



## Planktonic diversity in the Senegalese upwelling system: what can we learn now from the the spatial observation?

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Reçu le 13/12/2016; publié le 15/03/2017

AWA © MS WP2\_S3\_109

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### Abstract

Remote sensing techniques based on the measurement of the “Ocean color” allow to estimate a proxy of the phytoplanktonic biomass through the estimation of “chlorophyll a” concentrations in surface waters with generic algorithms, now from almost two decades, in a near operational way. Although it incompletely describes the water column structure, this estimation is often used to estimate the marine primary production of a full ecosystem. Despite the fact that the precision of such measurements largely varies according to optical properties of the atmosphere and ocean (between 30% in oligotrophic clear water and much more in coastal waters), the optimal use of the “Ocean color” can be used in a more qualitative way, to estimate other significant patterns. The most promising is the statistical estimation of occurrences of Phytoplanktonic Functional Types (PFTs) from the analysis of differences in the reflectance spectra of the sea water. Other techniques, from the emergence of multi-spectral measurements, that allow a much more precise estimation of reflectance spectra from the sea surface, or the direct measurement of the natural fluorescence of the phytoplankton, related to the photosynthetic activity, are surprisingly extremely under-used. Moreover, most of these techniques are poorly related to in-situ measurements, a key point in their application to ecological studies. We investigate some reasons of such a situation and propose some ways to improve it.



Commission Sous-Régionale des Pêches  
Sub-Regional Fisheries Commission



# International Conference ICAWA 2016

Extended book of Abstract

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ISBN: 978-2-9553602-0-5



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**EDITED BY:**

Patrice BREHMER (IRD-France; Dakar), Babacar BA (CSRP, Sub-Region; Banjul) & Gerd KRAUS (TI, Germany; Hamburg).

**TECHNICAL SUPPORT:** Marie Madeleine GOMEZ (CSRP), Ndague DIOGOUL (IRD-UCAD).

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Bamol Ali SOW , Alban LAZAR, Heino FOCK, Xavier CAPET, Aka Marcel KOUASSI, Idrissa Lamine BAMY, Osvaldina SILVA, Eric MACHU, Vamara KONE, Moustapha DEME, Didier JOUFFRE, Joern SCHIMDT, Modou THIAW, Suzanne TRAORE, Abdoulaye DIOP, Justine DOSSA, Didier JOUFFRE, Ibrahima DIALLO, Arnaud COMOLET, Zacharie SOHOU, Hamet DIADHOU, Célestin BLE, Rafael ALMAR, Moussa SALL, Abou BAMBA, Dano J.A. ROELVINK, Ibrahima LY, Marie BONNIN , Dienaba Beye TRAORE, Adama MBAYE, Hassane Dedah FALL, Mohamed M'barek O. SOUEILIM.

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**ISBN:** 978-2-9553602-0-5

Sub Regional Fisheries Commission / Commission Sous Régionale des Pêches ©2017

**COVER DESIGN:** AWA (BMBF – IRD) project

**LOGO AND FLYERS:** Laurent CORSINI (IRD)

**TRANSLATION:** Amadou NDIONE (independent)

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