3. Arctic Sea Ice

When will summer Arctic sea ice disappear?

- IPCC Report: the ice cover in summer will disappear near the end of this century.
- The recent ice cover reduction was much faster.
- The ice cover was anomalously small in 2007 summer.

→Some scientists believe disappearance by 2020.

However

- Significant year-to-year variability

→Such an early disappearance might be exaggeration.

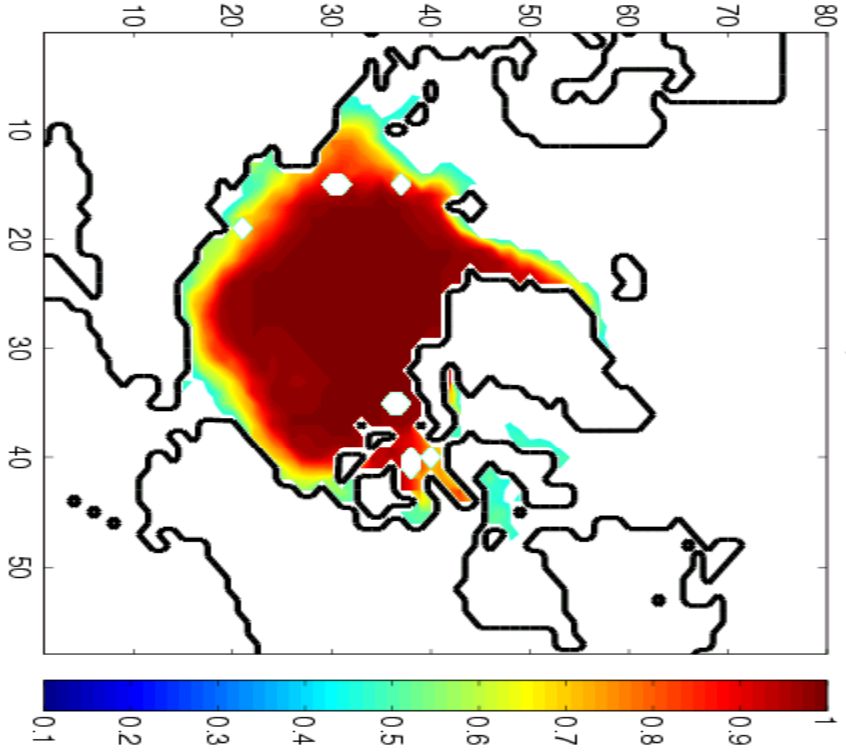
- A simple extrapolation is not reliable,

→but important mechanisms should be explored.

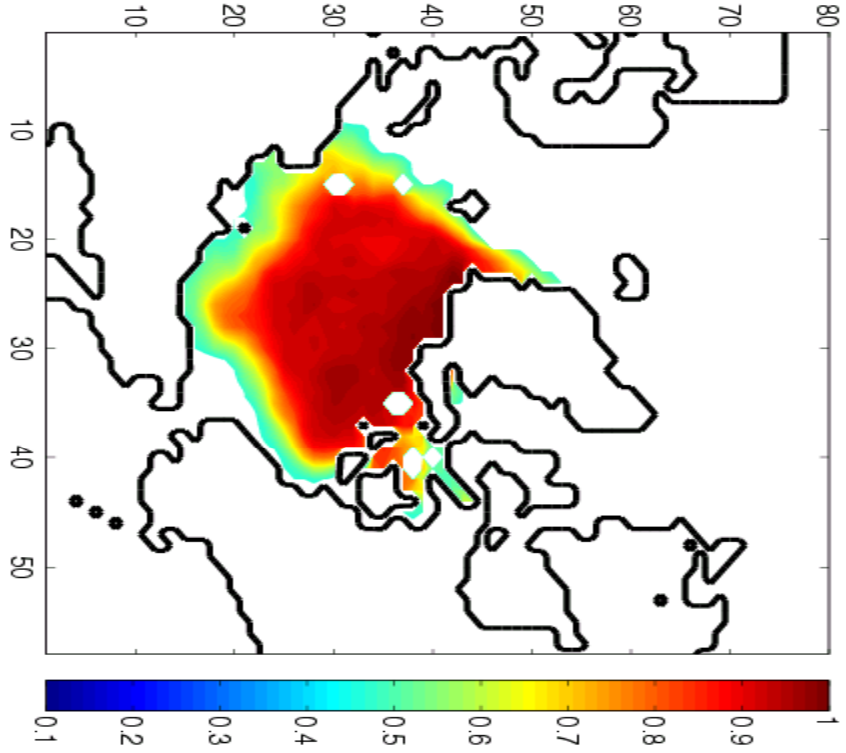
Observed ice cover concentration

Ice reduction is significant in last 30 years.

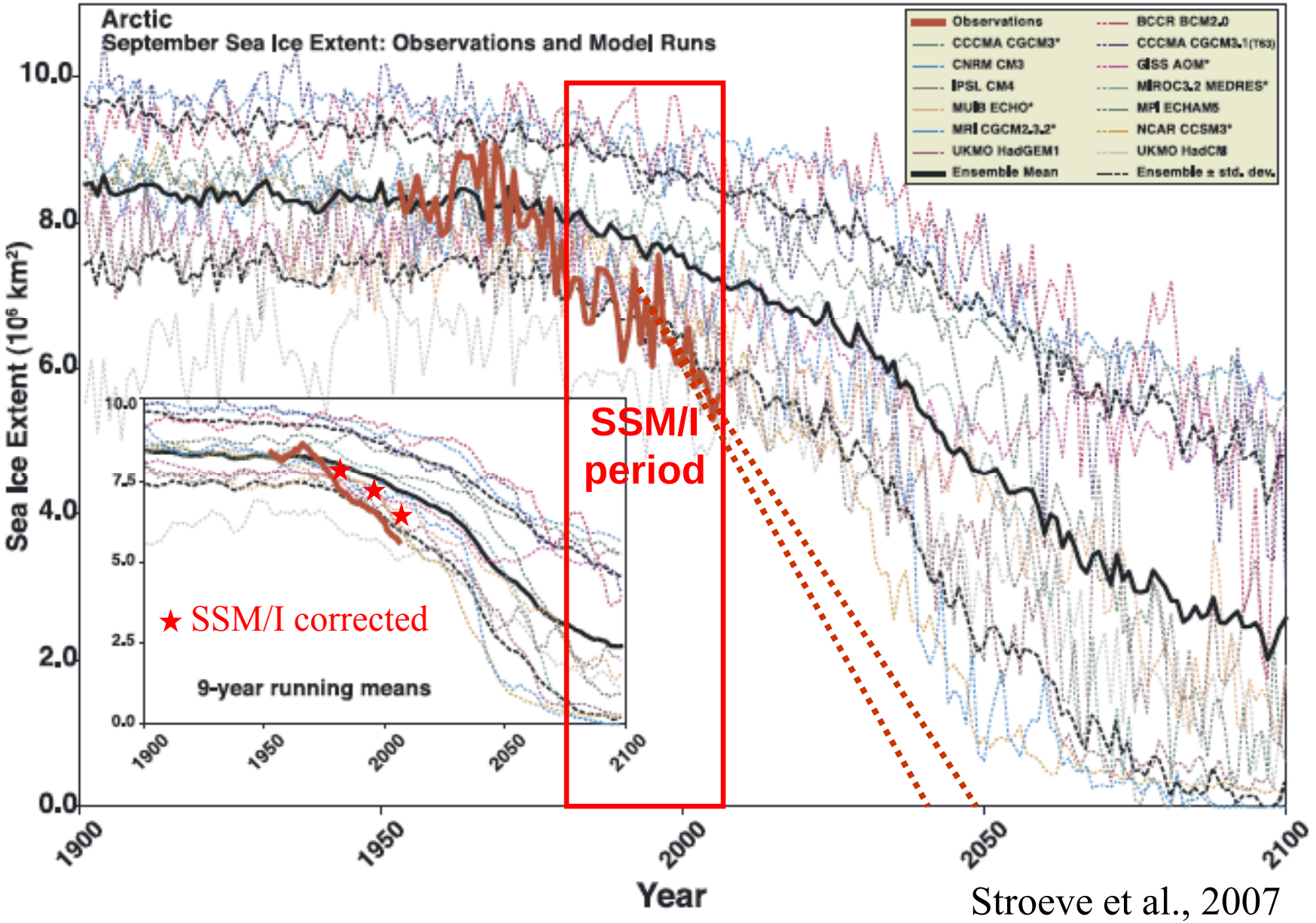
1965-75, Sep



1995-2005, Sep

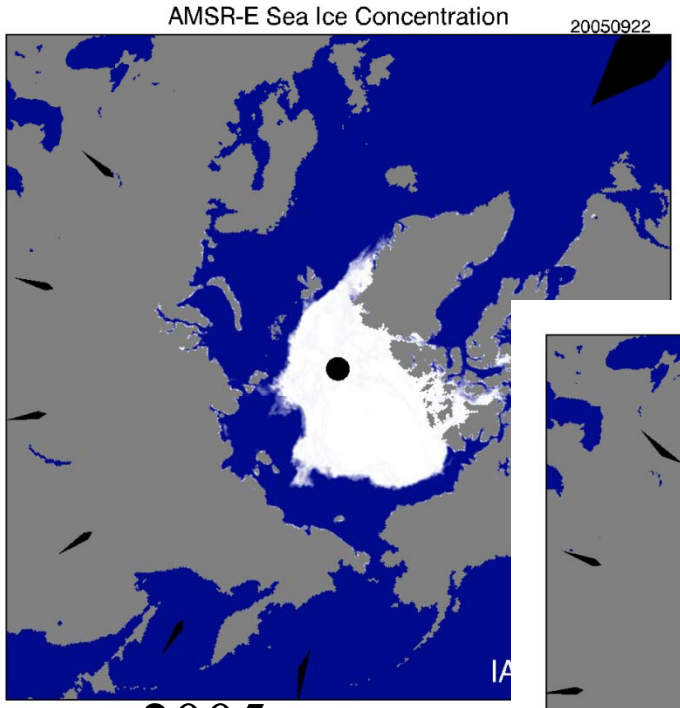


Observed sea ice melt faster than prediction

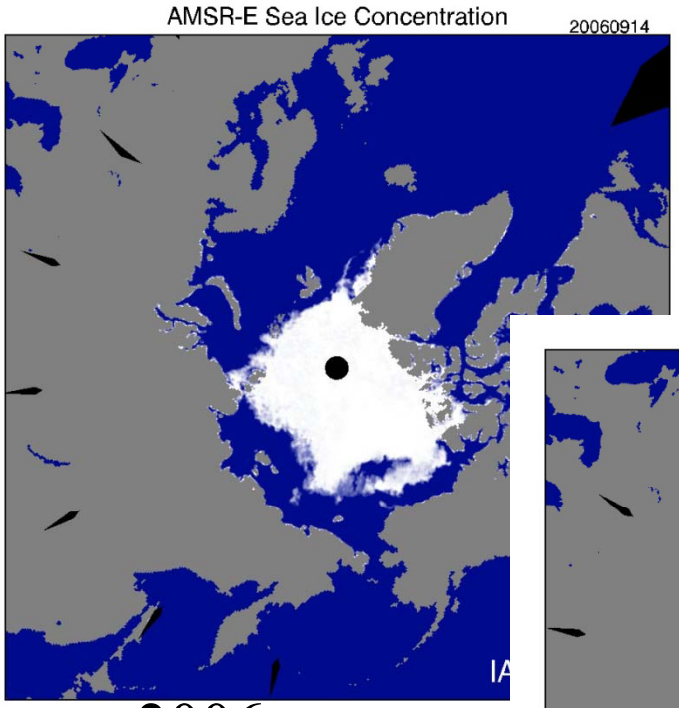


Stroeve et al., 2007

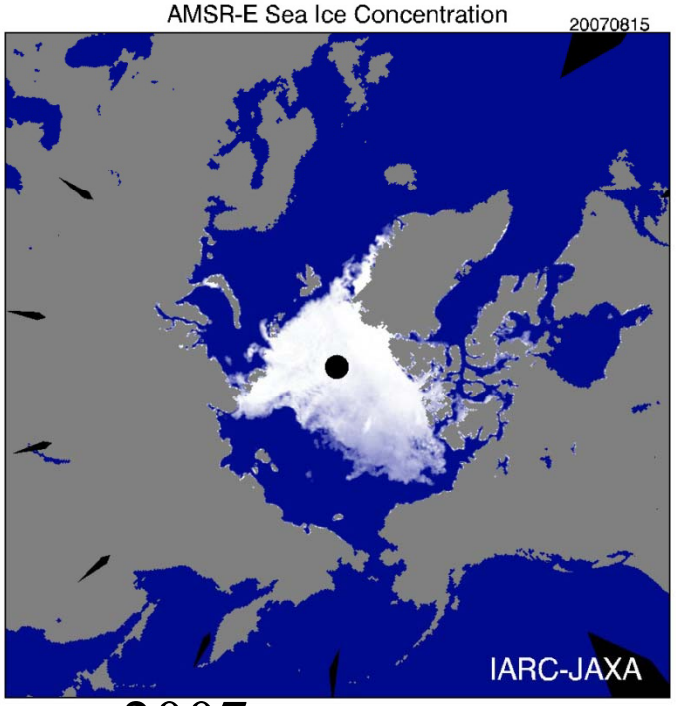
This HP gives a misled impression, under the fact of significant interannual variability.



2005



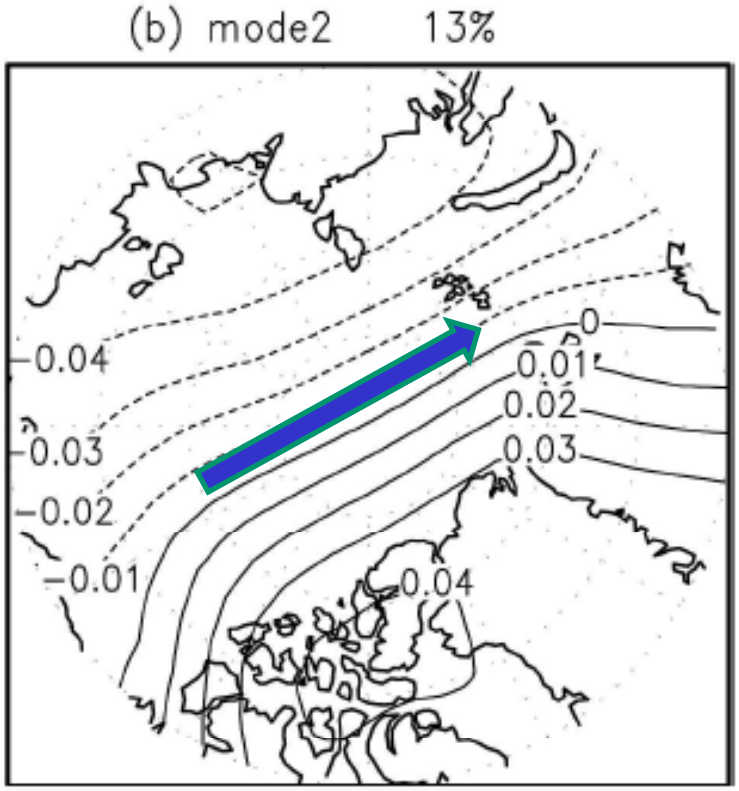
2006



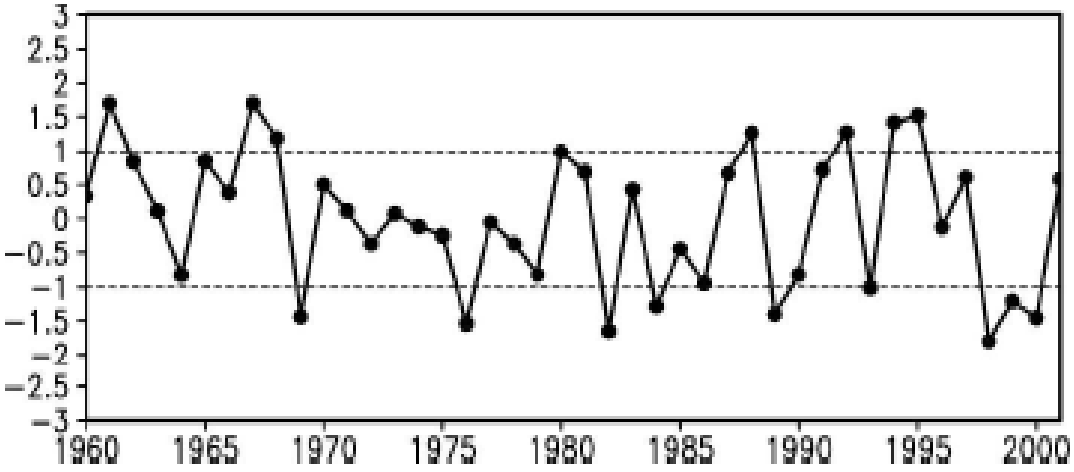
2007

If this decrease rate continues, the ice cover in this summer will possibly reach the IPCC prediction for 2040-2050.

2nd energetic variability in the atmosphere



Wind pushes sea ice from Bering to Greenland Sea.



Wu et al. (2006)

If this EOF mode continues to be positive in future,
sea ice would be pushed out and low in the Pacific sector.

Questions collected by web and moderator

- How fast is ice thickness decreasing?
- How accurate are thickness data? What methods? How often?
- What mechanisms are crucial for ice reduction under global warming?
- How can we verify models and their mechanisms against data?
- What will be the consequences of summer ice disappearance for ecosystem, human life, etc.?
- What do you predict for this summer ice cover?