

Future projections of North Atlantic polar low frequency

Polar lows are intense maritime storms sized below the scale of the coarsely resolved global atmospheric data.

By means of downscaling global reanalysis data with a regional climate model we have recently shown, that the frequency of polar lows in the North Atlantic remained on a similar level during the past decades. Here polar lows were identified by a tracking algorithm based on such reproduced bandpass filtered MSLP-fields.

We extend this approach into an anthropogenically warmed climate at the end of the 21st century. Therefore we downscaled IPCC-AR4 global climate change scenarios and counted polar lows.

We found a strongly reduced number of polar lows per winter, with only half as many cases in scenario A2, and increased variability. We relate this decrease to more frequent conditions of enhanced vertical stability inhibiting polar low formation. Consistent with a northward shifting ice edge, a poleward shift of the main genesis regions of polar lows was found.