The Copernicus Climate Change (C3) service: State of play

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(a) Copernicus G.2 unit
(b) ECMWF

CCI October 2014
New Copernicus regulation (EU) 377/2014: "the Climate Change service shall provide information to increase the knowledge base to support adaptation and mitigation policies. It shall in particular contribute to the provision of Essential Climate Variables (ECVs), climate analyses, projections and indicators at temporal and spatial scales relevant to adaptation and mitigation strategies for various Union's sectoral and societal benefit areas."
Copernicus Climate Change (C3) service

Strategy for the C3 service

Space & in-situ Observations
Climate data & re-analyses
Seasonal forecasts & Climate projections

Set of ECVs, indicators and indices for the Climate drivers and Climate impacts

EU knowledge in support of Adaptation and Mitigation
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Selected set of information for customer DGs

from European commission e.g., FP7 Space call

from research to operations

from other bodies e.g., MS, ESA, Eumetsat, EEA, WMO..

MS and other users & customers
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Consistent Climate Data Store

Observed, analysed and simulated Essential Climate Variables plus derived set of indicators relevant to consistently monitor and simulate Earth Climate responses to forcings
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C3S architecture: the SIS

Water management

Energy

Sectoral Information System

Climate indices relevant to the various EU sectoral policies
From European commission e.g., FP7 Space call

From other bodies e.g., MS, ESA, Eumetsat, EEA, WMO..

Consistent Climate Data Store

Sectoral Information System

Selected set of information for customer DGs

MS and other users & customers

Monitoring, QC of the service and feedbacks to production or R&D

Education, general public and authorities, reports, media, bulletin
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Interfaces & user interactions

Expert Panel

Commission C3 service

Delegated Body

Work Plan + Annual Activity Report (n+1)  

if OK

Solutions & user interactions

if not OK

F4P

Equity (EQC)

External expertise

Copernicus Climate Change (C3) service

C3 portal Climate-ADAPT

C3 service users

Customer DGs & Member States

O&D

CDS

SIS

Copernicus Data Service (CDS)

Support Innovation Services (SIS)

if OK

Technical recommendations

if not OK

High level recommendations
Copernicus Climate Change (C3) service

Provisional timing

| Stage 0 - Proof of Concept |
| Stage I - Pre-Operational |
| Stage II - Operational ~20 ECVs, ~5 Sectors |
| Stage III - Operational ~33 ECVs, ~9 Sectors |

Pre-operational Phase

Operational Phase
Copernicus Climate Change (C3) service

Marketplace concept

- Distributed
- Build upon existing infrastructures

WIS
GEOSS
WMO GFCS, INSPIRE,
...
Copernicus Climate Change (C3) service

Market place concept

WIS GEOSS WMO GFCS, INSPIRE, …

Other Copernicus Services

Adaptor

Web Portal

Broker

Adaptor

Adaptor

Adaptor

Adaptor

Catalogue

ESGF

Website ftp server

ECMWF MARS archive

Other Copernicus Services
#### Consistent Climate Data Store - ~ 20 ECVs & indicators -
Observed, re-analyzed and model projected products

**ATMOSPHERE**
- Surface Air Temperature
- Surface Precipitation
- Water Vapor
- Surface Radiation Budget
- Earth Radiation Budget
- Carbon Dioxide & Methane
- Ozone & Aerosols
- Cloud properties
- Wind Speed & Direction

**OCEAN**
- Ocean Color
- Sea Ice
- Sea Level
- Sea Surface Temperature
- Global Ocean Heat Content

**LAND**
- Snow Cover
- Glaciers & Ice Caps
- Albedo
- FAPAR
- Fire Disturbances
- Ice Sheets

### Sectoral Information System – 6-8 sectors

- **Agriculture and forestry**
- **Health**
- **Energy**
- **Infrastructure**
- **Coastal areas**
- **Water management**
- **Tourism**
- **Insurance**
### Indicative road map

#### Stage II & III

#### Consistent Climate Data Store - ~ 33 ECVs & indicators -
- Observed, re-analyzed and model projected products

<table>
<thead>
<tr>
<th>ATMOSPHERE</th>
<th>OCEAN</th>
<th>LAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Air Temperature</td>
<td>Ocean Color</td>
<td>Snow Cover</td>
</tr>
<tr>
<td>Surface Precipitation</td>
<td>Sea Ice</td>
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<td>CO2 partial pressure</td>
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<td>Ozone &amp; Aerosols</td>
<td>Ocean Activity</td>
<td>Lakes</td>
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<tr>
<td>Cloud properties</td>
<td>Sea Surface Salinity</td>
<td>Permafrost</td>
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<td>Wind Speed &amp; Direction</td>
<td>Current Salinity</td>
<td>Land Cover</td>
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<tr>
<td>Upper Air Temperature</td>
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<td>Leaf Area Index</td>
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<tr>
<td>Other Long-Lived GHGs</td>
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<td>Soil Moisture</td>
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</tbody>
</table>

#### Sectoral Information System – ~ 8-10 sectors

- Agriculture and forestry
- Health
- Energy
- Infrastructure
- Coastal areas
- Water management
- Tourism
- Insurance
- Disaster risk reduction
- Marine and fisheries
- Transportation
- Biodiversity
on-going negotiation with ECMWF of the Technical Annex of the C3 service :
"..............
Specific actions will be supported by the service to operationalize the production of a limited subset of ECV products generated under the ESA Climate Change Initiative (CCI), selected on the basis of quality, maturity, and added value to the service."
Copernicus Climate Change (C3) service

Provisional timing

<table>
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CCI 1st Set
- Phase 1: Jan 2011 - Dec 2013
- Phase 2: Jan 2014 - Dec 2016

CCI 2nd Set
- Phase 1: Jan 2012 - Dec 2014
- Phase 2: Jan 2015 - Dec 2017

6th Space Call

5th Space Call
HAPPENING NOW:
The Largest Climate March in History.

NEW YORK CITY, SEPTEMBER 21ST 2014
Thank you