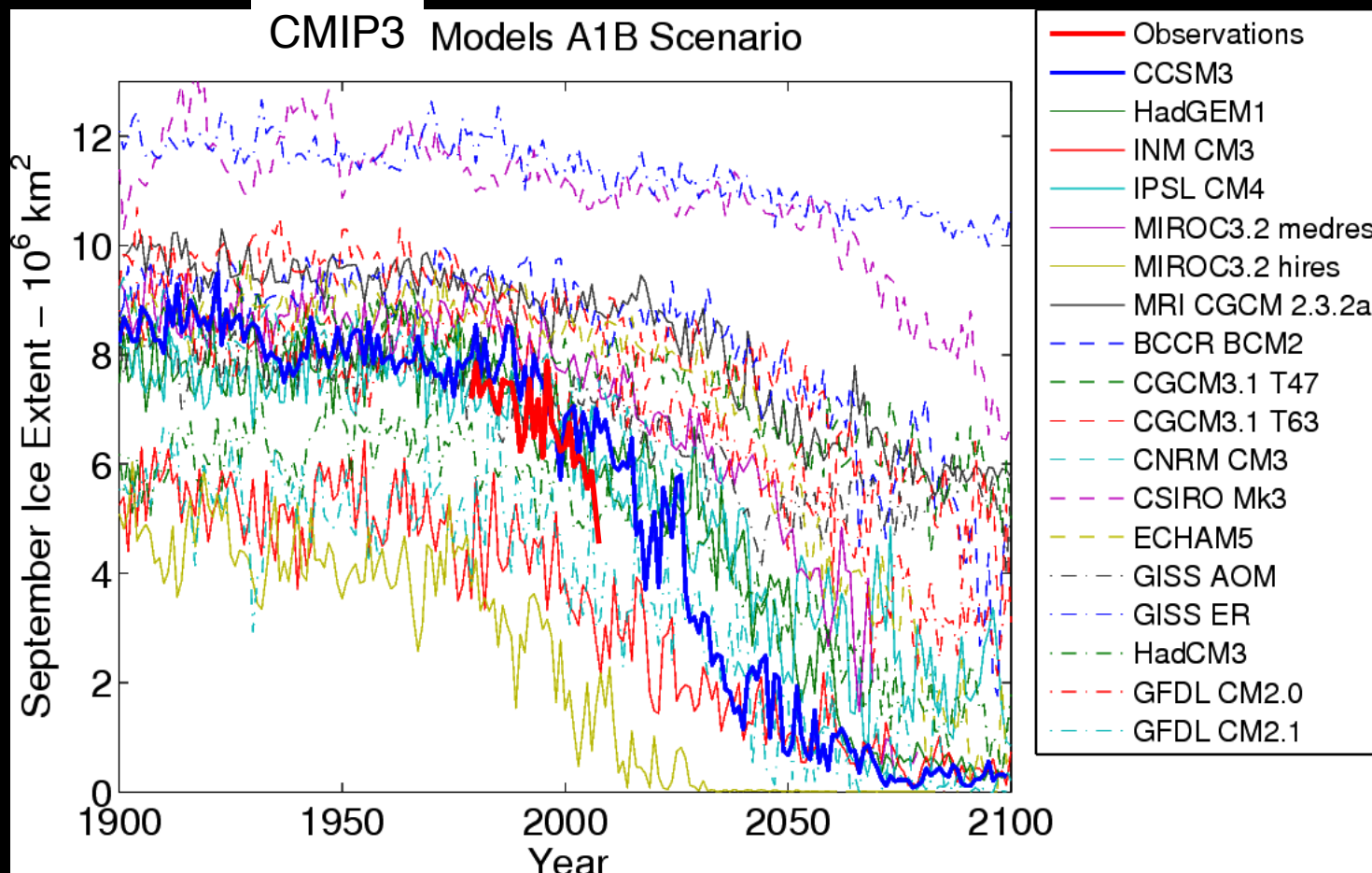
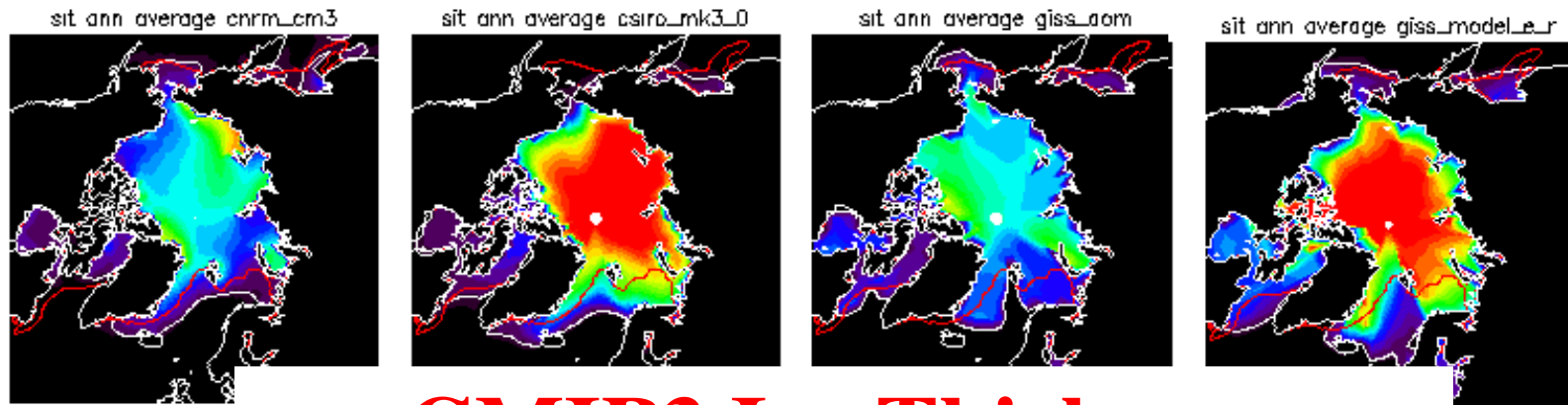


# Sea ice model development issues

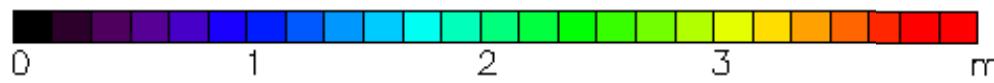
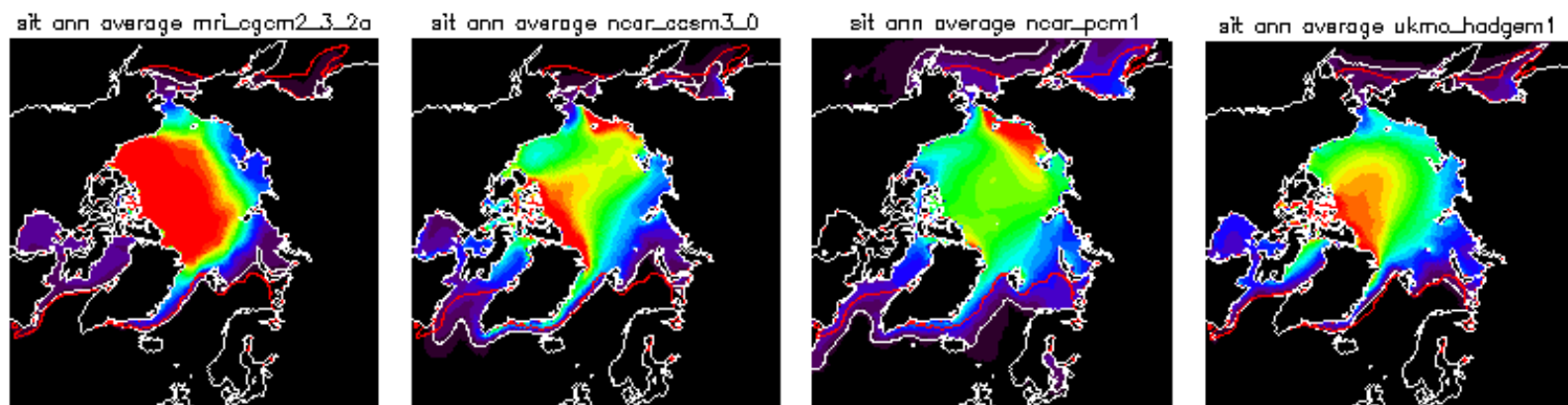
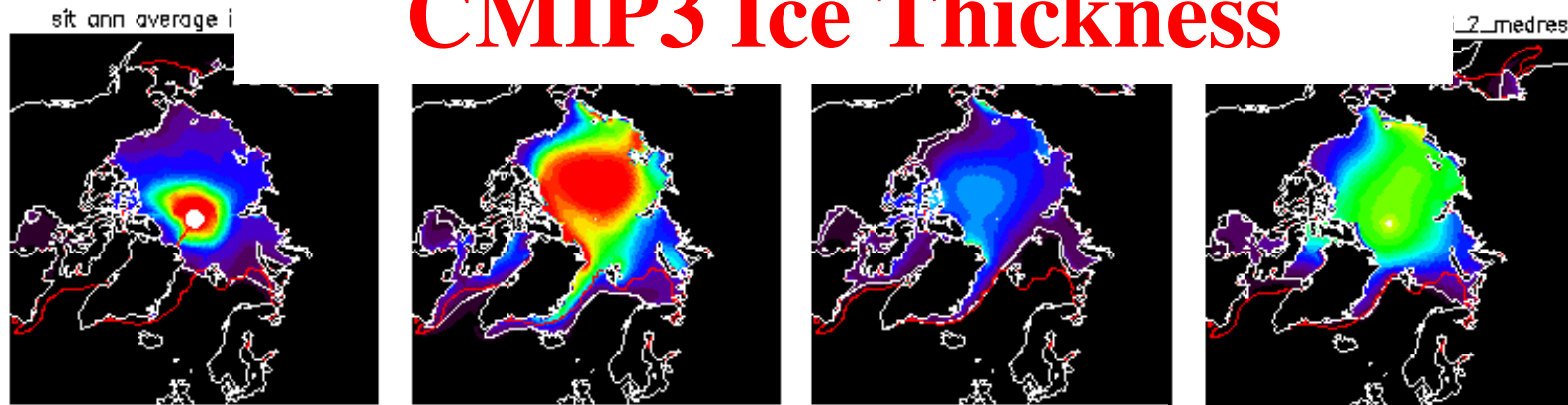
Session Chair: Cecilia Bitz



We need to do better (improving sea ice is only part of the problem)



# CMIP3 Ice Thickness



## CMIP3 Models

- 1) Continuum (like a fluid) **all models**
- 2) Viscous-plastic rheology with elliptical yield curve (isotropic and scale independent) **half**
- 3) Subgrid-scale parameterization for ice-thickness distribution (pdf) **one-quarter**
- 4) Account for internal melt around brine pockets **two**
- 5) Melt ponds and two-stream, multiple-scattering radiative transfer **none - yet**



# My Guess for CMIP5 Models

- 1) Continuum (like a fluid) **all models**
- 2) Viscous-plastic rheology with elliptical yield curve (isotropic and scale independent) **nearly all**
- 3) Subgrid-scale parameterization for ice-thickness distribution (pdf) **one-half**
- 4) Account for internal melt around brine pockets **two**
- 5) Melt ponds and two-stream, multiple-scattering radiative transfer **one**

# Other cool new developments

Tracer physics - allowing aerosols, dust, algae, age, etc  
manageable with remapping advection scheme

Simple desalination

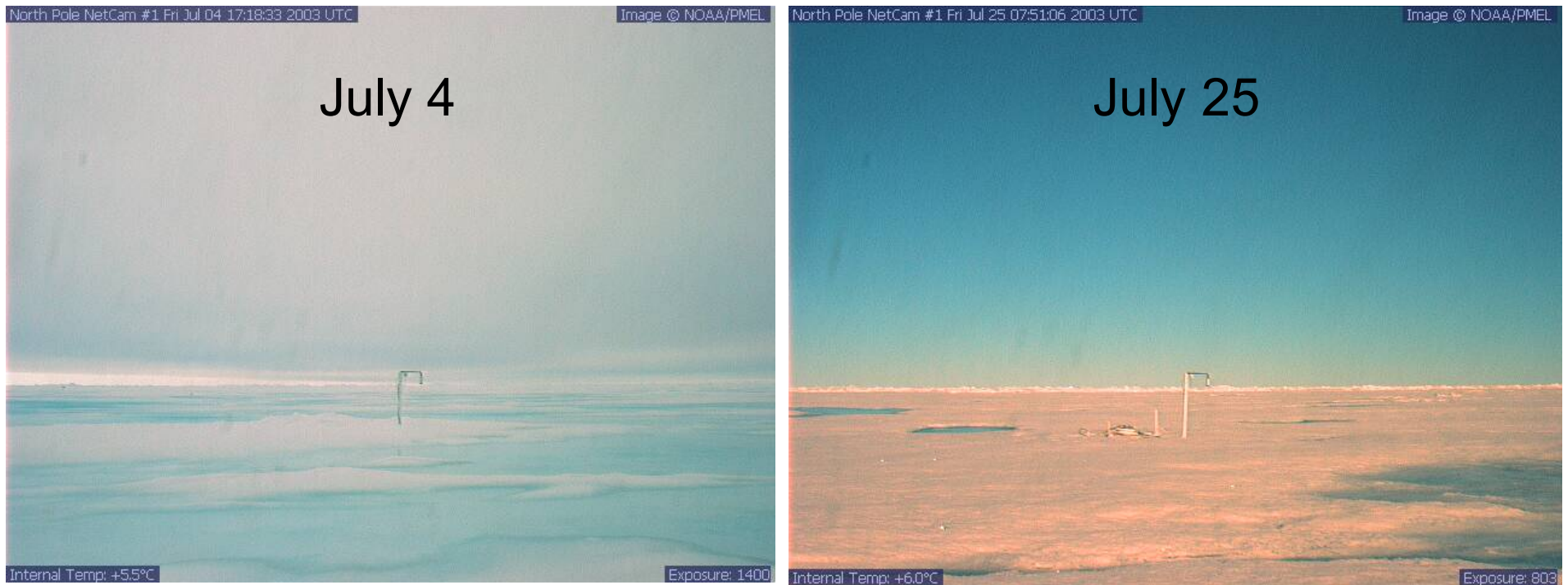
Icebergs

?

## Future Needs

Better desalination, porosity, and melt ponds

Dynamics appropriate for high resolution



North Pole Web Cam 2003