



## **Observed and modelled drift speed of Arctic sea ice**

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We investigate how the state of the Arctic sea-ice cover influences its drift speed. Our focus is on the seasonal cycle and long-term trends, where models and observations deviate substantially. Investigating the observational record and dedicated model simulations, we find that the observed seasonal cycle of drift speed is primarily determined by the seasonal cycle of ice concentration, rather than by the seasonal cycle of ice thickness as previously suggested. Such dominating impact of ice concentration is also apparent in the observed long-term trend. The main reason for why the observed seasonal cycle is not well captured by models appears to be that the modelled ice is not strong enough; it does not resist deformation to the same degree as ice does in reality.