



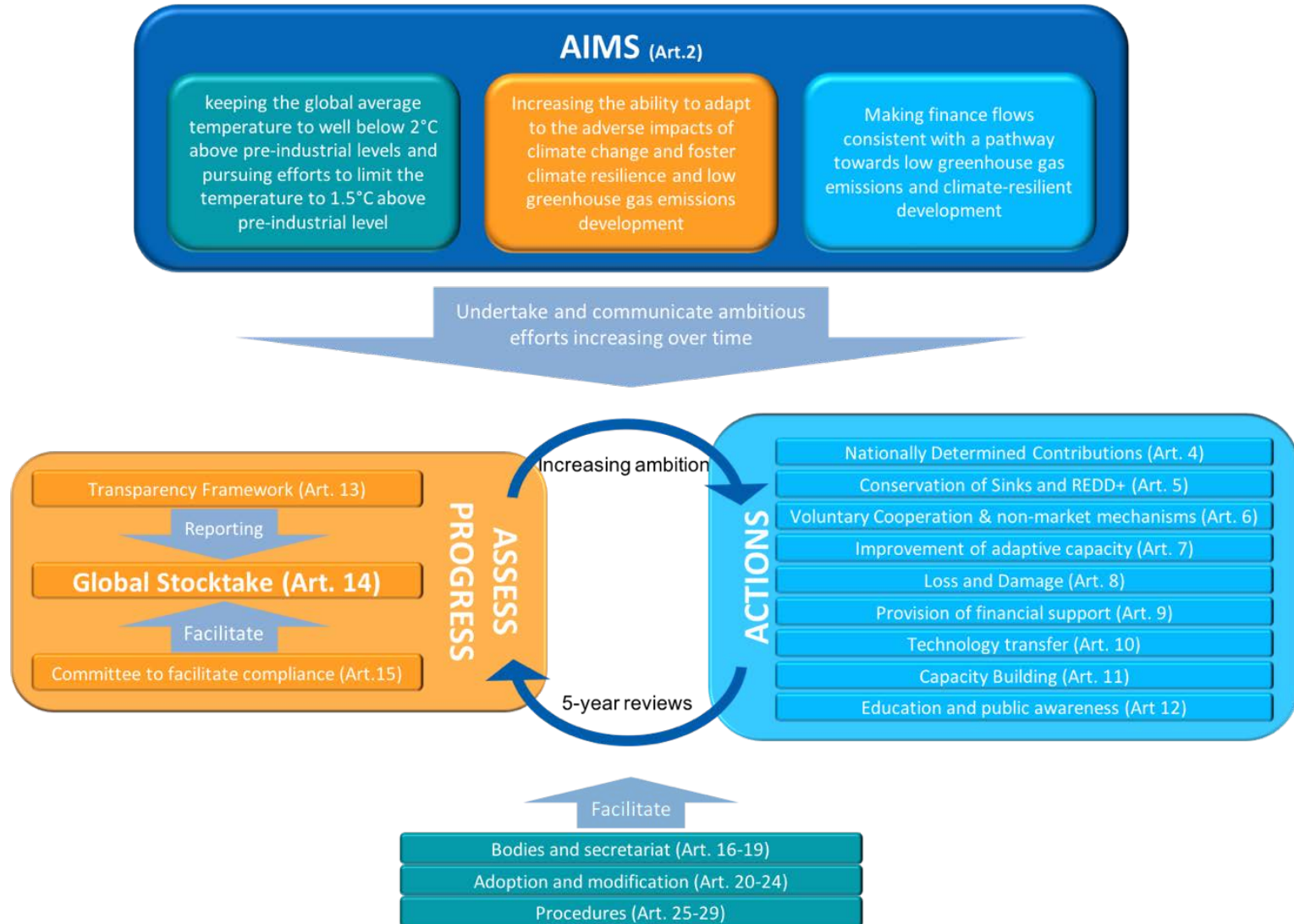
The GEO Carbon and GreenHouse Gas Initiative

Han Dolman

Chair Steering Committee

www.earthobservations.org
www.geoportal.org

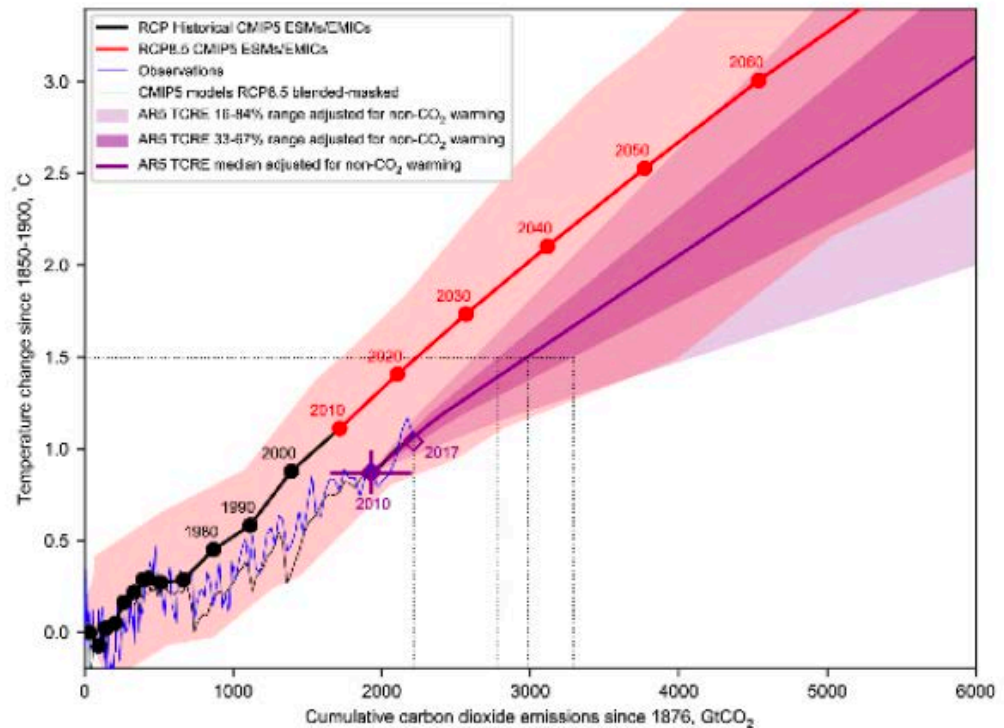
The Paris Agreement



The need for accurate observations

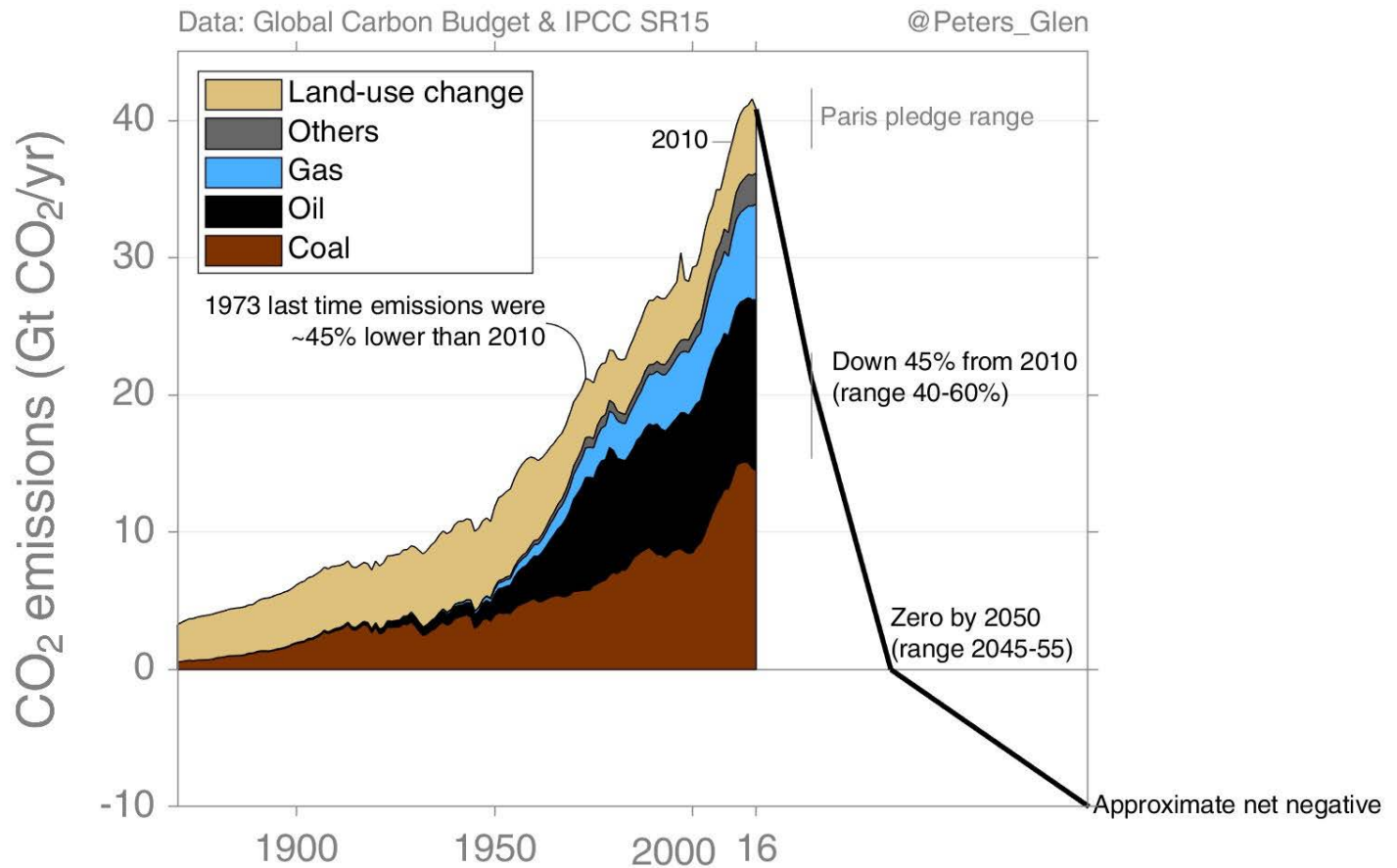
Systematic observations, data and information support:

- National reporting
- Mitigation (adaptation)
- Global stocktake
- Transparency process
- Technical experts review
- Public access to information

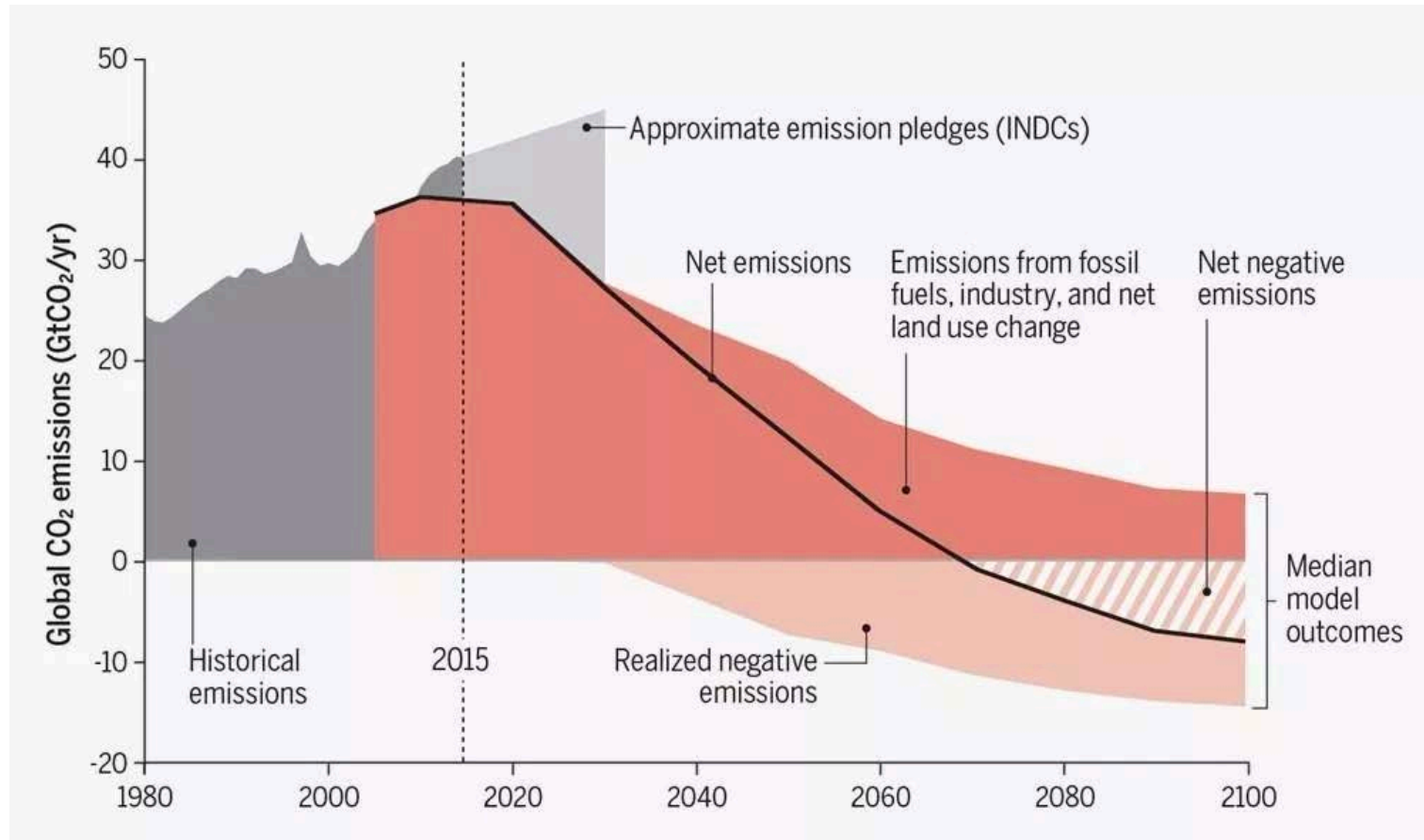


IPCC 1.5° C report

The Real challenge: zero emissions at 2050



The current state of play: NDCs fail short of target



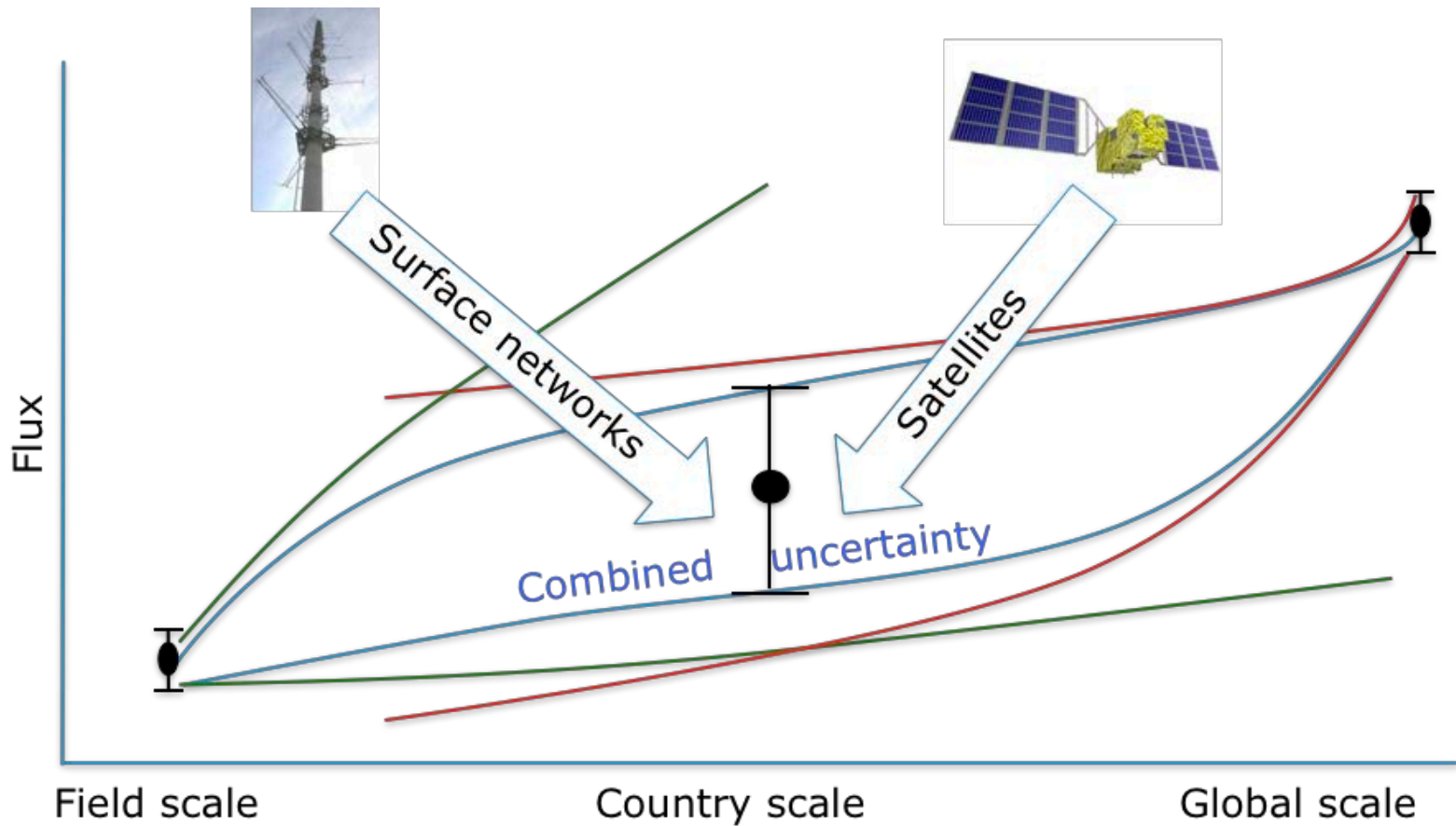
The three challenges for GHG monitoring

- A technological challenge
 - Do we have the right instrumentation, models, satellites...?
- An integration challenge
 - Do we know how to integrate ocean, land and atmosphere, observations and models?
- A communication challenge
 - Do we respond rightly to the demand of policymakers, stakeholders? Do we provide the correct data and information?

The technological challenge

- Do we have the correct amount and type of observations?
- Do we have the correct transport models for data assimilation, inversions?
- Do we have the correct amount and type of observations?
- Where uncertainties meet regional budgets: future satellite requirements
- Can we close country budgets?
- Can we deliver information in time and how, e.g the global stock take?

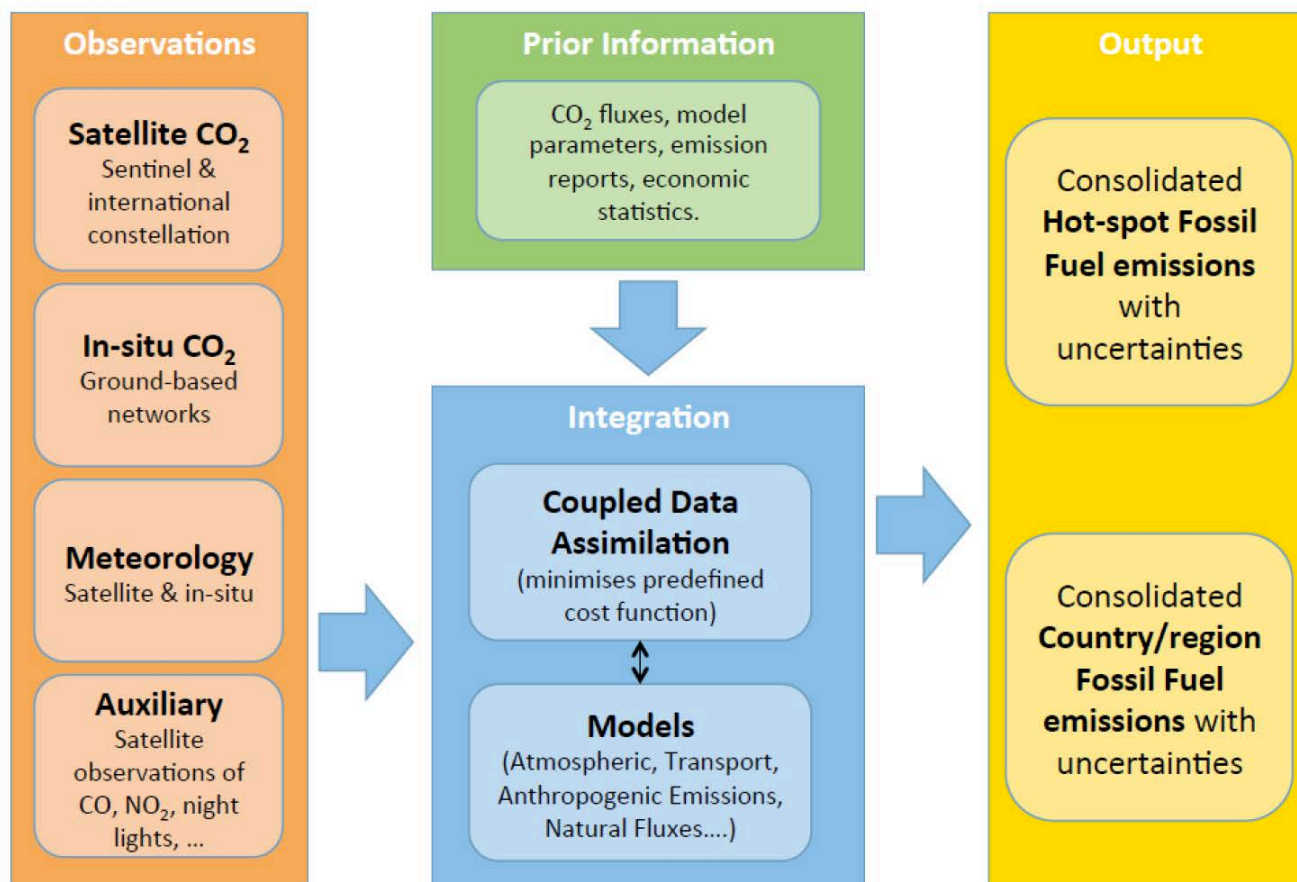
The technological challenge: observations at different scales



The technological challenge: increased focus on fossil fuel

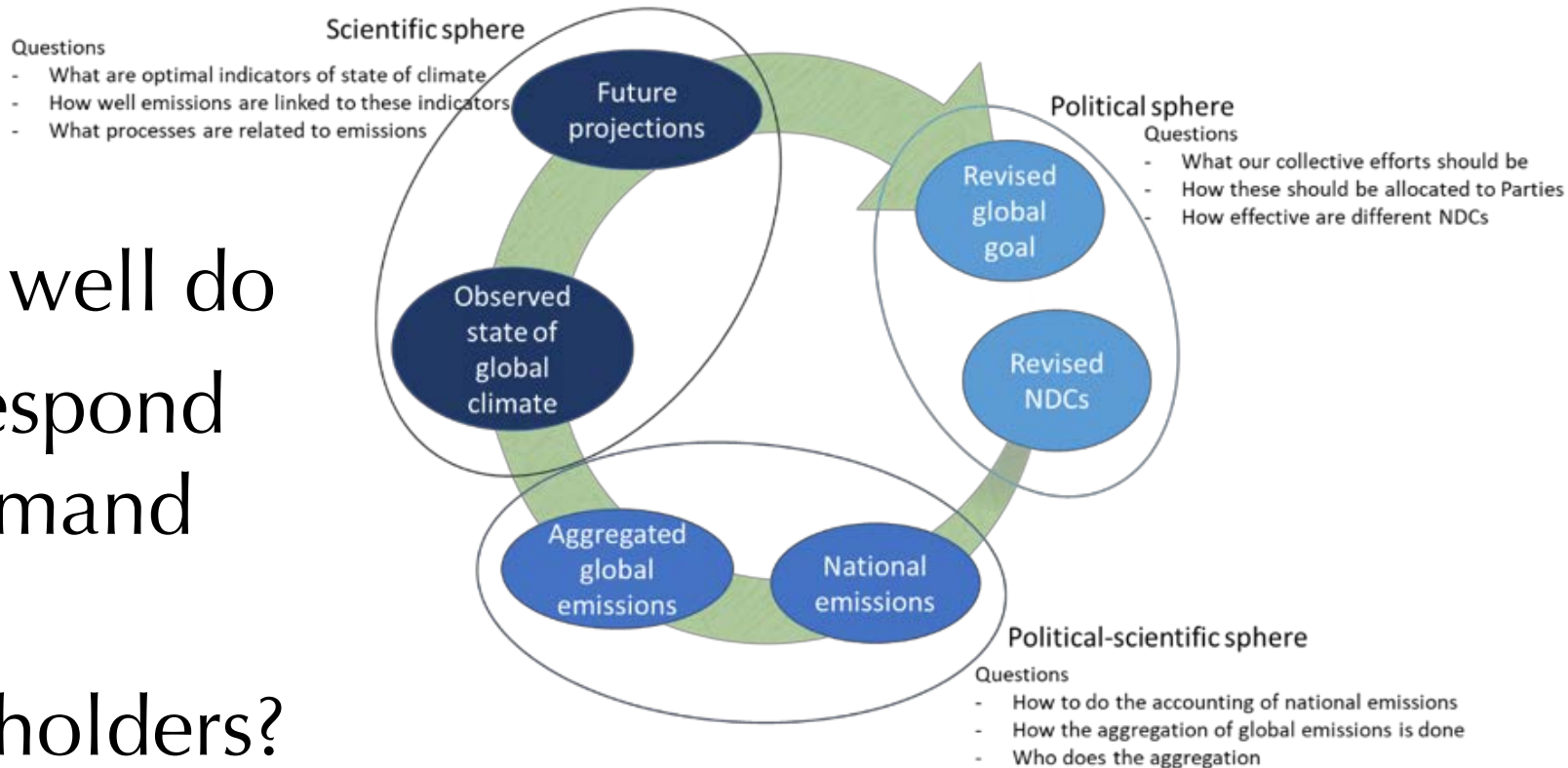
- To be able to detect reductions in fossil fuel we need to focus on fossil fuel emissions (inventories, observations, models)
- Use network design based on key aims
- Extend *in situ* observations to fossil fuel e.g. ^{14}C , CO , NO_2 efforts and use in inversions models
- Identify gaps and find remedies
- Reduce errors in model setup, model structure, *a priori* structure of the inversions through intercomparisons
- Develop means and tools to use future HR satellite data

The challenge of integration

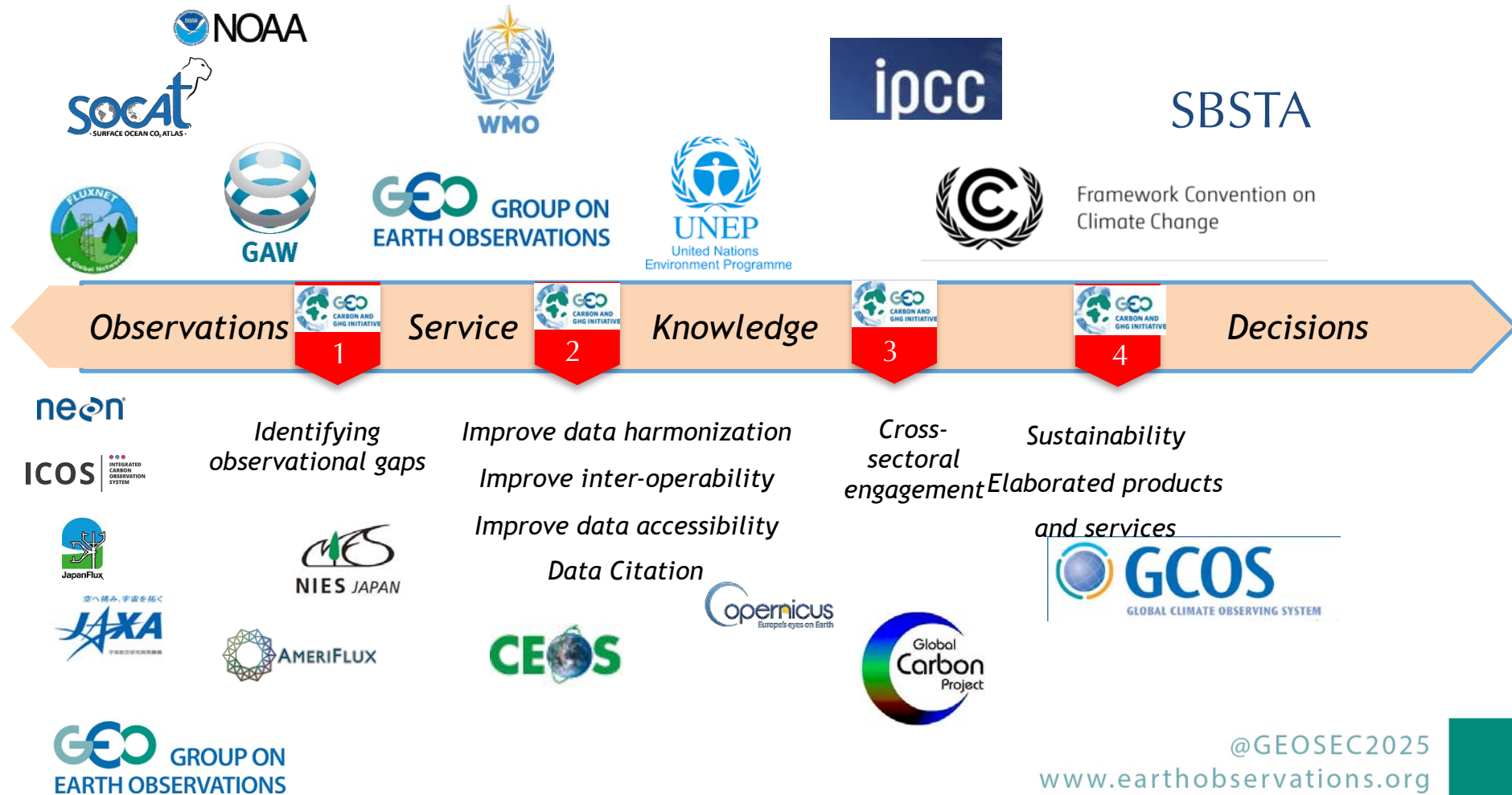


The communication challenge

How well do we respond to demand from stakeholders?



The communication challenge: information flow in a diverse landscape



The tasks of GEO-GHG

- Support the development of a cross-domain, global carbon cycle and greenhouse gas (GHG) monitoring system that provides long-term, high quality and open access near-real-time data and data products;
- Engage with users and policy makers and ensure the fitness-for-purpose of the monitoring system with their needs.
- Establish common terminology and key messages to help all actors (including scientist and decision makers) involved in addressing climate change.

Our mode of operation

- Promote existing efforts, support them where necessary and support new initiatives to fill gaps: data sources, data infrastructures (e.g. portals), data tools (e.g. software), elaborated products (model results, visualisations).
- Build on existing actors and encourage new actors to engage: Research Infrastructures, scientific communities, research programs and initiatives, related institutes.
- Promote existing best practices: open data (e.g. GEOSS Data Sharing Principles, FAIR principles), measurement protocols (e.g. standards by WMO, NOAA and ICOS), EU guidelines (e.g. Inspire directive)

Short term actions

- Provide a global forum for formal and informal discussions;
- Map the carbon observation and modelling landscape;
- Identify observational and modelling requirements to define requirements for an integrated global carbon monitoring system;
- Identify existing gaps in modelling and observation;
- Improve policy science interface, with the aim to produce rapid feedback in both directions;
- Establish common terminology;
- Agree on joint roadmap to reach goals;
- Explore cross-boundary opportunities between science and society

Thank you on behalf of the Steering committee and the GEO-GHG secretariat

