

WMO International Greenhouse Gas Monitoring Symposium

30 January-1 February 2023

First Circular

Accurate and timely information on greenhouse gases (GHG) in the Earth System is fundamental for the well-being of societies everywhere, has important economic value for individual nations, and is useful to characterize impacts on ecosystems. Globally, reducing emissions of greenhouse gases is the main tool to mitigate climate change according to the last assessment report of the Intergovernmental Panel on Climate Change. The fact that the three most important greenhouse gases, CO₂, CH₄ and N₂O are linked to both anthropogenic and natural processes, and some of those processes are insufficiently well understood and quantified, creates risks of delayed mitigation actions or reliance on the carbon sinks that are subject to climate feedback. Current monitoring efforts are inadequate to provide the information needed to avoid increased adverse climate impacts for all nations, with expected disproportionate impacts on vulnerable countries and populations.

WMO is developing a concept for a sustained, internationally coordinated routine greenhouse gas monitoring infrastructure in consultation with a broad group of stakeholders from both scientific, operational, and policy-setting entities. This builds on WMO's experience with the Global Atmosphere Watch and the Integrated Global Greenhouse Gas Information System, and it incorporates some of the operational practices and globally coordinated and agreed methods used in its World Weather Watch.

The aim of the infrastructure is (i) to facilitate and encourage the implementation of a fit-for-purpose GHG surface- and space-based observing systems based on shared best practices, standards, and timely and improved access to all GHG-related observations, (ii) to improve international coordination of related modeling and data assimilation activities, and (iii) to make progress toward establishment of a practice of utilization of routine products provided by GHG system for post-processing and service provision in a manner that is timely to inform decision making. The data generated by such a system would support delivery of robust, quantitative information to nations and communities everywhere, including the Parties of the Paris Agreement, through the tailoring to address mitigation action.

As part of its effort to seek input to these plans and to further explore the interest in collaborating on their development among stakeholders not traditionally involved with WMO activities, **WMO will host an International Greenhouse Gas Monitoring Symposium in Geneva, Switzerland, on January 30-February 1 2023.** The Symposium is targeted primarily at entities involved in greenhouse gas observations, modeling, data assimilation and related research in all domains of the Earth System. It is open to other interested parties as well.

Among the topics planned to be discussed are:

- Greenhouse gas budgets, impacting processes and associated uncertainties;
- Observations of GHG in different domains of the Earth System to support GHG analysis (surface-, subsurface-, and space-based);
- GHG exchange between different domains of the Earth System, processes description and climate feedbacks;
- Treatment of GHGs in Earth system modeling, required model improvement and quality control procedures;
- Routine, global GHG monitoring systems: input data requirements and intended output;
- Post-processing of global systems output and tools for decision-makers' tailoring;
- Potential contribution of the globally coordinated GHG Monitoring Infrastructure to UNFCCC processes.

The program will include invited and contributed presentations in oral and poster formats. A call for abstracts will be issued during the first half of September 2022.

The Symposium will be held at the WMO building, in Geneva, Switzerland, and it will take place primarily in person. Livestreaming is planned for those who will not be able to attend.

A Symposium Program Committee will be formed, co-chaired by Michel Jean (SG-GHG Chair) and Greg Carmichael (SG-GHG Co-Chair).

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