Luctor et Emergo

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Verklaring voor Nederland. Dit artikel is het deel betreffende Nederland van een groter hoofdstuk over zeespiegelstijging dat deel uitmaakt van een boek dat ik aan het schrijven ben, getiteld *The Fable of a Stable Climate.* Andere delen van dit hoofdstuk gaan over zeespiegelverandering (stijgen of dalen of helemaal niets) in Bangladesh, Tuvalu en de Maldiven. Mijn bedoeling is om met dit artikel een bijdrage te leveren aan de discussie rondom het rapport van de Deltacommissie (Commissie Veerman). Nu er en nieuwe regering op het punt staat aan te treden, hoop ik dat deze de conclusies en adviezen van de commissie en de daaraan verbonden enorme kosten opnieuw gaat bekijken. In het kader van de enorme besparingen die noodzakelijk zijn, tot 18 miljhard euro, is het zaak om een en ander nog eens nuchter te bekijken en ook de opinies van wetenschappers buiten het IPCC/Hockey Team circuit serieus te nemen.

Mijn advies zou zijn: blijf de werkelijke zeespiegelstijging (niet die gebaseerd op computermodellen) nauwkeurig registreren en neem pas maatregelen als die noodzakelijk blijken. Wel is van belang om op korte termijn de bestaande waterkeringswerken, zoals dijken, duinen, sluizen, enz. in perfecte staat te brengen en te onderhouden.

An important article of the man-made global warming dogma is the belief that global sea-levels will rise dramatically, causing the forced migration of hundreds of millions of people. Four areas especially serve as poster regions for the man-made global warming propaganda: the Netherlands, Bangladesh, Tuvalu in the South Pacific and the Maldives in the Indian Ocean.

The Netherlands. For the title of this chapter I have used the Latin motto of the province of Zeeland in the Netherlands, *Luctor et Emergo*, which means *I struggle and Emerge*. It goes with the coat of arms of the province, showing a lion emerging from the waves (Figure 1), symbolising the eternal struggle of the province (and the country) against the sea.

Figure 1. Coat of Arms of the province of Zeeland

As recently as 1953, the province suffered a severe flood, costing the lives of 1800 people and countless animals. It was caused by a combination of a severe storm and a springtide. Many dikes broke.

Personal anecdote. I remember this well myself. We lived in the province of Utrecht. My parents owned a small boat with outboard. That was put on a truck and transported to the stricken area, where in the meantime the storm had abated. My brother, and I took part in rescuing several people stranded on rooftops and transporting them to higher grounds.

Since that disaster, the Dutch have constructed a modern system of protection against a repeat of this disaster, called the *Delta Plan.*

Historically, there have been several disastrous floods. The best remembered were the so-called *St Elisabeth Floods* of 1404 and 1421. That was during the Little Ice Age, when there were more severe weather events than during the preceding Medieval Warm Period (see Chapter ...).

Al Gore, in his scaremongering sub-prime-science movie *An Inconvenience Truth*, makes a big, albeit unfounded spiel about alleged sea-level rise caused by human CO2 emissions. According to him, sea-level could rise by 6 metres by the end of this century, caused by the melting of half the ice caps of Greenland and Western Antarctica. The movie shows alarming animated pictures of the Netherlands being inundated (Figure 2).

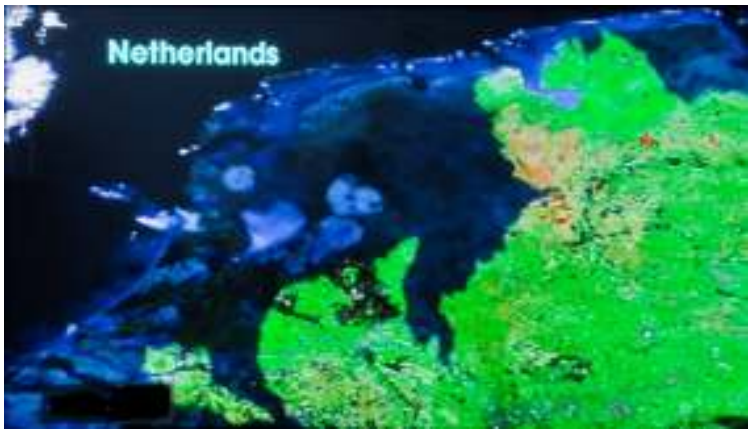


Figure 2. Scene from Al Gore's movie *An Inconvenient Truth*.

About 27% of The Netherlands is below sea level (not 55% as stated in the fourth assessment report of the IPCC, or 60% as stated by the Vellinga Committee – see below), protected by dikes and natural dunes (Figure 3). A large part of the country is formed by the delta of three major rivers, the Rijn (Rhine), the Maas (Meuse) and the Schelde (Scheldt).

Figure 3. About 27 % of The Netherlands is below sea level (green areas).

Indications of human habitation of The Netherlands go back more than 5000 years. Initially, people probably were living only in the higher areas, which were shaped by the icecap of the penultimate ice age, which covered about two-thirds of the country. Signs of human habitation in the low-lying areas go back at least 2500 years, when people started to build 4 to 6 metres high hills, called *terpen*, in the NW and N of the country, to protect them from high tides. (Figure 4). They are also found in northern Germany all the way to Denmark.

Figure 4. The norther part of pre-historic Netherlands. The red dots are the locations of the pre-historic *Terpen.*

This struggle against the sea goes therefore back to prehistoric times. After about 1100 AD, when dikes were built, the use of terpen against regular flooding became redundant.

Yes, sea-level in the Netherlands is rising. But that is a relative statement. It is a combination of sea-level rising and the land sinking. During the last Ice Age the North Sea was dry land. Since the end of the last Ice Age the sea-level has been rising by about 120 metres (Figure 5).

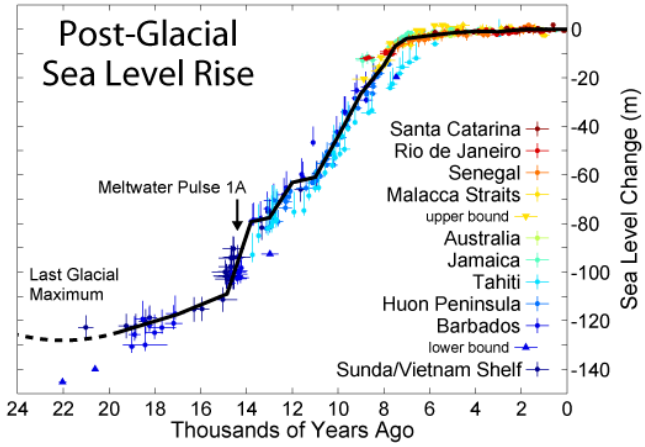


Figure 5. Post-glacial sea-level rise.

Our ancestors, living between 11,000 and 8,000 years ago, had to cope with a sea-level rise of about 22 mm per year. Even more in the period about 15,200 to 14,200 years ago. Since about 7,000 years ago sea level continued rising, but at a much slower rate. Notwithstanding global-warming-alarmists claims, there has been no increase in this steady rise of about 1.3 to 1.8 mm per year.

There are four reasons why sea level in the Netherlands is rising. Three of them are due to the land sinking:

1. Crustal movement. The earth's crust below the river and marine sedimentary cover has been going down in a hinge-like fashion. Carboniferous rocks (359-299 million years old) outcrop at the surface in the south-eastern-most corner of the country. Those can be seen in the famous Heymans Groeve (=quarry). Carboniferous rocks contain coal layers, which were mined until 1974, when coal became redundant after a huge natural gas field was discovered below the northern province of Groningen. Those coal strata were formed from the remains of large forests, which were formed at the surface. However, those coal strata are now found at depths up to 5 km underneath the North Sea (Figure 6). This means that the Earth's crust has sunk in a hinge-like movement towards the north-west. This crustal movement probably started in the Cretaceous, about 60 million years ago, and is probably still going on.

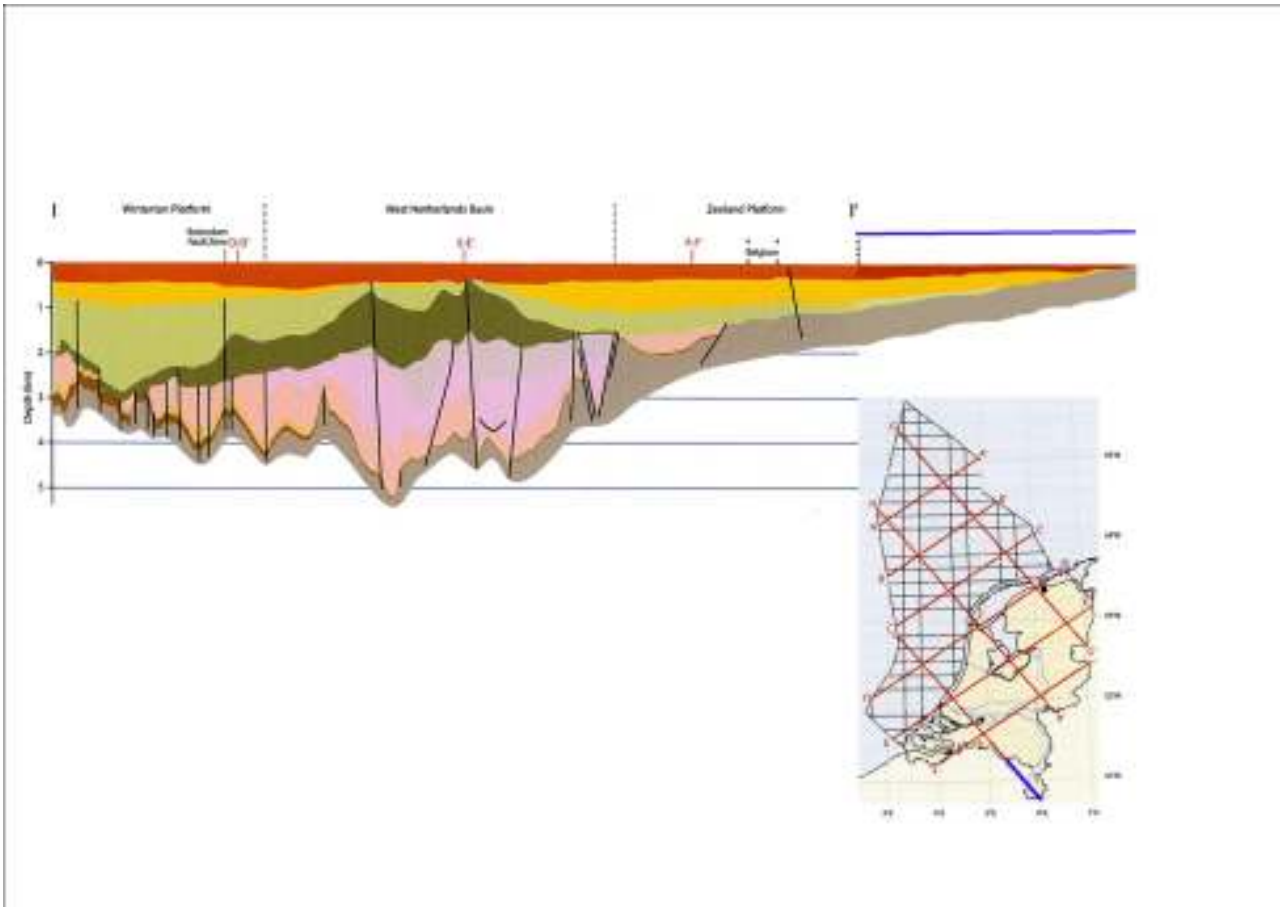


Figure 6. Geological cross section through the Netherlands, from south-east to north-west (Line I – I"). The Carboniferous strata (light-grey) are the lowest indicated. The blue line extension to the SW of the cross section has been added by the author.
Source: Duin, E.J.T. et al. 2006.

2. Isostatic re-adjustment. During the last ice-age, a large ice-cap of up to 3 km thick covered Scandinavia. The Earth's crust underneath had been pushed down by the weight of the ice. After the rapid melting of the ice-cap at the end of the ice age, the crust started to rebound slowly. This process is called "isostatic readjustment". It is reflected, for instance, in the fact that relative sea-level in Stockholm is falling (Figure 7).

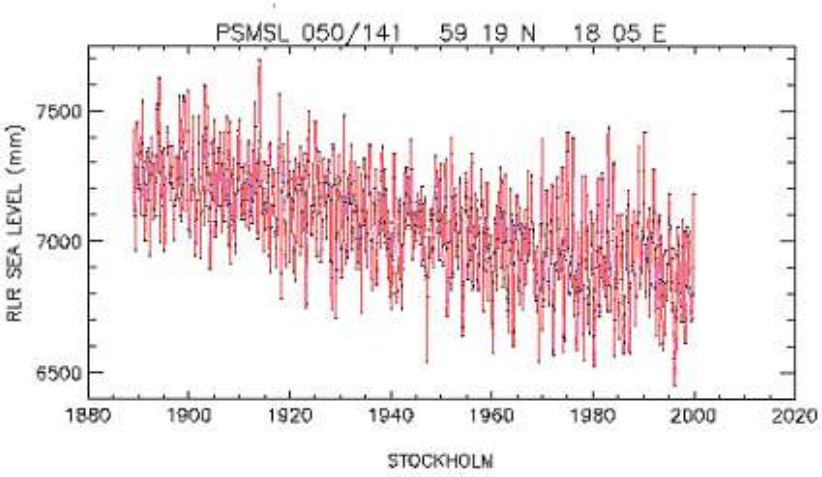


Figure 7. Relative drop in sea-level in Stockholm, caused by isostatic re-adjustment.

While the crust is rebounding, mantle material below the crust moves towards Scandinavia. This in turn causes the surrounding crust, including the Netherlands, to subside.

3. Sediment compaction. Unconsolidated sediments, mainly belonging to the Neogene (23 million years ago to Present) overlie harder [*find word*] strata. These sediments compact over time, assisted by human extraction of ground water, attributing to the dropping of the surface of the Netherlands.

4. Eustatic sea-level rise. This is the global sea-level rise due to the melting of ice caps and glaciers since the last ice age, and the thermal expansion of the sea-water.

NAP - Normaal Amsterdam Peil (Normal Amsterdam Datum).
One of the oldest records of sea-levels is the so-called AP (Amsterdam Peil = Amsterdam Datum). It started in the 17th century, when in 1683, the then-mayor of Amsterdam, Johannes van Waveren Hudde (1628-1704), established a baseline datum by having marble stones mortared into the walls of eight locks. These eight stones were at exactly the same height. From then on daily measurements were made of high- and low-tide sea-levels. During the 18th century this standard datum was transposed to many other areas in the Netherlands. In the period 1875 to 1885 a more precise check was made of all level marks in the country. Corrections were made where necessary and a new datum name was introduced in 1891, the NAP (Normaal Amsterdam Peil = Normal Amsterdam Datum). Twice a re-levelling was carried out, to correct for measurement errors in the older measurements and for vertical changes in the various levels. One was carried out from 1875 to 1885, the second from 1926 to 1939. In 1953 a new datum for NAP was established, being the top of a bronze bolt on top of a 22 metre long pole, driven into the ground at Dam Square in Amsterdam. This bolt is at 90 centimetres below the pavement and is 1.43 metre above NAP. Figure 8 shows that from 1700 to 1861 sea-level has risen gradually.

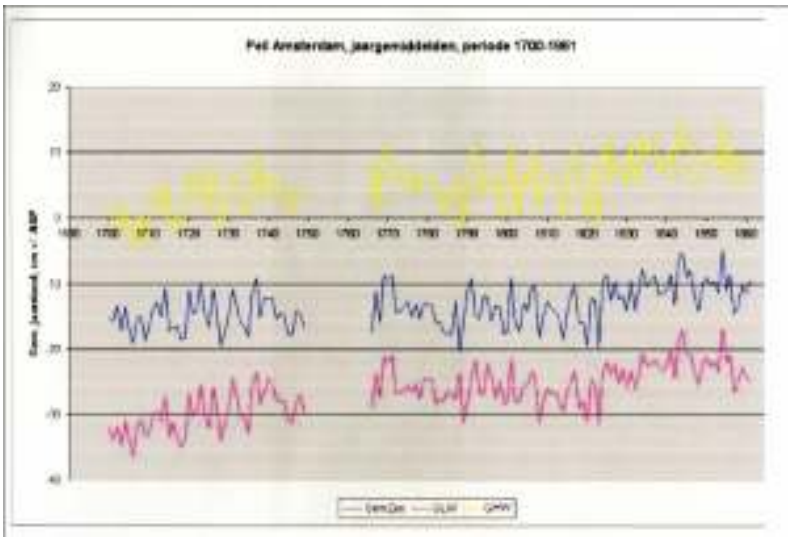


Figure 8. Sea level record in the Netherlands from 1700 to 1860 - Annual averages). GemZee - Average Sea level, GLW – Average low tide, GHW – average high tide.
Source:Kwaad, F.J.P.M: Het NAP-niveau – de dijkpeilstenen van burgemeester Hudde en de geschiedenis van het Normaal Amsterdams Peil.

The relative sea-level rise along the North Sea coast in the Netherlands was 22 cm in 125 years (from 1880 to 2008) or 1.76 mm per year. It did not show any acceleration (Figure 9).

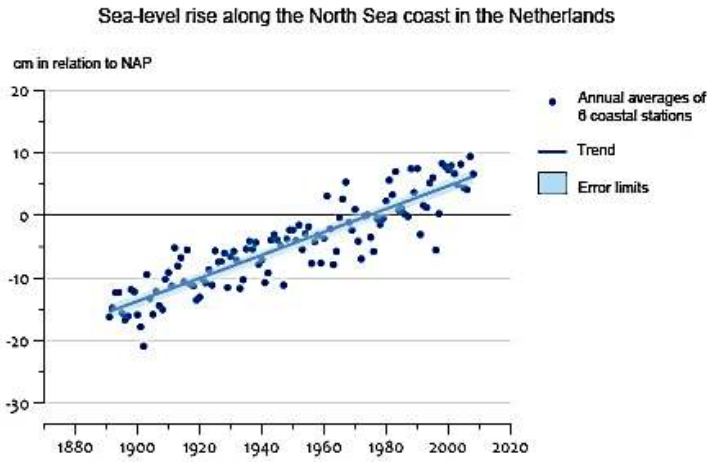


Figure 9. Sea-level rise along the North Sea coast in the Netherlands, from 1880 to 2010. Note the lack of acceleration in sea-level rise.
(Source: Rijkswaterstaat – see www. compendiumvoorleefomgeving.nl)

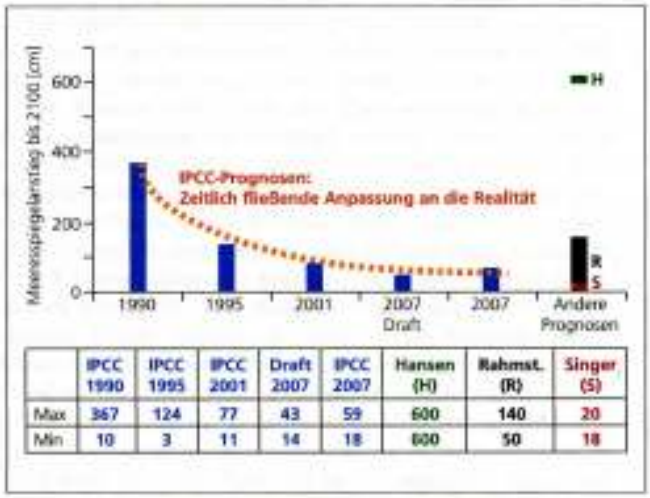
[This graph indicates (ca) 220 mm in 125 years, or 1.76 mm/yr]

It should be clear from this description that it is well nigh impossible to determine a rise in sea-level, due to man-made global warming, for the Netherlands from these contributing causes with their uncertainties and errors. However, the Dutch government, like most other governments, has based their climate policies on the IPCC and the Hockey Team (see Chapter ...). Recently they set up a committee to look into the future "dangers" of sea-level rise for the Netherlands and what to do about it. This commission, called the *Delta Commissie* (Delta Committee), also called the *Veerman Commissie*, after its chairman, Cornelis Pieter Veerman. Veerman is an economist and agronomist. He held professorial (*extraordinarius)* posts at the Catholic University of Brabant, the Erasmus University in Rotterdam and Wageningen University. From 2002 to 2007 he was a minister of the crown for agriculture, fisheries, nature and food quality. The committee consists of ten members. They cover expertise in landscape architecture economy, sustainable development, cultural technology, journalism, dredging, water protection technology, civil engineering and

hydrology. There are no climatologists or paleoclimatologists on the committee. The closest one as having climate expertise is professor Pavel Kabat, who is a expert in hydrology and water resources. He specialises in earth's systems science and climate. He teaches climate hydrology at Wageningen University. As far as I can ascertain, they are all believers in the IPCC/Hockey Team dogma. Alternative scientific opinions have not been considered. They certainly did not consider a scenario of future global cooling, which is a distinct possibility, based on solar activity (Duhau & de Jager, 2010). Their dogmatic stance is exemplified by statement in their report introduction:
(translated) *There is a relationship between global temperature increase and sea-level rise. The increase in temperature has been caused by greenhouse gas emissions, the most important source being the use of fossil fuels (p. 24.*). They also state that (translated) *The European Union has agreed as the aim of their climate policy that the global temperature (relative to the pre-industrial level)is not allowed to increase by more than 2^{o}C (p. 24).*

Probably because of their lack of expertise in climate science, the Delta Committee commissioned a report from a committee of international "experts" under the chairmanship of professor Pier Vellinga from Wageningen University. Their report is a joint publication by Wageningen University, Research Centre/ Alterra and the KNMI (Royal Netherlands Meteorological Institute).

The main findings of the Vellinga Committee represent an extreme position on possible sea-level rise. While the last IPCC report (AR4, 2007) presents as a scenario (<u>not</u> prediction) a possible rise of between 18 and 59 cm by the end of 2100 (an earlier draft was even lower, from 14 to 43 cm, *see* Figure 10), the Vellinga Committee proposes two high-end scenarios, one of 55 to 110 cm by 2100 and 150 to 350 cm by 2200. These figures are based on a projected temperature rise up to 6^{o}C by 2100 and up to 8^{o}C by 2200. These numbers are clearly ludicrous. They are based on computer models and not on real-world data. They also considered the possibility of increased river discharges due to global warming. They also mention that 60% of the Netherlands is below sea level. This is even more that the figure quoted in the 2007 IPCC report. The true figure is 27%.



	IPCC 1990	IPCC 1995	IPCC 2001	Draft 2007	IPCC 2007	Hansen (H)	Rahmst. (R)	Singer (S)
Max	367	124	77	43	59	600	140	20
Min	10	3	11	14	18	600	50	18

Abb. 10. Prognosen des IPCC zum Meeresspiegelanstieg im 21. Jahrhundert [21]. Die IPCC-Prognosen passen sich mehr und mehr der Realität von ca. 20 cm/Jahrhundert an (vgl. Abb.4-5).

Figure 10. Predictions of sea level rise by the IPCC. The German caption says *Prediction by the IPCC of sea level rise in the 21st century. The IPCC-predictions adapt themselves more and more to the reality of the 20th century.* Also indicate are the predictions by James Hansen (H), Steven Rahmstorf (R) and Fred Singer (S).

The Delta Committee has taken most of the Vellinga Committee findings on board, but goes even a bit further. It is of the opinion that The Netherlands must reckon with a rise in sea level of between 65 and 130 cm by 2100 and between 200 to 400 cm by 2200 (Figure 11).

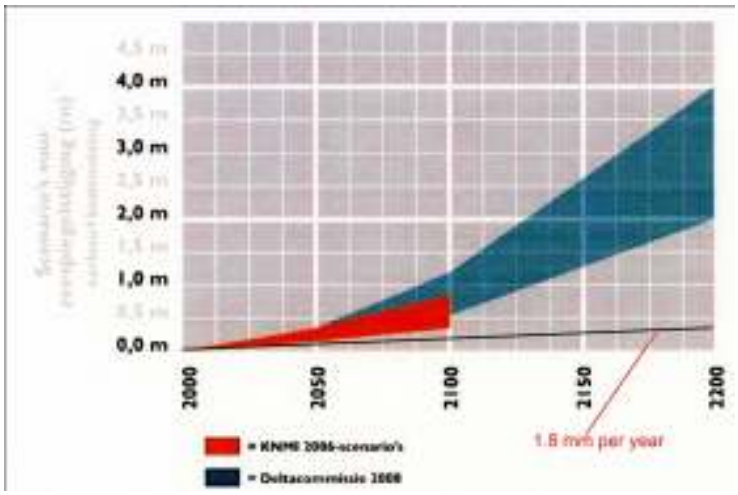


Figure ... Figure 4 of the sea-level rise report of the Dutch Delta Committee, showing their extreme se-level rise scenario. The red graph is from 2006 scenario's by the KNMI (Royal Dutch Meteorological Institute). I have added a line assuming a constant increase of 1.8 mm/yr, as has been the case till the present.

As mentioned previously, real-world data show that up till now, sea-level rise has been about 1.8 mm per year (Figure 9). Notwithstanding unfounded beliefs that sea-level rise will accelerate due to man-made global warming, no acceleration has been happening. There is no scientific reason to expect that sea level will rise more rapidly in the future. I have therefore indicated what sea-level rise would be in 2200 (only 34 cm!) if sea-level would continue at 1.8 mm per year.

The Delta Committee calculated that, to protect the Netherlands from this (extreme) scenario, the government should spend 1.2 to 1.6 billion euros per year from 2010 to 2050, and 0.9 to 1.5 billion euros per year from 2050 to 2100. They also suggested extra spending for associated projects of up to 0.3 billion euros per year. These are enormous sums for something that has no basis in credible science.

No wonder the committee's report has been severely criticised, as it borders on fanatic environmentalism. For instance, an article in the Dutch newspaper *NRCHandelsblad* of 9 October 2008 reports that some climatologists involved in the Vellinga Committee report think that the Delta Committee has misused their worst case scenarios for political ends. The German professor Hans von Storch, a respected climate scientist and expert in climate modelling (and not a man-made global warming sceptic), states that they (the Vellinga Committee) were asked what a worst-case scenario would mean for the Netherlands in the coming two centuries. They were asked what scenarios could not be excluded, although there was still a lack of knowledge. Von Storch commented that the Delta Committee has subsequently presented their findings as probable, which is not fair. The bottom line is of course that they wanted to get the billion euro. Why do they opt for protective measures to be taken now already? His critique is supported by another member of the Vellinga Committee, glaciologist Roderick van de Wal of Utrecht University. He said that, because of the great margins of uncertainty in the scenarios, The Delta Committee could also have decided to look at the problem again in ten years.

The government has accepted most of the advice from the Delta Committee. They appointed a *Delta Programme Commissioner,* who will draw up, update and implement the Delta Programme on behalf of the government. His name is Wim Kuijken. He has already stated that he needs more money to implement the programme as suggested by the Delta Committee. However, his authority and duties still have to be enshrined in a *Delta Act.* This Act was submitted to the Lower House of Parliament on 1 February 2010. However, it has

not yet been passed. However, the government fell in February 2010 before the act was passed. At the time of writing this (9 October 2010), the formation of a new government is in its final stages. We can only hope that the new government will look at the Delta plan afresh, before passing the expensive and unnecessary Delta Act. This is especially necessary in the light of the proposed drastic savings of up to 18 billion euros, required as a result of the global financial crisis. The sensible approach would be to keep recording sea-level rise along the Dutch coasts and only take expensive measures when the real data (instead of computer models) indicate that those are warranted.

CV of the author. Dr Gerrit van der Lingen was born in The Netherlands. He studied geology at Utrecht University, where he obtained his Ph.D. in 1960. The subject of his thesis was the geology of an area in the Central Spanish Pyrenees. After carrying out his compulsory military service in the Koninklijke Luchtmacht (Royal Air Force) he got a three-year contract with the government of Surinam in South America , where he carried out field work in Amazon jungle. In 1965 he, his wife Marianne and two sons moved to New Zealand to work in the Sedimentology Laboratory of the New Zealand Geological Survey. Since 1990 he has been working as a private consultant. He formed his own research organisation called GRAINZ (Geoscience Research and Investigations New Zealand). For the last 11 years of his career he received research funding from the New Zealand Government for paleoclimate research, which was carried out in co-operation with scientists from the Department of Geological Sciences of the University of Canterbury in Christchurch, where he was appointed Research Associate. Although he retired from paid research in 2002, he has remained active in the anthropogenic global warming debate, giving lectures, writing articles and letters for newspapers and magazines.

Dr van der Lingen's main research interests have been in sedimentology and paleoclimate. Sedimentological studies included investigations of flysch sediments, carbonate sediments, the diagenesis of deep-sea biogenic sediments and the diagenesis and provenance of oil reservoir rocks. He was involved in many oceanographic research expeditions, included two expeditions on the famous scientific deep sea drilling ship *Glomar Challenger* (Deep Sea Drilling Project). Oceanic sediment cores for paleoclimate research were collected during expeditions in the Tasman Sea and Southern Ocean. One of these, the 1998 TASQWA expedition, was on the German research ship *SONNE.*

He published many scientific articles in professional journals and was editor or co-editor of several books, including *Evolution of the Tasman Sea Basin* (A.A. Balkema Publishers).

In 1971 he was awarded a German fellowship from the Deutscher Akademischer Austauschdienst (DAAD) which he took up at the Technical University in Munich and the Senckenberg Institute for Marine Geology and Biology in Wilhelmshaven. From 1971 to 1978 he was a Council Member of the International Association of Sedimentologists. He was also an Editorial Board Member for the journal Sedimentary Geology (1972 to 1982) and the Journal of Petroleum Geology (1990 to 1997). He is a member of the New Zealand Climate Science Coalition.

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