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Join us at the Meteorological Technology World Expo 2024 | 24-26 September, Vienna

From 24th to 26th of September 2024, CAE will be in Vienna as one of the exhibitors at the **Meteorological Technology World Expo**, the leading global event for meteorological, hydromet, metocean, and environmental monitoring technologies and services industry, attracting over 150 exhibitors and thousands of attendees from more than 100 countries, it is the largest exhibition of its kind worldwide.

We look forward to seeing you in our booth (n° 7015) with our latest technologies and solutions such as **DATALIFE Platform**, an innovative **software suite** essential for data collection, management and analysis. It's an **open, configurable** information system that enables users to consult, classify, use, leverage and eventually share real-time and historical data in cartographic and tabular format. The system is geared towards ensuring an easily usable, efficient, scalable, reliable, robust and secure central unit.

The event will run concurrent with the **WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (TECO-2024)**. The theme of the year is: "Measurements and new technologies for WMO priority initiatives." and the conference comprises the following six topics:

1. new measurement technologies and innovative integrated approaches;
2. environmental sustainability of observing systems;
3. characterization and testing of instruments and methods;
4. traceability of measurements to recognized standards;
5. quality assurance and maintenance of the observing systems;

6. capacity development for sustainable and quality measurements.

In order to best organize the event, schedule a meeting with us immediately by writing to alberto.bertocco@cae.it. For every scheduled appointment a special gift!

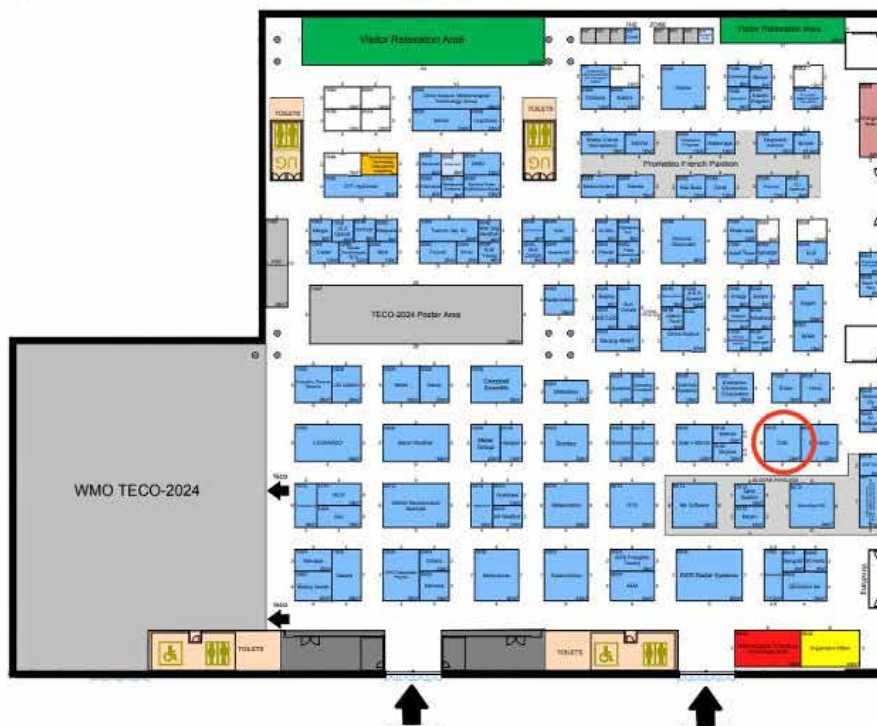
Register now for your FREE visitor badge: <https://www.meteorologicaltechnologyworldexpo.com/en/register.php>

For all information on the event and the program of conferences and seminars [click here](#).

CAE Team ■

Meteorological TECHNOLOGY WORLD EXPO 2024

September 24, 25, 26, 2024
Hall A
Messe Wien
Vienna, Austria



**We are here!
Stand n°7015**

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Awarded the "Paolo Bernardi Prize": Computer Vision to learn more about canals and streams

It is to commemorate the inventive genius of Engineer Paolo Bernardi, who passed away on 26 August 2023, that CAE supports the "Paolo Bernardi Prize" for research in operational hydrology, organised by the Italian Hydrological Society, of which he was one of the founding members.

A choice consistent with the history of the company, whose four founding partners all had a past as researchers and who found that their technical innovation skills were the basis upon which to build the entrepreneurial initiative. A choice that is consistent also with the present of CAE, which constantly invests in innovation, certain that this is the key element for future growth.

The prize, of € 5,000.00, is dedicated to applied research projects for the advancement of operational practice in the field of non-structural solutions based on real-time monitoring of phenomena, for the management and mitigation of risk due to extreme weather events and for the management of water resources.

The winning project of the first edition of 2024 is entitled "*Development and integration of technologies based on image acquisition for the monitoring of small river catchments: the MagicHydroBox*" and it was announced and awarded on the occasion of the **Hydrology Days**, organised by SII, which were held from 24 to 26 June in Udine.





The winners are Engineers Simone Noto and Nicola Durighetto, whom we asked to tell us more about the project.

Why choose the study of small basins and in particular ephemeral and intermittent waterways?

We decided to focus on these catchments because they contain stretches cyclically affected by dry periods, which generate a dynamic of expansion and contraction of the river and stream network. In recent decades, **the importance of these waterways has been recognised not only for their hydrological function but also for their biological, biogeochemical and ecological functions.** However, the need to study and monitor the dynamics and their implications at an environmental, ecological, and anthropic level, in natural and urban contexts, has been met with the difficulty of monitoring the hydrological quantities of greatest interest, due to a series of geomorphological and environmental factors (e.g., difficult accessibility, irregular geometry of the sections, moving bottom, absence of electricity, etc.). Consequently, these

contexts represent a **difficult field of application for traditional tools** for measuring the water height.

Briefly, what is the objective of the project you presented?

The project aims at overcoming the limitations characterising the methodologies used so far in the monitoring of ephemeral and intermittent waterways, while exploiting their potential and improving their performance, proceeding on two parallel fronts:

1. the optimisation of **algorithms for the processing and analysis of images and videos**, acquired with the aforementioned methods, in order to derive qualitative and quantitative information on the hydrological status of ephemeral and intermittent waterways;
2. the design and development of a **unique tool** that integrates on-site image/video acquisition and processing capabilities with the transmission of product data and autonomous power supply.

What are the most innovative aspects of the project?

The novelty mainly concerns the integration of multiple on-site processing capabilities into **a single tool**, designed to be used in **conditions where application is difficult**, such as small catchments without instrumentation. The second innovative aspect, compared to the technologies tested so far, concerns the **transmission of data in at least daily intervals**, in order to guarantee real-time monitoring and the timeliness of maintenance activities in the event of malfunctions.

What are the next steps to turn your project into reality?

We now foresee a year of work to complete all the planned activities, including the tests for the imple-

mentation of the same that will take place on two different experimental sites, one in the Mediterranean catchment of Montecalvello and one in the Alpine catchment of the Rio Valfredda, selected for their marked spatio-temporal dynamics of the river and stream network and for the diversity and heterogeneity of the environmental conditions offered. A thank you to the Italian Hydrological Society that has established this prize in memory of Engineer Bernardi, founder of CAE S.p.A., who has dedicated his entire life to research and work aimed at mitigating environmental risks and who, thanks to this prize, will continue to contribute to the creation of a safer world.■

and status of coastal and marine habitats, and aimed at halting the deterioration of Mediterranean ecosystems and the recovery of seabed and marine habitats in Italian waters by 2026, in order to achieve the **European objectives of promoting the sustainability of fundamental activities such as fishing, tourism, food and blue growth**. The specific actions to be implemented include the **enhancement of marine observation platforms** to increase the technical-scientific capacity to monitor the marine environment and to assess the effectiveness of protection and management measures in the context of the climate change scenario.



In this context, **CAE will do its part**, and will carry out large-scale interventions for the **restoration and protection of the seabed and marine habitats and coastal observation systems**. The subregions affected by the actions are Western Mediterranean, Central Mediterranean and Ionian, Adriatic Sea.

The planned activities concern the **expansion of the NON network in stretches of coast not cur-**

rently covered by monitoring stations, the **technological adaptation of the 36 existing monitoring stations** and the increase in sampling frequencies and meteorological parameters observed by them.

Each station will be equipped with **Dataloggers of the Compact Plus line** and **sea-weather sensors** to measure the sea level, atmospheric pressure, wind speed and air and water temperature. ■

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An automatic weather station (AWS) at the Royal Palace of Caserta for the safety of tourists and visitors

CAE has installed an **automatic weather station (AWS)** inside the wonderful **Park of the Royal Palace of Caserta (CE)**, a **UNESCO World Heritage Site** since 1997 and **among the most visited attractions in Italy**, with more than a million visitors in 2023 alone. It is considered the **largest royal palace in the world**, and the Park alone, also designed by the architect Luigi Vanvitelli, covers 120 hectares, with a length of about three kilometres. The choice to install an automatic weather station (AWS) right inside the Park is aimed at **ensuring the safety of the many tourists and visitors**, providing real-time data useful for **arranging any closures of the Park in case of adverse weather conditions**. The wooded area, very large and dense, especially in the event of strong wind, exposes people, for example, to the potential risk of falling branches. This solution makes it possible to prevent risks and protect the safety of everyone. This installation is part of the **civil protection trust network of the Campania Region, already maintained by CAE**, composed as a whole of **over 250 devices** including **stations, repeaters** and **plant** equipment. The system was modernised by the company itself in 2022, following the awarding of the tender for the updating and technological adaptation of the systems, equipment and IT and electronic infrastructures serving for **monitoring** and providing the regional **alert** in the event of **hydrometeorological** and **hydraulic** risk, which we have also discussed [here](#). CAE showed great readiness and speed, providing for the adaptation, in a mere **90 days**, of **70 stations**, of the entire radio transmission infrastructure, the implementation of the updated equipment in the plant, as well as the technological adaptation of **22 hydrometric**

sensors, 25 thermometric sensors, 13 hygrometric sensors, 3 barometric and radiometric sensors, as described in detail [here](#).

The **newly installed station**, part of this major modernisation and upgrading project launched in 2022, includes a **digital acquisition unit** of the **Compact** line, a **PG10 rain gauge, wind speed and direction sensors**, a **THS thermo-hygrometer**, a **RÆVO UHF radiomodem**. The station is powered by **solar energy** and is equipped with **4G** communication module. Given the peculiarities and prestige of the installation site, the **support poles** have been **painted brown**, using the same paint already used for other infrastructure in the Park. ■



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Sardinia: the strengthening of the ARPAS monitoring network is underway



CAE has been awarded the contract with the **Regional Agency for the Protection of the Environment of Sardinia (ARPAS)** for the supply and installation of **new hydro-thermal-rainfall real-time monitoring stations** in the main river catchments of the Sardinia Region. This is an important component under Action Line 2.3.1. "Interventions to improve the quality of wa-

ter bodies" of the Environment Operational Plan (EOP) FSC 2014–2020. The need to install the new hydrometric and rainfall stations, which emerged in implementation of the objectives set out in the EOP convention, constitutes the completion of the hydro-thermal-rainfall monitoring network managed by ARPAS.

Twelve new telemetry stations are expected to be installed, including **nine hydrometric** and **three rainfall** stations connected to the ARPAS monitoring network in xG transmission mode (for the pilot station also VHF radio) and the integration of **two rain gauge sensors** in existing or upcoming telemetry stations.

The choice of equipment was made on a performance basis consistent with the agency project to create a network with standard equipment and using open protocols in order to allow the entrustment of maintenance management potentially to all qualified economic operators.

For the **new monitoring stations**, CAE proposed the supply of the **Compact Plus model data-logger** to guarantee **high standards of quality, power, reliability and openness**. The **patented PG10 rain gauge** was then chosen to measure the cumulative precipitation and its intensity per minute.

The monitoring stations will all be equipped with **an autonomous power supply system and a real-time data transmission system** toward the Sassari and Cagliari acquisition centres of the ARPAS meteorological and hydro-thermal-rainfall monitoring network. ■

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