequent occurrence of extreme weather- related disasters worldwide such as heavy rain and drought. Beautiful islands now face the risk of submersion. The Earth is the sole homeland to our humankind. We must hand it down safely to the generations of our children and grandchildren. Now is high time to build a new international framework, which developed and developing countries join together."

-Shinzo Abe, Prime Minister (Paris, Dec. 1)

(MOFA)

Paris Agreement under UNFCCC

Paris Agreement was adopted in last Dec.

United Nations
Framework Convention on
Climate Change

(UNFCCC)

Article. 4
2. Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

Article. 11
3. All Parties should cooperate to enhance the capacity of developing country Parties to implement this Agreement. Developed country Parties should enhance support for capacity-building actions in developing country Parties.

Sustainable Development Goals (SDGs)

SDGs was set by the UN General Assembly in last Sep.

(UN SDGs)

Data, monitoring and accountability

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

Next step is Implementation of Paris Agreement and SDGs.
Support is necessary for developing countries.

OCO-2 and GOSAT/GOSAT-2

NASA

(NASA)

Orbiting Carbon Observatory (OCO)-2 [2014-]

MOEJ*, JAXA, NIES**

(JAXA)

Greenhouse gases Observing SATellite (GOSAT)[2009-], GOSAT- 2 [JFY2017-]

MOEJ: Ministry of the Environment Japan
NIES: National Institute for Environmental Studies

MOU for cooperation on GOSAT, OCO-2, and GOSAT-2

- NASA, MOEJ, JAXA, and NIES signed a MOU for cooperation on GOSAT, OCO-2, and GOSAT-2 missions in March 2015.

環境省

National Institute for Environmental Studies, Japan

(JAXA)

About START

- START focuses on capacity building in developing countries since 1992.
- START programs strengthen scientific skills, knowledge and connectivity of early and mid-career scientists and practitioners through experiences that are embedded at the interface of science, policy, and practice.
- In 2014-2015:
  - START supported more than 171 scientists/practitioners through direct training/research activities.
  - START organized 54 events to engage stake holders, train scientists and practitioners, and create a space for networking.

START
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Global Observation of Forest Cover and Land Dynamics (GOFC-GOLD)

- Capacity building for access and use of Landsat data for research in developing countries funded by NASA from 2012
  - (1) Advanced training
  - (2) Regional network development and workshops

OUTCOME

- *Expansion of users in developing countries*
- *International cooperation by improving the access to satellite data for researchers in developing countries*
- *Input to International Program such as Group on Earth Observations (GEO)*

Examples of Activities of Global Observation of Forest Cover and Land Dynamics (GOFC-GOLD)

(1) Advanced training

10 fellows joined the advanced training at Earth Resources Observation and Science (EROS) Center and at Boston Univ. to access and learn how to use Landsat data on July-August 2015.

(START)

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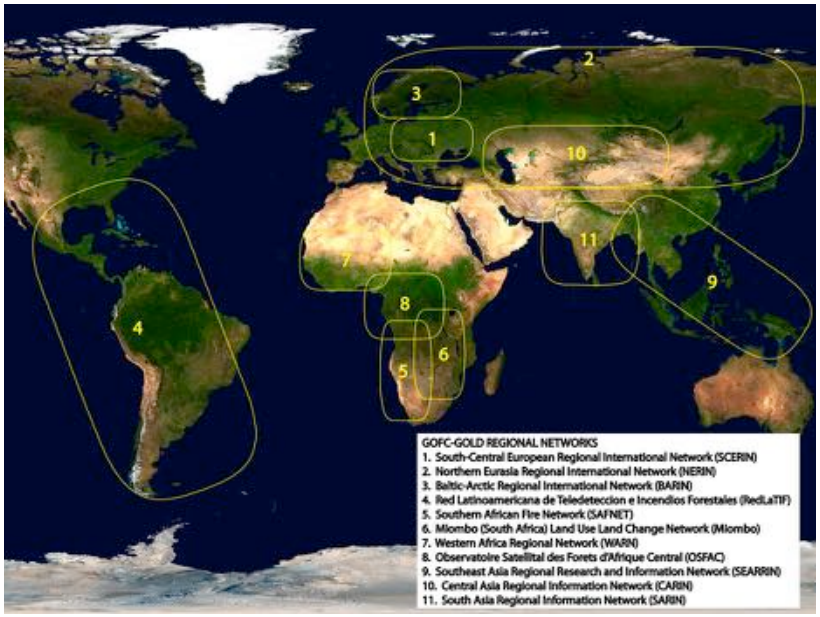
Examples of Activities of Global Observation of Forest Cover and Land Dynamics (GOFC-GOLD)

(2) Regional network development and workshops

- 11 regional networks were established.
- South Central and Eastern European Regional International Network (SCERIN) workshop was held in Brasov, Romania on July 2015.
- Southeast Asia Regional Research and Information Network (SEARRIN) workshop was held in Bogor, Indonesia on August 2015.
- International LCLUC* Regional Science Team Meeting in South and Southeast Asia was held in Yangon, Myanmar on January 2016.



(START)

*LCLUC: Land Cover/ Land Use Change

(START)

Proposal of capacity building of greenhouse gas observation

<Objective>
The objective is to promote the understanding of climate change in developing countries through innovative and practical uses of greenhouse gas satellite data. More concretely, the following three detail objectives are included.

1) To motivate climate change mitigation measures in developing countries through the understanding of greenhouse gas observation data

2) To grasp overview of inventory of greenhouse gas emission in regional-scale and urban-scale developing countries and check for the accuracy of built-up inventory, by using space-based observation data

3) To promote the understanding of Earth science and to promote international cooperation

<Assumed collaboration team>
NASA, MOEJ, JAXA, NIES, and START

Proposal of capacity building of greenhouse gas observation

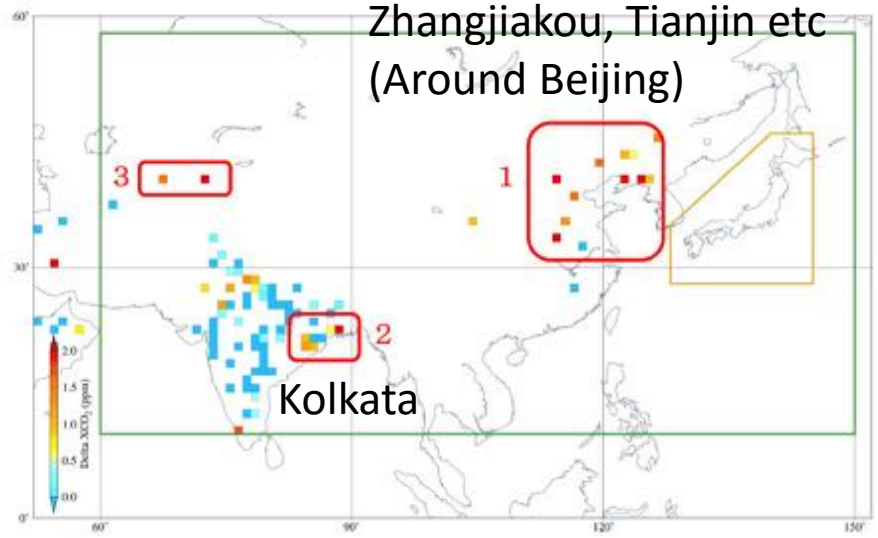
<Pilot Phase>

•A set of training activities targeting 2-3 Asian mega-cities.
(Ex. Kolkata, Bangkok, Beijing)

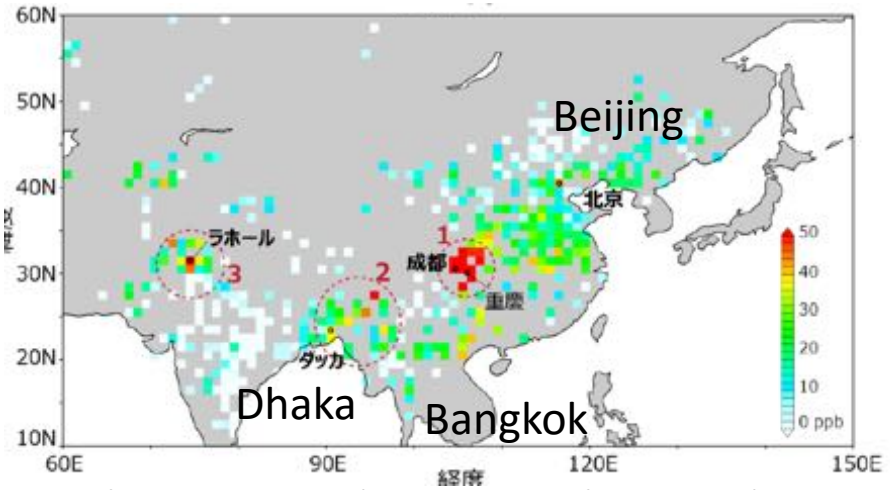
•Development of training course materials

•Trail of short term training course

•*The efficacy and effectiveness of training course will be checked out during the pilot phase and if necessary the methodology will be modified.*



Anthropogenic CO_2 density in Asia by GOSAT data (June 2009-December 2012) (MOEJ 2014)



Anthropogenic CH_4 density in Asia by GOSAT data (June 2009-December 2012) (MOEJ 2015)

Proposal of capacity building of greenhouse gas observation

<Full Phase>
(1) Development of training & outreach materials
-Developing training materials and materials for outreach.

(2) Advanced Training
-Short-term training course in US or Japan for young researchers
-Contents: Data download, data management and analysis

(3) Visiting scientist program
-Short-term visiting scientist program in US or Japan for young researchers
-Contents: Learning practical data management one by one in a lab

(4) Regional network development and workshops (WSs)
-Establishment of 1-2 regional networks and holding 1-2 regional WSs
-Contents of WS: Data management for 20 regional or local researchers and policymakers

(5) Symposium
-Global symposium of leveraging satellite data for 100 researchers and policymakers

Totally 500 people attendance (Including intensive capacity building for 50 people)

Proposal of capacity building of greenhouse gas observation

<Effect>

-Related with the objective of 1)

- This program supports mitigation measures in developing countries and contributes to activities of capacity building under Paris Agreement.
- This program contributes to validate effect of 'Reducing Emissions from Deforestation and Forest Degradation in Developing Countries' (REDD+).

-Related with the objective of 2)

- This program contributes to reinforce the accuracy of built-up inventory in regional-scale developing countries.
- Furthermore, the capacity building of space-based data through this program is useful to consider the verification of bottom-up inventory with collaboration of ground-based data.
- This program contributes to establish the new standard of inventory verification using space-based data.

-Related with the objective of 3)

- This program contributes to Global Earth Observation (GEO) and "The National Global Change Research Plan 2012-2021" by US Global Change Research Program (USGCRP).
- This program is a good example of international cooperation through building new capabilities of researchers in developing countries.

Proposal of capacity building of greenhouse gas observation

<Effect>

- This program contributes to achieve SDGs: “Goals 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.”
- This program contributes to develop community network of scientists, policy-makers, and practitioners.
- This program is a good concrete program motivated by MOU for cooperation on OCO-2 and GOSAT/-2 between US and Japan.
- This program enhances to deliver near-term uses of Earth observation and leads to expand satellite data user.
- This program will enhance the value of current missions of greenhouse gas observation and contribute to future new satellite missions such as OCO-3.
- This program might contribute to “Megacities Carbon Project” by JPL/NASA from capacity building in developing countries.