

Expectations for Satellite Observation Data to Contribute to GHG Inventory



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Efforts toward satellite data utilization for IPCC
Guideline of GHG Inventories

1:00.p.m.- 2:30 p.m., November 14 (Mon), 2016

Estimate only anthropogenic fluxes

Based mainly on socio-economic data: fuel use, agriculture...

Use emission factors based on measured emissions

Transparency, Consistency, Comparability, Completeness, Accuracy

Includes emission measurements

Emission Inventory

anthropogenic emissions by sources and removals by sinks

UNFCCC and IPCC guidelines

UNFCCC Review process

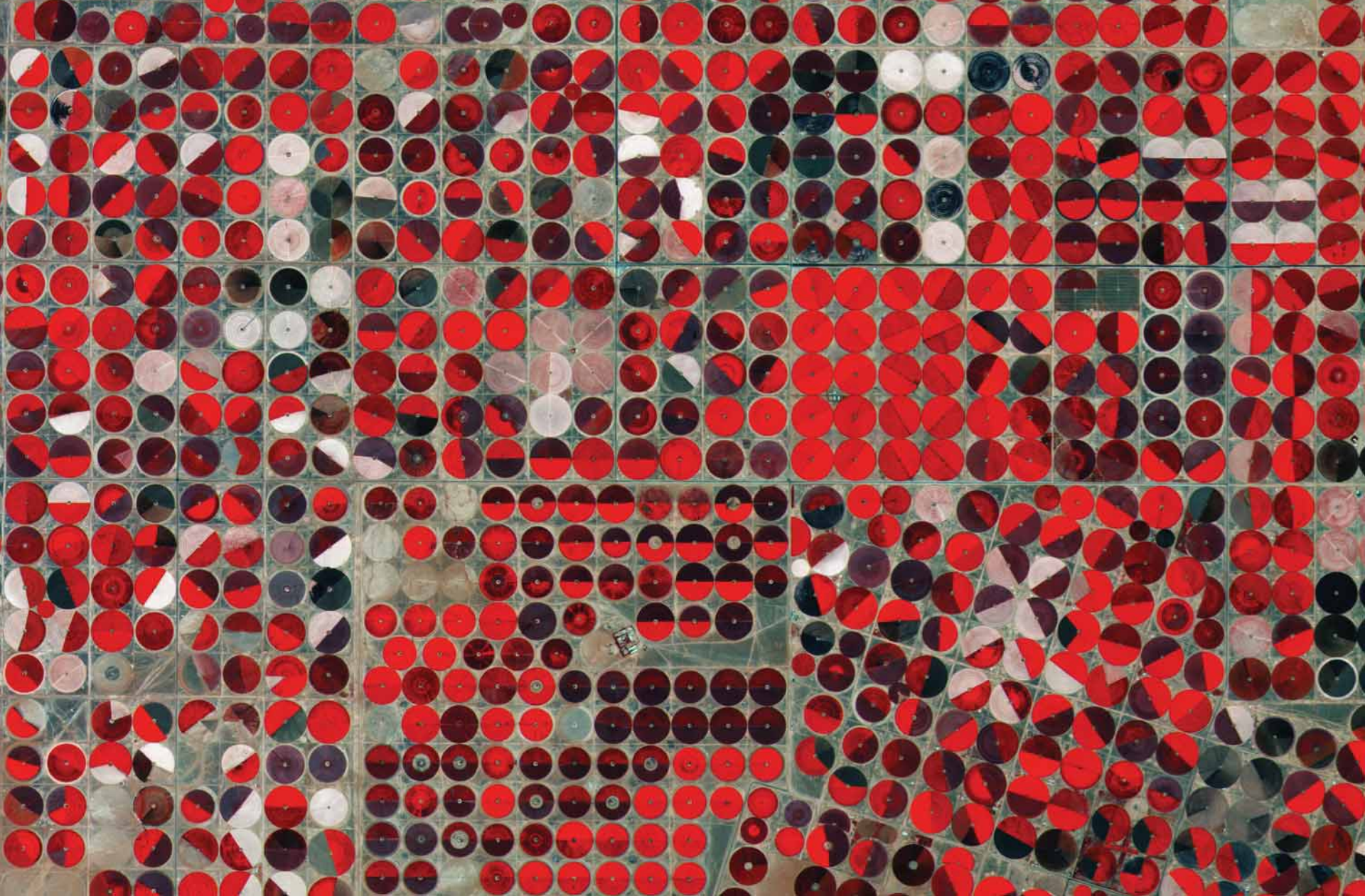
National systems

Fuel Data, Emission Measurements, EFDB

Emission Measurements: both in-situ and remote



Land Use from Satellites needs to give the 6 IPCC land categories (and their sub-categories)



Advantages of Emission Inventories

All countries can complete emission inventories themselves (with Capacity Building and financial support)

Approach agreed by UNFCCC, following the IPCC, with approaches to review and verification.

Estimates anthropogenic emissions and removals as required by UNFCCC

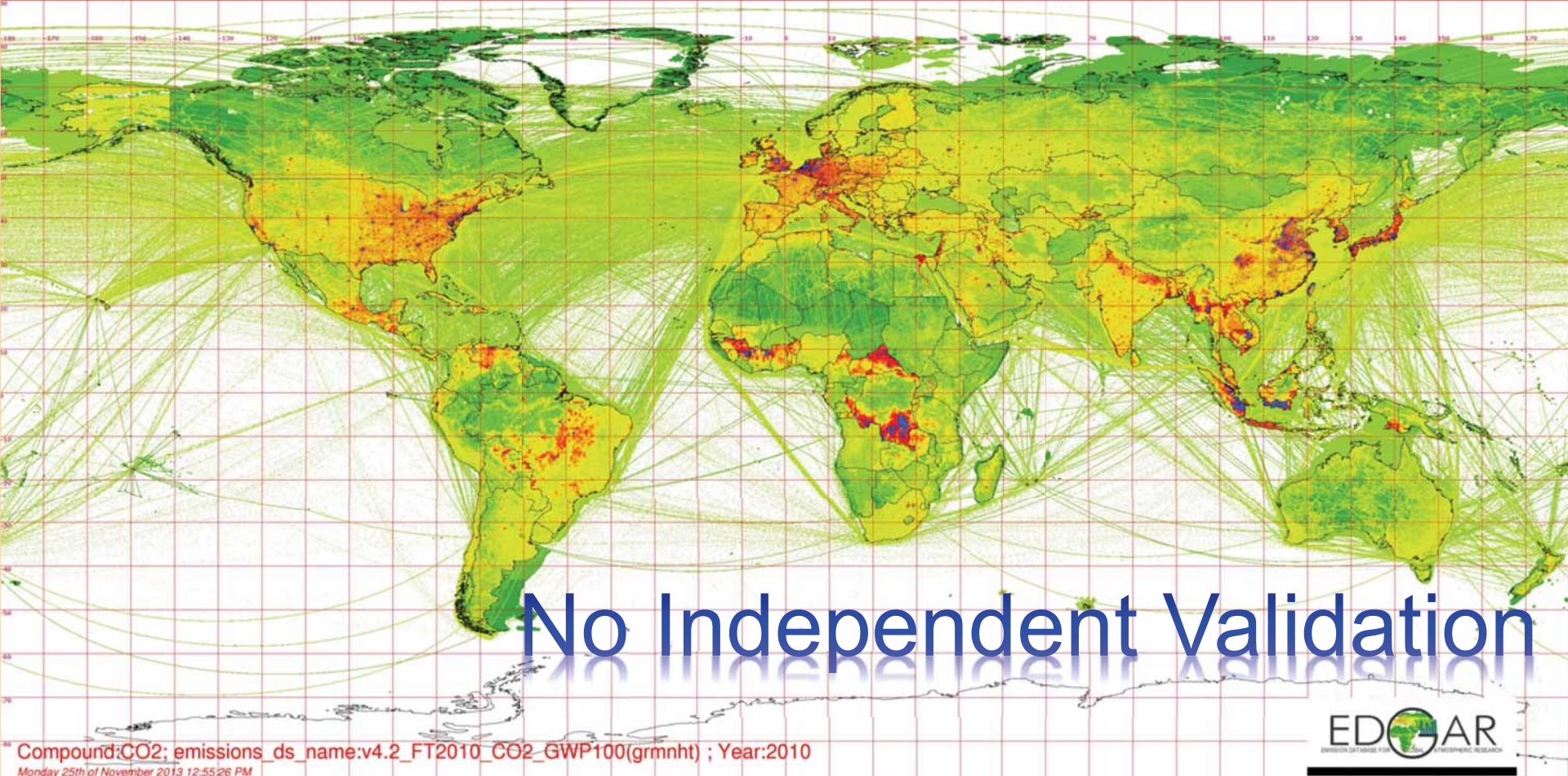
The approach based on statistics with international data from other countries filling gaps.

The method is easy to understand by non-technical observers. It is transparent.

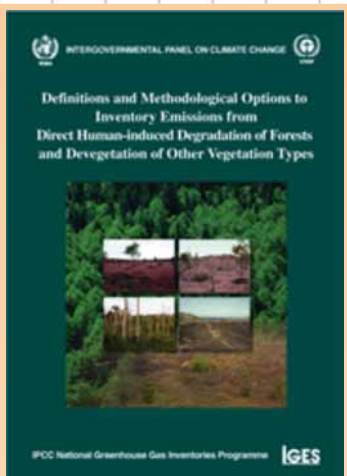
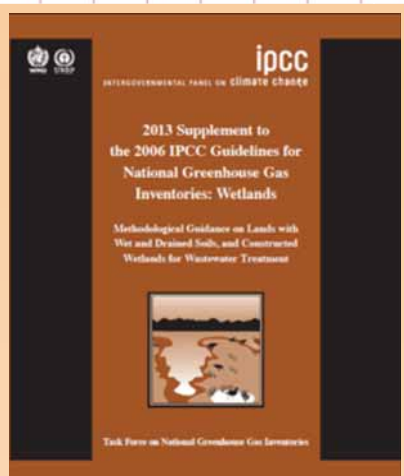
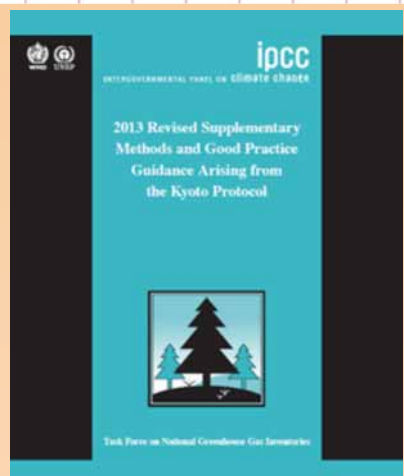
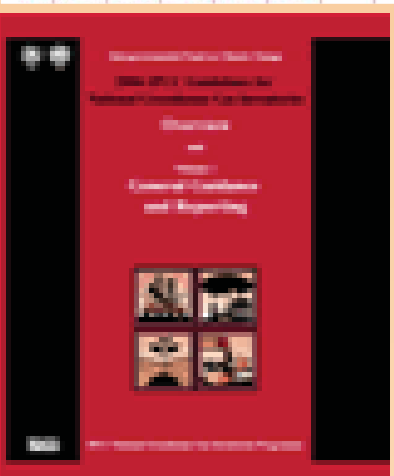
For land use and forestry adequate satellite data is available for free.

Individual economic sectors can be monitored

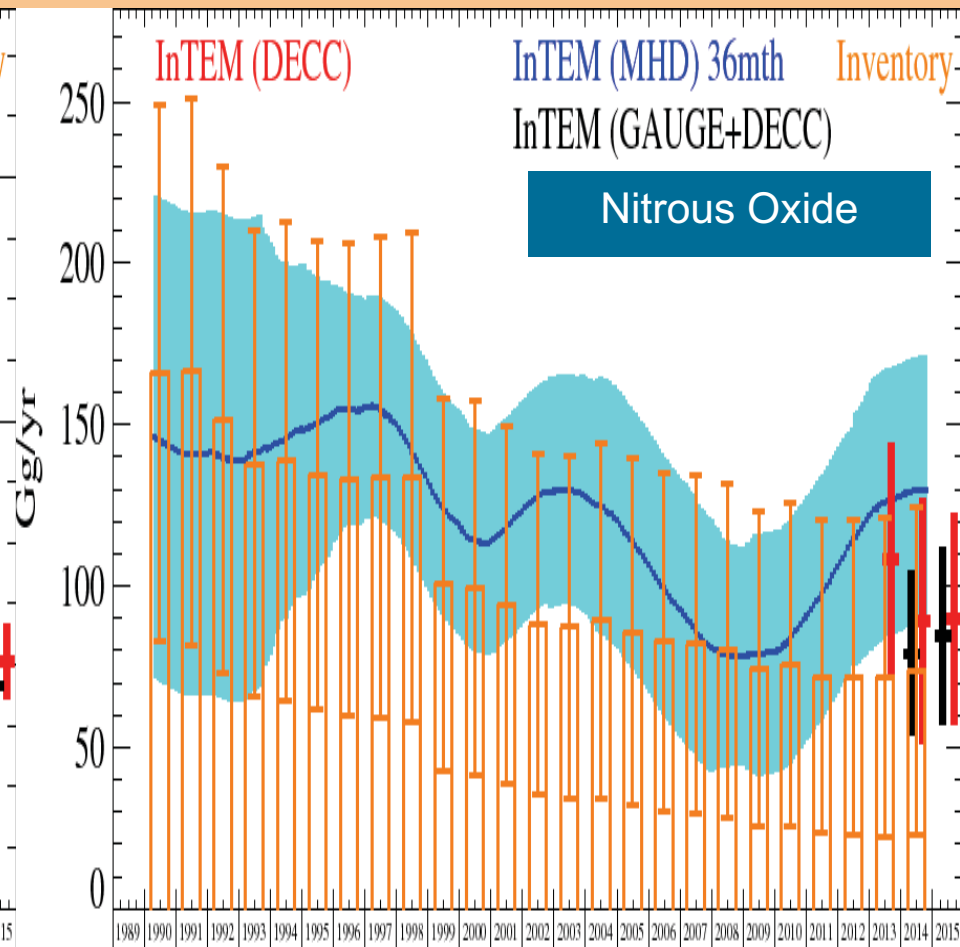
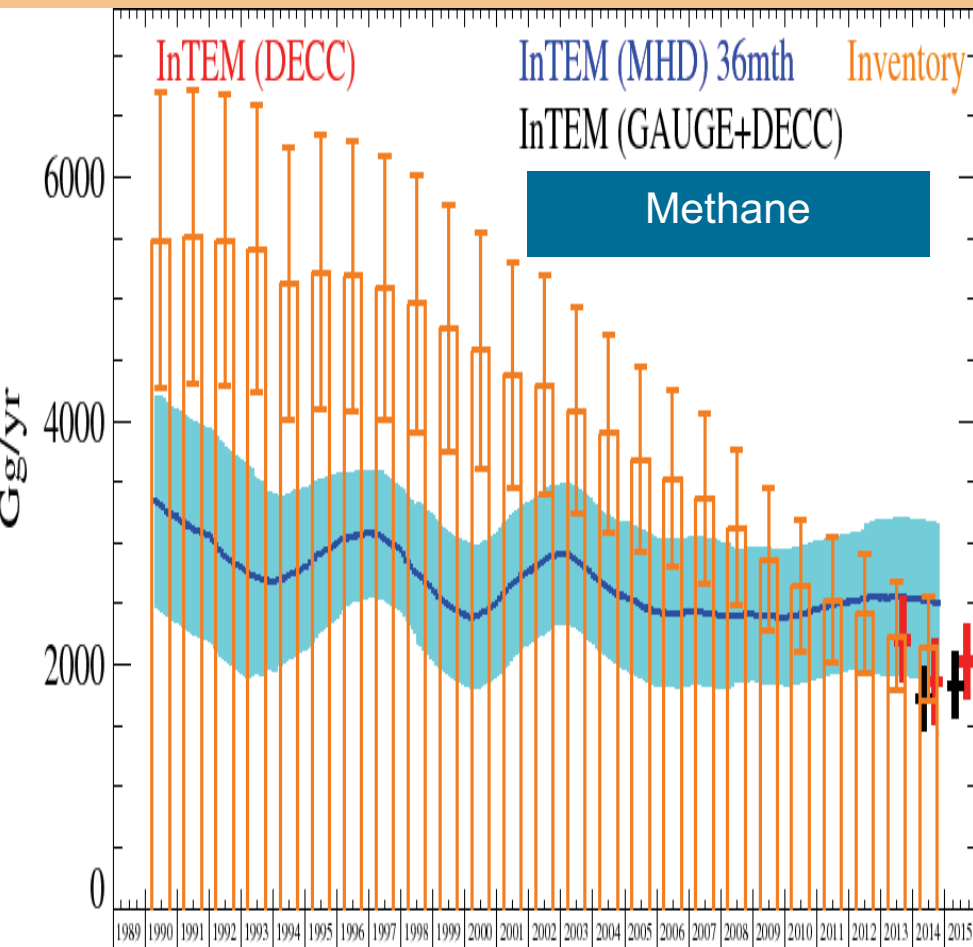
Accuracy varies from gas to gas and between source types, but can be estimated



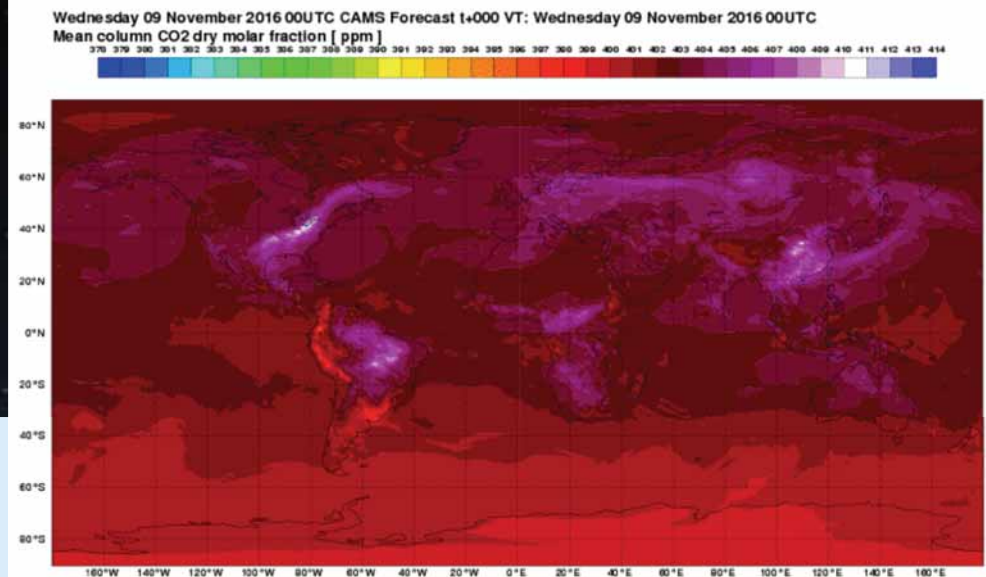
No Independent Validation



Atmospheric composition measurements have been used to validate emission inventories



Composition Observations: Satellites and ground-based stations



- Global
 - Regional
 - Reporting
 - Partly Reporting
-
- -
 -
 -

**Support national
emission inventories –
demonstrate credibility**

**Measurement of
source strengths**

Expectations

**Identify major missing
sources**

**Confirm overall impact
of mitigation (NDCs)**

**Clarity is needed on when these
services can be delivered**

Some thoughts from Inventory Experts

Unlikely to be possible for all countries – some will rely on estimates made by others

Requires expensive equipment, expert staff and sustained funding to maintain adequate observational standards.

Can separate biogenic and fossil carbon – not anthropogenic

Requires well trained scientific staff.

Not easy to separate economic sectors.

Unlikely to be a comprehensive global system for decades

Accuracy is lower than for emission inventories

Extract from GCOS Terrestrial ECV Product Requirements

ECV	Products	Frequency	Resolution	Required measurement uncertainty
Anthropogenic Greenhouse Gas Fluxes	Emissions from fossil fuel use, industry, agriculture and waste sectors.	Annual	By country and sector	Globally 5% Nationally 10%
	Emissions/ removals by IPCC land categories	Annual	By country/ region	Globally 15% Nationally 20%
	Estimated fluxes by inversions of observed atmospheric composition - continental	Annual	1000 - 10,000 km	10%
	Estimated fluxes by inversions of observed atmospheric composition - national	Annual	100-1000 km	30%
	Hi-res CO2 column concentrations to monitor point sources	4 hourly	1 km	1ppm

Thank-you



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