

Dragoness



Dragoness, Bergen, September 17-19, 2008



Micom

- Miami Isopycnic Coordinate Ocean Model (Bleck et al., 1992)
- Mixed layer+Isopycnic layers below
- Global domain with sea ice module



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Forcing

- Wind Stress
- Heat Flux
- River Runoff



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Initial Condition

- Sea Water Temperature
- Sea Water Salinity
- Sea Ice Cover



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Model Output

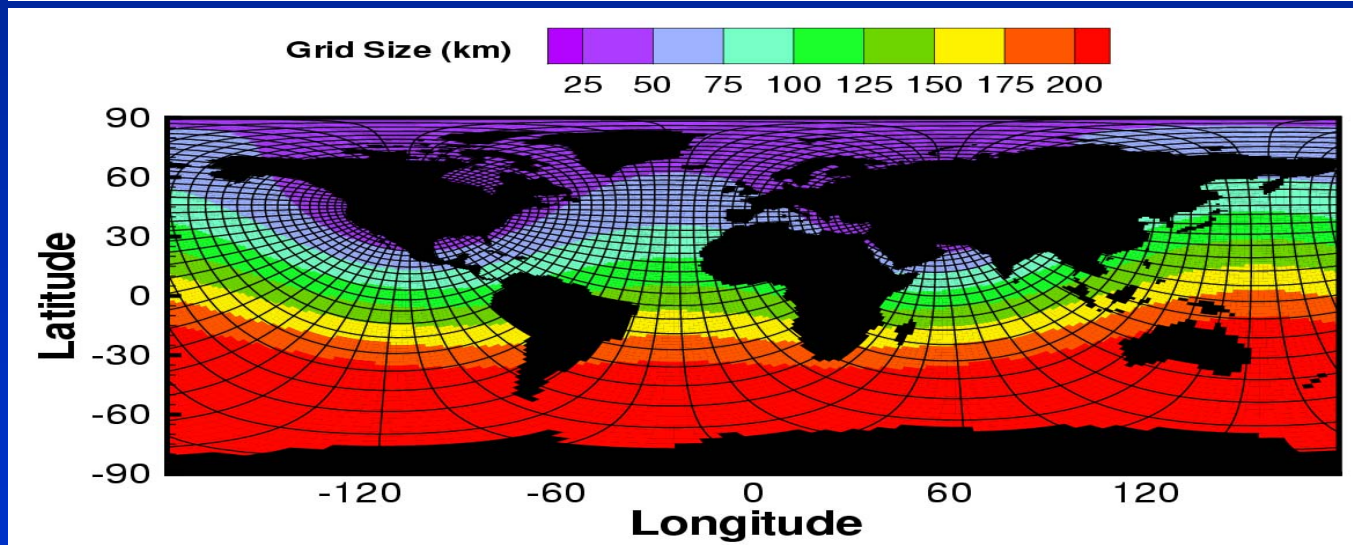
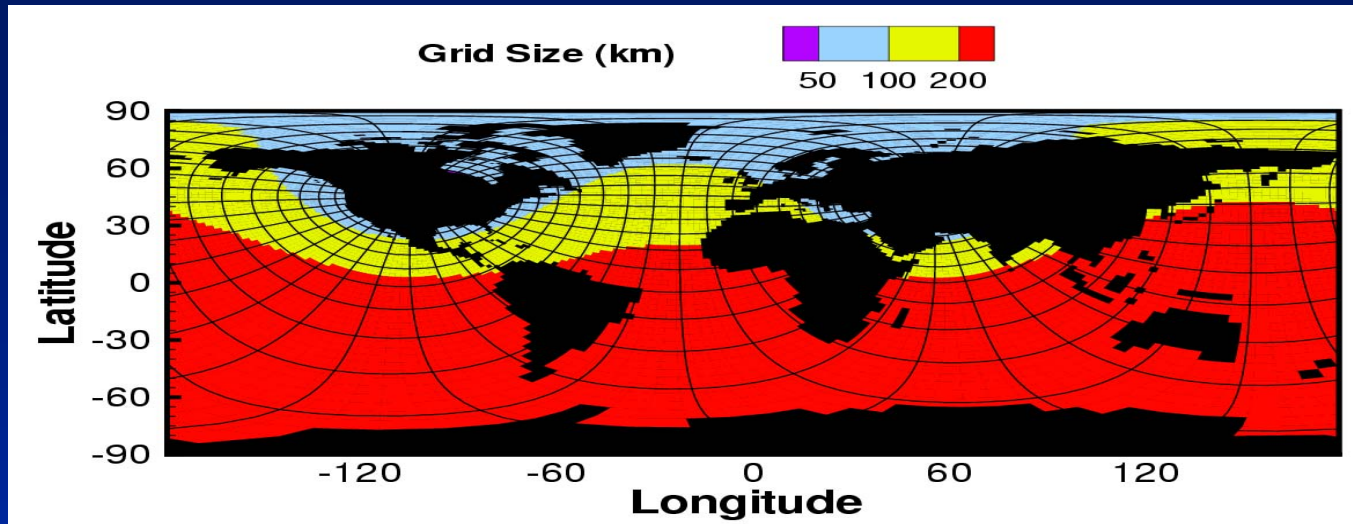
- 2D-field
- Potential density of the mixed layer
- Depth of the mixed layer
- Barotropic currents (U, V components)
- Sea surface height
- Ice thickness
- Ice coverage
- Ice velocity (U, V components)
- Ice age
- 3D-field
- Potential temperature of sea water
- Salinity of sea water
- Thickness of isopycnals
- Ocean currents (U,V components)
- Chemical tracers



Dragoiness, Bergen, September 17-19, 2008



Model Configurations

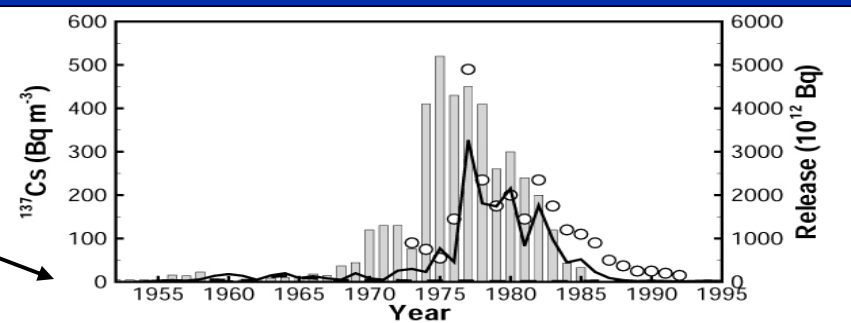
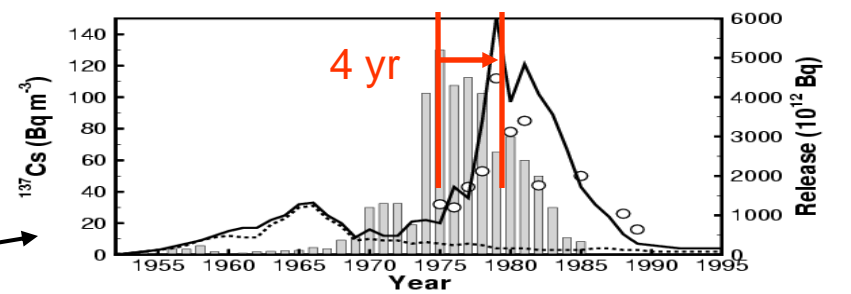
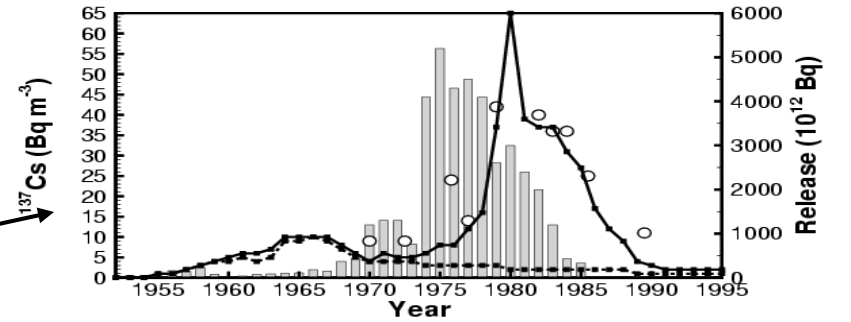
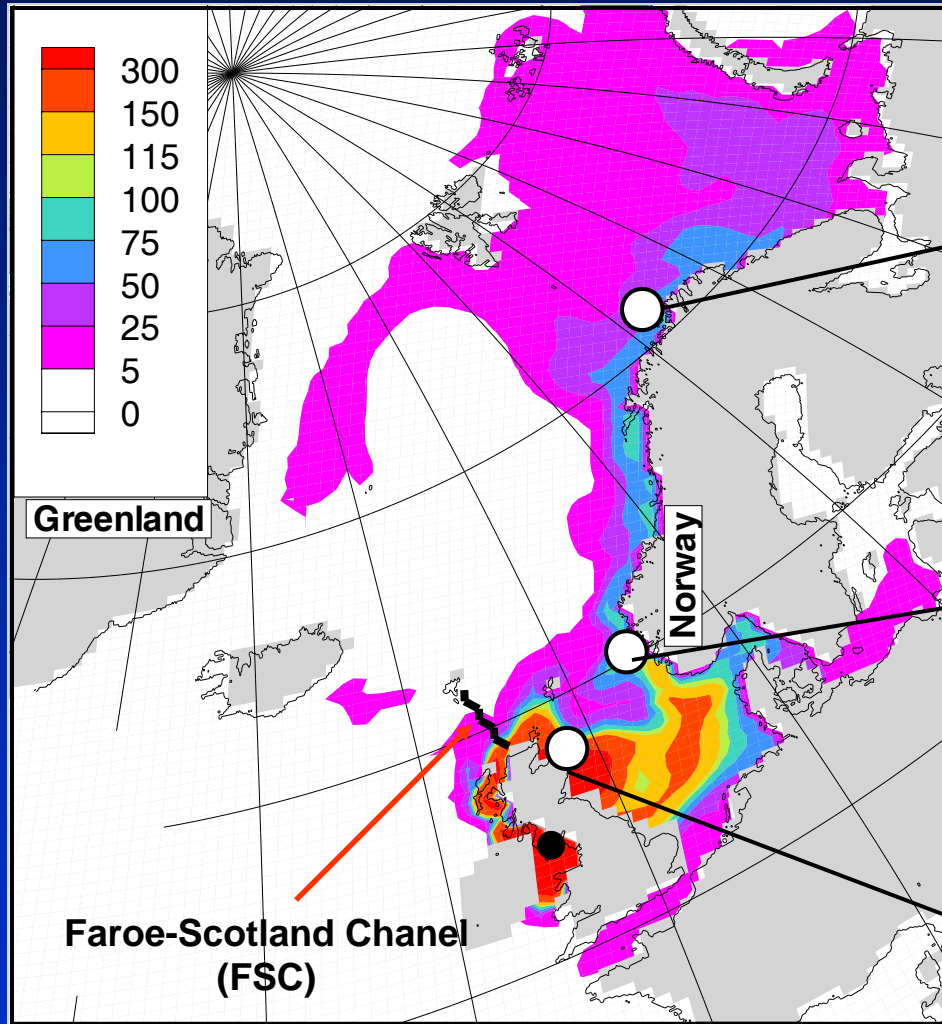


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Sellafield signal (left)

model-data (right)



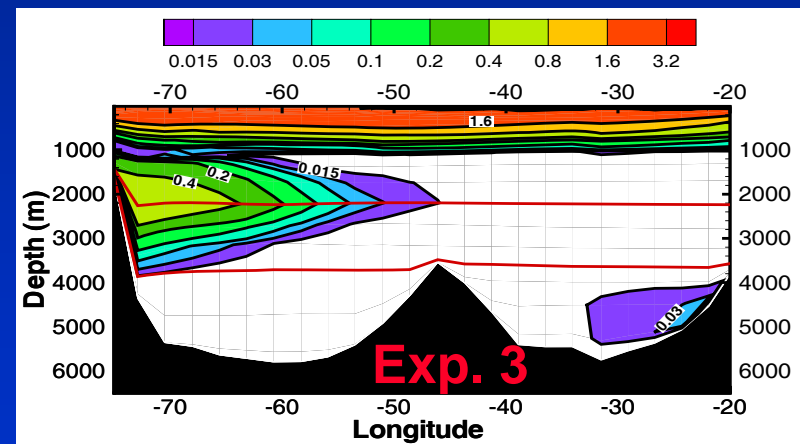
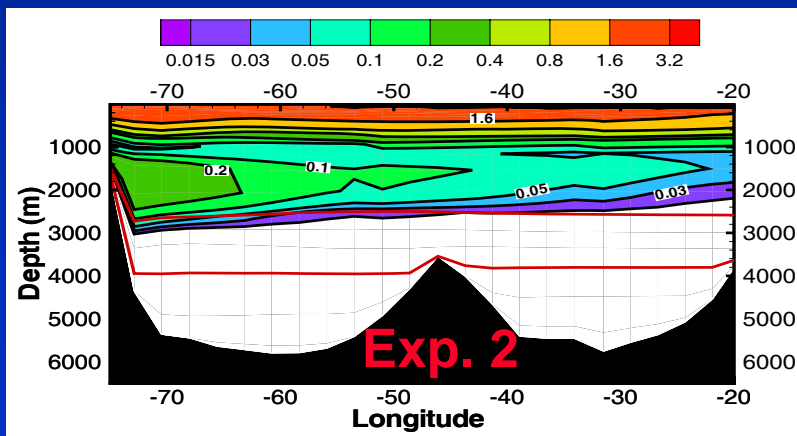
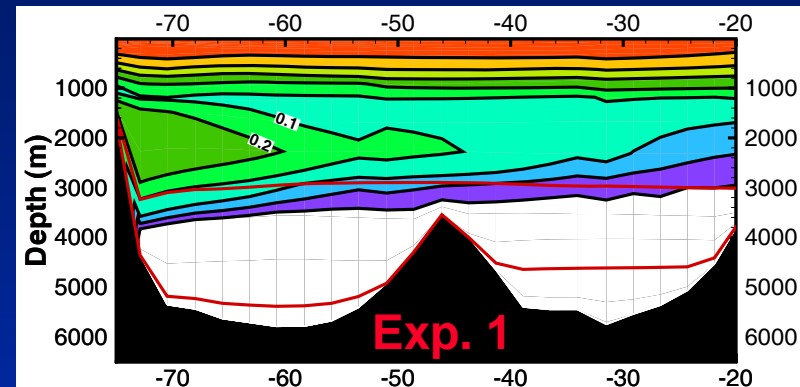
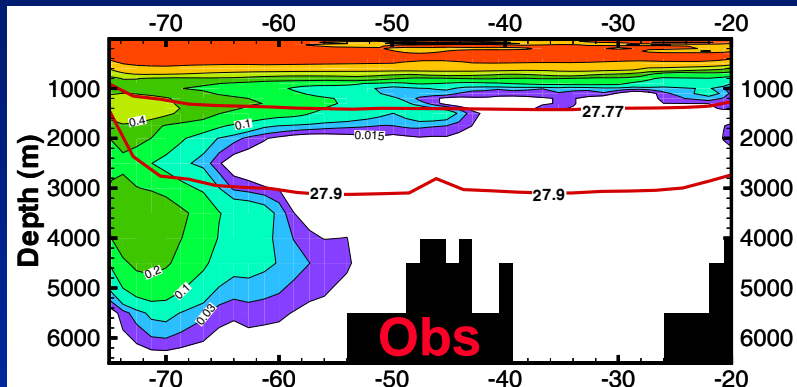
Obs: Kershaw et al., 1995



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Observed vs Simulated CFC-11 (pmol kg^{-1}) along 24°N in North Atlantic (August, 1992)



Obs: Bryden *et al.*, 1996

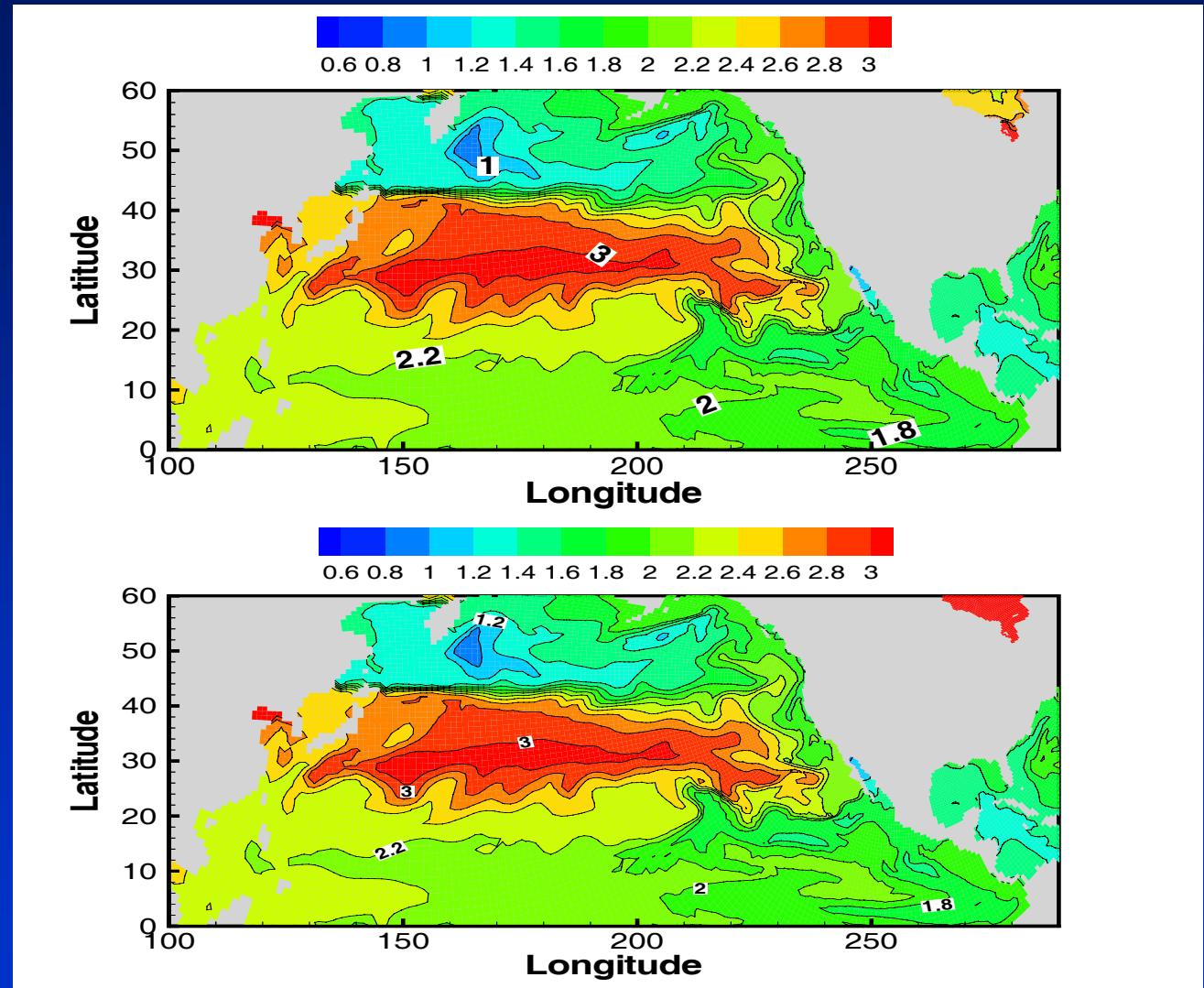


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Simulated Surf. 137Cs in 1999 (40 km resolution)

Only
Atmospheric
Fallout



Atmospheric
Fallout+
Sellafield



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Dragoness, Bergen, September 17-19, 2008

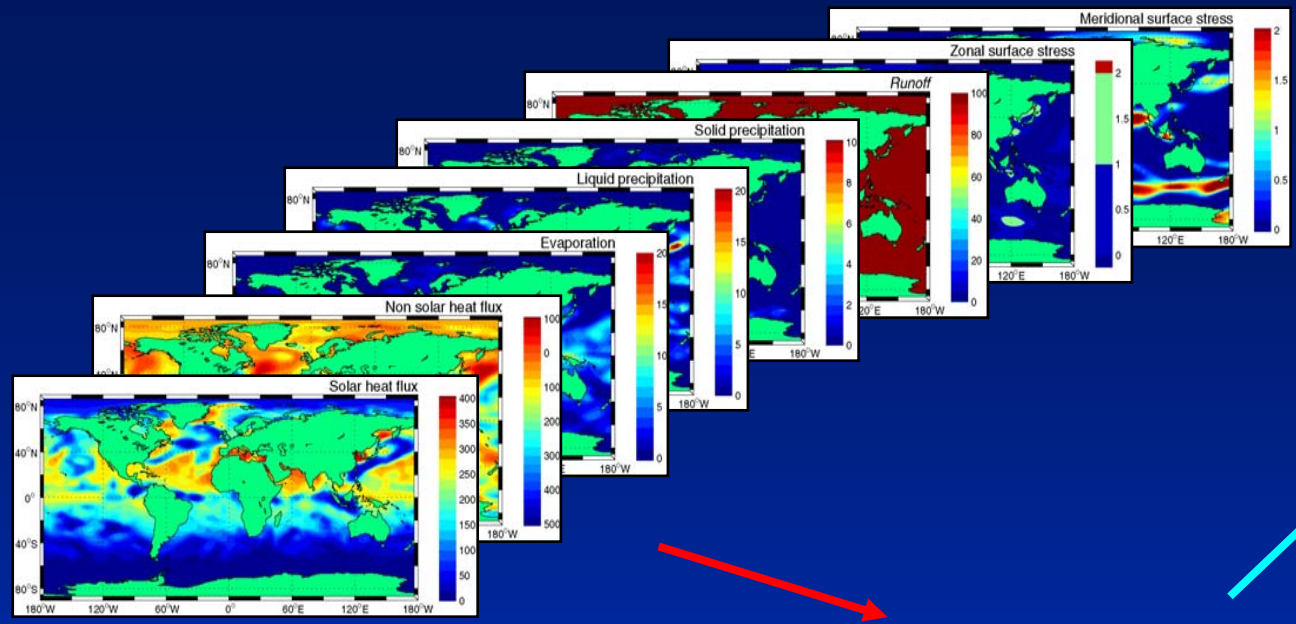


Bergen Climate Model (BCM, Furevik et al, 2003, Clim. Dyn.)



Dragoness, Bergen, September 17-19, 2008

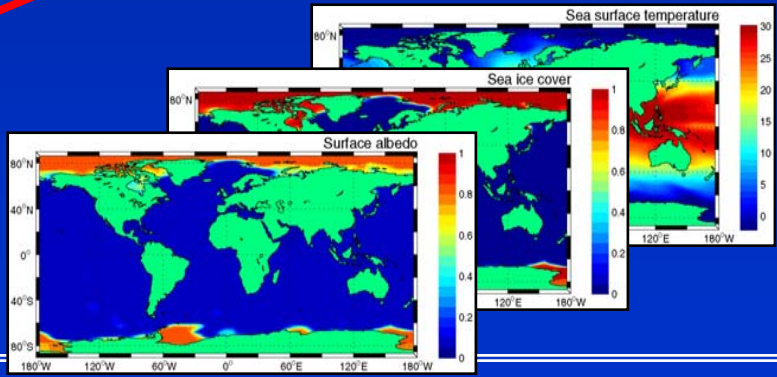




Atmospheric model
(ARPEGE/IFS)

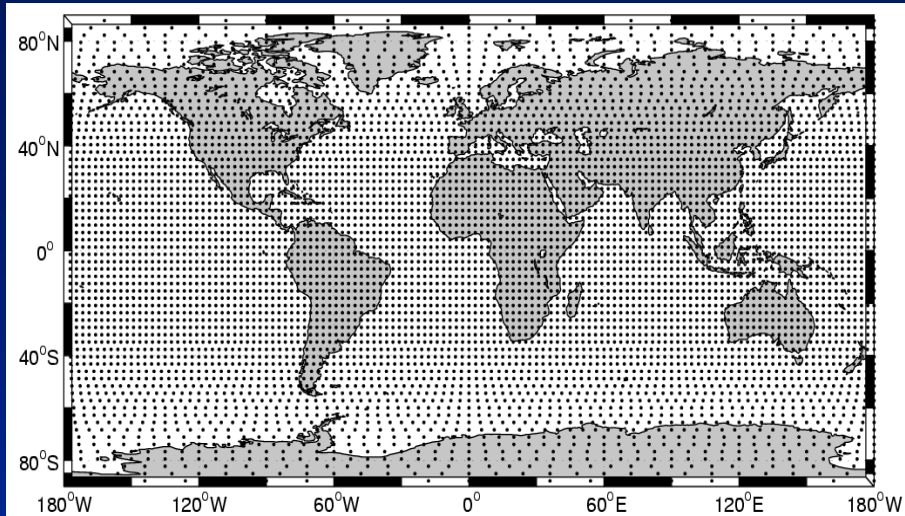
Coupler
(OASIS)

Ocean model
(MICOM)



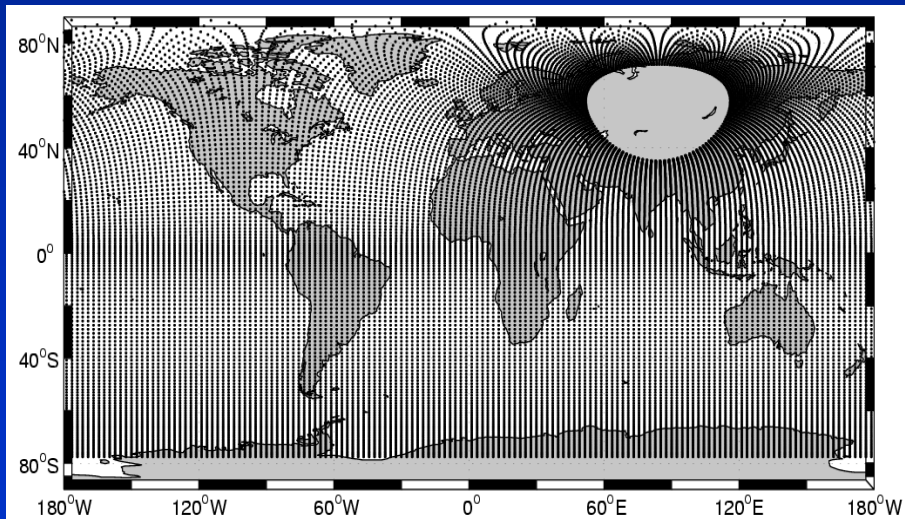
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ARPEGE configuration:

- Resolution of T_{L63} (2.8° along equator)
- 31 vertical levels



MICOM configuration:

- Resolution of 0.8° by 2.4° at the Equator — approx. square grid cells towards the poles
- 24 isopycnic layers



Dragoness, Bergen, September 17-19, 2008



Model Output

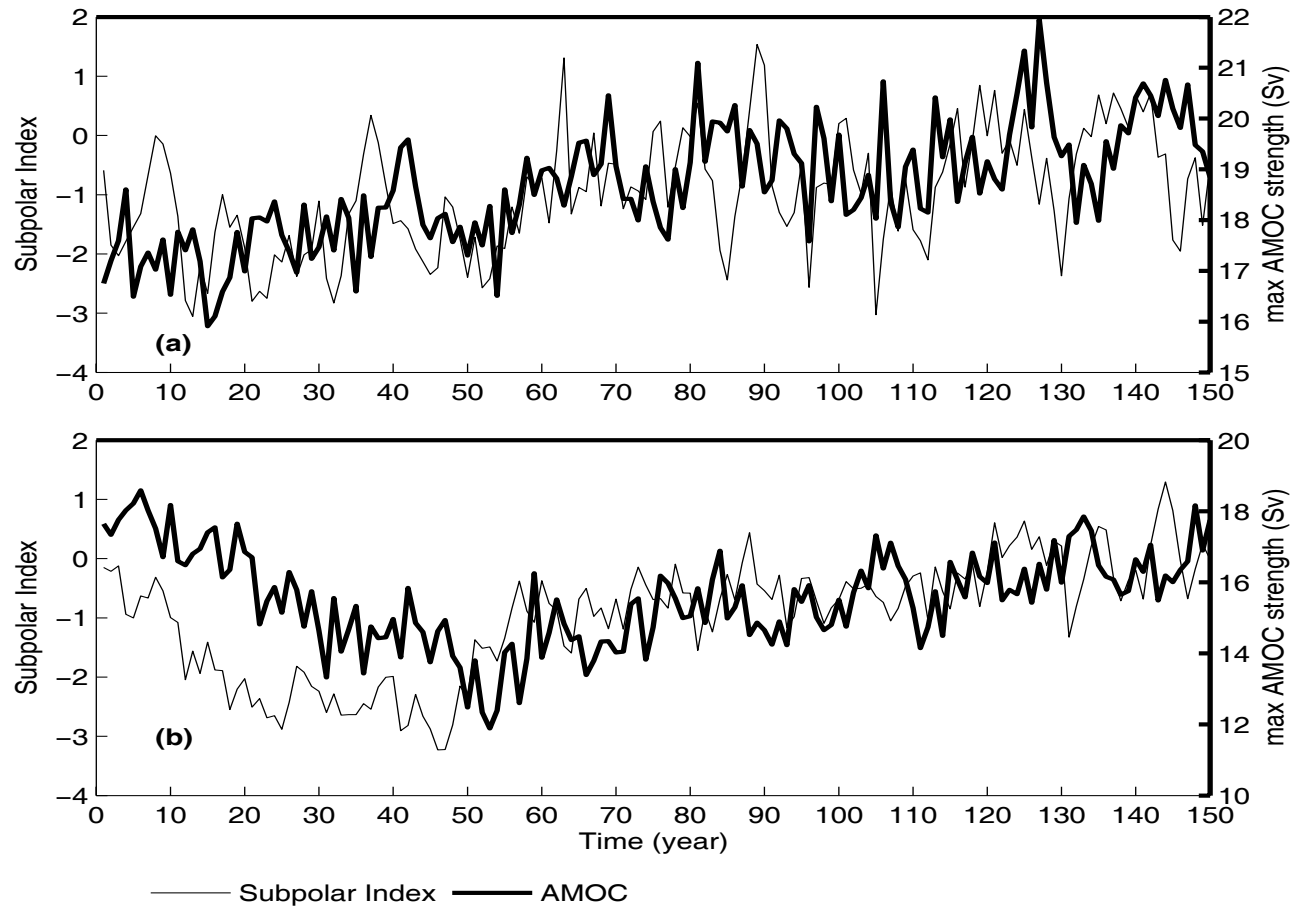
- Wind Stress
- Heat Flux
- Rainfall
- Water Content
- Air Temperature and Moisture
- Sea Level Pressure
- Cloud Cover



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Subpolar Gyre Index and AMOC



Dragoness, Bergen, September 17-19, 2008



Reference

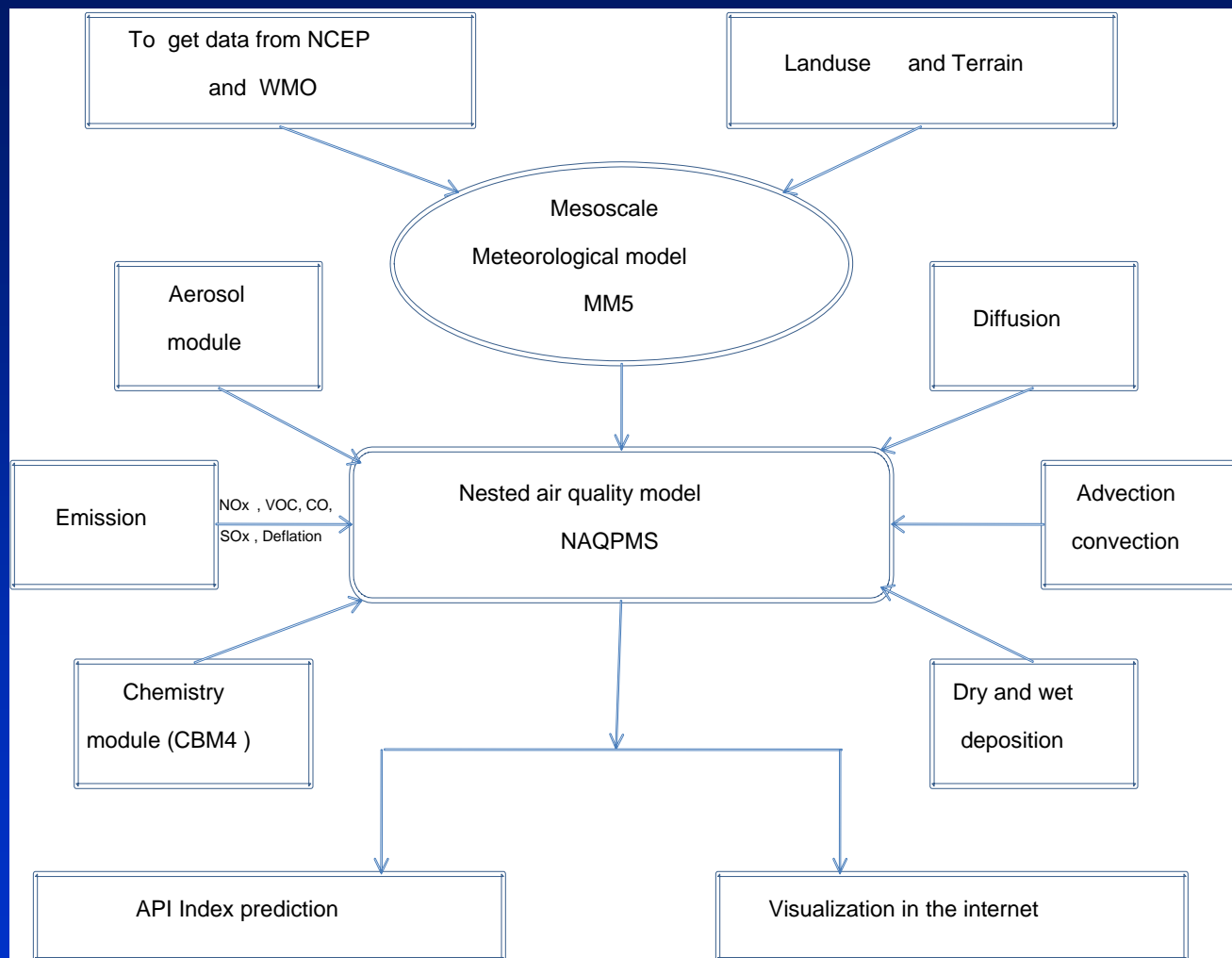
➤ <http://www.bcm.uib.no>



Dragoness, Bergen, September 17-19, 2008



Nested Air Quality Model



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Reference

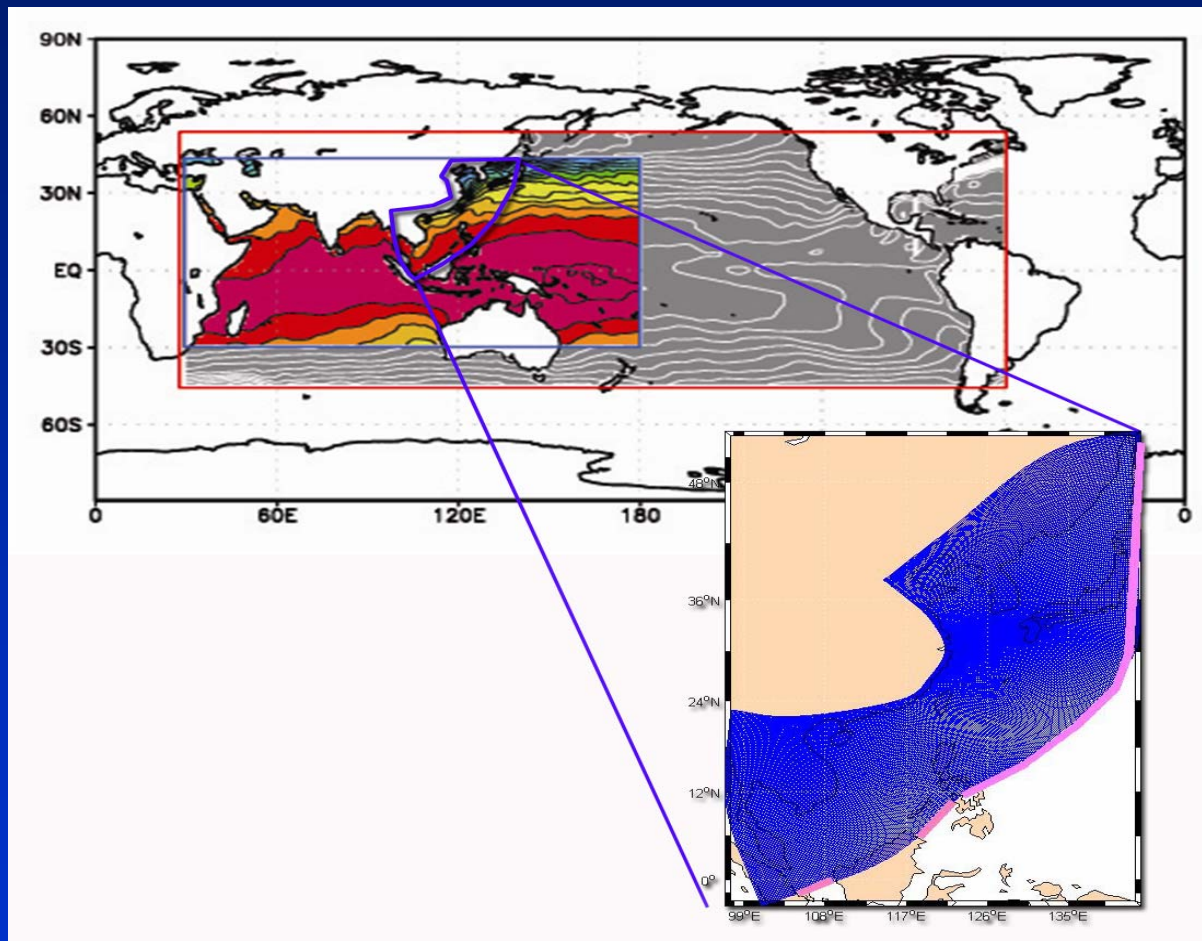
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Dragoness, Bergen, September 17-19, 2008



Regional HYCOM



Dragoness, Bergen, September 17-19, 2008



Model Assessment

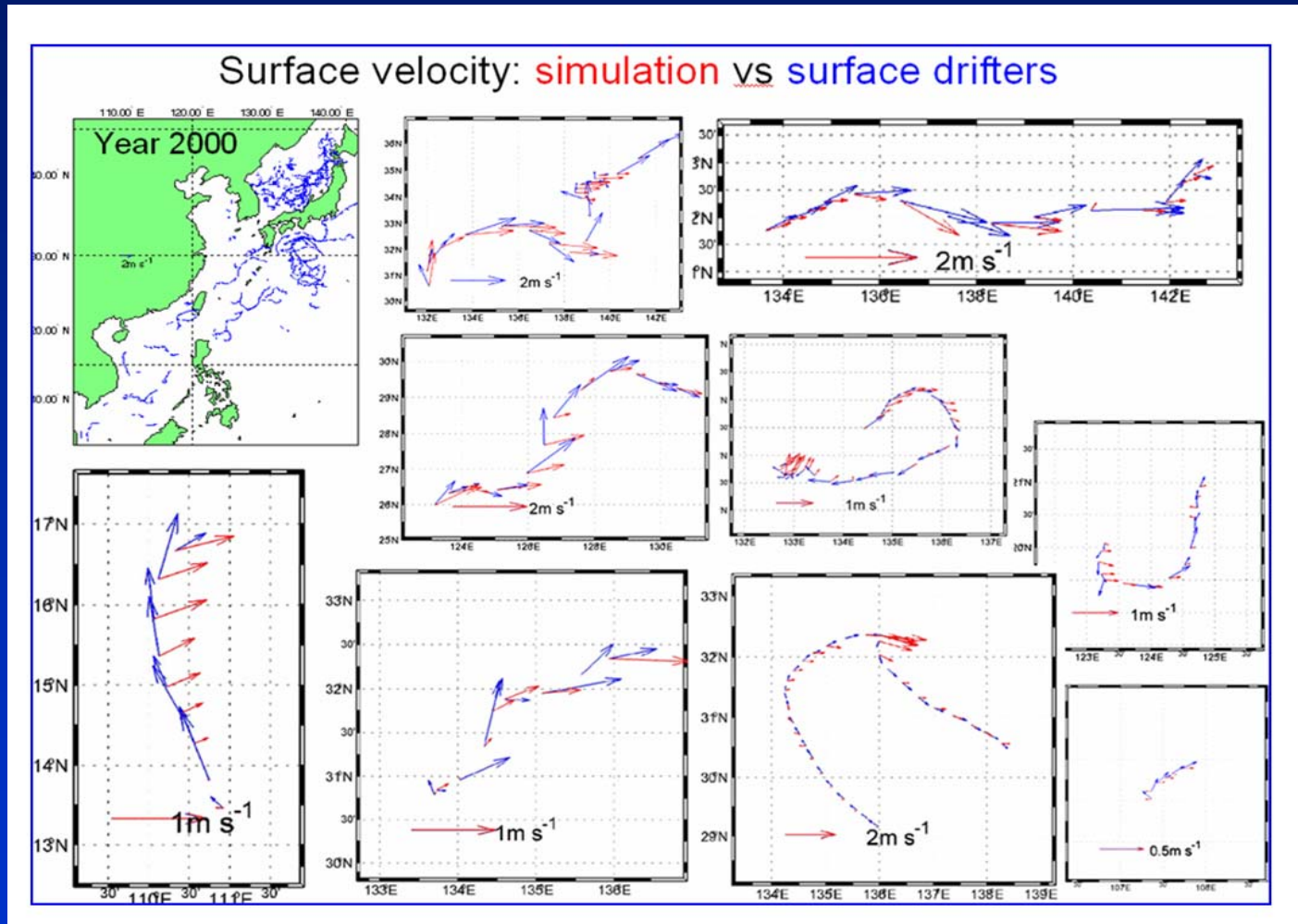
- Climatology from WOA 01 dataset;
- CLS's 1/3 degree grid point altimetry dataset;
- Surface trajectories of drifters from NEAR-GOOS website (some results showing in figure 8);
- Argo float T/S profiles from China Argo real time data center;
- Other T/S section from Chinese cruises



Dragoness, Bergen, September 17-19, 2008



Regional HYCOM



Dragoness, Bergen, September 17-19, 2008



Reference

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Dragoness, Bergen, September 17-19, 2008

