CHAOV in a nutshell: Five years of work in sixteen square feet

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CHAOV is the Chukchi Acoustics, Oceanography and Zooplankton Study

Objectives

Document the distribution and relative abundance of whales relate changes in those variables to oceanographic conditions, indices of potential prey density, and anthropogenic activities and develop noise and climate models.

Marine Mammals

Bowheads and belugas undergo predictable seasonal migrations – strongly correlated with month and ice concentration

Marine Mammals

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Oceanography

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Zooplankton

• Three long-term mooring clusters (three moorings, 3 ø 200, 3 ø 300, and 3 ø 500 ft) on the Beaufort shelf and slope
• Six biophysical sampling lines (6 ø 100 to 300 ft), with 46 transects
• One near-real-time autodetection buoy
• Visual survey (photos, transect, 230 x 12 ft)
• Passive acoustic monitoring (43 kHz hydrophones)

Future predictions

• Results consistent with recent publications predicting a regime shift
  • Shift may have already begun
• Two scenarios based on winds
  • Generalist feeders might be okay
  • Specialist feeders (like walrus) will not do well
• Ambient noise levels will increase

Report

The CHAOV final report can be found at: http://www.afsc.noaa.gov/mmfit/cetacean/chaov.php

Acknowledgments

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Key Findings

1. Icy Cape
   • The CHAOV model agrees really well with observations from the Chukchi Sea, with the exception of the nearshore, which shows much more complexity.
   • The Chukchi Sea is a large-scale conveyor belt for benthic organisms.
   • Predictions:
     • Late arrival of ice in fall and early ice retreat in spring
     • Mesoscale ice coverages – large interannual variability in ice thickness

2. CHAOV modeled the noise and ice generation and its impacts on whale behavior.
   • Visual survey better than passive acoustic data
   • Noisy Humans

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