The GEO Carbon and GHG Initiative
A new niche?

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Climate is important for GEO

GEO SBAs

- Biodiversity and Ecosystem Sustainability
- Disaster Resilience
- Energy and Mineral Resource Management
- Food Security and Sustainable Agriculture
- Public Health Surveillance
- Transport
- Sustainable Urban Development
- Water Resources Management

Paris Agreement is one of the three top GEO’s priorities
Challenges towards an effective contribution to the Paris Agreement (PA)

Political and societal demand for climate-related information increased after Paris

Many open questions:
• Do we have the correct amount and type of observations?
• Do we know all the components that need to be taken into account (i.e. observed)?
• Do we know how the natural sinks will react?
• Can we disentangle anthropogenic emissions from natural component?
• Can we close country budgets with observations?
• Can we deliver in time and how?
• ... many other!

Systematic “carbon” observations, data and information can support:
• National reporting
• Mitigation (adaptation)
• Global stocktake
• Transparency process
• Technical experts review
• Public access to information
Challenges towards an effective contribution to the Paris Agreement (PA)

Reducing fossil fuel emissions is key for PA. However, decreasing emissions does not imply a direct slowdown in atmospheric CO$_2$ concentration! Measuring CO$_2$ is not enough!

El Niño effect: weaker land sink

Source (Global Carbon Budget 2018, modified)
GEO-C recognizes that there are already organizations and programs dedicated to global climate observations with a mandate by UNFCCC (e.g. WMO, GCOS, ...).

GEO-C can give an added value contribution by (some suggestions):

1) Providing a global forum
2) Focusing on the land sector
3) Supporting space-based observations
4) Designing in situ research infrastructure
5) ... others?
GEO-C: possible niche
1) Providing a global forum

- building on existing plans and strategies
- facilitate collaborative (cross-disciplines and cross-expertise) actions
- bringing together different communities
- promoting coherence and broad consensus on mutually supportive role and responsibilities.

2) Focus on the land sector

Huge need for improving observations and understanding in the land sector vs. Huge gaps

Source (Global Carbon Budget 2018, Grassi et al., 2017, 2018)
GEO-C: possible niche

3) Supporting space-based observations

A refocused GEO-C, promoting the uptake of remotely-sensed observations could play a complementary role to the work of WMO-GAW and other initiatives more focused on in situ measurements.
GEO-C: possible niche

4) Support designing in situ research infrastructure (monitoring and experimental sites)

In-situ networks are key to:
- provide ground truthing (calibration, verification and validation for RS data)
- provide continuous data (virtually in real time)
- no “satellite-type” gaps (revisit-time, clouds, etc.)
- higher scale (site level) resolution

An optimal design of in-situ monitoring networks is necessary to fully capture variability (ecosystem types, geographic, disturbances, etc.).

Link with the future task ‘GEO In-situ Observation Resources FT’
GEO-C: possible outcomes and products

- **Scientific forum established**, to develop collaborative observations by various institutes and networks.
- **Portal** for long-term, high quality and open access near-real-time “carbon” data and products.
- **Set of “In-situ and satellite Essential Carbon Cycle Variables”** (linking with ECVs) defined.
- **Observational gaps** identified, in support to an optimal in-situ network design.
- Others...

- Linking with the Climate Foundational Task and GEO in situ
- Synergies for what concerns SDGs and Sendai GEO activities

*...to be agreed with WMO (waiting for congress and reform) and conducted in the frame of a broader collaborative global climate/carbon initiative*
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THANKS!

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