The North Atlantic Eastern Boundary: Observations from Moorings at Goban Spur 2016-2019

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Introduction

Main objectives
- Capture strength and variability of the Eastern Boundary Current (EBC)
- Monitor variability in transports and water mass properties associated with northward spreading of subtropical waters along the EB
- Analyse variations in fractions and mixing of source water masses feeding the North Sea

Current variability
- Difference in flow characteristics between EB1 and EB3
- Flow variations indicate presence of eddies
  At EB1: near zero mean flow with dominant across-slope variation
  At EB3: baroclinic current structure
  Periods of transport into interior at EB3 in upper water column
  Periods of transport into interior at EB3
  At EB1: On average along-slope poleward flow with dominant along-slope variation
  Barotropic current structure

Water mass variability
- Strongest variability in the layer of Mediterranean Outflow Water
- No consistent connection between current variability and temperature and salinity variations
  At EB1: For the period 2016-2019 positive linear trends in temperature and salinity
  At EB3: between 2017-2019 positive trends in temperature and salinity down to 1500 m
  Negative trend in temperature at 3500 m

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References

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Figure 1 Map of the Eastern North Atlantic; (a) positions of moorings EB1 and EB3 and the cruise track for the Atlantic Ocean Transect; (b) near and Eddies uppermost Complex positions. For the two moorings one ADCP was installed the moorings were deployed in the center of the contour in (a) and 10° E 1970-2018 and 400 m in red squares. Mooring deployment period and cruises are shown.

Figure 2 Time series of potential temperature (left) and practical salinity (right) for mooring EB1. Thick (thick) lines are daily (90 day low-pass-filtered) values. The red line is fits to the CTD casts and the orange line is the 95% confidence interval is shown. Dashed trendlines are repeated estimates, and the trend with the 95% confidence intervals are shown on the right side of the plots.