

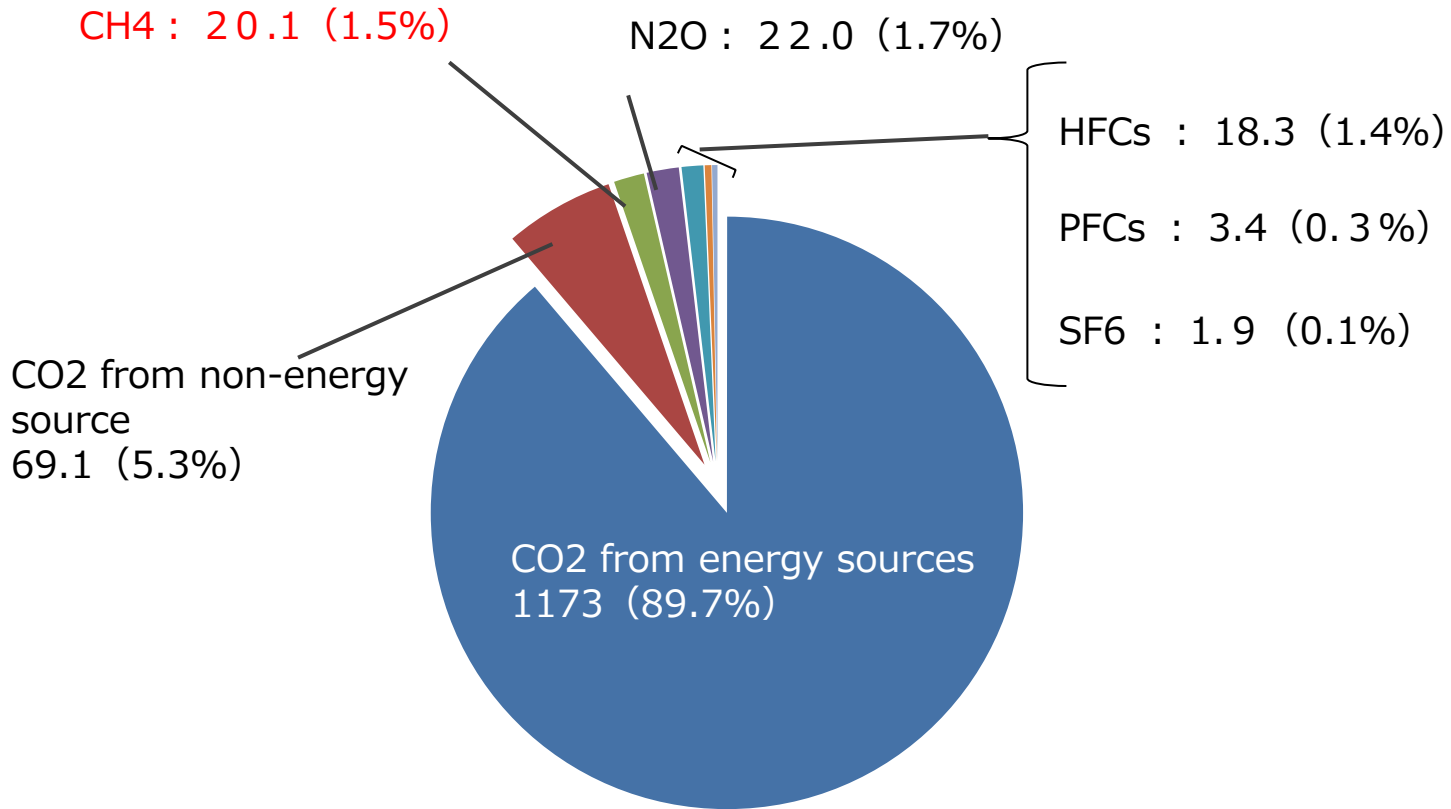
Country Update: JAPAN

Kunihiko SHIMADA

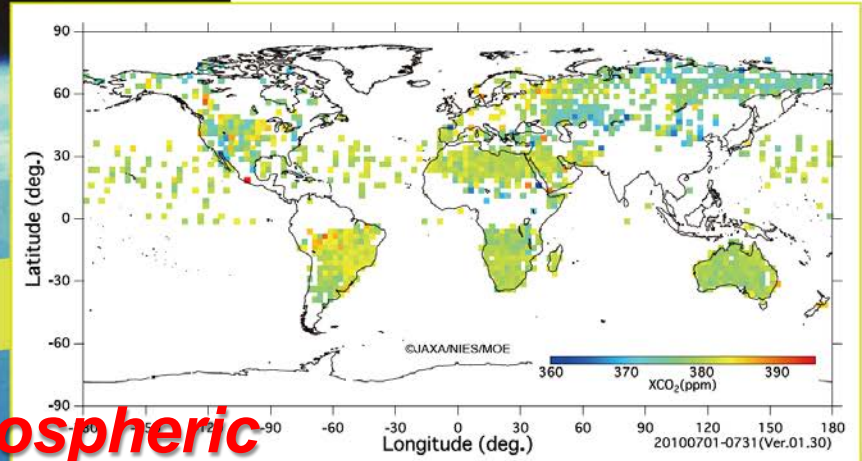
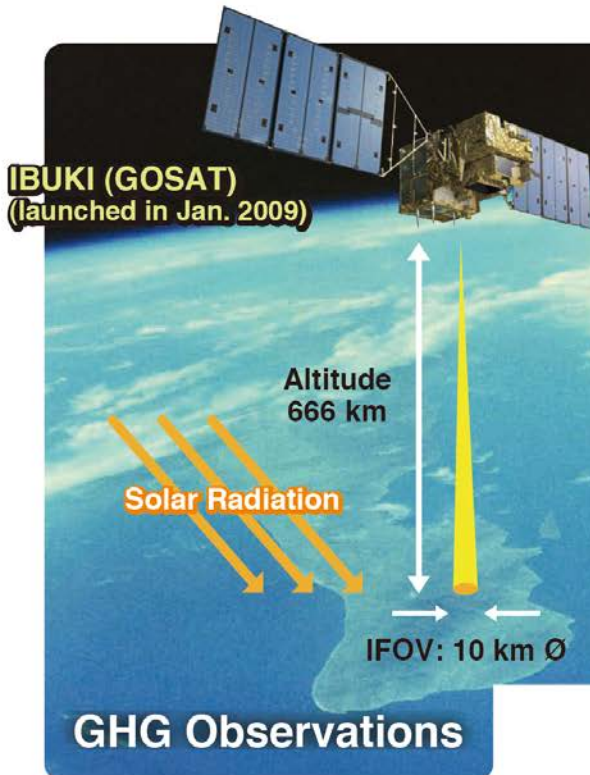
**Special Advisor to the Minister
Ministry of the Environment
Government of Japan**

**GMI Steering Committee Meeting
Vancouver, Canada, 12 March 2013**

Japan's Greenhouse Gas Emissions in FY 2011

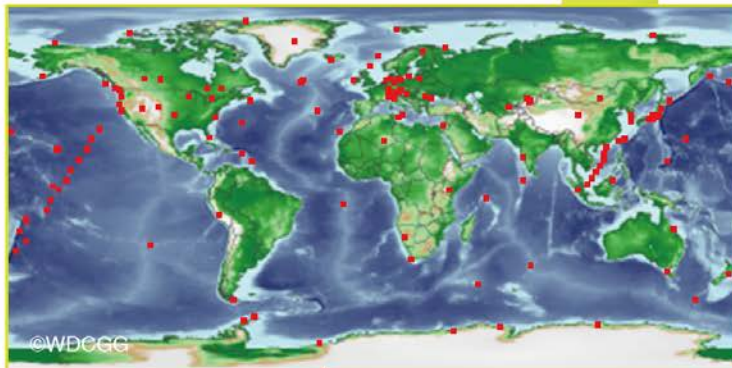


Contribution of satellite data to flux estimation

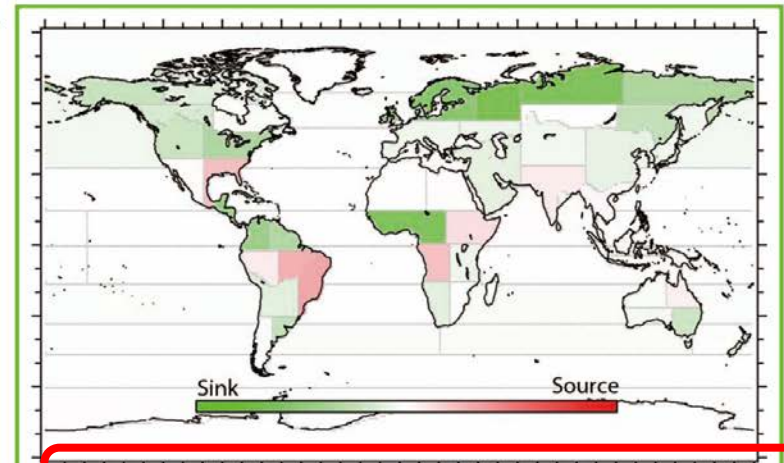


GHG data by IBUKI

**Atmospheric
inverse modeling**



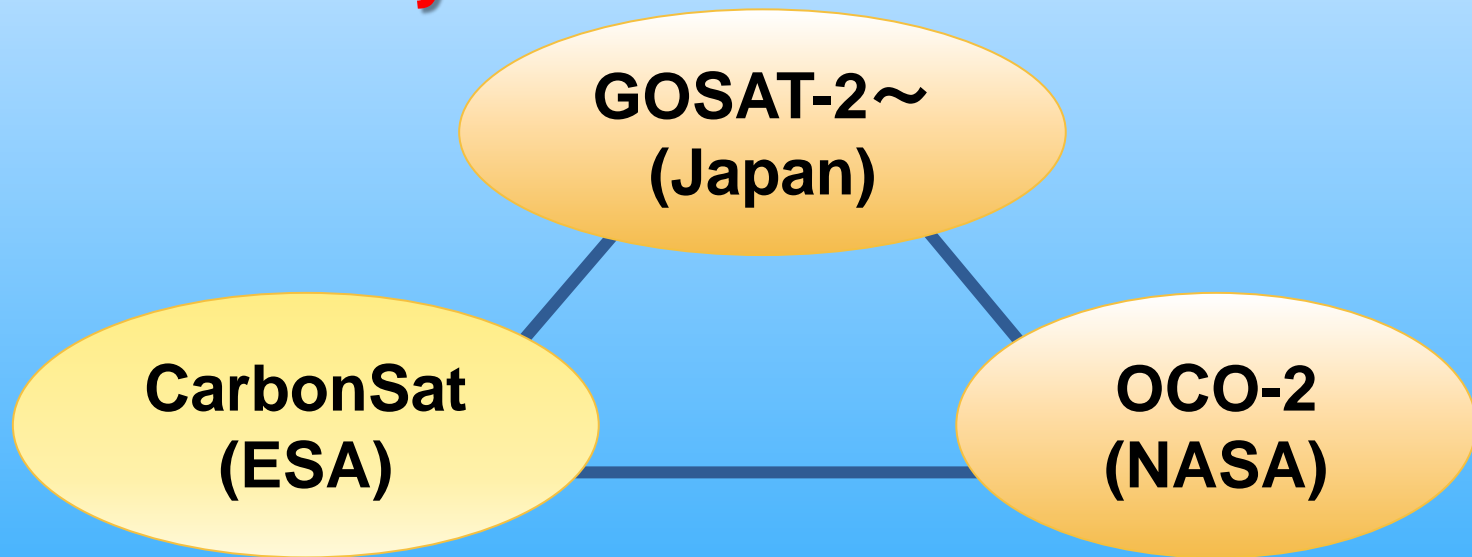
Ground Monitoring Stations



Estimation of Global Carbon Flux Distribution

International Cooperation in Global Observation

- ◆ *Establishing a platform for cooperation in data inter-comparison and verification, etc.*
 - ⇒ **Improvement in data reliability and accessibility**



Contribution of satellite data on GHGs observation: GHGs Observing SATellite "IBUKI" (GOSAT)

About GOSAT



Summary of GOSAT

GOSAT was developed jointly by the Ministry of the Environment of Japan, the National Institute for Environmental Studies (NIES) and Japan Aerospace Exploration Agency (JAXA), and launched on January 23, 2009. GOSAT is the world's first and only satellite designed specifically for monitoring atmospheric carbon dioxide (CO₂) and methane (CH₄) from space.

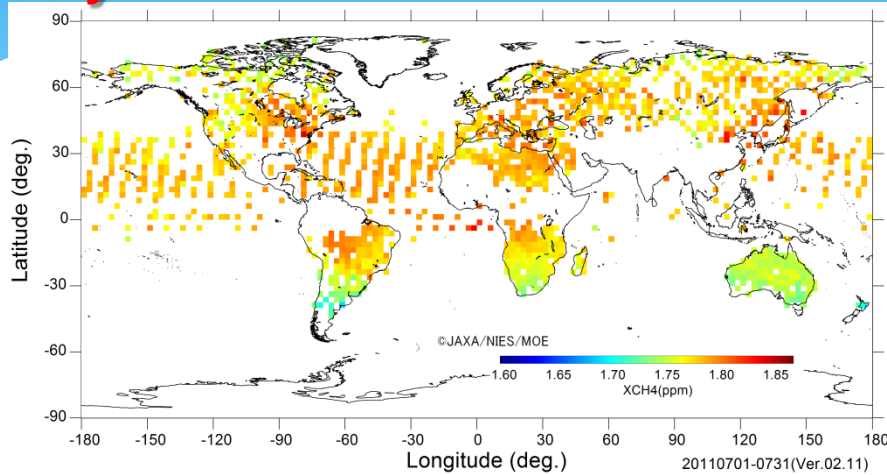
Objectives of GOSAT Project

- ❑ Contributing to progress in global carbon cycle studies
 - Significant increase in the number of GHG observation points. (ground-based sites:~200→GOSAT:~23000 points)
 - Understanding GHG distributions in more detail
 - Elucidating mechanisms of global carbon cycle / Improving accuracy of climate change
- ❑ Contributing to climate change policy making (promoting the development of low-carbon societies)
 - Improving the accuracy of regional CO₂ flux estimation
 - Contributing to setting future emission reduction goals via improving the accuracy of climate change prediction

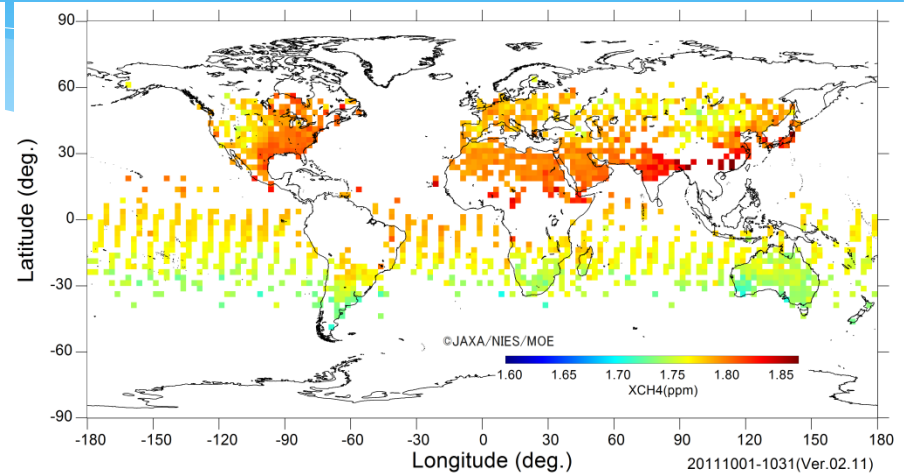
Maps of CH₄ concentration

Result of monthly averaged values of CH₄ concentration for four selected months in 2011-2012 period

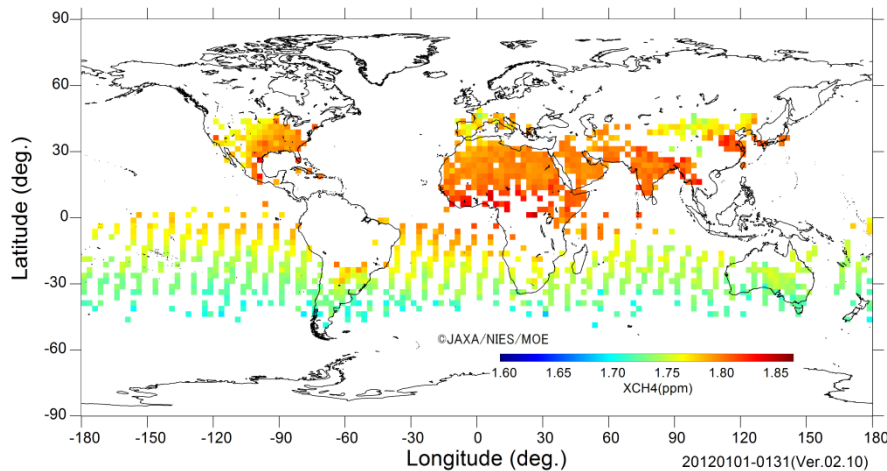
July 2011



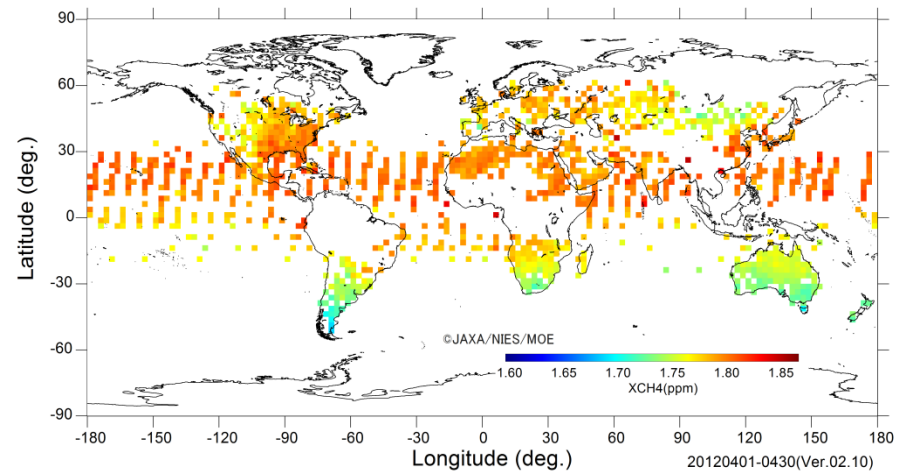
October 2011



January 2012



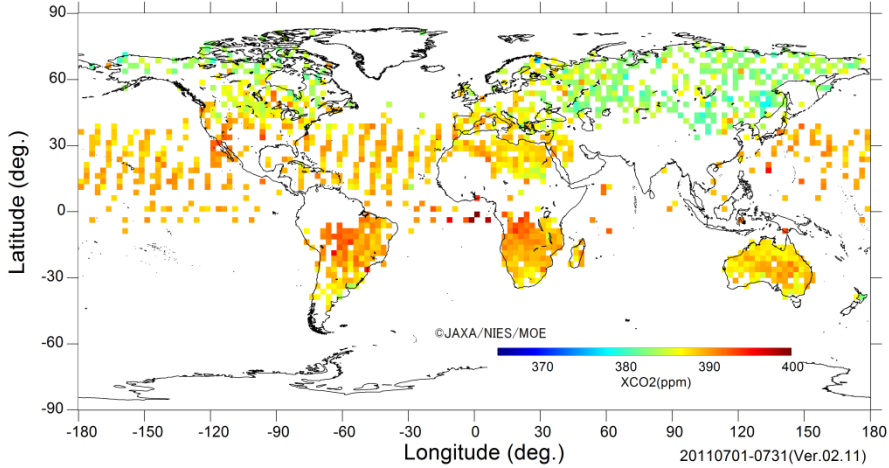
April 2012



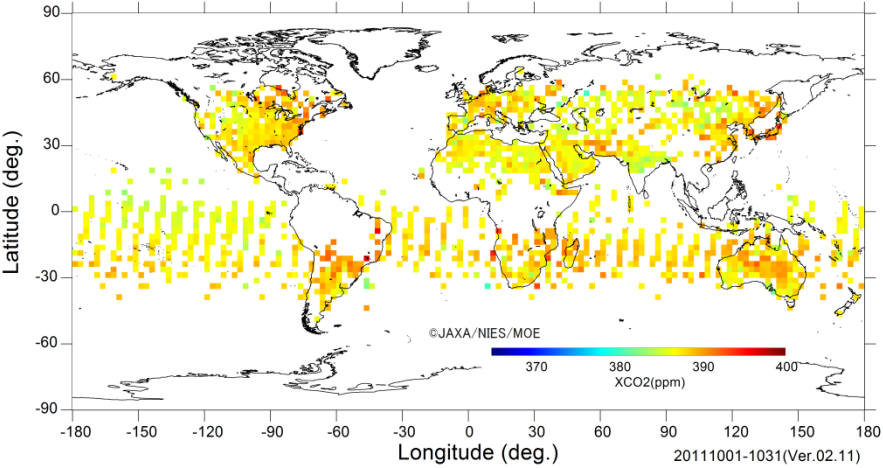
Maps of CO₂ concentration

Result of monthly averaged values of CO₂ concentration for four selected months in 2011-2012 period

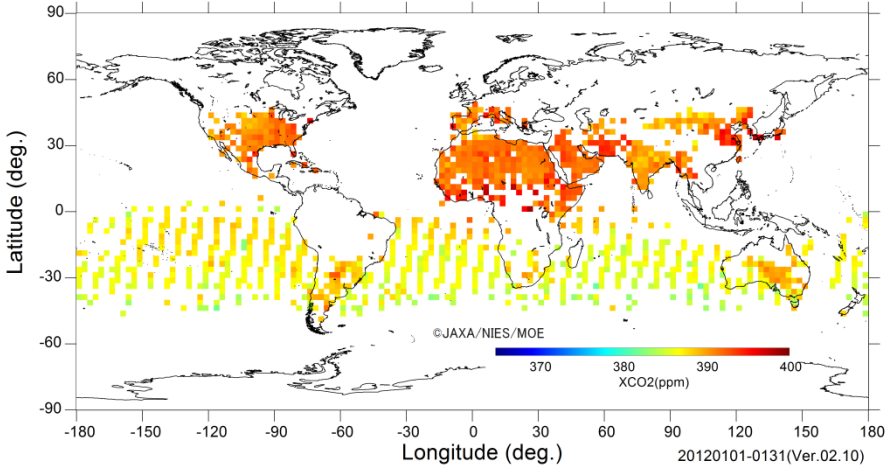
July 2011



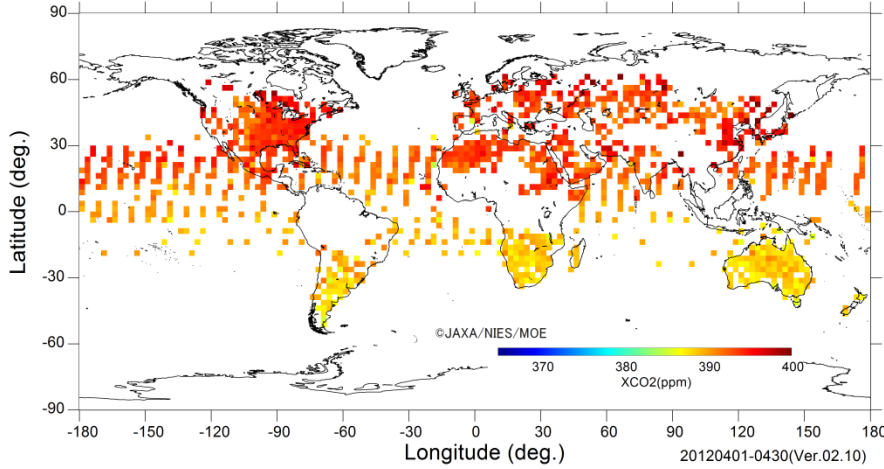
October 2011



January 2012



April 2012



New outcome :

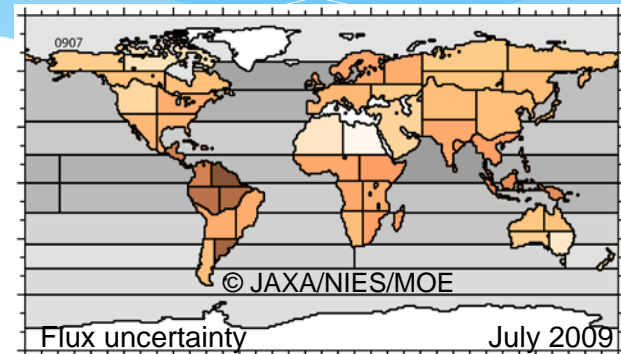
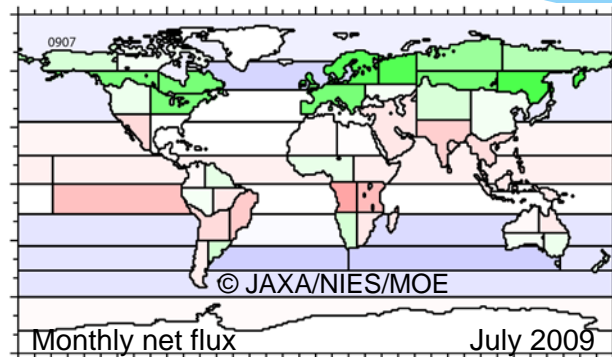
Improved regional CO₂ fluxes estimated (1)

Result of regional CO₂ flux estimation

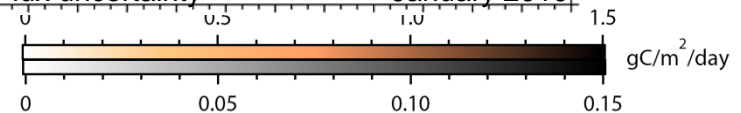
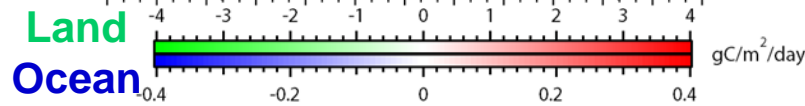
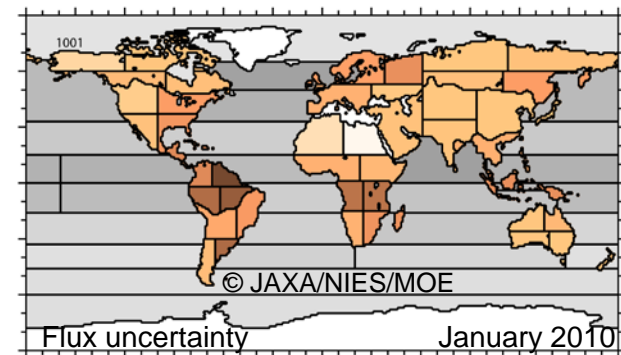
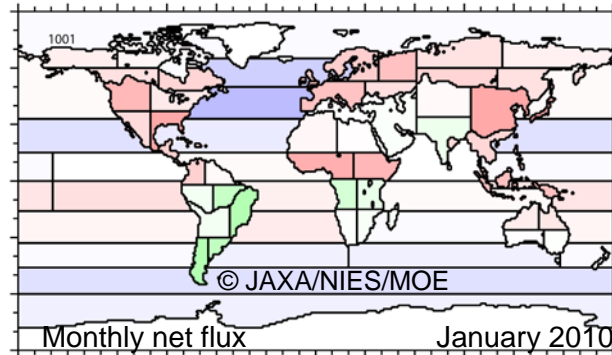
Data released: estimates for June 2009 to May 2010

Regional CO₂ Flux Estimates CO₂ Flux Uncertainties

July 2009
(Summer in
Northern
Hemisphere)



January 2009
(Winter in
Northern
Hemisphere)

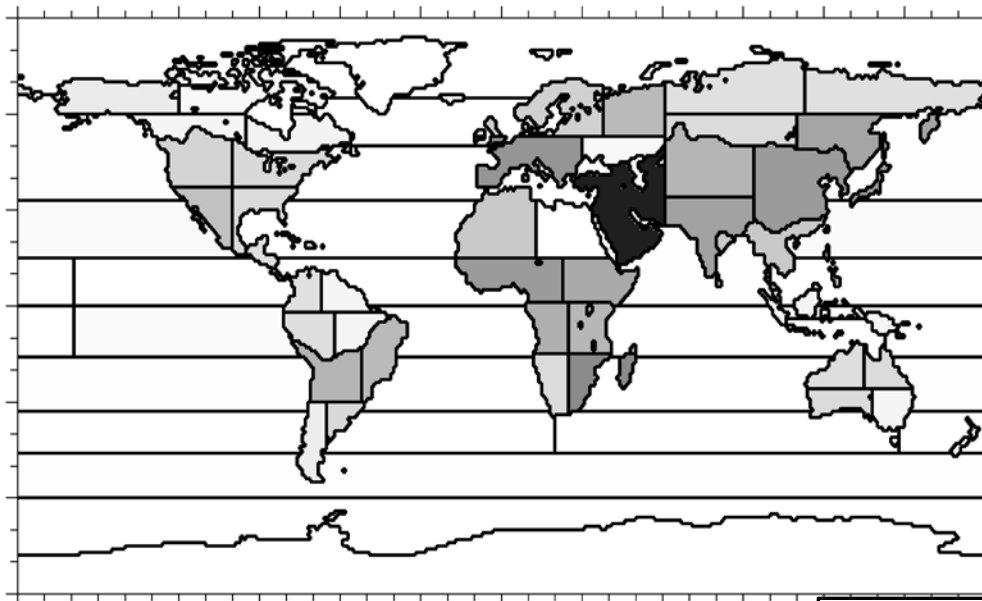


Currently working on the estimation of regional CH₄ flux estimation.

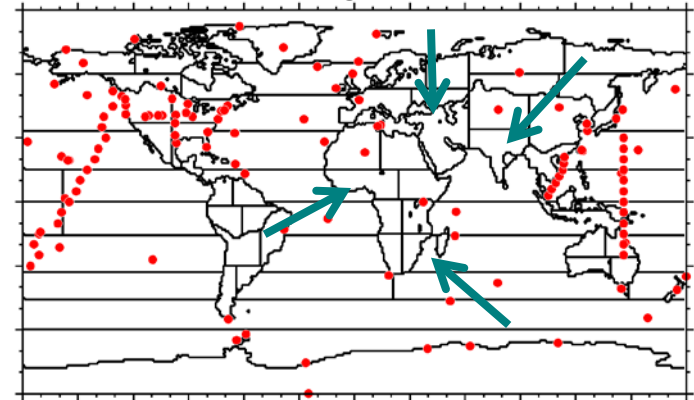
New outcome:

Improved regional CO₂ fluxes estimated (2)

Improvement in the accuracy of flux estimates by adding GOSAT data to ground-based monitoring data



Distribution of ground-based monitoring stations



Uncertainty reduction rate (%)

Darker regions: greater reduction in uncertainty

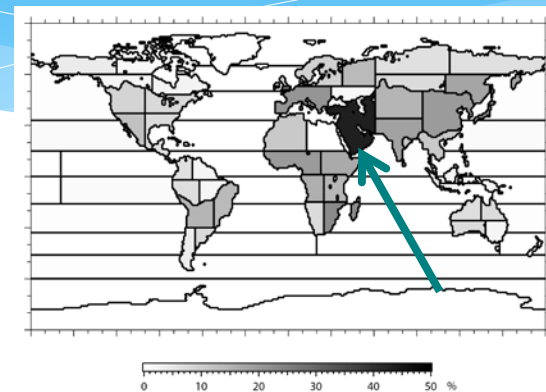
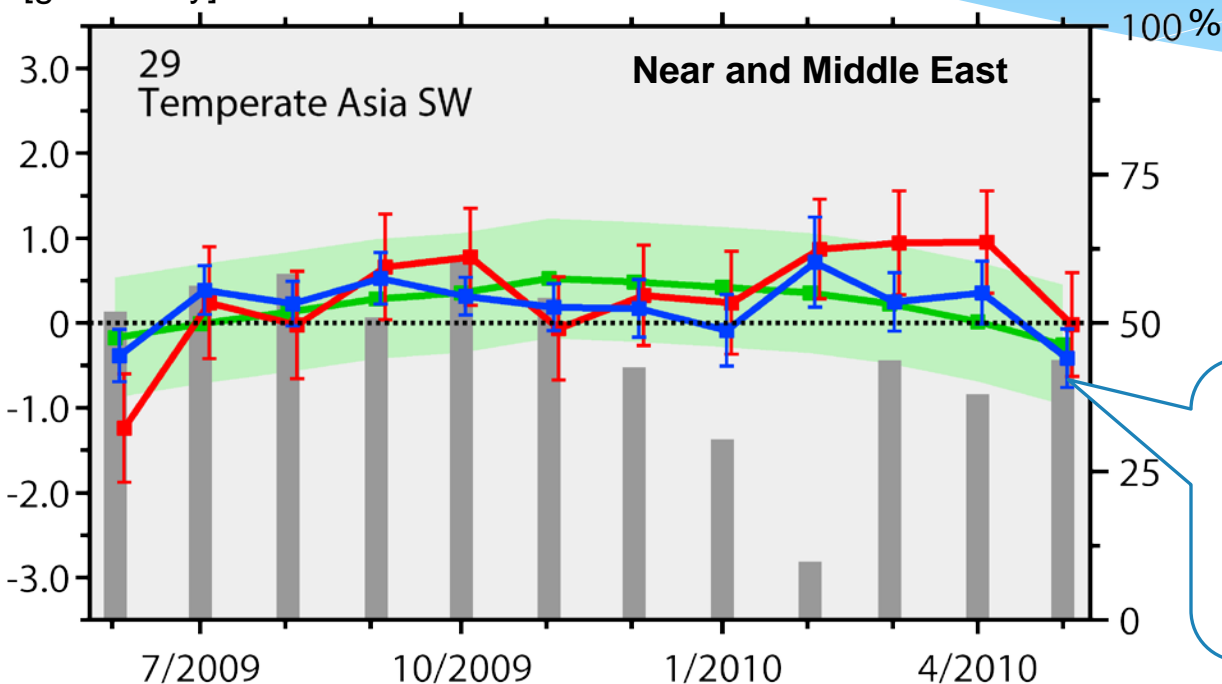
- Flux uncertainty was reduced as much as about 40% (annual mean) by adding GOSAT data to ground-based monitoring data
- Particularly, the uncertainties of flux estimates for poorly-sampled regions (e.g. South America, Africa, Middle and Near East, and Asia; indicated by arrows in right figure) were reduced significantly.

New outcome:

Improved regional CO₂ fluxes estimated (3)

Improvement in the accuracy of flux estimates by adding GOSAT data to ground-based monitoring data

[gC/m²/day]



Difference between the error bars (red and blue) = Uncertainty reduction achieved by adding GOSAT data to ground-based monitoring data

Time series of monthly net CO₂ flux estimate, flux uncertainty, and uncertainty reduction rate (Near and Middle East)

Red: Net flux estimated from ground-based data
Blue: Net flux estimated from ground-based data and GOSAT data

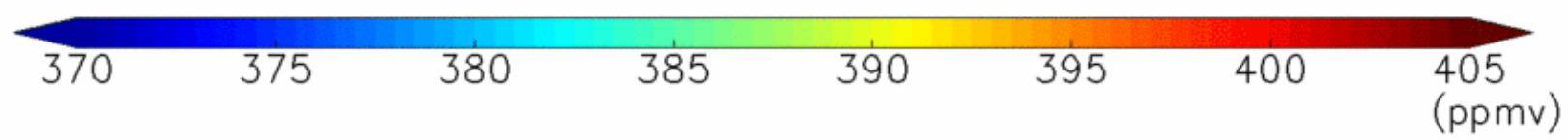
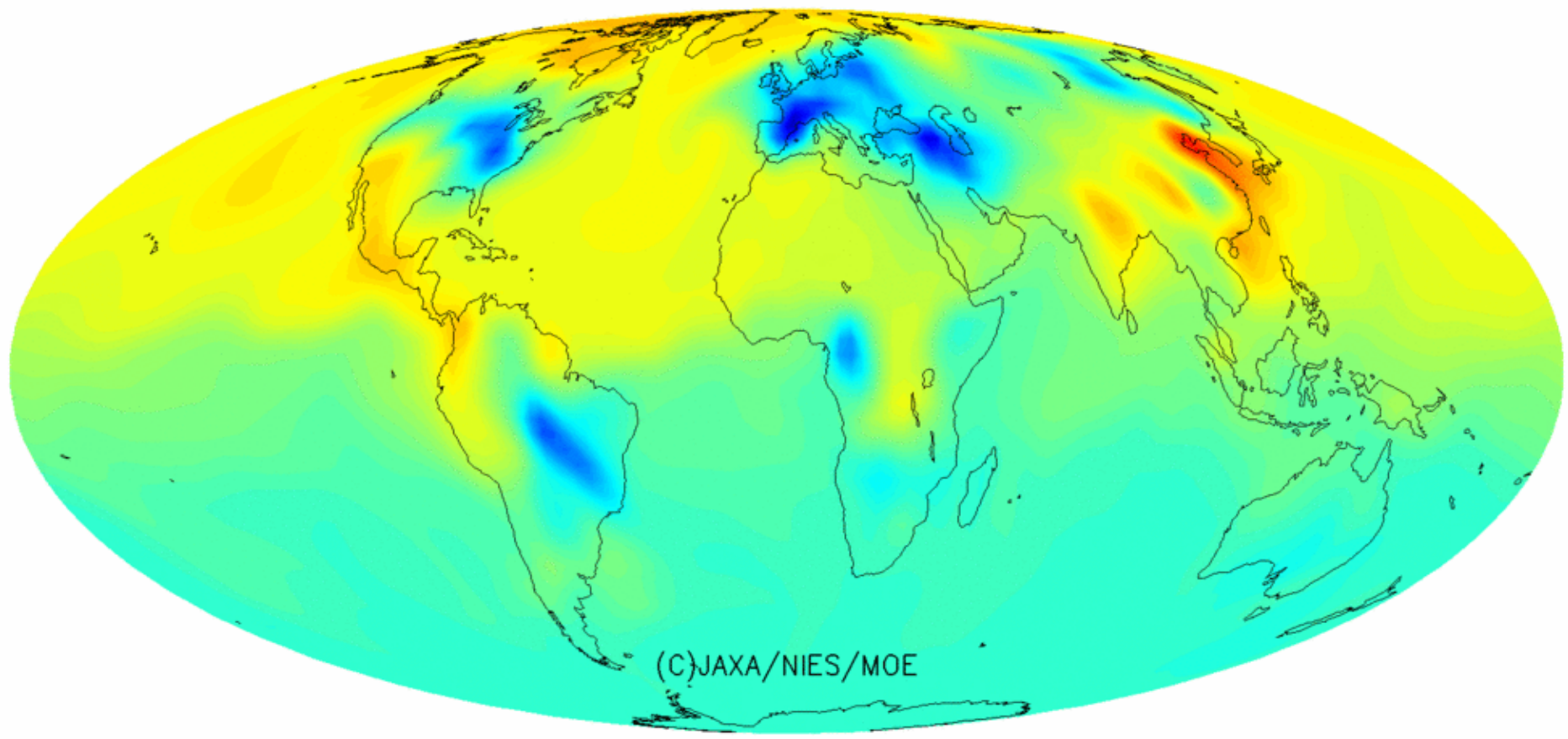
Error bar: Flux uncertainty

Green: A priori flux (based on fossil fuel consumption inventories and modeled land / ocean flux estimates)

Gray vertical bar: Uncertainty reduction rate (right)

New outcome : Model Simulated global CO₂ concentrations based on GOSAT observation (June 2009 – May 2010)

GOSAT L4B V02.01 CO₂ (2009/06/01) ETA:925

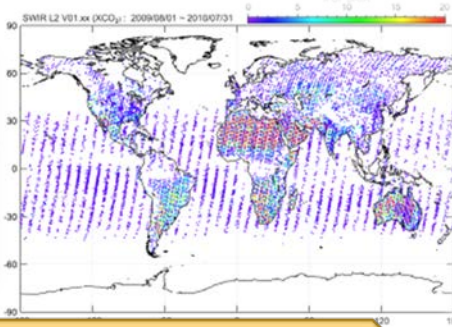


Perspective on future GOSAT missions

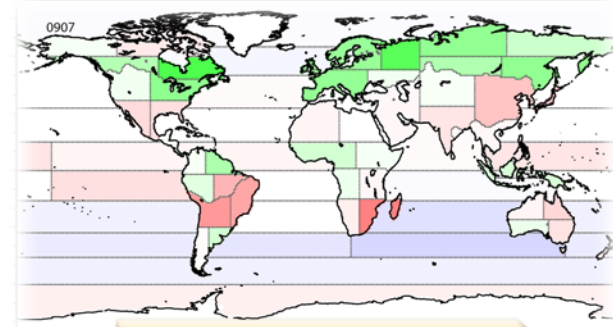
Goals of the GOSAT project

Filling out blank areas
Reducing GHG uncertainty

Improving accuracy of GHG
concentration and carbon flux



GOSAT
(2009 ~)



GOSAT-2
(2017~)

Possible contribution of GOSAT series

- ◆ Elucidating global carbon cycle through precise observation of CO₂ and CH₄
 - ⇒ **Improvement in climate change prediction**
- ◆ Early detection of major changes in climate system
 - ⇒ **Identifying changes in global environment**
- ◆ Monitoring of GHG reduction (mitigation efforts) (Incl. REDD+ activities)
 - ⇒ **Contribution to climate policy making**

Perspective on future GOSAT missions

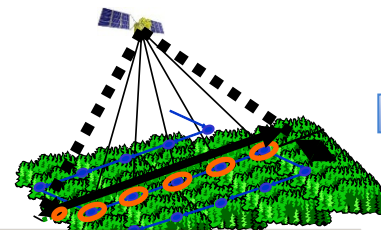
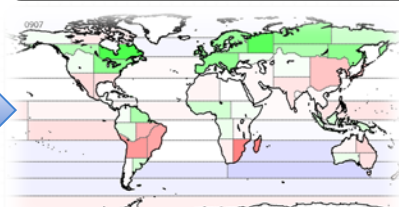
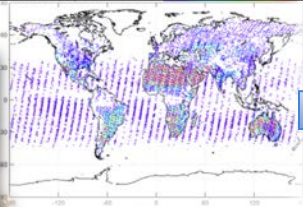
Goals of the GOSAT project

- Filling out blank areas
- Reducing GHG uncertainty

Improving accuracy of GHG concentration and carbon flux

Contributing to Global MRV system

Long-term space-based monitoring of GHG



GOSAT
(2009 ~)

GOSAT-2
(2017~)

GOSAT-3

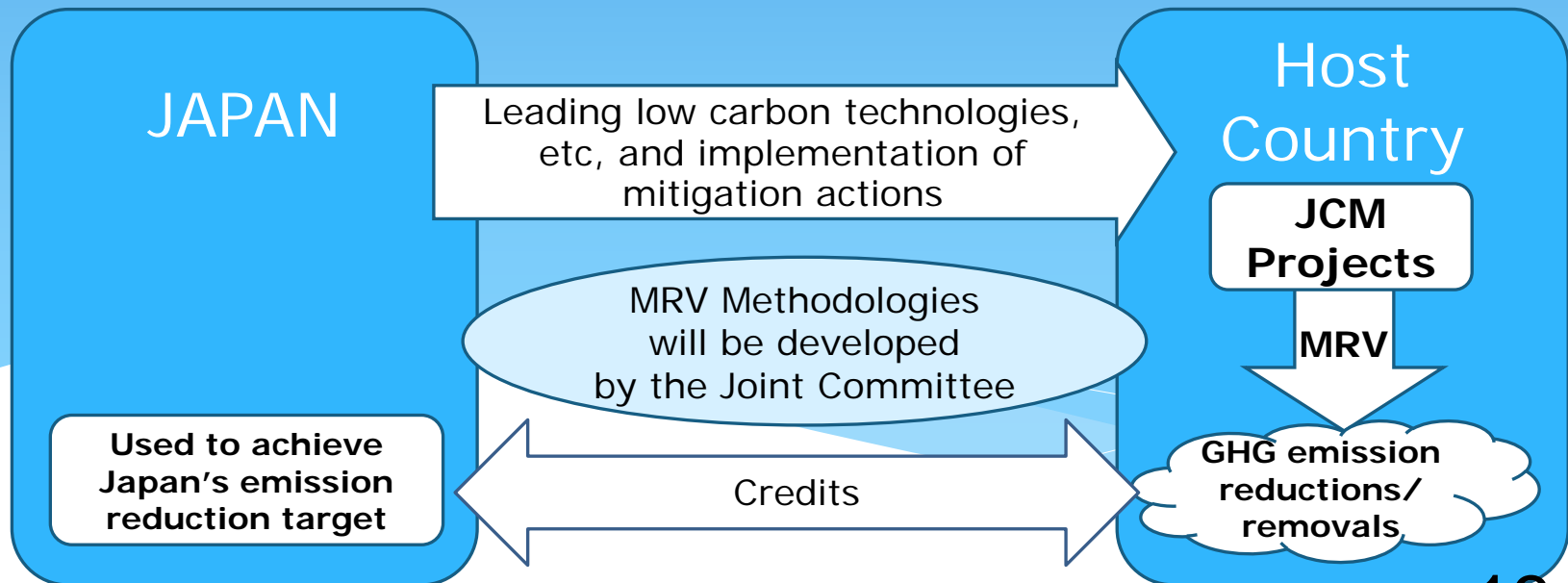
GOSAT-4 and
subsequent

Possible contribution of GOSAT series

- ◆ Elucidating global carbon cycle through precise observation of CO₂ and CH₄
 - ⇒ **Improvement in climate change prediction**
- ◆ Early detection of major changes in climate system
 - ⇒ **Identifying changes in global environment**
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Basic Concept of the JCM

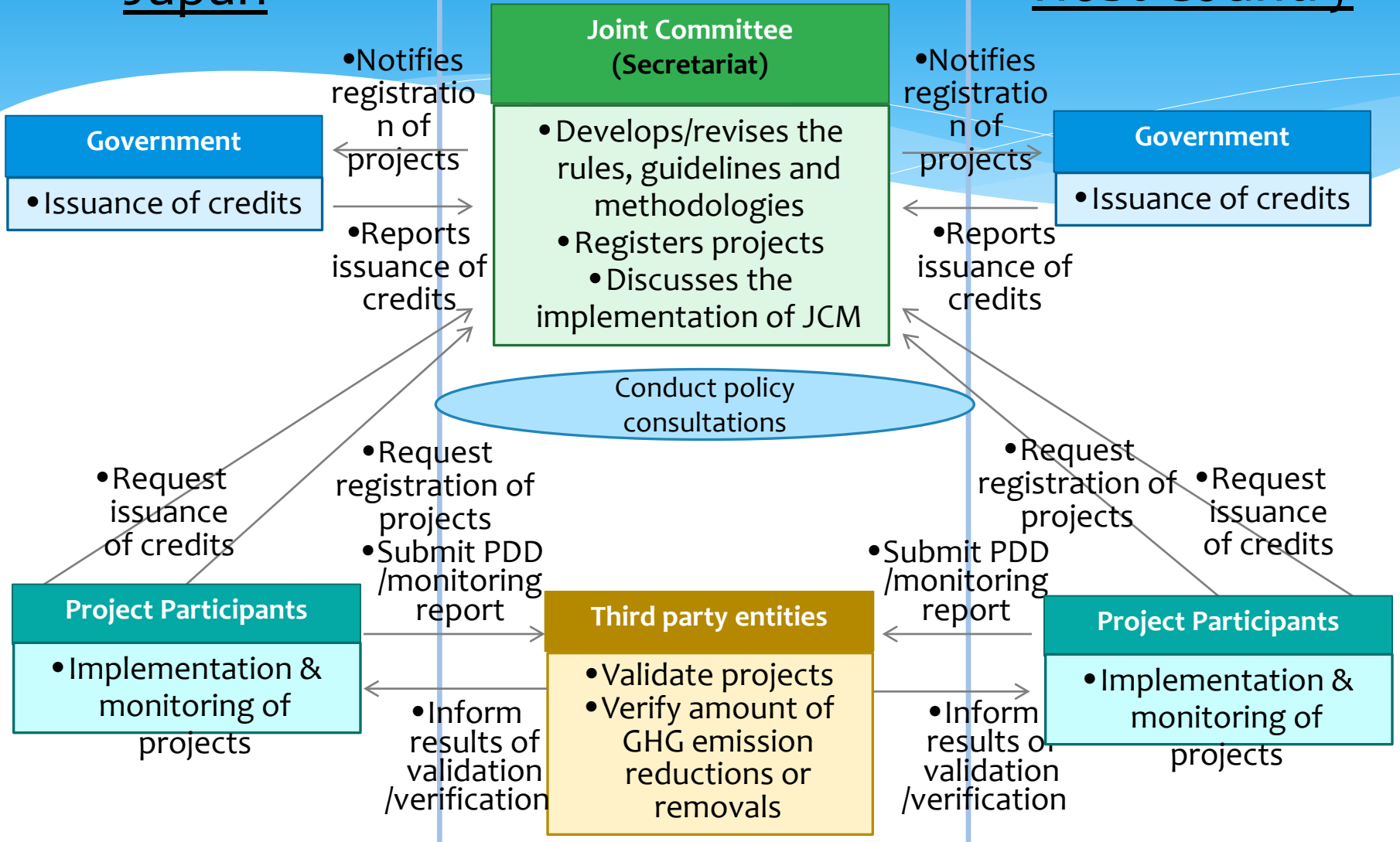
- Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Appropriately evaluating contributions to GHG emission reductions or removals from Japan in a quantitative manner, by applying measurement, reporting and verification (MRV) methodologies, and use them to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals, complementing the CDM.



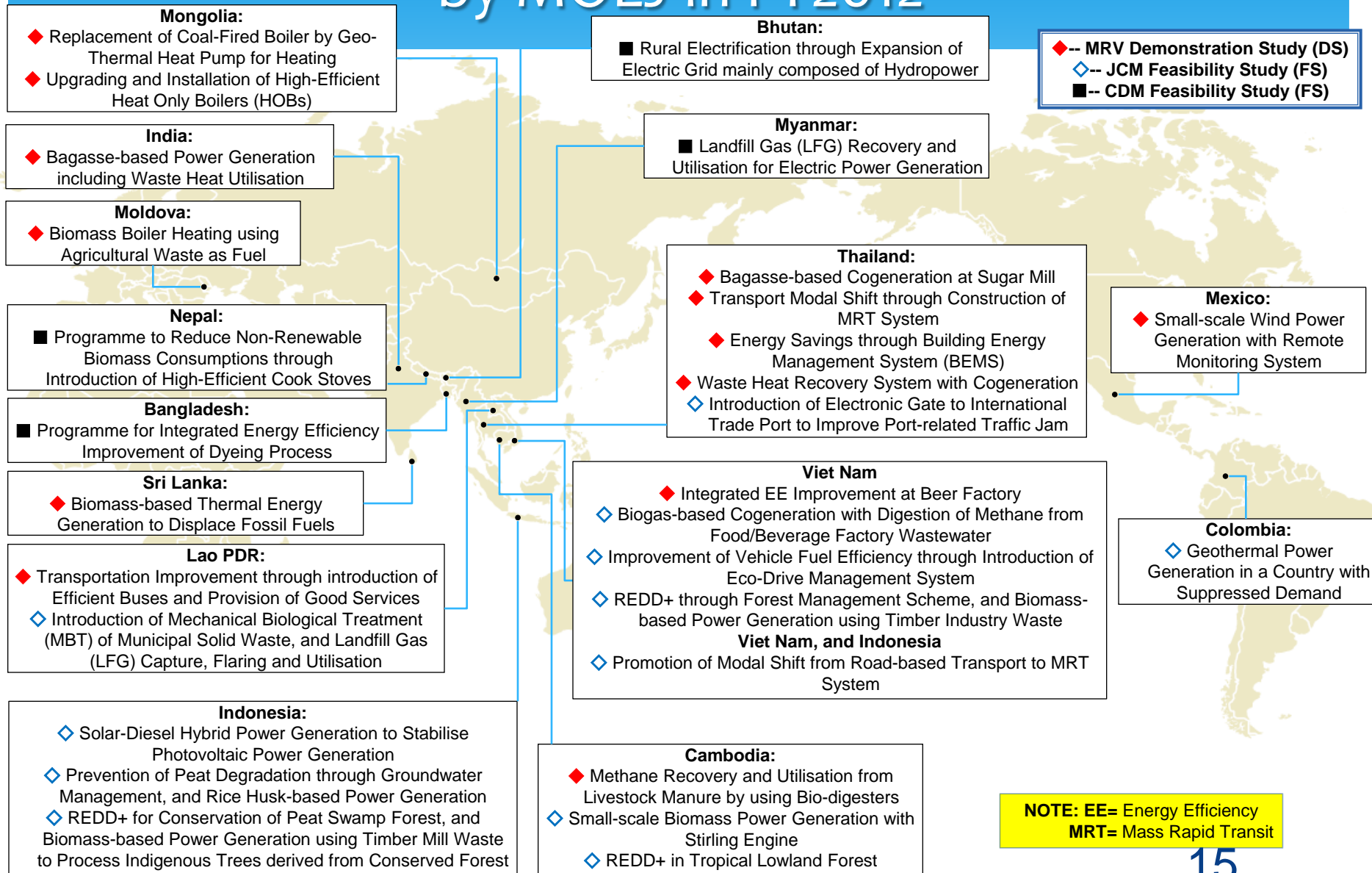
Scheme of the JCM

Japan

Host Country



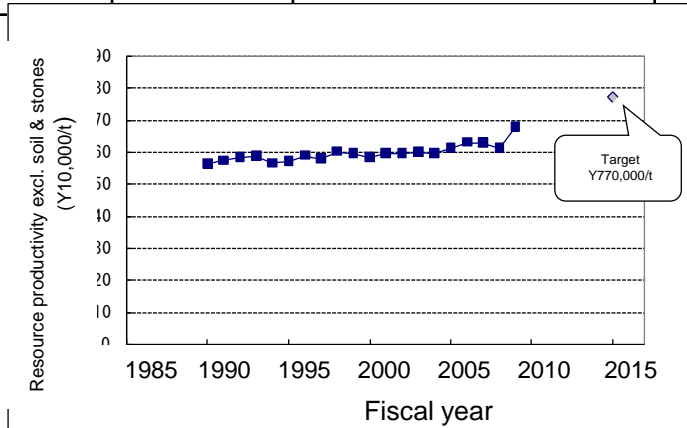
MRV Model Projects and Feasibility Studies by MOEJ in FY2012



Update on MSW

Revision of Fundamental Plan for Establishing a Sound Material-Cycle Society (forthcoming): Current State and Challenges

	FY2000	FY2009 (change over FY2000)	FY2015 (target yr.)
Resource productivity (10,000/t)	26.3	40.3 (+53%)	42
Cyclical use rate (%)	10.0	14.9 (+4.9 points)	14~15
Final disposal (mil. tons)	56	19 (-6.7%)	23



○Progress in 3R efforts, Improvement of individual recycling laws, Material flows performing well, due to people's awareness raising

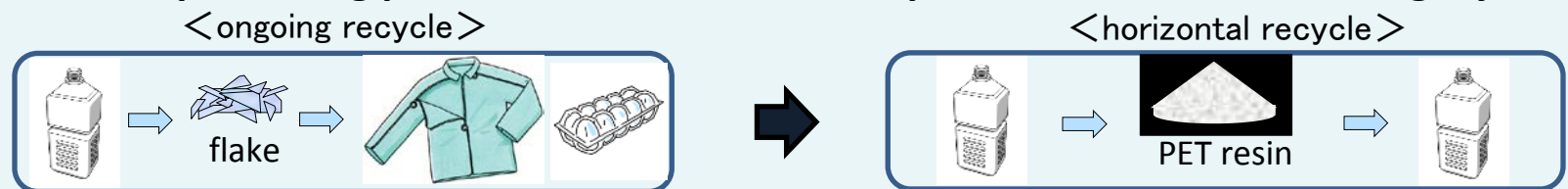
○While restraint on resources is expected to strengthen globally, productivity of resources other than soil /stones has not increased – this being insufficient efforts in “quality”

- (1) Restraint on resources consumption and reduction of environmental burdens
- (2) Promotion of efforts in terms of both “quantity” and “quality”
- (3) Building of a sound material-cycle society leading to regional revitalization

Revision of Fundamental Plan for Establishing a Sound Material-Cycle Society (forthcoming): priority item (1)

1. Promotion and upgrading of cyclical resource use with emphasis on “quality”

- Building of new recycle system to recover useful metals from EOL small home appliances, etc.
- Development of technology enabling advanced recycling such as horizontal – re-producing products from wasted EOL products in the same category



2. Raising of environmental industries in cyclical areas

- Aiming to raise environmental industries in cyclical areas, by collecting valuable resources from among wasted domestic resources and making cyclical use
- Supporting overseas operation by environmental industries, while promoting advanced recycle at home

Revision of Fundamental Plan for Establishing a Sound Material-Cycle Society (forthcoming): priority item (2)

3. Strengthening of measures from the viewpoint of safety and security

- Strengthening of national network of waste disposal facilities
- Securing tentative storage places for disaster-generated wastes and refuses

4. Promotion of international measures

- Promotion of multi- and bi-lateral cooperation to strengthen 3R measures in developing countries
- Accepting wastes from outside of Japan – those difficult for developing countries to dispose but possible to dispose in Japan

- Integrated efforts in line with a low-carbon society in harmony with nature
 - Change in life-style with emphasis on 2Rs
 - Formation of local recycling zones

Revision of Waste Management and Public Cleansing Law (2011) : Problems to Address

I . Problems on appropriate waste disposal

- ① Many cases of illegal dumping witnessed; necessity to clarify the responsibility for management of industrial waste- discharging enterprises
- ② Necessity to strengthen measures for waste management , with due consideration to local residents concerned about environmental contamination at waste management facilities
- ③ Necessity to raise good waste management businesses

II . Problems on promotion of sound cyclical use of waste

- ① On industrial waste generation, recycling in progress, but insufficient reduce
- ② Necessity to sound cyclical use of waste
- ③ Insufficient heat utilization at waste incineration plant

Revision of Waste Management and Public Cleansing Law (2011) :

Area of Revision 1

1. Enforcement of measures to secure proper disposal by waste-discharging enterprises

- Creation of advance notification system for off-site waste storage by waste-discharging enterprises
- Measures to make prime contractors fully responsible for waste from construction works
- Measures to enforce punishment on corporations whose employees execute illegal dumping

...etc.

2. Enforcement of measures for management at waste disposal facilities

- Obligatory regular inspection by prefectural governor for establishers of waste disposal facilities
- Public disclosure of information on management of waste disposal facilities via internet

...etc.

3. Raising good industrial waste disposal businesses

- Creation of special standards for effective licensing period for eligible industrial waste-discharging businesses => Reduction of clerical office work for such businesses

...etc.

Revision of Waste Management and Public Cleansing Law (2011) : Area of Revision 2

4. Enforcement of discharge control

○Obligatory development and submission of industrial waste reduction plan by much-discharging such enterprises

...etc.

5. Securing of sound material recycle

○Expansion of eligible applicants to enable importers of wastes to assign licensed domestic disposal/recycle businesses for proper recycling or disposal of imported industrial wastes when there is reasonable ground for doing so => import of waste for proper recycling or disposal in Japan can be promoted so that Japan can contribute to the reduction of environmental burdens in foreign countries, especially Asian countries.

...etc.

6. Promotion of incineration heat utilization

○Creation of institutional framework to enable heat recovery businesses to be authorized by the concerned governor to incinerate waste at their waste disposal facilities when they meet designated standards => Incentives for authorized business

...etc.

Act on Promotion of Recycling of Small Waste Electrical and Electric Equipment(2013)

【Outline】

Legal framework for the State to authorize business operators (recyclers) who accept end-of-life compact electrical devices from the local government and perform appropriate recycling securely, as well as to permit the authorized recyclers exemption of waste management law.

【Target items】

Those designated by ordinance, which are efficiently collectable and transportable and are urgent for recycling among electrical and electronic equipment utilized by consumers for their daily life

【Basic Policy】

Basic policy planned and announced by the Minister of the Environment and the Minister of Economy, Trade and Industry
(Content) Basic direction, Target amount, Measures for promotion, Protection of personal information and other issues for consideration

Act on Promotion of Recycling of Small Waste Electrical and Electric Equipment(2013)

