

# Understanding shoreline change on the Victorian coast: Seaspray, East Gippsland



Victoria has more than 2,500 km of coastline. In addition to its important and varied natural values, the coast provides critical social, cultural and economic benefits to communities. Coastal erosion already affects these values in many parts of Victoria. Climate change is likely to increase the frequency, intensity and extent of existing coastal hazards, further increasing the impact of erosion on the Victorian coast.

The Earth Systems and Climate Change Hub is investigating shoreline change in Victoria through the National Centre for Coasts and Climate.



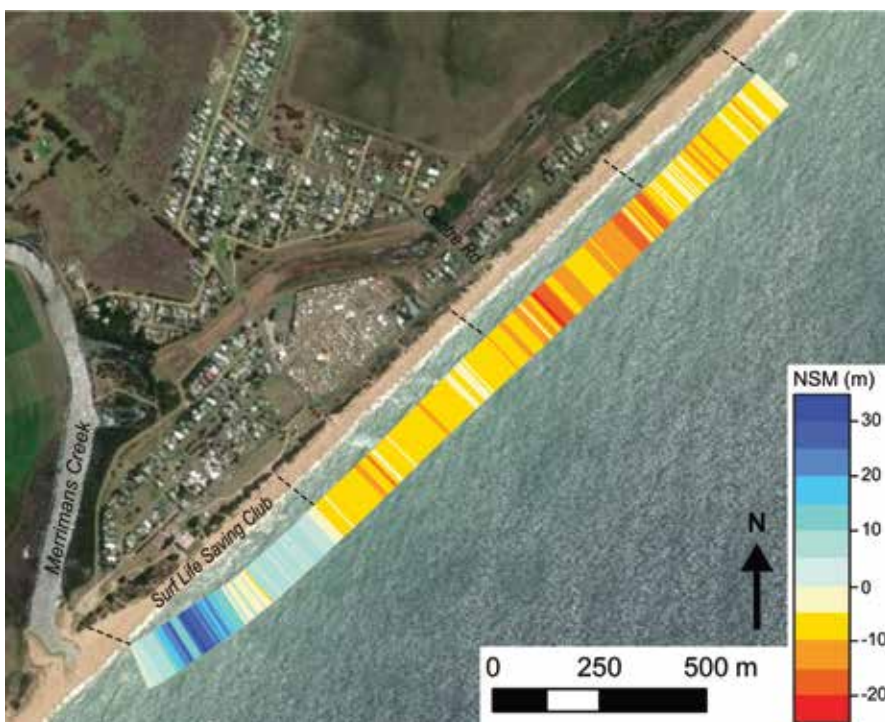
Understanding trends and changes in erosion rates is important for informing coastal management and planning activities. Researchers at the National Centre for Coasts and Climate (NCCC) in the Earth Systems and Climate Change Hub worked with the Department of Environment, Land, Water and Planning and Deakin University on the Victorian Coastal Monitoring Program to investigate changes in the frequency and intensity of historic erosion, and to shed light on the drivers of shoreline change, now and into the future. The program investigated historic shoreline change for 15 coastal areas in Victoria.

This fact sheet summarises the patterns of historic change for Seaspray Beach, East Gippsland. This and other regional summaries are available at [www.nespclimate.com.au](http://www.nespclimate.com.au).

## Historic shoreline change on the Seaspray coast

Seaspray is a low-lying coastal town situated towards the western end of Ninety Mile Beach, approximately 200 km from Melbourne. The town is vulnerable to flooding from nearby streams and by coastal inundation when sea level is elevated. A single high foredune protects the town from the sea. Erosion of this dune increases the likelihood of inundation during periods of increased sea level. Understanding changes in shoreline position on this coast is important for mitigation of future flood risk.

One area of the shoreline – the western extent of the study area between Merrimans Creek and the Surf Life Saving Club – has grown overall since 1965. This shoreline advance has occurred episodically, related to the movement of the Merrimans Creek mouth and the establishment of dune plants on the beach (including when vegetation was deliberately planted). While this section of coast has retreated slightly (~10 m) since 2004, in 2019 the shoreline was still located approximately 20 m seawards of its 1965 position. The dunes now consist of a wide (~50 m) series of dune ridges measuring up to 6 m in height, compared to the low (~4 m) and narrow (~30 m) dunes present in 1965.



Shoreline change on the Seaspray coast showing net shoreline movement (NSM), calculated as the distance between the earliest (1965) and most recent (2019) shorelines. Negative values (yellow/orange/red) indicate landward retreat (erosion) and positive values (green/blue) indicate seaward advance.

East of the surf club the protective dunes consist of a single narrow (~20 m) ridge. Here the study area has large eroded sections along with occasional sections showing no significant net change in shoreline position. Since 1965 the shoreline has retreated by an average of ~10 m, although this extends up to 22 m near the Centre Road intersection.

Shoreline retreat has occurred episodically followed by periods of

limited dune development and accretion. There have been two periods of relatively rapid erosion: one that impacted the centre of the study area in the period 1965–1972, and a more spatially extensive erosive period over 1992–2010. Since 2010 there has been slight shoreline recovery overall, but shorelines are yet to return to their pre-1972 position. The region remains vulnerable to further erosive events.

### How was shoreline change determined?

Researchers compared the shoreline in aerial photos dating from 1968–1989 to photos taken during 2010–2019 and were able to detect changes of 5 m or more. The shoreline was defined as the seaward edge of vegetation or the top of any rock walls, whichever was applicable.

### Implications for the future

Past shoreline changes have been the result of storms (causing erosion) and subsequent recovery periods. However, the overall retreat identified in this study indicates that erosion processes may dominate on this coast. While changes to dune shape were not examined directly, erosion has narrowed the dune, decreasing its capacity for shoreline protection. Dune rebuilding following erosion appears to occur slowly, so Seaspray remains vulnerable to continued shoreline retreat.

Living shorelines can reduce the threats of coastal erosion and flooding. NCCC researchers are developing national guidelines for coastal habitat restoration and eco-engineering to provide coastal managers and councils with more information to help manage threats to assets and mitigate future erosion risk.

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