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Polar lows and Arctic fronts: mesoscale weather systems at high latitudes

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'Polar low' is a term used for a range of mesoscale weather systems at high latitudes, from comma clouds and small-scale fronts to fully-fledged hurricane-like convective systems. Considerable research on the nature of these phenomena was done in the eighties and nineties, but there is still much to be learned. This is especially true about the leading edges of cold-air outbreaks from the sea ice over the open ocean; these are known as Arctic fronts, and frequently produce hurricane-force winds at the surface. In addition, they provide a favourable environment for 'proper' polar lows to develop. Under THORPEX-IPY, a project which is centred round an aircraft-based observational campaign in the Nordic Seas region in the spring of 2008, a primary aim is to supply high-resolution measurements of such fronts.