

ERA4CS

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*European Research Area
for Climate Services*



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**Climate change impacts assessment runs and post-processed for
communication to users**

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Brief Description	This milestone report contains descriptions of where data and results from the different case studies will be stored and how it can be accessed.
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Table of Contents

- 1. Introduction 2
- 2. Data Management Plans for the case studies 3
 - 2.1 Drought and water resource allocation for tourism, agriculture, energy sectors (UCO). 3
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 3
 - Making data openly accessible 3
 - 2.2 Hydropower production (IRSTEA) 4
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 4
 - Making data openly accessible 4
 - 2.3 Future Change in Biodiversity (SMHI) 6
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 6
 - Making data openly accessible 6
 - 2.4 Urban flash floods (TUDO) 7
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 7
 - Making data openly accessible 8
 - 2.5 Fluvial and coastal interactions under Mediterranean climate conditions (UGR) 9
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 9
 - Making data openly accessible 9
 - 2.6 Agricultural production (GEUS) 10
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 10
 - Making data openly accessible 10
 - 2.7 Pluvial flash floods in pre-alpine regions (BOKU, UIBK) 11
 - What is the purpose of the data collection/generation and its relation to the objectives of the project? 11
 - Making data openly accessible 11

1. Introduction

The ambition of AQUACLEW is to provide data, metadata, guidance and tools to already existing and sustained Climate Services. In AQUACLEW, seven case studies over Europe (Figure 1) are elaborated to provide to their users advance quality of services. During the course of the project the data produced by the cases studies are handle by the service developers. Following the Open science philosophy a data management plan was developed by each case study. Here we summarize the Data Management Plan (DMP) of each case study, focusing on the storage, access, and licnce of the data.

The DMP identifies which data each case study will collect and produce, which formats, which will be used and how the data will be made accessible beyond the project partners and how the data will be maintained after the project. In general, the data will be open under the license Creative Commons Attribution 4.0 International (CC BY 4.0) and made available through communication with the partners, together with metadata.

This is a living document and will be update during the last months of the project.

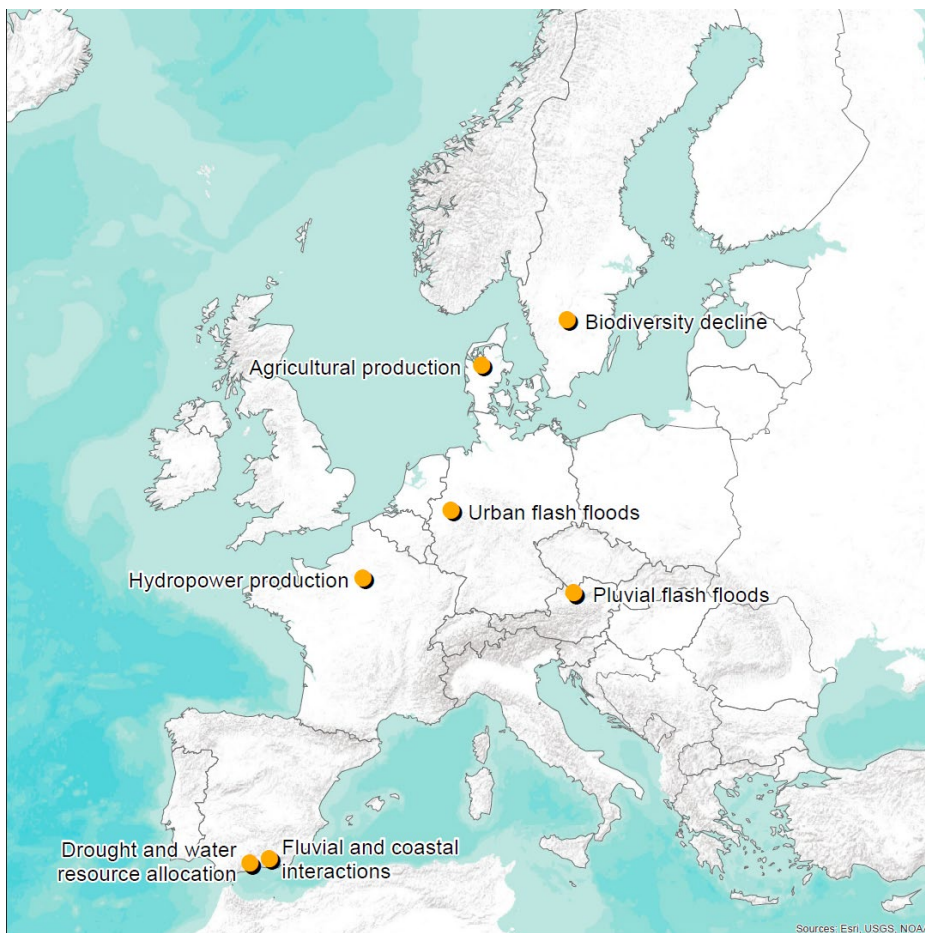


Figure 1: Locations of Aquaclew case studies

2. Data Management Plans for the case studies

2.1 Drought and water resource allocation for tourism, agriculture, energy sectors (UCO)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purpose of data collection/generation is to provide future river flow data adapted to the user requirements. That is, use pan-European information provided by a climate service (www.swicca.eu) and make them useful by specific users at smaller scales using the local knowledge.

Making data openly accessible

Open data by default	No specific restrictions will be needed for the data produced in our case study
Tools to access data	The data will be accessible through an online data publisher. No specific software will be required since the data produced are merely text data.
Location of data	Both data and associated metadata will be available by the online data publisher PANGAEA (https://www.pangaea.de/). A DOI will be assigned to them. These DOI will be also available on Research Gate https://www.researchgate.net/ and in the AQUACLEW website (https://aquaclew.eu) under the specific case study.
Data access (restrictions and security)	There are no restrictions on use.
Data license and timing	The data will be under the Creative Commons Attribution 4.0 International license. Data are under no embargo.

2.2 Hydropower production (IRSTEA)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purposes of data collection and data generation are as follows:

Type of Data	Purpose/relation to project objectives
GCM/RCM climate projections (precipitation and temperature)	These data are collected to be used as input to the hydrological model to obtain hydrological (river discharge) projections.
Discharge projections	These data are generated by the GR6J hydrological model for a number of studied catchments in France to be used to derive indicators of reservoir-based hydropower flexibility.
Observed climate data (precipitation and temperature)	These data are used to calibrate the GR6J hydrological model for a number of studied catchments in France.
Observed discharge data	These data are used to calibrate the GR6J hydrological model for a number of studied catchments in France and to evaluate the hydrological characteristics of the historical period for the climate change impact analysis.

Making data openly accessible

Open data by default

- Climate projections are open data from the DRIAS Portal: <http://www.drias-climat.fr/>
- Discharge projections generated by Irstea within the AQUACLEW project can be obtained by contacting partner Irstea (for research use only): vazken.andreassian@irstea.fr
- For contractual reasons, observed climate data cannot be shared without permission from Météo-France. Observed discharge data can be obtained from the Banque Hydro portal: <http://www.hydro.eaufrance.fr/>

Tools to access data

Open databases (see below) have their own data portal accessibility. Discharge projections generated by Irstea within the AQUACLEW project will be archived in zip files in a specific directory at Irstea and can be accessed via request by email.

Location of data

Data used within the AQUACLEW project will be archived in a specific directory at Irstea, following internal procedures.

Collected data in	Location
GCM/RCM climate projections (precipitation and temperature)	DRIAS Portal, http://www.drias-climat.fr/
Discharge projections	Irstea archive HYDRO Team

Observed climate data (precipitation and temperature)	Irstea archive HYDRO Team
Observed discharge data	Banque HYDRO, http://www.hydro.eaufrance.fr/

Data access (restrictions and security)

Collected data in	Restriction(s)	Access provided through
GCM/RCM climate projections (precipitation and temperature)	Open	DRIAS Portal, http://www.drias-climat.fr/
Discharge projections	Open	Irstea (request by email to vazken.andreassian@irstea.fr)
Observed climate data (precipitation and temperature)	Restricted use for research and conditioned upon approval by data owner (Météo-France)	Irstea (request by email to vazken.andreassian@irstea.fr)
Observed discharge data	Open	Banque HYDRO, http://www.hydro.eaufrance.fr/

Data license and timing

Dataset	License	Available
GCM/RCM climate projections (precipitation and temperature)	http://www.drias-climat.fr/accompagnement/conditions	Already available at DRIAS Portal, http://www.drias-climat.fr/
Discharge projections	No license	6 months after the end of the project
Observed climate data (precipitation and temperature)	Restricted use (see below)	Restricted use (see below). Requests can be made 6 months after the end of the project
Observed discharge data	http://www.hydro.eaufrance.fr/conditions.php?urlRetour=	Already available at Banque HYDRO, http://www.hydro.eaufrance.fr/

2.3 Future Change in Biodiversity (SMHI)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purposes of data collection and data generation are as follows:

Type of Data	Purpose/relation to project objectives
Climate indicators	To show relative change in different variables for time periods in the future
Euro CORDEX projections (precipitation and temperature)	These data are collected to be used as input to the hydrological impact model to obtain hydrological projections for discharge, groundwater, water temperature. Precipitation and temperature data are also used as in-data to the climate indicator calculations.
Discharge, groundwater, water temperature projections	These data are generated by the S and EHYPE hydrological model for a region in Sweden and are used as in-data to the climate indicator calculations.
Observed climate data (precipitation and temperature)	These data are used to validate the S and EHYPE hydrological model for a region in Sweden. They are also used for bias adjustment of the climate model data.

Making data openly accessible

Open data by default Data used from EURO CORDEX and C3S services is openly accessible under their respective licenses.

Tools to access data The results delivered to Jönköping Länsstyrelsen can be made available dependent on the requests to Jönköping Länsstyrelsen (contact: Måns Lindell). General climate results for each region in Sweden (2015) are available through Länsanalyser at www.smhi.se

Location of data The results will be delivered to Jönköping Länsstyrelsen who will store it according to their procedures.

Data access (restrictions and security) There are no restrictions on accessing the data, but all requests for access should go through Jönköping Länsstyrelsen (<https://www.lansstyrelsen.se/jonkoping/om-oss/kontakta-oss.html>)

Data license and timing

Dataset	License	Available
Climate indicators	CC-SA-BY-4.0	End of AQUACLEW project through request to Jönköping Länsstyrelsen

Figures and plots	CC-SA-BY-4.0	End of AQUACLEW project through request to Jönköping Länsstyrelsen
PTHBV	Access: Other Restrictions Other: Creative Commons Attribution Use: limitation Free for use for non-commercial purposes.	https://ecds.se/dataset/smhi_luftwebb_temperature_and_percipitation_data_f_or_sweden_7085c74e For commercial purposes, please contact marcus.flarup@smhi.se
E-HYPE results	CDS license	Through C3S Climate Data Store once processed by CDS team
Euro CORDEX	http://is-enes-data.github.io/cordex_terms_of_use.pdf	http://www.cordex.org/data-access/how-to-access-the-data/

2.4 Urban flash floods (TUDO)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purposes of data collection and data generation are as follows:

Type of Data	Purpose/relation to project objectives
Climate model	To derive temperature changes for the RCP 2.6, 4.5, and 8.5 scenarios. These temperature changes are an input for generating the temperature-based scaling data and the adjusted design rainfall data.
Rainfall observation data	To generate the temperature-based scaling data for future rainfall.
Temperature-based rainfall scaling data	To adjust the existing KOSTRA-DWD 2010R design rainfall data based on potential future climate changes according to the RCP 2.6, 4.5, and 8.5 scenarios.
Design rainfall data	To create adjusted design rainfall data according to the RCP 2.6, 4.5, and 8.5 scenarios by applying a temperature-based scaling technique.
Adjusted design rainfall data	Time series for the surface runoff simulations for generating the flood extent and depth, flow velocity, and flow direction of surface runoff.
Digital Surface Model	To simulate flood extent and depth, flow velocity, and flow direction of surface runoff based on topography and built environment in Hagen .
Surface runoff - Extent & depth - Flow velocity - Flow direction	To enable the municipality's urban planning and civil protection departments to devise adaptation strategies for flash flood events based on climate change projections.

Making data openly accessible

Open data by default This depends on whether the City of Hagen allows the publication of generated data, as for example some data (e.g. rainfall observation data from the city’s weather stations) is only used internally and not published.

Tools to access data This depends on whether the City of Hagen allows the publication of generated data, as for example some data (e.g. rainfall observation data from the city’s weather stations) is only used internally and not published.

Location of data

Collected data in	Location
Flood depth & extent	Currently: Internal server at TU Dortmund University Future location to be determined based on decisions of the case study partner as some input data is only used within the municipal administration and is so far not published by the City of Hagen.
Flow velocity	Currently: Internal server at TU Dortmund University Future location to be determined based on decisions of the case study partner as some input data is only used within the municipal administration and is so far not published by the City of Hagen.
Flow direction	Currently: Internal server at TU Dortmund University Future location to be determined based on decisions of the case study partner as some input data is only used within the municipal administration and is so far not published by the City of Hagen.

Data access (restrictions and security)

Collected data in	Restriction(s)	Access provided through
Flood depth & extent	Some input data is only used within the municipal administration and is so far not published by the City of Hagen.	City of Hagen
Flow velocity	Some input data is only used within the municipal administration and is so far not published by the City of Hagen.	City of Hagen
Flow direction	Some input data is only used within the municipal administration and is so far not published by the City of Hagen.	City of Hagen

Data license and timing This depends on whether the City of Hagen allows the publication of generated data, as some input data (rainfall observation data for the municipal weather stations) are so far only used within the municipal administration and are so far not published.

2.5 Fluvial and coastal interactions under Mediterranean climate conditions (UGR)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purposes of data collection and data generation are as follows:

Type of Data	Purpose/relation to project objectives
Maritime climate statistical analysis	Assessment of the current state of coastal dynamics (data from statistical characterization, temporal dependence and simulation).
Maritime climate offshore projections	Modeling and analysis of maritime climate variables (significant wave height, wave period, mean wave direction) under different climate change scenarios for offshore conditions (in collaboration with the University of Genova, Italy)
Maritime climate propagation	Use of downscaling techniques for the assessment of wave conditions in coastal areas and deltas.
Hydrological flow and sediment discharge	Analysis of sediment discharge at basin scale.

Making data openly accessible

Open data by default The re-used data is available at the given institution domain (EURO-CORDEX, Portus, Metocean-UNIGE) following their own guidelines. All data produced within this project will be shared once the results have been published. The data will be made available under request and to use for research purposes.

Tools to access data All data will be available in a private data repository where authorized users could download data in a friendly way.

Location of data <https://gdfa.ugr.es/aquaclew-ugr>.

Data access (restrictions and security) Request form will be provided with use specifications to be filled out by the institution. The request should specify the expected use of the data. The data is provided for research purposes only. Data is collected in a Data repository where access and use must be requested.

Data license and timing

Dataset	License	Available
Statistical and trend analyses	Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (use only for research purposes).	Once the results have been published.

2.6 Agricultural production (GEUS)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

In relation to the objectives of the AQUACLEW project, the purposes of data collection and data generation are as follows:

Type of Data	Purpose/relation to project objectives
Climate data	Develop new set of metrics targeted to characterize reference data, climate model (CM), hydrological model (HM) and delta-change/bias-correction
Hydraulic head	Create a framework for calibration, evaluation and selection of ensemble members (both for HM members or CM members) and DC/BC methods relevant to climate indicators
Stream discharge	Create a framework for calibration, evaluation and selection of ensemble members (both for HM members or CM members) and DC/BC methods relevant to climate indicators

Making data openly accessible

Open data by default	All data will be open and accessible by default
Tools to access data	The climate model data is in a format that is readily available to be used with the MIKE-SHE model (dfs2). The hydrological data is provided as output from the MIKE-SHE model (dfs0) and also as time series in a CSV format (upon request).
Location of data	Data are stored at GEUS.
Data access (restrictions and security)	There are no restrictions. Access is provided through GEUS. The data is available by request (Torben Sonnenborg (GEUS), email: tso@geus.dk).
Data license and timing	Data are under no embargo.

2.7 Pluvial flash floods in pre-alpine regions (BOKU, UIBK)

What is the purpose of the data collection/generation and its relation to the objectives of the project?

Type of Data	Purpose/relation to project objectives
National design precipitation data (ehyd.gv.at)	National dataset on design precipitation values. Points (text files) representing 6km x 6km areas. Dataset is typically used as input for planning and design purposes (e.g. design of urban drainage systems, estimation of design discharges in un-gauged basins, etc.). → Used for PFF impact assessment under current conditions.
Precipitation Intensity duration, change rates (swicca.eu)	relative changes in precipitation intensity for different durations (1h to 24h) and return-periods (10yr, 50yr, 100yr) for RCPs 4.5 (5 members) and 8.5 (4 members) for three time slices (2011-2041, 2041-2071, 2071-2101). Data in excel-files representing 0.1 x 0.1 degree (~12km) areas. → Used to scale national design precipitation for PFF impact assessment under projected future conditions.
ÖKS15 temperature	Bias-adjusted and localised climate-scenarios, based on EUROCORDEX EUR11 scenarios. Available for Austria on an 1x1 km grid, daily resolution → used for the application of temperature-based scaling (CC-scaling, super CC-scaling) of design precipitation values for PFF impact assessment under projected future conditions.
1 hourly precipitation data by ZAMG	Data from precipitation-gauges operated by the Central Institution for Meteorology and Geodynamics (ZAMG), 1 hour resolution → used to derive regional relationship between Temperature and Precipitation Intensity
5 min precipitation data by hydrographical services (HD)	Data from precipitation-gauges operated by the hydrographical service of Upper Austria, 15 min resolution → used to derive regional relationship between Temperature and Precipitation Intensity
ERA-Interim 500 and 700 hPa geopotential height	Reanalysis dataset, 3 hourly resolution, ca. 80 km grid, geopotential height of 500 hPa and 700 hPa niveau → used to calculate mean temperature in in respective layer, proxy for cloud temperature

Making data openly accessible

Open data by default

Data will be shared upon personal request by the involved institutions. This policy is adopted in order to be able to clearly communicate the methodologies used to derive the datasets as well as the intended area of application and limitations of the datasets.

Tools to access data

For datasets, which are derived from the combination of already openly-available climate-service data (ehyd.gv.at, swicca.eu, data.ccca.ac.at) the used methodology for the production of the newly derived datasets will be described in the project report in sufficient detail for reproduction by third parties. Specific tools, which were used (e.g. python-scripts) will be available upon request from the involved partners. For datasets, which have been derived from a combination of openly available data (climate-service data) and datasets with restricted access (meteorological-station-data) the methodology and tools/scripts will also be available from the involved partners upon request, however access to the restricted data-sources will have to be negotiated with the original data owner/provider.

Location of data

Collected data in	Location
ÖKS15 Climate Change Signal	The data will be stored on a server of BOKU-Met.

National Design Precipitation	Data available under ehyd.gv.at (.txt files for download) or upon request from UIBK-WB in different formats (e.g. .shp), stored on internal projects-server
Precipitation intensity duration	Data available upon request from UIBK-WB, stored on project-server
5 min precipitation data by hydrographical services (HD)	Stored on project-server @ UIBK; restricted access

Data access (restrictions and security)

As mentioned above, datasets will be available upon request from BOKU-MET and UIBK-WB. All data without access restriction will be shared upon request, for datasets with access restriction we refer to the original data-provider.

Data license and timing

Data are under no embargo.