The use of passive microwave retrievals in the generation of a long term sea ice concentration series

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The Met Office Hadley Centre's HadISST1 dataset contains a monthly series of globally complete sea surface temperature and sea ice concentration fields on a 1 degree latitude-longitude grid. This is used to force atmospheric global climate models, to verify coupled atmosphere-ocean models, and to monitor climate variability and long term changes. We are now developing a new version for 1850 onwards using the latest available data. Sea ice concentrations from passive microwave retrievals will be used in combination with digitized sea ice charts. The historical in situ data and the satellite data must be made consistent through the removal of relative biases. We discuss the challenges associated with this task, and in particular focus on those arising from the use of the satellite data, e.g. the underestimation of the Arctic retrievals due to surface melt ponds during the summer period. The generation of a homogenous long term time series will help us put the recent sharp decline of Arctic sea ice extent in the context of the pre-satellite observations.