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PROJECTED FUTURE DURATION OF THE SEA-ICE-FREE SEASON IN THE ALASKAN ARCTIC BY CMIP5 MODELS

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Continued reduction in sea ice cover will result in longer open water duration, which is important for the shipping industry, marine mammals as well as other components of the regional ecosystem. In this study we are to assess future sea ice conditions, particularly the length of open water duration in the Alaskan Arctic over the next few decades using the latest coupled climate models (CMIP5). The Alaskan Arctic, including the Chukchi and the Beaufort Sea, has been a major region of summer sea ice retreat since 2007. For the region north of the Bering Strait (70° N), future open-water duration may extend from a current 3-4 months to around five months by 2050 based on the mean of 12 selected climate models. It is about one month shorter along the same latitude over the Beaufort Sea. Uncertainty is generally ±one month estimated from the range of model results. Open-water duration in the Alaskan Arctic expands quickly in these models over the next decades, in contrast to model under-predictions of sea ice loss for the entire Arctic. Continued increases in open-water duration over the next two decades will impact regional economic access and potentially alter ecosystems, yet we need to keep in mind that from December through May most of the northern Alaskan Arctic will remain sea ice covered into the second half of the century.