



CHANGES IN TIDAL RANGE IN THE NORTH SEA DUE TO MEAN SEA-LEVEL RISE

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The barotropic ocean model TRIMGEO is used to study the changes in tidal range in the North Sea caused by a mean sea-level rise of 90 cm. In this idealised process study the results of two one year-long simulations are investigated which were forced every 10 minutes by realistic tidal elevations at the open boundaries of the model domain. For one of these simulations the mean sea-level at the open boundaries was additionally elevated by 90 cm.

For the risen sea-level the model predicts an increase of the mean tidal range for almost the whole model domain of 60 to 120 cm. Areas close to the amphidromic points were not taken into account. The strongest increase of the tidal range of at least 100 cm can be observed at the southern coast of the North Sea. The increase in tidal range in the scenario run is caused by enlarge tidal high waters where the tidal low waters show no significant change. This is in general agreement with observations from the German Bight where tidal high waters show a slight positive trend for the last decades which can not be found in the tidal low waters.