

Report of SEPM CSRG activity

On Wednesday 28th January 2026, members of the SEPM Coast and Shelf Research Group organised a one-day field workshop for the 2026 International Sedimentological Congress in Wellington, Aotearoa New Zealand. The group comprised 25 very curious and knowledgeable early career researchers (ECRs) from five continents, who visited the shores of Te Awarua o Porirua (Porirua Harbour), with a specific focus on the very dynamic mini-delta of the Te Kakaho River (Fig. 1). As is the case for many harbours and estuaries across Aotearoa New Zealand, sedimentation remains an ongoing management challenge. This workshop served two opportunities: 1) Introduce ECRs to basic field methods used to study modern depositional systems; and 2) place the recent evolution of Te Kakaho minidelta in its historical context associated with deforestation and earthquake-related uplift.

Porirua Delta

The Porirua Delta is a small, coarse-grained delta fed by a river catchment mainly comprising basement greywacke rocks and argillites (250-100 myr).



Figure 1: Google Earth view of the Kakaho River, and historical image of the delta.

The day started with a lovely initial iwi welcome by Ngāti Toa Rangatira, mana whenua of the land and sea, coordinated by Te Rūnanga o Toa Rangatira, led by Robert McClean (Fig. 2). Together with colleagues from the local councils, taught us about the region's history, along with the opportunities and challenges involved in caring for the land and harbour. We also valued the opportunity to hear about the Porirua Harbour Accord and the important work currently underway.

Following the regional introduction, we travelled to Te Kakaho delta itself, whose dynamics over the last 80 years is well constrained by satellite imagery (see introductory poster), displaying a relatively smooth west-to-east lateral channel avulsion and lobe switching that followed a seismic-induced uplift of several meters. Several trenches and sediment cores were collected from various areas of the delta, allowing for extremely entertaining, high-level discussions driven by the participants' respective expertise.



Figure 2: Robert McClean introducing the participants of the workshop to the area of Te Awarua o Porirua (Porirua Harbour), and the challenges the shallow estuary is facing with increased sedimentation rates.

The conclusions of this workshop are the following: despite an excellent historical aerial imagery archive to constrain the recent dynamics of the delta, the preserved stratigraphy does not follow any typical facies model but rather show a much higher degree of heterogeneity in the distribution of the different facies, as well as the extent and depths of low-oxygen zones. This workshop also allowed participants to observe trace and trace maker relationships of gastropods and crabs, which are commonly encountered in the sedimentary record of shallow-marine settings. This workshop will also serve as a starting point for further discussion and studies on local sediment supply to the harbour, at the request of the local iwi and councils, which Andrew La Croix (University of Waikato) and Ted Spinks (University of Canterbury) will help nurture, together with Earth Science New Zealand collaborators.

Thank you to all the participants for the very fruitful discussions and collaborative spirits of the day (Fig. 3).

The convenors of this day-trip: Elisabeth Mahon, Miquel Poyatos-Moré, Romain Vaucher, Xin Shan, and Valentin Zuchuat, would like to thank Robert McClean (Te Rūnanga o Toa Rangatira), Cliff Atkins (Te Herenga Waka-Victoria University of Wellington), and Catherine Chagué (University of New South Wales and NIWI) for their help in organising this event. Without them, this would not have been possible.

We also want to extend our gratitude to Andrew La Croix (Waikato University) and Ted Spinks (University of Canterbury), who, in addition to elevating the discussions with their scientific expertise and local knowledge, contributed to making this a great field day.



Figure 3: Happy geologists after a great day out on Te Kakaho minidelta.

On behalf of the CSRG committee: Elisabeth Mahon (University of Melbourne); Miquel Poyatos-Moré (Universitat Autònoma de Barcelona), Romain Vaucher (James Cook University), Xin Shan (First Institute of Oceanography), and Valentin Zuchuat (CSIRO Mineral Resources)