EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

GEM Gulf Ecosystem Monitoring

NPRB

Multi-ecosystem sampling in the North Pacific Ocean using the Continuous Plankton Recorder

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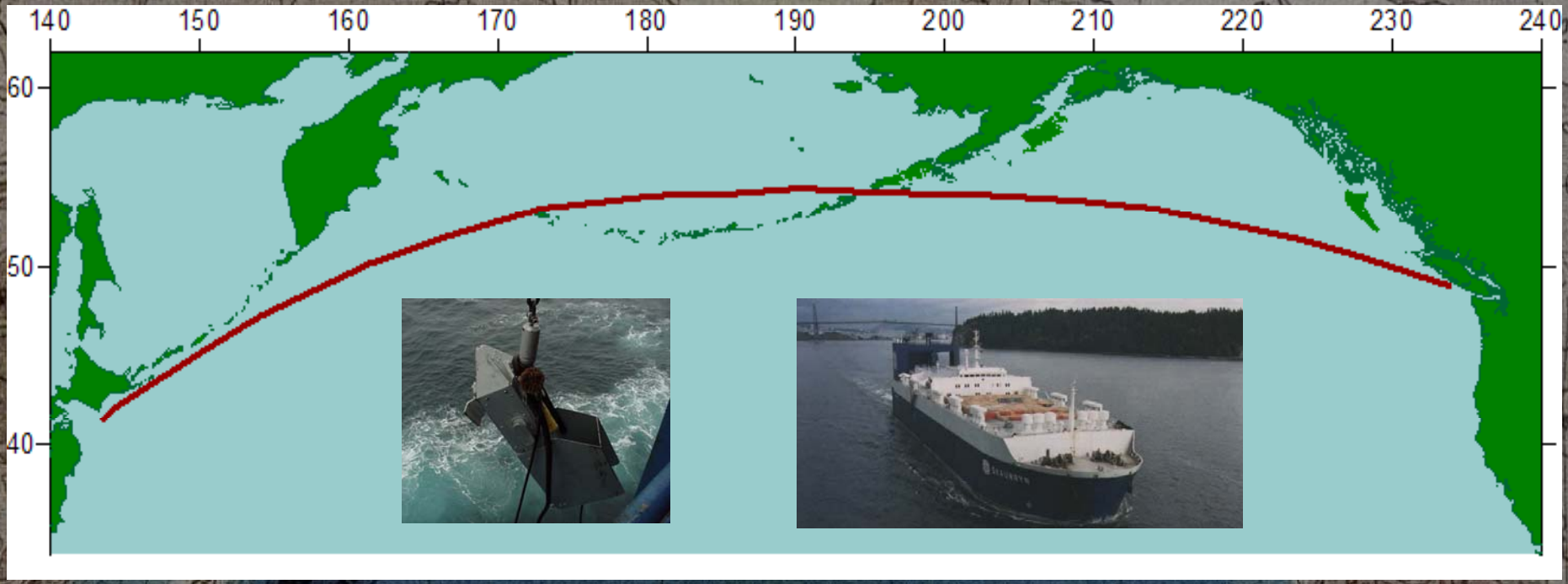
CONTINUOUS PLANKTON RECORDER SURVEY SAHFOS

PRBO CONSERVATION SCIENCE

Fisheries and Oceans Canada / Pêches et Océans Canada

Environment Canada / Environnement Canada

In June 2002



CPR towed behind ship and collected near surface (7m) plankton samples and temperature

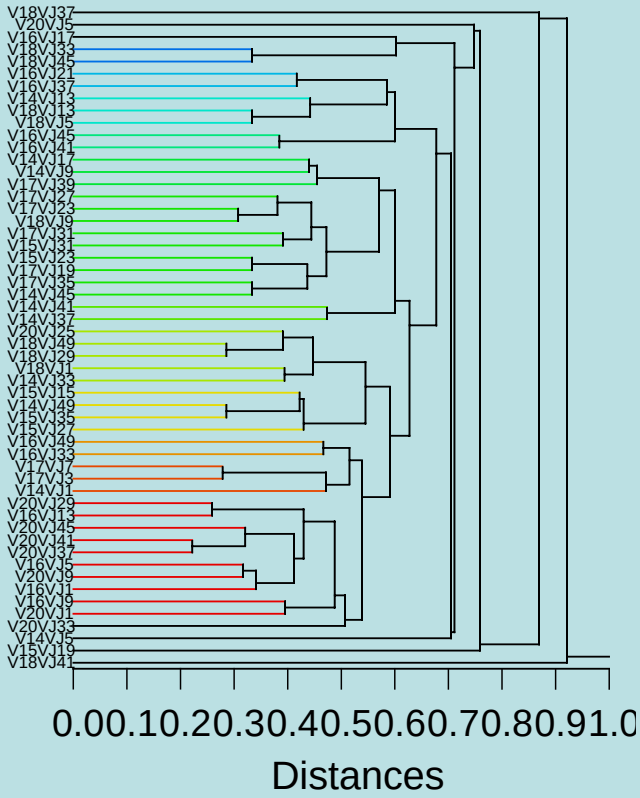
Bird observer on-board ship recording bird densities

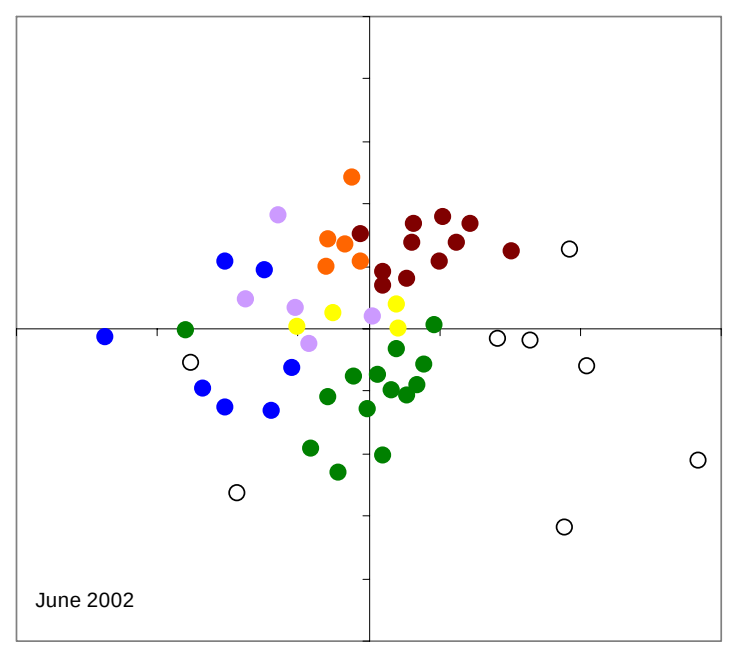
Questions

- Can the taxonomic data from lower and upper trophic levels define regions (or perhaps ecosystems) along the transect?
- How consistent are these regions between years? (Plankton data from June 2000 and June 2001 also available)
- What are the patterns of biomass for each region, for both trophic groups?

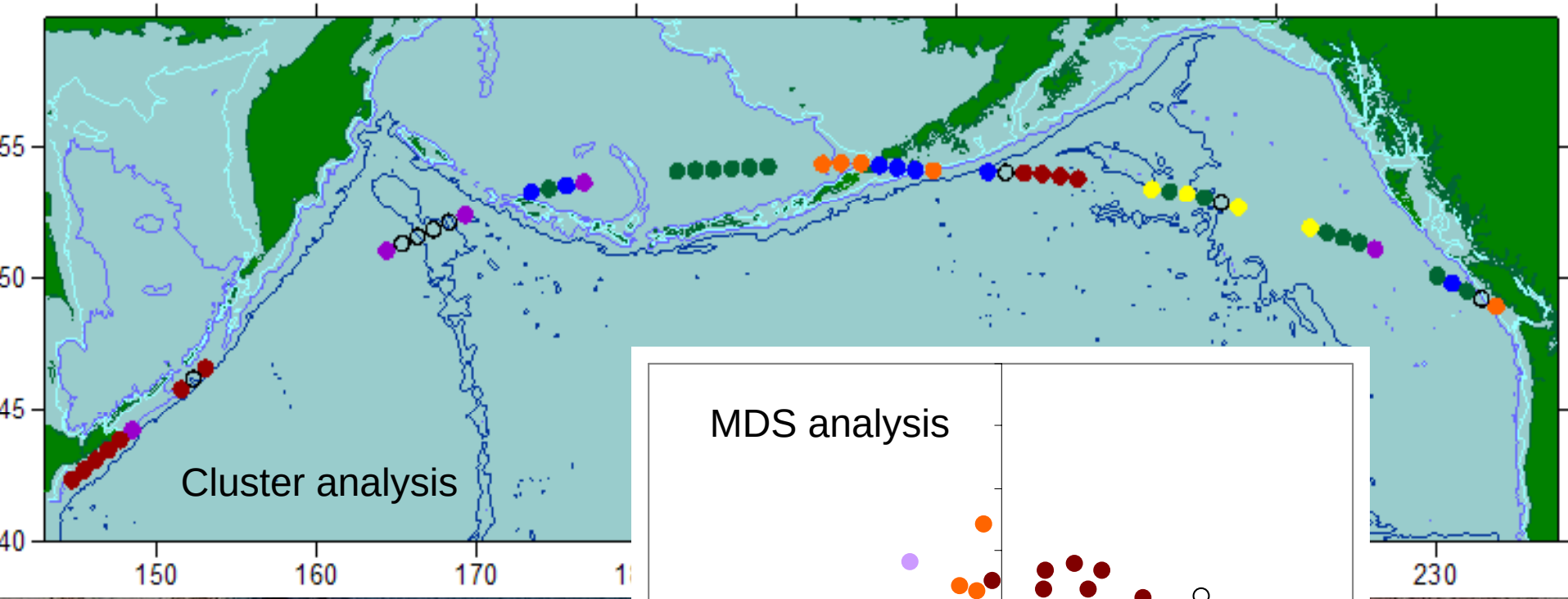
Methods

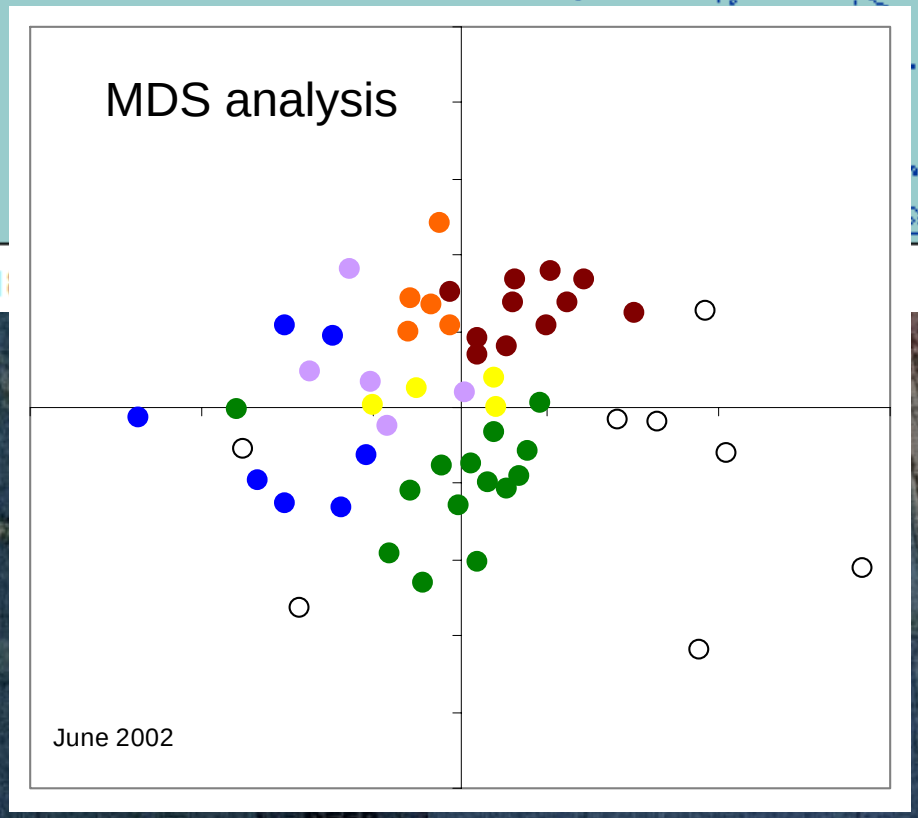
- Day time data only (no bird obs. at night and different plankton in surface CPR samples)
- Used cluster analysis and Multi-dimensional Scaling (MDS) on plankton (presence/absence, 88 taxa) and bird (density, 48 taxa) data

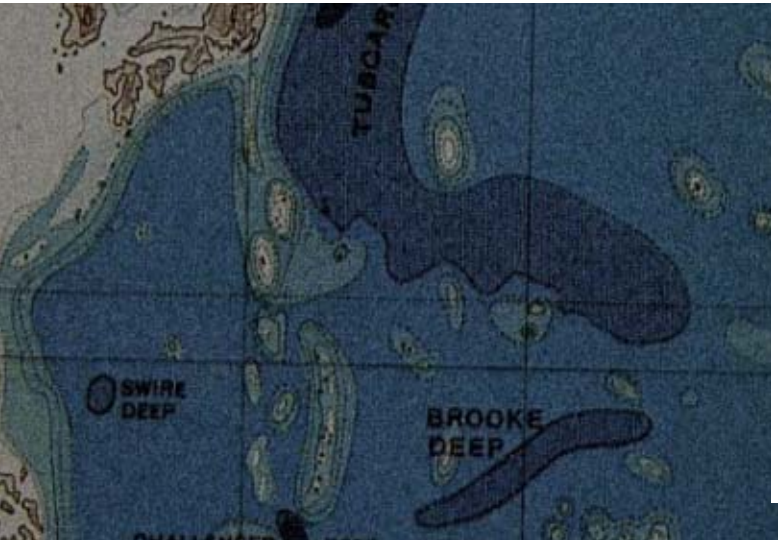


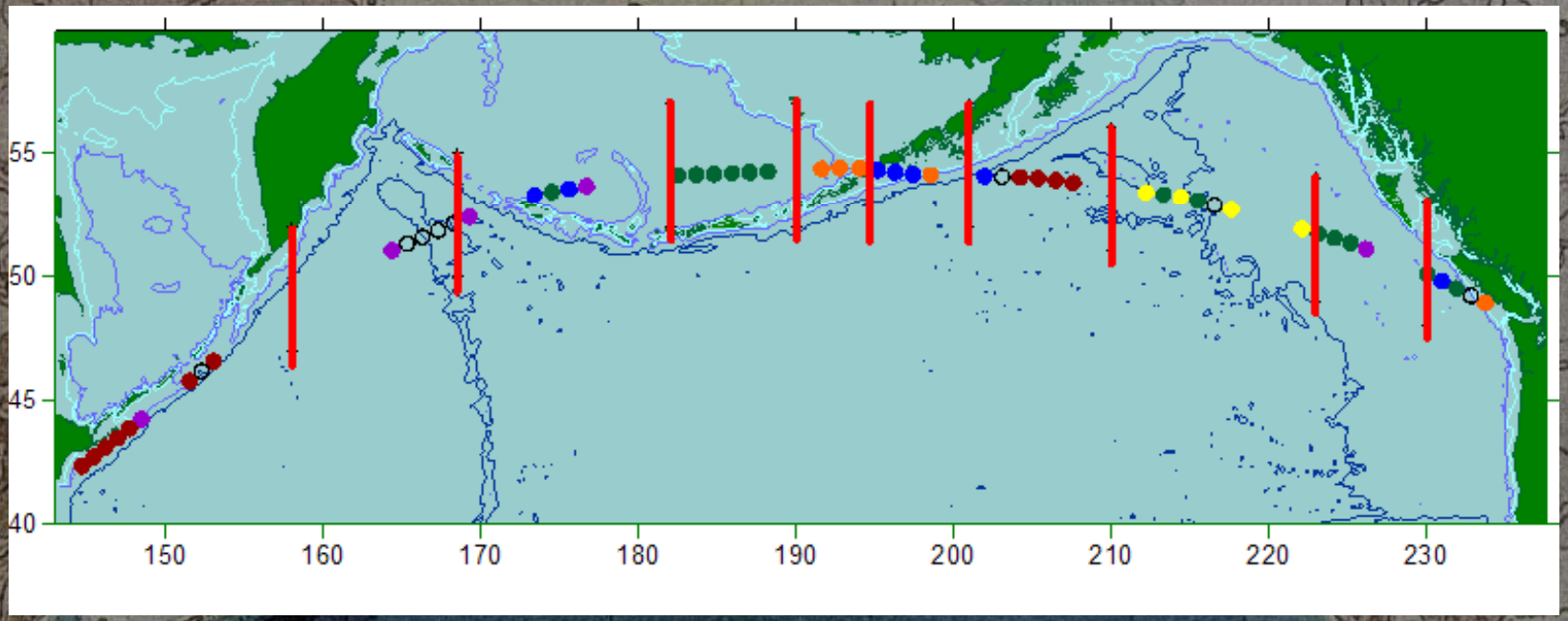


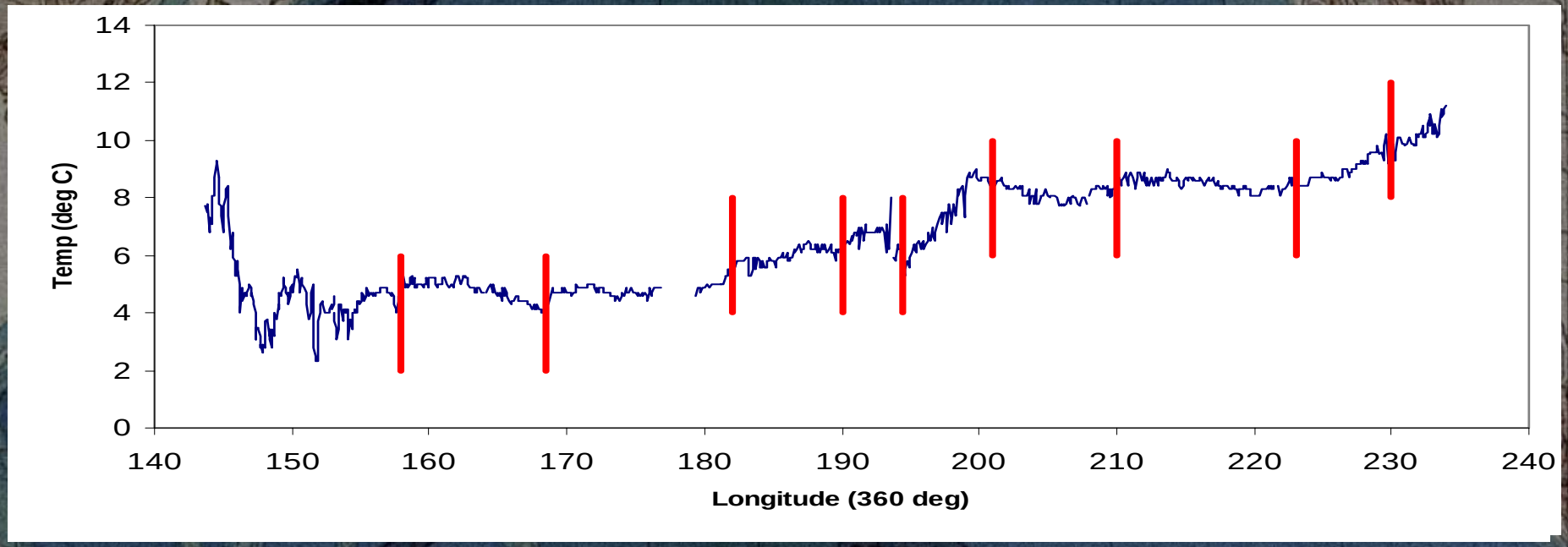
Results: Plankton data, June 2002



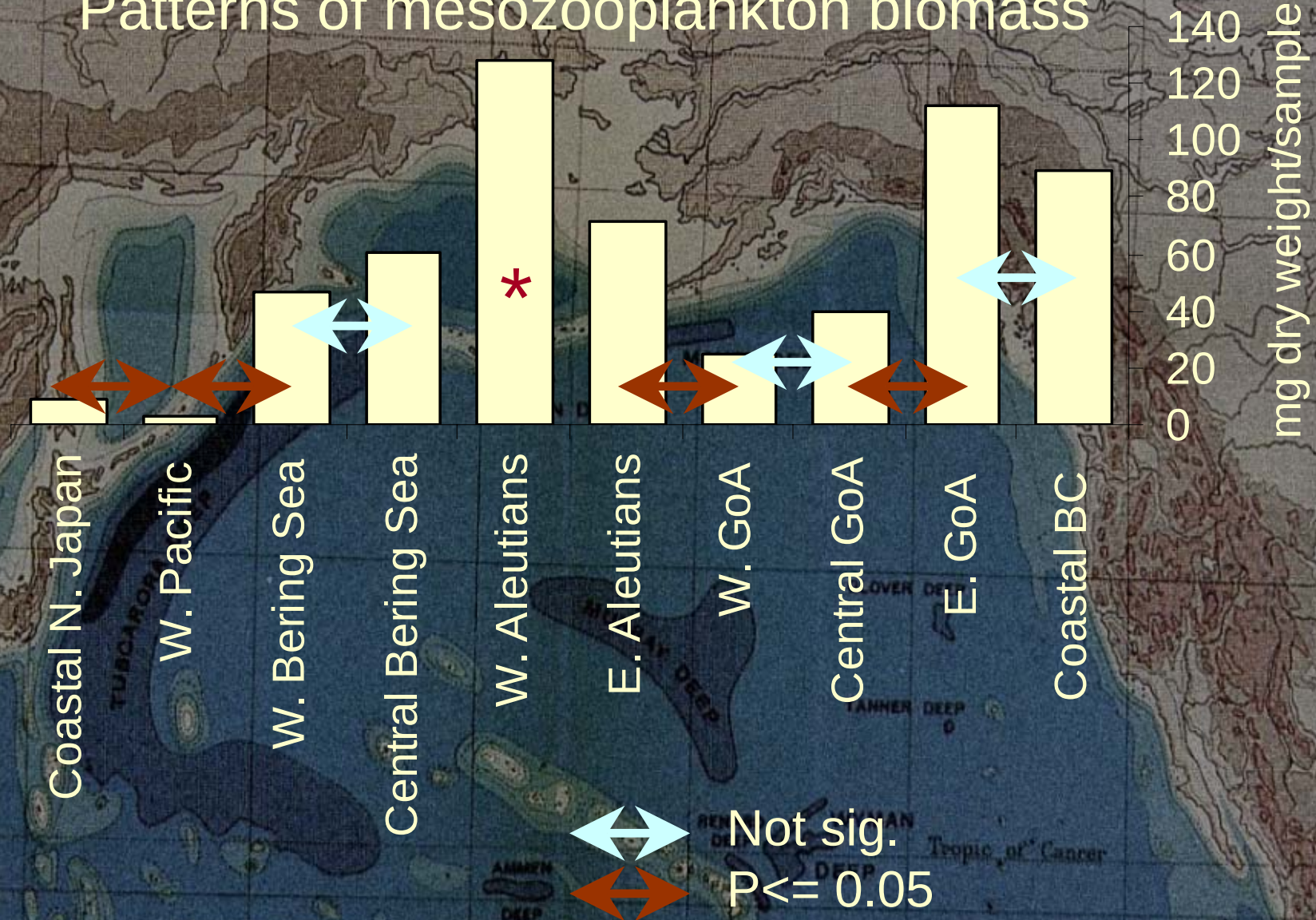




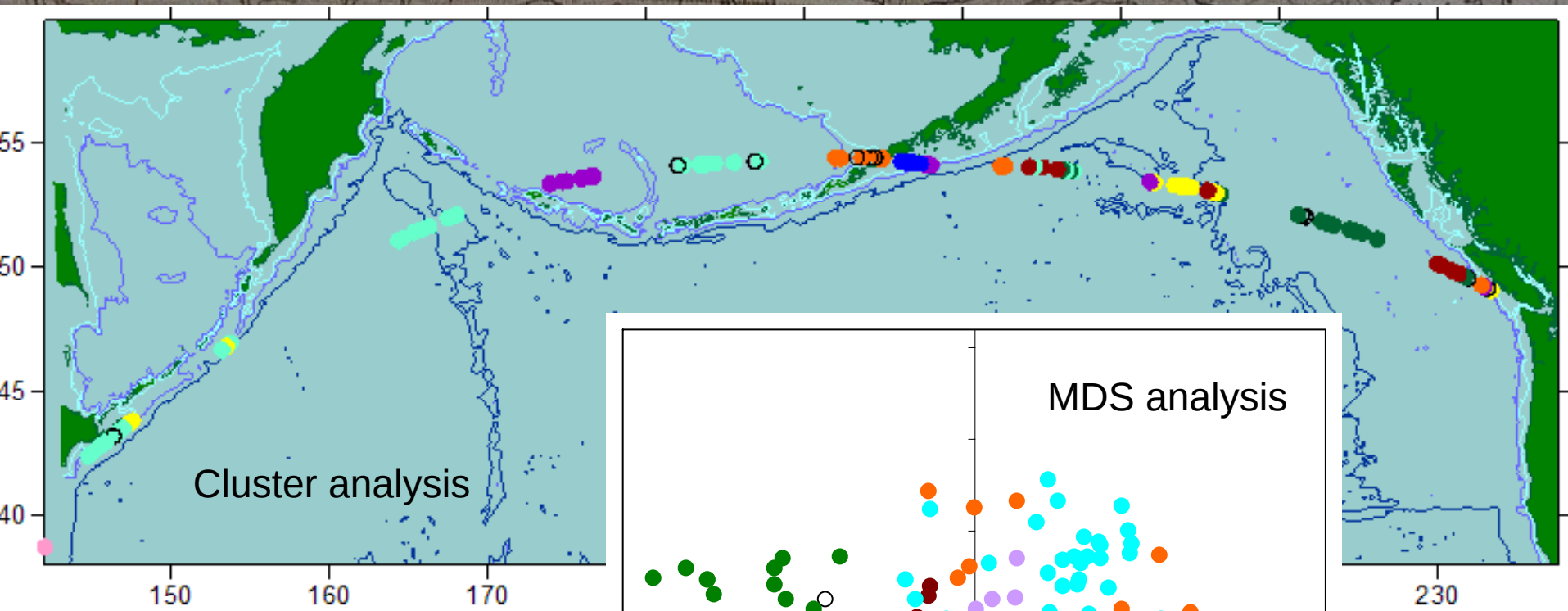

55
50
45
40
150
160
170
180
190
200
210
220
230

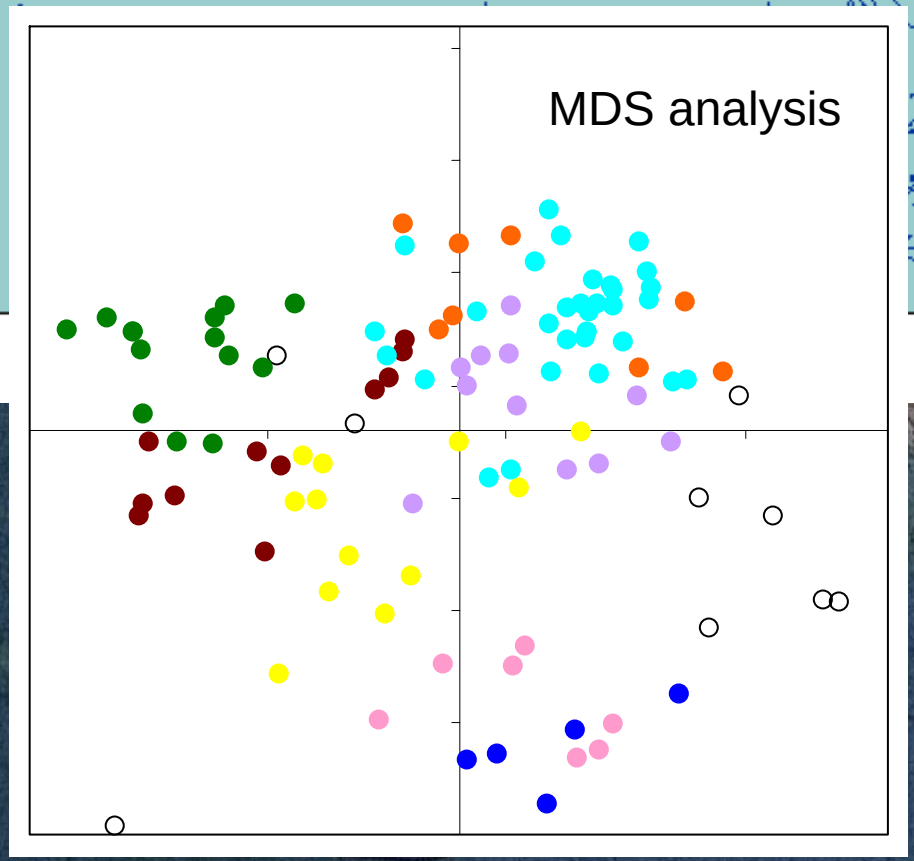

Temp (deg C)
14
12
10
8
6
4
2
0
140
150
160
170
180
190
200
210
220
230
240
Longitude (360 deg)

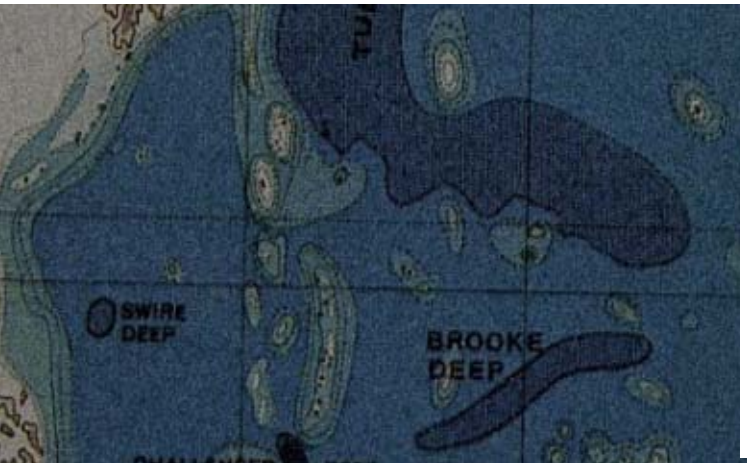
Patterns of mesozooplankton biomass



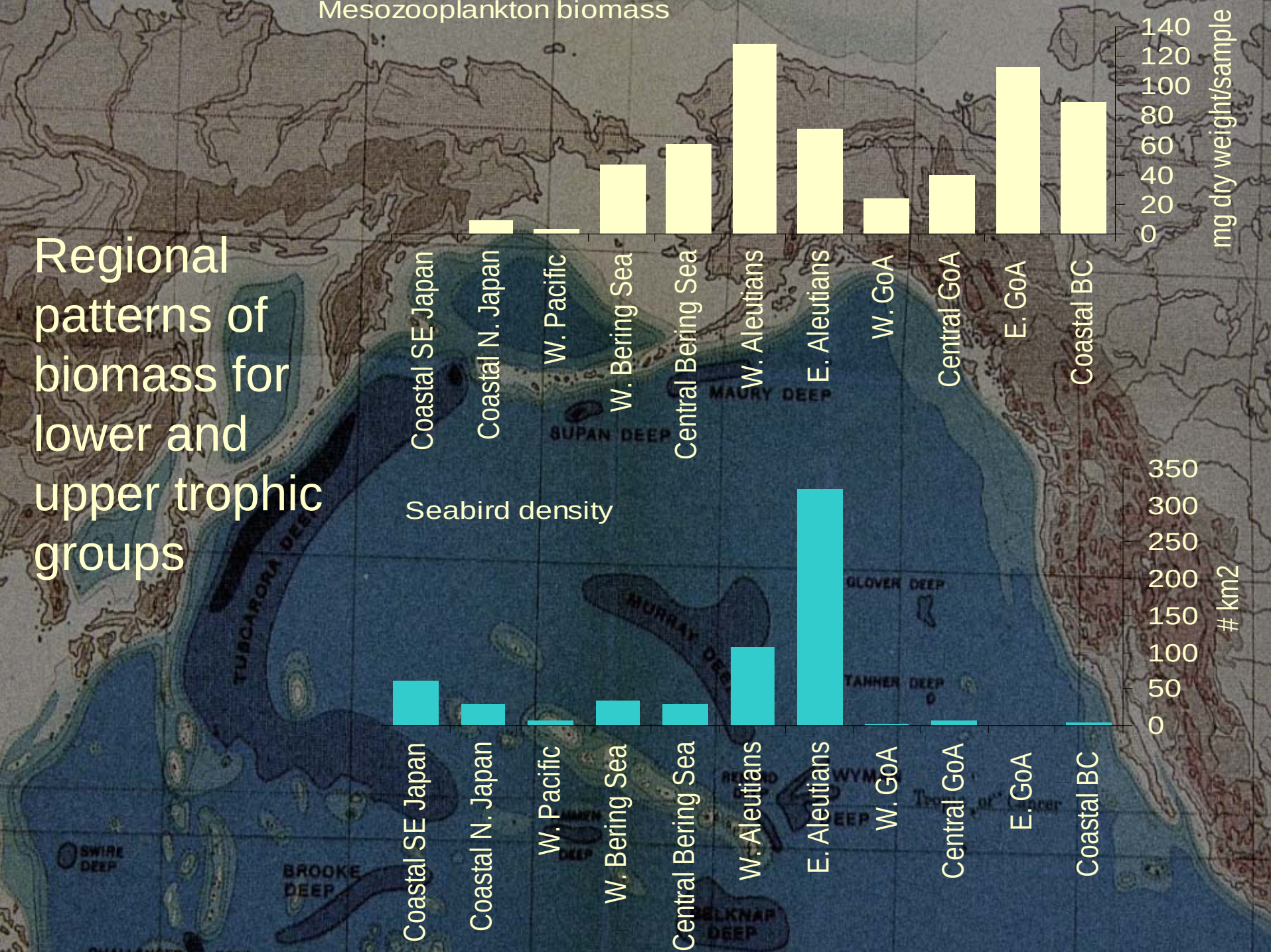
Results: Bird data, June 2002

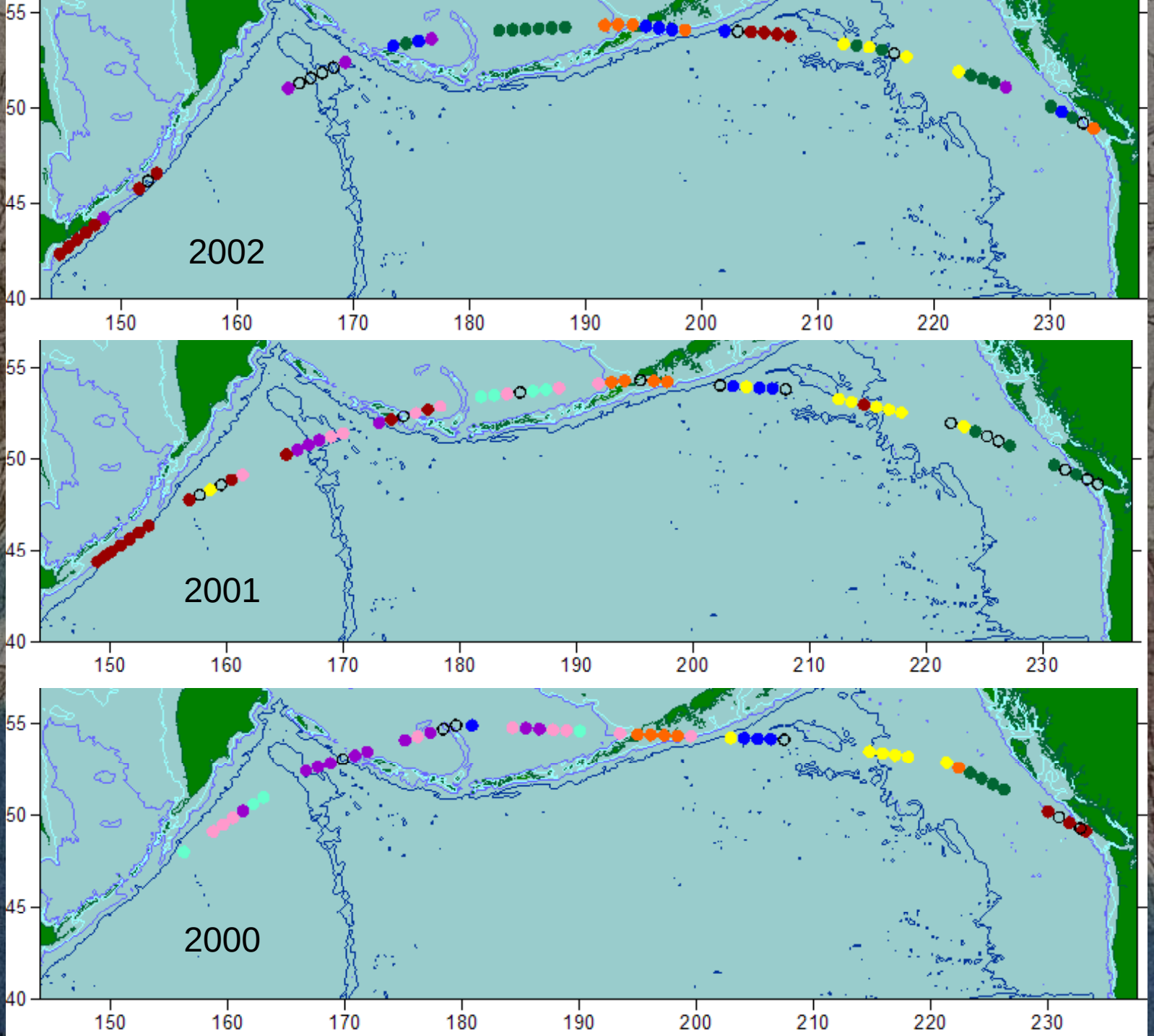






Regional patterns of biomass for lower and upper trophic groups




2002
2001
2000
55
50
45
40
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160
170
180
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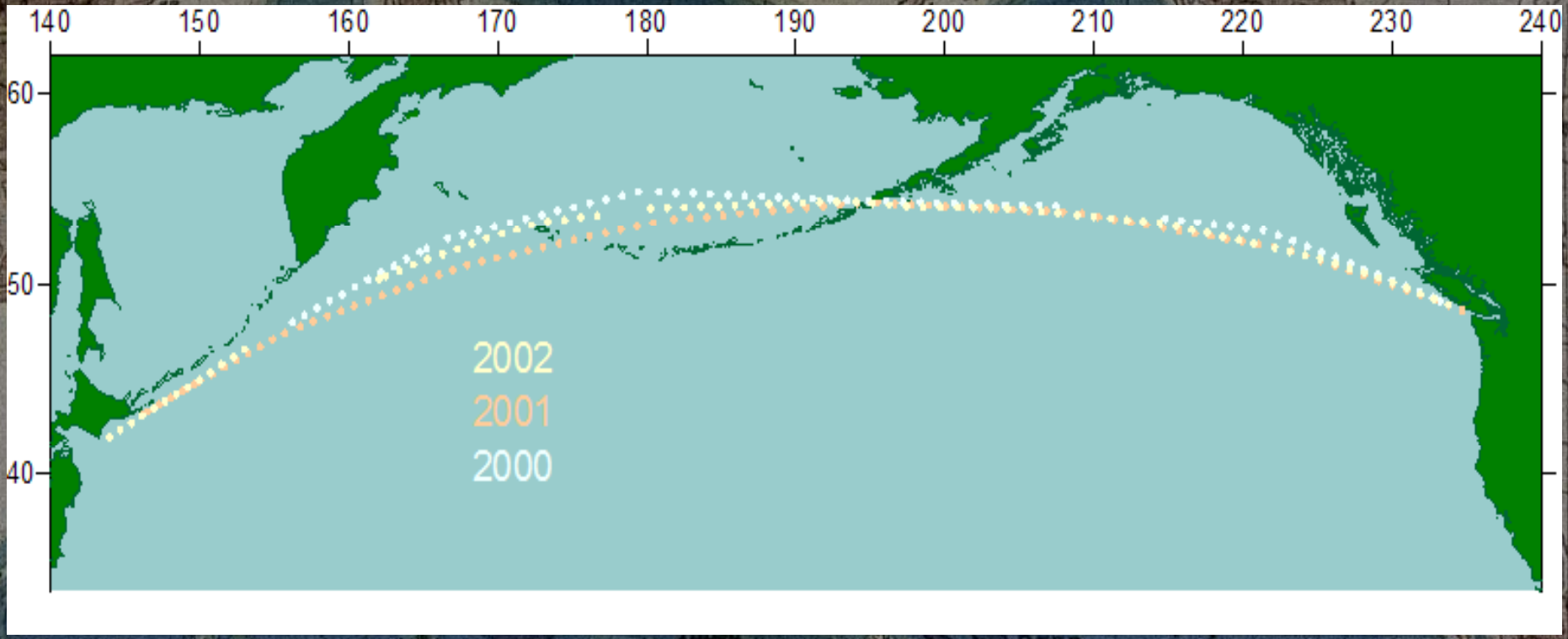
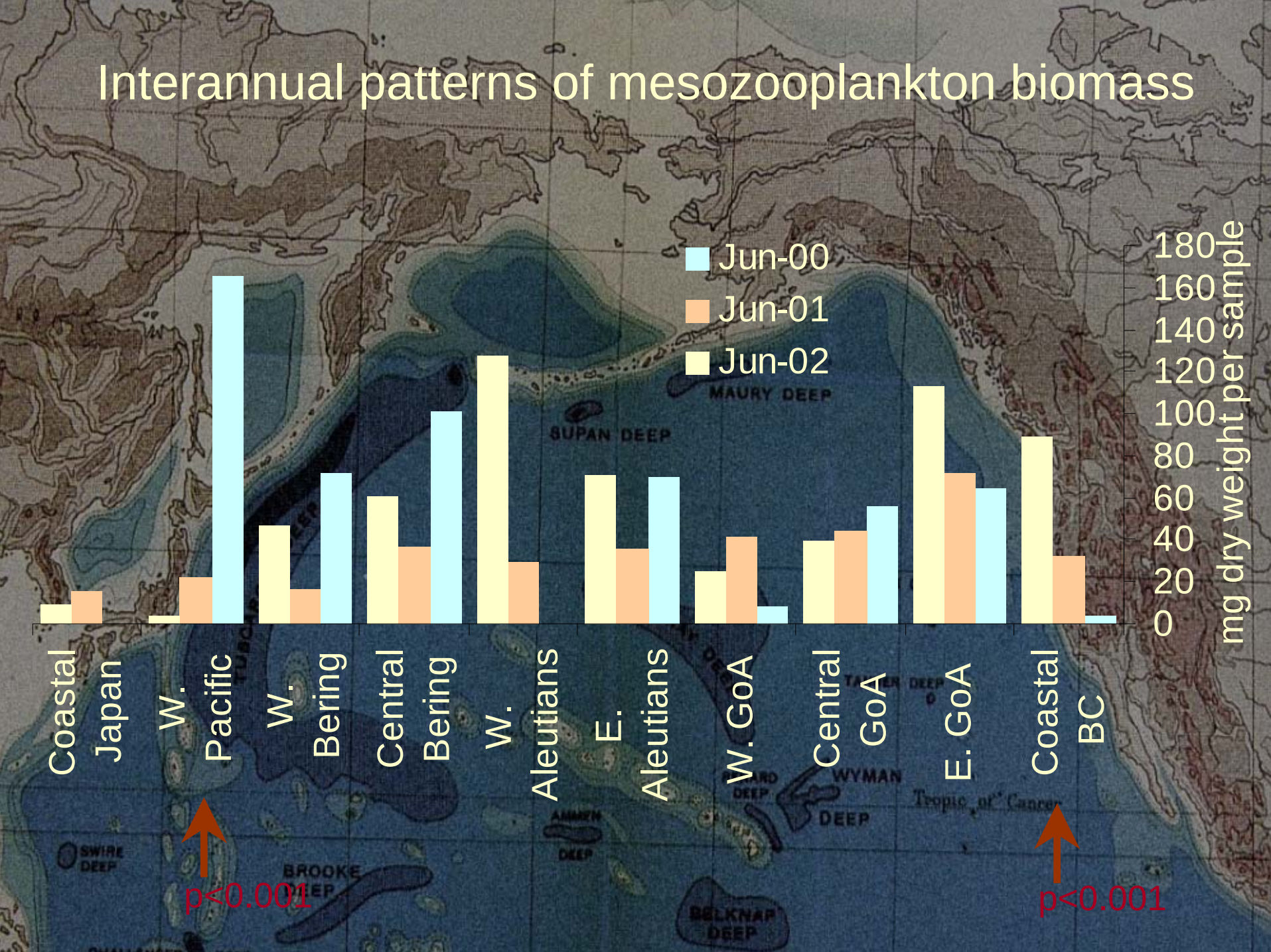
200
210
220
230

Results for the western Pacific could be more variable because the transect varies most here – by up to 2° latitude



Interannual patterns of mesozooplankton biomass



Summary

- Both lower and upper trophic level data identified the same regions across the north Pacific, suggesting separate ecosystems. Regional patterns of biomass are evident.
- So far (at least for plankton), these regions are consistent from year to year. Seasonal data (October 2002, April and June 2003) shortly available to look at seasonal consistency.
- A method for describing, monitoring, and understanding ecosystems