

# Identifying and tracking damaging storms

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## Summary

Scientists working at the University of Reading have developed a unique software package known as TRACK, a diagnostic tool to identify storms, track their movement and evolution, and record their characteristics (for example intensity and growth rates). To maximise its usefulness, this tool has been designed to be suitable for use with very large meteorological datasets, and produce output data suitable for end-users.

## Background

Simulating cyclonic storms is important when planning for defence against extreme weather, and vital for risk assessment and insurance pricing in the insurance and reinsurance sectors as the resulting wind storms can result in expensive claims. As an example, Munich Re (the world's largest reinsurance company) was reported in the *Wall Street Journal* as estimating claims resulting from 2012 superstorm *Sandy* in the United States would reach \$25 billion.

## How is University of Reading research contributing?

Research on tracking storms has been used to develop TRACK, a storm-tracking and analysis software package. TRACK has generated widespread applications, particularly in weather forecasting, climate model development and in the insurance industry. It enables the detection of many types of storm featured in a wide variety of numerical weather and climate models (including tropical and extra-tropical cyclones and mesocyclones), while observational and re-analysis datasets offer new insights into severe weather impacts.

## What impact has our research had?

A large number of quantitative practical applications in forecasting, the insurance industry and maritime operations have resulted. Users of TRACK include a wide range of national meteorological services and private-sector meteorological service providers - insurance brokers are able to improve assessments of wind-storm risk, and national and commercial operational meteorological centres are able to validate and improve storm properties in their models. Improved storm simulations lead to better forecasting and reduced forecast errors, and enable enhanced simulations of future climate for evaluating long term changes to risks and hazards.

Storms affect many regions of the globe, and TRACK software has already been applied to operational meteorological centres worldwide. The use of the software by meteorological centres helps improve storm forecasts, potentially reducing storm-related loss of life and damage to infrastructure through improved warning and better preparation.



**“Customers require storm warnings alongside the regular weather forecasts. These dedicated forecasts cannot be produced reliably based on a single model, requiring more specialized tools ... TRACK software provides us with this capability.”**

**Joris de Vroom**  
Forecast manager  
BMT ARGOSS



“Where will our knowledge take you?”

### Find out more...

- Department of Meteorology, University of Reading, UK
- [www.met.reading.ac.uk](http://www.met.reading.ac.uk)