

Dr. Marjolaine Krug from the Oceans and Coast branch of the Department of Forestry, Fisheries and Environment will be the recipient of the 2021 Africa Award for Research Excellence in Ocean Sciences. This award was established in 2015 and is awarded annually by the American Geophysical Union. The expectations for this award include “*significant original contributions to Earth or ocean science research in Africa, excellence in research, student mentorship, acting as the main driver of the science when working in collaborative teams, and outstanding service and outreach to society.*”

Dr Marjolaine Krug is a physical oceanographer with expertise in satellite oceanography and ocean glider observations. Her research has focused on the dynamics and variability of the Agulhas Current as well as interactions between the Agulhas Current and the coastal and shelf regions.

Since her PhD graduation in December 2011 from the University of Cape Town, Dr Marjolaine Krug has established a strong reputation both nationally and Internationally. Dr. Krug published a number of seminal papers which significantly increased our understanding of the Agulhas Current and its variability. In her first paper stemming out of her PhD in 2010, Dr Krug’s innovative use of Synthetic Aperture Radar information enabled the mean structure of the Agulhas Current to be mapped at a higher spatial resolution than ever before. She was also the 1st to highlight the seasonal variability in the Agulhas Current using observations from satellite altimeters. Her ability to develop an algorithm to objectively track large meanders in the Agulhas Current allowed to show that their frequency is far less than previously understood. Her methods have led to a new algorithm, the Location of the Agulhas Current's Core and Edges (LACCE), which was very recently published (Rosso et al., 2021) and can be used operationally to track the Agulhas Current. Dr Krug has mentored and supervised a number of students. One of the highlights in her role as a supervisor was to be part of her first PhD student discovery of a new current along the South west coast of Madagascar (Ramanatsoa et al. 2018).

One of Dr Krug’s major achievements as a researcher was to pioneer the deployment of underwater ocean gliders in the Agulhas Current, one of the strongest currents in the world. In 2015, Dr Krug led the 1st deployment of underwater ocean gliders in the Agulhas Current as part of the Shelf Agulhas Glider Experiment (SAGE) and between 2017 and 2019, she undertook 3 more ocean glider deployments in the Agulhas Current region as part of the [Gliders in the Agulhas \(GINA\)](#) initiative and in a contribution to the *CAPTOR Project* (Connectivity And disPersal beTween prOteCted aReas), a programme led and supported by ORI/SAAMBR and funded by the African Coelacanth Ecosystem Programme (ACEP). Underwater gliders are robotic platforms piloted from the land and which can measure a range of physical, biological, and biogeochemical variables such a temperature, chlorophyll, oxygen, salinity and more. Piloting these gliders in the fast and powerful Agulhas Current proved very challenging but it also shed new understanding the variability of the current at small spatial scales and its impact on coastal regions (Krug et al., 2017; Tedesco et al., 2019). While there have been no new deployments of underwater gliders along South Africa’s coastline since 2019, those initial deployments demonstrated the feasibility and the value of ocean gliders as real-time observing platforms for interdisciplinary research.

Dr Krug is involved in a number of international panels. She is a member of the GOOS Physics and Climate panel (the Ocean Observations Physics and Climate panel - OOPC) and the chair of the OOPC-led Boundary System Task Team. She is an associate researcher at the Nansen Tutu Center for Marine Environmental Research and University of Cape Town Oceanography Department.

Dr Krug is currently employed as a senior scientific advisor to the South African Department of Forestry, Fisheries and the Environment (DFFE), where she leads the development of the Oceans and Coastal Information Management System (OCIMS).

In response to the award, Dr Marjolaine Krug made the following statement:

I was born in France and came to South Africa in the late 1990s. This country captured my heart and has now been my home and the home of my children for over 2 decades. I am deeply honored to receive this award and even more happy to be the 1st female recipient. Many on this continent have not had the same privileges as I have and I would therefore like to dedicate this award to all the African women who were robbed of their potential due to past injustice. At the same time, I am extremely encouraged by the increasing pool of talented African scientists that is emerging, such as my colleagues Dr Lauren Williams, Dr Tarron Lamont, Dr Issufo Halo and many others. I have no doubt that many of them will be nominated for the award in the forthcoming years and I am happy that I will be able to play a role in that.

I have had the pleasure to work alongside some really great people in the last 10 years such as Prof Seb Swart, Prof Pierrick Penven, Dr Fabrice Collard and many others. I am grateful to Prof. Mathieu Rouault for demystifying the idea of what academic research is and for the support of the Nansen Tutu Center for Marine Environmental Research over the years. I also want to thank Prof Juliet Hermes for amongst other things, suggesting that I apply to be part of the OOPC panel. Working alongside accomplished international researchers at the OOPC who are driven to make a difference has really broadened my perspective. Many wonderful female scientists have inspired me and tried to give me a hand up along the way such as Prof Lisa Beal and Prof. Bernadette Sloyan.