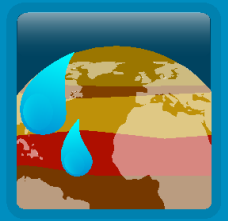
soil moisture cci

climate change initiative

European Space Agency

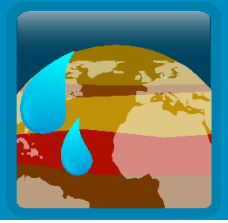
ESA Climate Change Initiative- Soil Moisture (CCI SM): Serving our users – lessons for Copernicus Climate Change Service

Dr Eva Haas, GeoVille & Richard Kidd, EODC



ESA CCI Soil Moisture

- Overview of project – building on Phase 1
- EODC concept – connecting science and operations
- Data provided – fitting to user needs, based on standards
- Users served – user statistics
- Lessons to bring to Copernicus Climate Change Service



Project Overview

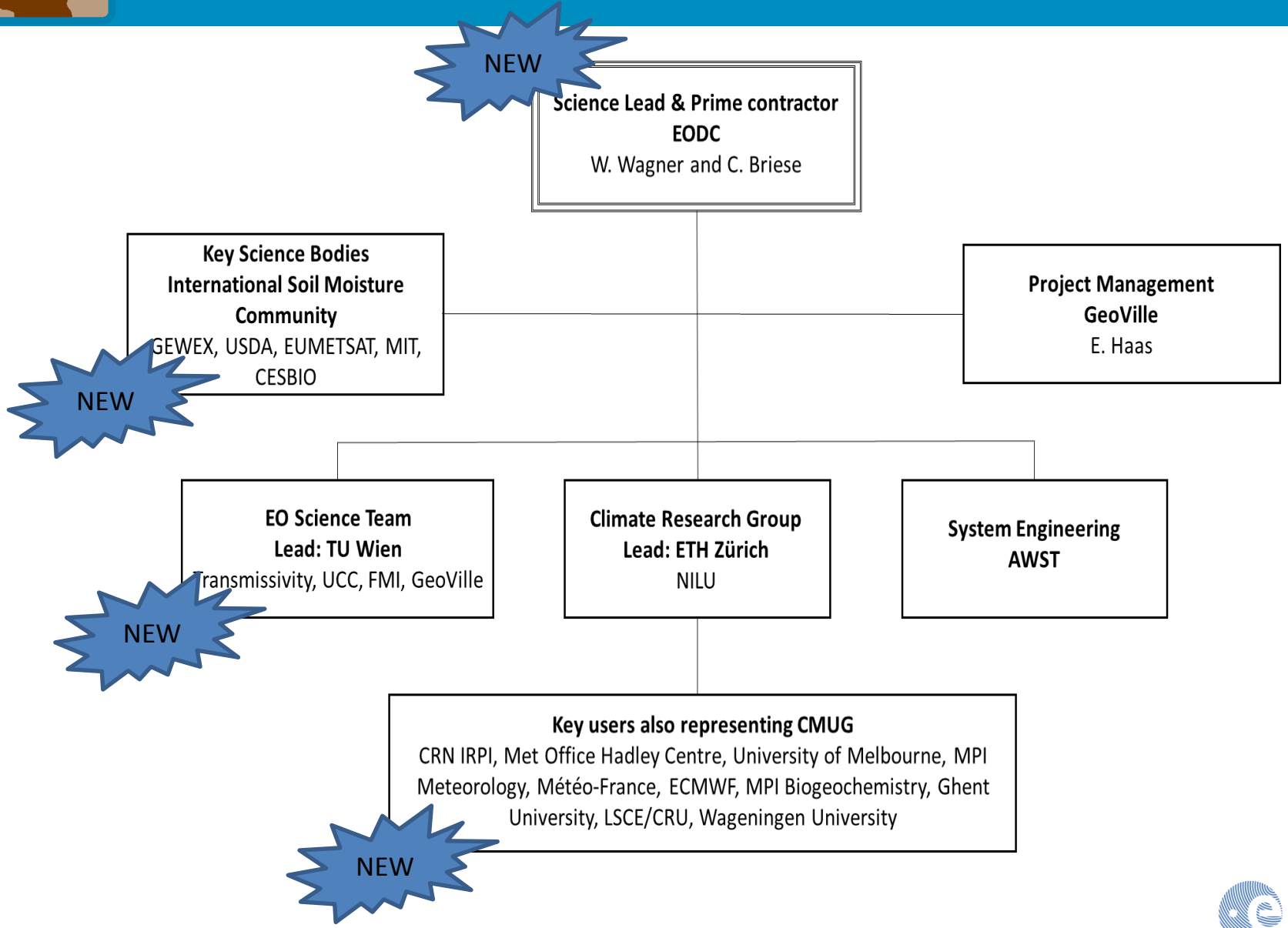
- **CCI SM now successfully in phase 2**

- **Phase 1 (2012-14) Overarching Goal:** Produce and validate, **within an R&D context**, the most complete and consistent possible time series of multi-sensor global satellite data products for climate research and modelling: **Achieved**

- But also,
  - develop validate algo's addressing GCOS ECV requirement,
  - optimise the impact of ESA EO missions on the climate data record (CDR),
  - generate complete specifications for operational production process, and
  - strengthen inter-disciplinary cooperation (EO, Climate Research and modelling communities).

- **Phase 2 (2015-17) Goal:** Graceful evolution of system from prototype from Phase I to a sustainable version in Phase II.
- Provide an operational framework for the production of the most complete and consistent possible multi-sensor global ECV soil moisture data records based on active and passive microwave sensors

The CCI Soil Moisture Team



Phase 2: Project Structure

- **Goal:** Graceful evolution of system from prototype from Phase I to a sustainable version in Phase II.

- **Outline of tasks**

- Task 1: **Requirement Management**
- Task 2: **Algorithm Development**
- Task 3: **System Evolution**
- Task 4: **Product Generation**
- Task 5: **Climate Assessment**
- Task 6: **Coordination & Management**

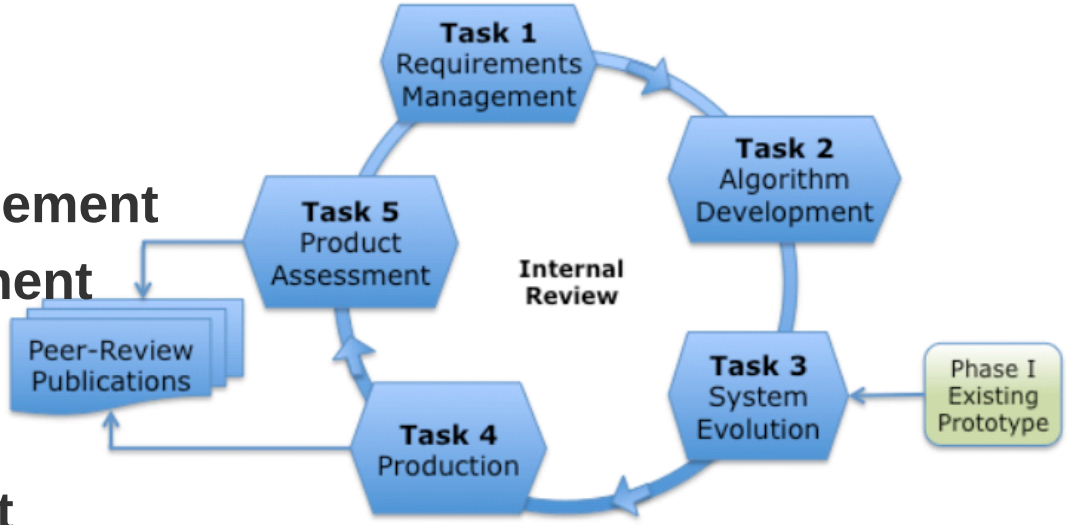
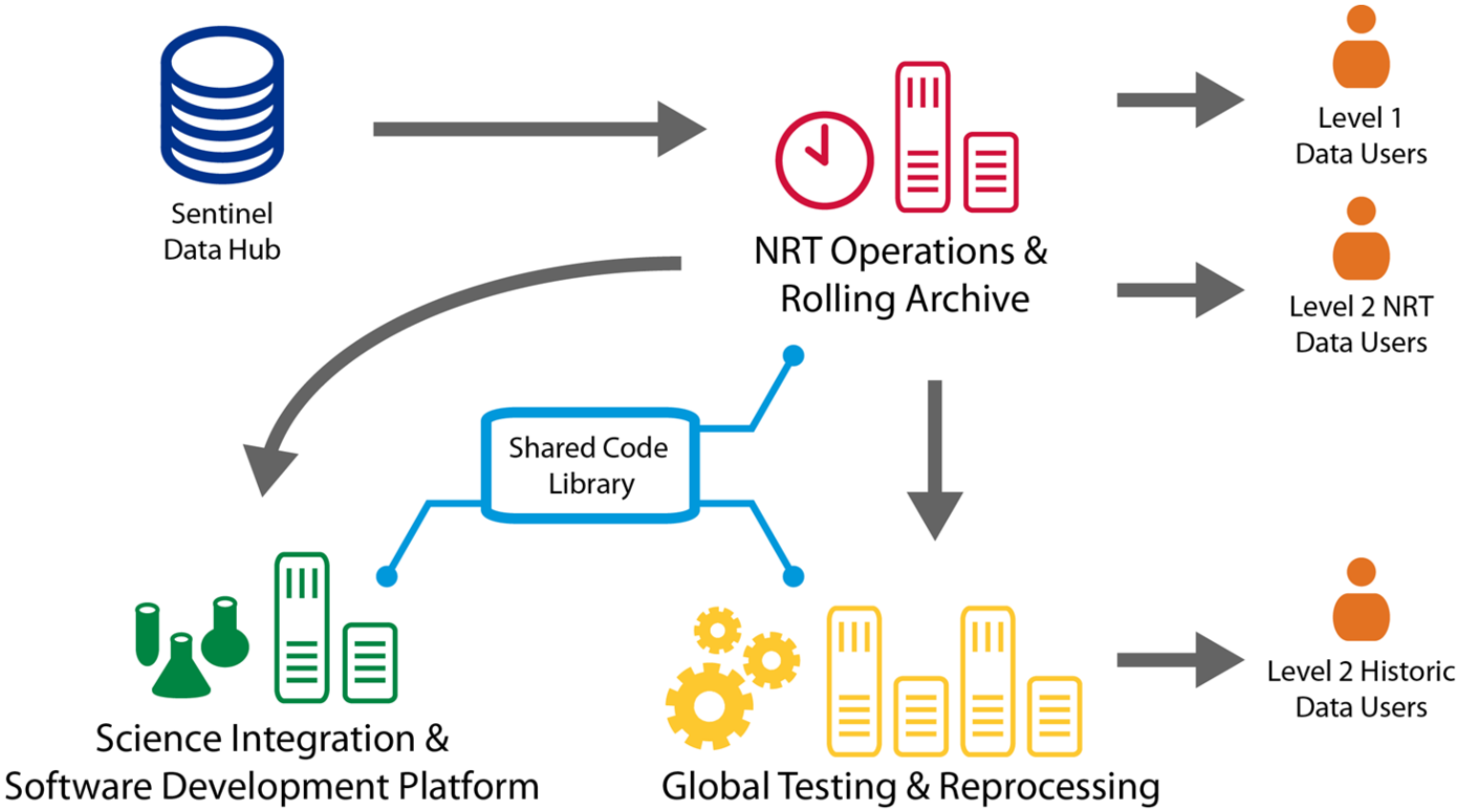


Figure 1: Cycle of Tasks during Phase II

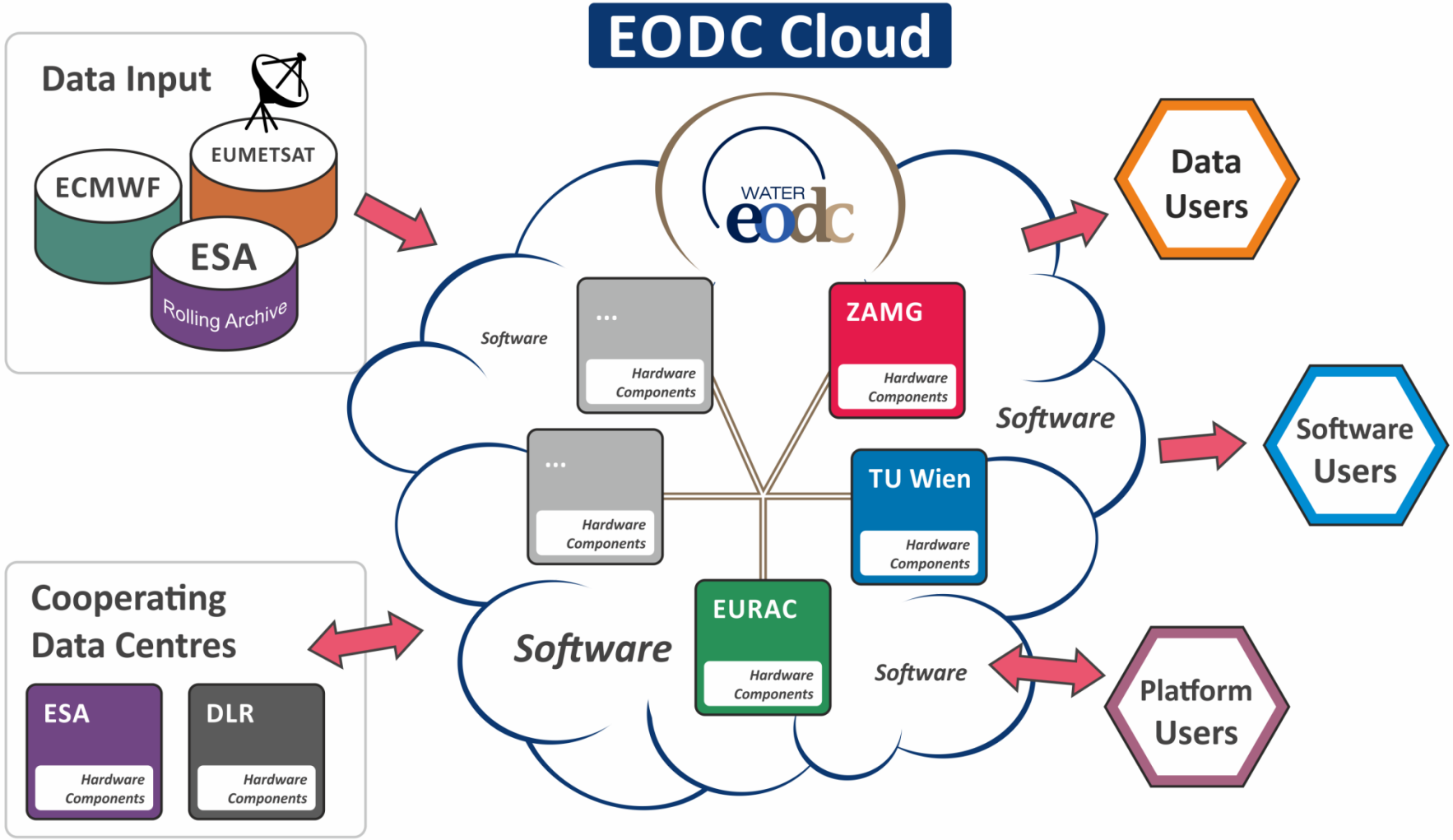
- Cyclic task interaction over the course of three years

The Ideal EO Processing Chain: Connecting Science and Operations



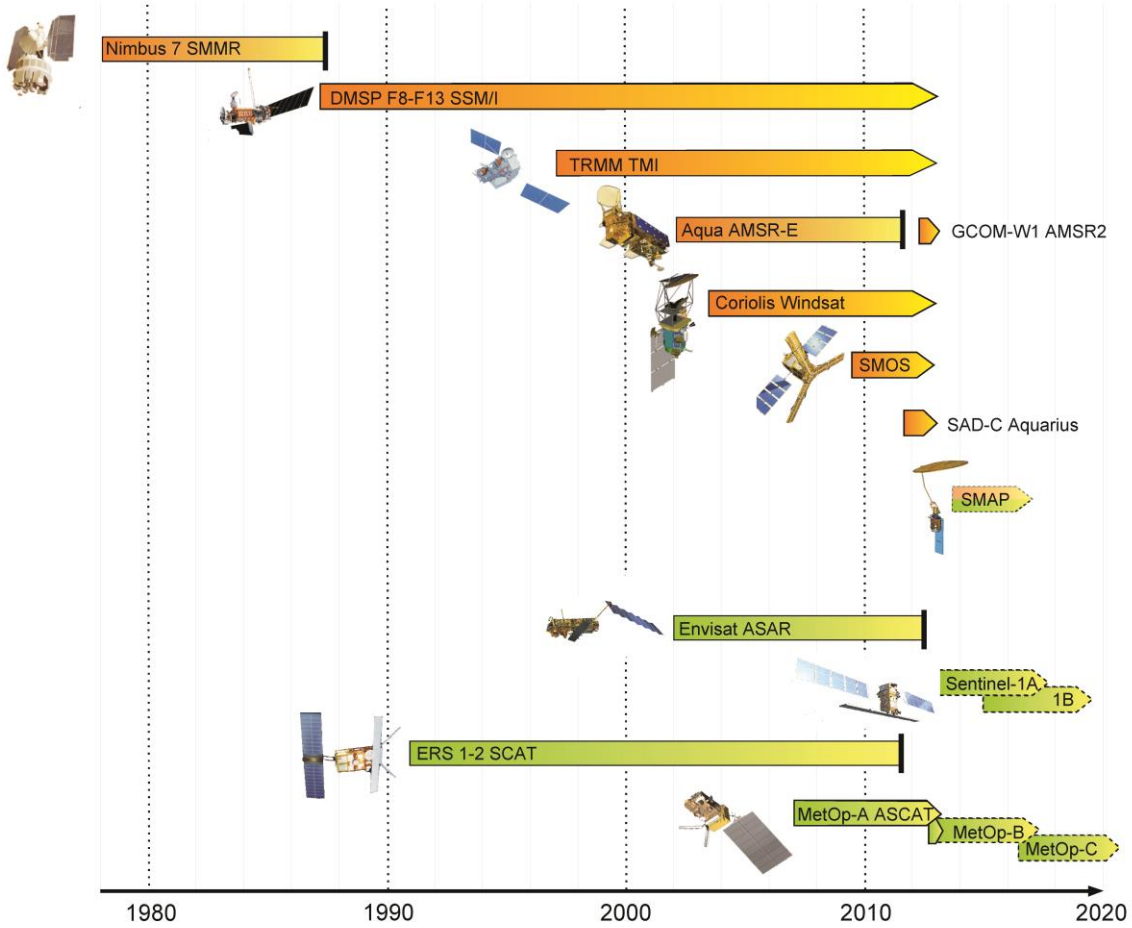
- Developed as a result of experience with NWP community – EUMETSAT
- Implemented by EODC as prime of CCI SM 2

EODC: Bringing Scientists to the Data



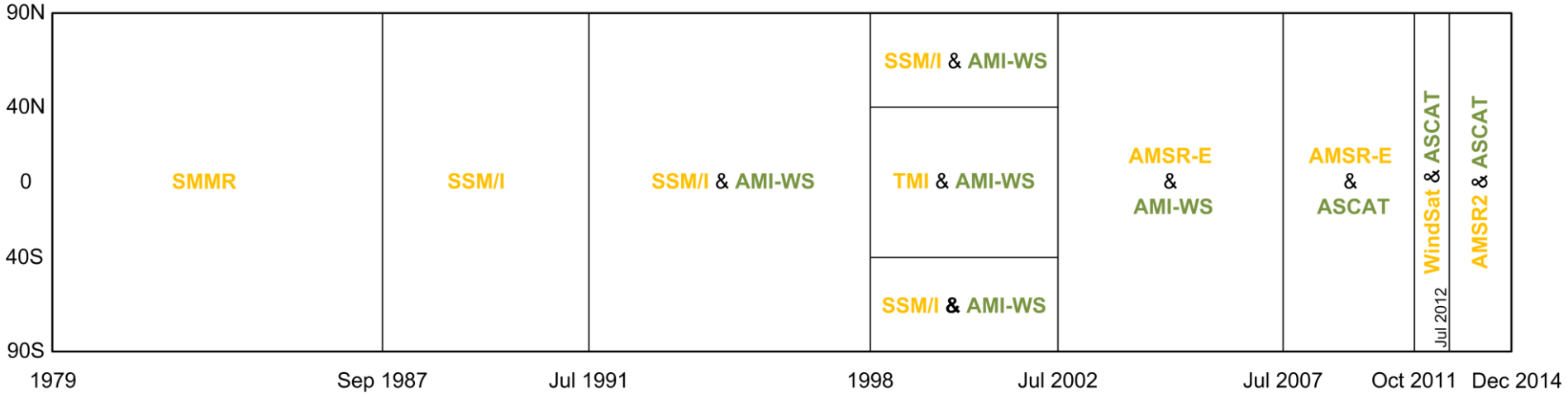
Creating the Climate Data Record

- The CDR makes best use of existing European and international programmes

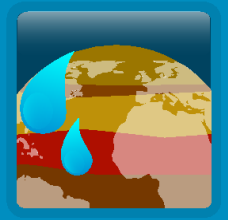


Current Status CDR (Jan 2015)

- Temporal extent from Nov 1978 – Dec 2014 (Global Product 36 Years)
- Input data volume size ~ 200 GB from 9 satellite sensors



- Processing chain consists of 44 processing steps ~100 hours processing (parallel processing on 24 core machine with 128 GB RAM)
- Generates 3 products:
  Active Product ~ 23 GB, Passive Product ~ 33 GB, Combined Product ~ 27 GB

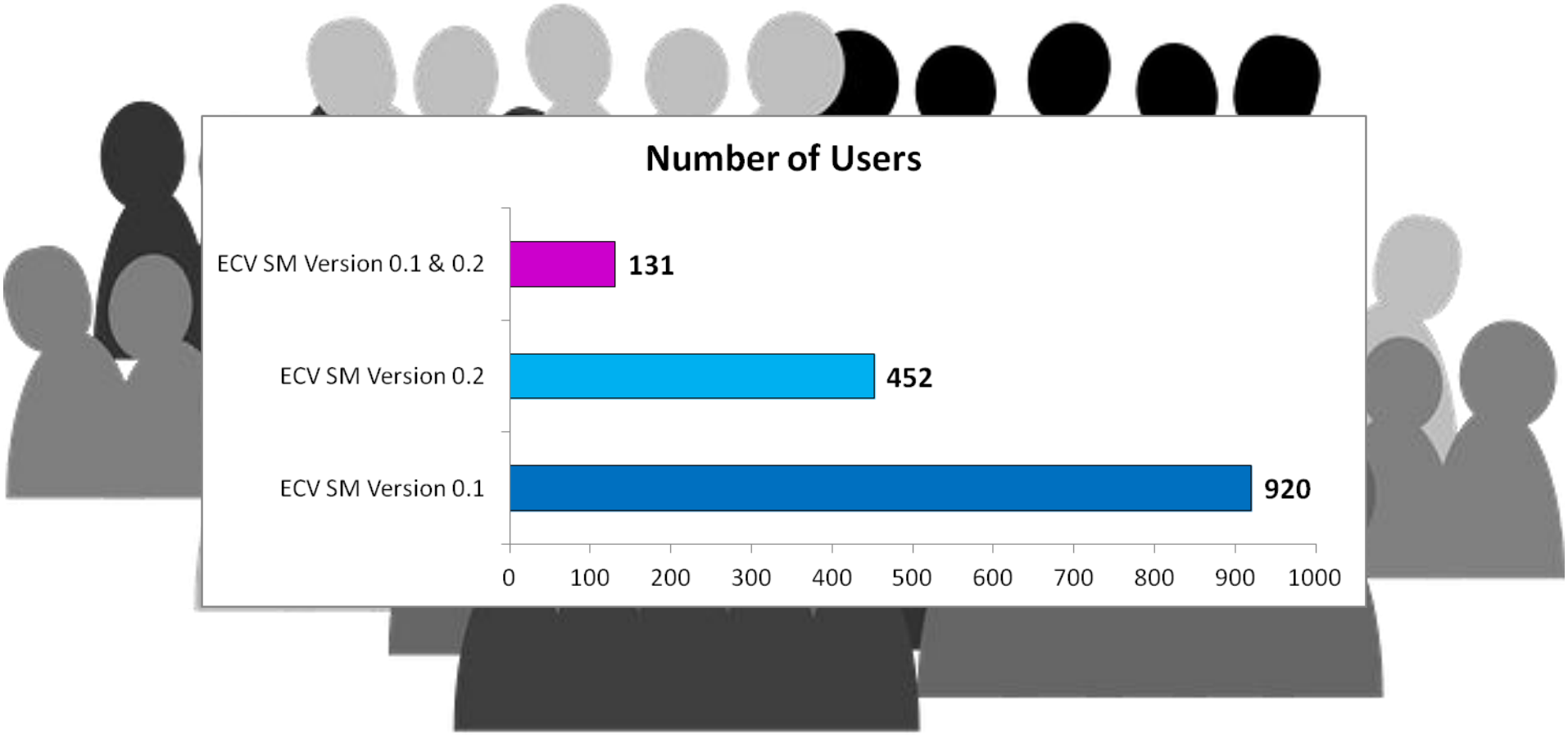


Product Generation: Listening to Users

- The initial task of both phase 1 and phase 2 is **Requirement Management:** Capture requirements both from user (phase 1), and user and system (phase 2), but also requirements from international bodies i.e. GCOS
- **Phase 1** saw three interactions (targeted questionnaires) with users the results of which directly lead into product development
  - increased product types, improved/modified advanced ancillary data (meta data)
  - adherence to, and expansion of data community standards, and importantly
  - endeavoured to establish community agreed best practice (definitions, validation methods etc)
- **Phase 2** will continue this strong relationship with users, key users and international bodies – and with the annual cyclic nature of phase 2 will see a more intense relationship with and feedback from users.

esa

Registered users

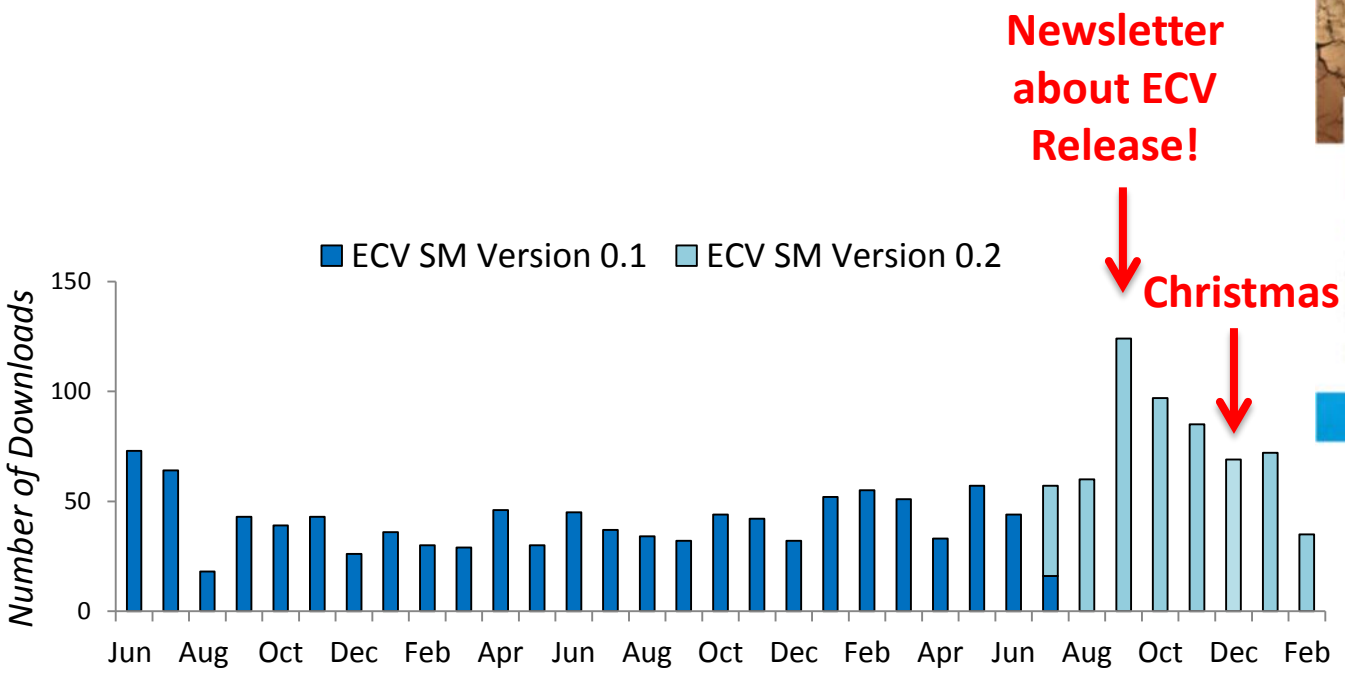


Total registered users as of today: 1503

User statistics as of 12.02.2015

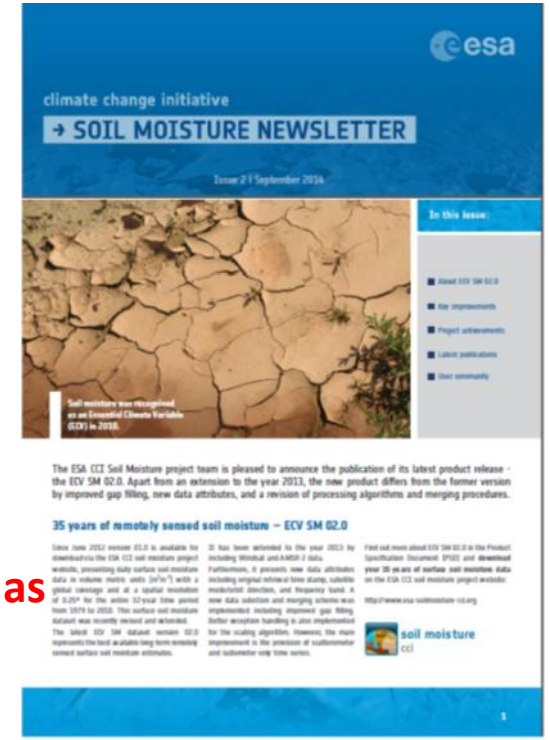
Time line of Registrations

- Registrations



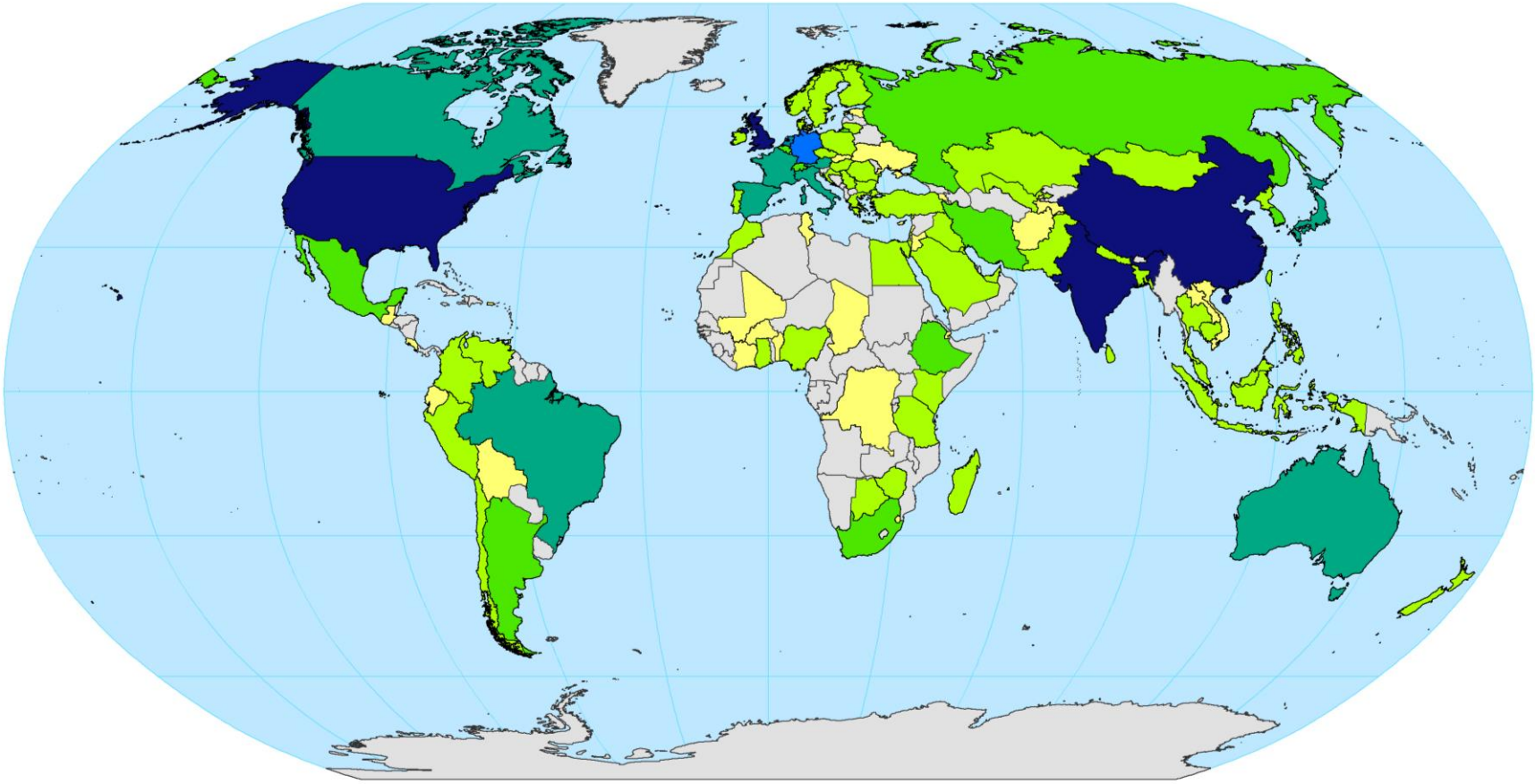
Newsletter about ECV Release!

Christmas



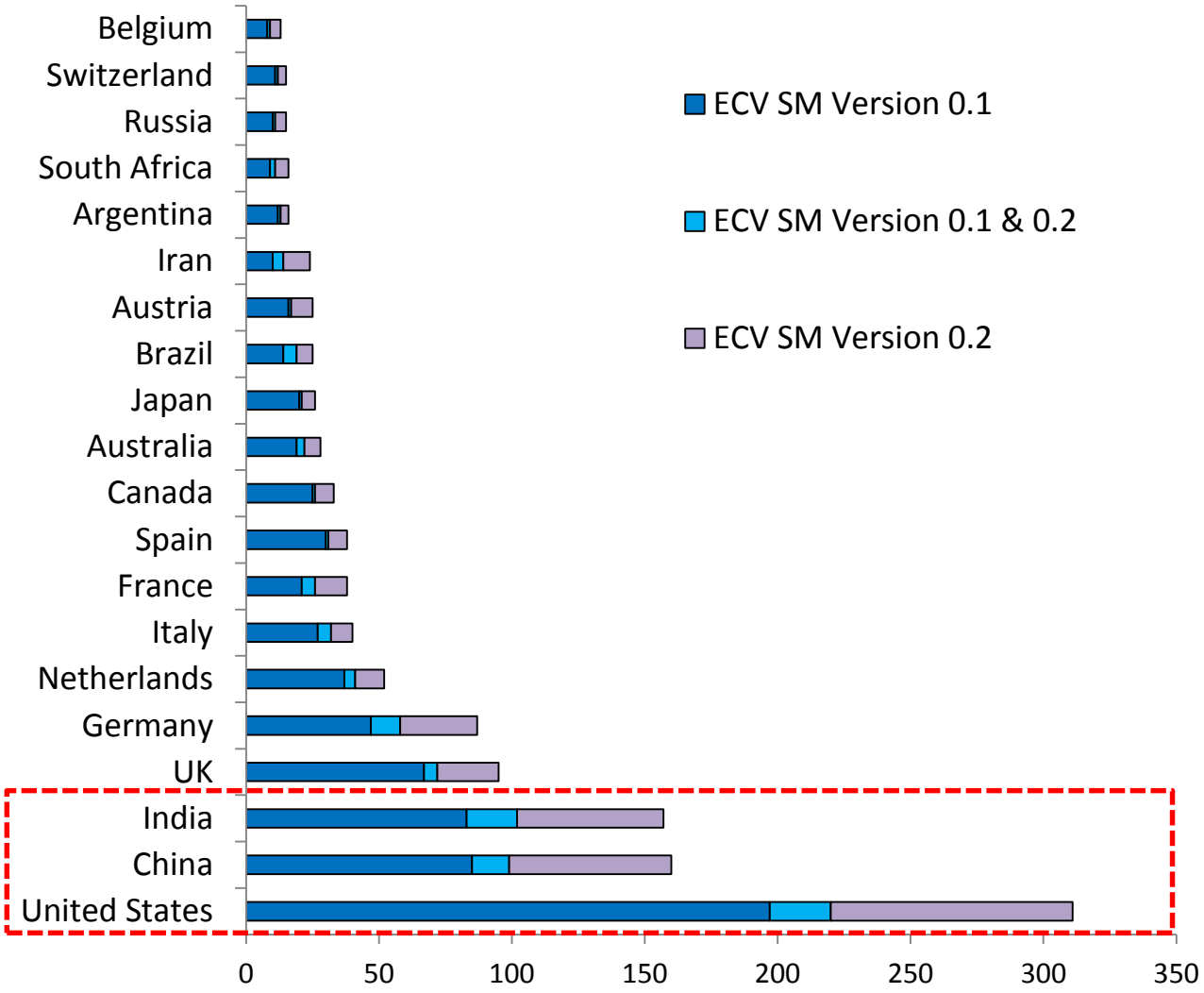
User statistics as of 12.02.2015

Origin of registered users



User statistics as of 12.02.2015

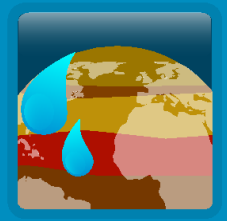
Top 20 user countries

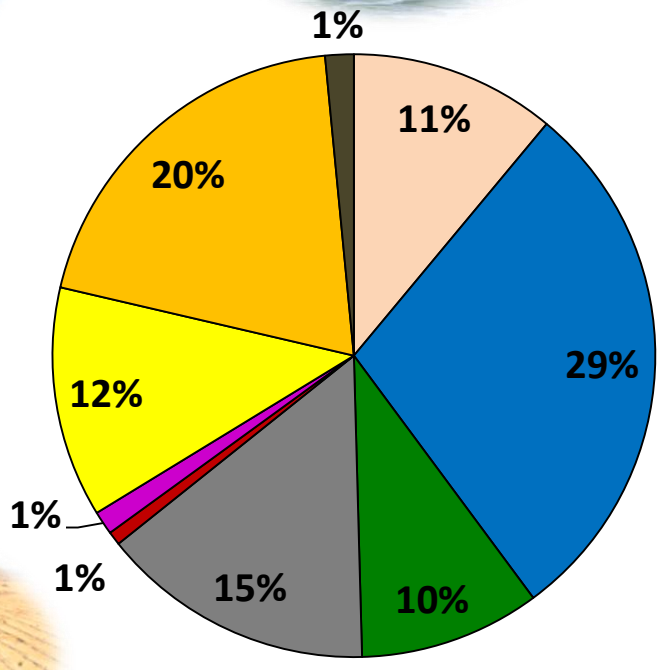


≈ 41 %

User statistics as of 12.02.2015

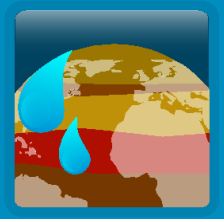
Societal benefit areas





Agriculture
Climate
Disasters
Ecosystems
Energy
Health
Undefined
Water
Weather

esa



Lessons to bring forward

- **We can't provide information on which systems are best to use to provide data as we are not, currently operating a truly operational service – although we are moving into a cloud based environment – we are currently just pushing whole global products to users via ftp. But,**
  - open source is a prime consideration, and
  - data volumes (EO and product) are a prime concern
- **A robust, and secure, client registration and approval system enables**
  - Filtering of bogus requests and bogus users
  - Us to understand who are using our data (we thought we were serving the climate community– but we also have large groups from the water and ecosystem communities – with dramatically different user requirements)
  - To target questionnaires to specific user communities, or types of user, and use their feedback to enhance the product
- **Must understand who are the users, and set up a clear, effective communication and feedback system**
  - Clean and efficient communication system with users (i.e. ticketing) must be in place (bug tracking, resolving issues with product or service)

esa

Thank you for the attention

Please come back to us in case of questions!

https://www.eodc.eu/ AND http://www.esa-soilmoisture-cci.org