

GCOS BREAKOUT SESSION:

Paris Agreement and Observations for GHG Science and Reporting

Chairs: Karina von Schuckmann, Han Dolman, Martin Herold, Dale Hurst

21. April 2021, 3-5pm (CET), remotly

Guiding question: How well do the GCOS ECVs contribute to adequate monitoring of GHG in the context of the Paris agreement? What improvements can we make?

Organisation:

- **Talk 1 (Han Dolman, VU Amsterdam, NL):** Importance of science-based information for reporting and monitoring at the science-policy interface: A GCOS perspective - 15 minutes
- **Talk 2 (Joana Post, UNFCCC) - 15 minutes:** Recommendations for GCOS from a UNFCCC perspective: Global stocktake and the science dialogue process
- **Talk 3 (Stephen Briggs, ESA) - 15 mins -** CEOS support to the UNFCCC Global Stocktake 2023
- **Talk 4 (Arlyn Andrews, NOAA Global Monitoring Laboratory) - 15 minutes:** Towards an Integrated Surface-to-Space Global Atmospheric Carbon/GHG Observing System: Tracking Emissions and Climate Feedbacks To Support Mitigation Efforts and Improve Climate Forecasts
- **Q&A with audience**

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IDENTIFIED CHALLENGES

RESEARCH

- Improve knowledge of changes in natural cycles to accurately differentiate between natural net fluxes and anthropogenic emissions
- Improve process understanding for inventories, particularly on the allocation of carbon in the system
- Better characterize terrestrial emissions

MONITORING

- Large uncertainties and discrepancies (top-down/bottom-up)
- Move from global to regional and country level: still a way to go
- Challenge for public sector to deal with increasingly privately funded satellite missions
- Improvements needed to deal with time-scales & related uncertainties
- Identify & work to close observing system gaps

ASSESSMENT / POLICY

- Reinforcement needed for communication to policy (UNFCCC): what is needed? What is possible? What is not possible?
- Incoherent messages from different int. groups
- Improve integration top-down / bottom-up
- Promote broad support to IPCC

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DISCUSSED SOLUTIONS

RESEARCH

- Reinforce linkage between model/obs interactions
- Strengthen collaboration between different international programs
- Realize regional demonstrators (coherent across programs)
- Improve model complexity & parametrizations for carbon inventories

MONITORING

- Work to improve satellite retrivals
- Develop and establish tools/frameworks for multi-product & - parameter approaches
- Revise / reinforce obs. syst. requirements
- New and more integrated EVCs
- Strengthen collaboration between different int. programs, and identify / realize regional demonstrators (coherent across programs)

ASSESSMENT / POLICY

- Strengthen collaboration between int. programs, and particularly on message coherency
- Develop demonstrators (across programs) on information need for mitigation, adaptation & finance
- Strengthen collaboration with IPCC, particularly supporting the establishment of guidelines, including through selected demonstrators for specific countries' support

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Potential actions to take forward...

- Identify and collaborate among international programs (e.g. GCOS, CEOS, GEO, ...) on specific regional demonstrators to jointly advance on key challenges identified across research, monitoring and assessment/policy, and aiming to develop storylines on achieved advancements to improve communication to policy (UNFCCC), and to reinforce observing system recommendations, and to contribute to specific country support (IPCC, GEO, UNFCCC)
- Discuss the creation of a task force acting across different international programs (e.g. GCOS, CEOS, GEO, ...) to join forces aiming to improve knowledge of changes in natural cycles to accurately differentiate between natural net fluxes and anthropogenic emissions
- Reinforce exchange across international on ECV specification, revision and addition; observing system recommendations and support to critical guidelines in support of IPCC and GEO.

➔ Discuss specific role of GCOS in support of these identified opportunities in the light of the Implementation Plan.