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## Pakistan calls CAE: 163 new stations

Within the project “Scaling-Up of GLOF Risk Reduction in Northern Pakistan” (GLOFII) to reduce the vulnerability of communities to GLOF hazards through a variety of interventions, CAE will provide an **additional 163 stations** for Early Warning Systems (EWS) applications in valleys with high probability of GLOF events from potentially hazardous lakes and glacial movements.

As part of the GLOFII project, the Pakistani Meteorological Department (PMD), less than a year after the delivery of the previous 293 stations and as a testament to the appreciation for what has already been done by CAE, has ordered an additional 163 stations to enhance monitoring in further valleys.

The new monitoring stations, capable of being programmed to trigger alarms even in the local area and to manage multiple telecommunication systems, are divided as follows:

149 hydrometeorological monitoring stations with Compact datalogger;

14 alert points with dataloggers and sirens.

The trust in CAE has therefore been renewed, with the signing of this contract for a new important supply, which will be useful to expand the main project mentioned above and of which we had spoken [here](#). Once again, Italian technology for the creation of a safer world. ■



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## The Citizens' Observatory arrives at the Tagliamento



CAE, parent company of the RTI established with CONIT and SoftLab, has won the tender issued by the Eastern Alps Hydrographic District (DAO), for the provision of an **environmental monitoring network** that interfaces with a **forecasting IT platform** that will allow the DAO to **create and manage the Citizens' Observatory on the catchment area for the Tagliamento River** in the stretch between Pinzano and the mouth of the river. The Observatory as a whole foresees:  
 the use of innovative measuring **sensors**, which can also be **used** directly by **citizens**;  
 the exploitation of the **collective intelligence of citizens** through the monitoring of social network-

ks and the use of tools, such as specific **apps**, used by experienced and trained personnel (e.g. civil protection volunteers or/and specialised environmental associations, students, members of professional orders...);  
 the **training of citizens** and the activation of actions on the territory to maintain their involvement;  
 in this way, the **data** will be made **accessible** to all those involved in the activities of the Observatory, improving the exchange of communications between **decision-makers, rescuers** and even individual **citizens**.  
 The Observatory includes the new network, whi-

ch will be provided by CAE, for **hydrometric monitoring and flow rates** in the section between Pinzano and the mouth of the Tagliamento, to be connected to the Authority's control systems. The network will make available a series of important information related to the hydrometric/hydrologi-



cal conditions of the Tagliamento basin, allowing **a better implementation of the forecast models of hydrological development.**

The measurement system consists specifically of **4 remote sensing stations for hydrometric monitoring and monitoring of the flow rates**, consisting of:

- **Compact datalogger;**
- **hydrometric pressure sensor** for measurement of the level;
- **ADCP current velocity meter;**
- Solar panel power supply capable of guaranteeing complete energy autonomy;
- **dual transmission system** based primarily on 4G technology (or higher) and secondarily on satellite back-up system;



- **hydrometric rod** equipped with QR code.

The stations will provide **real-time flow data**, combining water velocity, level data and channel geometry information, and, during the project, **numerous manual measurement campaigns** will be carried out as part of the activity of **development of the outflow scale**, covering ranges going from the bottom of the scale upwards, in order to obtain an adequate historical series of data.

This activity is carried out within the framework of an Agreement between the Ministry of Ecological Transition and the District Authority of the Eastern Alps for the implementation, within the Fund for Development and Cohesion (FSC) 2014/2020 – Environmental Operational Plan “Interventions for the reduction of hydrogeological risk and coastal erosion”, of a series of interventions aimed at the implementation of an excerpt of measure M43 of the Flood Risk Management Plan for the UOM Tagliamento. ■



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## CAE in Argentina

The first major network installed by CAE abroad dates back to 2007, when **the Instituto di Hidrologia de Llanura IHLLA, Azul**, province of Buenos Aires, Argentina, set up **CAE hydro-meteorological stations** to monitor **rainfall** and **levels** in the upper part of the Arroyo Azul basin in order to promptly signal the state of **alert** in case of possible **flooding** and, secondly, with the aim of providing real-time meteorological information for the **improvement of agricultural practices** (to learn more [click here](#)).

The SPM20 technology network and data transmission via UHF radio network to the control centre continued to operate throughout all these years, thanks to the reliability of the equipment

provided and the constant maintenance carried out by the IHLLA personnel.

As part of a project to **strengthen the scientific-technological system** with the aim of deve-





loping and improving the social and productive fabric of the territory of Buenos Aires, IHLLA has received funding that it has decided to invest in the purchase of **new CAE technologies**. The new project will make it possible to replace the SPM20 stations, CAE's flagship model until a decade ago, with the most innovative and high-performance **CAEtech Compact dataloggers**: **programmable**, user-friendly and powerful thanks to the **openness** of the software and the use of **standard protocols** that guarantee full and native **compatibility** with the existing system. These new technologies can be easily inserted into the existing network, preserving all current support infrastructures.

The **new DATALIFE software platform** will also be provided, a natural evolution of its predecessor Mercurio, better suited to modern cybersecurity and reliability needs.

IHLLA's investment also includes **specialised technical training** in Argentina, oriented to the knowledge of new technologies, the main functions and



how they integrate into the existing network. This training is essential for the technical personnel of IHLLA to **manage the network independently**, with the remote support of CAE from Italy, **and to continue maintenance operations to keep the network active and efficient** over the course of the years. ■

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## Flow measurement: the experience of CAE

Let's go back to talking about specialised services, CAE has long been structured to respond to the growing number of work orders that require the execution of complementary services, related to the world of monitoring and topographic surveys, investing in technology and training.

This new structure has been successful and, from 2019 to date, **583 interventions have been ordered for 11** work orders that demonstrate the ability to intervene successfully and effectively on different types of waterways: from the Po, the longest and most impressive Italian river, to torrential waterways, where the speeds involved can be significant. We recall the measures for the Hydrographic District of the Eastern Alps on the **Piave**, to which are added those provided for by the new project described in this issue of CAE Magazine on the Ta-

gliamento, but also **AIPO, ARPA Veneto, Basilicata, Civil Protection Lazio Region, ARPA Piedmont and Valle d'Aosta**.

In particular, CAE uses specific equipment (GNSS survey system, total station, ADCP with floating support and hydraulic whirlpools) to carry out topographic surveys and flow measurements that make it possible to build run-off scales and calibrate hydraulic models. This service can also be preparatory to the implementation of automatic real-time systems for monitoring of the flow rates. For the calculation of the latter, in addition to traditional techniques, CAE has developed a model that, after an initial calibration of the site-specific parameters, is able to estimate the average current speed within the measurement section, starting from the surface velocity data and, for each measured



hydrometric level, to combine them with the wet area, returning a reliable real-time measurement of the flow rate at the installation site.

*“CAE was born with the aim of facilitating the lives of its customers, which is why we have been offering “turnkey” systems for 45 years. The provision of additional specialist services, such as flow measurement, is nothing more than the natural evolution of our business model: we want to provide the customer with all possible information to enable him to*

*work better. The services in question, in addition to requiring an important level of training and the use of specific technologies, involve a considerable management effort, in fact, they are activities strongly linked to seasonality. Despite the complexity, we are convinced that this service generates truly important knowledge of the territory that cannot be obtained otherwise and for this reason we work with great commitment and determination,”* stated Simone Colonnelli, geologist and project manager of CAE. ■







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## News from the world of Consortia: efficiency of well pumping systems for irrigation use

News from the world of Bonifica Consortia for reclamation, CAE has just won a tender for the execution of “Interventions to improve the efficiency of the management of water pumping systems for irrigation use, aimed at saving water through the implementation of **measurement and remote control systems**” in management at the **Consorzio della Bonifica Parmense**. A new and special project for CAE, which concerns the monitoring of data relating to **water pumping plants**, which serve to extract the water present inside the well, through a submerged pump and a delivery pipe that conveys the water to the outside.

The **automatic monitoring network** will therefo-

re have the task of detecting the data relating to the **flow and volume of water withdrawn from the wells in the pipeline**, the **groundwater levels** and the **hydrometric levels of the water collection channels for irrigation use** in the different sites of interest, through the turnkey supply of **6 new automatic stations** and the **updating of 3 existing ones**, which will be equipped with the innovative **CompactPlus datalogger**, **WLR radar hydrometers**, **piezometers** and **flow meters**.

In existing stations, the new sensors will be added to those already installed and to the **floodgate interfacing** systems. The new data will always be available and viewable on the software systems



already in use, indeed, thanks to the primary transmission system via **UHF radio**, the new stations will be inserted into the existing radio network owned by the Consortium, integrating perfectly with what is already present. In addition, through the **4G** module, the secondary transmission backup

system, there will be full redundancy of the data communication systems.

The proposed solution will make it possible to carry out constant control over the wells, **optimising the management of the pumping systems, with a consequent reduction in energy consumption,**





and to evaluate actual water consumption, so as to be able to take any useful actions to optimise the correct management of water resources and, consequently, to **reduce its wastage**, generating **savings** also in economic terms.

By setting **thresholds** related to the water level in the receiving channels of the emitted water, it will also be possible to define **when and how much water to withdraw**, avoiding potential periods of non-use of this precious resource in the channels, whose stagnating would be subject to evaporation and infiltration phenomena, with consequent losses in terms of irrigated water.

This **innovative system** represents a resilient way to cope with climate change, which is bringing increasingly **hot and dry summers**, during which it will be essential to be able to preserve water resources **by making decisions** based on **accurate and timely data**. ■



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## CAE MAGAZINE

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