TG3: The GEO Carbon and GHG Initiative

Toward policy-relevant global carbon cycle observation and analysis

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The three challenges for GHG monitoring

- A technological challenge
  - Do we have the right instrumentation, models, satellites…?
- An integration challenge
  - Do we know how to integrate ocean, land and atmosphere, observations and models?
- A communication challenge
  - Do we respond rightly to the demand of policymakers, stakeholders? Do we provide the correct data and information?

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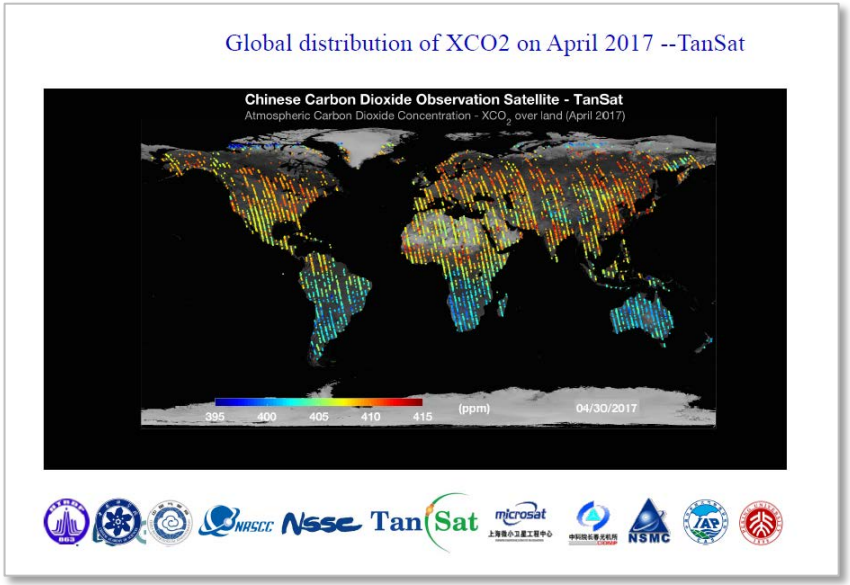
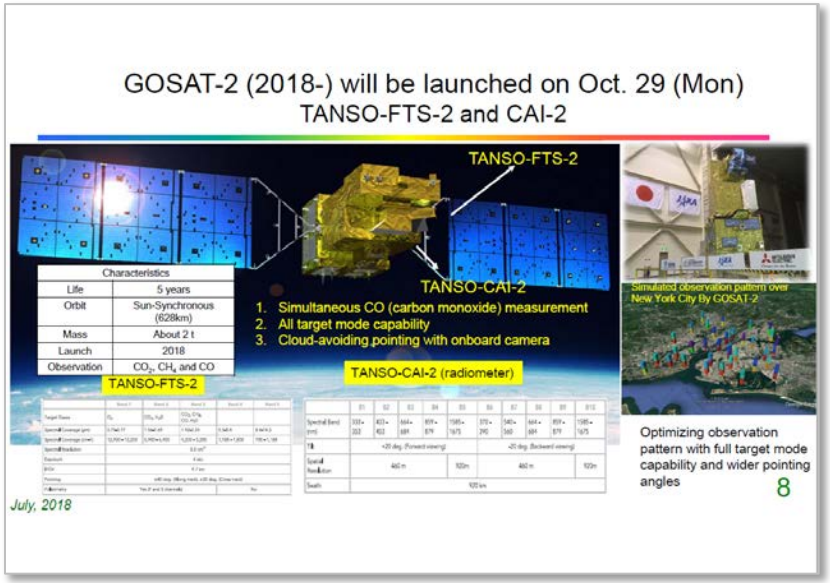
- Satellite observation of GHGs is enlarged in the past 10 years and became indispensable instrumentation for source/sink evaluation by improving data coverage.

Matsunaga



Liu



Kuze

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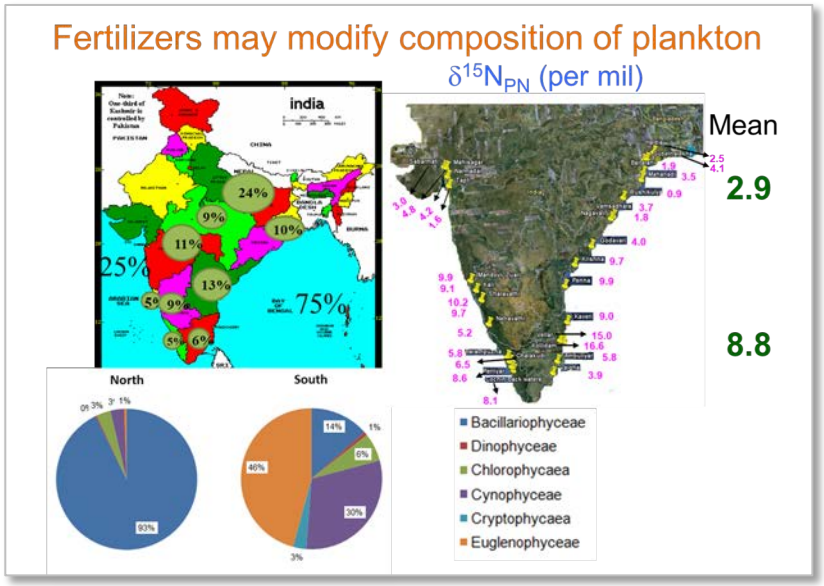
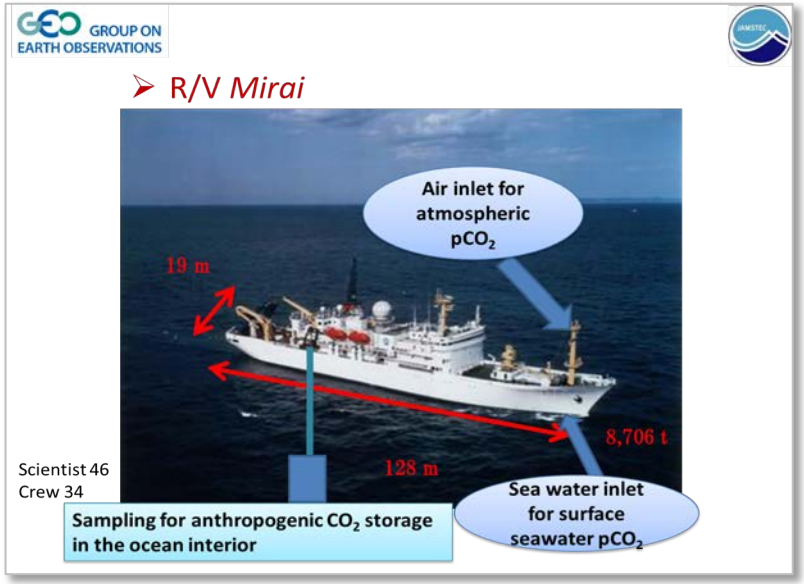
- Aircraft observation provides unique seasonal variations and vertical profiles, and improves inversion model results.
- International frameworks of research vessels (e.g., GO-SHIP) and seawater pCO_2 (e.g., SOCAT) are ongoing for open ocean.
- Coastal observations are required and established for a better estimation of CO_2 source/sink (e.g. India).

Machida



Sarma



Murata

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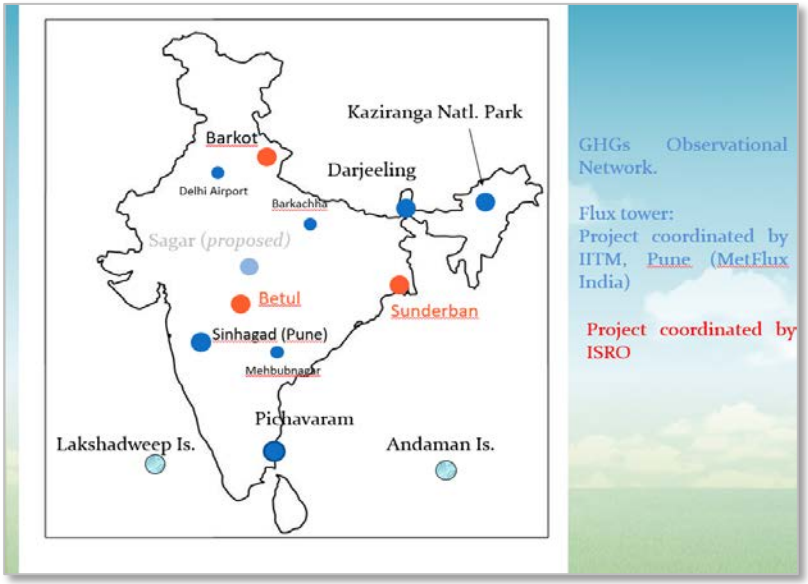
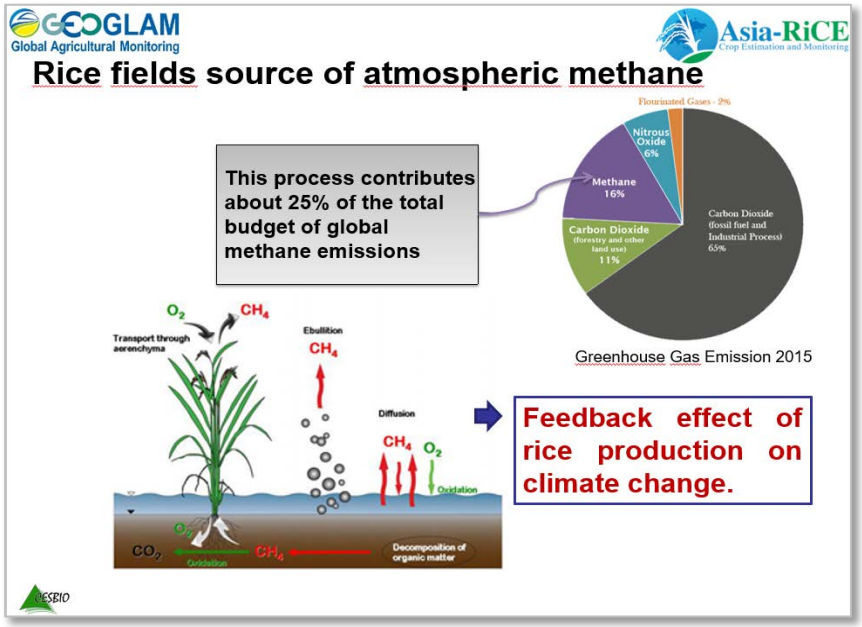
- Great progress has been made in terrestrial flux monitoring in India.
- Peatland restoration in Indonesia is critically important for mitigation.
- EO is expected to provide timely and synoptic information of rice production and methane emission in Asian rice fields.



Chakraborty



Toan

Gunawan

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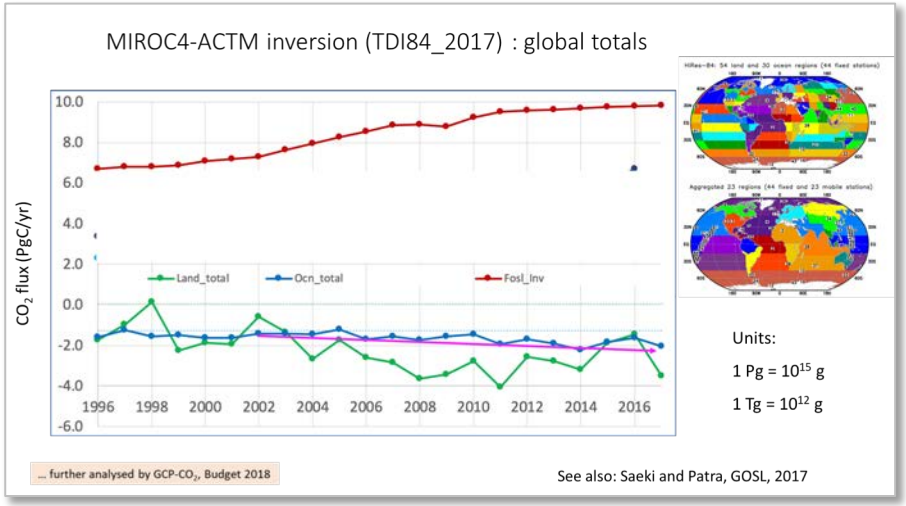
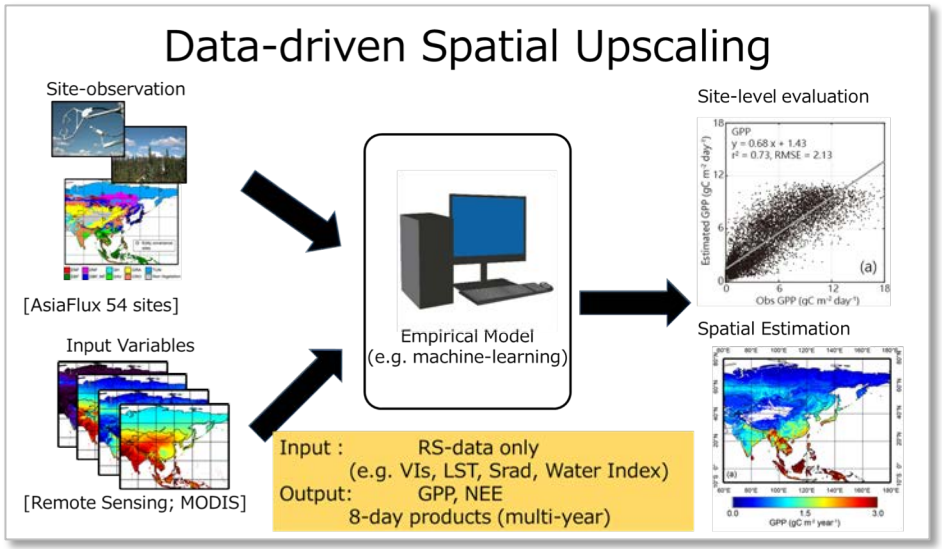
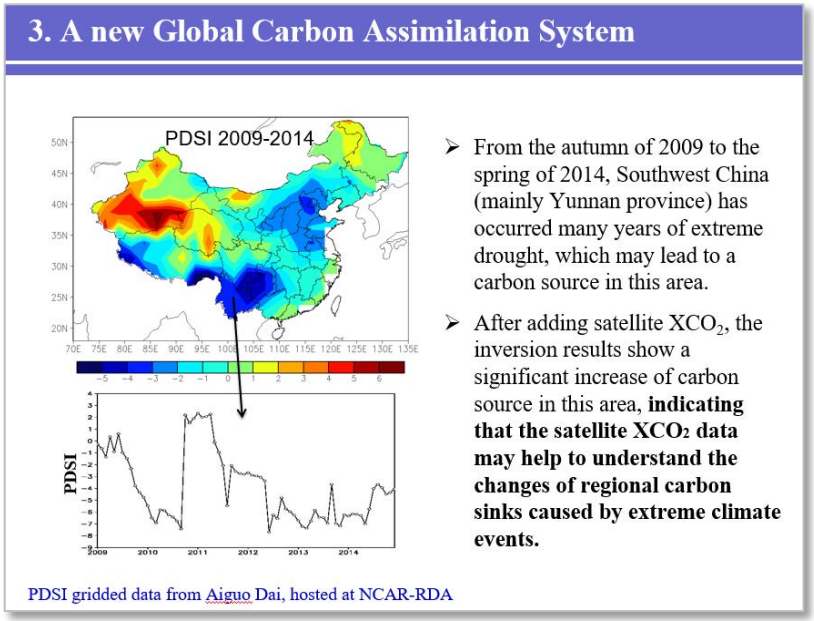
- Needs of separating anthropogenic (fossil fuel) from natural source/sink are more recognized for supporting national GHG inventories.
- Top-down and flux-upscaling estimations of GHG give us essential insights to interpret long-term trends of sink/source distribution and FF emission.



Patra



Ichii



Jiang

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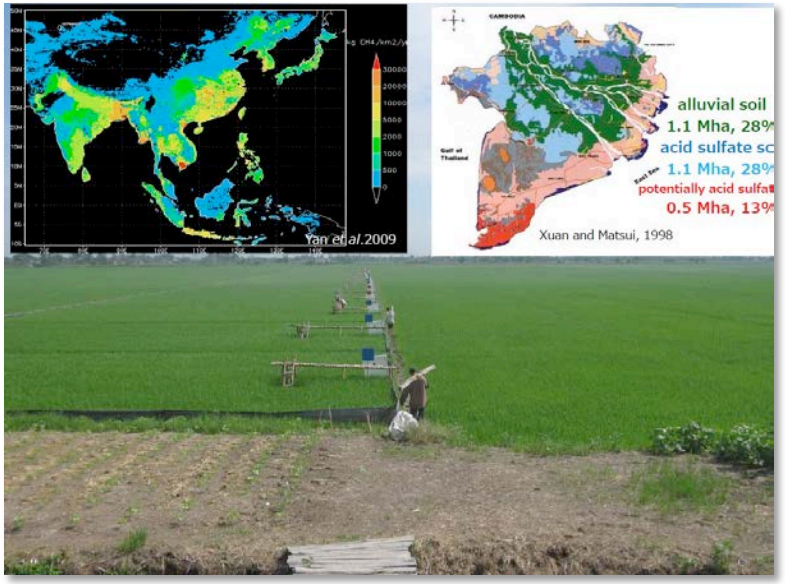
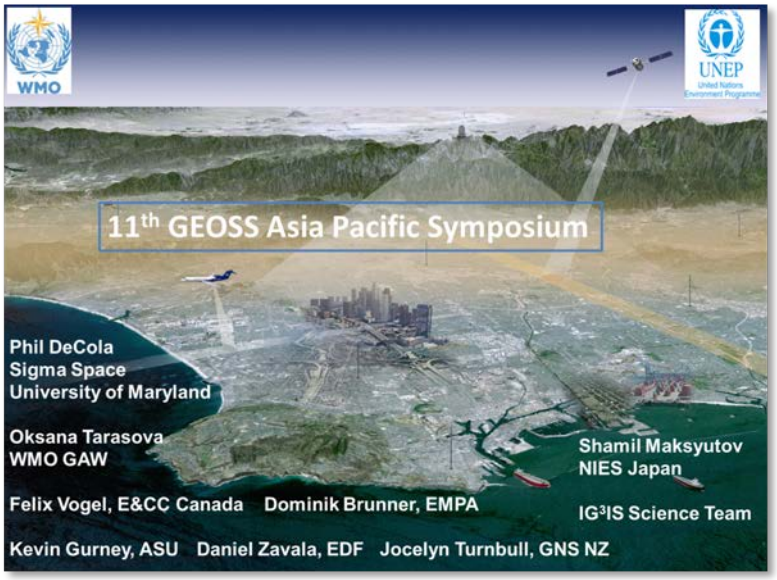
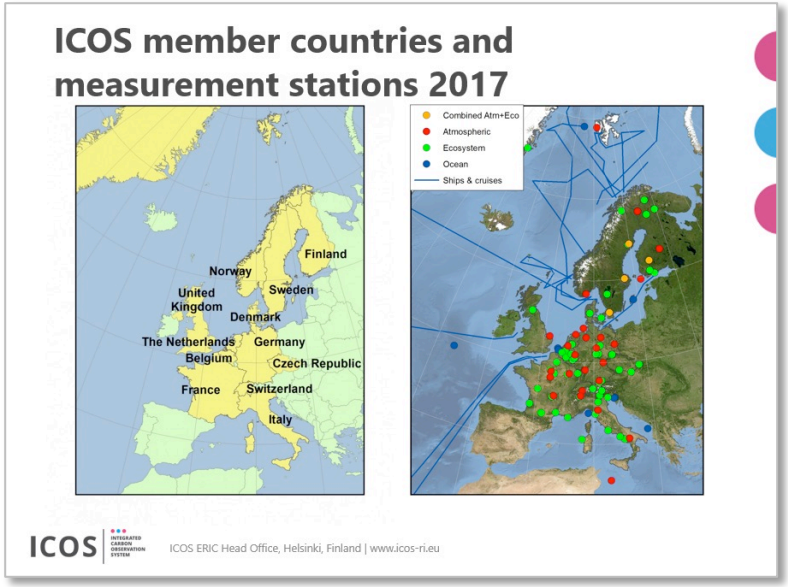
- MRV system for monitoring CH_4 emission from rice fields is applicable for economic assessment of GHG mitigation.
- Needs of transformation to “infrastructure”: Keys to success are to build strong national consortia, and to get early commitment from the stakeholders.
- IG^{3}IS will serve as an international coordinating mechanism and establish and propagate consistent methods and standards.



Arai



DeCola



Heiskanen

AP region's response to the Paris Agreement

- Technological and integration challenge
  - ✓ Harmonizing data flows between different organizations
  - ✓ Acquiring datasets for separating anthropogenic and natural source/sink from different source factors
- Communication challenge
  - ✓ What questions we are trying to answer
  - ✓ How do we disseminate information (e.g., global stock take)
- Solutions
  - ✓ Establishing a system in each country/region in Asia to have infrastructure
  - ✓ Capacity building for data sharing and synthesis
  - ✓ Funding (ADB, government agencies, etc.)