

## Competence Center for Climate Change Digital Twin for Earth Forecasts and Societal Redressement: DTECLIMATE"

### SP2: ACT4D-EUTROPHICATION

## OVIDIUS UNIVERSITY HOSTS CLIMATE RESILIENCE WORKSHOP IN OVIDIU



To mark the University Day of Ovidius University of Constanța, the **Institute for Nanotechnologies and Alternative Energy Sources (INSAE)**, in partnership with the **Ovidiu City Hall**, organized, On March 20<sup>th</sup>, 2025, a high-level **Workshop on “Solutions for Strengthening Local Community Resilience to Climate Change Impacts.”**

The event is part of the Activity Plan for the **DTEClimate - Act4D-Eutrophication Project**, funded through Romania’s National Recovery and Resilience Plan (PNRR), Contract No. 7/16.11.2022.

Project specialists presented newly developed procedures for **data collection, processing, and analysis**, as well as **simulation models and forecasts** on the evolution of aquatic ecosystems under climate change. The workshop will also highlight **mitigation strategies, community adaptation measures, prevention tools, and action plans** for various climate scenarios.





## CLIMATE CHANGE SIGNALS INTENSIFY ACROSS ROMANIA

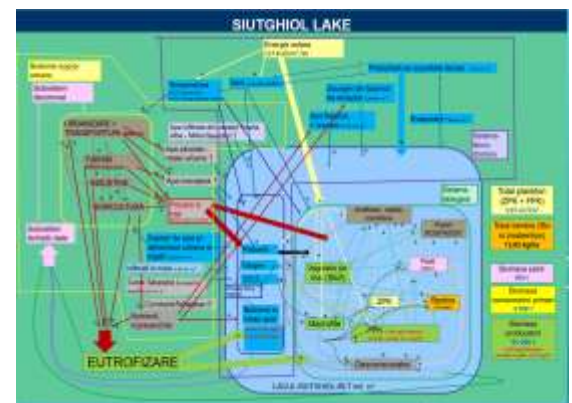
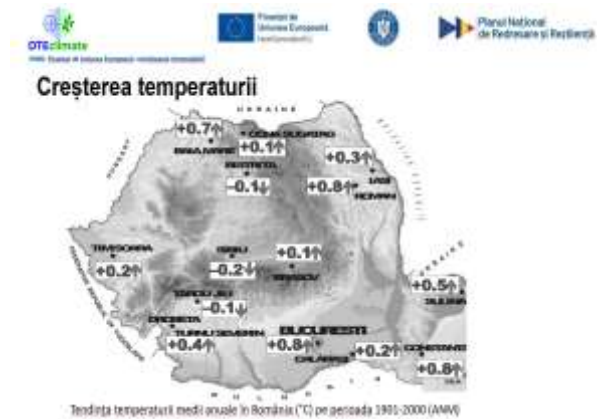
Unusually high temperatures recorded this July, sudden torrential downpours that exceeded all forecasts, and violent storms striking without warning—damaging homes, uprooting trees, and disrupting utilities across the country, including in Tulcea and Constanța—are clear signs that the climate is changing. Even more concerning, the frequency of these events is increasing, and so is the damage they cause. These developments raise urgent questions: How can we prevent such impacts? How should communities prepare? What actions must local authorities take?

To address these challenges, the Laboratory for Sustainable Development Engineering and Climate Change Adaptation has been established at Ovidius University of Constanța, hosted by the Institute for Nanotechnologies and Alternative Energy Sources (INSAE).

The laboratory was created through two major European-funded projects—one under Horizon Europe focused on reducing CO<sub>2</sub> emissions from urban mobility (2016–2020), and another under the National Recovery and Resilience Plan (PNRR) aimed at establishing Romania’s National Competence Center for Climate Change Adaptation.

The team now includes experts from multiple faculties, national research institutes, and international partners from Bulgaria, Greece, Turkey, Italy, Belgium, France, and the UK. INSAE has recently acquired a state-of-the-art Data Center, a research vessel, advanced water and air monitoring systems, and new analytical equipment.

Field research is coordinated by Assoc. Prof. Marius Skolka, who explains that Lake Siutghiol and its surrounding communities serve as a pilot ecosystem. Over the past three years, interdisciplinary teams have conducted extensive expeditions, collecting water samples at various depths and monitoring ecological changes driven by droughts, heavy rainfall, and

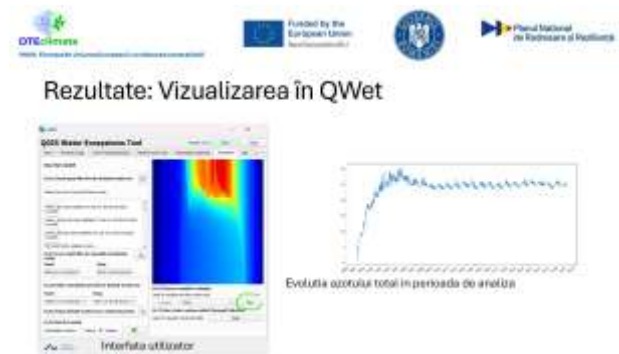


shifting bird populations. Their findings document the worsening eutrophication of the lake. To understand these complex processes, Dr. Gabriel Prodan highlights the use of advanced models integrating satellite data (Copernicus, Sentinel-2), machine learning, and AI to track water quality parameters, identify pollution sources, and generate forecasts.



Community engagement is carried out through the Constanta Blue Bay Living Lab, where researchers collaborate with local authorities, residents, and businesses. Prof. Igor Sîrodoev and Lect. Enache Tuşa note strong cooperation with the Ovidiu City Hall in identifying nutrient discharge sources, defining remediation scenarios, and strengthening climate resilience for lakeside communities.

Air pollution—another major driver of climate change—is also under scrutiny. Prof. Mamut points out that Constanta’s vehicle fleet has grown by up to 17% in some years, mostly with older cars, pushing greenhouse gas emissions and air pollution upward. These pollutants ultimately reach the sea and lakes.



A mobile air-quality laboratory, acquired by the Constanta Municipality and operated with INSAE, now supports detailed monitoring, including nanoparticle sampling and dispersion modeling using the ADMS platform.

Dr. Laurențiu Oancea explains that Constanta’s transport model, developed with PTV Visum, allows researchers to estimate traffic flows, vehicle emissions, and their dispersion across the city—identifying hotspots, stagnation zones, and even the building floors most affected by pollution.



The work carried out at this laboratory demonstrates that Constanta has the scientific capacity to understand and respond to climate risks. Now, it is up to local authorities, institutions, and citizens to prioritize these findings, allocate resources, and take preventive action.

