Understanding Arctic's Connections to Weather and Climate across the Northern Hemisphere

APPLICATE.eu

What is APPLICATE?

- A four-year project started November 2016, funded by the EU's Horizon 2020 Research and Innovation programme with a budget of €8M.
- A consortium of 15 partners from eight different countries.

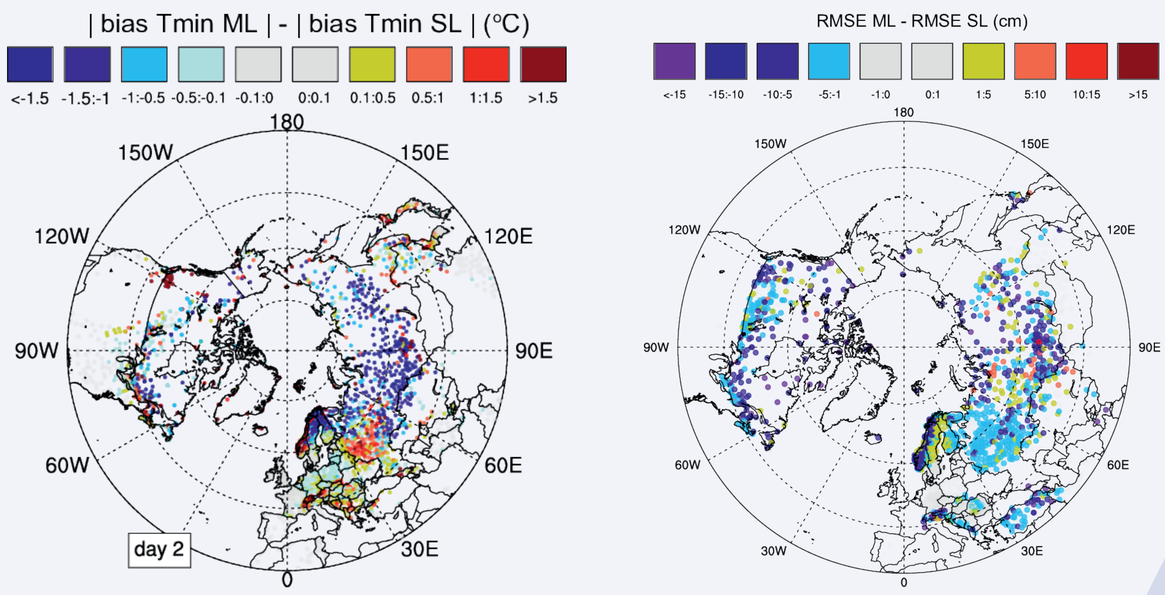
Mission

- Develop enhanced predictive capacity for weather and climate in the Arctic and beyond
- Determine the influence of Arctic climate change on Northern Hemisphere mid-latitudes
- Create knowledge for the benefit of policy makers, businesses and society

Activities

Modelling

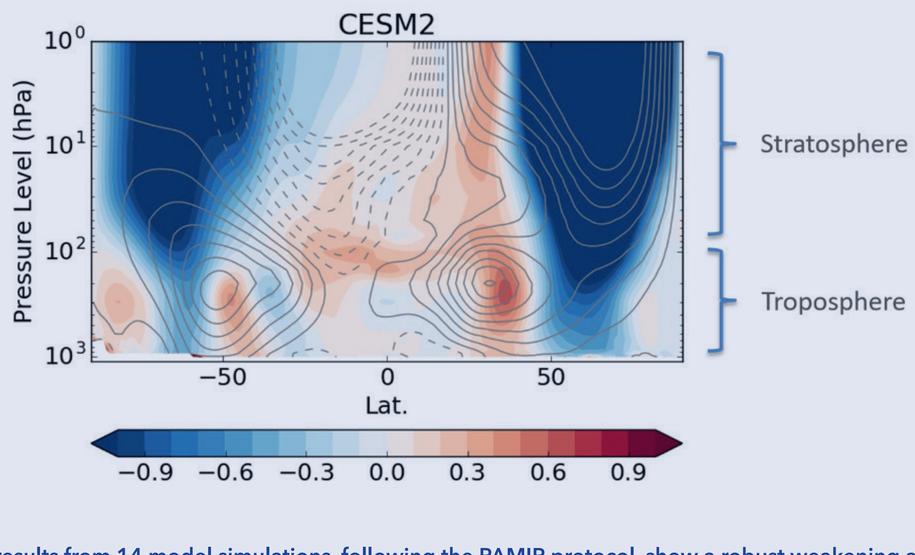
- Improve the trustworthiness of climate change projections
- Enhancing the capacity to predict weather and climate of the Northern Hemisphere



The new multi-layer land snow scheme of the ECMWF IFS model improves the representation of the snow processes (melting, freezing and temperature change) and induces a bias reduction for several near surface weather parameters in coupled weather forecasts over snow covered regions.

Linkages

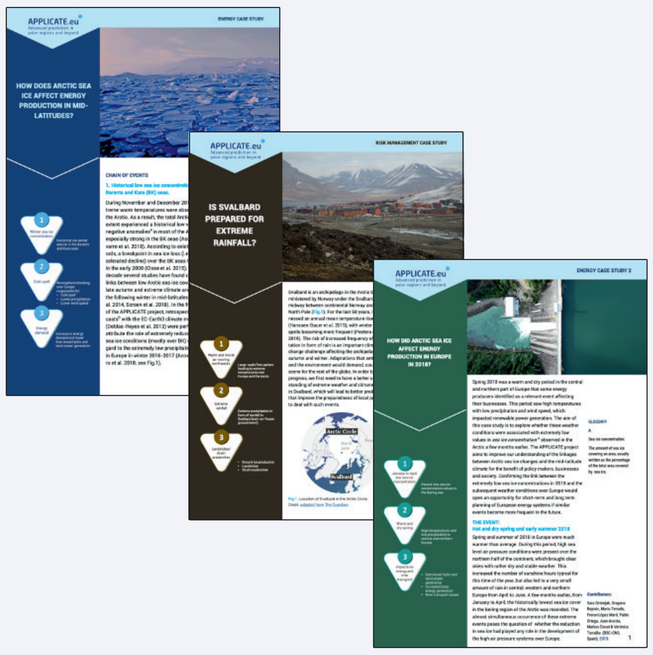
- Determine how sea ice loss will in the Arctic impact weather events in mid-latitudes?
- Advance our understanding through novel coordinated modelling experiments (Polar Amplification Model Intercomparison Project, PAMIP)



Multi-model results from 14 model simulations, following the PAMIP protocol, show a robust weakening and equatorward shift of the winter surface mid-latitude westerly winds in response to reduced Arctic sea ice (Figure 3.1), consistent with a negative North Atlantic Oscillation.

User Engagement

- Collaboration with key users in the targeted regions
- The APPLICATE User Engagement team disseminates APPLICATE's work and applies scientific advancements to relevant socio and economic realms



The User Engagement Team produced three case studies to show the use of weather, climate and sea ice forecasts in the case of specific events with a significant impact on certain sectors or communities. The events analyzed in the case studies are selected together with users in User Group meetings, in thematic workshops, or through interviews.

Clustering

- Contribute in the efforts of the EU Polar Cluster, a network of EU-funded projects
- Merges the most up-to-date findings on Polar change and its global implications
- Collaborations all over the globe
- Established and maintained through the User Group, scientific Advisory Board and scientific cooperations
- EU Polar Cluster, Year of Polar Prediction and CMIP6

More Highlights from APPLICATE:

- **CRISTO Framework for Model Evaluation**
  A list of criteria for good metrics to evaluate numerical models an their performance
- **Atmosphere-Ocean Single Column Model**
  A tool to help improve coupled models in the Arctic
- **"Advancing Predictive Capability of Northern Hemisphere Weather and Climate"**
  An online course from and for early career scientists and less-experenced users of climate services

DATA:
www.applicate.met.no

Our Polar Prediction Matters blog at:
blogs.helmholtz.de/polarpredictionmatters/

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