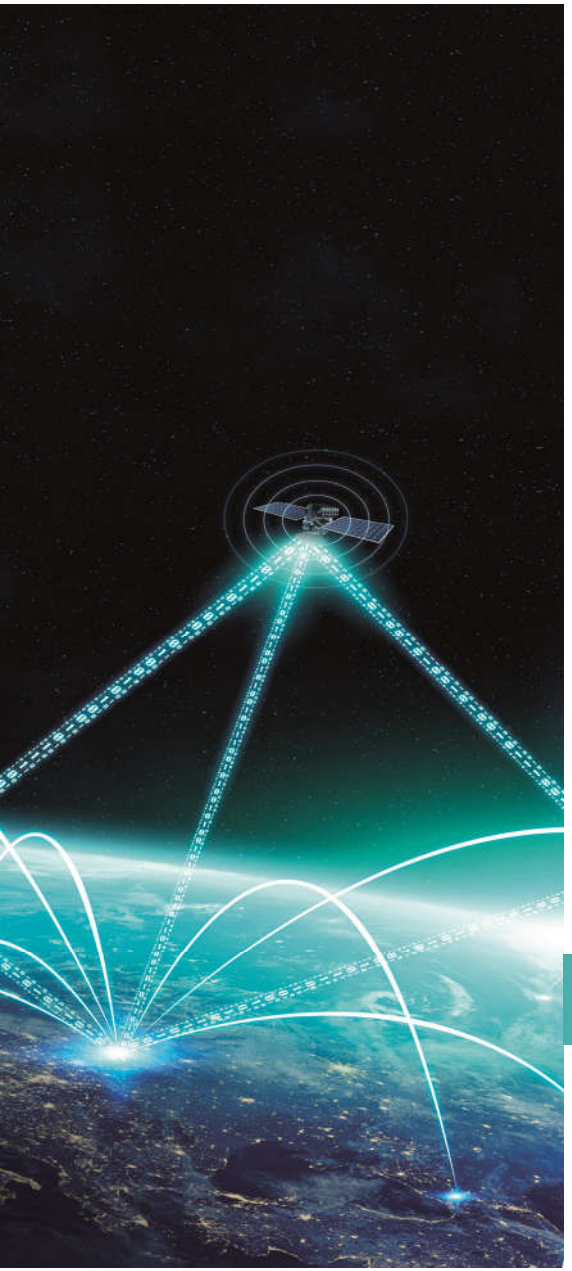


Globale Fernerkundungsprodukte und Plattformlösungen für Projekte der Entwicklungszusammenarbeit

Fachsession:

„Zukunft des Einsatzes von Fernerkundungsprodukten in der Entwicklungszusammenarbeit“

Dr. Helmut Staudenrausch, DLR Raumfahrtmanagement

Nationales Forum für Fernerkundung und Copernicus 2018

Die Bundesregierung

Copernicus

DLR

Erdbeobachtung für die globalen Agenden

Climate Action

Paris Agreement

Monitoring Climate Change & Understanding

Sustainable Development

2030 Agenda

Managing progress on sustainable development
in all its facets

Disaster Risk Reduction

Sendai Framework

Supporting
Disaster Resilient Societies

DLR

Häufig genannte Hindernisse für operationelle EO Nutzung im Kontext der globalen Agenden und der Entwicklungszusammenarbeit

Restriktive Datenpolitiken (inklusive Kosten)

Keine ausreichenden “fit for purpose” Produkte

Zeitliche Aulösung für Monitoring von Veränderungen in nötigem Maßstab nicht ausreichend

Fehlende Langfristperspektive der Datenverfügbarkeit

Capacity building und Training

Fehlende Standardisierung von Methoden

Fehlende “Analyse fertige“ Daten

Schwieriges Auffinden von Daten

Fehlen von robusten nutzerorientierten Methoden und klaren Guidelines

Unzureichende Nachvollziehbarkeit erfolgreicher Fallstudien

Das europäische Copernicus Programm

S-1	S-2	S-3	S-4	S-5P	S-5	S-6
Radar	High Res. Optical	Medium Res. Optical & Altimetry	Atmospheric Chemistry (GEO)	Atmospheric Chemistry (LEO)	Atmospheric Chemistry (LEO)	Altimetry
A 3 Apr. 2014	**A** 23 Jun. 2015	**A** 16 Feb. 2016	**A** 2022	**A** 13 Oct. 2017	**A** 2021	**A** 2020
B 25 Apr. 2016	**B** 6 Mar. 2017	**B** 25 Apr. 2018	**B** 2027		**B** 2027	**B** 2025
C 2022/23	**C** 2022/23	**C** 2023			**C** > 2027	
D > 2022/23	**D** > 2022/23	**D** > 2023				

Langfristige Kontinuität für nachhaltiges Monitoring

Freier Zugang für alle

Big Data Zeitalter

Sentinel Flotte

>15 TB/Tag

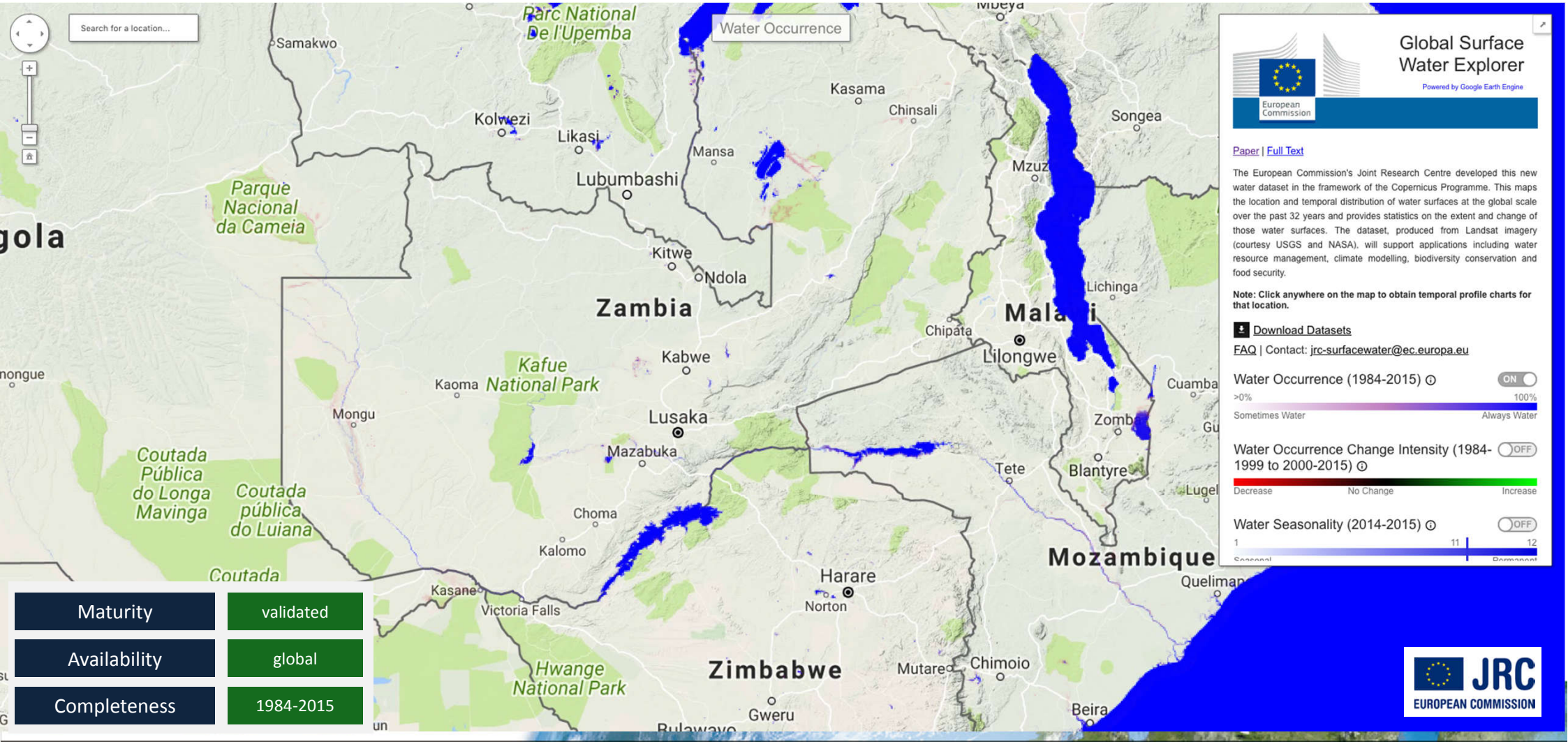
Stetiger Strom großer Mengen an Daten

IKT Fortschritte nutzen

High Performance Computing Infrastructures

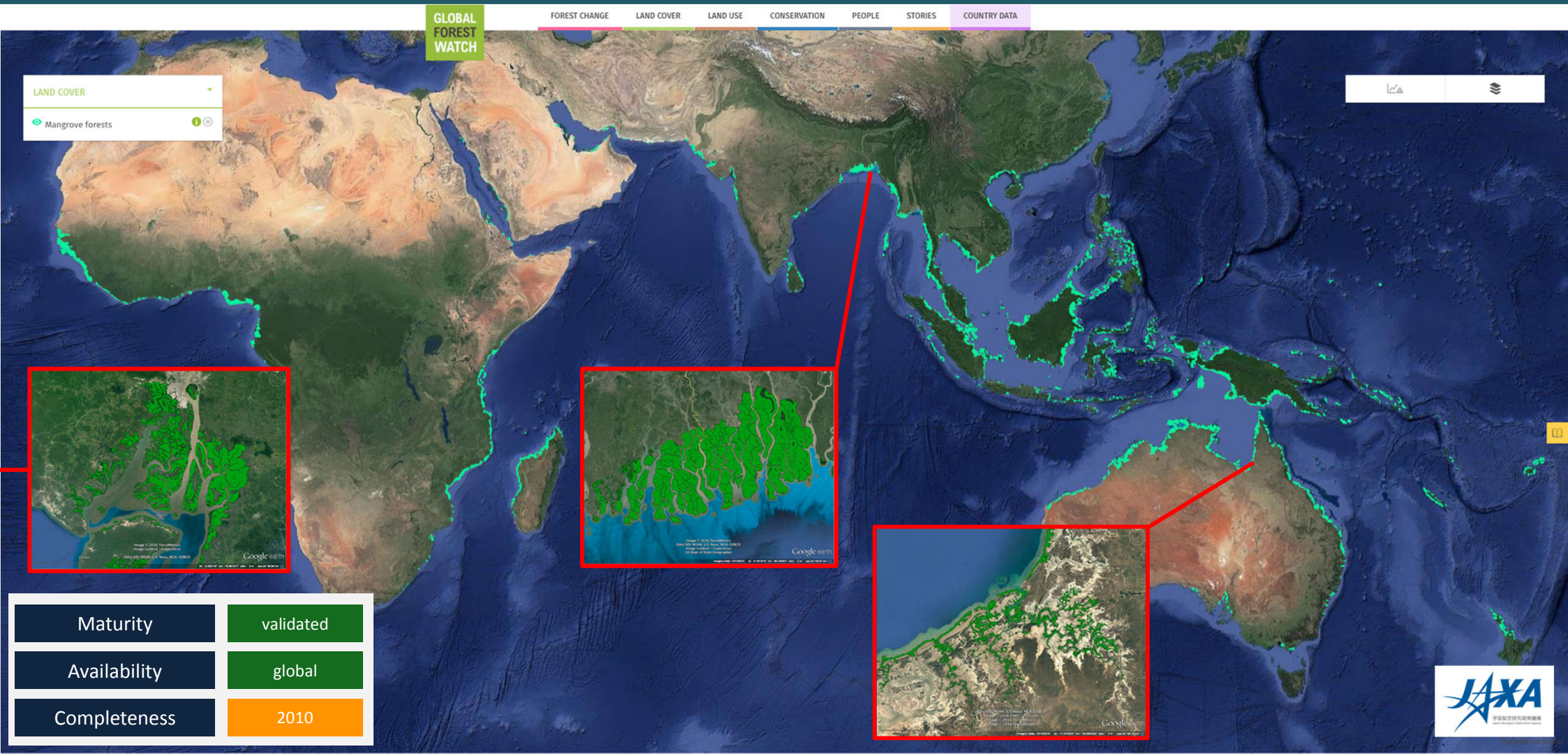
Ansatz der EO Community zu Anforderungen der globalen Agenden für nachhaltige Entwicklung

Global EO products in support of SDG indicators
Global Surface Water Extent for SDG 6.6.1 (water-related ecosystems)



Maturity	validated
Availability	global
Completeness	1984-2015

Global EO products in support of SDG indicators
Global Mangrove Watch for SDG 6.6.1 (water-related ecosystems)



Maturity	validated
Availability	global
Completeness	2010

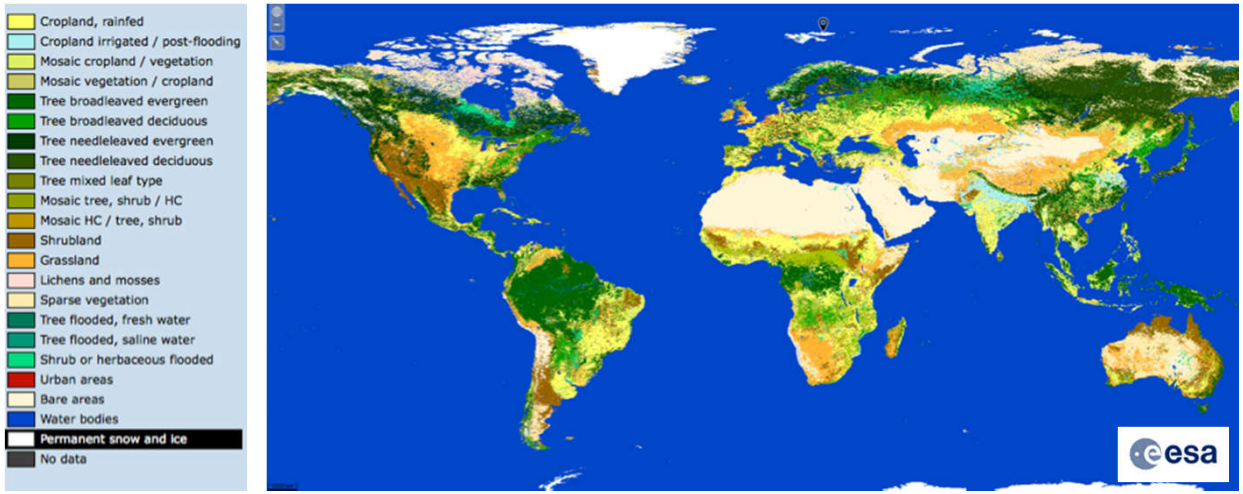
Global EO products in support of SDG indicators
Global land cover and land productivity dynamics for SDG 15.3.1 (LDN)

Land Cover

Global land Cover Maps, 1992-2015, Annual maps

AVHRR, SPOT VGT, ENVISAT MERIS, MODIS, PROBA-V, Sentinel 3, 300m

ESA Land Cover CCI

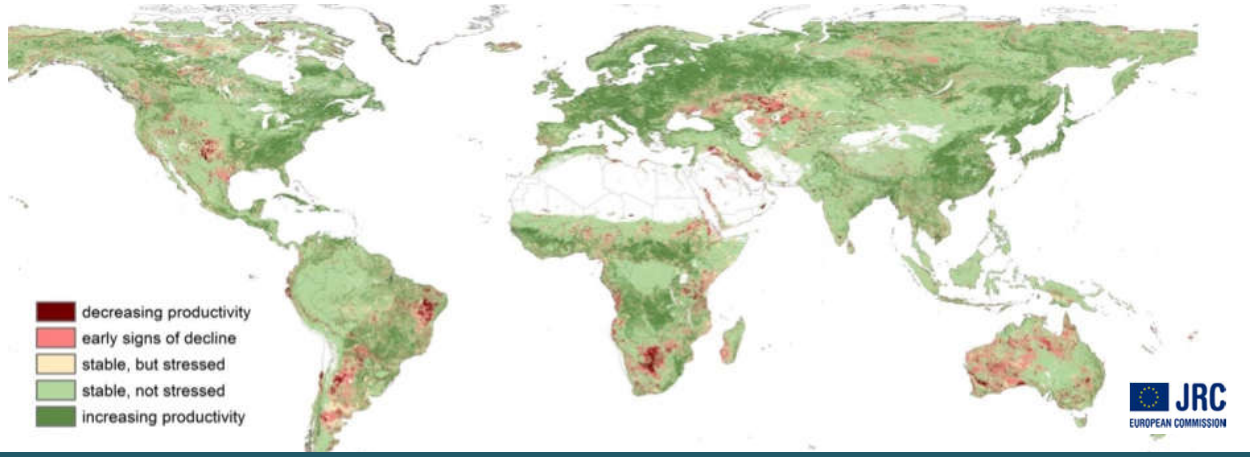


Land Productivity Dynamics

LPD derived from 1999-2013 NDVI phenological analyses

SPOT VEGETATION, 1km

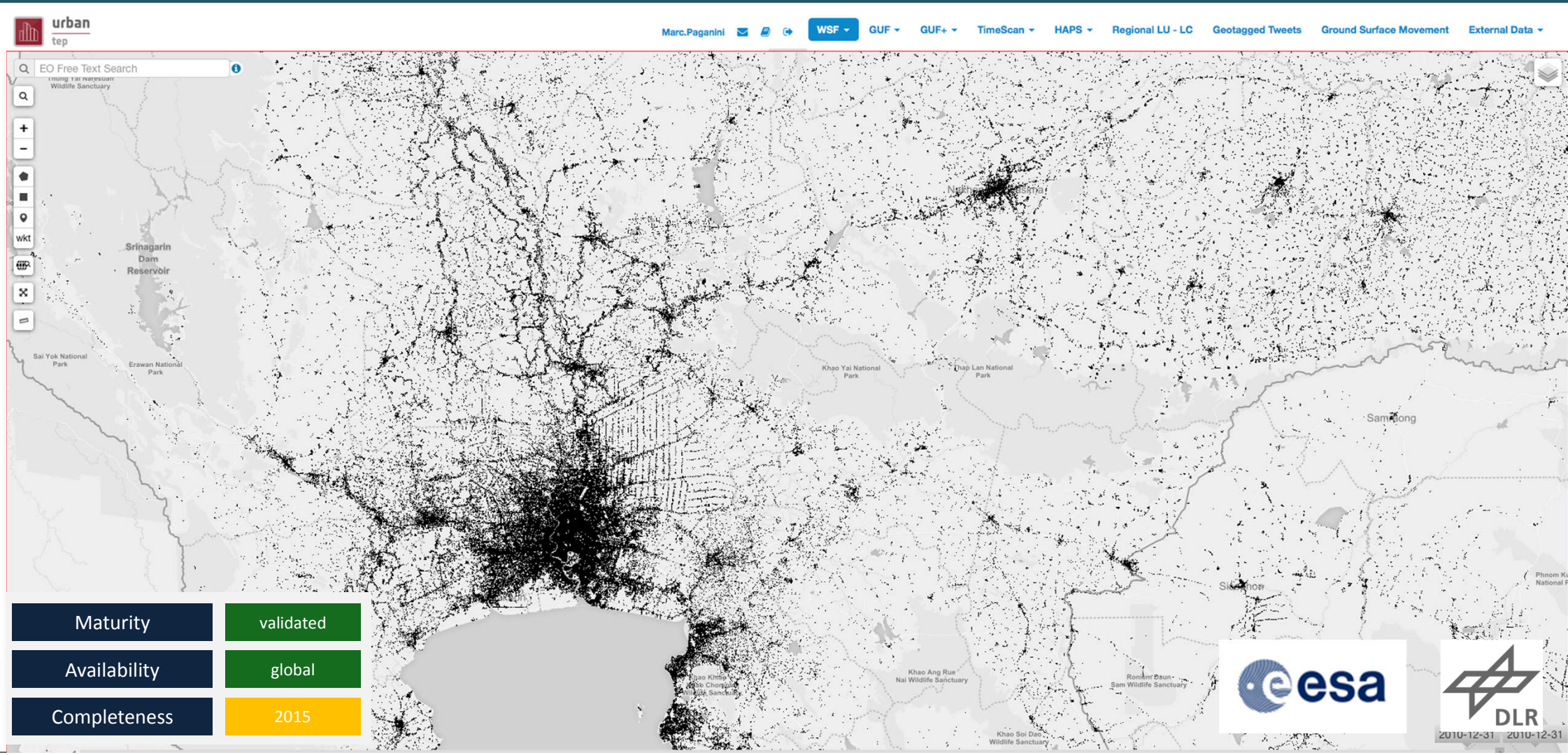
EC Joint Research Center (JRC)



Maturity	coarse resolution
Availability	global
Completeness	2000-2015

Monitoring 15.3.1. on the status & trends in land degradation is based on sub-indicators: (1) **Land Cover and Land Cover Changes** (2) **Land Productivity** (3) **Soil Organic Carbon**

Global EO products in support of SDG indicators
World Settlement Footprint (WSF) for SDG 11



Maturity	validated
Availability	global
Completeness	2015

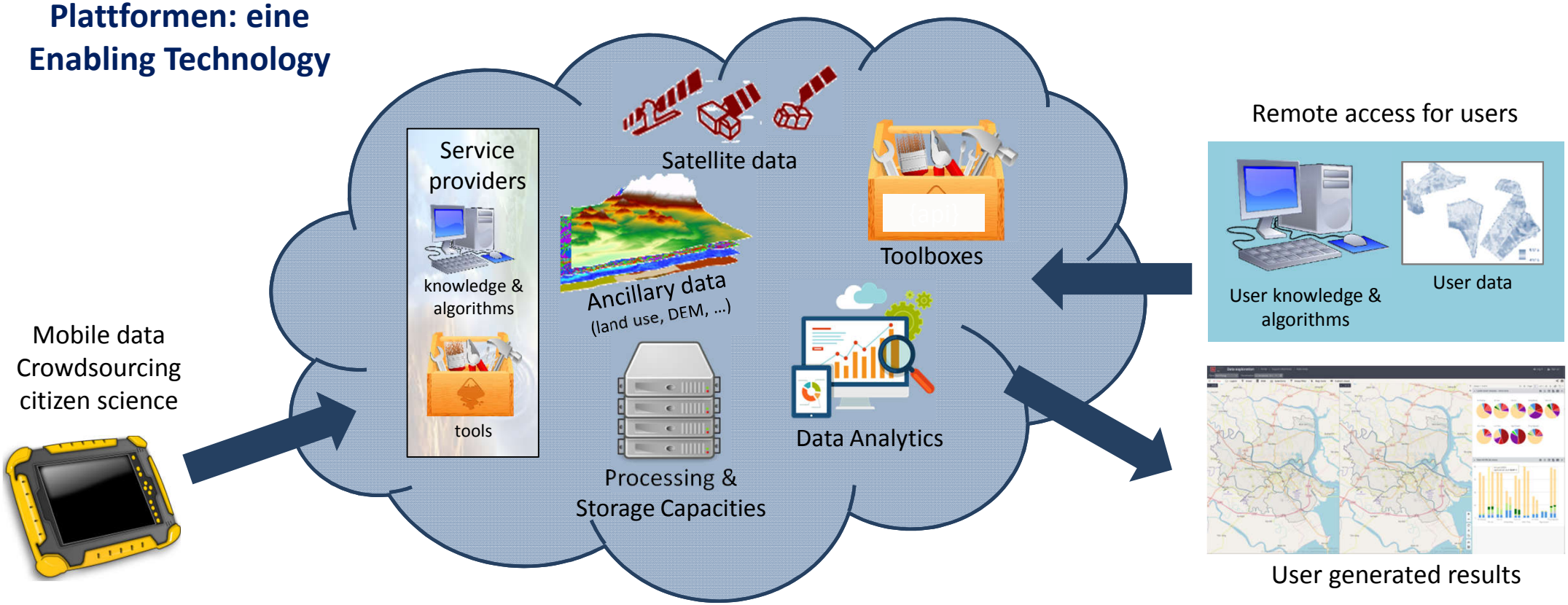
Ansatz der EO Community zu Anforderungen der globalen Agenden für nachhaltige Entwicklung

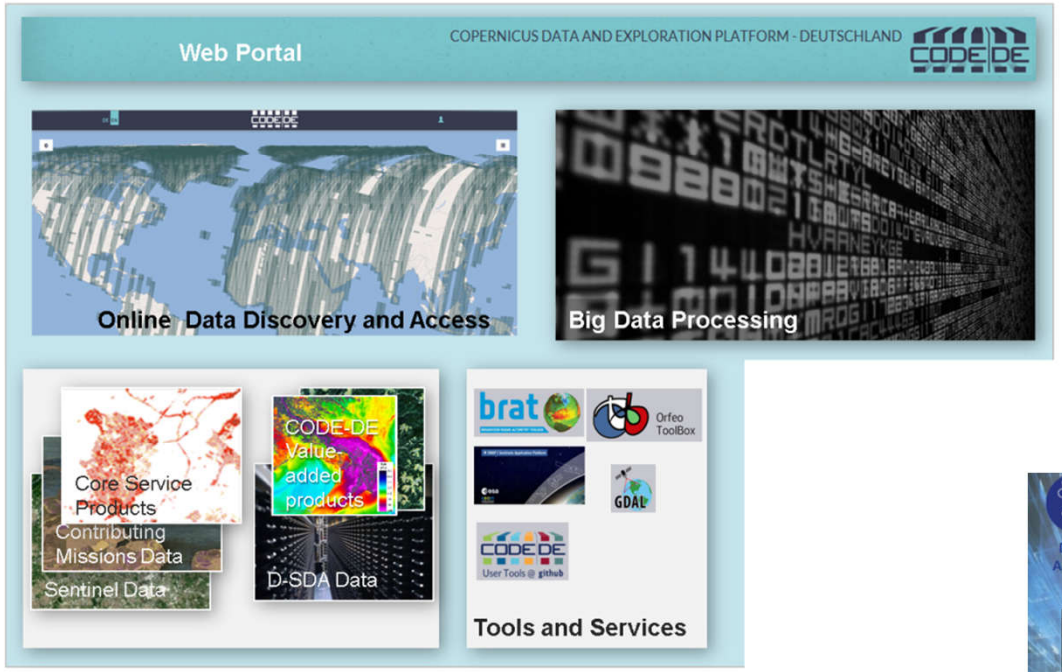
Plattformlösungen

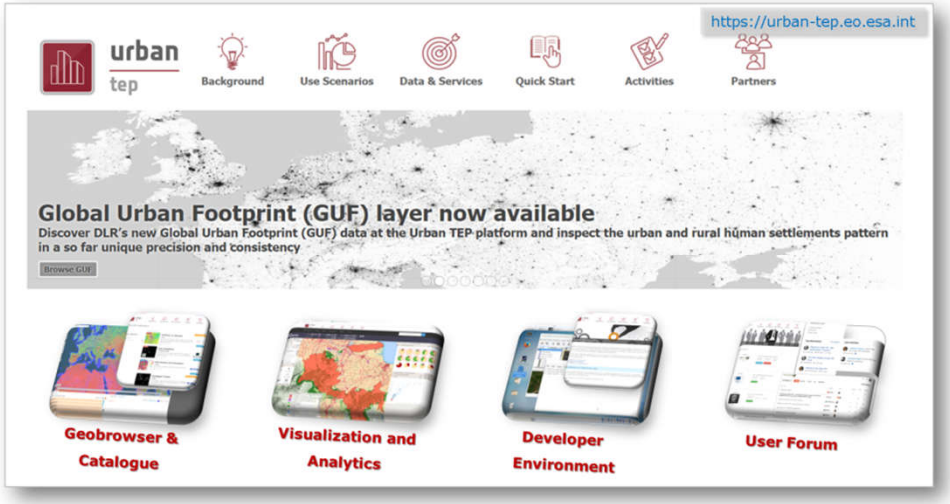
"Bringing the users to the data"

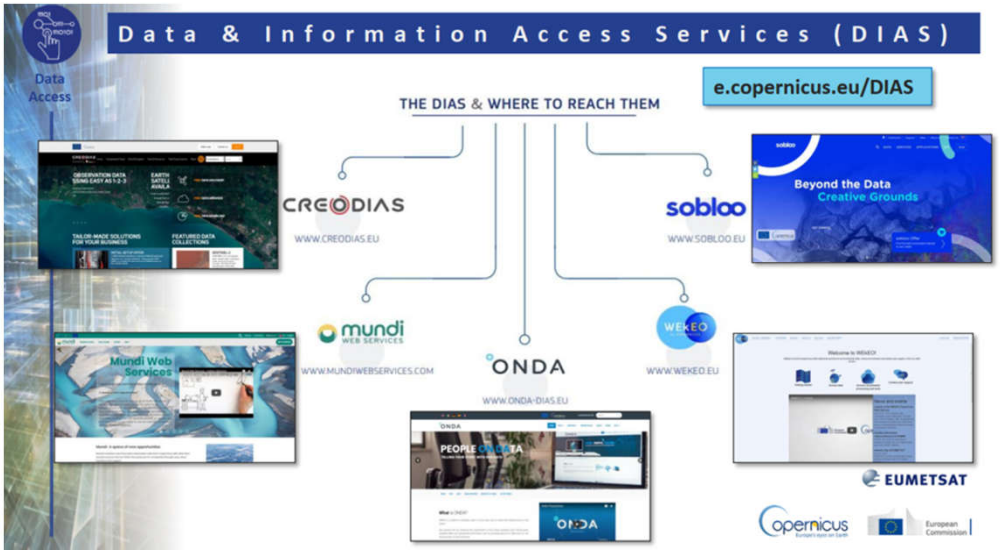
Erleichterung der Informationsextraktion
Ermöglichung der Verarbeitung sehr großer Datenmengen
Stimulation von Innovation

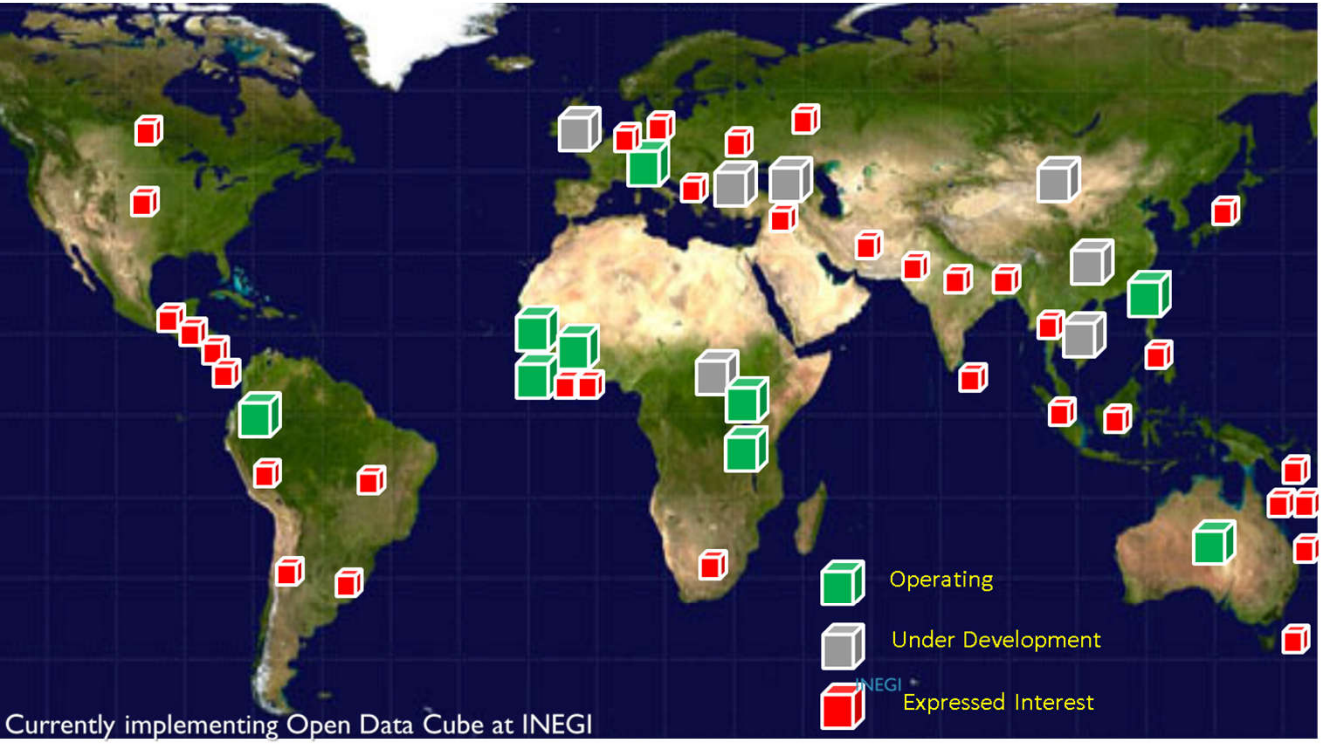
Plattformen: eine Enabling Technology




Web Portal
COPERNICUS DATA AND EXPLORATION PLATFORM - DEUTSCHLAND
CODE DE
Online Data Discovery and Access
Big Data Processing
Core Service Products
Contributing Missions Data
Sentinel Data
CODE-DE Value-added products
D-SDA Data
brat
Orfeo ToolBox
GDAL
CODE DE User Tools @ github
Tools and Services


https://urban-tep.eo.esa.int
urban tep
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
Developer Environment
User Forum


Data & Information Access Services (DIAS)
Data Access
e.copernicus.eu/DIAS
THE DIAS & WHERE TO REACH THEM
CREODIAS
WWW.CREODIAS.EU
sobloo
WWW.SOBLOO.EU
Beyond the Data
Creative Grounds
mundi WEB SERVICES
WWW.MUNDIWEBSERVICES.COM
ONDA
WWW.ONDA-DIAS.EU
WEKEO
WWW.WEKEO.EU
EUMETSAT
copernicus
European Commission



Currently implementing Open Data Cube at INEGI

WORKS ON INDICATOR 15.4.2
MOUNTAIN **GREEN** COVER

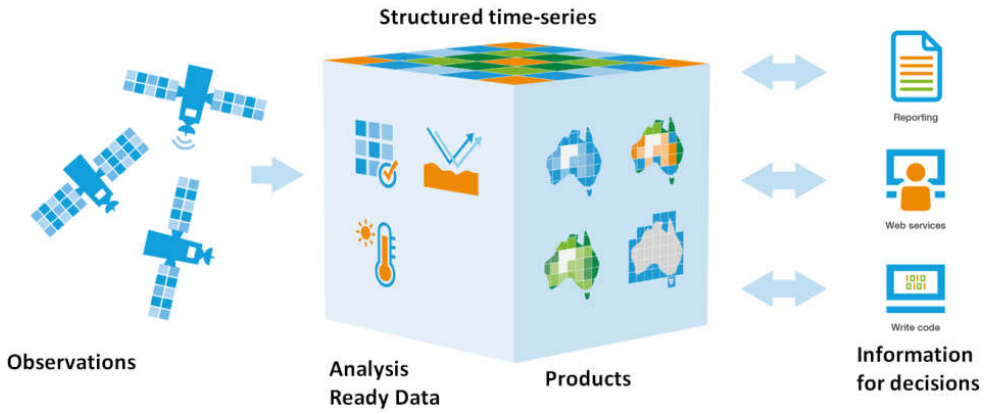
First classification is a conversion from the 2014 Land Use/Land Cover map to 6 classes

ODC process allows constant update to the national classification because it is generated automatically

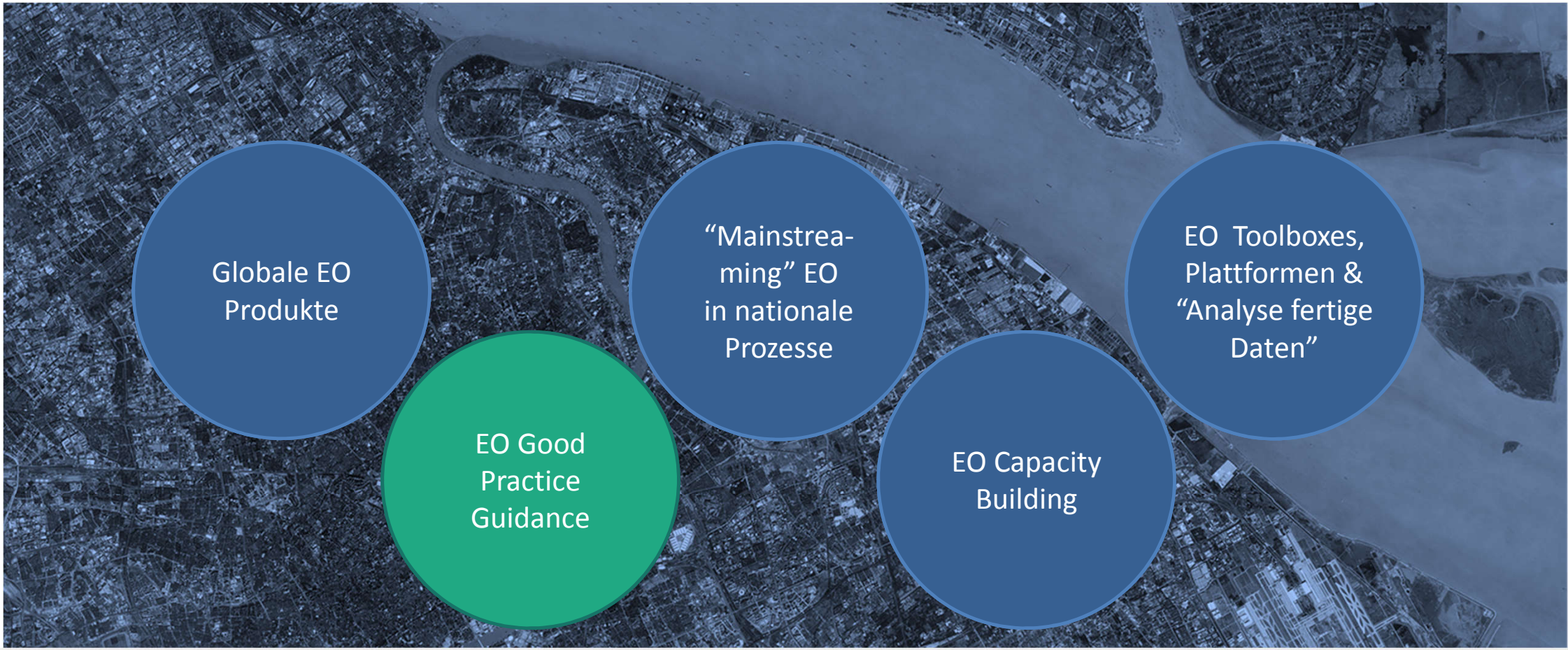
Spared resources can be applied to expert and field validation for quality assessments

STEPS (chronological)	without ODC	Progress	with ODC	Progress
Use Intergovernmental Panel on Climate Change definitions (6 classes)	✔	✔	✔	✔
Land Use/Land Cover Map	✔	✔	✔	✔
Obtain converted classification (original to 6 classes)	✔	✔	✔	✔
Draw sample from converted data			✔	design
Use sample and *6 other ODC indicators* as training dataset for classification			✔	ODC indicator (geomedian)
Run national classification with Machine Learning			✔	
Link result raster to Digital Elevation Model (DEM) for mountain areas	✔	✔	✔	
Calculate Green Cover index on DEM mountain area mask	✔	✔	✔	
Possible field validation for quality assurance in subsampled dataset			✔	
Provide feedback to FAO	✔	✔	✔	

Digital Earth Australia



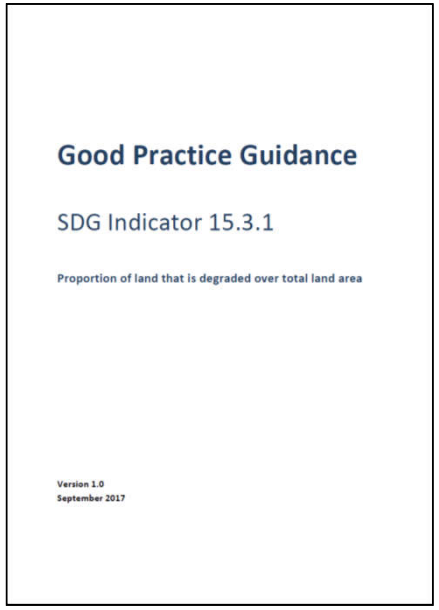
Ansatz der EO Community zu Anforderungen der globalen Agenden für nachhaltige Entwicklung



Wald und Land Monitoring for REDD+ and SDG 15

GFOI REDDcompass
Systematischer Workflowansatz für REDD+ MRV. Stellt direkte Verknüpfungen zwischen UNFCCC Vorgaben und der IPCC Good Practice Guidance sowie wissenschaftlicher Guidance her.

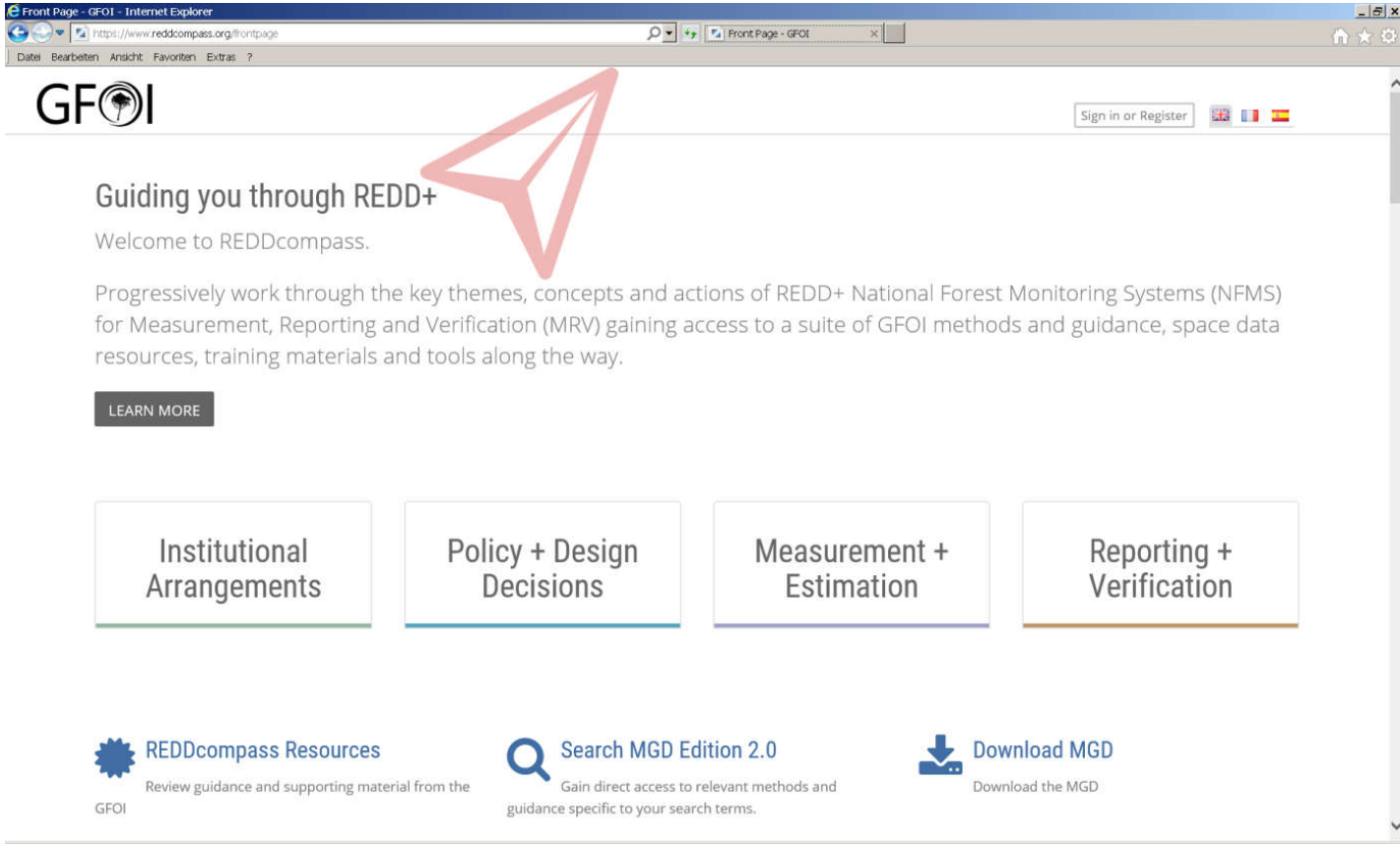
GEO Land Degradation Neutrality


Good Practice Guidance

SDG Indicator 15.3.1

Proportion of land that is degraded over total land area

Version 1.0
September 2017



DLR

Ansatz der EO Community zu Anforderungen der globalen Agenden für nachhaltige Entwicklung

EO COLLEGE – Ausbildungsportal für Anwendung satellitengestützter Erdbeobachtung

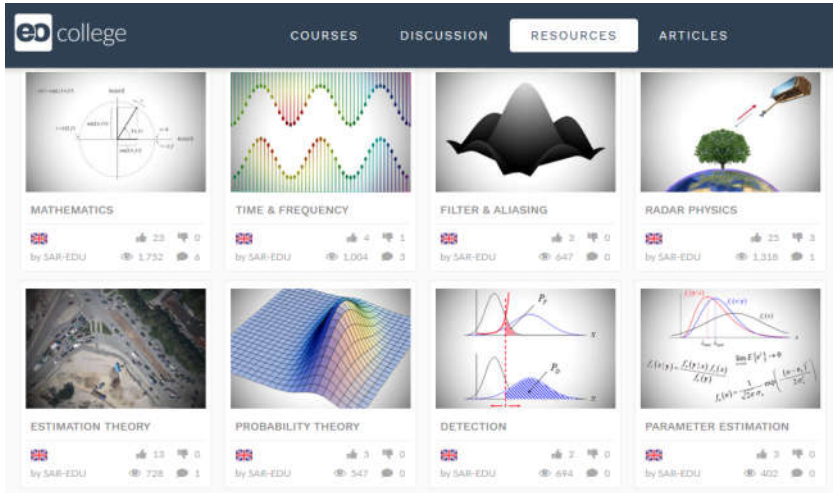
Massive Open Online Courses

- Basic **Radar** Course
- Advanced Radar Courses
- Courses on SDGs ‚**Zero Hunger**‘ & ‚**Climate Action**‘
- Courses on **Land** applications (incl. Africa topics)

Learning resources

- Radar remote sensing
- **Hyperspectral** remote sensing

  → Material under **Creative Commons** License



- Available
- In Production
- Proposed

- Launch 2017
- > 8.500 registered users
- > 25.000 h spent on page
- > 750.000 pageviews

Aim (proposed to ESA by DLR)

- Creation of a **central hub** for EO eLearning
- Creation of an **ecosystem** of EO MOOCs

Ansatz der EO Community zu Anforderungen der globalen Agenden für nachhaltige Entwicklung

Mainstreaming EO in nationale Prozesse

EARTH OBSERVATIONS FOR THE SUSTAINABLE DEVELOPMENT GOALS

GEO GROUP ON EARTH OBSERVATIONS

esa

eo4sd earth observation for sustainable development

WORLD BANK GROUP

IFAD

European Investment Bank

ADB

European Bank for Reconstruction and Development

SERVIR Eastern & Southern AFRICA

USAID FROM THE AMERICAN PEOPLE

NASA

DLR