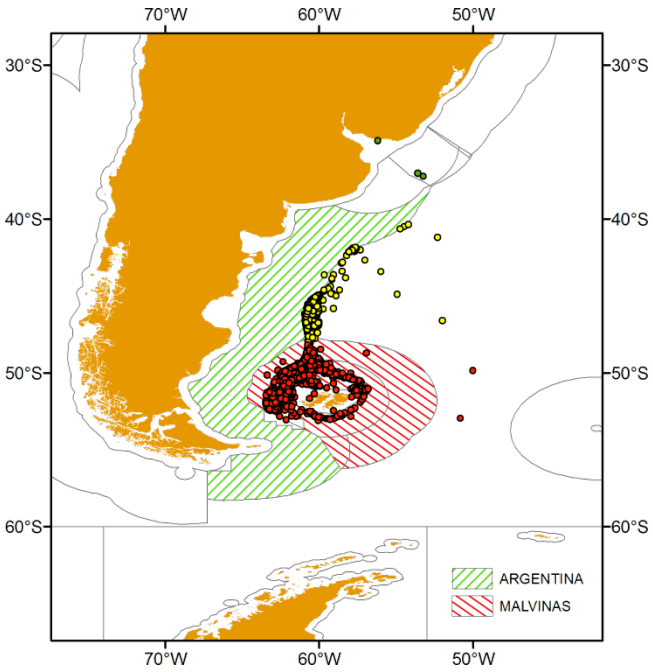
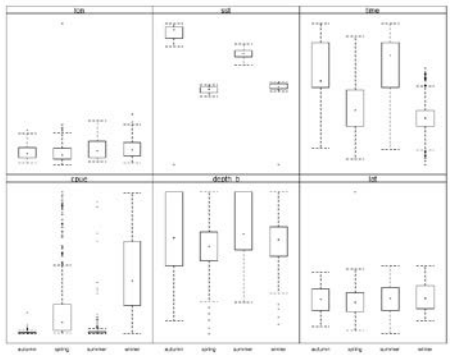
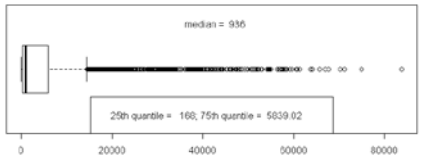
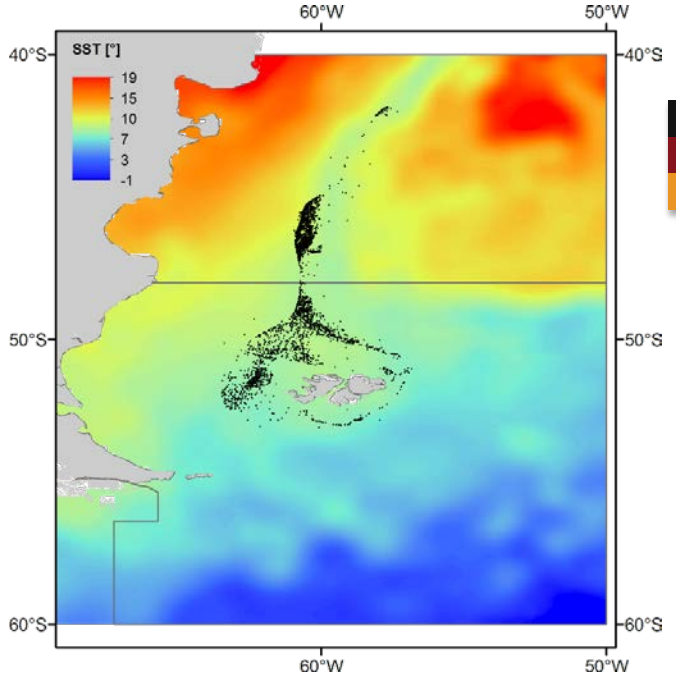
Roi Martinez (AWI) and Julio Portela (IEO)







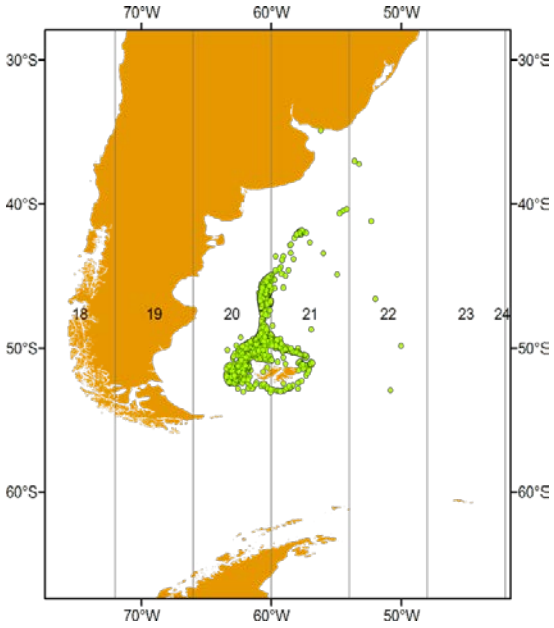


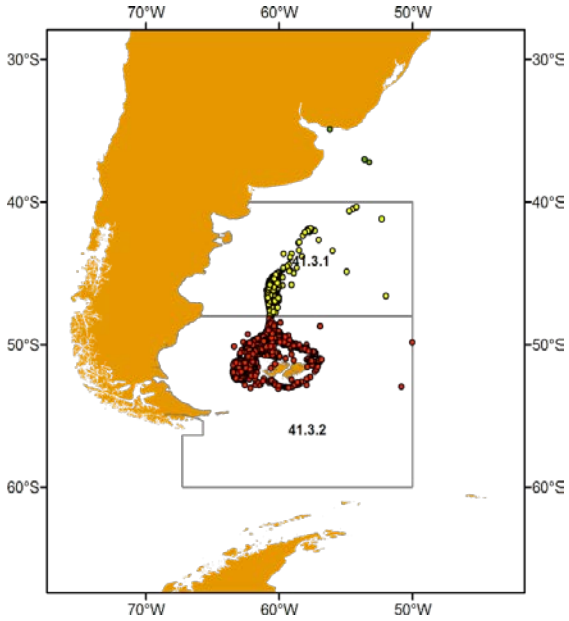
Relationships between cephalopod's abundance and environmental parameters in the SW Atlantic

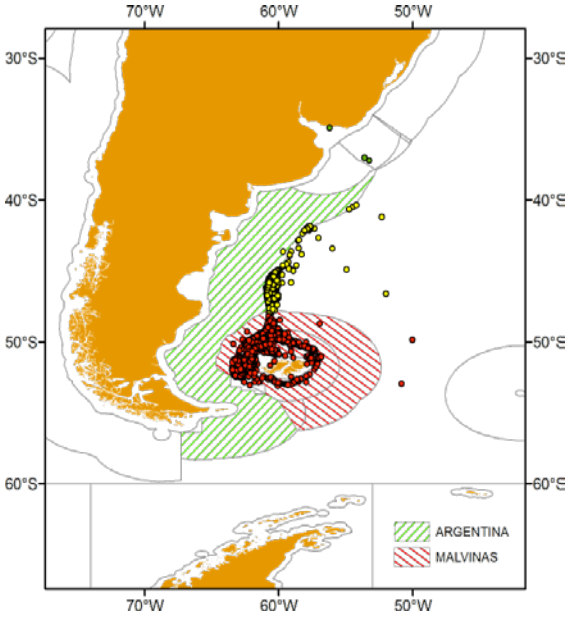
Study Area

- AREA 1: High seas of the SW Atlantic beyond Argentinean EEZ and north of the Falkland Islands Conservation Zones (FICZ-FOCZ)

- AREA 2: Falkland Islands Conservation Zones (FICZ-FOCZ)



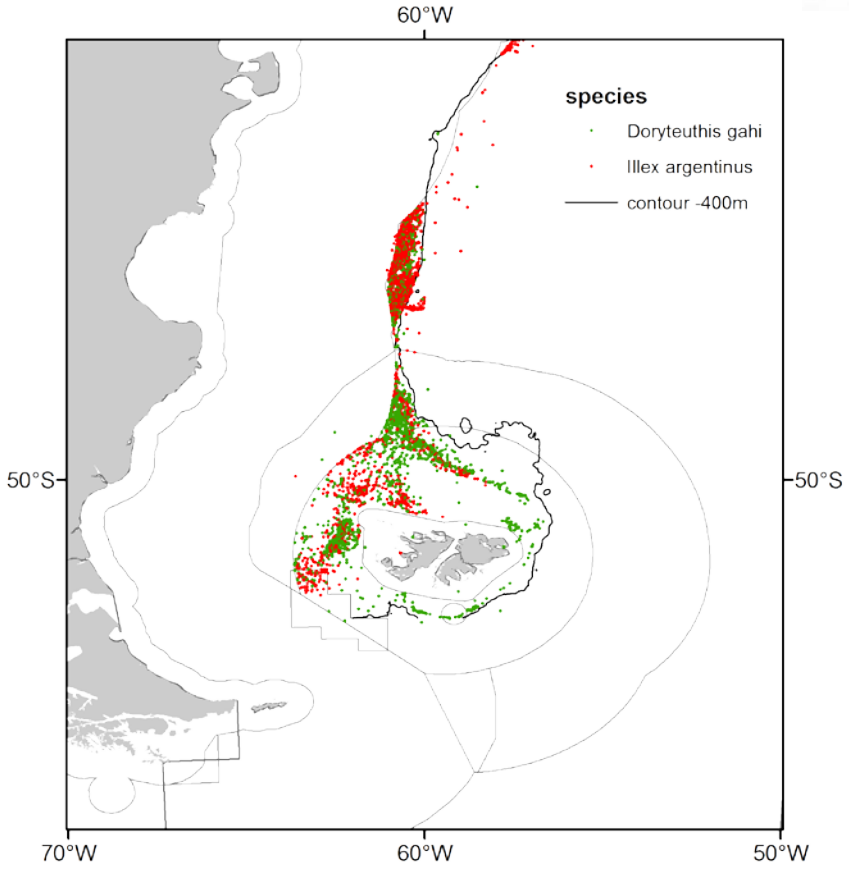




Cephalopod species

- Argentine shortfin squid (*Illex argentinus*)

- Patagonian squid (*Doryteuthis gahi*, formerly *Loligo gahi*)



Data

Fishery Data (2010-2013):

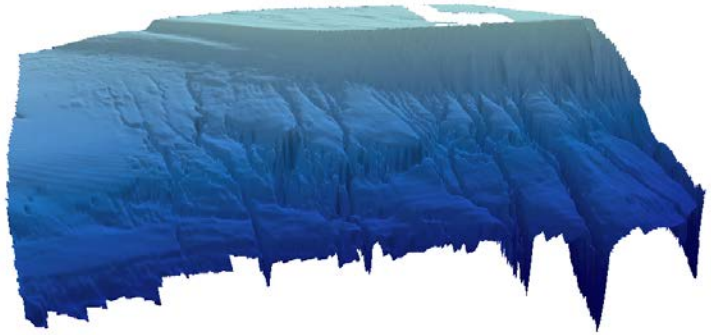
- Log books (CPUE) filled in by captains of Spanish trawlers and provided by the Spanish General Secretariat for Fisheries (SGP)

Environmental Data:

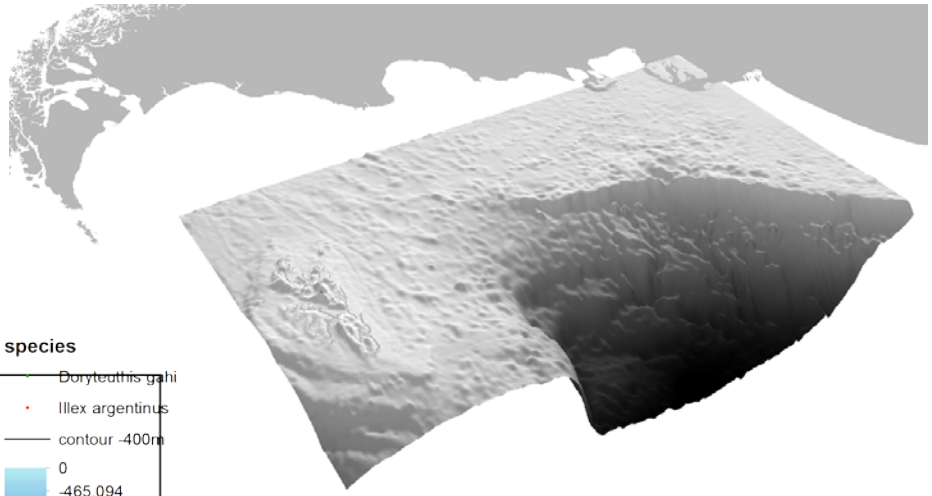
- Bathymetry (GEBCO)
    - Slope
    - Aspect
    - BPI
- Geographical data (latitude, longitude)
- Oceanography data (SST, Chlorophyll, etc)

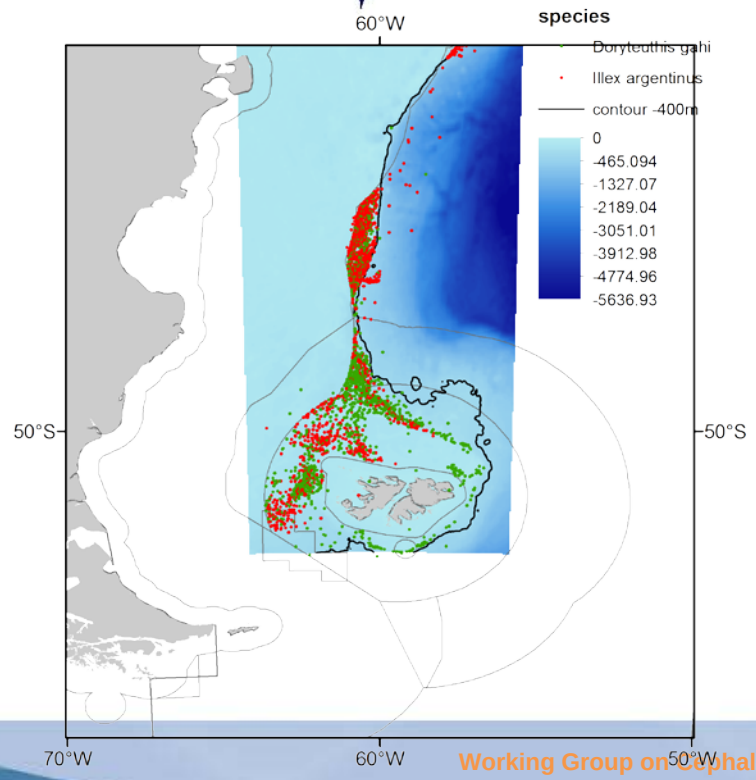
Bathymetry

Area 1: High Resolution Bathymetry



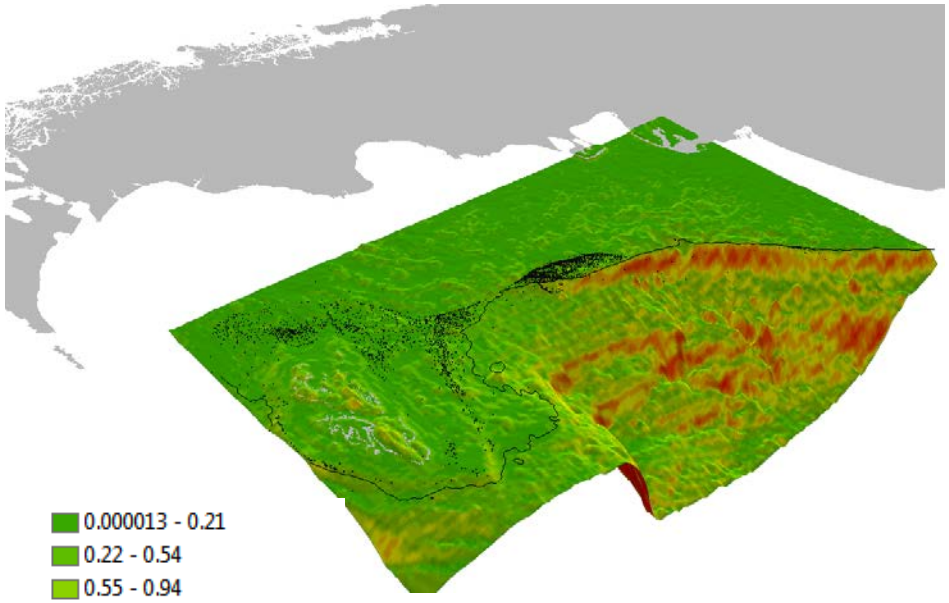
Total Area : Lower Resolution Bathymetry



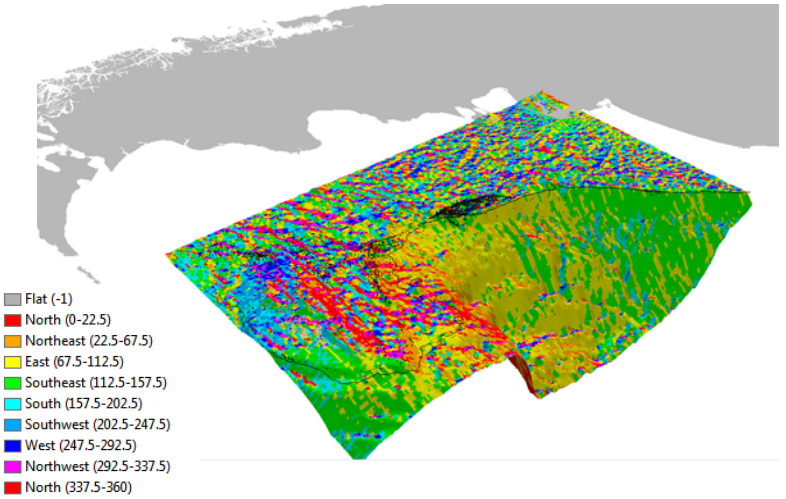


Bathymetry: Derived Datasets

No significant slope in the fisheries areas

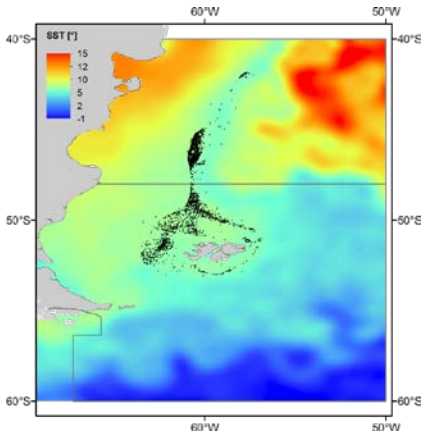


No significant faces orientation in the areas

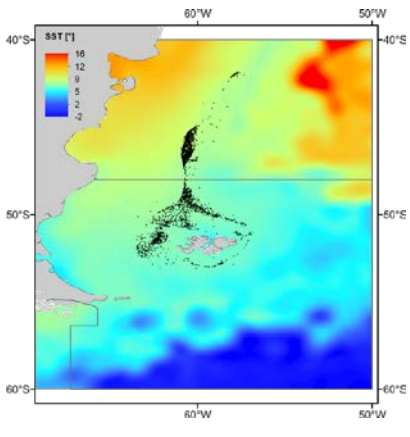


SAME ANALYSIS WITH THE HR BATHYMETRY

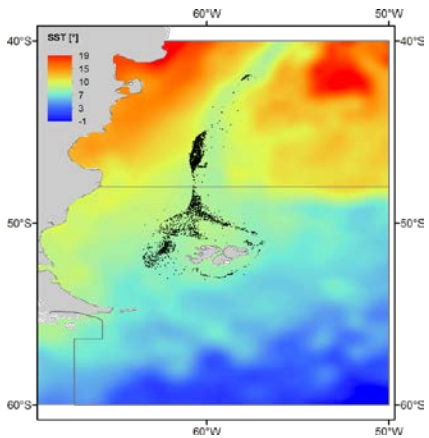
Sea Surface Temperature 2013



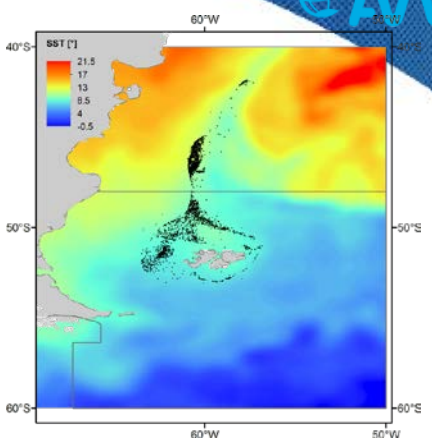
Winter



Spring



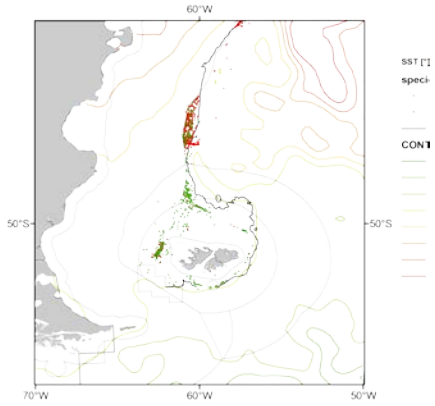
Summer

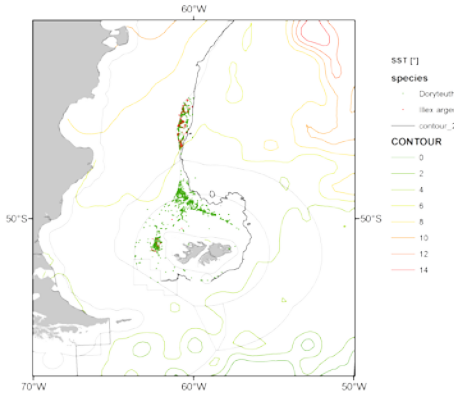


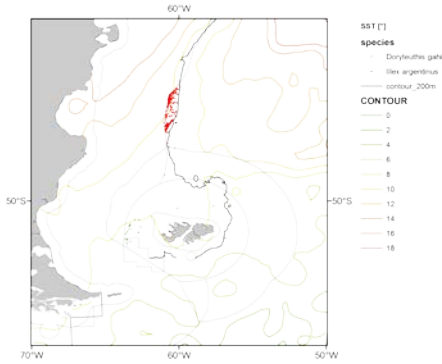
Autumn

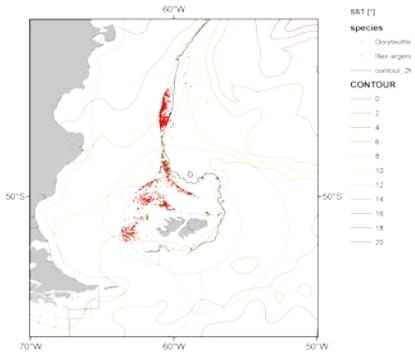
Image provided by Physical Sciences Division, Earth System Research Laboratory, NOAA, Boulder, Colorado, from their Web site at http://www.esrl.noaa.gov/psd/.

Maybe different Season Months Selection???



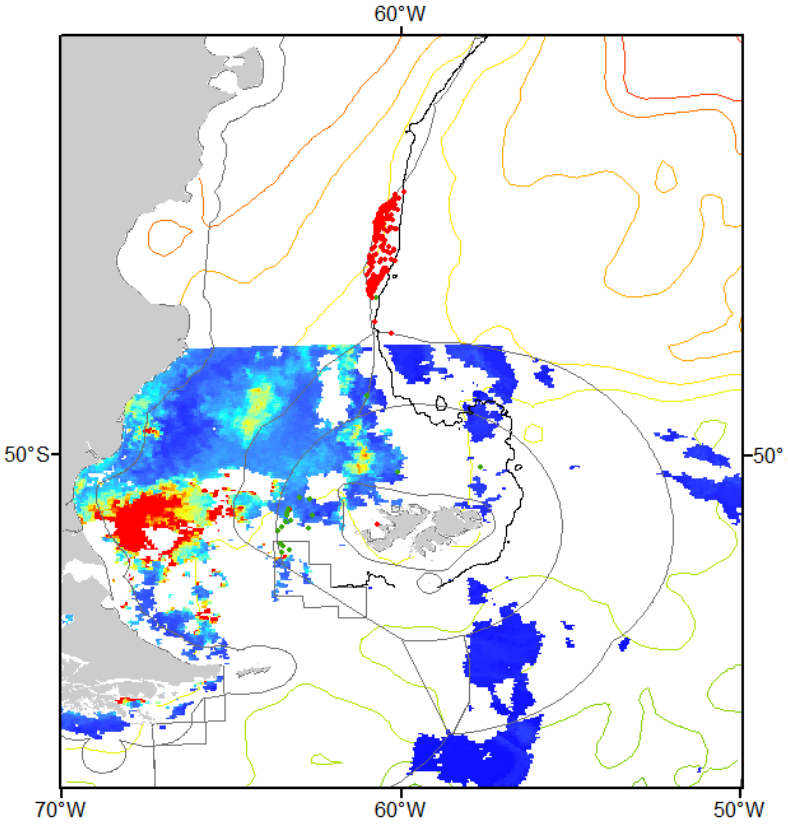


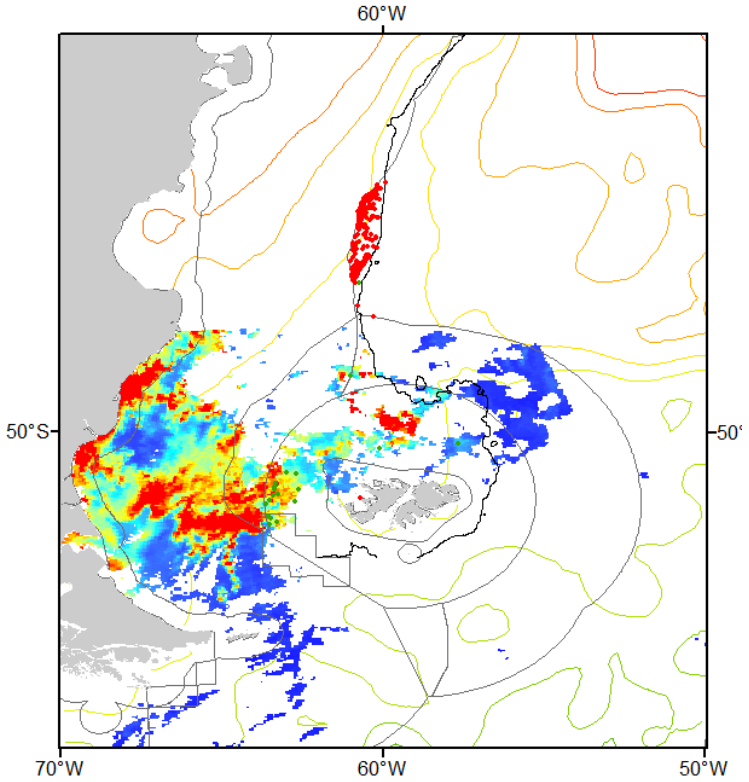




Chlorophyll Distribution

Time Series netCDF dataset by NOAA (To include)

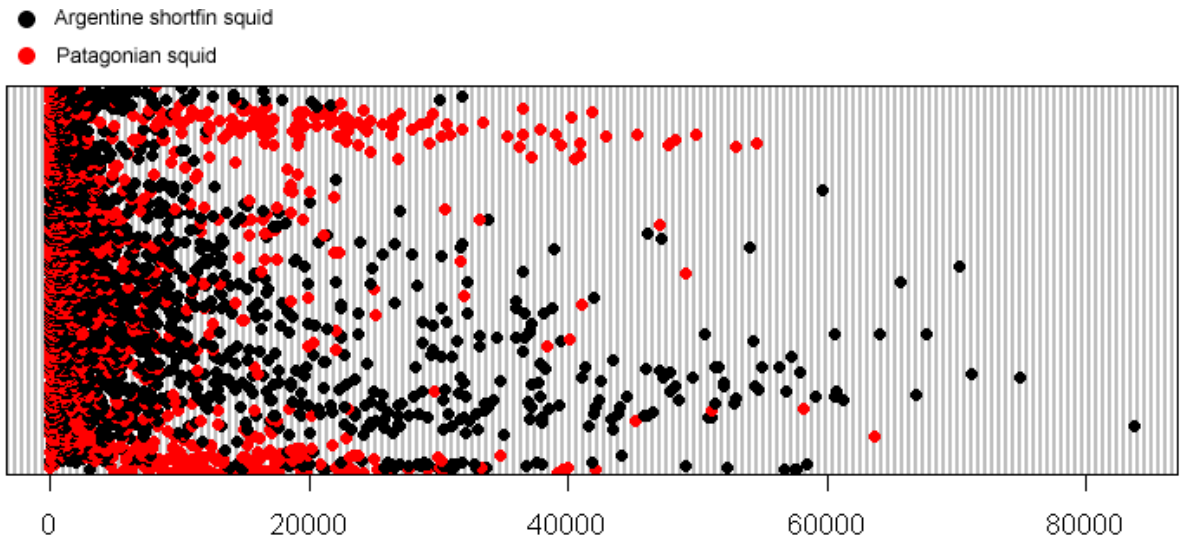




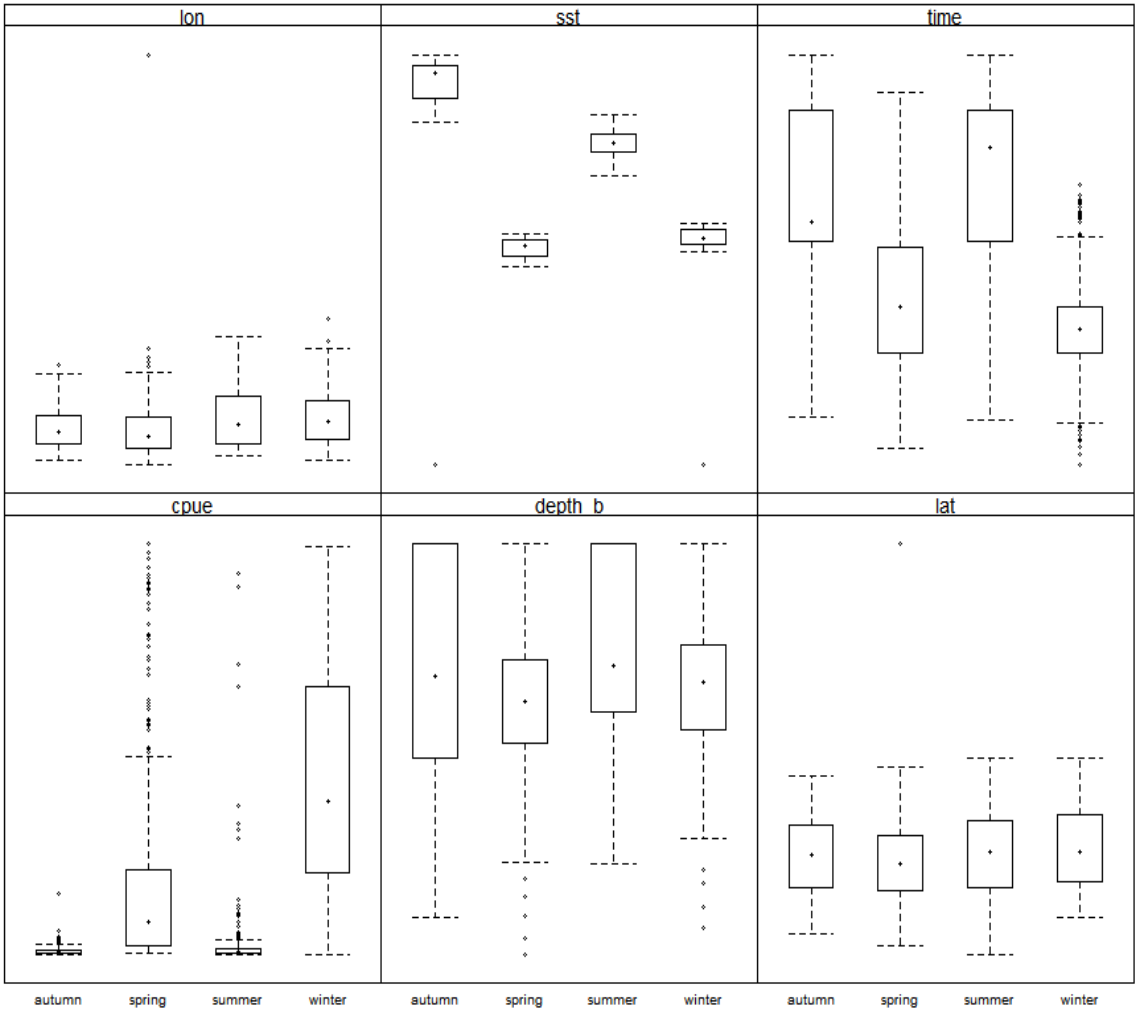
Analysis 2013 Logbooks

The dimension of the table is 4630 files by 11 columns.

	lat	lon	depth	op_num	fish_time	catch_kg
Minimum	53.10	63.48	-1441.0	0.000	0.0	0
1st Quantile	-50.17	-60.87	-208.0	2.000	13.0	168
Median	-46.95	-60.68	-157.0	3.000	20.0	936
Mean	-48.14	-60.77	-187.4	2.709	351.6	5459
3rd Quantile	-46.25	-60.43	-135.0	3.000	700.0	5839
Maximum	-41.85	-56.83	-58.0	6.000	1535.0	83722

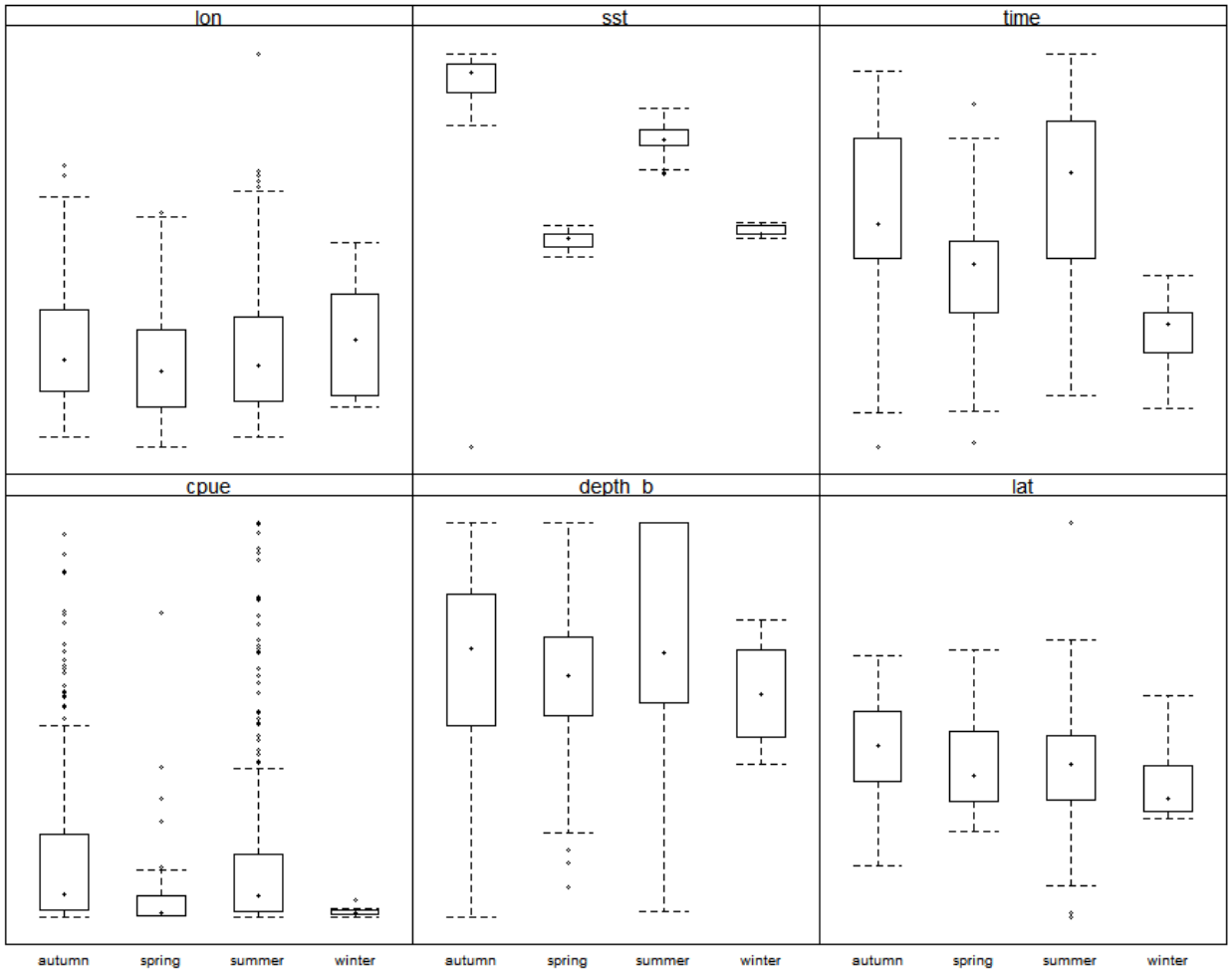


Data Exploration



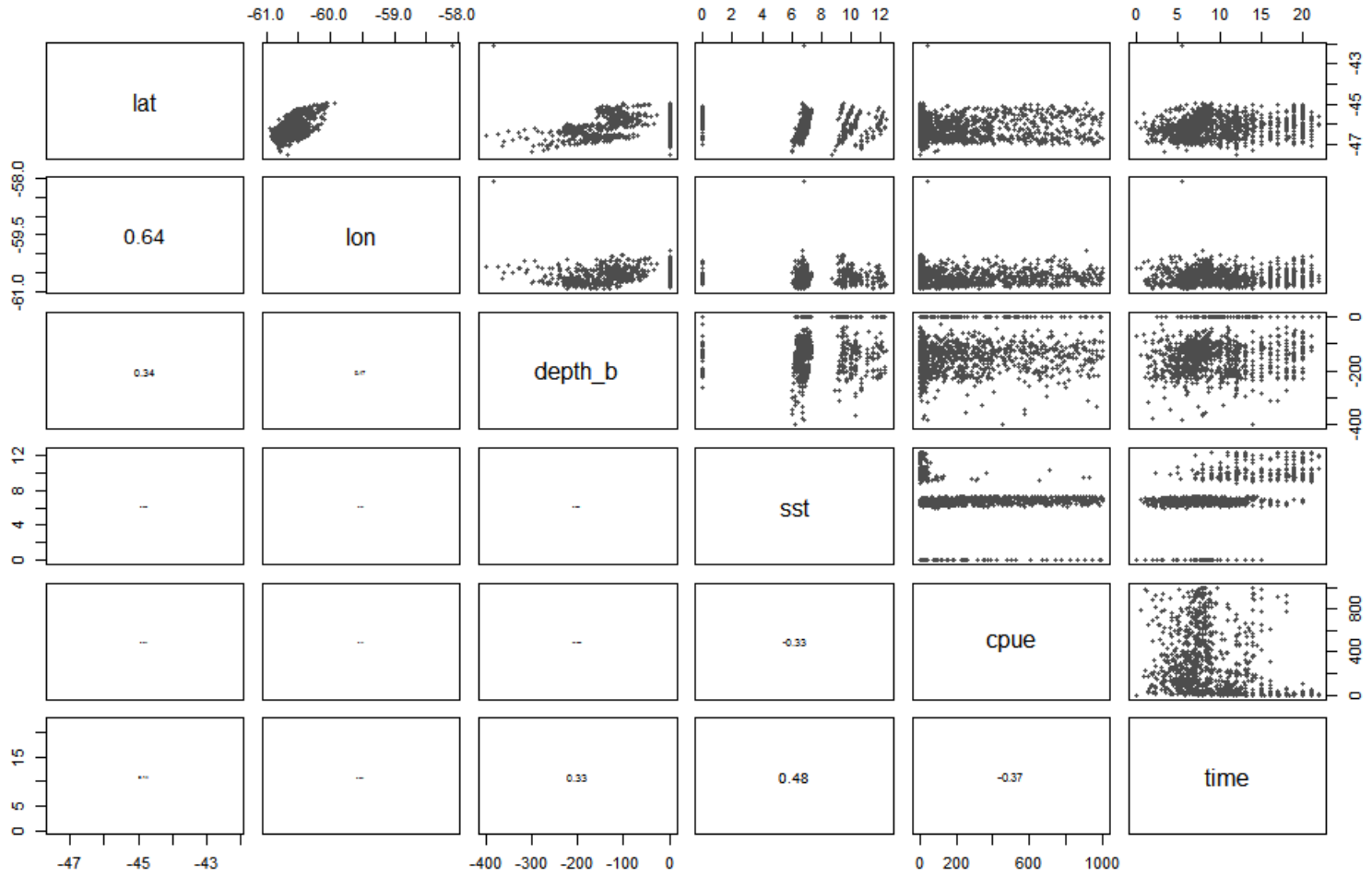
Ilex Argentinus by Season and environmental parameters

Data Exploration



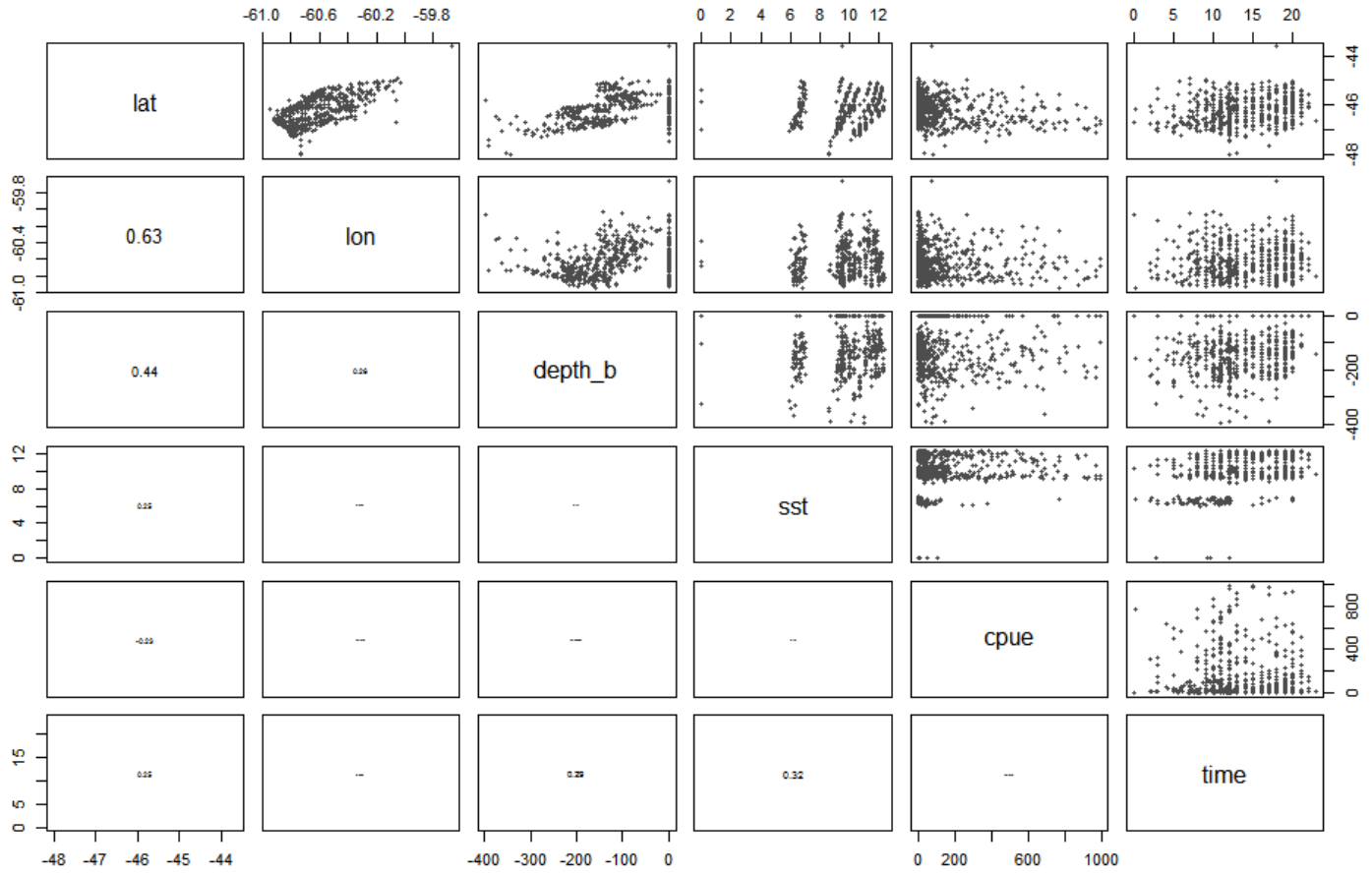
Doryteuthis gahi by Season and environmental parameters

Data Exploration



Ilex Argentinus correlation between environmental parameters

Data Exploration



Doryteuthis gahi correlation between environmental parameters

Methodology

- Geographic Information Systems (GIS)

- Data Exploration:
  - Cluster Anlysis: (Supervised and not supervised methods) . Hierarchical Models, K-means , SOM (Self Organized Maps)

- Prediction tools:
  - Neural networks (NN) : Feedback algorithm
  - Decision Trees: CART

Expected results from this study:

- Distribution of cephalopods in relation to depth, latitude, longitude, SST and chlorophyll concentrations

Future work:

- We shall intend to widening the historical data series (probably from 2000 onwards

- To analyze the influence of el Niño in the distribution of both species
- Add new data: SSS??? , Bottom Temperature, Sediment Data??, Benthic Position Index Data.