



CEOS-CGMS WGClimate: GHG Task Team status and future plans

*Mark Dowell
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Input to COP-26



Home Español / Français

Pilot Top-down Carbon Dioxide and Methane Budgets

In support of the Global Stocktake Mitigation Goals of the Paris Agreement



Carbon Dioxide

Pilot, Top-down CO₂ emissions and removals associated with Terrestrial Carbon Stock Changes by nation

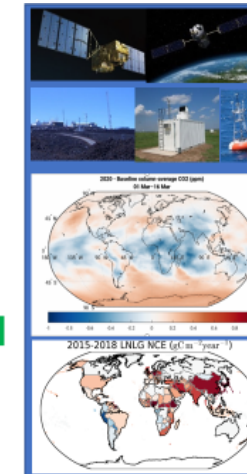
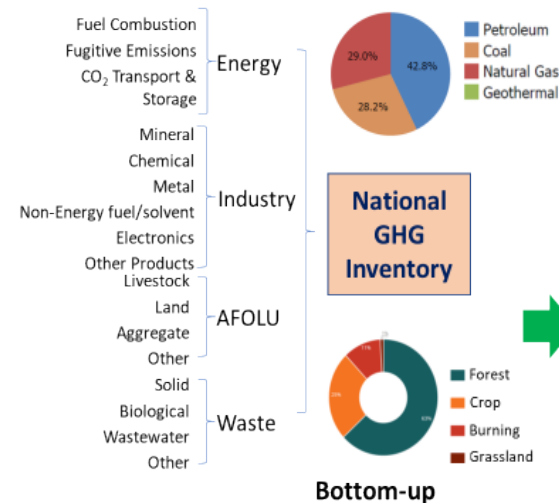
[More info...](#)



Methane

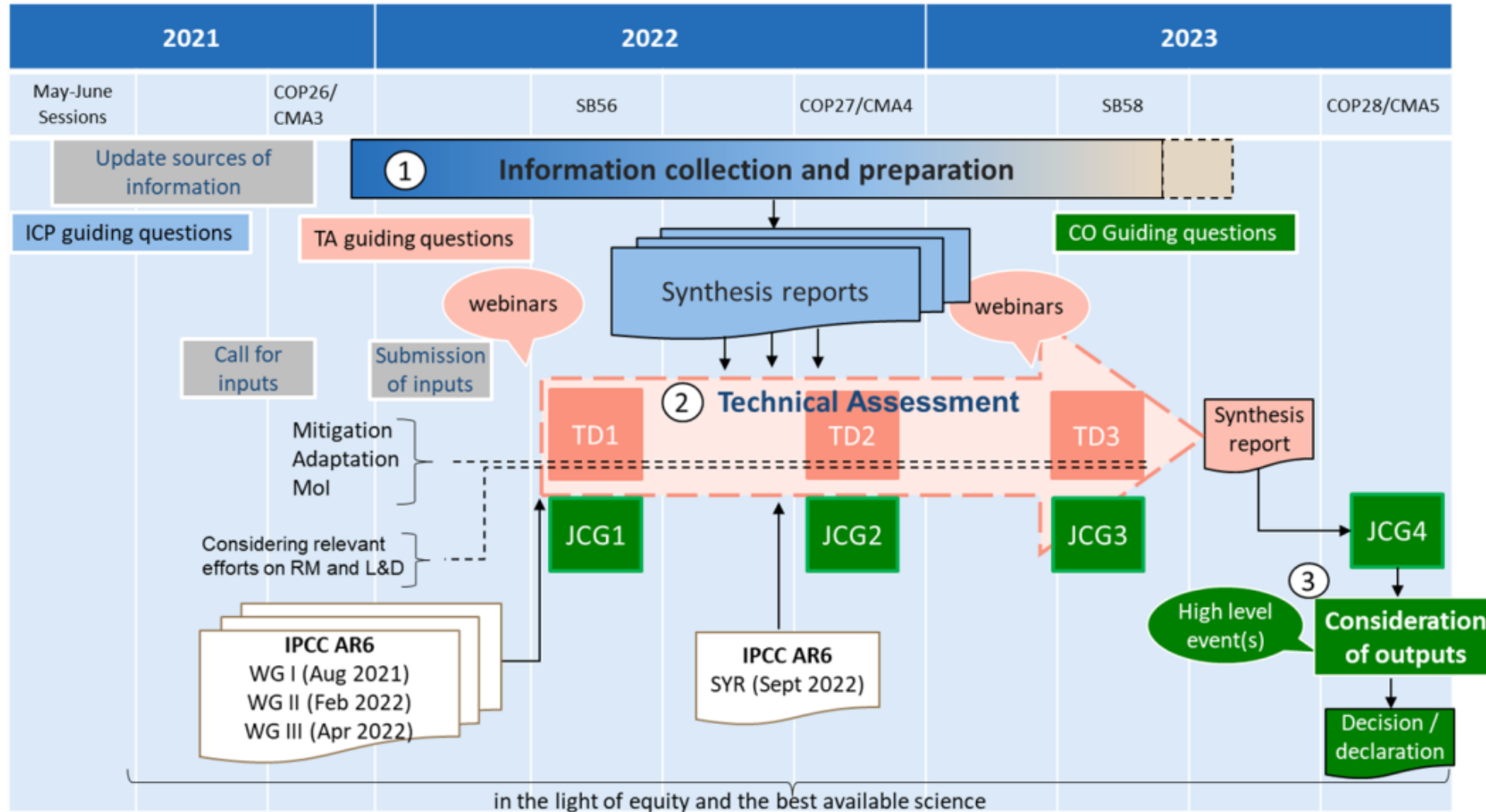
Pilot Top-down methane emissions estimates by sector and country

[More info...](#)



<https://ceos.org/gst/ghg.html>

Global Stocktake





United Nations
Climate Change

Paris Agreement



Transparency Framework

Global Stocktake

Mitigation

Adaptation

Means of
Implementation:
Finance, Technology,
Capacity Building

Cross-cutting:
Response measures,
Loss & Damage,
Equity



Systematic Observations

Systematic Observations Community



WORLD
METEOROLOGICAL
ORGANIZATION



EUROPEAN COMMISSION



The Committee on Earth Observation Satellites



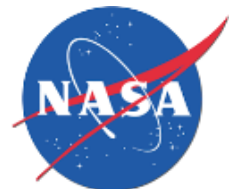
CGMS



GLOBAL CLIMATE OBSERVING SYSTEM



DLR



Structure & Contributors

- **Executive Summary**
- **Introduction**
- **The Global Climate Observing System (GCOS)**
- **Mitigation** – Systematic Observations Supporting Atmospheric greenhouse gas emission monitoring and improved Inventories for AFOLU
- **Adaptation** – Systematic Observations to Improve Resilience to the Adverse Impacts of climate change
- **Means of Implementation** - Systematic Observations supporting Finance, Technology Transfer & Capacity Building
- **Cross-cutting Issues** - Systematic Observations to Support Reporting and Best Practices Across Thematic Areas, including Loss and Damage

Main Contributors

- David Crisp (NASA/JPL-retired)
- Maxx Dilley (WMO)
- Sara Venturini (GEO)
- Anthony Rea (WMO/GCOS)
- Frank Martin Seifert (ESA)
- Carlo Buontempo (ECMWF)
- Mark Dowell (EC/JRC)
- Osamu Ochiai (JAXA)
- María José Sanz Sánchez (BC3)
- Jürg Luterbacher (WMO)
- Ian Jarvis (GEOGLAM)

Main Messages of the Report

- Systematic Observations underpin **climate science and services**
 - A basic set of **Essential Climate Variables** has been defined by GCOS
 - Use of top-down atmospheric GHG and bottom-up space-based AFOLU data reduces gaps and enable a more **complete and transparent GST**
- Systematic Observations are vital for **adaptation**
 - underpinning the **identification, planning, implementation and monitoring** of adaptation measures, and are
 - a first step in the **value chain** towards **successful decision making**.
- Systematic Observations **strengthen the evidence base** for the climate rationale, which **enables funding** from the public and private sector.

GHG-AFOLU Workshop

Workshop on Systematic Observation contributions and synergies for GHG & AFOLU in support of UNFCCC

Start dialogue between the different Earth Observation communities addressing the needs of UNFCCC

In particular, atmospheric GHG monitoring and those addressing aspects of the AFOLU sector

15th, 18th,19th November CET pms

Involving many relevant International coordination mechanisms

Address the "soft" coordination and stakeholder engagement aspects i.e. interface with the Convention, the UNFCCC Secretariat and Party user groups, but also more technical aspects of reporting, outputs datasets, formats, avoiding "double - accounting" and the longer-term ambition of using diverse earth observation datasets in the modelling and MVSs being developed

Topic => Questions => Discussion => Recommendations (report)



Evolving policy needs

1. A global (data assimilation) system supporting monitoring and verification Paris Agreement should be able to rely on earth observation data for a **comprehensive picture for the decades to come.**
2. Assuming that the proposed legislative efforts are implemented as planned such an integrated observation and modelling capacity should **be able to discern fossil GHG emission plumes reduce (and disappear) over the next 15-30 years**
3. But also **monitor the remaining emissions**, in a regime where unavoidable sources (e.g. from agriculture) are compensated by critical carbon sinks of the global biosphere.
4. Thus, it is fundamentally important to address both GHG and AFOLU and their synergistic and integrated use in this MVS capacity (also implications for satellite constellation planning and development)

Agenda (sessions CEST pm 14:00-16:30)

15 November	18 November	19 November
Intro Session	Intro & Overview 2 (45min)	Overview 4 (15min)
Intro Session	Question 2 (60min)	Question 4 (60min)
Overview 1 (15min)	Overview 3 (15min)	Overview 5 (15min)
Question 1 (60min)	Question 3 (60min)	Question 5 (60min)

- Overview/Question 2: Data sets & Standards (Dave, Frank-Martin)
- Overview/Question 1: User need/requirements (Han, Maria, Lucia)
- Overview/Question 3: Gaps in coordination & links to CC Community (Philippe(s))
- Overview/Question 4: Research Needs (Ben, Martin)
- Overview/Question 5: Common MVS System and how to evolve (Richard, Mark)

Report Outline

1.	Background and Objectives (2 pg) (Mark)	.....
	Introduction by Mark Dowell and Greet Janssens-Maenhout	.....
	Giacomo Grassi: Introductory presentation on the adjustment of land mitigation pathways	.....
	Stephen Briggs: CEOS Global Stocktake Strategy	.....
	Richard Engelen: Outcome of the CHE-AFOLU Workshop	.....
	Philippe Peylin: VERIFY outcome for CO2, CH4 and N2O	.....
2.	Policy Context [WHY] (4pg) (Greet)	.....
i.	International Policy Context	.....
ii.	Policy Response/Implementation – European Union Example	.....
iii.	Implications for Earth Observation Needs	.....
3.	Observation requirements to monitor GHG inventories (4pg) (Marilena)	.....
i.	Providing an overview of the State of the art accounting (Marilena)	.....
ii.	Existing Systematic Observation Requirements (GCOS & others) (Marilena)	.....
iii.	Contribution to the Global Stocktake Exercise (Marilena)	.....
4.	Earth Observation Requirements, Status Quo & Plans (4pg) (Ruben)	.....
i.	Status of GHG Earth Observations (Marilena)	.....
ii.	Status of AFOLU Earth Observations (Ruben)	.....
iii.	Plans for satellite and system development (Ruben)	.....
iv.	Public, Private Sector & Hybrid opportunities (Ruben)	.....
v.	(not sure if this is subsection or seprate chapter) Gaps in Users Engagement & understandin of Policy needs [WHAT & HOW] (3pg) (Mark)	.....
5.	Ensuring Data Standards, Complementarity and Consistency [WHAT & HOW] (3pg) (Ruben)	...
6.	Engaging the Carbon Cycle Community [WHAT & HOW] (3pg) (Greet + D.1)	.....
7.	Prioritizing Research Needs for further development [WHAT & HOW] 3pg Marilena, Ruben & D.1)	4
8.	Towards a common System in support of Monitoring and Verification [WHAT & HOW] (3pg) (Mark & Greet)	.....
9.	Recommendations and Way Forward [HOW Summary] (2pg) (Mark)	.....
Annexes:		.....
A:	Attendance List	.....
B:	Agenda	.....
C:	Online Resources	.....

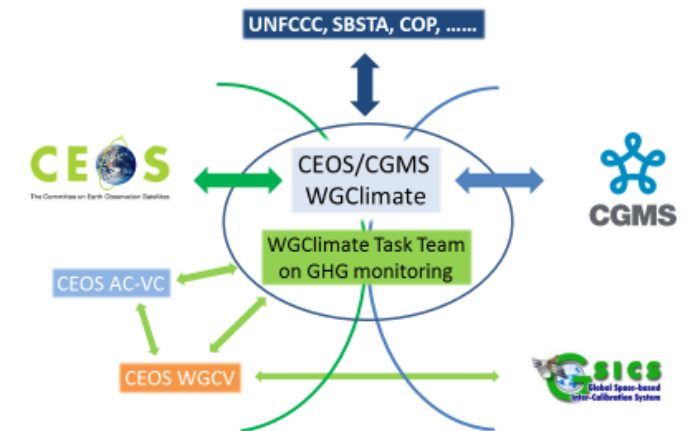
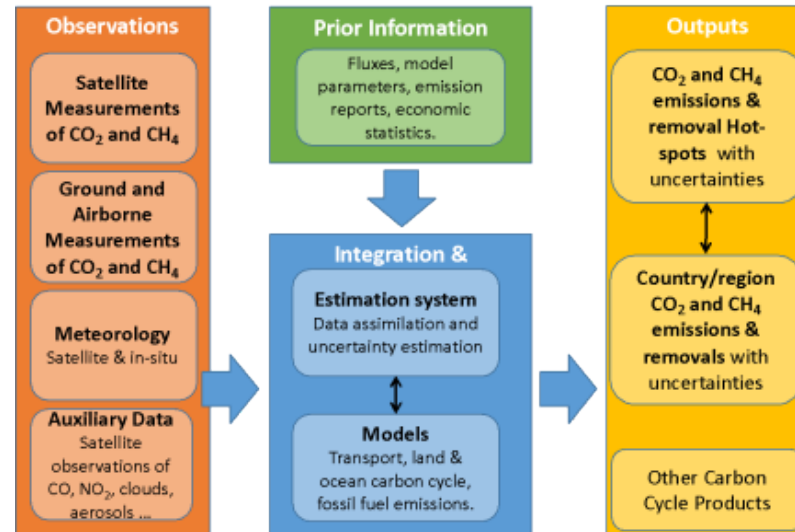
- Around 50 pages
- JRC producing first draft
- Should be sent to attendees in May
- Comments before Summer
- Ready for SIT TW

Looking Forward 2nd GST & beyond



ROADMAP FOR IMPLEMENTATION OF A CONSTELLATION ARCHITECTURE FOR MONITORING CARBON DIOXIDE AND METHANE FROM SPACE

in cooperation with the
Coordination Group for Meteorological Satellites (CGMS)
&
WMO Global Space-based Inter-Calibration System (GSICS)



Roadmap

System

Stakeholders

NB: Leadership transition in progress



space agency engagement in proposed WMO framework



Looking Forward 2nd GST & beyond

- CGMS Critical role in transition to operations:
 - space segment towards WIGOS vision,
 - standards for operational products,
 - operational QC and Cal/Val framework.
 - identify continuity issues and make proposals for contingency planning
 - training and end user support,
- Dedicated Geo ring study

