University of BRISTOL

OpenGHG

A platform for greenhouse gas analysis

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Conference: *deRSE25 – Karlsruher Institut für Technologie*

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The Air We Breathe: Insights from a Data-Rich Planet

Sensor Networks

Data Storage?

Embargo on data?

.nc .txt .xlsx .xml .

Licensed data?

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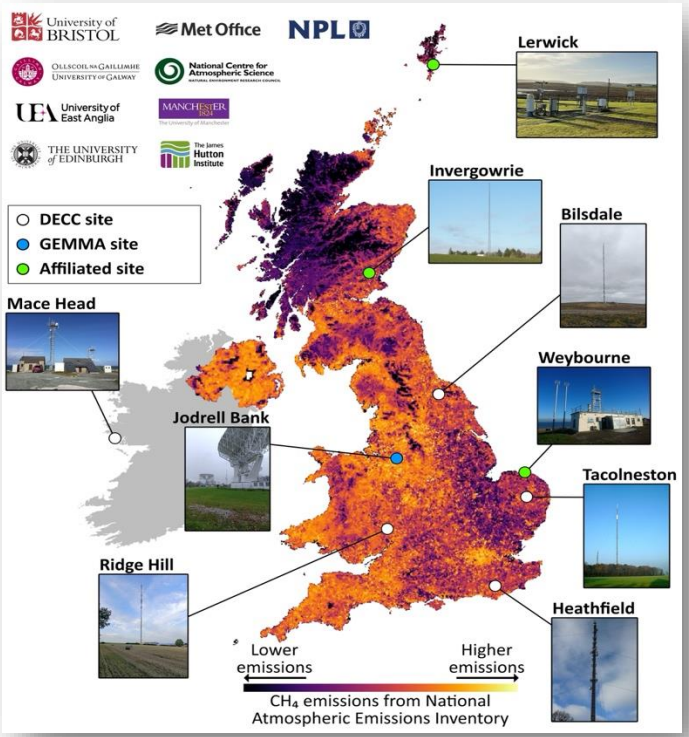
designed by Freepik from Flaticon

Sensor Network

Different calibration, Complex data

Local storage



Conventional Data sharing

High frequency, Higher Size

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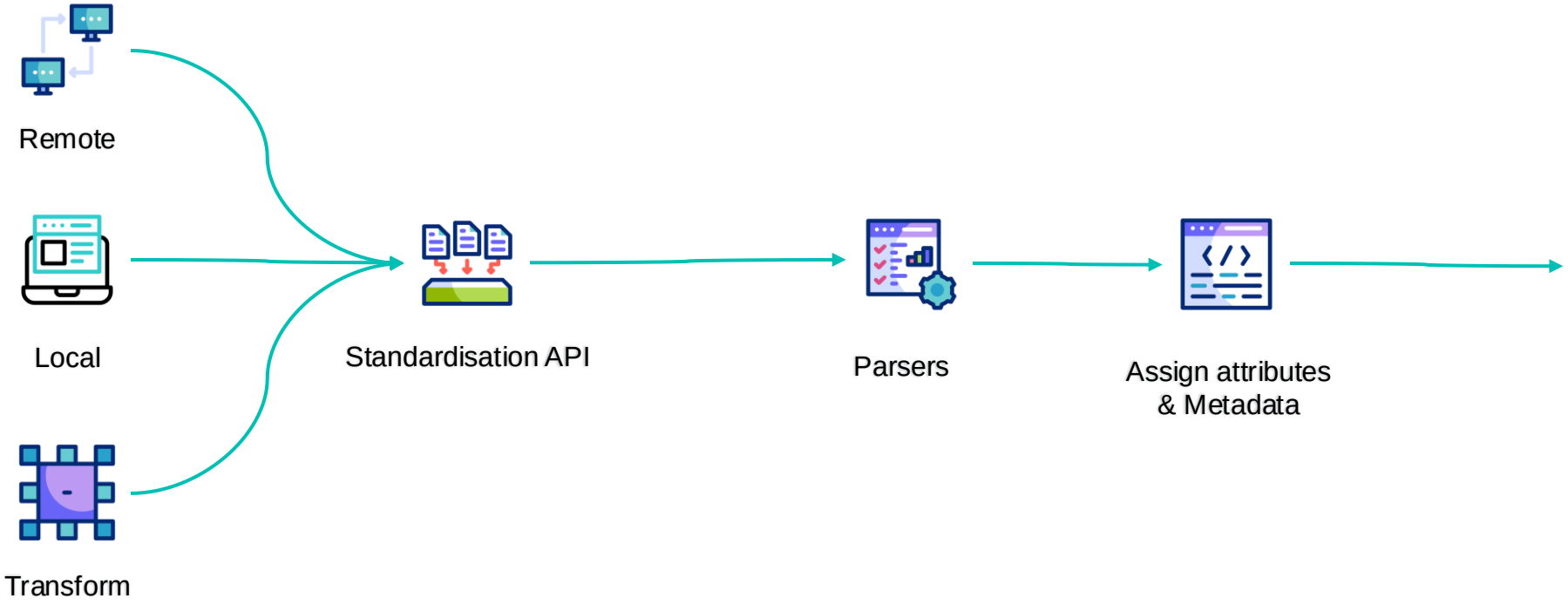
What is OpenGHG



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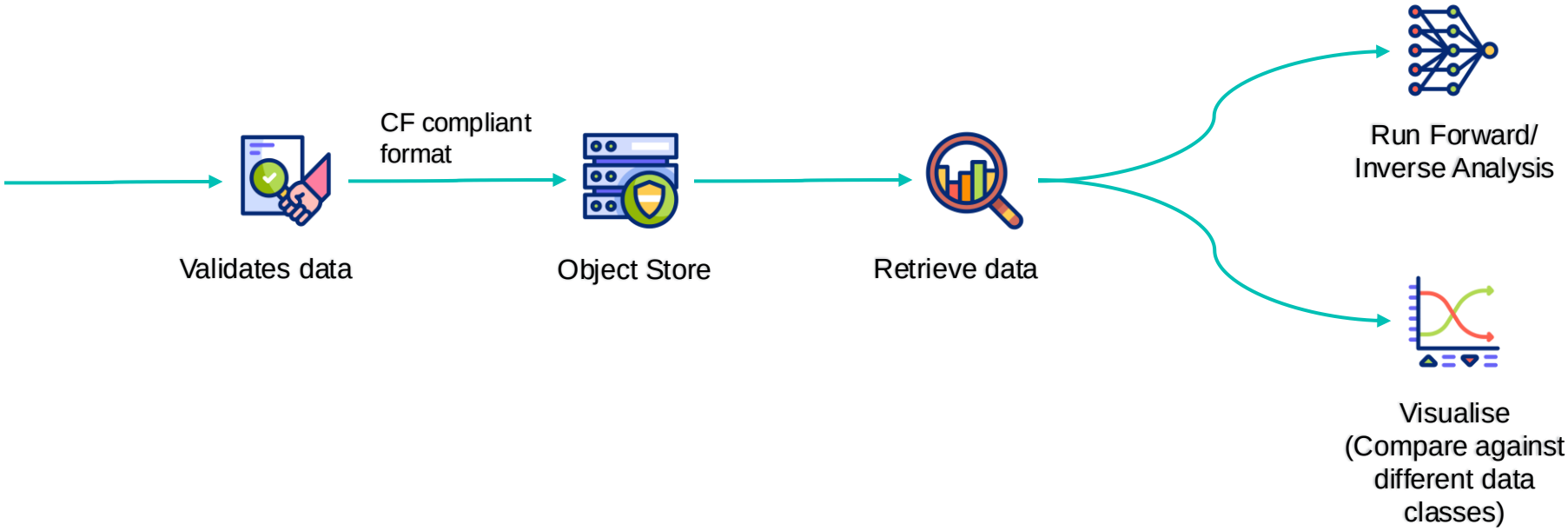
What is OpenGHG



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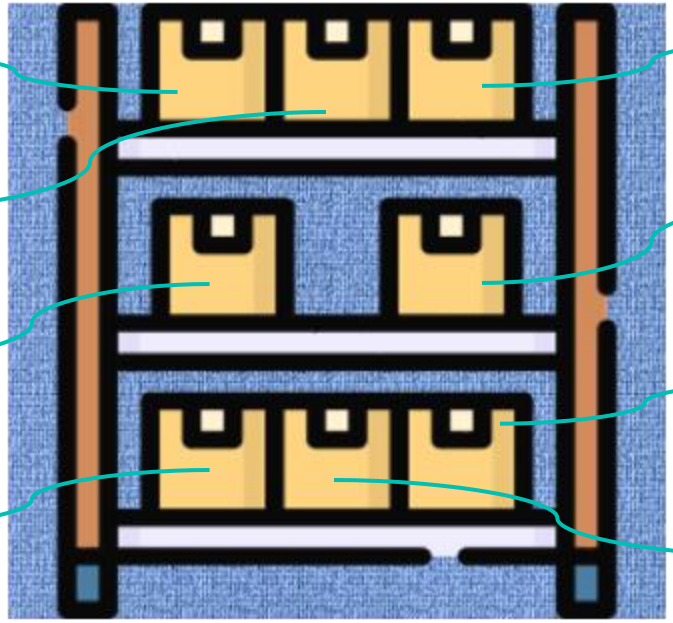
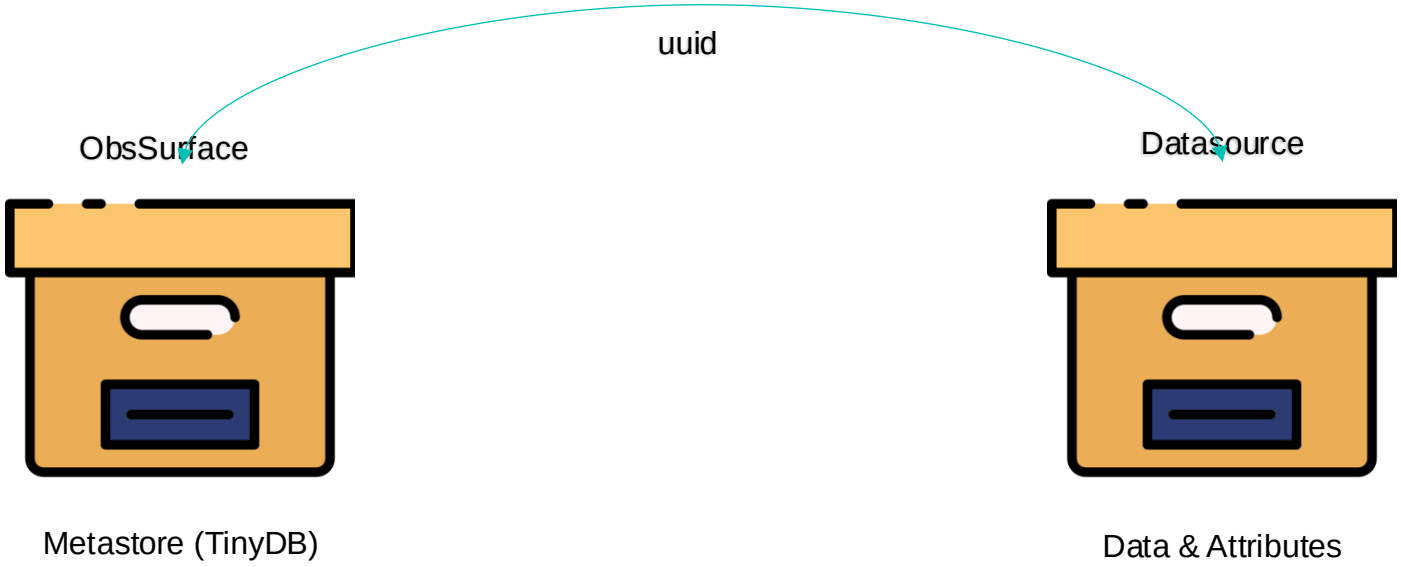
Lets look at ObectStore



Lets look at ObectStore



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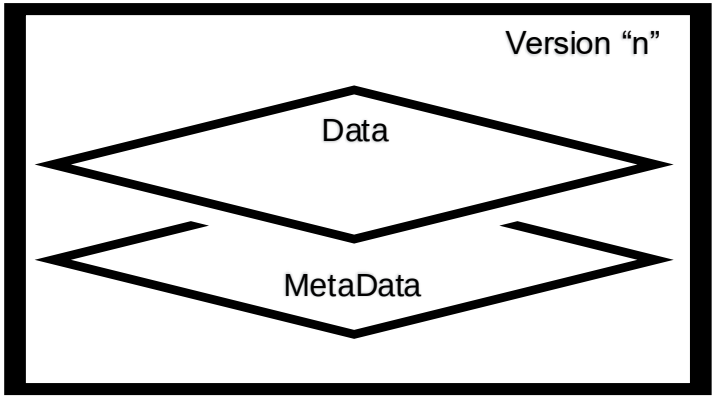
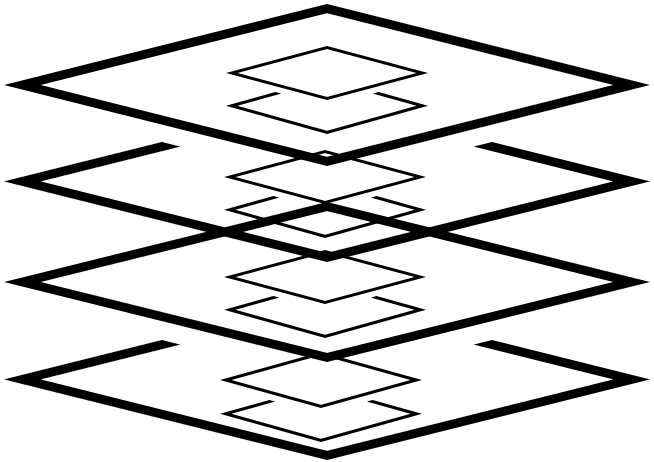
Lets Look at Datasources



site=“mhd”
species=“ch4”
inlet=“10m” …

- OpenGHG stores individual data sources using keywords
  - Categorised and searchable
- This can be directly output to netcdf containing appropriate data variables and attributes
- Stored internally in CF-compliant format

Lets Look at Datasources

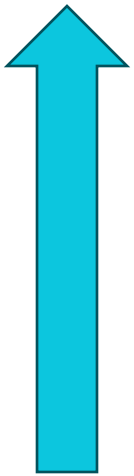


Version 4

Version 3

Version 2

Version1



Most recent version gets fetched

- Versions can be created for each of these data sources.
- Most recent will be accessed by default when retrieving the data.

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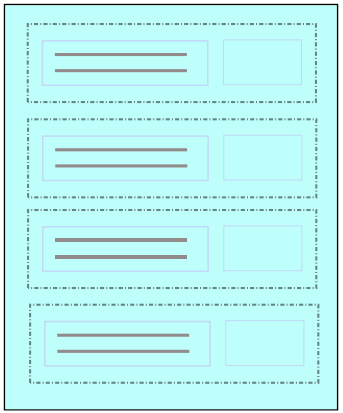
ObsPacks

OpenGHG object store
All associated data files standardised and stored.



Output data files
.netCDF
CF-compliant

ObsPack

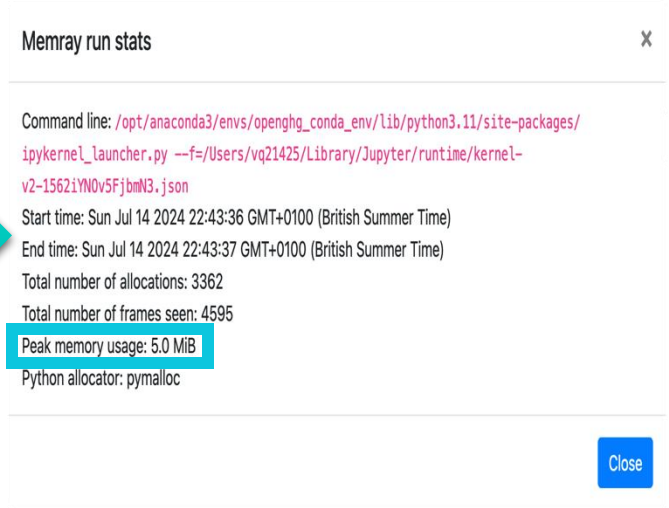
- Product description
- NetCDF files
- Data
- Attributes
- Naming convention
- Sub-categorised by observation type (surface-insitu, surface-flask, column)

Zarr's Impact: Faster, Smarter, and More Efficient Data Storage

Before

99.93% Decrease (Memory Usage)

After



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OpenGHG in Ongoing Research

AGAGE

The ACRG runs three of the world's nine AGAGE (Advanced Global Atmospheric Gases Experiment) global background stations.

CORSO

The CORSO project directly contributes to the implementation of the new European anthropogenic carbon dioxide emissions Monitoring and Verification Support capacity (CO2MVS) in the Copernicus Atmosphere Monitoring Service (CAMS).

GEMMA

GEMMA is a programme to enhance the UK's measurement and modelling capability for greenhouse gas emission estimation.

PARIS

PARIS is a 4-year Horizon Europe research project that aims to improve estimates of greenhouse gas emissions from a selection of European countries

UK DECC Network

The UK DECC (Deriving Emissions linked to Climate Change) Network consists of four sites in the UK and Ireland measuring greenhouse and ozone depleting gases.

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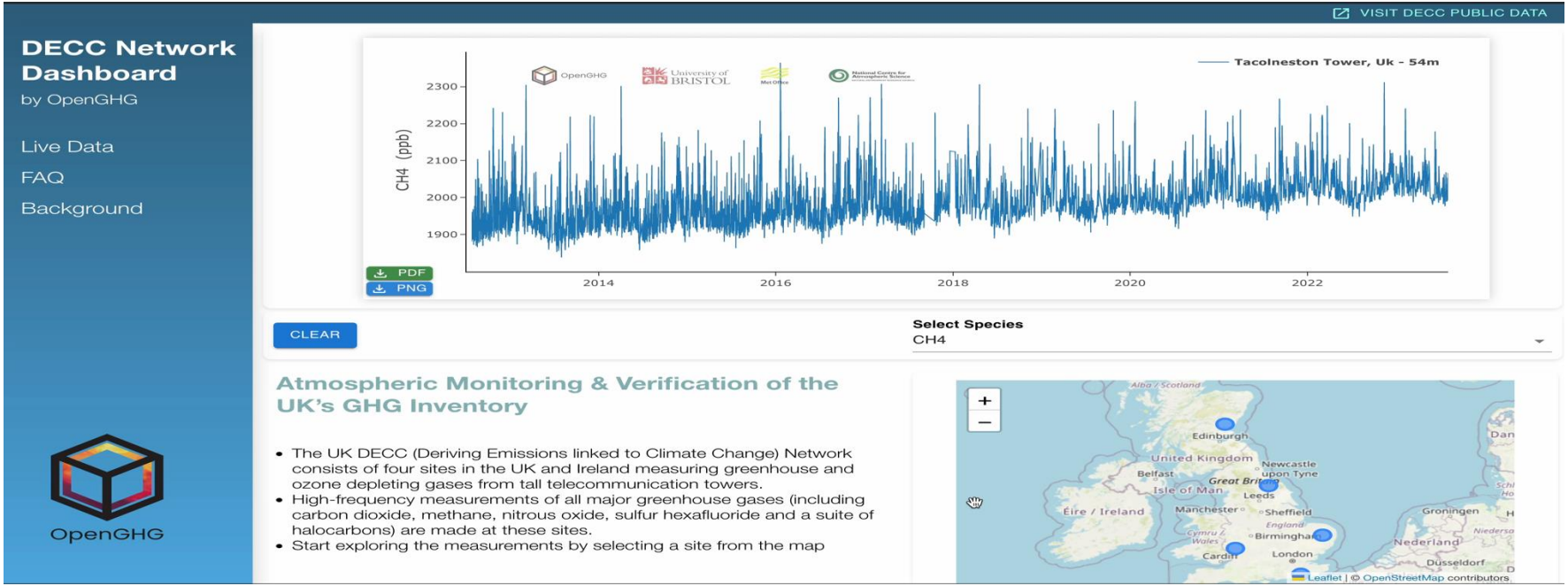
Data Visualisation



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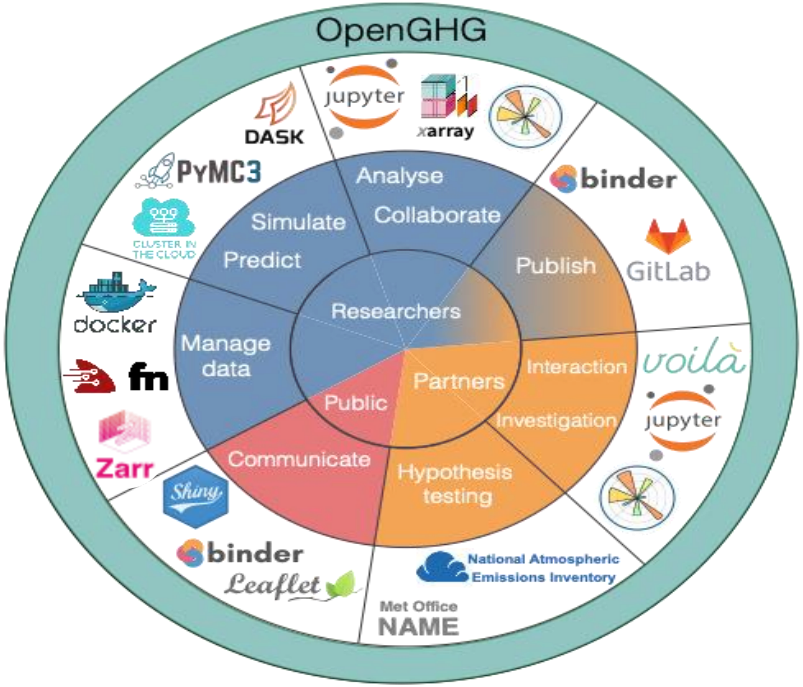
Ongoing Research

- Adding capabilities to handle more variants of satellite data.
- Developing dashboard for the GEMMA project, plans to roll out to public.
- Allow more labelling of data sources.
- Allow users to define custom parsers.
- Increase Inverse modelling capabilities for added satellite data.

Building Blocks



Connect with us:

Web: openghg.org

Docs: docs.openghg.org

Dashboard: https://openghg.github.io/decc_dashboard/

Tutorials: Youtube

Contribute: github.com/openghg

Emails: matt.rigby@bristol.ac.uk, prasad.sutar@bristol.ac.uk, rachel.tunnicliffe@bristol.ac.uk, brendan.murphy@bristol.ac.uk

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