

2010 PAN-ARCTIC OUTLOOK JULY REPORT

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1. Extent Projection

Sea ice projection for the September monthly mean arctic sea ice extent – 4.9 (in million square kilometers)

2. Methods / Techniques

Statistical analysis of the AMO, PDO and AO time series based on specific regression model

3. Rationale

Substantial bias in previous sea ice projection for the September was obtained because of principal change in atmospheric circulation over Asia and Eastern part of European Russia, which was found in recent monthly SLP fields (fig.1). It is in contrast to Jan-Apr average wind field (fig.2). Southward flow direction was turned in Northward. The reason of this change is related to increasing of SST in North-East Atlantic domain (fig.3) and development of considerable SLP low anomaly. As a result hot air masses from South Asia and Africa have arrived in Siberia and Russian Arctic (fig.4). Relatively thin ice cover will be subjected to rapid melting due to the SAT substantial increasing in Russian Arctic and in North East of Canada.

4. Executive Summary

Future SIE estimates in Arctic might be obtained by joint analysis of time series of three climate indicators: AMO, PDO, AO for last thirty years. I used a modified regression analysis approach.

NCEP/NCAR Reanalysis
Sea Level Pressure (mb) Composite Anomaly 1968–1996 climo
NOAA/ESRL Physical Sciences Division

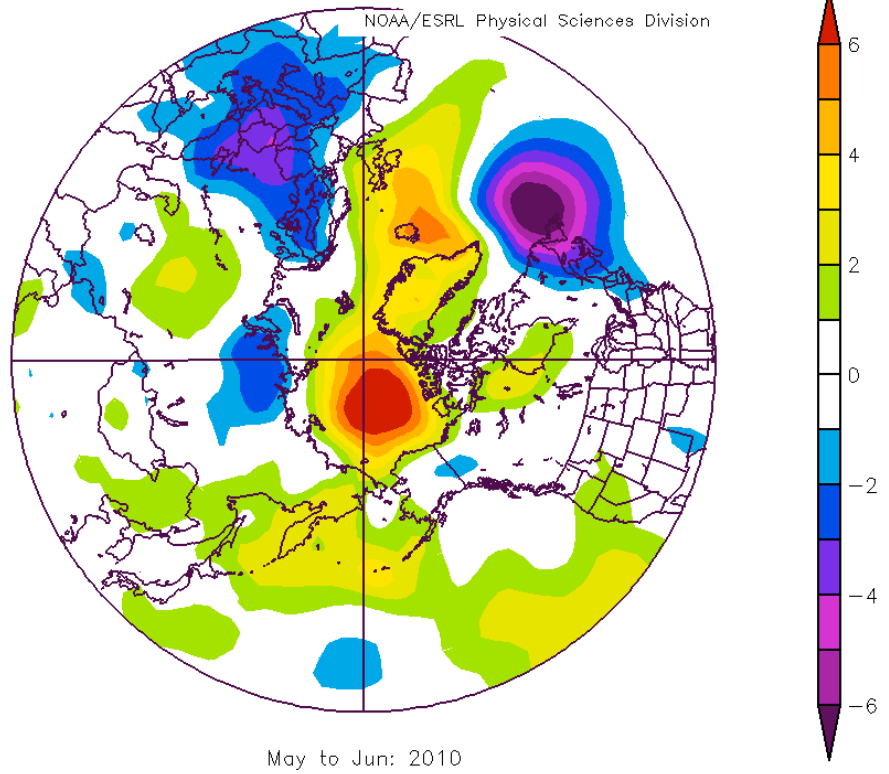


Figure 1. May-June SLP field

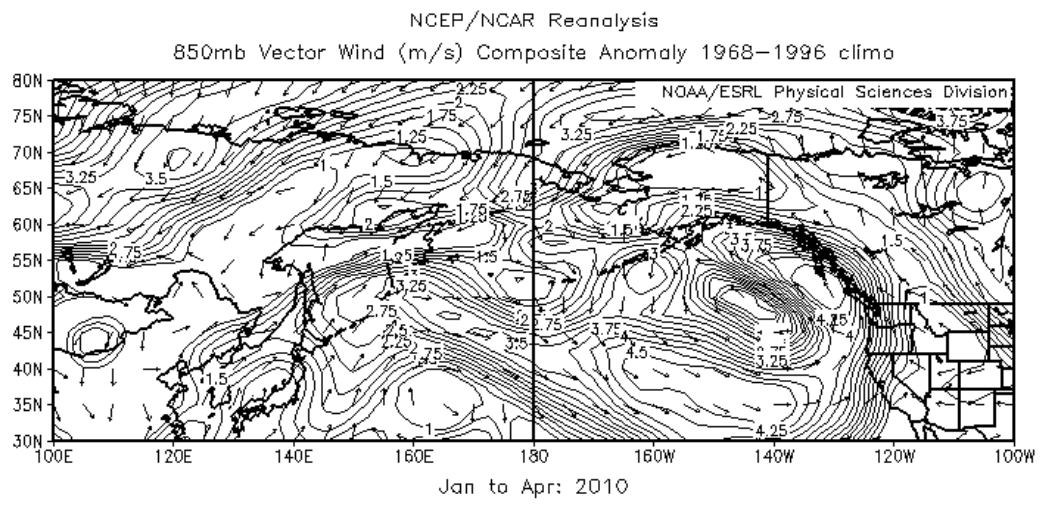


Figure 2. Jan-April vector wind field

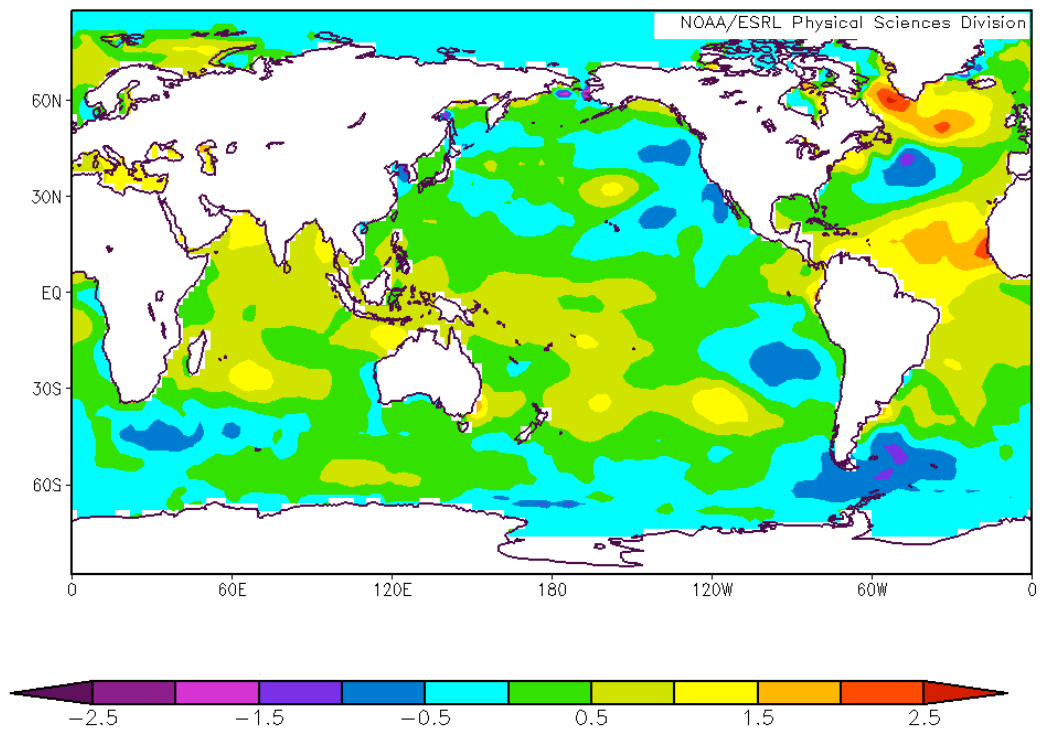


Figure 3. May-June SST field

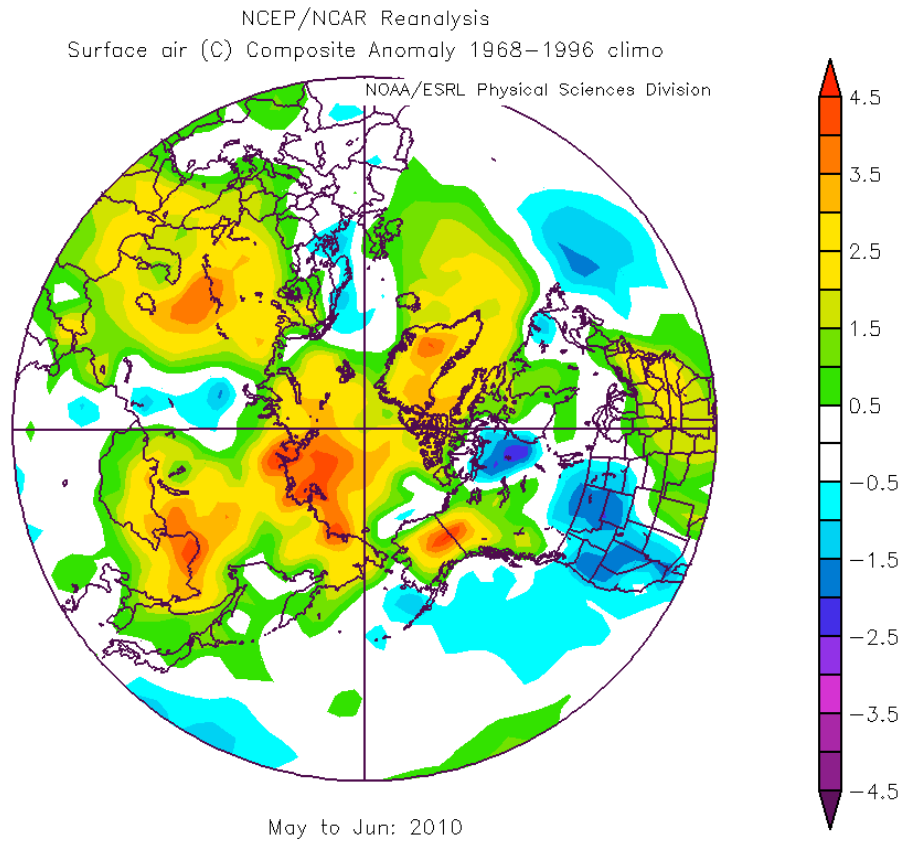


Figure 4. May-June SAT field