8.5 RADIALES Vigo Transect (Site 53)

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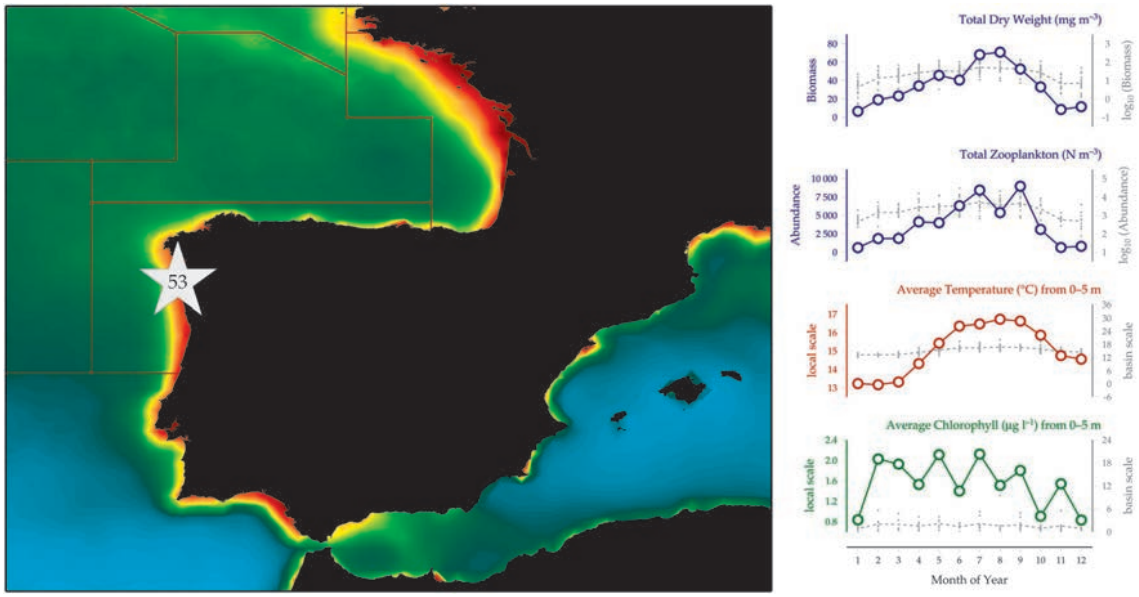

Figure 8.5.1
Location of the RADIALES Vigo survey area (Site 53), plotted on a map of average chlorophyll concentration, and their corresponding seasonal summary plot (see Section 2.2.1).

The Vigo transect has been sampled since 1987 as part of the time-series project RADIALES of the Instituto Español de Oceanografía (http://www.seriestemporales-ieo.com). Station 3 of the Vigo transect, which was used for this summary, is located off the northwest Iberian coast at 42.1417°N 8.9533°W. Zooplankton samples are collected from 50 m to the surface (oblique hauls) on a monthly basis with a Juday–Bogorov net (0.5 m diameter, 200 µm mesh). Samples are preserved in 4% formalin in sodium-borate-buffered seawater and then examined in the laboratory for identification and counting of mesozooplankton by the rarefaction method (Omori and Ikeda, 1984). Biomass is calculated as dry weight (Lovegrove, 1962) of samples filtered upon arrival at the laboratory.

In the coastal region off Galicia (northwest Spain), the classical pattern of seasonal stratification of the water column in temperate regions is masked by upwelling events from April to September. These upwelling events provide zooplankton populations with favourable conditions for development in summer, which is the opposite of what occurs in other temperate seas in this season of the year. Nevertheless, upwelling is highly variable in intensity and frequency, demonstrating substantial year-to-year variability.

Seasonal and interannual trends (Figure 8.5.2)

The seasonal cycle of zooplankton biomass is characterized by high values from April to October, with a slight reduction in June and August and a clear reduction in winter. In contrast with the series in A Coruña, the zoopankton at Vigo shows a single late summer biomass and abundance peak. Interannual biomass anomalies reveal an increasing trend, following a period of low biomass observed in the period 1994–2001. Copepod species typical of warm waters (e.g. *Temora stylifera*) appeared in relatively large numbers during warmer periods (e.g. 1997–1998, 2001–2002, and 2009), while other species decreased in the five years prior to 2010 (e.g. *Calanoides carinatus, Acartia clausi*).

In situ temperature decreased over the 21 years of the time-series, in contrast with regional averages at nearby locations (e.g. A Coruña). To investigate longer-term trends in both temperature and zooplankton at the site, data were compared with long-term data from CPR and SST records (Figure 8.5.3). Long-term temperatures in the region reveal an increase of almost 1°C in SST during the last half century. As described for the A Coruña series, the increase in zooplankton biomass and abundance recorded at Vigo during the past 15 years is not reflected in the period of below-average copepod abundance in CPR standard area F4, due to local upwelling conditions near the coast and to the differences in the waters sampled by each series (Bode *et al*., 2012).

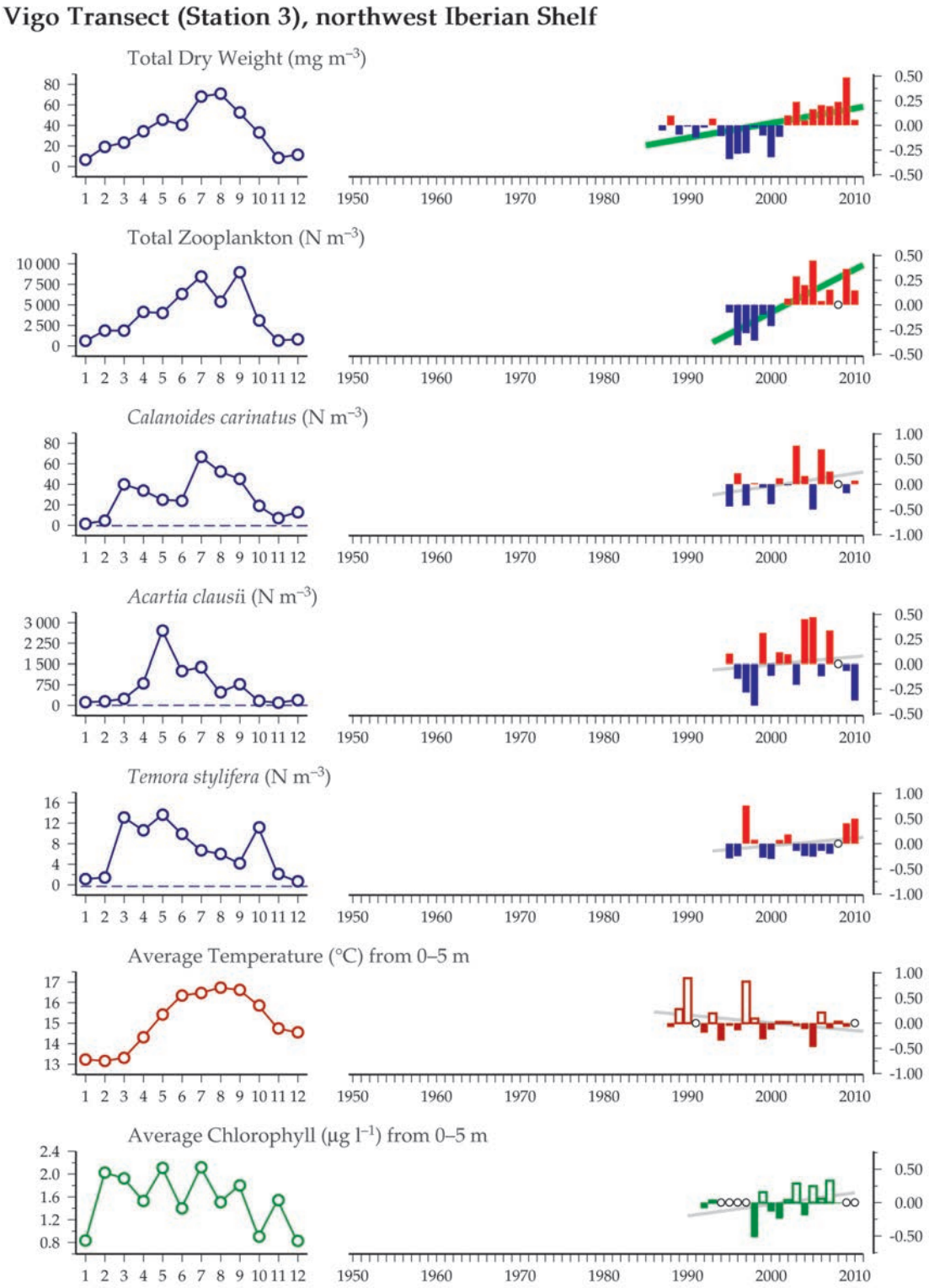

Figure 8.5.2
Multiple-variable comparison plot (see Section 2.2.2) showing the seasonal and interannual properties of select cosampled variables at the Vigo Transect monitoring area.

Additional variables are available online at: http://WGZE.net/time-series.

Figure 8.5.3
Regional overview plot (see Section 2.2.3) showing long-term sea surface temperatures and wind speeds in the general region surrounding the Vigo Transect monitoring area, along with data from the adjacent CPR F04 Standard Area.