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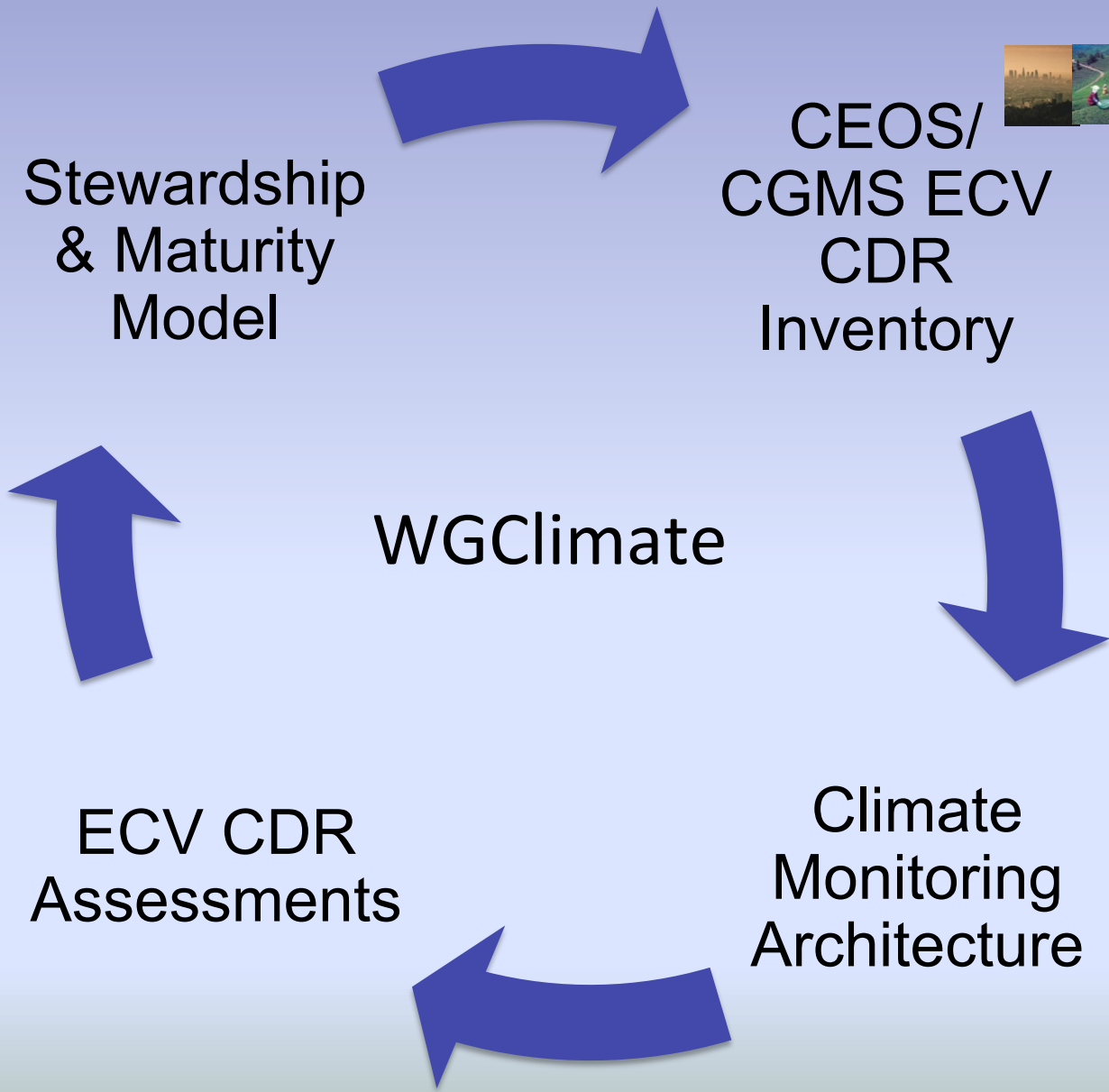
### National met services, other national institutions and regional agencies

- to the observing systems, including to baseline and reference atmospheric networks (GSN, GUAN, GRUAN, ...), following GCOS principles and guidelines where possible
- operating monitoring centres, lead centres, data centres, ...
- supporting a Cooperation Mechanism and regional activities for developing capacity
- coordinating their specific national GCOS activities

### GCOS bodies:

- the Programme Director and staff at WMO
- the Steering Committee (SC)
- co-sponsored Panels for Atmosphere, Ocean and Land, and their working groups
- also working via representation of these Panels on WOAP and now the WDAC

### Secretariats of contributing observing systems and programmes, related technical commissions, space-agency coordinating bodies, expert groups, ...



Stewardship  
& Maturity  
Model

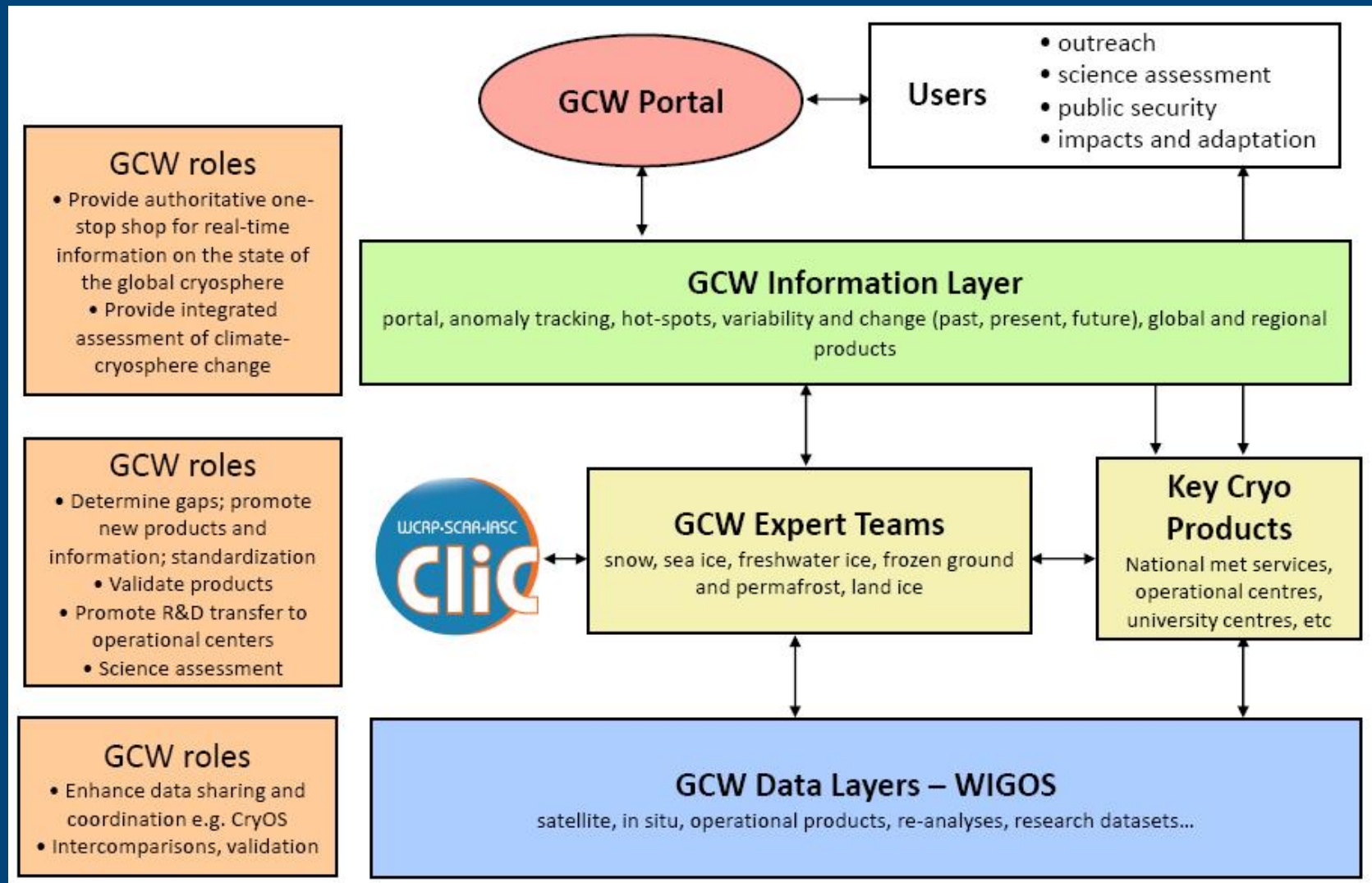
CEOS/  
CGMS ECV  
CDR  
Inventory

WGClimate

ECV CDR  
Assessments

Climate  
Monitoring  
Architecture

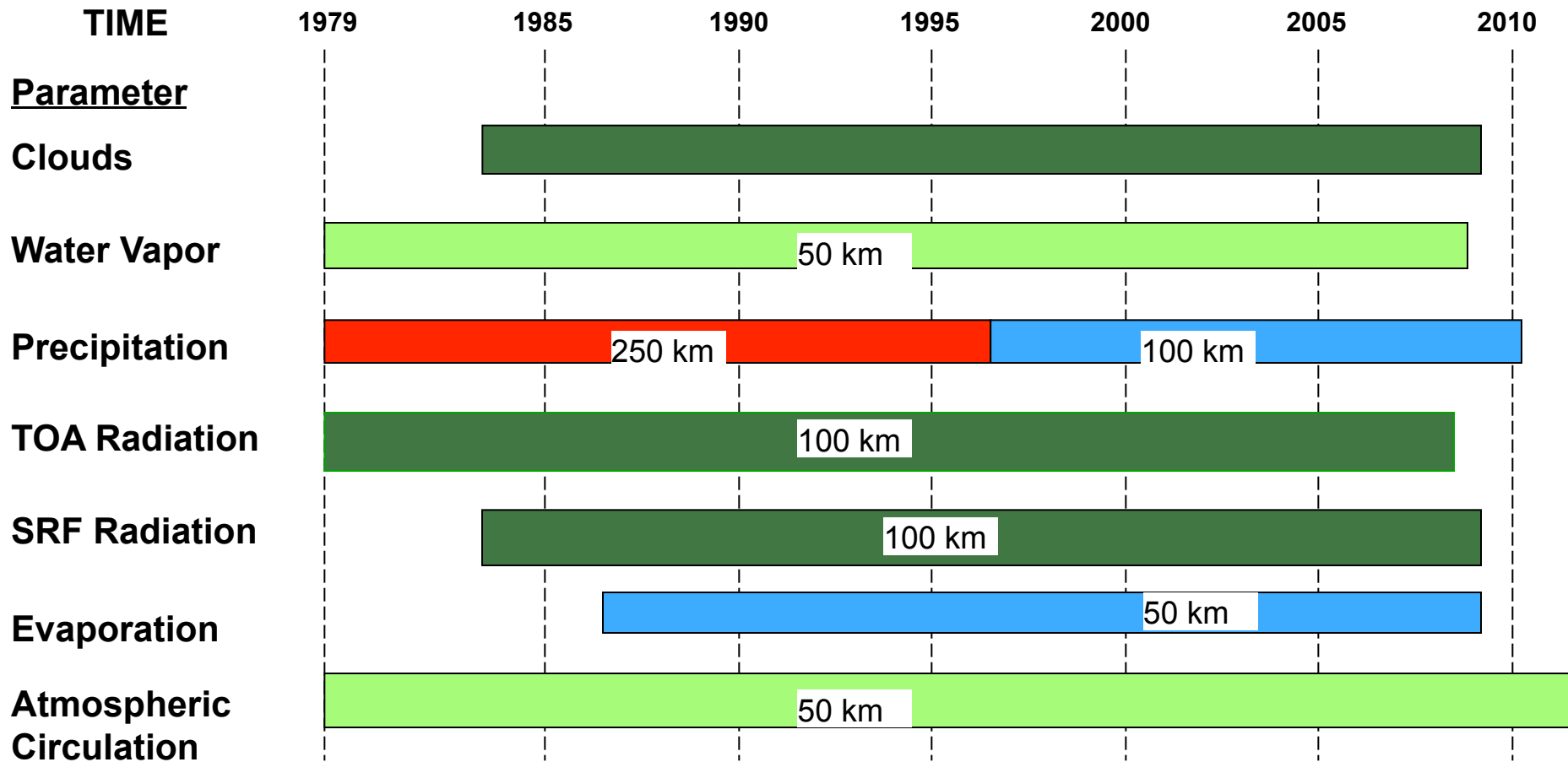
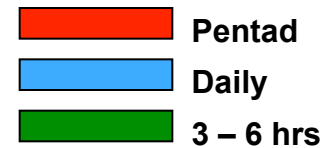
# Global Cryosphere Watch



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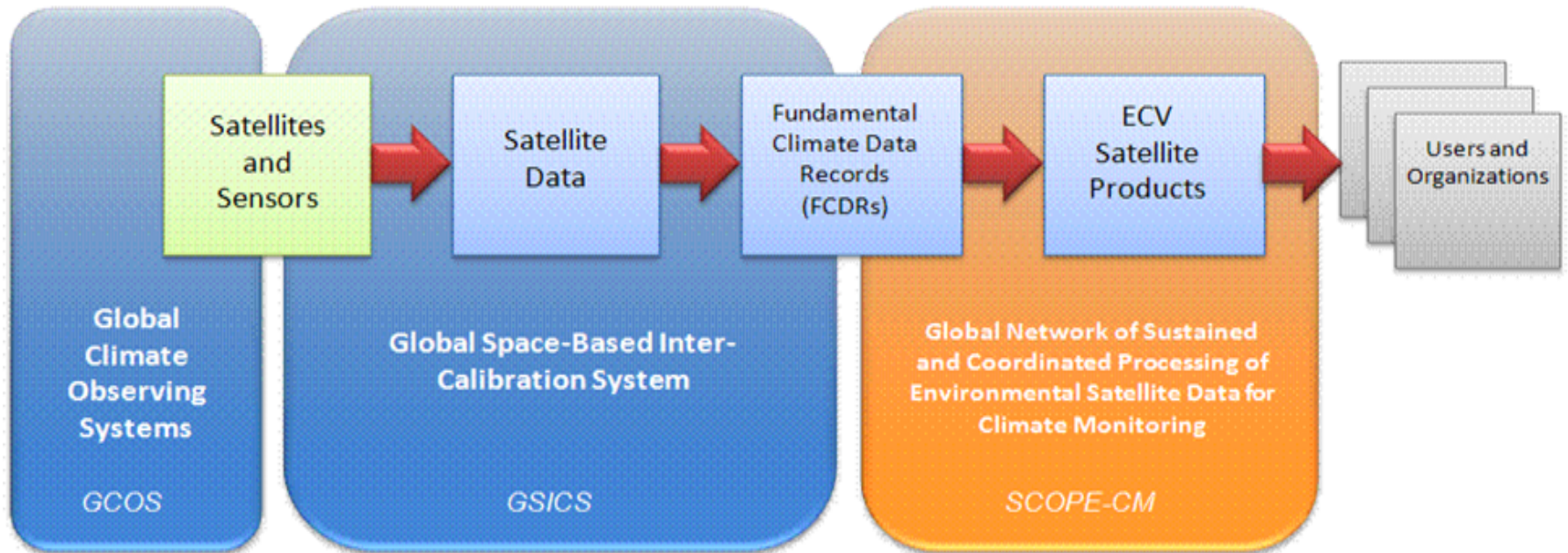


# Available Global Datasets



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## Conceptual View of End-to-End Provision of ECV



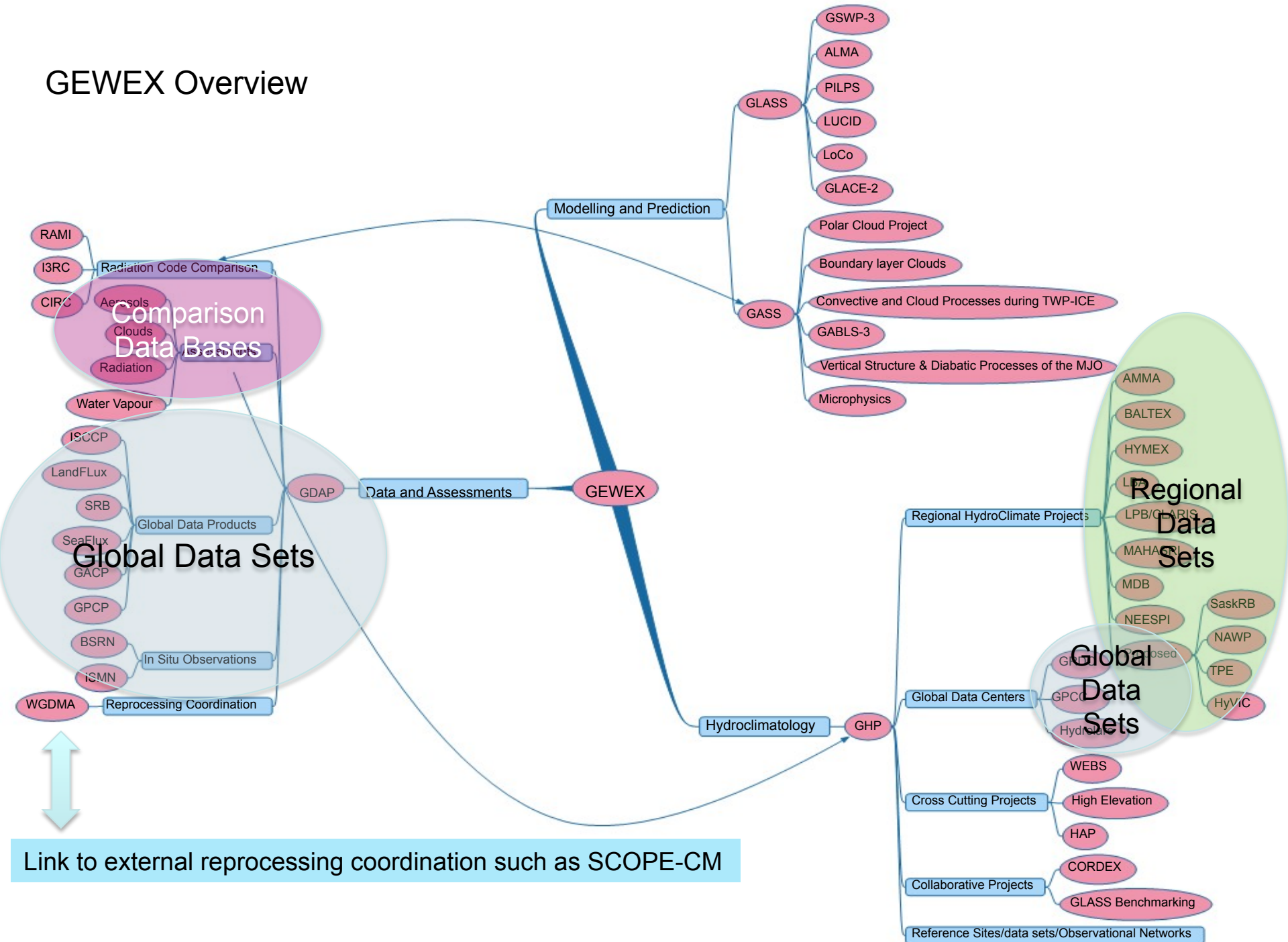
The architecture for space-based for climate monitoring contributing to the Global Framework for Climate Services in the context of WMO considers the whole chain from observations to decision making.

## The objectives of CGMS are formalised within its Charter:

- To provide an international forum for the exchange of technical information on geostationary and polar-orbiting meteorological satellite systems and research & development missions, such as reporting on current meteorological satellite status and future plans, telecommunications matters, operations, **intercalibration of sensors**, processing algorithms, products and their validation, data transmission formats and future data transmission standards.
- **To harmonise meteorological satellite mission parameters (such as orbits, sensors, data formats and downlink frequencies) to the greatest extent possible.**
- To encourage complementarity, compatibility and possible mutual back-up in the event of system failure through cooperative mission planning, compatible meteorological data products and services and the coordination of space and data-related activities, thus complementing the work of other international satellite coordinating mechanisms.

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# GEWEX Overview

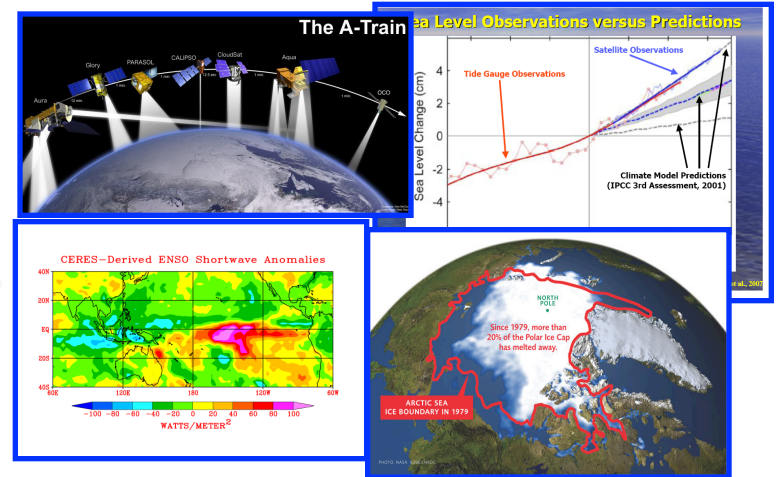
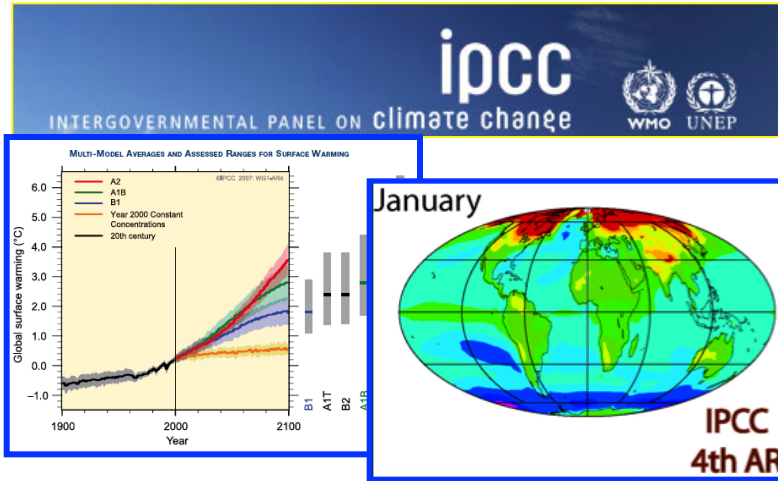


Link to external reprocessing coordination such as SCOPE-CM





# (Satellite) Observations and CMIP/IPCC: Better Linkage



How to bring as much observational scrutiny as possible to the IPCC process?

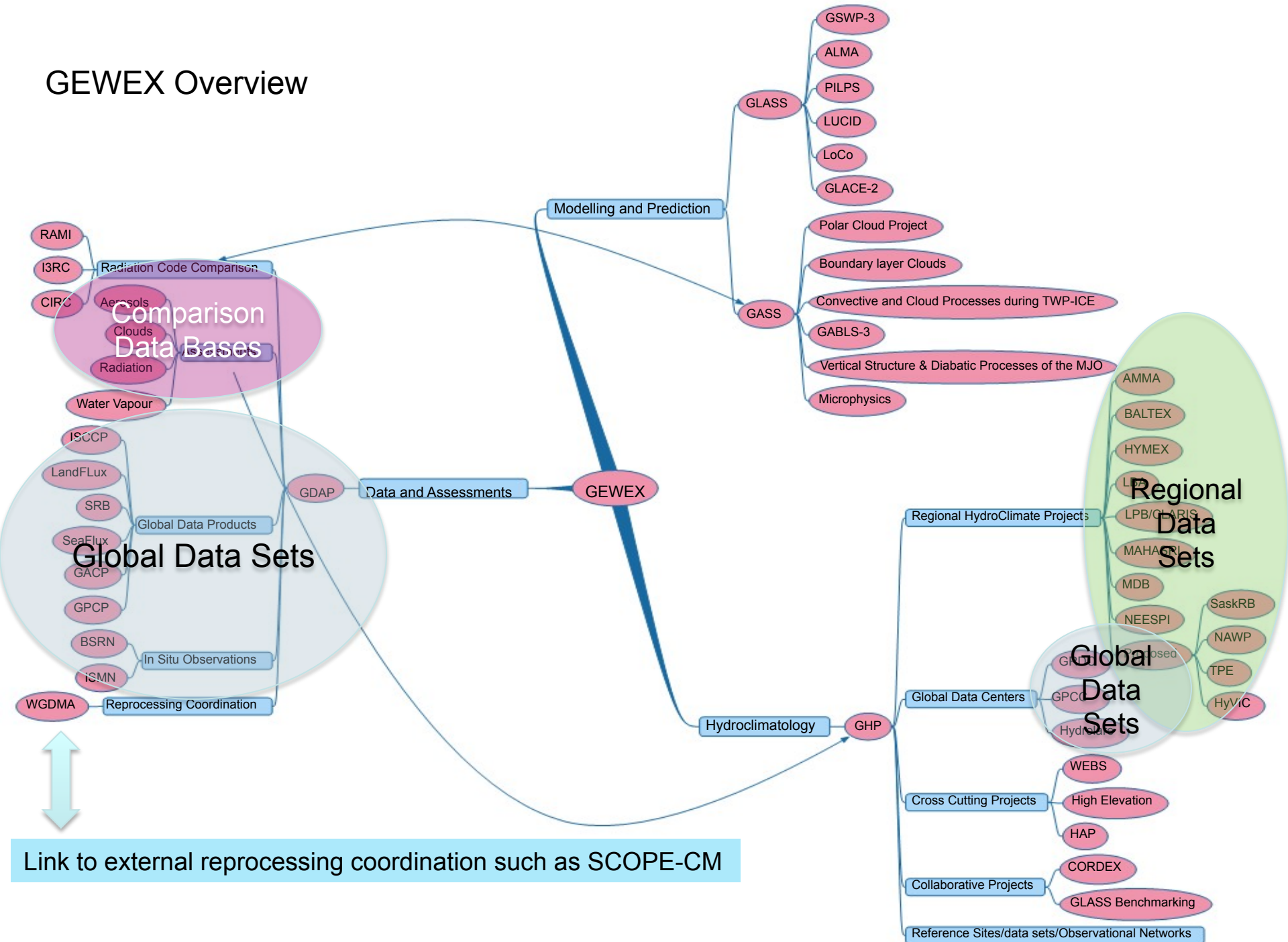
How to best utilize the wealth of Earth observations for the IPCC process?

AR5 – initial target  
AR6 and other MIPs – long-term targets

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## Climate Data Record Maturity Matrix Model (V4.0 from NOAA/NCDC)

Maturity	Software Readiness	Metadata	Documentation	Product Validation	Public Access	Utility
1	Conceptual development	Little or none	Draft Climate Algorithm Theoretical Basis Document (C-ATBD); paper on algorithm submitted	Little or None	Restricted to a select few	Little or none
2	Significant code changes expected	Research grade	C-ATBD Version 1+ ; paper on algorithm reviewed	Minimal	Limited data availability to develop familiarity	Limited or ongoing
3	Moderate code changes expected	Research grade; Meets int'l standards: ISO or FGDC for collection; netCDF for file	Public C-ATBD; Peer-reviewed publication on algorithm	Uncertainty estimated for select locations/times	Data and source code archived and available; caveats required for use.	Assessments have demonstrated positive value.
4	Some code changes expected	Exists at file and collection level. Stable. Allows provenance tracking and reproducibility of dataset. Meets international standards for dataset	Public C-ATBD; Draft Operational Algorithm Description (OAD); Peer-reviewed publication on algorithm; paper on product submitted	Uncertainty estimated over widely distributed times/location by multiple investigators; Differences understood.	Data and source code archived and publicly available; uncertainty estimates provided; Known issues public	May be used in applications; assessments demonstrating positive value.
5	Minimal code changes expected; Stable, portable and reproducible	Complete at file and collection level. Stable. Allows provenance tracking and reproducibility of dataset. Meets international standards for dataset	Public C-ATBD, Review version of OAD, Peer-reviewed publications on algorithm and product	Consistent uncertainties estimated over most environmental conditions by multiple investigators	Record is archived and publicly available with associated uncertainty estimate; Known issues public. Periodically updated	May be used in applications by other investigators; assessments demonstrating positive value
6	No code changes expected; Stable and reproducible; portable and operationally efficient	Updated and complete at file and collection level. Stable. Allows provenance tracking and reproducibility of dataset. Meets current international standards for dataset	Public C-ATBD and OAD; Multiple peer-reviewed publications on algorithm and product	Observation strategy designed to reveal systematic errors through independent cross-checks, open inspection, and continuous interrogation; quantified errors	Record is publicly available from Long-Term archive; Regularly updated	Used in published applications; may be used by industry; assessments demonstrating positive value

1 & 2	Research
3 & 4	IOC
5 & 6	FOC

CDRP-MTX-0008 V4.0 (12/20/2011)

# *Thoughts on climate data product standards*

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- **Use validated, peer-reviewed methods**
- **Demonstrate long-term consistency**
  - Operational products can provide targeted information for real-time users as well as validation for climate products
- **Bear a reasonable resemblance to reality and a confidence level in that resemblance to reality**
  - data **quality/error information** provided
- **Processing transparent and reproducible**
  - Archived in a self-describing format, but distributed in a variety of usable formats (e.g., GIS, KML, GeoTIFF, browse)
  - Source data and processing software available
- **Standardized data citation**
  - Editors and reviewers need to make it a requirement
  - Make dataset publication on par with journal article publication

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# Introduction (II)

- **Data assimilation combines models and observations and provides:**
  - **Verification facility**
  - **Essential tool for reanalysis and climate monitoring**
  - **Consistent framework for observation impact**
  - **Know-how on quality control, obs error characterisation, etc.**
- **This presentation is a (incomplete) digest of major events over the last year or so:**
  - **THORPEX DAOS (Exeter, June 2011), ECMWF annual seminar (September 2011), WMO data impact workshop (May 2012)**
  - *WCRP reanalysis conference (May 2012) (→ see M. Bosilovich)*
- **We will concentrate on:**
  - **Progress in data assimilation methods**
  - **Observation Usage and Impact**

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