SOUTH AFRICAN NETWORK FOR COASTAL AND OCEANIC RESEARCH

CALL FOR 2018 SANCOR POSTDOCTORAL FELLOWSHIP

Managed by the Knowledge Fields Development Directorate of the NRF

Contact person: Carmen Visser Tel: (021) 402 3536

Email: Sancor@daff.gov.za

Strategic Framework Document

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1. EXECUTIVESUMMARY

The National Research Foundation (NRF) on behalf of the Department of Science and Technology (DST) is offering South African Network for Coastal and Oceanic Research (SANCOR) Postdoctoral Fellowships.

SANCOR invites recent recipients of a doctoral degree to apply for postdoctoral scholarships valid for a period of 24 months to conduct research in the marine and coastal environment. Research should be based on the broad themes as set out in SANCOR's research agenda. The total award is R200 000 per annum. These fellowships are expected to stimulate research and to encourage the development of early career scientists.

2. STRATEGIC CONTEXT

SANCOR is funded by the DST and managed by the NRF. SANCOR is a non-statutory body that generates and communicates knowledge and advice in order to promote the sustainable use and management of the marine and coastal environments. SANCOR's vision is to protect/conserve the health of marine and coastal environments, rich in opportunities for human advancement and managed on the basis of excellent information, generated through well-coordinated research and development of scientific capacity. It aims to promote, facilitate and co-ordinate excellence in marine and coastal research and education for the benefit of South Africa.

SANCOR's objectives are to:

- provide and maintain a forum for interaction and collaboration, to exchange information on regional, national and international development in science in the marine and coastal environments (SMCE) and allow issues to be brought for debate and approaches developed for their resolution,
- contribute to strategies for SMCE, which take into account present and expected future demands on the marine and coastal environments and resources in southern Africa,
- co-ordinate and integrate SMCE activities aimed at achieving specific objectives, *inter alia* by stimulating appropriate inter-disciplinary and inter-institutional activities,
- contribute to the development and optimal utilization of financial, technical and logistical resources,
- promote capacity building, leading to full participation in SMCE activities by all sectors,
- market the benefits of SMCE and promote the use of its findings in the management of South Africa's marine resources,
- act as a link between funding agencies, both national and international, and agencies capable of executing SMCE projects.

SANCOR promotes the development of emerging scientists by offering postdoctoral fellowships in research in the marine and coastal environment.

3. OBJECTIVES OF THE POSTDOCTORAL PROGRAMME

The objectives of the SANCOR Postdoctoral Fellowship programme are to:

- encourage and promote the development of young researchers and offer an opportunity to further their careers by gaining professional research experience,
- produce highly skilled scientists to build capacity in the marine sciences and to increase the number and quality of South African post-doctoral fellows within the SMCE in South Africa, leading to an internationally competitive and transformative research system.

4. RESEARCH SCOPE OF SANCOR POSTDOCTORAL PROGRAMME

The proposed research should address at least one of the broad themes from SANCOR's Programme outlined in the table below.

For the purposes of this programme, the definition of an ecosystem is deliberately wide, ranging from very large-scale entities (LME-scale) to very small (habitat-level, such as rocky shores, sandy beaches, etc.).

The structure provided in this document is intended to describe the thinking behind the programme, rather than 'packaging' the research. Projects will not necessarily be expected to fit within only one programme theme, but may span two or more themes depending on the question(s) asked and the scientific emphasis of the project.

The first theme, **Ecosystems and Change**, is concerned specifically with changes in marine ecosystems over space and time. The second theme, **Ecosystems and Society**, emphasizes the interactions between natural ecosystems (or parts thereof) and human societies and will accommodate both quantitative and qualitative research. The third theme, **Ecosystem Function and Biodiversity**, concentrates on explaining the fundamental structure and functioning of ecosystems and the factors that influence the dynamics of these systems. Finally, the fourth theme, **Marine Biotechnology**, supports research towards the development of new products and processes involving marine organisms. Integration across the research themes is encouraged.

SANCOR's Broad Research Themes

Theme 1: Ecosystems & Change Temporal and spatial changes in marine ecosystems, including climate change and variability, biogeographic studies, etc.		
Documenting change	Drivers of change	Effects of change
There is a recognized need to develop capacity to document change. The following are examples of the types of research which would document	**Three major drivers of change are recognized. These include natural change, climate change, and change as a result of direct human intervention (such as**	**Some examples of research related to the effects of change include:** Ecosystem resistance, stability,

change: Biology and effects of invasions Changes in ecosystem states Ecosystem variability Changes in species distribution, range extensions Indicators of change, including top predators Past changes – long-term geological Harmful Algal Blooms Uncertainty and risk Baseline studies Low Oxygen events Physical processes - Sea level, shoreline change, etc. Observation science, including amalgamation, assimilation and analysis of long-term data, and new methodologies for the analysis of long-term data Changes in UV radiation and its effects on organisms and ecosystems Estuarine functioning and biodiversity	**resource extraction, invasions, pollution, coastal engineering, etc.). The following are envisaged as examples of such research:** Seeking correlates and causes of biological and physical change Relationships between physical and biological change Uncertainty and risk Linkages between marine and terrestrial systems Linkages with hydrology and change, and hydro-geographical links Human dimensions of ocean and coastal change (as driver, context, recipient) Changes in UV radiation and its effects on organisms and ecosystems Marine-coastal interface, including the estuarine interface	resilience, and thresholds to these Adaptive management (also forms a component within the Ecosystems & Society theme) Implications for, and feedbacks to, international agreements Ecosystem health Changes in ecosystem states Ecosystem effects of fishing Predictive capability and modelling (physical processes, biological processes, linkages with human systems, etc.) Harmful Algal Blooms Linkages between marine and terrestrial systems Marine-coastal interface, including the estuarine interface Linkages with hydrology and change, and hydro-geographical links Ocean-atmosphere-land interactions and linkages Human dimensions of ocean and coastal change (as driver, context, recipient) Ecotoxicology & marine pollution studies Changes in UV radiation and its effects on organisms and ecosystems Prediction around compounded effects of drivers of change, e.g. of climate

		change on invasions Responses of biogeographic regions to climate change, land-sea interchanges

Theme 2: Ecosystems & Society Interactions between ecosystems (and their components) and societal processes, including human activities and development in the coastal environment, such as tourism and marine aquaculture, governance and compliance etc. This programme theme should consider interactions between ecosystems and society in both directions, *i.e*. societal influences on marine and coastal environments, and influences of these environments and happenings therein on society. Research within this theme must have a direct link with the ocean or coastal environment, and incorporate the consequences of climate change.		
Documenting the interactions	Understanding the interactions	Managing the interactions
People dynamics affecting ecosystems/ Impact of people on ecosystems Land-based sources of marine pollution, especially storm-water Effects of improved technology Coastal developments – monopolization of the coastline, inappropriate engineering, pollution Infrastructure development (increased shipping, inappropriate engineering, etc.) Marine natural hazards, extreme natural events Tourism interactions with the ecosystem and society – positive and negative Bather (and coastal water user)	Impact of lack of natural resources, lack of access, etc. on society Values placed on ecosystems and resources, in economic and other terms Disentangling direct anthropogenic change from larger-scale change Poverty, coastal livelihoods, population health Common-property resources	Impact of environmental policies and political decisions on ecosystems and on society Role of education and awareness programmes in promoting responsible interactions with the environment Co-management systems, community involvement in management Allocation of rights Tenure regimes Disentangling direct anthropogenic change from larger-scale change Compliance – fisheries and other Risk management (including from pollution, marine natural hazards, etc.), contingency planning

safety issues Coastal infrastructure vulnerability; oceanographic features/hazards		Sustainability research Common-property resources Transfer of knowledge

Theme 3: Ecosystem Function & Biodiversity Ecosystem structure and functioning, and factors influencing ecosystem dynamics, including biodiversity, conservation, ecology, etc.	
Definition and delimitation	Ecosystem processes
a. Definition and delimitation of the physical environment Recruitment patterns and processes Defining bioregions, ocean provinces, regional and geographic definition Seabed mapping Near-shore oceanography (physical and biological oceanography) Chemical oceanography Mapping biotopes (*e.g*. reefs, seamounts, etc.) b. Composition of the biota Biodiversity Taxonomy & systematics Species delimitation and genetic boundaries Assemblage structure Ecological interactions Offshore and deep-sea biota (from 30m depth) Taxonomic gaps (particularly small, deep-sea, microbial) Taxonomy of larval stages Fish taxonomy (in light of fish taxonomists retiring and leaving the system) Microbial ecology c. Organization of the ecosystem Trophic composition Species diversity Microbial ecology Energy and material flows	a. Physical Waves Wind Tides Currents Rivers Temperature Turbidity Upwelling Near-shore oceanography (physical and biological oceanography) Land-sea interactions, e.g. freshwater requirements of marine environments, etc. b. Geological Sedimentary composition Sediment transport Rock type Geological history c. Chemical Accumulations in sediments Nutrients and nutrient fluxes Iron limitation Salinity d. Biological Dispersal and recruitment Migration and movement patterns Seasonal cycles

	Productivity Eco-physiology Larval-adult linkages/ relationships Species interactions (predation, competition, etc.) Evolutionary responses and studies Processes driving biogeographic and genetic patterns Eco-physiology Evolutionary responses and studies

Theme 4: Marine biotechnology Research towards the development of innovative processes and products involving marine organisms. Some examples of research within six subject areas are provided.		
Marine aquaculture •Genomics •Genetics •Diseases •Transgenics •Nutrition and sustainable feeds •Microbiological interactions and applications •Improved performance & sustainability in marine aquaculture •New organisms •Developmental biology & processes •Bioremediation	Genomics, proteomics and metabolomics •Developmental biology (larval development, etc.) •Molecular biology and biotechnology •Cell culturing •Biomarkers & biosensors (stress responses, etc.)	Marine bioactive compounds and bio-products •Bio-prospecting •Algal biotechnology •Bio-fouling •Marine microbial biotechnology •Biomineralization •Biomaterials •Nanobiotechnology •Bioremediation
Marine bio-energy •Carbon sequestering •Biomass conversion •Hydrogen and methane production from marine organisms	Oceans and human health •Bioremediation •Harmful algal blooms •Endocrine disrupters (*e.g*. hormone inputs, etc.) •Food safety (contamination, etc.) •Heavy metal contamination •Human nutrition – new products and improvements, promoting consumption of sustainable marine products, etc.	Social and policy issues in marine biotechnology •Ethics •Introduction of alien species •GMOs and related societal issues •Access rights and issues and benefit sharing arrangements •Environmental rights •Bio-piracy

5. *MODUS OPERANDI*

5.1 Eligibility Criteria

- Applicants should have received their doctoral degrees within a period not exceeding five years prior to application,
- Applicants who are currently completing their Doctoral dissertation for submission may apply however, **awards that are not taken up by 30 September 2018 will be automatically cancelled by the NRF**;
- Applicants should not be a full time or part-time employee of higher education institutions or any other research institution.
- The applicant must be based at a recognized South African research institution.
- The applicant may not hold an NRF grant-holder linked bursary concurrently with an NRF free-standing bursary or any other NRF grant
- The applicant may hold only one bursary from either the NRF or another state-funded organisation at any one time

5.2 Duration, value and rules of the award

- The fellowship is valued at R200 000 per annum, and is tenable for two years, renewable annually subject to satisfactory progress.
- The fellow must be based at the research institution throughout the scholarship period.
- A mentor must be identified at the host institution.
- The host institution of the fellow shall be required to commit to providing co-funding, a workspace and other necessary resources such as office space, computer and laboratory facilities.

5.3 Assessment Criteria

The following assessment criteria shall apply:

- Candidate's academic merit and potential for successful research as shown by his/her graduate record, publication record, conference proceedings, prizes, awards and letters of recommendation.
- Citizenship of the applicant. Preference will be given to SA citizens or permanent residence holders.
- Equity and redress of the applicant.
- Significance of the research in terms of the problem statement. The proposed research must address SANCOR's research scope.
- Relevance and applicability of the research approach/methodology.
- Potential impact of the research on science and the benefits to society.
- The access and the availability of the required infrastructural support from the host institution (such as office space, computer and laboratory facilities. etc.) as well as additional funding.

5.4 Funding Decision

The NRF's funding decisions will be informed by the assessment committees' accumulative grading of each assessed application. NRF grants will be made according to the **normal granting rules** as per NRF Policy.

6 APPLICATION PROCEDURE

Applicants must apply online at https://nrfsubmission.nrf.ac.za and follow the application procedure set out in the call document. Hard copy application will NOT be accepted.

NB! The applicant must ensure that their CVs are fully updated in the NRF Online Submission System, as these will be used in the assessment process.

Required documentation:

- Completed application form.
- The full CV of the applicant completed on the NRF Online Submission System at https://nrfsubmission.nrf.ac.za.
- Copies of academic transcripts and certificates for previous degrees and PhD degree.
- Two reference letters from academics with whom the applicant has worked.
- Approval from the host institution indicated in a letter from the mentor confirming: i) the use of facilities and ii) the provision of additional financial commitment (such as supplementation of the running expenses, basic facilities, etc.)

Should you encounter online problems, please contact the NRF Support Desk at supportdesk@nrf.ac.za.

CALL CLOSES: 27 JUNE 2017

Conditions of award: The following grant conditions, among others, must be accepted before the award will be honoured.

1. The grant can only be used for the stated purpose.
2. The award is made according to the NRF's standard financial and grant policies.

Incomplete submissions will not be considered by the selection committee. Late applications will not be considered.

7 SCORECARD ASSESSMENT

The purpose of the scoring system is to evaluate applications in order to determine applicants that are most deserving of the limited funds available. All research proposals submitted to the NRF for funding are evaluated according to the predetermined criteria. Each area is given a weight to indicate its relative importance. Kindly consult the table below for details on the criteria used as well as their relative weighting.

Scorecard for the Assessment of Proposals for Postdoctoral fellowships

Criteria	Sub-criteria	Details	Weight (Total = 100%)
Status of the applicant	Academic merit	The applicant's academic track record which could include publications, conference proceedings, prizes and awards.	20%
	Equity and redress (applies only to SA citizens)	Race and gender of the applicant. BF=4, BM=3, WF=2, WM=1.	10%
	Citizenship of the applicant	Preference will be given to SA citizens or permanent residence permit holders. SA citizen/permanent resident = 4; SADC = 3; Rest of Africa = 2 and Other = 1	10%
Proposed research	Significance of research	Significance of the research in terms of the problem statement.	30%
	Appropriateness of research approach/methodology.	Details of the proposed research approach / methodology to be implemented.	15%
	Potential impact to science and society	In what ways will the research training contribute to the advancement of science in South Africa and how will it benefit society in South Africa?	15%
			100%

8. REPORTING

For continuous monitoring of progress, the awardees will be required to submit an Annual Progress Report (APR), in a format provided by the NRF, against deliverables as outlined in the application form and the signed Conditions of Grant. It is a requirement of the award that awardees are to write one SANCOR Newsletter article and to prepare one presentation in their local region per year.

9. CONTACT DETAILS

REFER ALL TECHNICAL QUERIES TO:
SUPPORT DESK
012 481 4202
Supportdesk@nrf.ac.za

REFER ALL OTHER QUERIES TO:
CARMEN VISSER
021 402 3536
sancor@daff.gov.za