EAST COAST
NRM CLUSTER

CLIMATE CHANGE IN AUSTRALIA

IMPACTS & ADAPTATION INFORMATION FOR AUSTRALIA'S NRM REGIONS

First order assessment of the risk of estuaries to climate change in the east coast NRM cluster

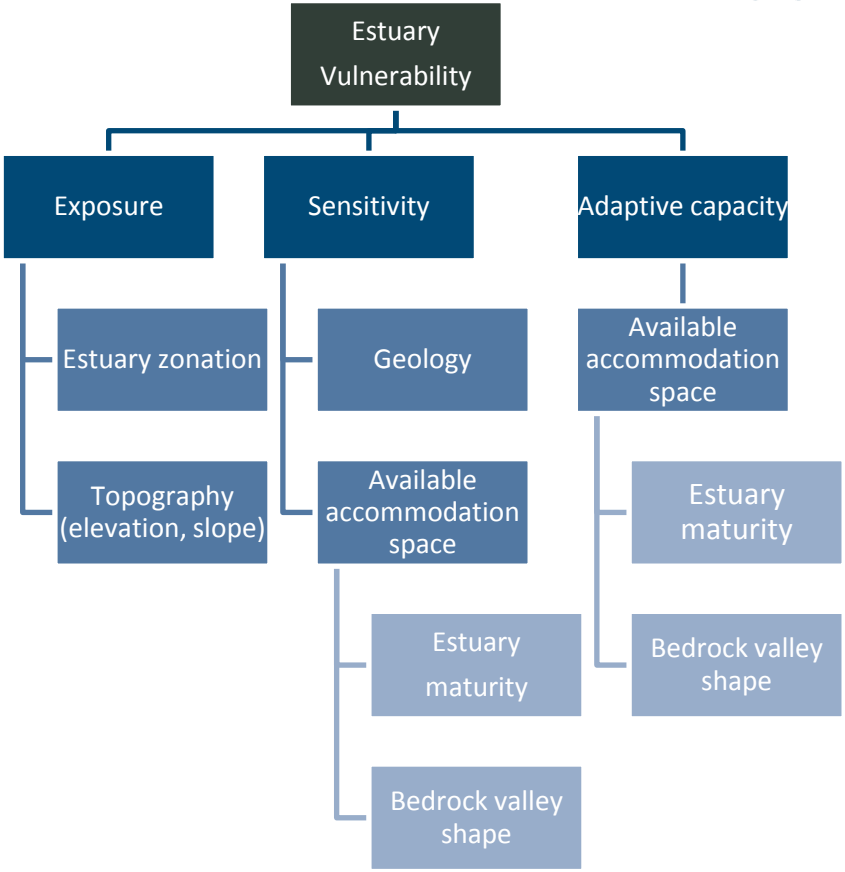
Background

Vulnerability can be described in terms of the exposure and sensitivity of a system to climate change drivers, and the capacity of a system to adapt to climate change drivers. This can be integrated with estuary geomorphology to indicate the future vulnerability of an estuary to geomorphic change.

An integrated framework for assessing the future vulnerability of an estuary to geomorphic change was developed.

First order assessments are broad in spatial scale and utilize readily available datasets.

Ideal spatial datasets for first order assessments of estuary vulnerability to geomorphic change are bedrock geology, unlithified Quaternary geology and digital elevation models. These datasets can be used to describe the exposure and sensitivity of estuarine landforms to climate drivers and the adaptive capacity of estuarine landforms to climate drivers.

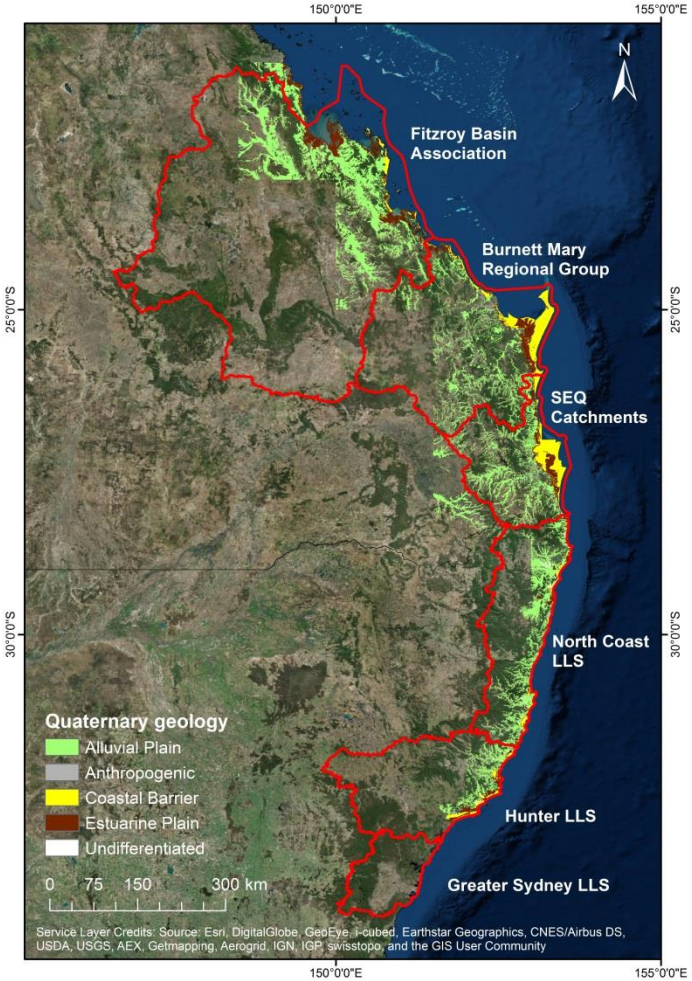


Aim

To apply an integrated framework for assessing the future vulnerability of an estuary to geomorphic change as a first order assessment of vulnerability of estuaries in the east coast NRM.

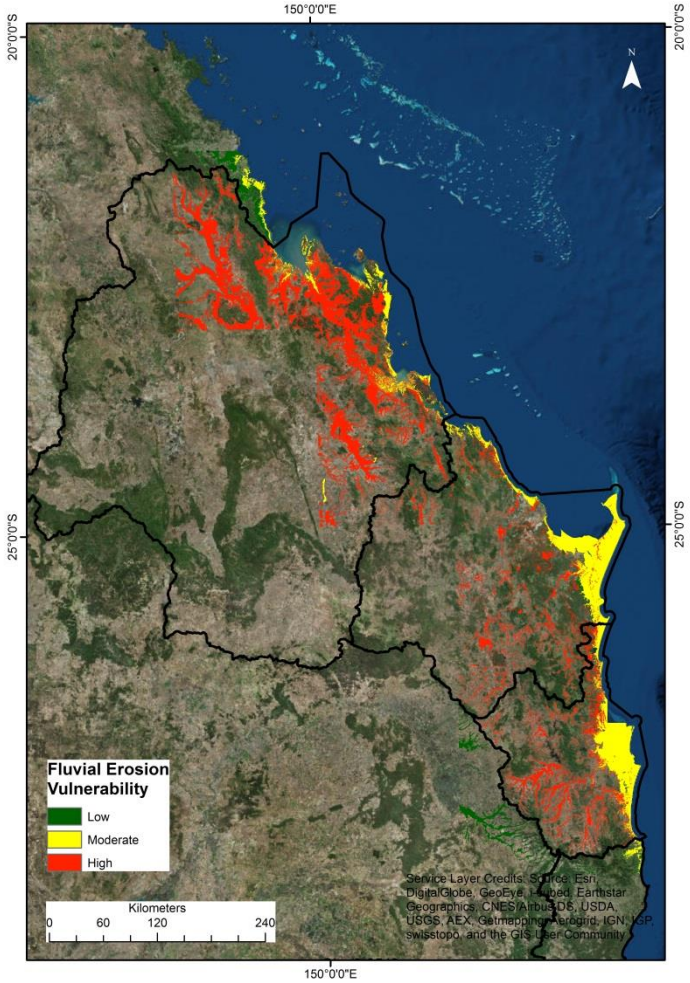
Methods

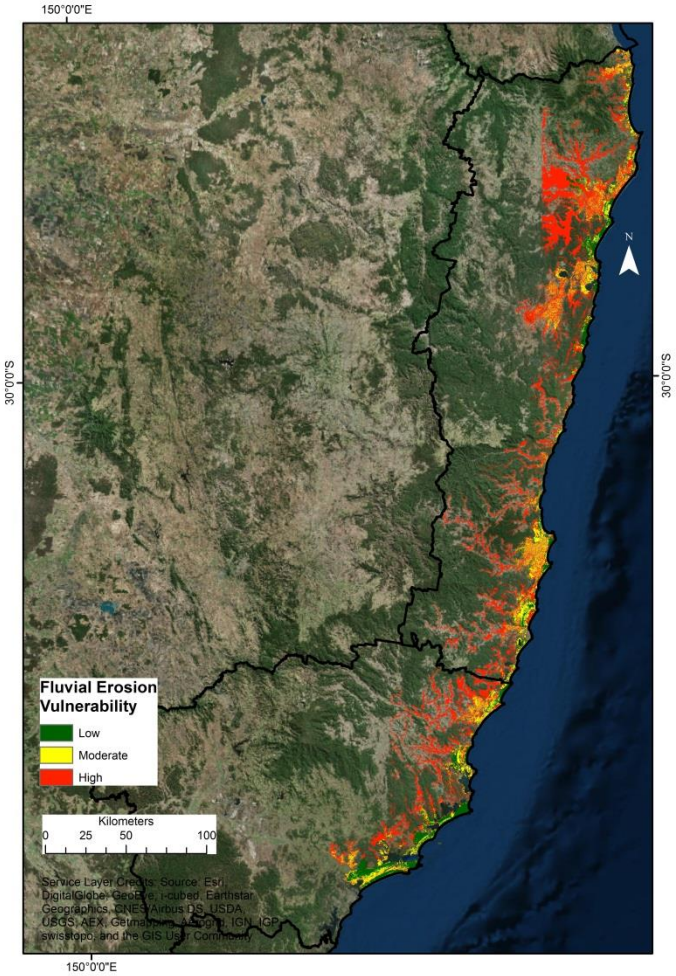
- Within GIS, readily available spatial datasets were applied within the integrated framework to describe the vulnerability of estuaries to climate change. The primary datasets used were coastal bedrock geology, coastal Quaternary geology, and digital elevation models (DEMs).
- As high resolution DEMs require greater processing power, and are not available for the entire study area, a DEM was used that was derived from NASA Shuttle Radar Topography Mission with a 1 second arc. This DEM has a cell size of approximately 30 m x 30 m and elevation to the nearest metre. The resolution of the assessment would be improved by using a higher resolution DEM.
- Datasets were used qualitatively to develop vulnerability indices indicating vulnerability of estuarine landforms to marine erosion and inundation, and fluvial erosion and inundation. In combination these indices were combined as an overall index of vulnerability to climate change. Vulnerability indices are described in supplementary material.



Results

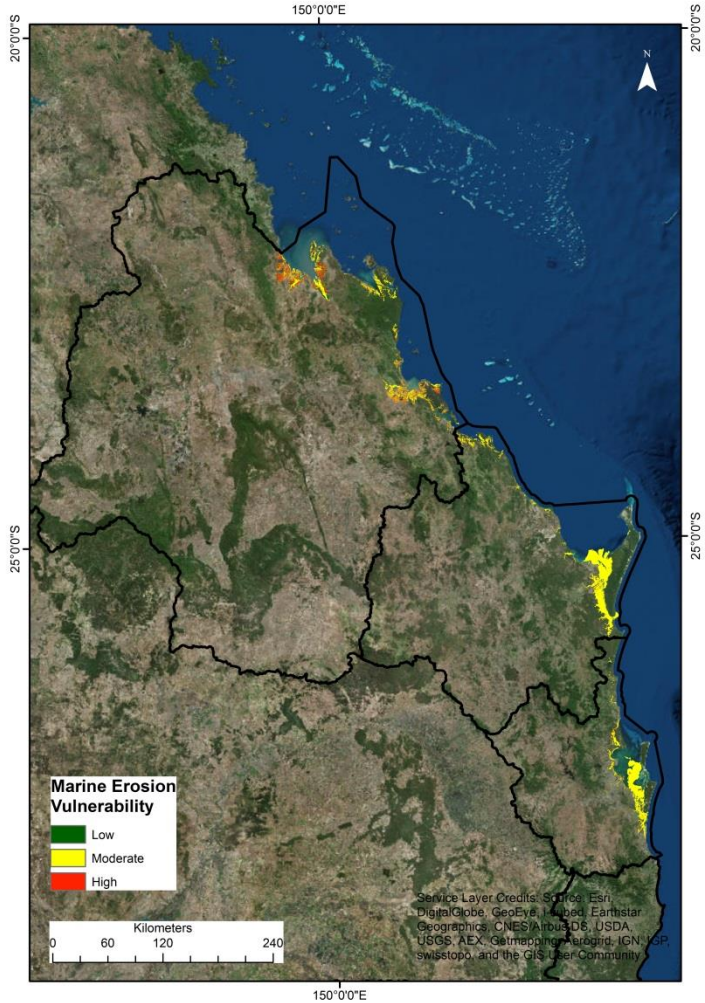
Fluvial erosion in the east coast NRM

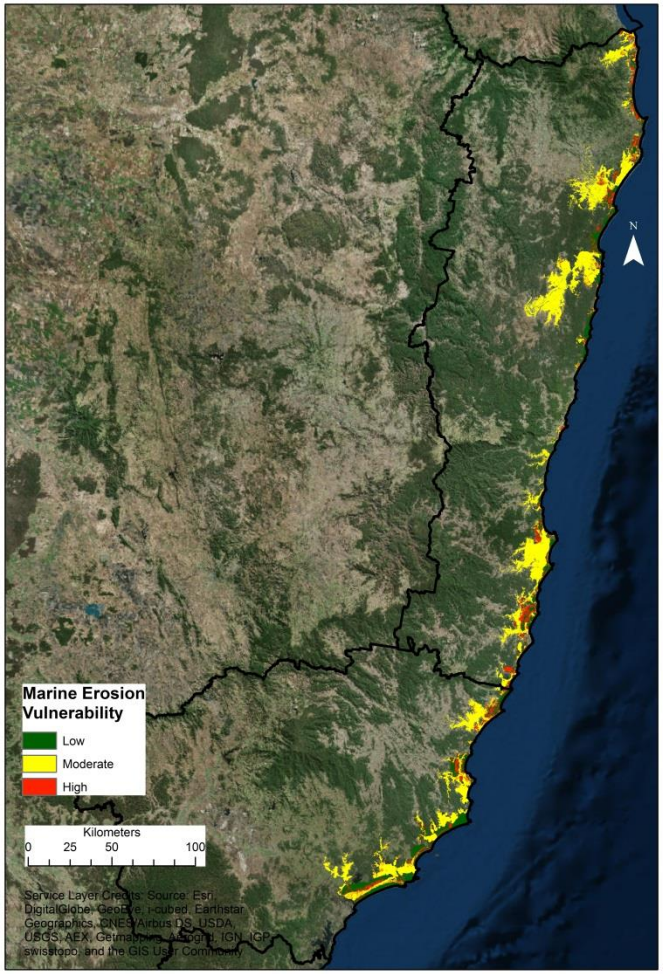




Results

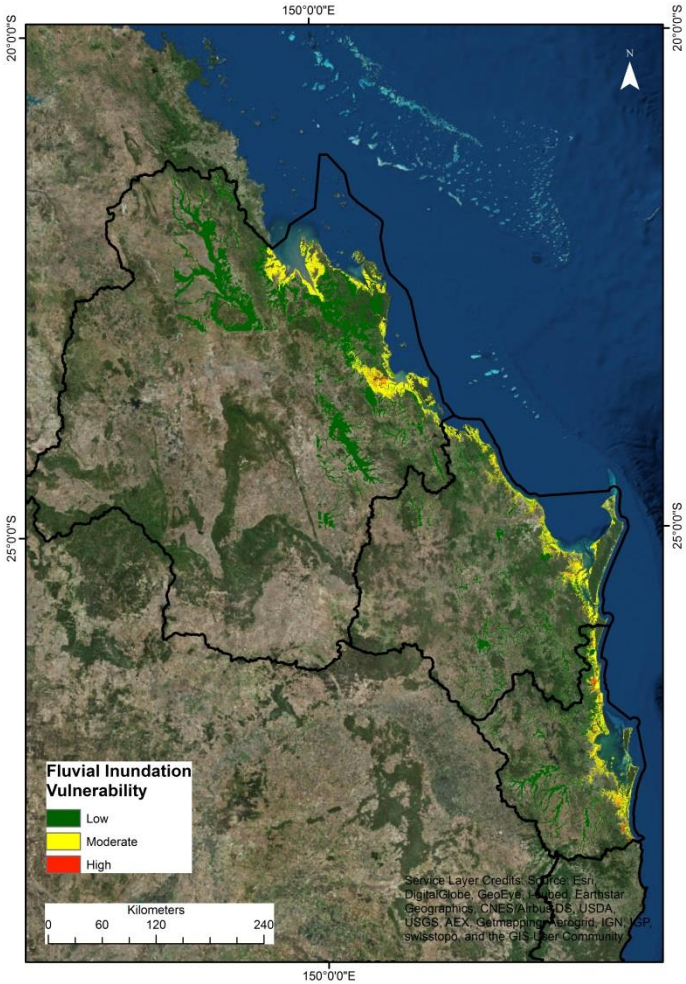
Marine erosion in the east coast NRM

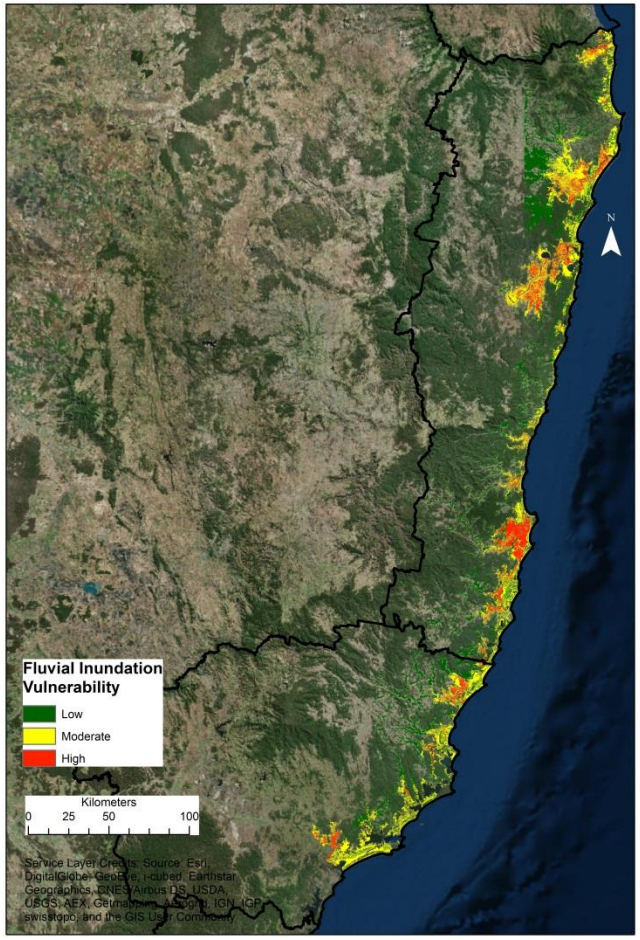




Results

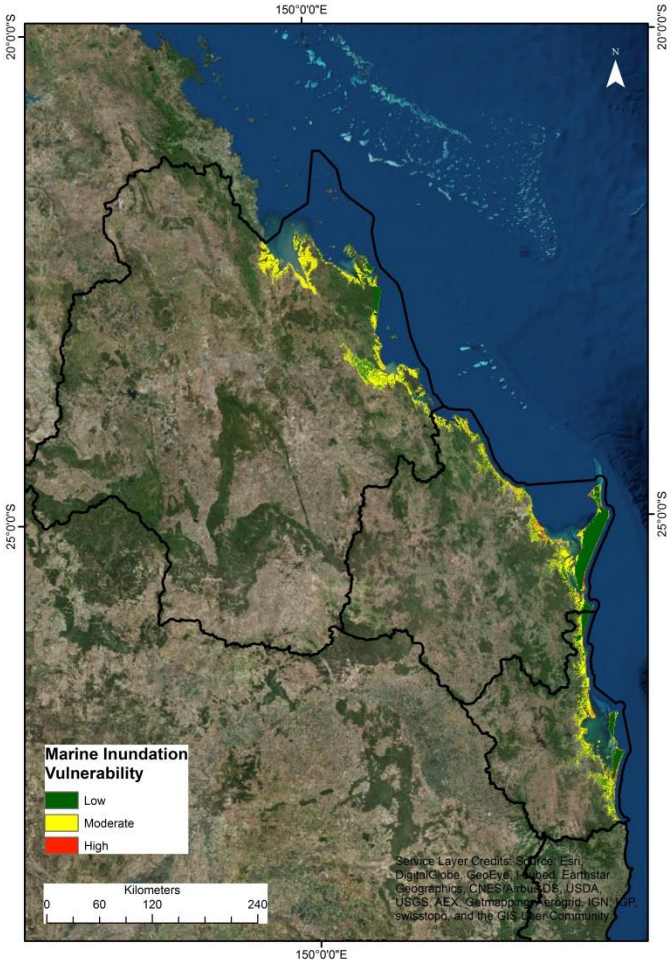
Fluvial inundation in the east coast NRM

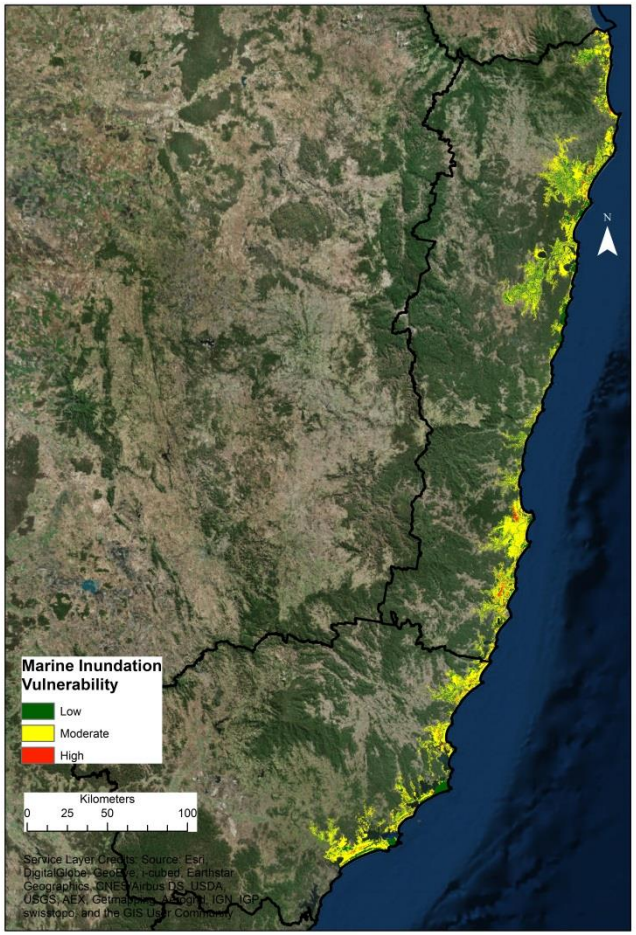




Results

Marine inundation in the east coast NRM





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Thank you

From the East Coast Cluster

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