



Climate Change

CCI+ mid-term review

Session: Key challenges in climate research,
monitoring and modelling for ESA

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Climate Change

Research 2 Operational Services

Frameworks: **GCOS**
GLOBAL CLIMATE OBSERVING SYSTEM

GFCS
GLOBAL FRAMEWORK FOR CLIMATE SERVICES

Underpinning R&D



Environmental Services



User Requirements

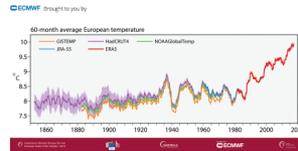
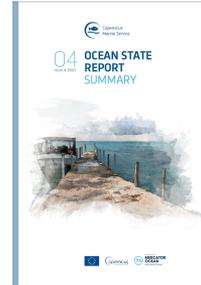
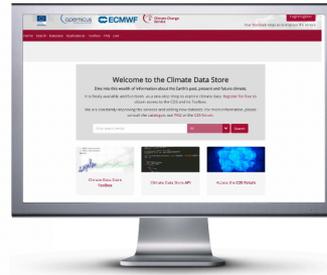
New ECVs:



Clear transfer mechanism/process

GCOS-TR	ECV	ECV1	update	ES
Atmosphere surface				
A1.1	Air temperature			
A1.2	Wind speed and direction			
A1.3	Pressure			
A1.4	Surface radiation budget			
Atmosphere upper air				
A2.1	Air temperature			
A2.2	Wind speed and direction			
A2.3	Water vapour			
A2.4	Cloud amount			
A2.5	Earth radiation budget			
Atmosphere composition				
A3.1	Carbon dioxide			
A3.2	Methane			
A3.3	Other long-lived greenhouse gases			
A3.4	Aerosols			
Oceans surface				
S1.1	Sea surface temperature			
S1.2	Sea surface salinity			
S1.3	Sea level			
S1.4	Sea ice			
Oceans subsurface				
S2.1	Ocean colour			
S2.2	Carbon dioxide partial pressure			
S2.3	Temperature			
S2.4	Salinity			
S2.5	Current			
Land hydrology & cryosphere				
L1.1	Runoff			
L1.2	Glaciers and ice caps			
L1.3	Ice sheets			
L1.4	Permafrost			
L1.5	Sea-ice thickness			
Terrestrial biomes				
B1.1	Albedo			
B1.2	Land cover (including vegetation type)			
B1.3	Fluxes of absorbed photosynthetically active radiation			
B1.4	Leaf area index			
B1.5	Fire ground biomass			
B1.6	Land surface temperature			

New algorithms, improved products, etc.





Climate
Change

Research 2 Operational Services

Complex stakeholder/user landscape

(engineered) coordination is key, and is a collective effort:

- Uptake of CCI+ R&D by environmental services (e.g. C3S)
- Exchange on continually evolving user requirements
- Facilitate user journey
 - Clarity on role of different platforms, portals
 - Consistent documentation of products, data standards
 - Coherent visibility for providers
 - Tools, cross referencing, consistent messaging,...
- Continue to work out transparency and complementarity
 - Who is paying for what?
 - Avoid overlaps
 - ...