

THE DUTCH AND THE SEA LEVEL RISE

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A historic battle

The Netherlands and the North Sea have had an affair over the centuries, which one would call these days a Love / Hate Relationship. The sea and the three large rivers flowing into it have made it a fertile country, enabled global trade and shipping, and afforded it an international position as a colonial power, while its citizens fought against the sea, fighting to keep their heads above water. Literally!

There is now quite a stir in the Netherlands about the supposedly rising sea level and on whether it will actually rise rapidly through "Global Warming", as some are worried about and whether the dikes should be raised for protection.

That is of course - in what is historical known as "the Low Countries by the Sea" - not really news. Some 2500 years ago people lived in the north and west of the country on mounds ("terpen"), while in the higher parts the land has been occupied for about 5000 years. Everyone always fought against the sea.

Something important happened in the 11th and 12th centuries.

First, around the year 1000 Friesland, in the NorthEast, was already partially protected by dikes and in the rest of "Holland" this protection began to take shape soon thereafter. This was done as a collaboration between the local landowning Count and his tenant farmers, who were all getting tired of the annual floods. The partnership was built by local organizations called Heemraden (literally: Home Councils), in which the Count was the chairman of a democratically elected Heemraad. Regionally, these Councils were later united in larger elected bodies; they could levy taxes and perform the necessary work. Note that this occurred before the date of the English Magna Carta, which, incidentally, was a treaty between the King and his vassals. The people were not involved in this. Also, the ancient Romans and Greek are disqualified as discoverers of pure democracy, as their civilizations were based on slavery.

The Dutch Heemraden were the cradle of modern democracy and the regional ones still exist to this day. The Netherlands should be proud.

How do we measure the sea level rise?

The sea level rises. It has been increasing for almost twenty one thousand years, since the largest extent of the last ice age, when it was 120 metres lower than today. For the first eight thousand of those years of melting continental ice sheets after the onset of the interglacial era in which we now live, the oceans rose about five centimetres per year, but the last eight thousand years showed a gradual reduction to an average one and a half millimetre per year. That rate has now been unchanged for many years.

There are several ways in which sea level is measured; this often entails complications because the land surface with which one compares the sea has been moving up and down in absolute terms by geological processes. In the Netherlands, this land movement has been mostly downward due to the subsidence and water expulsion of the recent sediments brought in by the rivers, but downward faulting into the North Sea basin has also been a factor. An example of the latter geological process can be inferred from the fact that coal seams, which are close to the surface in the southern province of Limburg, have dropped to 5 km depth under the North Sea.

Today there are satellites in precise orbits measuring the distance to the sea surface. But the sea surface is not a global plane: it can vary, by differences in gravity or currents by as much as 100 metres from place to place. There are important differences between the world's oceans. So many "corrections" must be applied that in the end the corrections are larger than the measured variations in sea level. It's no wonder that the satellite measurements differ from local tide gauge measurements

Changes in sea level

Sea level fluctuations are in themselves an interesting science. Examples of extremes and of future disasters often have a geological reason:

* Pacific coral islands usually grow on top of ancient volcanoes. The volcanoes themselves sink slowly because of their weight, while the

hard-working corals attempt to maintain their depth of water.

Tuvalu is a "poster child" for environmentalists, but accurate sea level gauge measurements show no increase. There are other Pacific islands like Takuu and Carteret where the sea is rising dramatically, but that is because the islands are sinking faster, as they are located on a subsiding tectonic plate.

* Another example are the Maldives in the Indian Ocean, where the government receives large international grants to mitigate the islands' predicted demise, while renowned scientists have proved that the sea level there is actually falling.

* Bangladesh - like a part of the Netherlands - consists mostly of accumulated delta sediments, brought in by the Brahmaputra and Ganges rivers. The deposition of water-laden sediments is continuing, while the delta compacts slowly and builds out into the ocean. The regular flooding of low lying areas are natural phenomena that have nothing to do with global warming.

* There is a well-known geographic rebound feature associated with the melting of the ice sheets after the last ice age. In Scandinavia and in the Hudson Bay one can still see the rising of the land. When flying the Polar route from West Canada to Europe, one can see the raised old beaches along the Hudson Bay coast, high along the coastal lands. This is part of the so-called Eustatic effect.

In spite of all these complications, independent researchers generally agree with a current annual sea level rise of about 1.8 millimetres per year, a total of less than 20 centimetres to the end of this century.

This obviously constitutes an important difference with the computer simulations of the UN IPCC (Intergovernmental Panel on Climate Change), which for many years expected about half a metre of sea level rise by 2100, while Al Gore even talked about five to six metres.

It is also of importance to the Dutch government, which - as a member of the IPCC - thinks that it should believe in the IPCC's computer scenarios. These assume that larger amounts of carbon dioxide exert such a major influence on the Earth's temperature that the ocean levels will rise due to the melting of the polar ice caps and glaciers and the expansion of warming ocean water. Many voices of independent scientists protest against these uncertain and politically motivated projections and call them unnecessarily alarming.

Political consequences in the Netherlands

With this, we have landed in the realm of politics. In 2008, the Dutch government, in an attempt to determine a course of action by the Netherlands to protect the country against sea incursion, founded the Delta Committee (or Veerman Committee, after its Chairman). There were no climatologists and palaeo-climatologists on this ten-man committee. Almost all were supporters of the IPCC version and alternative scientific opinions were not taken into consideration, thereby excluding peer-reviewed theories of Dutch professors in the Earth Sciences and Astronomy.

Because of their lack of expertise, the Commission created a second committee of international experts chaired by Wageningen Professor Vellinga, which was asked to produce a report in cooperation with KNMI (the Dutch Meteorological Office) and a research group so that the government would have an idea what would the largest flood risk would be that the Netherlands could run. It was especially this worst-case scenario report that put the cat among the pigeons, because it built on the theories of investigators from the German PIK centre, in particular Professor Rahmstorf whose estimate of disasters is known as being much larger than even those of the IPCC.

The Delta Commission's 2008 report thus based its conclusions and recommendations on a possible increase to 110 cm in 2100 (twice as high as that of the IPCC, which calculates a maximum of 59 cm increase by 2100) and even to 4 meters in 2200. It included the recommendation to improve coastal defences, such as the raising of the dikes, using these extreme predictions, which would cost an annual two billion euros for the next forty years.

But if the sea level rise would continue as it had behaved for the last centuries, it would rise at most 18 cm and 36 cm in 2100 and 2200 respectively.

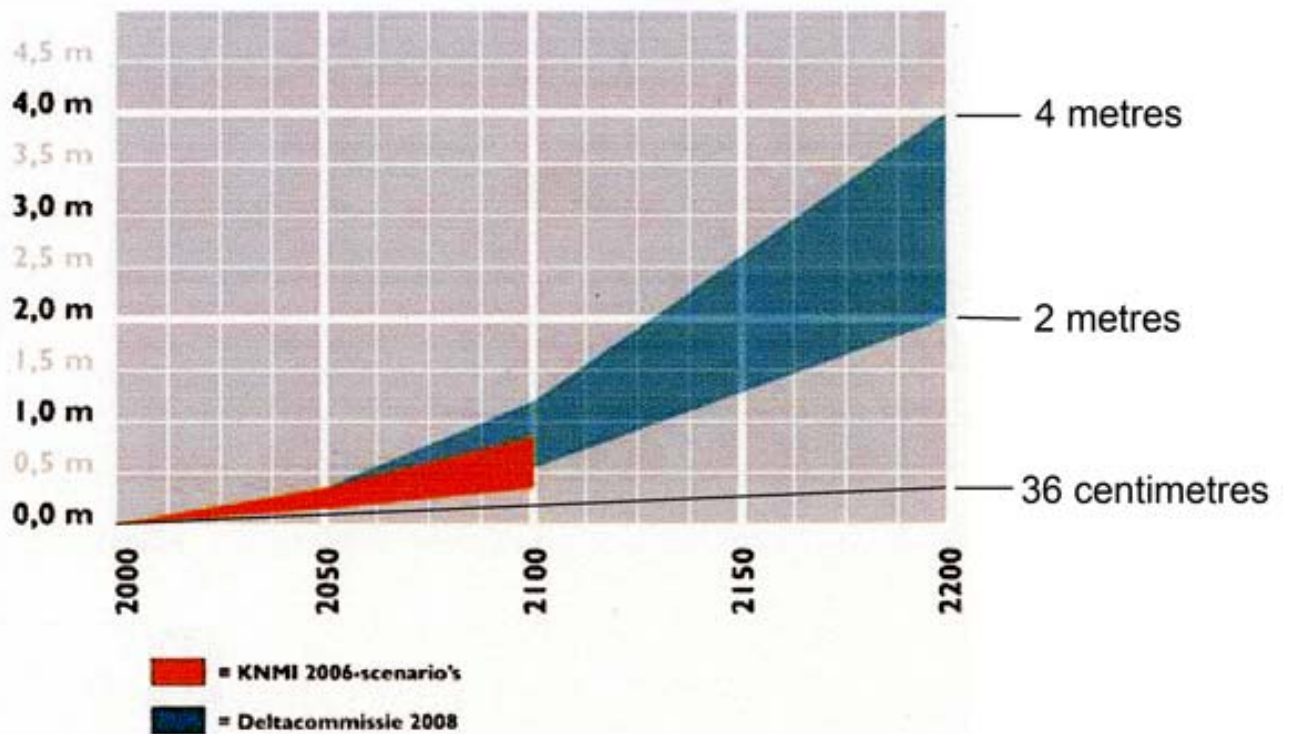


Figure 1
 Graph of the Delta Commission's report, with predictions of sea levels in 2100 and 2200. The bottom line shows how high the sea level will rise if current growth continues.

Dr. Hendrik Tennekes, former Director of Research at the KNMI, was one of the first to ring the alarm bell in a fiery protest on the climatesci.org/2008/10/28/ blog, particularly when the Delta report recommendations were followed by a massive publicity campaign.

The NRC Handelsblad (9 Oct '08) reported that some of the climatologists on the Vellinga Committee suspected that the Delta Committee excessive "worst-case" estimates were misused for political purposes.

The government accepted the report and appointed a "Delta Commissioner", who has stated that he needed more money. The Delta Act was submitted to the Dutch House of Commons, but the government fell before the bill was voted.

Participation Dutch style

It was enough to mobilize the climate skeptics in the Netherlands. For years, there had been a group of independent expert scientists who were in disagreement with the IPCC process and the human-made carbon dioxide cause of catastrophic global warming. The group had gathered around Emeritus Professor Arthur Rörsch and now Dick Thoenes (engineer), Kees de Jager (astrophysicist), Bas van Geel (paleobotanist), Noor van Andel (physicist), Salomon Kroonenberg (Geotechnology), Hans Labohm (Economist), Gerrit van der Lingen (geologist) and dozens of other professional and journalistic supporters.

They discussed among themselves, gave lectures, interviews, made web sites, but did not get much attention from the KNMI, nor from the government.

The uproar caused by the Delta Commission Report resulted in attempts to open a scientific debate, to do something in which almost no country has succeeded. In Canada we are still waiting for an open forum. The patient work by Professor Rörsch (an engineer / biochemist / negotiation expert / ex-TNO director / ex-science representative of the Netherlands in the EU) resulted in a discussion with the meteorologists at the KNMI, a presentation to a House of Commons Committee and a Symposium at the KNAW, the Royal Dutch Academy of Sciences in April 2010.

The report of the Academy meeting is already months late in coming. It seems to be a task that is just as difficult for the academics as the recent cabinet formation was for the politicians.

The Dutch government, affected by the economic problems of 2010, is now probably less willing than before to commit to a multi-billion Euro dike improvement project.

Helped by the Climate Gate scandal and the fiasco of the Copenhagen climate conference, there is a good chance that this (sea) tide is turning.

If the Government would postpone the plans of the Delta Commission for the time being, it could save 10 billion euros over the next five years.



*Figure 2
Beach of Raratonga (Cook Islands). Gauge measurements here have
not shown a rise of sea level .
(Photo Gerrit van der Lingen)*

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