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# SEASONNAL OSCILLATIONS OF THE THERMOCLINE IN THE TROPICAL ATLANTIC OCEAN

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The FOCAL/SEQUAL Programme are devoted to the study of the seasonnal response of the upper tropical Atlantic Ocean to the wind forcing. Part of the FOCAL programme is a study of the available historical data. A description of the mean seasonnal variability of the depth of the thermocline defined as the depth of the 20°C isotherm is presented.

Two regions of large amplitudes are : (1) 3°-8 N and West of 20°W (denoted as the Northwest equatorial region) and (2) along the equator and in the Eastern Atlantic near Africa (called the Eastern equatorial region). The annual cycles of these two regions are not in phase. The thermocline reaches its maximum depth from February to April in the Eastern equatorial region from October to December in the Northwest equatorial region and from April to June North of 10°N. Thus a six to eight month phase difference separates the two events. This produces an annual movement of the thermocline with a double tilt : one in an equatorial plane with a pivot point around 15°W and the other along a pivot line approximately parallel to the equator and situated between 3°-8°N. The zonal tilt of the thermocline along the equator was already confimed by equatorial models. The meridional north equatorial tilt of the thermocline is situated approximately under the mean annual position of the Intertropical Convergence Zone (ITCZ).
The seasonnal vertical displacement of the thermocline associated with the latitudinal seasonnal migration of the ITCZ is related to the change in the sign of the curl of the wind stress. Calculations of Ekman pumping confirm this result.

Thus, the seasonnal variability of the thermocline in the tropical Atlantic Ocean is resulting from the combination of two events : (1) an equatorial phenomenon which affects the Eastern equatorial region (ii) a North equatorial phenomenon due to the local response of the subsurface ocean to the migration of the ITCZ.

The FOCAL/SEQUAL observations will provide yearly complete data sets adequate to understand the physics of the response of the thermocline to the wind forcing in the tropical Atlantic Ocean.