Citizen science can create valuable long-term datasets, case study from a Queensland coastal volunteer program

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Community engagement in citizen science brings multiple benefits

Citizen science has become a popular way to collect data and information, and to engage the wider public in scientific research. Community engagement in citizen science is a cost-effective way to collect data over long temporal and spatial scales and brings positive effects for participants including improved scientific literacy and citizen empowerment.

Photos taken with an SLR camera were joined together to give a whole of beach image, note the pole which was used as a reference point for beach profiles, Berm width and wind/wave measurements.

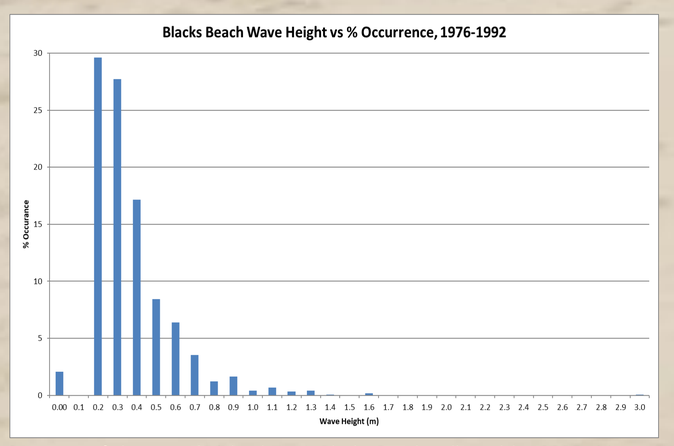
COPE citizen scientists taking wind measurements at Blacks Beach.

The Coastal Observation Program Engineering (COPE)

The Coastal Observation Program Engineering (COPE) data collection system was designed to collect data at sites along the Queensland coast to assist in the understanding of coastal processes and the way these processes affect the coastline. The COPE project was operational from 1971 to 1996 and enlisted volunteers to record information on a regular basis at their local beach at over 100 beaches. The program was coordinated by the then Beach Protection Authority (BPA) who collated, analysed and reported on the data.

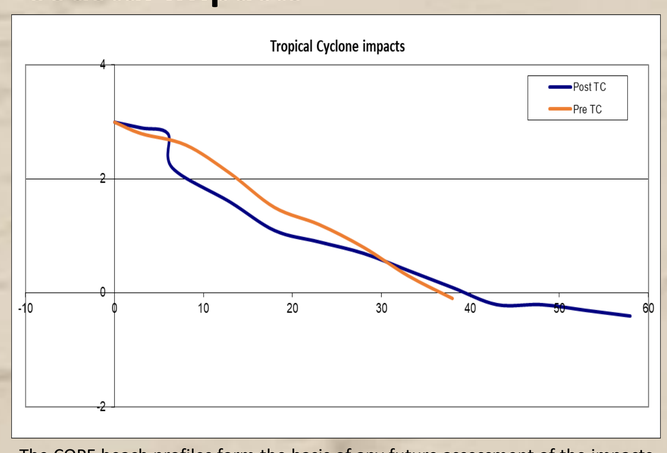
COPE citizen scientists collected a wide variety of data

Wave information



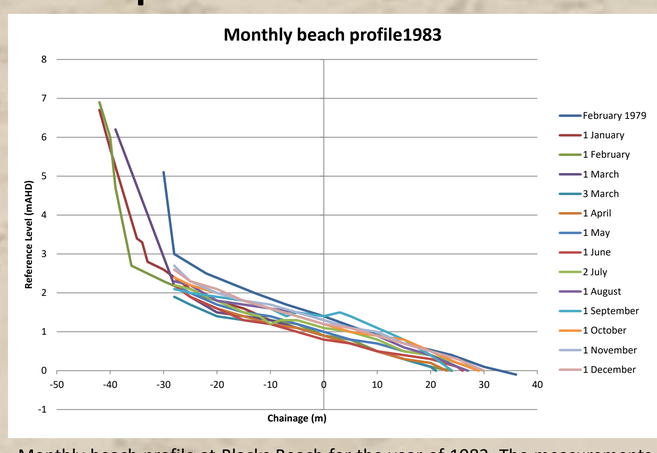
Summary of the wave height data at Blacks Beach collected by COPE citizen scientists 1976–92 , note the dominant wave height of 0.2 to 0.4 metres.

Coastal impacts



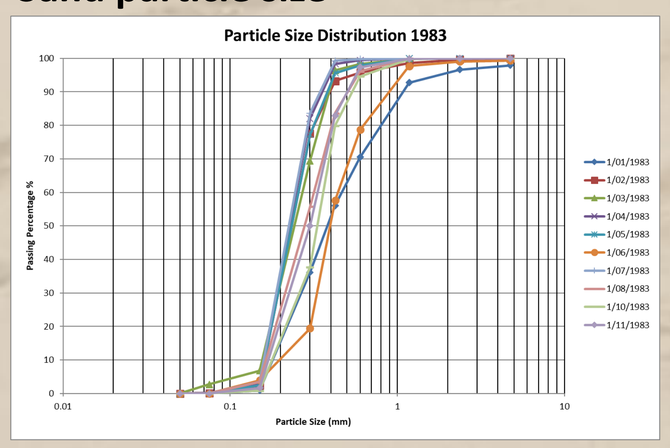
The COPE beach profiles form the basis of any future assessment of the impacts of extreme events such as tropical cyclones. Any erosion of the beach profile is evident from pre and post cyclone surveys.

Beach profiles



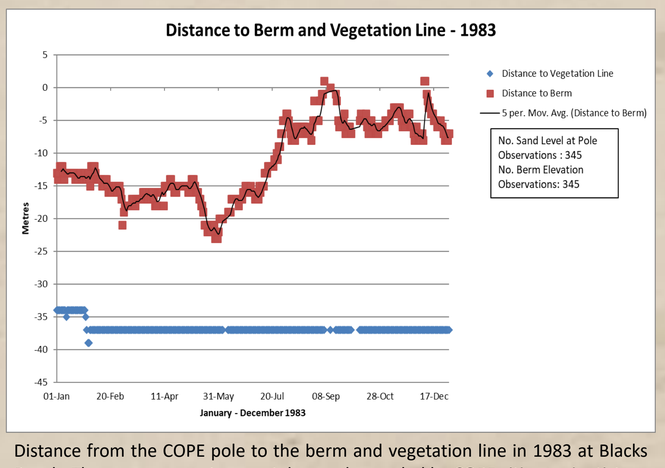
Monthly beach profile at Blacks Beach for the year of 1983. The measurements were taken and recorded by COPE citizen scientists.

Sand particle size



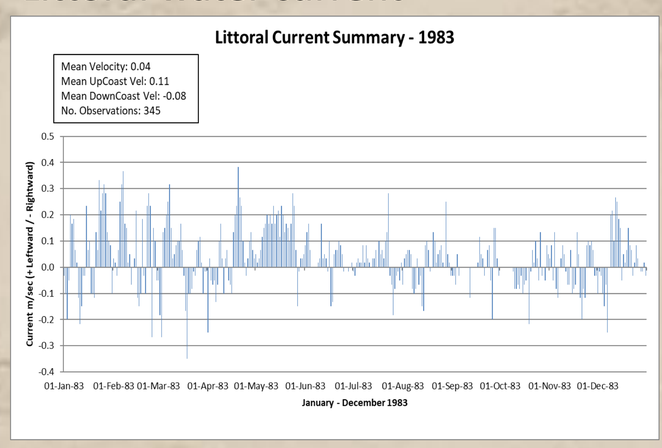
Sand particle size distribution in 1983 at Blacks Beach. The sand samples were collected by COPE citizen scientists.

Berm width



Distance from the COPE pole to the berm and vegetation line in 1983 at Blacks Beach. The measurements were taken and recorded by COPE citizen scientists.

Littoral water current



Summary of littoral current speed from 1983 at Blacks Beach. The measurements were taken and recorded by COPE citizen scientists.

COPE data a multitude of applications

The COPE data provides a snapshot of coastal processes such as the erosion and accretion of sandy beaches and of wind, wave and current parameters. It has become an invaluable baseline for studies into beach erosion and for mitigation activities such as beach replenishment and sea defences. Other future potential use of the COPE data includes investigations into the influence sea level rise on erosion and inundation and for coastal development design works.