

{rokbox title=|Position of the stations monitored from 1996 to 2019 in the frame of the CANALES, CIRBAL and RADMED projects :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-climatological-hydrographic-properties-water-mass-transports-balearic-channels-vargas-et-al-2020-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-climatological-hydrographic-properties-water-mass-transports-balearic-channels-vargas-et-al-2020.jpg{/rokbox}

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[**Climatological Hydrographic Properties and Water Mass Transports in the Balearic Channels From Repeated Observations Over 1996–2019.**](#)

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Abstract: The longest time series of CTD transects available in the Mallorca and Ibiza Channels (1996–2019) are presented. These hydrographic sections have a three-monthly periodicity and allow to resolve the seasonal cycle of water mass properties. They are organized in two closed boxes allowing the use of inverse models for the calculation of absolute geostrophic transports through the Channels. These long time series allow to establish the climatological distributions of potential temperature and salinity for each season of the year as well as other relevant statistical properties such as the variance and covariance functions. The results indicate that these distributions depart from normality making the median a better statistic than the mean value for the description of climatological fields. The salinity field shows a seasonal cycle in the upper layer indicating a higher influence of the Atlantic Water during summer, decreasing through the rest of the year. The Western Intermediate Water, which is mainly formed in the North-Western Mediterranean and the Balearic Sea, is observed preferentially in the Ibiza Channel during winter and spring. This water mass is better detected using a geometry-based method instead of the traditional criterion based on predefined temperature and salinity ranges. These water masses flow preferentially southwards through the Ibiza Channel, and northwards through the Mallorca Channel, although intrusions in the opposite directions are observed. Below, the Levantine Intermediate Water shows a similar behavior, but the mass transport analyses suggest that most of this water mass recirculates with the Balearic Current along the northern slope of the Islands. Although the depth of both Channels prevents the circulation of deep waters, a small fraction of the Western Mediterranean Deep Water could overflow the sills.

Keywords: Balearic Channels, Western Mediterranean, box inverse model, water masses, Northern and Balearic Currents