## SIGNALS AND SCENARIOS OF CLIMATE CHANGE IN EUROPEAN SEAS

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The Northern Hemisphere has been warmer since 1980 than any time during the last 2000 years, with a stronger temperature increase at northern than southern latitudes. Although marine ecosystems have been influenced by many other factors such as overfishing and eutrophication, every sea in Europe has shown at least some changes related to recent climate change. Even moderate climate scenarios are expected to further alter the marine environment. In the northern Arctic and Barents Seas, the most obvious temperature-related changes for marine life are due to a decline in sea ice cover. In general, it is expected that in open systems there will be a (further) northward movement of marine organisms resulting in a shift from Arctic to Atlantic species in the more northern seas and from temperate to more subtropical species in southern waters. Increased river runoff and subsequent freshening of the Baltic Sea will lead to shifts from marine to more brackish and even freshwater species. Temperature-induced loss of endemic species from enclosed systems, such as the Mediterranean and Black Sea, will enhance the introduction of non-native organisms. A better mechanistic understanding of impacts will be essential for development of adaptive strategies to address the inevitable consequences of climate change for our marine waters.

Reference

Philippart C.J.M., R. Anadón, R. Danovaro, J.W. Dippner, K.F. Drinkwater, S.J. Hawkins, T. Oguz and P.C. Reid. 2007. Climate change impacts on the European marine and coastal environment. Marine Board-ESF Position Paper (and references herein).