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# *Adriadapt Newsletter - Issue no. 1*

***2019***

**ADRIADAPT – A Resilience information platform for Adriatic cities and towns** started officially on January 1st 2019, and took its way with a meeting of all partners in Venice at the beginning of March. The project will, during the next two years, unite technicians, policy makers, planners and scientists from Italy and Croatia in their efforts for **creating a knowledge base for cities and towns in adapting to climate change**. Supporting cities in creating good and sustainable strategies, building resilience and preparing for climate change is increasingly important also for cities and towns in the Adriatic area; climate change impacts are becoming progressively concrete with more extreme weather events as well as with slow onset impacts on the population, habitats in and around cities and in consequence, on local economies.

Cities and towns, as concentrations of cultural, social and economic activities along the Adriatic coasts, need to prepare for coastal and river flooding, coastal erosion and subsidence in order to maintain and enhance their ability to support livelihoods, local and regional economies and infrastructures. Further challenges for the Adriatic coastal areas are connected to freshwater availability under threat by the salinization of aquifers and fires related to droughts and heat waves.

**In this video** we explain how ADRIADAPT project is going to support the Adriatic area in tackling these challenges.

**ADRIADAPT - presentation of the project**

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## ADRIADAPT project partners

**Expert partners:**

- Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)
- Agenzia regionale per la prevenzione, l´ambiente e l´energia dell´Emilia-Romagna (ARPAE)
- Universita Iuav di Venezia (IUAV)
- Centar za regionalne aktivnosti Programa prioritetnih akcija (PAP/RAC)
- Državni hidrometeorološki zavod (DHMZ)

**Local partners:**

- Unione Dei Comuni Valle Del Savio
- Comune di Cervia
- Comune di Udine
- Šibensko-kninska županija
- Grad Vodice

**Communication partners:**

- Društvo za oblikovanje održivog razvoja (DOOR)

## Local partner-municipality: City of Vodice

- *Local community - basic info*

City of Vodice is a charming little town situated along the Adriatic coastline in the Šibenik-Knin County. It has nearly 10,000 inhabitants, but during the summer months population increases 3 to 5 times, as Vodice is a popular tourist destination in Croatia, thanks to its pebble and sandy beaches which attract those seeking fun under the sun.


- *Major concerns regarding climate change*

Floods in coastal areas, especially in urban areas, are a major concern regarding climate change for Vodice, as these harmful events are becoming almost regular phenomena in the last years. With intensification of storm severity caused by changes in the hydrological regime and in conjunction with the sea level rise one can expect nothing but more troubles in the future. Less obvious, but nevertheless very concerning are coastal erosion and malfunction of infrastructural systems in the coastal zone, which could also be attributed to the sea level rise effect. In the hinterland of Vodice, especially in non-urban areas, wildfires are becoming a serious threat due to prolonged periods of droughts in summer months, which occur as a direct consequence of less precipitation and temperature rise. These climate change-related effects have some side effects as well, as they affect local economy, i.e. tourism and agriculture predominantly, put pressure on resources such as water and energy, affect public health, etc. It is important to point out that other cities along the Adriatic coastline in southern part of Croatia experience similar problems, as well.

- *Current status in development of planning documents*

Vodice has not developed any planning document specifically related to addressing climate change issues, so far. Aside from SECAP (Sustainable Energy and Climate Action Plan) which is an objective in the on-going Adriadapt project, Vodice has been involved recently (2015) in preparation of one planning document that tackled climate change issues – Coastal Plan for Šibenik-Knin County, first of this type in Croatia developed on a regional scale. Besides these specific planning documents, Vodice is in the process of urban plan renewal, where guidelines from Coastal Plan for ŠKC are expected to be implemented.

- *Implemented measures*

Apart from planning documents, Vodice did some small steps "here and there" related to addressing climate change issues. As a part of Coastal Plan for ŠKC, Vodice has done the analysis of coastal vulnerability for Vodice area, where various scenarios of sea level raise combined with extreme wave agitation have been analysed for the time frame toward the year of 2100, with a focus set on central downtown area which is most affected by flooding. Results are used to derive new concept for run-off water

system, which is in development, and will be incorporated in the urban plan renewal and will implement eco-based approach and promote solutions such as so-called blue & green infrastructure. In line with these actions, some small scale repairs and enhancements on the present run-off water system have been done within last few years. In energy sector, an example of implemented measures is an automatization of street lighting system. Furthermore, one of city's development initiatives is re-nourishment of coastal zone Punta-Blata-Bristak, where several climate change adaptation measures, in line with Coastal Plan of ŠKC, have been implemented in newly designed beach – park area (1 of 3 phases have been completed so far). Local authorities intend to emphasize their efforts related to climate change adaptation and mitigation even more in the upcoming years.

## Expert partner: Euro Mediterranean Centre on Climate Change (CMCC)

One of the ADRIADAPT activities concerns the definition and provision of a set of climate change indicators for stakeholders that will access and share data and information on expected climate changes and impacts in the ADRIADAPT focus area. Together with the selection of a series of extreme event indicators, fundamental for the definition of climate adaptation strategies in the northern Adriatic basin, CMCC is going to provide the projections of such parameters under different potential climate scenarios to the end of the current century. Standard extreme event parameters are considered to quantify intense and extreme precipitation, temperature and wind conditions: from simple percentile based parameters to more complex indexes indicating the number of days (or nights) below (or over) a certain threshold to better identify stress conditions (heat waves, warm spells, etc.) for the local population.

**List of climate indices for the characterization of extreme events**

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| **Extreme precipitation** | 99 percentile of precipitation |
| **Intense precipitation** | 95 percentile of precipitation |
| **R95N** | number of days with daily precipitation exceeding the long term 95$^{th}$ percentile |
| **R10mm - Heavy precipitation index** | number of days with precipitation higher than 10mm |
| **RL5N** | number of days with daily precipitation below the 5$^{th}$ long term percentile |
| **CDD** | consecutive dry days |

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| **HUMIDEX** | Perceived temperature based on temperature and relative humidity |
| **Extreme HUMIDEX** | 99 percentile of Perceived Temperature |
| **Extreme wind** | 99 percentile of daily wind |
| **Extreme max wind** | 99 percentile of daily max wind |

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| **Extremely high temperature** | 99 percentile of temperature |
| **Extremely high max temperature** | 99 percentile of max daily temperature |
| **High temperature** | 95 percentile of temperature |
| **High max temperature** | 95 percentile of max daily temperature |
| **Tropical nights index** | N.of days with temperature newer below 20°C |
| **HWDI** | heat wave duration |
| **HWFI** | warm spell days index |
| **HDG** | Heating degree-day (indicator for heating energy demand) |

| | |
|---|---|
| **Extremely low temperature** | 1 percentile of temperature |
| **Extremely low min temperature** | 1 percentile of min daily temperature |
| **Low temperature** | 5 percentile of temperature |
| **Low min temperature** | 5 percentile of min daily temperature |
| **CFD** | Consecutive frost days |
| **CDG** | Cooling degree-day (indicator for cooling energy demand) |

The provision of future scenario data at high spatial resolution over the region builds on dynamical and statistical downscaled simulations. In fact, one of the ways to investigate the climate system and its variability is through climate models, but their main limitation is the horizontal resolution, not sufficiently high to well capture local features such as the one derived by local orography. Therefore, in order to improve the description of the small-scale processes and their effects on climate, *dynamical* and *statistical downscaling* are performed using respectively Regional Climate Models (RCMs) and Statistical Downscaling schemes (SDs). The EURO-CORDEX (COordinated Regional climate Downscaling EXperiment) on the 12.5 km EUR-11 spatial domain is one source of data foreseen within ADRIADAPT and we plan to use results from 4 different RCMs for uncertainty evaluation purposes. Within ADRIADAPT SDs results will be also made available.

Two different possible radiative emission scenarios for the 21st century have been chosen: a scenario considered as a sort of worst case in terms of radiative forcing and a more moderate scenario. The historical simulation has been performed forcing these models with observed concentration of greenhouse gasses, aerosols, ozone and solar irradiance. The two scenarios follow a rising radiative forcing pathway leading to 8.5 $W/m^2$ (radiant flux per square metre) and 4.5 $W/m^2$ in 2100.

The availability of different simulations allows to reduce the uncertainties due to global climate models and to compute an Ensemble Mean of seasonal future changes. Different future periods of 20 years will be considered for both tools (RCMs and SDs) to eventually cluster the aforementioned indexes (i.e. 2021-2040, 2041-2060, 2061-2080, 2081-2100) and to be compared with historical (1986-2005) results.

CMCC is finishing the raw data collection and in the next moths the suggested indexes will be computed and made available to ADRIADAPT partners.

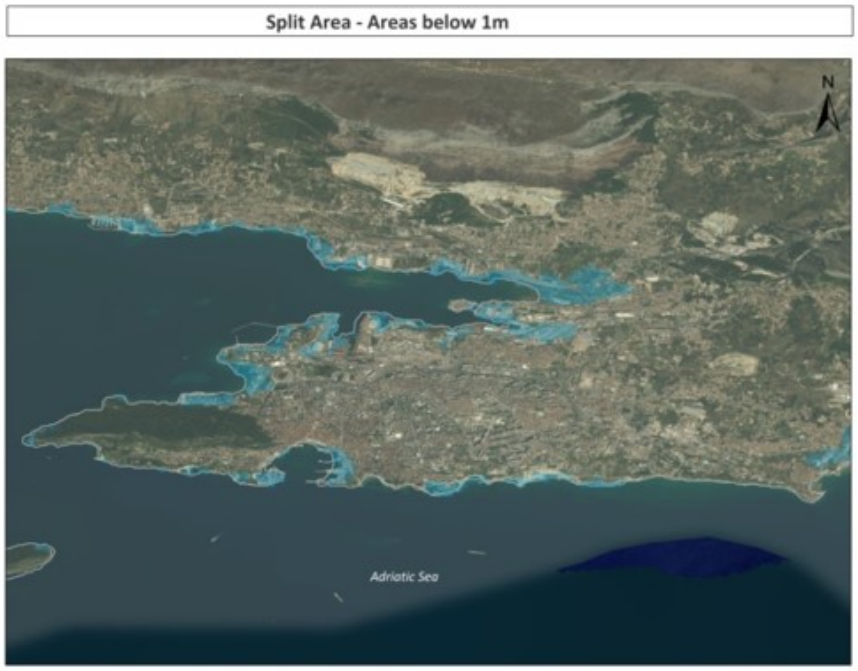
## Project activities & events


*13th of May, 2019, Cesena (IT)*

**Training course on adaptation to climate change for Local Authorities: strategies, opportunities, challenges to plan adaptation**

The training is one of the first actions of the ADRIADAPT project to actively involve Local Authorities to build an interdisciplinary working group capable to implement the adoption of integrated adaptation plans within the cities. The training course aims to provide specific knowledge and scientific and regulatory references on adaptation to climate change dedicated to the Local Authorities involved in the project. The training path will include meetings in each pilot areas involved in the project. The first training course has been held in Cesena (Emilia Romagna Region) on May 13th addressing in particular the pilot areas of Union of the Municipalities of Savio Valley and Cervia municipality involving managers and municipal technicians from different key municipal departments including the environment and energy department, urban planning, public buildings and green areas department and civil protection. In a

second meeting, planned for September, decision makers from the same local authorities will be involved.




*12th of June, 2019*

**Adriadapt expert meeting on strategic publications of the WP4 and WP5**

The purpose of the meeting is to harmonize the approaches, streamline the key messages and coordinate 3 key strategic publications for the WP4 and WP5, all targeted to the local authorities. Materials from the publications may be used for training and for the knowledge platform. Publications will also contain some information related to climate change. Therefore, interested partners from other WPs are also welcome at the meeting.

## Update on project's recent activities

- Communication and Dissemination Action Plan (CADAP) and Contents and Update Strategy for Project Website and Social Media Profiles have been produced to serve project partners in easier and more proficient dissemination of project activities.

- Adriadapt Questionnaire for Local and Regional Government Units - Experiences with impacts of climate change and adaptation to these impacts has been produced and disseminated in order to collect data on climate monitoring.

General Data Protection Regulation **(GDPR)**

In line with the GDPR (General Data Protection Regulation), your address and personal information will be safely stored in ADRIADAPT database managed by Society for Sustainable Development Design (DOOR). Collected data will be appropriately processed to ensure security and confidentiality. We do not sell or share this information with anyone. If you no longer wish to receive ADRIADAPT newsletter, you can unsubscribe from this list at any time by clicking on the "unsubscribe from this list" link which can be found in the footer of this newsletter.

**Project partners**

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*The project is coordinated by the Euro Mediterranean Centre on Climate Change (CMCC). Project participants include local authorities from Croatia and Italy, together with knowledge providers from the Adriatic Sea basin in the fields of climate science, climate adaptation and urban planning.*

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