Geophysical Research Abstracts
Vol. 21, EGU2019-8494, 2019
EGU General Assembly 2019

Filling the gap: assessment and design of an observational infrastructure for the long-term monitoring of GHGs and carbon cycle in Africa.

Matthew Saunders (1), Ana López-Ballesteros (1), Johannes Beck (2), Jörg Helmschrot (2), Antonio Bombelli (3), Veronika Jorch (4), Werner Kutsch (5), and Robert Scholes (6)

(1) Trinity College Dublin, Botany Department, College Green, D2, Dublin, Ireland (saundem@tcd.ie), (2) Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL), Windhoek, Namibia, (3) Impacts on Agriculture, Forests and Ecosystem Services Division, Foundation Euro-Mediterranean Center on Climate Change (CMCC), Viterbo, Italy, (4) Thünen Institute of Climate-Smart Agriculture, Braunschweig, Germany, (5) Integrated Carbon Observation System (ICOS) ERIC, Head Office, Helsinki, Finland, (6) Global Change Institute, University of the Witwatersrand, South Africa

There is currently a lack of representative, systematic and harmonised environmental observations of greenhouse gas (GHG) sources and sinks and related variables across the variety of natural and human-disturbed biomes in Africa. This limits our understanding of the biogeochemical and biophysical processes underlying climate change, its impacts, feedback loops and tipping points across the African continent and surrounding oceans, but also increases the uncertainty of the African contribution to the global carbon (C) cycle and climate forcing. The current and projected socio-economical trajectories for the continent (i.e. the increasing trend of urbanisation as well as population and economic growth) together with the vulnerability of natural and managed ecosystems to climate change make the development of a pan-African GHG research infrastructure (RI) an urgent societal and scientific priority.

The EU-African H2020 SEACRIFOG project aims to design such a pan-African RI for C and GHG monitoring, which could be used to better inform mitigation and adaptation policies as well as to achieve the international Paris Agreement targets. Here we present some key outputs of the SEACRIFOG project including a minimum set of essential variables to be measured, which forms the conceptual monitoring framework from which a harmonised and cross-domain (i.e. considering the atmosphere-land-ocean continuum) research network can be developed. Additionally, we also present an assessment of the current African observational capacity, in regards to ongoing and planned monitoring networks and resulting data products, together with an inventory of methodological protocols that could potentially be applied. Overall, these results support the design of this future RI by identifying the observational priorities while maximising interoperability and harmonization with other global and regional networks.