The impacts of Arctic sea ice reduction on the ocean circulation from global coupled model simulations

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As a boundary between the atmosphere and the ocean sea ice plays crucial role in feedback mechanisms. Observations of Arctic sea ice over the last 30 years indicate a substantial retraction. In order to improve the understanding of both triggers and consequences of Arctic sea ice decline, the specific role of climate system components and their interactions must be better understood. To address the influence of sea ice decline on the ocean circulation this study presents results from the atmosphere-ocean-sea ice global coupled model ECHAM6 - FESOM. We compare three 150-year idealized sensitivity experiments in which sea ice is reduced by (I) reduced albedo (II) reduced lead closing parameter (III) added longwave, with a control run. Even though sea ice retraction differ between each experiment, patterns of changes in oceanic parameters establish comparably.