
Ma-Re / CSIR-SOCCO

3 Post-doctoral Fellowships in the Southern Ocean Carbon – Climate Observatory (SOCCO)

Preamble

The CSIR's Southern Ocean Carbon – Climate Observatory programme is seeking 3 (three) **Post-doctoral Researchers** as part of a collaboration between its Ocean Systems and Climate group and the Marine Research Institute (Ma-Re) at the University of Cape Town (UCT). These appointments are linked to 3 EU H2020 projects in which CSIR-SOCCO is a partner. The opportunities are based in the Rosebank, Cape Town office of the CSIR, formalised through a postdoctoral research fellowship at Ma-Re, UCT. The appointments are for a period of two years (with the possibility of an extension for a third year). The post-doctoral research will align with the science plans of the Southern Ocean Carbon - Climate Observatory (SOCCO); a multi-institutional and inter-disciplinary South African initiative whose aims are to understand the link between climate and the carbon cycle in the Southern Ocean (<http://socco.org.za/>).

About the Fellowships

Post Doc 1: Southern Ocean CO₂ and Heat Uptake: The future role of the Southern Ocean in influencing the rates of global warming depends critically on the sensitivity of its uptake and storage of heat and anthropogenic CO₂. This sensitivity is thought to be largely dependent on the response in the physics of the mixed layer and sea ice system to climate change. This post-doctoral fellowship aims to use air-sea CO₂ re-constructions, high resolution models as well as Earth System Models (ESMs) to examine the climate sensitivity of the mechanisms that explain CO₂ and heat ocean – atmosphere fluxes in the Southern Ocean.

Post Doc 2: Southern Ocean Emerging Feedbacks in Carbon Cycle: The sensitivity of coupled ocean – atmosphere physical and ocean biogeochemical mechanisms to climate forcing can lead to regional non-linear responses that lead to changing feedbacks, thresholds of abrupt change and tipping points. This post doctoral fellowship aims to use the South African ESM in combination with other CMIP6 models to examine how non-linearities in the carbon cycle can be linked to specific physical and biogeochemical mechanisms, their scales and dynamics in the Southern Ocean.

Post Doc 3: Southern Ocean Biogeochemical Model Development: The sensitivity of the ocean biological carbon pump to climate forcing is critical to project changing carbon feedbacks in the second half of the 21st century, particularly in the Southern Ocean. SOCCO is looking for a biogeochemical modeller for model development through improved parameterisations of physiological processes for phytoplankton in coupled biogeochemical-physical models. Experience is required in parameterisations for functional responses to multiple drivers. In addition the post-doc is expected to work with observational data collected under varying conditions that will be used to derive and implement new relationships into numerical models. Some experience in observational oceanography / biogeochemistry would be beneficial.

Equipment and resources

The infrastructure available to support this work includes: high precision lab and ship CO₂ observations; high precision ship-based underway pCO₂ observations; high precision wave glider based pCO₂ and pH observations; high resolution buoyancy glider physics and bio-optics; high resolution ocean modelling capabilities on the Centre for High Performance Computing and the South African Earth System Model.

Key responsibilities

- To initiate further independent research within the strategic objectives of the current programme
- Assist with PhD/MSc supervision of students in support of the SOCCO/UCT-Ma-Re human capital development mission
- Lead, assist and supervise field data collection and model development
- Contribute to the writing of numerous reviewed journal publications, of which the successful candidate would be expected to be the lead author of at least two.

Eligibility

The Fellowships are open to any eligible person, preferably South African, who can carry out its objectives. Possession of a PhD degree which has been obtained no more than five years ago is a minimum requirement. Eligible candidates may not have held any academic or permanent professional positions since achieving the PhD. The research to be conducted by the Fellow will be under the general supervision of the Departmental Supervisor at the University of Cape Town and the Fellow will be registered in the Department of Oceanography at UCT.

As part of the Fellow's professional development, the successful candidate will be required to participate in limited teaching and co-supervision of MSc and PhD students.

The required entry skills are:

- A PhD in Ocean CO₂ or biogeochemical modelling and or observations but with some modelling experience

- Experience in acquiring and processing large global data sets as well as running and analysing model outputs
- Proficiency in Python coding.

Value and Tenure

The value of the Fellowship award is R350 000 per annum. Postdoctoral Research Fellowships are non-taxable, meaning that Fellowships must be granted without fringe benefits and no services are required of the successful candidate in return for the Fellowship beyond the agreed research activity.

The Fellowship is offered for two years + one year depending on the availability of funds and the Fellow's performance.

Conditions of Award

- The postdoctoral research fellowship is available only to individuals who have achieved the doctoral degree within the past 5 years
- Applicants may not previously (since achieving the PhD) have held full-time professional or academic positions
- No services beyond the scope of the research fellowship are required in return for the Postdoctoral Fellowship award
- No benefits or travel allowances are included in the value of the fellowship
- The successful incumbent must comply with the University's approved policies, procedures and practices for the postdoctoral sector.

Applications

To apply, send an email application to the Director of Ma-Re at the University of Cape Town, Associate Professor Marcello Vichi (Marcello.Vichi@uct.ac.za) and attach:

- letter of application describing research experience, interests, and collaborative experience
- a curriculum vitae and list of publications
- certified transcripts of academic qualifications at tertiary level
- contact information for two (2) scientific referees.

Applications will stay open until the positions are filled. However, it is anticipated that the Fellowships will commence by October 2020.

Applicants will be considered by a sub-committee within the Marine Research Institute.

The University of Cape Town reserves the right to disqualify ineligible, incomplete and/or inappropriate applications.

The University of Cape Town reserves the right to change the conditions of award or to make no awards at all.