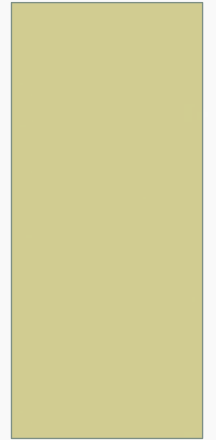


**CLIMATE SERVICES:  
AN INTERNATIONAL PERSPECTIVE**

GUY P. BRASSEUR



# The US Academy of Sciences (2001)

A climate service must focus on very different types of activities in order to address all the major categories of variability and change. Climate services and products include observations, forecasts, and projections and their uncertainties that address both seasonal to interannual variability and decadal to century-scale change and variability, including human-induced global change. Each is associated with different types of users or decision makers and with different types of needs and products, as is evident by the current use of climate information.

A CLIMATE  
SERVICES VISION

first steps toward the future

# EUROPEAN UNION DEFINITION OF CLIMATE SERVICES (2015)

**Transformation** of climate-related data –together with other relevant information- into **customized products** such as projections, forecasts, information, trends, economic analyses, assessments, counseling on best practices, development and evaluation of **solutions**, and other services in relation to climate that may be of use for society at large

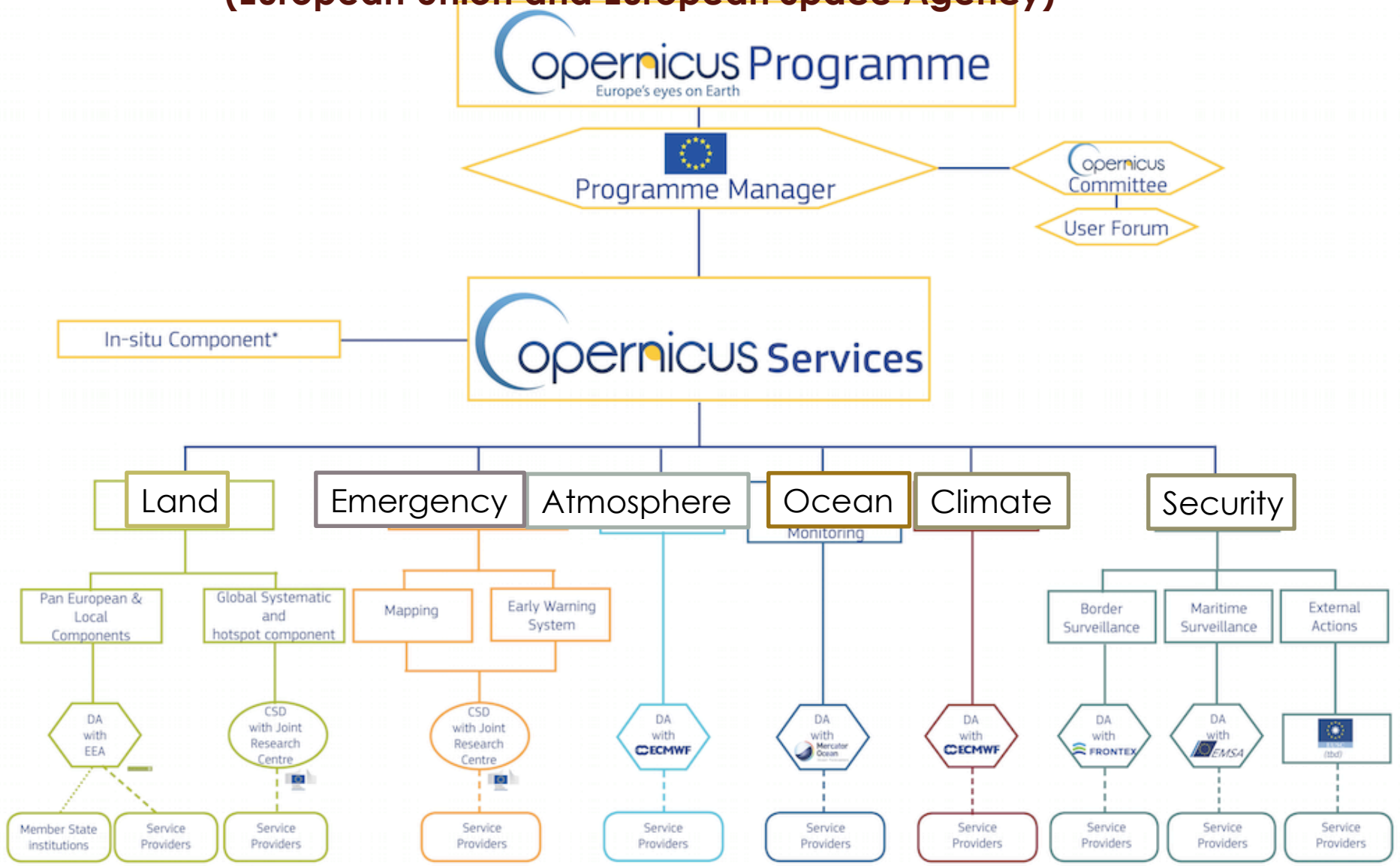
Includes data, information and knowledge that support **adaptation**, **mitigation** and **disaster risk management**.

# “TOP-DOWN” VERSUS “BOTTOM-UP” APPROACHES

- **Top-Down: (Dissemination of large data sets)**
- EU Copernicus Climate Change Service (C3S) managed by ECMWF
- Hydrometeorological Services incl. the British Met Office, NOAA, etc
  
- **Bottom-up: (Dialogue with Stakeholders, solution to their problems)**
- European Environmental Agency (EEA)
- International Institute for Applied System Analysis (IIASA)
- Potsdam Institute for Climate Impacts (PIK)
- UK Climate Impact Programme (UKCIP)
- Earth Institute, Columbia

# The Copernicus System

## (European Union and European Space Agency)



# THE COPERNICUS CLIMATE CHANGE SERVICE (C3S)

1. **Climate data store** (ECVs, observations, reanalyses, climate indicators)
2. **Sectoral information system** (Tailored indicators for primary users, support of public and commercial applications)
3. **Evaluation and quality control** (user requirements, gaps, capacity building, new service components, scientific assessments)
4. **Outreach and dissemination** (liaison with users, training, annual state of climate)



## Mayors Adapt: Promoting urban leadership in adaptation to climate change

The Covenant of Mayors Initiative on Climate Change Adaptation has been set up by the European Commission to engage cities in taking action on climate change adaptation.



The initiative, provides a platform for supporting adaptation, networking and public awareness at the local level where the impacts of climate change will be felt the most.

[→ Want to join the initiative?](#)



**Adaptation support tool**

New to adaptation?  
Use the Adaptation Support Tool

What are European countries doing?

Choose a country

Find case studies on adaptation in Europe

Choose a country

Share your information

## News

- » 25 Apr 2016 Recommendations for improving flood risk governance in Europe
- » 01 Apr 2016 European droughts set to become more prevalent by the end of the century
- » 16 Mar 2016 City of Maastricht...

## Events

- » 10 May 2016, Adaptation Futures 2016: practices and solutions, Rotterdam, The Netherlands
- » 23 May 2016, 2016 Berlin Conference on Global Environmental Change: Transformative Global Climate Governance "après Paris". Berlin

## Newsletter

Check the [European Climate Adaptation Newsletter](#) and register to receive it in your e-mail

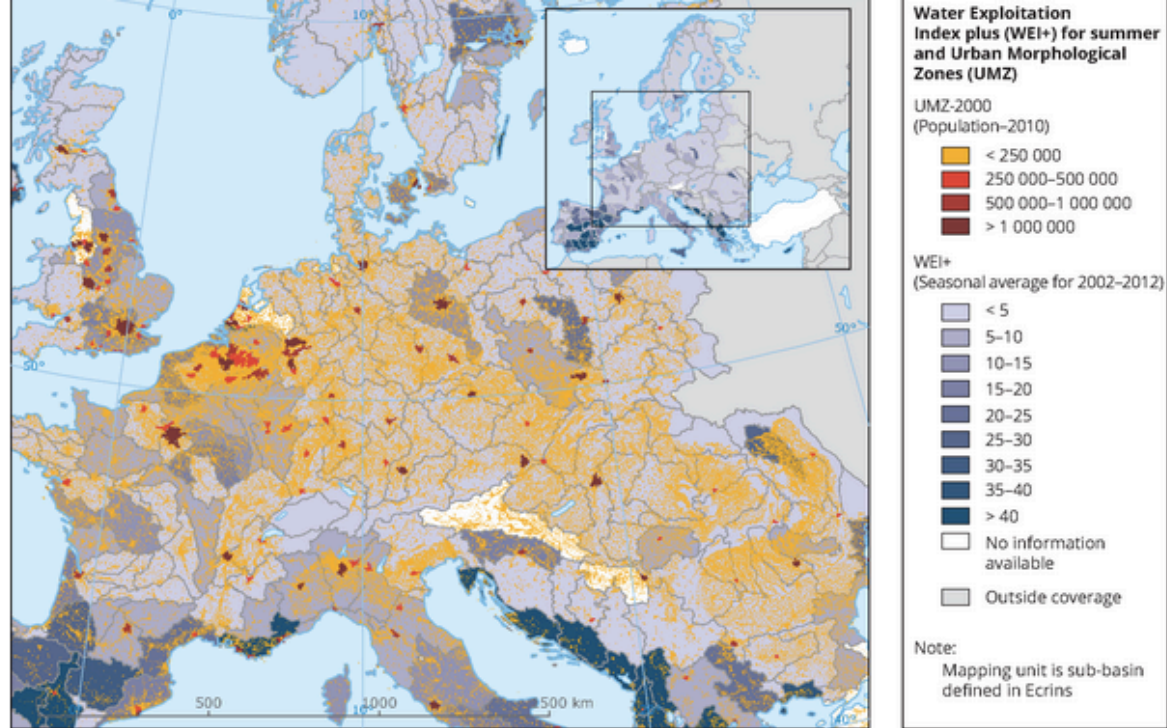


## Latest updates

Check the latest updates in the content of the Platform.

- » Country information page
- » Mayors Adapt landing page

# Is Europe's freshwater use sustainable?



## Other key findings

- During winter, approximately 30 million inhabitants live under water stress conditions, while the figure for summer is around 70 million. This corresponds to 6 % and 14 % of the total population of Europe respectively.
- Agriculture accounts for 36 % of total water use on an annual scale. In summer, this increases to about 60 %. Agriculture in the Mediterranean region alone accounts for almost 75 % of total water used for agriculture in Europe.
- Around 20 % of the total population of the Mediterranean region live under permanent water stress conditions. More than half (53 %) of the Mediterranean population is effected by water stress during the summer.
- Public water supply is second to agriculture, accounting for 32 % of total water use.
- The service sector, including businesses dealing with tourism, has become one of the main pressures on renewable water resources, accounting for 11 % of total annual water use. Small Mediterranean islands in particular are under severe water stress conditions due to receiving 10-15 times more tourists than they have local inhabitants.





# LESSONS LEARNED (1)

- Experience has shown that **there is no fully-developed market** yet for climate **adaptation** products.
- The market has been primarily for climate **mitigation** products, for which small private companies provide advise.

## LESSONS LEARNED(2)

- One of the reasons is that there is **no strong legislation** on climate adaptation.
- Another reason is the **business model** of current climate services.
- A third reason is that the **timescales** associated with climate change are considerably longer than the strategic planning horizon of most institutions.

# CHALLENGES FOR CLIMATE SERVICES

- The **insufficient awareness** by some societal actors of their vulnerability to future climate change
- The **lack of relevant and timely products** and services offered by the scientific community
- The **inappropriate format** in which the information is provided
- The **inadequate business model** adopted by climate services.

# Scientists forced to face communication into **value-conflicting** contexts

Data generation:

**Adequate?**

Integration, analysis, and interpretation:

**Problematic**

Delivery, translation for application, including non-climate context:

**Emergent & Weak**

Appropriately informed adoption

Mixed

Size of community

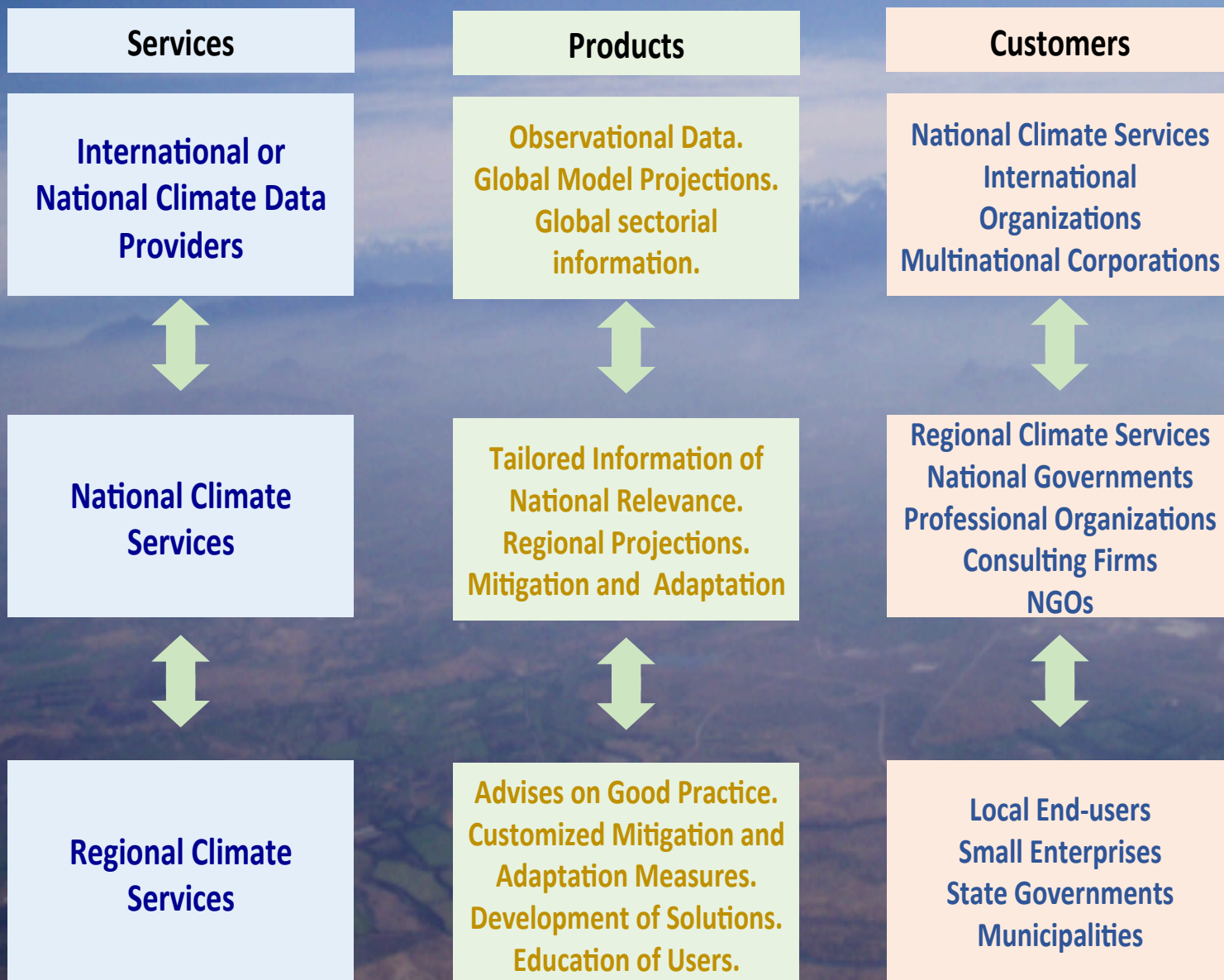
Choices

Choices

Choices

**Scientists** – Producers – Analyzers – Translators – Providers – Communicators – **Users**

# The Chain of Climate Services



# A NEW ARCHITECTURE

(TO BE ADAPTED TO THE SPECIFICITIES OF THE TARGET MARKETS)

1. **Experts in climate science** (culture of the Academic community)
2. **Specialists in impacts, adaptation and vulnerability** (incl. culture of consulting firms)
3. **Representatives of the corporate world** (culture of business)
4. **Representatives of public services** (culture of the political world, government, urban aspects, etc.)
5. **Social managers and communication specialists**

Efforts to synthesize knowledge “in house” and turn it into practical implementation

# TAKING A BROAD APPROACH

**Integration, Synthesis and Knowledge Transfer and Education**



**Socio-Ecological System:  
Vulnerability and Societal Responses**

**Climate Economics**

Costs of Mitigation  
and Adaptation

**Climate Policy**

Governance and  
decision making

**Climate  
Communication**

**New Technologies**

Management Practices



**Physical Earth System  
Climate Change and Impacts:**

**Climate System**

Global Climate  
Models  
Downscaling  
Probabilistic  
Projections  
and  
Analysis

**Climate Impacts**

Extreme weather  
events  
Water  
Ecosystems  
Biodiversity  
Urban Areas  
Air and water quality,  
etc.

# Thank You

*“Science exists to serve human welfare. It’s wonderful to have the opportunity given us by society to do basic research, but in return, we have a very important moral responsibility to apply that research to benefiting humanity.”*

*Walter Orr Roberts*

