Developing Copernicus startups in Chile

One of the main goals for Finnish Meteorological Institutes (FMI) activities in Chile was to find new partners and spread awareness about Copernicus-based solutions. A key element was to reach new user groups for two-way knowledge and capacity sharing. In September 2021 the Impacto Chile Hackathon was organized in collaboration between many organizations in Chile and Finland, with an open call for innovative solutions to help Chile in key challenges of Air Quality, Sustainable Agriculture and Forestry. During and after the hackathon, co-creation of sustainable solutions with the participants and promotion of utilizing Copernicus data for their innovations were achieved.

The Impacto Chile Hackathon was originally planned to be organized on-site in Chile earlier, but the COVID-19 pandemic hit the event hard and it had to be postponed and eventually fully virtualized as an online event. The sponsorship and visibility of the event suffered too from COVID-19 as the aspired private sector of Chile and global EO/cloud computing companies would not commit on an event which could not be organized on-site. Fortunately, the organization of the hackathon was outsourced to the Ultrahack organization with previous experience in coordinating a hybrid hackathon event in Mexico City. Eventually, the Impacto Chile Hackathon virtual event took place on 3rd to 5th of September 2021, with the best 15 teams selected from the 50 who applied. Despite the challenges, the event was a success and the solutions offered by the participants were outstanding.

FMI set up a SmartMet server system with up-to-date Copernicus data from Copernicus Atmosphere Monitoring Service (CAMS) and the Copernicus Climate Change Service (C3S) for the hackathon. SmartMet server is a data and product server with OGC compliant WMS and powerful timeseries API. SmartMet server for Chile provides access to gridded observation and forecast data, for daily air quality forecasts and monthly bias-adjusted seasonal forecasts, to offer data directly to hackathon participants for their web solutions.

After the hackathon, the three ingenious winning teams of the hackathon FungusFree, Stars in the City and Neuralsun were invited to the Arctic Space Center in Lapland, Finland for a week in March 2022 as an award.

- ★ **FungusFree:** Application of EO data for the early detection of Botrytis cinerea fungus.
- ★ **Stars in the City:** Real-time air quality monitoring with applying existing live video streams of city lights to measure line-of-sight air transparency.
- ★ **Neuralsun:** Reduce air pollution in Chile through the creation of an electrical energy marketplace that allows finding low energy prices with a monitoring network of meteorological variables and a model based on satellite data that allow predicting environmental and energy conditions in the short and medium term to buy and sell electrical energy for heating.

During their stay, the winning teams and FMI had workshops dedicated to further co-developing their solutions and building partnerships. Unfortunately, due to the COVID-19 travel restrictions, team Neuralsun could not attend the workshops but future collaboration with them has been discussed together. Following the meetings, the data offered at the SmartMet server for Chile was updated and complemented according to the requests from the teams, including for instance Sentinel-3 NDVI, Sentinel-5 products and multiple new CAMS parameters. The discussions were fruitful and the atmosphere inspiring. The collaboration will be continued in January and August 2023 when FMI representatives travel to Chile to meet with the winning teams again. Additionally, FMI will search for new SME partners and promote Copernicus-based solutions and be in touch with other Copernicus Chile Relays partners.

Find more details about SmartMet server for Chile and Impacto Chile Hackathon 2021 from links below:
https://smart.nsdc.fmi.fi/grid-gui
https://impactochile-hackathon.com/
https://github.com/fmidev/chile-smartmet