Toward a coordinated Global Greenhouse Gas (GHG) Monitoring Infrastructure

Greenhouse gas monitoring provides critical input to scientific research and support for the implementation of the Paris agreement; however, GHG monitoring currently relies primarily on individual research activities and research funding,

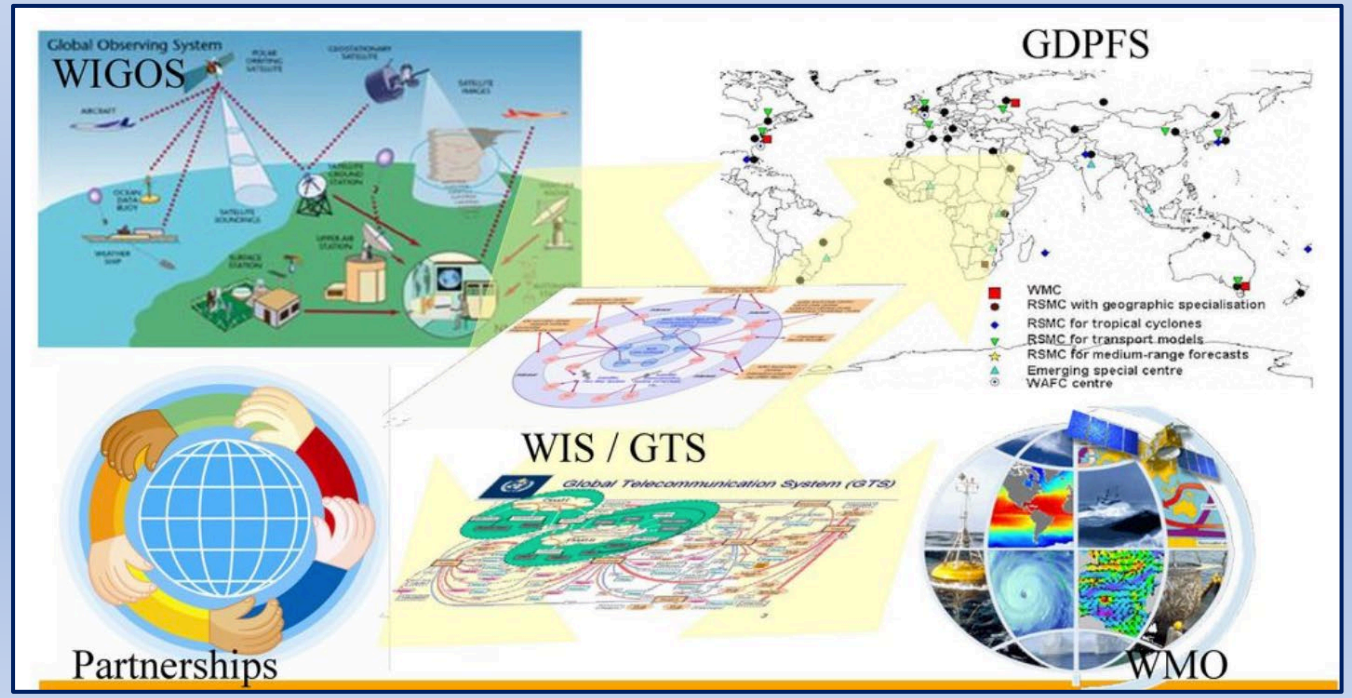
- Important natural sources and sinks terms for GHG still not sufficiently well understood;
- Multiple coordination mechanisms for GHG monitoring exist, but are typically discipline-specific or regional in scope;
- No integration of space-based and surface-based observations; no universal access to observational data;

Conjecture: GHG monitoring would benefit from coordinated, global, operational approach similar to the one taken for weather prediction and climate monitoring

Required infrastructure:

- **Integrated carbon observing system (surface- and space-based);**
- **Earth System modeling with data assimilation tracking CO2, CH4 and N2O;**
- **Timely international exchange of all observations and relevant model data;**
- **Framework for intercomparison of output, possibly also for collaboration on algorithms, model components;**
- **Coupling with ocean and/or land biosphere models;**

The WMO World Weather Watch as a paradigm



Such an approach would help

- **Leverage all existing GHG monitoring capabilities for common goals**
- **Maximize return on investments**
- **Avoid fragmentation of effort, both scientifically and politically**
- **Lead to a consolidated design**

Could facilitate access to funding for the required observing systems in developing countries