



Historical Ocean Colour and SST inter-annual variability for the Azores region from 2002 to 2008 – comparison with in situ data

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Historical data from different Ocean Colour (OC) sensors (MODIS/AQUA, SeaWiFS/Orbview-2 and MERIS/ENVISAT) and SST sensors (AVHRR/NOAA, MODIS/AQUA, and AATSR/ENVISAT) are used to study the inter-annual variability of near-surface phytoplankton biomass (expressed in Chl-a mg m⁻³) and sea surface temperature (in $^{\circ}\text{C}$) for the Azores region (subtropical NE Atlantic) from 2002 to 2008. This study uses daily, monthly, seasonal and annual OC and SST images for the Azores area (43° - 35° N; 24° - 34° W). SeaWiFS and AVHRR data (raw data) were obtained at the HAZO HRPT station (Azores), MODIS (Level-2) at the Ocean Colour Web Level 1/2 browser (NASA/GSFC) and MERIS and AATSR (Level-2 Full resolution) at ESA. All were processed at DOP/UAz using the HAZO automated system developed at the University of the Azores (IMAR-DOP/UAz). Seasonal variation is strongly observed at this region with typical spring and autumn/winter Chl a blooms. Although not all sensors data cover the same periods of time, all of them seem to show the same general pattern with highest pigment concentrations during spring season and lowest during summer. Sea surface temperature shows the same general trend with highest surface temperature values found during summer and the lowest during winter. In particular, MODIS means are underestimated when compared with AATSR and AVHRR ones. Remote sensing data were compared with in situ values. High inter-annual variability is observed for this region. Inter-sensor comparison suggests SeaWiFS to present the highest sensor variability, while MODIS and MERIS show the best agreement, bringing forward the importance of Ocean Colour sensor continuous calibration and validation and actual urgency in improving sensor merging methods.