

The UNEP Large Marine Ecosystem Report – A Perspective on Changing Conditions in LMEs of the World's Regional Seas (2008)

The oceans are under serious threat from the overexploitation of marine life, pollution, and the effects of global warming.

The new United Nations report found that 61 of the world's 64 large marine ecosystems — large areas of coastal waters adjacent to continents — show a significant increase in sea surface temperatures in the last 25 years, contributing to decreasing fisheries catches in some areas and increasing catches in others.

Fisheries harvests in several northern Atlantic large marine ecosystems (LMEs), including the Norwegian Sea, the Faroe Plateau and the Iceland Shelf, are increasing due to the increase in zooplankton, a vital fish food, brought about by the warming waters. However, climate warming is contributing to decreasing fisheries harvests in several European LMEs, including the North Sea, the Celtic Biscay Shelf and the Iberian Coastal LMEs.

The report documents the most rapid warming in the Northeast Atlantic and Mediterranean Region (Baltic Sea, North Sea and Black Sea LMEs), in the Northwest Pacific off East Asia (East China Sea, and Sea of Japan/East Sea LMEs), and in the Northwest Atlantic (Newfoundland Labrador Shelf LME). The notable exceptions to the warming are in the California Current LME and Humboldt Current LME (off the coasts of Chile and Peru). Both are in upwelling areas of nutrient-rich cool water in the Eastern Pacific Ocean.

“The large majority of these LMEs are shared by two or more countries, underscoring the need for regional cooperation to advance sustainable management,” said Dr. Kenneth Sherman, expert on Large Marine Ecosystems. “The added stress of climate warming makes it that much more important that nations cooperate to sustainably manage Large Marine Ecosystems, the areas where most marine fisheries are produced and caught.”

According to the report, 70 percent of global fish stocks within LMEs are overexploited, reducing the availability of fish for food, which is especially critical in LMEs off the coasts of Africa, Asia and Latin America, where fish is a major protein source.

The U.N. report also said that an unprecedented volume of nitrogen effluent running into coastal waters is causing a greater frequency and extent of harmful algal blooms, oxygen depletion events and dead zones. During the algal blooms, small plankton consume excessive amounts of available dissolved oxygen, sink to the bottom and deprive fish and shellfish of the oxygen they need to survive.

“The effort to reverse the degraded status of LMEs will take time, well-focused and creative policies, and funding,” said Achim Steiner, UN Under-Secretary General and Executive Director of UNEP, the agency that released the report.

“This book represents the first attempt at establishing the baseline environmental conditions of the world’s LMEs,” said Monique Barbut, Chief Executive Officer of the Global Environment Facility (GEF), the funding agency that partners with national and international agencies, including UNEP, to assist developing coastal countries in efforts to reduce coastal pollution, restore damaged habitats, and recover depleted fisheries. Several LME projects funded by the GEF are showing success in reducing coastal pollution, restoring damaged habitats, and recovering depleted fisheries.

The report provides synopses of ecological conditions for each of the world’s 64 LMEs. The synopses are based on the five-module assessment framework of LME productivity, fish and fisheries, pollution and ecosystem health, socioeconomics, and governance.

The synopses of LME ecological conditions include standardized information on productivity (gC/m²/yr), ocean fronts, sea surface temperature (SST) and anomalies in SSTs, 50 years of annual fisheries biomass yields, value, mean trophic levels, fisheries conditions relative to stock conditions, amount of primary productivity required to support the mean annual catch levels, and information on nutrient over-enrichment and coastal eutrophication.

Three introductory background papers included in the report are focused on: 1) global fisheries assessments, 2) effects of global warming on fisheries biomass yields, and 3) an assessment of nutrient over-enrichment of LMEs.

The scientific results produced in the report can assist policy decisions within the LMEs. The report is available online at: www.lme.noaa.gov/. A hard copy and a CD of the book can be ordered by contacting the LME Program Office:

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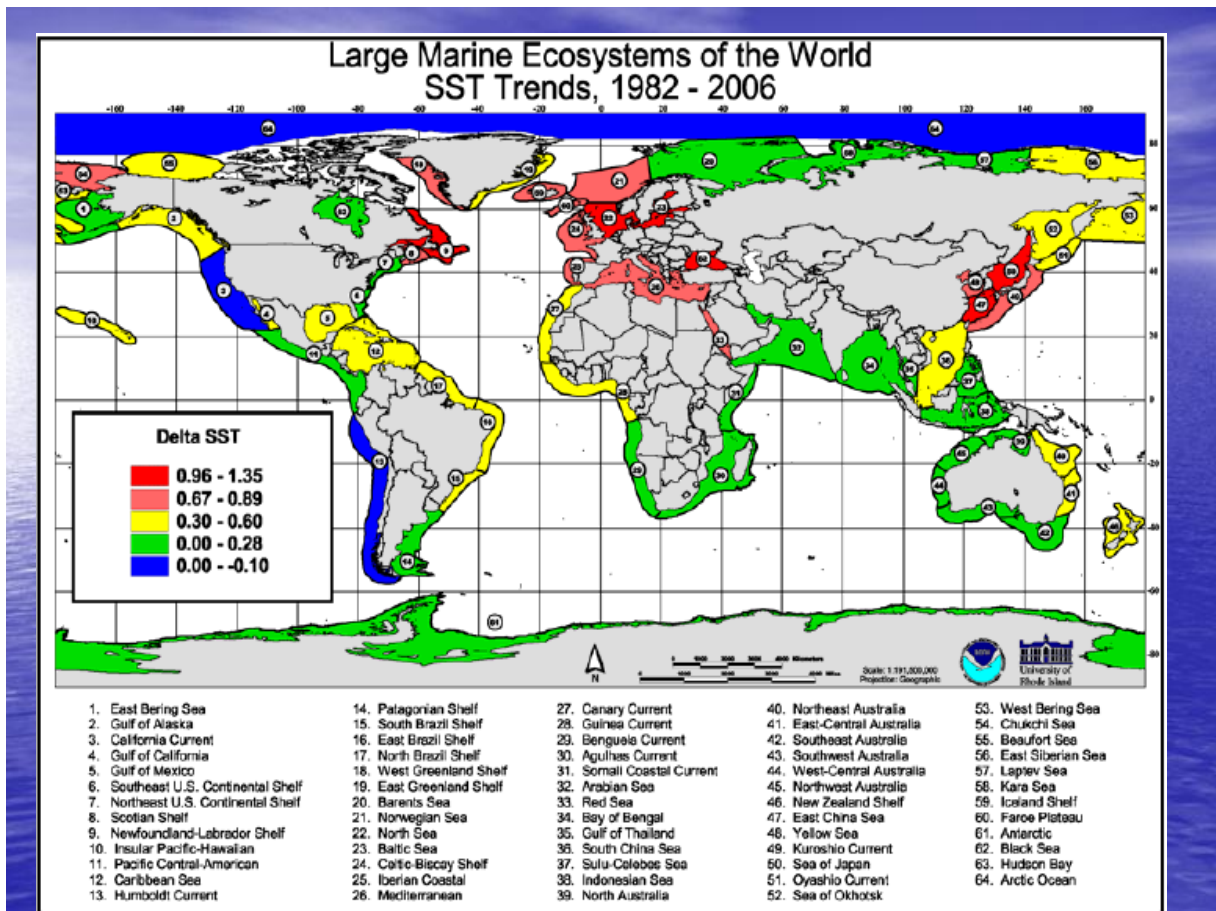


Figure 1. SST trends in the 64 Large Marine Ecosystems of the World. The red areas are those warming the most. Those cooling are indicated in blue.