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Do we have to take an acceleration of sea level rise into account?

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In view of preservation of safety against inundation and of the many values and functions of the coastal zone, coastal retreat is no longer acceptable. That is why it was decided to maintain the Dutch coastline on its position in 1990. Later the preservation concept was extended to the Dutch coastal foundation, which is the area that encompasses all dune area's and hard sea defences and reaches seawards until the 20m depth contour line.
Present Dutch coastal policy is to grow with sea level by means of sand nourishments. A main issue for the planning of sand nourishments is the rate of sea level rise, because that is the main parameter for the volume of the sand needed. The question is than relevant if we already have to take into account an acceleration of sea level rise.

Six stations with long water level records, well spread along the Dutch coast, were analysed. Correction of the measured data was considered necessary for an adaptation of the NAP in 2005 as a consequence of movements of the top of the pleistoceen, on which the NAP bench marks have been founded, and for the 18.6 year (nodal) cycle in the time series of yearly mean sea levels. It has been concluded that along the Dutch coast no significant acceleration of sea level rise could be detected yet. Over the last 120 years sea level rose with an average speed of 19 cm per century relative to NAP (the Dutch ordnance datum). Time series shorter than about 50 years showed less robust estimates of sea level rise.
Future sea level rise also needs consideration in view of the estimate of future sand nourishment volumes. Scenario's for sea level rise have been derived for the years 2050 and 2100 relative to 1990 by the KNMI (Dutch Met Office) in 2006 for the Dutch situation. Plausible curves have been drawn from 1990 tangent to the linear regression line in 1990 and forced through the high and low scenario projections for 2050 and 2100. These curves show discrepancies with measurements of the last decade, particularly for the high scenario.

Dutch design levels for coastal water defence structures (dikes and dunes) are based on extreme value statistics of long time series of high water levels. These design levels have typically return periods of 2000, 4000 and 10.000 years, depending on the importance of the protected dike ring. The last statistical analysis for the update of the design levels refers to the sea level situation of 1985. According to the Water Act Dutch design levels must be tested periodically (every 6 years). Due to sea level rise and tidal changes the design levels are corrected for the rise of the mean high waters from 1985 until the end of the testing period under consideration. This demands a tailoring approach for different regions or locations instead of a national average as for coastal preservation.
Runs with climate models and coupled hydrodynamic models in the framework of the Essence project and the Delta Committee 2008 showed no indication for a change in the statistics of extreme storm surge levels.
For the estimation of sea level rise over the last 120 years a linear regression gives the most robust estimate. Showing decadal variability needs more sophisticated models. For the last update of the design levels the elegant Whittaker smoother has been applied.

Dutch policy prescribes to account for a future sea level rise of 60 cm per century for the design of new dikes or dike reinforcements and 85 cm per century for the long term (200 years) allocation of space for future reinforcements, in agreement with the KNMI'06 scenario's for sea level rise (central value and upper limit).