



## **Progress toward an Integrated Global GHG Information System (IG3IS)**

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Accurate and precise atmospheric measurements of greenhouse gas (GHG) concentrations have shown the inexorable rise of global GHG concentrations due to human socioeconomic activity. Scientific observations also show a resulting rise in global temperatures and evidence of negative impacts on society. In response to this amassing evidence, nations, states, cities and private enterprises are accelerating efforts to reduce emissions of GHGs, and the UNFCCC process recently forged the Paris Agreement. Emission reduction strategies will vary by nation, region, and economic sector (e.g., INDCs), but regardless of the strategies and mechanisms applied, the ability to implement policies and manage them effectively over time will require consistent, reliable and timely information.

A number of studies [e.g., Verifying Greenhouse Gas Emissions: Methods to Support International Climate Agreements (2010); GEO Carbon Strategy (2010); IPCC Task Force on National GHG Inventories: Expert Meeting Report on Uncertainty and Validation of Emission Inventories (2010)] have reported on the state of carbon cycle research, observations and models and the ability of these atmospheric observations and models to independently validate and improve the accuracy of self-reported emission inventories based on fossil fuel usage and land use activities. These studies concluded that by enhancing our in situ and remote-sensing observations and atmospheric data assimilation modeling capabilities, a GHG information system could be achieved in the coming decade to serve the needs of policies and actions to reduce GHG emissions.

Atmospheric measurements and models are already being used to provide emissions information on a global and continental scale through existing networks, but these efforts currently provide insufficient information at the human-dimensions where nations, states, cities, and private enterprises can take valuable, and additional action that can reduce emissions for a specific GHG from a specific human activity. Based upon the recent advances in GHG observation technologies, new data-mining tools for acquiring socioeconomic activity data, and enhancements to the computational models used to merge this data, WMO and its partners are developing a plan for an Integrated Global GHG Information System (IG3IS) able to evaluate the efficacy of policy, reduce emission inventory uncertainty, and inform additional mitigation actions. The presentation will cover the principles and objectives of IG3IS, as well as progress toward answering the questions: What research capabilities are ready and able to deliver useful information for whom? What decisions will be informed? What valuable and additional outcomes will result?