



## OceanSAfrica: Developing Operational Oceanography Capabilities for Africa

OceanSAfrica is a multi-institutional initiative that will develop operational oceanography capabilities in South Africa and Africa. Conceived at the first African Operational Oceanography Meeting held in Cape Town in July 2009 under the auspices of the African Centre for Climate and Earth Systems Science (ACCESS), the first phase of the initiative has made significant national advances. It will now enter a second phase designed to build and showcase substantial national, regional and African capabilities as explicit components of international marine operational programmes. It has several primary aims, designed to strongly leverage existing national and regional achievements into African capabilities:

1. Provide a strategically-directed *platform* amongst African marine research institutes for the identification, development and showcasing of new capabilities in the fields of ocean modelling, earth observation, in situ observation and dissemination technologies.
2. Develop *vehicles to transfer* these capabilities to operationally mandated marine agencies.
3. Develop new national and regional *human capacity and infrastructure* in the marine science, technological and technical domains.
4. Create mechanisms for *focused and sustainable development* of this expertise and infrastructure.
5. Facilitate the development of *new national structures* for operational oceanography and marine meteorology, concomitantly with the development of new government agency mandates in the domain.
6. Scoping and implementation plans to form *regional and African partnerships* to transfer maturing domain-specific operational competencies from the research to the operationally mandated community.
7. Provide regional components for *integration into international* operational and scientific programmes and commitments, such as JCOMM, GMES and GMES-Africa, and appropriate GEO, GOOS and GODAE tasks.

OceanSAfrica is comprised of four pillars: (1) *In Situ* Observations, (2) Remote Sensing, (3) Modelling, and (4) Dissemination. Each pillar is led by an individual institution, but involves active commitment from other institutions, increasingly Africa-wide. A key focus area across all pillars is capacity building – the creation and sustained maintenance of a much-expanded science, engineering and technology (SET) expertise base in the marine domain.



environmental affairs  
Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA





## Summary of OceanSAfrica Pillars

| <b>In Situ Observations</b><br>Lead: Department of Environmental Affairs,<br>Branch Oceans & Coasts   | <b>Remote Sensing</b><br>Lead: Council for Scientific and Industrial<br>Research, NRE Earth Observation   |
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| Consolidating, expanding and adding value to existing autonomous and ship based observational facilities, particularly through improved communication links and near real-time data access.<br><br>Developing new scientific and technical capabilities to use currently available autonomous platforms and sensors, such as gliders, profiling floats and buoys.<br><br>Developing new low-cost, modular and distributable autonomous platforms and sensors such as miniature floats and semi-expendable bio-optical sensors, improving African <i>in situ</i> observational capabilities and the SET base.  | Consolidating, expanding and adding value to existing national and regional facilities, such as FP7 DevCoCast/EAMNet and AMESD/MESA, to provide routine earth observation data and user training for marine and freshwater domains.<br><br>Maximising calibration/validation contributions and uptake readiness for forthcoming earth observation missions, strongly focusing on the Sentinel series for marine & aquatic physics & biogeochemistry.<br><br>Developing new algorithms and products for African shelf-sea, oceanic and freshwater users and contributing to sensor and algorithm validation programmes for ESA and NASA.   |
| <b>Ocean Modelling &amp; Assimilation</b><br>Lead: Department of Oceanography, University<br>of Cape Town   | <b>Dissemination</b><br>Lead: South African Environmental Observation<br>Network (SAEON)  |
| Developing South African and regional expertise and capacity in regional ocean modelling and data assimilation to predict the ocean state. Assessing regional ocean current and wave forecasting models for critical southern African shelf sea regions using the ROMS, HYCOM and Deltares platforms.<br><br>First stage demonstration of data assimilation capabilities using HYCOM and the EnKF with the aim of generating long-term regional ocean hind- and forecasts with direct application to both operational forecasting and reanalyses, for a wide variety of users.<br><br>Building capacity and regional expertise in numerical ocean modelling and operational forecasting through postgraduate/short course training and provision of modelling tools and code modules. | Integrate data and products into a powerful, user friendly, multi-media distributed dissemination system, delivering products of value to an extended user community. Products will include rapid environmental assessment of the marine and coastal environment, especially high risk extreme events and climate related change impacting on people, and support for the management of economically important offshore industries.<br><br>Specify and develop a set of guidelines, standards and reference implementations for a data management system capable of ensuring inter-operability for operational oceanography. Build and host a standardised meta-data repository where products, data sets, documentation and appropriate reports can be categorised and discovered. |

