

Case Study



Collaborative weather and climate services for South Africa

Background

The Weather and Climate Science for Service Partnership (WCSSP) in South Africa is a collaborative initiative between the Met Office and the South African Weather Service (SAWS) supported by the UK Newton Fund. WCSSP South Africa focuses on translating science into applied services that support weather and climate resilient economic development and social welfare. This creates mutual benefits for both the UK and South Africa, assisting with economic development as well as protecting life and property through improved weather and climate services based on user needs.

WCSSP South Africa builds on the existing partnership between Met Office and SAWS which is underpinned by the use of the Met Office Unified Model (UM) for weather forecasting activities. SAWS is the first national meteorological service on the African continent that is a MetUM partner. WCSSP South Africa further strengthens links between the UK and South Africa, drawing on UK capability and expertise, and creating sustainable relationships for long-term collaboration.

Key areas within WCSSP South Africa include:

- building strategic partnerships;
- gathering weather and climate user requirements to develop applied weather and climate services;
- improving high-resolution weather forecasting capabilities;
- enhancing training on weather and climate science and services; and
- Disaster Risk Reduction (DRR) through impacts-based weather forecasting.

Outputs of the partnership

High-resolution numerical weather prediction (NWP)

As part of WCSSP South Africa, SAWS plans to upgrade and improve the quality of its weather forecasting activities by implementing high-resolution numerical weather prediction (NWP) models. This will enable more detailed and regionally accurate short-range weather forecasts to be developed, and lead to further NWP model improvements in both South Africa and the UK. This development will mean improvements in the quality and accuracy of weather guidance provided to government, businesses and communities within South Africa.

Operationally, SAWS produces a weather forecast at 12 km resolution for the Southern Africa region. With an increase in resolution to approximately 4 km over Southern Africa, and potentially 1.5 km over the country of South Africa, NWP activities can now capture key processes involved in the accurate prediction of short-range weather, most importantly the convection process which is not currently resolved in the 12 km model.

Scientific exchanges to improve NWP

Several scientific exchanges have taken place to build the capability of SAWS staff so they can interpret the new high-resolution NWP information, as well as improve the Met Office's understanding of NWP model performance over tropical and southern hemisphere regions.

In March 2015, two SAWS scientists visited the Met Office in the UK, to jointly perform verification and model evaluation activities alongside Met Office scientists. Results of these scientific activities suggest an improved capability in the new, high-resolution NWP models as compared to the existing 12 km models, specifically in their ability to realistically simulate convective processes. Knowledge of model verification techniques was shared with SAWS staff to promote an increased capability in local verification activities on their return to South Africa.

Train the Trainer exchanges

Both SAWS and the Met Office are regional centres of education on weather and climate science, with key roles in training weather forecasters in their respective parts of the world. To pull through successes achieved at both training centres, and to learn from different methodologies and practical applications, there have been several Train the Trainer exchanges. These exchanges have enabled the identification of learning modules which would be beneficial if transferred from one organisation to the other. For example, SAWS delivers specific training on the operational maintenance of weather stations, something that isn't currently provided by the Met Office College. In addition, the Met Office also provides comprehensive training in high-resolution NWP interpretation which will be increasingly beneficial to SAWS as its NWP capabilities improve as a result of the partnership.

Transforming science into industry services

Met Office and SAWS teams worked together to undertake market audits for Energy, Water and Agriculture sectors in South Africa. The research was part of the process of understanding how to develop and deliver relevant weather and climate services that match local users' socio economic needs.

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