**Impact of changing land use and climate; unravelling the fate of fine sediment**

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In Aotearoa/New Zealand, the natural forest cover has been reduced from 80 to 90 percent of the land area to approximately 30 per content over the past 700 years. The sedimentation rates have significantly increased due to the European settlement and more recent intensive land use changes rates. Moreover, the compounding effects of climate change and extreme weather events have further intensified the sedimentation rates. These excessive fine sediments pose detrimental effects on water quality and freshwater ecosystems, causing water to become turbid and stream beds to turn muddy. Beyond ecological impacts, these fine sediments can emerge as significant hazards during and after major floods, exemplified by incidents in Te Matau-a-Māui/Hawke’s Bay and Gisborne/Tairawhiti catchments during Cyclone Gabrielle.

This presentation discusses the approaches to enhance the prediction of adverse effects of fine sediments resulting from long-term land use changes in a time of increasing extreme climate events. Particularly discussing about scenario-based modelling framework applicable to catchment management. This frameworks aids in determining potential sources of fine sediments in rivers, estuaries and marine environments, while assessing the effectiveness of mitigation strategies.