



Satellite monitoring service for smart Aquaculture

Daniela Iasillo
www.rheticus.eu



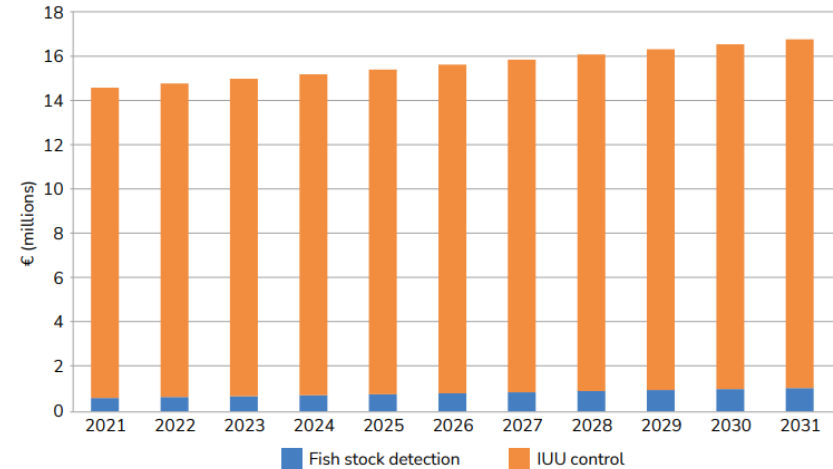
Tradition and
Innovation

The market evolution

Aquaculture production is projected to reach 109 million tonnes in 2030, an increase of 32 percent (26 million tonnes) over 2018.

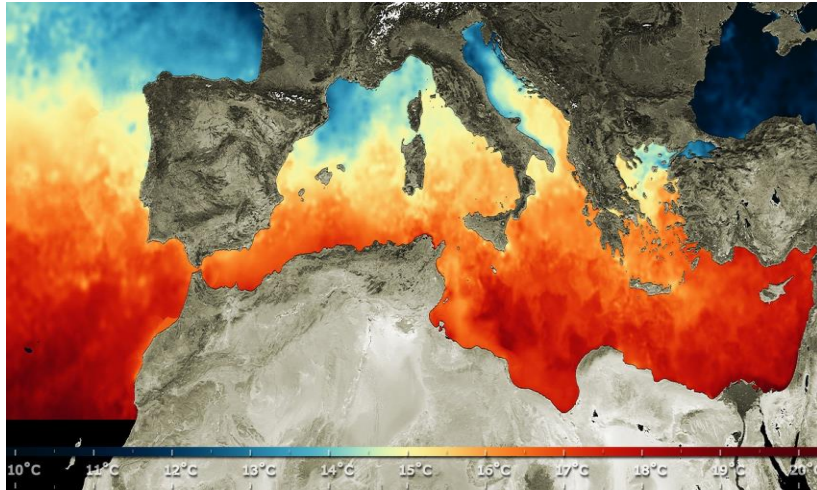
(EUSPA EO and GNSS Market Report, 2022)

Revenue from EO data sales by application



Drivers: Growing food demand and aims for sustainability.

The challenge: Climate change and traditional technique



- Economic, environmental and safety impacts:

Climate changes have led to changes in the sea temperature and in the quantities of phytoplankton, affecting the growth rates and mortality of animals and, therefore, the productivity of farms and the quality of products.

- Limitations of traditional techniques:

Lack of predictive information about when it is better to complete the harvest.

Benefit in using



- Estimate multiple parameters
- View impact to the entire production
- Continuous monitoring over time with weekly measurement frequency
- Historical information
- No sensors to install



A new approach



Satellite Data



Cloud-Based & Automatic
Processing Infrastructure



Info as a Service



Ca' Foscari
University
of Venice

BLUEFARM

Spin off dell'Università Ca' Foscari di Venezia



Mussel Growth
Models



Optimize productivity at a glance



Produttore

Produzione

Coordinate impianto

Abbonamento N.

Scadenza abbonamento

Bollettino N.

Data bollettino

Alberoni Mitili Soc. Coop.
Via San Gallo 173/P
30126 Lido di Venezia VE
Italy
Mitili
Lat: 45,306; Lon: 12,355
Lido di Venezia
001/2019
28/01/2019
18/2019
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

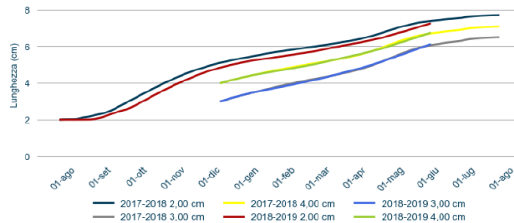
+ 0,62 %

Indicators :

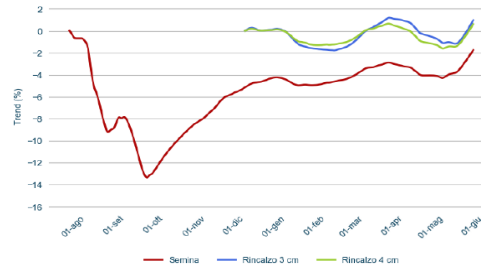
- Mussel total weight
- Weekly mussel growth
- 7-day forecast of mussel growth
- Comparison with previous growing season

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

Trend 2017-2018 vs 2018-2019



Timeline dei trend di accrescimento 2017-2018 vs 2018-2019



Rheticus® Aquaculture provided us a lot of operational information, very useful for our mussel production activities, able to optimize plant operation and identify critical environmental issues.

Stefano Gilebbi, Alberoni mitili Soc. Coop., Italy

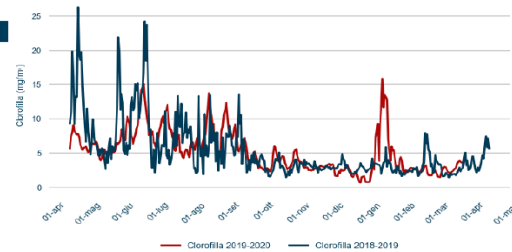
Optimize productivity at a glance



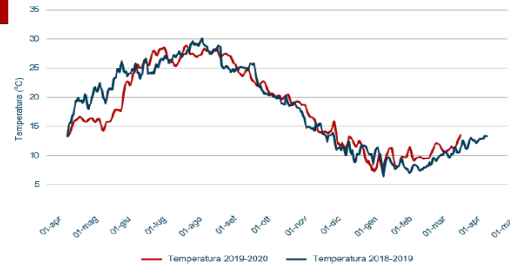
N. cumulativo giorni				Ottimo	Buono	Discreto	Cotico
15/04/2019	Semina	Nutrienti		285	35	22	1
15/04/2019	Semina	Temperatura		108	48	121	66
15/12/2019	Rincaizo	Nutrienti		77	19	2	1
15/12/2019	Rincaizo	Temperatura		0	7	87	5
15/06/2019	Rincaizo	Nutrienti		235	28	18	1
15/06/2019	Rincaizo	Temperatura		60	38	118	66

Mese	Clorofilla 2009-2019 (mg/m³)	Clorofilla 2019-2020 (mg/m³)	Temperatura 2009-2019 (°C)	Temperatura 2019-2020 (°C)
Apr	10.19	6.74	14.50	15.59
Mag	10.39	5.64	19.13	16.22
Giu	12.30	9.04	23.66	24.67
Lug	10.62	7.17	26.49	27.16
Ago	9.40	8.03	26.76	27.49
Set	7.16	5.22	23.47	24.10
Ott	5.01	3.79	19.15	20.19
Nov	3.51	2.95	14.73	15.89
Dic	2.77	1.72	11.51	12.04
Gen	3.21	6.16	9.69	8.95
Feb	5.43	2.30	8.47	10.03
Mar	9.45	2.77	10.18	11.57

Trend Clorofilla 2018-2019 vs 2019-2020



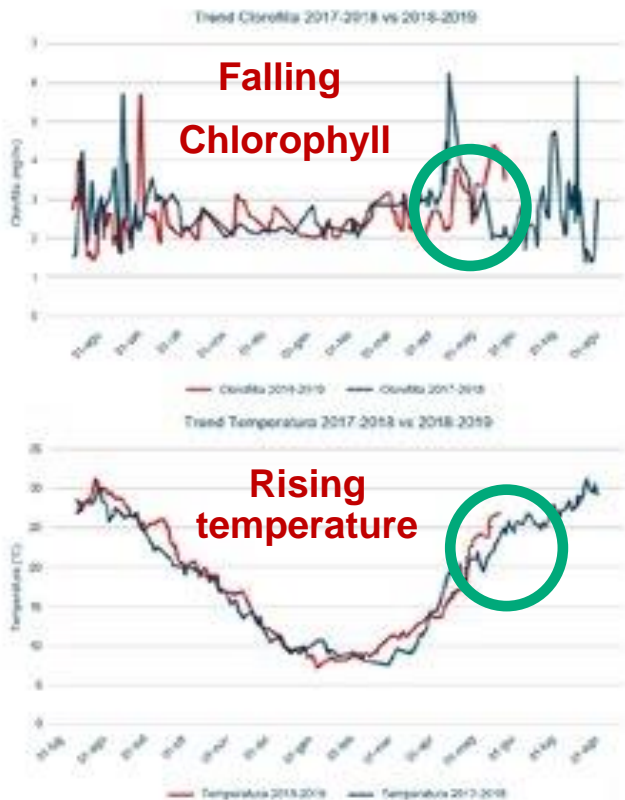
Trend Temperatura 2018-2019 vs 2019-2020



Environmental parameters

- Sea Temperature
- Chlorophyll

From the Report to the market



**TIME TO GO
TO THE MARKET**





SUSTAINABLE AQUACULTURE

Rheticus Aquaculture provides
standardized and accurate analytics
to implement and monitor progress
toward the SDGs reporting.



<https://sdgs.un.org/>

Rheticus[®]

AQUACULTURE

Rheticus[®]
AQUACULTURE



23 AMA members use
Rheticus[®] Aquaculture



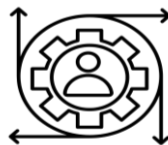
How it works



Satellite image
aquisition



GIS data of
environmental
parameters



ML/AI algorithms
classifies growth
models



Easy-to-read, and
actionable report, Weekly
updated, ranging over
the whole production



Harvesting


Rheticus[®]

Cloud-hosted platform,
fully owned and operated by Planetek

User

Traction

- **Info-as-a-Service** subscription business model, globally available in 60 days
- Award-winning service at multiple industry events
- Global Authorized Distributor Network
- **80+** subscriptions since 2016, from Europe, Asia, New Zealand
- **~30% new subscriptions** per year



Subscription Plan



Rheticus® Aquaculture pilot

Duration: 1 year

Update Frequency: Weekly

Historical data: 2 to 10 years

Implementation time: 30 days

Rheticus Aquaculture part of the process

Integration of historical data

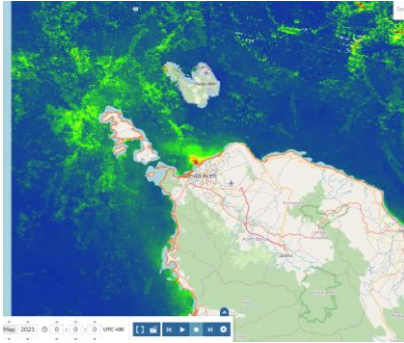
Presentation of Final Products for Aquaculture

Giulio Ceriola (Planetek), Christine Sams (NOC)

Inland and marine aquaculture

- Objective: to provide a complete characterization of the impact of aquaculture to the shoreline and to the coastal ecosystem in areas where the mangrove forest was destroyed to create aquaculture fields

Access to Rheticus® analytics and Geoportal



Geoportal is available at:

<https://adb.planetek.it/maps/?limit=5&offset=0>

Select the area of interest and then View Map



Rheticus Marine dashboard is available at:

<https://services.rheticus.eu/Apps/?tenant=rheticus>

Username: p20g1438_adb_indonesia

Password: xmXCWqbZYCKP

The future trends

Land-based aquaculture
Adoption of advanced
technology (EO, GNSS, AI)
Food security
Seaweed and sponge
cultivation



Seaweed cultivation in North America

*** The Norwegian Aquaculture
Analysis 2021, EY 17 Mar 2022**

Q&A

Daniela Iasillo

iasillo@planetek.it

LinkedIn : <https://www.linkedin.com/in/daniela-iasillo-99884057/>



 www.rheticus.eu

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 rheticus@planetek.it

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