Sea surface temperature survey using Meteosat Second Generation along the Senegalese cost.

Mbaye Diop
Laboratoire d'Enseignement et de Recherche en Géomatique (LERG)
Campus universitaire de l'ESP
Email : mbdiop@gmail.com

Abstract

African economy is highly dependent from the good management of natural resources. One of the consequences of this dependency is the vulnerability in the climatic fluctuations which can negatively impacts on the earth and marine ecosystems. Therefore, a good meteorological and environmental survey system is an appropriate strategy to prevent natural disasters and allow resources conservation.

At oceanic level, the sea surface temperatures are an important factor of fish's migration. The upwelling phenomenon is accompanied with mineral substances concentration and the development of the phytoplankton, an important element in the food chain of fish. Nowadays, the most important part of fishes captures are given by the artisanal boats which has no equipment to follow this very variable phenomenon in time and in space, to optimize the expenses.

With the spatio-temporal dynamic of oceanic and earth phenomenon, satellite tool constitutes a good one to accomplish a permanent environmental survey, with the synoptic vision and the possibility of high temporal resolution.

The estimation of the sea surface temperatures (as an indicator of fish's richness in the ocean) is based on the brightness temperature measured in thermal channels, while taking into account atmospheric effect across its different constituents.

The presence of clouds can provoke an underestimation of the temperatures of the SST oceanic surface (TSO) and requires then to be identified well.

The transparent spectral windows (3.5-4.1 µ, 8.5-8.9 µ, 10.0-13.0 µ) are therefore chosen to measure the temperature of the ocean. In this work, infrared bands 10.8 µ and 12.0 µ were chosen, while the cloud mask is performed using the *Clm* product available via the receiving station MSG data (*Eumetcast* station) or by the application of a threshold on the visible 0.8 µ channel. The SST values are calculated in the spatio-temporal resolution of the satellite. A daily synthesis is then performed in an operational way, from data collected between 10 am and 6 pm. The calculated SST are validated by comparing them with historical data and with OSI-SAF data which are a reference in the field.

Key-words: Meteosat Second Generation, Sea Surface Temperature, survey, dissemination, fishery.