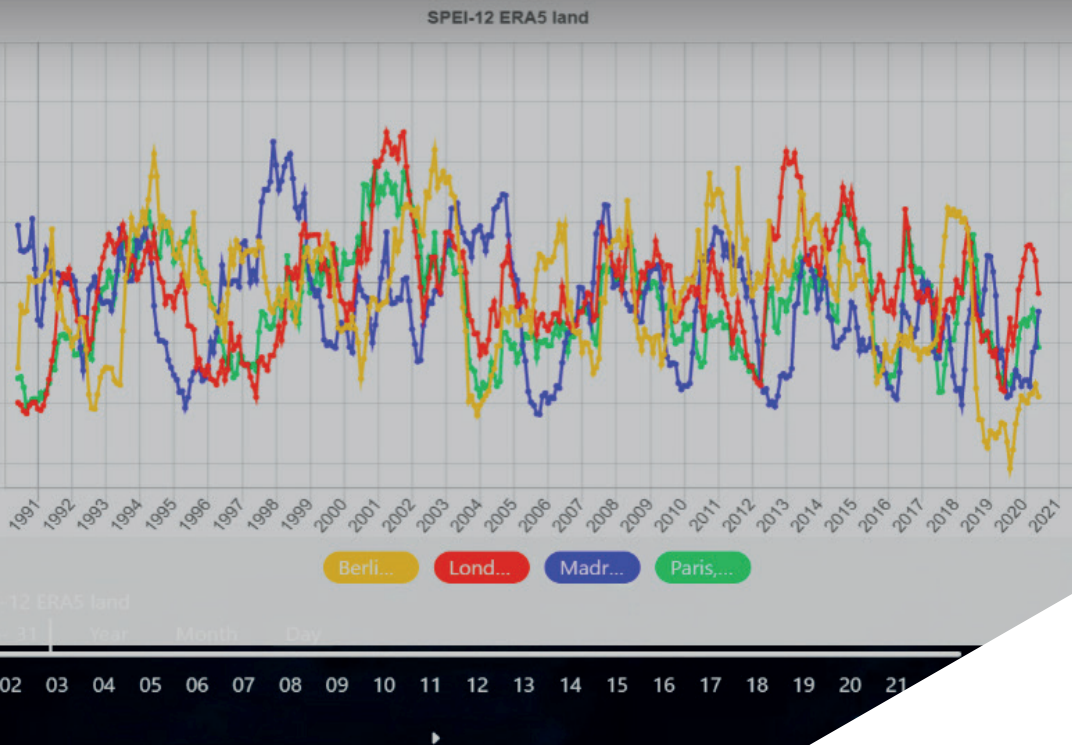


EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT: CLIMATE RESILIENCE



BACKGROUND

Earth Observation (EO) data enables global climate research by providing timely and accurate information in large quantities about the Earth's atmosphere, landmasses and oceans. This information, when combined with information about our society, paints a very powerful picture about climate risks and resilience-building opportunities. ESA's Earth Observation for Sustainable Development (EO4SD) initiative works closely with International Financing Institutions (IFIs) and their client countries to harness the benefits of EO for their operations and resources management.

The EO4SD Climate Resilience cluster provides insight on, and access to, EO data and delivers products and tools to support climate-resilient decision making at regional, national and international levels. As part of the EO4SD Climate Resilience cluster, Telespazio UK (TPZ UK) carried out climate data provision and tool development.



THE PROJECT AIM:

The EO4SD Climate Resilience cluster's aim is to identify specific needs of the IFIs and provide EO-based services to meet these needs. The cluster also carries out capacity-building activities to allow stakeholders to use EO-based information autonomously and sustainably for climate resilience decision making. Examples of the services the EO4SD Climate Resilience cluster provides include:

- > Data provision to the World Bank and the cluster's own climate data platform
- > Supporting risk screening and hazard assessment
- > Indicator provision and tool development
- > Mapping and monitoring, including model validation
- > Impact assessment of climate change
- > Webinars and online courses on climate change and climate-resilient decision making

TELESPAZIO UK SERVICES

Building on its experience as the leading developer of the Copernicus Climate Change Service (C3S) Climate Data Store (CDS), TPZ UK assisted with the provision of data to the cluster's climate data platform and directly to the IFIs, such as the World Bank's Climate Change Knowledge Portal (CCKP). Furthermore, TPZ UK has provided a number of climate impact indicators to different IFIs. For example, the Standardised Precipitation Evapotranspiration Index (SPEI) for 6, 9, 12, and 18-month timescales and Potential Evapotranspiration (PET) indicator were developed using EO precipitation and Copernicus reanalysis datasets for the African Union's African Risk Capacity (ARC).

Climate impact indicators using state-of-the-art EO and climate datasets were provided to the CCKP, including the SPEI, as an indicator of water stress, and precipitation indicators (for example, 1-in-50 maximum 1-day rainfall and 1-in-50 maximum 5-day rainfall). These indicators have also been made available via the cluster's platform, where the data can be visualised and plotted. Extreme rainfall indicators were also provided to improve the International Finance Corporation's (IFC) assessment of flood impact and its link to extreme precipitation. The data was seamlessly integrated into IFC's existing climate risk tool for ease of use. In addition, working with the Multilateral Investment Guarantee Agency (MIGA), TPZ UK developed the Rainfall Explorer, an interactive web-based tool that provides reliable insights into potential climate risks to existing and future investments. Rainfall Explorer enables users to look up flood events across the globe from the 1980's to a week from present time, and obtain the return period and statistical significance of the associated rainfall based on the long-term historical record.



INSIGHTS

Manu Sharma, Multilateral Investment Guarantee Agency (MIGA):

"We are very much focused on finding ways to assess how resilient our projects can be. We need to make sure that funds are being spent in the right way; tools like the Rainfall Explorer really help us move the needle."



Dr Mohamad Nobakht, Principal Earth Observation System Engineer at Telespazio UK, developer of the Rainfall Explorer:

"One of the key contributions of EO4SD CR was to provide

decision-ready information to the IFIs, derived from EO and climate data, and to facilitate mainstreaming their use in IFIs' operations. Rainfall Explorer in particular was one of the analytical tools that was received very well by MIGA, a member of the World Bank Group. This tool provided great insight into historical extreme precipitations and their link to flood events on a global scale. It allowed climate experts at MIGA to look up any flood event that has occurred anywhere on the planet between 1979 and now, and quickly extract high quality information about the statistical return period of the extreme precipitations leading to that particular event."