


Atlantic Research Institute of Marine Fisheries and Oceanography
(AtlantNIRO)

Canary upwelling system in ESRI ArcGIS 9.0

Resume

1. GIS in oceanography and fisheries
 2. Canary upwelling GIS (based on 20-th cruises of AtlantNIRO ships)
 - Work area and time constrains of 20-th cruises
 - Data layers
 - Remount sensing data
 - GIS Database
 - GIS Mapping
 - GIS Analysis
 3. Future ability (Digital atlas, geodata base, environmental modeling)
- 

Main GIS possibility

Main GIS Tools

1. Cartography tools
2. Data distribution
3. Monitoring tools
4. Decision support tools

Oceanographic data features

1. Spatial distribution
2. Full three dimension
3. Fuzzy boundary
4. Height dynamic environment

GIS data forma

Vector-points

Vector-line

Vector-polygon

Raster-pixel

Raster-voxel

Examples dataset

Hydrological station, wind measured

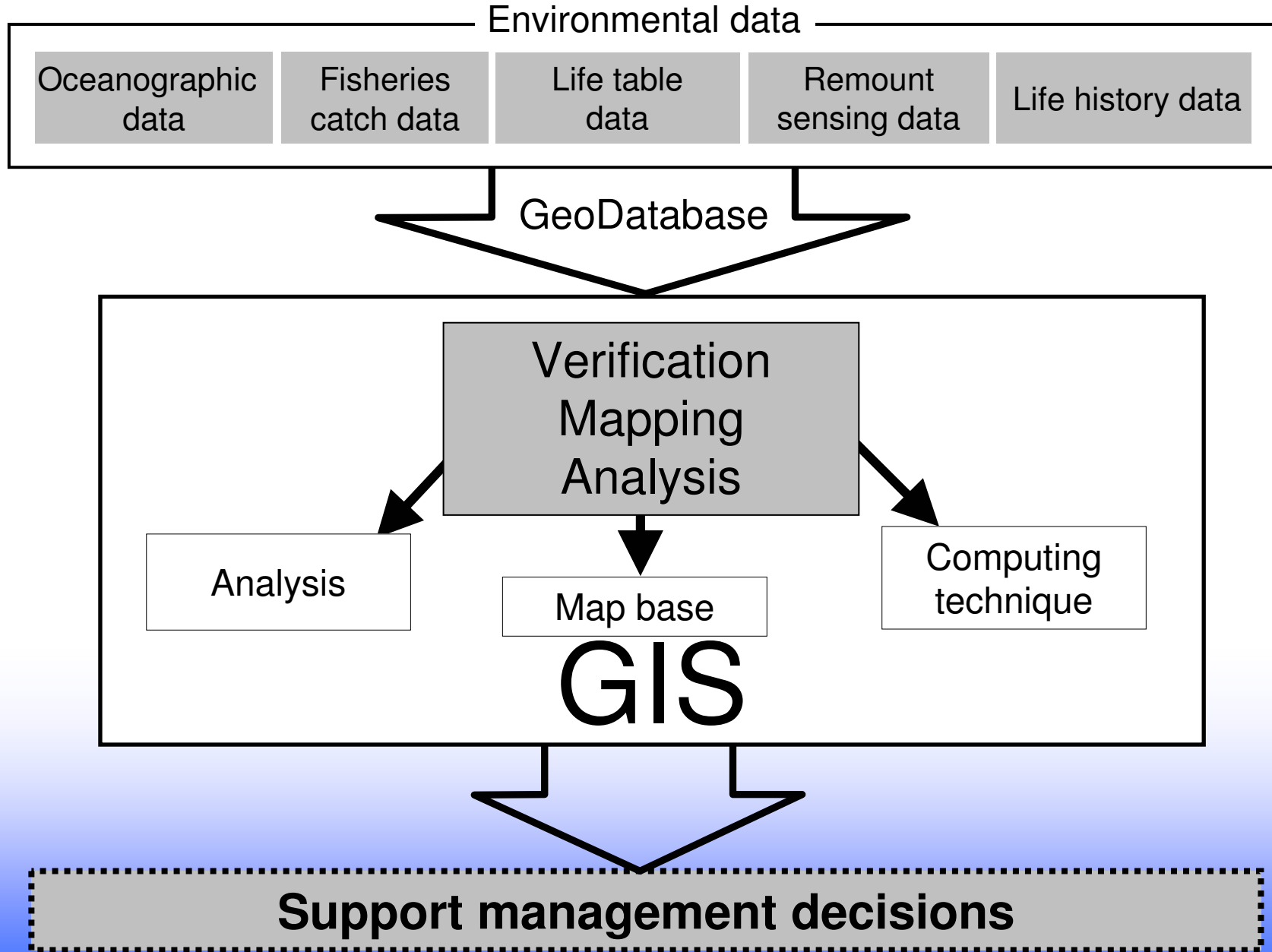
Coastline, Bathymetry

Fisheries, natural habitat data,
regions, spatial extent of fishery laws

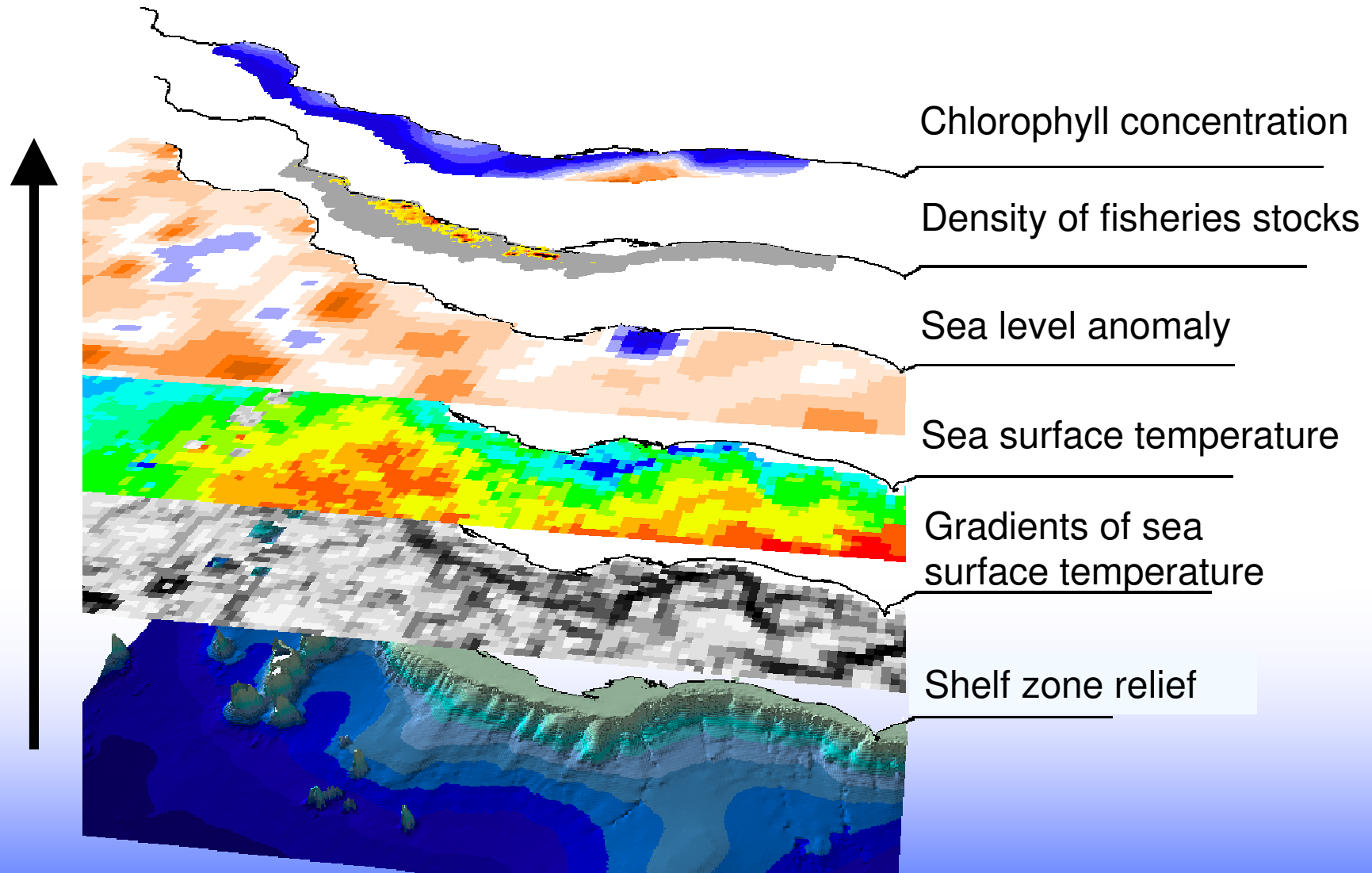
Remount sensing data

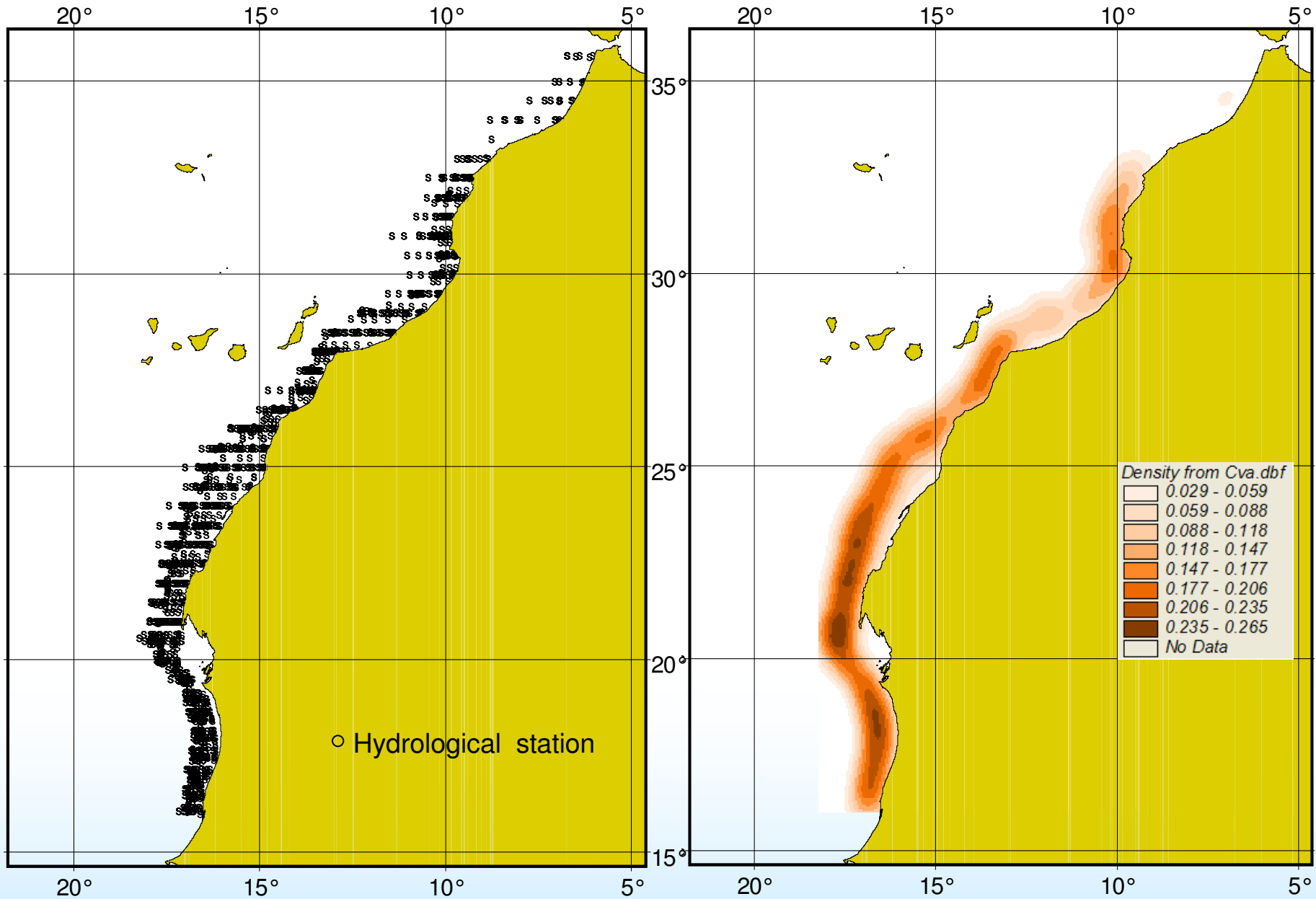
Sonar/hydroacustics data

Schema of processing



Examples of GIS Data Layers

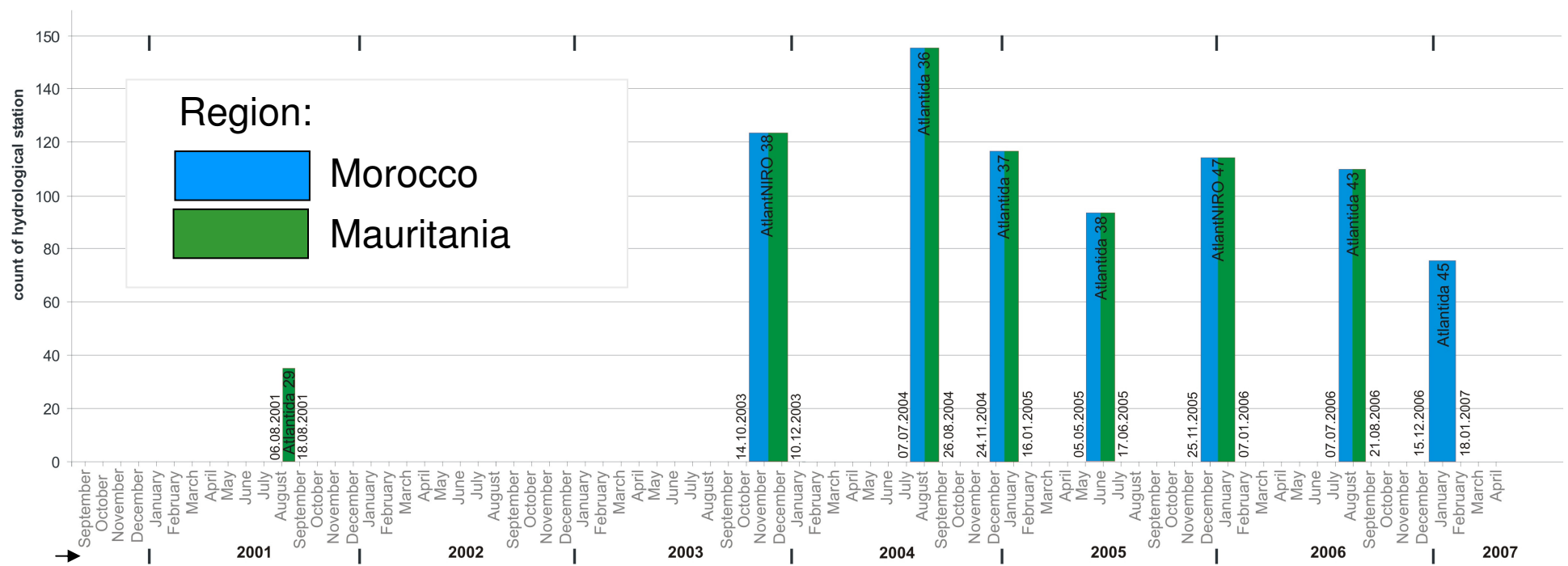
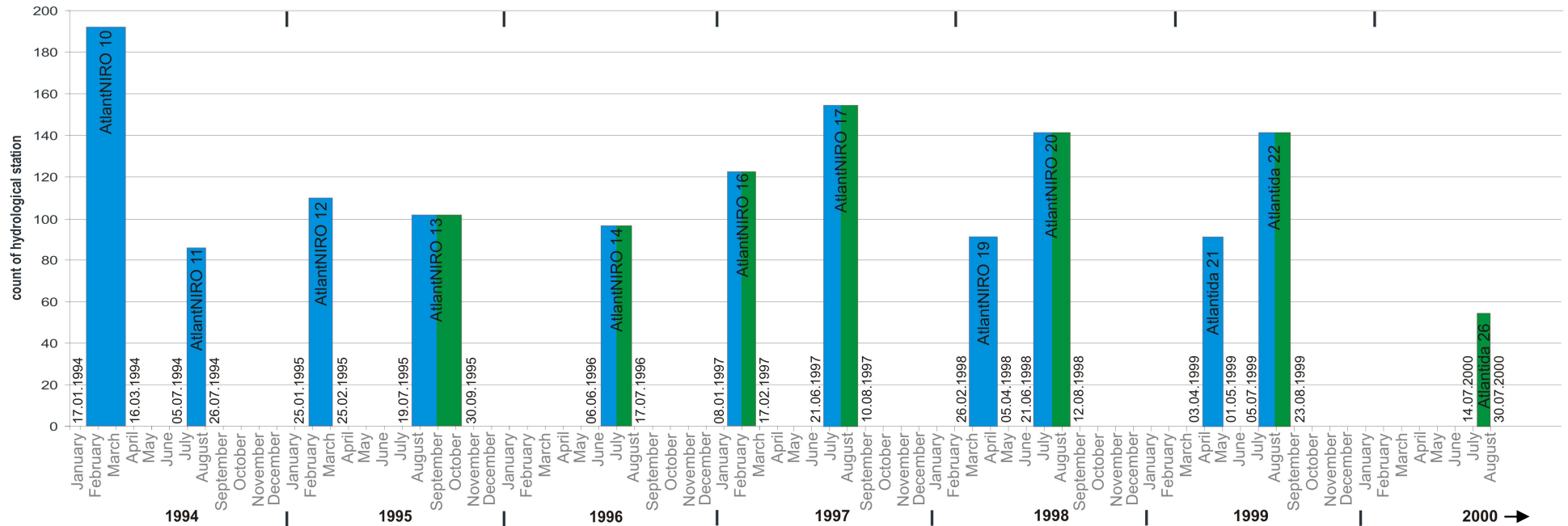




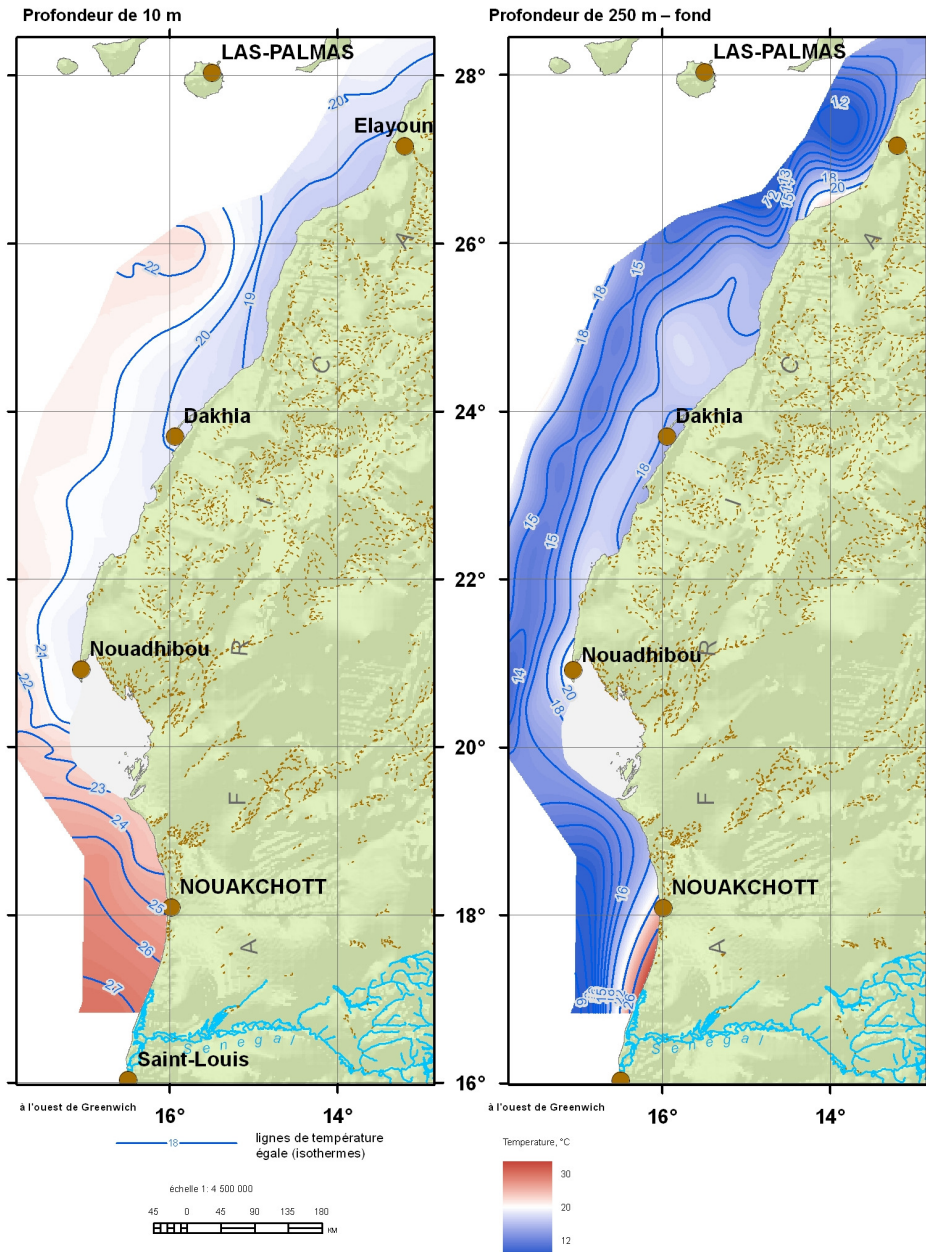
Spatial distribution of observe hydrological stations during 1994 – 2007

Spatial density of observe hydrological stations (station per nml²)

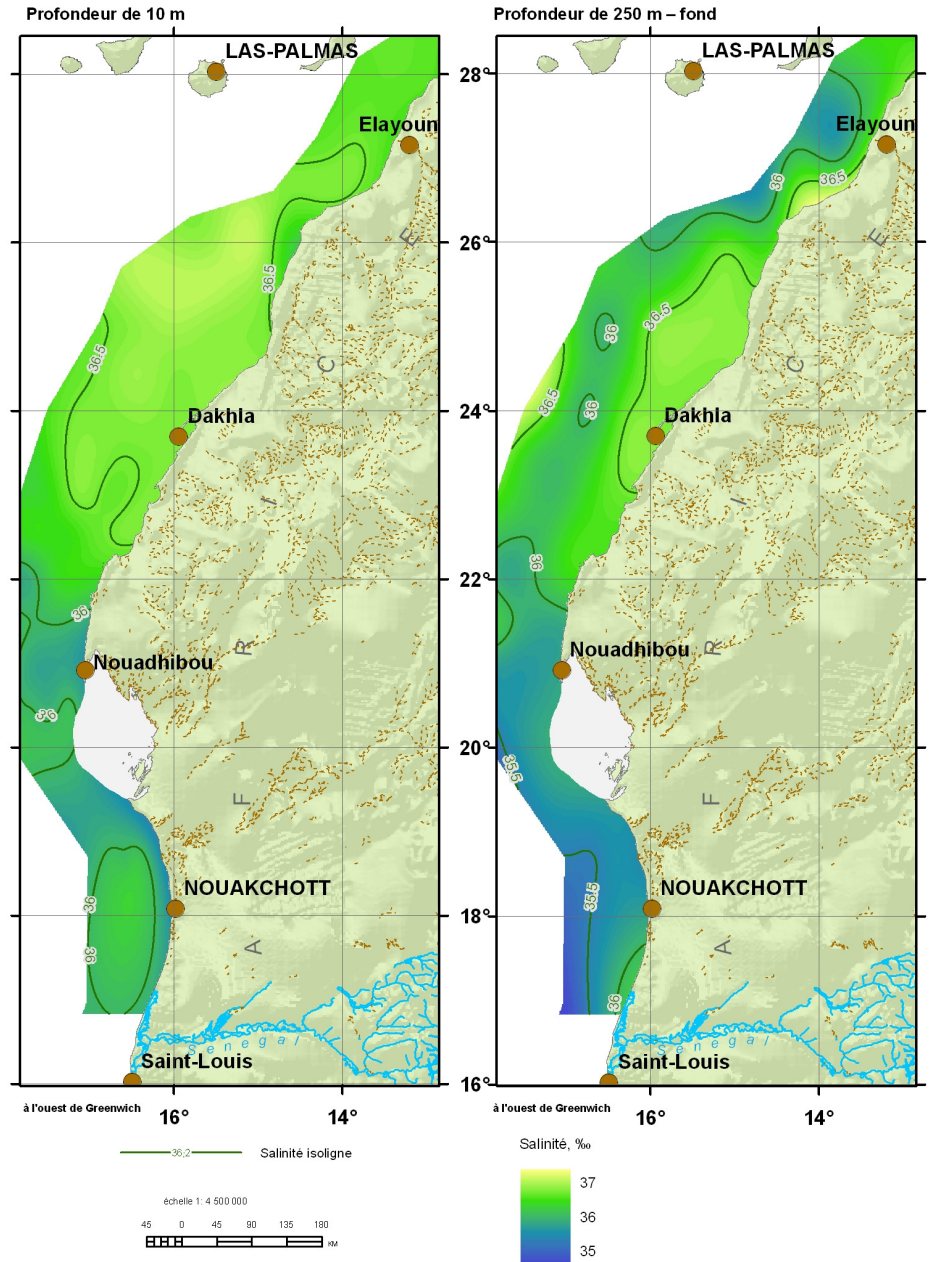
Time distribution of observation



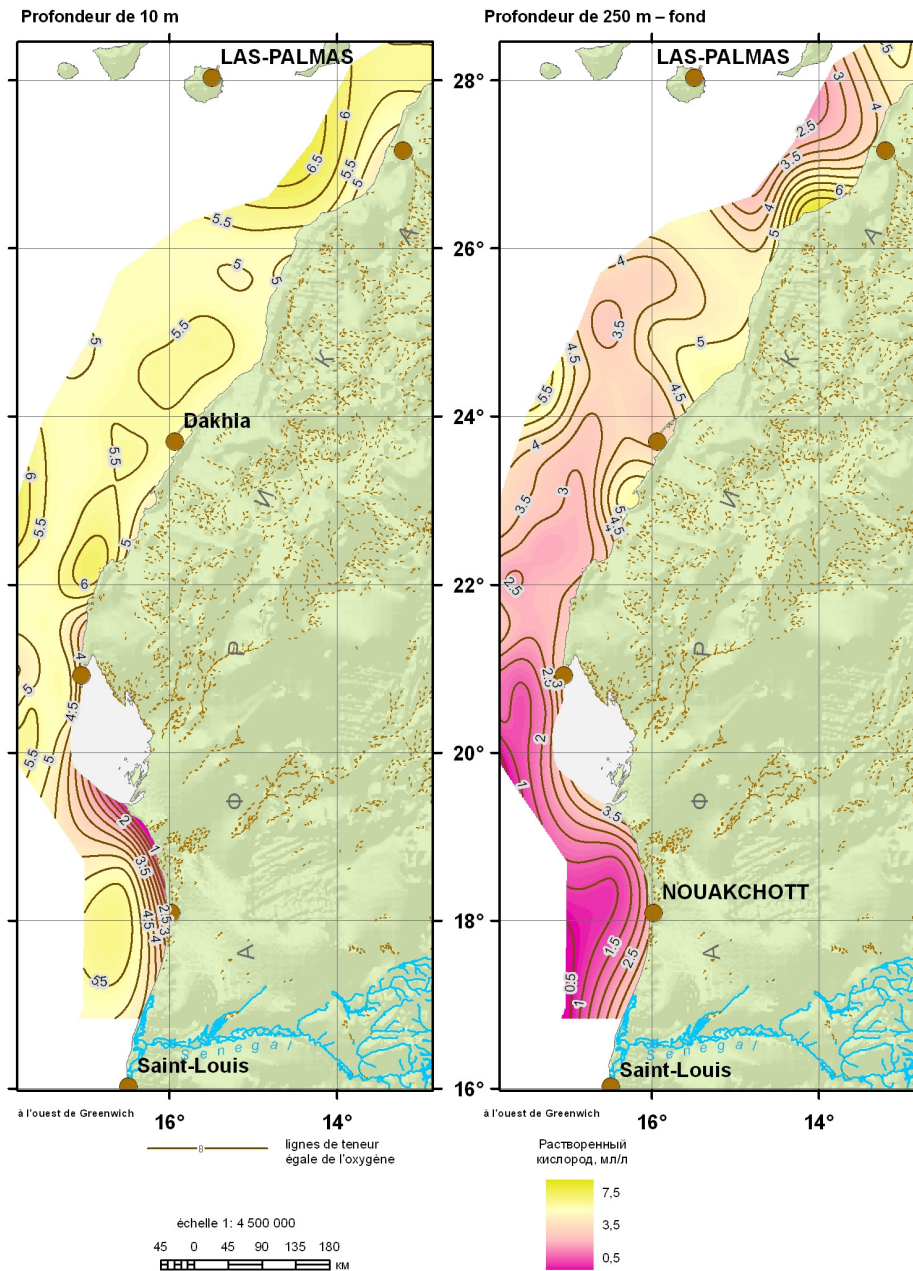
Température de l'eau (19 juillet 1995 - 30 septembre 1995)



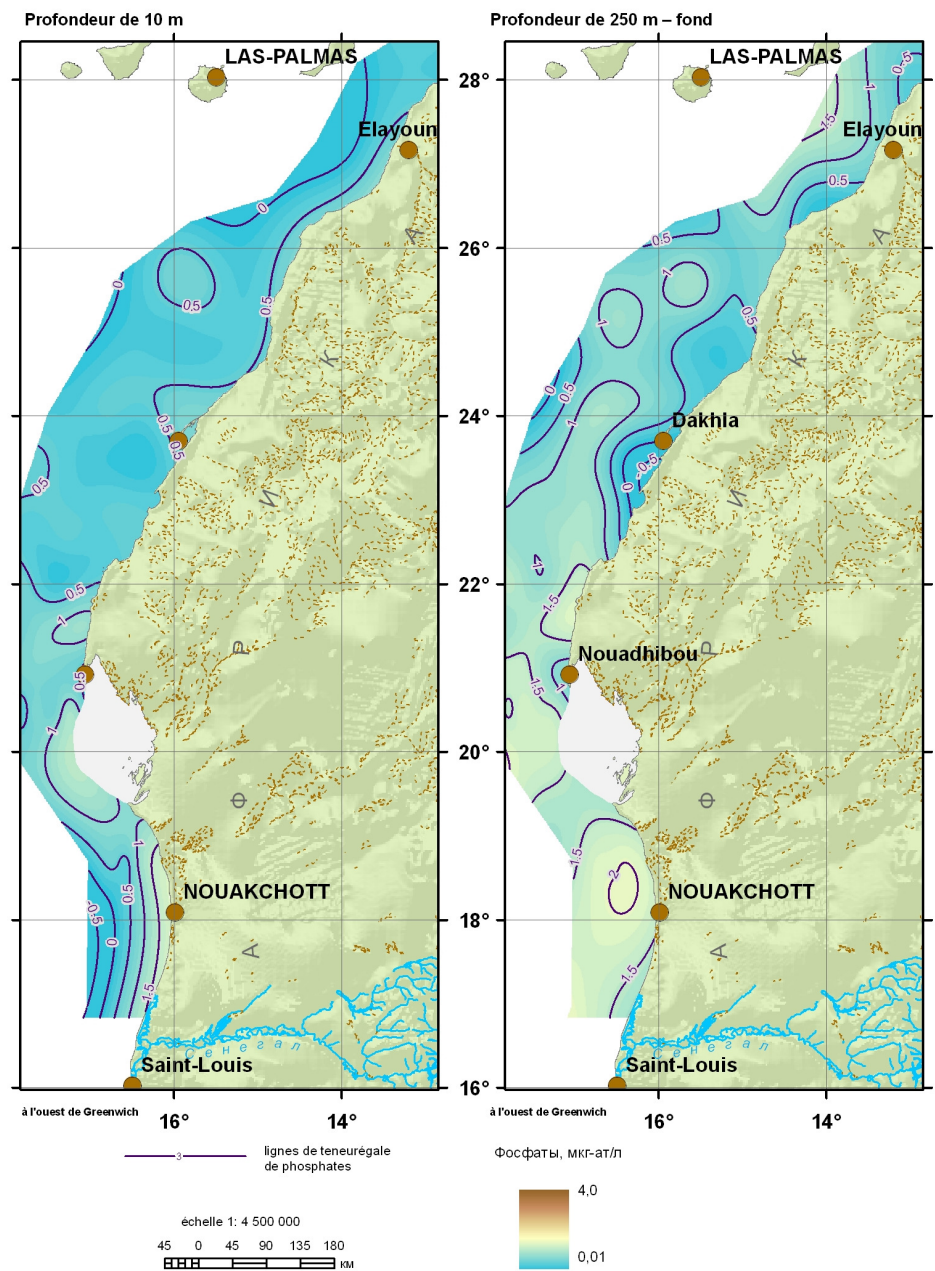
Salinité (19 juillet 1995 - 30 septembre 1995)



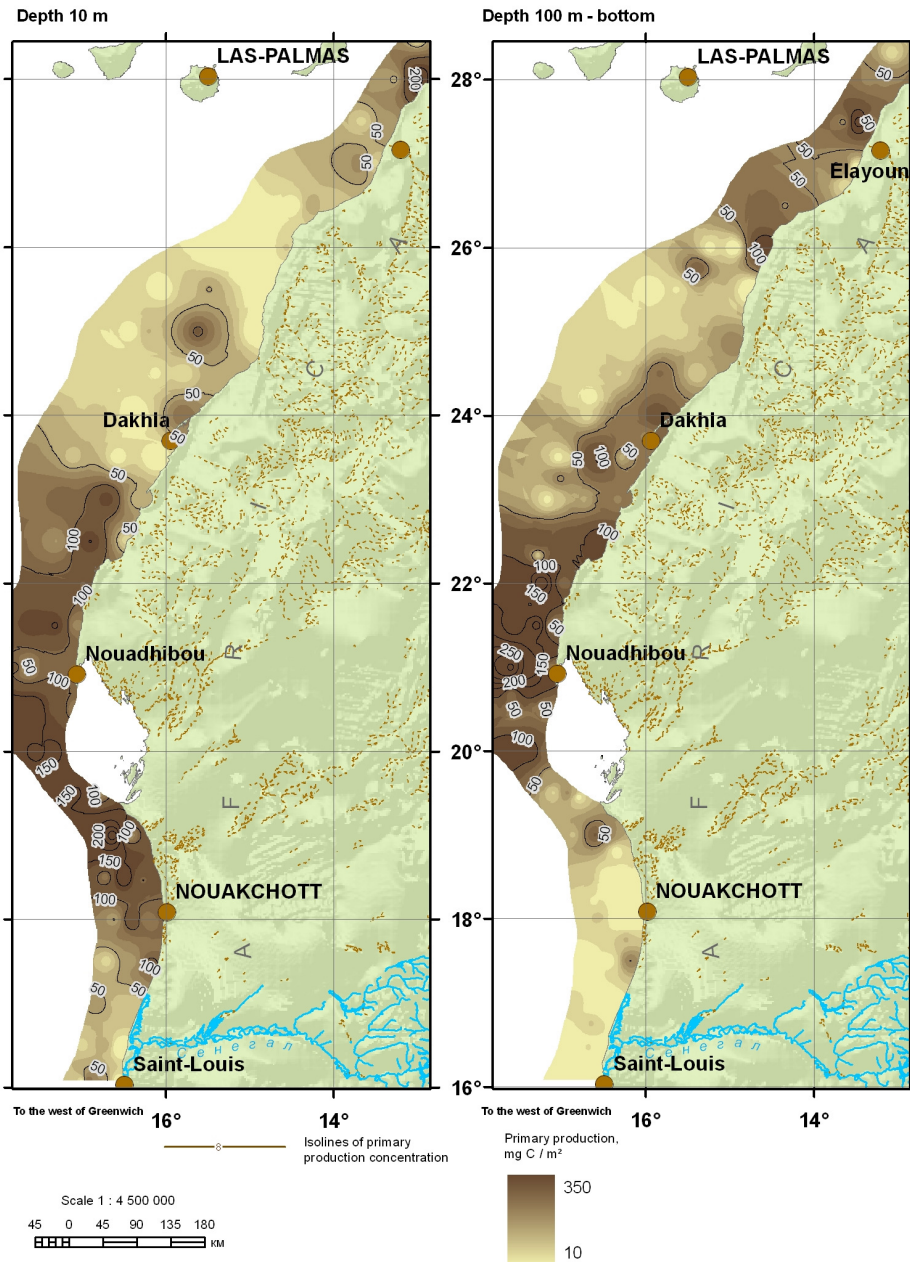
Oxygène dissous (19 juillet 1995 - 30 septembre 1995)



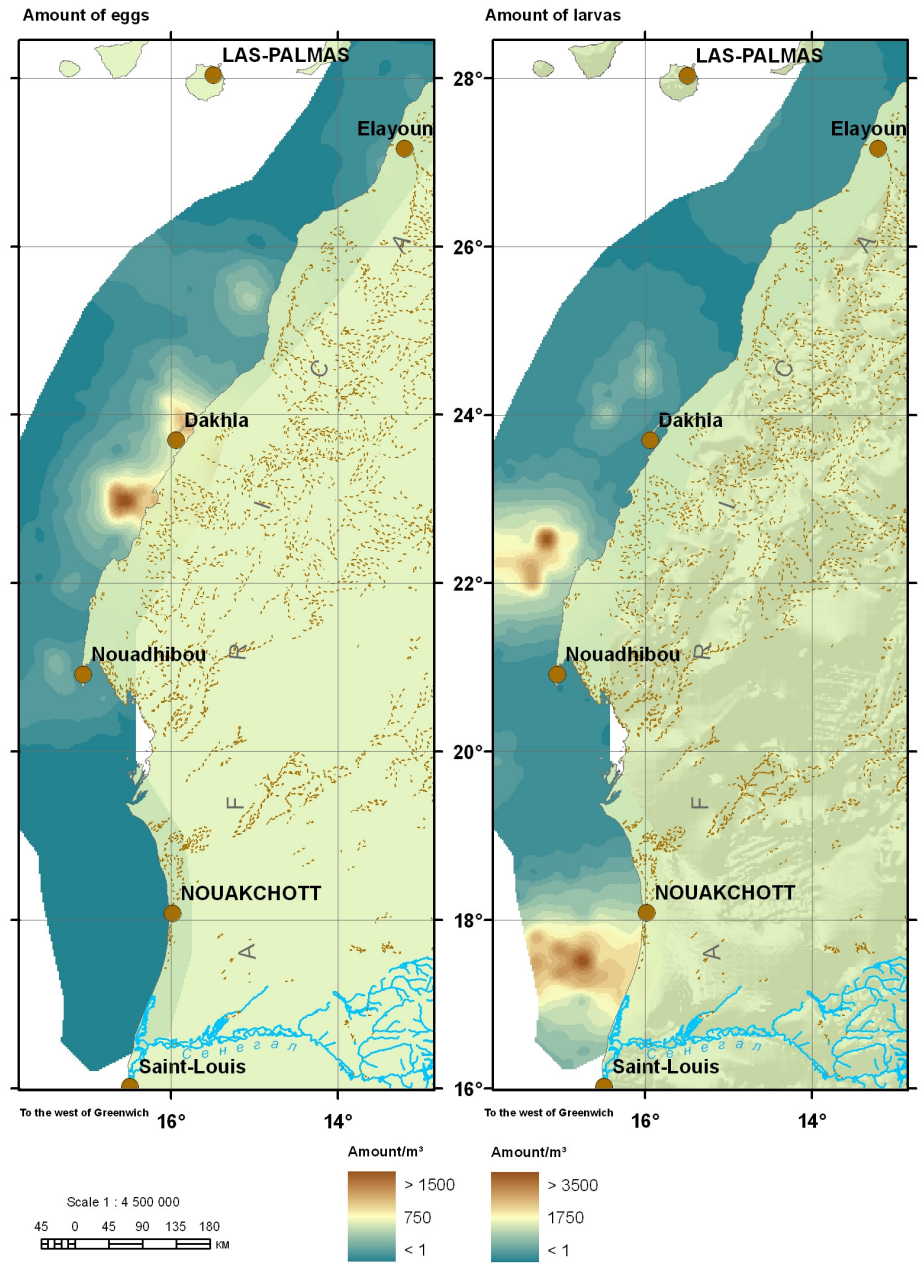
Phosphates (19 juillet 1995 - 30 septembre 1995)



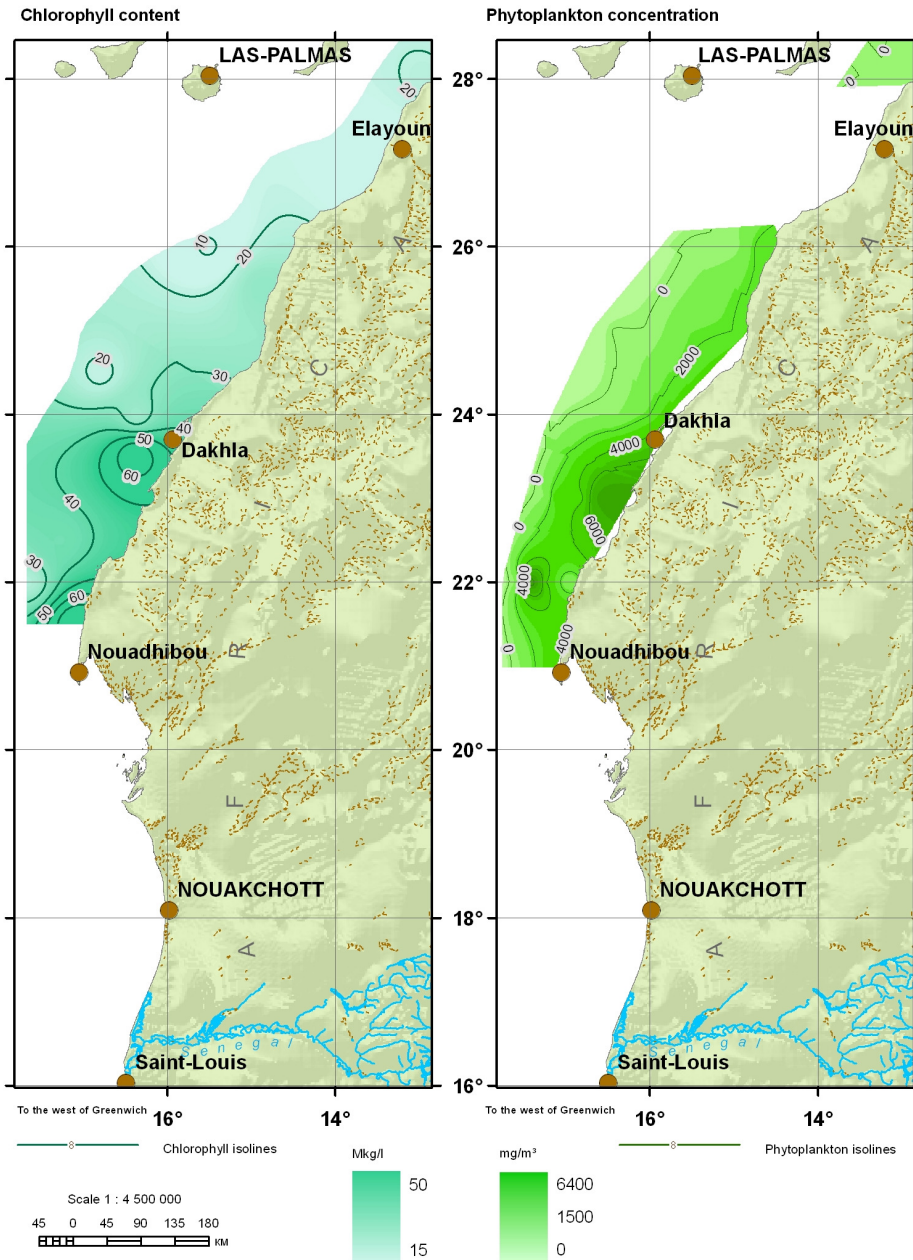
Primary production (19 July 1995 - 30 September 1995)



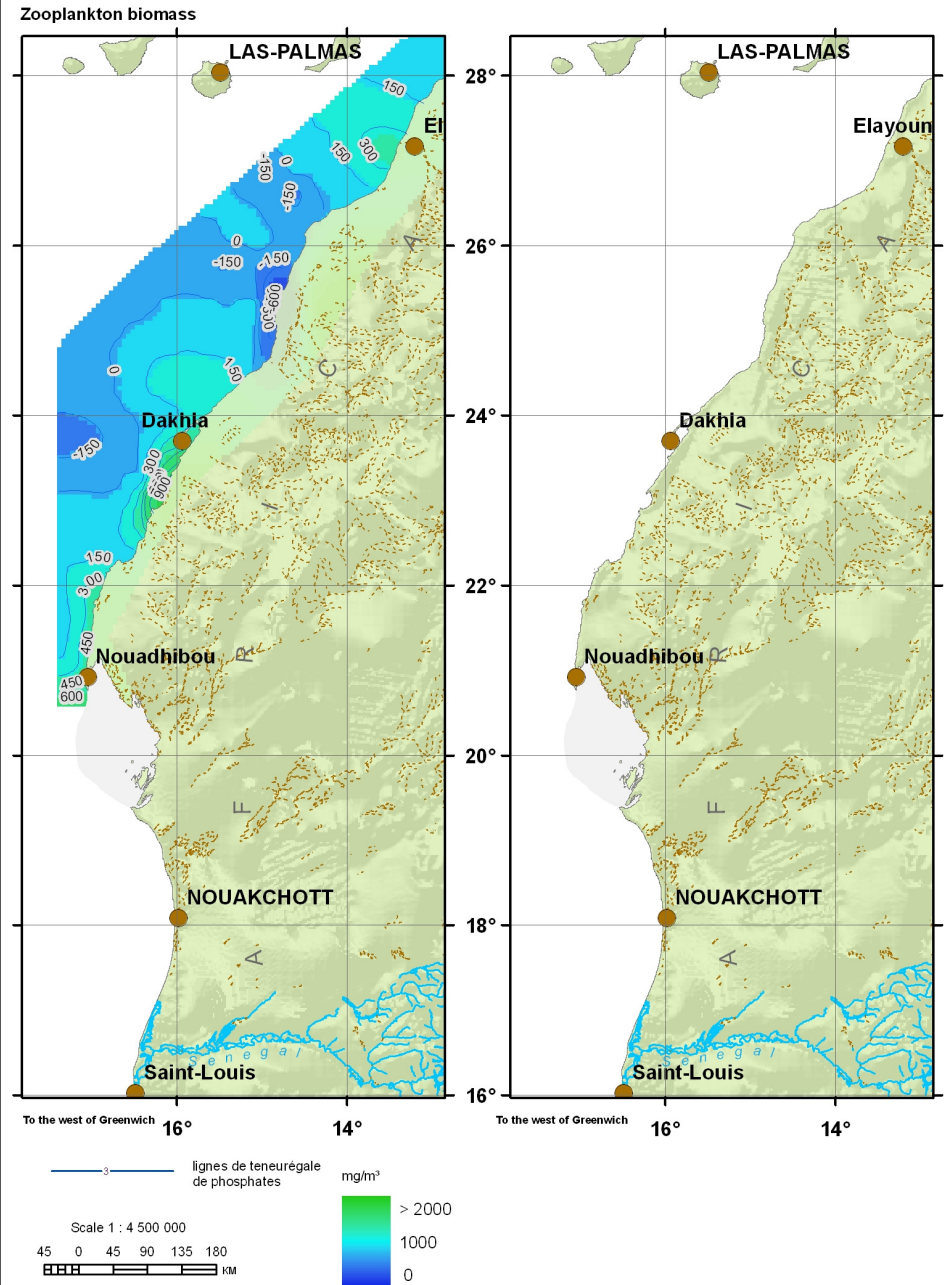
Ichthyoplankton distribution (19 July 1995 - 30 September 1995)



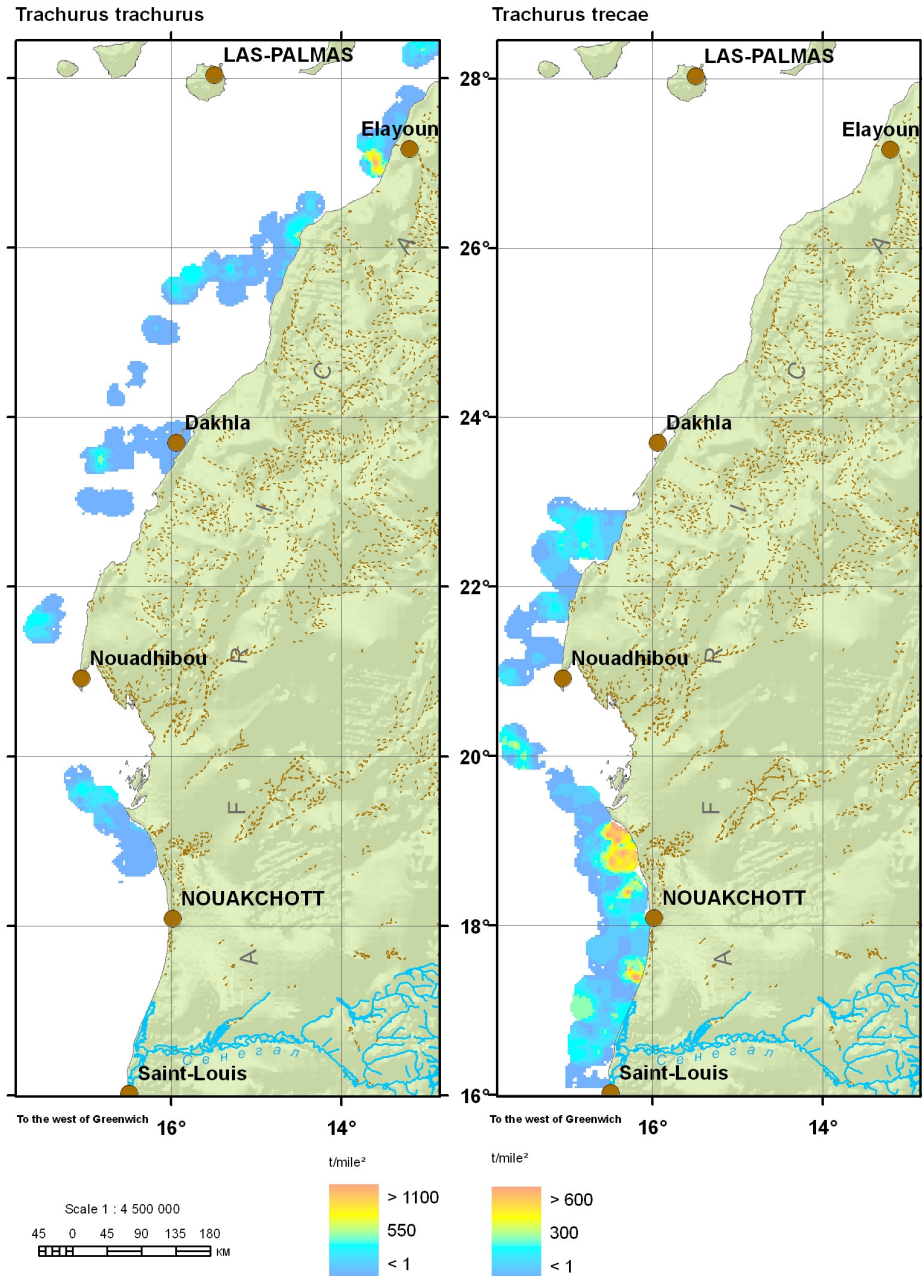
Chlorophyll concentration and Phytoplankton distribution (19 July 1995 - 30 September 1995)



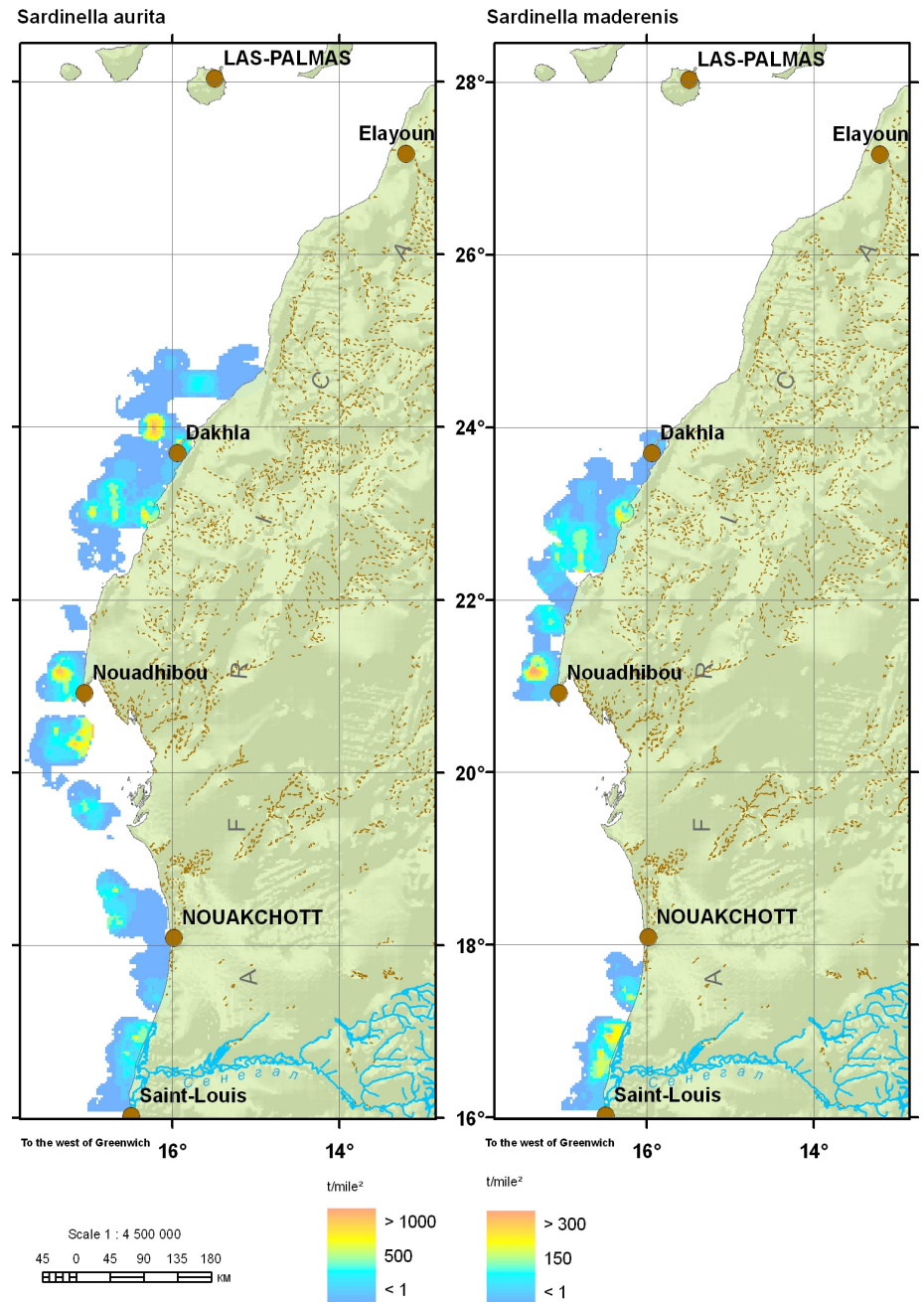
Animal plankton distribution (15 December 2006 - 18 January 2007)



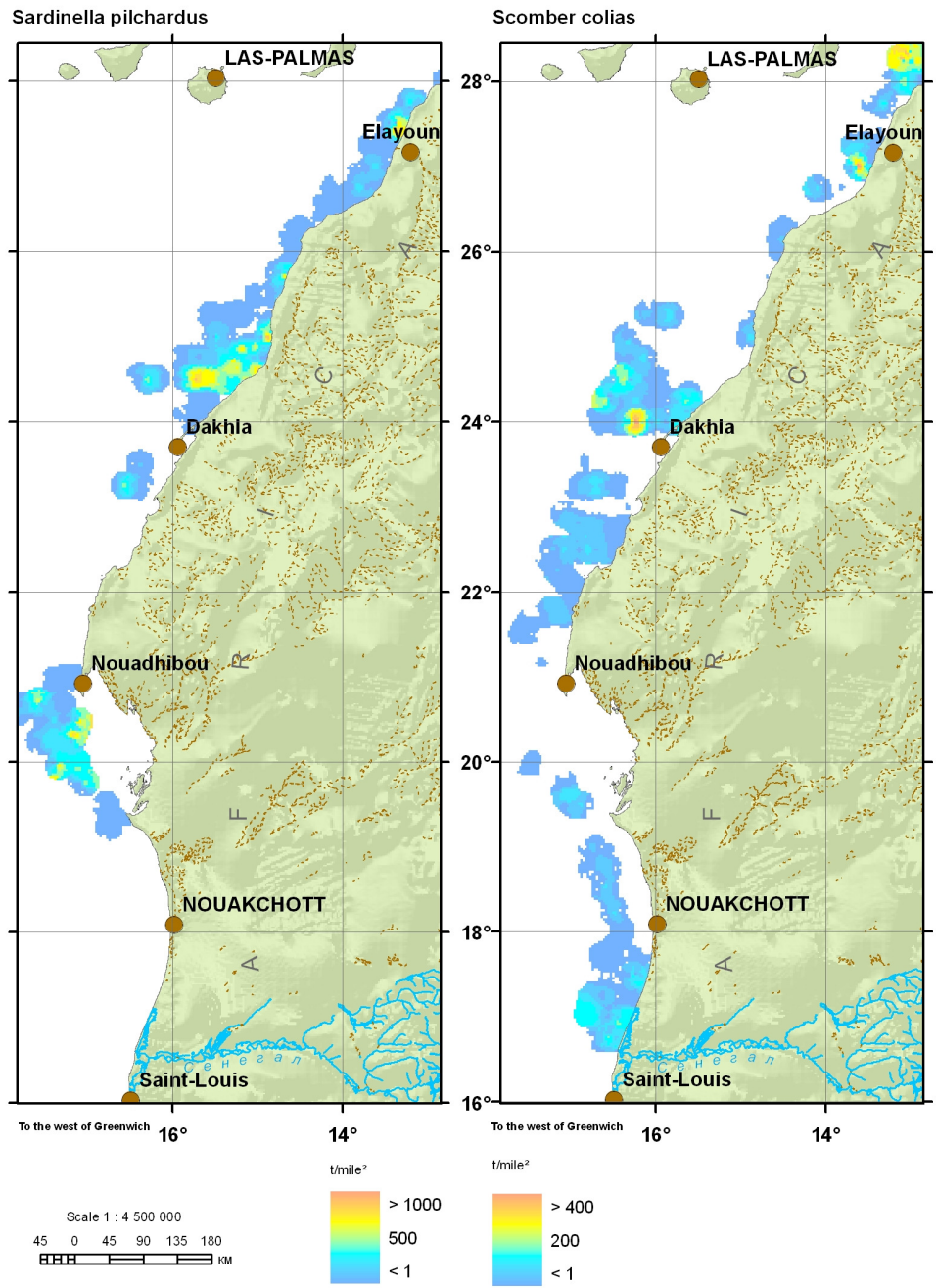
Fishery stocks density ((19 July 1995 - 30 September 1995))



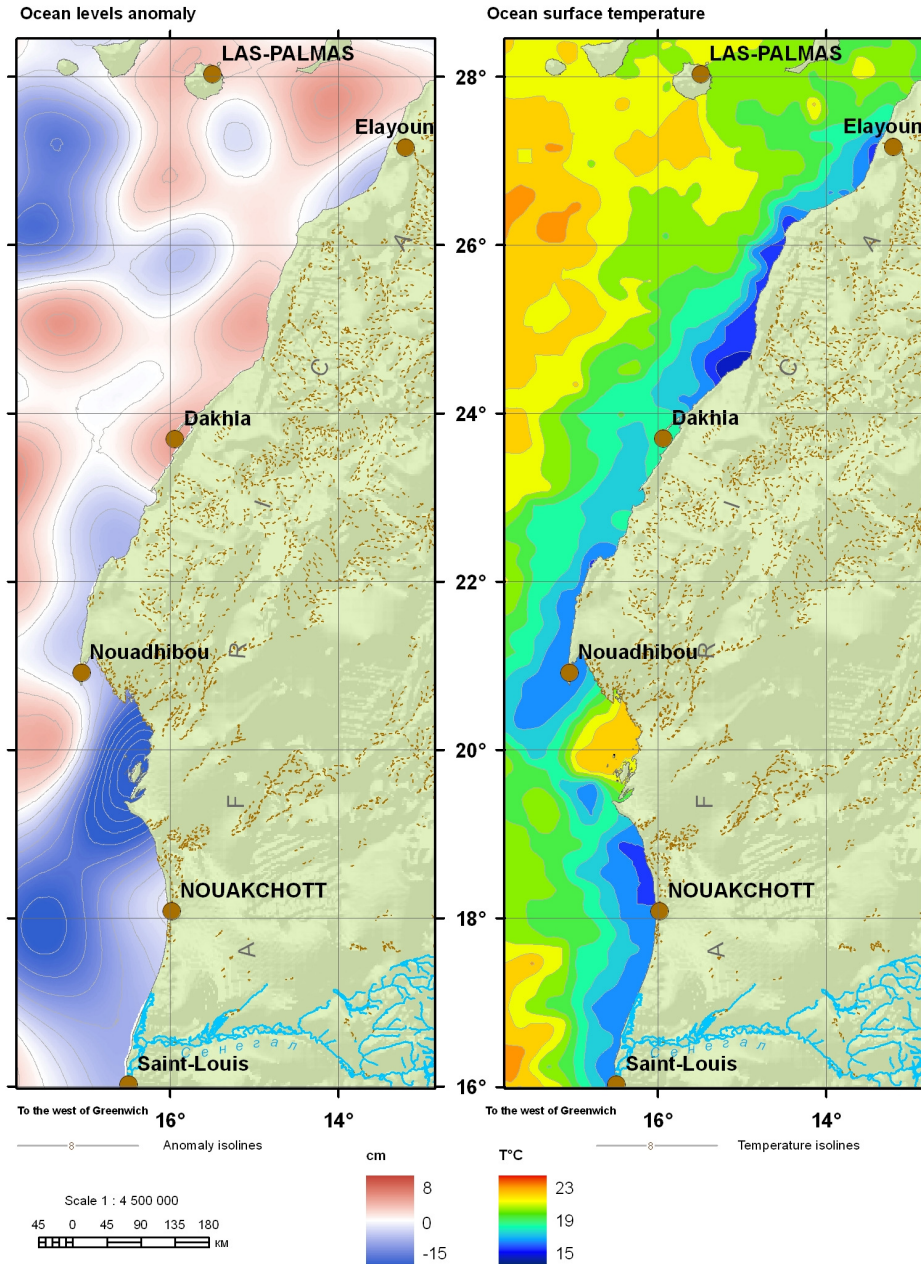
Fishery stocks density (19 July 1995 - 30 September 1995)



Fishery stocks density (19 July 1995 - 30 September 1995)



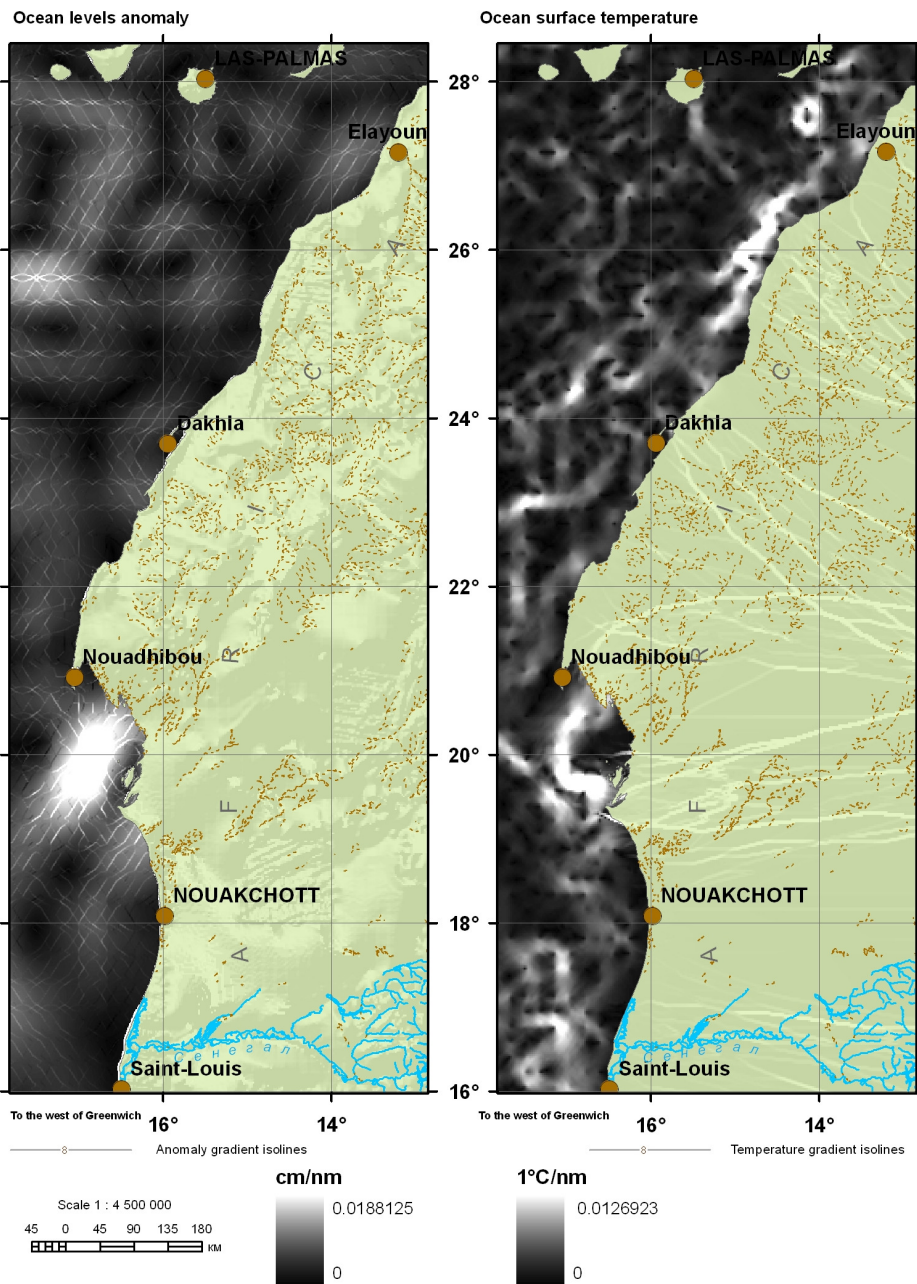
Remote sensing ocean data (may1995)



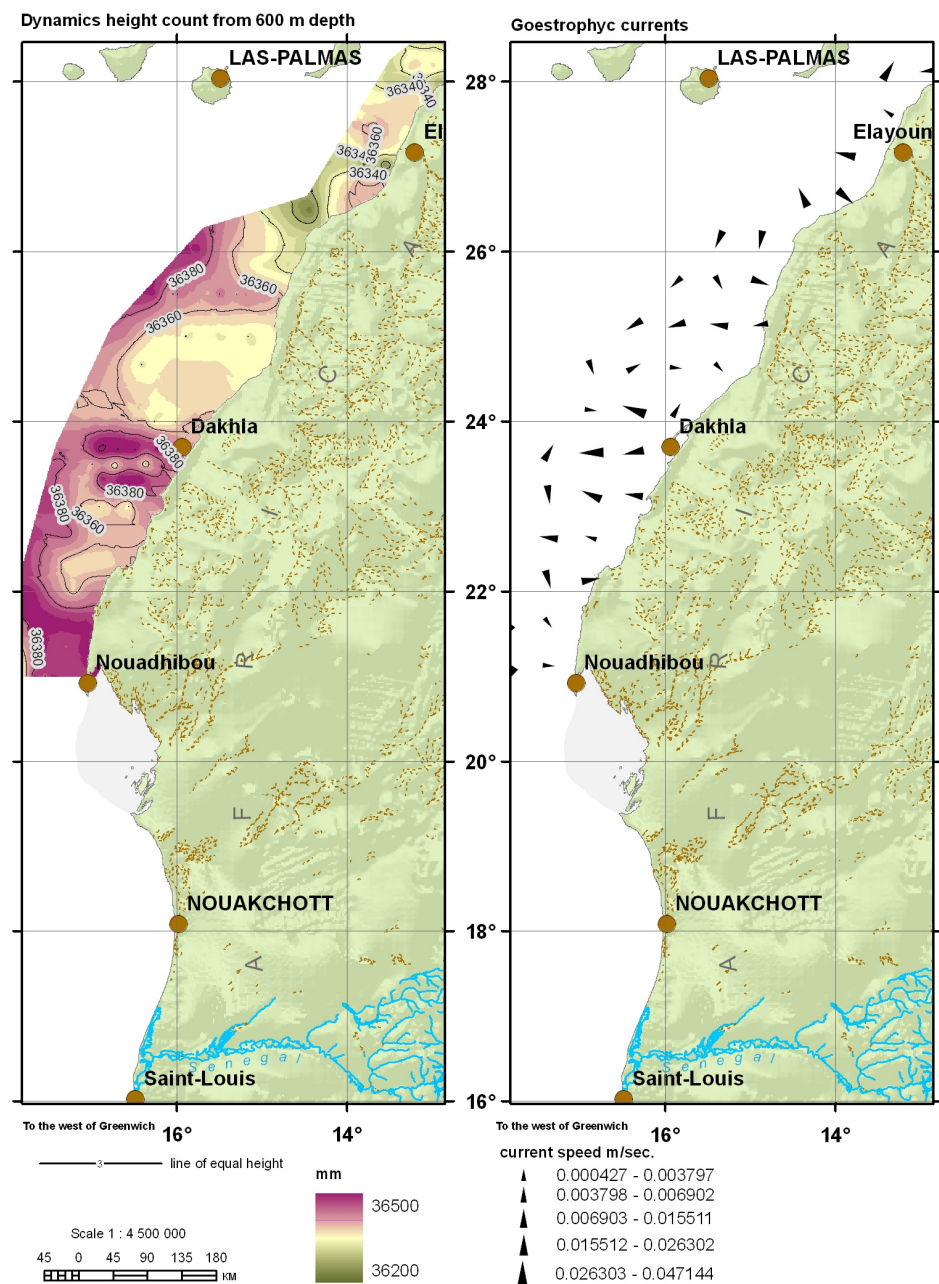
Additional GIS ability



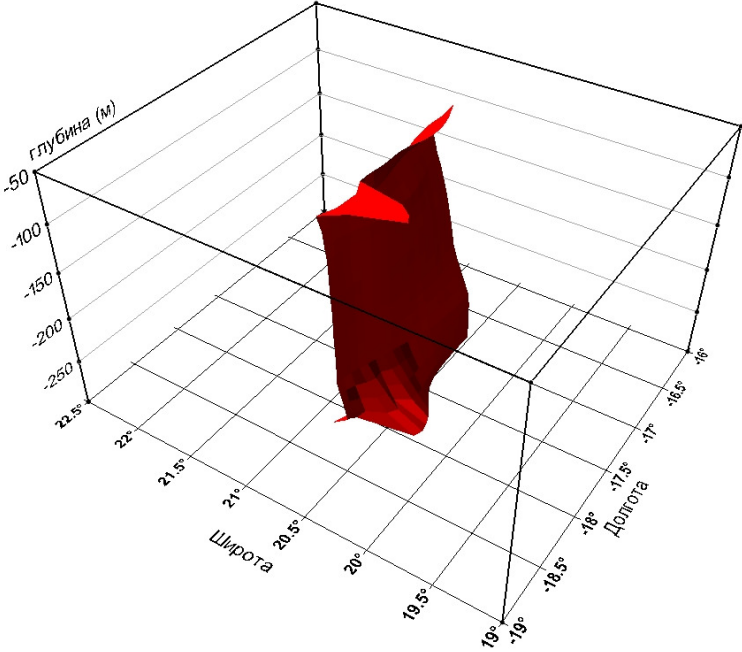
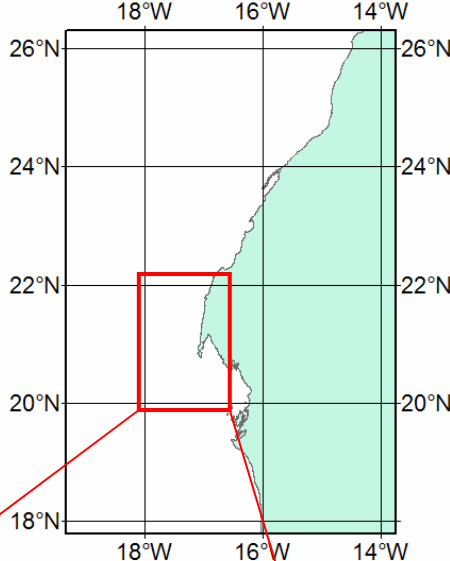
Gradient of altimetry and sea surface temperature (may1995)



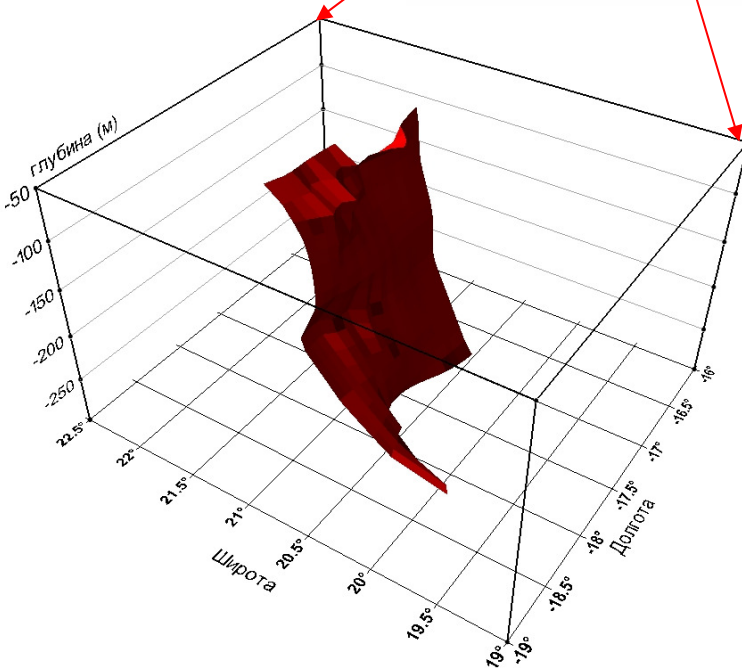
Dynamics height and geostrophic currents (15 december 2006 - 18 january 2007)



Shape of front between NACW and SACW

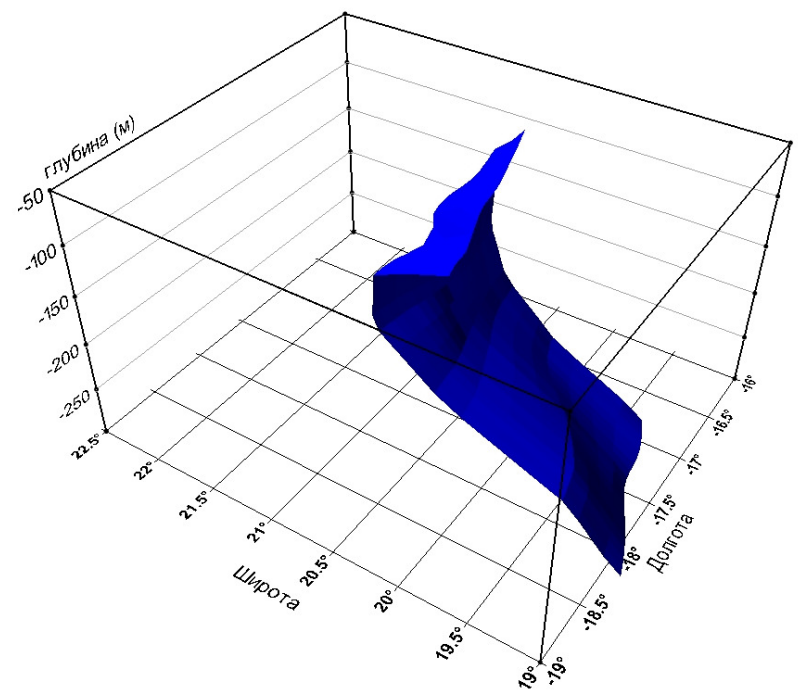
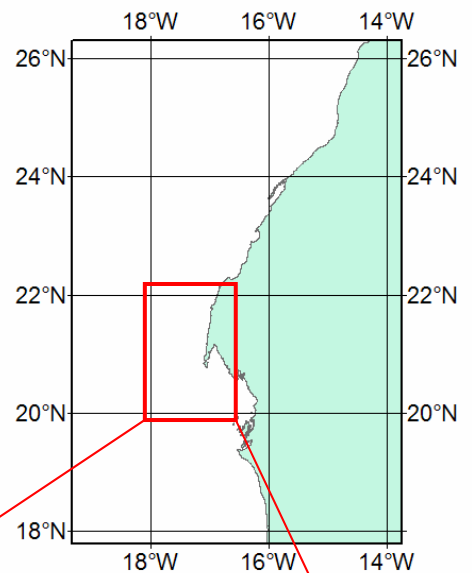


Summer 1995

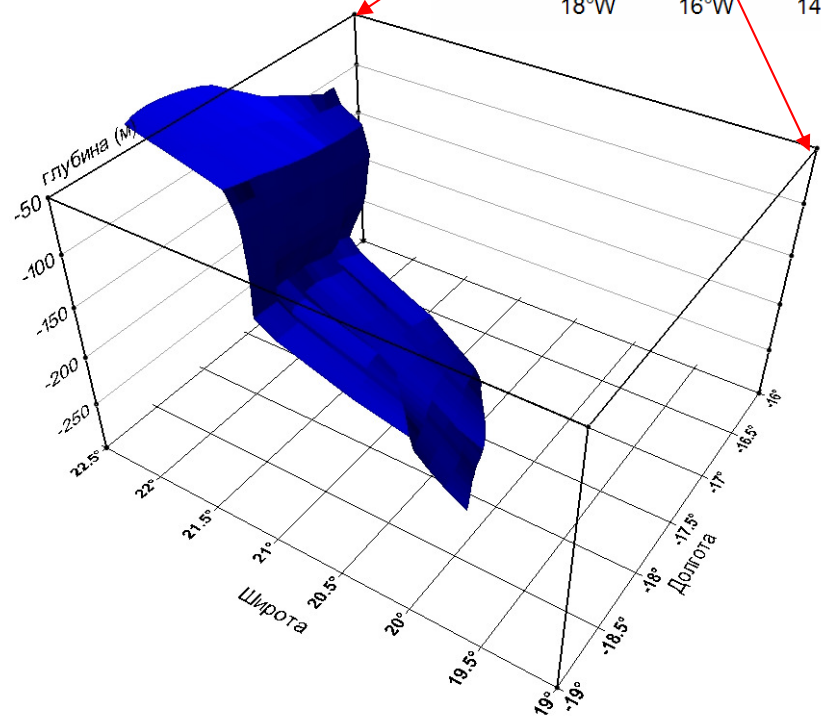


Summer 1998

Shape of front between NACW and SACW



winter 1996



winter 1998