

English Summary Report Seal Level Monitor 2022

Since 2014, Deltares has been updating the Sea Level Monitor for the Ministry of Infrastructure and Water Management. The aim is to determine the status and development of the sea level in order to support policies for flood risk management. The primary focus is on the average quantity of sand needed for nourishment purposes, and the testing and design of the primary flood defences.

Six tidal stations

The Sea Level Monitor records the sea level status annually at the six main tidal stations of the Netherlands (Delfzijl, Harlingen, Den Helder, IJmuiden, Hoek van Holland and Vlissingen), which continuously record/measure water levels. The methodology for the Sea Level Monitor was established in 2014 and it calculates the long-term trend. This calculation takes into account the various factors affecting the fluctuations in water levels, the most important being winds and tides. The results of the Sea Level Monitor are considered to be representative for the average sea level rise over approximately the next fifteen years. Observations and research results are reported every four years. This is the third report.

Previous reports

The previous two reports concluded that, given the methodology, a constant trend since 1900 was the best fit for the trend. This report sets out the grounds for/draws a different conclusion. The rise in the sea level on the Dutch coast can now best be described by a trend of 1.8 ± 0.1 mm/year until approximately 1990, and an increase in the average annual rise to 2.9 ± 0.4 mm/year during the past 30 years. This increase fits the expectation based on knowledge about the global status of sea level of a gradually increasing acceleration of sea level rise.

A trend of 2.9 mm/year is a responsible approximation for approximately the next fifteen years. The methodology used in the Sea Level Monitor is not suitable for a calculation of the trend after that time.

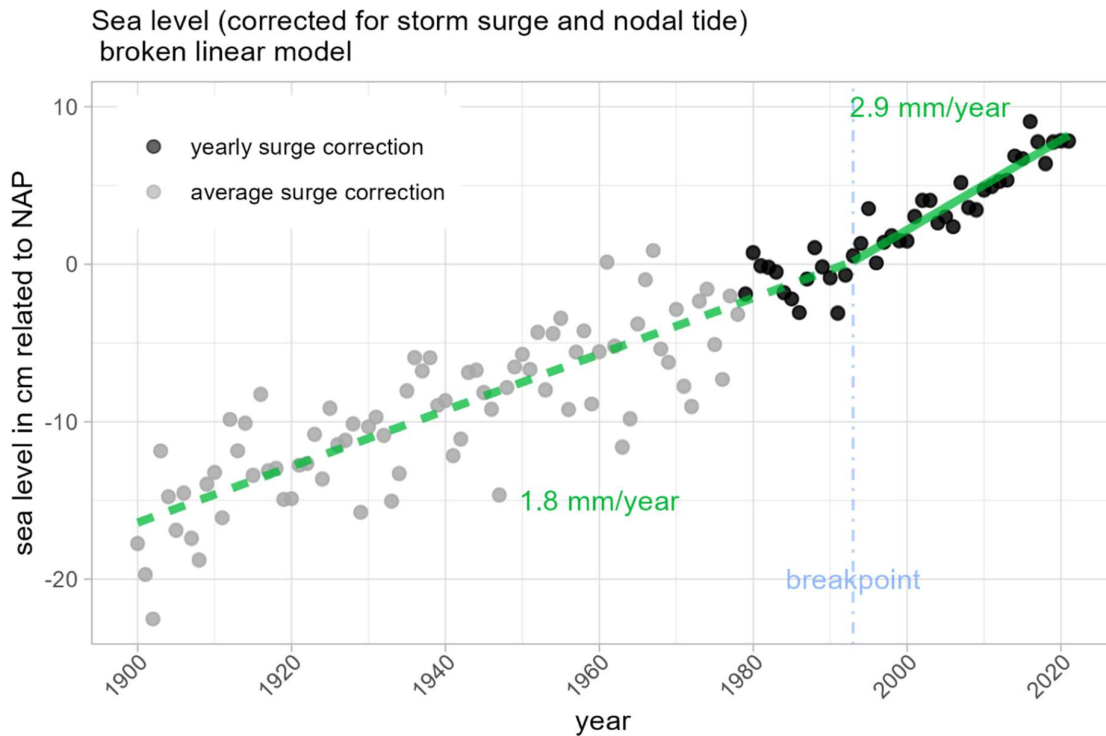


Figure 1 The change in the sea level trend over time

The figure above conveys three main messages:

- An acceleration of sea level rise can be observed in the Netherlands. The rise in the decades ahead is expected to be higher than the trend last century.
- The level of uncertainty in the data in this Sea Level Monitor is lower than previously. This is due to a more accurate correction for wind surge, making the description of local sea level rise in recent periods more accurate.
- The year-to-year variation in sea level (approximately ± 10 cm) is much larger than the uncertainty in the long-term trend (approximately ± 0.4 mm/year).

Data from five of the six Dutch stations were used in this Sea Level Monitor. There is reason to believe that the data from the Delfzijl station are not now reliable enough, in particular because of the high rate of land subsidence. The trends in the rise since 1993 at the other stations are similar: 2.3 and 3.3 mm a year.