

# → 8th ADVANCED TRAINING COURSE ON LAND REMOTE SENSING

10–14 September 2018  
University of Leicester | United Kingdom

## ESA Thematic Exploitation Platforms

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11/09/2018





# Welcome to the Brown Bag Lunch Demo!



Exploitation Platforms Introduction



Geohazards  
Exploitation Platform  
(GEP)

Urban Exploitation  
Platform  
(U-TEP)





Exploitation platform (or community platform)  
=  
Virtual **open and collaborative** environment

## WHAT'S NEW:

users access a work environment containing the data and resources required, as **opposed to downloading and replicating the data 'at home'**

# EP Elements and actors

## Elements

Portal (web interface)  
Data  
Software and Toolboxes  
Services/ Application  
Processing resources  
Development environment  
Results  
Publications



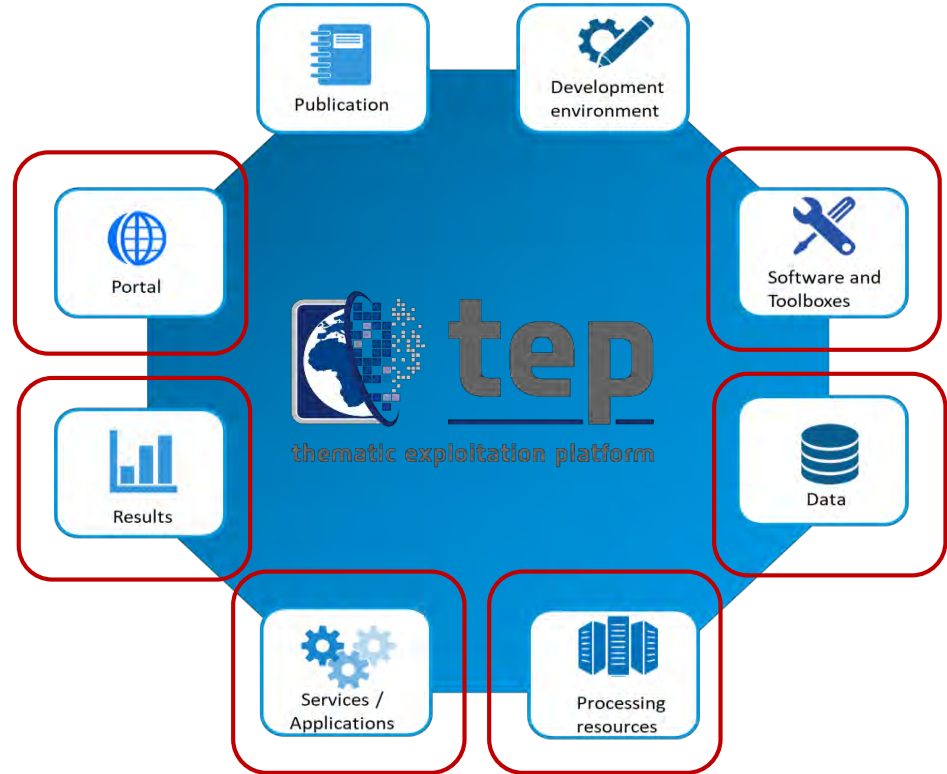
## Actors

Software vendor  
ICT providers  
Data providers  
End User  
Developers  
Service Provider  
Community  
[...]

# Canonical Scenario 1: EO Data Exploitation

Allows a user to

- ✓ discover/select data and pre-existing processing service
- ✓ process data
- ✓ visualise/analyse or select and apply data manipulation tools to the result

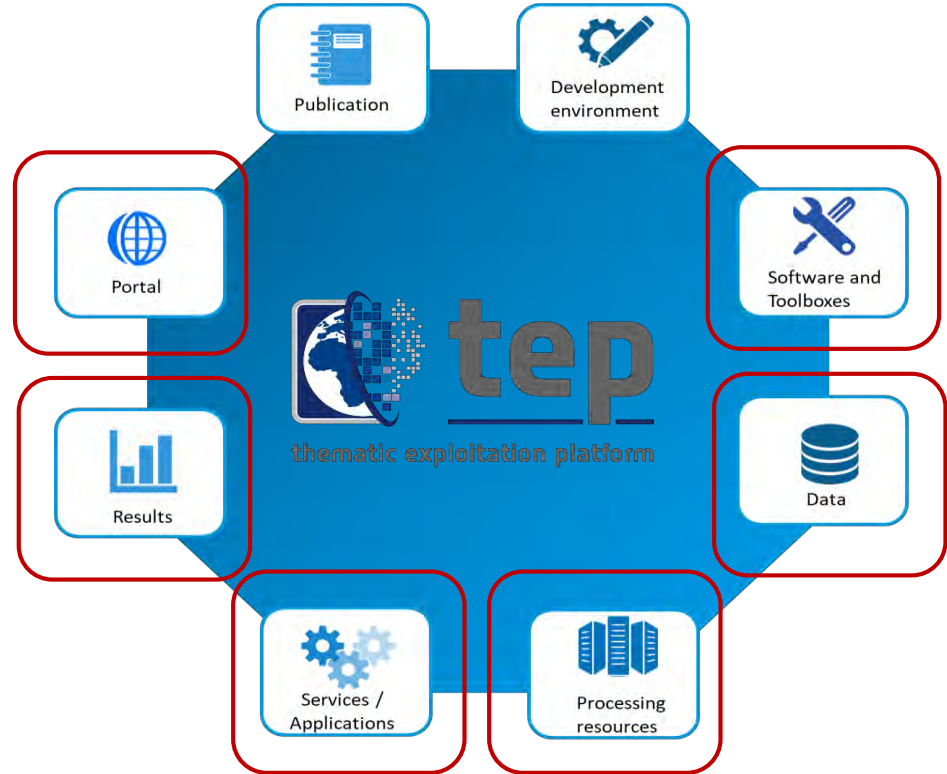




# Canonical Scenario 2: New EO Service Development

Allows a user to

- ✓ develop and validate an application (such as a processor)
- ✓ deploy the application on the platform for use also by other users



# Canonical Scenario 3: New EO Product Development

Allows a user to

- ✓ discover/select data
- ✓ process the data
- ✓ publish the resulting product



- Quota restricted: Data is accessible to authorized subset of registered and authenticated users according to assigned quota
- Restricted: Data is accessible to authorized subset of registered and authenticated users
- Open: Data is freely accessible to all registered and authenticated users







→ POLAR TEP



→ FORESTRY TEP



→ COASTAL TEP



→ TEP FOOD SECURITY



→ GEOHAZARDS TEP



→ URBAN TEP



→ HYDROLOGY TEP

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A high-resolution satellite image of Earth from space, showing a curved horizon and a mix of dark and light landmasses. The text 'How a TEP looks like' is centered over the image.

How a TEP looks like

The screenshot displays the P-TEP (Polar TEP) software interface, which is used for processing and analyzing Earth Observation (EO) data. The main window shows a map of the Arctic region with various data overlays, including a red line indicating a specific path or boundary. The interface is divided into several panels:

- Left Panel:** Contains a map view with various data overlays, including a red line indicating a specific path or boundary. The map shows the Arctic region with various data overlays, including a red line indicating a specific path or boundary.
- Top Panel:** Displays the date range from 2010-01-01 to 2017-09-22.
- Right Panel:** Contains a list of datasets and a search bar. The search results show 4157 Total Results Found, with a list of data packages and their details.
- Bottom Panel:** Contains a list of processors and a search bar. The search results show 4157 Total Results Found, with a list of data packages and their details.

The interface is designed for interactive and non-interactive EO data processing, allowing users to explore and analyze data from various sources.

Canonical Scenario 1 EO data exploitation:  
Interactive and non-interactive EO data processing

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forestry  
tep

Explorer

Developer

Manage / Share

Helpdesk

My Account

Logout

Filters

ForestChangeS2

LandCoverGeotiff

LandCoverS1

LandCoverS2

LandCoverS2OLD

S1Biomass

S1stack

Test\_Amarin

Service Name \*

ForestChangeS2

Version

1.0

Docker Tag

itep/forestchanges2

Service Type

Processor

Title

Change mapping using Sentinel-2 data

Description

Forest change mapped by difference in the red band between two Sentinel-2 images. A core F-TEP service. Updated in Apr

FILES

INPUT DEFINITIONS

OUTPUT DEFINITIONS

installersFile

S2\_changeMag.xml

S2\_preprocess.xml

extractCloudMask.py

extractSRSfromJP2.py

polygon2nsewBounds.py

workflow.sh

File Language:

Dockerfile

Executable:

```

1 FROM ubuntu:16.04
2
3 MAINTAINER Forestry TEP
4
5 # Dependencies
6 RUN apt-get update && apt-get install -y \
7     zip \
8     bc \
9     curl \
10    libfreetype6 \
11    gdal-bin \
12    python \
13    python-dev \
14    python-gdal \
15    && apt-get clean && rm -rf /var/lib/apt/lists/*
16
17 #####
18 # Download and install SNAP
19 ENV SNAP_MAJ_VER="6"
20 SNAP_MIN_VER="0"
21 SNAP_POINT_VER="0"
22
23 ENV SNAP_BASE_URL="http://step.esa.int/downloads/${SNAP_MAJ_VER}.${SNAP_MIN_VER}/installers"
24 SNAP_INSTALLER="esa-snap_sentinel_unix_${SNAP_MAJ_VER}_${SNAP_MIN_VER}.sh"
25
26 LABEL org.opencontainers.image.title="Forest Change Mapping"
27 RUN curl -sL "${SNAP_BASE_URL}/${SNAP_INSTALLER}" >/var/tmp/${SNAP_INSTALLER}
28 # Install SNAP
29 RUN echo -e

```

VegetationIndices  
Canonical Scenario 2 New EO Service Development:  
Integrate or develop your own processing service  
VegetationIndicesOLD

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Canonical Scenario 3 New EO Product Development:  
Perform massive processing, systematic generation, publication  
and sharing of products

TimeScan Landsat 2015

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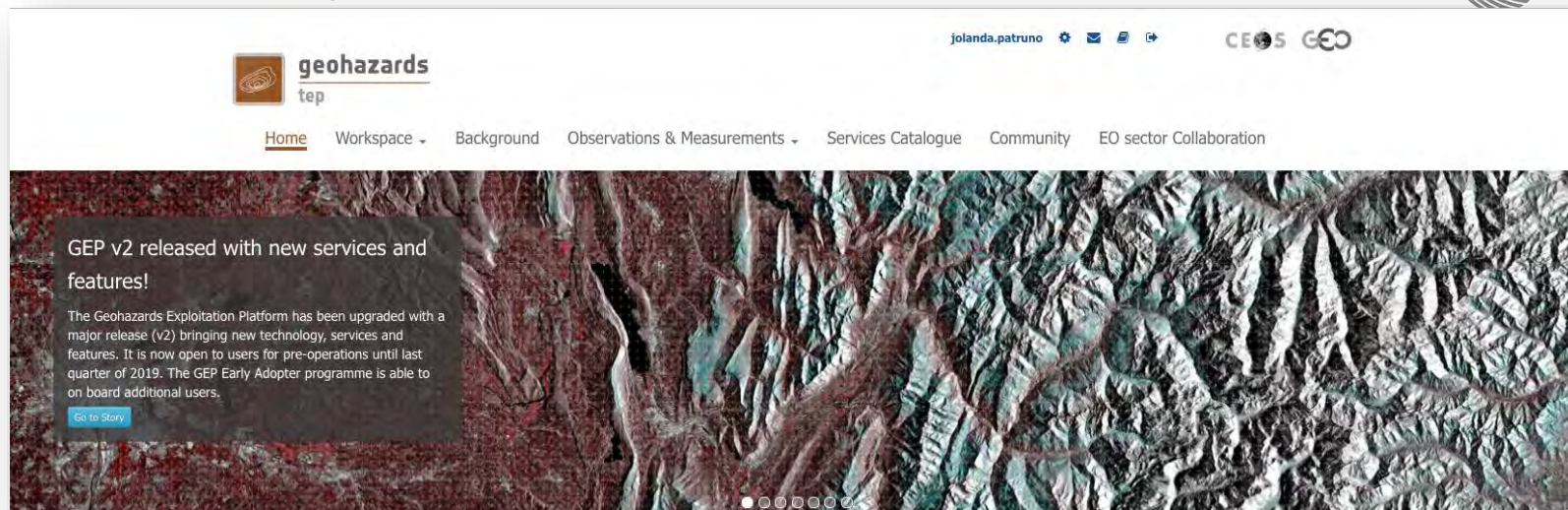
A high-resolution satellite image of Earth from space, showing a curved horizon with a bright blue atmosphere and dark, textured landmasses below. The text is overlaid on this image.

Geohazards Exploitation Platform (GEP)

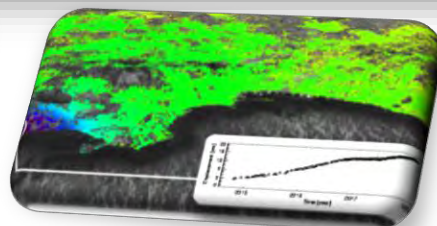
Urban Exploitation Platform (U-TEP)



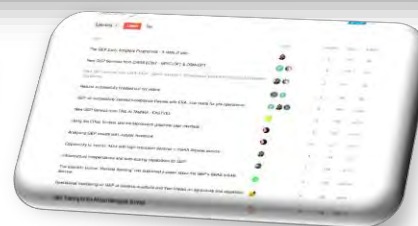
# Geohazards Exploitation Platform - GEP



**Geobrowser & catalogue**



**Visualization and Analytics**



**User Forum**



**Developer environment**

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# Portfolio services



## SAR/InSAR

DIAPASON  
Sentinel-1



**SNAP  
InSAR**

**GMTSAR  
InSAR**

**STAMPS  
PS**

**ADORE  
DORIS**

InSAR  
Browse

## Advanced InSAR/PSI

**FASTVEL**

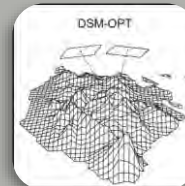
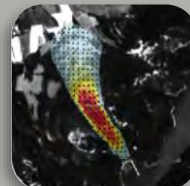


**PSI  
Post-Proc**



**GAMMA  
DInSAR**

## Optical



**STEMP  
L-8  
S2 – S3**

**RASTER**

**eGEOS  
SAR  
Flood**

## Other

**COIN**

**COMBI**

**SNAC**

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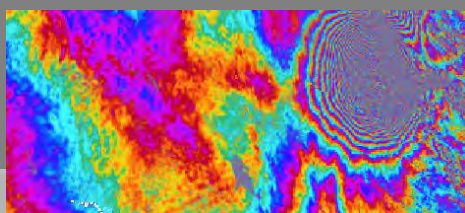
# Portfolio EO based products



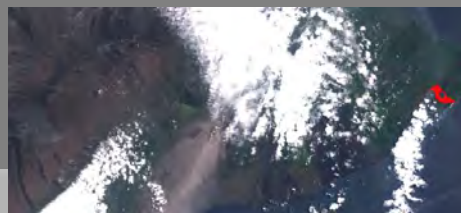
STEMP for Landsat 8  
Surface Temperature  
Maps



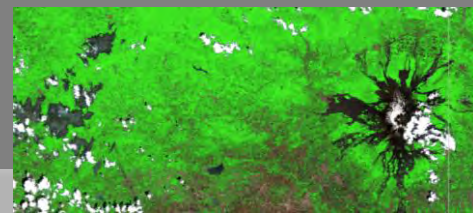
Sentinel-1 Medium/High  
Resolution InSAR  
Browse



VEGAN HSP  
Hot Spots Detection  
Maps



VEGAN VHON  
Vegetation Vigor Maps  
(NDVI)



Multi-Sensor Full  
Definition RGB Raster  
(Disaster Charter)

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# VIDEO

A high-resolution satellite image of Earth from space, showing a curved horizon with a bright blue atmosphere and dark, textured landmasses below. The text is overlaid on this image.

Geohazards Exploitation Platform (GEP)

Urban Exploitation Platform (U-TEP)

# Urban Exploitation Platform – U-TEP



<https://urban-tep.eo.esa.int>



Background



Use Scenarios



Data & Services



Quick Start



Activities

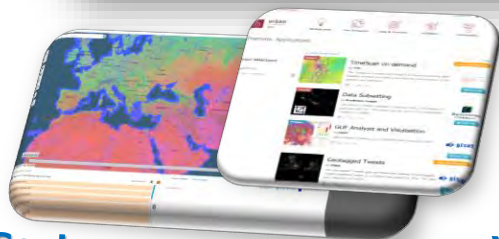


Partners

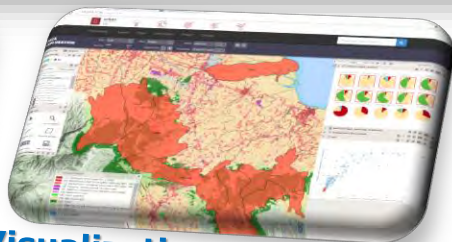
## Global Urban Footprint (GUF) layer now available

Discover DLR's new Global Urban Footprint (GUF) data at the Urban TEP platform and inspect the urban and rural human settlements pattern in a so far unique precision and consistency

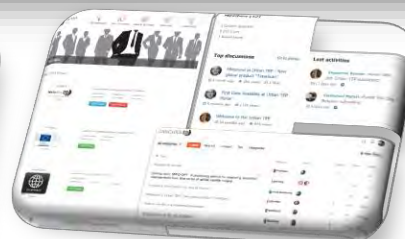
[Browse GUF](#)



Geobrowser & catalogue



Visualization and Analytics



User Forum



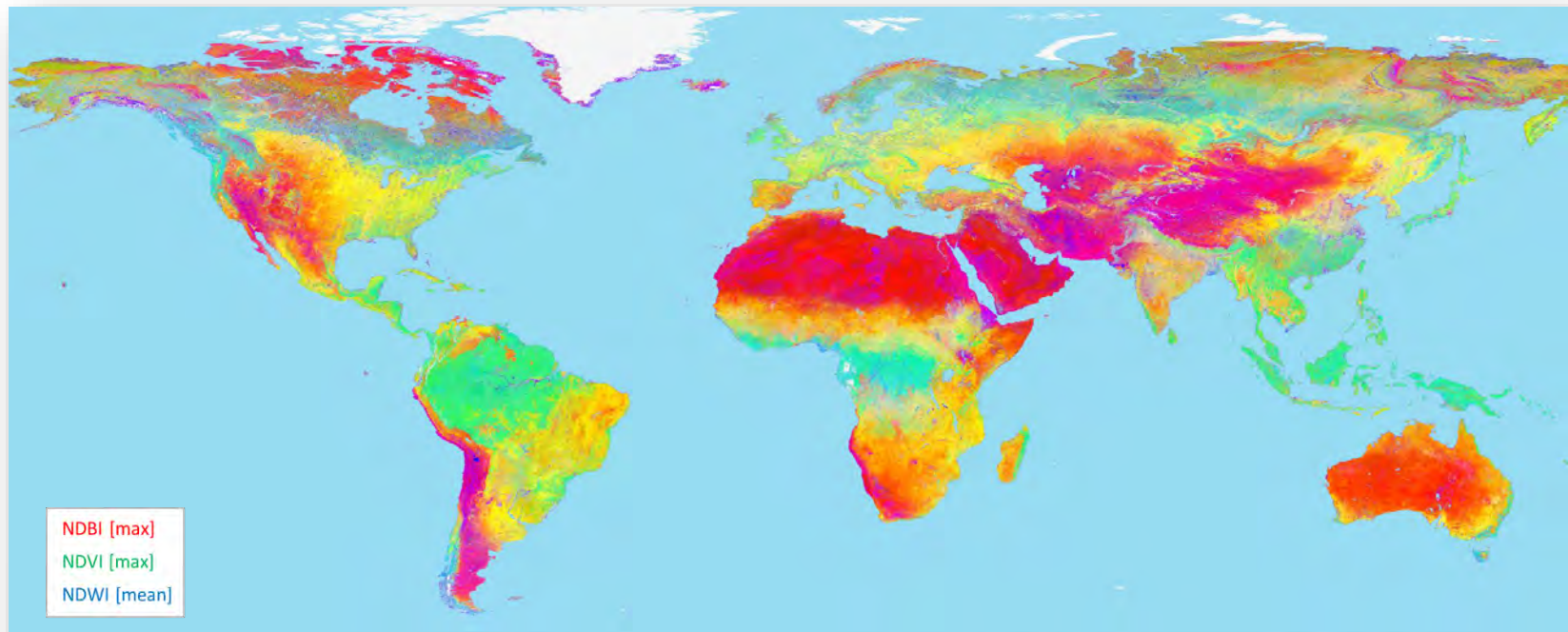
Developer environment

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# Product and Service Portfolio: Processing



~ **460,000**  
Landsat-8 scenes  
(2014-2015)

**6** Spectral indices

**5** Temporal statistics

**30m** spatial resolution

> **1.5 PB** intermediate products

**25 TB** final product

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Place **Haiti**Visualization **ecu 3**

Save as

Period **2012**

PANTHER

3D Map Layers Selections Areas filter Custom views Add layer

## Layers

## Analytical Units Layers

## Background layers

- ☐ Carto DB basemap
- ☐ OpenStreetMap
- ☐ Wikimedia
- ☐ Bing Aerial
- ☒ Sentinel 2 (satellite)

## Custom WMS Layers

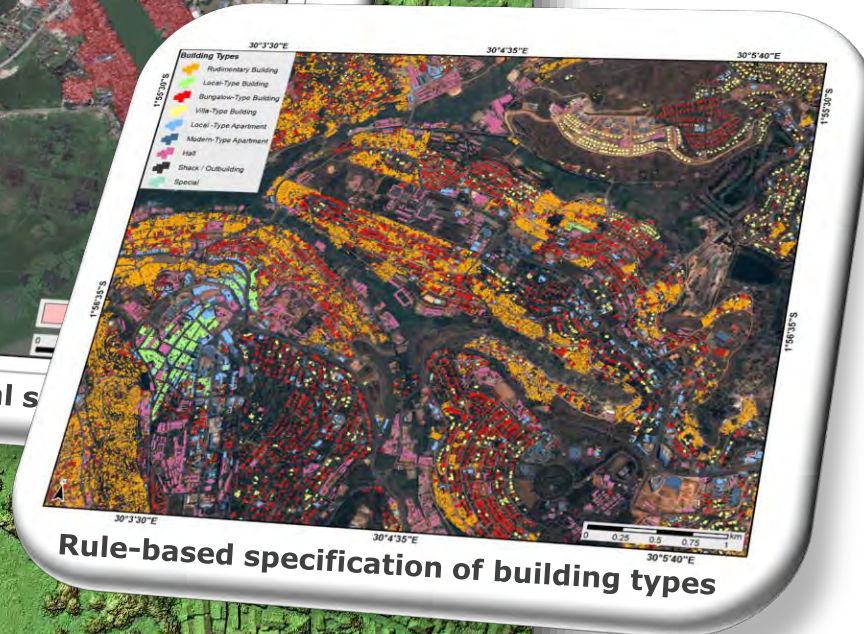
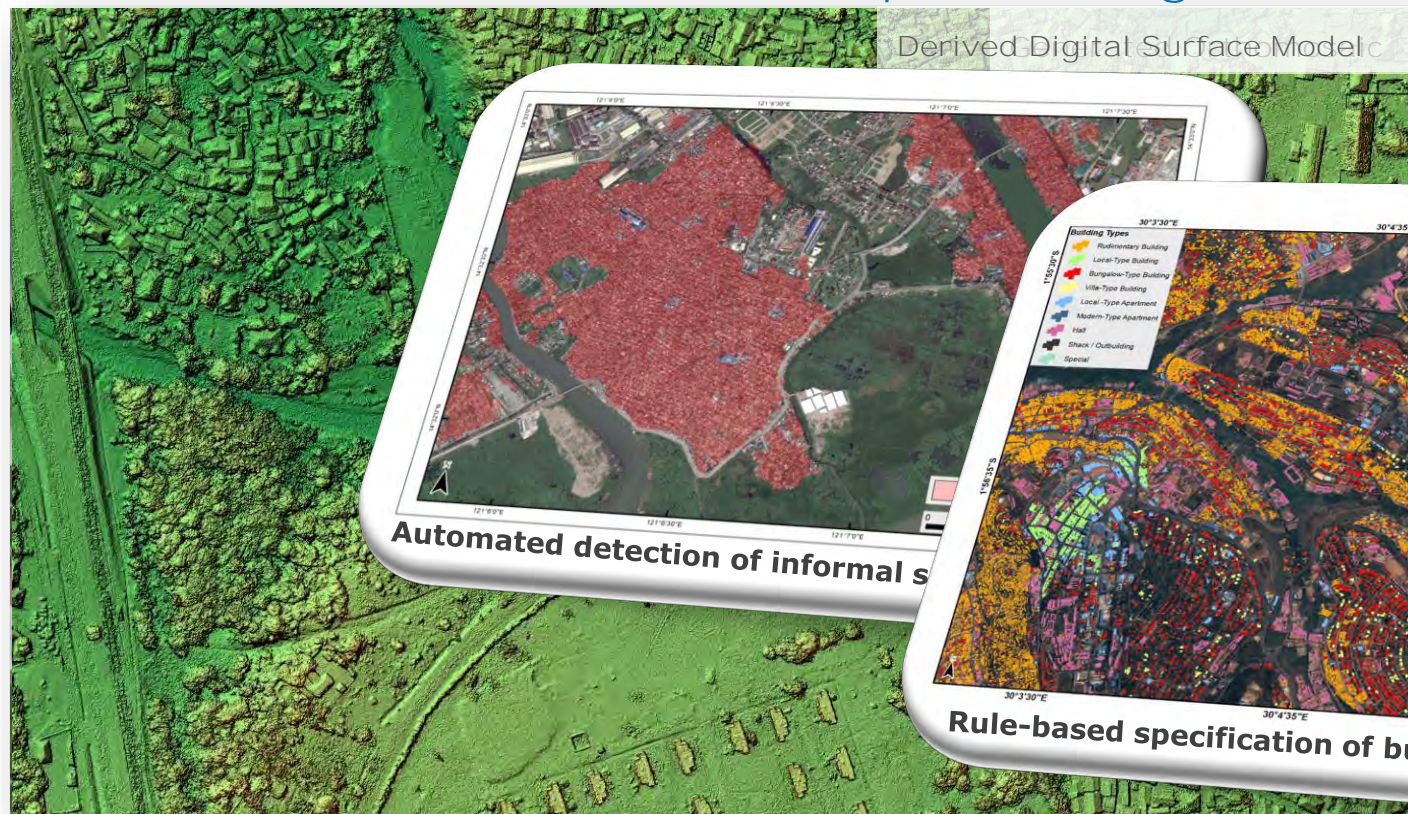
- ☒ GUF Imperviousness
- ☐ TimeScan-Landsat (RGB: max-NDBI, ...)
- ☐ TimeScan-Landsat (RGB: mean-NDBI, ...)
- ☒ GUF 2012 - 12M

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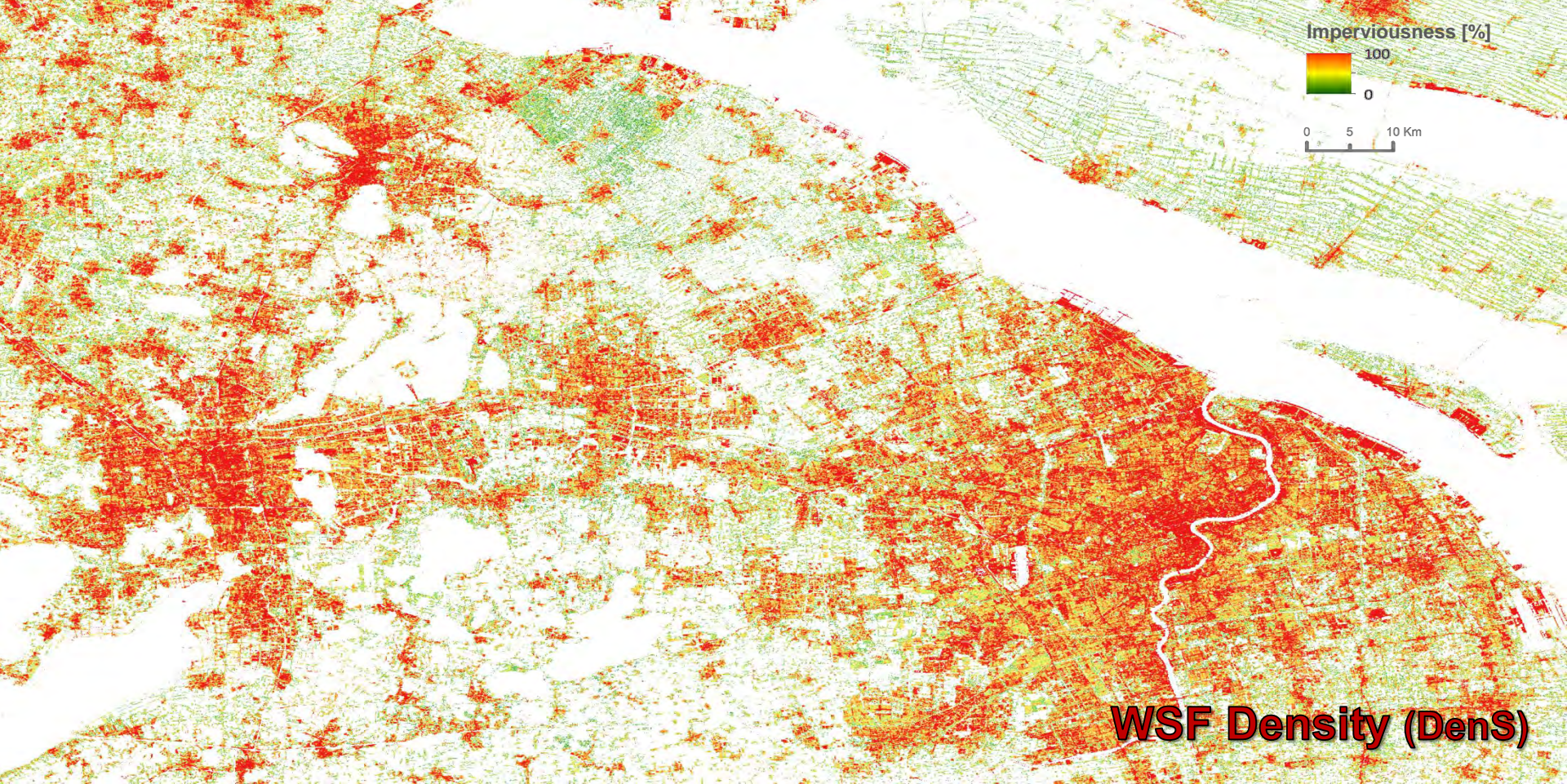
# Product and Service Portfolio: processing



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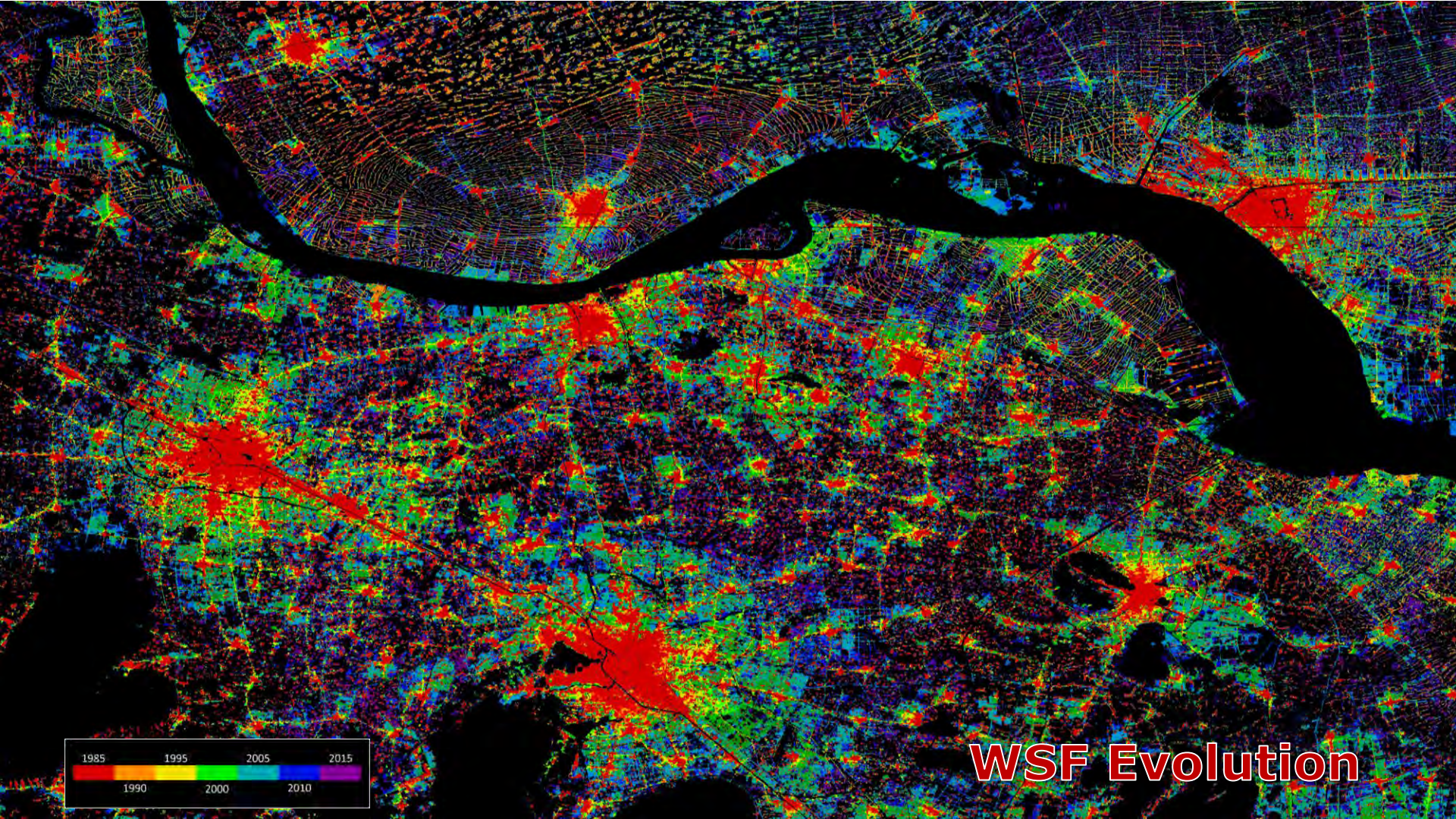


● Beijing



**WSF Evolution**





**WSF Evolution**

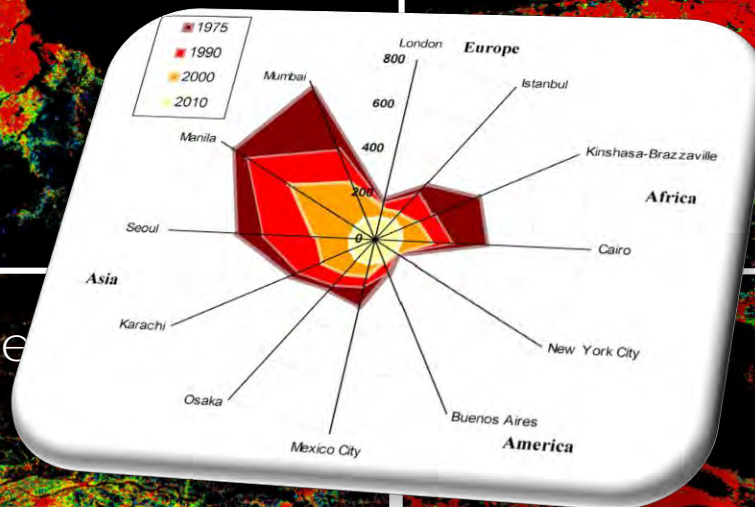




Dar Es Salaam



Sao Paulo



Pearl River



Los Angeles

A high-resolution satellite image of Earth from space, showing a curved horizon and a mix of dark and light landmasses. The word 'DEMO!' is centered in white text.

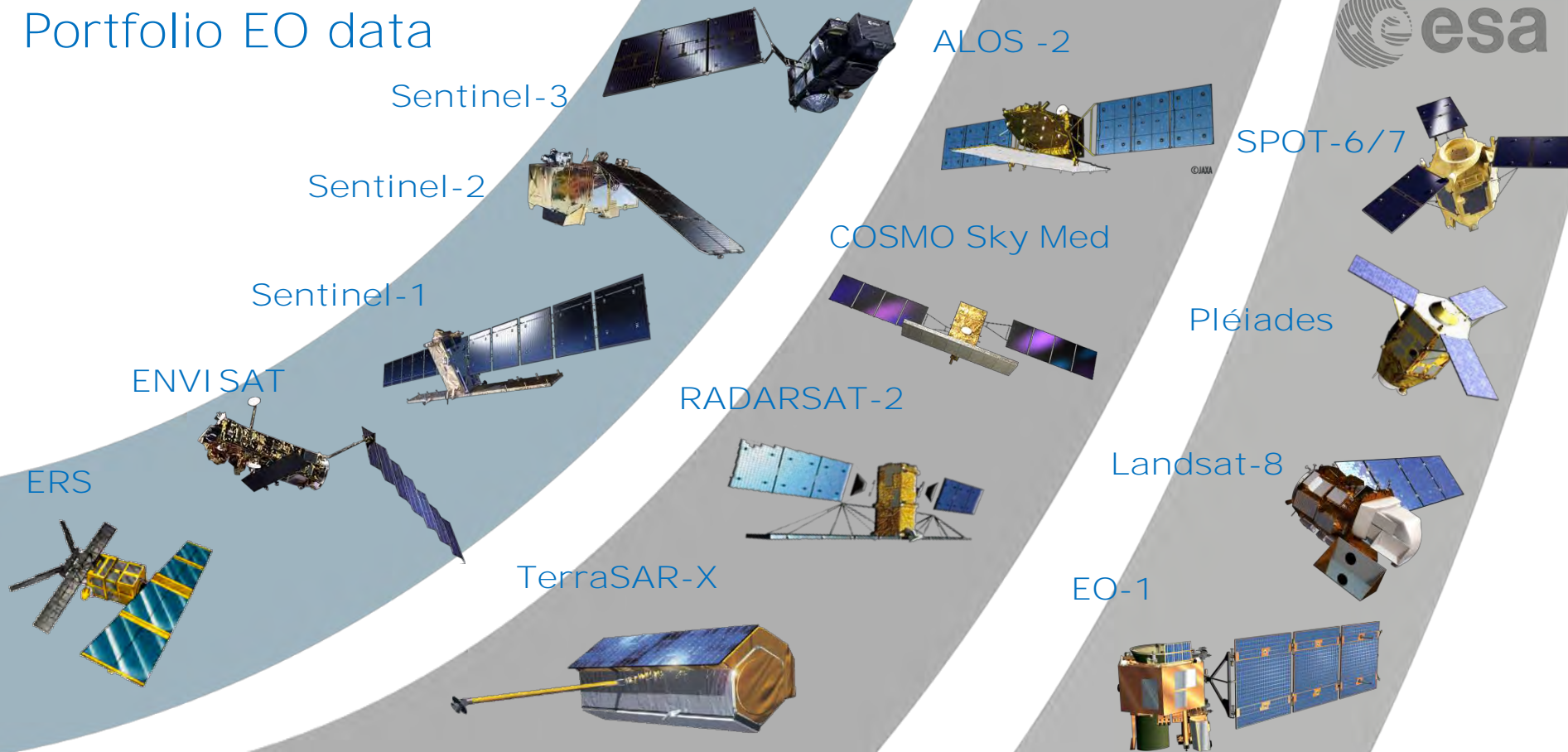
DEMO!

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# Portfolio EO data



Sentinel-3

ALOS -2

SPOT-6/7

Sentinel-2

COSMO Sky Med

Pléiades

Sentinel-1

RADARSAT-2

Landsat-8

ENVISAT

TerraSAR-X

EO-1

ERS

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