

DG for Internal Market,
Industry, Entrepreneurship
and SMEs

DG GROWTH



# The Copernicus Climate Change (C3) service

H. Zunker, B. Pinty Copernicus Services unit







6 services use
Earth
Observation
data to make ...



**Contributing missions** 

**Sentinels** 







...added-value products







## **Copernicus** regulation

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**



#### C3S architecture: the CDS

from European commission e.g.,FP7 Space call



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

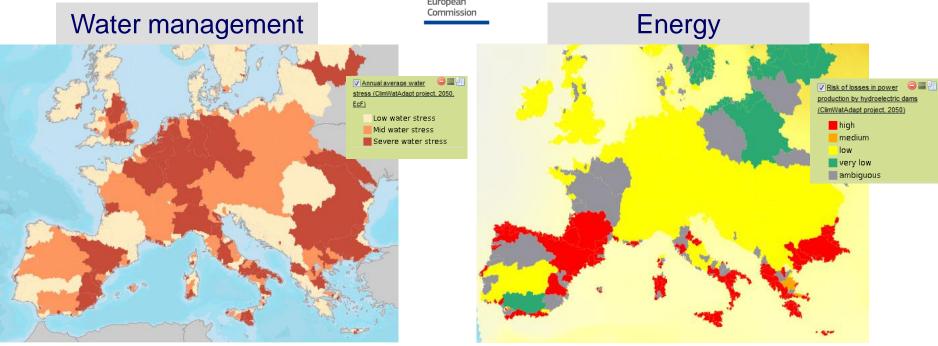
#### **Consistent Climate Data Store**

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

### **Copernicus Climate Change (C3) service**



#### C3S architecture: the SIS



#### **Sectoral Information System**

Climate indices relevant to the various EU sectoral policies

# Copernicus Climate Change (C3) service



#### C3S architecture: logical view

QC function Ø **Evaluation** 

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

utreach 20

#### Copernicus Climate Change (C3) service



#### Indicative road map Stage II & III

Consistent Climate Data Store - ~ 33 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
Upper Air Temperature
Other Long-Lived GHGs

#### **OCEAN**

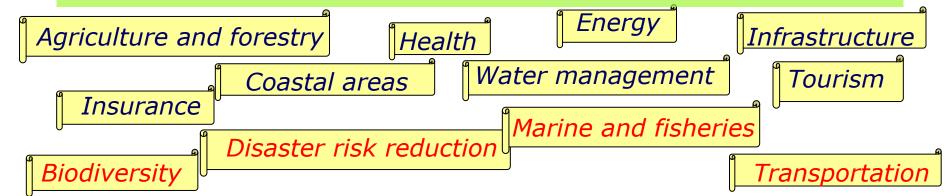
Ocean Color Sea Ice Sea Level Sea Surface Temperature Global Ocean Heat Content

CO2 partial pressure Ocean Activity Sea Surface Salinity Current Salinity

#### LAND

Snow Cover
Glaciers & Ice Caps
Albedo
FAPAR
Fire Disturbances
Ice Sheets
Lakes
Permafrost
Land Cover
Leaf Area Index
Soil Moisture

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



## Copernicus Climate Change (C3) service



### **Provisional timing**

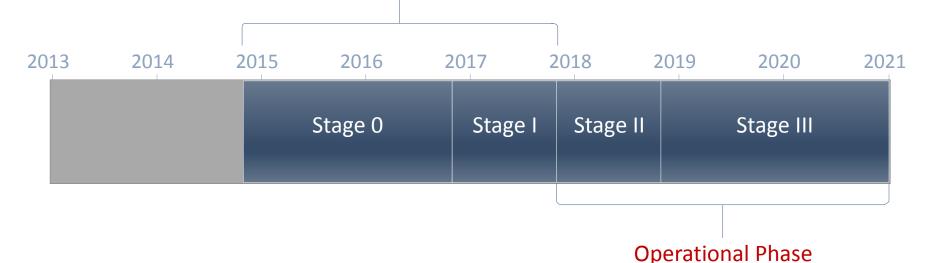


Stage I - Pre-Operational

Stage II - Operational ~20 ECVs, ~5 Sectors

Stage III - Operational ~33 ECVs, ~9 Sectors







## Concluding remarks (1)

➤ Assessment of the required components of a C3 Service.

- Consistent with global efforts on climate datasets (i.e. GCOS requirements, CEOS/CGMS implementation) and climate Services (i.e. GFCS).
- ➤ The C3 service should be considered as a European contribution to building Global Earth Observation System of Systems (GEOSS) developed within the framework of the Group on Earth Observations (GEO).



- ➤ The C3 service will benefit from existing activities.
- ➤ Initial "seed" projects under FP7 space have already started.

➤ There is a clear framework and initial roadmap for implementation of the Service.

➤ The C3 service will address climate change issues at global scale with a European dedicated focus.



#### Thank you