Understanding and Predicting Decadal Coastal Evolution

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Coastal management requires understanding and prognosis of decadal coastal evolution. This evolution is sensitive to climate change among other drivers. The iCOASST project has developed new and improved methods to understand and predict such changes with application to coastal erosion and flood risk management as the application. The project is based on an integrated framework that links several components to develop a system-level understanding of this change as follows: (1) new methods for system-level analysis and mapping of coast, estuary and inner shelf landform behaviour; (2) well validated 'bottom-up' hydrodynamic and sediment transport shelf models that can be applied at shelf scales to investigate inner shelf-coastal interactions; and (3) compositions of existing or new 'reduced complexity models' of selected coastal landforms and processes. The ability to link models and the availability of the data is also fundamental. The ultimate goal is multiple simulations of coastal evolution to explore uncertainties in future decadal-scale coastal response, including the effects of climate change and management choices. This paper reviews the achievements of this project, the lessons learnt and the next step research steps.