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# OHMCV DMP

*Plan de gestion de données créé à l'aide de DMP OPIDoR, basé sur le modèle "ANR - DMP template (english)" fourni par Agence nationale de la recherche (ANR).*

## Plan Details

<b>Plan title</b>	OHMCV DMP				
<b>Version</b>	First version				
<b>Fields of science and technology (from OECD classification)</b>	Earth and related environmental sciences				
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## Project Details

<b>Project title</b>	SNO OHMCV (Observatoire Hydro-Météorologique Méditerranéen Cévennes Vivarais)
<b>Acronym</b>	OHMCV
<b>Abstract</b>	<p>The SNO (Service National d'Observation) OHMCV (Observatoire Hydro-Météorologique Méditerranéen Cévennes Vivarais) is dedicated to the study of hydrometeorological phenomena, sometimes extreme, affecting Mediterranean regions, particularly intense rainfall, flash floods, and associated material transport. These hazards are a significant societal challenge due to the relative unpredictability of extreme rainfall in terms of location and intensity, the rapid hydrological dynamics of urban and mountainous watersheds, as well as the increasing vulnerability and spatial distribution of assets in Mediterranean regions. The service brings together expertise from researchers, engineers, and technicians from various disciplines (meteorology, hydrology, hydraulics, geophysics, geography, applied mathematics, and sociology) with the aim of collecting data, improving knowledge and forecasting capabilities for intense rainfall, floods, and their impacts in a context of high anthropogenic pressure and climate change. Two complementary observation strategies are implemented by OHMCV to monitor relevant hydrological and social variables: 1) detailed and long-</p>

term, multi-scale (local to regional) observation of rainfall, water level, discharge, physico-chemical properties of river water, transport of matter (sediment, nutrients) in river, and spatial characterization of the physical properties of the monitored instrumented sites in the Cévennes and Vivarais regions: Olivier de Serres, Valescure, Galeizon and Mont-Lozère; 2) hydrological and sociological intensive post event campaigns of extreme phenomena occurring in all Mediterranean regions. These campaigns involve collecting information on the highest water levels reached, peak discharges, flood dynamics, flood impacts, risk perception, knowledge, and behaviors of the population through physical measurements and interviews shortly after a major event.

### **Funding**

- National Institute of Sciences of the Universe (INSU) :
- Observatory of Earth Sciences and Astronomy of Grenoble (OSUG) :

### **Start date**

2000-01-01

### **Partners**

- IGE : Institut des Géosciences de l'Environnement (CNRS, Grenoble-INP, INRAE, IRD, Univ. Grenoble Alpes) / Institute of Environmental Geosciences [01wwcfa26](#)
- ESPACE : Étude des Structures et des Processus d'Adaptation et des Changements de l'Espace (CNRS, Univ. Aix-Marseille, Univ. Avignon, Univ. Côte d'Azur) / Study of Structures, Adaptation Processes, and Space Changes [052cnt662](#)
- CREER : Centre de Recherche et d'Enseignement en Environnement et en Risques (Mines Alès) / Center for Research and Teaching in Environment and Risks / [03e8rf594](#)
- HSM : HydroSciences Montpellier (CNRS, IRD, Univ. Montpellier) [00aycez97](#)
- RiverLy : Unité de recherche et de développement pluridisciplinaires sur le fonctionnement des hydrosystèmes (INRAE) / Multidisciplinary research and development unit on the functioning of hydrosystems [003vg9w96](#)
- PACTE : Laboratoire de sciences sociales (CNRS, Science Po Grenoble, Univ. Grenoble Alpes) / Social Sciences Laboratory [026j45x50](#)
- CERMOSEM : Plateforme du développement territorial (PACTE) / Territorial development platform
- LEE : Laboratoire Eau et Environnement (Univ. Gustave Eiffel, Département GERS) / Water and Environment Laboratory [03x42jk29](#)

### **Research outputs :**

1. Default research output

### **Contributors**

Name	Affiliation	Roles
Boudevillain Brice - <a href="https://orcid.org/0000-0002-1771-4953">https://orcid.org/0000-0002-1771-4953</a>	IGE-OSUG - 201722374A	<ul style="list-style-type: none"> <li>• Project coordinator</li> </ul>
Nord Guillaume - <a href="https://orcid.org/0000-0001-5541-9368">https://orcid.org/0000-0001-5541-9368</a>	IGE-OSUG - 201722374A	<ul style="list-style-type: none"> <li>• DMP manager</li> </ul>

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# OHMCV DMP

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## 1. Data description and collection or re-use of existing data

### 1a. How will new data be collected or produced and/or how will existing data be re-used?

#### Data collection

Data is acquired from sensors connected to a data acquisition system (with or without teletransmission), and is also obtained through sample collection in the field.

At OHMCV, there are four types of data groups (some examples of variables, instruments and collection techniques are indicated):

1. Monitoring : This includes rainfall and meteorological measurements, river measurements, and groundwater measurements.
2. Catchments characterization : This group includes, for example digital elevation models (DTM), land cover, hydrographic network, catchment delimitation, soil properties, and soil depths.
3. Products : At present, this mainly involves rainfall reanalyses obtained by radar/rain gauges data merging.
4. Hydrological and Socio-Hydrological Intensive Post-Event Campaigns (IPEC).

Detailed information about data collection procedures categorized by measured variables can be found in the link below: [Data collection procedures by variables](#) (an English version of this website is currently under development).

#### Data re-use

- Data from Météo-France (note that since January 2024, most of their data is accessible to anyone: <https://meteo.data.gouv.fr/>).
- Electricité de France (EDF) and the Grand Delta Flood Forecasting Service (SPCGD): subject to an agreement and not publicly disclosed (only labs mentioned in the agreement).
- Hydrometric data from the HydroPortail database (now available to anyone with an account on this service: <https://hydro.eaufrance.fr/>).
- Land cover maps (Corine LandCover, LandSat, QuickBird), geological maps (BRGM, Bureau de Recherches Géologiques et Minières / Geological and Mining Research Bureau), soil maps (INRAE, BRGM), digital terrain models (IGN, Institut national de l'information géographique et forestière / National Institute of Geographic and Forest Information).
- High water marks data from the "plate-forme nationale repères de crues" (<https://www.reperesdecrues.developpement-durable.gouv.fr/>)
- Observed inundated areas from local services of Ecological Transition Ministry (DREAL, Direction régionale de l'Environnement, de l'Aménagement et du Logement / Regional Department for the Environment, Planning and Housing ; DDTM, Direction départementale des Territoires / Departmental Directorate of Territories).
- Impacts data from other administrations or companies.

Until just now (january 2024 for Météo-France), except for Meteo-France and hydrometric data, and impacts data , re-used data is available but it is not publicly disseminated through this document.

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### 1b. What data (for example the kind, formats, and volumes), will be collected or produced?

Variable kind	Measured variables	Data kind	Data format	Locations	Data volume and time span	Data contact
					Olivier de Serres : Rain gauges : 500 MB for 8 years. Mont-Lozère: A few megabytes are required for three pluviographs, each with a variable time step rain chronicle and an associated quality code, spanning	Principal investigator:

Monitoring	<p>Total precipitation (from rain gauges)</p> <p>Drop Size Distributions (DSD, from disdrometers)</p>	Numeric time series	CSV NetCDF	Instrumented sites : Olivier de Serres, Valescure, Galeizon and Mont Lozère.	<p>36 years, 10 years, and 1 year of measurement, along with one meteorological station capturing 10 parameters measured over a 10-year period at a 15-minute time step.</p> <p>Valescure: A few megabytes for the meteorological station at "Bastides" including temperature, radiation, humidity and wind sensors in addition to pluviograph with a variable time step rain chronicle and an associated quality code spanning 20 years.</p> <p>Galeizon: A few megabytes for one pluviograph with a variable time step rain chronicle and an associated quality code spanning 3 years.</p> <p>DSD: 300 GB for 9 years on 10 stations.</p>	<p>Brice Boudevillain-UGA/OSUG-IGE (rain gauges Olivier de Serres, and disdrometers on all sites)</p> <p>Principal investigator: Pierre-Alain Ayrat-CNRS-UMR ESPACE (rain gauges Valescure, Mont-Lozère and Galeizon)</p> <p>Principal investigator: Pascal Brunet-CNRS-HSM (meteorological station at Valescure)</p>
	<p>Water level and discharge, water surface flow velocities, temperature, electrical conductivity, turbidity, suspended sediment concentrations, concentration of major ions, concentration of trace elements and alcalinity, water table level.</p>	Numeric time series	CSV and/or XLSX	Instrumented sites: Olivier de Serres, Valescure, Galeizon and Mont Lozère.	<p>Olivier de Serres: 1 GB of ASCII files. 2,5 GB of XLS files for 11 years (2011-2021). 40 GB of videos recorded for LSPIV observations at Gazel station over a 6-year period (2017-2022).</p> <p>Valescure: 31 MB for 4 hydrometric stations with water level, flow, and quality codes for both heights and flows. The time series have variable time steps, and the stations have been installed 20 years ago.</p> <p>Galeizon: 3 MB for 1 hydrometric station with water level, flow, and quality codes for both heights and flows. The chronicles have variable time steps, and the station has been installed 8 years ago.</p> <p>Mont-Lozère: 67 MB for 5 hydrometric stations with water level, discharge, and quality codes for both heights</p>	<p>Principal investigator: Guillaume Nord-UGA/OSUG-IGE (Olivier de Serres),</p> <p>Principal investigator: Pierre-Alain Ayrat-CNRS-UMR ESPACE (Valescure, Mont-Lozère, and Galeizon),</p> <p>Principal investigator: Pascal Brunet-CNRS-HSM (piezometer at Valescure)</p>

					and discharges. The chronicles have variable time steps, and the stations have been installed for 42 years (2 stations), 32 years (1 station), 25 years (1 station), and 1 year (1 station).	
					Stations LSPIV Ardèche: 64 MB(*) for 6 years on 4 stations with 2 time series (river height and discharge)	
	Water surface flow velocities (measured) and discharge (deduced)	Videos for some surface flow velocities measurements by LSPIV (Large Scale Particle Image Velocimetry)	Video	L'Auzon at Vogüé	(*) The volume of data is modest because videos of hydrometric stations have not been archived. Some sequences have been used as gauges to construct rating curves but are not in the BDOH database.	Principal investigator: Guillaume Dramais - INRAE-Riverly
Catchments characterisation: Geophysical and topographic data	Soil: geological and pedological maps, land cover, Digital Terrain Model (DTM), electric resistivity and infiltration capacity campaign.	Numeric time series	CSV XLSX NetCDF Raster	On the instrumented sites for electric resistivity, infiltration capacity campaign, and DTM Reused data : geological, pedological, land cover maps	100 MB (one-time)	Principal investigator: Guillaume Nord-UGA/OSUG-IGE
Rainfall reanalyses (2D product obtained from rain gauges and radar networks)	Rainfall amount	Numeric time series	CSV NetCDF "ESRI ASCII grid" raster format	All Cevennes and Vivarais region (210 x 160 km <sup>2</sup> )	1,68 GB for 8 years (2007-2014).	Principal investigator: Brice Boudevillain-UGA/OSUG-IGE
Hydrological and Socio-Hydrological Intensive Post-Event Campaigns (IPEC)	Including Hydrological and Socio-Hydrological Information	Numeric time series Video Photo Testimony documents Impacts data (road closures, damaged buildings, fatalities..)	CSV JPEG XLSX Raster, Shapefile	Mediterranean regions (France: Aude, Cevennes, PACA; Europe: Italy, Slovenia, Germany)	13,3 GB for hydrological IPEC between 2002 and 2020.	Principal investigator: Olivier Payrastre-Université Gustave Eiffel-Laboratoire Eau Environnement and Isabelle Ruin-CNRS-IGE (for sociological aspects)

## 2. Documentation and data quality

### 2a. What metadata and documentation (for example the methodology of data collection and way of organising data) will accompany the data?

#### Metadata and documentation for raw data

##### *Collected raw data*

Metadata for raw data is meticulously documented in a notebook, accessible to all researchers within the lab. The recorded information includes date and time (in UTC format), location, temperature (for Campbell dataloggers), and specifics about the battery of sensors. It also includes records of anomalies during data collection, such as measurement-related issues or problems with sensors. Additionally, any actions taken during data collection, such as cleanings or specific operations, are documented. Photos are regularly taken in the fields during site visits.

##### *Teletransmitted raw data*

There is a file called "SAV" that is teletransmitted daily. It includes information about the sensor program, the temperature of the location, and details about the battery status. It also contains diagnostic variables, such as data transmission issues or information about sensors that need to be emptied or cleaned.

#### Metadata and documentation for processed data

##### *Current state*

All data is accessible on the [OHMCV's website](#); however, since data is sourced from various repositories, the available information and documentation depends on the data source. Information about collection procedures (organized by variables) is available, and users can access data either by variables or by observation sites.

- Data sourced from OSUG data center:  
Users can retrieve comprehensive metadata for each dataset, encompassing DOIs, creators, titles, publishers, publication years, descriptions, rights, resource types, subjects, geolocations, dates, contributors, funding references, primary language, related identifiers, and formats. Each dataset is stored in a ZIP file, and some of them include a PDF and README file, offering explanations of associated sensors and variable descriptions.
- Data sourced from BDOH:  
Users have access to metadata for each dataset. This metadata includes dataset ID, measured variables, units, producers, measurement types, start and end dates, the number of measurements, and dataset name. BDOH metadata already conforms to the THEIA/OZCAR format explained in the 'Next section' below.
- Data sourced from HyMeX:  
A part of the OHMCV data was dedicated to the intensive and extended observation periods of a research project called HyMeX. Access to the corresponding metadata are available on the associated website : <https://mistrals.sedoo.fr/en/HyMeX/> . Since the project is completed, access has become challenging.

Metadata concerning some atmospheric precipitation dataset were already integrated into the Theia/OZCAR IS through the pivot format described in the next paragraph.

##### *Next state*

Metadata will adhere to the Theia/OZCAR metadata model, commonly known as the Theia/OZCAR pivot format, while observed variables will be named in accordance with the Theia/OZCAR thesaurus.

The pivot format comprises three integral components: Observatory description (adhering to the Dublin Core standard), Dataset description (conforming to the ISO 19115/Inspire standard), and Observation description (following the Observation & Measurement standard).

<b>Pivot format section</b>	<b>Components</b>
Observatory description	<ol style="list-style-type: none"><li>1. Identification: Name, Title and Description</li><li>2. Fundings</li><li>3. Contacts</li></ol>
Dataset description	<ol style="list-style-type: none"><li>1. Identification : Dataset title, Description,</li><li>2. Thematic: GEMET Inspire Theme, Topic Category (ISO 19115)</li><li>3. Keywords</li><li>4. Spatial Extent</li><li>5. Temporal Extent</li><li>6. Access and use constraints</li><li>7. Contacts</li></ol>
Observation description	<ol style="list-style-type: none"><li>1. Sampling feature of interest : Station name, Location</li><li>2. Variable: name, unit and description</li><li>3. Acquisition Procedure: Processing information, Sensor Information</li><li>4. Observation: Temporal extent</li><li>5. Result: Time series data</li></ol>

For more in-depth information about the metadata pivot format, kindly refer to the following link:

<https://theia-ozcar.gricad-pages.univ-grenoble-alpes.fr/doc-producer/producer-documentation.html#modele-de-donnees-pivot>

For more in-depth information about the Thesaurus of THEIA/OZCAR, kindly refer to the following link:

<https://theia-ozcar.gricad-pages.univ-grenoble-alpes.fr/doc-producer/producer-documentation.html#thesaurus-theia-ozcar-categories-et-noms-de-variables>

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## 2b. What data quality control measures will be used?

### Quality control measures for instruments and data

Quality control measures include rigorous protocols, instrument calibration, validation procedures, cross-comparison with alternative data sources, and comprehensive documentation of procedures.

Variable types	Measured variables	Data quality control
Monitoring	Rainfall volumes and intensity, meteorology	<a href="#">Control measurement procedure</a>
	Raindrop size and speed distribution	<a href="#">Control measurement procedure</a> Hachani, S., Boudevillain, B., Delrieu, G., & Bargaoui, Z. (2017). Drop size distribution climatology in Cévennes-Vivarais region, France. <i>Atmosphere</i> , 8(12), 233, doi: <a href="https://doi.org/10.3390/atmos8120233">10.3390/atmos8120233</a>
	Water level and discharge (Mont-Lozère, Galeizon and Valescure)	<a href="#">Control measurement procedure</a>
	River measurements (Olivier de Serres)	<a href="#">Control measurement procedure</a> Nord, G., Boudevillain, B., Berne, A., Branger, F., Braud, I., Dramais, G., ... & Wijbrans, A. (2017). A high space-time resolution dataset linking meteorological forcing and hydro-sedimentary response in a mesoscale Mediterranean catchment (Auzon) of the Ardèche region, France. <i>Earth System Science Data</i> , 9(1), 221-249, doi: <a href="https://doi.org/10.5194/essd-9-221-2017">10.5194/essd-9-221-2017</a> The current protocol of the AirOSol platform for hydrochemical monitoring (major, trace metals and alkalinity) will be indicated in the next version of the DMP.
Products: Rainfall Reanalyses	Rainfall amount	<a href="#">Control measurement procedure</a> Delrieu, G., Wijbrans, A., Boudevillain, B., Faure, D., Bonnifait, L., & Kirstetter, P. E. (2014). Geostatistical radar-raingauge merging: A novel method for the quantification of rain estimation accuracy. <i>Advances in Water Resources</i> , 71, 110-124, doi: <a href="https://doi.org/10.1016/j.advwatres.2014.06.005">10.1016/j.advwatres.2014.06.005</a>
IPEC	Hydrological Intensive Post-Event Campaigns	<a href="#">Control measurement procedure</a> Gaume, E., & Borga, M. (2008). Post-flood field investigations in upland catchments after major flash floods: Proposal of a methodology and illustrations. <i>Journal of flood risk management</i> , 1(4), 175-189, doi: <a href="https://doi.org/10.1111/j.1753-318X.2008.00023.x">10.1111/j.1753-318X.2008.00023.x</a>
	Socio-Hydrological Intensive Post-Event Campaigns	<a href="#">Control measurement procedure</a> Ruin, I., Lutoff, C., Boudevillain, B., Creutin, J. D., Anquetin, S., Rojo, M. B., ... & Vannier, O. (2014). Social and hydrological responses to extreme precipitations: An interdisciplinary strategy for postflood investigation. <i>Weather, climate, and society</i> , 6(1), 135-153, doi: <a href="https://doi.org/10.1175/WCAS-D-13-00009.1">10.1175/WCAS-D-13-00009.1</a>

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## 3. Storage and backup during the research process

### 3a. How will data and metadata be stored and backed up during the research?



### Raw data and metadata

For instrumented site Olivier de Serres managed by IGE, raw data is acquired through teletransmission or direct collection. Data is sent once a day via the teletransmission software Loggernet to an IGE server for storage (using SUMMER storage solution, "Stockage Unifié Mutualisé Massif Evolutif et Réparti", <https://summer.univ-grenoble-alpes.fr/>). Directly collected raw data is stored on personal local machines, an external hard disk, an internal SD memory card (for some sensors in case of teletransmission failure), and in a team-shared directory (using SUMMER storage solution). Metadata for collected raw data is recorded in the notebook mentioned in section 2a. However, some of this information is also documented in an Excel file, which is stored in the team-shared directory mentioned above. Photos are stored on personal local machines and in a team-shared directory (using SUMMER storage solution). The metadata for teletransmitted raw data is directly stored in the IGE server.

For instrumented sites managed by UMR ESPACE (Valescure, Galeizon and Mont-Lozère), raw data is also acquired through teletransmission or direct collection. Raw data is stored on 2 local machine and 2 external hard disk. Metadata for raw data is recorded in an Excel file and stored with row data on a local machine and a hard disk.

Hydrological post event survey raw data (IPEC data) is first stored and processed on the of the involved reseracher's local machines. It is then grouped in a unique folder and standardized format, and is then stored on an external hard disk, and on a team-shared server at Univ Eiffel GERS-LEE

### Processed data and metadata

For instrumented site Olivier de Serres managed by IGE, investigators either receive the raw data from the research engineer or download it from the IGE server onto their local machines for analysis and quality control procedures. Processed data and metadata are stored in the team-shared directory. As a part of the OHMCV data was dedicated to the intensive and extended observation periods of a research project called HyMeX. Access to this data requires an account on the [associated website](#) managed by [SEDOO](#) data service. Since the project is completed, access has become challenging. The relocation of data is currently in progress at OSUG data center.

For instrumented sites managed by UMR ESPACE, the processed data and metadata are stored on a local machine and a hard disk. Once a year the data is transfered on BDOH.

Hydrological post event survey processed data (IPEC data) is grouped in a unique folder and standardized format, and is then stored on an external hard disk, and on a team-shared server at Univ Eiffel GERS-LEE.

### Storage and backup solutions

OHMCV leverages storage and backup solutions provided by the INRAE and the UGA infrastructures. These systems are designed to guarantee elevated data security and availability:

1. SUMMER Storage: Provided by UGA University and used by OSUG data center and IGE, SUMMER offers backup on a remote site with a 30-day history and synchronous replication, providing redundancy for data on two geographically distant sites. This robust architecture is based on Netapp@ servers.
2. BDOH is a data storage, visualization, and export tool for various time steps developed by INRAE. It is based on a Postgres SQL database. Physically, the server hosting this service was located at the INRAE Lyon data center and was recently relocate in Toulouse.

Service	Contact
SUMMER	Patrice Navarro (IGE) Rémi Cailletaud (OSUG)
BDOH	Fabien Thollet (INRAE) Flora BRANGER (INRAE)
OHMCV's website	Brice Boudevillain (Editorial director) OSUG communication service: Marion Papanian, Pierre Jacquet
SEDOO/MISTRALS/HyMex	François André (OMP/Sedoo)

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## 3b. How will data security and protection of sensitive data be taken care during the research

### IPEC

Hydrological and Socio-Hydrological Intensive Post-Event Campaigns contain personal data. For this particular type of data (including impacts data), only a synthesized XLSX file with no personal information will be made public. Complete data is not publicly available.

### Contact information

The contact point information of contributors in this DMP is considered as personal data. Therefore, we will seek their consent, providing them with the opportunity to refuse, modify, or request the deletion of their information.

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## 4. Legal and ethical requirements, code of conduct

### 4a. If personal data are processed, how will compliance with legislation on personal data and on security be ensured?

In compliance with the General Data Protection Regulation (GDPR) and with a focus on contact information and IPEC data, we will implement the following measures:

- Obtain consent from individuals regarding the use of their personal contact information. An email will be sent once per year reminding them of the possibility to modify or delete their personal information.
- Sensitive IPEC data is not publicly accessible.

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### 4b. How will other legal issues, such as intellectual property rights and ownership, be managed? What legislation is applicable?

#### Data Produced by the OHMCV

##### *Intellectual property*

As the data produced by the OHMCV is funded by public subsidies, in accordance with the Law for a Digital Republic (LOI n° 2016-1321 du 7 octobre 2016 pour une République numérique), they are obligated to be open and accessible, and they are made available as soon as the processing is done (usually on an annual basis). The data is freely reusable, with the condition of acknowledging its authors according to the sentences indicated here below:

"The OHMCV is funded by the National Institute of Earth Sciences (INSU/CNRS) and the Observatory of Earth Sciences of Grenoble (OSUG/University of Grenoble Alpes)."

"L'OHMCV est financé par l'Institut National des Sciences de l'Univers (INSU/CNRS) et l'Observatoire des Sciences de l'Univers de Grenoble (OSUG / Université Grenoble Alpes)"

##### *Licenses*

OSUG data center data: CC-BY-NC 4.0

BDOH data: etalab 2.0

#### Re-used data

*Météo France* : Until december 2023, researchers downloaded data from Climathèque, which was covered by an agreement allowing sharing only with OHMCV researchers and associates. When data was not available on Climathèque, it could be requested from Météo France with a financial contribution to cover the costs of making the data accessible. Most of data is now openly available since january 2024 [here](#).

*EDF* : EDF has an agreement via the UGA or the CNRS: data can be shared for research purposes, but they are not publicly disseminated.

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### 4c. What ethical issues and codes of conduct are there, and how will they be taken into account?

The main ethical concern centers around the proper handling of personal information about contributors and IPEC data. The handling of this data is detailed in response to questions 3b and 4a.

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## 5. Data sharing and long-term preservation

### 5a. How and when will data be shared? Are there possible restrictions to data sharing or embargo reasons?

There are no restrictions to data sharing nor embargo.

## Current state

### *How data will be shared*

Data is disseminated through a dedicated website and data repository platforms. Following analysis, investigators upload the processed data, and disseminate it through [OHMCV's website](#).

Here are links to access data and metadata:

- [Data organized by instrumented sites](#)
- [Data organized by variables](#)

### *When data will be shared*

Data becomes available as soon as the processing is completed, typically on an annual basis.

### *Re-used data*

Restrictions apply to raw data from EDF-DTG, provided only to personnel from specified laboratories based on agreements. This data is not available to the public.

Restrictions apply to impacts data, which is generally provided to specified laboratories based on agreements. This data cannot be shared and is not available to the public.

## Next state

Data will be accessible on the Theia/OZCAR web portal: <https://in-situ.theia-land.fr/>

The data download service will be available in the near future. Users will have the option to download data in CSV and NetCDF formats. Data downloading will require user authentication through Data Terra Single Sign-On authentication, ensuring adherence to embargoes and access restrictions for certain data. Authentication will also grant access to authenticated data producers for statistics on data downloads.

The data will also be indexed in a Geonetwork metadata catalog, allowing for automatic harvesting of the data catalog through the CSW webservice.

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## 5b. How will data for preservation be selected, and where data will be preserved long-term (for example a data repository or archive)?

### How data for preservation will be selected

- The selection of data for preservation is inclusive, keeping all raw and processed data.

### Data preservation

#### *Raw data*

- For IGE: this data is stored in both the IGE server and the team-shared directory mentioned above.
- For UMR ESPACE: this data is stored on local machines and hard disks

#### *Elaborated data*

- HyMeX project (Hydrological Cycle in the Mediterranean Experiment) under the MISTRALS meta-program
- BDOH
- OSUG data center

At the current time, there is no long-term preservation solution. However, all necessary technological guarantees and measures are in place to ensure at least medium-term storage.

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## 5c. What methods or software tools are needed to access and use data?

### Access tools based on data formats

Data format	Software tools
CSV, XLSX	Standard spreadsheet software
NetCDF	NetCDF-compatible tools or libraries for NetCDF files (NetCDF format version: <a href="#">classic</a> )
JPEG	Image viewers software
Shapefile, ASC ESRI Grid	GIS software
TXT	Text editor
mkv (vidéos LSPIV)	VLC media player pour la visualisation, logiciel FUDAA-LSPIV pour le traitement

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## 5d. How will the application of a unique and persistent identifier (such as a Digital Object Identifier (DOI)) to each data set be ensured?

### Current state

The majority of datasets produced by OHMCV is already referenced by a DOI provided by:

- the DOI services of the OSUG data center
- the HYMEX project by the Sedoo OMP (Observatoire Midi-Pyrénées) data center.
- Nakala repository of the Huma-Num research infrastructure

These DOIs will be cited using Theia/OZCAR pivot format and will be visible within the Theia/OZCAR Information System.

### Next state

Assigning a DOI through the workflow of data imported into Theia/OZCAR is not yet available, but it may be considered in the long term. If a dataset already has a DOI, this identifier will be mentioned in the metadata record on the Theia/OZCAR portal.

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## 6. Data management responsibilities and resources

### 6a. Who (for example role, position, and institution) will be responsible for data management (i.e. the data steward)?

Project Leader:

Brice Boudevillain, UGA/OSUG CNAP Assistant Physicist, IGE, Grenoble.

Olivier de Serres' instrumented site data management is held by:

Guillaume Nord, UGA/OSUG CNAP Assistant Physicist, IGE, Grenoble.

Mont Lozere, Valescure and Galezon sites data management is held by:

Pierre-Alain Ayrat, CNRS Research Engineer, UMR ESPACE Laboratory, Cévennes unit, Saint-Christol lez Alès.

Hydrological Intensive Post-Event Campaigns (IPEC) data management is held by:

Olivier Payrastra, researcher at the University Gustave Eiffel, Laboratoire Eau et Environnement at Nantes.

Socio-Hydrological Intensive Post-Event Campaigns (IPEC) data management is held by:

Isabelle Ruin, researcher at IGE, Grenoble

LSPIV data management is held by:

Jérôme Le Coz, researcher at INRAE, Riverly laboratory at Villeurbanne.

Guillaume Dramais, INRAE Engineer, Riverly laboratory at Villeurbanne.

Valescure's piezometer data management is held by:

Pascal Brunet, CNRS Engineer, HSM, Montpellier.

Technical services (IGE, ESPACE, HSM, RiverLy, Laboratoire Eau Environnement) is in charge of the following aspects:

- Data collection
- Data storage and backup

The scientists at OHMCV are responsible for:

- Data and metadata production, processing and dissemination
- Data quality control
- Data storage

The Data Management Plan is jointly written by the Data Curator and OHMCV data managers.

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### 6b. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

OHMCV data managers, with the technical support of OSUG data center, facilitate the creation of DOIs, ensure data security, and develop platforms/websites.

With funding from Labex OSUG, we benefit from a 16-month Data Curator contract in 2023-2024.

The technical service of the laboratories is involved in field data collection and data pre-processing.

The laboratories' IT service is responsible for data storage and access.

OZCAR/Theia provides training and workshops on relevant topics.

The scientists and technical staff of OHMCV dedicate a portion of their time to collect, analyse, document and share the data.

OSUG and INRAE are in charge of providing necessary storage and backup resources.