

OPENING SESSION

Statewide DEM and Flood Modelling Project – A Partnership Between MRT, SES and Land Tasmania

Claire Kain, *Senior Natural Hazards Geologist, Mineral Resources Tasmania*

The Tasmanian Strategic Flood Map (TSFM) project, a collaborative effort between the Australian and Tasmanian Governments, is changing our understanding of flood risk across Tasmania. By developing a statewide flood model and digital twin, the TSFM assesses the threats to life and property from riverine flooding, using hydraulic modelling for the 0.5%, 1%, and 1% climate-change design events.

This presentation highlights two key GIS-based components of the project: the creation of a statewide Digital Terrain Model (DTM) and the baseline flood risk assessment. The DTM, an essential part of the base data environment, was constructed by merging over 200 datasets, including LiDAR, photogrammetric contours, hydrography, and spot heights. The final product is a seamless, hydrologically accurate 10 m statewide model, along with a set of hydrologically correct 2 m DTMs at the catchment scale.

The flood risk assessment integrates the hydraulic flood model outputs with exposure and vulnerability data to produce a statewide flood risk overlay, a prioritised list of affected communities, and a detailed risk profile report for each area. These sub-projects were technically demanding, necessitating advanced GIS systems and custom automation to produce such complex outputs at a statewide scale.

Transforming Tomorrow – Co-Developing a Digital Twin for Coastal Zone and Mangrove Management in the Torres Strait Islands

Emma Kilcoyne, *Project Manager, SmartCoast*

SmartCoast is a collaborative research and industry initiative supported by the Queensland (QLD) node of the Earth Observation Hub (EOHUB). Led by Fugro (Brisbane), with key partnerships from James Cook University (JCU) and EOMAP, the project aims to develop a digital coastal zone management tool for Horn and Thursday Islands in the Torres Strait. This region faces increasing challenges from climate change, including more frequent extreme weather events and the highest rate of sea-level rise in QLD. Mangroves, which naturally line the shorelines of these islands, offer a crucial nature-based solution to mitigate coastal erosion. However, baseline data on the extent and health of these mangroves is lacking, and there is currently no ongoing monitoring to assess whether intervention and rehabilitation are needed to ensure their effectiveness.

To address this, the project employs a fusion of Earth Observation, LiDAR, and high-resolution imagery to provide an uninterrupted, high-resolution, sea-to-land survey path with a specific focus on mangrove vegetation. This data is essential for developing the robust SmartCoast application that will be foundational for ecosystem and mangrove management.

SmartCoast is a tailored platform designed to deliver precise and actionable geo-data insights for coastal management. By creating a virtual representation of the islands, the platform will help users make informed decisions by simplifying and visualising complex natural processes. It will feature environmental hindcasting and forecasting for various climate scenarios and storm events. The digital twin will undergo iterative prototyping with various UI/UX designs to ensure user-friendliness and adherence to FAIR (Findable, Accessible, Interoperable, and Replicable) data principles.

The verification of mangrove ecosystem data is led by James Cook University (JCU) in collaboration with local island habitat rangers. This information will support the development of advanced capabilities including inventory classification (e.g., healthy, threatened, transition zones, catchment areas) to enhance mangrove management and asset exposure risk to coastal inundation.

C.R. Kennedy – Committed to Tasmania

Dan Harley, *Sales & Support Tasmania, C.R. Kennedy*

This presentation will provide an overview of the latest updates from C.R. Kennedy Tasmania.