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Title:

Takeaways from ten years of the Mean Temperature of the Catch index

Short Title - Under 30 characters:

Review of MTC applications

Abstract:

The mean temperature of the catch index (MTC: Cheung et al. 2013 *Nature* 497:365-368), calculated from the average inferred temperature preference of exploited species weighted by their annual catch, was developed to detect effects of ocean warming on global fisheries catches. Despite varying regional patterns, the overall global MTC of 52 large marine ecosystems was shown to increase by 0.19 °C per decade between 1970 and 2006, indicating a tropicalization of catches with increasing dominance of warm-water species, in line with the climate-driven sea surface temperature rise. Since its original use on a global scale, the MTC index has been applied at finer regional scales in Europe, Asia, America, and Oceania, based on updated and more detailed data, resulting in more than 20 publications. We present a review and meta-analysis of all recent MTC applications and discuss the generality of the index, as well as its strengths and weaknesses. The majority of MTC applications have looked at temperate and subtropical regions and reported a positive MTC trend over the years. Studies from tropical regions reported stable or slightly decreasing MTC trends due to the limited scope for further catch tropicalization, but also due to the expansion of fisheries to offshore and/or deeper and cooler waters. Most studies have used catch data to calculate MTC trends, while only a handful compare catch-based with survey-based MTC to resolve whether the changes in fisheries catch composition reflect changes in population abundance. While the MTC index has detected warming trends on a global scale, observed trends may be more variable and less predictable at regional scales. We suggest that confounding factors that may be masking warming signals, such as local management regulations and historical overfishing effects, need to be taken into consideration when interpreting these results.

Abstracts: Open or Invited:

No

Meeting Theme:

Fish and fisheries at the Water–Energy–Food Nexus

Presentation Type and Format:

Oral

Primary Session Choice:

Managing fisheries in a world of shifting stocks; integrating biological, policy, behavioural, social and economic aspects (Flex format)

Secondary Session Choice:

Evolutionary effects of species distribution shifts; building adaptive capacity for conservation and management (Flex format)

Keywords:

Climate change, Commercial fisheries

Are you a student?:

No

Session Moderator:

No

Will you be traveling to the United States from a country that requires you obtain an entry visa?:

No