

Climatology project (J28) support for ESS Climate Change Program Outputs and Outcomes

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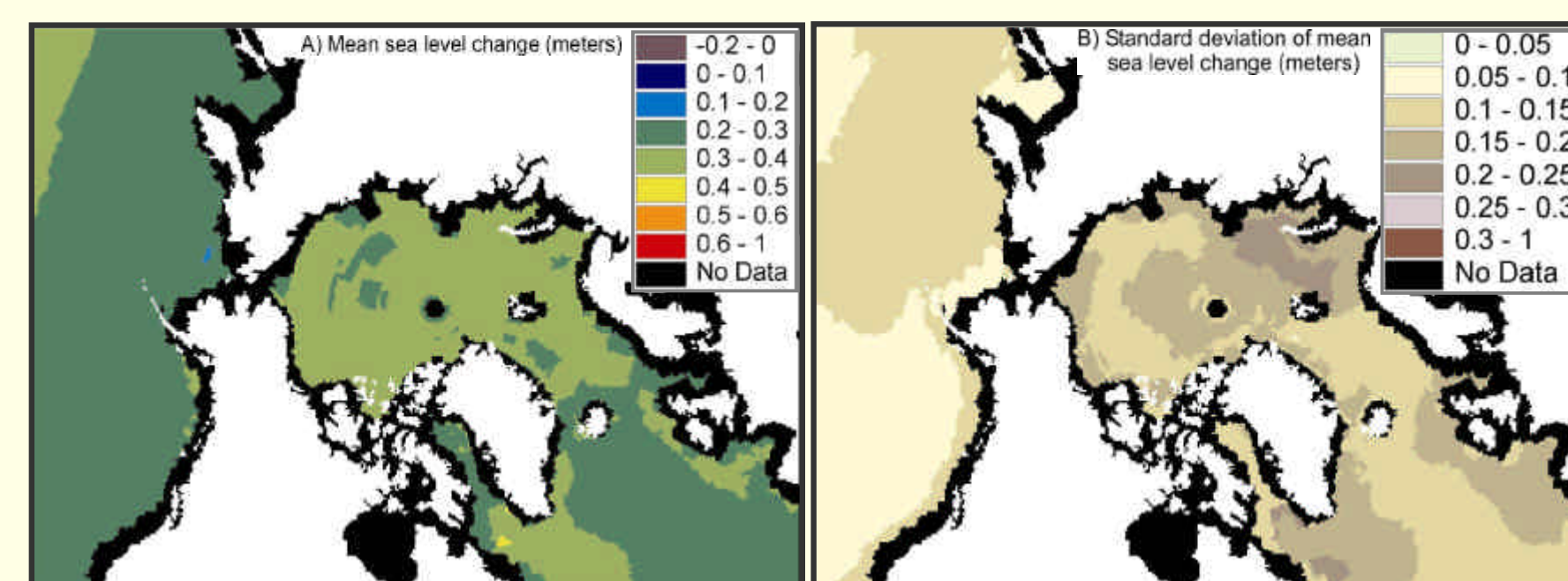
Abstract

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Several outputs and outcomes of the Natural Resources Canada Climate Change Program (CCP) are met using direct climatological support as listed under J28. Contribution to national and international programs is a flagship objective of J28 Climatology, with most work going to support the Arctic Coastal Dynamics Project (ACD). Objectives of the ACD project satisfy several CCP outputs, including delineation of sensitive regions, identification of critical climate/process relationships, assessment of coastal response, and estimation of costs incurred by climate change impacts.

Specific supporting objectives consist of furnishing wave power data and thermal stress information, via parameters such as melting degree days, as well as a database of storm activity. All work is performed at a circumpolar scale, however Canada benefits both because results directly encompass its region of interest and because comparisons with our circumpolar partner nations can be instructive, especially in terms of examining mitigation strategies under similar threat scenarios. Additional work has been performed for the Arctic Climate Impacts Assessment (ACIA), and an important outcome will be realized when results from this work are contributed to the IPCC assessment when the call comes.

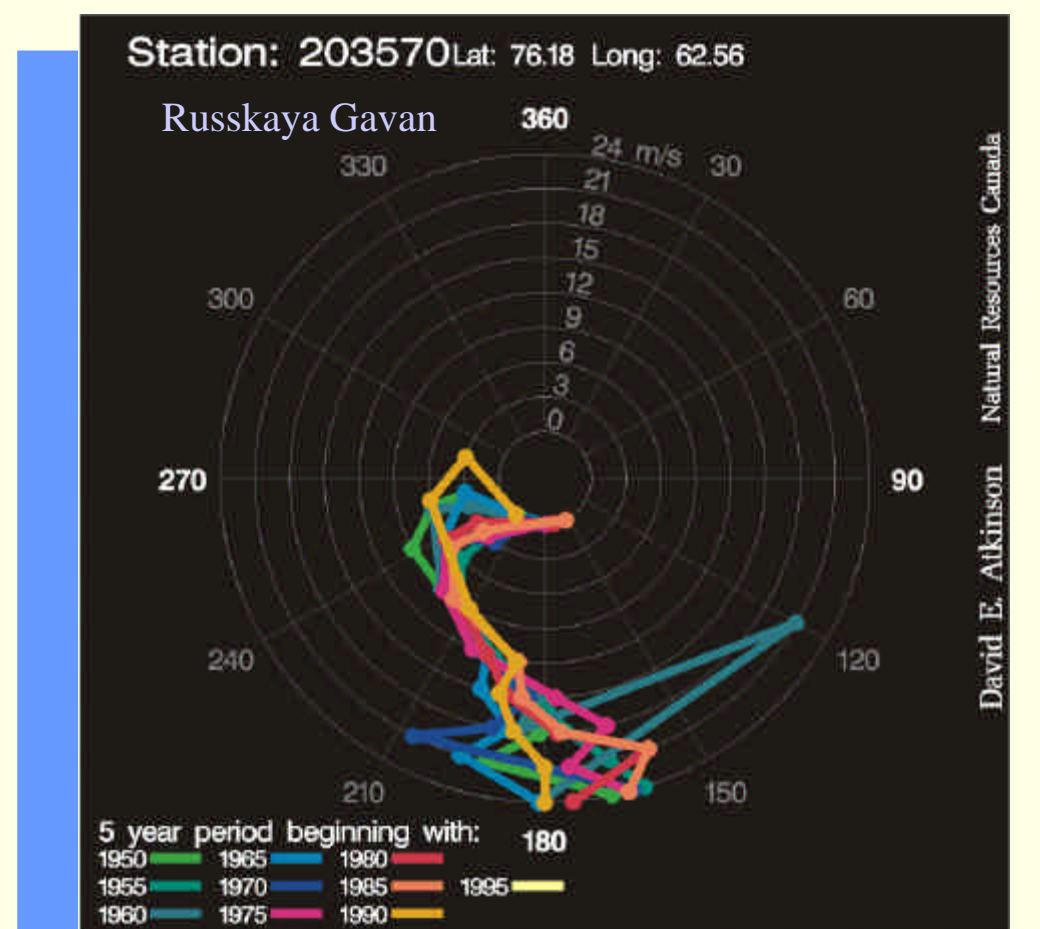
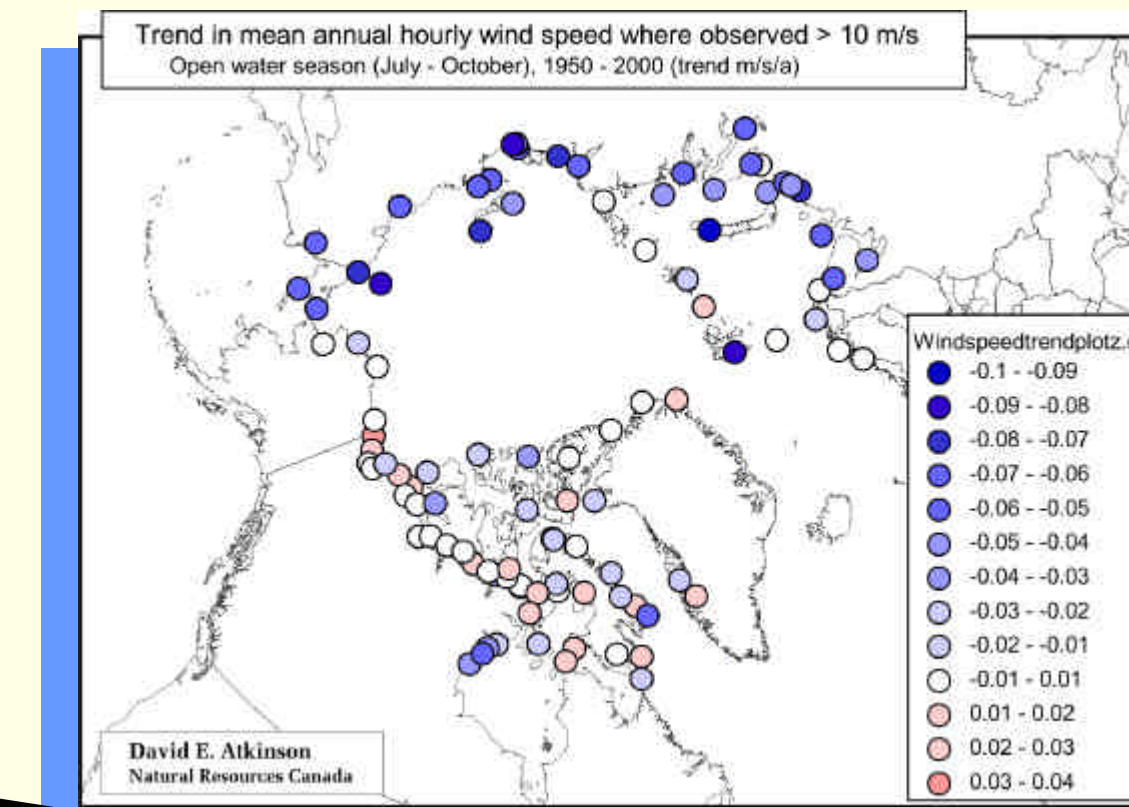
To date work has included accuracy assessment and correction of a major source of gridded climate data, the NCEP/NCAR reanalysis set. This is leading to the establishment of a corrected, uniform surface wind field grid from which the wave parameters can be extracted. A statistical land-fast ice prediction model is also under development. Storms data and melting degree-days have already been extracted over the 1948 - 2003 period. Assessment work has also begun using a very detailed regional climate model, in a recently initiated collaborative effort with an atmospheric modeling team (HIRHAM model), led by Annette Rinke, from the Alfred Wegener Research Institute in Germany. Such work will benefit CCP by improving estimates of climate change impacts over that which can be obtained with the coarser-resolution models (such as NCEP/NCAR reanalysis).

Projected Sea Level Change (ACIA)

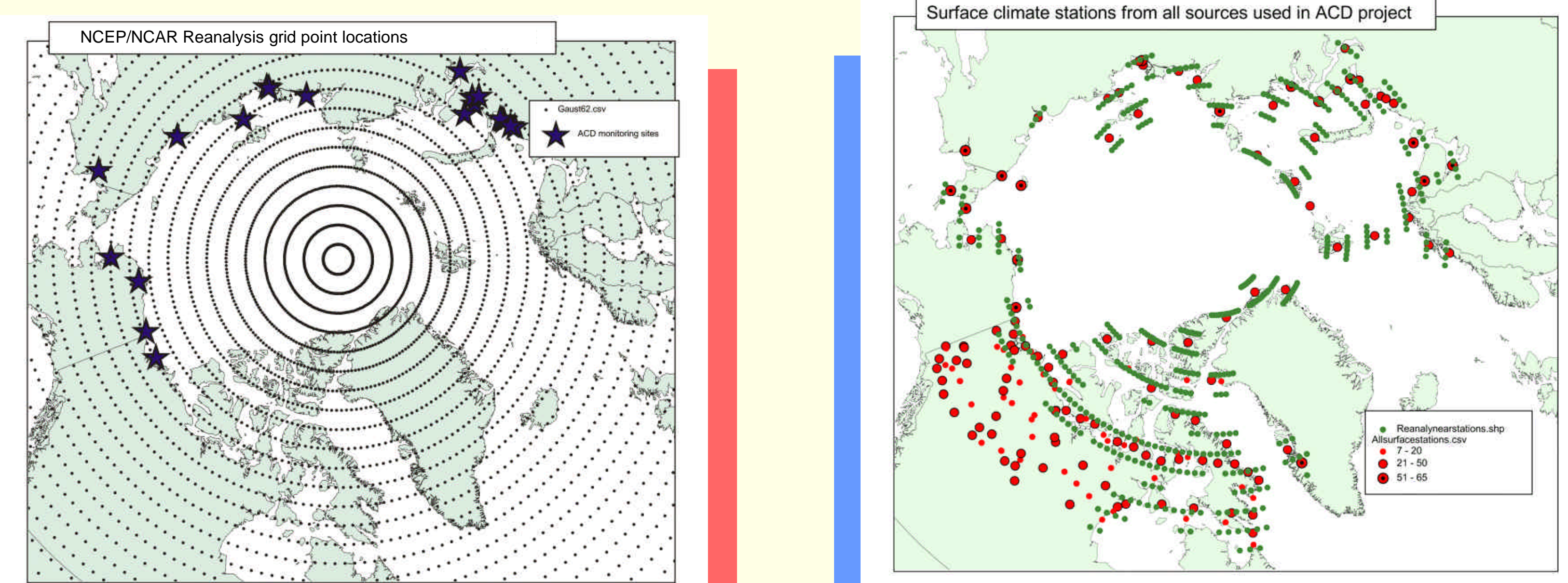


Climatological products from observational data

Open-water season wind speed trends

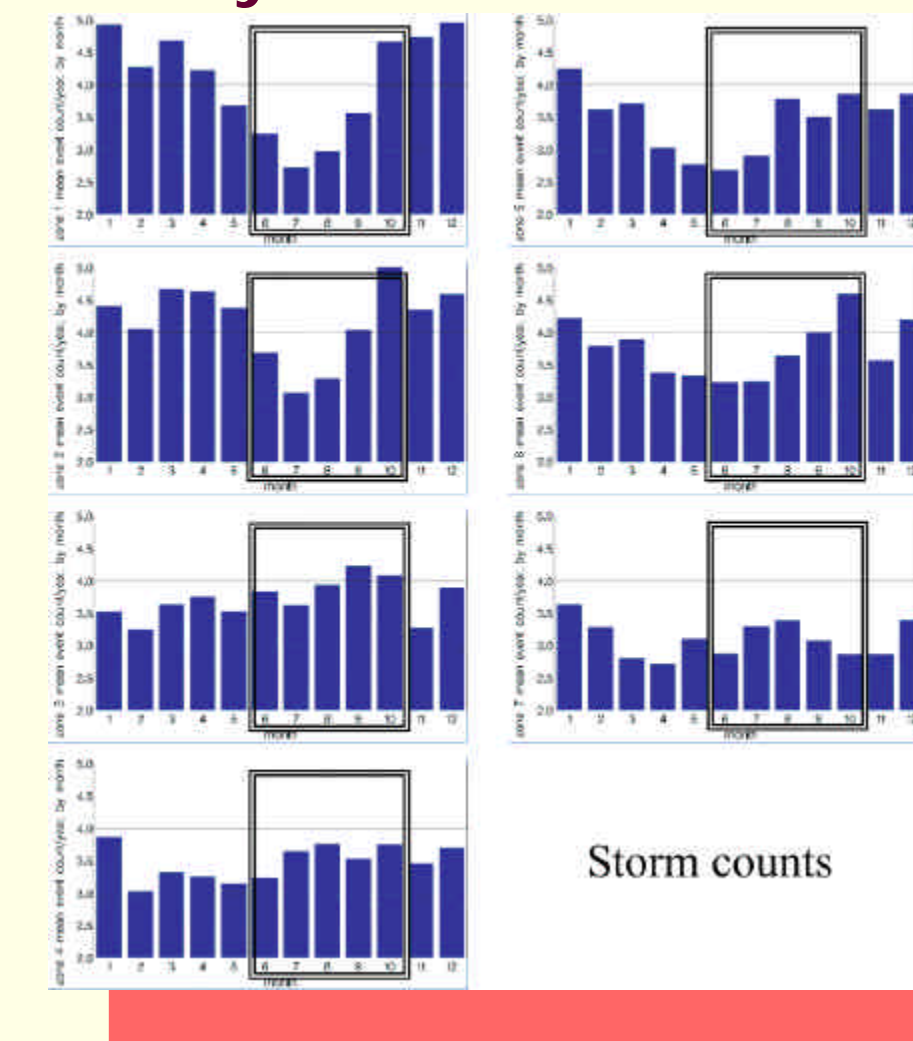


Acquisition of modeled reanalysis and observational data

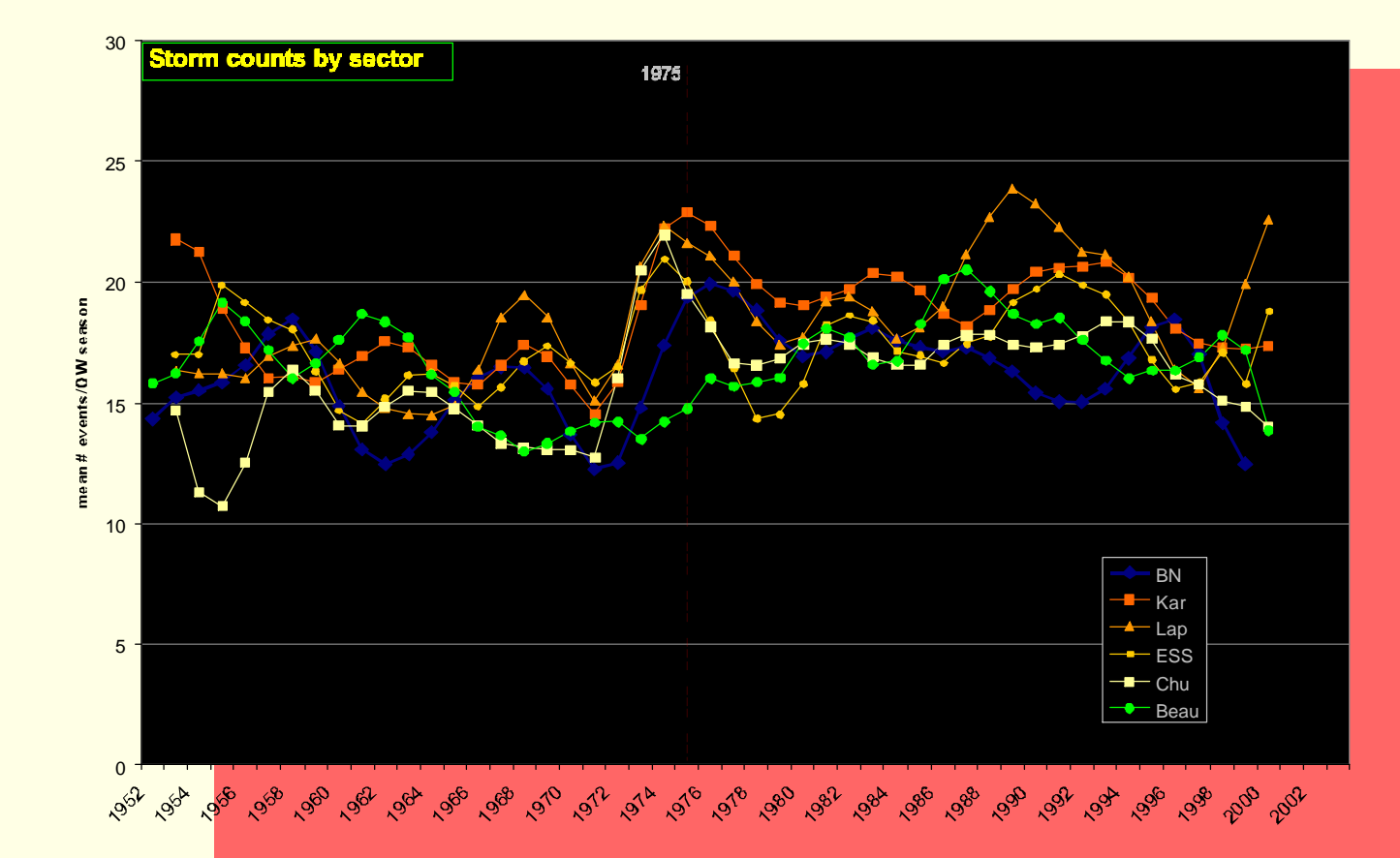


Environmental forcing parameters from reanalysis data

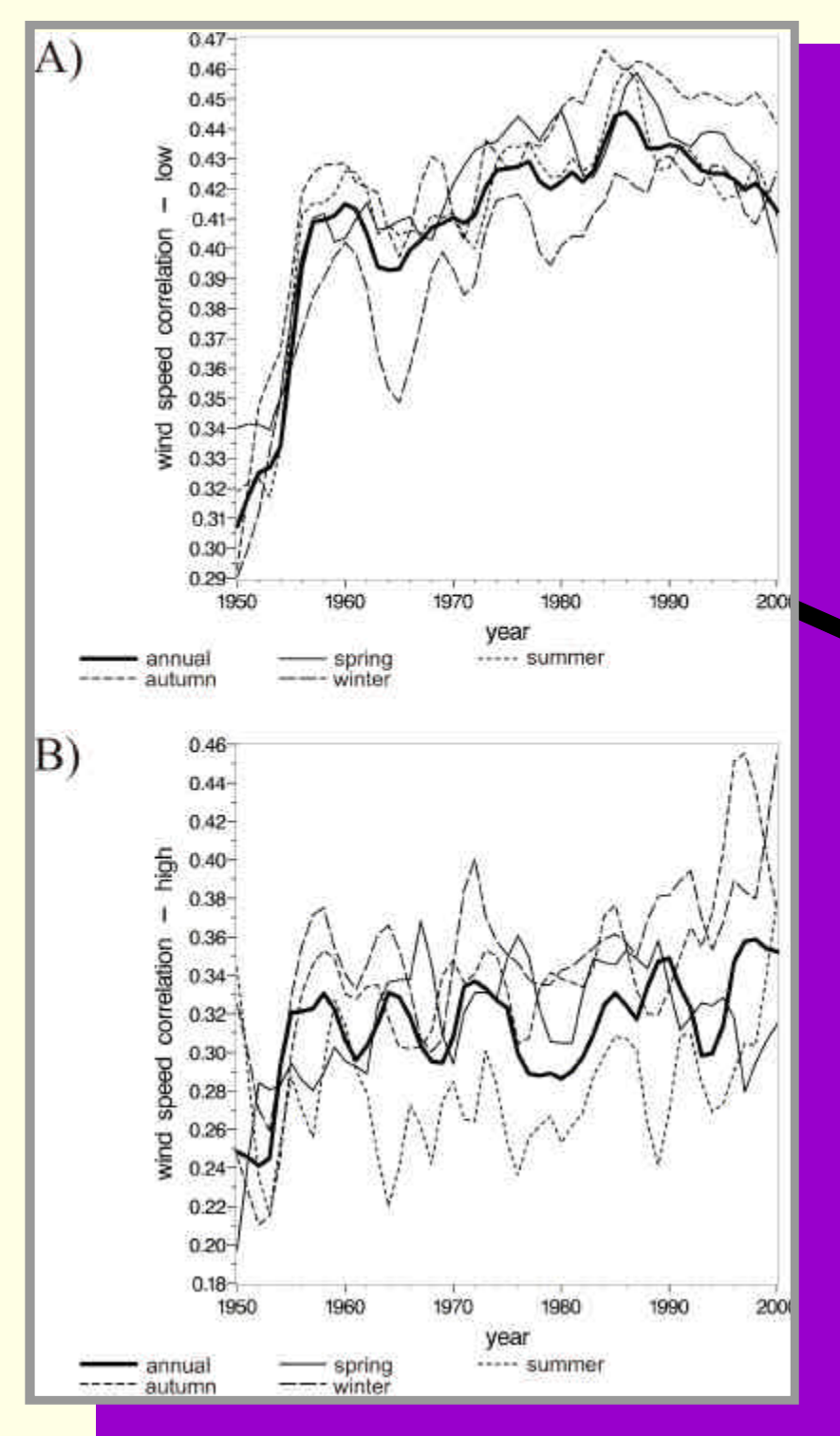
50-year storm counts



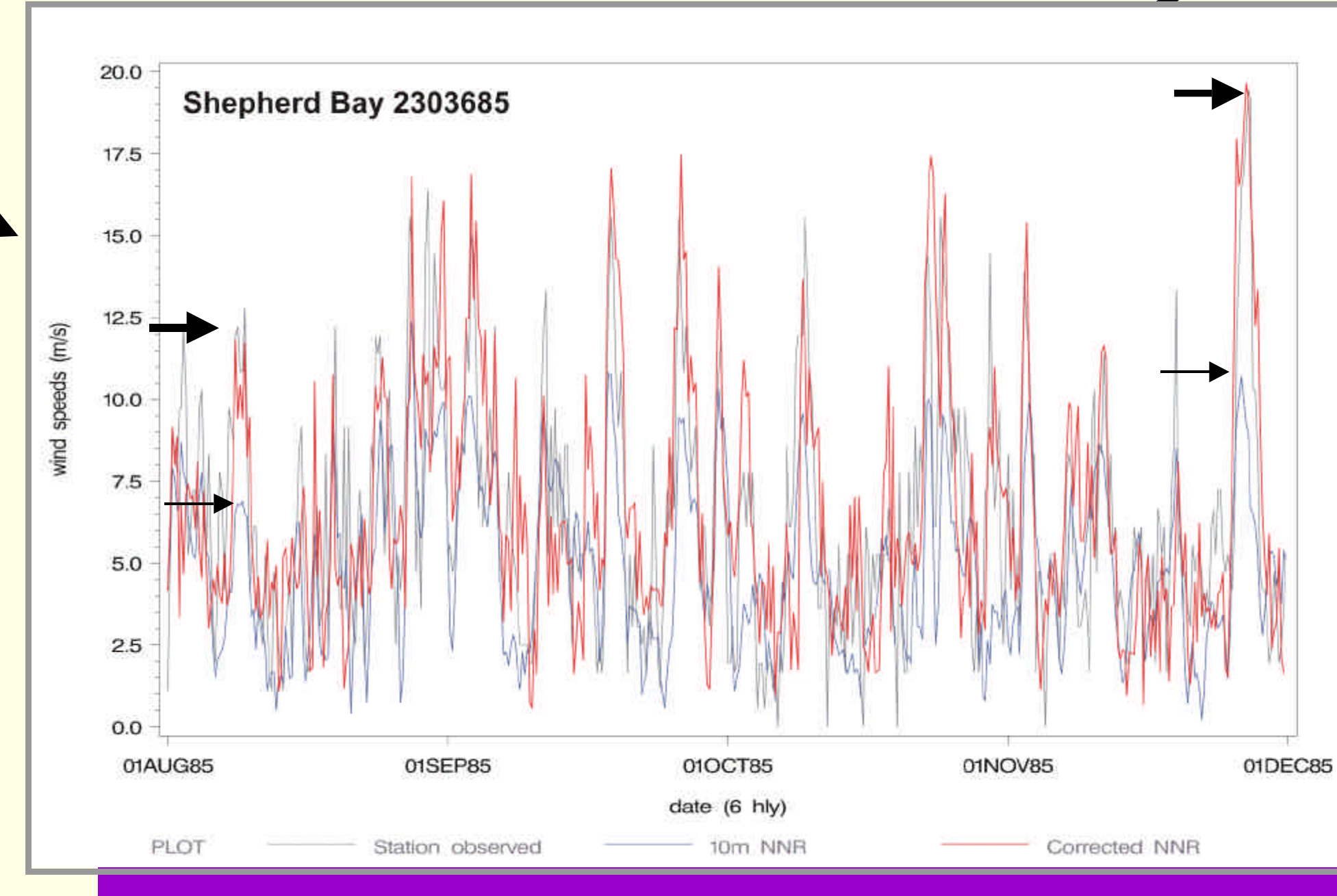
Circum-Arctic storminess



Assessment and



Correction



Melting degree days

