UCP 2023 MINUTES OF MEETING OF THE ENVIRONMENTAL -CLIMATE & BIODIVERSITY MARKET SEGMENT PANEL

Meeting Date	07.11.2023	**Time**	10:00-13:30
Meeting Called By	EUSPA	**Location**	Seville (hybrid event)
Minutes Taken By	Ana M. Melendez	**Next Meeting Date**	N/A
Attendees	**Veronika Strnadova, EUSPA, Session moderator and organizer** **Marc Leminh, FDC, Session moderator and organizer** **Leila Ajjabou, EUSPA, Zoom keeper and organizer** **Ana M. Melendez, FDC, Writer of MoM and organizer** **User Community Representatives (UCRs)** Joanna Balasis-Levinsen, EEA Simone Balbo, JRC Stijn Vermoote and Samuel Almond, ECMWF Muriel Lux, Mercator Ocean International Fabien Lefevre, CLS Mike Harfoot, Vizzuality Nastasja Scholz, LUP Umwelt Isadora Jiménez, Lobelia Elena Maksimovitch, Weathertrade Laura Moreno Patricio, Earthpulse Jose Angel Canizares, BBVA Nanne Tolsma, Satelligence Josh Gilbert, SustGlobal Carles Debart, GHGSAT Complete list of attendees is in Annex 1: List of Attendees.		
Distribution (in addition to attendees)	UCP Plenary, EUSPA, Public		

Agenda Items	Presenter
1. Welcome and introduction to Environmental, Climate and Biodiversity session	Leila Ajjabou, EUSPA
2. CLMS data and services & Global land cover product	Joanna Balasis-Levinsen, EEA & Simone Balbo, JRC
3. C3S/CAMS data and services	Stijn Vermoote and Samuel Almond, ECMWF
4. Copernicus Marine data and services	Muriel Lux, Mercator Ocean International
5. Satellite technologies to monitor ocean environment and wildlife on Earth	Fabien Lefevre, CLS

6. Satellite Imagery and Its Role in Global Biodiversity Monitoring and Conservation	Mike Harfoot, Vizzuality
7. BirdWatch - A Copernicus-based service for farmland birds habitat monitoring	Nastasja Scholz, LUP Umwelt
8. Earth Observation for climate action	Isadora Jiménez, Lobelia
9. EO data for climate risks indicators	Elena Maksimovitch, Weathertrade
10. Ready to use EO based indicators for decision making for Insurance and Utilities market	Laura Moreno Patricio, Earthpulse
11. The user perspective	Jose Angel Canizares, BBVA
12. EO applications for measuring Science Based Targets	Nanne Tolsma, Satelligence
13. Solving the Carbon Credit Conundrum: Geospatial AI for Project Permanence in Nature Finance	Josh Gilbert, SustGlobal
14. New tools for ESG reporting: from carbon accounting to carbon measurement	Carles Debart, GHGSAT
15. Minutes of Meeting and Wrap up	Ana M. Melendez, FDC

Summary

The Environmental- Climate and Biodiversity session of the User Consultation Platform (UCP) 2023 took place on 7th November 2023 as a hybrid event, with in-person venue in Seville, Spain. The panel gathered around 60 participants (26 remotely and 34 physically) coming from Environmental, Climate and Biodiversity industries, banks as well as from European Institutions, covering the whole spectrum of the market segment.

The panellists gave in depth presentations of their applications, how they use satellite technologies (EO and GNSS) and what their specific requirements are. This broad coverage generated interest from the participants and helped start good interactions with all the attendees with many questions and comments.

The commented topics and summary are the following:

- Climate change is the current biggest challenge that we need to tackle for the future.
- GNSS and EO are contributing to the below objective.
- Users request higher temporal frequency for real time monitoring, higher spatial resolution and new satellite sensors (e.g. L-band or hyperspectral systems).
- All participants in the session mentioned that they are already using the current data.
- There is a need for information to be provided as ready-to-use indicators and metrics
- There is a clear evolution with an increasing uptake by private companies that are using the data to report on climate change risk and on impact for biodiversity loss.

1 MINUTES OF MEETING

Agenda Item 1 - Welcome and introduction to the Environmental- Climate and Biodiversity. Leila Ajjabou / EUSPA

Leila Ajjabou, Market and Innovation Officer at EUSPA, and Marc Leminh from FDC welcomed all participants to the User Consultation Platform (UCP) session. They provided a brief overview of the session's objectives, state of art for Environmental- Climate and Biodiversity (financial impact, risks, regulations…) and how the entire UCP is indeed a tool allowing EUSPA to achieve closer contact with the user community.

Indeed, the UCP aims at identifying the needs and requirements at application level relevant for EU Space programmes (EGNOS, Galileo, Copernicus, GOVSATCOM, Space Situation Awareness (SSA) and others). However, the Environmental- Climate and Biodiversity session is more focused on Earth Observation.

User needs and requirements from different market segments, including Environmental- Climate and Biodiversity, can then be taken as inputs for the provision of user driven space-based services by the EU Space Programme.

Then, it was explained that the session was divided into four parts:

i. Informative part: in which participants were mainly briefed about the state-of-art of Copernicus for Environmental monitoring.

ii. Biodiversity: **wildlife and habitat monitoring** part. Three speakers presented the state-of-art of biodiversity followed by an open discussion between all participants.

iii. Climate risks: **EO to measure climate risks** part. Four speakers presented the state-of-art of Climate risks followed by an open discussion between all participants.

iv. Corporate sustainability: **ESG reporting and indicators**. Three speakers presented the state-of-art of Climate risks followed by open discussion between all participants.

The slides of this agenda item can be found as Attachment 1 in section 4.

Copernicus for Environmental Monitoring

Agenda Item 2 – CLMS data and services & Global land cover product. Joanna Balasis-Levinsen/EEA & Simone Balbo/ JRC

The presentation started with a brief presentation of European Environment Agency (EEA) and Joint Research Centre (JRC) and its role in the services provided by Copernicus focused on Environmental Monitoring. On one hand, European Environment Agency (EEA) oversees implementing European and local components; and on the other side, JRC is responsible for implementing the global part of the CLMS portfolio.

Mrs. Balasis-Levinsen from EEA started introducing the Copernicus Land Monitoring Service and its number of environmental applications related to products developed at the EEA, followed by a demonstration session performed by Mr. Balbo from JRC based on JRC global land cover products.

During the session, EEA invited participants to attend the coming webinars performed by them whose objective is to discuss the service and several number of applications for climate change adaptation.

The slides of this agenda item can be found as Attachment 2 in section 4.

Agenda Item 3 - C3S/CAMS data and services. Stijn Vermoote and Samuel Almond / ECMWF

Mr. Vermoote introduced the data provided by the European Centre for Medium Range Weather Forecasts (ECMWF) where it was remarked that this data is operational (not research), open and free for past, present and future. In addition, ECMWF provides open-source applications on a cloud platform and generates tailored indicators on the fly.

The slides of this agenda item can be found as Attachment 3 in section 4.

Agenda Item 4 - Mercator Ocean data and services. Muriel Lux / Mercator

Mrs. Lux presented a quick overview of the Copernicus Marine Service (products portfolio and visualisation tool), followed by use cases for marine protection & biodiversity. Then she displayed the Ocean Monitoring Indicators finishing the session with the evolution of the service to better address biodiversity.

The slides of this agenda item can be found as Attachment 4 in section 4.

Biodiversity: wildlife and habitat monitoring

Agenda Item 5 - Satellite technologies to monitor ocean environment and wildlife on Earth. Fabien Lefevre / CLS

Mr. Lefevre explained that CLS was created more than 40 years ago by the French space agency and their passion is to design and deploy space-based solutions for the protection of our Earth and Ocean and to manage its resources sustainably. They use more than 500 different data sources including satellites and in-situ data to develop and provide operational services to help citizens and their governments respond to sustainable development challenges. CLS is supporting the Copernicus Services and is involved in five of the six Copernicus services.

The slides of this agenda item can be found as Attachment 5 in section 4.

Agenda Item 6 – Satellite Imagery and Its Role in Global Biodiversity Monitoring and Conservation. Mike Harfoot, Vizzuality

Mr. Harfoot briefly introduced Vizzuality and its team, then focused on their biodiversity activities. Vizzuality is at the intersection between science and business using data and human understanding to develop the products, services and strategies of the future. They work with world-changing

organization like WWF and have a lot of partnership like Google, NASA, with the aim to protect, restore and enhance biodiversity. He remarked that they need a brave-new biodiversity data work (for instance: biodiversity targets for companies are lower than for climate, 75% of the indicators are unavailable and the data available is lacking of information mainly in taxonomy).

The slides of this agenda item can be found as Attachment 6 in section 4.

Agenda Item 7 - BirdWatch - A Copernicus-based service for farmland birds habitat monitoring. Nastasja Scholz / LUP Umwelt

Ms. Scholz presented Luftbild Umwelt Planung company which is specialized in environmental climate and biodiversity use cases and devices. Then she continued presenting the Bird Watch project and its motivation and application. In this specific project, EO is used to assess the habitat suitability for ten different species of birds. She stressed that she needed a better than 3m resolution on all axis (tree height is of importance) and that some information was lacking such as land use, pastures or grasslands. She ended the presentation describing BirdWatch's goals.

The slides of this agenda item can be found as Attachment 7 in section 4.

Discussion on Biodiversity: wildlife and habitat monitoring – Verbal interventions

Question (Q): As there is lot of data available in the market, how do you choose the right data for your applications? Have you considered that it is easy or difficult process?

Mr. Harfoot from Vizzuality answered: Although there are a lot EO data available, the amount of data on biodiversity is more limited. In terms of choosing data, we have the option to dump everything into machine learning or AI models and pull out the relevant information from it which help us in the process.

Comment by Environmental Hydraulics Institute IHCantabria – University of Cantabria, Spain

It was commented that it is necessary to have a community or forum to discuss how to manage the big data available in order to find a get simple and efficient solution between all. The large amount of data it is starting to be a big problem because there isn't a common pipeline and common data standards.

Question (Q): From EC perspective and taking into account that biodiversity modelling is much more demanding, do you have any ideas how biodiversity might have more visibility or impact?

Mr. Harfoot from Vizzuality answered: From demanding point of view, increasing the regulatory and environment requirements for companies and governments to report on biodiversity. With respect to funding, the level of funding on biodiversity is lower than climate change which impacts directly the types of information available.

Question (Q): What is the current missing data that you consider it is need to measure biodiversity?

Mrs. Scholz from Luftbild Umwelt answered: With respect to bird's habitat monitoring, there is a need to have more detailed flora information such as species of tree, shrub or crop. Besides, it is needed to identify the drivers of biodiversity change.

Question (Q): Why is near real time needed? And what does it mean?

Mr. Harfoot from Vizzuality answered: Right now, we typically use static layers that represent an individual year, and we don't really monitor change very well. If we had dynamic variables, so that, more fine scale, it would allow us to manage interventions or take some actions quickly. However, there are different parts of biodiversity which respond on different timescales, so, in these cases having dynamic variables would not change anything. When we refer near real time, it means -regular update.

Question (Q): In terms of quality assessment and process, do you have any systems that you put in place to assure the quality of the services that you provide to final users? Do you think that customers and users have the enough instruments knowledge to tell you that the services are not to the quality they need? Customers and users are looking for information or services instead of data.

Mrs. Lux from Mercator Ocean International answered: From Copernicus service side, the communication with the final users is the first step in the chain. For that, we have a process to collect users' needs where we process them to prepare the evolution of our services.

Fabien Lefevre from CLS confirmed that CLS has a tremendous qualification, calibration and validation process including external companies to make sure that the services provided are qualified.

Climate risks: EO to measure new risks

Agenda Item 8 - Earth Observation for climate action. Isadora Jiménez / Lobelia

Lobelia company was presented by Mrs. Jiménez and she explained that the main Lobelia's objective is to merge the knowledge of the satellite information with the climate change information for creating climate services in different areas (from cities & health, crossing agriculture, food and land ecosystems and to ocean ecosystems). Later she focused on the assessment of physical climate risks and she ended her presentation listing the five most relevant needs regarding EO data provision in Europe.

The slides of this agenda item can be found as Attachment 8 in section 4.

Agenda Item 9 - EO data for climate risks indicators. Elena Maksimovitch / Weathertrade

Mrs. Maksimovitch started her presentation stating that climate change impacts directly business. For this reason, Weathertrade's mission is to translate the climate data to the business' needs. They generate Climate Risk reports per location where the user only needs 2 clicks on its platform to get it. At the end of the presentation, Mrs. Maksimovitch shared their need for EO and GNSS (blended multi-sensor products in a form of long time series, aggregated high-resolution products: representative for 1km resolution, bias corrected products, wind gust metrics, hail statistics of frequency's hail and frequency of extreme rainfall).

The slides of this agenda item can be found as Attachment 9 in section 4.

Agenda Item 10 – Ready to use EO based indicators for decision making for Insurance and Utilities market. Laura Moreno Patricio / Earthpulse

Mrs. Moreno gave a brief overview of her company whose main mission is the usability of the data provided to the clients and they are focused on the AI4EO axis. It was stated that small climate changes have a high financial impact giving the flood of Ebro River in 2021 as an example which caused 200M€ of losses.

After this example, she presented its products (SPAI - Satellite Processing by Artificial Intelligence and Pulses) which use Copernicus Data and Services and she finished presenting her requirements: better soil moisture (using L-band radiometers), high resolution surface temperature, SLAs for data, data access without quotas and transparency on data delivery.

The slides of this agenda item can be found as Attachment 10 in section 4.

Agenda Item 11 - The user perspective. Jose Angel Canizares / BBVA

From bank and user perspective, Mr. Canizares from BBVA was the last speaker talking about climate change and its impact. He showed that the number of regulations is increasing in recent years and they will continue increasing more and more. From a bank point of view, EO has some advantages and disadvantages. However, he explained that they have some difficulties to download the data due to their limited knowledge and he recommended to have a one-access point platform, more friendly and open data standard.

The slides of this agenda item can be found as Attachment 11 in section 4.

Discussion: Climate risks: EO to measure new risks

Comment by Weathertrade

Mrs. Maksimovitch commented that sometimes the clients don't know the locations of their physical assets which is a big problem when they have to evaluate the flood risk for somewhere if they don't know where the physical assets are.

Question (Q): Do you agree or disagree with the list of requirements displayed during the presentations? Which one would it be the most important for you to solve quickly?

Mr. Canizares from BBVA mentioned that the real need from bank perspective is to have a single data access point. Mrs. Ajjabou from EUSPA remarked that the new Copernicus Data Space Ecosystem (CDSE) tries to cover this need. Mrs. Jiménez from Lobelia challenged the idea of a single point entry, indicating that although understanding the need, the lack of this service is also a booster for the private sector that can find a business opportunity by covering that need.

Question (Q): Why is the user requesting access to the data but not to the information that it's in the data?

Mr. Canizares from BBVA answered: Because we need to validate the data that are providing, and for that, we need to access the data. In addition, a single data access point will also improve the knowledge and it will be more accessible for end users allowing them to do some additional analysis and research.

Comment by Mercator Ocean International

A single access point gathering all the Copernicus data is available (WEKEO).

Question (Q): How do you characterise uncertainty with your customers?

Mrs. Jiménez from Lobelia answered: We try to be transparent, so, we provide simple information with the current climate models, so that users can confidently use that information that helps them to deal with uncertainty.

Question (Q): Are you going to centralise or standardise the way you are going to compute data at institution level?

Mr. Canizares from BBVA answered: We are working on it, trying to understand what the ECB and EBA are requiring, because there's not a clear methodology right now.

Corporate sustainability: ESG reporting and indicators

Agenda Item 12 EO applications for measuring Science Based Targets. Nanne Tolsma / Satelligence

This presentation started with a quick presentation of Satelligence company where it was mentioned that they are focused on agriculture performance and risk using satellite data to generate actionable insights. After explaining how they measure Science Based Targets, he mentioned that better emission data and traceability are their main needs.

The slides of this agenda item can be found as Attachment 12 in section 4.

Agenda Item 13 - Solving the Carbon Credit Conundrum: Geospatial AI for Project Permanence in Nature Finance. Josh Gilbert / SustGlobal

The presentation by Mr. Gilbert was delivered by teleconference. He explained how SustGlobal tries to solve the Carbon Credit Conundrum. Their solution is composed by four steps: assess future wildfire risk using geospatial AI, visualize the sequestration potential impact from these events, quantify and score carbon risks attributed to climate-related events and implement forest protection using forest adaptation measures.

The slides of this agenda item can be found as Attachment 13 in section 4.

Agenda Item 14 - New tools for ESG reporting: from carbon accounting to carbon measurement. Carles Debart / GHGSAT

Mr. Debart from GHGSAT started with a presentation about the status of GHGSAT's satellite constellation. GHGSAT is a global company in charge of emissions monitoring of greenhouse gas in

order to provide global high resolution emissions data to industries. They use Copernicus data apart from their own data; and in 2024, GHGSAT will be a contributing Copernicus mission.

The slides of this agenda item can be found as Attachment 14 in section 4.

Discussion: Corporate sustainability: ESG reporting and indicators

Comment by Weathertrade

Mrs. Maksimovitch commented that data was the most used word during the session. However, there is a need to specify the term "data" for each case in the whole value chain (from raw data to end users' data).

Mrs. Scholz from Luftbild Umwelt suggested that they use "indicators" instead of "data" when they refer to processed data.

Comment by EUSPA

Mrs. Strnadova commented that obviously we need better data in terms of higher spatial resolution or higher frequency, but with the evolution of new methods and space systems we will create advanced indicators and metrics using or fusing different state-of-the-art data and sensors helping us to better address climate change in the future.

Validation of requirements

The audience did not provide comments related to GNSS and EO requirements contained in the draft version of the Report on User Needs and Requirements.

2 CONCLUSIONS

The Environmental- Climate and Biodiversity UCP session was successfully closed by Leila Ajjabou from EUSPA.

Key results of this working session were highlighted during the plenary UCP session on 8th November, 2023 by Carmen Aguilera from EUSPA.

These results are summarised below as well:

- EO is a key tool for monitoring the planet and assessing the climate change while GNSS is mostly used for wildlife tracking with large scale applications (small size, low power and short TTF are needed)
- Regulation is a major driver with new EU directives on the environment and ESG reporting that will increase market uptake
- Climate risk, impact assessment and ESG reporting are use cases that address the corporates as new users
- The historical depth of Copernicus is key for climate related applications but Increased EO resolution (sub meter) and better revisit (less than once a week) will unlock new usage
- For the end-users the information should be provided in form of indicators and metrics which can be directly implemented into the company business processes.

3 OTHER NOTES & INFORMATION

None

4 ANNEXES & ATTACHMENTS

Annex 1: List of Attendees

Attachments: PRESENTATIONS