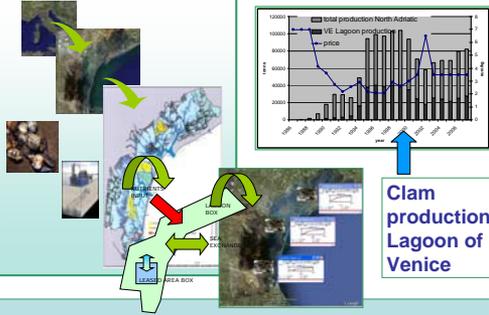


SSA15 - Venice Lagoon

Venice Lagoon

Sustainable management of the clam *Tapes philippinarum*



History

- 1983: *Tapes philippinarum* introduction
- 1983-1990 clam colonisation
- From 1990: fishermen started to fish in open access regime/ social tensions/poor quality (fished also in prohibited area)
- 1999: catches decline
- 2001: allocation of aquaculture concessions
- 2005: extension of aquaculture concessions
- 2009: re-allocation of aquaculture concessions
- Negative impacts: sediment resuspension, benthic habitat alteration
- Economic Relevance: 60% of national production
- Number of fishermen: around 1000;
- estimated gross annual production: 180 Million Euro

Social problems

4 people charged for illegal fishery
Fishery meeting ended in a fight
GRAL in the storm: director resigns



Policy Issue

Evaluation of alternative management strategies
 Preserving the economic activity of clam harvesting

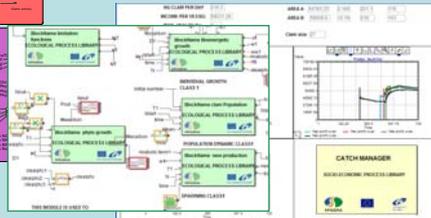
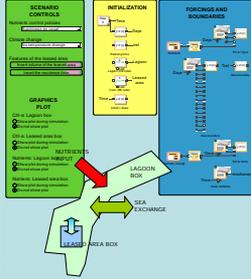
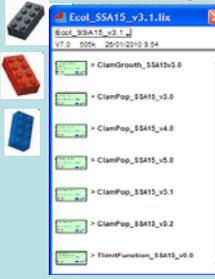
H-blocks for SPICOSA Library

EXTEND ESE BLOCKS

biogeochemistry

Clams growth and clams population

Catch manager (socio-economic)

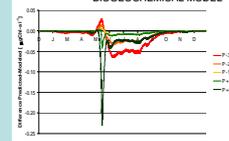
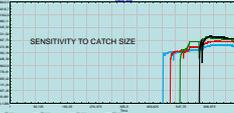
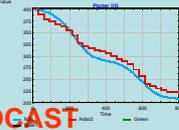
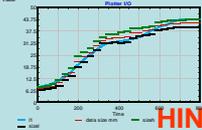


CLAM GROWTH

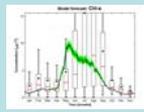
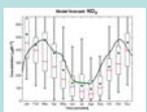
CLAM population decay

ESE MODELS SENSITIVITY

BIOGEOCHEMICAL MODEL



HINDCAST



NOx and CHI-a evolution

	growth rate	calibrated time series	calibrated constant series	calibrated time series	calibrated time series	calibrated +20% time series
temperature	5.0	395.9	16.2	68.0	41.12	
Nutrient	3.8	353.3	5.2	30.0	18.25	
population1	14.2	288.7	1.6	8.7	5.98	

difference between the value of Chl-a produced by the model when forced with a nutrient concentration different from 80µ

SCENARIOS

EXTEND INTEGRATED MODEL RESULTS

- Different levels of fishing effort
- Density and timing of seed
- Changes in external costs
- Size and location fields
- Climate Scenarios



Year	Clams (kg)	Seed (kg)	Harvested (kg)	Price (€)	Maximum yield (kg)	Minimum price (€)	Net Income (€)	Net value of resource (€)
2010	1000	100	500	1000	1000	1000	1000	1000
2011	1000	100	500	1000	1000	1000	1000	1000
2012	1000	100	500	1000	1000	1000	1000	1000
2013	1000	100	500	1000	1000	1000	1000	1000

CONCLUSIONS

Creation of an integrated bioeconomic model of *Tapes philippinarum*

- Sensitivity analysis to changes in price and mortality rate suggests that higher level of uncertainty induce fishermen to increase pressure on resource, decreasing the harvesting size, increasing pressure on environment and impacts
- Need of management strategies to avoid price fluctuations such as 'labelling' and 'certification' in order to prevent overexploitation of Lagoon resource, and of nursery productivity.
- From the beginning of the application of SPICOSA SAF methodology to the Venice Lagoon clam fishing management issue a lot of changes in the political situation have occurred. The new administrations and the main organization responsible for fishing management in the Venice Lagoon, G.R.A.L.-Lagoon Fishery Management Resources are carrying out a sustainable management of the resource, and they are receptive towards a collaboration with the scientific counterpart.