

{rokbox title=|Portada del informe ICES/GLOBEC workshop :: Foto: ICES|
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[ICES/GLOBEC workshop on long-term variability in southwestern Europe](#)

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Abstract: The Workshop on Long-term Variability in Southwestern Europe (WKLTVSWE) was held in Lisbon, Portugal from 13 to 16 February 2007, a joint effort of ICES and GLOBEC and endorsed by EUR-OCEANS (<http://www.eur-oceans.org>). In 1997, GLOBEC's SPACC (Small Pelagic Fish and Climate Change) initiative held a joint meeting with SCOR Working Group 98 on worldwide, large-scale fluctuations in sardine (*Sardinops sagax*) and anchovy (*Engraulis spp.*

) populations (Schwartzlose et al., 1999). It was decided then to continue this “global” undertaking with a series of regional workshops. Previous meetings had focused on the Benguela Current in 2001 (Cury and Shannon, 2004), the Humboldt Current in 2002 (Alheit and Niquen, 2004), and Japanese waters in 2003. During the 2005 annual meeting of the former ICES Study Group on Regional Ecology of Small Pelagics (SGRESP) – subsequently ICES/GLOBEC Working Group on Life Cycle and Ecology of Small Pelagic Fish (WGLESP) – it was recommended that this series of workshops be continued with a meeting focusing on the waters surrounding the Iberian Peninsula, including the western Mediterranean Sea.

A synthesis of the hydrography, oceanography, and biology of southwestern European waters is presented. The goals of the workshop were to (i) provide a survey of large-scale, long-term changes throughout the ecosystems surrounding the Iberian Peninsula (are there signals of regime shifts in the region?), (ii) identify apparent synchronies (teleconnection patterns) with other regions of the North Atlantic or northern hemisphere, and (iii) gain insight into the causes and mechanisms underlying the major ecosystem changes, e.g. identify possible links of those changes in the ecosystems to climate variability. Testing materials were climatic and oceanographic variables, ecosystem indices (zooplankton and phytoplankton indices), and population indices of small pelagic (catches and recruitment series) in addition to climate-forcing indices at local and worldwide scales.

The time-series compiled during the workshop were as broad as possible. In all, 73 data time-series were compiled and classified by type: global climatic and biological indices. With the objective of identifying and analysing oscillations at multi-annual scale in the variability of the time-series, it was decided to work on three case studies: Case study 1 – global region, Atlantic Iberian Peninsula; Case study 2 – local region, Portugal; Case study 3 – local region, Bay of Biscay.

The results of the global case study revealed significant interannual trends in climate, oceanographic, and ecosystem variables, regional indications of global warming since ca. 1950. Quasi-decadal scales are characteristic of climate, oceanographic, and fish abundance indices, but plankton indices are over shorter periods. Sardine and anchovy demonstrated synchrony in positive and negative phases up to 1978, increasing and decreasing simultaneously. This pattern was broken and moved to asynchrony thereafter, when sardine and anchovy were in opposite phase. The Portuguese case study demonstrates that sardine catches are negatively correlated with northwesterly winds, and that these are strongly and positively correlated with the North Atlantic Oscillation (NAO). Sardine catches exhibited periods of 20 – 29 years, and ten years of cyclic variation. The Bay of Biscay case study demonstrated that anchovy recruitment is significantly correlated with local downwelling and upwelling events that can be measured at 45°N 2°W, and that it follows a seasonal pattern. During winter, the water column has almost no stratification as a result of convergence and downwelling from western poleward currents bringing warmer, more-saline water of subtropical origin. During summer, water-column stratification increases when northerly winds dominate and mechanisms of divergence and stable stratification prevail, bringing colder, less-saline water of subpolar origin to the Bay of Biscay. This weak upwelling yields stable stratification that favours good recruitment. Nevertheless, if spring – summer northerly winds induce gales and storms, disrupting stable stratification, this would be detrimental to anchovy success.

A general mechanism emerged, of an alternation of periodical quasi-decadal dominance of boreal fresher, colder water and subtropical warmer, more-saline water. In accordance with the biogeography of the region, this seems to favour the productivity of each species differently.

Keywords: