

Storminess helps coastal marshes withstand sea level rise

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Rising sea levels are predicted to threaten many coastal sea marshes around the world in the coming decades as the Earth's climate warms. In addition to accelerating sea level rise, global climate change is predicted to increase the frequency and severity of storms in many places around the world. But few studies have taken into account how an increased storminess might affect the ability of coastal marshes to withstand sea level rise.

Schuerch et al. ran simulations of marshes on the German island of Sylt in the Wadden Sea for the period from 2010 to 2100. They analyzed simulations of 48 sea level rise scenarios and 13 storm scenarios to identify the critical rate of sea level rise that would allow marshes to survive just until 2100.

They find that with no increase in storminess, with constant sea level rise, the maximum rate of sea level rise the marshes could withstand was between 19 and 21 millimeters (about 0.7 and 0.8 inches) per year. But when they took into account storminess, the marshes' ability to withstand sea level rise increased: marshes survived an additional 3 millimeters (0.1 inches) per year of sea level rise if the storminess was caused by increasing frequency of storms, though only an additional 1 millimeter (0.04 inches) per year if the storm intensity, but not frequency, increased.

The authors explain that flooding that occurs with storms tends to transport [sediment](#) to the marshes from adjacent areas, helping to build

up the marshes; thus the effects of increased storminess on a particular marsh's ability to withstand [sea level rise](#) will depend on the availability of erodible fine-grained material near the marsh.

More information: Modeling the influence of changing storm patterns on the ability of a salt marsh to keep pace with sea level rise, *Journal of Geophysical Research-Earth Surface*, [doi:10.1029/2012JF002471](https://doi.org/10.1029/2012JF002471) , 2013. dx.doi.org/10.1029/2012JF002471

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