



Climate change impacts on dunes erosion in the Netherlands

Renske de Winter and Gerben Ruessink

Utrecht University, Geosciences, Physical Geography, Utrecht, Netherlands (r.c.dewinter@uu.nl)

The dunes in the Netherlands are occasionally eroded as a result of storms and corresponding storm surge levels and extreme waves. We discuss the effect of climate change and the corresponding sea level rise on dune erosion. With the XBeach dune erosion model we studied two representative profiles and analysed the effect of sea-level rise ranging from 0.20 to 2.50 m on dune erosion, as well as changes in the angle of wave incidence.

The eroded volume in our XBeach model under storm conditions is in the order of magnitude of previous studies. In contrast with the Bruun-rule, which suggests a relation between sea-level rise and retreat distance, we found a linear relation between SLR and the amount of eroded volume of the dunes. Changes in the wave angle from shore normal to ~ 40 degrees, increase the erosion volume to the same extend as 40 cm sea-level rise.