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A DECADE OF ACOUSTIC THERMOMETRY IN THE NORTH PACIFIC (B): UNDERSTANDING BASIN-WIDE AVERAGES OF TEMPERATURE BY COMPARISONS TO THE POP NUMERICAL OCEAN MODEL.

With a decade of long-range (several Mm) acoustic propagation data obtained during the Acoustic Thermometry of Ocean Climate (ATOC) and North Pacific Acoustic Laboratory (NPAL) projects, the interannual, seasonal, and higher frequency variability of transbasin-averaged ocean temperature in the North Pacific can be examined. Acoustic transmissions were made from sources located off the northern Californian coast and north of Kauai, Hawaii to several receivers of opportunity located in the North Pacific Basin. The acoustic data are a high signal-to-noise measure of large-scale temperature with excellent temporal resolution. Although only a few realizations of the seasonal cycle are available, inter- and intra-annual variabilities have signal amplitudes comparable to the seasonal cycle. The seasonal cycle of temperature is mostly accounted for by local air-sea heat exchange. The time scales for some of the changes in temperature are short, sometimes of order weeks. Not all available acoustic paths are suitable for assessing the seasonal cycle, however. Near Hawaii, the acoustic sampling does not extend to the near-surface waters, so seasonal variations there are not measured. To better understand the nature of the signals, the temperature changes observed by the acoustics will be compared to temperature changes modeled by a co-temporal, high-resolution ocean model (POP: Parallel Ocean Program).

Poster presentation

Presentation is given by student: No

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