

Primeira Sessão: Ecologia e Fisiologia – Comunicações orais

Temporal and local spatial changes of the vertical sea water temperature in the Alcatrazes Archipelago and relationships with local depth

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In the Alcatrazes Archipelago, located in the Southwest Atlantic, the influence of temperature variability on biological communities, inducing changes in biodiversity, has been observed. To overcome the scarce abiotic data available in the archipelago to date we monitored water temperature continuously. We used low-cost sensors (HOBO Tidbit MX2203 Temperature 400' Data Logger), to investigate the temporal variability along the water column at six sites in the sheltered side of the archipelago, between February/2022 and February/2023. The dataset was interpolated meter by meter and some metrics were calculated: (1) detection of the mixing layer (ML), the (2) thermocline (TC) and the (3) South Atlantic Central Water mass (SACW), when these were present in the water column. Due to differences in local depth at the monitoring sites, we expected to find differences in temperature patterns, where sites with greater depth would show greater stratification of the water column throughout the year. The expected vertical stratification of the water column occurred between November and March, with a warm ($22.8 \pm 0.2^\circ\text{C}$) superficial layer and homogeneous (ML) and a colder ($17.0 \pm 0.6^\circ\text{C}$) homogeneous (SACW) bottom layer. During the remaining months the water column was generally homogenous ($21.9 \pm 0.1^\circ\text{C}$). A spectral analysis (FFT) highlighted energy peaks at 8, 7, 4.6, 3.5 and 2.7 days, suggesting influences of tides and winds, while a multidimensional scaling (nMDS) analysis allowed us to verify that seasonality is indeed what "commands" the stratification/destratification variations in the sampled sites. In summary, temperature variations in the sheltered side of Alcatrazes present a marked seasonality. Although local depth had little effect on temperature variations over this first year of observation, the presence of SACW was detected at all sites, and the greater the local depth, the greater its permanence during the year.

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