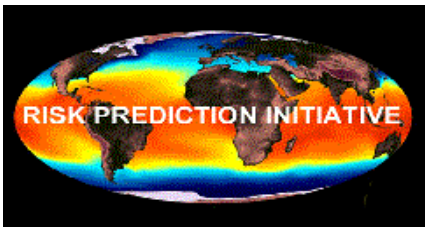


# SEASCAPES

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## Joint Expert Consulting Project with the Bureau of Meteorology Research Centre for the Risk Prediction Initiative



In May 1997 the Risk Prediction Initiative (RPI) invited SEA to participate in a workshop entitled "Wind-Field Dynamics of Landfalling Tropical Cyclones" which took place in Hamilton, Bermuda. It provided an opportunity for tropical cyclone experts and insurance/ reinsurance industry representatives to focus on issues related to the specification and understanding of near-surface wind fields in tropical cyclones making landfall.

The RPI is an industry-funded partnership between climate scientists and insurers operated through the Bermuda Biological Station for Research, Inc. The RPI strives to build links between insurers and climate researchers on scientific topics that are relevant to the (re)insurance industry.

One of the outcomes of the 1997 workshop was an invitation to SEA, in association with the Bureau of Meteorology Mesoscale Meteorology Research Group in Melbourne, to undertake a detailed scoping study for the development of a public wind field model for tropical cyclones.

The Scoping Study presented a historical overview of the development of parametric wind field modelling of tropical cyclones and highlighted areas where improvements could be expected due to advances in understanding and the availability of improved data. A detailed functional specification for an improved parameterisation was then developed together with a number of logical work packages which might be required in order to develop an improved model.

In July 1998 the resulting technical specification formed the basis of a public Call for Proposals by the RPI for organisations to undertake the

## Welcome to SEASCAPES

Welcome to the first edition of SEASCAPES - keeping you up-to-date with past and future projects as well as featuring the developing risk assessment capabilities of Systems Engineering Australia Pty Ltd (SEA).

SEA is a specialty consulting company which undertakes numerical modelling and risk assessment in the coastal, ocean, wind and environmental engineering fields. The company was started in 1996 by specialist civil engineer Dr Bruce Harper using methodologies based on his 23 years of experience in undertaking sophisticated numerical and statistical studies of the environment.

Capabilities include statistical analysis of tropical cyclone data, insurance losses, cyclone wind, wave and storm surge modelling as well as thunderstorm downbursts, hail and tornadoes.

Visit us on the web:  
[www.uq.net.au/seng](http://www.uq.net.au/seng)



**Severe Thunderstorms - Hail, Wind and Tornadoes, see over for details ...**

# Severe Thunderstorm Model Developed for SUNCORP General Insurance is Available for General Application

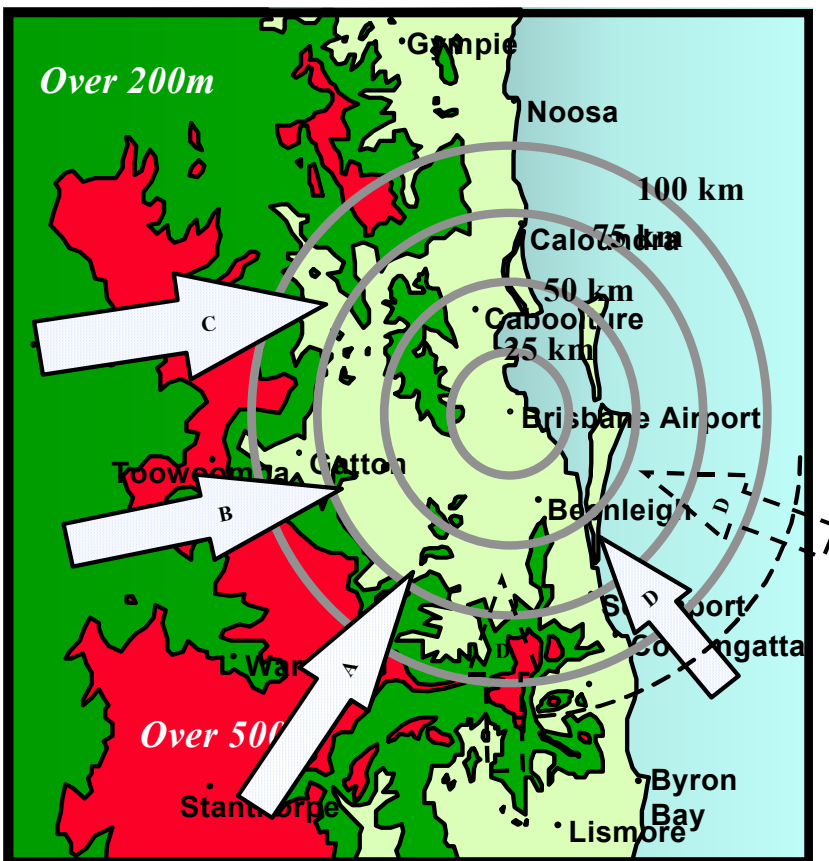
Pioneering work by SEA on tropical cyclone risk assessment modelling for SUNCORP was further extended during 1996/97 to include the effects of severe thunderstorms.

The SE Queensland coastal region is an area subject to the effects of severe thunderstorms on an aver-

age of about 20 days each year. A number of meteorological and topographical factors combine to provide a moist unstable environment which is ideal for the generation of severe convection and can create explosive conditions over Brisbane, Ipswich and the Gold and Sunshine Coasts. The study considered a 30 year in-

ventory of severe storms in the region taken from Bureau of Meteorology and SUNCORP records, leading to the development of a regional climatology of severe storms and a sophisticated statistical simulation model.

The generalised model, thought to be the only one of its type yet developed, predicts wind, hail and tornado losses and can be extended to consider motor vehicle losses or to other regions such as Sydney.



## Some of the SEA Clients Since 1996

### Tropical Cyclone Insurance Risk Assessment:

- RACQ-GIO Insurance
- Commercial Union Insurance
- SUNCORP General Insurance

### Severe Thunderstorm Risks:

- SUNCORP General Insurance

### Coastal and Ocean Hazards:

- Woodside Offshore Petroleum
- Dept Natural Resources, Vic.
- Dept Environment, Qld.

### Research:

- The Risk Prediction Initiative, Bermuda.

## Conference News:

### ASTIN/AFIR Colloquium - August 1997

Dr Harper was an invited keynote speaker on risk modelling at the international ASTIN/AFIR actuarial conference held in Cairns.



### WMO Fourth International Workshop on Tropical Cyclones

April 1998 - Haikou, China.

Held every two years, the World Meteorological Organisation's IWTC is an opportunity for leading scientists and operational forecasters to exchange state-of-the-art information on tropical cyclones. Dr Harper was the invited rapporteur on the subject of Parametric Windfield Modelling, with his attendance sponsored by the RPI of Bermuda.



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