

## Unlocking the potential of Open Science: Meet the B-C Demonstrators

Fisheries & Aquaculture; 2 related data workflows  
[Fish, a matter of scales](#) and [Aquaculture Monitor](#) Demonstrators

Anton Ellenbroek, FAO of the UN (Presenter)  
In FAIR company of IFREMER, FORTH, IRD, CLS





Blue-Cloud

# Vision: Open science, Open minds

**Interoperate with other VRE's**  
**(Example from a Food Data System VRE of FAO)**

Manage Products

Q Search...

**VRE**  
**Blue**  
**Cloud**

**OBIS**  
**/**  
**WoR**  
**MS**

**WS**  
**Blue**  
**Cloud**

**FNSCloud**  
**/**  
**FOODEX2**

CWP / HS /  
ISSCFC /  
ISSCFG /  
ISCAAP  
EUROFIR

**OGC**

**GRSF**  
**Blue**  
**Cloud**

**Interoperate with External Services for  
Food Systems analytics  
(FAO, FNS Cloud, WoRMS)  
Based on FAIR Principles**

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Showing 1 to 3 of 3 entries << < 1 > >>

# VREs as Collaboration Platform

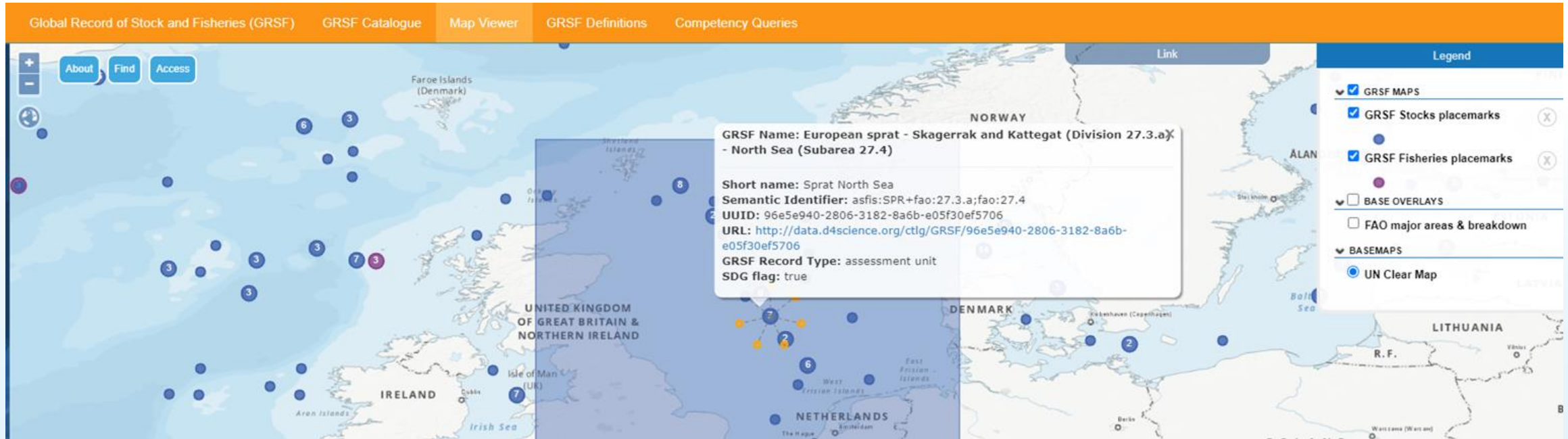
Blue Cloud VREs create reproducible research pipelines:

- From data collection through analysis and publishing.
- With the versatility to make them one-stop shops for projects
- The WorkSpace integration effortlessly transforms existing local data to public repository assets
- The application deployment options enable a wide user-base to collaborate
- Connected to communities: **FAO FIRMS partnership of 30+ organizations, directly engaged in Governance**

- Large (Blue Cloud) or focused **registries** (GRSF)
- D4Science infrastructure, embedding an **OGC Compliant SDI**
- Data services can be deeply integrated, e.g. using R Shiny
- **Community**: FAO FIRMS partnership of 30+ organizations, also engaged in Governance

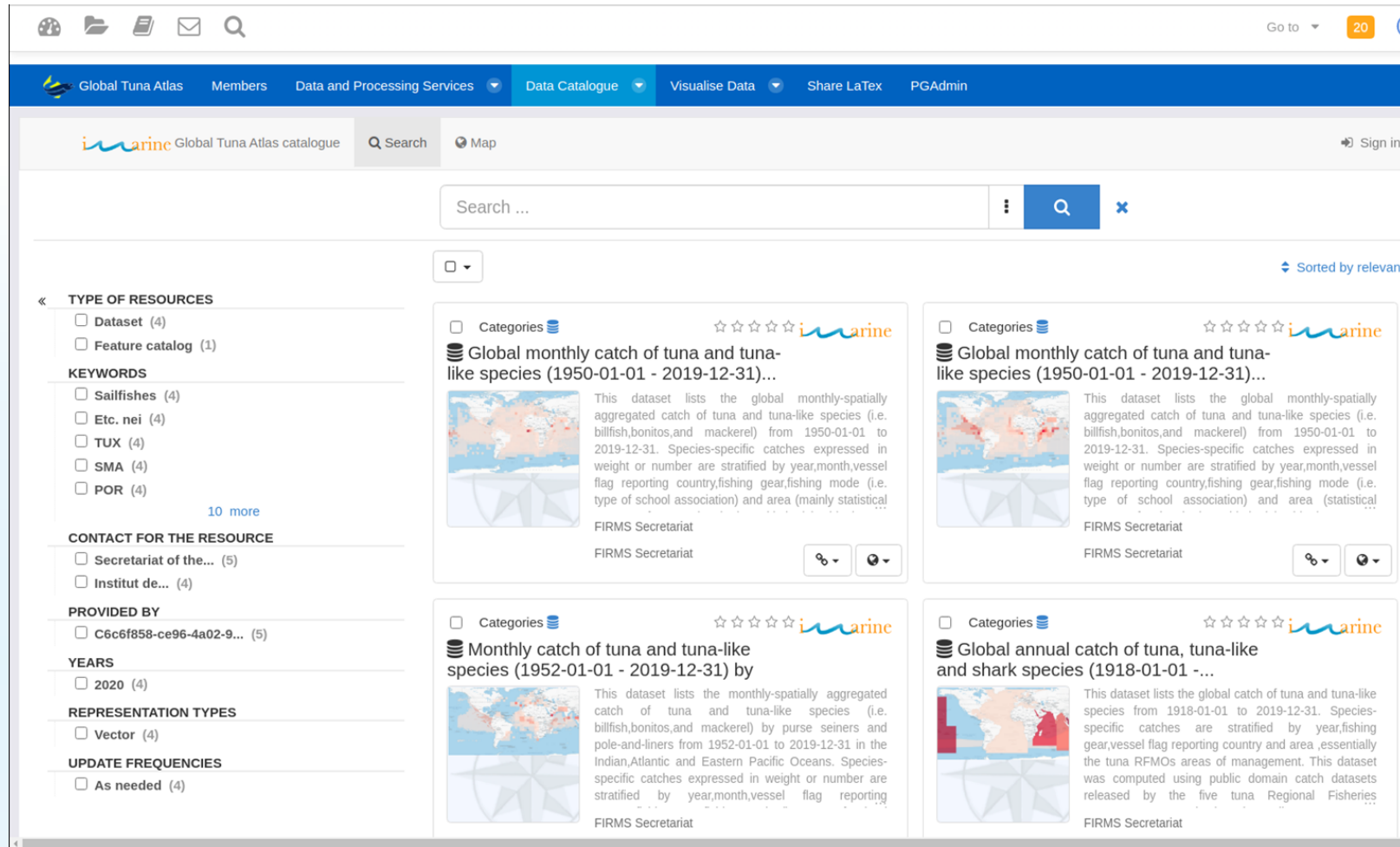


# FAIR Data + OGC Standards = Metadata driven Maps



- Traceable data for traceable fish
- GRSF Beta was released in October 2020, and we continue with content updates
- The FAO Open FAIR Viewer is integrated in the infrastructure
- Dont be shy, give it a try <https://i-marine.d4science.org/web/grsf/map-viewer>

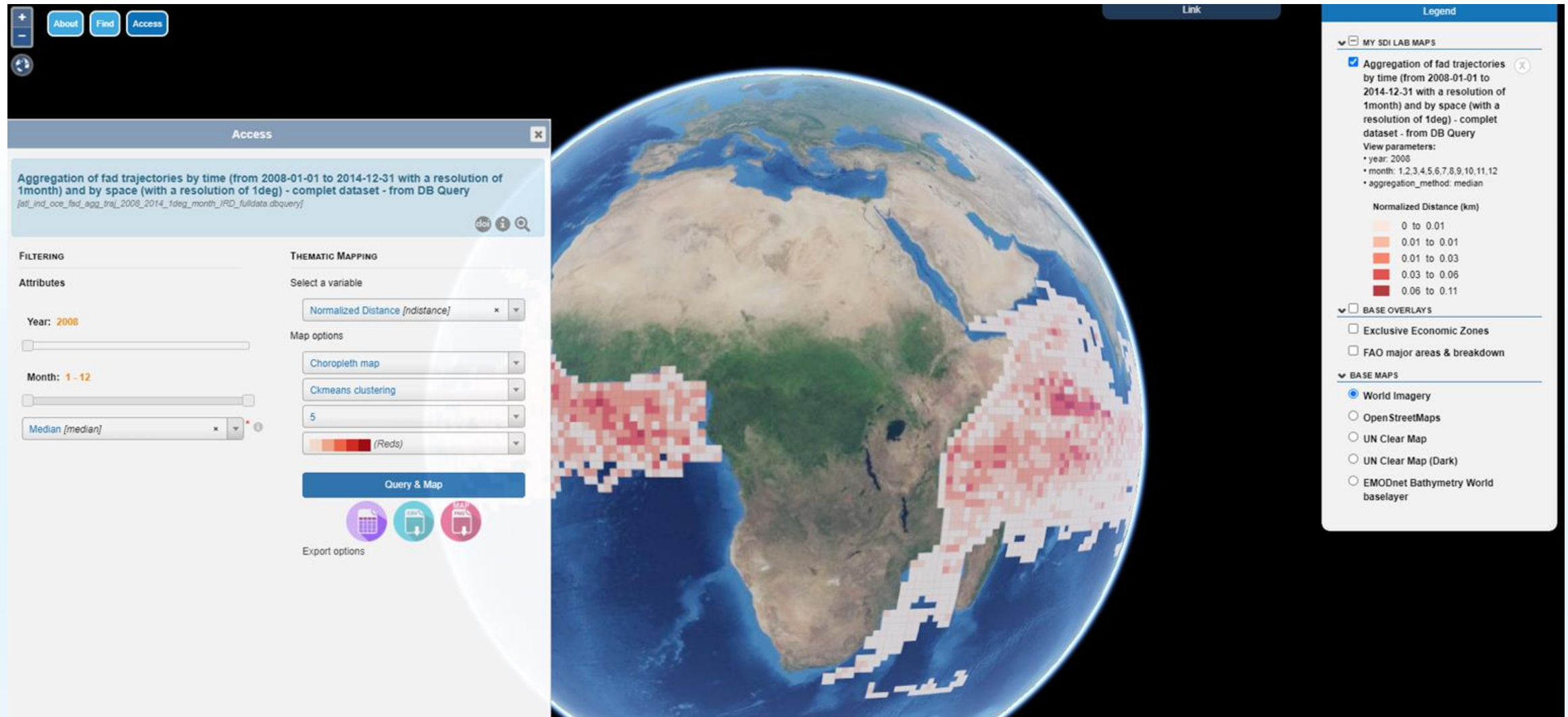


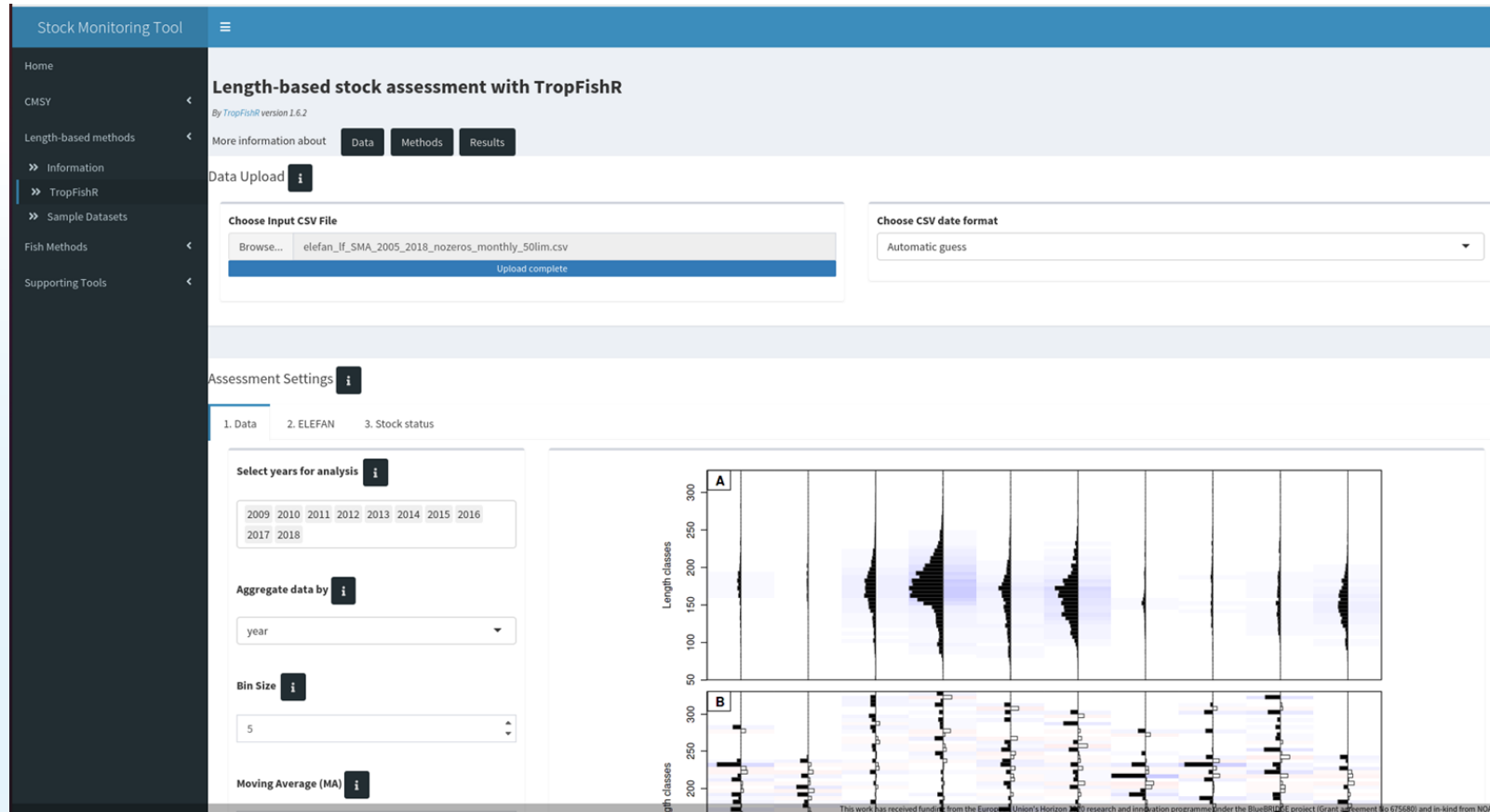



The screenshot shows the 'Global Tuna Atlas' web application. The top navigation bar includes links for 'Global Tuna Atlas', 'Members', 'Data and Processing Services', 'Data Catalogue', 'Visualise Data', 'Share LaTeX', and 'PGAdmin'. Below this is a search bar and a 'Sign in' button. The main content area displays a grid of resource cards. On the left, there is a sidebar with filters for 'TYPE OF RESOURCES' (Dataset, Feature catalog), 'KEYWORDS' (Sailfishes, Etc. nei, TUX, SMA, POR), 'CONTACT FOR THE RESOURCE' (Secretariat of the..., Institut de...), 'PROVIDED BY' (C6c6f858-ce96-4a02-9...), 'YEARS' (2020), and 'REPRESENTATION TYPES' (Vector). The resource cards show details for 'Global monthly catch of tuna and tuna-like species (1950-01-01 - 2019-12-31)...' and 'Monthly catch of tuna and tuna-like species (1952-01-01 - 2019-12-31) by...'. Each card includes a map thumbnail, a description, and the 'FIRMS Secretariat' as the provider.

- Co-funding from H2020, FAO and IRD
- ISO/OGC compliant global tuna catch (1950-present)
- Built with open source R tools
  - geoflow
  - OpenFairViewer
- Reliable, reusable, sustainable workflow
- Core services:
  - e.g., Data catalogue, MapViewer

# VRE: Global Tuna Atlas



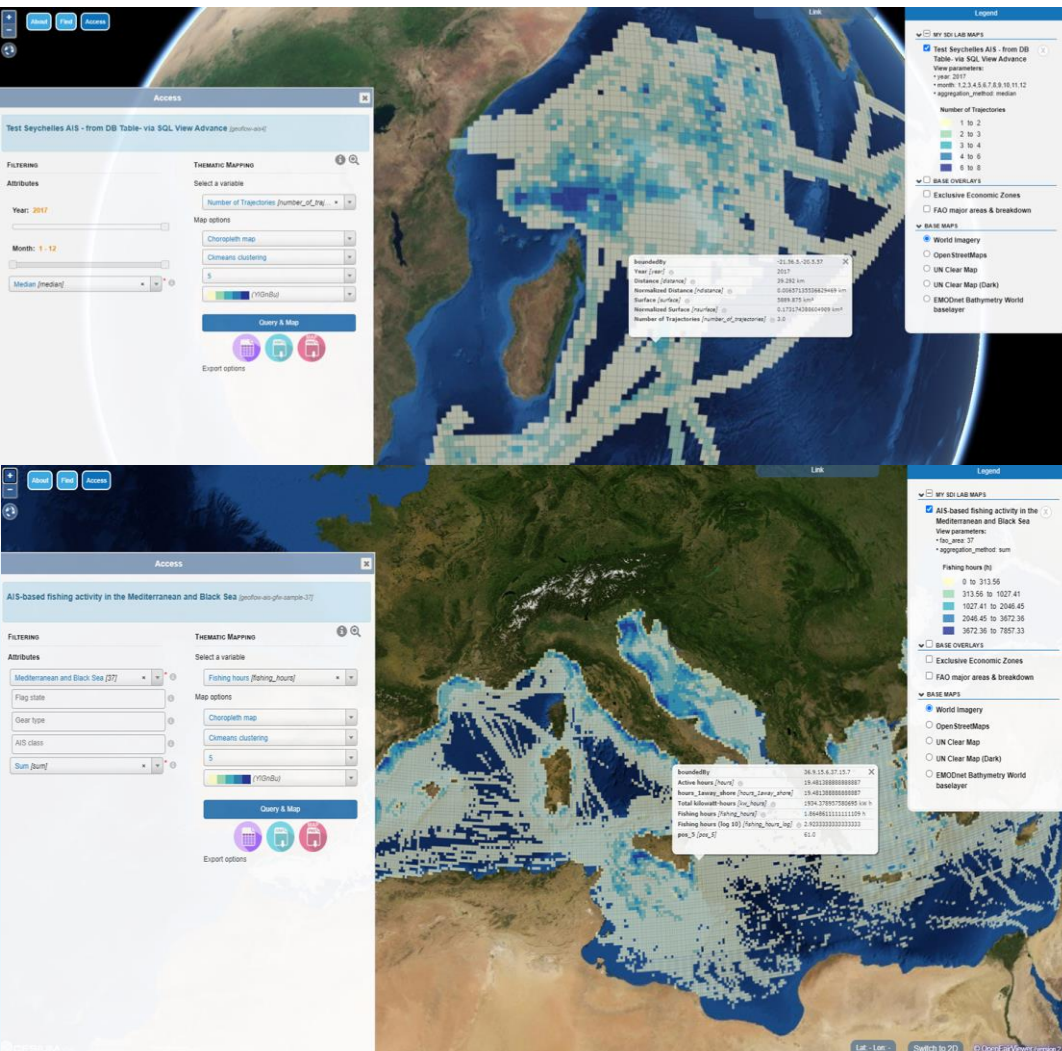


- Web-based Stock Monitoring
- R shiny Tool
  - Data-limited methods
  - E-Learning and hands-on community training
- Docker for lightweight Cloud deployment of software
- Interacts with D4Science
  - Data-Miner
  - Workspace



# VRE: the Fisheries Atlas; add context

- A FAIR amount of work to integrate spatial datasets across ecology, environment, stock monitoring indices, fleet dynamics => add an environment context
- Extend analytical services beyond map viewer; Integrated R Shiny applications )

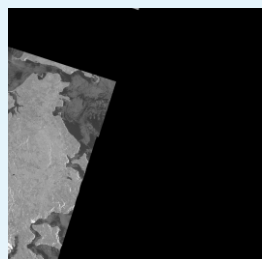
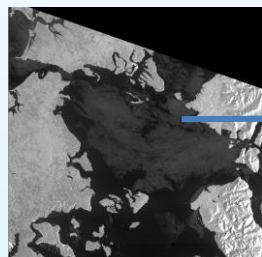
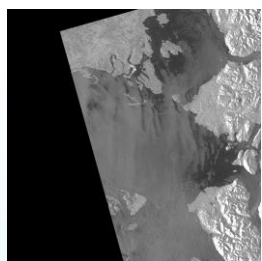




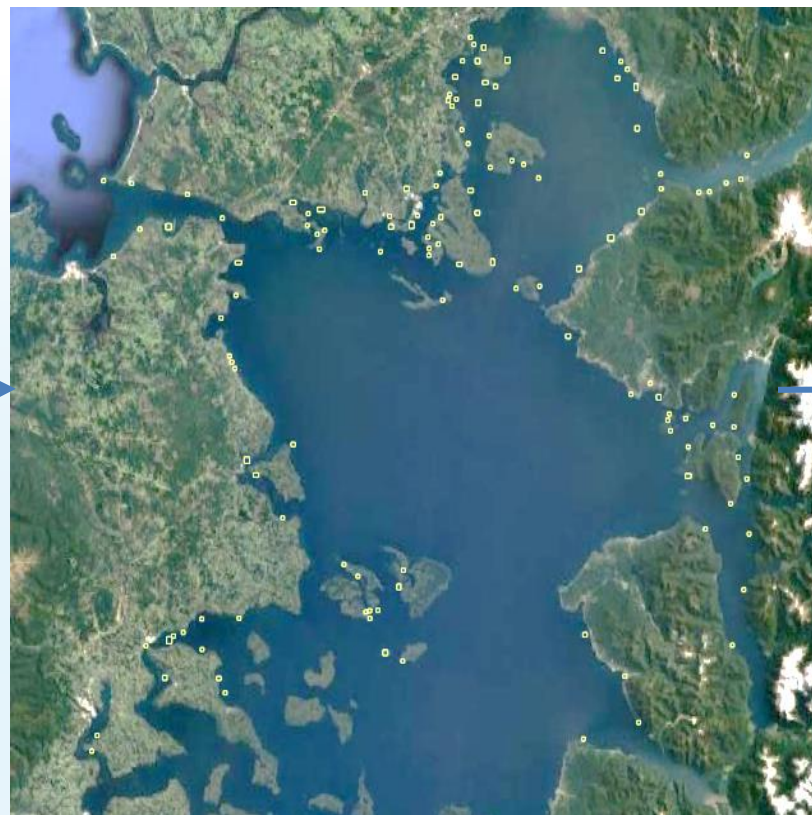
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# Aquaculture Application in Chile

- ROI – Puerto Montt => Cage detection (Completed)



Algorithm  
A

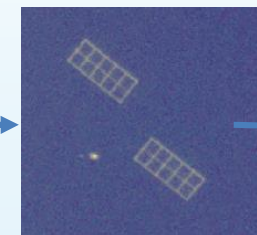
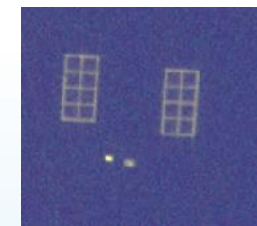


Time series of  
SAR images (S1)

Cage positions

Planet

Algorithm  
B



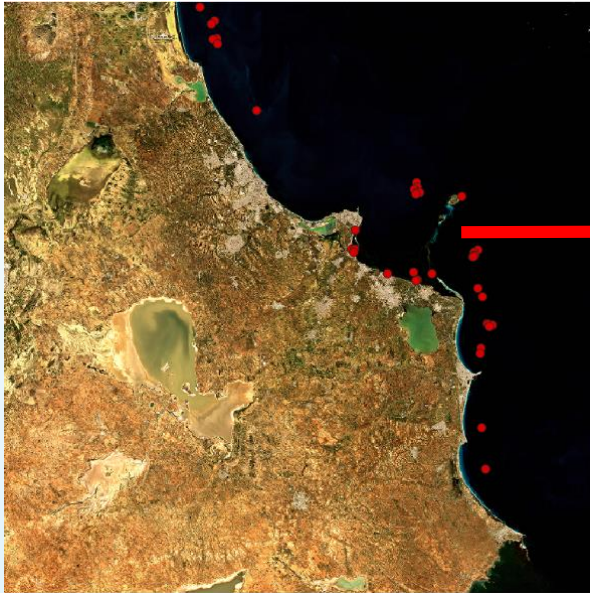
Crops of PlanetScope data over the  
detected farms

Next slide

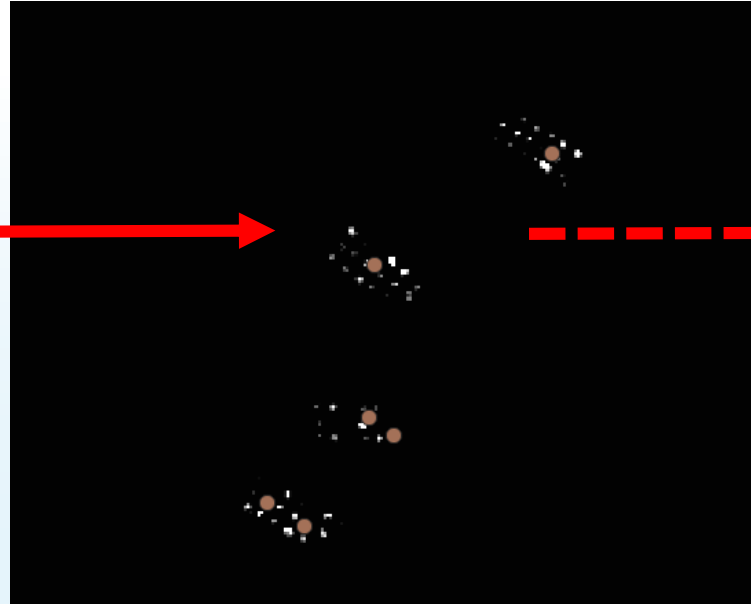


# Aquaculture Application in Tunisia

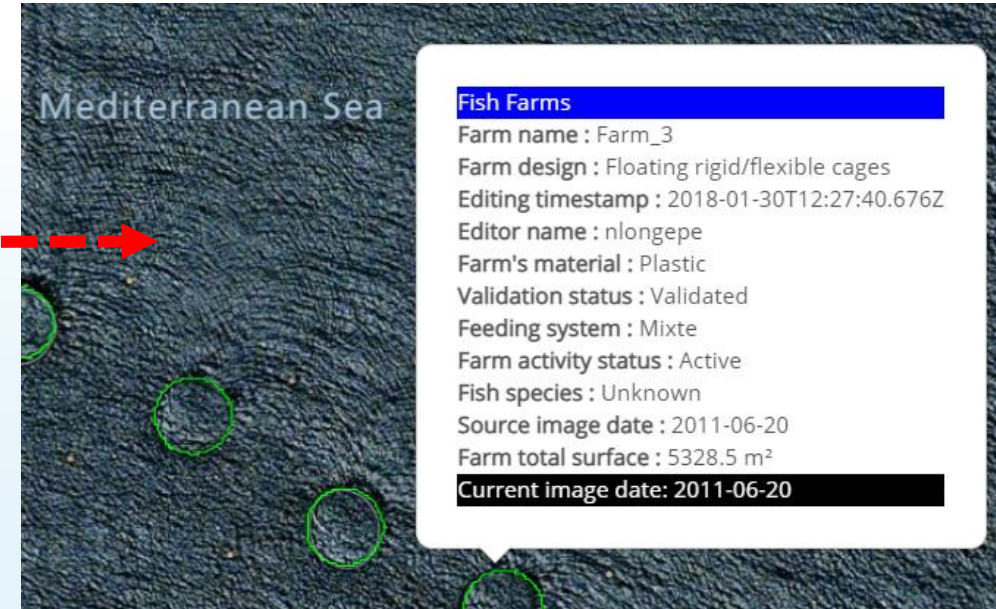
- Example ROI – Monastir area => Activity monitoring (Ongoing)



Cage positions



Cage size computation on  
Sentinel1 data (2020)  
WeKEO capable



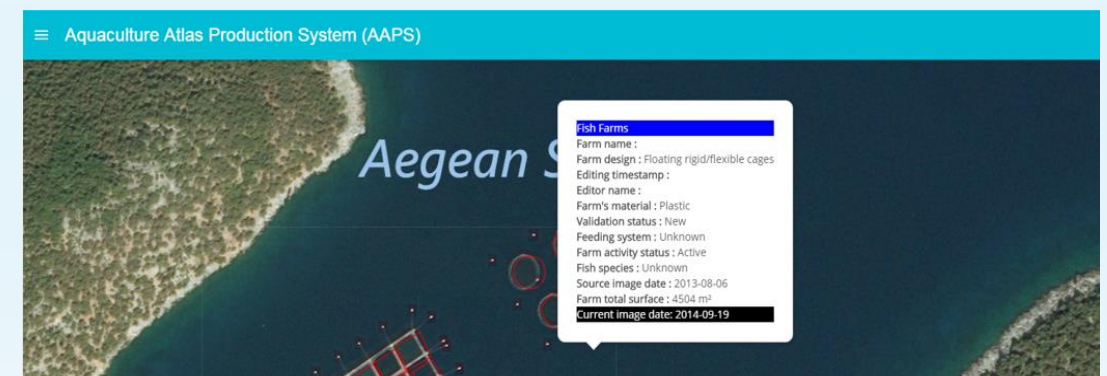
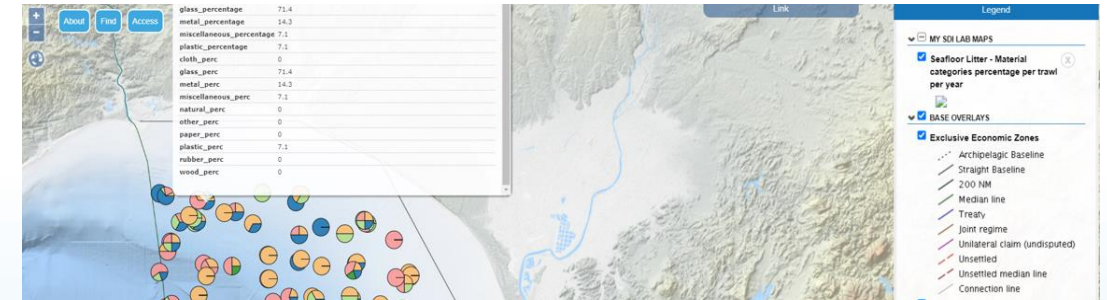
Combine with Local data  
VRE Collaboration (2021)

The collaboration chain can be applied to other regions without any modification (FAIRy well indeed ...)

# VRE Flexibility; Data Services

## Blue Cloud enables Open Science

- With Data content from the federated platforms
  - E.g. EmodNet / SeaDataNet
  - E.g. other demonstrators; EOVS
- With Data processing services from e.g. WEkEO
  - E.g. Weather events or forecasts
  - E.g. Satellite detection of Floa-things
- With User uploaded content
  - Use bespoke services to manage content
  - E.g. enrich detected features





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# *Thank you! Questions?*

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