Potentialities and difficulties of application CoastColour data to the Egyptian Coastal Waters

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Why CoastColour (and other OC) data are very important for the Egyptian Coastal Waters (Sites 3 and 13)?
1. Egyptian Mediterranean (Nile delta and SE Levantine, Site 3):
The Nile Phytoplankton Bloom

MODIS image taken in Feb. 2003 (courtesy of NASA)
The Nile Phytoplankton Bloom

MODIS image taken in Feb. 2003 (courtesy of NASA)

Major outfalls / land-based sources along the delta coast and quantities of effluents discharged each day (in million m³)
The Nile bloom in Feb. 2003 (MODIS Image, courtesy of NASA)

The Modern Nile Bloom

Post-High Dam > early 1980s ??

Anthropogenic, multispecies (dinoflagellates and diatoms), and extensive in time and space (winter and spring).
The Nile bloom in October 1964 (Halim 1967).

**The Classic Nile Bloom**

*Pre-High Dam < mid 1965*

Natural, monospecific (diatomic), variable in magnitude, and timely in autumn only.
Impacts of Aswan High Dam on marine productivity

The Nile bloom in October 1964 (Halim 1967).

From Nixon (2004)

From El-Sayed & van Dijken (1995)
Impacts of Aswan High Dam on coastal Fisheries

From Nixon (2004)
From El-Sayed & van Dijken (1995)
2. Egyptian Red Sea (Site 13):

Figure from Status of the World's Coral reef (2008)

Moufaddal (2005)
2. Egyptian Red Sea (Site 13):

Areas of coral reefs subjected to dumping in a 16-years period (1984-2000)

Moufaddal (2005)
Why CoastColour (and other OC) data are very important for the Egyptian Coastal Waters (Sites 3 and 13)?

1. Egyptian Mediterranean (Nile delta and SE Levantine, Site 3):
   - Very dynamic
   - Very high biological variability
   - Subjected to historical changes & regime shifts (off the Nile delta coast)

2. Egyptian Red Sea (Site 13):
   - Host some of the most diverse and productive ecosystems (coral reefs, seagrass, etc)
   - Receiving very high pressure from rapid tourism development, urbanization and other human activities
Previous & Current Contributions from Regional & EU Initiatives

- **GlobColour (ESA-DUE Project)**

- **EAMNet (Europe-Africa Marine Network)**

- **CoastColour**
Potential Applications of CoastColour (and other OC) Data to Egyptian Coastal Waters

Development and calibration of a good local algorithm for the Egyptian Mediterranean and Red Seas will be very useful for:

- Mapping mesoscale and submesoscale features prevailing in the SE Levantine Basin
- Assessment pattern & variability of chl-a distribution in the Nile delta shelf
- Revealing long-term trend of growth of chl-a
- Proper management of coastal and marine fisheries
- Management and protection of sensitive habitats of the Red Sea
- Other coastal applications
“Champion” Problems of a “Champion” User .. !!

- Local and sparse in-situ measurements
- Limited to coastal inshore area (not offshore)
- Limited to Chla, TSM and Transparency (no more)
- Sometimes with no date of sampling, no coordinates ..!!
- Sometimes not accurate and their results can’t be trusted
- Rare regular long-term monitoring sampling programs
- Data collected from short-term programs are either not available or difficult to obtain !!
- No local algorithm
- ...What else ?!
Available in-situ data (my contribution to CoastColour)

Egyptian Mediterranean

Chl-a, TSM, & Transparency
- April, June, August & October 2007
- August 2009
Available in-situ data (my contribution to CoastColour)

Egyptian Mediterranean

Chl-a, TSM, & Transparency
- Sept. 2004 & Sept. 2006
- August 2009

Egyptian Red Sea
What’s Next ??

Have to wait till Feb. 2011 ..!

Thank You!