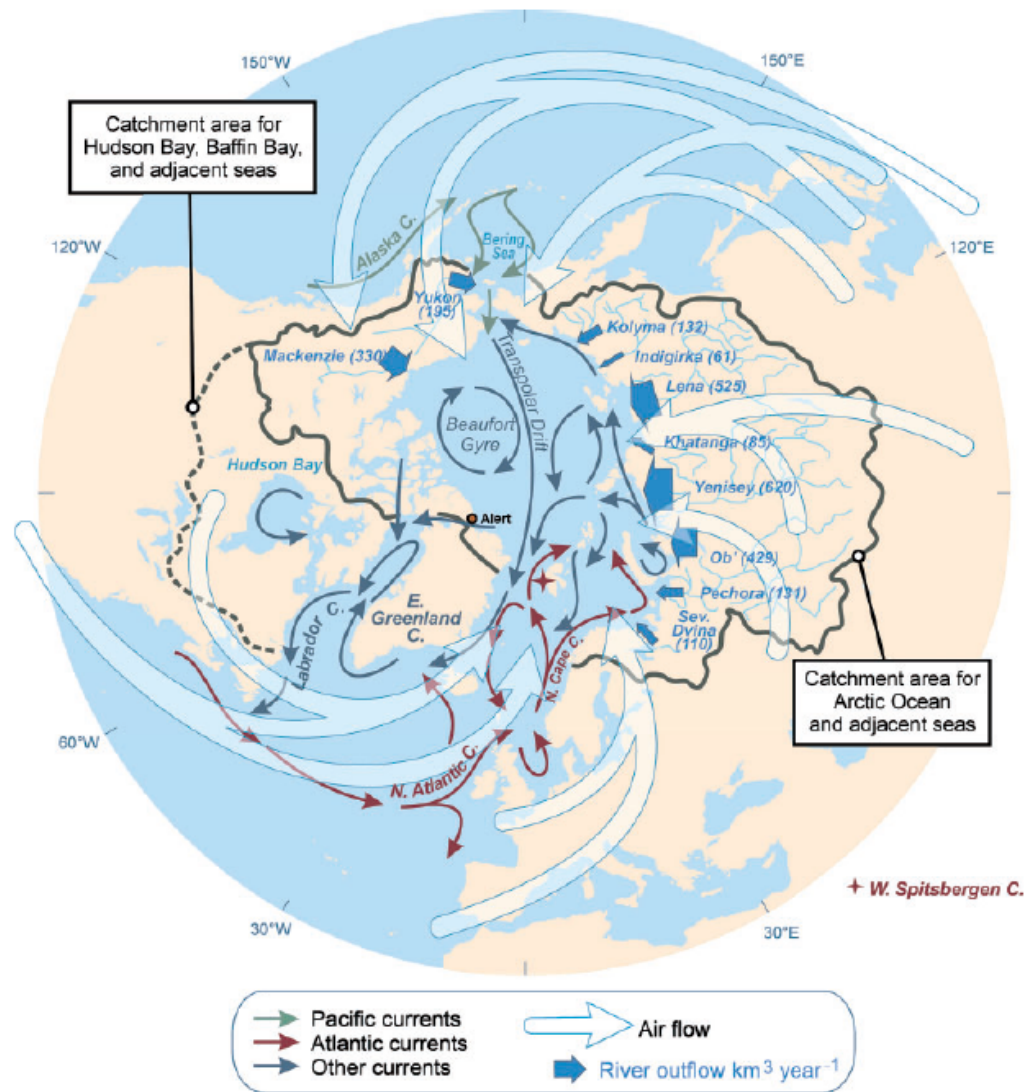


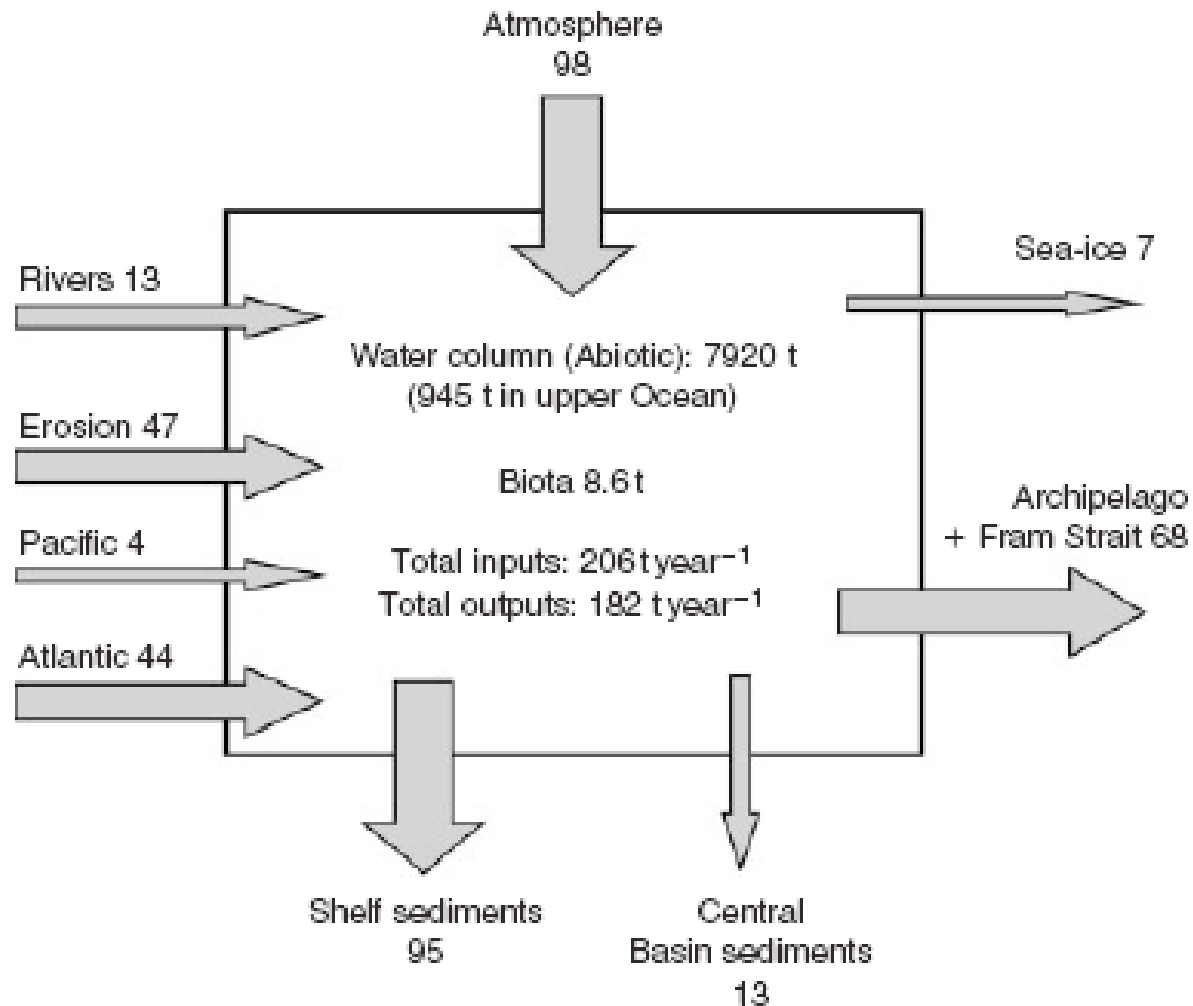
Mercury in the Arctic?



Hg inputs to the Arctic Ocean



Mass budget of Hg in the Arctic Ocean



- Outridge et al., 2008

Why study Hg in the Arctic Ocean?

- Hg (MeHg) accumulates to potential harmful concentrations in the arctic food web!
- Is the arctic ocean and its biota a global « sink » for atmospheric Hg contamination?

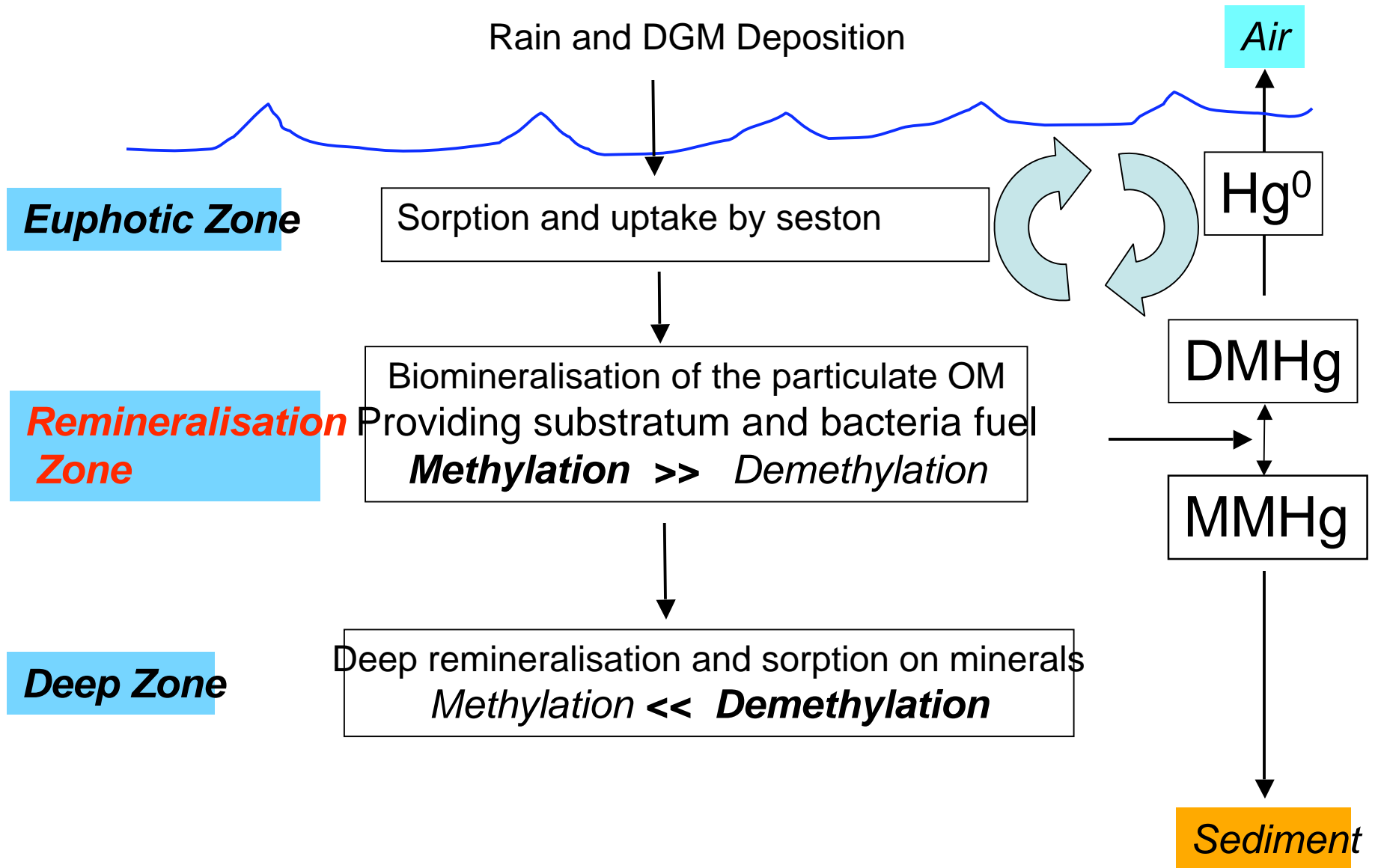
Key questions

- What controls Hg trends and variability in the arctic?
- What is the the role of atmospheric deposition (AMDE)? ⁷Be- needed!
- What are the mechanisms altering the dynamic balance between sinks and sources?
- What are the causes for the alarming rise of Hg levels in arctic biota?

Sources of MeHg

- Atmosphere, rivers, sediments,...
- In 2009 converging observations have published providing evidence for the water column mercury methylation for the open Mediterranean (Cossa *et al.*, 2009) and the Northern Pacific (Sunderland *et al.*, 2009)

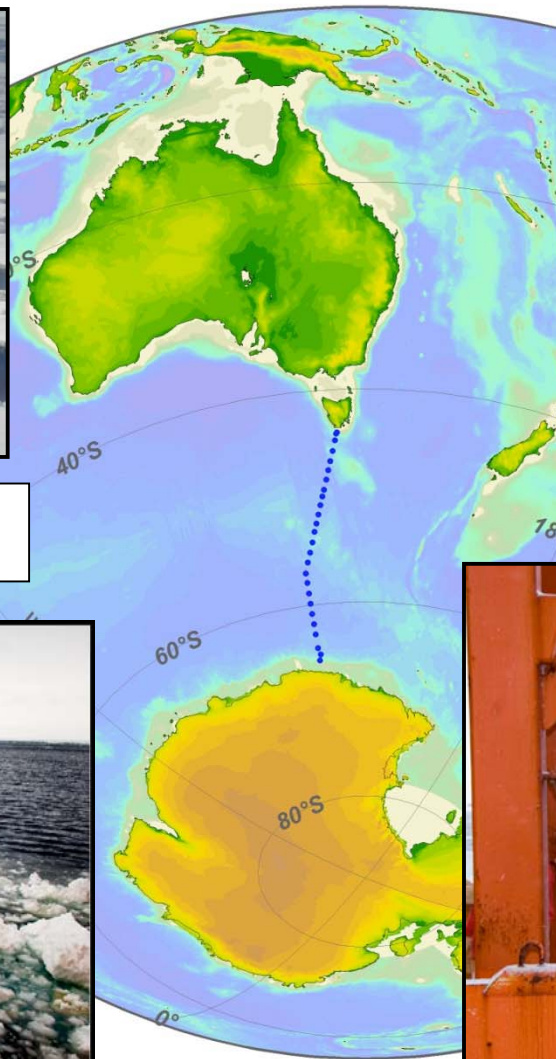
Water Column Hg Methylation Model



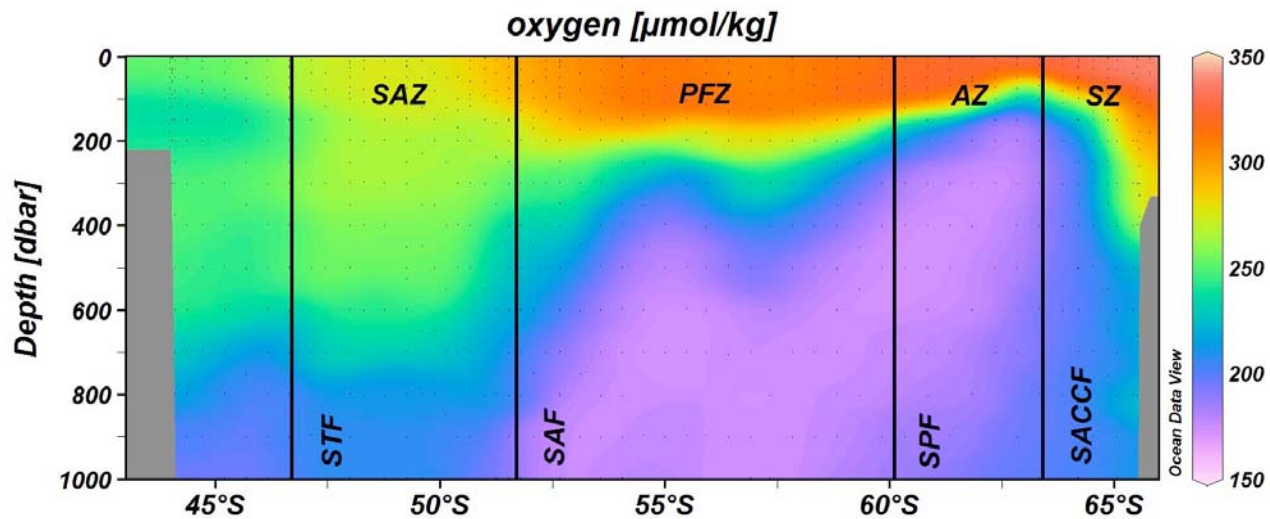
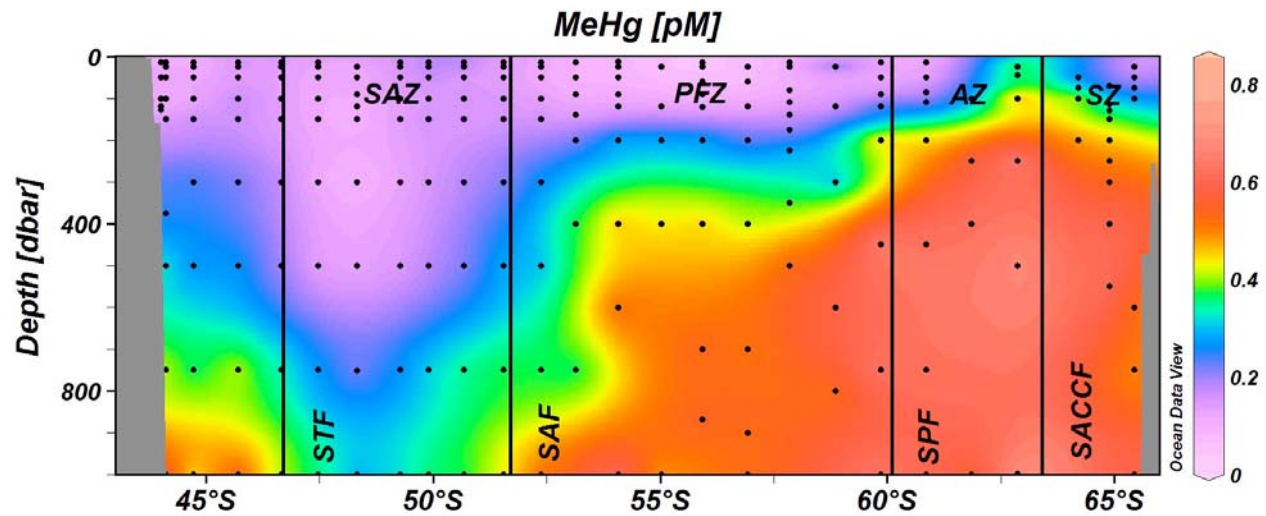
Southern Ocean GEOTRACES SR3 transect



March-April 2008

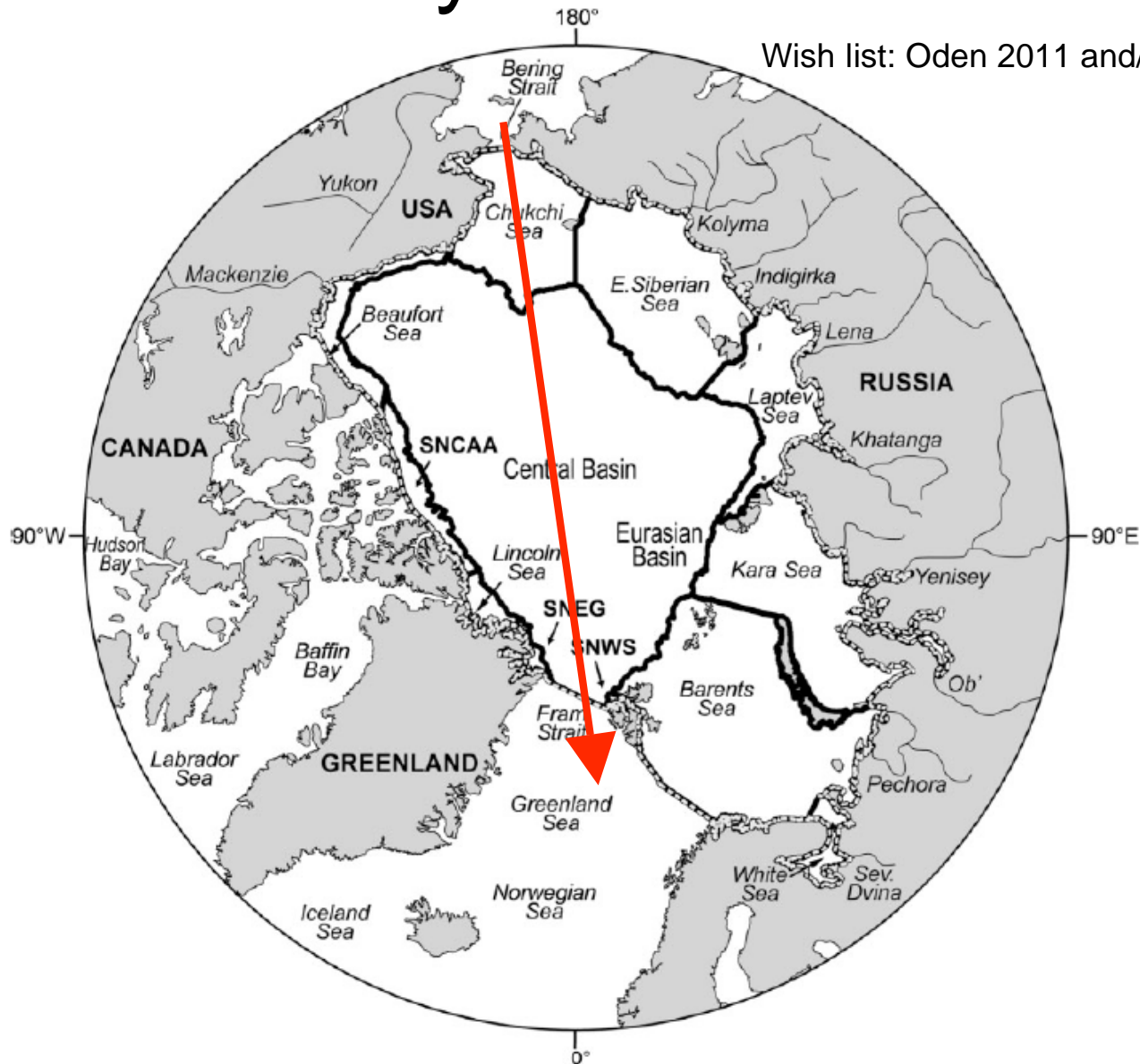


MeHg in the Southern Ocean (SR3 – GEOTRACES transect)



Mercury in the Arctic!

Wish list: Oden 2011 and/or Polarstern 2011



Further reading:

- Cossa, D., B. Averty and N. Pirrone (2009). "The origin of methylmercury in open Mediterranean waters." Limnol. Oceanogr. **In Press**.
- Kirk, J. L., V. L. S. Louis, H. Hintelmann, I. Lehnherr, B. Else and L. Poissant (2008). "Methylated Mercury Species in Marine Waters of the Canadian High and Sub Arctic." Environmental Science & Technology **42**(22): 8367-8373.
- Macdonald, R. W., F. Y. Wang, G. Stern and P. Outridge (2008). "The overlooked role of the ocean in mercury cycling in the Arctic." Marine Pollution Bulletin **56**(12): 1963-1965.
- Outridge, P. M., R. W. Macdonald, F. Wang, G. A. Stern and A. P. Dastoor (2008). "A mass balance inventory of mercury in the Arctic Ocean." Environmental Chemistry **5**(2): 89-111.
- Sunderland, E. M., D. P. Krabbenhoft, J. W. Moreau, S. A. Strode and W. M. Landing (2009). "Mercury sources, distribution, and bioavailability in the North Pacific Ocean: Insights from data and models." Global Biogeochemical Cycles **23**: 14.
- 9th International Conference on Mercury as a Global Pollutant (2009, June 7-12th)