CAREER OPPORTUNITY

The Council for Scientific and Industrial Research (CSIR) is a leading scientific and technology research organisation that researches, develops, localises and diffuses technologies to accelerate socio-economic prosperity in South Africa. The organisation’s work contributes to industrial development and supports a capable state.

Post-Doctoral Fellowships

About the job:

The CSIR has three opportunities for Post-Doctoral Fellowships in the Southern Ocean Carbon and Climate Observatory programme (SOCCO), within the Smart Places cluster, and hosted at the Marine Institute (Ma-Re), UCT. The purpose of the fellowships is to conduct research in line with three H2020 projects in which SOCCO is a partner. The positions are offered as a two-year contract with the possibility of extension for a third year. These opportunities are based in Rosebank, Cape Town.

For more information about the programme and cluster please visit http://www.socco.org.za and http://www.csir.co.za/smart-places respectively.

Fellowships:

- **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 fellowship aims to use air-sea CO₂ reconstructions, high resolution models as well as Earth System Models (ESM) to examine the climate sensitivity of the mechanisms that explain CO₂ and heat ocean-atmosphere fluxes in the Southern Ocean.

- **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 fellowship aims to use the South African ESM 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.

- **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. For this fellowship the successful candidate will be a biogeochemical modeller, who will be responsible for model development through improved parameterisations of physiological processes for phytoplankton in coupled biogeochemical-physical models. This will be done based on experience in parameterisations for functional responses to multiple drivers. Observational
data will be collected under varying conditions that will be used to derive and implement new relationships into numerical models.

**Key responsibilities:**

- Initiate further independent research within the strategic objectives of the current programme;
- Assist with Master’s and Doctoral 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, and be the lead author of at least two.

**Qualifications, skills and experience:**

- A Doctoral degree in Ocean CO₂ or biogeochemical modelling and/or observations, with experience in modelling;
- Experience in acquiring and processing large global data sets as well as running and analysing model outputs;
- Proficiency in Python coding.

**Closing date:** 15 May 2020

PLEASE NOTE THAT FEEDBACK WILL BE GIVEN TO SHORTLISTED CANDIDATES ONLY.

For more info, please contact the CSIR Recruitment Centre on 012 841 4774 or email us at Recruitmentinfo@csir.co.za

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