

Polar meso-scale cyclonic eddies in the Arctic atmosphere

Handbook.

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Abstract

This Handbook presents information about Arctic atmosphere unique natural event - polar meso-scale cyclone (PMC). PMCs were discovered and documented in the middle of XX century based on atmosphere satellite sounding methods development. Polar mesocyclones attract an intensive attention of meteorologists, climatologists, oceanologists, sea transport staff and Arctic shelf oil extraction specialists. An applied interest to PMCs is due to necessity of possible origin strong storm and very strong storm weather events forecasting and their impact on economic objects infrastructure and sea transport tools. This information is useful to support the hydrometeorological service and to increase the quality of forecasting over Arctic sea area of water where mesoscale cyclogenesis processes develop which is necessary for regional Roshydromet branches and oil and natural gas production companies working on Arctic shelf. Polar meso-cyclonic vortex weather conditions, duration and drift speed data are presented in this Handbook. Possible polar mesocyclone genesis mechanisms and their annual course and interannual variations peculiarities are described. Possibility of meso-scale cyclone projection estimation and brief description of 20 typical meso-scale cyclogenesis events are collected. The Handbook Annex contents regional PMCs catalogue-calendar with meso-scale cloudy eddies geographical coordinates, size and shape indication for 1981-2002, except 1996.

The Handbook is intended for hydrometeorologists, sea transport staff, arctic shelf human activity projections, and corresponding specialization students and PhD students also.