# Breakout group Ocean & Cryosphere

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## What are the main strengths of the CCI?

- Longterm consistent and validated data records (CCI CDR's)
- Extensive and high-quality research and development (R&D)
- Longterm commitment
- Expert community
- Credibility of data and dataset documentation
- Knowledge exchange, education and workshops (i.e., outreach and communication)

## What are the emerging wider policy drivers?

- Changing geopolitics
- Open science policy, FAIR, CARE, TRUST (data principles)
- Climate adaption & mitigation needs, geo-engineering
- IPCC, Global Stocktake, UNFCCC COP (i.e., policy governance driven by climate change)

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## What scientific and technical challenges should be prioritised in the CCI?

- Characterisation of uncertainties for all ECVs and consistently across ECVs
- Improve data access and volume and timely updates of ECV data records
- Integration, consistency and continuity of satellite sensors, data records and funding
- Continue investment in reference data needed for CCI, such as fudicial measurements
- Use science to address societal challenges, also locally, and emerging climate threats

## What are the opportunities for improving?

- Retrieval methods and algorithms need improvement, including physical approaches, advanced AI and/or both
- CDRs from multiple sensors require homogenisation to ensure consistency across past, current & future missions
- New missions offer enhanced observational capabilities, improve existing products and develop new ones that were previously not feasible, this rewires the development of improved or entirely new algorithms
- Irregular spatial and temporal sampling in CDRs requires gap-filling methods to ensure continuous datasets needed for some applications

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## How can we smooth links to transfer ECVs to operational services?

- Improve communication between research and development (R&D) and operational projects
- Better coordination, e.g., between ESA, Copernicus and EUMETSAT
- Improve clarity on user requirements regarding operationalisation
- Improve, standardise and unify the data catalogues
- Resolve any technical issue that may currently challenge the transfer

## How can CCI improve the exploitation of our ECV data?

- Improve communication with users to understand their needs, e.g., through surveys and training
- Improve communication between projects (cross-ECVs and observation/modelling projects a starting point)
- Common approach for data standards, tools and access, but tailoring for specific needs might be needed
- Regional and local data are sometimes required (e.g., for impact and adaptation), interaction with CORDEX

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## How can we make the CCI programme more effective?

- Collaboration across CCI programme
- Communication and outreach, both internal and external
- Capacity building, e.g., for early career scientists, at international level, providing training
- Consistency between phases
- Streamline processes for reporting, deliverable formats for end users, one central data repository

## How can we make the ECV data more consistent between each other?

- Common formats, e.g., standardised metadata, common grids and land-sea masks for cross-interface products
- Thematically grouped ECVs based on similar methodologies, resolutions, time periods
- Adopting common approaches or common language for uncertainty characterisation
- Standardising CCI documentation, noted how User Requirement Documents can lead to divergence
- Knowledge exchange and feedback system for cross-ECV projects to report back to ECV developers

# Thank you