

**Newton Fund Weather and Climate Science for Service Partnership Programme (WCSSP)
Engagement Event Response**

Organisation Name and address	Wx Service for the Future, Inc Holtzman Way, York
Contact name and email address	Dr E. Smith, ElizabethSmith@WxServicefortheFuture.com
Proposed WCSSP Country (please select)	Brazil China India South Africa South East Asia Cross Project

Proposed Activity (please limit to 2 sides of A4):

Severe convection principals testing

Summary:

This activity would take the forecasting principals and tools developed in countries like the US, where they have been perfecting severe convection techniques over several decades and applying these to severe convection in South Africa to see which perform the best in this climate.

If possible, it would be of value to break this up over different areas of South Africa to take into account the varying climates to understand the impact across more elevated regions, or more arid regions and so on.

This activity would ideally take place over several years to develop as many case studies as possible for a variety of techniques. The case studies would involve applying the forecast techniques to forecast model output and undertaking detailed evaluation against observational data which is openly available. The benefit of using these techniques over raw model output would be assessed. This would then deliver recommendations of which tools should be implemented for severe convection forecasting across South Africa for forecasters to rely on, particularly when considering how to issue warnings that can be relied on by the public and cause appropriate action to be taken. Throughout the project, engagement with scientists and forecasters in South Africa will be key to gain understanding of current forecasting practise and where these new techniques can add value. As such this work would deliver socio-economic benefits across South Africa, by having more reliable forecasts of severe weather, warnings become more accurate and trusted by the public and thus action is taken to protect life and property.

This activity has links to all four of the South Africa Work Packages:

- 1) **Monitoring and Attribution:** the outputs of this activity could indicate where there needs to be improvements in monitoring to provide the input data for the forecasting tools.
- 2) **Model Evaluation and Development at Seamless Timescales:** as part of this activity both 1KM and 4KM data will be used to establish tools that work at different resolutions so that the best can be made of the data available to forecasters.

- 3) **Impacts and Projections:** the outputs of this activity will help to aid in the dissemination of more accurate warnings and help reduce the impacts from the hazards that severe convection generates.
- 4) **Science for Services:** this activity could provide a foundation for the development of prototype services that deal specifically around the hazards severe convection produce.

To achieve this activity, at least 1 FTE would be required per year, though to get the maximum value 2.5FTE over 3 years would be more appropriate.