

## Weather and Climate Science for Service Partnership Programme

### Strengthening the resilience of vulnerable communities to weather and climate variability

Exposure to extreme weather and climate events threatens the sustainability of economic development and social welfare across the globe, and the securities on which we rely for our health and well-being. In line with the Global Framework for Climate Services, the UN-wide initiative to enable better management of climate risks, we work in partnership to develop targeted climate services.

The Weather and Climate Science for Service Partnership (WCSSP) programme comprises projects designed to build the basis for strengthening the resilience of vulnerable communities to weather and climate hazards. Projects aim to develop strong international partnerships, harnessing the best of British scientific expertise. The Programme is supported by the UK Government's Newton Fund.



### Collaborative weather and climate services for South Africa

The Weather and Climate Science for Service Partnership in South Africa (WCSSP South Africa) involves the Met Office, the South African Weather Service (SAWS) and other key UK institutes.

WCSSP South Africa strengthens links between the UK and South Africa, drawing on UK capability and expertise, and creating sustainable relationships for long-term collaboration. It aims to protect life and property through improved weather and climate services based on user needs. It is improving high-resolution weather forecasting capabilities and enhancing the capability within SAWS to deliver severe weather warnings, improve forecast service delivery and to facilitate development of services to specific sectors that support economic development and social welfare. The project is also supporting disaster risk reduction (DRR) through impacts-based weather forecasting.



### Addressing regional climate vulnerability in China

The Climate Science for Service Partnership China (CSSP China) has been formed by the China Meteorological Administration, Institute of Atmospheric Physics at the Chinese Academy of Sciences and the Met Office, and other key UK and Chinese institutes.

China experiences extreme conditions such as heavy rainfall, flooding, tropical cyclones, heatwaves and drought, potentially affecting food and water security and leading to increased impact of natural disasters. The partnership is developing an understanding of the key needs for climate service development in China and the relevant underpinning science required. It has so far focused on four key sectors: energy, urban environments, agriculture/food security, and water resources. As the underpinning science develops the partnership is increasing the capacity to translate science into services that could impact decisions affecting people's welfare and livelihoods.





## Improving climate modelling in Brazil

The Climate Science for Service Partnership Brazil (CSSP Brazil) supports the development of capability to underpin services to inform decision makers in climate mitigation and adaptation strategy. Through CSSP Brazil we are building strong, sustainable partnerships with Brazil's National Institute for Space Research, National Institute for Amazon Research and the National Centre for Monitoring and Early Warning of Natural Disasters, as well as other key UK and Brazilian scientific institutes.

CSSP Brazil focuses on three main research areas: improved carbon cycle modelling to inform mitigation policy; climate model development; and climate impacts and disaster risk reduction. The partnership aims to provide robust science background for mitigation policy through improved quantification of the global carbon cycle, including natural carbon sinks which are important for 'overshoot and recovery' scenarios. This can inform the Brazilian Government Working Group on REDD+ (contributing to the lineation of the scientific basis for the deforestation carbon emissions reference level) and preparation of the Third National Communication on Greenhouse gas emissions to the United Nations Framework Convention on Climate Change, on the land use, land-use change and forestry (LULUCF) sector.



## Advancing scientific understanding in Southeast Asia

We are in the process of establishing a Weather and Climate Science for Service Partnership for Southeast Asia (WCSSP SE Asia). We hope that the WCSSP SE Asia will form strong, sustainable science and innovation partnerships that can be harnessed to advance scientific understanding and modelling capabilities which deliver underpinning services to protect lives and livelihoods across SE Asia.

## Promoting economic development and social welfare

The Newton Fund builds science and innovation partnerships with 16 partner countries to support their economic development and social welfare, and to develop their research and innovation capacity for long-term sustainable growth. It has a total UK Government investment of £735 million up until 2021, with matched resources from the partner countries. The Newton Fund is managed by the UK Department for Business, Energy and Industrial Strategy, and delivered through 15 UK Delivery Partners, which include the Research Councils, the UK Academies, the British Council, Innovate UK and the Met Office.

### CASE STUDY



## Improving regional accuracy of short-range weather forecasts

As part of WCSSP South Africa, SAWS is working 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 – potentially at 1.5 km resolution over South Africa – and will 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.