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Biodiversity baseline for large marine ecosystems: an example from the Barents Sea.

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Biodiversity is an increasingly important issue for the management of marine ecosystems. However, the proliferation of biodiversity indices and difficulties associated with their interpretation have resulted in a lack of clearly defined framework for quantifying biodiversity and biodiversity changes in marine ecosystems for assessment purpose. Recent theoretical and numerical developments in biodiversity statistics have established clear algebraic relationships between most of the diversity measures commonly used, and have highlighted those that most directly relates to the concept of biological diversity, terming them “true” diversity measures. In this poster, we implement the calculation of these “true” diversity measures at the scale of a large-marine ecosystem, the Barents Sea. We applied hierarchical partitioning of biodiversity to an extensive dataset encompassing 10 years of trawl-surveys for both pelagic and demersal fish community. We quantify biodiversity and biodiversity changes for these two communities across the whole continental shelf of the Barents Sea at various spatial and temporal scales, explicitly identifying areas where fish communities are stable and variable. The method is used to disentangle areas where community composition is subject to random fluctuations from areas where the fish community is drifting over time. We discuss how our results can serve as a spatio-temporal biodiversity baseline against which new biodiversity estimates, derived from sea surveys, can be evaluated.

Keywords: Barents Sea, Fish Community, Biodiversity, Baseline, Alpha and beta diversity.

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