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Title:	Final report for IC project: “Fully-coupled climate simulations with an eddy-permitting ocean component”
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Report Viewgraphs for IC project: Fully-coupled climate simulations with an eddy-permitting ocean component

- Two sets of simulations were performed within this allocation:
  1) a 12-year fully-coupled experiment in pre-industrial conditions, using the CICE4 version of the sea-ice model;
  2) a set of multi-decadal ocean-ice-only experiments, forced with CORE-I atmospheric fields and using the CICE5 version of the sea-ice model.

- Results from simulation 1) are presented in Figures 1-3, and specific results from a simulation in 2) with tracer releases are presented in Figure 4. They show the initial adjustment of ocean heat content and sea-ice coverage, as expected from a simulation that started from rest and no-ice. Figure 3 also shows that the intermediate ocean resolution captures the eddy variability reasonably well, especially in areas with large mesoscale eddies. Finally, Fig. 4 represents the amount of light attenuation induced by the simulated organic matter (CDOM) released by Arctic rivers into the ocean, affecting biological productivity directly.

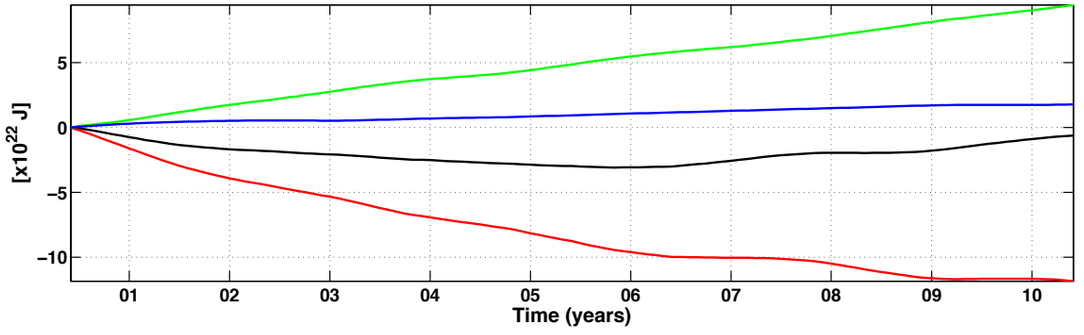

Figure 1: Time series of ocean heat content (OHC) for the fully-coupled model simulation computed from surface to bottom (black line), surface to 700 m depth (red line), 700-2000 m (green line), and 2000 m-bottom (blue line).

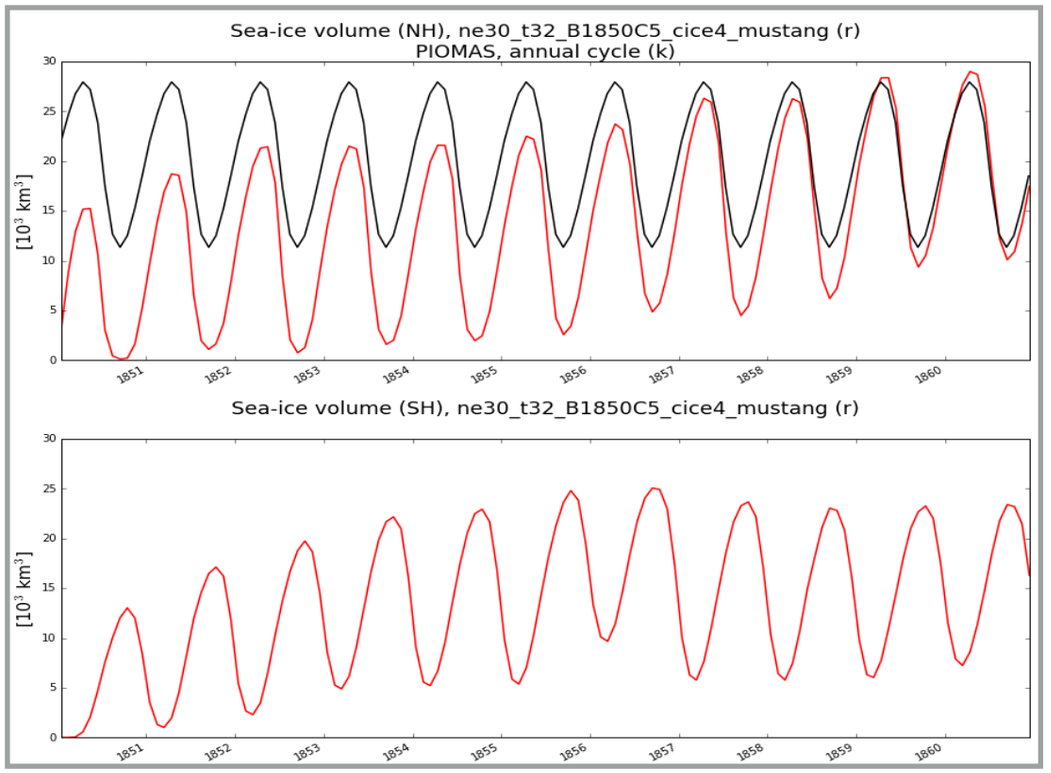

Figure 2: Time series of sea-ice volume from the fully-coupled simulation (red lines) in the Northern (upper panel) and Southern Hemisphere (lower panel). In the NH, the model results can be compared with the PIOMAS reanalysis data (black line).

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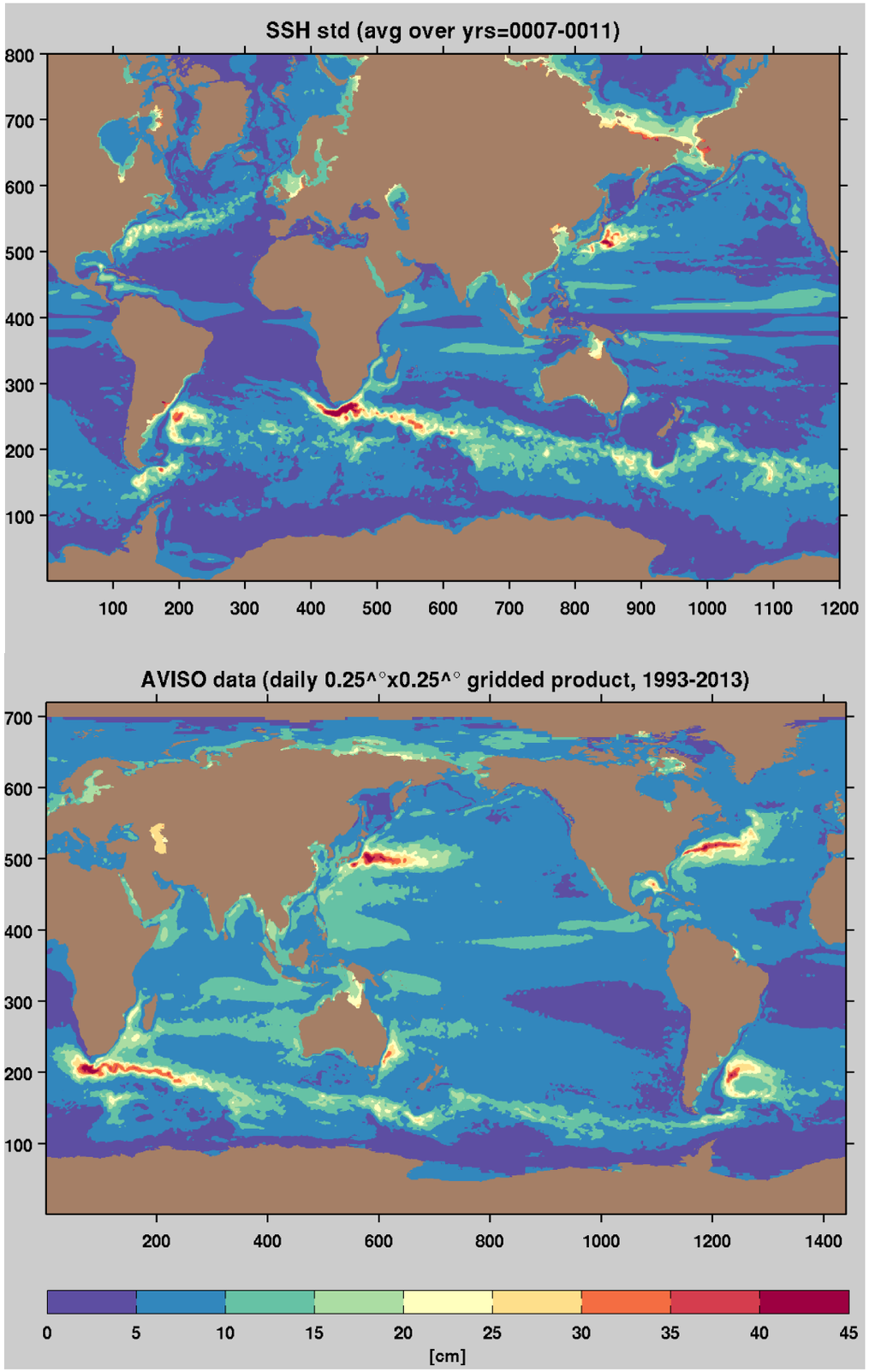

Figure 3: Sea Surface Height standard deviation computed over years 7-11 of the fully-coupled model solution (upper panel), compared with SSH derived from the AVISO satellite observational data set (lower panel).

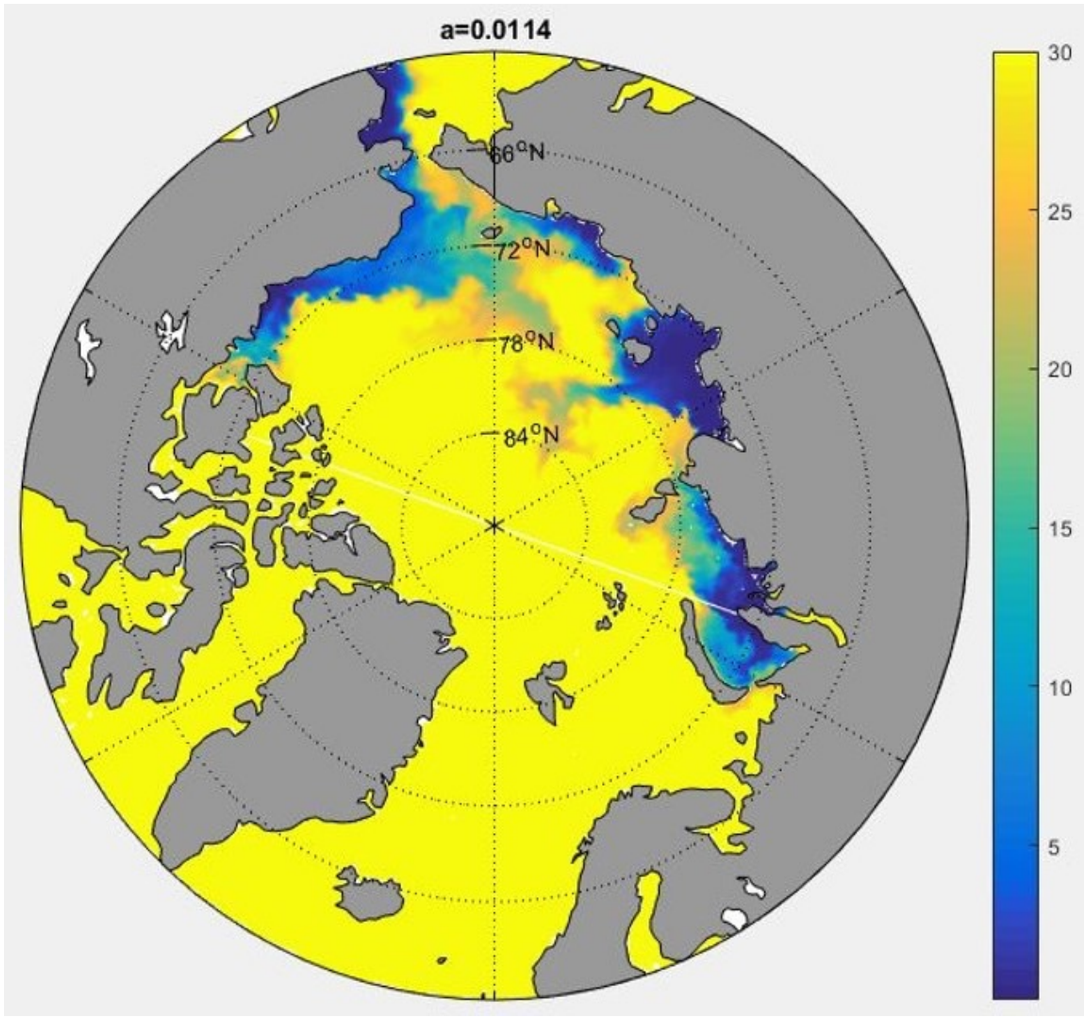

Figure 4: Light attenuation due to tracers that have been released in one of the ocean-ice-only eddy permitting simulations, to represent Chromophoric Dissolved Organic Matter (CDOM).

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