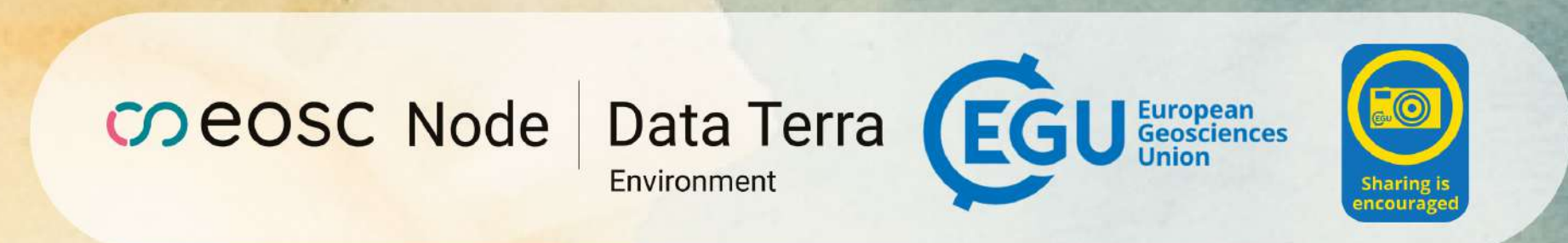
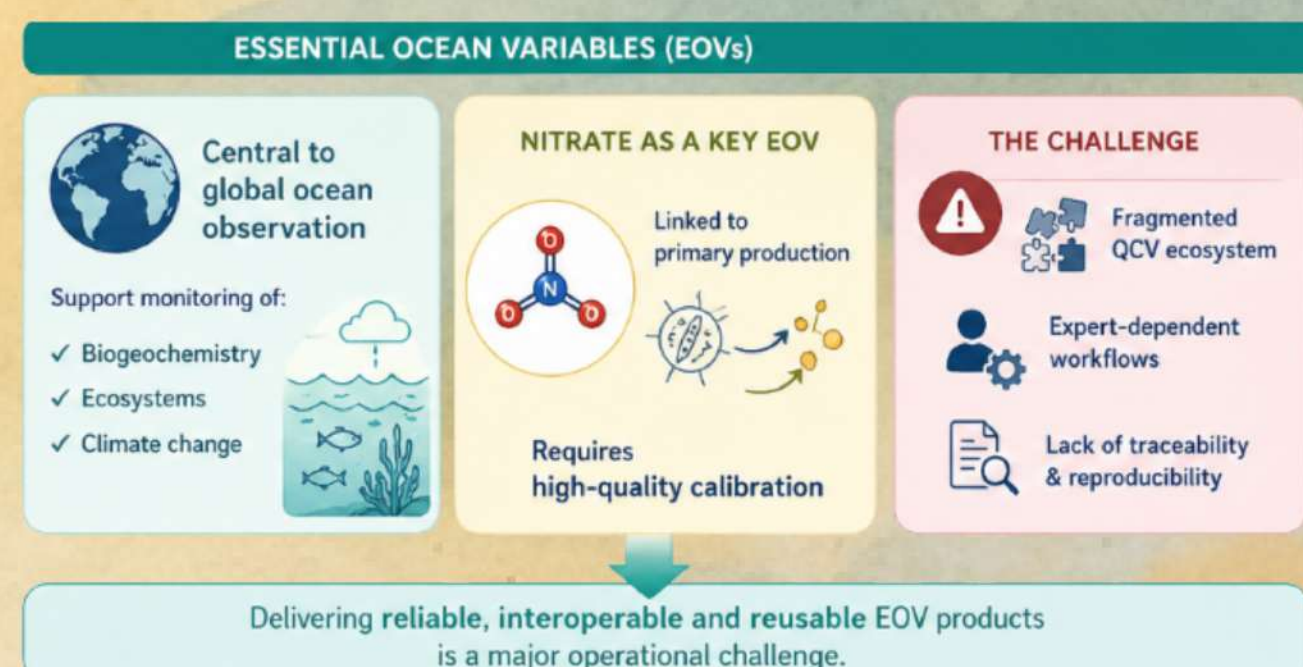
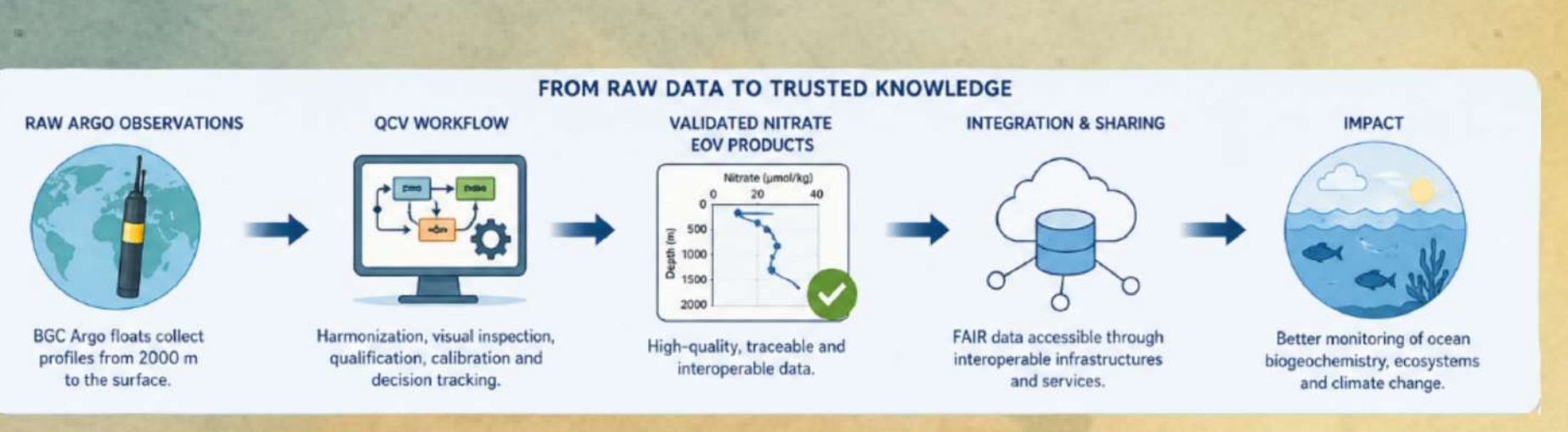


# From raw Argo observations to validated nitrate EOVs: A traceable quality control workflow (QCV) implemented in Galaxy

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Jérôme Detoc, Virginie Racapé, Marie Jossé, Clément Weber, Catherine Schmechtig, Delphine Dobler, Alban Sizun and Thierry Carval

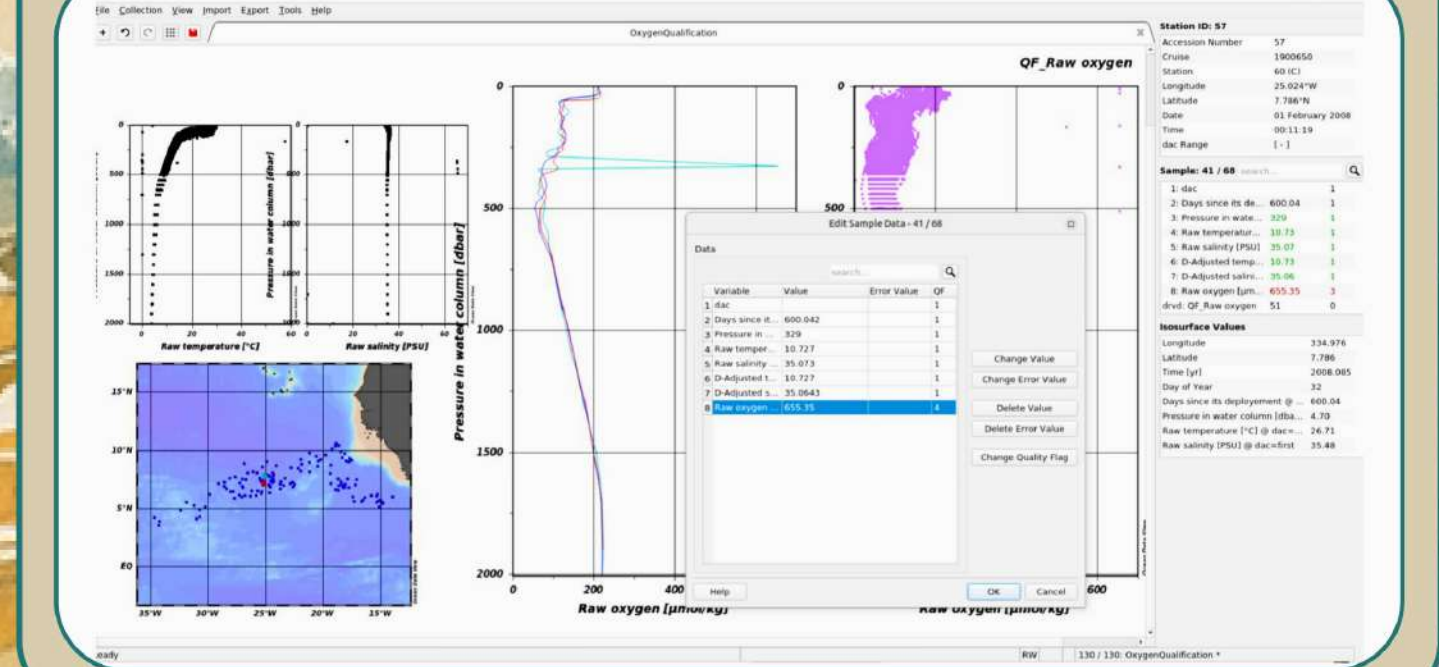


## Addressing Challenges in marine data quality and accessibility

- Facilitating the qualification, calibration, and validation of ocean BGC variables, primarily targeting the Argo and Glider networks, but adaptable for other comparable workflows with data accessible from a data lake.
- Crucial for monitoring global phenomena like ocean acidification, deoxygenation, and carbon uptake and sequestration by the ocean, contributing to broader societal impacts.
- The service's atomic and standalone components can be integrated into various solutions and environments (e.g. Galaxy platform, Cloud infrastructure, local host).
- Web-served to significantly reduce uptake costs related to software and workflow interfaces, eliminating the need for local installations.

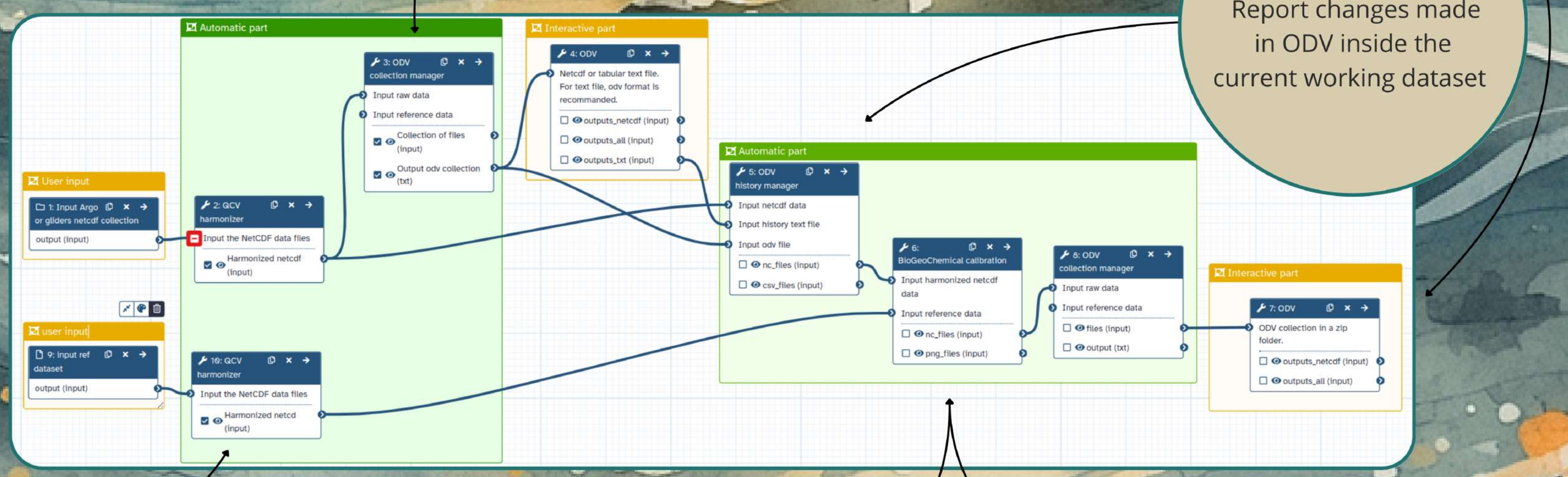
## Expert qualification

Using Ocean Data View allows the user to visualise data (profiles location, and along the vertical dimension), qualify obvious bad measures and compare with reference.



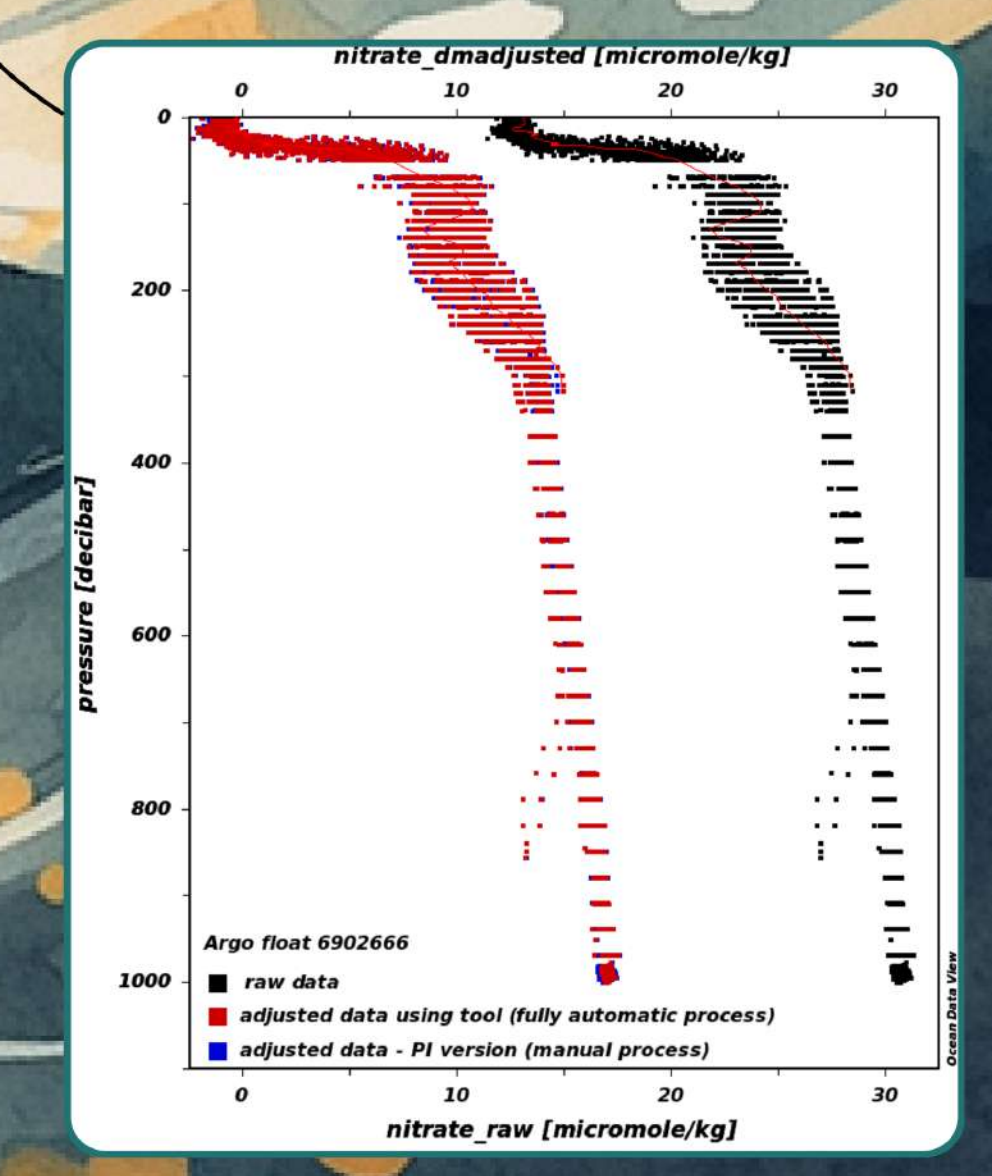
Load observation files of argo/glider platform or reference files from S3 or local machine

Data harmonisation Harmonize and aggregate many files in one easily manipulable dataset



## Nitrate calibration

- How does the DM operator estimate the Nitrate adjustment usually ?
- Define the vertical level where the reference nitrate concentration (Nref) will be estimated (visual)
  - Choose the method for estimating Nref (climatology or neural network)
  - Estimate an offset (Nfloat - Nref) and a drift in time
- To help the DM operator, the tool provides 2 new automatic computation of the parameterisation of its functions
- Estimation of the vertical level for estimating the Nref
  - Estimation of the number of useful breakpoint for the drift calculation



# From raw Argo observations to validated nitrate EOVs: A traceable QCV workflow implemented in Galaxy

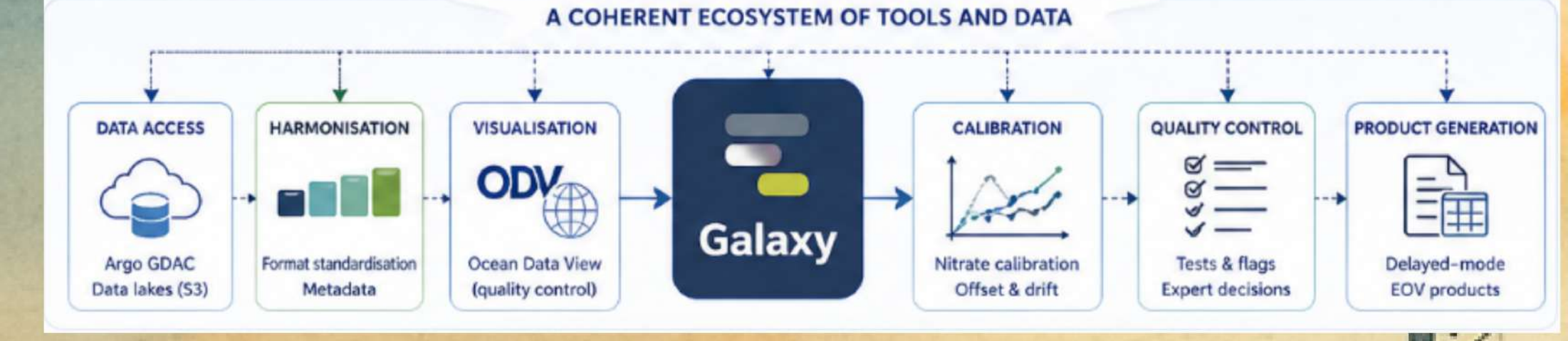
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## GALAXY: AN OPEN PLATFORM TO ORCHESTRATE QCV WORKFLOWS

Galaxy enables experts to run complete, traceable and reproducible QCV workflows — no programming required.



A typical expert workflow takes hours and multiple tools — here it is integrated into a single reproducible pipeline

### 1 DATA ACCESS & PREPARATION

Raw Argo observations are collected and prepared in Galaxy.

### 2 DATA HARMONISATION

Multiple NetCDF files are harmonised into a single interoperable dataset.

### 3 EXPERT QUALIFICATION IN ODV

Experts visually inspect and qualify data using Ocean Data View (ODV).

### 4 NITRATE CALIBRATION & VALIDATED PRODUCT

Nitrate calibration produces traceable delayed-mode EOVS products.

# HURRAY !!

Ready for deployment in EOSC as an operational EOVS production service