

INTRODUCTION

In the tropical regions of the Atlantic, a stratum of warm ($T > 24^{\circ}\text{C}$) tropical surface water of usually low salinity overlies a cold water mass of south Atlantic central water; both water masses are separated by a discontinuity layer (thermocline, halocline). As the warm water layer is much thinner in the eastern Atlantic (30 to 40 m) than in the western Atlantic (up to 150 m), the Gulf of Guinea thermocline is always close to the surface. The seasonal vertical oscillations of this thermocline result in equatorial and coastal upwellings; this has a major impact on the regional fisheries, and the location of upwelling zones affects the distribution and abundance of fishery resources in the area. Recent studies indicate that this upwelling phenomenon is mainly linked to zonal winds outside (west of) the Gulf of Guinea; the energy of these winds is transmitted to the Gulf via equatorial waves (Picaut, 1984).

The major surface current systems that directly affect the hydrography of the Gulf of Guinea are the Benguela, the South Equatorial and the Guinea Currents. The latter flows eastward from Senegal to the Bight of Biafra and is fed by the Equatorial Counter Current and a branch of the Canary Current (Figs. 1 and 2). The Equatorial Undercurrent transports cold Atlantic central water to the Gulf which replaces the warm layers of tropical surface water during seasonal upwellings.

As the Gulf of Guinea is under influence of both, the northern and southern climate, four marine seasons can be evidenced in the surface-water layer: a long, warm season from February to May, a long, cold season from June to October, a short, warm season from November to mid-December, and finally, a short, cold season from mid-December to January. The long, cold season features an upwelling along the equator ("equatorial divergence") and along the north and south coasts of the Gulf of Guinea. These seasonal variations are characterized by the shift of position of two active oceanic fronts which define the northern and southern limits of the extensions of the warm water layer. The upwelling follows them in the direction of the poles. The areas swept by the passage of these fronts are called alternation zones. One of these, to the North, extends from Cape Verga (Guinea) to Cape Blanc (Mauritania). Its southern counterpart stretches from Cape Lopez (Gabon) to Cape Frio (Angola). During the northern winter, the northern front is located around Cape Verga, the southern front around Cape Frio (Fig. 1). During the southern winter these frontal zones are shifted, the first up to Cape Blanc, the second as far as Cape Lopez (Fig.2). At the same time, upwelling is also observed between Cape Palmas (Côte d'Ivoire) and Cotonou (Benin).

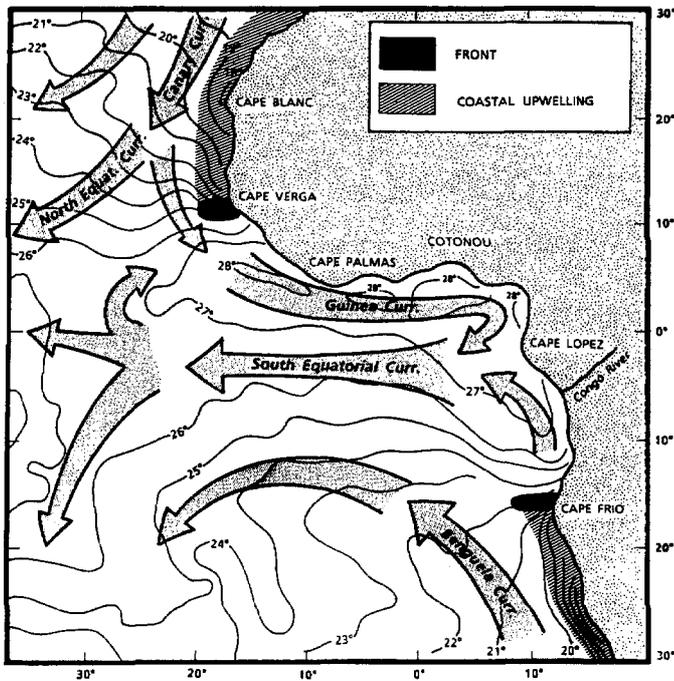


Fig.1 Surface currents and surface temperatures in January (modified from Wauthy, 1983)

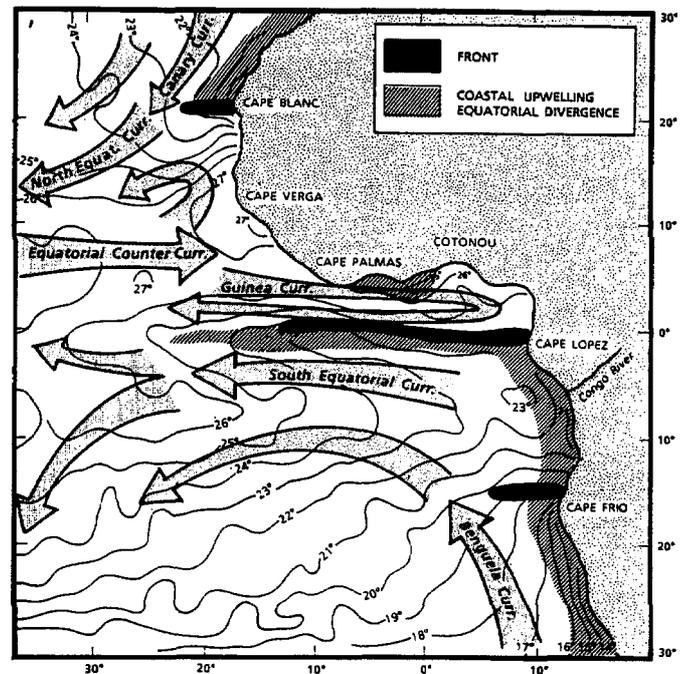


Fig.2 Surface currents and surface temperatures in July (modified from Wauthy, 1983)

The location of these fronts and alternation zones corresponds to changes in the distribution of species and species assemblages. In fact, Cape Verga, Cape Palmas, Cape St. Paul and Cape Lopez are important biogeographic limits. Those sections of the Gulf of Guinea which are permanently covered by a layer of warm surface water (Grain Coast and Bight of Biafra), have a coastal fauna that is intertropical (equatorial) in nature, and are characterized by slight seasonal variations in the hydroclimate, a moderate productivity (except in estuaries), and the presence of a large number of species ("multispecies nature"). The coastal tropical fauna is gradually replaced by a more sub-tropical one toward the extreme positions of the alternation zones (Cape Verga and Cape Lopez).

Another feature of the fauna of the Gulf of Guinea is the bipolar concentration of fishery resources. There are two areas of high production that correspond to the northern and southern alternation zones, in addition to the Côte d'Ivoire/Ghana section which benefits from seasonal upwelling. The migration of some important fish stocks is clearly correlated with the shift of these fronts.

The Gulf of Guinea is a traditional fishing ground for its bordering countries, especially as far as artisanal fisheries are concerned. In the past decades, industrial fisheries have gradually developed, including some foreign long-distance fleets operating under licence agreements. The total marine catch from the Gulf of Guinea (Côte d'Ivoire to Gabon) reported to FAO in 1988 totalled 630 315 metric tons, of which only 1 772 t were taken by foreign fleets. The shares in the 1988 landings of the countries bordering the Gulf of Guinea were as follows: Ghana, 302 935 t; Nigeria, 157 039 t; Cameroon, 62 529 t; Côte d'Ivoire, 60 764 t; Gabon, 10 000 t; Togo, 14 755 t; Benin, 9 693 t and Equatorial Guinea, 36 000 t.

Principal References

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Preparation and Format

Each of the major commercial groups is introduced by a schematic illustration showing the main parts of a typical representative and some measurements and technical terms of general use to fishery workers. In order to facilitate identification, the chapters on bony fishes, sharks and batoid fishes are preceded by an illustrated guide to the different families. The arrangement of families within a resource group and of genera and species within a family is strictly alphabetical (by scientific name).

The information by species contains valid scientific names, synonyms or other scientific names still in use, FAO names (English, French and Spanish), size (maximum size and/or common size), fishing gear and habitat. Each species is represented by a line-drawing, on which the most important diagnostic characters are indicated. Furthermore, the identification of many species is facilitated by the presentation of colour illustrations.

In view of the numerous languages and dialects spoken in the area and of the fact that for many species unequivocal names are not yet available, it was decided not to incorporate any local/national names, but to leave a space for this information to be filled in by users. After the document has been used in the field for some time, an addendum to the field guide, giving local/national names, is planned by RAFR.