

# ICT & Climate Services

*Mainstreaming Climate Services with Applications*

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Sydney, Australia



An initiative of the Organisation of African, Caribbean  
and Pacific States funded by the European Union





# OVERVIEW

**01** Introduction

**02** ClimSA Project & the EU  
Joint Research Centre

**03** The Climate Station

**04** PESO Approach

**05** Discussion



# Strengthening Climate Services in the Pacific



## Intra-African Caribbean Pacific Climate Services and Related Applications Programme

This European Union-funded programme was developed to support the Climate Information Services value chain in the Pacific with technical and financial assistance, infrastructure and capacity building.

### Pilot Countries



Kiribati



Samoa






Nauru



Tonga

## Project Components

-  14 Pacific ACP States
-  Improved understanding and use of Climate Information
-  Understanding end users of Climate Information

## Focus Areas



Agriculture  
& Fisheries



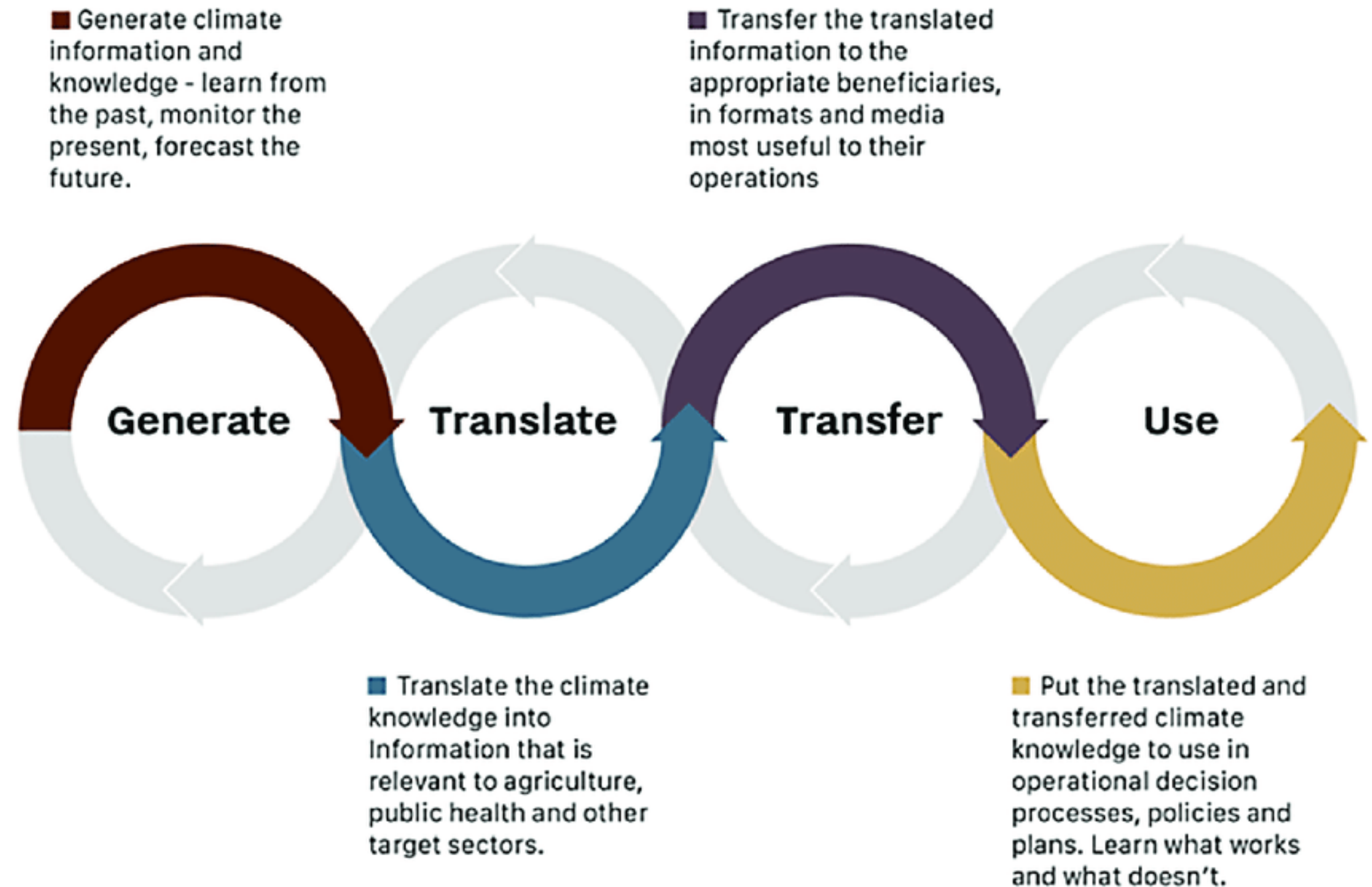
Disaster Risk  
Reduction

# Climate Services

Climate services are systems to deliver the best available climate information to end-users in the most usable and accessible formats.

## 4 Pillars of Climate Services are:

- generation
- translation
- transfer
- use of climate information



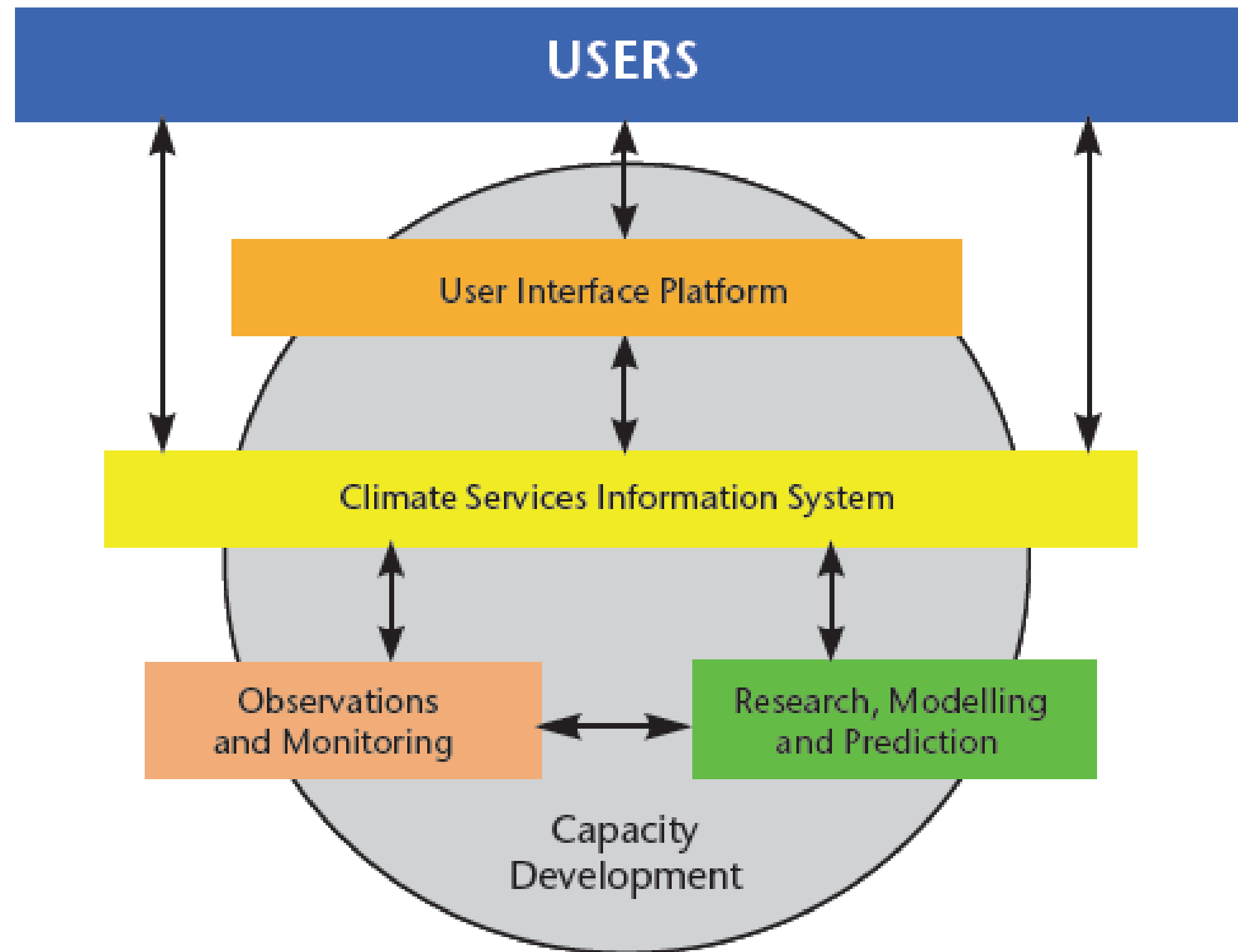




# Climate Services

- Climate services provide climate information in a way that assists decision-making by individuals and organizations.
- Such services require appropriate engagement along with an effective access mechanism and must respond to user needs.
- Such services involve high-quality data from national and international databases on **temperature, rainfall, wind, soil moisture** and **ocean conditions**, as well as **maps, risk and vulnerability analyses, assessments, and long-term projections** and **scenarios**.
- Depending on the user's needs, these data and information products may be combined with non-meteorological data, such as **agricultural production, health trends, population distributions in high-risk areas, road and infrastructure maps** for the delivery of goods, and **other socioeconomic variables**.

# Global Framework for Climate Services



GFCS Climate Services Value Chain

The **Global Framework for Climate Services (GFCS)** supports, strengthens, and coordinates the development, delivery, and use of climate services at national, regional and global levels.

The framework is built around 5 components:

1. Climate observations and monitoring,
2. Climate research, modelling and prediction,
3. Climate services information system,
4. Engagement between users and providers of climate services, and
5. Capacity development.

## Challenges with Earth Observation Data

**Continuity:** in many institutions in the Pacific, internet is not available, or at least not continuously.

**Assess data quality/suitability:** which data are best suited for a specific application/region, within the offered portfolio?

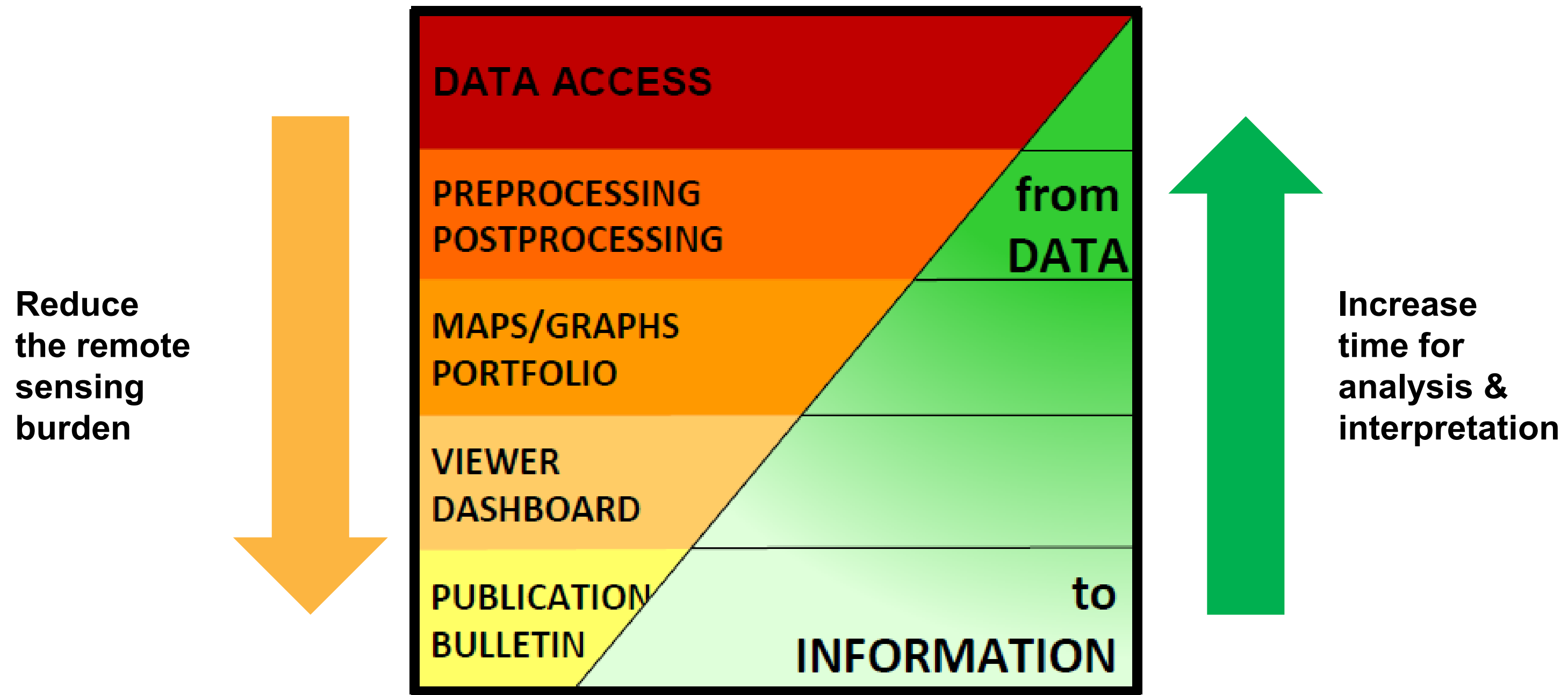
**Manage complexity:** different files formats (.hdf, .netcdf, .grib, hrit, tiff) and projections.

**Lack of localised data required for climate projections**  
(timescale of 30+ years)





# Overall Objectives of Operational Climate Stations





# THE EU JOINT RESEARCH CENTRE, ISPRA

**JRC is one of the technical implementing partners of the ClimSA Programme, with a specific mandate to capacitate RCCs of the African Caribbean and Pacific states in the development of climate smart informed decision-making tools.**





## THE CLIMATE STATION (C-STATION)

The Climate Station is a platform for **retrieving, processing and visualizing** climate and Earth Observation datasets for the implementation of climate services.

It is developed by JRC for the ClimSA Programme, and has been already deployed to the RCCs since 2021, as a prototype.

The platform is now mature for full integration in the Climate Service Information Systems (CSIS) at the regional level and deployment to the national institutions.









# Key Principles of the Climate Station

**‘Open’ System:** based on Open Source technologies (Ubuntu, GDAL, Mapserver/OpenLayers, postGresQL, python, php) and open to Users contributions (needs specifications and developments).

**‘Flexible’** in the Installation/Re-Installation:

- Automatic installation on the projects HW (e.g. African Monitoring of the Environment for Sustainable Development (AMESD))
- Installation on a generic PC (Ubuntu OS or Windows)
- Installation and activation of all components on a single computer.
- Lighter Historical Datasets to facilitate re-install

**Dedicated** services retrieve datasets from:

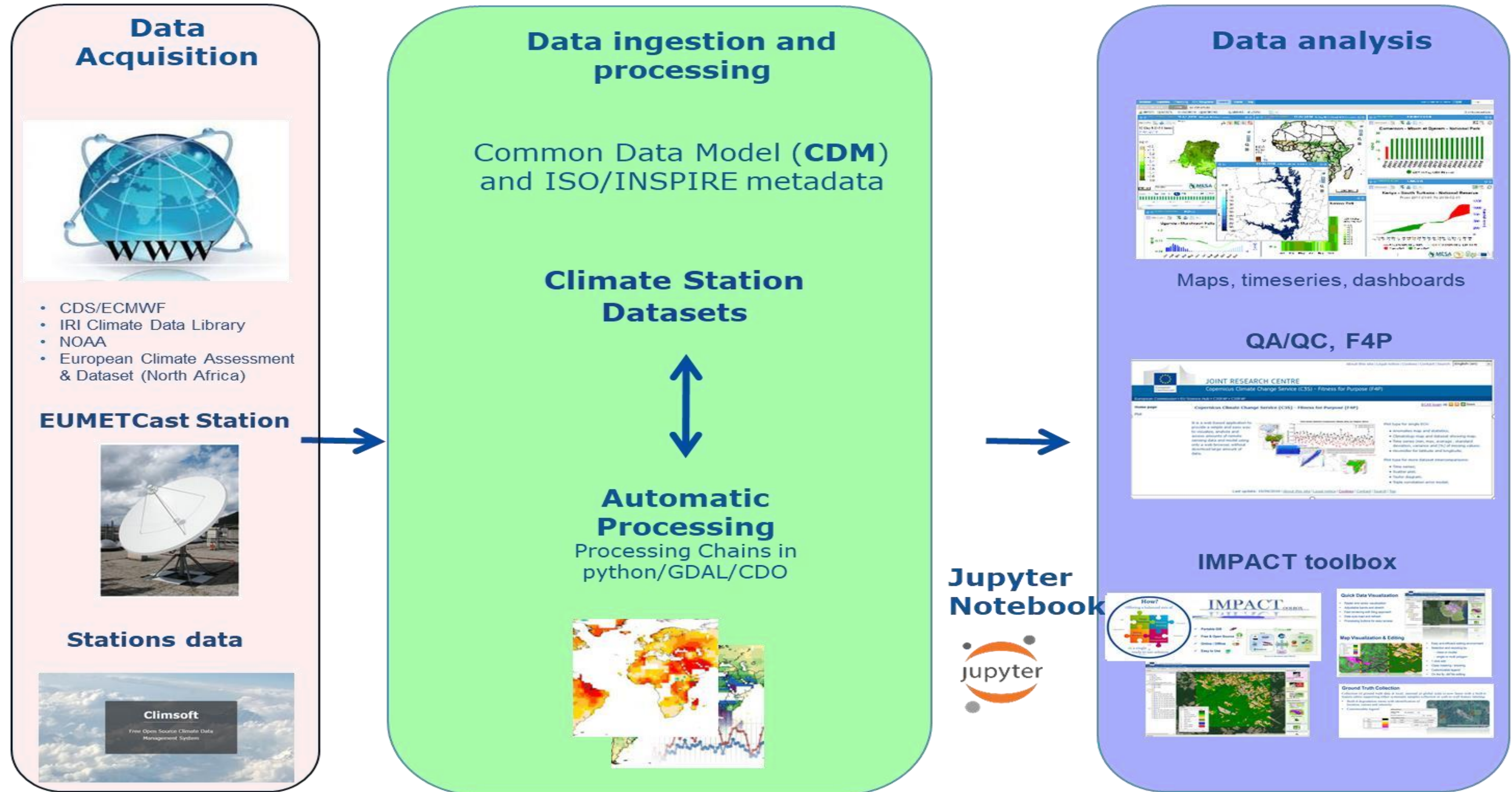
- EUMETCast
- the Internet
- Data Stores (e.g. through Application Programming Interfaces, as for Climate Data Store and Int. Resource Identifier)

For each data record, the spatial/temporal subset is automatically downloaded and converted to C-Station standards (Common Data Model).

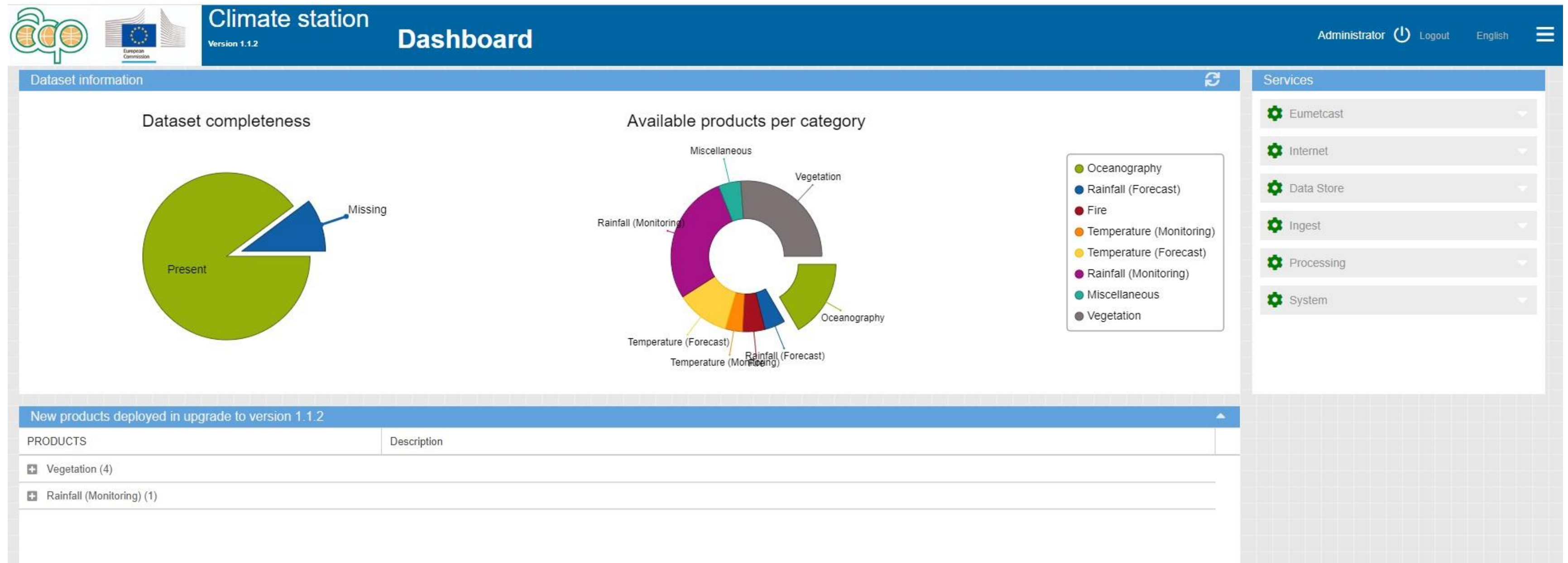




# Climate Station: Conceptual Design



# Climate Station: General User Interface - Dashboard



- Login
- Language Selection
- Overview of the local datasets
- Control of the Services
- Overview of products released on latest version



# Climate Station: General User Interface - Portfolio

Climate station Portfolio  
Version 1.1.2

Administrator Logout English

Search products to add to your Portfolio

Activate all Deactivate all Current Portfolio Show current Portfolio!

Theme

- ☐ Theme ↑
- ☐ Land
- ☐ Marine
- ☐ Other

Product category

- ☐ Product category
- ☐ Vegetation
- ☐ Rainfall (Monitoring)
- ☐ Rainfall (Forecast)
- ☐ Fire
- ☐ Inland water

Region

- ☐ Region ↑
- ☐ African area
- ☐ Caribbean, Pacific, Africa
- ☐ Central Africa
- ☐ Eastern Africa
- ☐ Global

Search only NEW products in version 1.1.2: Search

PRODUCTS	Active	Sub Product	Mapset	Region	Active
+ Vegetation (8)					
+ Miscellaneous (13)					
+ Rainfall (Monitoring) (9)					
+ Rainfall (Forecast) (10)					
+ Fire (1)					
+ Oceanography (10)					
+ Temperature (Monitoring) (4)					
+ Temperature (Forecast) (13)					

- Quick selection of the products of interest
- Option to work on the newest products only
- Overview of the active products

# Climate Station: General User Interface - Acquisition

**Climate station Acquisition**  
Version 1.1.2

Administrator Logout English

Eumetcast Internet Data Store Ingest

Product categories	Get			Ingestion				Log
PRODUCTS	Source	Active	Log	Sub Product	Mapset	Completeness	Active	
Vegetation (8)								
JRC/MARS WSI-HP - v1.0 Product code: wsi-hp Provider: ECMWF/JRC-MARS	JRC MARS Water satisfaction index - Crop JRC:MARS:WSI:CROP Source: INTERNET	<input checked="" type="checkbox"/>	LOG	crop	Africa 1km (SPOTV)	2003-01-01 Files: 727 Missing: 1 2023-03-01 Start date: 2003-01-01	<input checked="" type="checkbox"/>	LOG
	JRC MARS vegetation Water satisfaction index - HP for Pasture JRC:MARS:WSI:PASTURE Source: INTERNET	<input checked="" type="checkbox"/>	LOG	pasture	Africa 1km (SPOTV)	2003-01-01 Files: 727 Missing: 1 2023-03-01 Start date: 2003-01-01	<input checked="" type="checkbox"/>	LOG
MODIS FAPAR - 1.0 Product code: modis-fapar Provider: JRC DRO	DRO FAPAR 10day normalized (zscore) JRC:DRO:FAPAR:10ZSCORE Source: INTERNET	<input type="checkbox"/>	LOG	10dzscore	Africa 0.01 deg (MODIS)	2001-01-01 Files: 799 Missing: 13 2023-03-01 Start date: 2001-01-01	<input type="checkbox"/>	LOG
	DRO FAPAR 10day (monitoring) JRC:DRO:FAPAR:10DFAPAR Source: INTERNET	<input type="checkbox"/>	LOG	fapar	Africa 0.01 deg (MODIS)	2001-01-01 Files: 799 Missing: 13 2023-03-01 Start date: 2001-01-01	<input type="checkbox"/>	LOG
Risk of Drought Impacts for Agriculture (RDri-Agri) - v2.3.2 Product code: gdo-rdri Provider: JRC/GDO	Risk of Drought Impacts from JRC server JRC_GDO_RDRI_DEKAD Source: INTERNET	<input checked="" type="checkbox"/>	LOG	rdria	GPCC Global 1 degree	2010-01-01 Files: 475 Missing: 4 2023-03-01 Start date: 2010-01-01	<input checked="" type="checkbox"/>	LOG
Sentinel3-OLCI DMP 300m - olci-v1.0 Product code: vgt-dmp Provider: VITO/Copernicus - JRC	VITO PDF server - OLCI DMP 300m V1.0 PDF:GLS:OLCI-V1.0:DMP Source: INTERNET	<input checked="" type="checkbox"/>	LOG	dmp	Africa 300m (SPOTV)	2021-01-01 Files: 79 Missing: 3 2023-03-01 Start date: 2021-01-01	<input checked="" type="checkbox"/>	LOG

- Control of the Acquisition of incoming products
- Check the logfiles of the Services
- Check the Data completeness



# Climate Station: General User Interface – Data Management

**Climate station**  
Version 1.1.2

**Data Management**

Administrator Logout English

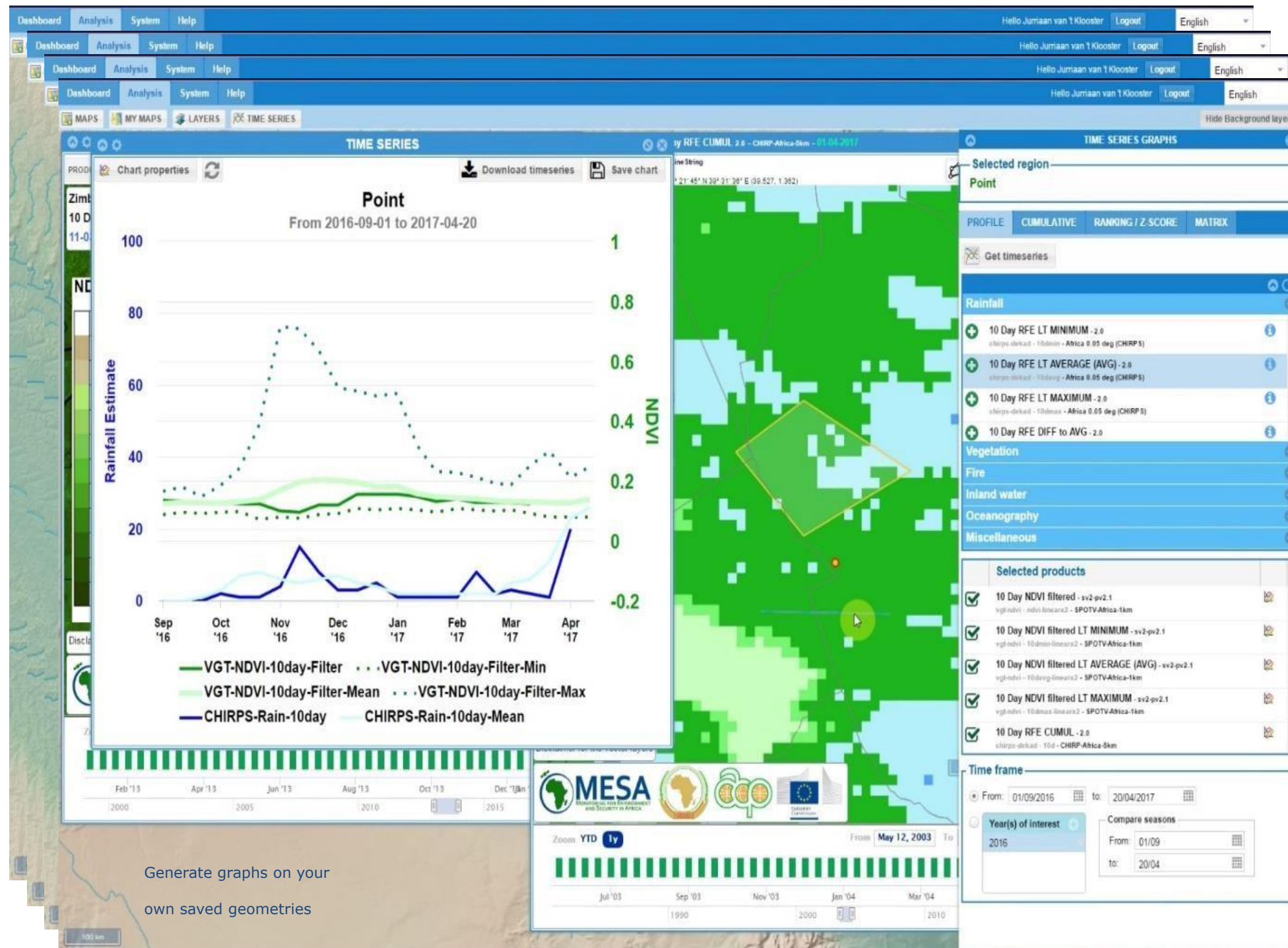
Requests

PRODUCTS	Request	Mapset	Request	Sub Product Name	Status	Request
+ Vegetation (9)						
+ Rainfall (Monitoring) (9)						
+ Rainfall (Forecast) (10)						
+ Fire (1)						
+ Oceanography (11)						
- Temperature (Monitoring) (4)						
GTS GLOBAL gridded temperature daily - 1.0		IRI ACP 0.5 degree		Gridded temperature daily tmin	2022-03-06 Files: 366 Missing: 20 2023-03-06	
Product code: cdas-daily-temperature				cdas-daily-temperature - 1.0 - tmin	Start date: 2020-09-20	
Provider: IRI				Gridded temperature daily tmax	2022-03-06 Files: 366 Missing: 20 2023-03-06	
				cdas-daily-temperature - 1.0 - tmax	Start date: 2020-07-01	
ERA5 hourly 2m dewpoint temperature - 1.0		CDS-ACP-25km		ERA5 hourly 2mdw	2023-02-04 Files: 745 Missing: 240 2023-03-07	
Product code: era5-hourly-2mdw				era5-hourly-2mdw - 1.0 - 2mdw	Start date: 2021-04-15	
Provider: CDS						
ERA5 hourly 2m Temperature - 1.0		CDS-ACP-25km		ERA5 hourly 2MT	2023-02-04 Files: 745 Missing: 240 2023-03-07	
Product code: era5-hourly-2mt				era5-hourly-2mt - 1.0 - 2mt	Start date: 2021-04-26	
Provider: CDS				ERA5 Hourly 2MT min	2023-02-04 Files: 745 Missing: 240 2023-03-07	
				era5-hourly-2mt - 1.0 - 2mtmin	Start date: 2022-08-01	
				ERA5 Hourly 2MT max	2023-02-04 Files: 745 Missing: 240 2023-03-07	
				era5-hourly-2mt - 1.0 - 2mtmax	Start date: 2022-08-01	

- Check the completeness of each Product
- Create 'Requests' for retrieving missing files, to be sent or executed directly if the Station is connected to the internet)



# Climate Station: General User Interface – Analysis



## Interactive Map view windows

- View products with selected color pallet applied
- Product timeline
- Add vector layers (GAUL border, EEZ, Protected areas, user uploaded, etc.)
- Draw geometries (polygon, line, point, etc.)
- View and administer logos, title and disclaimer objects in the map area
- Outmask selected geometry
- Save map as PNG image
- Save Map view window as a template

## Link map view windows

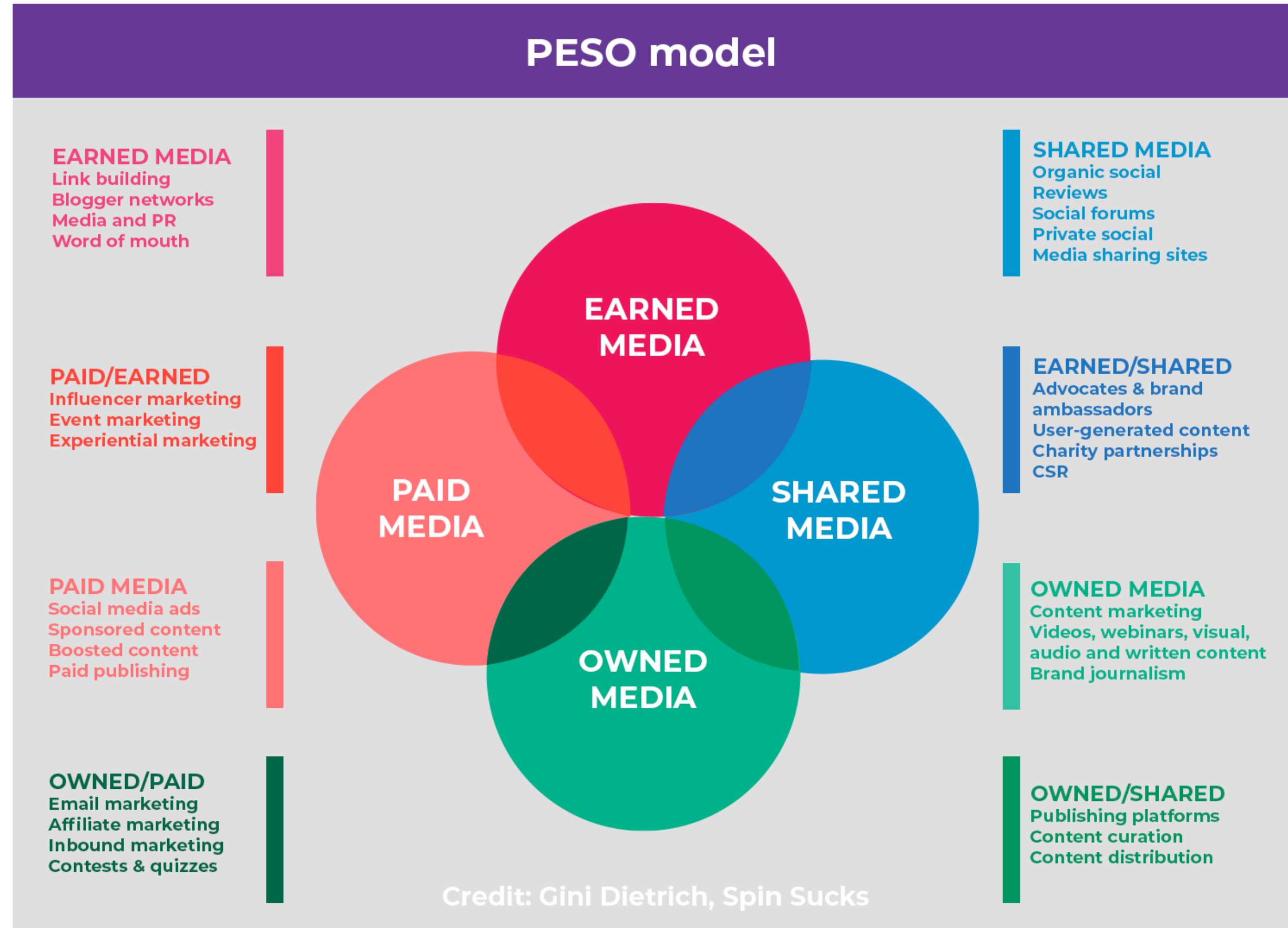
- with zooming, panning and timeline (selected product date)



- 1. Introductory training has been attended by staff at the regional and country level.**
- 2. Installation of the Climate Station on SPREP's server.**
- 3. Adapt the maps for the Pacific Region (now presented under 2 windows)**
- 4. Training at the regional level with customised data**
- 5. Strong interest in Sub-Products: Global Drought Observatory, IMPACT toolbox, Fisheries (OPFish)**



# The PESO Approach to Mainstreaming Climate Services





# WORLD MET DAY

## Samoa Social Media Campaign

- Visibility and branding exercise
- Virtual tour of Samoa Met Office
- Capacity building for SMD Team
- Launch of billboards

50K  
target

7  
days

150K +  
reach





# SCIENCE TO SERVICES

June 2023

Tarawa, Kiribati

one-day training on how to interpret a tide predictions calendar and use online software to create early warning graphics on mobile devices.

Tools used: COSSPac Tide Predictions Calendar (print), Canva, smartphones

22

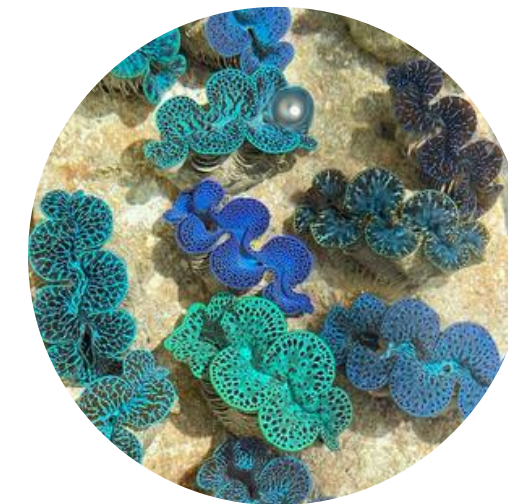
attendees

22+

products

3

tools





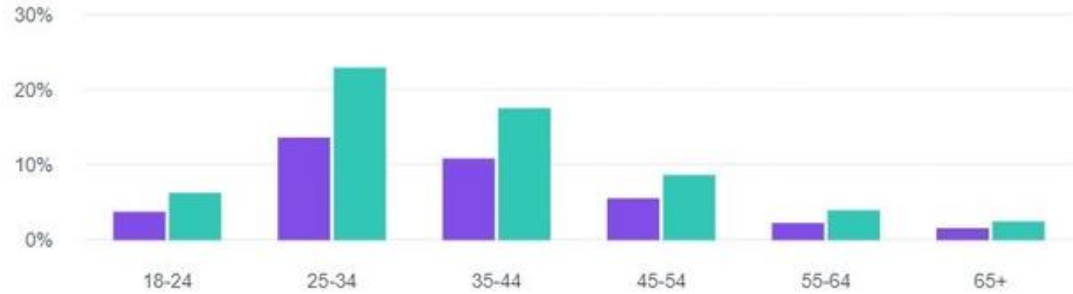
Audience

These values are based on total followers of your Page or profile.

Create a post

Age and Gender

Men 37.80%  
Women 62.20%



Location

Cities Countries

Apia, Samoa	25,524
Auckland, New Zealand	4,529
Sydney, NSW, Australia	1,672

Page overview

Create a post Last 28 days

Discovery

Post reach	149,978
Post engagement	129,801
New Page Followers	444

Interactions

Reactions	32,657
Comments	6,580
Shares	1,016
Photo views	13,173
Link clicks	56

Content

Create a post

Last 60 Days

Post reach



FA'AMATALAGA OLE VEVELA 🌅 Ua maitauina le vevela o le atunu'u. Mo le masina o Mati lava ia, ole vevela maualuga fa'amauina i aso ta'itasi sa matele ina la'asia le 30 tikeri ma luga...  
Wed, Mar 27

Post reach  
49,757

Engagement  
3,396

Boost post



NAMASTE from Christoph Mason • ws Village: Si'usega, Fusi-Safotulafai • 👤 Work Experience: 8 years • 🎓 Qualifications: Certified self-proclaimed Formula 1 driver • 🗣️ Favorite Quote:...  
Tue, Mar 26

Post reach  
44,188

Engagement  
6,940

Boost post



Fa'amatalaga Lata mai o le Tau — 2 Mati 2024 ws • 🌅 Vevēla Fa'amauina mo Apia i le 3:22pm = 32.8°C • 🌊 Matā'upolu 30–40 kilomita i le itulā 🌊 Galu e 1.5–2.0 mita 🌤️ Timu pupu'u ma e...  
Sat, Mar 2

Post reach  
39,270

Engagement  
8,423

Boost post







# ClimSA

INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME



An initiative of the Organisation of African, Caribbean  
and Pacific States funded by the European Union



# SPREP

Secretariat of the Pacific Regional  
Environment Programme

# Thank you