



## Distribution and Biomass of phytoplankton over the Senegalese shelf: A need for regional ocean colour algorithm

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

AWA © MS WP2\_S2\_82

### Abstract

The acquisition and processing of 1179 images from the SeaWiFS (Sea-viewing Wide Field-of-view Sensor) sensor on board the Seastar satellite enabled us to monitor the chlorophyll a (Chl-a) between December 2003 and November 2007 over the Senegalese plateau. The level 1 data from this sensor were processed using an algorithm combining a neuronal classification and Self Organizing Maps before retrieving chlorophyll-a concentrations with a variational method (S-NV). The results obtained allowed us to distinguish a typical seasonality and a strong spatio-temporal variability of phytoplankton over the Senegalese plateau. The spatial distribution is marked by a maximum concentration along the coasts and especially south of the Cape Verde peninsula. Temporal variability is marked by a concentration that increases from winter to spring with a high spring concentration that exceeds 13 mg/m<sup>3</sup> on average, a sharp decline in summer, and a new increase in autumn. The phytoplankton mean biomass estimated using the standard OC4V4 SeaWiFS algorithm was ~5 mg/m<sup>3</sup> while the S-NV algorithm provided a mean concentration of ~4 mg/m<sup>3</sup>. Although estimates are comparable, S-NV allows to obtain a mean annual coverage over 50% while S-STD reached only 24%. Seasonal differences can be even stronger. Over the investigated period, years 2004 and 2007 show the highest concentrations in spring. S-STD give concentrations over 17mg/m<sup>3</sup> whereas S-NV provide values of ~6mg/m<sup>3</sup> for the same year/month. Results indicate that S-NV algorithm generates concentrations in better agreement with in situ observations than the standard algorithm.



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), Ndagoue DIOGOUL (IRD-UCAD).

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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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