WIND TUNNEL TOPOGRAPHIC MODELLING STUDY OF THE CAPE MORETON AWS SITE

Cyclone Testing Station

Bureau of Meteorology

CLIENT:
James Cook University
Cyclone Testing Station for Commonwealth Bureau of Meteorology, Queensland Regional Office; 2003.

LOCATION
Cape Moreton, South East Queensland.

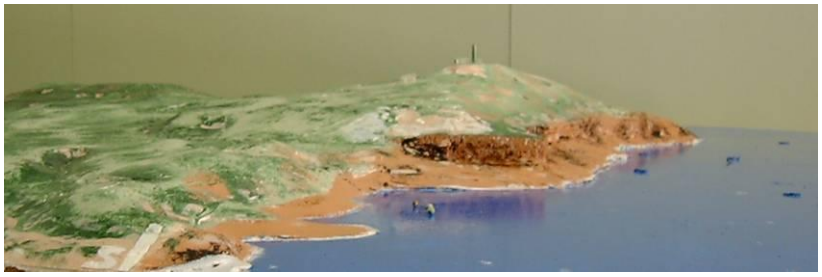
PROJECT DESCRIPTION

Systems Engineering Australia were commissioned as client liaison and technical sub-consultants to the James Cook University Cyclone Testing Station in Townsville in their undertaking of a detailed wind tunnel study of the Cape Moreton automatic weather station (AWS) site near Brisbane.

The Cape Moreton AWS is located adjacent to the historic lighthouse, situated about 45km north-east of the centre of Brisbane on the northern tip of Moreton Island. Wind measurements have been regularly recorded at this site since 1957 and it remains a major regional reference for the Bureau of Meteorology, especially for shipping and small craft warnings. The site is at an elevation of 100 m above sea level, with a complex and sometimes very steep local terrain.

Although the winds recorded at the AWS are known from general experience to overestimate the adjacent surface winds, no scientific assessment had been done to provide a comprehensive conversion procedure for Bureau of Meteorology usage.

The 2.5m x 2.0m x 22m long boundary layer wind tunnel at the Cyclone Testing Station was used to investigate the directional characteristics of the AWS by constructing and testing a 1:1000 topographic scale model. The study confirmed wind conversion factors in the range of 1.3 to 2.0 depending on approach directions.



SEA PERSONNEL PROVIDED

- Liaison with the Bureau of Meteorology;
- Technical review of the wind tunnel study results;
- Meeting and discussions with JCU and Bureau of Meteorology officers.

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