

AEGEAN

INSTITUTE: Hellenic Centre for Marine Research (HCMR)

MODEL NAME: ERSEM-POM (European Regional Seas Ecosystem Model – Princeton Ocean Model)

AREA OF APPLICATION: North Aegean Sea

MODEL DOMAIN: North Aegean Sea

STATE VARIABLES:

Nutrients

Nitrate

Ammonium

Phosphate

Silicate

Phytoplankton

diatoms (C,N,P,Si)

Nanoplankton(C,N,P)

Picoplankton(C,N,P)

Dinoflagellates(C,N,P)

Heterotrophs

Heterotrophic nanoflagellates(C,N,P)

Microzooplankton(C,N,P)

Mesozooplankton(C)

Bacteria(C,N,P)

Non-living organic matter

particulate(C,N,P,Si)

Dissolved(C,N,P)

Benthic

Benthic organic matter (C,N,P)

OBJECTIVES:

Investigate the impact of :

Ocean circulation, Climate patterns, Acidification(implementation of WP2 module),

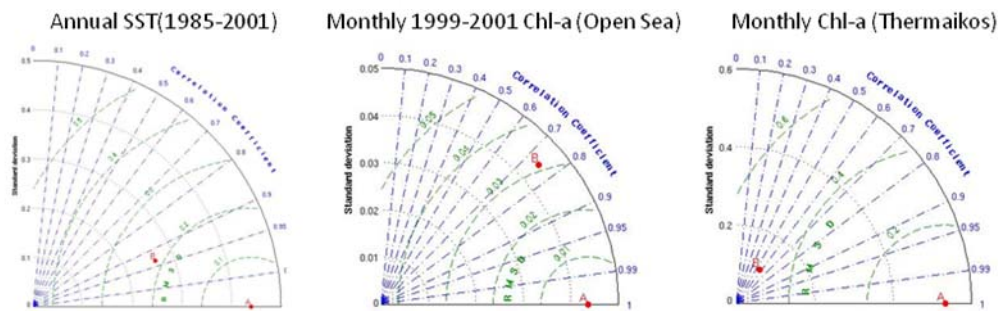
Eutrophication, Fisheries(implementation of WP2 End2End model OSMOSE)

VALIDATION:

Cost function (Moll, 2000)

Moll, A. (2000). "Assessment of three-dimensional physical-biological ECOHAM1 simulations by quantified validation for the North Sea with ICES and ERSEM data."

ICES Journal of Marine Science **57**: 1060-1068.



The SST simulation shows a very good correlation (0.9-0.95) with a low RMSD (~0.2). The variances of model and field data are also rather close indicating that the model captures the observed variability.

The Chl-a simulation for Thermaikos gulf is rather poor which is due to a number of properties/characteristics. It is a coastal system which accepts significant inputs from rivers, point (sewage treatment plant, industries etc) and diffuse (agricultural runoff) sources. These sources are very variable both in time and in magnitude. Additionally as known satellite images in coastal areas are significantly less reliable compared to in situ measurements.

Unlike Thermaikos the Chl-a simulation for the open Sea is significantly better with a correlation close to 0.8 a very low RMSD (0.03) and correct standard deviation indicating the chl-a pattern variations are of the right amplitude. Although the open sea and Thermaikos gulf exhibit similar correlations (0.6, 0.7), the model simulates much better the amplitude of the variations of chl-a in the open sea than in Thermaikos gulf and this results in a smaller RMS error (~0.03 open sea, 0.45 Thermaikos).