

How does ice cover affect the benthic fauna in the Barents Sea?

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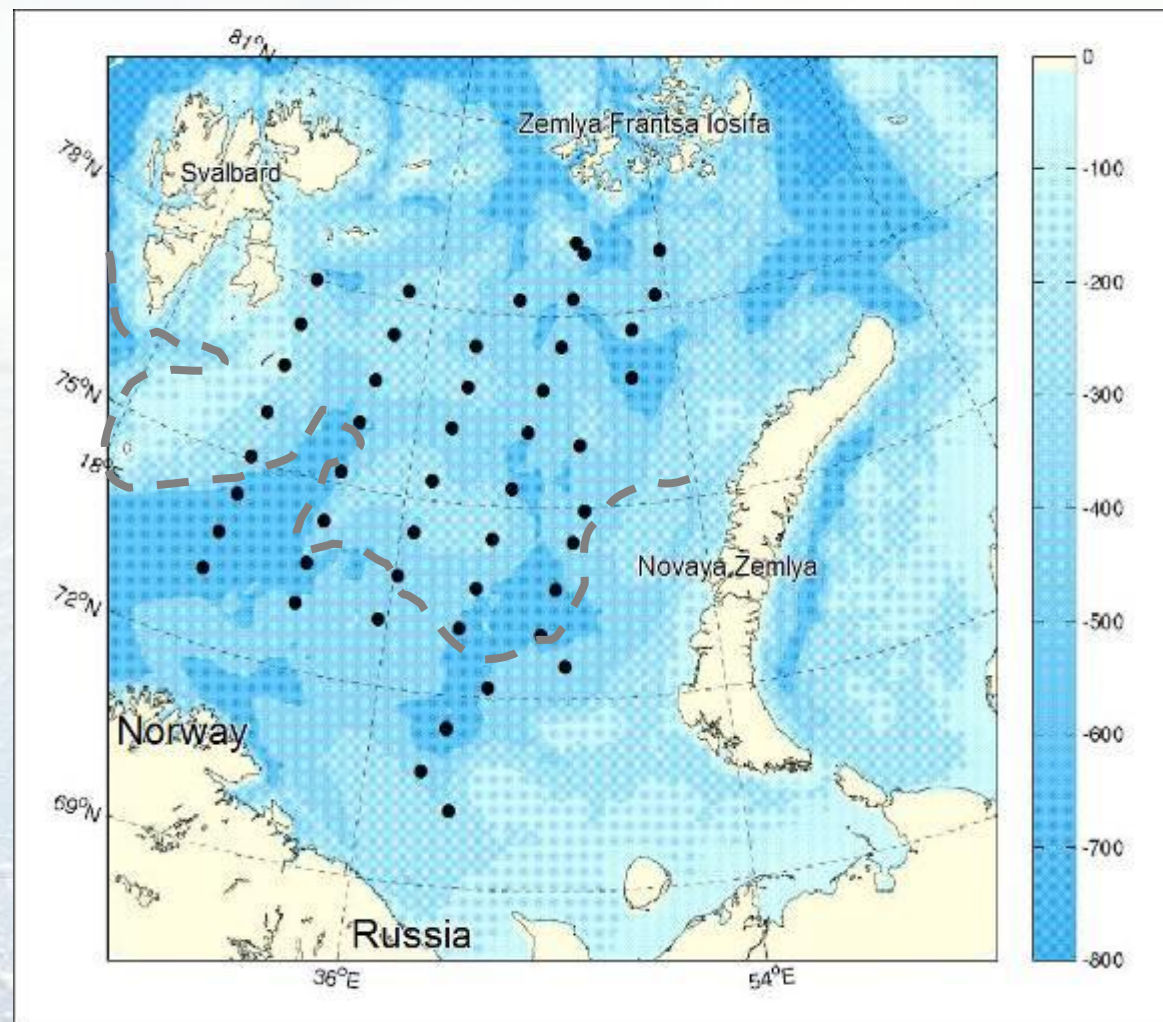
Outline of presentation

- 2 examples of Norwegian-Russian benthic cooperation programmes
 - "Traditional" study: infauna and environmental variables
 - Pilot study - Epifauna: bycatch
- Discussion of methodologies and what they tell us (or don't);
- Integration possibilities?

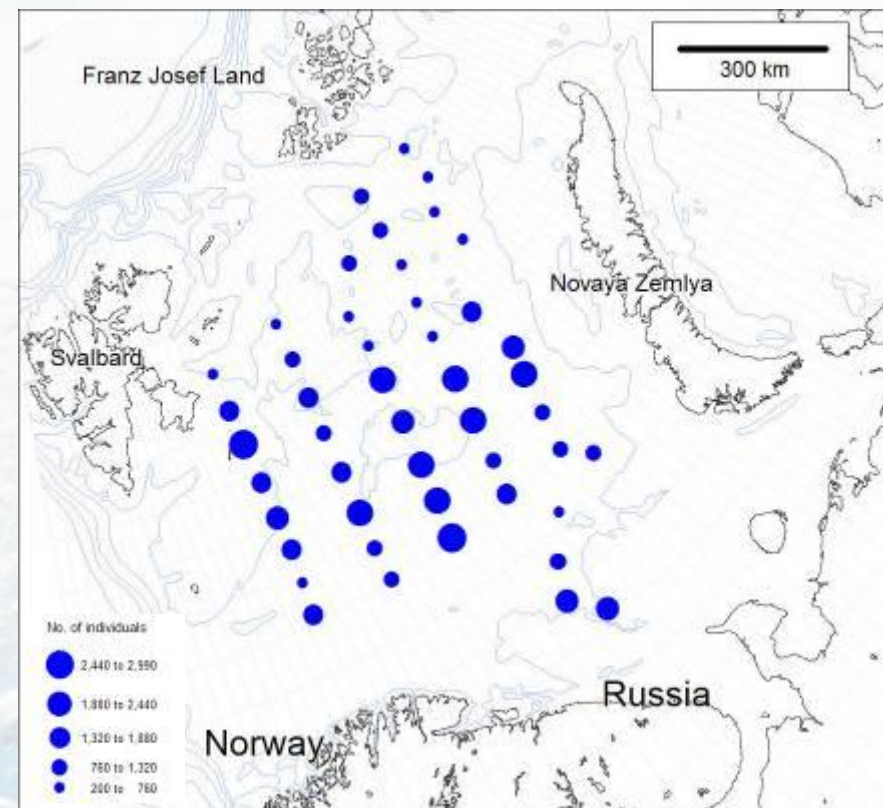
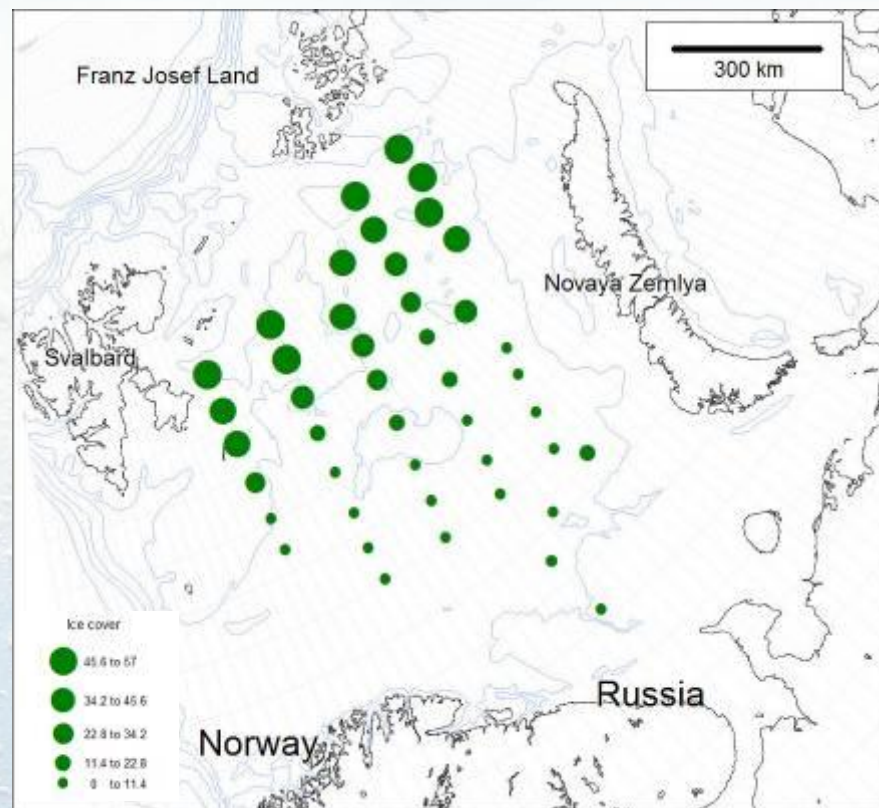


"BASICC" 2003

- Infaunal abundance
- APN-ZIN cooperation
- 47 benthic stations
- approx 400 000 km²
- 30 m² actual sediment sampled



Ice cover and faunal abundance



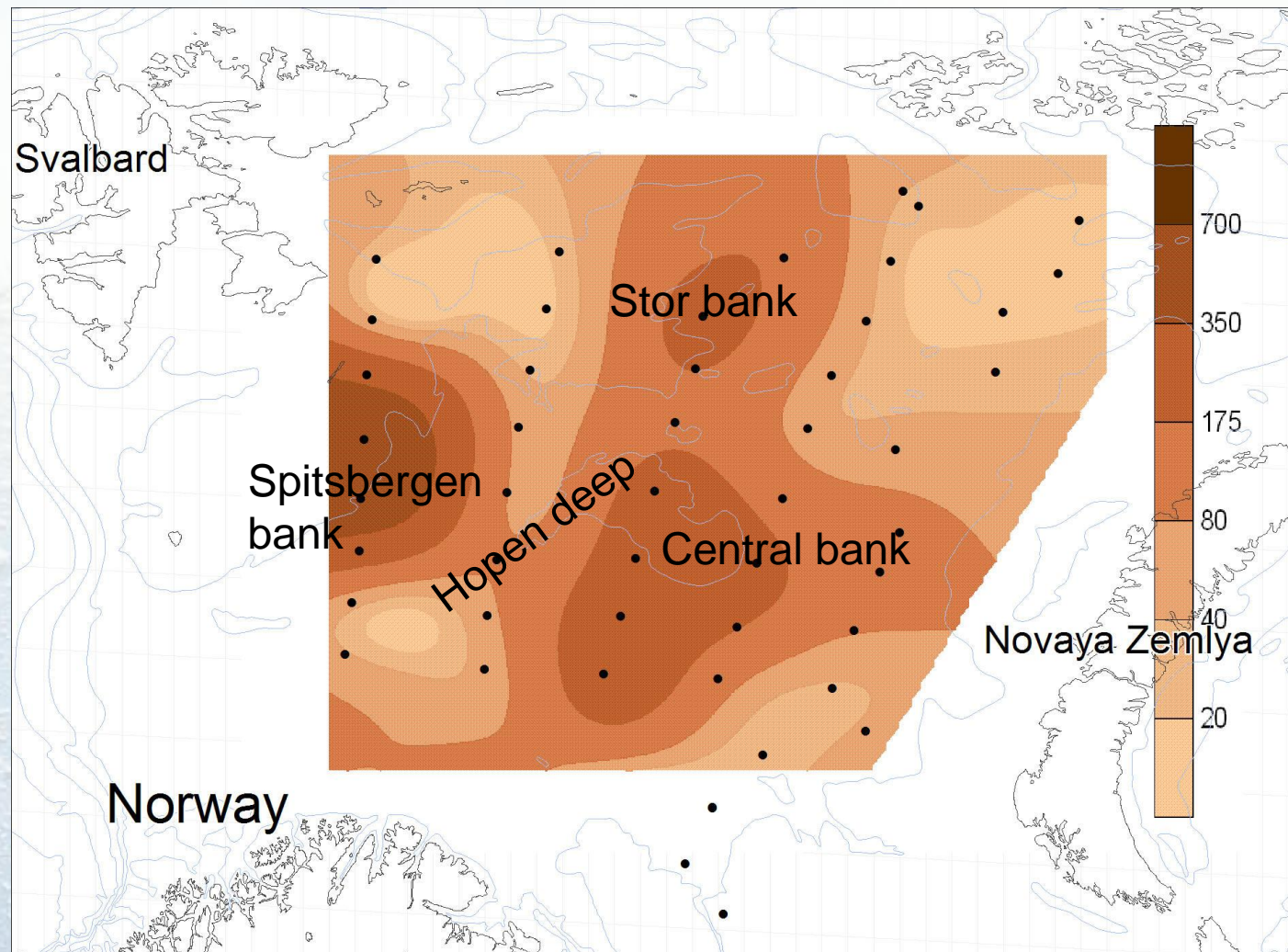
a) Ice cover (NSIDC data; av. 3 years)

b) Faunal abundance (per 0.5 m²)

Infaunal biomass

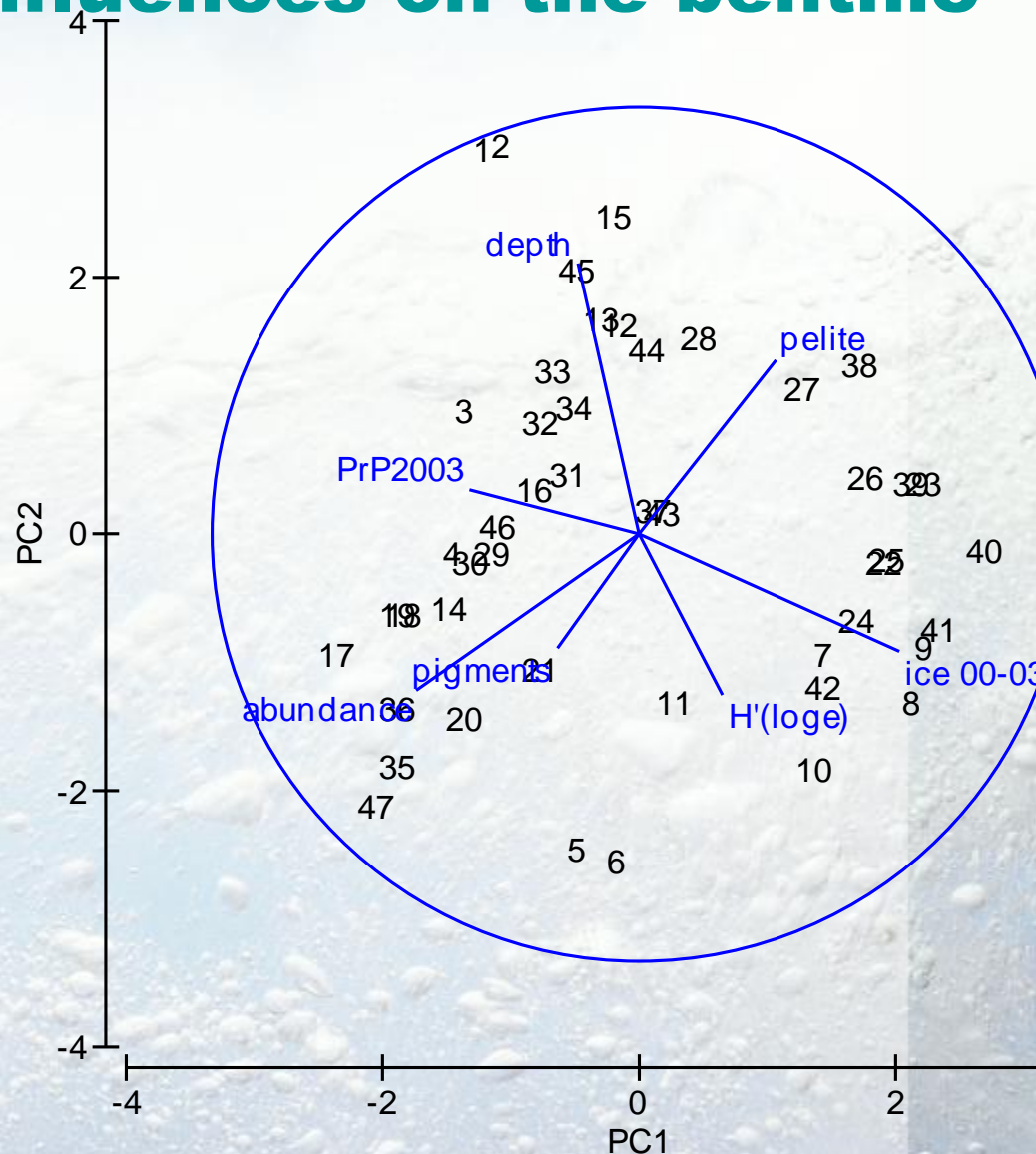
Wet weight
g/ m²

Including
calcareous
parts



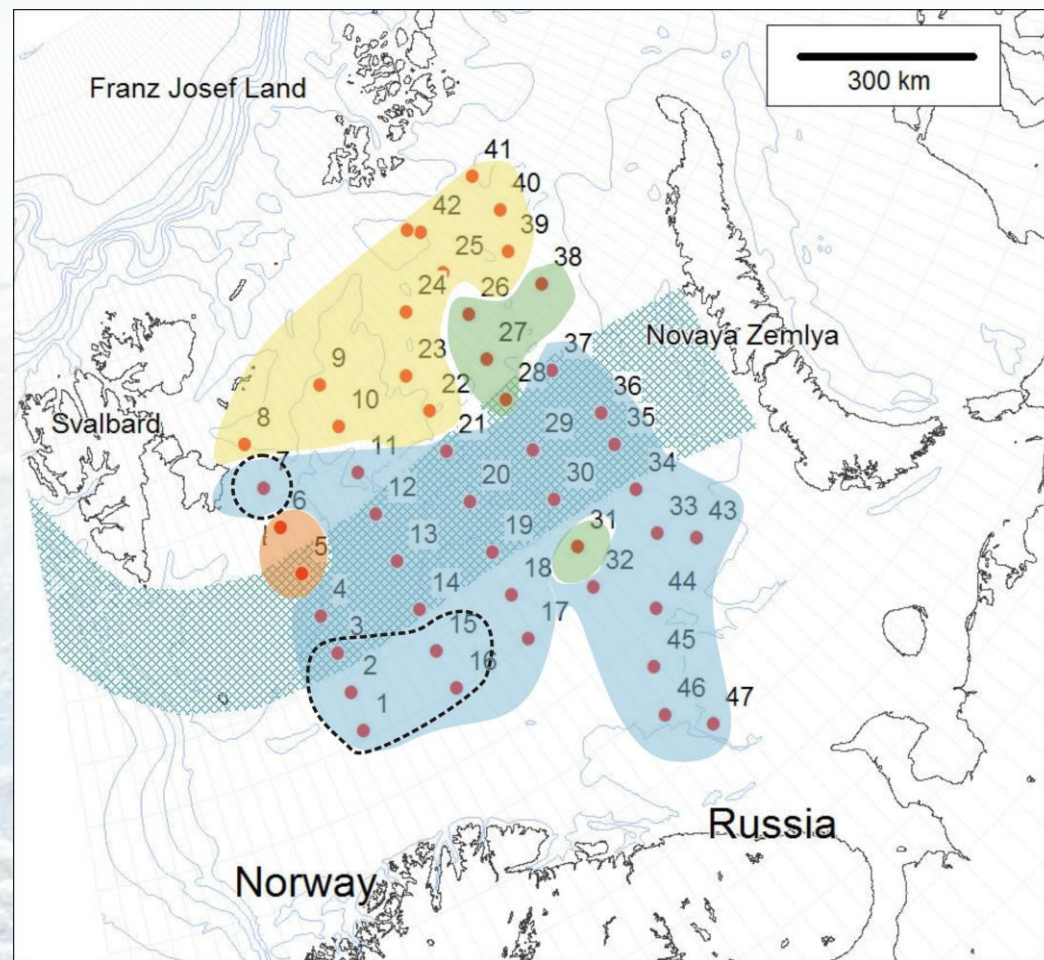
Environmental influences on the benthic fauna

- Production inverse to ice cover
- Production and pigments associated with faunal abundance
- Diversity not associated with production
- Ice suppresses production; leads to lower faunal abundance
- Implications for changing ice distribution



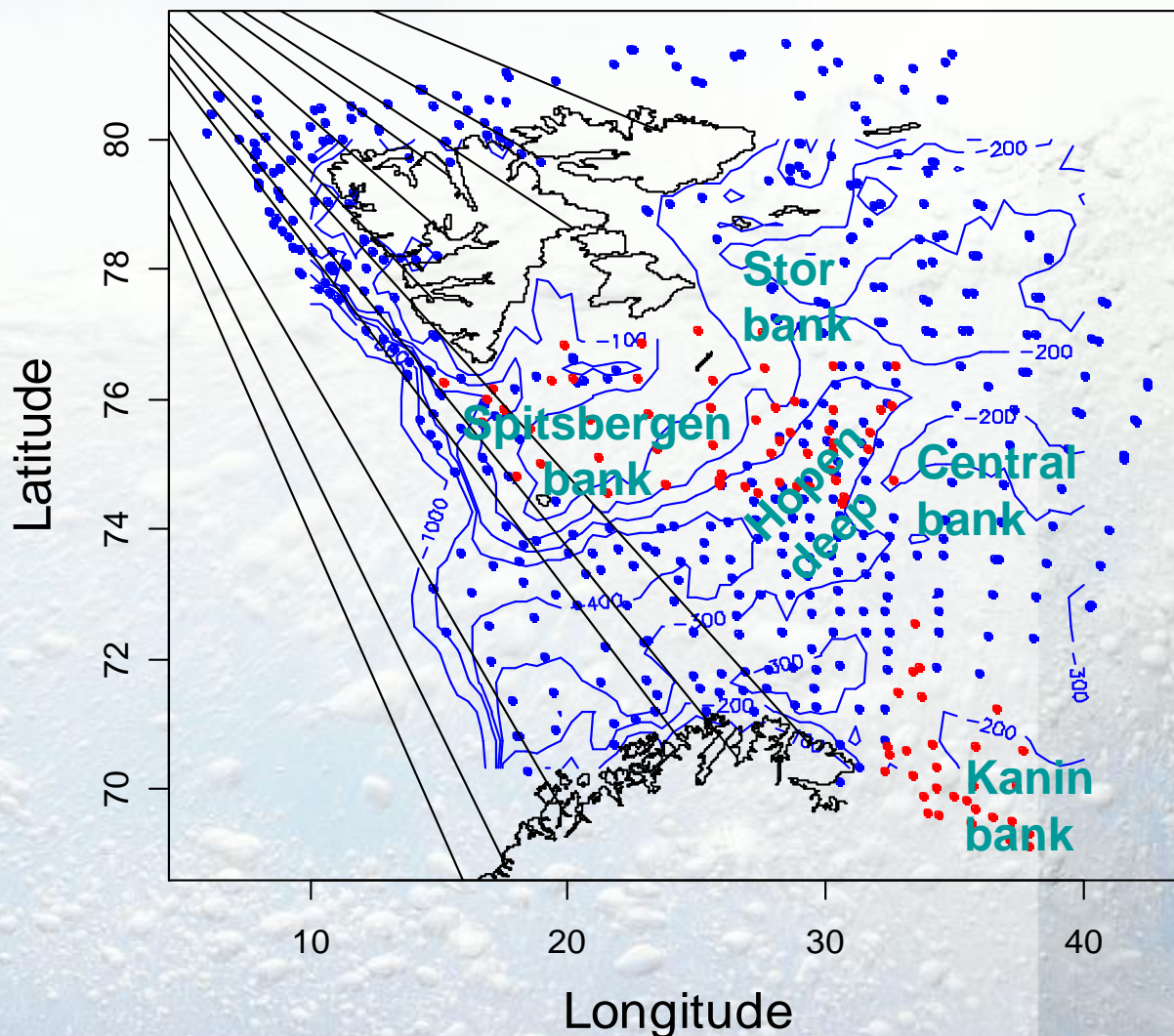
Faunal similarity

- Groupings, approx. 50% similarity
- Foraminifera excluded
- Northern group
 - Heavily ice influenced
 - Lower productivity
- Southern group
 - Intermediate to low ice
 - Higher productivity
 - Atlantic influenced sub-group

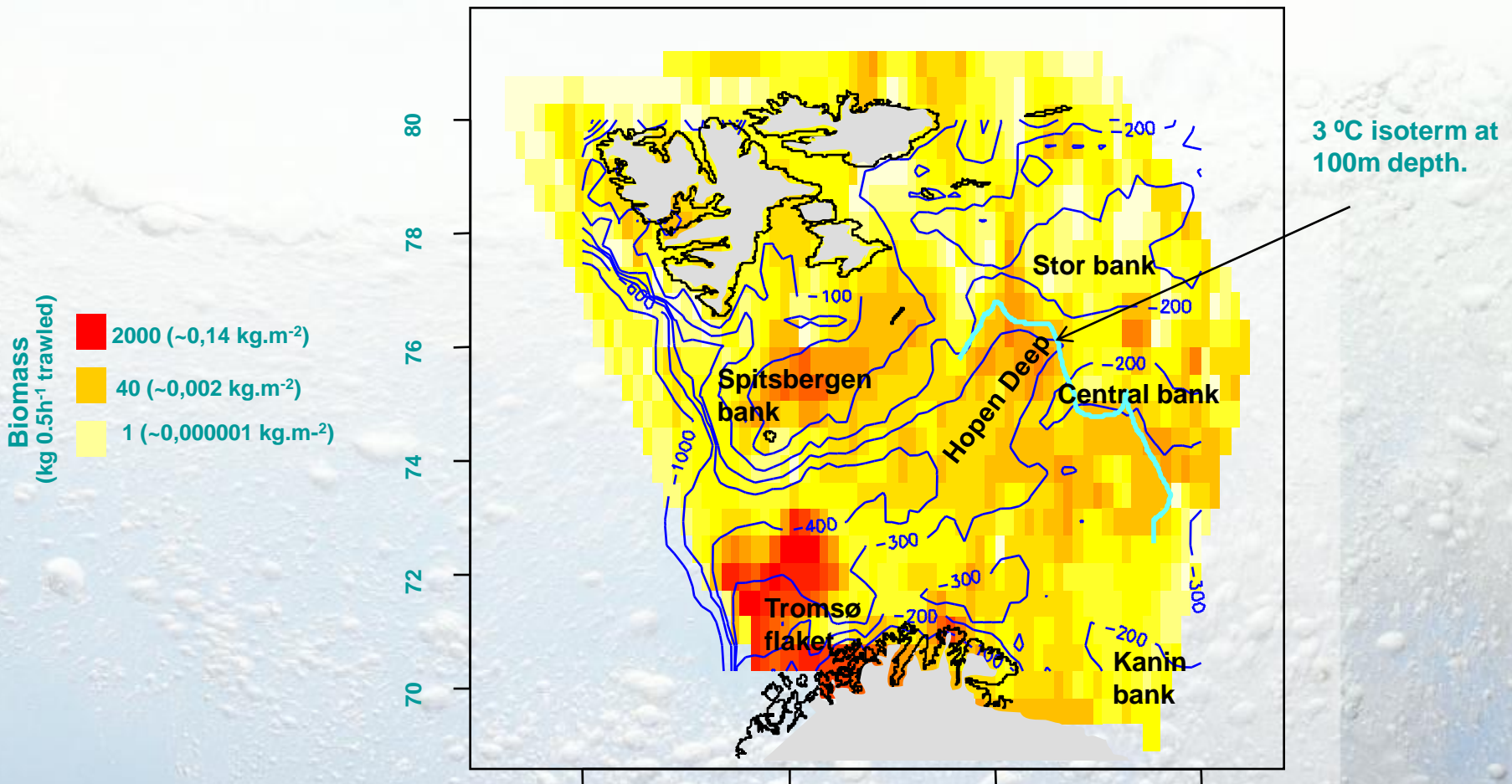


Ecosystem Cruise 2006

- Epifauna (bycatch)
- IMR-PINRO cooperation
- 5 ships used
 - 3 Norwegian
 - 2 Russian
- 500 trawls
- 13.500m² per trawl



Benthic by-catch: biomass distribution

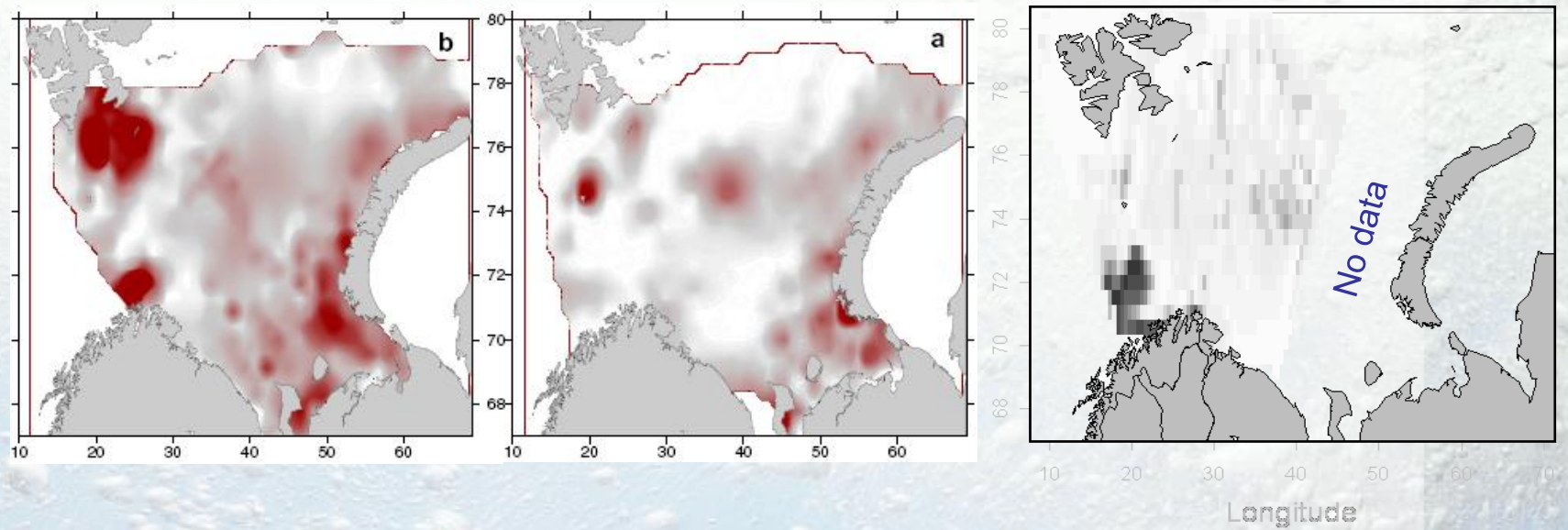


Biomass fluctuations

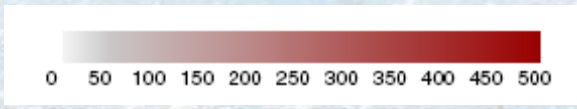
1924-32
(warm)

1968-70
(cold)

Mega-epifauna
2007



Denisenko 2001; 2004
also in Wassmann *et al.* 2006



Biomass gram m⁻²

IMR unpublished new data

Conclusion (epifaunal studies)

- Coordinated Russian-Norwegian Cruises permit a first, near synoptic, look at the whole Barents Sea mega epifauna taken as bicatch.
- Bicatch-biomass hotspots corresponds with previously recorded hotspots from classic infauna studies
- Sponges locally dominate i biomass; might be a vulnerable habitat structuring organisms
- Erect filtrating organisms might indicate vulnerable areas

Integration: infauna/ epifauna analyses?

- Trawl and grab – selecting for different kinds and size-classes of organisms;
 - Sponges, echinoderms, marine worms and bivalves
- Different representation of patchily distributed organisms;
- Some broad similarities (areas of high biomass) but many differences;
 - Methods complementary, but one cannot replace the other
- Need for interdisciplinary programmes
 - Need to develop standards for epifaunal analyses



Thank you for your attention

