IAG Webinar Oceania

Thurs 2nd March 05:00 UTC (4 pm AEDT / 6 pm NZDT)

Coordinators: Ian Rutherfurd & Nicole Wheeler
Australia and New Zealand Geomorphology Group

INTERNATIONAL GEOMORPHOLOGY WEEK 2023

05:00–05:20

Quantification of sediment conveyance following a large earthquake

Katie Jones, GNS Science / Victoria University of Wellington, New Zealand

Evaluating the influence of earthquakes on erosion, landscape evolution and sediment-related hazards requires quantifying the volume and velocity of post-seismic sediment cascades. However, accurate estimates of post-earthquake sediment transfers remain rare. Following the 2016 M_W7.8 Kaikōura earthquake in New Zealand, the volume of co- and post-seismic erosion was quantified directly using multi-temporal difference models. These direct observations emphasise the importance of local controls on landslide failure mechanism and the evacuation of landslide sediment.

05:20–05:40

Geomorphology of Early Cenozoic incised channels, Gippsland Basin, SE Australia: Evidence for submarine origin

Dr. Liz Mahon, School of Geography, Earth & Atmospheric Science, University of Melbourne, Australia

Large, incised channels occur in the Early Cenozoic interval of the offshore Gippsland Basin. These channels incise up to 500 m into the shoreface and coastal plain deposits. These channels have been interpreted as forming via fluvial incision, associated with tectonic uplift during the Eocene. We have identified three major phases of channel incision and infilling, from the Palaeocene-Eocene transition to the Late Eocene. We interpret these large channels to be of a submarine origin. This is because incision predates revised dates of tectonic uplift, they occur seaward of the shoreface, and they are filled with marine material.

05:40–06:00

Cosmogenic radionuclide data for Australia

Dr. Alexandru Codilean, GeoQuest Research Centre, University of Wollongong, Australia

The application of cosmogenic nuclides to quantifying rates of surface erosion (denudation) has revolutionised our understanding of the processes that drive the evolution of Earth's surface. Here, we use a near-continental scale dataset of cosmogenic nuclide determinations in modern fluvial sediment to explore the spatial pattern of and controls on millennial-scale denudation rates, and the dynamics and timescales of sediment transport in Australia's large river basins. Our data document low denudation rates across the continent and suggest that sediment reworking, and protracted sediment transit times may be the norm in Australian rivers.

06:00–06:20

Factors influencing bed returns from a small footprint bathymetric lidar in shallow freshwater environments

Dr. Justin Stout, Waterways Centre for Freshwater Management, University of Canterbury, New Zealand

he acquisition and analysis of bathymetric data in shallow freshwater bodies has made great technical strides over the past decade. Shortwave green lidar can capture dense point clouds (100 pts/m2) which can be used to resolve complex bathymetries. We still face difficulties in collecting this data in a range of different freshwater body types and environments. Based on field trials we present the optimal lidar sensor parameters for a range of water bodies with varying water clarity, water surface roughness, depth, and bed material.

06:20–06:40

Sedimentation Patterns inTwo Stands of *Avicennia marina* in Western Port Bay, Australia

Dr Sabrina Sayers, School of Earth, Atmosphere & Environment, Monash University, Australia

Avicennia marina is the most widely distributed mangrove species, with a cold tolerant sub species existing at the southern poleward limit of mangroves. This sub species and its contribution to the morphology of coastlines has not been researched as much of that of its counterparts in the tropics and sub-tropics. In this study, the sedimentation dynamics of two sites with differing plant characteristics in Western Port Bay, Australia, are investigated to ascertain insights into the effect of vegetation structure on sediment movement within stands of Avicennia marina var australasica.

06:40–07:00

Multidisciplinary approaches to landscape geomorphology

Clare Wilkinson, University of Canterbury, & Tonkin Taylor Consulting, New Zealand

Mātauranga Māori (the knowledge, culture, values and word view of the Indigenous peoples of Aotearoa New Zealand) and Te Ao Māori (the Māori world) are poorly represented in studies of Earth's surface. This work aimed to better understand post-earthquake landscape response through multiple lenses, both cultural and scientific. By using a bicultural approach, this work highlighted how mātauranga Māori and geomorphology can be woven together to gain a broader perspective on landscape research.