

Sea level talks 2020 – Fall programme

Webinars about ongoing sea level research in the Netherlands

Speakers from IMAU - Utrecht University, the Royal Netherlands Institute for Sea Research (NIOZ), the Royal Netherlands Meteorological Institute (KNMI), and TU Delft. Sponsored by the TU Delft Climate Institute.

We are organising a series of webinars to showcase high-profile Dutch research projects related to sea level change.

Considering that many scientific meetings have been cancelled or postponed, while research projects continue to make progress, we wish to provide early career researchers with an additional chance to present their work and to engage in a public debate.

The webinars will target (under-)graduate students, fellow scientists in academia and research institutes, as well as any interested people with a scientific and/or technical background.

The talks will be held via Zoom. Presentations will last for about 30 minutes, followed by another 30 minutes of public discussion.

Upcoming webinars:

- **1 October 2020 at 16:00:** Carolina Camargo (NIOZ)
“Exploring sources of uncertainty in steric sea-level change estimates”
- **15 October 2020 at 16:00:** Raymond Sellevold (TUD)
“Greenland ice sheet surface mass loss: processes and projections from global climate simulations”
- **29 October 2020 at 16:00:** Karen Simon (NIOZ)
“Constraint of GIA in Northern Europe and the North Sea with geological RSL and GPS data”
- **12 November 2020 at 16:00:** Carine van der Boog (TUD)
“The collision of eddies with the Lesser Antilles”
- **26 November 2020 at 16:00:** Dewi le Bars (KNMI)
“Evaluation of the KNMI'14 sea level scenarios using a sea level budget”
- **10 December 2020 at 16:00:** Inger Bij de Vaate (TUD)
“The influence of Arctic sea ice on seasonal variation of tides”

Practical information

Join Zoom Meeting: <https://tudelft.zoom.us/j/99063756967> (Meeting ID: 990 6375 6967)

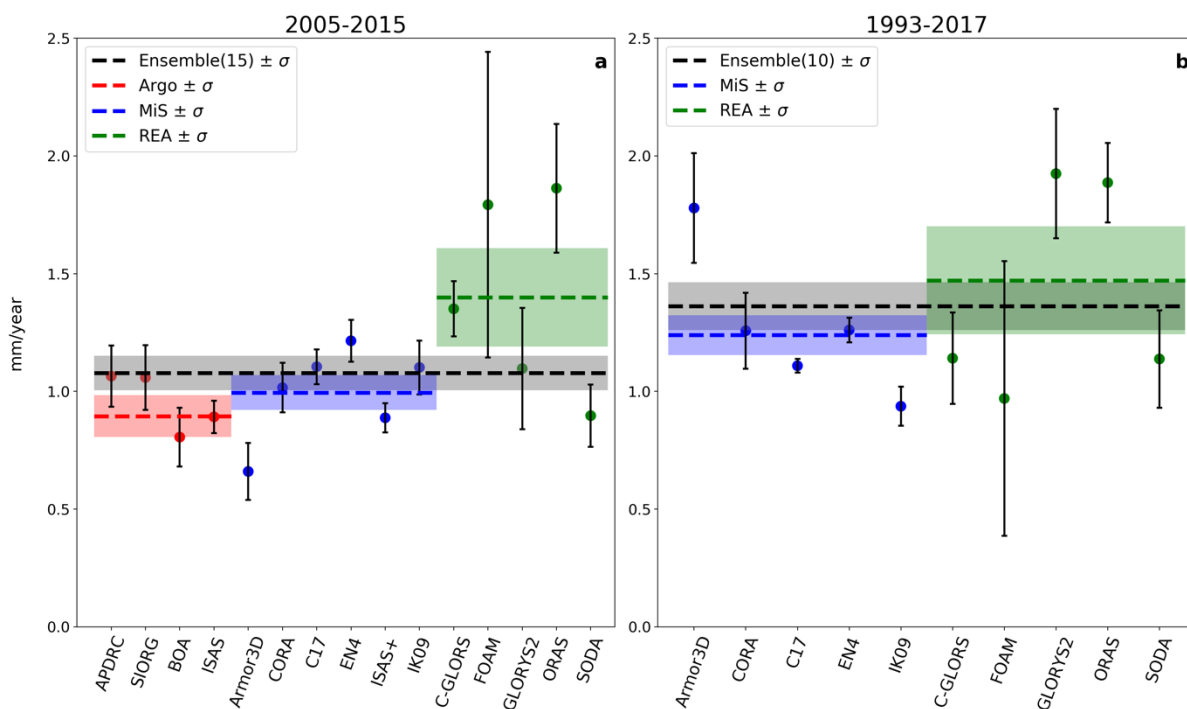
For questions: Dr. Riccardo Riva (r.e.m.riva@tudelft.nl)

Abstract 1 October 2020

Exploring Sources of Uncertainty in Steric Sea-level Change Estimates

Carolina Camargo - Royal Netherlands Institute for Sea Research (NIOZ)

Recent studies disagree about the contribution of variations in temperature and salinity of the oceans – steric change – to the observed sea-level change. In this talk we explore two sources of uncertainty to both global mean and regional steric sea-level trends. First, we analyse the influence of different temperature and salinity datasets on the estimated steric sea-level change. Next, we investigate the impact of different stochastic noise models on the estimation of trends and their uncertainties. By varying both the datasets and noise models, the global mean steric sea-level trend and uncertainty can vary from 0.69–2.40 mm/yr and 0.02–1.56 mm/yr, respectively for 1993-2017. This range is even larger on regional scales, reaching up to 30 mm/yr. Our results show that a first-order autoregressive model (AR(1)) is the most appropriate choice to describe the residual behaviour of the ensemble mean of all datasets for the global mean steric sea-level change over the last 25 years, which consequently leads to the most representative uncertainty. Using the ensemble mean and the AR(1) noise model, we find a global mean steric sea-level change of 1.36 ± 0.10 mm/yr for 1993-2017, and 1.08 ± 0.07 mm/yr for 2005-2015. Regionally, a combination of different noise models is the best descriptor of the steric sea-level change and its uncertainty. The spatial coherence in the noise model preference indicates clusters that may be best suited to investigate the regional sea-level budget.



Global mean sea-level trends (mm/yr) and uncertainty (1-sigma) from (a) 2005-2015 and (b) 1993-2017. Dashed lines represent the trends of the ensemble and category means, with the respective uncertainties in the shaded area. Grey, red, blue and green indicate the ensemble mean and the Argo, multiple in-situ and reanalysis category means.