I. Climate-driven changes in Gulf of Maine (GoM)

1. Decadal decrease in surface water calcification rates and 10-fold increase in GoM SST over past decade.
2. Warming-induced acceleration of Arctic ice melt → increasing volumes of low salinity/low alkalinity water moving southward into NW Atlantic and GoM since 1990’s.

II. Impacts on GoM plankton community and POC & PIC export

1. 1990’s → 2000’s: Shorter duration spring blooms; longer autumn blooms; decreasing large copepod species abundance; increase in smaller species (Greene & Pershing 2007).
3. Full-depth warming → higher rates of respiration & remineralization.

III. Impacts on carbonate system parameters

1. Evidence of seasonal aragonite loss in relatively shallow GoM water column.
2. Reflected by %CaCO3 in sinking particulates: decreases significantly 100 m → 200 m.
3. Seasonal aragonite dissolution is coupled with POC remineralization in the lower shelf water column.

SUMMARY:
Projected negative impacts on shellfish and crustacean fisheries.