Future Priorities BOG Atmosphere

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25/03/2026

1. Programmatic strengths and priorities

Main strengths

- **Strong brand** with international visibility: trusted data, metadata, uncertainty and expert credibility.
- **Long-term funding** enables robust climate data records and sustained European science teams.
- **CCI bridges scientific development and production-**oriented delivery, Round Robin key aspect, crucial link to C3S.
- **Multi-mission harmonization and merging** supports temporal continuity, coverage and quality.
- **User engagement** via CMUG and related communities is a distinctive asset.
- Trust + stability + permanence = strong usage

Priority improvements

- **Improve uptake** in model-evaluation workflows and comparison tools; better integration of science aspects.
- Move further toward **common Level 2/3 formats and clearer uncertainty conventions**.
- **Make products more user-friendly**, including handling of gaps, averaging kernels and compound ECVs.
- **Use smaller, agile actions** to onboard wider user communities.
- **Implement independent CMUG user type activity,** not limited to climate modelers

2. Policy drivers and future opportunities

Emerging policy drivers

- **IPCC, WMO, Montreal Protocol** need to remain important drivers, but also strengthen **UN-SDG and WHO**.
- **Applications on health and emissions are rising**, especially where higher spatial resolution is required.
- **Adaptation, loss and damage, and resilience monitoring** are becoming more central.
- **Climate-security and regulatory use cases** are growing, increasing demands on confidence and traceability.
- **Data-assimilation-ready products** are increasingly relevant as well as specific data for **process understanding**.

Opportunities for improvement

- **Connect new missions to heritage records** to preserve long-term consistency.
- **Exploit Metop-SG, CO2M, TANGO and geostationary missions** more systematically.
- **Combine LEO and GEO** to better capture temporal variability and daily cycles.
- **Strengthen cross-project exchange** on merging, validation, uncertainty and gap filling.
- **Improve discoverability and access** through a more coherent user-facing landscape (incl. use of LLMs).
- **Promote a limb sounding mission.**

3. Technical priorities and cross-ECV consistency

Scientific / technical challenges

- **Maintain climate-quality consistency** across sensors, missions and time periods.
- **Prioritise legacy-to-new mission continuity** and LEO–GEO integration where relevant.
- **Address observing-system gaps**.
- **Continue improving uncertainty characterisation**, bias correction and auxiliary inputs.
- **Use machine learning selectively**, but with strong validation and explainable quality control.
- **Create ECV inventory + tool for users** to find the data sets

Making ECVs more consistent

- **Harmonize formats, metadata and key documentation** as far as scientifically feasible.
- **Move toward more consistent uncertainty definitions** and reporting
- **Align supporting inputs and best practices** where possible.
- **Standardize for interoperability**, while preserving necessary retrieval-specific differences
- **Design products so users can combine ECVs** more easily in applications and assessments.

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4. Organisational priorities and takeaways

Operational interface and exploitation

- **Clarify the interface** between ESA CCI, EUMETSAT, C3S, SAFs and other operational actors.
- **Define clearer transition paths** from research development to operational uptake.
- **Keep CCI focused** on innovation and scientific maturity; large-scale routine processing may sit elsewhere.
- **Reduce fragmentation** across portals and improve product discoverability.
- **Broaden exploitation** beyond modellers to adaptation, health, monitoring and impact communities.

Key messages

- CCI remains distinctive because it combines long-term science investment with trusted climate records.
- The next step is not to dilute this role, but to strengthen interoperability, usability and transfer pathways.
- Preserve scientific quality while expanding relevance for policy and operational communities.

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