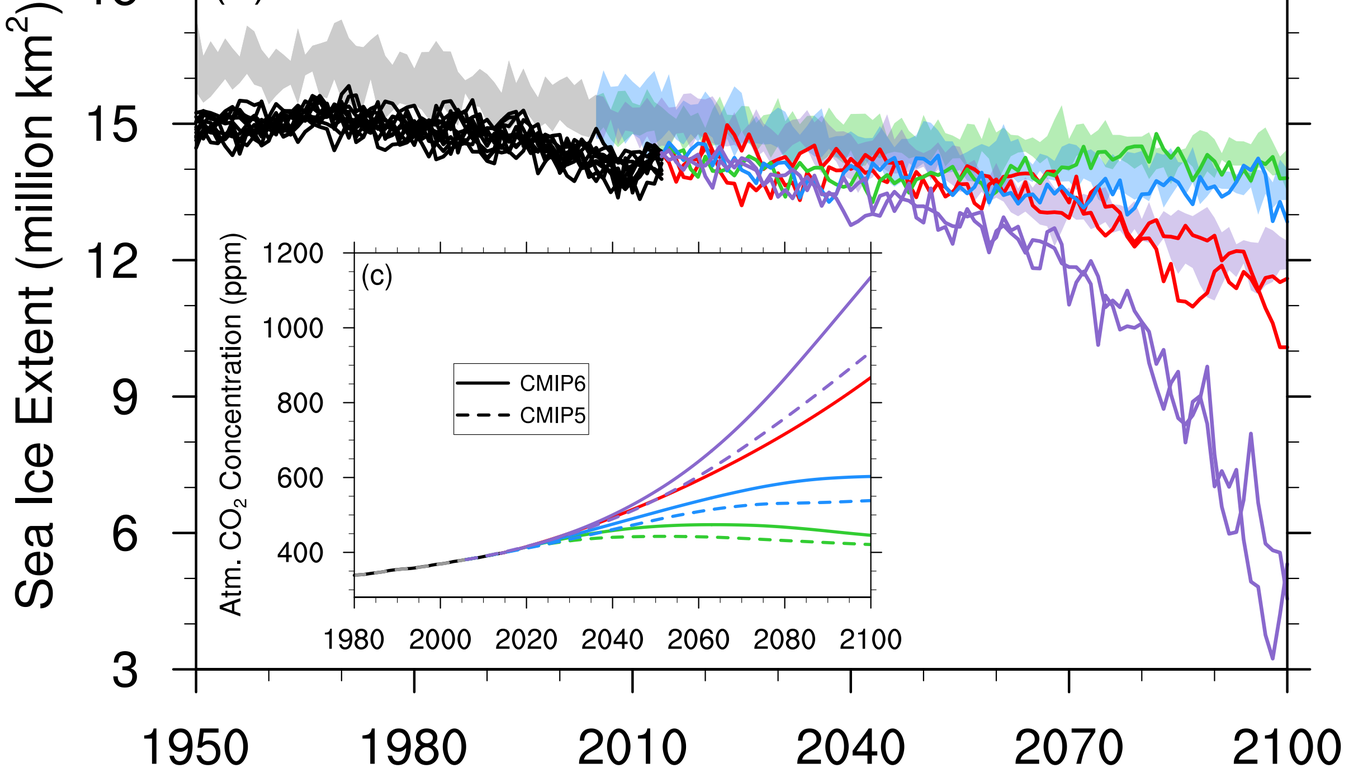
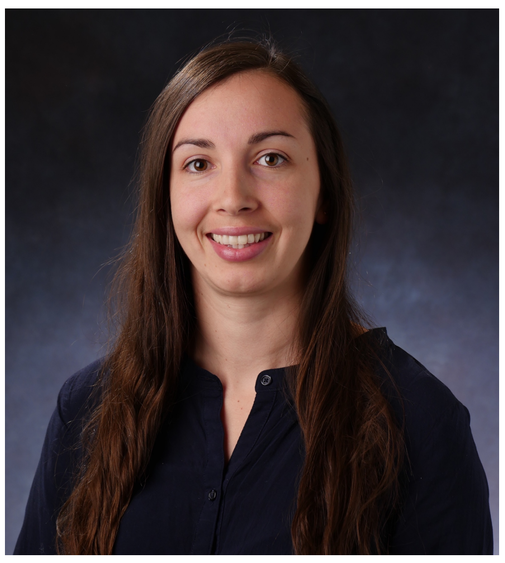
No Scenario Impact on Arctic Sept. Sea Ice in CESM2

The newest iteration of the Community Earth System Model (CESM2) shows no impact of future emission scenario on the minimum Arctic sea ice extent (for both CESM2-CAM6 and CESM2-WACCM6), in contrast to the previous version (CESM1-CAM4). This is due to ice-free conditions being simulated before differences in future emission scenario become significant.

However, there is a clear scenario impact on March sea ice extent in CESM2, comparable to the CESM1-CAM4 results when accounting for CMIP6 to CMIP5 forcing differences.



Time evolution of Arctic sea ice extent in (a) September and (b) March over the historical period as well as for four different future emission scenarios from the CMIP6 CESM2-CAM6 simulations (colored lines, showing individual members) and the CMIP5 CESM1-CAM4 simulations (shaded areas, showing ensemble spread). The grey dashed line in (a) indicates the threshold of an ice-free Arctic. (c) Atmospheric CO_2 concentration used as forcing for CMIP6 (solid lines) and CMIP5 (dashed lines).



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