SOLSTICE

SOLSTICE builds capacity in critical skills to tackle the 2013 South Africa chokka squid crash

The GCRF-funded SOLSTICE-WIO project has set up a PhD training programme at the Nelson Mandela University's brand new Ocean Science Campus to build skills that detect marine ecosystems shifts.

In 2013 the chokka squid fishery based in the Eastern Cape Province suffered its largest crash since opening in 1985. The fishery came tumbling down as boats were repossessed by banks and fishing crews went home penniless. The disaster lasted 18 months, pushing the industry to the brink of permanent collapse and shattering livelihoods of some 35,000 people. The causes of this crash remain speculative. While some degree of overfishing could have been involved, observations suggest changing ocean ecosystems were to blame.

Understanding the fluctuations and, in extreme cases, collapses of marine ecosystems requires a formidable research capacity in physical, biogeochemical and biological oceanography, supported by state-of-the-art technologies such as ocean models, satellite observations, marine robotics and specialised equipment like the artificial intelligence-driven underwater zooplankton profiler. But these huge efforts can't stop there. Fisheries are not so much about fish as they are about people. Hence the biogeophysical science needs to be coupled with socio-economic studies to consider socio-ecological systems as a unified entity.

SOLSTICE is helping to build this form of research capacity in South Africa. Strongly supported with fellowships from both the National Research Foundation (NRF) and the DST1 funded ACEP2 programme, SOLSTICE has set up a PhD training programme at the new Ocean Science Campus (OSC), a new facility at the Nelson Mandela University in Port Elizabeth. The OSC was built to incubate research and training in marine science, and advance NMU into becoming a truly relevant regional university capable of addressing societal challenges such as food security. The OSC is the hub in the SOLSTICE UK-WIO network also hosting the newly established marine robotics centre (see Success Story 2).

Eight SOLSTICE PhD candidates, seven of whom are women, were enrolled at the OSC in 2018. Their research topics have been carefully planned to fit into the SOLSTICE Case Study research plan which tackles the Agulhas Bank ecosystem, and include ocean physics, phytoplankton, zooplankton, benthic nepheloid layer dynamics, fisheries modelling, social dynamics, and food security. The students are co-supervised by senior research scientists at NMU and the UK, and receive their initial training at the National Oceanography Centre, UK. SOLSTICE has also employed a senior engineer to support the student projects.

The SOLSTICE team at the OSC will be joined by two postdoctoral fellows in late 2018 – one specialising in remote sensing (satellites), the other ocean modelling. Together, they will tackle one of the world's toughest questions – how will climate change impact our fisheries and food security?

The project outcome described in this Success Story contributes to the following objectives of the GCRF programme "Growing research capability to meet the challenges faced by developing countries."

Objective	Contribution
Strengthening capacity of individuals, organisations and institutions of DAC-listed countries to effectively carry out and disseminate high quality research	HIGH
Strengthening capacity of UK organisations to undertake interdisciplinary research in ODA context	HIGH
Strengthening capacity of UK organisations to apply leading-edge technologies in developing countries (remote sensing, ocean modelling, robotics)	HIGH
Creating equitable partnerships characterised by transparency, joint ownership, mutual responsibility and benefits for all partners	HIGH
Addressing GCRF challenge area "Secure and resilient food systems supported by sustainable marine resources and agriculture"	MEDIUM
Interdisciplinarity (collaborations which bring together a breadth of disciplines to effectively tackle the development challenges)	MEDIUM
Developing global research networks	MEDIUM