

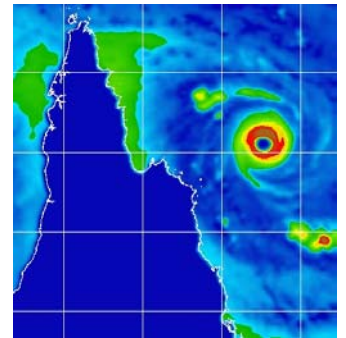
# SEASCAPES

Volume 8, Issue 1

Autumn 2005

## Category 5 Cyclone *Ingrid* Defies the Statistics

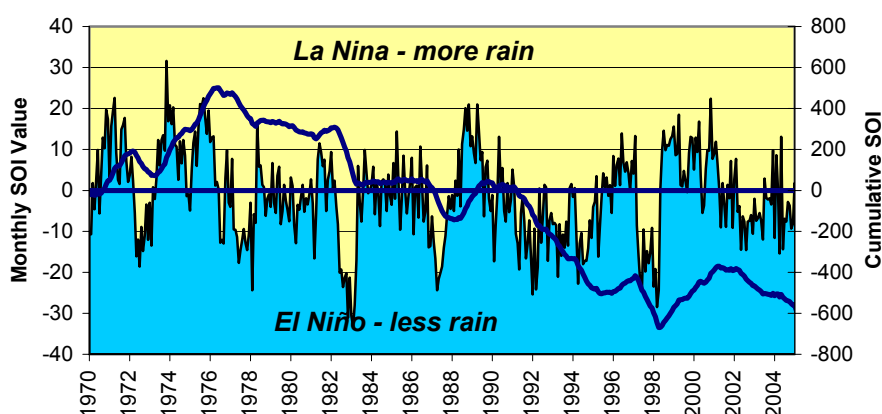
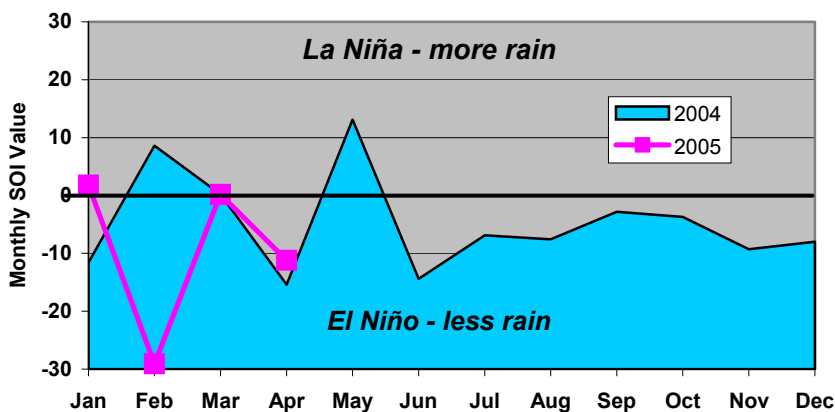
In spite of our story below suggesting a decreased likelihood of tropical cyclones during suppressed ENSO periods, severe tropical cyclone *Ingrid* defied the odds in March to enter the record books as the only known cyclone yet to affect Queensland, Northern Territory and Western Australia as a Category 5 event. After a veritable drought of severe cyclones in Queensland since *Aivu* in 1989, *Ingrid* provided an intriguing insight into how the infamous *Bathurst Bay* cyclone of 1899 may have occurred, inflicting its deadly toll on a pearling fleet near Princess Charlotte Bay. *Ingrid* showed that a very severe storm could generate in this normally relatively benign area by getting a kick-start from the Gulf of Carpentaria, which is where the original source of low level vorticity for *Ingrid* was generated. After this initial assistance, the unusually stable environment and the very warm waters of the Coral Sea did



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## A Suppressed ENSO Again Looking Likely for 2005/06

Our biannual look at the ENSO condition always elicits special comment from *SEASCAPE* readers and this season a closer look is taken at some longer term behaviour. In addition to our normal annual comparison below, the trends over the past 34 years are also shown this time, both as the monthly SOI value and as a cumulative SOI index, beginning in 1970 at zero. This is a relative indicator of the balance between El Niño and La Niña conditions over this period. During the cyclonically active 1970s the index can be seen to have risen rapidly, reaching a peak in 1976. Since that time the trend has been steadily downwards due to a run of strong El Niños in 1983, 1987, 1992 and 1998. In 1999 it looked like the tide had turned at last but since 2001 the tendency has been for near-neutral or mild El Niños. At present, it is still difficult to say what the coming year will bring because of the mixed signals over recent months, but the majority of indicators suggest continued suppressed conditions. [Data and comments based on Bureau of Meteorology sources.]



### SEASCAPES

*SEASCAPES* features the developing risk assessment capabilities of Systems Engineering Australia Pty Ltd (SEA).

Our services include coastal, ocean and offshore engineering, statistical analysis of tropical cyclone data, quantitative estimation of insurance losses, cyclone wind, wave and storm surge modelling, flood risk assessment and severe thunderstorm downbursts, hail and tornadoes. We do investigations, analysis, consulting, peer review and research.

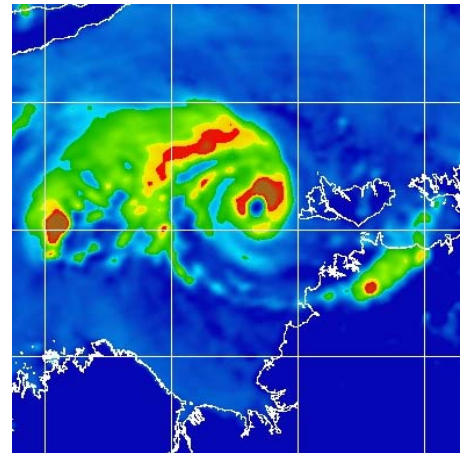
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the rest and inevitably a very severe tropical cyclone was able to develop unhindered. Remarkably, *Ingrid* maintained a near-constant size throughout its 15 day life. As it slowly moved westwards towards Cape York, attention turned to its likely coastal impacts but luckily it managed to pass between even the remotest communities. Its storm surge however was significant, even behind the Great Barrier Reef, with clear evidence of frontal dunes being pushed well into the coastal forest and trees flattened or stripped bare. Its compact size enabled it to recover quickly as it reentered the Gulf and slowly moved NW towards Nhulunbuy, which had the closest escape of all the northern centres threatened by *Ingrid*. As the storm approached, it intensified and then maintained its tight centre right across the top-end, passing over several sparsely settled islands. As it approached the Tiwi Islands north of Darwin, memories of Cyclone *Tracy* were invoked as this "midget", similar to *Tracy* in many respects, might have just as easily changed course at the same critical moment and headed towards Darwin. At twice *Tracy*'s size and estimated to be packing equivalent peak winds, *Ingrid* proved there is no room for complacency in Northern Australia during the cyclone season, regardless of the state of the ENSO signal.

[Satellite images from the US Naval Research Laboratory, Monterey, CA]

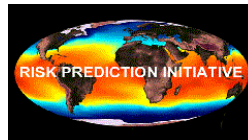


## SEA and Willis Re Form Technical Partnership

Willis

Systems Engineering Australia Pty Ltd and Willis Reinsurance Australia Limited have announced a technical partnership designed to complement each organisation's specialist risk assessment services for insurers and reinsurers. With Willis's wide ranging international experience and expertise in risk consulting and SEA's specialist risk modelling skills, the new partnership is expected to offer enhanced services to customers and clients through Willis. SEA looks forward to increased exposure to the international market and opportunities to leverage its existing technologies, as well as enabling the new techniques and approaches that have been developed over the past decade through its proactive involvement in Government, industry and research both in Australia and internationally.

## Workshop on Open Source Risk Modelling - Santa Clara.



The Risk Prediction Initiative, based in Bermuda, organised a workshop at the HP headquarters in Silicon Valley in March for specialist risk modellers to discuss the advantages of encouraging Open Source Software initiatives. Dr Bruce Harper was the only Australian risk modeller invited to attend and has taken on the role of rapporteur on storm surge and tsunami modelling for future workshops.

## WMO International Workshop on Tropical Cyclone Landfalling Processes - Macau, China.



The World Meteorological Organisation's (WMO) inaugural specialist workshop on tropical cyclone landfalling processes was held in Macau during March at the special invitation of the Government of China and the Macau Meteorological and Geophysical Bureau. Dr Bruce Harper of SEA, supported by Willis, was among the 63 participants invited to facilitate a wide ranging discussion on matters of interest. His presentation on developments in storm surge modelling in Australia provided a summary of work undertaken by SEA and colleagues over the past

### Some of the SEA Clients:

#### Coastal and Ocean Hazards:

- Woodside Energy Ltd, WA
- Dept Natural Resources, VIC
- Dept Natural Res. and Mines, QLD
- EPA, QLD
- Dept Infrastructure Planning and Natural Resources, NSW
- Commonwealth Dept of Transport and Regional Services
- GHD Pty Ltd
- Bureau of Meteorology
- Kvaerner E&C Australia
- McConnell Dowell

#### Multi-Hazard Studies:

- Dept Emergency Services, QLD
- Bureau of Meteorology / GA

#### Tropical Cyclone Risks:

- RACQ Insurance
- CGU Insurance
- Suncorp Metway Insurance
- Powerlink Queensland
- Geoscience Australia
- CSIRO Atmospheric Research
- Aon Group Australia Limited
- Risk Management Solutions

#### Severe Thunderstorm Risks:

- Suncorp Metway Insurance
- Macquarie University, NHRC
- Powerlink Queensland

#### Flood Risks:

- RACQ Insurance, QLD

#### Research:

- Risk Prediction Initiative, Bermuda.
- James Cook University CTS

#### Guidelines:

- World Meteorological Organisation
- Engineers Australia

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