

REPRESENTATION OF FISH AGGREGATIONS AND THEIR SPATIO-TEMPORAL EVOLUTION

REPRÉSENTATION DES AGRÉGATIONS DE POISSONS ET DE LEUR ÉVOLUTION SPATIO-TEMPORELLE



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1- INTRODUCTION



Fisheries techniques and effort are becoming increasingly efficient



Dramatic decline of some fish stocks

An understanding of the spatial and temporal dynamics of fish aggregations is needed



2- PROBLEMS

- There are not enough efficient tools available to represent and visualize fish aggregations in a realistic manner
- Although fish aggregations are 3D phenomena, they are traditionally studied in 2D using GIS and other mapping tools which causes loss of valuable information

3- OBJECTIVE

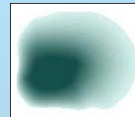
To represent fish aggregations and their spatio-temporal evolution in 2D and 3D with GIS tools and to analyze the relationships between these aggregations and the environmental parameters

4- METHODOLOGY

2D

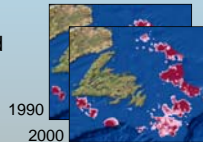
1 Representation of fish aggregations

Based on fuzzy sets



2 Representation of the evolution of the fish aggregations

Integration and visualization

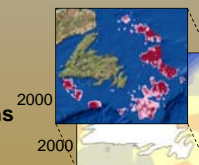


3 Representation of the changes in the environmental parameters

Spatial interpolation

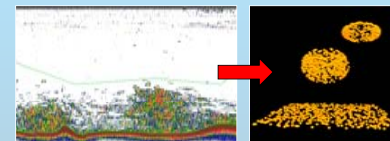


4 Study of the correlation between the evolution of the fish aggregations and the ocean's conditions



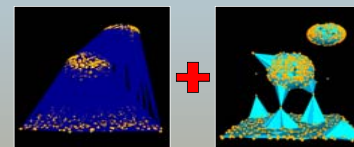
3D

1 Transformation of the fisheries data



Acoustic data

2 Representation of fish aggregations

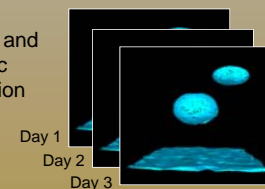


3D modeling

3D clustering

3 Representation of the evolution of the fish aggregations

Integration and dynamic visualization



5- CONCLUSION

This research project provides:

- Methods for a better representation and modeling of fish aggregations processes through time both in 2D and 3D
- Methods for enhanced understanding of potential effects of environmental parameters and climate changes on fish aggregations evolution



Facilitate the perception of the fish stocks behaviour and condition in relation to the environmental parameters



Development of new strategies to help fish stocks recovery and/or maintenance

6- ACKNOWLEDGEMENTS

