ICES CM 2019/J:630

Modelling *A. aurita* (Linnaeus, 1758) biomass distributions related to plankton productivity and ocean circulation in the Adriatic Sea

Authors: Lionel Eisenhauer, Dag Slagstad

Abstract

The Northern Mediterranean Sea is an area for which long term studies on jellyfish blooms occurrences are available. The Adriatic Sea biological productivity is strongly influenced by the riverine input and where jellyfish blooms have an ecological and economic impact related to both the tourism and the fisheries industry. Several drivers are hypothesized to enhance the occurrence of jellyfish blooms related to natural climate cycles, climate change and anthropogenic pressure sources. In order to understand the mechanisms driving jellyfish blooms, ecosystem model approaches accounting for the abiotic (transport, hydrography, year specific riverine inflow and nutrient input) and biotic variability (plankton productivity) are required to relate ecological driving factors to jellyfish blooms. We present simulations from a nested high-resolution ecosystem model setup (SINMOD; 800 horizontal resolution) for the Adriatic Sea, resolving mesoscale circulation patterns, coupled to a biogeochemical model using functional groups including variables for the biomass dynamics of the scyphozoan Jellyfish *Aurelia aurita* (Linnaeus, 1758). Bloom dynamics related to the recirculation patterns of the Adriatic Sea, Interannual variations in the seasonal temperature pattern recognized to trigger the strobilation events and the seasonal evolution of the biomass depending on the simulated plankton production levels in order to quantify to carbon flow that is captured by *A. aurita* are discussed.

Keywords:

Aurelia aurita, ecosystem modelling, hydro-climatic cycles, trophic ecology

Contact author:

Lionel Eisenhauer, SINTEF Ocean, SINTEF Sealab Brattørkaia 17C, 7010 Trondheim, lionel.eisenhauer@sintef.no