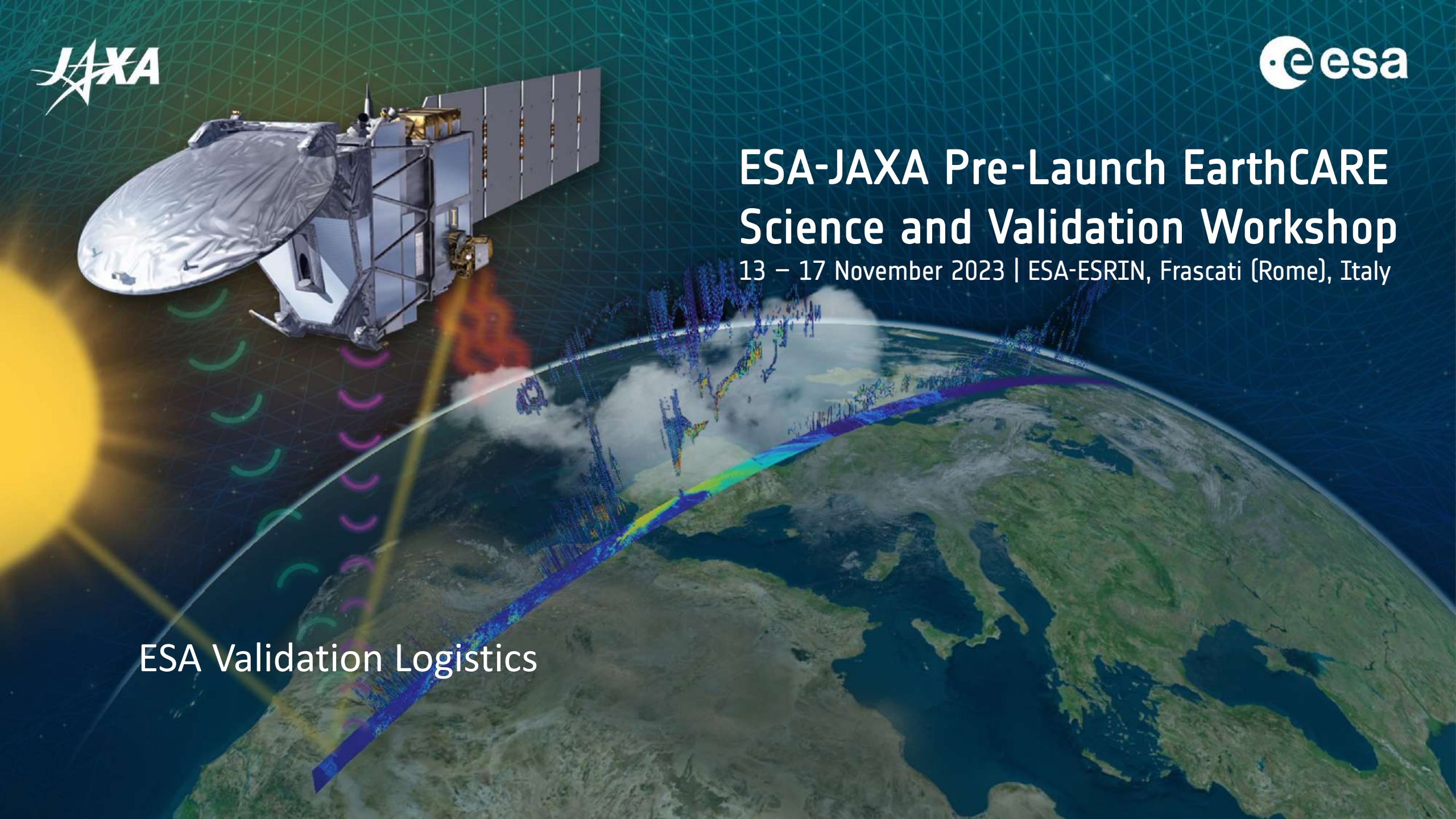




ESA-JAXA Pre-Launch EarthCARE Science and Validation Workshop

13 – 17 November 2023 | ESA-ESRIN, Frascati (Rome), Italy

ESA Validation Logistics





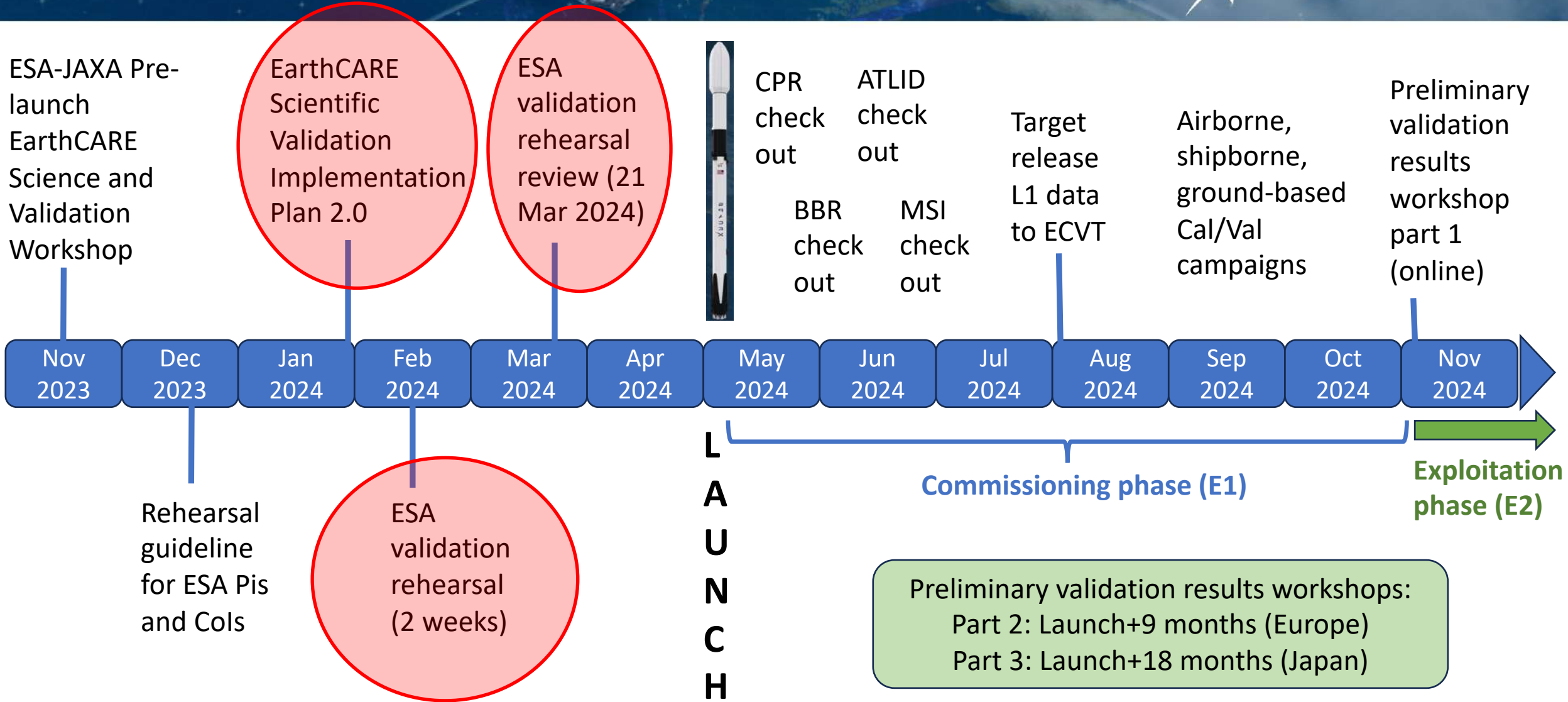
Upcoming activities and events

Scientific Validation Implementation plan

ESA validation rehearsal

Validation support tools

Upcoming validation activities and events



EarthCARE Scientific Validation Implementation Plan 2.0



ESA UNCLASSIFIED



estec

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F +31 (0)71 565 6140
www.esa.int

EarthCARE Scientific Validation Implementation Plan (VIP)

Version 1.2 in 2021 :

- Vol 1 overview, scope, objectives of ESA and JAXA validation activities
- **Vol 2 Details of ESA validation activities**
- Vol 3 Details of JAXA validation activities

Prepared by: Rob Koopman
Reference: EOP-PX
Issue/Revision: EC-PL-ESA-SYS-10.49
Date of Issue: 1.2
Status: 26/02/2021
Final

European Space Agency
Agence spatiale européenne

Towards readiness for release of version 2.0 in **Jan 2024**



Each AO proposal is presented in the SVIP vol 2 **based on input from Pis**
→ **Poster session**



ESA validation rehearsal



Who is it for?

ESA PIs and co-Is

What is it for?

Validation readiness

ESA validation rehearsal



Who is it for?

ESA PIs and co-Is

What is it for?

Validation readiness

Familiarization with:

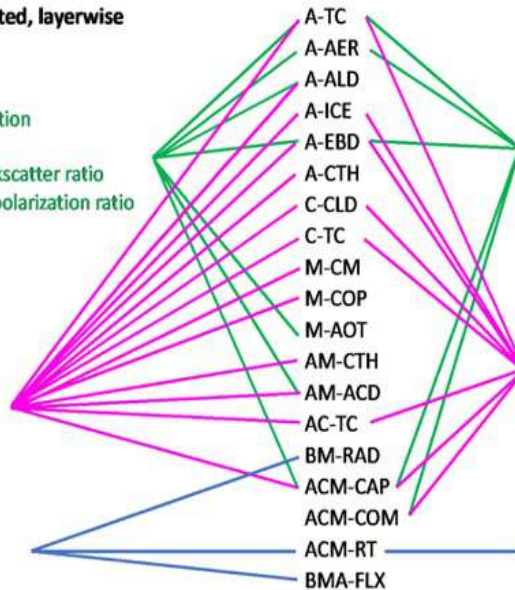
- ESA data products

Cloud-top, vertically integrated, layerwise

Aerosol
 Aerosol layer height, classification
 Optical thickness,
 Layer-mean extinction-to-backscatter ratio
 Layer-mean particle linear depolarization ratio
 Angstrom exponent

Cloud and precipitation
 Cloud-top height, phase, type
 Optical thickness
 Effective radius
 Liquid, ice, rain water path
 Surface snow rate
 Surface rain rate

Radiation
 Radiative fluxes at TOA
 Broadband radiances at TOA

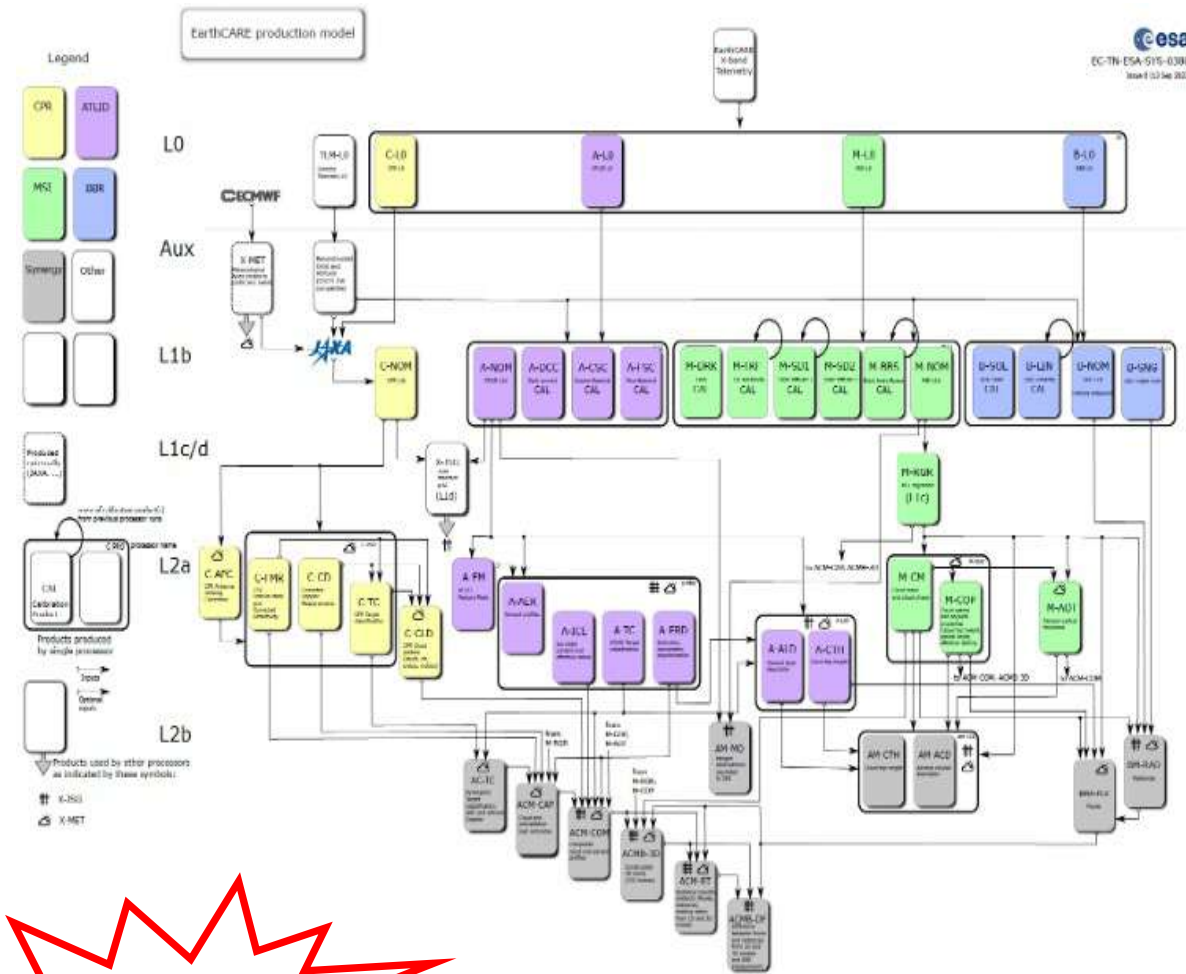


Vertical profiles

Aerosol
 Aerosol fraction
 Aerosol species
 Extinction
 Extinction-to-backscatter ratio
 Particle linear depolarization ratio

Cloud and precipitation
 Extinction
 Effective radius
 Liquid, ice, rain water content
 Snow rate, median diameter
 Rain rate, drop size
 Cloud/precipitation fraction
 Cloud/precipitation classification

Radiation
 Broadband radiances
 Radiative fluxes



ESA validation rehearsal



Who is it for?

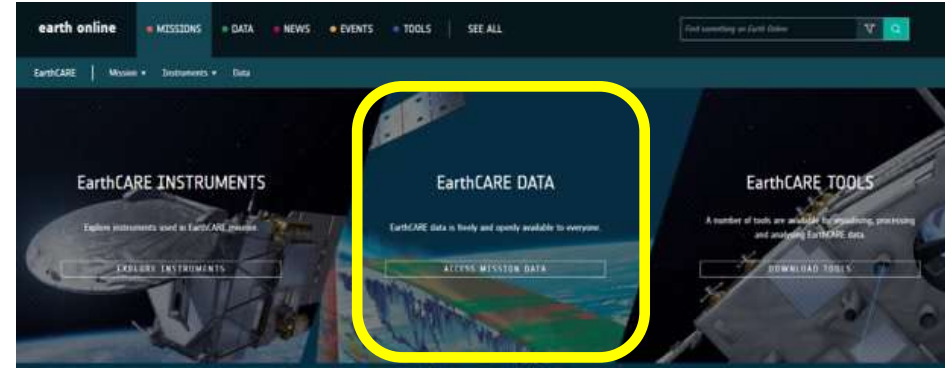
ESA PIs and co-Is

What is it for?

Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services



Data Access Authorisation Request

Requester:

Country of Residence:

Institutional/Department/Company:

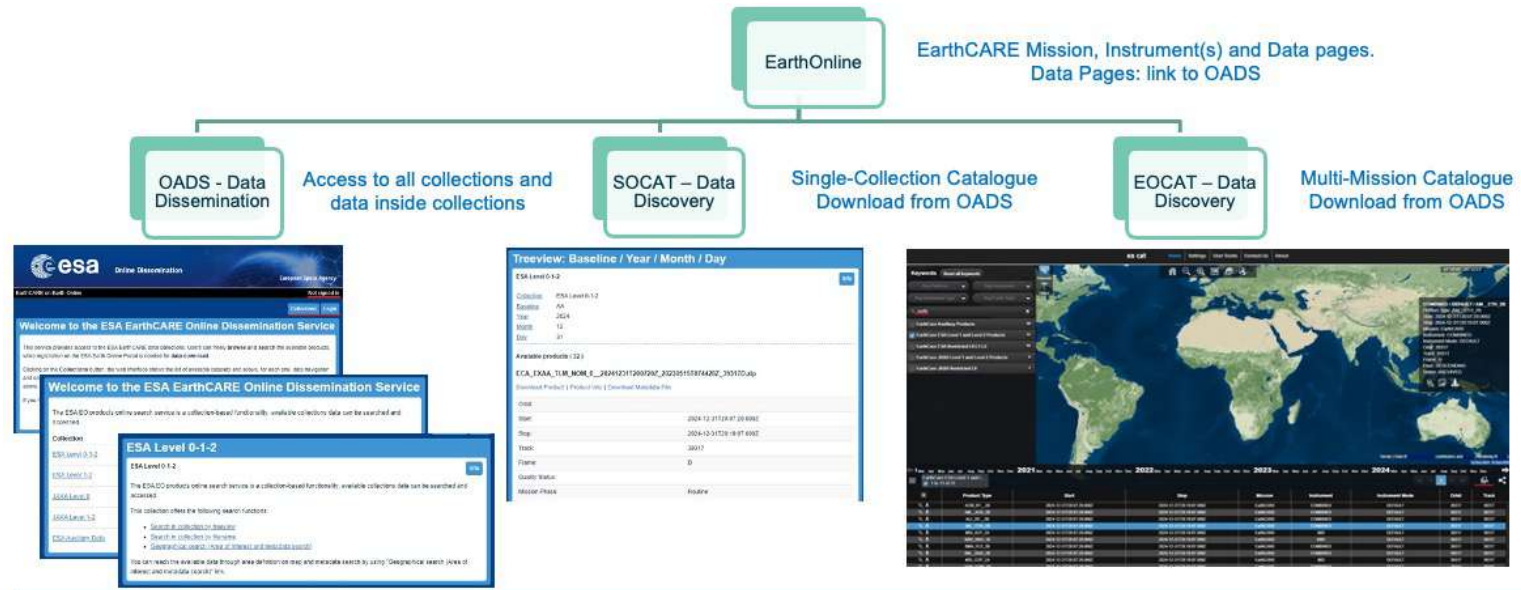
Request:

Application Domain:

Authorized users:

Conditions for pre-operational data access

Submit



Back up system: commissioning server

<https://ecvt.esa.int/confluence/display/ECAOPI/EarthCARE+data+dissemination>

ESA validation rehearsal



Who is it for?

ESA PIs and co-Is

What is it for?

Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services
- EVDC correlative database and upload

evdc esa

Home Search Cal/Val Data Search Satellite Data Upload Data Documentation Tools Campaigns Overpass Tool Contact Us / Data Policy Login

Welcome to the EVDC

ESA Validation Data Center is a central, long-term repository in Europe for archiving and validation of atmospheric composition products from satellite and ground-based observations.

REGISTER ABOUT EVDC

Support

Networks, Projects, Policy
O3sondes
S5P Validation Team Page
Aeolus Validation Team Page
ASKOS Validation Team Page
EarthCARE Validation Team Page

News and Information

24th October 2023
The TAV file is updated (R077)

21st June 2023
The EVDC survey is open

31st January 2023
The EarthCARE correlative agreement protocol is defined

Protocol for exchange of EarthCARE Validation Team (ECVT) data for EVDC ESA Validation Data Centre <https://evdc.esa.int/>

You hereby agree to the conditions of this data protocol when submitting this form

Name: _____

Institution and Position (PI, Student, etc) _____

EarthCARE campaign name and AOID _____

E-mail: _____

[SIGN AND SUBMIT DATA PROTOCOL](#)

DEMO-5

Cal/Val database on EVDC
Ann Mari Fjaeraa

Documentation Tools Campaigns Overpass Tool

GEOMS and GEOMS tool
Browse Metadata
DCIO
Newsletters and Documents
DOI
EVDC Video Tutorials and training material

Tools Campaigns Overpass Tool

GEOMS Tool
Reading HDF/NC Files
Creating HDF/NC Files
FLEXTRA Backward Trajectories
ECMWF Plots
Data Formatting Templates

ESA validation rehearsal



Who is it for?

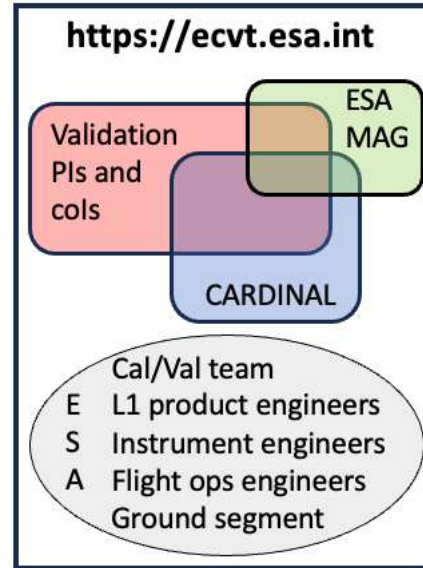
ESA PIs and co-Is

What is it for?

Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services
- EVDC correlative database and upload
- **ECVT portal (Confluence)**



Confluence - Spaces - People - Discussion - Calendars - Create

Pages / EarthCARE Validation ESA ADP Portal Home

Validation Activities

Created by Robert Koopman, last modified 3 months ago

The links on this page point to individual pages per project. Some of these pages can be edited by the PI. For editing, please use the guidelines for collaborative editing.

EVID	ACID	PI	Validation targets	Independent validation sources	Verifort	Geographical region							
			ATLID	BBR	CPR	MSI	SR	Surface	Surface	Aerosol	Mode		
								retrieval	campaign	campaign			
01	37720	Overseas											Global
02	38038	Webster											
03	38106	Wentinger											Global
04	38023	Geertzen											Antarctic
05	38044	Botti											Europe + selected outside Europe
06	38769	Lueb											Global
07	38767	Lofthoff											South America
08	38768	Missouler											Finland
09	38009	Renard											Global
10	38816	Dalencow											Barbados, Arctic
11	38811	Liberti											Italy
12	38813	Müller											Korea and UK
13	38818	Arcoletti											Siberia, Arctic, Norway (Eiderbakkfjell), High latitudes (CALIPSO)
14	38814	Agulhary											Netherlands
15	38936	Golekb											France (Ext. La Réunion and Dakar)
16	38029	Devasthale											Sweden, Global (Satellite)
17	38861	Wilson											Global (high lat concentration in USA)
18	38899	Ganesa											Norway
19	38835	Jensen											Global
20	39067	Hu											China
21	39147	Chenkovskiy											France - USA
22	39173	Noronha											East Asia
23	39180	Antiklis											Greece
24	39184	Chapler											Global
25	39186	Stavrou											The Netherlands
26	38003	Swick											Global (Campaign)
27	38011	Benoit-Bernard											Spain (France) (CALIPSO international campaign)
28	38074	Martinet											Europe
29	38027	Scott											Global
30	39096	Wittner											Global
31	39021	Do											Arctic/North America
32	38073	Howeller											Global (Campaign)
33	31530	Utzler											Sweden
34	37949	Kloewenart											Austria
35	63769	Phillips											North America
36	79123	Sopachewa											Global
37	490658981	Spain											UK
38		Stapel											Norway/Arctic
39	37949	Mansour											Cyprus
40	90132	Müller											USA++
41	82323	Naves											Europe
42	80678	Doel											USA++
TOTAL			35	31	8	17	16	11	26	29	15	4	28

Confluence - Spaces - People - Discussion - Calendars - Create

Pages / EarthCARE Validation ESA ADP Portal Home

Interactive Discussion Boards

Created by Robert Koopman, last modified by Stephanie Rusli on Sep 03, 2021

These boards are for all to use. The first table lists the discussion boards for general use. The second table lists the discussion boards of the validation subgroups.

Please carefully read the guidelines below.

For all discussion boards the following guidelines apply

Add new topic

Discussion board category	sub category	Link to discussion boards
General		Discussions of general importance
System		System (Platform, Pointing, Thermal, Power)
Algorithm / Product Groups	Instruments and Level 1	ATLID
		BBR
		MSI
		CPR
Level 2	Target classification	
		Aerosols
		Clouds
		Precipitation
		Radiation

Account creation?
 Password reset?
 Access configuration?
 Find your way?



ECVT portal admins:
rob.koopman@esa.int,
stephanie.rusli@ext.esa.int

ESA validation rehearsal



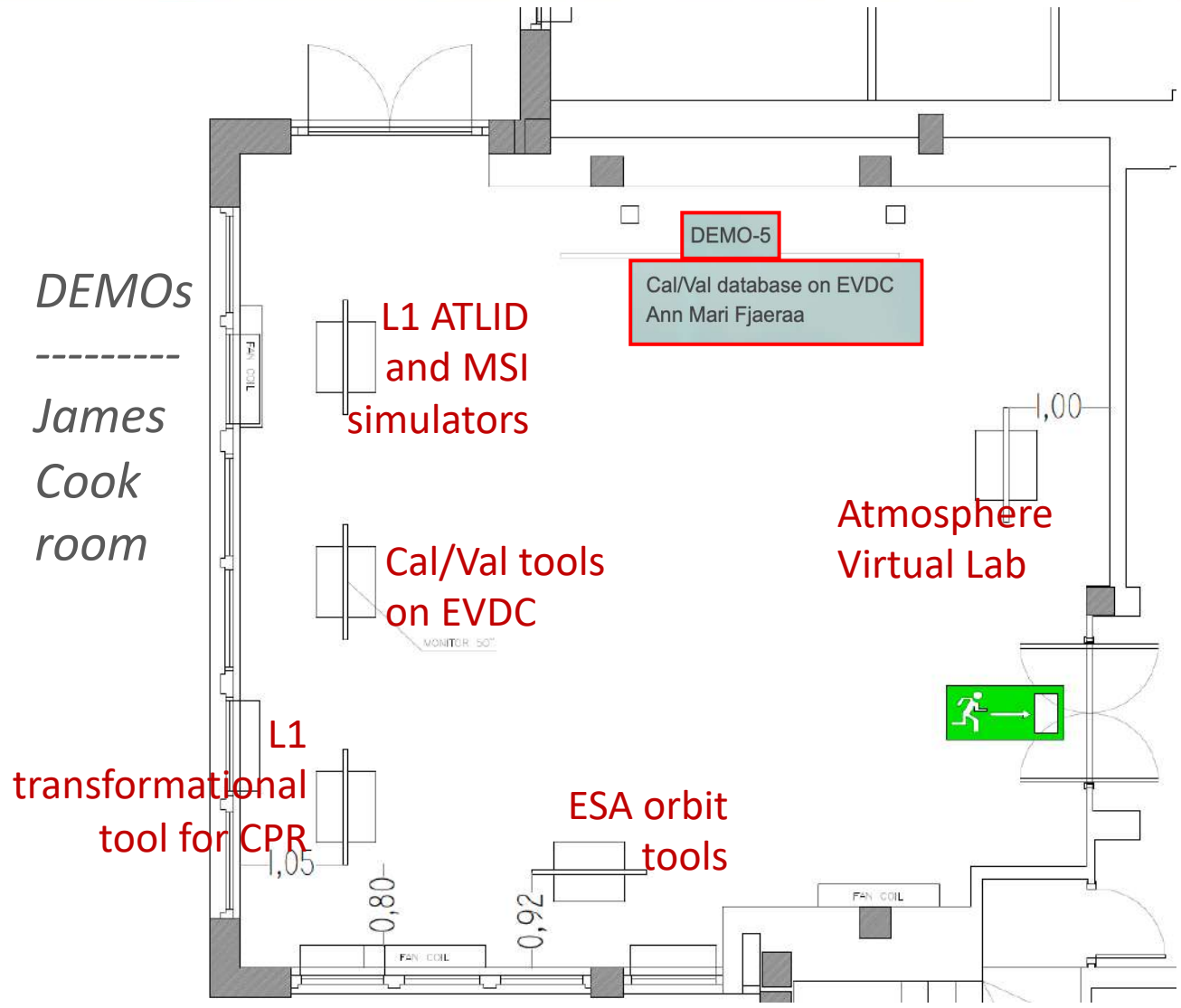
Who is it for? ESA PIs and co-Is

What is it for? Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services
- EVDC correlative database and upload
- ECVT portal (Confluence)
- **Validation support tools**

16:38	15	ESA-ECVT logistics	S. Rusli
16:53	5	ESA orbit tools	M. Pinol Sole
16:58	5	Atmosphere Virtual Lab	S. Niemeijer
17:03	5	Level-1 ATLID simulator	David Donovan
17:08	5	MSI-simulator tool	Msc Nils Madenach
17:13	5	A L1 transformational operator for the objective evaluation of the EarthCARE Cloud Profiling Radar data products using suborbital observations	Lukas Pfitzenmaier
17:18	5	EVDC-Cal/Val database	Ann Mari Fjaeraa
17:23	5	EVDC-Cal/Val tools	Jarek Dobrzanski
17:28	62	Demos/Poster Session	





Who is it for? ESA PIs and co-Is

What is it for? Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services
- EVDC correlative database and upload
- ECVT portal (Confluence)
- Validation support tools
- **Validation best practices**

ToC: Best practices for the validation of Aerosol, Cloud, and Precipitation Profiles

[Chapter 1: Introduction](#)

[Chapter 2: Validation needs for space profilers](#)

[Chapter 3: Towards a protocol for correlative measurements](#)

[Chapter 4: Correlative metadata and data format](#)

[Chapter 5: Guidance for validation](#)

[Chapter 6: Data assimilation and modeling](#)

[Chapter 7: Knowledge and data gaps](#)

ESA validation rehearsal



Who is it for? ESA PIs and co-Is

What is it for? Validation readiness

Familiarization with

- ESA data products
- data discovery and dissemination services
- EVDC correlative database and upload
- ECVT portal (Confluence)
- Validation support tools
- Validation best practices

When?

(rehearsal guidelines Dec 2023-Jan 2024)

Rehearsal 12-23 Feb 2024

Rehearsal review (online) 21 Mar 2024 (afternoon CET)

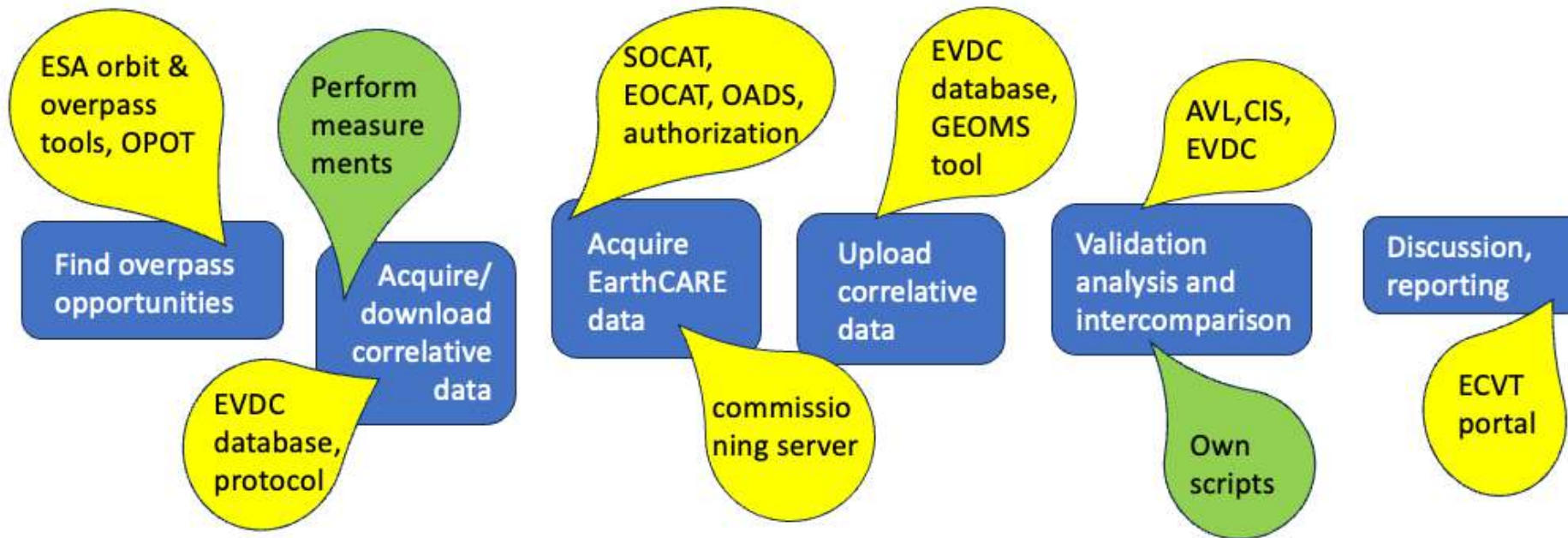
Where?

Own work station (online)



What is expected of PIs/CoIs?

- Identify and rehearse Cal/val workflow
- Feedback to ESA



Why participate?

- Last chance before launch to improve accessibilities and functionalities
- Logistical overhead for data access (data protocols, authorization, account/password activation, GEOMS template,...)
- Avoid work overloads during commissioning phase

ESA validation support tools



Detailed information: ^awebinars (on ECVT portal), and ^bpresentations and demos that follow this talk.

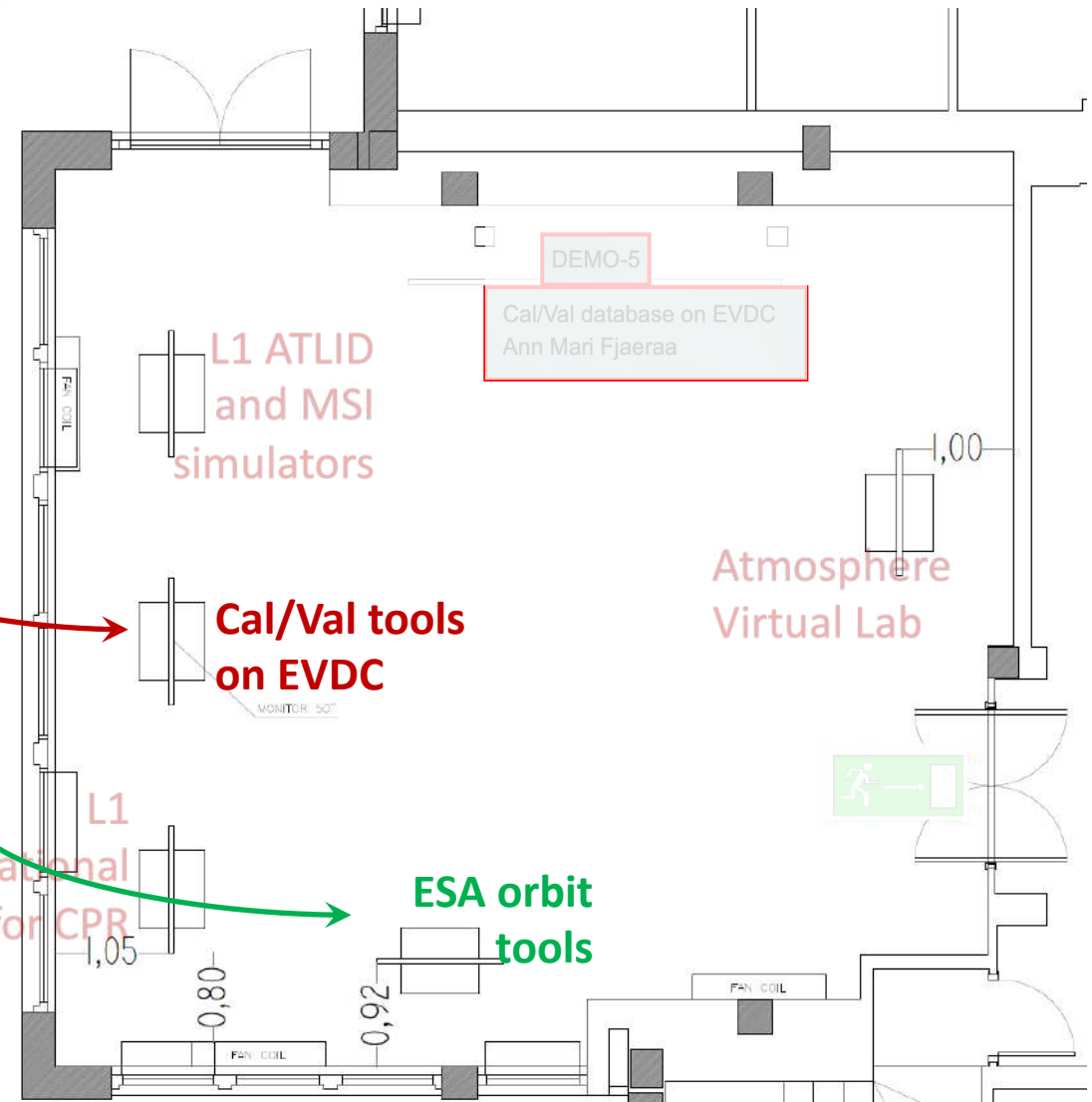
1. Orbit prediction and overpass analysis

Web-based: Orbit Prediction and Overpass Tool (OPOT)

Graphical application: Earth Observation Swath and Orbit Visualization (ESOV)

Command line: Zone/TrajectoryOverPass, Instrument collocation tool

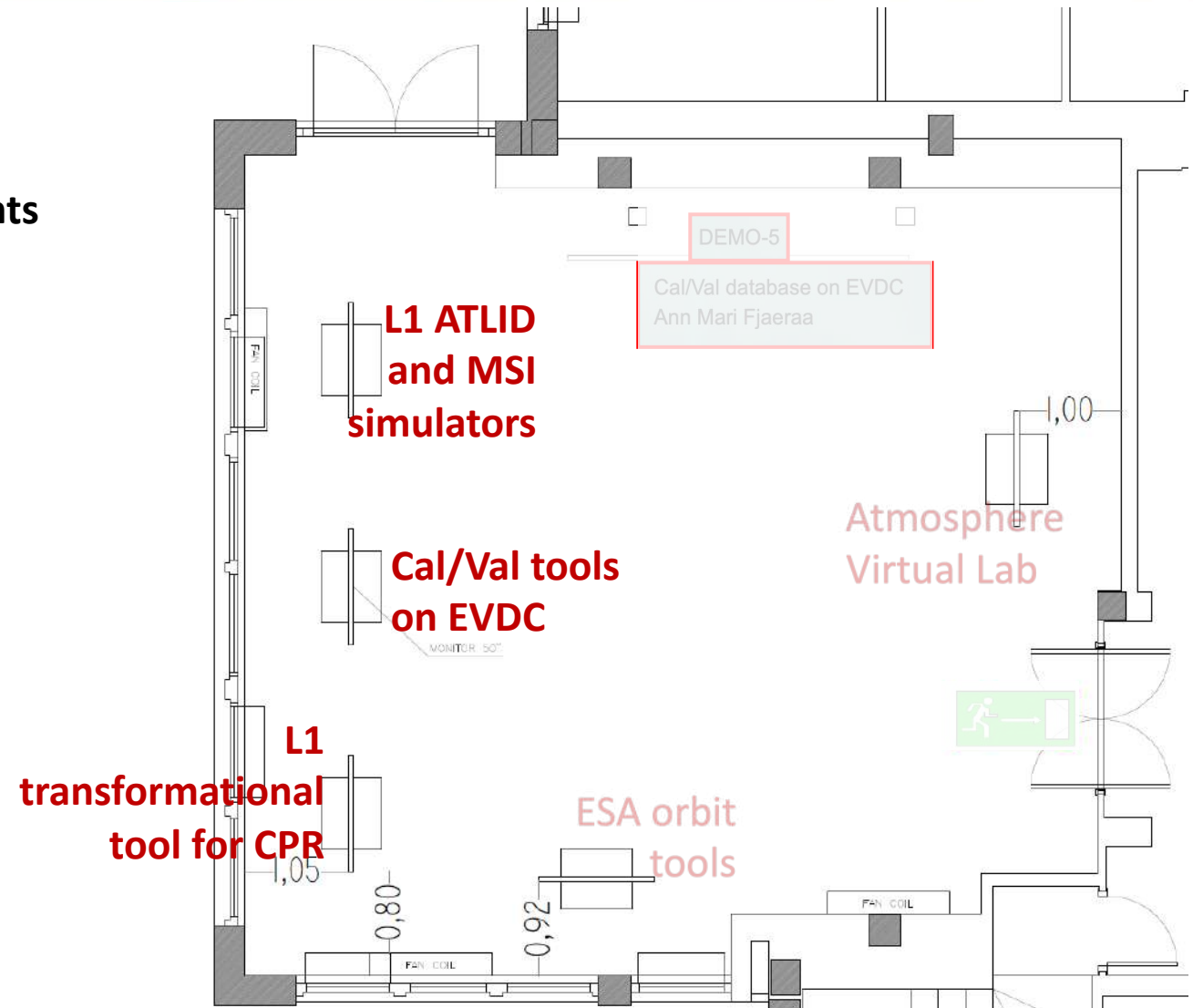
NOTE: present implementation of OPOT is TLE-based
→ Less accurate and less precise for longer-term prediction



Detailed information: ^awebinars (on ECVT portal), and ^bpresentations and demos that follow this talk.

2. Comparing sub-orbital with EarthCARE L1 measurements

- ❖ L1 data available to ECVT L+3
- ❖ Sub-orbital measurements are not directly comparable to space-based measurements
→ L1 tools/simulators for ATLID, MSI, CPR
- ❖ Addresses difference in lidar, radar frequencies
- ❖ For user convenience:
tools will be hosted on EVDC
- ❖ Free, public use

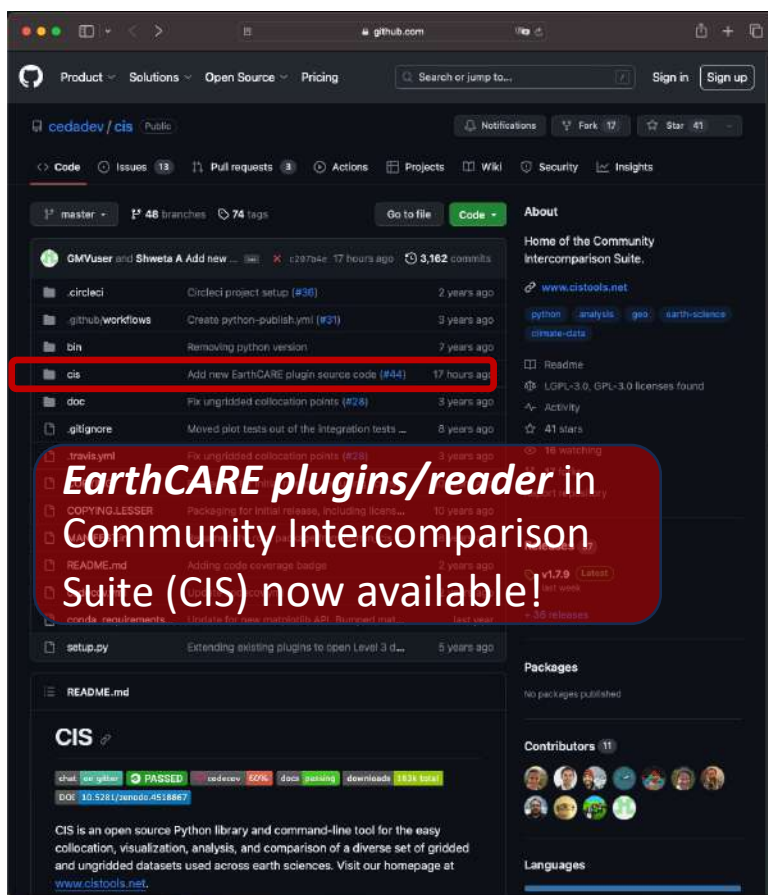


ESA validation support tools

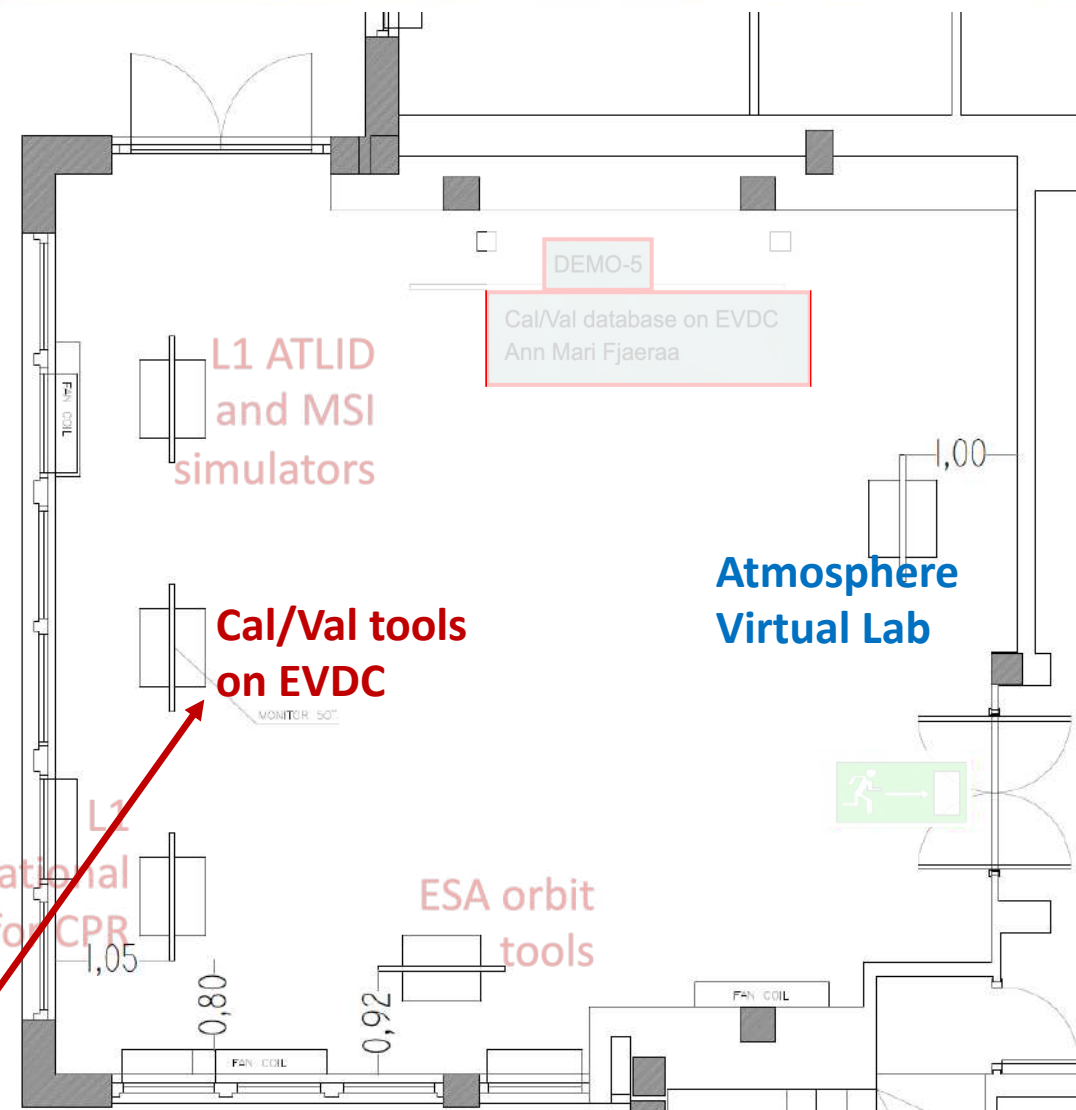


Detailed information: ^awebinars (on ECVT portal), and ^bpresentations and demos that follow this talk.

3. Validation analysis tools

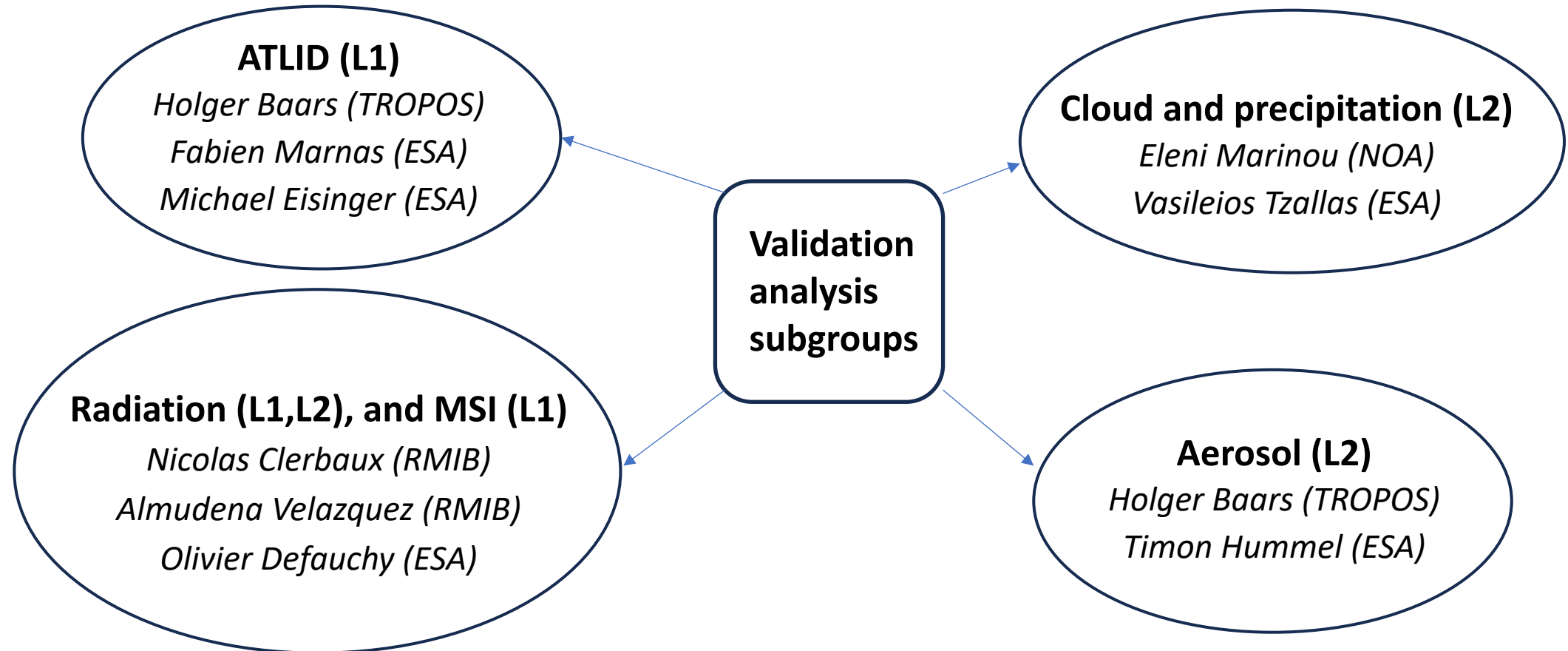


- EarthCARE data ingestion
 - Visualization
 - Quicklooks
 - Filtering
 - Collocation
 - Simple math operations
 - *Command line tools*
 - *Python-based*
- See CIS demo at EVDC Cal/Val tools booth



Community Intercomparison Suite

ESA EarthCARE Validation Teams (ECVT) subgroups



Take-away message for ESA PIs/Cols



ESA ground stations



64

ESA product intercomparisons per AO proposal:

19

21

29

Scientific
Validation
Implementation
Plan vol 2

ESA EarthCARE data
<https://earth.esa.int/>

Pre-op data access agreement
Account creation
Access to commissioning server

ESA correlative data for
EarthCARE validation
<https://evdc.esa.int>

Sign data protocol
Account creation
GEOMS compliance

DEMO-5

Cal/Val database on EVDC
Ann Mari Fjaeraa

ESA EarthCARE
validation portal
<https://ecvt.esa.int>

Account creation
Password reset
Access configuration

stephanie.rusli@ext.esa.int
Rob.Koopman@esa.int

Thank you!