

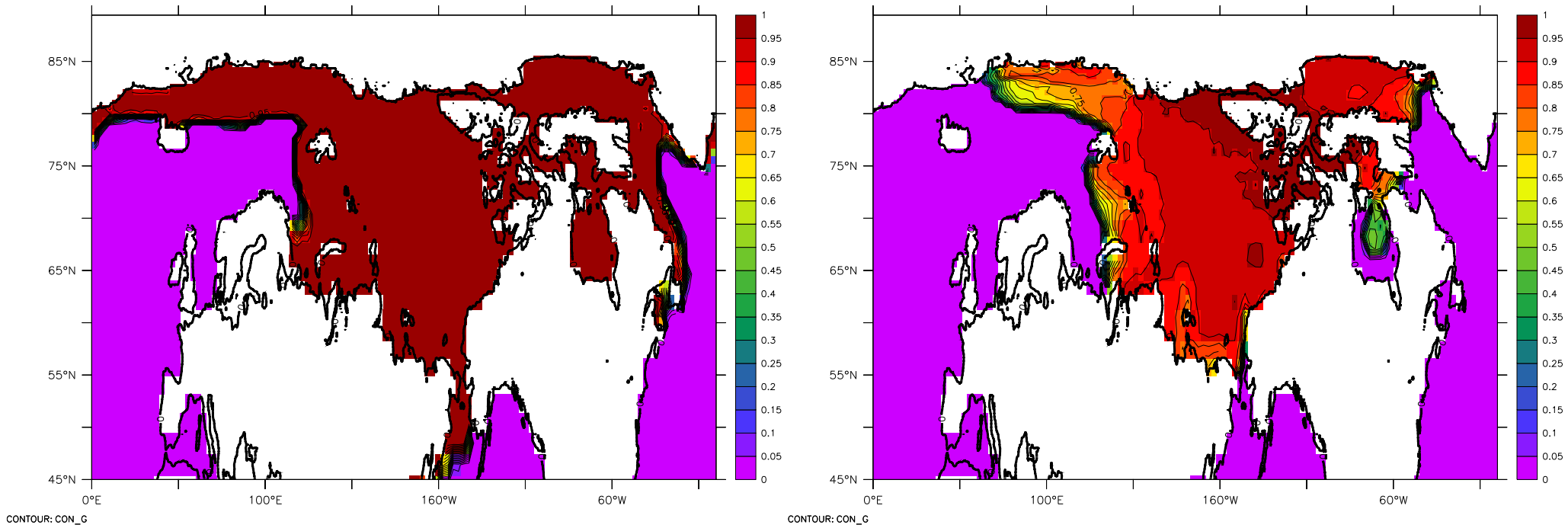
Arctic ocean and sea-ice circulation  
in a global ocean–sea ice general circulation model

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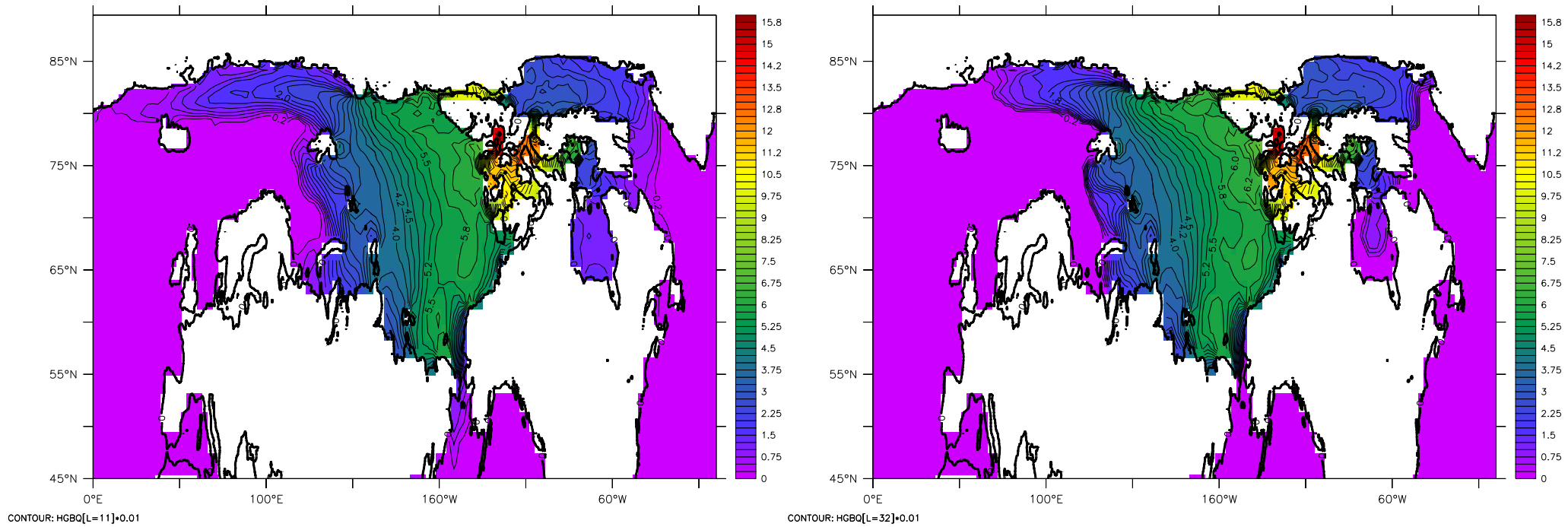
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- Modular Ocean Model (MOM3)
  - Non-Boussinesq primitive equations in Z coordinates
  - Non-linear free surface
  - KPP vertical mixing
  - Redi and skew Gent-McWilliams diffusion
  - Second order moments advection scheme
  - Rotated grid, horizontal resolution:  $3^\circ$  (isotropic grid)
  - Vertical resolution: 26 levels (5-500 m) with truncated bottom cells
- Sea ice model
  - 2-layer (snow + ice)
  - Elasto-visco-plastic rheology
  - Floating (as opposed to "levitating") sea ice
- Forcing
  - Daily NCEP/NCAR reanalysis SAT and SLP ( $\rightarrow$  geostrophic wind)
  - Climatological relative humidity, cloudiness, precipitation
  - Bulk heat, evaporation and momentum fluxes

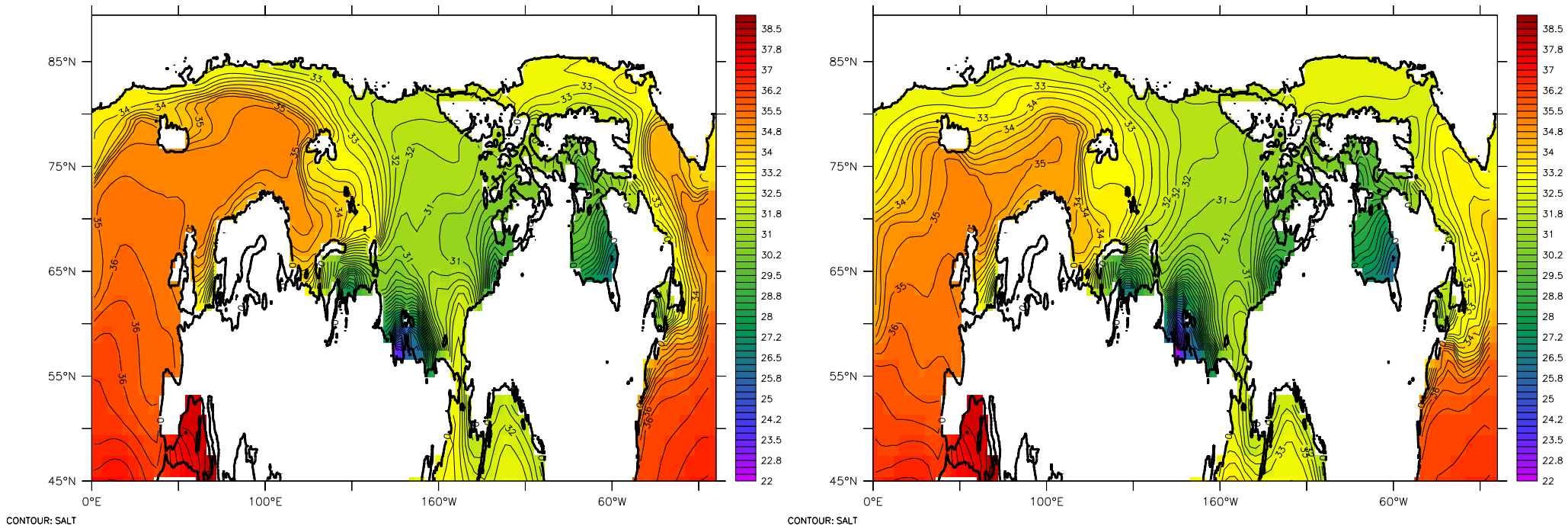
1978 March (left) and September (right) sea-ice concentration



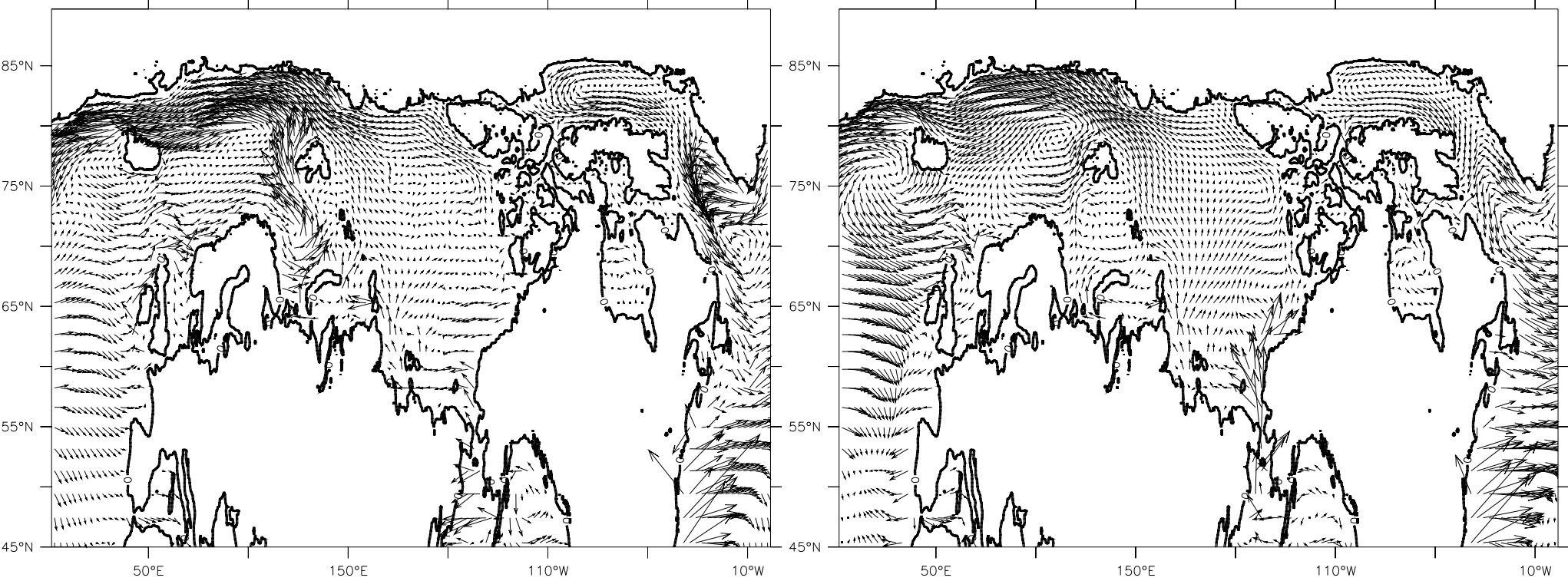
# 1978 March (left) and September (right) sea-ice thickness (m)



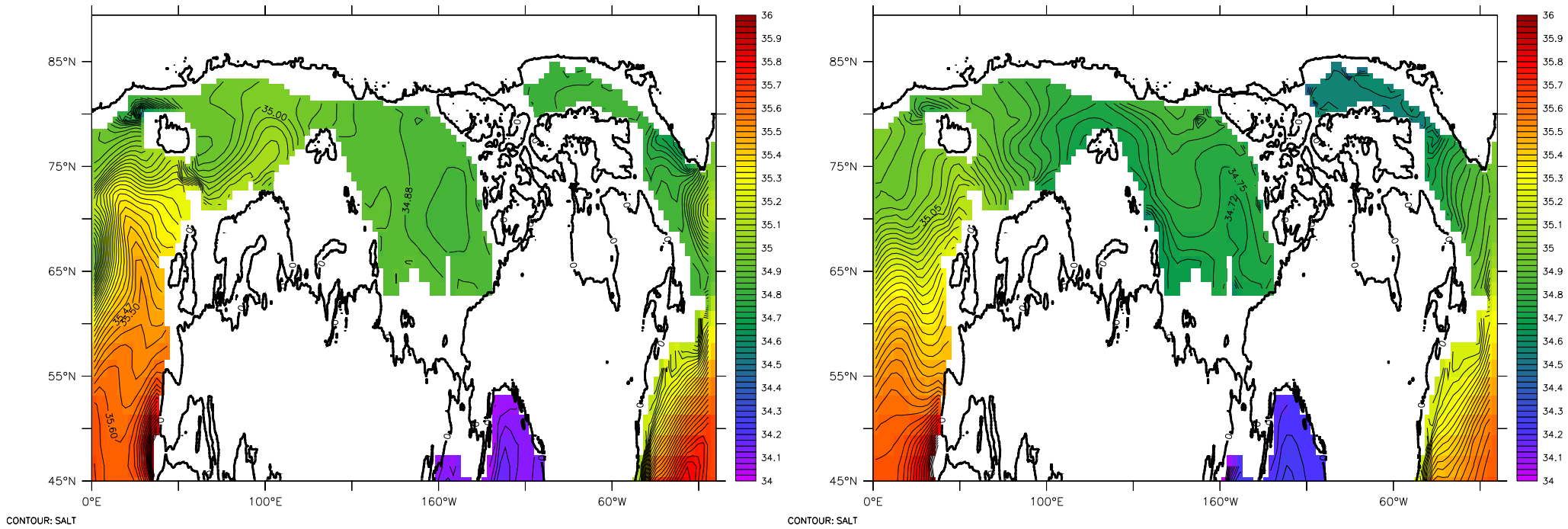
1948 January (left) and 1978 January (right) surface salinity (psu)



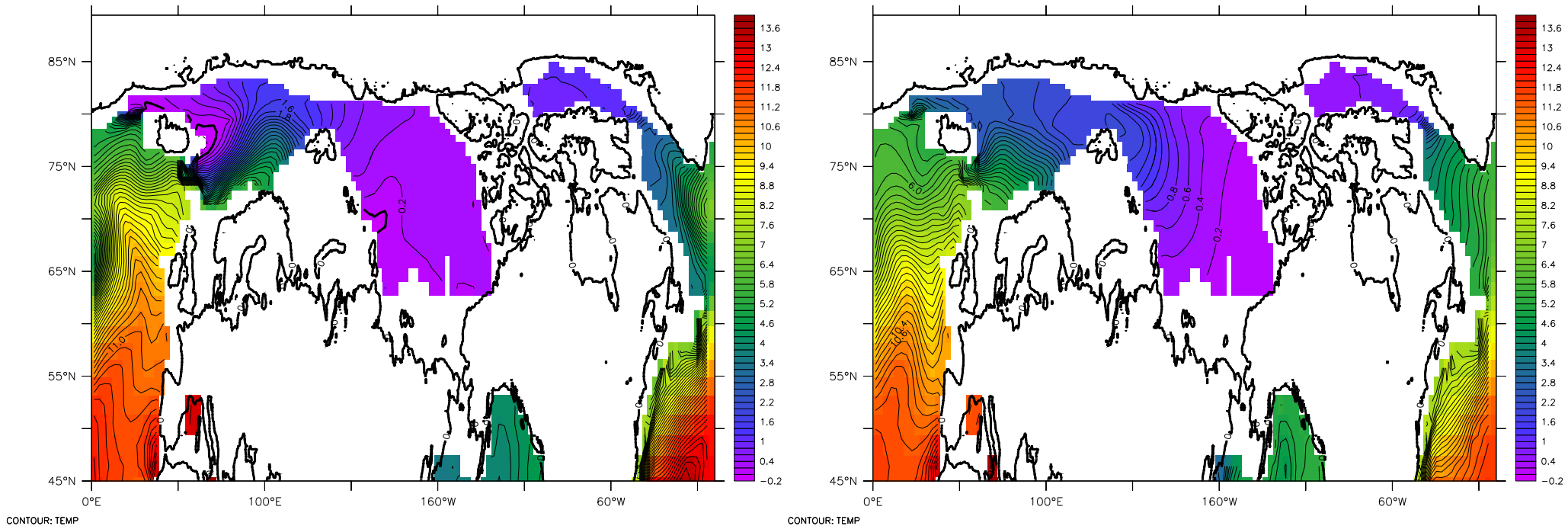
1978 winter (left) and summer (right) surface currents (m/s; scale 0.1 m/s)



# 1948 (left) and 1978 (right) 500-m salinity (psu)



1948 (left) and 1978 (right) 500-m temperatures ( $^{\circ}\text{C}$ )





1948 (left) and 1978 (right) 500-m currents (m/s; scale 0.025 m/s)

