Earth's ice from Space

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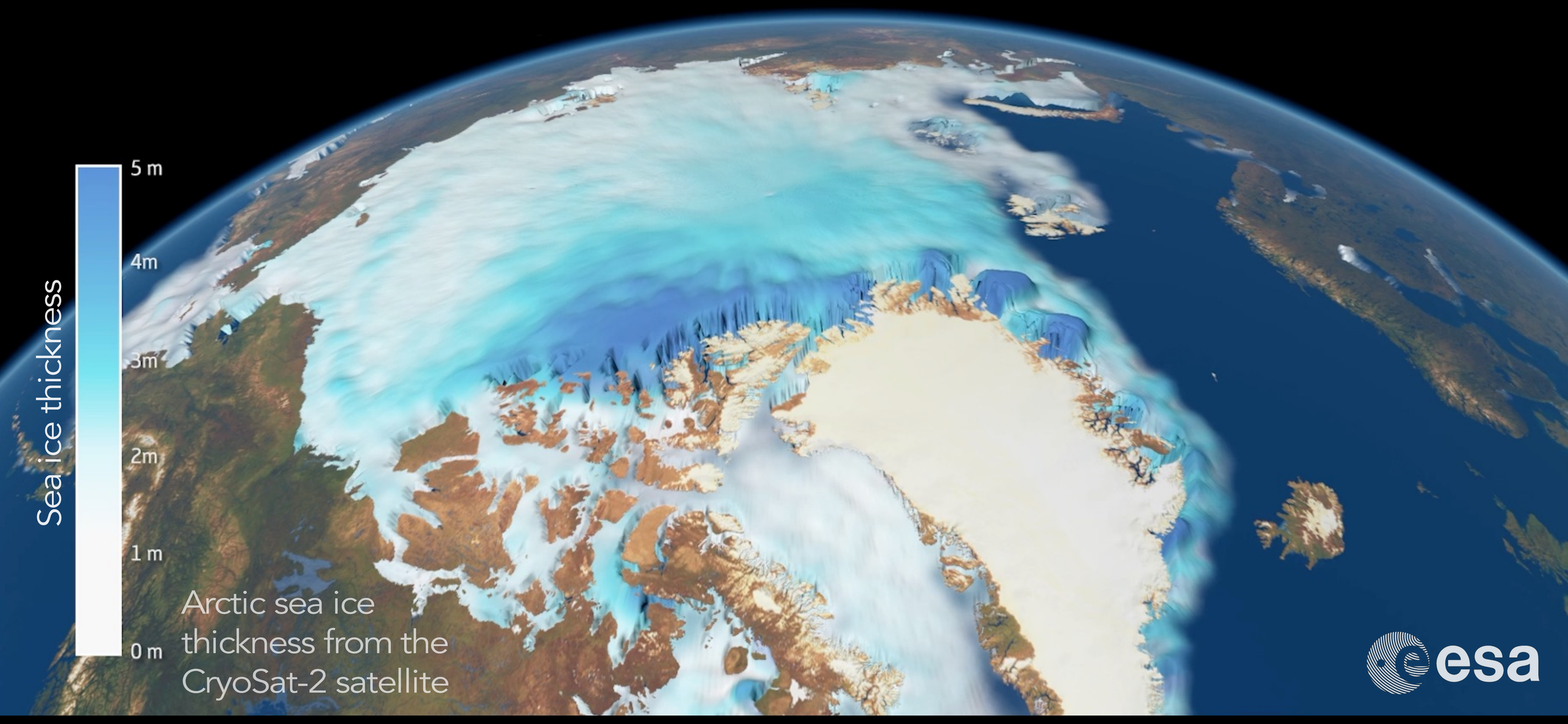
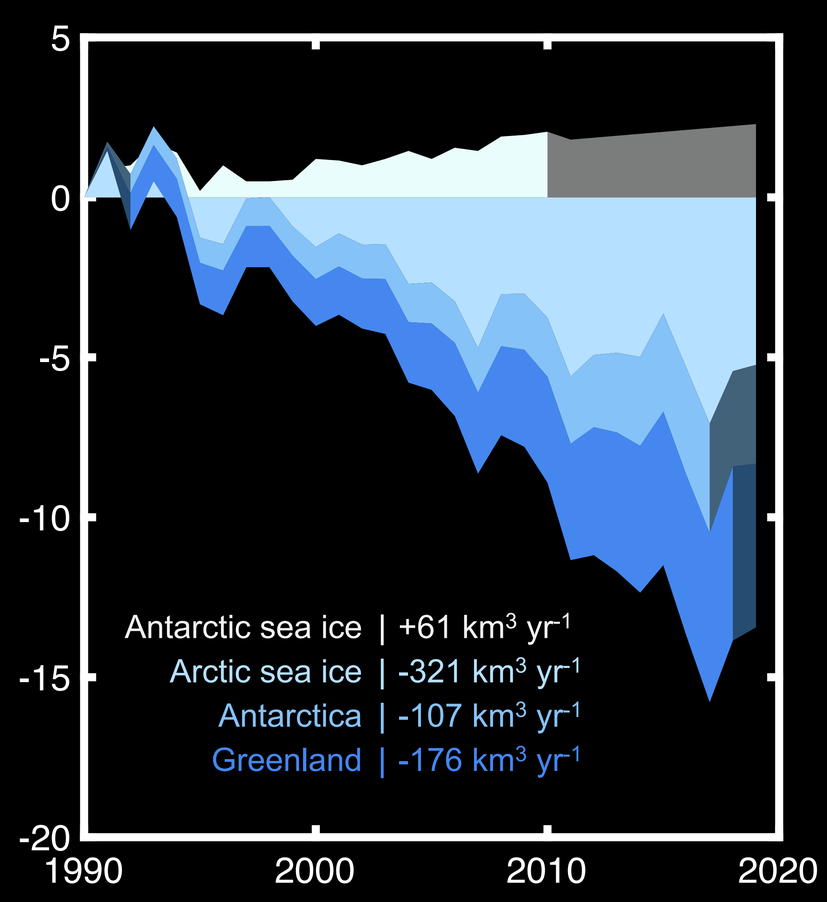
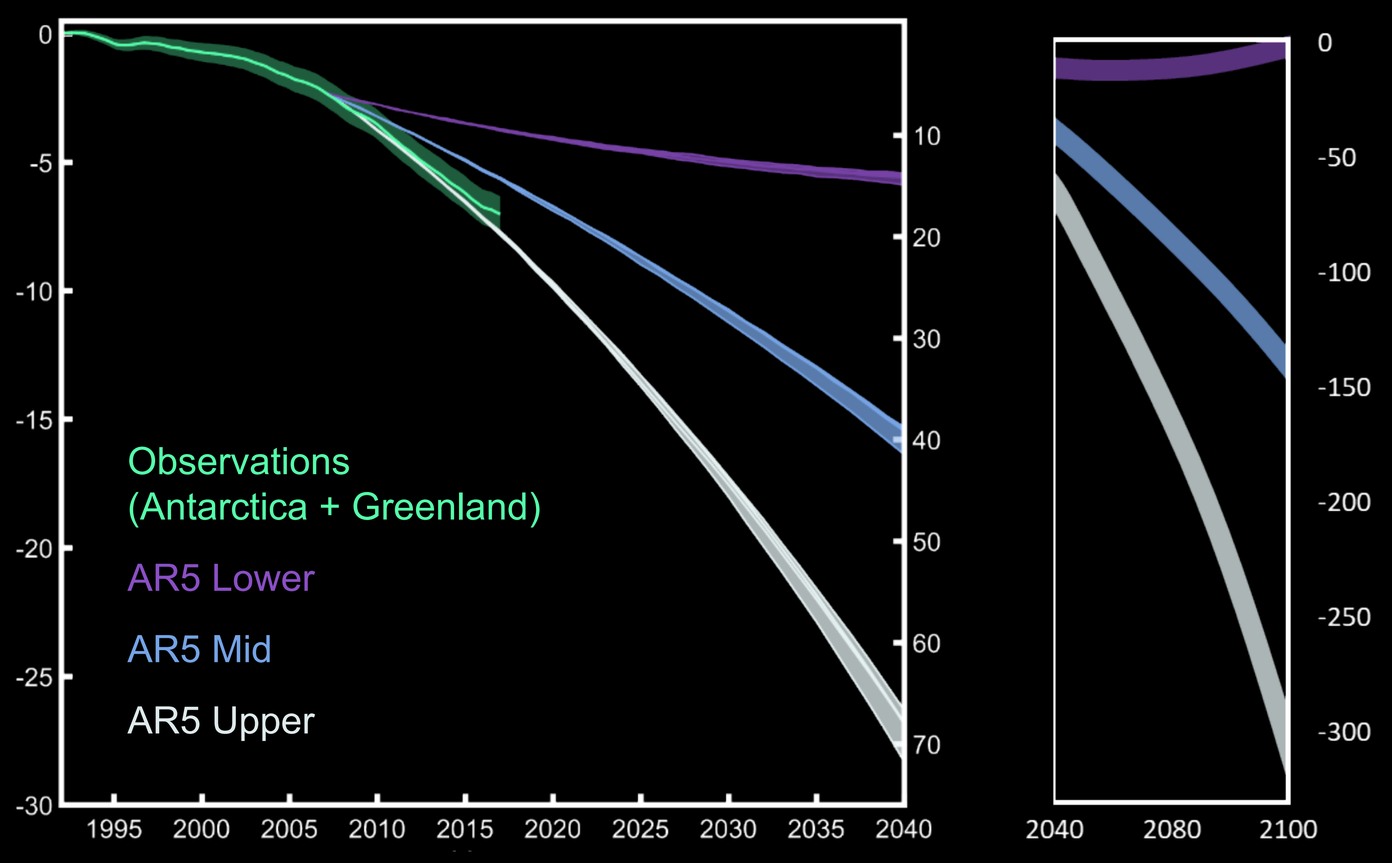


Observations

- The CryoSat-2 satellite, launched by the European Space Agency (ESA) in 2010, has provided nearly a decade of sea ice and ice sheet observations.
- Elevation difference over time reveals ice volume change.
- 260 cubic kilometers of sea ice lost per year, reducing the albedo of Earth's poles and allowing more solar radiation to be absorbed.
- 283 cubic kilometers of ice sheet lost annually, corresponding to a global sea level rise of 1.6 mm per year.
- CPOM lead the Ice Sheet Mass Balance Inter-comparison Exercise (IMBIE) to quantify the sea level contribution due to the polar ice sheets and the Ice Sheet Model Inter-comparison Project (ISMIP6) to predict their future contributions, both of which support assessments of the IPCC.





Implications

- Ice sheet loss observations currently tracking the upper AR5 model output, which predicts 30 cm of sea level rise by 2100.
- One million people vulnerable worldwide per 1 cm sea level rise.
- Models need to include the influence of the ocean on ice sheets. ISMIP6 intends to make improvements to model projections included in the next IPCC report, AR6.
- New satellite missions required to continue observations into the 2020s.

cpom

As well as leading IMBIE and ISMIP6, CPOM also partners with space agencies to provide scientific leadership for polar satellite missions. We produce and distribute unique and widely-used records of Earth's sea ice and ice sheet thickness change, and we support the land ice and sea ice elements of the UK Earth System Model.

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