



Highlights of a pan-African system for long-term Greenhouse Gas observations

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Background

The improvement of global climate science necessitates the **reduction of uncertainty in greenhouse gas observations** in Africa. A combination of satellite products, ground-based stations, and data centres is needed to optimise emission measurements of **CO₂, CH₄ and N₂O** over the African continent.

1. A scientific assessment of essential variables was performed. A total of **58 essential variables** were rated by experts against **cost, feasibility and relevance**.

2. The concept of an ideal network has been designed by inverse modeling techniques based on **spatial and temporal optimization** of potential observation stations.

3. A dynamic inventory of existing **stations, essential variables, data sets** and related **protocols** is being developed.

<https://seacrifog-tool.sasscal.org>

Expected impact

- ✓ **Food security and climate smart agriculture:** ensure enhanced productivity, income, and appropriate land-use.
- ✓ **GHG inventories:** combine *in situ* measurements at multiple scales and calculated emission factors, in order to provide accurate GHG emission baselines e.g. from crop-livestock farming.
- ✓ **Energy:** improve resource use efficiency through consumption practices suitable for ecological conservation.
- ✓ **Health:** improve air quality research.

Observation

Societal demands for **Essential Variable identification**

- Remote-sensing data
- Ecosystem stations
- Atmospheric stations
- Ocean stations

Scientific criteria & feasibility for **site selection**

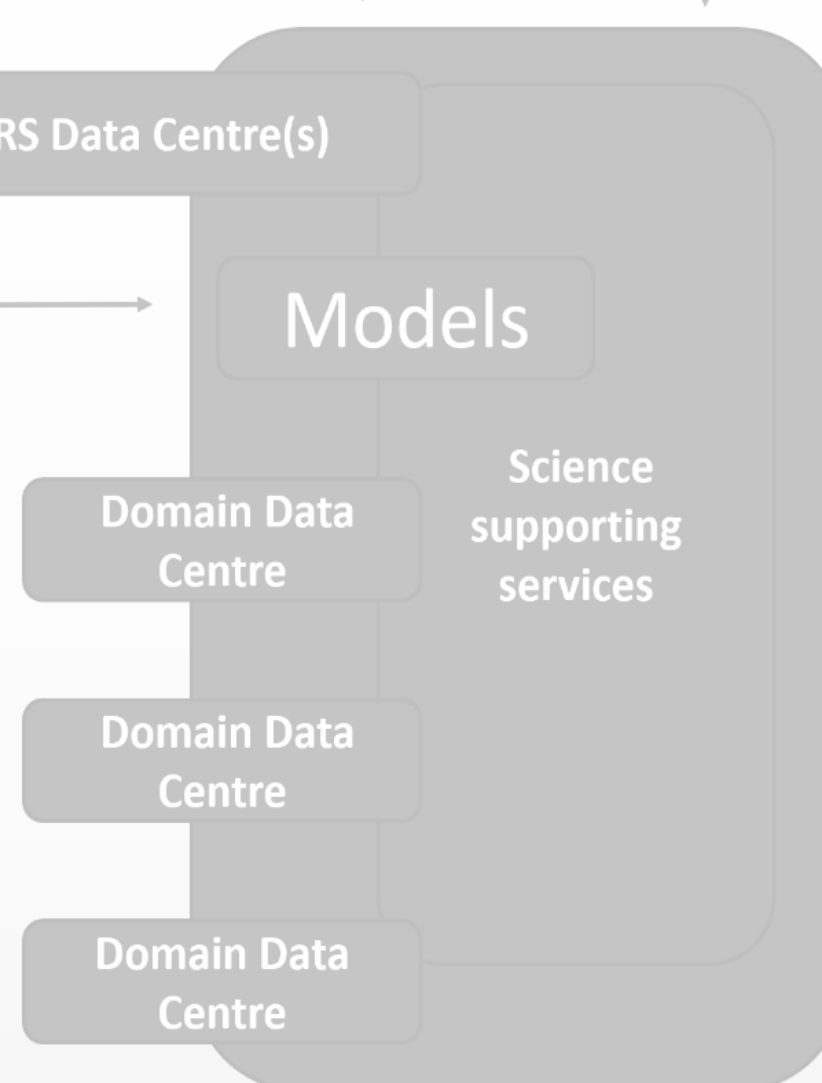
Stakeholder expectations for **Essential Variable identification**

Governance

Who plans?
Who pays?
Who implements?
Who operates?
Local partners key

Data

Specific requirements for Africa
Technical criteria & feasibility



Science

Knowledge & Assessment

vis-à-vis societal, scientific and political demands

Data Policy

Access rights
IPR

Governance

The future structural framework will need a management body coordinating funds, partners and implementing operations of the system.

Figure 1: Overview of the concept

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Sustainability

The sustainability of the system is envisaged through **partnerships, long-term commitment** and **shared governance**. This will involve international, national and sub-national actors.

- ❖ Long-term (30-year initial plus operational cost) cumulated cost with modular extensions estimated at: **400-500 M€**