

Mathematisch-Naturwissenschaftliche Fakultät**Institut für Biowissenschaften****Fachgebiet: Meeresbiologie**

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MSc Helena Frazão(e-mail: helena.frazao@io-warnemuende.de)***Spatial and Temporal Variability in the Northeast Atlantic Subtropical Gyre and Implications for the Biogeochemistry of the Region***

Discerning the spatio-temporal variability of ocean processes is of utmost importance to better understand and predict the impact of these processes on ocean biogeochemistry and circulation. In this thesis, the long-term variability of the currents and water column properties were assessed on different spatial and timescales in the Northeast Atlantic Subtropical Gyre. The variability of the currents and the water column properties was studied in three depth layers: Azores Current and associated Azores Front in the upper 1000 m between 1871 and 2010; at the levels of the Mediterranean Water Outflow core (1000 m – 1100 m) since 1981; and at the deeper water column (below 1600 m) between 1980 and 2009. Moreover, the observed changes in the upper thermocline were connected with the variability of the biogeochemistry in the region. It is shown that not only the concentration of the nutrients decreased since the 1970s but also the Chl a concentration started to decline at the beginning of the 20th century, reducing the CO₂ uptake by the oceans over the last 100 years.