

# Sea ice decline and Aitkensize particle relation

Tuuli Lehmusjärvi, Group 1,  
Assistant: Lisa Beck



# Declining sea ice linked to increase of particle concentration at Svalbard

- Based on Dall'Osto et al. (2017, 2018):
    - sea ice decline:
      - more exposed open water
      - increased phytoplankton activity
      - enhanced new particle formation
      - changing the amount of CCN in Arctic atmosphere
- Are we able to see this effect at Svalbard as well?

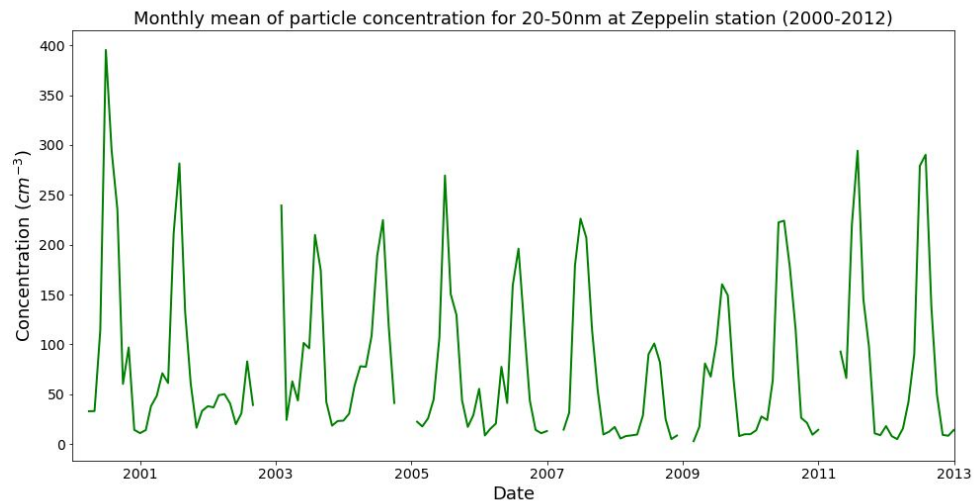
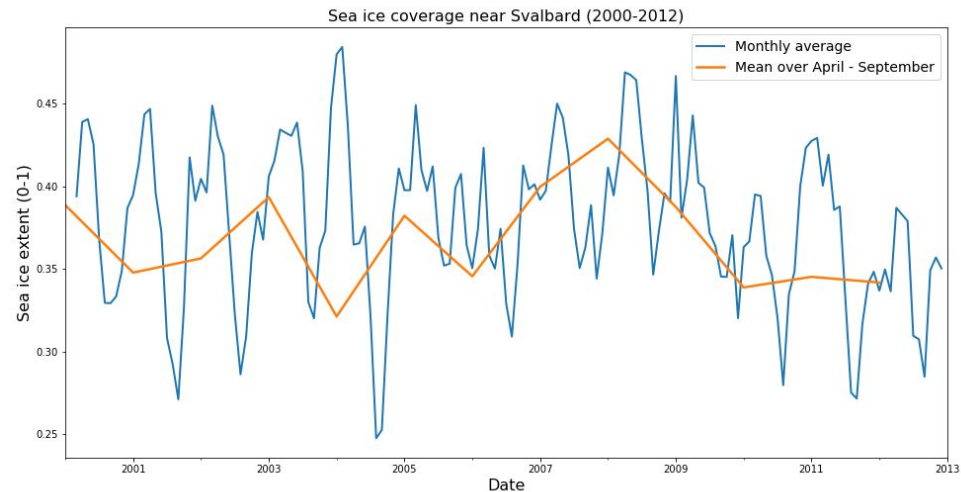
# Methods

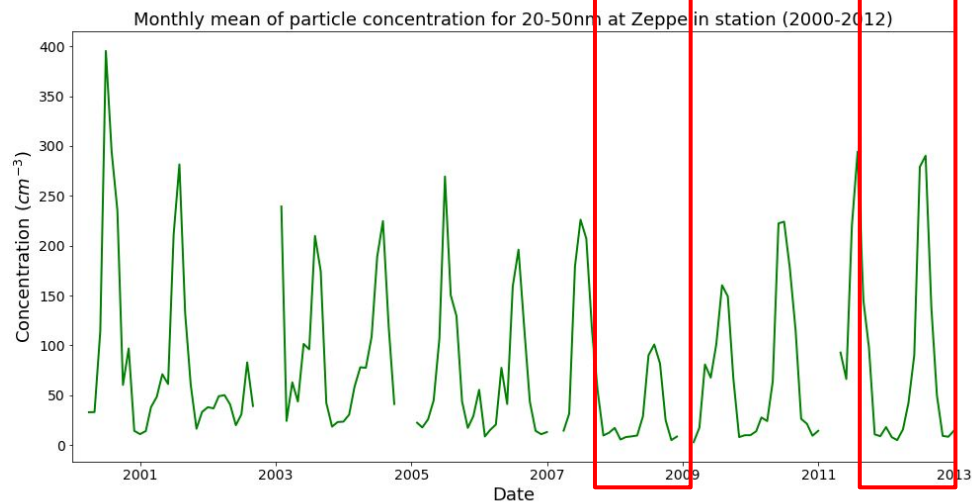
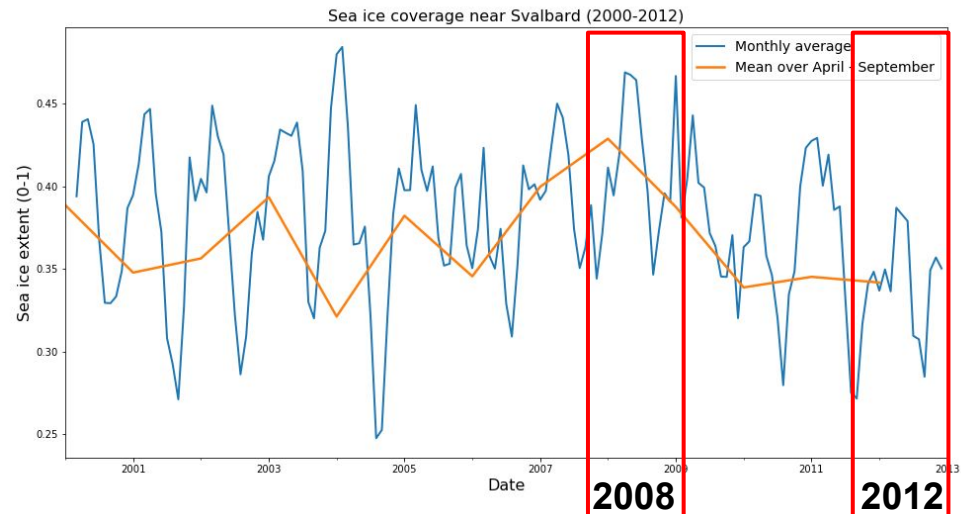
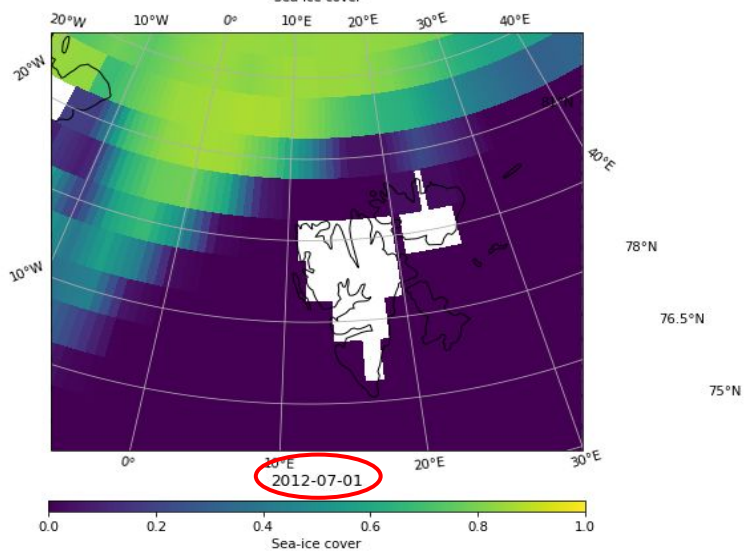
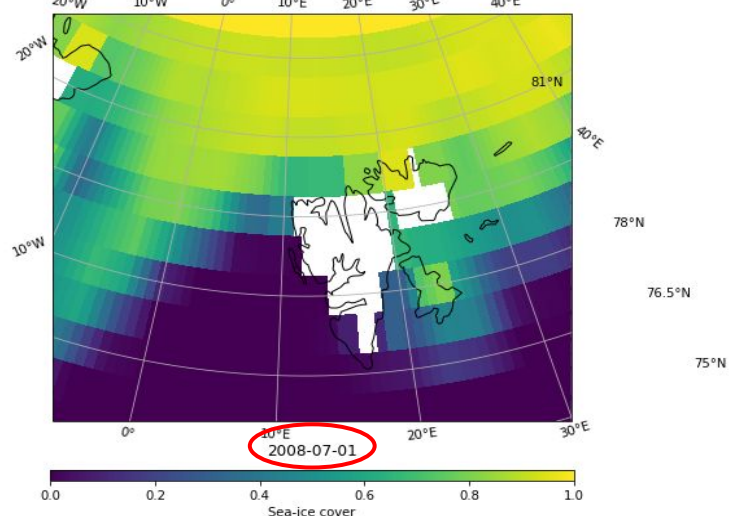
- Observational data
  - Particle size distribution (20-500 nm) from Zeppelin station from 2000-2016
  - Selected sizes from 20 to 50 nm (Aitkensize)
  - Measured with DMPS (Differential Mobility Particle Sizer)
- Modelled data
  - Sea ice extent from ECMWF
  - ERA-Interim reanalysis (1979-2012)



# Results

- Comparing sea ice extent and particle concentration at the same time period (2000-2012)





# Conclusions

- Sea ice extent and particle concentration are anti-correlating
- In future with less sea ice we might have increased CCN concentration
- Applying mask based on wind measurement did not show clear results  
→ backtrajectories could be used





