Breakout 4, Group 1

What are commonalities between the reports we heard this morning?

Physics: lateral **exchanges**, vertical, deep circulation, freshwater, **sea ice**, sea level, models

Biogeochemistry: **connectivity between basins**, controls on productivity, timing, elemental ratios, human pressures

Foodweb and Community Structure: multi-scales, **timing**, trophic linkage, **shifting biogeography**

Ecosystem and Health: changing biogeography, resource use, extreme events, **carbon budget**, assessment, **human pressures**

Two Possible Approaches

- "Top-Down" Choose a driver and see how it affects the key topics
  - Ex: Effect of sea-ice melt
- "Bottom-Up" Choose an intriguing observable and try to explain/predict it
  - Changing distribution of fish
  - Storage of anthropogenic carbon
  - Expanding O_2 minimum zones

Changing Distribution of Fish

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  - Modeling: need very high-resolution models, want to be able to predict for next 20 years

Anthropogenic Carbon Storage

- Need to know about:
  - Phytoplankton, stratification, circulation, elemental ratios
  - Connectivity between basins; Freshwater Input

Link back to incorporate most of the major "commonalities" shown on the first slide

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