COPERNICUS DATA IN SUSTAINABLE DEVELOPMENT GOALS USING IMAGE MAPS
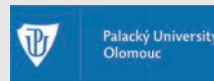
A4 Handy Maps

Sushmita SUBEDI

Palacký University
Olomouc, 2023

SUPERVISOR
Prof. Dr. Vít VOŽENÍLEK | Palacký University Olomouc

CO-SUPERVISOR
Assoc. Prof. Stefan LANG, Ph.D. | University of Salzburg

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SOIL LOSS
Italy, 2021-2050

SWITZERLAND

ALPS

SLOVENIA

CROATIA

FRANCE

Milan

Venice

Turin

Po

Po

Ligurian Sea

Adriatic Sea

ITALY

Rome

Naples

Tyrrhenian Sea

Earthstar Geographics

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Soil Loss Raster
Data Source: Copernicus Climate Change Service
Spatial Resolution: 500 m
Topographic Base: ESRI World Imagery

Symbol Component:
Labeling, Country boundary, Cities

Soil Loss (t/ha/yr)

0   5   10   20   100   *max 1227*

Map Projection:
Albers Equal Area Conic

0   100   200 km

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Olomouc, 2023

COPERNICUS SUPPORTS SDGS

SURFACE SOIL MOISTURE
Australia
January 2023

INDONESIA

PAPUA NEW GUINEA

Coral Sea

AUSTRALIA

Brisbane

Perth

Sydney

Canberra

Adelaide

Melbourne

Indian Ocean
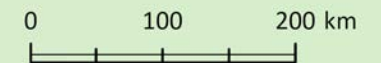
Tasman Sea

Earthstar Geographics

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Soil Moisture Raster
Data Source: Copernicus Climate Change Service
Spatial Resolution: 0.25°x 0.25°
Topographic Base: ESRI World Imagery

Symbol Component:
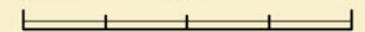Labeling, Country boundary, Cities

Surface Soil Moisture (%)

0   10   30   50   70   *max 95*

Map Projection:
GDA2020

0   500   1,000 km

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COPERNICUS SUPPORTS SDGS

TURBIDITY
Lake Turkana
21 January 2023

ETHIOPIA

GREAT RIFT VALLEY

Lake Turkana

KENYA

Turkwel

Earthstar Geographics

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Turbidity Raster
Data Source: Copernicus Global Land Service
Spatial Resolution: 100 m
Topographic Base: ESRI World Imagery

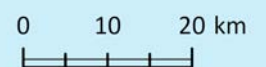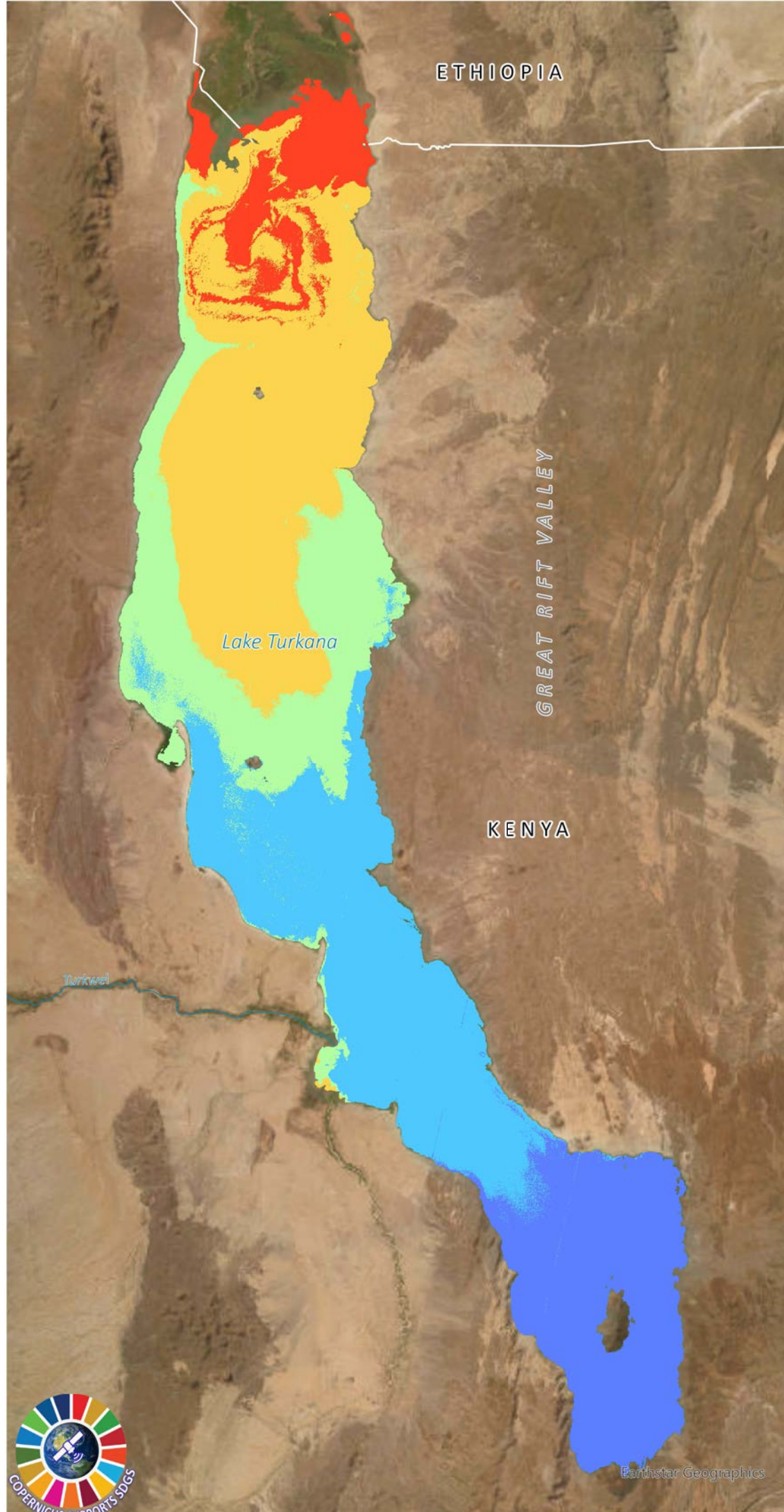**Symbol Component:**
Labeling, Country boundary

Blended Mean Turbidity (NTU)

max 753
50
20
10
5
min 1

Map Projection:
WGS 1984

0   10   20 km

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COPERNICUS SUPPORTS SDGS

BUILT-UP SURFACE

Vienna, 2020

LOWER AUSTRIA

VIENNA

Danube

Earthstar Geographics
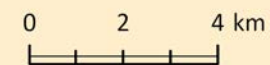
IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Built-Up Surface Raster
Data Source: Global Human Settlement Layer [Copernicus Emergency Management Service]
Spatial Resolution: 100 m
Topographic Base: ESRI World Imagery

Symbol Component:
Labeling, State boundary, River

Built-Up Surface (m²)

0	100	1000	2000	4000	*max 10000*

Map Projection:
Albers Equal Area Conic

0	2	4 km

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Olomouc, 2023

COPERNICUS SUPPORTS SDGS

PARTICULATE MATTER (2.5)
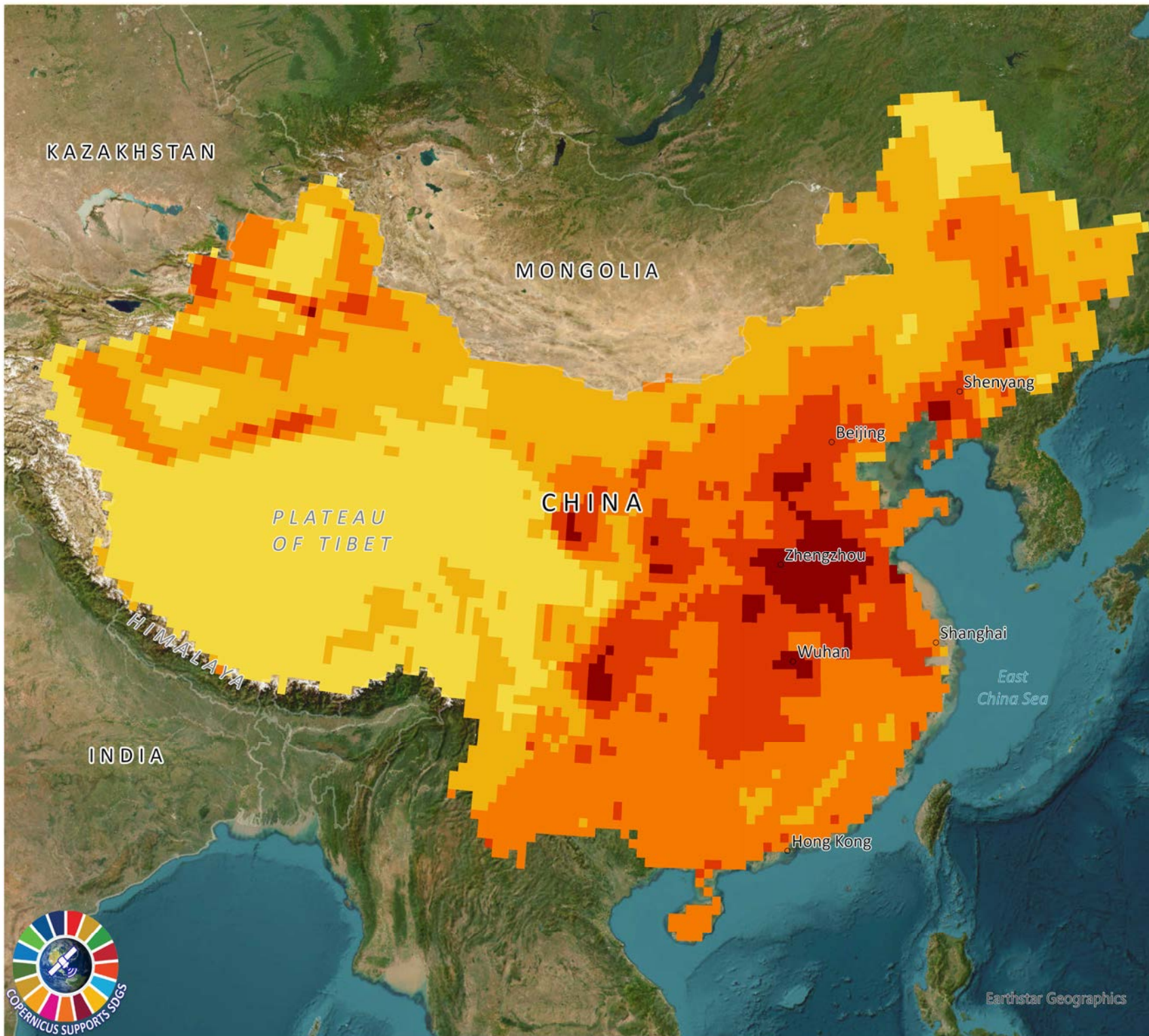
China

15 February 2023

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: PM 2.5 Raster
Data Source: Copernicus Atmosphere
Monitoring Service
Spatial Resolution: 40 km
Topographic Base: ESRI World
Imagery

Symbol Component:
Labeling, Country boundary, Cities

Particulate Matter 2.5 (µg/m³)

0   10   20   40   80   *max 133*

Map Projection:
South China Sea Lambert

0   500   1,000 km

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Olomouc, 2023

KAZAKHSTAN

MONGOLIA

CHINA

PLATEAU
OF TIBET

HIMALAYA

INDIA

Shenyang

Beijing

Zhengzhou

Wuhan

Shanghai

East
China Sea

Hong Kong

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

SURFACE WATER CHLOROPHYLL

Mediterranean Sea, December 2022

EUROPE

Bay of Biscay

Black Sea

ASIA

Mediterranean
Sea

AFRICA

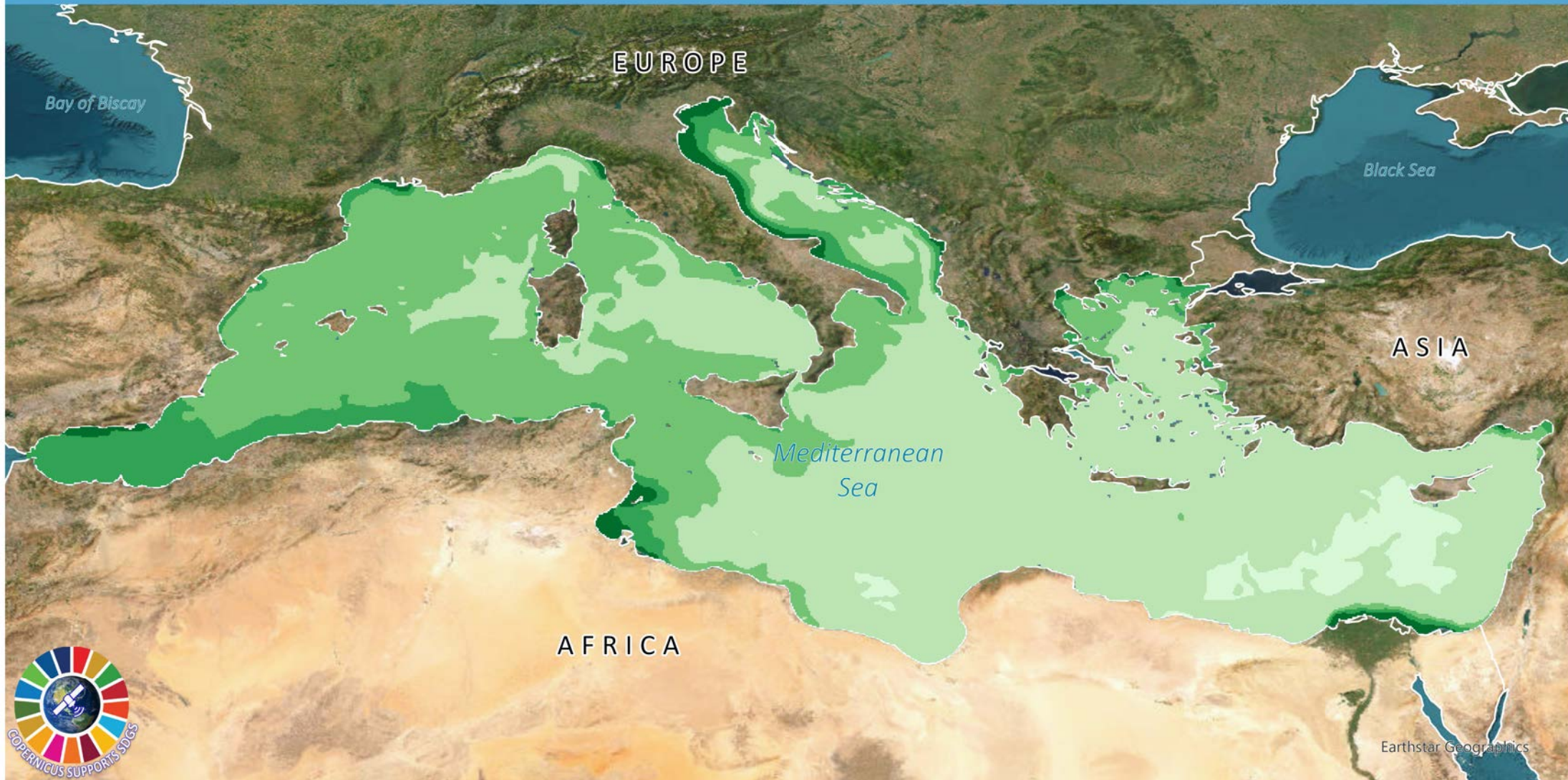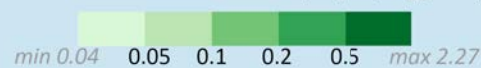Earthstar Geographics

COPERNICUS SUPPORTS SDGS
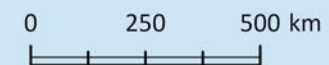
IMAGE MAP TYPE: Double Thematic

Symbol Component:
Labeling, Continent
boundary

Image Component:
Thematic Content: Surface Chlorophyll Raster
Data Source: Copernicus Marine Environment
Monitoring Service
Spatial Resolution: 4 km
Topographic Base: ESRI World Imagery

Map Projection:
WGS 1984

Surface Water Chlorophyll (mg/m³)

min 0.04   0.05   0.1   0.2   0.5   max 2.27

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0   250   500 km

SEA WATER PH

Black Sea
January 2023

UKRAINE

Sea of Azov

RUSSIA

ROMANIA

CAUCASUS

Black Sea

Sea of Marmara

TURKEY

Earthstar Geographics

IMAGE MAP TYPE: Double Thematic

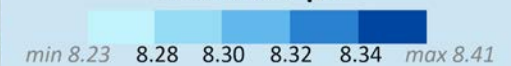**Image Component:**
Thematic Content: Sea Water pH (7.5 m depth)
Data Source: Copernicus Marine Environment Monitoring Service
Spatial Resolution: 3 km
Topographic Base: ESRI World Imagery

Symbol Component:
Labeling, Country boundary

Sea Water pH

min 8.23   8.28   8.30   8.32   8.34   max 8.41

Map Projection:
WGS 1984 Web Mercator

0   100   200 km

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Olomouc, 2023

COPERNICUS SUPPORTS SDGS

SOLAR PHOTOVOLTAIC POWER

Europe, July 2022

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Solar Photovoltaic Power
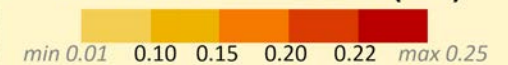Data Source: Copernicus Climate Change Service
Spatial Resolution: 0.25°x 0.25°
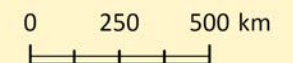**Topographic Base:** ESRI World Imagery

Symbol Component:
Labeling, Continent boundary

Solar Photovoltaic Power (CRF)

min 0.01 0.10 0.15 0.20 0.22 *max 0.25*

Map Projection:
Lambert Conformal Conic

0   250   500 km

Norwegian Sea

EUROPE

North Sea

Atlantic Ocean

Black Sea

ASIA

Mediterranean Sea

AFRICA

Earthstar Geographics

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Olomouc, 2023

COPERNICUS SUPPORTS SDGS

SUITABILITY FOR AEDES ALBOPICTUS

Europe, January 2023

Norwegian Sea

Atlantic Ocean

North Sea

EUROPE

Mediterranean Sea

Black Sea

ASIA

AFRICA

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Climatic Suitability for Aedes Albopictus
Data Source: Copernicus Climate Change Service
Spatial Resolution: 0.1°x 0.1°
Topographic Base: ESRI World Imagery
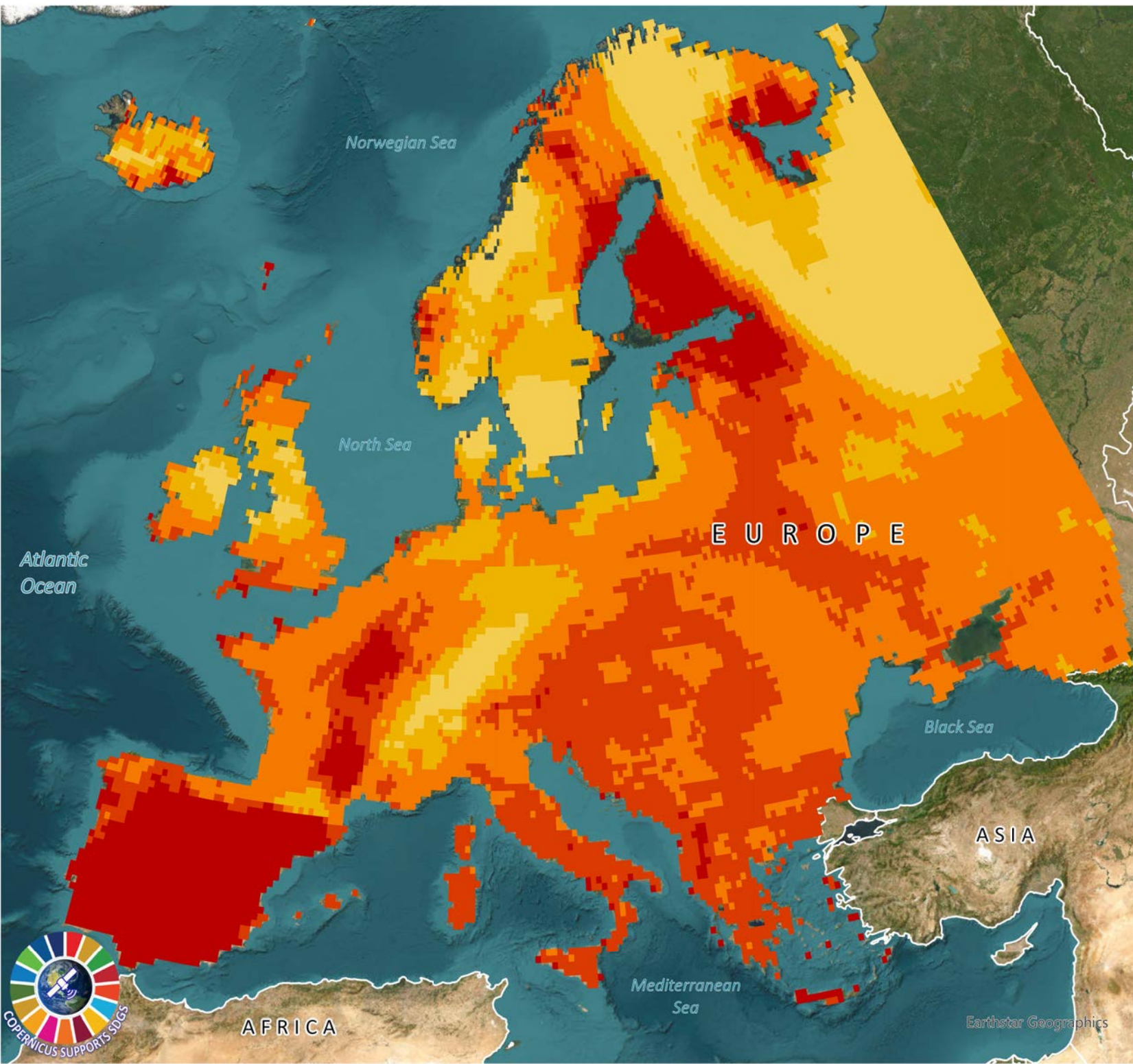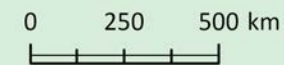
Symbol Component:
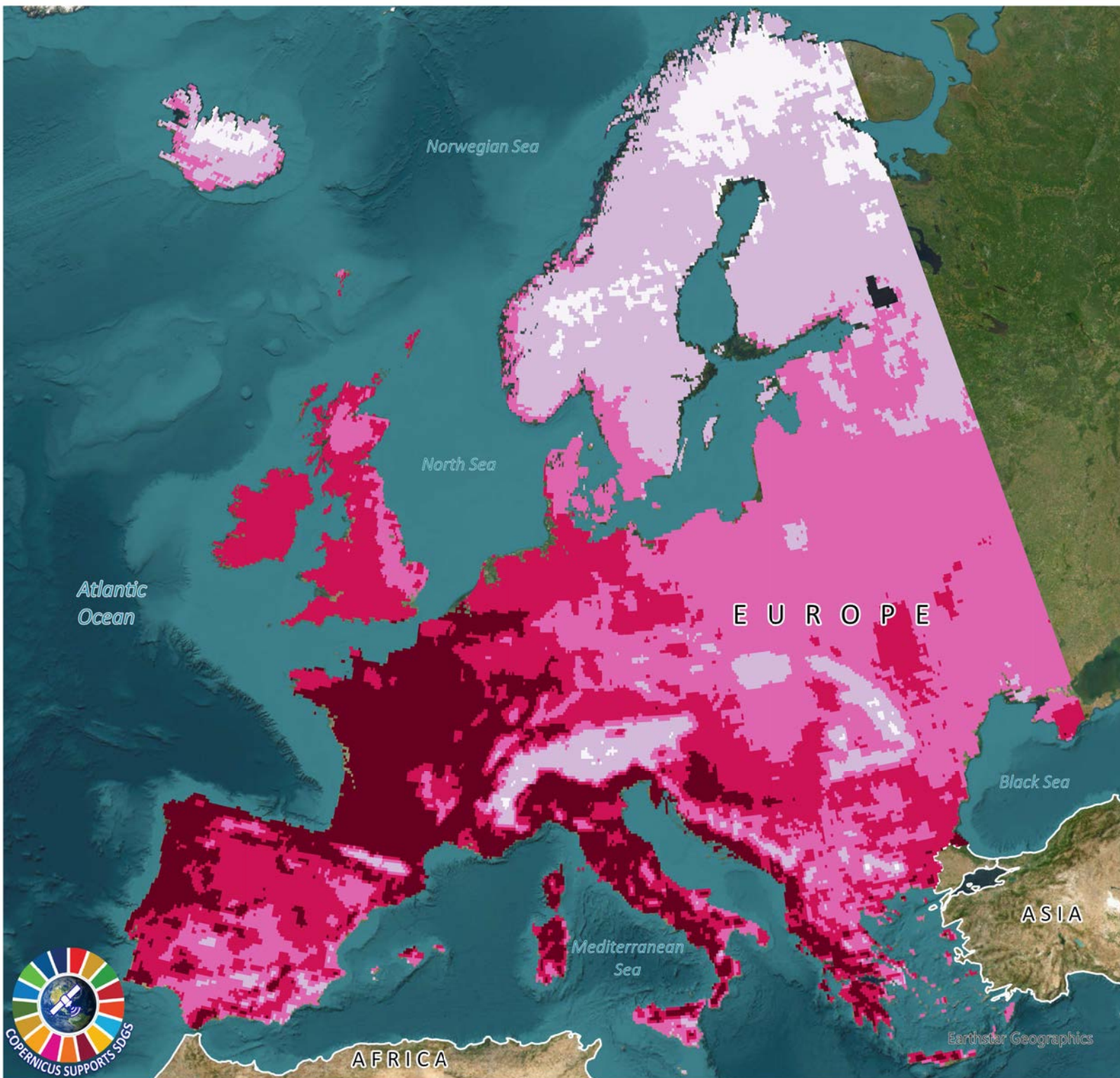Labeling, Continent boundary

Climatic Suitability

0   20   40   60   80   *max 100*

Map Projection:
Lambert Conformal Conic

0   250   500 km

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ATLANTIC SALMON

Northwest European Shelf
January 2023

IMAGE MAP TYPE: Double Thematic

Image Component:
Thematic Content: Abundance of Atlantic Salmon (Gridded)
Data Source: Copernicus Climate Change Service
Spatial Resolution: 0.5° x 0.5°
Topographic Base: ESRI World Imagery

Symbol Component:
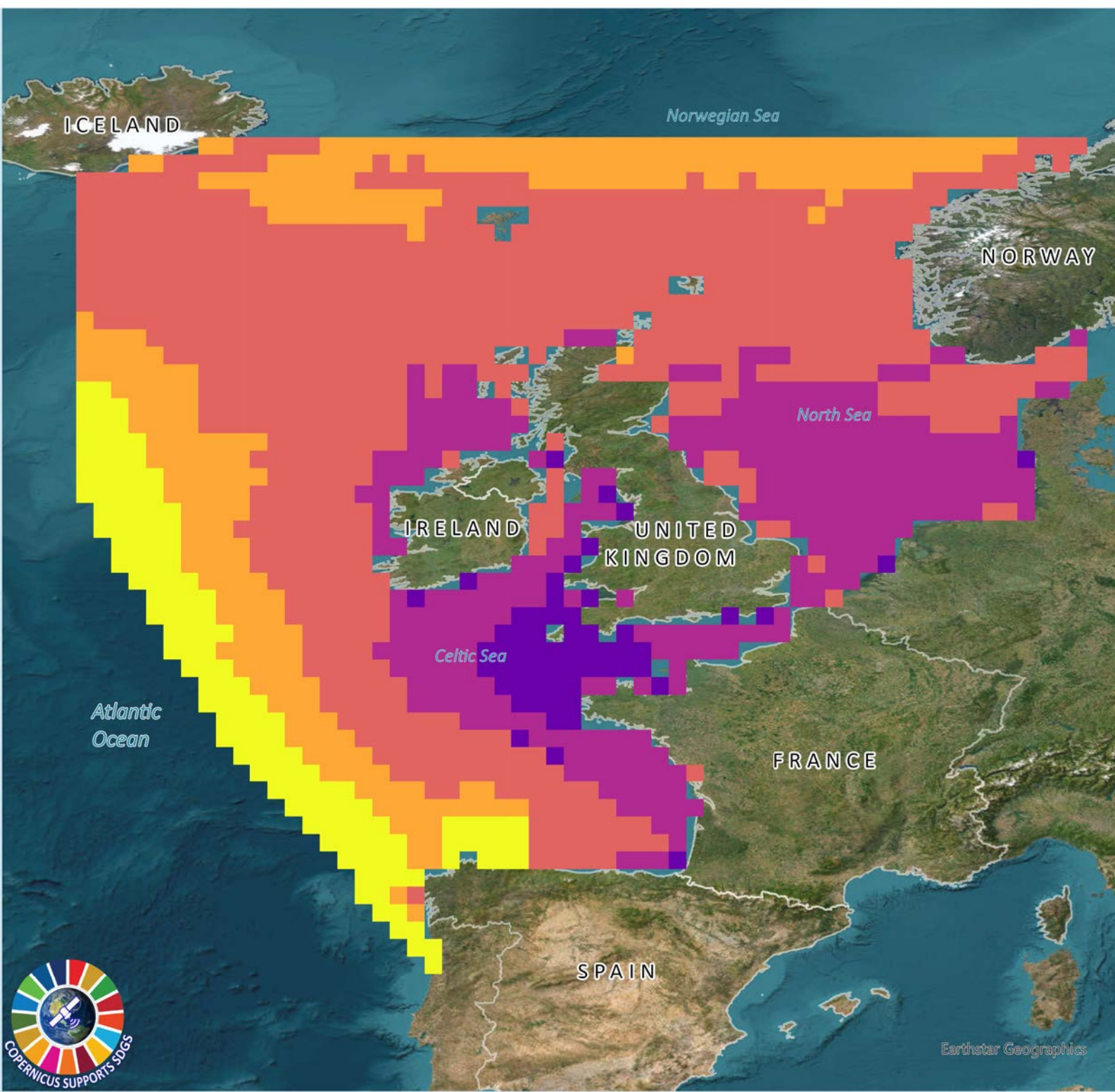Labeling, Country boundary

Number of Atlantic Salmon

0   1000   2000   5000   8000   *max 12798*

Map Projection:
WGS 1984

0   250   500 km

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Olomouc, 2023

ICELAND

Norwegian Sea

NORWAY

North Sea

IRELAND

UNITED KINGDOM

Celtic Sea

Atlantic Ocean

FRANCE

SPAIN

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

ATMOSPHERIC CARBON DIOXIDE

World Continents, January 2020
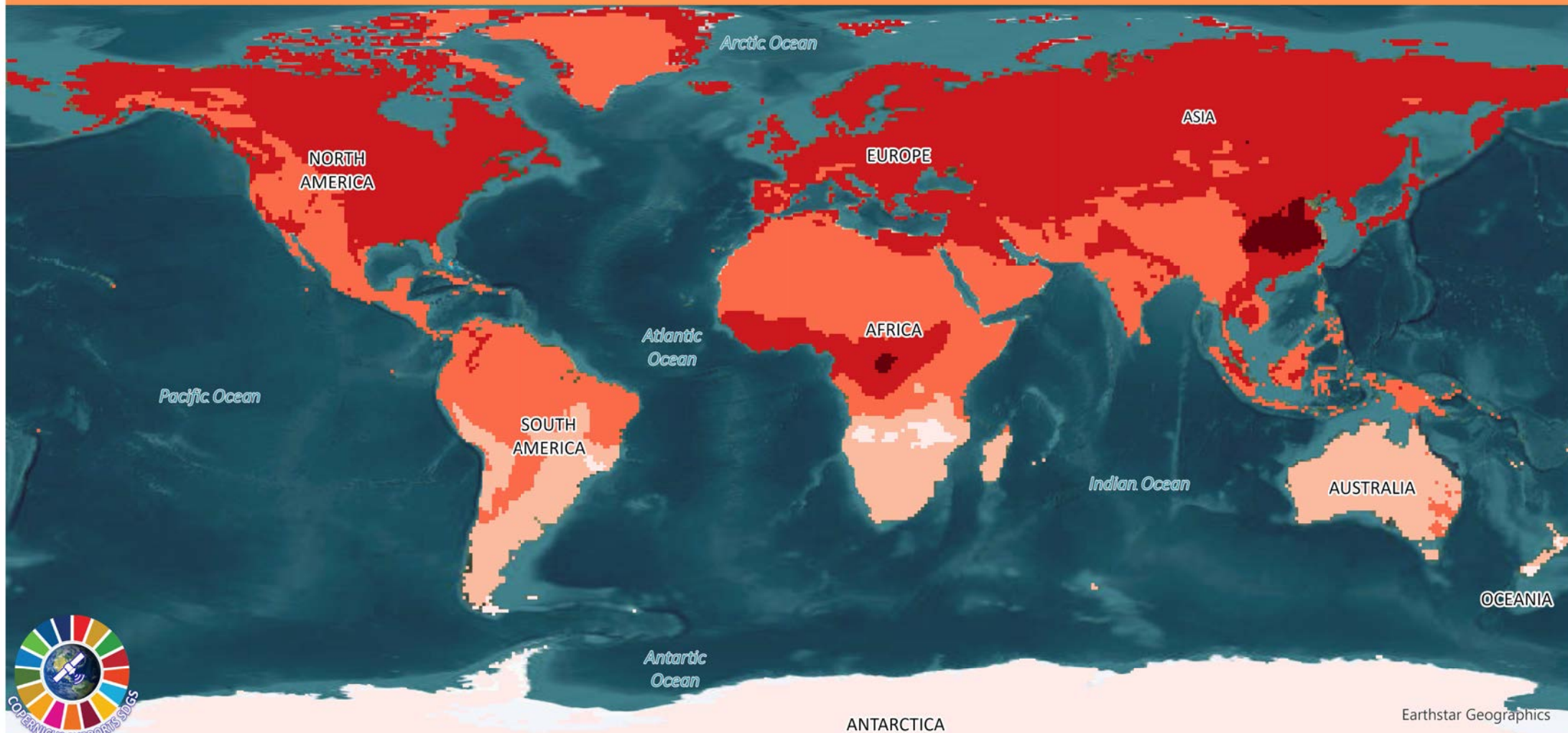
ARCTIC Ocean

ASIA

NORTH AMERICA

EUROPE

AFRICA

Atlantic Ocean

Pacific Ocean

SOUTH AMERICA

Indian Ocean

AUSTRALIA

Antarctic Ocean

OCEANIA

ANTARCTICA

Earthstar Geographics

IMAGE MAP TYPE: Double Thematic

Symbol Component:
Labeling

Image Component:
Thematic Content: Atmospheric CO2 Raster
Data Source: Copernicus Atmosphere
Monitoring Service
Spatial Resolution: 0.75°x 0.75°
Topographic Base: ESRI World Imagery

CO2 Column-Mean Molar Fraction (PPM)

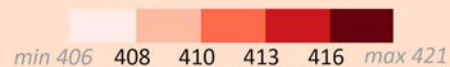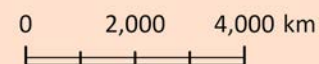min 406   408   410   413   416   max 421

Map Projection:
WGS 1984

0   2,000   4,000 km

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Olomouc, 2023

ATMOSPHERIC METHANE

World Continents, January 2020

Arctic Ocean

NORTH AMERICA

EUROPE

ASIA

AFRICA

Atlantic Ocean

Pacific Ocean

SOUTH AMERICA

Indian Ocean

AUSTRALIA

OCEANIA

Antartic Ocean

ANTARCTICA

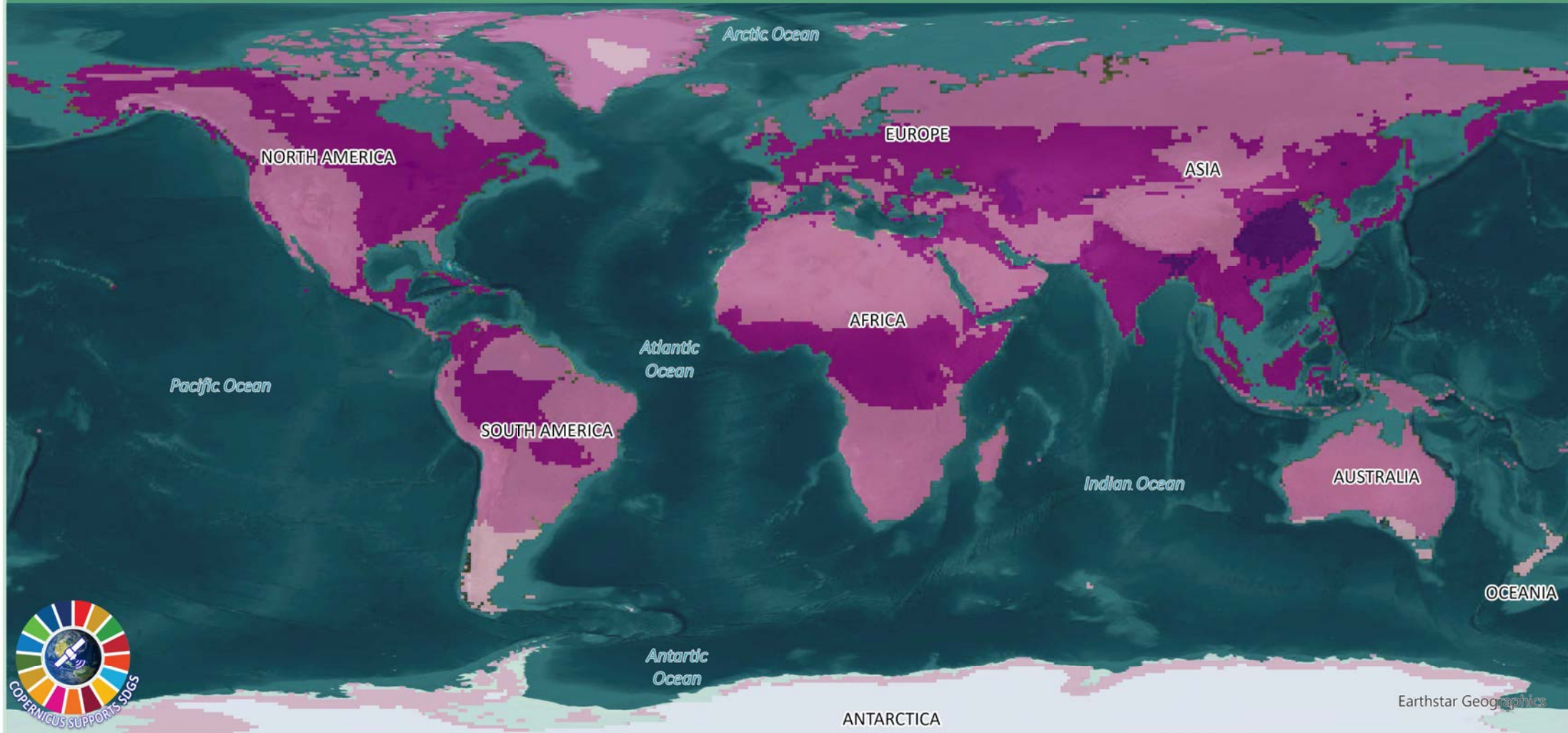Earthstar Geographics

COPERNICUS SUPPORTS SDGS
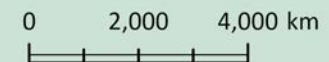
IMAGE MAP TYPE: Double Thematic

Symbol Component:
Labeling

Image Component:
Thematic Content: Atmospheric CH4 Raster
Data Source: Copernicus Atmosphere
Monitoring Service
Spatial Resolution: 0.75°x 0.75°
Topographic Base: ESRI World Imagery

Methane Column-Mean Molar Fraction (PPB)

min 1716   1750   1800   1870   1900   max 2039
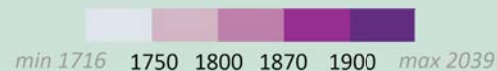
Map Projection:
WGS 1984

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Palacký University
Olomouc, 2023

0   2,000   4,000 km

FOREST COVER
Venezuela, 2019

Caribbean Sea

Caracas

ANDES

VENEZUELA

COLOMBIA

BRAZIL

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

IMAGE MAP TYPE: Back/Rear Thematic

Symbol Component:
Thematic Content: Forest Cover, Country boundary, Labeling
Data Source: Copernicus Global Land Service
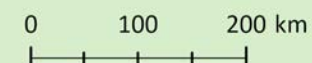Spatial Resolution: 100 m

Image Component:
Topographic Base: ESRI World Imagery

Forest

Total Area: 47,426,889 ha

Map Projection:
WGS 1984

0   100   200 km

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Olomouc, 2023

WATER ECOSYSTEM
Minnesota, 2019

CANADA

MINNESOTA

WISCONSIN

Lake Superior

Mississippi

Minnesota

St. Paul

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

IMAGE MAP TYPE: Back/Rear Thematic

Symbol Component:
Thematic Content: Water bodies, State boundary, Labeling
Data Source: Copernicus Global Land Service
Spatial Resolution: 100 m

Image Component:
Topographic Base: ESRI World Imagery

Water Body
Total Area: 1,203,013 ha

Map Projection:
NAD 1983

0   50   100 km

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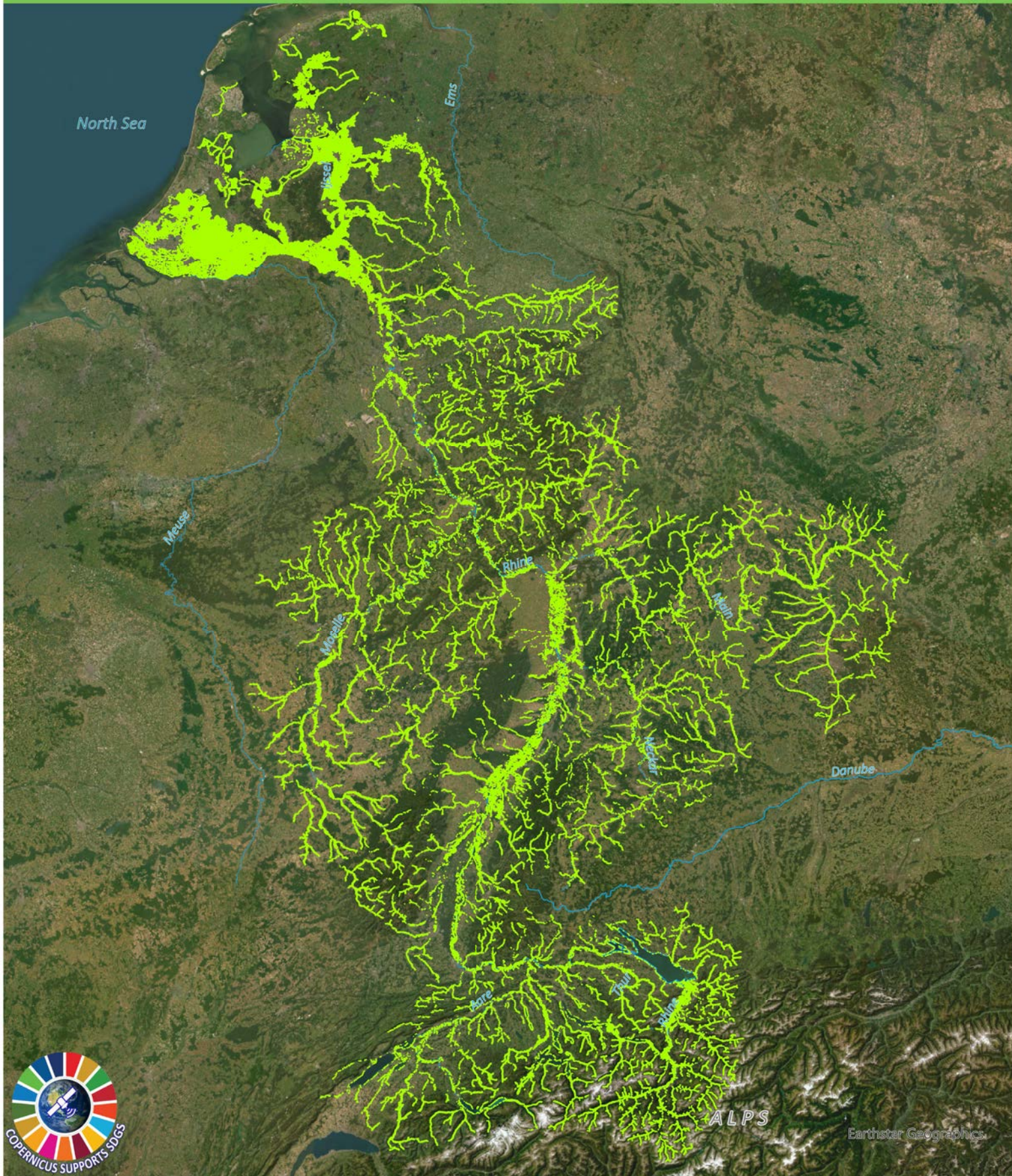Olomouc, 2023

RIPARIAN GRASSLAND
Rhine Basin, 2018

North Sea

IJssel

Ems

Meuse

Moselle

Rhine

Main

Neckar

Danube

Aare

Thur

Rhine

ALPS

Earthstar Geographics

COPERNICUS SUPPORTS SDGS

IMAGE MAP TYPE: Back/Rear Thematic

Image Component:
Topographic Base:
ESRI World
Imagery

Symbol Component:
Thematic Content: Riparian Grassland, River
network, Labeling
Data Source: Copernicus Land Monitoring Service
Spatial Resolution: 0.5 ha MMU

Riparian Grassland

Total Area: 779,695.80 ha

0   50   100 km

Map Projection:
ETRS 1989 LAEA

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Olomouc, 2023