



How well do Reanalyses represent polar lows?

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Polar lows are intense maritime mesocyclones forming at high latitudes during polar air outbreaks. The associated high surface winds can be an important cause of coastal damage. Modern reanalyses, thanks to their relatively high resolution, constitute a new opportunity for analysing mesoscale phenomena such as polar lows. Moreover, evaluating how well reanalyses dataset can represent polar lows is crucial for building polar lows climatologies, studying their cyclogenetic mechanisms in relation with surface fluxes and to diagnose the ability of climate models to simulate these important phenomena.

In this talk we present an analysis of how ERA-Interim reanalysis represents the polar lows identified by the Norwegian meteorological services and listed in the STARS (Combination of Sea Surface Temperature and AltimeteR Synergy) dataset for the period 2002-2011. We show that ERAI-Interim has excellent ability to capture the observed polar lows events with up to 90% of the observed events being found in the reanalysis. We further apply an objective feature tracking algorithm with constraints on vorticity intensity and atmospheric static stability to build an objective climatology of polar lows from the ERA-Interim reanalysis. We show that, especially for the stronger polar lows, the objective climatology shows good agreement with the STARS dataset over the 2002-2011 period. This allows us to extend the polar lows climatology over the whole ERA Interim period. The differences between ERA-Interim and another reanalysis product (NCEP-CFS) and also the operational analyses are discussed.