



Dear MultiMiner Community,

2024 has been a year of incredible progress for **MultiMiner**, with fieldwork campaigns conducted across Europe to drive innovation in sustainable mining. From Finland to Greece and Austria, our teams have worked tirelessly to collect valuable data and test cutting-edge technologies. Here are some highlights from this year's activities:

- **Ihalainen, Finland:** Ground moisture monitoring advanced with IoT-enabled sensors and drone-based SAR imaging, marking a milestone in Finnish SAR history.
- **Kirki, Greece:** Environmental challenges like Acid Mine Drainage (AMD) were tackled using drone water sampling and portable XRF, informing long-term rehabilitation strategies.
- **Hochfilzen, Austria:** Vegetation and biodiversity monitoring focused on assessing ecological impacts and supporting future land reclamation efforts.
- **Chalkidiki, Greece:** Comprehensive water sampling, spectral measurements, and dust monitoring integrated ground and EO data for enhanced environmental insights.
- **Kallyntiri, Greece:** Mineral exploration and site monitoring leveraged the potential of ground-based data and EO technologies to explore critical raw materials.

These campaigns underscore the collaborative spirit of the MultiMiner consortium and our dedication to advancing sustainable mining practices. As we look ahead to 2025, we're excited to share the **first results** from these campaigns, showcasing the transformative potential of our work.

Stay connected by visiting our website for deliverables and following us on social media for updates.

Thank you for your support throughout 2024—we hope you enjoy this special edition of the MultiMiner newsletter!

Warm regards

The MultiMiner Team



Fieldwork Highlights

1. Ihalainen, Finland – Monitoring Dust and Soil Moisture

Summer fieldwork at Ihalainen focused on understanding the environmental impact of mining activities on air and land quality. Supported by GTK and VTT, advanced dust traps and soil moisture sensors were deployed, alongside a drone-mounted spectrometer and a drone SAR instrument, to collect critical data for predictive modelling. These efforts are key to developing effective mitigation strategies for dust pollution and soil moisture management.



👉 **Want to know more about the moisture monitoring fieldwork campaign?**
Read the blog item to hear about the collaboration and technology advancements that MultiMiner is spearheading in its fieldwrks!

[Read about the Ihalainen Fieldwork](#)

2. Kirki, Greece – Tackling Historic Mining Challenges

In May, MultiMiner conducted a pivotal field campaign at the Kirki mining area. The team, led by HSGME, GTK, and CGS, addressed the environmental impacts of Acid Mine Drainage (AMD) using innovative tools like drone-based water sampling and portable XRF technology. The work provided vital insights into contamination levels, setting the stage for future rehabilitation strategies at this historically significant site.



👉 **Want to know more about how we're addressing these challenges?**
Read the full blog post for an in-depth look at our fieldwork and its impact on mining rehabilitation efforts!

[Read the Kirki Blog Post](#)

3. Chalkidiki, Greece – Advancing Environmental Monitoring

In **April 2024**, the MultiMiner team carried out a successful fieldwork campaign in the **Chalkidiki region, Greece**, with partners from **BGR, GTK, CGS, and VTT**. This significant milestone combined water sampling, drone-based spectral measurements, and dust monitoring—showcasing our commitment to **efficient, modern, and environmentally responsible mining practices**.



[Read more about Fieldwork in Chalkidiki](#)

Each of these field campaigns showcased the integration of cutting-edge technologies, such as Earth Observation (EO) and machine learning, to advance sustainable mining practices and mitigate environmental impacts.

And that's not all! Follow along with us in 2025 as we bring you more insights from fieldworks and the results they yield.



Collaboration and the Formation of ESMIN

In 2024, MultiMiner joined forces with sister projects to co-found ESMIN (European Sustainable Mining & Innovation Network). Together with AGEMERA, m4mining, S34I, and GoldenRAM, this network promotes collaboration and the exchange of ideas to improve the mining lifecycle across Europe.

More projects are set to join the network, and we look forward to where the network will go in the coming months. Follow ESMIN on LinkedIn to stay up to date!



Stay updated with ESMIN's progress by subscribing to the newsletter and following our [LinkedIn page](#) for the latest news and insights. If you're interested in joining or learning more about **ESMIN**, please don't hesitate to reach out. Let's build a greener, more responsible future for European mining together!

Subscribe to the ESMIN Newsletter



MultiMiner Spreading its Impact!

This year, MultiMiner's outputs and progress were shared extensively across the community through presentations at major events, including:

- Czech Copernicus User Forum
- PDAC 2024, the world's premier mining convention
- EURAW, the European Raw Materials Clustering Event
- IGARSS 2024, a leading geoscience and remote sensing symposium
- EGS Geochemistry Expert Group meeting
- MACLEAN workshop
- EGT-TWIN workshop
- University lectures across Europe

We're proud to be reaching stakeholders across academia, industry, and the broader raw materials community, ensuring that MultiMiner's findings and innovations are widely disseminated and applied.



[Check out the Blog!](#)



Looking ahead to 2025

As we look ahead, we're thrilled to continue sharing more about our **fieldwork successes** and their impact on advancing sustainable mining. We'll be attending **more key events**, engaging with the community, and reaching out to build new partnerships.

We're also excited to share the **first results** from the MultiMiner project in 2025! These insights will highlight the progress made through our innovative fieldwork campaigns and cutting-edge technologies. You can find all our latest deliverables and project outputs on the MultiMiner website:

[Check out all of our Deliverables!](#)



Wishing You a Wonderful Holiday Season

As the year draws to a close, we want to extend our heartfelt thanks to all our partners, stakeholders, and supporters. Your contributions have been invaluable in making 2024 a success for MultiMiner.

We wish you a happy Christmas and a peaceful holiday season. Here's to a new year filled with progress, innovation, and collaboration!

**Season's
Greetings from
the team at**



MultiMiner





MultiMiner

Earth Observation for Smart Mining



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