SEASCAPES

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2004 Queensland Safer Communities Award

The project "Queensland Climate Change and Community Vulnerability to Tropical Cyclones" has been awarded the *2004 Queensland Safer Communities Award* in the 'combined' category, recognising governments, the private sector and academia working together in an effective problem solving partnership.

Systems Engineering Australia Pty Ltd (SEA) has been a principal contributor to the project since its inception in 2000, both directly as specialist technical consultant and also in conjunction with the Marine Modelling Unit at James Cook University, which has undertaken extensive storm tide studies for the Queensland coast, and the James Cook Cyclone Testing Station (CTS), whereby a joint CTS-SEA housing risk model was developed as part of the overall project.

SEA's original Stage 1 work was also recognised by the Queensland Division of the Institution of Engineers Australia in their Annual Excellence Awards for 2001.

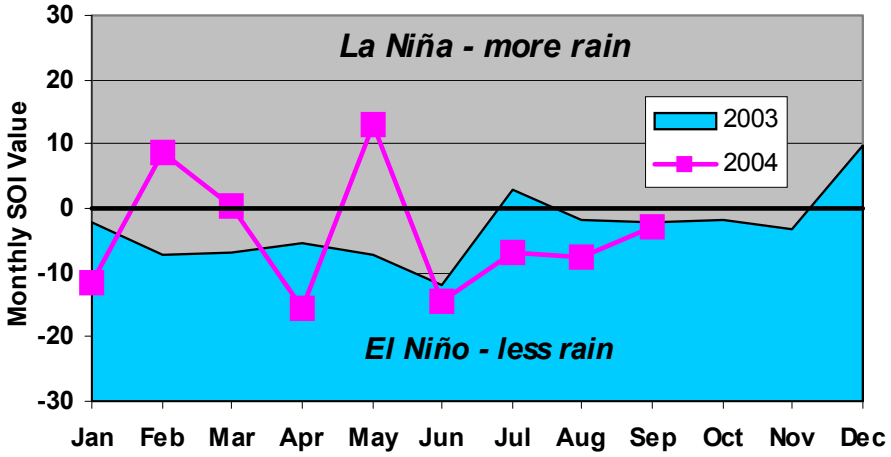
The project has been designed to update and extend the present understanding of the threat of state-wide storm tide inundation, including the effects of storm wave conditions in selected areas, and estimates of potential Greenhouse impacts.

The Project Steering Committee comprised representatives from the Dept of Natural Resources and Mines, Environmental Protection Agency and Dept of Emergency Services and was chaired by the Bureau of Meteorology in Queensland. Principal financial support has been from the Queensland State Greenhouse Special Treasury

Photo: Accepting the award on behalf of the Project Steering Committee and the various technical participants are (l to r) Mr David Robinson, Manager Coastal Sciences of the Environmental Protection Agency and Mr Jim Davidson, Regional Director of the Bureau of Meteorology in Queensland. The project is now nominated for the 2004 Australian Safer Communities Award.

ENSO Still Undecided for 2004/05

While some indicators suggest an El Niño event is developing, others are consistent with neutral ENSO conditions. The SOI has been negative during most of 2004 but is now close to zero. Ocean indicators include a surface cool tongue that persists in the eastern Pacific, consistent with neutral conditions, although some areas have higher SSTs. Most ENSO model predictions from September now suggest neutral conditions to continue throughout the coming summer.[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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SEA

CONTINUING A SUCCESSFUL PARTNERSHIP:

SEA and GHD continue to develop a respected partnership with two new projects in 2004.

Coastal Protection Options for Rarotonga, Cook Islands.

GHD Pty Ltd and SEA have recently been chosen by the South Pacific Applied Geoscience Commission (SOPAC) to undertake a study of coastal protection options for Rarotonga in the southern Cook Island group.
The aim of the study is to re-assess existing foreshore protection and make recommendations for optimum development options based on current knowledge and best practice. The study is focused on the Avatiu-Avarua corridor on the northern coast of the island and the long term protection of the harbours and fringing reef foreshore, including the international airport.
SEA is undertaking a risk assessment of the principal foreshore threat, which is due to tropical cyclones. The combined effect of tide, storm surge and breaking wave setup has the potential to inflict significant damage to the foreshore, as shown even as recently as Cyclone Pam in 1997. The study will be completed in Q4 2004.

Townsville and Thuringowah Storm Tide

GHD Pty Ltd and SEA were also recently successful in being awarded the Townsville and Thuringowah Storm Tide Study, and follows the highly regarded study done last year for Whitsunday Shire Council. In addition to overall management and infrastructure risk assessment, GHD will undertake numerical hydrodynamic modelling using the Delft3d system. SEA will provide cyclone climatology, spectral wave modelling and the statistical modelling aspects.
Townsville City has been the first local government authority in Queensland to fully embrace the recommendations of Stage 1 of the *Queensland Climate Change and Community Vulnerability to Tropical Cyclones* Project. This means that, as part of the regional extreme water level planning study, a real-time storm tide prediction system will also be developed and made available to the Bureau of Meteorology. The prediction system will be similar to and consistent with the system currently being developed by SEA for the NT Bureau of Meteorology. Emergency managers have expressed great interest in the prediction system, not only because of its enhanced warning capabilities, but because of the ability to explore a wide range of potential cyclone scenarios.

NT Storm Tide Prediction System

Work is continuing on the development and implementation of a real-time storm tide warning system for the Bureau of Meteorology in the Northern Territory. The work is being funded by contributions from Emergency Management Australia (EMA), the Bureau of Meteorology and the NT Department of Emergency Services (NTES). The project is designed to provide a real-time tropical cyclone storm tide prediction system for the coastline of the Northern Territory from west of the Qld border and extending into the northern Kimberley region of WA.
One of the key activities in the system development has been the hindcasting of wind and storm tide conditions during Severe Tropical Cyclone *Tracy* that devastated Darwin in December 1974. The work has uncovered further details about this uniquely small yet intense cyclone and the manner in which it underwent extreme structural changes as it neared the coastline. The findings raise some new questions about exactly how strong winds in some parts of the

Some of the SEA Clients Since 1996

Tropical Cyclone Risks:
- *RACQ Insurance*
- *CGU Insurance*
- *Suncorp Metway Insurance*
- *Aon Group Australia Limited*
- *Powerlink Queensland*
- *Geoscience Australia*
- *CSIRO Atmospheric Research*

Severe Thunderstorm Risks:
- *Suncorp Metway Insurance*
- *Macquarie University, NHRC*
- *Powerlink Queensland*

Flood Risks:
- *RACQ Insurance, QLD*

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*

Research:
- *RPI, Bermuda.*
- *James Cook University CTS*

Guidelines:
- *World Meteorological Organisation*

Real risk management decision - making tools for your business.

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