



Mussel farming, innovation in digital services using satellite data
to support production.

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ministero delle politiche
agricole alimentari e forestali



PROJECT FUNDED BY MIPAAF (2019)
2017-2019 NATIONAL PLAN FOR FISHERIES AND AQUACULTURE

CONTEXT

Availability of real-time environmental data allows to estimate growth rate and to be aware in time of risky situation that could impact production, harvesting and commercialization.

Considering the increasing impact of climate change and the reduction of margins, producers welcome any new opportunities to minimise risks, reduced production costs and optimize profitability.

Have been partners in this present project



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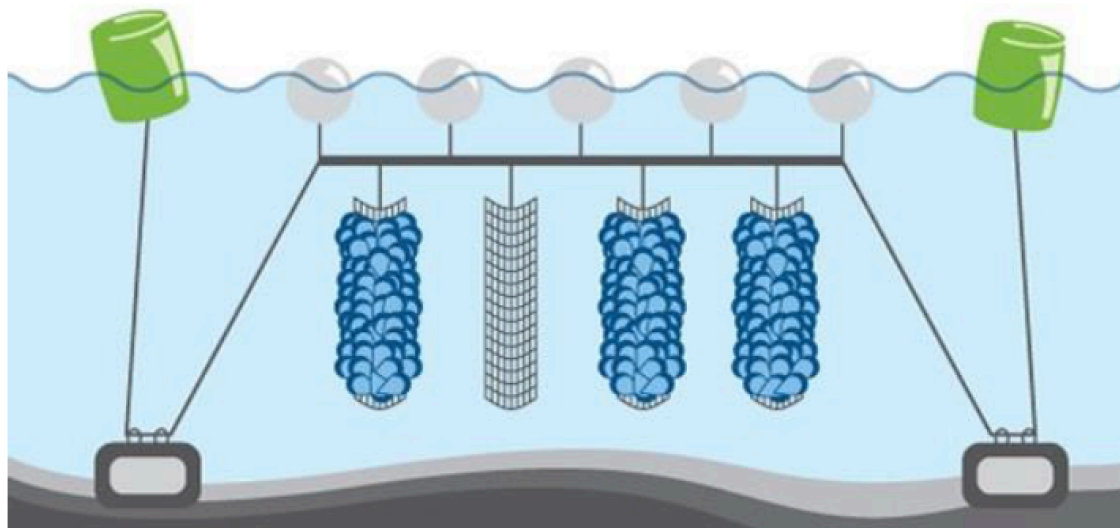


Rheticus® Aquaculture
Satellite Support for Smart Aquaculture

BLUEFARM



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Producers needs

- Optimise management
- Maximise profitability
- Minimise risks



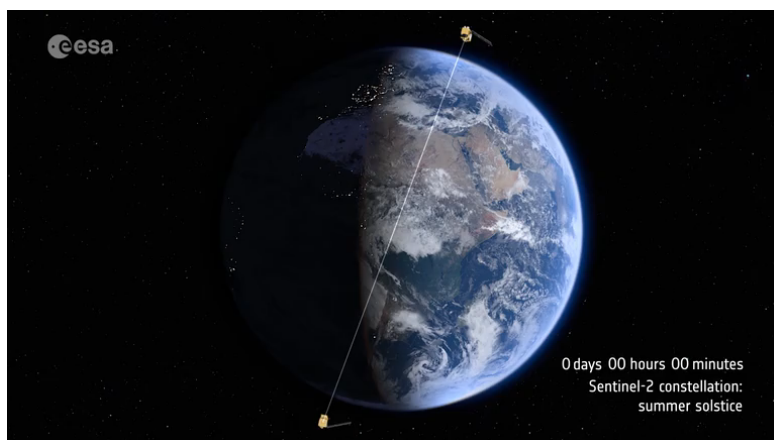
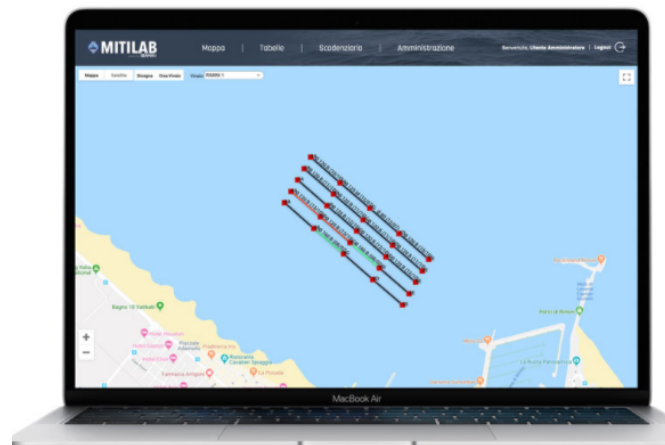
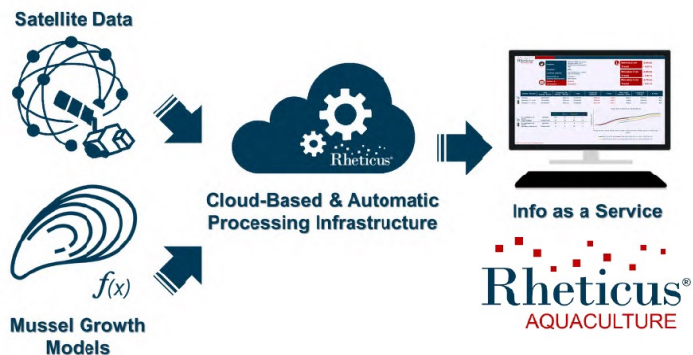
Vantages + Opportunities

- Existing satellite data with increasing accuracy
- No devices installed on site & no need for maintenance
- Cloud services – Multiusers platforms/software

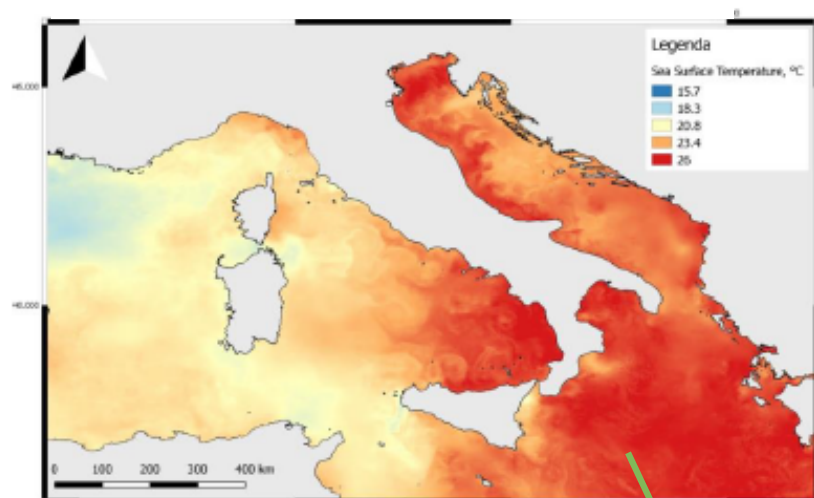
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Data Processing Workflow



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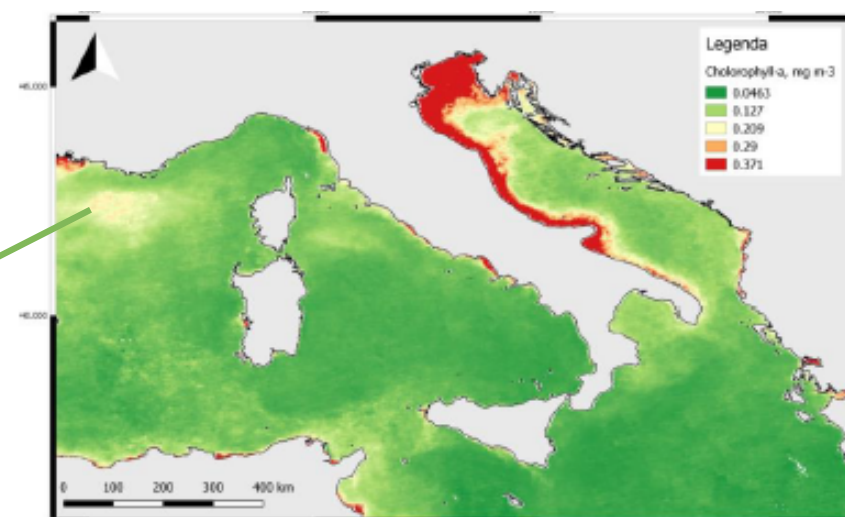
Sea water temperature

Environmental parameters

- Sea temperature
- Chlorophyll



Impact on growth rate
&
meat content



Chlorophyll level

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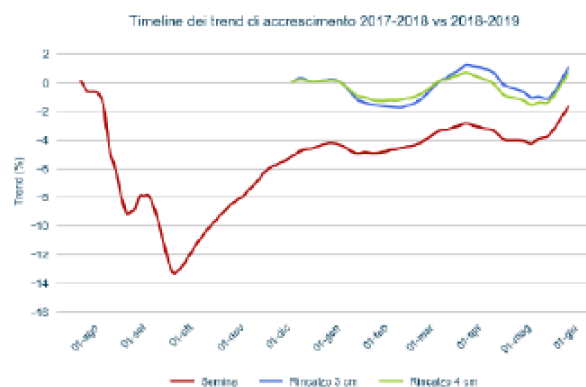
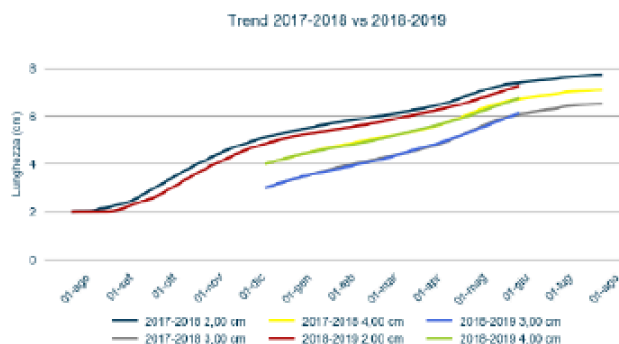
Contents of the Weekly Bulletin



	Produttore	
	Produzione	Mitilab
	Coordinate impianto	
	Abbonamento N.	001/2019
	Scadenza abbonamento	28/01/2020
	Bollettino N.	18/2019
	Data bollettino	03/06/2019

	Semina 2 cm	7,24 cm
	Trend	- 1,75 %
	Rincalzo 3 cm	6,11 cm
	Trend	+ 0,97 %
	Rincalzo 4 cm	6,74 cm
	Trend	+ 0,62 %

Semina - Rincalzi	Data Semina - Rincalzi	Lunghezza alla Semina - Rincalzi	Data	Lunghezza raggiunta	Trend	Peso totale individuo medio	Lunghezza a 14 gg	N. Filari
Semina	29/07/2018	2,00 cm	02/06/2019	7,24 cm	- 1,75 %	22,80 g	7,48 cm	N/D
Rincalzo 3 cm	10/12/2018	3,00 cm	02/06/2019	6,11 cm	+ 0,97 %	12,68 g	6,40 cm	N/D
Rincalzo 4 cm	10/12/2018	4,00 cm	02/06/2019	6,74 cm	+ 0,62 %	17,73 g	6,99 cm	N/D

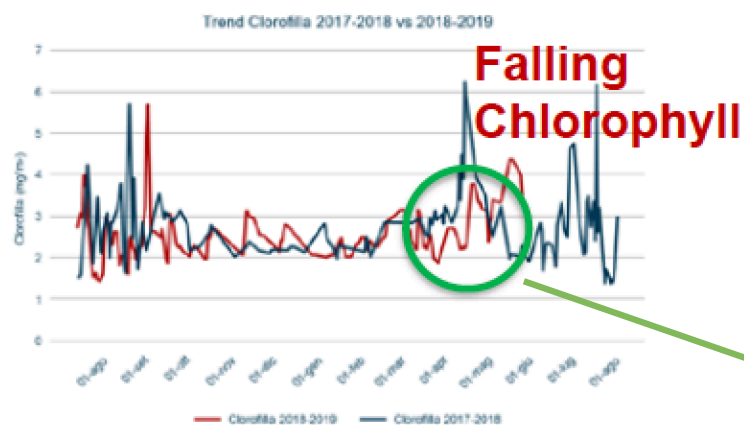


Indicators

- Mussel total weight
- Weekly mussel growth starting from seeding date and subsequent sorting/socking dates
- 7-day forecast of mussel growth
- Comparative analysis of growth rate with the previous growing season

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Contents of the Weekly Bulletin



Initial length
(seed new socks)

Date

Current
length

2,00 cm

02/06/2019

7,24 cm

3,00 cm

02/06/2019

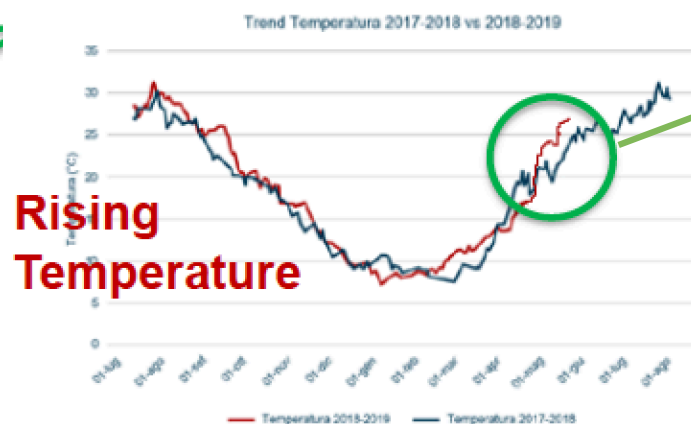
6,11 cm

4,00 cm

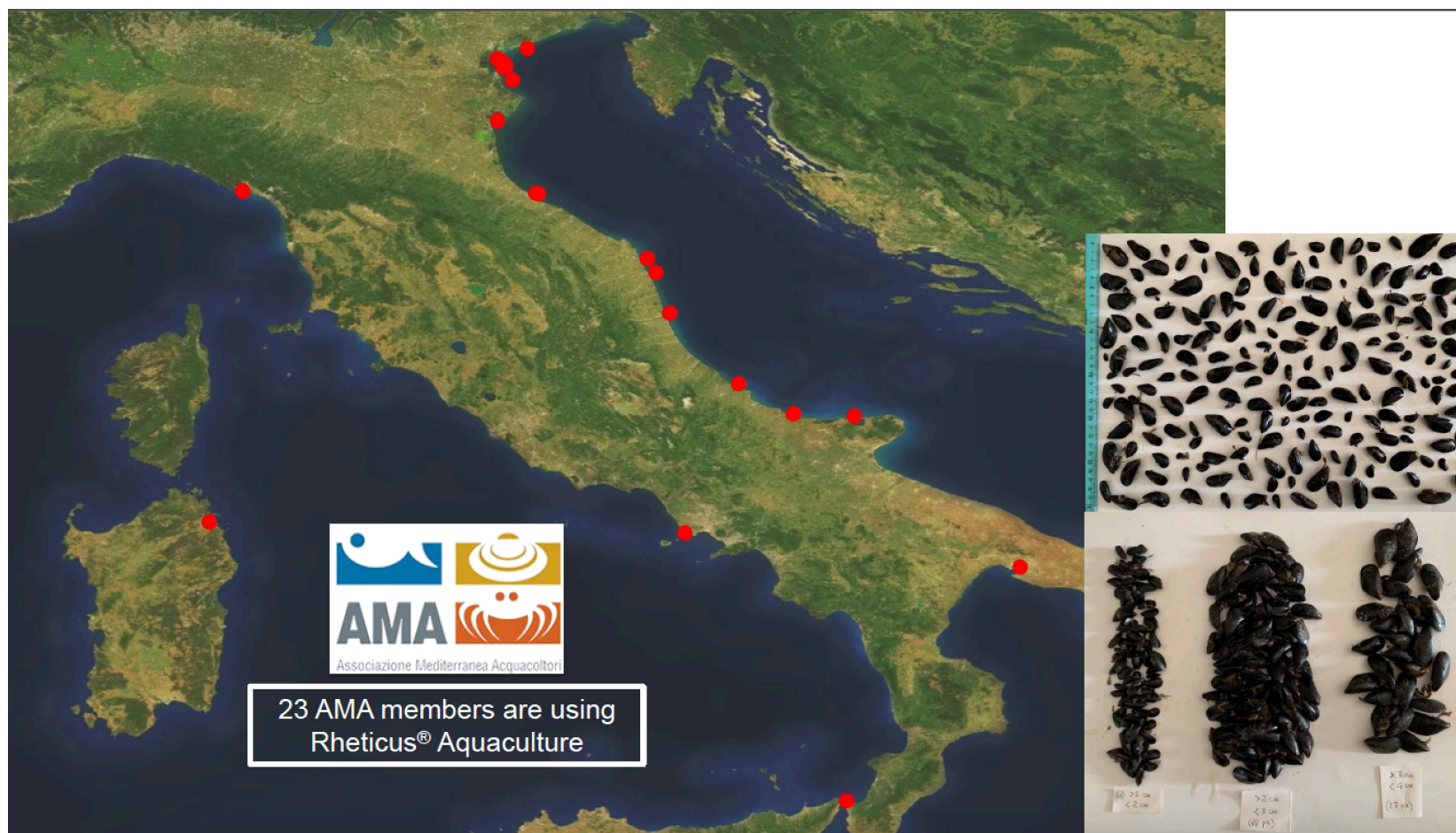
02/06/2019

6,74 cm

It's time to go to market



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Producers needs – Possible use of satellite data

- **Historical data availability:**
Site selection
AZA - Spatial Marine Planning
Spat recruitment prediction
- **HABs and/or toxic algae blooms**
Prediction systems (*)
Data on phytoplankton
composition (if feasible?)
- **Pollutant or sea front monitoring**
Alert systems
- **Extreme climatic events certification**
Insurances
Refunding

(*) Toxic algae blooms detection also imply the development of storage and/or detoxification equipment.



The collage features three main posters and a set of logos. The top-left poster is titled 'Marine Data to Support Aquaculture in the North Atlantic' and mentions a virtual workshop by EATiP, Copernicus Marine, and EMODnet, dated October 20-21, 2020. The top-right poster is titled 'Copernicus Marine Service for the Aquaculture Sector' and mentions the Amalia hotel in Athens, dated September 24-25, 2019. The bottom-left poster features the 'HiSea' logo, which depicts a ship and a fish. The bottom-center features the 'FORCOAST' logo, which includes three circular icons representing a fish, a shell, and a wave. At the bottom right, there is a row of logos including the European Union flag, Copernicus, Mercator Ocean International, and the European Aquaculture Association.

And many other project and initiatives

Conclusions

- Important opportunity to move from “handcraft aquaculture” to “precision aquaculture”
- Make services not too expensive and tailored for specific applications: low added value of shellfish industry products has to be taken into account
- Make services easily available for family scale farms or micro-enterprises with limited skills (use of digital devices and language). The involvement of producers associations should be a key factor.
- In most cases satellite data should be used together with data collected on the field. Integration of different data sets in few widely used platforms would be a key factor for success.
- Understand where is the limit between free access to data (CMEMS-Copernicus) and services which provide further elaborations and made data consultation user friendly
- More experience is needed and dispersion in the offered services should be avoided