Interannual Variability
of Arctic Climate
Seasonal and Regional Differences

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CL4 - Climate Variability and Prediction in High Latitudes

university of groningen

faculty of science and engineering

Koninklijk Nederlands Meteorologisch Instituut
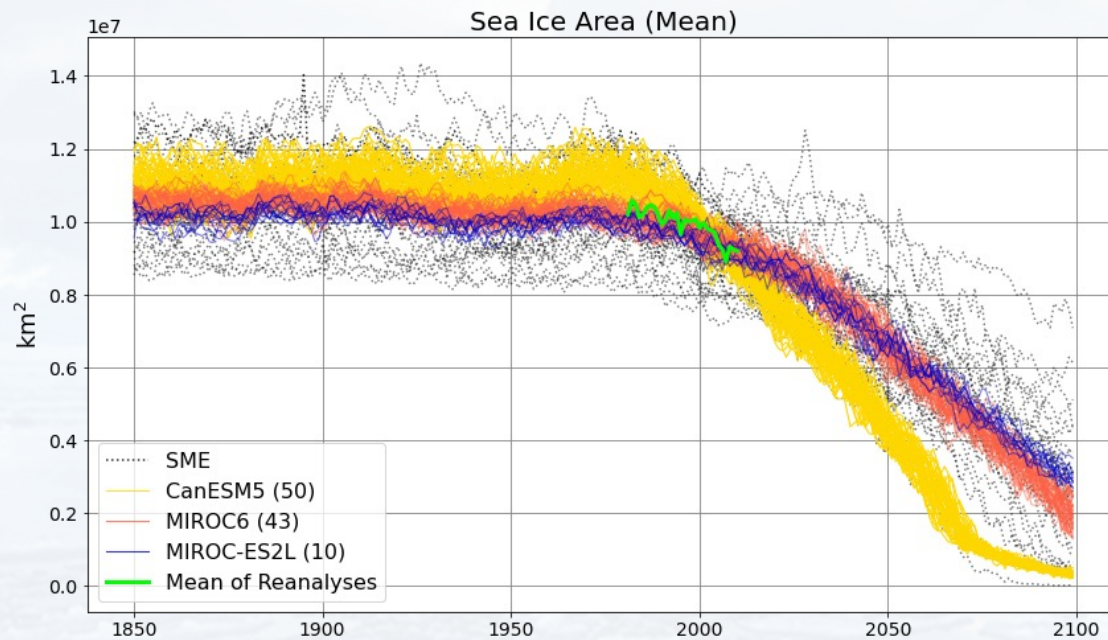Ministerie van Infrastructuur en Waterstaat

Data

Monthly CMIP6 (historical + SSP 5-8.5)
+ Reanalyses (ERA-5, JRA55, 20CRv3, HadISST, GIOMAS)

- **Surface atmospheric temperature**
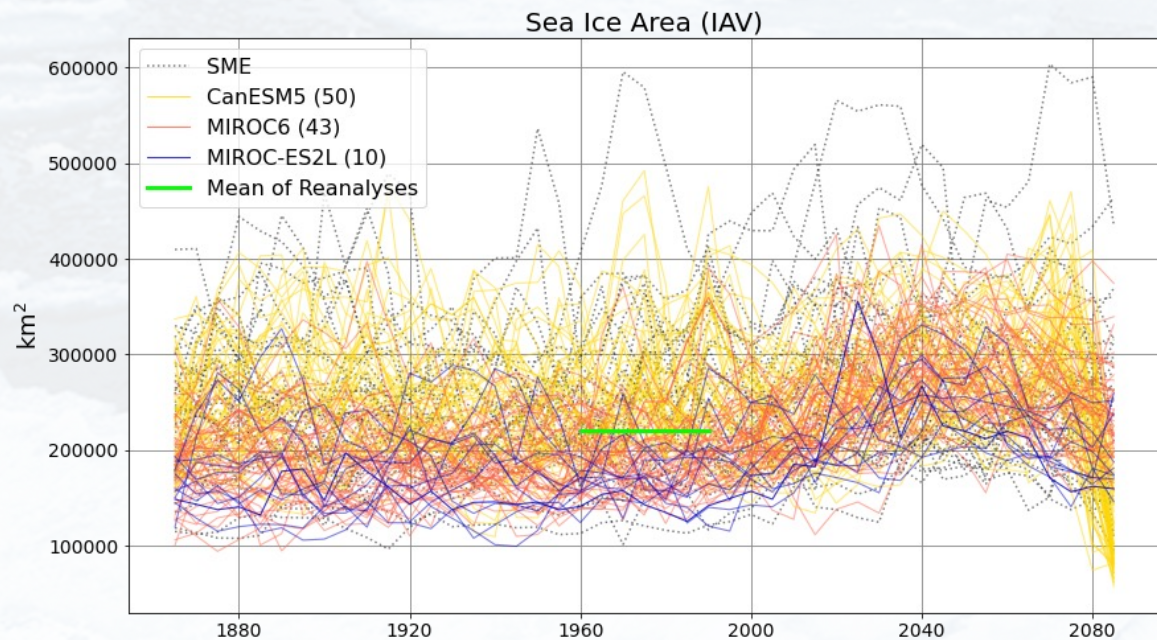
- **Precipitation**

- **Sea ice concentration**
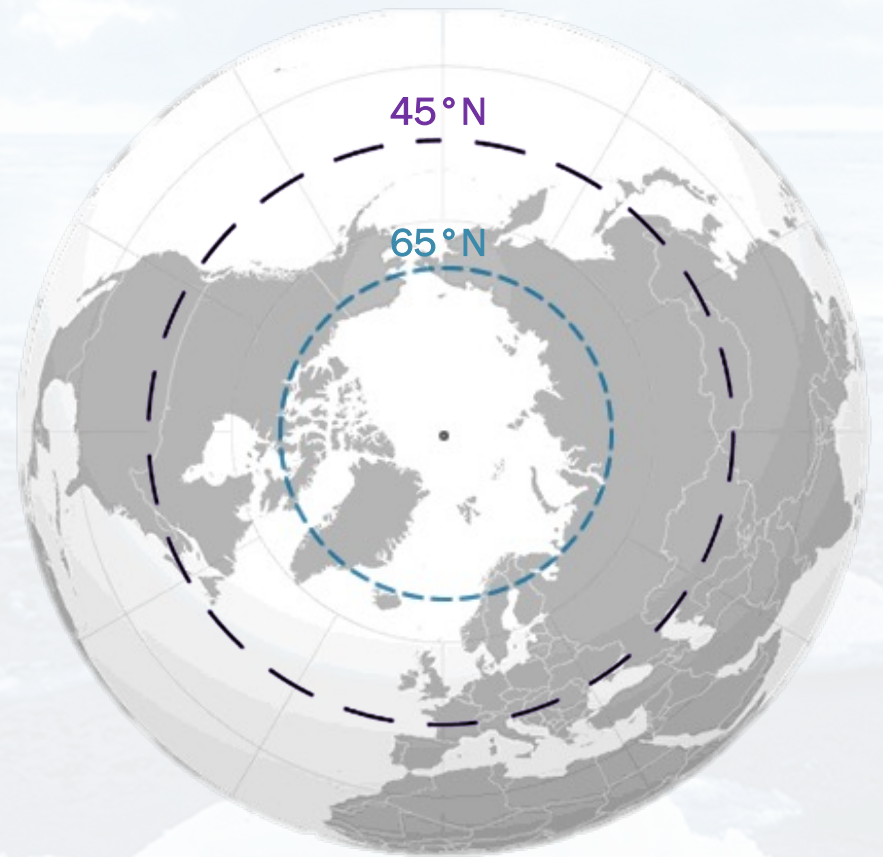
Annual Sea Ice Area

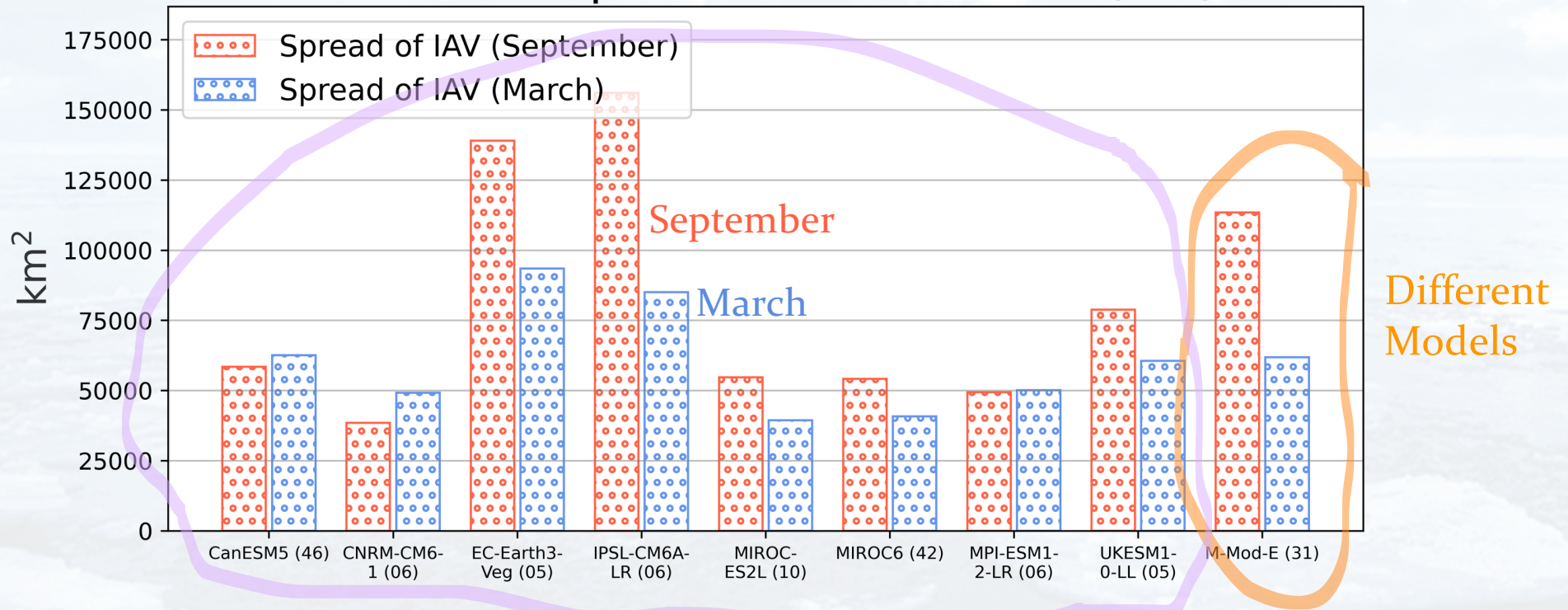Sea Ice Area (Mean)

Members of one model mostly agree on mean SIA...
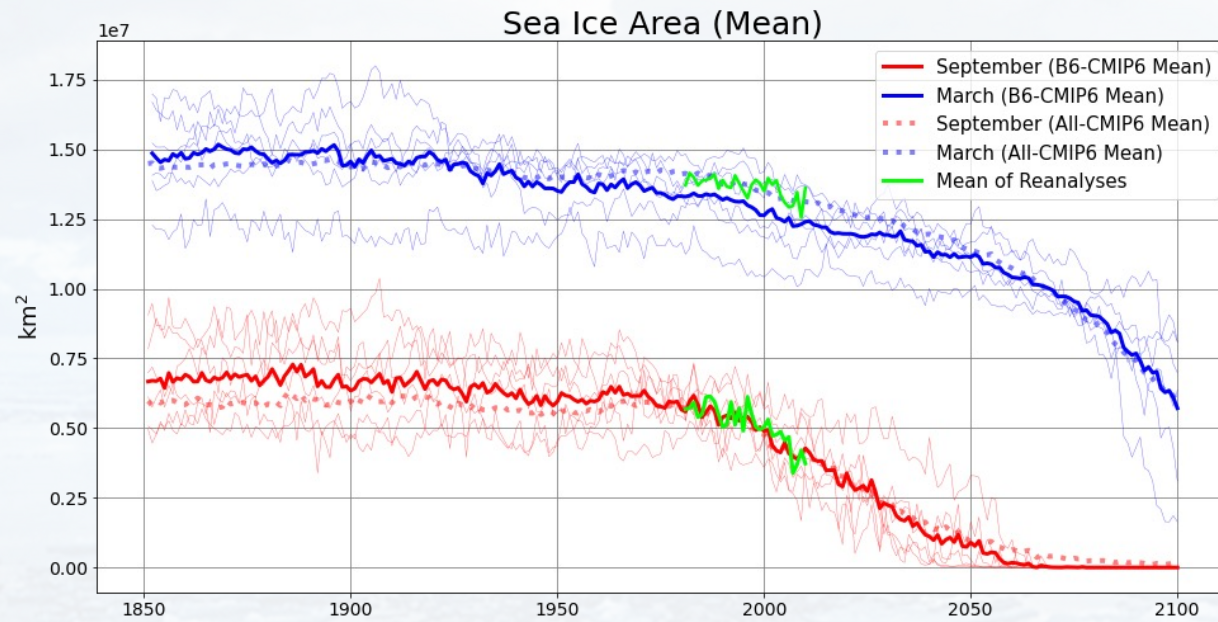
... but not on their annual variations.

Sea Ice Area (IAV)

Natural Variability
1981-2010

Ensemble Spreads: Sea Ice Area (IAV)

Seasonal Differences

March

September

Regional Differences
Linear Trends (1981-2100)

Winter

+0.22%/dec   -0.04K/dec   +3.26mm/dec
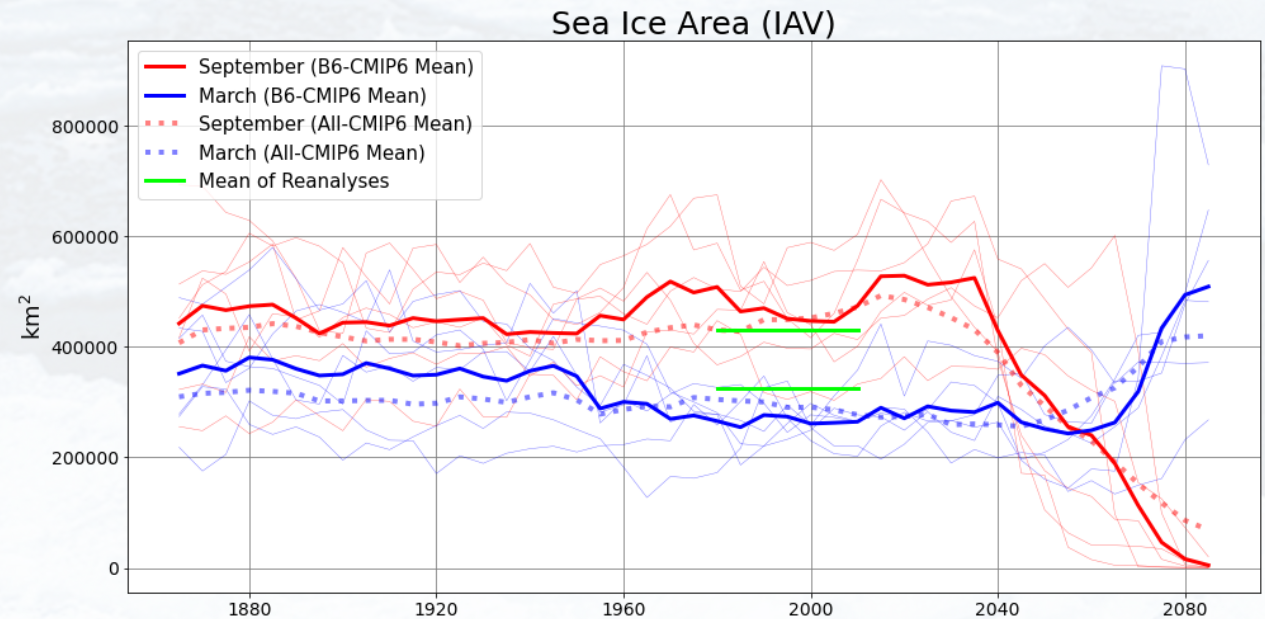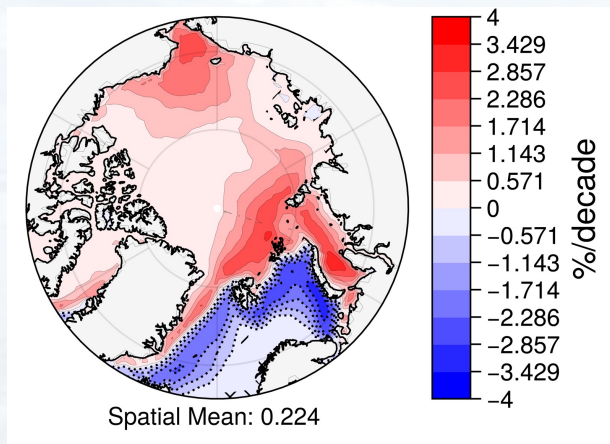
Regional Differences
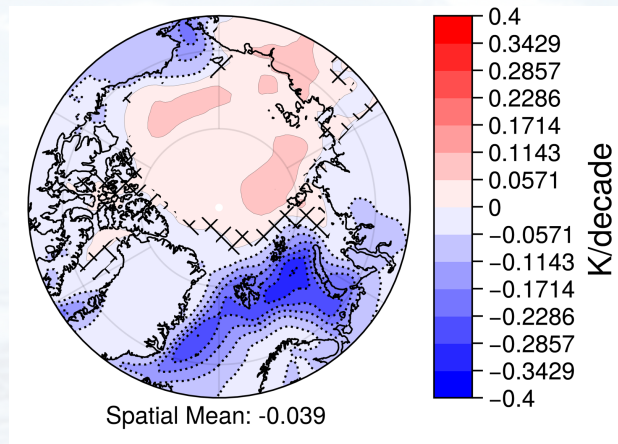
Linear Trends (1981-2100)
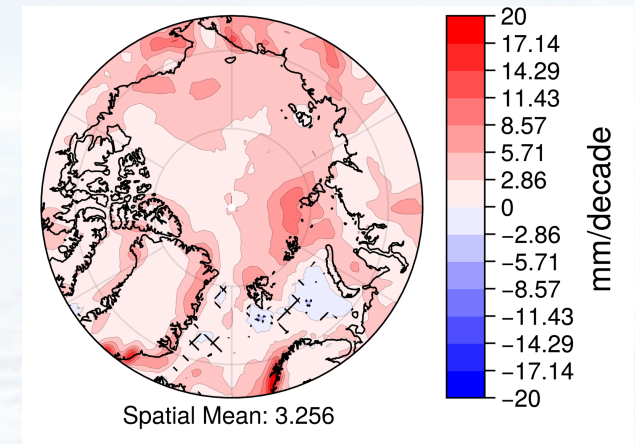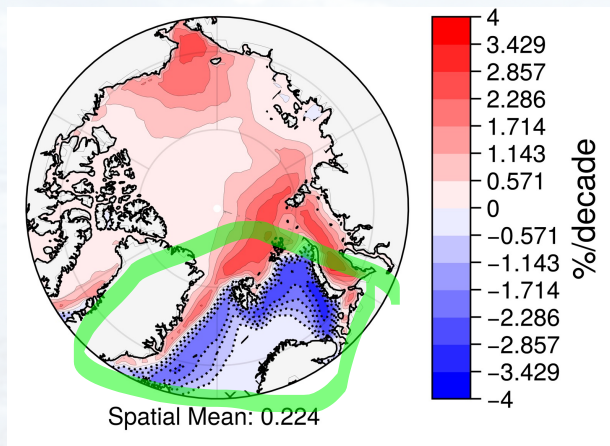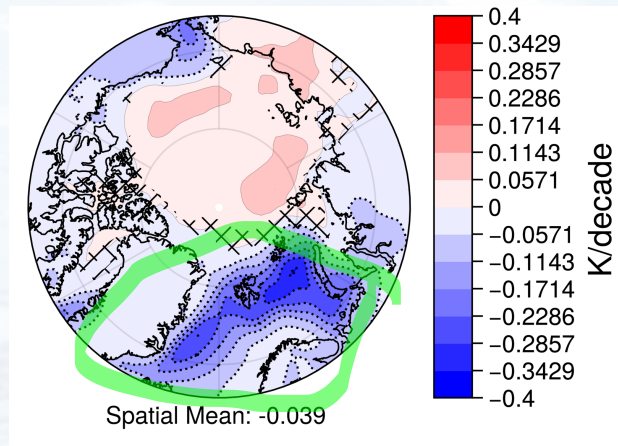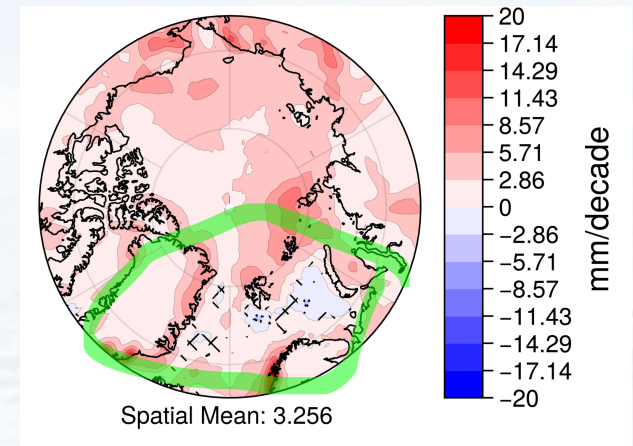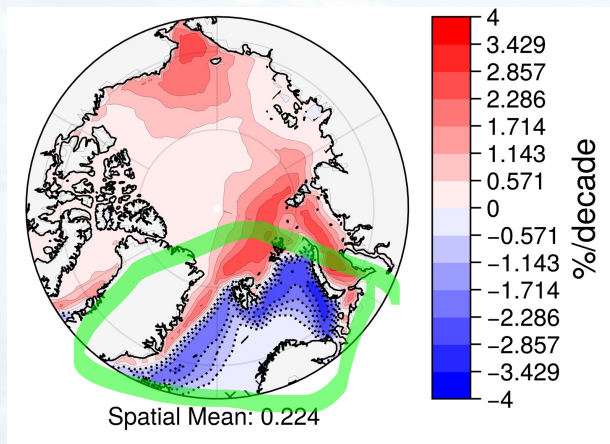
Winter

Sea Ice Concentration

+0.22%/dec

Temperature

-0.04K/dec

Precipitation

+3.26mm/dec

Regional Differences

Linear Trends (1981-2100)
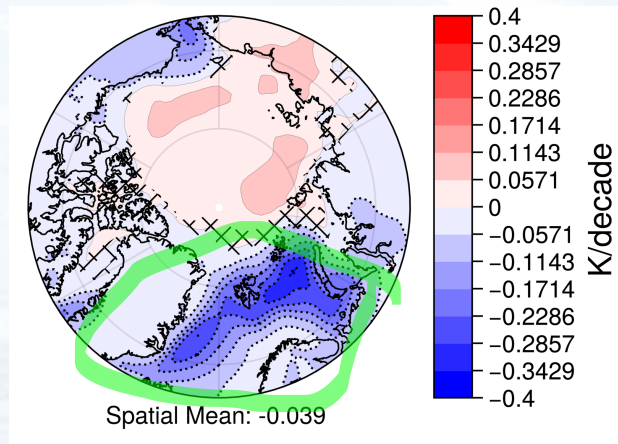
Winter

Sea Ice Concentration
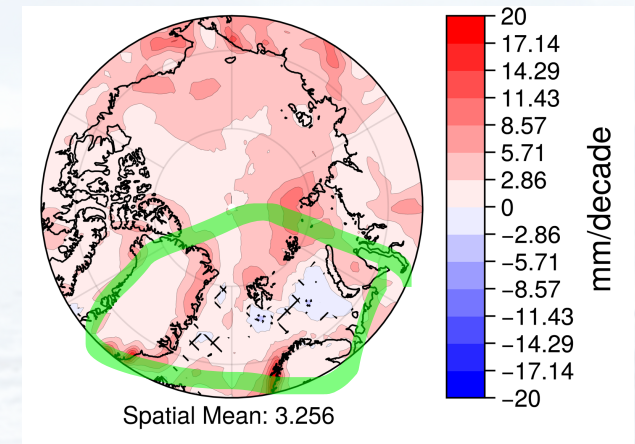
Temperature

Precipitation

+0.22%/dec

-0.04K/dec

+3.26mm/dec

Main Conclusion:

→ Attributing IAV changes to climate change is most beneficial if studied on
1) **local** and 2) **seasonal** scales, as well as 3) in context with **natural variability**.