New Space Calibration Monitoring System

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Content

- Motivation

- Supporting Activity
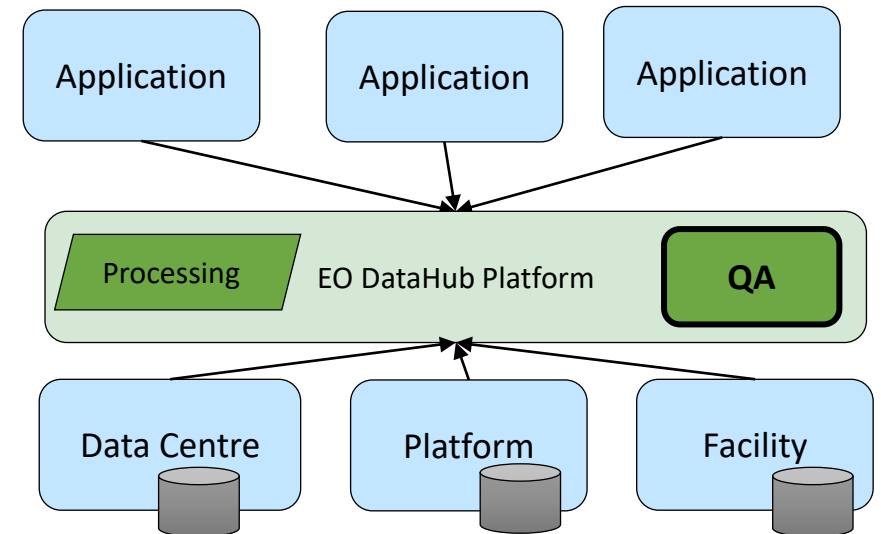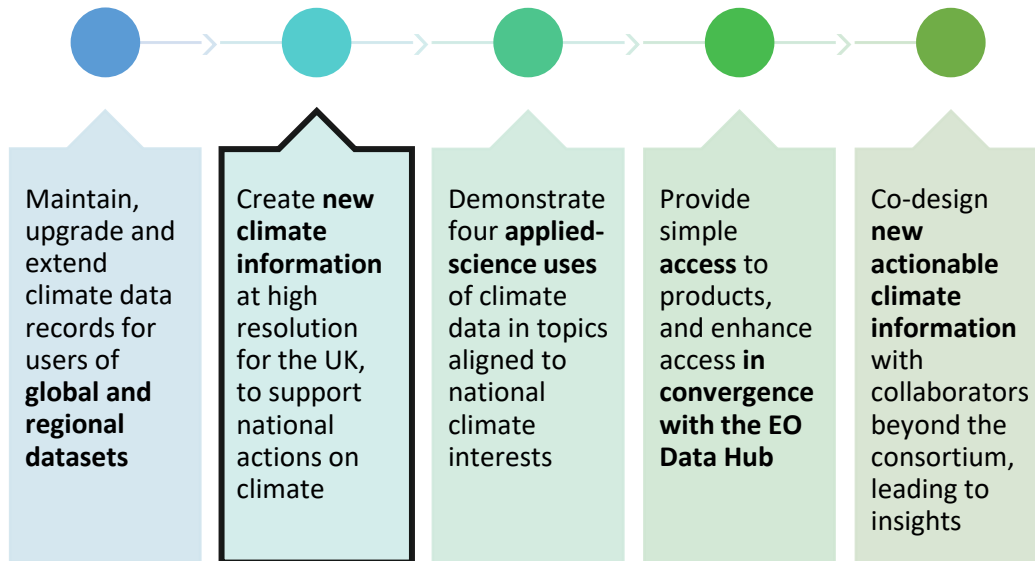
- Calibration Monitoring System

- Next Steps

"New Space" Mission Data Quality

- Users need to know the extent "new space" missions are fit for quantitative applications
  - Activities such ESA EDAP & NASA CSDA
  - Discussion fora such as JACIE & VH-RODA

- Proposal at VH-RODA 22 (via I. Zuelta) to develop a community matchup comparison system to publish biases of missions wrt references

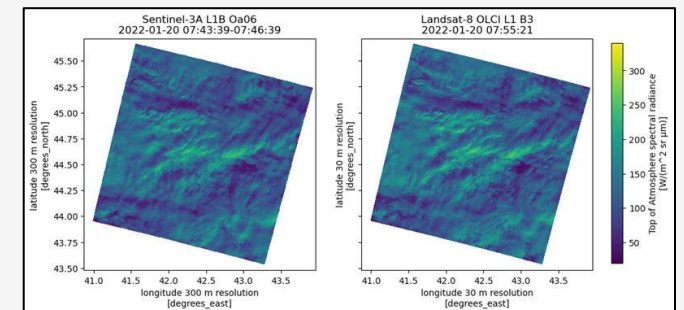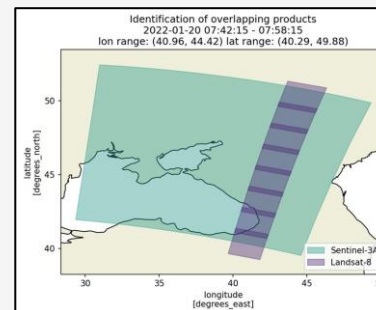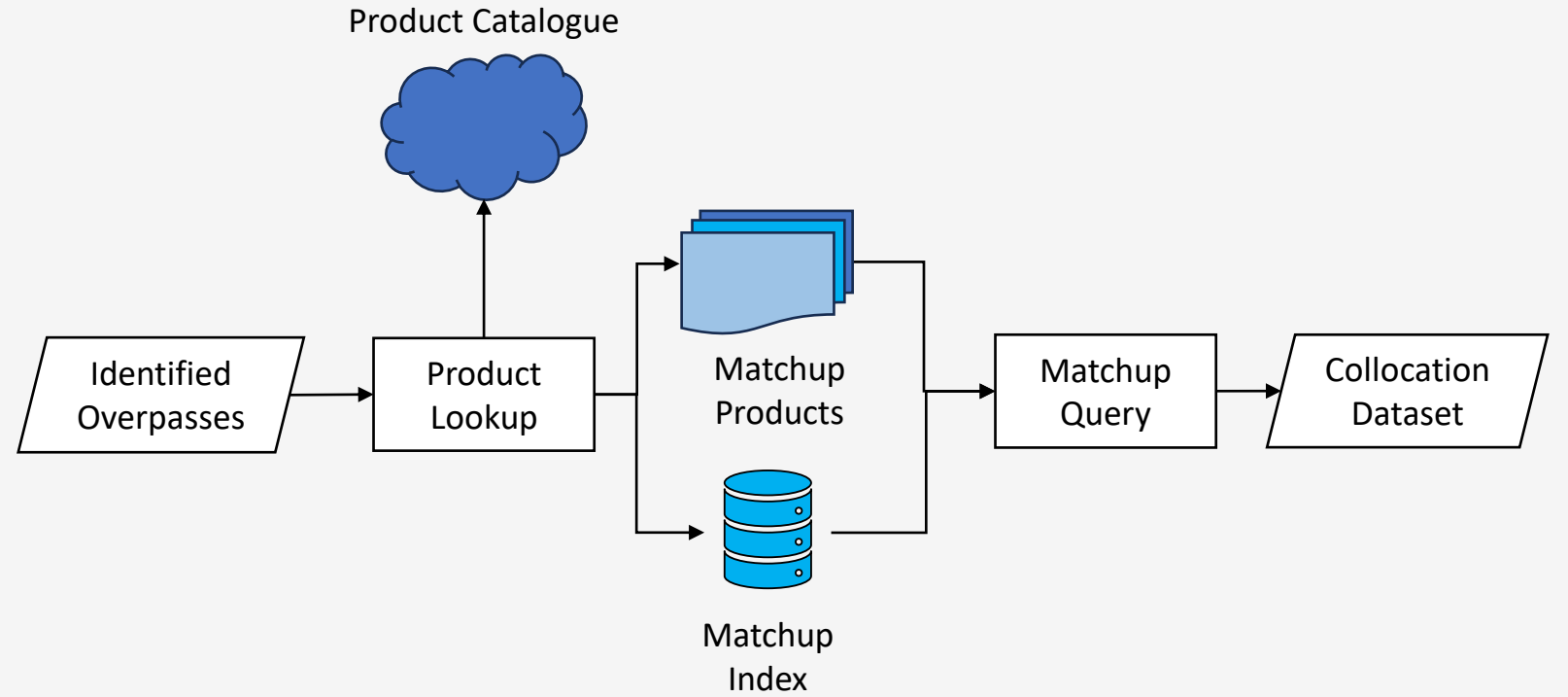- CEOS New space initiative – response to WGCV-52 ACT-18/19
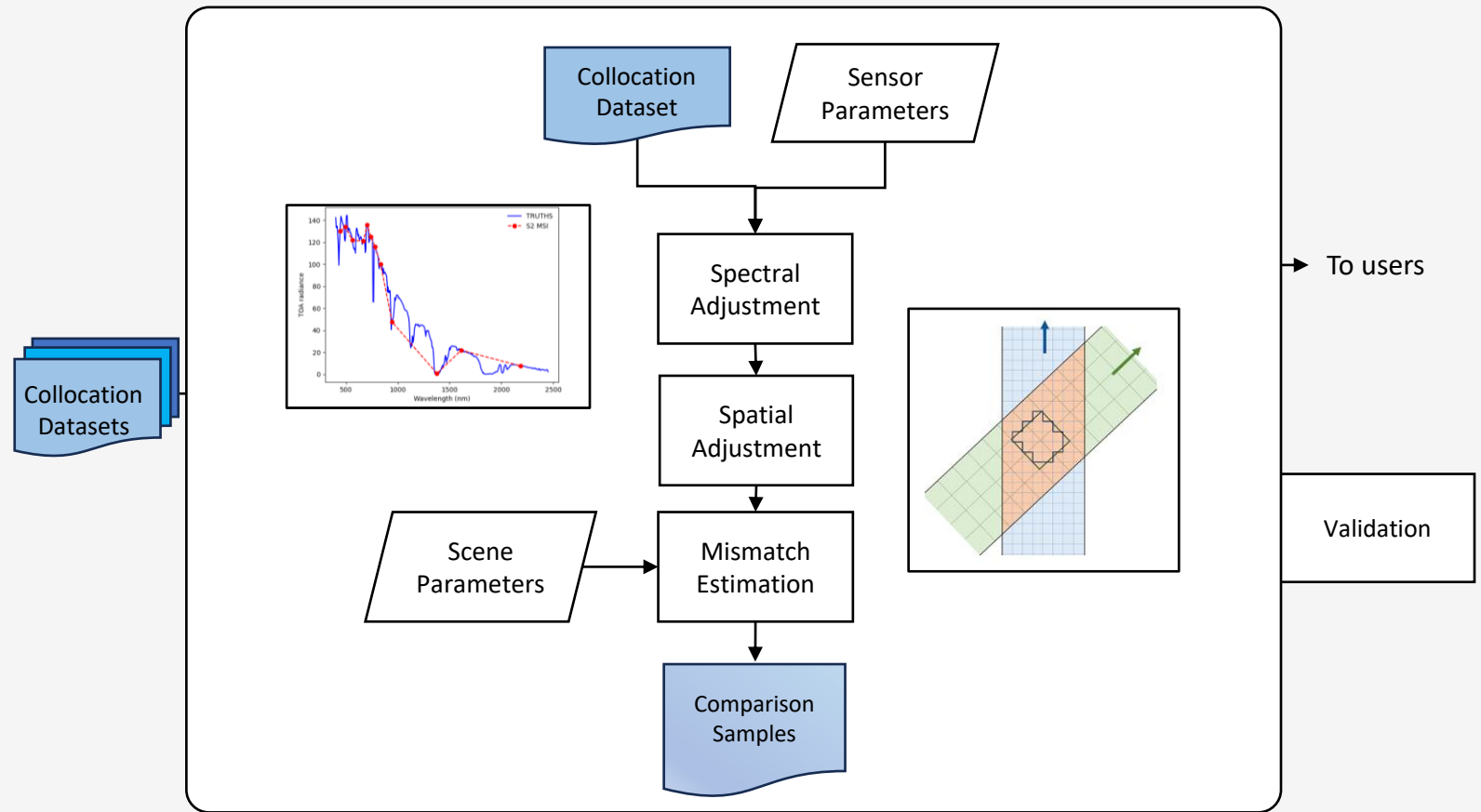
VH-RODA 2022, ESRIN

Supporting UK National Activity

Maintain, upgrade and extend climate data records for users of global and regional datasets

Create **new climate information** at high resolution for the UK, to support national actions on climate

Demonstrate four **applied-science uses** of climate data in topics aligned to national climate interests

Provide simple **access** to products, and enhance access **in convergence with the EO Data Hub**

Co-design **new actionable climate information** with collaborators beyond the consortium, leading to insights

EOCIS — EARTH OBSERVATION CLIMATE INFORMATION SERVICE

Application   Application   Application

Processing   EO DataHub Platform   QA

Data Centre   Platform   Facility

EARTH OBSERVATION DATA HUB

Proposed Calibration Monitoring System

- Build from NPL's matchup database and cal/val pipeline to answer need from "new space" users – develop a CEOS calibration monitoring system
  - Provide location for "new space" missions to deliver set of products for defined cal/val sites
  - Analyse and develop a web dashboard to share results
- Start with an initial MVP implementation:
  - Sensors – Sentinel-2, Landsat-8, with commercial providers coming later after engagement
  - CEOS References – RCN GONA, RCN RRV, Hypernets GONA, with PICS L4 coming later (setting up model will take a little longer)
    - Potentially add to list but maintain a minimum core to constrain effort
    - Look to have result from a combined comparison of sites
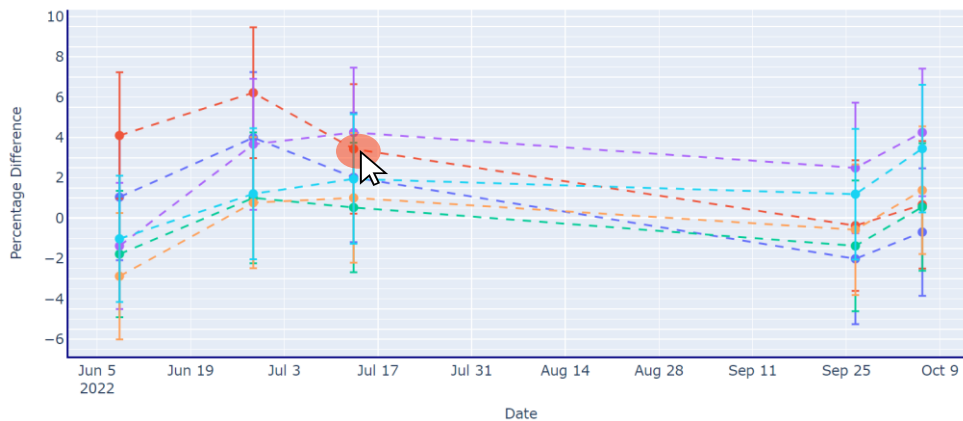 - Plan for full demo at VH-Roda (Nov)

Pages with background information

Comparison Selection Pane

Mission:

Sentinel-2A

Reference:

× HYPERNETS - GHNA   × RadCalNet - GONA

Sentinel-2A Wavebands:

× B2 - 492 nm   × B3 - 559 nm

× B4 - 664 nm

Start Date:

06/08/2022 → 10/06/2022

Comparison Time Series

Summary

Sentinel-2 Wavelengths   Average Bias
RadCalNet GONA
• 492.43657768   X%
• 559.84905824   Y%
• 664.62175142   Z%
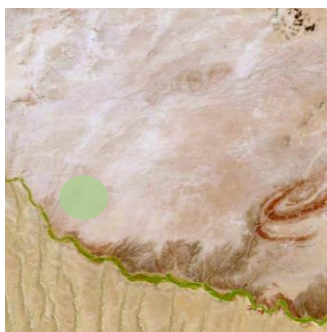
HYPERNETS GHNA
• 492.43657768   A%
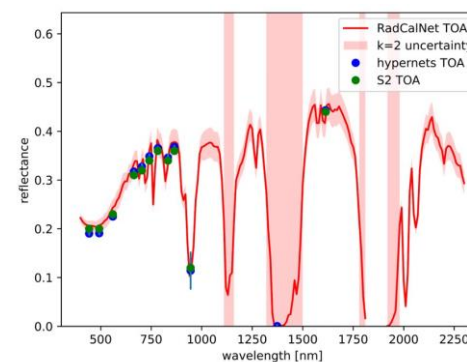• 559.84905824   B%
• 664.62175142   C%

Time Series Analysis

Matchup Analysis

Mission Product	S2A_MSIL1C_20200327T110651_N0209_R137_T30UXC_20200327T115046
Mission Time	2020/03/27 11:06.51
Reference Product	GONA01_2023_87_v04.09
Reference Time	2020/03/27 11:00.00
AOD	0.019
...	

Mission Quicklook

Comparison Data

Per Matchup Information and Analysis

CEOS
Committee on Earth Observation Satellites
Working Group Calibration and Validation
Privacy Policy | Disclaimer | Accessibility

python

Dash
by plotly

Version 1.1

Considerations for Development

- Code to be open sourced
  - Gives transparency for users and vendors
  - Enables community development

- Missions able to join on a voluntary basis
  - Software effort on the vendor side – e.g., reader plugins
  - Matchup products to be delivered to platform, but not intended to be redistributed

- Should be set up to run automatically to minimise on-going effort

Conclusions & Next Steps

- Apply NPL's cal/val pipeline to answer need from "new space" vendor/users – proposed as a CEOS calibration monitoring system

- Developing MVP for presentation/discussion at VH-RODA

- Seeking volunteer Beta test from Newspace as demo