


AI4EO)

Air Quality & Health Challenge

Prize Catalogue



An initiative of  **esa**

A challenge
proposed by  **ECMWF**

Platinum
Sponsors  **AIRBUS**

Gold
Sponsor

 **NVIDIA.**



Implemented by



Introducing AI4EO

AI4EO is an initiative from the Φ-lab of ESA's Directorate of Earth Observation Programmes. It strives to bring the worlds of Artificial Intelligence and Earth Observation closer together to kindle and encourage interaction and collaboration.

The Air Quality & Health challenge

The first AI4EO challenge, which stems from a need expressed by ECMWF and the Copernicus Atmosphere Monitoring Service (CAMS), focuses on developing AI-powered solutions to facilitate the downscaling of analyses and forecasts of surface concentrations of particulate matter (PM2.5) and nitrogen dioxide (NO2).

Downscaling PM2.5 and NO2

Participants are challenged to develop new methods to downscale air quality products to a resolution that can be used at a local level to deliver surface concentration maps of PM2.5 and NO2 of a higher resolution than Sentinel-5P satellite data and the CAMS products. A quantitative and qualitative evaluation of the results will be performed on the three

selected Areas of Interest, namely Northern Italy, California and South Africa.

Why?

According to the World Health Organisation, air pollution is responsible for over 7 million premature deaths annually. Better Information about air pollution and reducing emissions of key pollutants such as fine particulate matter and nitrogen dioxide could save millions of lives and millions in health care costs.

The Copernicus Atmosphere Monitoring Service provides global information about air pollutants. CAMS open data products having a spatial resolution of about 40 km on a global scale and of about 10 km over Europe, locally accurate applications require to downscale information to finer scales.

Reducing exposure to fine particulate matter (PM2.5) is among the UN's Sustainable Development Goals. The most successful methods could be eventually considered for benchmarking currently used methodologies.

How it works: The AI4EO Prize catalogue

This catalogue presents the available prizes for the top three teams and their members as well as the winner of the special student's prize. Each winning team receive "AI4EO points" that can be used to assemble their prize bundle from the catalogue – It's like redeeming points from a consumer rewards and loyalty programme!

Individual and team prizes

Some prizes are individual, others are team prizes. The teams can either chose to spend the points together or share the points and spend them as individuals or a combination of both. The prizes are marked accordingly as



individual
prize



team
prize

Restrictions

Some prizes come with restrictions. These can be found in small print in the description of those specific prizes.

AI4EO points

Winner
30.000
AI4EO points

2nd Prize **20.000**
AI4EO points

3rd Prize
10.000
AI4EO points

Best student team
10.000 AI4EO points

Order for choosing prizes on a "first come first served" basis is the following: 1st, 2nd, student team, 3rd prize. The assigned team leader is responsible for communicating the selected prize(s) to the organisers.

Platinum Sponsor

AIRBUS

Airbus Defence and Space has accumulated over 30 years of in-orbit operation and aims to improve life on Earth and beyond through cutting-edge technologies. Airbus provides an array of space products and services, providing solutions for customers and their programmes around the globe.

To support participants during the challenge itself, Airbus will provide access to HR and VHR imagery via the OneAtlas Sandbox, Copernicus Sentinel data, as well as diverse machine learning bricks and more.

Gold Sponsors



Nvidia designs graphics processing units for the gaming and professional markets, as well as system on a chip units for the mobile computing and automotive market. NVIDIA's invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined modern computer graphics and revolutionized parallel computing.

To support participants during the challenge itself, NVIDIA will provide technical advice and support via their community-led initiative RAPIDS.



WEKEO is the EU's Copernicus DIAS reference service for environmental data, virtual environments for data processing and skilled user support. The WEKEO DIAS Service is implemented by EUMETSAT, ECMWF and MERCATOR OCEAN.

To support participants during the challenge itself, WEKEO will provide cloud computing resources and data access infrastructure, as well as training sessions and technical support through WEKEO user support and experts.

Platinum Sponsor Prizes

AIRBUS

10.000 EUR worth of **VHR imagery OneAtlas**
(increments of 500 EUR)

Airbus data licences implementation and French law/regulation applicable could provide specific right and restriction to the beneficiary upon his/her origin and characteristic.



AI4EO points
500

Amount
20

Unit
increments

Gold Sponsors Prizes



2 x 1 year of Virtual Processing Environments (8 vCPUs, 4 TB for Object storage, 64 GB RAM) + 1 day of training



AI4EO points
5500

Amount
2

Unit
year

6 x 1/2 days of training on WEKEO Virtual Processing Environments by WEKEO experts with sharing of codes and optimization expertise



AI4EO points
1000

Amount
6

Unit
1/2 day



3 x Quadro RTX8000



AI4EO points
6000

Amount
3



Take part in the #AI4AirQuality challenge to win AI4EO points!

Better analysis and forecast of PM2.5 aerosol and NO₂ pollutants is waiting for you!



6 x 1 day of coaching on promotion and communication in Earth Observation by Stéphane Ourevitch, leading expert in communication

	AI4EO points	Amount	Unit
	1200	6	days

6 days of coaching on access-to-finance for high tech start-ups by Rainer Horn, leading expert in fund raising

	AI4EO points	Amount	Unit
	7200	1	module



Air pollution may not always be visible, but it can be deadly

World Health Organization



10 x 500 EUR worth credits for cloud computing resources, together with direct access to Earth Observation data on CREODIAS platform and technical support for 2 years

	AI4EO points	Amount
	500	10

Winners can decide about their own cloud configurations according to their needs, of course CloudFerro can provide recommendations.



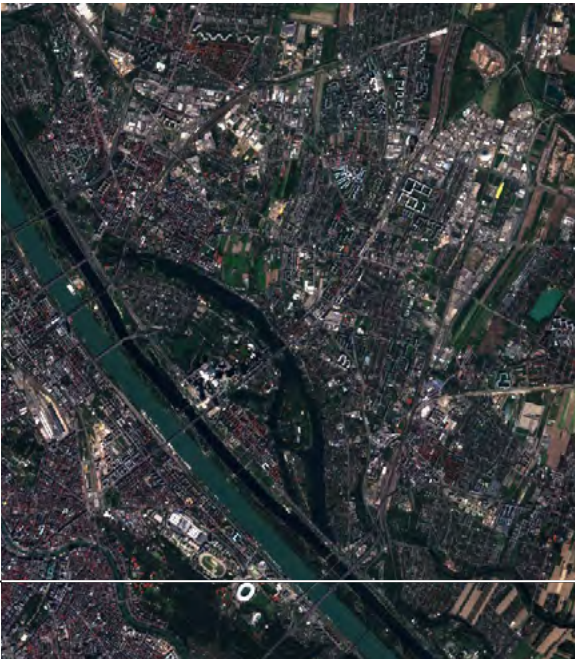
Air pollution is the biggest environmental health risk of our time

United Nations



6 days of technical assistance on AI/E0 implementation, with use of NVIDIA TESLA V100 GPU for training data preparation

AI4EO points	Amount	Unit
4000	1	module



6 days of technical assistance on solution engineering, including porting on cloud

AI4EO points	Amount	Unit
4000	1	module

6 days of coaching on business plan analysis and preparation by Marcello Maranesi, former CEO of Eurimage and e-GEOS

AI4EO points	Amount	Unit
6000	1	module



1 year free subscription to Hexagon Geospatial software for E0 data processing (Imagine and Imagine Photogrammetry)



AI4EO points	Amount	Unit
9000	1	year



1 year Enterprise-L
subscription to
Sentinel Hub

Up to 1M processing units
per month.
Up to 3M processing units
in Batch mode per month
Individual support

	AI4EO points	Amount	Unit
	10000	1	year

1 year Basic
subscription
to Sentinel Hub

Up to 70000 processing
units per month.
Up to 210000 processing
units in Batch mode per month

	AI4EO points	Amount	Unit
	1000	1	year

1 year Enterprise-S
subscription to
Sentinel Hub

Up to 400000 processing
units per month.
Up to 1.2 M processing
units in Batch mode per month
Individual support

	AI4EO points	Amount	Unit
	5000	1	year

1x Sentinel Hub
goodies

	AI4EO points	Amount
	100	1



3 years, training
on the ADAM platform,
licenses, services,
processing and
storage capabilities,
data publication on
the ADAM platform
equivalent to the
prize value

	AI4EO points	Amount
	10000	1



7 days of consultancy
on user research,
willingness-to-buy,
UX/UI, service design

	AI4EO points	Amount	Unit
	8000	1	module




“ A worldwide monitoring and modelling network would reduce the dramatic toll of air pollution on health and food production

Rajesh Kumar and colleagues,
Nature comment



3 months free access to ONDA Virtual Machine.

With Specification: 30 GB RAM, 8vCores, 200 GB SSD and 500 Bps guaranteed. VM specification and duration can be balanced to better fit to the winner requirement

	AI4EO points	Amount
	285	1

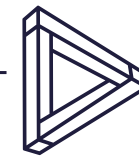


1 year access to Mundi Marketplace Business ACCELERATOR


	AI4EO points	Amount	Unit
	12000	1	year




TRILATERAL
RESEARCH



7 days of data protection and ethics consultancy with Trilateral's experts who will provide guidance to support compliance with EU and national legislation and alignment with societal expectations

	AI4EO points	Amount	Unit
	5000	1	module

1 month part-time paid internship with the opportunity to shadow Trilateral's Senior Researchers and co-write journal and blog articles

	AI4EO points	Amount	Unit
	2000	1	month




EarthPulse


Dataset generation with SCAN,
EarthPulse labelling tool

	AI4EO points	Amount
	7000	1

6 days of coaching on Artificial intelligence,
Machine learning & NN development and
training by Juan Pedro, EarthPulse AI expert


	AI4EO points	Amount	Unit
	5000	1	module

6 days of coaching on product development
& business strategy by Laura Moreno, mentor
of Copernicus Accelerator, Barcelona Activa
and Astropreneurs


	AI4EO points	Amount	Unit
	5000	1	module

STUDIOMAPP

3 x 1 month part - time paid
internship with opportunity
to work with Studiomapp's
team on ongoing Climate
projects (remotely, with
possibility to get onboarded
at the end of internship)

	AI4EO points	Amount	Unit
	2000	3	month

3 x 1 day consultancy /
mentoring support for
Startup in reviewing Business
plan or Project Proposals
for funding requests (in full
Confidential agreement)

	AI4EO points	Amount	Unit
	1000	3	day




www.ai4eo.eu



@ai4eo



hello@ai4eo.eu

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