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Investigation of polar lows by combined use of active and passive satellite remote sensing

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Polar lows are fairly intense but small and short-lived cyclones which form poleward of the main baroclinic zone over high-latitude oceans. As polar lows often cause strong winds and heavy precipitation, they are posing a serious danger to ships and coastal facilities that they encounter. Due to observational constraints over the open oceans, not much is known about their phenomenology, origin and life cycle. The present study gives new and improved insight into the structure and development of such severe storm systems. This is achieved by the combinative use of recent microwave radiometers, radars, altimeters (e.g. ASAR, MERIS, MODIS, AATSR, AVHRR, SSM/I, AMSR-E, QuikSCAT, RA-2, JASON-1), model output and collocated in-situ data. A case study of a polar low event near the Norwegian coast suggests that the development may be caused by both CISK and baroclinic processes. Comparisons of model results with satellite data will be presented.