Deltas in Depth scientific sessions		
Deltas in Depth 1.1 Climate Change Scenarios		
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Presentations	•	Prof. Bart van den Hurk, KNMI, the Netherlands
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The first presentation introduces the new KNMI'14 scenarios. The Dutch climate change scenarios build on a tradition, starting with the first release in 2006. The 2006 scenarios were based on a lot of statistical scaling. The new KNMI'14 scenario's contain more physical processes and are based on a selection of climate fields (downscaled EC-Earth runs with RACMO), this allows for derivation of spatial patterns and this was used to create “westerly” and “easterly” or “wet” and “dry” scenario's. The new scenario's are made because of needs/requests of policy makers and water managers, and new scientific knowledge and analyses. The new scenarios, like the 2006 ones, span two variables: the worldwide rise in temperature and changes in circulation. The new scenario's for example have regional differences, different quantiles and are presented with probabilities. Sea level change in the scenario's is based on the global mean temperature and (uncertain components of) the glacier mass balances. There is no high-end (previously called “Veerman”) scenario for sea level rise.

Important notions:

- Mean summer drying in 2006 scenario's was somewhat too strong
- Drying in the Rhine basis is different from that in the Netherlands
- Range of sea level rise slightly wider than in the 2006 scenario's

Main points in the 2014 scenario's:

- Winter temperature continues to rise
- Winter precipitation increases (largely dependent on westerly circulation)
- Change of summer precipitation uncertain

Although weather is not captured in the scenarios. Some “future weather” analogues are included, these analogues use current day weather and put these in the context of the future climate. Future weather examples make climate change more lively and easy to engage in for the public.

The second presentation gives detailed information on changes in wind and a “weather” example: Geostrophic wind over the North Sea does not show a trend, but shows large variability over the last 140 years. Although there is a large body of literature, there are in general insignificant changes of either sing over the North Sea. Using EC-Earth gives negative changes (0.1) and they are statistically not significant for mean wind (9). There are also no trends in annual maximum winds or 1 in 100 year events and in days per month with low (<5 m/s) winds. Extreme wind direction, however, might be more from the S/W. For the Netherlands changes in wind from the north are the most dangerous, but these are not predicted to increase.

However, using a high-resolution (25 km) uncoupled EC-Earth run, there is an increase in early fall extremes. These storms originate near the West-African coast under the high sea surface temperature in future climate (this might be unrealistic because SST is prescribed). If the results are true, the storm season would also start earlier. The generally seen pole ward movement of storm tracks is not seen over the Atlantic.

Practitioners are quite interested in these "surprises" in scientific work. Someone in the public remarks that storms similar to the high-resolution EC-Earth run, are also seen in warm paleo-climate states, although these are not resolved in the utilized models.