

Question	Answer
Session 2: The AI/ML Revolution	
How can the online attendants test the demonstrations?	There is no possibility for online participants to test the on-site demonstration
Thank you but how do we know which demonstrations are being showed?	The demo programme is published on the workshop agenda. There are 5 demos each day during the breaks
Will knowledge get lost if potentially only AI models will be used in the future compared to mainly physics-based models where humans are aware of the relations and mechanisms (AI Blackbox as another buzzword here)	We envisage a future scenarios where physics-based models are a key part of operational forecasting. Physical model data is key for training these models and our understanding of machine learning models through the lens of physics is an important part of building trust.
Will IFS (ECMWF's operational forecasting system) be disabled?	No, there is no plan for the IFS to be disabled. ECMWF view that having 2 complementary systems provides a more robust set of products for operational forecasting.
Are the physics models still usefull or not at all anymore ?	Yes, physics models are still key. Without physical model data these ML models would not exist. The upcoming ERA6 will showcase what the last decade in model development will enable in ML models.
Which AI model architectures are the most interesting in the development of meteorological prediction AI models?	Lots of different architectures are used, they all broadly follow a pattern of encode to a latent representation on a lower resolution grid, process on that grid, and then decode to the original grid and variables. Transformer and graph neural network blocks are two popular choices for each of these parts of the model.
How does your ERA5/ERA6 and AIFS compare with NVIDIA's Earth 2 in terms of accuracy and spatial resolution?	My understanding of NVIDIA's Earth 2 is that it's a platform for developing and running AI weather and climate models. ECMWF's AIFS (which was developed in the Anemoi framework) features on the platform as a model that can be run.
Do you see future Earth system models evolving towards hybrid approaches where physical models and machine learning continuously inform each other?	The space of possible opportunities is huge and moving very quickly. In addition to the methods I showed today, there's a rich research thread combining physics and machine learning, the combination of the two is very potent.
How many active users at the moment on DestinE / using GeoAI functionality?	There are roughly 7K active users so far.
Are the demonstrations available online? Thank you!	No, demos are available only to online participants.
Session 4: User needs & trustworthy AI	
For Ruben: have you solved integrating new products in existing solutions?	To share four best practices messages: 1. Keep it simple – Start with an easy integration, expand it on-demand. 2. Observe the data – Data quality is high valuable for every integration. 3. Review the process – every new product needs to run through a standardized review. 4. Rollback-Plan – have a clear and workable rollback-plan.
Can CLMS EO products gain timeliness with AI?	Certainly - AI is a key enabler for improving product accuracy, timeliness, and for unlocking new product opportunities. Timeliness is often directly constrained by the extent of non-automatable steps in the production chain. For example, CLMS already operates fully automated products that are published within 12 hours after sensing. At the other end of the spectrum, Land Cover / Land Use products require complex spatial-context interpretation, which has so far relied primarily on human interpretation. For these products, the adoption of capable AI-based methods could significantly reduce production time - representing a true step change in timeliness, but maybe also in reproducibility and production costs.
Unfortunately "Horizon Projects.." is unavailable via the QR Code provided. Could you update and provide the document/ document link following the workshop please?	https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/HORIZON-CL6-2026-03-GOVERNANCE-07

<p>How best to align / choose between / harmonise the multitude of AI-enabled EO platforms and services which are emerging?</p>	<p>AI has been disruptive for several years and will likely remain so for some time. I believe that, in the domain of Earth observation, we are only at the beginning of this evolution. While certain technological trajectories can be anticipated, the nature of disruption implies that today's landscape may evolve rapidly and unpredictably. A diversity of emerging platforms should therefore be expected - and perhaps accepted - to a certain extent, as it fosters innovation. At the same time, AI-enabled platforms are likely to become the primary interface for interacting with geospatial data and making it accessible to a broader user base.</p> <p>More specifically, I believe that the next major development will be conversational geospatial analytics, potentially allowing anyone to access and analyse geospatial information through natural language interfaces. My expectation is that such solutions will also reduce the relevance of heterogeneous and the multiplicity of underlying systems, as platforms will increasingly be able to discover, access, and interact with distributed data sources - potentially even across other AI-enabled platforms.</p> <p>In this context, Copernicus should have a strong strategic interest in positioning itself as a leader in AI-driven geospatial services, just as it has done with the Sentinel programme for Earth observation data.</p> <p>To conclude, under the current circumstances, it is very difficult to advise users. What is clear, though, is that we are facing significant changes - which, I hope, Copernicus will successfully harness for the benefit of society.</p>
<p>Is constellr data freely available to users from academia/ research?</p>	<p>We have some open data points on our constellr knowledge center https://constellr.github.io/product-1st/example-datasets/ and we also are part of the ESA Third party mission programme https://earth.esa.int/eogateway/news/constellr-announcement-of-opportunity-now-open-to-users where data quotas can be requested for free with a very short proposal.</p>
<p>So far there has not been much mention of actual user research grounding the development of AI services. Can any panel members discuss the role of practical user research in what they do, or their ambitions for user research going forwards?</p>	<p>As an institute involved in CAMS activities, the French National Institute for Industrial Environment and Risks (INERIS) works to implement the latest state-of-the-art performing developments including AI approaches in its services and products. Developments are made to match the needs of users. For example, AI-based downscaling methods are used to provide a high resolution estimate of air pollution exposure to epidemiologists or environmental economists, air quality forecasts from deterministic models are post-processed by AI to support local authorities during pollution episodes (https://ads.atmosphere.copernicus.eu/datasets/cams-europe-air-quality-forecasts-optimised-at-observation-sites?tab=overview), and finally surrogate models to perform source attribution by emission sectors and/or geographical areas in support of policy makers are developed (https://policy.atmosphere.copernicus.eu/).</p>
<p>Alongside the harmonisation/ choosing from a variety of AI-enabled EO platforms: which mechanisms ensure the same high quality (data) standards for third party missions, i.e. constellr, in comparison to the core of Copernicus?</p>	<p>As a Copernicus Contributing mission our data quality is also evaluated by the same Optical Mission Performance Cluster as the Sentinel Satellites. As we are currently only Category 1 (onboarding preparation) these reports are currently not public. We publish our own calibration and validation results though on our knowledge centre.</p> <p>Generally thought, commercial missions operate under different conditions than institutional missions (very clearly in terms of budget), so depending on the use case, commercial missions might focus on other parameters than just pure data quality, such as latency, resolution, etc. So, it always depends on the purpose of the mission what you can expect from the data.</p>

<p>We have heard a lot about the needs for vast AI infrastructure, opportunities of AI solutions and the work with data. It would be interesting to hear the perspectives on how this all can be implemented in a responsible, sustainable way?</p>	<p>Thank you, this is an important question and I'd like to break it down into A) how the EU is taking concrete steps to ensure AI and its infrastructure are developed responsibly and sustainably; and also B) how each of us can contribute:</p> <p>A) What the EU Is Doing: The EU has put in place the AI Act as a binding, risk-based framework for AI. The AI Act sets clear requirements for transparency, safety, and accountability, while our Ethics Guidelines help developers build systems that respect fundamental rights and broader societal values. On digital infrastructure, through the Climate Neutral Data Centre Pact, data centre operators have pledged to make data centres climate-neutral by 2030, using 100% carbon-free energy, improving energy efficiency (PUE ≤ 1.3), and reusing waste heat. Early progress shows over 70% of reported data centers already use 100% renewable energy (2025 report). In addition, the EU also supports work on measuring and reducing the environmental impact of digital technologies, including funding projects like the European Green Digital Coalition. Meanwhile, the Digital Europe Programme helps SMEs and workers adopt sustainable digital practices. But challenges remain, for example only ~40% of data centre hardware is recycled (Eurostat), and AI models still have significant energy demands. That's why investing in research through Horizon Europe to develop more sustainable solutions remains a priority.</p> <p>B) What You Can Do While systemic change requires policy and industry action, individual and organisational choices also matter. If you are a user or a consumer, you can favour cloud providers that offer transparency on their carbon footprint (e.g., Google's carbon-neutral regions or Microsoft's sustainability tools). If you're a developer, you can optimise code for efficiency and use tools that help approximate emissions, like CodeCarbon or IBM's AI Fairness 360 as part of a broader responsible AI approach. In general, all of us can adopt conscious digital practices, for example by deleting unused files, streaming in lower resolution, and asking providers about their sustainability practices. If you want to learn more feel free to explore all links or also consult our Digital Decade 2030 targets.</p>
<p>Session 5: Digital Twins & AI</p>	
<p>Does AIFS incorporate physics-equation (e.g., PINN), and if so, how?</p>	<p>AIFS does not explicitly incorporate physics equations such as PINNs. It learns relationships directly from data, while ensuring forecasts remain within physically plausible ranges. We do encode some physical consistencies directly into the final layers of the outputs. These include ensuring some fields are non-negative (e.g. precipitation) or that some fields cannot exceed other fields (e.g. the amount of snowfall cannot exceed the total precipitation amount).</p>
<p>@Sara Hahner: Do you have the possibility to validate the soil moisture simulations, e.g. using automatic soil moisture stations? What are the accuracies?</p>	<p>We compare the emulator's predictions to our physics-based model ecLand. While soil moisture is very difficult to verify due to the lack of observations, AIFS output has been checked at a few locations, and the temporal evolution of soil moisture in the forecasts appears reasonable.</p>
<p>What is the time horizon for the coupled ML ESM? Is it foreseen for Phase III of DestinE?</p>	<p>The coupling of the ML-based Earth System Model will be evaluated in Phase III of DestinE.</p>
<p>Very similar talk to what we saw yesterday. But what we are really interested in - when your models do NOT work and then your stories of when AIFS fails. What are current limits of AIFS?</p>	<p>Known limitations are openly documented on the ECMWF Forecast User Portal: https://confluence.ecmwf.int/display/FCST/Forecast+User+Portal. Whilst we observe the above issues, we have seen no evidence of model instability in the operational forecasts that we have run for the past year.</p>
<p>What types of data do you use for river model?</p>	<p>The river model uses hydrological and meteorological data; further details are available here: https://destine.ecmwf.int/news/destine-blog-towards-an-ml-based-earth-system-model-hydrology/</p>
<p>How much of AIFS is open source / FAIR & available to other European researchers?</p>	<p>AIFS provides open inference checkpoints so users can run forecasts themselves, with initial conditions available under ECMWF's open data policy. The majority of the training datasets are fully open.</p>

Is the human dimension or can the human dimension be included or modelled in anemoi?	Anemoi is an open-source framework for building data-driven weather models. It does not prescribe variables, so including human-related factors depends on the user's choice of input data and modelling setup.
Is a comparative analysis to ECMWFs equivalent sea ice emulator planned?	Not yet, but this will be part of the broader Earth system approach, bringing the various components together.
Session 6: AI in Action	
@Betty & others: would the current challenge faced by SMEs be linked to/caused by consolidation of market towards the bigger players who can afford large data and HPC infrastructures, and more comprehensive/proactive R&I?	For sure the Large Enterprises can afford large data and HPC infrastructures, and more comprehensive/proactive R&I (eg. Airbus can have all in house but there is also a cost to maintain) but there is a "game changer" since a lot of countries have invested in Satellite National Missions and in HPC infrastructure : European High-Performance Computing Joint Undertaking (EuroHPC JU) eg. In Greece we have the https://www.hpc.grnet.gr/en/ and DAIDALOS (as ongoing project https://www.mindigital.gr/archives/7331)in which the SME can pay less than AWS (or other HPC commercial solution) and be productive. Plus the use of Copernicus and Copernicus Contributing Missions is enhancing the opportunity.
@panel: what else or what more do you think the COM could do regarding ensuring access for SMEs/young space companies to 'authoritative' in situ data for validation or other necessary purposes?	We've also noticed that there's a lot of publicly funded scientific work and projects where the results and datasets aren't made public, and when they are, the formats aren't standardized. Providing the data and presenting it in a uniform structure would be crucial. There is a need for a "EU HUB" serving in situ data for validation. All EU countries have the data from several projects in several places (Governmental Offices, Local Government etc) but there is no taxonomy and method for distribution plus some data are not accurate.
@Betty, where can we find the latest report with the statistic data	See EARSC link: https://earsc.org/2025/11/12/earsc-industry-survey-2025/
Earthpulse: is this application free to use for public authorities or who are the key stakeholders?	This app is designed for public transport operators to make informed decisions about fleet management and how to prioritize passenger health and safety. However, it can also be used by anyone needing information about the status of their city and recommendations on what to do, whether they are public transport users, vulnerable individuals, or cyclists, with advice ranging from "wear a mask" to "avoid exposure to the heat."
Session 7: Research & Innovation	
Could you tell us why CORINE is selected for scene labelling?	Our BigEarthNet.txt has been built upon our BigEarthNet dataset made up of pairs of Sentinel-1 and Sentinel-2 image patches acquired over 10 European countries in 2018/2019. At the time we started to build BigEarthNet, the CORINE Land Cover (CLC) map of 2018 was released to public. Due to its high reliability at patch level and year consistency with respect to our dataset, we preferred to use it.
Will the agents be able to identify if the query cannot be addressed with Sentinel data, eg, the resolution is not good enough say to detect single-tree illegal logging? Or will the agents always provide a result.	The ERC funded Agent-BigEarth focuses on Copernicus data archives specifically. Although there are some scientific studies for agents related to applications (e.g., object detection) that require aerial VHR data, those that require multispectral, SAR data (e.g., crop, forest monitoring, etc) are missing and needed. As a next step, multi-agent collaboration systems can be designed to target applications requiring diverse data and applications.
In the PROTEUS project, is there also a link to DestinE and related FM-developments planned or will that purely happen in the Copernicus	Yes, there is a link to DestinE. SERCO, who has experience with the DestinE Core Service Platform, is one of the partners in this project.
Are new models being added to REMSA?	Yes, the models are added regularly to REMSA database. We plan to make it open-source, allowing community contributions.
@eODyn: are you using S1C AIS data, if not can you access these data?	Please contact CDSE for any S1 data access issues.
Session 8: Digital Transformation of Earth Observation Services	
What is the prospect on DestinE in the coming MFF?	DestinE will continue its evolution in the new MFF, aiming to complete the full digital twin of the planet's system(s), investing on innovation and expanding into more areas, providing state-of-the-art data modelling and simulation capabilities.
Which groups / topics / companies would you like to add to the 2027 AI for EO meeting? For example experts in drone tech, LidaR etc	An AI workshop in 2027 is not confirmed yet. We will develop the agenda based on emerging challenges and opportunities, as we have done so for the current workshop

<p>From the perspective of Latin America, particularly from laboratories like PRIAS at CeNAT in Costa Rica. Do you see opportunities exist to interconnect European and Latin American capacities in innovation?</p>	<p>Yes, there are many opportunities to connect European and LAC capacities. Copernicus is already well engaged in LAC. Note also that our Copernicus data platforms (CDSE, WEkEO, C3S and CAMS Data Stores, etc) are available for everyone to use.</p>
<p>@Franz Immler, how would you imagine including instruments insuring trustworthiness of AI into future calls?</p>	<p>We will ask for addressing trustworthiness in the topic description. For example, in the current call (HORIZON-CL6-2026-03-GOVERNANCE-01-two-stage) , we asked applicants to "demonstrate explainability, robustness and replicability of the approach". This will be assessed in the evaluation of proposals by experts. Proposals that do not have a convincing approach on these aspects will be scored lower and thus have a lower chance to be funded.</p>
<p>How can EC-JRC, ESA and EEA improve global collaboration e.g. with NASA, NOAA, USGS, JAXA, WRI etc? In EO there is only 1 planet.</p>	<p>The Commission as well as Copernicus entities are well connected to other (non-EU) agencies, both at the so-called 'high level' dialogues, as well as at working level. It is true though that the current global context requires a regular review of those collaborations and associated priorities.</p>
<p>Any plans to integrate dtoccean with the digital twins developed under dg connect</p>	<p>The EU Digital Twin of the Ocean (DTO) is an integral part of the overall ecosystem that includes DestinE, Copernicus and Digital Twins at National, Regional or Local Level. Interoperability activities between the DTO and DestinE have already started and are included in the recent Digital Europe Programme (DEP) Work programmes and under the European Strategy for Water Resilience.</p>
<p>Why is it easier for european companies to use US cloud Providers than European HPC infrastructure?</p>	<p>Current European cloud providers do not yet match their American counterparts in terms of scalability, security, availability, access speed, and support for high levels of concurrent data access. Even when competitive new European solutions emerge, migration costs must be taken into account to create real incentives for adoption, since cloud providers are often deeply embedded in companies' information systems.</p>
<p>To Aurelien: From a company's point of view - what are the most urgent needs in combining AI and EO?</p>	<p>Speed - Enable EO companies to reduce time to market, scale across use cases. Accuracy and fit-for-purpose performance: AI can combine multiple modalities and integrate client-specific data to deliver outputs that are more precise and that can better address specific client needs by fine-tuning foundation models on proprietary data. Example for physical risk: EO companies can detect and model hazard occurrence, but insurance data is needed to translate those hazards into actual business risk (i.e materialize) across a company's footprint. Physical world measurement: AI applied to EO can strengthen trust in GenAI by grounding AI models in real-world physical observations and measured data.</p>
<p>When will we reach the end of the line: more and better data, larger models (Foundation Models) etc. are not anymore useful. Any ideas?</p>	<p>More and better data will always be used as a raw material for a number of developments, including these in the area of AI. Besides the common European Data Spaces, EuroHPC and AI ecosystem emerging, relevant R & I activities will address forward-looking aspects, starting from Agentic AI and expanding to relevant breakthroughs.</p>