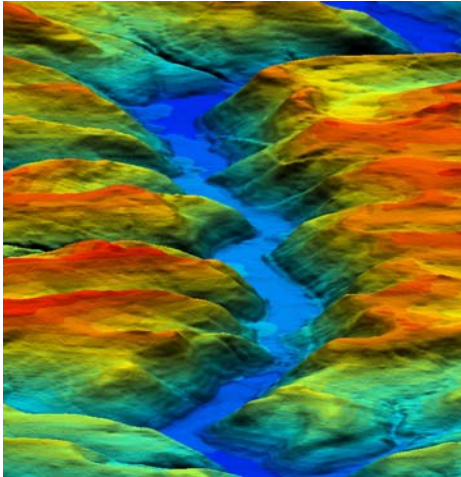


## Environmental and social research in the coastal zone

**Key purpose:** To develop and apply advanced geographical theories and technologies to both natural and anthropogenic phenomena, so as to develop detailed understanding of our coastal environment and assess the impact of changes to this environment.

**Key Competencies:** The School of Earth & Environmental Sciences has identified 3 key research themes in the coastal zone to which staff are applying their expertise:



### Assessment and mitigation of climate change impacts

The vulnerability of coasts to extreme water levels has been tragically demonstrated by the Aceh tsunami and the New Orleans hurricane. Sea level rise and changed coastal processes associated with global climate change are predicted to increase coastal hazards risk to existing and proposed development in low lying coastal areas. Paleo-ecology research reconstructs the climate in the Australasian region over the past millennium in an effort to help predict climate change and what impact it may have on the modern world.

The multi-disciplinary strengths of the School are demonstrated in strong credentials to reconstruct the past, and to simulate scenarios for the future, in the context of global change. The School possesses expertise in determining sedimentation rates in riverine and coastal environments through stratigraphy and dating, identification of natural hazards, including mapping and management of landslides in the Illawarra region and the application of innovative new dating techniques to unravelling changing landscapes across Australia, including the history of floods and aridity.



### Study of processes and changes in the coastal zone

A range of management, policy and legal issues that relate to a coastal region on a local, national and international scale can benefit from the accurate collection and presentation of geospatial data. Spatial information technologies, particularly geographical information systems (GIS) have a lot to offer in terms of understanding processes within the coastal zone, mitigation of hazards and tracking environmental changes.

The School has a strong track record in examining coastal processes and the morphology and evolution of coastal landforms using spatial techniques. Conceptual and disturbance modelling is key to determining the nature of change that is occurring as a response to altering boundary conditions, such as sea level. Advanced research outputs from the application of state-of-the-art geospatial mapping form an ideal foundation for those charged with managing our shoreline for the social, economic and environmental good.



### Social and economic planning

Our ever-increasing coastal population demands careful management and planning of resources, both in environmental and infrastructural terms. Population densities, city locations, designated land uses, access to public transport, services and recreational space all have a considerable impact on the resultant quality of life for the inhabitants in coastal regions. Meanwhile, as Australia's 'sea change' continues, the industrial base of coastal regions is shifting, from 'traditional' activities to tourism, information technology, and creative industries. Increasingly, it is recognised that future coastal planning will be place-based and holistic, incorporating social and economic values into frameworks for sustainability.

Staff in the school with backgrounds in human geography, demography and rural planning are currently active in research that examines social and economic processes in coastal regions, land use changes and conflicts, and the impacts of shifting demography and social values. Outcomes from this research are proving vital to predicting future social and economic changes, and will assist in planning for sustainable, high quality-of-life coastal places.