



Climatology and Impact of Polar Lows in the North Atlantic: Present and Future

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Polar lows are maritime cyclones occurring during cold air outbreaks in high latitudes. We use the Melbourne University algorithm to detect and track polar lows in the North Atlantic. The algorithm is applied to ERA-Interim reanalyses as well as high resolution (25 and 50 km) global climate model data from GFDL for present and future climates. Cyclone track densities for the GFDL present climate and the ERA-Interim reanalyses compare well for the occurrence of present day polar lows.

We also present cyclone track densities for future climates under RCP4.5 and RCP8.5 for the early and late 21st century. Polar lows mainly form close to Svalbard but also along the coast of Greenland, in the Norwegian Sea and Barents Sea. We present the shifts in location and intensity of polar lows for future climates and discuss potential reasons for these changes. During their lifetime, they travel several 100 kilometres and can reach the Norwegian coast as well as off-shore infrastructures. Therefore we also assess the difference between current and future occurrence of polar lows reaching the coast of Norway as well as areas with oil platforms and active fisheries. This analysis pinpoints the exposure to current and future impacts of polar lows on these socio-economic assets.