D7.8 Data Management Plan v1

WP7 – Project Management

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Figure 1: CLARITY Disclamer

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CLARITY Project Overview

Urban areas and traffic infrastructures that are linking such areas are highly vulnerable to climate change. Smart use of existing climate intelligence can increase urban resilience and generate benefits for businesses and society at large. Based on the results of FP7 climate change, future internet and crisis preparedness projects (SUDPLAN, ENVIROFI, CRISMA) with an average TRL of 4-5 and following an agile and user-centred design process, end-users, purveyors and providers of climate intelligence will co-create an integrated Climate Services Information System (CSIS) to integrate resilience into urban infrastructure.

As a result, CLARITY will provide an operational eco-system of cloud-based climate services to calculate and present the expected effects of CC-induced and -amplified hazards at the level of risk, vulnerability and impact functions. CLARITY will offer what-if decision support functions to investigate the effects of adaptation measures and risk reduction options in the specific project context and allow the comparison of alternative strategies. Four demonstration cases will showcase CLARITY climate services in different climatic, regional, infrastructure and hazard contexts in Italy, Sweden, Austria and Spain; focusing on the planning and implementation of urban infrastructure development projects.

CLARITY will provide the practical means to include the effects of CC hazards and possible adaptation and risk management strategies into planning and implementation of such projects, focusing on increasing CC resilience. Decision makers involved in these projects will be empowered to perform climate proof and adaptive planning of adaptation and risk reduction options.

Abbreviations and Glossary

A common glossary of terms for all CLARITY deliverables, as well as a list of abbreviations, can be found in the public document "CLARITY Glossary" that is available at CLARITY-H2020.eu.

Executive Summary

This report is the first deliverable of Task 7.3 "Data Management" and describes the initial Data Management Plan (DMP) for the CLARITY project, funded by the EU's Horizon 2020 Programme under Grant Agreement number 730355. The purpose of the DMP is to provide an overview of all datasets collected and generated by the project and to define the CLARITY consortium's data management policy that is used with regard to these datasets.

The CLARITY DMP follows the structure of the Horizon 2020 DMP template [1]. It reflects the status of the data that is collected, processed or generated and following what methodology and standards, whether and how this data will be shared and/or made open, and how it will be curated and preserved.

This initial version of the DMP defines the general policy and approach to data management in CLARITY that handles data management related issues on the administrative and technical level. This includes for example topics like data and meta-data collection, publication and deposition of open data, the data repository infrastructure and compliance to the Open Access Infrastructure for Research in Europe (OpenAIRE).

It furthermore summarises the intermediate results of the data collection activities in Task 2.2 "Demonstrator-specific data collection" that are being carried out according to the data collection concept introduced in Task 2.2 "Data requirements definition, data collection concept, demonstration and result validation concept" and the guidelines on FAIR (Findable, Accessible, Interoperable and Reusable) data management [2]. The DMP will evolve during the lifespan of the project. Next versions will refine and enhance policy aspects and will go into more detail regarding the datasets collected and produced by the CLARITY project.

1   Data Summary

The assessment of climate change adaptation measures will require the collection, processing and storage of a large variety of data sets related to the whole chain of climate change impact and adaptation assessment such as general environmental and meteorological variables, climate change projections based on relevant IPCC scenarios, downscaled climate projections, data on population, infrastructure, land use, etc.

As the data identification and collection activities are still ongoing, the initial DMP can currently only provide an incomplete picture of the datasets that are needed in the different demonstration cases and the CLARITY CSIS in general. Nevertheless, the current data summary provides already a good overview of the different types of datasets that are required the input of models and tools of WP2 "Demonstration & Validation" and WP3 "Science Support". A detailed description of datasets following the methodology and data survey (Annex 1) of Task 2.1 "Demonstrator-specific data collection" can be found in Annex 2. The contents of these annexes will eventually become part of D2.1 "Demonstration and validation methodology" and D2.2 "Catalogue of local data sources and sample datasets".

While the focus of the first version of the DMP is mainly on data collected, the next version will also report on data produced in the context of the project and non-sensitive data that can be made publicly available in open data repositories and registered at relevant catalogues.

1.1   WP2 and WP3

The data collected in WP2 "Demonstration & Validation", which will be further processed and extended, including new data generated in WP3 "Science Support", are needed to establish the underlying scientific base and to support the methodological approach for the development of CSIS and implementation of CLARITY demonstration cases. The identified data to be collected in the first phase of the project comprise a variety of climate, environmental, geographical and morphological datasets, as well as demographic and socio-economic datasets, which are primarily needed for hazard identification, climate change analysis and risk assessment in the CLARITY demonstration cases, and relevant for the implementation of adaptation measures assessment, e.g. through cost-benefit analysis. The existing datasets originate from climate and environmental monitoring (e.g. European Climate Assessment & Dataset, EEA Urban Atlas, Copernicus Land Monitoring Services, LiDAR altimetric information) or numerical model simulations (e.g. CMIP5, NOAA, ECMWF, EURO-CORDEX). The data are used directly for analysis in demonstration cases or serve as input for high-resolution climate and environmental modelling in WP3. Depending on the dataset availability and its intended use in the project, the data coverage varies from European, national to local level. The data are stored in NetCDF, GRIB, ASCII, shape, raster and vector formats. The expected size of individual datasets ranges between a few MB and 20 GB, with a typical value of about 300 MB per file. However, raw datasets can include large numbers of files and these data will preferentially be processed offline by individual experts, while the aggregated data, data necessary for functionality of the CSIS and for the integration of methodological modules (building blocks) will be stored on designated project specific or institutional data (cloud) data stores. Apart from local (institutional) data that is subject to complex agreements, the data stored in these joint or institutional data stores will have full access policy for the project partners and will be considered for open access publication in open access repositories unless restricted by third-party copyrights or confidentiality agreements.

A detailed descriptions of the datasets that are relevant to WP2 and WP3 are available in Annex 2.

1.2   WP1 and WP4

WP1 "Co-Creation" and WP4 "Technology Support" will collect, process and produce any (meta-) information that is needed in addition to the datasets from WP2 "Demonstration & Validation" and WP3

"Science Support" for the implementation of Building Blocks (modules) of the Non-paper Guidelines for Project Managers [3] and their integration into the CLARITY Climate Services and the CSIS, respectively. As the type and extent of these datasets depend on work in progress, more details will be provided in the next version of the DMP.

1.3 WP6 and WP7

Data collected and produced in WP6 "Dissemination and Community Building" and WP7 "Project Management" relates mainly to the user account and profile information that is needed for project internal administrative purposes as well as external dissemination, community building and exploitation activities. This encompasses both personal data of CLARITY partner personnel for operating the project's mailing lists, collaboration platform (Drupal) and the and document repository (ownCloud) and personal data of external users for providing CLARITY community functionality (newsletters, event invitations, etc.).

The datasets comprise information like name, organization, email address, role, etc. that is for the most part collected from the respective users through direct input when registering at the respective websites and confirmed with double-opt-in.

The datasets, which in general do not exceed a size of 100k per user account, are stored in an internal restricted repository under the regime of data protection and privacy and will not be made openly available.

A detailed descriptions of the datasets related WP6 and WP7 are available in Annex 2.

2   Data Management Policy

CLARITY's general data management policy that is presented in the subsequent chapters has been developed in accordance to Horizon 2020 FAIR principles [2], open data requirements [4] and implementation guidelines [5]. It applies mainly to new results that are produced in CLARITY and that are to be made available by the project consortium as open source, open science and open data.

2.1   Making data findable, including provisions for metadata

2.1.1   Are the data produced and/or used in the project discoverable with metadata, identifiable and locatable by means of a standard identification mechanism (e.g. persistent and unique identifiers such as Digital Object Identifiers)?

All open data, publications and open source software produced in CLARITY (open CLARITY results) will identifiable and locatable by means of a persistent Uniform Resource Locator (URI). If possible, open CLARITY results will be assigned a **Digital Object Identifier** (DOI) in order to make content easily and uniquely citable. Thereby, CLARITY relies on external services, since DOIs can only be assigned by DOI registrants through a DOI registration agency (see https://www.doi.org/doi_handbook/8_Registration_Agencies.html).

Open CLARITY results that are deposited in the CLARITY **default Open Access repository** (Zenodo, see 2.2.7) will be assigned a DOI automatically and will benefit also from Zenodo's DOI versioning support (see 2.1.4).

Open CLARITY results that are deposited in institutional repositories, repositories of scientific publishers or other data and research repositories will be **at least** indefinable by a persistent URI. If the institution is a DOI registrant that has an agreement with a DOI registration agency, a DOI will be assigned, too.

Whether scientific publications will be assigned a unique identifier like DOI, Publisher Item Identifier (PII), International Standard Serial Number (ISSN), etc. **depends on the open access strategy** (green or gold) chosen by the editors and thus also on the respective scientific publisher **and the chosen research repository**. Zenodo (http://help.zenodo.org/features/) is for example, one of the open data repository repositories that can generate DOIs for research results. See also 2.2.3.

2.1.2   What naming conventions do you follow?

File names will include at least a version number (see 2.1.4) and/or a time stamp. Datasets that are produced by (climate) models should follow the standard NetCDF Climate and Forecast (CF) Metadata convention (https://cf-trac.llnl.gov/trac) and, if applicable, adhere to the common naming system of the Coupled Model Intercomparison Project (CMIP5) Model Output Format and Metadata Requirements [6].

2.1.3   Will search keywords be provided that optimize possibilities for re-use?

All open CLARITY results deposited in a repository will provide search keywords together with their metadata (see 2.1.5). Keywords for open data will be selected from controlled vocabularies that are suitable for the specific type of the data (see 2.3.3).

2.1.4   Do you provide clear version numbers?

Open source software will follow the semantic versioning schema (http://semver.org). The same can also be applied to datasets. For publications, versioning is in general not necessary.

Additionally, all open data, publications and open source software deposited in the Zenodo repository (see 2.2.3) will use DOI versioning. DOI versioning allows for updating a dataset after it has been published and

to cite either a specific version of a dataset or all versions of a dataset (see https://blogs.OpenAIRE.eu/?p=2010).

2.1.5 What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.

"It is essential to provide as much accurate metadata as possible, as rich metadata significantly improves the data's findability and re-usability" [1]. Metadata for describing the data that is collected and generated by the CLARITY project is not only needed for facilitating open access to the data, it may also be needed by the CSIS, e.g. when searching or accessing data. There are many different meta-data standards for many different types of data and it may not be possible to find one that fits all purposes. Therefore, a pragmatic and feasible approach is to agree on a **common and minimal catalogue metadata schema** for those datasets that are published in public catalogues and data repositories and to use data-type specific schema extensions, if necessary.

Default Catalogue Metadata schema for open data generated by the project

In general, the Zenodo deposition metadata domain model (http://developers.Zenodo.org/#representation) which is based on DataCite's metadata schema (https://schema.datacite.org/) minimum and recommended terms will be used for open data **generated** by the project and deposited in an appropriate repository (see 2.2.3).

For CLARITY, the following deposition metadata fields are mandatory:

- **title**
  Title of the deposition.

- **description**
  Abstract or description for deposition.

- **files**   Deposition files identifiers, filenames, size of the files in bytes and MD5 checksum of files

- **upload_type**
  Type of the deposition from a controlled vocabulary (publication, dataset, software, …).

- **publication_date**
  Date of publication in ISO8601 format (YYYY-MM-DD).

- **creators**
  The creators/authors of the deposition.

- **license**
  Open license from controlled vocabulary "Open Definition Licenses Service" (see 2.3.2and 2.2.11).

- **doi**
  Digital Object Identifier assigned by the DOI registrant (e.g. Zenodo), also used for versioning (see 2.1.4)

- **keywords**
  Free form keywords for this deposition.

- **related_identifiers**
  Persistent identifiers of related publications, datasets and software (see 2.2.6).

- **communities**
  List of communities the deposition to appears in (https://zenodo.org/communities/clarity/)

- **grants**
  List of European Commission FP7 grants which have funded the research for this deposition (730355). Needed to establish the relationship to CLARITY in OpenAIRE

(https://www.OpenAIRE.eu/search/project?projectId=corda__h2020::42171f776c336559bebf4a4e c817d79a) and CORDIS (http://cordis.europa.eu/project/rcn/210518_en.html)

This minimal metadata schema **can be extended** by arbitrary subjects from a taxonomy or controlled vocabulary as described in the Zenodo API documentation. It is compatible with the Dublin Core metadata standard (http://dublincore.org/) and thus can be interpreted by OAI-PMH (https://www.openarchives.org/pmh/) catalogue harvesters like those used by CKAN (https://ckan.org/portfolio/federate/) and OpenAIRE (http://api.OpenAIRE.eu/#cha_oai_pmh). Metadata is stored internally in JSON-format according to a defined JSON schema (https://zenodo.org/schemas/records/record-v1.0.0.json) and can be exported in several standard formats such as MARCXML, Dublin Core, and DataCite Metadata Schema.

Default Catalogue Metadata schema for open data collected by the project

The CKAN domain model (http://docs.ckan.org/en/ckan-1.7.4/domain-model.html) is used for metadata of data **collected** by the project if this data is also stored in a dedicated public CKAN catalogue. This domain model **can be extended** by arbitrary metadata fields as described in the CKAN extension guide (http://docs.ckan.org/en/latest/extensions/adding-custom-fields.html) and is therefore compatible with Zenodo's deposition metadata domain model.

Extensions to the default metadata schemas described above, e.g. for supporting spatial metadata or linked data, will be described in future versions of the data management plan, if necessary.

Additionally, separate metadata files that follow a different standard than the default catalogue metadata schema can be published together with the original dataset in the respective catalogue or repository. This is especially relevant if INSPIRE Metadata (based on EN ISO 19115 and EN ISO 19119) is available for datasets collected or has to be made available for datasets produced by the project.

For data that is collected or produced by the project but **not** made available in a public catalogue or data repository (e.g. for licensing or privacy reasons), only metadata according to the internal dataset metadata schema of the CLARITY data survey. This internal metadata schema is used by CLARITY's technical coordination site to collect information on datasets in accordance with the CLARITY data management policy and is described in Annex 1.

2.2   Making data openly accessible

2.2.1   Which data produced and/or used in the project will be made openly available as the default? If certain datasets cannot be shared (or need to be shared under restrictions), explain why, clearly separating legal and contractual reasons from voluntary restrictions.

The different types of data that are generated during the project for the four demonstrator sites or for general purpose are **open by default** with the following general exceptions:

- **copyright and permissions for reusing third-party data sets**
  Processing and combining input data from many different sources may lead to **unclear IPR situations** regarding the generated output data, therefore such repurposed data (e.g. model output data) can only be made open if any of the underlying data (e.g. model input data) is open, too.

- **personal data treatment and confidentiality issues**
  Datasets referring to the quality and quantity of certain elements at risk, such as people and critical infrastructures, are not open by default as their publication may pose **privacy, ethical or security risks**.

- **data-driven business model**
  Data that is **exploited commercially** through the MyClimateService.eu marketplace will not be made open.

- **user-generated content**
  Data related to individual adaptation scenarios (e.g. adaptation options, performance indicators, criteria, etc.) that is generated by (external) end users during the usage of CRISMA climate services, is only be made open with **explicit permission** from the end user.

If there are restrictions on data needed to validate the results presented in scientific publications, access to individuals with legitimate interest will be granted on request as described in 2.2.9. For more information on data generated and collected by the project and specific exceptions from open access, please refer to the datasets listed in Annex 2.

2.2.2   Note that in multi-beneficiary projects it is also possible for specific beneficiaries to keep their data closed if relevant provisions are made in the consortium agreement and are in line with the reasons for opting out.

Currently, no beneficiary has the intention to opt-out from the open data pilot. If the situation changes, the consortium agreement will be changed and the DMP updated accordingly.

2.2.3   How will the data be made accessible (e.g. by deposition in a repository)?

CLARITY open results will be made accessible according to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020 [4].

Open Data

All **open results** (data, software, scientific publications) of the project will be openly accessible at an appropriate **Open Access repository** (see 2.2.7) as soon as possible. Specifically, research data needed to validate the results in the scientific publications will be deposited in a data repository at the same time as a publication. Non-public research data (see 2.2.1) will be archived at the repository using a restricted access option (see 2.2.9).

Scientific Publications

Providing open access to peer-reviewed scientific publications can be ensured either by publishing in green or gold open access journals with or without author processing fees. Any scientific publications from CLARITY and the related bibliographic metadata must be made available as open access and announced on the project website (http://www.clarity-h2020.eu/) as well as in the OpenAIRE portal (https://www.OpenAIRE.eu/) and the R&I Participant Portal (https://ec.europa.eu/research/participants). To automate the process of reporting scientific publications and related research data in OpenAIRE, the publication **should** be deposited in an OpenAIRE-compliant repository, either by the authors of the publication (green open access) or by a scientific publisher (gold open access). While additional forms of **disseminating** open access papers, including academic social network sites such as ResearchGate (https://www.researchgate.net/) are possible, an electronic copy of the publication has to be deposited in **suitable open access repository** (see 2.2.7) in the first place. According to the European Research Council's Guidelines on Open Access [5], "Venues such as Research Gate or Academia.edu that require users to register in order to access content **do not count as repositories**. The posting of publications on a personal, institutional or project specific webpage or the deposit in a publically accessible Dropbox account is not sufficient to satisfy the requirements either."

If the chosen repository is not fully OpenAIRE complaint, the publications or data **must** be linked at https://www.openaire.eu/participate/claim with the respective funding agency (European Commission). Green open access journals or gold open access journals without author processing fees should be preferred for disseminating CLARITY scientific publications. Nevertheless, the journal's visibility and prestige (translated in the Impact Factor) of the journal, together with the speed of publication, should be considered when choosing a journal for publication of a manuscript. According to the EC recommendation, authors of the publication are encouraged to retain their copyright and grant adequate licences to publishers (see 2.4.1).

Green open access (self-archiving)

Green open access or self-archiving means that the published article or the final peer-reviewed manuscript is **archived by the researcher itself** in an online repository, in most cases after its publication in the journal. The journal must grant the researcher the permission to self-archive the final peer-reviewed article, at the latest, 12 months after publication.

Gold open access (open access publishing)

Gold open access means that the publication is **available by the scientific publisher** as open access. Some journals require an author-processing fee for publishing open access. Author-publishing fees for gold open access journals can be reimbursed within the project period and budget. Some publishers allow the researcher to deposit a copy of the article in a repository, sometimes with an embargo period (see 2.4.2).

2.2.4   What methods or software tools are needed to access the data?

Regarding the mere access to open data **deposited as data files** in a data repository, there are no special methods or software tools needed. The files can be downloaded from the data repository via HTTP protocol using a standard web browser. This implies, however, that open data that is originally stored in a database or another type of data store, has to be exported ("dumped") to a file before it can be deposited in a repository. Repository APIs (see 2.2.7), DOI versioning (see 2.1.4) and the respective database tools can help to automate this export tasks.

Regarding software and tools for **offline** viewing, interpreting, processing and editing of data files downloaded from the data repository, it heavily depends on the type and format of the data (see 2.3.1). However, for open data that is generated within the CSIS directly, the data can be accessed **online** either through the well-defined service APIs (e.g. OGC WMS) or through respective user interfaces of the CSIS. Moreover, those CSIS components that are published as open source software (see 2.2.6) are also deposited in a repository and thus can be linked with the data with help of appropriate metadata (related_identifers, see 2.1.5).

2.2.5   Is documentation about the software needed to access the data included?

Documentation of (open source) software needed to access the data and developed by CLARITY will be made available on the CLARITY website and the respective source code and release repositories.

2.2.6   Is it possible to include the relevant software (e.g. in open source code)?

As described in 2.2.4, open source software developed by CLARITY and hosted in the public CLARITY GithHub source code management system at https://github.com/clarity-h2020 will be made available together with the respective open data in a repository (see 2.2.3). Moreover, since the source code of the software is stored on GitHub, releases can automatically be published in a supported repository (see https://guides.github.com/activities/citable-code/).

2.2.7   Where will the data and associated metadata, documentation and code be deposited?
Preference should be given to certified repositories which support open access where possible.

Open Data and Open Source Software

Some CLARITY partners like UNINA and AEMET already operate their own OpenAIRE-compliant repositories (https://www.OpenAIRE.eu/search/organization?organizationId=dedup_wf_001::745e00fd93e980bf964e10bcd9bfa04a and https://www.OpenAIRE.eu/search/organization?organizationId=dedup_wf_001::745e00fd93e980bf964e10bcd9bfa04a) while other partners like ZAMG make use external institutional repositories (https://data.ccca.ac.at/organization/zamg) or do not have access to an institutional repository at all.

To ensure that data management procedures are unified across the project, a **common default Open Access repository** for open data and open source software generated within the project has been chosen. In the end, it is up to the owner of the data or software to decide whether he wants to use an institutional repository or the CLARITY default repository. However, repositories other than the default one should be OpenAIRE-compliant and issue a DOI as highlighted in 2.2.3. The default repository of the CLARITY project for depositing publications, open data and open source software is **Zenodo** (http://www.zenodo.org). Zenodo is an EC-co-funded, multidisciplinary repository, for publications and data. A DOI is automatically assigned to all Zenodo files, which can be uploaded in any file format. Zenodo allows researchers to deposit both publications and research data, while providing means to link them. Data is stored in the CERN cloud infrastructure. Zenodo is compliant with the open data requirements of Horizon 2020, the EU Research and Innovation funding programme and OpenAIRE. Furthermore, a CLARITY project page (community) has been set up at https://zenodo.org/communities/clarity/ for easy upload of project datasets.

Scientific Publications

As described in 2.2.3, there are two possibilities for a researcher: publishing in green or in gold open access journals. In case of green open access, Zenodo can be chosen by the researcher as a primary repository for self-archiving. This leaves still the possibility for the **additional** dissemination of the published publication also at academic social network sites like ResearchGate that do not count as suitable open access repository. For finding suitable green open access publishers, researchers are encouraged to consult RoMEO (http://sherpa.ac.uk/romeo), a searchable database of publisher's policies regarding the self-archiving of journal articles on the web and in Open Access repositories.

In case of gold open access, the scientific publisher's modalities for open access (e.g. embargo periods) must allow the researcher to fulfil the EC's open access obligations. Furthermore, the **repository used by the scientific publisher** should be OpenAIRE-compliant and issue a DOI (see 2.1.1 and 2.2.7) if the researcher is not allowed to allow to deposit a copy of the publication in a repository of his choice. For finding suitable gold open access publishers, researchers are encouraged to consult the Directory of Open Access Journals (https://doaj.org/), a service that indexes high quality, peer-reviewed open access academic journals that use an appropriate quality control system.

2.2.8   Have you explored appropriate arrangements with the identified repository?

Currently, there is no need for such an arrangement. Zenodo is OpenAIRE's recommended "catch-all" repository for projects like CLARITY without ready access to an organized data centre.

2.2.9   If there are restrictions on use, how will access be provided?

Where a restriction on open access to research data is necessary, attempts will be made to make data available under controlled conditions to other individual researchers. In the case where restricted or embargoed data is stored in the Zenodo repository, information about the restricted data will be published in the repository, and details of when the data will become available will be included in the metadata. According to the Q&A session "Open Research Data in H2020 and Zenodo repository" [7], Metadata for both open, closed, embargoed and restricted records are always publicly available in Zenodo. Data files and data sets for restricted access records are only visible to their owners and to those the owner grants access. Restricted access allows a researcher to upload a dataset and provide the conditions under which he/she grants access to the data. Researchers wishing to request access must provide a justification for how they fulfil these conditions. The owner of the dataset gets notified for each new request and can decide to either accept or reject the request. If the request is accepted, the requester receives a secret link which usually expires within 1-12 months.

2.2.10   Is there a need for a data access committee?

In case there are any issues regarding the restricted access to research results, CLARITY's quality assurance and ethics board can act as data access committee and seek clarification.

2.2.11 Are there well-described conditions for access (i.e. a machine-readable license)?

The license for open data as well as the conditions for access and possible embargo periods are distributed in machine-readable format as part of the metadata (see 2.1.5). Moreover, the license for open data will be selected from the list of licenses conformant with the principles of the Open Definition (http://opendefinition.org/licenses/).

2.2.12 How will the identity of the person accessing the data be ascertained?

The identity of the person that intends to gain access to **restricted data** stored in CLARITY's default repository (Zenodo, see 2.2.7) will be ascertained according to the mechanism described in 2.2.9.

2.3 Making data interoperable

2.3.1 Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?

This can only be partially answered, as the data collection is still in progress. However, most datasets related to (climate) models are distributed in the NetCDF (Network Common Data Form). NetCDF consist of self-describing, machine-independent data formats that facilitate the exchange and reuse of scientific data. Many (open source) software applications do exist that are able to read and generate NetCDF datasets.

2.3.2 What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?

See 2.1.5 and 2.3.3.

2.3.3 Will you be using standard vocabularies for all data types present in your data set, to allow inter-disciplinary interoperability?

The following standard vocabularies will be used in the default metadata schema (see 2.1.5) for all types of open data:

- License: Open Definition (http://opendefinition.org/)

- Funders: FundRef (https://www.crossref.org/services/funder-registry/)

- Grants: OpenAIRE (http://api.OpenAIRE.eu/)

Vocabularies for keywords and other metadata properties have yet to be selected. Some candidates are CUASHI (http://hiscentral.cuahsi.org/) for hydrological data and general ISO 19115 keywords for other data. Additional vocabularies used will be reported in future versions of the data management plan.

2.3.4 In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?

Currently, CLARITY does not intend to introduce new project specific ontologies or vocabularies.

2.4 Increase data re-use (through clarifying licences)

2.4.1 How will the data be licensed to permit the widest re-use possible?

Open Data and Open Source Software

According to article 26 of the Grant Agreement, data and software are owned by the beneficiary that generates them. Notwithstanding the above owners of **open results** arising from the CLARITY project are encouraged to release their work under a Creative Commons license, preferably Creative Commons Attribution 4.0 (CC-BY-4.0, http://opendefinition.org/licenses/cc-by/).

Scientific Publications

Authors of scientific publications arising from the CLARITY project are encouraged to seek an agreement with the scientific publisher of the publication (see 2.2.3) that allows the authors to

- retain the ownership of the copyright for their work and to

- deposit the publication in an Open Access repository.

2.4.2 When will the data be made available for re-use? If an embargo is sought to give time to publish or seek patents, specify why and how long this will apply, bearing in mind that research data should be made available as soon as possible.

Research data needed to validate the results of the scientific publications will be made available as open access at the same time as the publication. If an embargo period is imposed by the publisher, the publication and the related data are not made openly accessible until the embargo period has expired. In Horizon 2020, the embargo period must be shorter than 6 months. Information (metadata) about the publication and the related data will be made available at the same time as the publication, regardless of whether an embargo period has been imposed. Details of when the publication and the data will become available will be in included in the metadata as described in 2.2.9.

2.4.3 Are the data produced and/or used in the project usable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why.

Open results produced by the project and deposited in a respective repository are usable by third parties after the end of the project. If confidentiality, security, personal data protection obligations or IPR issues related to specific research data that is needed to validate a scientific publication forbid open access, the data may be deposited in a restricted repository and access may be granted upon request and under the conditions of a restricted license (see also 2.2.9).

2.4.4 How long is it intended that the data remains re-usable?

The open results that are deposited in the Zenodo repository will be available at least 5 years after the conclusion of the project. According to Zenodo's general policies (http://about.zenodo.org/policies/), "items will be retained for the lifetime of the repository. This is currently the lifetime of the host laboratory CERN, which currently has an experimental programme defined for the next 20 years at least."

2.4.5 Are data quality assurance processes described?

Quality assurance concerning accuracy and completeness of metadata will be performed by the data managers mentioned in 2.6 according to the quality control procedures described in D7.7 "Quality and Ethics Plan" [8].

2.5 Allocation of resources

2.5.1 What are the costs of making data FAIR in your project?

There are no immediate costs anticipated to make the open results generated in CLARITY FAIR. Especially no costs are foreseen for storing open results in the project's default repository (Zenodo, see 2.2.7). Additional details will be reported, as needed, in future versions of the DMP.

2.5.2   How will these be covered? Note that costs related to open access to research data are eligible as part of the Horizon 2020 grant (if compliant with the Grant Agreement conditions).

Any unforeseen costs related to open access to research data in Horizon 2020 are eligible for reimbursement during the duration of the project under the conditions defined in the Grant Agreement, in particular, in Article 6 and Article 6.2.D.3.

2.6   Who will be responsible for data management in your project?

Data management activities concern the whole project and needs to be coordinated and monitored both at project and work package level. Data management is also linked to publication of project results and thus dissemination activities. Therefore, the following roles and responsibilities can be identified:

2.6.1   Roles

The **Project Data Manager** (T7.3 task leader) is responsible for

- developing the data management plan and policy in cooperation with the project management in WP7 and the technical partners

- coordinating the technical realisation in WP1/WP4 (data survey, data repositories, metadata catalogues, ...)

- monitoring data management activities (both collection and publication) and deadlines and sending reminders to WP data managers

- providing support to WP data managers

- writing the data management plan (D7.x)

- providing solutions for specific issues in accordance with project management

The **Workpackage Data Managers** are responsible for

- the implementation of the data management policy in their respective WPs

- monitoring data management activities and deadlines and sending reminders to partners

- offering customized help and further guidance for filling out the WP data surveys

- asking partners for missing information or clarifications

- providing input to the data management plan by analysing and summarising the WP-specific data surveys

- offering customized help and further guidance for publishing open data and open source software

- monitoring that open results (data and software) are deposited in the default repository or a complementary OpenAIRE-compliant repository and sending reminders to partners

- monitoring that open results available in OpenAIRE are properly linked with CLARITY (see https://www.OpenAIRE.eu/participate/claim)

- contacting the quality assurance and ethics committee in case of questions and ethical and privacy issues that may forbid a publication of the data

The **Dissemination Manager** is responsible for

- offering assistance in choosing the right publication path (green or gold open access)

- offering customized help and further guidance for publishing scientific publications

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- ensuring that the open access policy of the journal complies with the H2020 open data requirements [4] before the researcher submits a manuscript

- monitoring that green access (self-archiving) publications are deposited in repositories and sending reminders to partners

- monitoring that metadata about publications is made available in the R&I Participant Portal (preferably automatically through OpenAIRE) and on the CLARITY website

- monitoring that research data related to a publication is made available in repositories and linked to respective publication

- monitoring possible embargo periods and sending reminders to partners

- monitoring that publications available in OpenAIRE are properly linked with CLARITY (see https://www.OpenAIRE.eu/participate/claim)

The Quality Assurance and Ethics Manager is responsible for

- performing a quality assurance and ethics assessment of open data before their publication

- keeping contact with data managers and decide together with the ethical committee on critical issues

The Data Provider / Scientist is responsible for

- informing the data & dissemination managers when new open data / papers ready for publication are available

- describing the data (by means of appropriate metadata) or scientific publication in accordance to the CLARITY data management policy (e.g. according to the chosen metadata standard) and with help of the tools (e.g. template, web form, ...) provided by the project

- depositing (publishing into a repository) the data or scientific publication in accordance to the CLARITY data management policy and with help of the tools (catalogue, repository, ...) provided by the project

The designated persons for the roles are listed in D7.7 "Quality and Ethics Plan" [8].

2.6.2 Are the resources for long-term preservation discussed (costs and potential value, who decides and how what data will be kept and for how long)?

No immediate costs are anticipated for open data that is stored for long-term preservation in the Zenodo repository. See also 2.5.1. Additional details will be reported, as needed, in future versions of the DMP.

2.7 Data security

2.7.1 What provisions are in place for data security (including data recovery as well as secure storage and transfer of sensitive data)?

Open results deposited in the Zenodo repository (see 2.2.7) are stored in CERN's EOS service (http://eos.web.cern.ch/content/about-eos) in an 18 petabytes disk cluster. Each file copy has two replicas located on different disk servers. For each file, two independent MD5 checksums are stored. The servers are managed according to the CERN Security Baseline for Servers. For more information see http://about.zenodo.org/infrastructure/.

2.7.2   Is the data safely stored in certified repositories for long-term preservation and curation?

Open results deposited in the Zenodo repository are safely stored for long time preservation (see 2.7.2). According to [1], "Zenodo is in the process of preparing the Data Seal of Approval (https://www.datasealofapproval.org/) application and we currently expect to send it in Spring 2017. In addition, CERN is working towards ISO certification of the organisational and technical infrastructure which Zenodo relies on for the purpose of long-term preservation of High Energy Physics data.".

2.8   Ethical aspects

2.8.1   Are there any ethical or legal issues that can have an impact on data sharing? These can also be discussed in the context of the ethics review. If relevant, include references to ethics deliverables and ethics chapter in the Description of the Action (DoA).

All currently identified ethical parameters to be obeyed are documented in Deliverable D7.7 "Quality and Ethics Plan" [8] in section 11 "Ethics and Security". Furthermore, ethics requirements will be additionally addressed in the Deliverables of WP8 "Ethics requirements". Those Deliverables have not yet been finally clarified and are under discussion with the Project Officer. Additional details will be reported, as needed, in future versions of the DMP.

2.8.2   Is informed consent for data sharing and long-term preservation included in questionnaires dealing with personal data?

Deliverable D7.7 "Quality and Ethics Plan" [8] in section 11 "Ethics and Security" provides information about applying ethical standards and requirements. It also informs CLARITY project partners when and where approvals are needed and how to deal with personal data. Further on, it is communicated where informed consent is needed and how to get them, e.g. addressing informed consent procedure for communication with stakeholders. Additional details will be provided in WP8 "Ethics requirements" Deliverables which are currently work in progress.

2.9   Other issues

2.9.1   Do you make use of other national/funder/sectorial/departmental procedures for data management? If yes, which ones?

Currently, the project does not make use of procedures for data management other than those described in this data management policy.

Note: *public/governmental institutions and other CLARITY partners may have their own obligations / policies for data management, but in the project (for data collected and produced by the project) we currently only follow the EC procedure (guidelines on FAIR data management ….).*

3   Conclusion

The initial Data Management Plan (DMP) of the CLARITY project introduces a detailed data management policy in line with Horizon 2020 open data requirements and guidelines on FAIR (Findable, Accessible, Interoperable and Reusable) data management.

The FAIR policy defines comprehensible and easy to follow administrative and technical procedures and clear responsibilities for embedding data management activities in the complete project lifecycle.

CLARITY DMP relies on state of the art technical solutions and standards like Digital Object Identifiers, DataCite metadata, the OpenAIRE initiative and the Zendo research data repository for the implementation of these procedures and their seamless technical integration into CLARITY's Climate Services Information System (CSIS). This will ensure that the results of the CLARITY project, including open data, open science publications and open source software, are preserved and stay accessible and usable after the end of the project.

The DMP furthermore summarises the intermediate results of the ongoing CLARITY data survey and thus provides the first overview on the data that is collected, processed or generated following the methodology and standards set out in the data management policy. The DMP is a living document and will be updated regularly with new results from the continuous data survey, or when the common data management policy needs to be updated.

The main input for the data survey comes from Task 2.1 "Data requirements definition, data collection concept, demonstration, and result validation concept" and from Task 2.2 "Demonstrator-specific data collection". Accordingly, the contents of the data survey in Annex 2 will eventually be integrated into the upcoming deliverable D2.2 "Catalogue of local data sources and sample datasets". Apart from that, data management is an active task that concerns nearly all work packages of the project.

References

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[8] G. Schimak, D. Havlik, J. Lorenzo, M. Á. Esbrí, P. Dihé and A. Geyer-Scholz, "D7.7 Quality and Ethics Plan," CLARITY Consortium, 2017.

Annex 1 - CLARITY Data Survey Template

The CLARITY Data Survey Template is used to collect information on used and produced datasets according to the requirements of the CLARITY Data Management Plan with help of CLARITY's technical coordination site (http://cat.clarity-h2020.eu/).

1. **Title**

2. **Responsible Party**
   Institution, contact person (name, telephone, email), author (if known), available expertise, tag if the data are external and Link to: Data Management (Here is meant to be listed only responsible partner within the project. For the external data where the data provider is outside of the Consortium, more information can be given in Data Management. The responsible partner should be able to have access (e.g. open data) or be in contact with the external data provider). You can also choose persons directly if they are members.

   2.1. **Responsible Party Role**
        Please describe the role of the CLARITY Responsible Party, e.g. responsible for collecting the data, responsible for storing the data

   2.2. **Responsible Party (CLARITY)**
        Here is meant to be listed only responsible partner within the project. For the external data where the data provider (owner) is outside of the Consortium, more information can be given in the Data Management section. The responsible partner should be able to have access (e.g. open data) or be in contact with the external data provider.

   2.3. **Responsible Person (CLARITY)**
        Here is meant to be listed only responsible person within the project.

3. **Data Provenance**
   Data provenance documents the inputs, entities, systems, and processes that influence data of interest, in effect providing a historical record of the data and its origins. (http://siis.cse.psu.edu/provenance.html).

   3.1. **Provenance Description**
        Description of the process that led to the production of the current dataset. This includes: Input data (which input or other data are needed to produce this dataset) Links to Datasets (if possible) or external links to / description of external data Process or model (which process or model was / is used to process the input data and produce this data) Link to Model (if possible) or external link to / description of external model

   3.2. **External Datasets**
        Links to external data that was used as basis for the creation of the current dataset.

   3.3. **Internal Dataset**
        Links to internal Datasets (if possible) that were used for the production of the current dataset. If the current dataset is produced by a model ("model output"), the links would point to the "model input" datasets.

   3.4. **External Model**
        External link to description of external model that was used to produce the current dataset.

4. **Intended use**
   Where and how this this data can be used within the project.

4.1. **Intended use description**
How and for which purpose is the data used / produced in CLARITY? E.g. input for vulnerability models, which WP/Task, application (which pilot site or general application)?

4.2. **Building Blocks**
In which Building Blocks is the data used?

4.3. **Relations to Building Blocks**
Please describe the relation of the dataset to the selected Building Block(s). E.g. if the Building Block is a local climate model, the dataset might be input or output of that model.

5. **Data description**

5.1. **Dataset information**
Please provide the following information on
a) title
b) naming conventions used (e.g. $location_$params_YYYY-MM.DD.csv)
c) short description,
d) persistent and unique identifier such as Digital Object Identifiers (if available)

5.2. **Parameter information**
Parameter information (applies mainly to model input data): a) parameter name, b) unit, c) source type (e.g. model, observations), d) data type (e.g. gridded, point data, vector, shapefile, raster)

5.3. **Coverage**
Temporal and spatial coverage:
a) region (e.g. EU, City of Stockholm)
b) start time (e.g. 1961-01-01)
c) end time (e.g. 2100-12-31)

5.4. **Resolution**
a) spatial (in m)
b) temporal (e.g. hourly, daily)

5.5. **CRS**
Coordinate Reference System (CRS)

5.6. **Storage**
Please provide the following information related to the storage of the data:
a) format(s) (e.g. NetCDF, ASCII, proprietary, to be defined, etc.)
b) Version
c) transfer size (GB)
d) direct link(s) to datasets or Link to (Meta-) Data Repository

5.7. **Metadata**
a) keywords (e.g. for new datasets: will be selected from vocabluary specified under c)
b) keywords vocabluary (e.g. ISO 19115, CUAHSI, to be decided, ...)
c) Metadata Standard (e.g. CKAN, ISO 19115, custom, to be decided, etc.)

6. **Data management**

6.1. **Availability**
a) existing data
b) data will be produced in the CLARITY project
c) data will be reused/extended

6.2. **Owner**
Owner of the data if different from responsible partner or data is external

6.3. **Open Access**
a) yes
b) no
Why is / won't be the dataset openly available? (if previous answer is no).

6.4. **Access conditions**
a) license (e.g. CC-BY-SA, for research only, etc.)
b) ordering, costs
c) constraints, (e.g. software requirements, external expertise needed, …)
d) further restrictions on use (e.g. sensitive data, non disclosure, etc.)

7. **(Meta-) Data Repository**

7.1. **Data Repository Name**
Name of the Data Repository where the Data will be deposited (for open data produced by CLARITY) or can be downloaded (for data collected / used by CLARITY).

7.2. **Data Repository Description**
Description of the Repsoitory (e.g. wheter institutional with open access, public, internal service or database, deposit at zenodo.org, REST service, to be provided by CLARITY, etc.)

7.3. **Data Repository Link**
Link to data repository

7.4. **Data Repository Properties**
a) new (to be set up by CLARITY) or existing repository (YES/NO)
b) internal (provided by CLARITY or a partner) or external (e.g. zenodo.org) (YES/NO)
c) public or restricted (YES/NO)

7.5. **Data Repository Properties**
a) sustainability of the repository (e.g. in case of internal / partner repo, what happens after the end of the project?)
b) security (e.g. backups, replication, etc.)

7.6. **Data Repository Access**
a) access methods (e.g. type of client or application needed to access the repository, e.g. WMS client)
b) access documentation (e.g. API documentation available)
c) availability access software
d) access control and logging (e.g. no login required)

Annex 2 - CLARITY Data Survey

In the following, the intermediate results of the ongoing CLARITY Data Survey are presented, that will eventually be integrated partly into D2.2 "Catalogue of local data sources and sample datasets".

1. Digital Elevation Model over Europe (EU-DEM)

Responsible party

Processors: European Environment Agency (EEA)

Owners: Directorate-General Enterprise and Industry (DG-ENTR) , European Commission

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from European Environment Agency (EEA). The EU-DEM is a hybrid product based on SRTM and ASTER GDEM data fused by a weighted averaging approach and it has been generated as a contiguous dataset divided into 1 degree by 1 degree tiles, corresponding to the SRTM naming convention.

More info: https://www.eea.europa.eu/data-and-maps/data/eu-dem#tab-metadata

External Datasets: EU-DEM

Intended use

EU-DEM will be used in WP3 on:

1. EU-scale: as a base map for high-level screening

2. Use Cases: AT, IT, SE - elevation information as input for urban climate model MUKLIMO_3

3. Possible other applications

Building Blocks: Catalogue of Data Sources and Simulation Models, High Level Climate Change Risk Assessment Tool, Map Component

Data description

The Digital Elevation Model over Europe from the GMES RDA project (EU-DEM) is a Digital Surface Model (DSM) representing the first surface as illuminated by the sensors. The EU-DEM dataset is a realisation of the Copernicus programme, managed by the European Commission, DG Enterprise and Industry.

The EU-DEM is a 3D raster dataset with elevations captured at 1 arc second postings (2.78E-4 degrees) or about every 30 metre.

All three datasets are made available as tiles (5x5° or 1000x1000km) and as single files:

- EU-DEM in ETRS89 geographic (EPSG code 4258)

- EU-DEM in ETRS89-LAEA (EPSG code 3035)

- Colour shaded relief image over Europe in ETRS89-LAEA (EPSG code 3035)

The datasets are encoded as GeoTIFF with LZW compression (tiles) or DEFLATE compression (European mosaics as single files).

Parameter information:

- Name: Elevation

- Unit: meters (m)

- Source type: observations

- Data type: raster

Coverage:

- Temporal: 2000

- Spatial: EU

Resolution: about 30 m

CRS: ETRS89

Storage: Format: tif, Transfer size: about 20 GB

Link for download: https://www.eea.europa.eu/data-and-maps/data/eu-dem#tab-original-data

Metadata: https://www.eea.europa.eu/data-and-maps/data/eu-dem#tab-metadata

Metadata: Link to Metadata: https://www.eea.europa.eu/data-and-maps/data/urban-atlas#tab-metadata

Data management

Availability: existing data

Owner: EEA, Directorate-General Enterprise and Industry (DG-ENTR), European Commission

Open Access: yes

Access conditions:

From Metadata Rights: https://www.eea.europa.eu/data-and-maps/data/urban-atlas#tab-metadata

Access to the data is governed by the draft delegated regulation on Copernicus data and information policy, as approved by the EC on 12th of July 2013, and in the process of decision making by the Council and European Parliament. This delegated act supplements regulation (EU) No 911/2010 of the European Parliament and of the Council on the European Earth monitoring programme (GMES). It establishes registration and licensing conditions for GMES/Copernicus users and defines criteria for restricting access to GMES/Copernicus dedicated data and GMES/Copernicus service information.

The following credit must be displayed when using these data: "Produced using Copernicus data and information funded by the European Union - EU-DEM layers."

Access and use of the data is made on the conditions that:

1. When distributing or communicating Copernicus data and information to the public, users shall inform the public of the source of that data and information.

2. Users shall make sure not to convey the impression to the public that the user's activities are officially endorsed by the Union.

3. Where that data or information has been adapted or modified, the user shall clearly state this.

(Meta-) Data Repository

Data Repository Name: EEA Website

Data Repository Description: External data available for download.

Data Repository Link: EU-DEM Permalink

Data Repository Properties: public or restricted (YES/NO)

Data Repository Properties:

- External data repository. Expected long-term availability.
- Security methods, including back-up, not know.
- The data are useable for third parties, also after the end of the project

Data Repository Access: Data are available for download. GIS tool needed for data analysis.

2. Climatic models

Responsible party

Aemet is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): AEMET

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

CMIP5.

The CMIP5 experimental protocol was endorsed by the 12th Session of the WCRP Working Group on Coupled Modelling (WGCM) and is presented in the following document: Taylor, K. E., R. J. Stouffer and G. A. Meehl, 2009: A Summary of the CMIP5 Experiment Design

External Datasets: ACCESS1-0, CanESM2, HADGEM2-CC, MPI-ESM-MR, NorESM1-M

Intended use

External grid data with climatic projections. Foreseen possible risks over the road network linked to weather variables.

Building Blocks: Catalogue of Data Sources and Simulation Models, Data Repositories, High Level Climate Change Risk Assessment Tool, Multi-Criteria-Analysis Decision Support Tool

Data description

Netcdf data fails with the forecasted values of weather variables.

Parameter information: grid data

Coverage: Spain/Europe from 1960 - 2100

Resolution: space: 1.5º, temporal: daily

Storage: format: netcdf, expected size: 300 MB / (variable and model), (this size corresponds to Europe)

Data management

Availability: existing data

Owner: CMIP5

Open Access: yes

Access conditions: research purposes

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: to be defined

3. Seasonal models

Responsible party

Aemet is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): AEMET

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

NCEP-NCAR for the USA seasonal models. ECMWF for European seasonal models

External Datasets: CFS

Intended use

External grid data with seasonal forecasts. Foreseen possible risks over the road network linked to weather variables.

Building Blocks: Catalogue of Data Sources and Simulation Models, Data Repositories, High Level Climate Change Risk Assessment Tool, Multi-Criteria-Analysis Decision Support Tool

Data description

GRIB data fails with the forecasted values of weather variables.

Parameter information: grid data

Coverage: Spain/Europe from 2014 - 2019

Resolution: space: 1.5º, temporal: daily

Storage: format: GRIB, expected size: 150 MB / (variable and model), (this size corresponds to Europe)

Metadata: To be defined

Data management

Availability: existing data

Owner: NOAA and ECMWF

Open Access: no

Open Access:

NOAA data are freely accessible, ECMWF data are proprietary data

Access conditions: all use

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: to be defined

4. Altimetric information of the LiDAR point cloud

Responsible party

Meteogrid is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): METEOGRID

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

Spanish Geographic Institute

External Datasets: Spanish National Center of Cartographic Downloads

Intended use

This database is going to be used in: (1) hazard definitions (hydric, landslides, vegetation growth, etc) and (2) identification of vulnerable elements; in the Spanish user case

Building Blocks: Catalogue of Elements at Risk and Adaptation Options, Map Component

Data description

Digital files with altimeter information of the LiDAR point cloud., distributed in 2x2 km-long files. Point clouds were captured with flights using LiDAR sensors with a density of 0.5 points / m2, subsequently classified and RGB-colored using orthophotos from the National Plan for Aerial Orthophotography (PNOA) with a pixel size of either 25 or 50 cm. (check LIDAR coverage in http://pnoa.ign.es/coberturalidar)

Parameter information: Point data

Coverage: It is available all Spanish territory but it has to be defined the coverage that It is going to be used (road buffers?)

Resolution: 0.5 points / m2

CRS: ETRS89 for the Iberian Peninsula, Balearic Islands, Ceuta and Melilla, and REGCAN95 for the Canary Islands (both systems are compatible with WGS84). UTM projection in the corresponding zone. orthometric heights.

Storage: LAZ (LAS compression file format) file. Expected size depends on coverage

Metadata: ISO 19115 standard

Data management

Availability: existing data

Owner: Spanish Geographic Institute

Open Access: yes

Access conditions: All uses

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: To be defined

5. Digital Elevation Models of Spain

Responsible party

Meteogrid is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): METEOGRID

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

Spanish Geographic Institute

External Datasets: Spanish National Center of Cartographic Downloads

Intended use

This database is going to be used in hazard definitions (hydric, landslides, vegetation growth, etc) ; in the Spanish user case

Building Blocks: Catalogue of Elements at Risk and Adaptation Options, Map Component

Data description

It has been obtained by interpolation of the land class obtained from LIDAR flights of the National Plan for Aerial Orthophotography (PNOA).

Parameter information: raster

Coverage: It is available all Spanish territory but it has to be defined the coverage that It is going to be used (road buffers?)

Resolution: 5 meters

CRS: ETRS89 for the Iberian Peninsula, Balearic Islands, Ceuta and Melilla, and REGCAN95 for the Canary Islands (both systems are compatible with WGS84). UTM projection in the corresponding zone. Also zone 30 extended for sheets into zones 29 and 31.

Storage: ASCII (.asc) ESRI array. Expected size depends on coverage

Metadata: ISO 19115 standard

Data management

Availability: existing data

Owner: Spanish Geographic Institute

Open Access: yes

Access conditions: All uses

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: To be defined

6. Information System of Land Use in Spain

Responsible party

Meteogrid is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): METEOGRID

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

Spanish Geographic Institute

External Datasets: Spanish National Center of Cartographic Downloads

Intended use

This database is going to be used in hazard definitions (hydric, landslides, vegetation growth, etc) ; in the Spanish user case

Building Blocks: Catalogue of Elements at Risk and Adaptation Options, Map Component

Data description

User-friendly environment for making queries and obtaining results in the form of cartographic, statistical and graphical data. It was made in 2011. http://www.siose.es/

Parameter information: Vector layer (shapefile)

Coverage: It is available all Spanish territory but it has to be defined the coverage that It is going to be used (road buffers?)

Resolution: E: 1:25 000

CRS: ETRS89. Longitude and latitude coordinates

Storage: Format: shp, Expected size depends on coverage

Metadata: ISO 19115 standard

Data management

Availability: existing data

Owner: Spanish Geographic Institute

Open Access: yes

Access conditions: All uses

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: To be defined

7. Spanish transport networks vector layers

Responsible party

Meteogrid is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): METEOGRID

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

Spanish Geographic Institute

External Datasets: Spanish National Center of Cartographic Downloads

Intended use

Spanish transport networks vector layers are going to be used in identify vulnerable elements; in the Spanish user case

Building Blocks: Catalogue of Elements at Risk and Adaptation Options, Map Component

Data description

These dates are vector layers with all kinds of road and railways

Parameter information: Shapefile data (lines, points, and polygons)

Coverage: Spain national territory (Balears and Canary island too)

Resolution: E 1:10000

CRS: ETRS89. Longitude and latitude coordinates

Storage: format: shp, expected size: 635 kb

Metadata: ISO 19115 standard

Data management

Availability: existing data

Owner: Spanish Geographic Institute

Open Access: yes

Access conditions: all uses

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: to be defined

8. Water related pan european indicators

Responsible party

Data producer: SMHI. Data owner: Copernicus C3S

Responsible Party (CLARITY): SMHI

Responsible Person (CLARITY): Lena Strömbäck, Yeshewatesfa Hundecha

WPs: WP3

Data provenance

Dataset available from the SWICCA Copernicus C3S proof of concept project.

European patterns and relevance describes the future trends of climate change across Europe, ands the showcases of climate impact adaptation that are relevant to each future trend. The metadata of climate impact indicators describes the SWICCA impact indicators and how they have been produced.

For more information see: http://swicca.climate.copernicus.eu/

External Datasets: Pan European water related climate data

Intended use

Three possible uses:

- For the SE case study. I particular CABJON has previously used this dataset.

- Available for other case studies if there is an interest

- Can be used for a Pan-European overview .

Building Blocks: Catalogue of Data Sources and Simulation Models, Data Repositories

Map Component, Data description

Information about available climate indicators are given here: http://swicca.climate.copernicus.eu/start/climate-indicators/

Parameter information: See: http://swicca.climate.copernicus.eu/start/climate-indicators/

Coverage: Spatial: Pan-european data

Time: Reference data for a historical period and climate impacts for the 2020, 2050 and 2080s. Seasonal forecasts.

Resolution: Different time resolution is available: 5, 12 and 50 km grid. Catchment with mean area of 215 km2

Storage: NetCDF, available for visualisation and download: http://swicca.climate.copernicus.eu/indicator-interface/maps/. Additional formats via a THREDDs catalogue can be made available.

Metadata: Metadata is available via: http://swicca.climate.copernicus.eu/start/climate-indicators/

Data management

Availability: existing data, data will be reused/extended

Owner: Copernicus C3S

Open Access: yes

Access conditions: Details will be decided on at the end of the SWICCA project

(Meta-) Data Repository

Data Repository Name: http://swicca.climate.copernicus.eu/indicator-interface/graphs-and-download/

Data Repository Description: Interface for exploration and download of data.

Data can also be downloaded via: http://swicca.smhi.se/thredds/catalog.html

Data Repository Properties: Openly available, however, will be discussed with Copernicus after end of SWICCA project. (Dec 2017)

Data Repository Access: http://swicca.smhi.se/thredds/catalog.html

9. 1 km resolution of data over Stockholm

Responsible party

Data producer: SMHI

Data owner: Copernicus C3S

Responsible Party (CLARITY): SMHI

Responsible Person (CLARITY): Lena Strömbäck, Jorge Humberto Amorim

WPs: WP3

Data provenance

Dataset available from the Urban SIS Copernicus C3S proof of concept project.

- The dataset consist of 1x1 km grid of hourly data over Stockholm it contains:

- Meteorological data, produced by HARMONIE-Arome.

- Air quality produced by MATCH

- Hydrological data produced by HYPE

- A large number of climate indicators produced based on these model simulation .

A large part of the data is already available, the production of climate data is being completed during fall 2017.

For more information see:
General information: http://urbansis.climate.copernicus.eu/
Information about indicators: http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/
Browsing data: http://urban-sis.smhi.se/

Note: The site also contains data for Bologna and Amsterdam, not included in the Clarity project.

Intended use

The dataset will be used for the SE use case . Main use is for heat studies together with Stockholm city.

It might also be of use for hydrology and air quality of Stockholms city.

Building Blocks: Catalogue of Data Sources and Simulation Models, Community based Sensitivity Analysis, Data Repositories, Map Component

Data description

Information about available climate indicators are given here:

http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/

Parameter information: See: http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/

Coverage: Spatial: City of Stockholm

Temporal: Three time frames with selected years in each:

- Historical: 2006, 2007, 2012, 2013, 2014

- Present: 1985, 1994, 1995, 2005, 2009

- Future: 2032, 2035, 2046, 2053, 2054

Resolution: Spatial: 1km

Time resolution: Precipitation: 15 min, Other basic variables: 1 hour, Indicators and staistics on mothly or yearly resolution

Storage: NetCDF, available for visualisation and download: http://urban-sis.smhi.se/ For additional formats via the THREDDs catalogur: http://urban-sis.smhi.se/thredds/catalog.html

Metadata: Available in each file at download.

A more extensive description is available here:
http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/

Data management

Availability: existing data, data will be reused/extended

Owner: Copernicus C3S

Open Access: yes

Access conditions: Details will be specified at the end of the Urban SIS project (Jan 2018).

(Meta-) Data Repository

Data Repository Name: Urban SIS

Data Repository Description: Available in each file at download.

A more extensive description is available here:
http://urbansis.climate.copernicus.eu/urban-sis-climate-indicators/

Data Repository Link: Urban SIS data

Data Repository Access: http://urban-sis.smhi.se/thredds/catalog.html

10.Decadal climatic models

Submitted by Iñaki Torres Cobián on Fri, 09/29/2017 - 11:28

Responsible party

Aemet is responsible for collecting data. Atos and Meteogrid are responsible for storing the data

Responsible Party (CLARITY): AEMET

Responsible Person (CLARITY): Luis Torres Michelena

WPs: WP2

Data provenance

CMIP5.

The CMIP5 experimental protocol was endorsed by the 12th Session of the WCRP Working Group on Coupled Modelling (WGCM) and is presented in the following document: Taylor, K. E., R. J. Stouffer and G. A. Meehl, 2009: A Summary of the CMIP5 Experiment Design

External Datasets: CAN-CM4, IPSL-CM5A-LR, MIROC5, MPIESM-LR

Intended use

External grid data with a decadal forecast. Foreseen possible risks over the road network linked to weather variables.

Building Blocks: Catalogue of Data Sources and Simulation Models, Data Repositories, High Level Climate Change Risk Assessment Tool, Multi-Criteria-Analysis Decision Support Tool

Data description

Netcdf data fails with the forecasted values of weather variables.

Parameter information: grid data

Coverage: Spain/Europe from 1980 - 2035

Resolution: space: 1.5º, temporal: daily

Storage: format: netcdf, expected size: 400 MB / (variable and model), (this size corresponds to all-world; for an European grid around 40MB)

Metadata: To be defined

Data management

Availability: existing data

Owner: CMIP5

Open Access: yes

Access conditions: research purposes

(Meta-) Data Repository

Data Repository Name: ATOS

Data Repository Description: public institution

Data Repository Access: to be defined

11. LIDAR Campania Region (DSM – DTM)

Responsible party

refine dataset to retrieve the needed geometry information (with the support of PLINIVS)

Responsible Party (CLARITY): Napoli

Responsible Person (CLARITY): Francesca Pignataro

WPs: WP2, WP3

Intended use

Napoli case (building heights, vegetation cover, etc.)

Building Blocks: Catalogue of Data Sources and Simulation Models

Data description

Coverage: Campania Region

Resolution: 1m

Data management

Availability: existing data

Owner: Ministry of Environment Italy

Open Access: yes

Access conditions: Creative Commons Attribution

(Meta-) Data Repository

Data Repository Name: Ministry of Environment Italy - Geoportal

12. Local heat maps at 100m resolution

Responsible party

Produced by ZAMG (other?) for Demonstration Cases, on request.

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP2, WP3

Data provenance

Produced in the project, using the Urban Climate Model realization Muklimo 3

External Datasets: THIS DATA IS NOT AVAILABLE YET (example)

Internal Dataset: Digital Elevation Model over Europe (EU-DEM), Urban Atlas Landcover 2012

Intended use

Needed for detailed risk analysis in the following Demonstration Cases:

- Linz - confirmed, by ZAMG

- Stockholm – optional

- Naples – optional

- Spain – optional

Produced by Urban Climate Model BB on purpose. Results shown on a map, using Map BB

Building Blocks: Map Component, Urban climate model

Data description

Local heat map, produced on demand.

Coverage: typically 30x30km. Temperature values for several (selected) days and a 30 years average heat map

Resolution: 100x100 meters, hourly temperatures

CRS: To be decided

Storage:

a)   formats: NetCDF, ASCII or raster file

b)   Version: not relevant here

c)   transfer size (GB): a single map is few MB; accumulated data can be few GB

d)   direct link(s) to datasets or Link to (Meta-) Data Repository: not available, data produced on demand

Data management

Availability: data will be produced in the CLARITY project

Owner: ZAMG

Open Access: yes

Open Access: We are not sure if this will be open access or not. For research, it probably needs to be open access.

13.Urban Atlas Landcover 2012

Responsible party

https://www.eea.europa.eu/data-and-maps/data/urban-atlas#tab-gis-data

Responsible Party (CLARITY): AIT

Responsible Person (CLARITY): Mario Köstl

WPs: WP2

Data provenance

Existing data from Copernicus Land Monitoring Service

External Datasets: Urban Atlas Landcover

Intended use

It is an input model for further climate calculations of the City of Linz (Austria, WP2/DC3)

Data set needed for use cases in the city of Linz: Basic landcover information for analysis on city-level.

Data description

The Urban Atlas is providing pan-European comparable land use and land cover data for Large Urban Zones with more than 100.000 inhabitants as defined by the Urban Audit.

Coverage: European Cities, Large Urban Zones with more than 100.000 inhabitants

Resolution: vector data

CRS: ETRS89

Metadata: https://www.eea.europa.eu/data-and-maps/data/urban-atlas#tab-metadata

Data management

Availability: existing data

Owner: Copernicus Land Monitoring Service

Open Access: yes

Access conditions: open data

(Meta-) Data Repository

Data Repository Name: Copernicus Land Monitoring Service

Data Repository Description: Copernicus Land Monitoring Service

Data Repository Link: Urban Atlas Data

Data Repository Access: https://www.eea.europa.eu/data-and-maps/data/urban-atlas#tab-gis-data

14. OSM roads, buildings, landcover

Responsible party

www.openstreetmap.org

Downloaded and further processed by AIT /SBC Mario Köstl

Responsible Party (CLARITY): AIT

Responsible Person (CLARITY): Mario Köstl

WPs: WP2

Data provenance

Open Street Map www.openstreetmap.org

External Datasets: Open Street Map

Intended use

Delivers information on roads, buildings and landcover for WP2/DC3 City of Linz . Data needed to differentiate buildings from non-buildings. Input data for Muklimo and Envimet.

Data description

https://www.openstreetmap.org/about

Coverage: Shapefile for City of Linz , possible to download it for whole Austria

Resolution: Vector Data

CRS: ETRS

Metadata: https://www.openstreetmap.org/about

Data management

Availability: existing data

Owner: © OpenStreetMap contributors

Open Access: yes

Access conditions: OpenStreetMap® is *open data*, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF).

(Meta-) Data Repository

Data Repository Name: www.openstreetmap.org

Data Repository Description: www.openstreetmap.org

Data Repository Link: Open Street Map

Data Repository Access: www.openstreetmap.org

15.10m DEM

Responsible party

AIT /SBC

Responsible Party (CLARITY): AIT

Responsible Person (CLARITY): Mario Köstl

WPs: WP2

Data provenance

Data delivered from OGD Upper Austria https://www.land-oberoesterreich.gv.at/opendata.htm

External Datasets: 10m DEM

Intended use

Data needed for microclimate simulation and flooding simulation.

Data description

Digital Elevation Model: A digital elevation model (DEM) is a 3D representation of a terrain's surface created from remote sensing data.

Coverage: 20x21km around Linz ; available for whole Upper Austria

Resolution: 10m grid size

CRS: MGI/Austria GK Central

Storage: no storage needed

Metadata: https://www.land-oberoesterreich.gv.at/124923.htm

Data management

Availability: existing data

Owner: OGD Upper Austria

Open Access: yes

Access conditions: open access: https://www.land-oberoesterreich.gv.at/124923.htm

(Meta-) Data Repository

Data Repository Name: https://www.land-oberoesterreich.gv.at/124923.htm

Data Repository Description: https://www.land-oberoesterreich.gv.at/124923.htm

Data Repository Access: https://www.land-oberoesterreich.gv.at/124923.htm

16. Zoning Plan Upper Austria

Responsible party

AIT /SBC

Responsible Party (CLARITY): AIT

Responsible Person (CLARITY): Mario Köstl

WPs: WP2

Data provenance

Downloaded from OGD Upper Austria https://www.land-oberoesterreich.gv.at/171835.htm

External Datasets: Zoning Plan of Upper Austria

Intended use

Information on potential future land use/information on land use change potentials (e.g. dedicated as building land but currently open space --> reserve for future constructions)

Data description

Zoning plan shows areas of land which are divided by the municipalities into zones within various uses are permitted (e.g. residential, industrial, agricultural) and therefore could be used for estimating the future land cover/use changes. Data can be used for future scenarios and future climate scenarios.

Coverage: 20x21km around Linz , available for Upper Austria

Resolution: Vector data

CRS: MGI / Austria GK Central

Storage: not needed

Metadata: https://www.land-oberoesterreich.gv.at/171835.htm

Data management

Availability: existing data

Owner: Upper Austria

Open Access: yes

Open Access: https://www.land-oberoesterreich.gv.at/171835.htm

Access conditions: https://www.land-oberoesterreich.gv.at/171835.htm

(Meta-) Data Repository

Data Repository Name: OGD Upper Austria

Data Repository Description: Open Geo Data Platform of the province of Upper Austria

Data Repository Access: open access: https://www.land-oberoesterreich.gv.at/171835.htm

17.20m HR soil sealing layer (0-100%)

Responsible party

AIT /SBC

Responsible Party (CLARITY): AIT

Responsible Person (CLARITY): Mario Köstl

WPs: WP2

Data provenance

Downloaded from the EEA (European Environment Agency) Website: https://www.eea.europa.eu/data-and-maps/data/eea-fast-track-service-precursor-on-land-monitoring-degree-of-soil-sealing

External Datasets: 20m High Resolution soil sealing layer (0-100%)

Intended use

Possible use for MUKLIMO simulations. Shows the degree of soil sealing (0-100%) in 20m resolution.

Data description

Raster data set of built-up and non built-up areas including continuous degree of soil sealing ranging from 0 - 100% in aggregated spatial resolution (20 x 20m). Year 2009.

Coverage: European data, grid data, 20m resolution

Resolution: 20m resolution

CRS: ETRS89

Metadata: https://www.eea.europa.eu/data-and-maps/data/eea-fast-track-service-precursor-on-land-monitoring-degree-of-soil-sealing#tab-metadata

Data management

Availability: existing data

Owner: EEA

Open Access: yes

Open Access:

Access conditions: open access: https://www.eea.europa.eu/data-and-maps/data/eea-fast-track-service-precursor-on-land-monitoring-degree-of-soil-sealing

(Meta-) Data Repository

Data Repository Name: https://www.eea.europa.eu/data-and-maps/data/eea-fast-track-service-precursor-on-land-monitoring-degree-of-soil-sealing

Data Repository Description: Website of EEA (European Environmental Agency) https://www.eea.europa.eu/

Data Repository Access: https://www.eea.europa.eu/data-and-maps/data/eea-fast-track-service-precursor-on-land-monitoring-degree-of-soil-sealing#tab-european-data

18.European Landslide Susceptibility Map

Responsible party

https://esdac.jrc.ec.europa.eu/themes/landslides

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from ESDAC

more information: https://esdac.jrc.ec.europa.eu/themes/landslides

Intended use

European Landslide Susceptibility Map (ELSUS1000) v1 will be used in WP3

Building Blocks: Catalogue of Data Sources and Simulation Models, High Level Climate Change Risk Assessment Tool, Map Component

Data description

from https://esdac.jrc.ec.europa.eu/content/european-landslide-susceptibility...

ELSUS1000 version 1 shows levels of spatial probability of generic landslide occurrence at continental scale. It covers most of the European Union and several neighbouring countries. Basically, the map has been produced by regionalizing the study area based on elevation and climatic conditions, followed by spatial multi-criteria evaluation modelling using pan-European slope gradient, soil parent material and land cover spatial datasets as the main landslide conditioning factors. In addition, the location of over 100,000 landslides across Europe, provided by various national organizations or collected by the authors, has been used for model calibration and validation .

Ancillary datasets: Confidence Level map of ELSUS1000 v1; NUTS 3-aggregated map of ELSUS1000 v1; and the Climato-Physiographic Regions, Classified Slope Gradient, Classified Soil Parent Material and Classified Land Cover maps used for landslide susceptibility assessment

Parameter information: Name: Landslide susceptibility levels, Data type: Raster (ESRI GRID)

Coverage: Temporal: 2013, Spatial: 27 member states of the European Union (no Cyprus) + Albania, Bosnia and Herzegovina, Croatia, Kosovo, FYR Macedonia, Montenegro, Norway, Serbia and Switzerland

Resolution: 1 km

CRS: ETRS89 Lambert Azimuthal Equal Area

Metadata: Link to Metadata: https://esdac.jrc.ec.europa.eu/content/european-landslide-susceptibility...

Data management

Availability: existing data

Owner: European Soil Data Centre (ESDAC)

Open Access: yes

Access conditions:

from: https://esdac.jrc.ec.europa.eu/content/european-landslide-susceptibility... (Notification)

1. The data provided have been produced for research purposes jointly by the Joint Research Centre (JRC), Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Institute de Physique du Globe de Strasbourg (CNR-EOST), and Istituto di Ricerca per la Protezione Idrogeologica (CNR-IRPI). The data produced are made available for research and development purposes.

2. None of these organizations, including the authors, accept any liability whatsoever for any error, missing data or omission in the data, or for any loss or damage arising from its use. The JRC agrees

to provide the data free of charge but is not bound to justify the content and values contained in the databases.

3. The permission to use the data specified above is granted on condition that, under NO CIRCUMSTANCES are these data passed to third parties. They can be used for any purpose, including commercial gain.

4. The user agrees to:
    a) Make proper reference to the source of the data when disseminating the results to which this agreement relates.
    b) Participate in the verification of the data (e.g. by noting and reporting any errors or omissions discovered to the JRC).

(Meta-) Data Repository

Data Repository Name: ESDAC website

Data Repository Description: External data available for download.

Data Repository Link: ELSUS1000 v1

Data Repository Access: Data is available for download, registration is required.

https://esdac.jrc.ec.europa.eu/content/european-landslide-susceptibility...

19.EURO-CORDEX ensemble climate simulations

Responsible party

http://euro-cordex.net/index.php.en

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from EURO-CORDEX

http://euro-cordex.net/index.php.en

Intended use

data will be used in WP3 on:

Use cases: as input for calculating climate indices for the city of Linz (Austria), based on simulations with the urban climate model MUKLIMO_3

Building Blocks: Catalogue of Data Sources and Simulation Models, Data Repositories, High Level Climate Change Risk Assessment Tool, Multi-Criteria-Analysis Decision Support Tool

Data description

from http://euro-cordex.net/060374/index.php.en :

EURO-CORDEX is the European branch of the CORDEX initiative and will produce ensemble climate simulations based on multiple dynamical and empirical-statistical downscaling models forced by multiple global climate models from the Coupled Model Intercomparison Project Phase 5 (CMIP5).

Emission Scenarios

The EURO-CORDEX simulations consider the global climate simulations from the CMIP5 long-term experiments up to the year 2100. They are based on greenhouse gas emission scenarios (Representative

Concentration Pathways, RCPs) corresponding to stabilization of radiative forcing after the 21st century at 4,5 W/m² (RCP4.5), rising radiative forcing crossing 8,5 W/m² at the end of 21st century (RCP8.5), and peaking radiative forcing within the 21st century at 3,0 W/m² and declining afterwards (RCP2.6, also referred to as RCP3-PD) (Moss et al., 2010 and 2008; Nakicenovic et al., 2000; Van Vuuren et al., 2008).

more info: http://www.data.euro-cordex.net

Parameter information: Format: netcdf

Coverage: Spatial: 27N – 72N, ~22W – 45E

Temporal: Hindcast (ERA Interim): 1989 – 2008, Control: 1951 – 2005 (1981 – 2010, 1951-80), Scenario : 2006 – 2100 (2041-71, 2011-40, 2071-2100)

Resolution: EUR-44: 0.44 degree (~50 km), EUR-11: 0.11 degree (~12.5 km)

Data management

Availability: existing data

Owner: CORDEX

Open Access: yes

Open Access: Data openly accessable, after having created an Earth System Grid Federation (ESGF) OpenID.   Datanode   (for   example):   https://esgf-data.dkrz.de/user/add/?next=https://esgf-data.dkrz.de/searc...

Access conditions:

from http://cordex.dmi.dk/joomla/images/CORDEX/cordex_terms_of_use.pdf

Terms of use for CORDEX data for non-commercial research and educational purposes of:

a) I agree to restrict my use of CORDEX model output for non-commercial research and

educational purposes only.

Results from non-commercial research are expected to be made generally available through open

publication and must not be considered proprietary.

Materials prepared for educational purposes cannot be sold. These restrictions may only be relaxed by permission of the individual modelling groups responsible for the simulations.

(Meta-) Data Repository

Data Repository Name: Earth System Grid Federation (ESGF) Search Portal

Data Repository Description: External data available for download

Data Repository Link: ESFG

Data Repository Access: ESGF OpenID and corresponding password needed

two possible ways of extracting specific regions:

- Software "Climate Data Operators" (CDO)
- a web-based method (https://climate4impact.eu)

20. Future flooding in Sweden

Submitted by Lena Strömbäck on Wed, 10/04/2017 - 14:28

Responsible party

Data producer: SMHI Data owner: SMHI

Responsible Party (CLARITY): SMHI

Responsible Person (CLARITY): Lena Strömbäck, Yeshewatesfa Hundecha

WPs: WP3

Data provenance

High resolution flooding data over Jönköping and/or Stockholm consisting discharge and runoff. Dataset will be produced using the S_HYPE setup with a set of climate projections with hourly resolution as forcing. Example of output data from S-HYPE: http://vattenwebb.smhi.se/modelarea/, http://vattenwebb.smhi.se/modelregion/ However, produced data will be for future conditions and will be further processed to show climate indicators.

Intended use

The dataset will be used for the SE use case. Main use is for hydrology studies in Jönköping. Can also be used for other areas in Sweden, for instance Stockholms city.

Building Blocks: Catalogue of Data Sources and Simulation Models, Community based Sensitivity Analysis, Data Repositories, Map Component

Data description

Will be decided on based on need of the use case. Available variables from HYPE areed here: http://www.smhi.net/hype/wiki/doku.php?id=start:hype_file_reference:info...

Coverage: Spatial: City of Jönköping, (or any other Swedish area if needed.) Temporal: Historical, present or future based on needs of the use case .

Resolution: Spatial: Subbasin Temporal: Hourly

Storage: For   available   output   formats   from   hype   see   this   link: http://www.smhi.net/hype/wiki/doku.php?id=start:hype_file_reference#outp... Data can be reformatted to other representation if needed.

Metadata: Not available yet.

Data management

Availability: existing data, data will be reused/extended

Owner: SMHI

Open Access: yes

Access conditions: Can be provided free of use.

21.European Climate Assessment & Dataset (ECAD)

Responsible party

http://www.ecad.eu/

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from http://www.ecad.eu/

Intended use

will be used in WP3

Data description

from http://www.ecad.eu

ECA&D

The objective of ECA&D is to combine collation of daily series of observations at meteorological stations, quality control, analysis of extremes and dissemination of both the daily data and the analysis results. Integration of these activities in one project proves to be essential for success.

The ECA dataset consists of daily station series obtained from climatological divisions of National Meteorological and Hydrological Services and station series maintained by observatories and research centres throughout Europe and the Mediterranean.

E-OBS

E-OBS is a daily gridded observational dataset for precipitation, temperature and sea level pressure in Europe based on ECA&D information.

Parameter information:

- daily observations at 10615 meteorological stations (minimum, mean and maximum temperature, precipitation amount, sea level pressure, cloud cover, sunshine duration, snow depth, relative humidity, wind speed, maximum wind gust and wind direction)

- 72 indices of extremes, describing changes in the mean or extremes of climate (No. of summer days, No. of tropical nights, Standardised Precipitation Index, ...)

- daily gridded observational dataset (E-OBS) of precipitation, temperature and sea level pressure,

more information about available datasets: http://www.ecad.eu/dailydata/datadictionary.php

Coverage:

Spatial: 10615 meteorological stations throughout Europe and the Mediterranean (62 countries)

Temporal:

Station data: start time varies depending on station

E-OBS gridded data: 1950-2017

Resolution: Spatial: station data; 0.25° and 0.5° regular lat-lon grid for gridded data, Temporal: daily for observational and gridded data; monthly, seasonally, yearly for indices data

Storage:

ECA dataset & indices data

Format: ASCII

E-OBS (gridded version of ECA dataset)

Format: netcdf

Metadata:

Daily datasets: http://www.ecad.eu/dailydata/index.php

Indices of extremes: http://www.ecad.eu/download/millennium/millennium.php

Gridded datasets: http://www.ecad.eu/download/ensembles/ensembles.php

Data management

Availability: existing data

Owner: ECA&D and E-OBS

Open Access: yes

Access conditions:

from http://www.ecad.eu/documents/ECAD_datapolicy.pdf :

1. Terms and conditions of use

a) Observational station data of the European Climate Assessment & Dataset (ECA&D) and
the ENSEMBLES Observations gridded dataset (E-OBS) are made available free of charge
from http://www.ecad.eu

b) These data, which include many GCOS-defined Essential Climate Variables (ECVs) for the
atmosphere near the surface, are strictly for use in non-commercial research and education
projects only. Scientific results based on these data must be submitted for publication in the
open literature without delay. If you are unsure about the terms "non-commercial","research",
and "education", please contact the ECA&D Project Team at eca@knmi.nl for clarification.

c) Part of the data in ECA&D is for stations which are labelled "non-downloadable". This
indicates that the daily data for these stations are not publicly available from http://www.ecad.eu .
"Non-downloadable" daily data are used together with "downloadable" daily data to calculate
derived value-added products, such as indices of extremes or daily maps of gridded data (E-OBS).
The derived products are made publicly available irrespective of the "non-downloadable"/"downloadable"
status of the daily data these products are based on.

d) "Non-downloadable" daily data are also used for research projects conducted by ECA&D
staff or jointly by ECA&D staff and other research groups. You can contact us for
suggestions for joint research. The "non-downloadable" data may be available from the data
provider directly, as well as additional data. Please direct your inquiries to obtain these data to
the ECA&D Project Team (eca@knmi.nl).

e) Although care has been taken in preparing and testing the data products, we cannot
guarantee that the data are correct in all circumstances; neither do we accept any liability
whatsoever for any error or omission in the data products, their availability, or for any loss or
damage arising from their use.

f) Users should help improve the quality of the data and its delivery by giving feedback where
appropriate. Frequent updates are published and a version control system is in place for E-
OBS.

g) Participation in ECA&D is open to anyone maintaining daily data for stations in the region.
Please contact us if you want to take part. ECA&D has been designated as Regional Climate
Centre for Climate Data (RCC-CD) in WMO Region VI (Europe and the Middle East).

(Meta-) Data Repository

Data Repository Name: ECAD website

Data Repository Description: Data available for download.

Data Repository Access: no registration needed for ECA station data, whereas user registration is mandatory for access to E-OBS grids

Part of the data in ECA&D is for stations which are labelled "non-downloadable". This indicates that the daily data for these stations are not publicly available from http://www.ecad.eu , but may be available from the data provider directly.

22.Tree Cover Density (TCD) 2012

Responsible party

European Environment Agency - copernicus@eea.europa.eu

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from http://land.copernicus.eu /

Intended use

Data will be used in WP3

Building Blocks: Catalogue of Data Sources and Simulation Models, High Level Climate Change Risk Assessment Tool, Map Component

Data description

from http://land.copernicus.eu/pan-european/high-resolution-layers/forests/tree-cover-density

High resolution land cover characteristics of 5 main land cover types.

HR Forest, Service Element 1 - Final enhanced and mitigated European mosaic of Tree Cover Density (TCD; 0-100%) in 20m spatial resolution and European projection. The TCD maps the degree (0-100% per pixel) of tree cover density without a minimum mapping unit (MMU), but with a minimum mapping width (MMW) of 20m.

The included features are:

1) Evergreen/non-evergreen broad-leaved, sclerophyllous and coniferous trees;

2) Orchards, olive groves, fruit and other tree plantations, agro-forestry areas, forest nurseries, regeneration and transitional woodlands;

3) Alleys, wooded parks and gardens;

4) Groups of trees within urban areas;

5) Forest management/use features inside forests (forest roads, fire-breaks, thinning, etc.) and forest damage features inside forests (partially burnt areas, storm damage, insect-infested damage, etc.) are included if tree cover can be detected from the 20m imagery.

Accordingly, included features are all detectable trees, independent of use.

Parameter information: Name: Tree cover density, Data type: Raster

Coverage: Temporal: 2011-2012

Spatial: Europe

Resolution: Spatial: 20m and 100m

CRS: ETRS89

Storage: Format: Raster, Transfer size: 7.4 GB for TCD Full Mosaic 020m; 388 MB for TCD Full Mosaic 100m

Metadata: Link to Metadata: http://land.copernicus.eu/pan-european/high-resolution-layers/forests/tree-cover-density

Data management

Availability: existing data

Owner: European Environment Agency (EEA)

Open Access: yes

Access conditions:

from   http://land.copernicus.eu/pan-european/high-resolution-layers/forests/tree-cover-density (Conditions applying to access and use):

Access to data is based on a principle of full, open and free access as established by the Copernicus data and information policy Regulation (EU) No 1159/2013 of 12 July 2013.

Free, full and open access to this data set is made on the conditions that:

1. When distributing or communicating Copernicus dedicated data and Copernicus service information to the public, users shall inform the public of the source of that data and information.

2. Users shall make sure not to convey the impression to the public that the user's activities are officially endorsed by the Union.

3. Where that data or information has been adapted or modified, the user shall clearly state this.

4. The data remain the sole property of the European Union.

Any information and data produced in the framework of the action shall be the sole property of the European Union. Any communication and publication by the beneficiary shall acknowledge that the data were produced "with funding by the European Union".

(Meta-) Data Repository

Data Repository Name: Copernicus Land Monitoring Service

Data Repository Access: openly available: http://land.copernicus.eu/pan-european/high-resolution-layers/forests/tree-cover-density

23. European Settlement Map (ESM) 2016

Responsible party

European Commission, Joint Research Centre, Insitute for Protection and Security of the Citizen

Responsible Party (CLARITY): ZAMG

Responsible Person (CLARITY): Maja Zuvela-Aloise

WPs: WP3

Data provenance

Existing data from http://land.copernicus.eu /

Intended use

Data will be used in WP3

Building Blocks: Catalogue of Data Sources and Simulation Models, High Level Climate Change Risk Assessment Tool, Map Component

Data description

European Settlement Map 2016 (also referred as EUGHSL2016) is raster data that represents the percentage of built-up per spatial unit. Data is based on SPOT5 and SPOT6 satellite imagery.

more information: http://land.copernicus.eu/pan-european/GHSL/EU%20GHSL%202014

https://cws-download.eea.europa.eu/pan-european/related/ESM2016Description.txt

Parameter information: Name: European Settlement Map (ESM) 2016

Data type: Raster

Coverage: Temporal: 2010-2013

Spatial: Europe

Resolution: Spatial: 10m and 100m

CRS: ETRS89

Storage: Format: Raster, Transfer size: 2.8 GB for ESM-2016 10m and ~450 MB for ESM-2016 100m

Metadata: Link to Metadata: http://land.copernicus.eu/pan-european/GHSL/EU%20GHSL%202014

Data management

Availability: existing data

Owner: European Commission

Open Access: yes

Access conditions:

from http://land.copernicus.eu/pan-european/GHSL/EU%20GHSL%202014 (Conditions applying to access and use):

These data are provided for scientific research purposes only. No other use, including commercial, is authorized. No third party distribution of all, or parts, of the electronic files is authorized. Disclaimer: The JRC follows procedures designed to ensure that data produced and disseminated by JRC are of the best quality possible. However, JRC does not guarantee the accuracy, reliability, or completeness of the data provided. Therefore the JRC provides this data without any warranty of any kind whatsoever, either expressed or implied. JRC shall not be liable for incidental, consequential, or special damages arising out of the use of any data provided by JRC.

Any information and data produced in the framework of the action shall be the sole property of the European Union. Any communication and publication by the beneficiary shall acknowledge that the data were produced "with funding by the European Union".

Any information and data produced in the framework of the action shall be the sole property of the European Union. Any communication and publication by the beneficiary shall acknowledge that the data were produced "with funding by the European Union".

(Meta-) Data Repository

Data Repository Name: Copernicus Land Monitoring Service

Data Repository Access: available for download: http://land.copernicus.eu/pan-european/GHSL/EU%20GHSL%202014

registration required

24. Address Book - User Data

Responsible party

Collect and process user data (end users, experts, potential customers, persons from stakeholders) in order to get in contact with them (email, newsletter) and invite them to events in their region or field of profession. Data providers are the users themselves as natural persons (website registration) or parties inside or outside the consortia (e.g. of at attendants at events) or organizations publishing name, occupation and contact data of responsible personnel (cities, research organizations, enterprises).

Responsible Party (CLARITY): SCC

Responsible Person (CLARITY): Andrea Geyer

WPs: WP5 and 6

Data provenance

Data provenance is either direct input by the user when registering at the website or input/input by a partner or the responsible party of public available user data like name, organization, email address plus assigning a considered user role. The purpose of user data added by a partner is a) to visualize as many stakeholder of the ecosphere as possible and b) contact user for several CLARITY dissemination measures, e.g. invite for probably suitable events, ask for comment as an expert .

Contacts we gather will be number-one source for dissemination and exploitation success - therefore we will encourage people to register directly at our site, type in business card information from people we talk to at events or people we know already and may have a benefit from CLARITY for their business.

For panel participation extended data will be requested concerning expertise and relevant work and shall be confirmed with double-opt in.

Intended use

User data will be utilized for dissemination, community building and exploitation. CLARITY will cluster contacts and aggregate target groups for effective (and efficient) exploitation activities. Well defined target groups will help to tailor project´s future services and besides, will provide additional ideas for business model development.

User data/address book will not die down after the termination of the project but be a groundwork for further exploitation. For exploitation relevant user data will be transferred to order processing applications like invoicing and book keeping and enriched in these systems (e.g. payment settings).

Furthermore it is intended to setup a multi-disciplinarian panel comprising of all stakeholder groups and sectors involved. Panel can be utilized on focus groups and surveys, to establish expert groups for policy making and ecosphere development.

Building Blocks: Marketplace

Data description

Fields:

1) Surname
2) Given Name
3) Title
4) Organization/company

5) Department
6) Responisibility
7) Email address
8) Profile, messenger - can we import this from LinkedIn ?
9) Role for buying decisions *taxonomy* "gatekeeper", "influencer", "decider", "buyer", "user"
10) Role for community building *taxonomy* "architecture /construction", "urban/spatial planner", "scientist", "policy maker", "risk manager in sector"
11) Sectors *taxonomy*
12) Consultant, Planner - Y/N
13) Contact description - free text
14) Interest - *taxanomy* - can be set up after use case design
15) Source - *taxonomy* "registered on web site"; "event 1-n"; "3rd party event" - description (text); "partner contact"

Additional fields for panel

Coverage:

a) Name = User data
b) Unit = human individual (person)
c) source type = individual input; import open data (?)

Storage: Text data, 100k per user, estimated 5.000 users (?)

Metadata: Personal, user specific data.

Data management

Availability: existing data, data will be produced in the CLARITY project, data will be reused/extended

Owner: individual user

Open Access: no

Access conditions:

Data under regime of data protection and privacy - restrictions on use. Double-opt in for the individual end user , frequent ask for confirmation.

(Meta-) Data Repository

Data Repository Description: Internal database generated in CLARITY

Data Repository Properties: new, internal repository, restricted.

   a) sustainable - data will be kept and fostered after the end of the project; every partner will make use of relevant data referring to their business. Built-up community - "ownership" to be defined, CC experts foundation?

   b) backups; no use by third parties - data protection regulations.

25. CLARITY mailing and document repository - User data

Responsible party

The intention is to collect contact information (i.e, name, email, telephone number, WP participation, etc.) from each partner personnel involved in CLARITY   project in order to give them read/write access to the document repository as well as subscribe them to the specific email (WP1, WP2, WP3, WP4, WP5-6, WP7) set up for each WP where they are involved.

In addition, additional emails have been created for the different managerial bodies of the project - Technical Committee (TC), Quality Assurance & Ethics (QA) and General Assembly (GA) . where designated persons from each partner are involved.

A further email for the Advisory Board members will be set up in the next weeks. This email will comprehend persons from project partners and experts from outside the project.

Responsible Party (CLARITY): ATOS

Responsible Person (CLARITY): Miguel Esbri, Juan Alonso

WPs: CLARITY, WP1, WP2, WP3, WP4, WP5 and 6, WP7

Data provenance

Data provenance is direct input from the partners (or project external) persons when being granted access to CLARITY document repository or subscribed to the emails.

Intended use

User data is used for subscribing the person to the various CLARITY WP emails where he/she is participating and creating personal accounts in the document repository.

Relations to Building Blocks: There is no direct relation with CLARITY Building Blocks

Data description

Title: CLARITY Contact_v1.00_20171006.xlsx

Naming convention: CLARITY Contact_v{increase index]_{modification_date]

Parameter information:

Institution: name of the entity which the person belongs to (either from a project partner or external)

Country: country where the insitution is located

Contact Name: Full name of the person to be registered in the emails and document repository

Position / Role : role of the person in the institution

WP1: it indicates whether the the person is registered in WP1 email

WP2: it indicates whether the the person is registered in WP2 email

WP3: it indicates whether the the person is registered in WP3 email

WP4: it indicates whether the the person is registered in WP4 email

WP5-6: it indicates whether the the person is registered in WP5-6 email

WP7: it indicates whether the the person is registered in WP1 email

TC: it indicates whether the the person is registered in TC email

QA : it indicates whether the the person is registered in QA email

GA : it indicates whether the the person is registered in GA email

e-mail address: person's contact email address

Start date (contact): date when the person was registered in the emails/owncloud repository

Phone number: person's contact telephone number

Mobile number: person's contact mobile phone number

User ownCloud: person's user account in owncloud document repository in ATOS ' servers

User available?: indicates whether the person has already an account in ATOS' owncloud repository, being then not necessary to create a new account

Website: institution website

Coverage: Partners belonging to a European Country

Resolution: Not applies

Storage:

- **DMP 1.2: What is the type and format of the data that is generated/collected:** Excel file

- **DMP 1.5: What is the expected size of the data?:** Less than 1 MB

- **DMP 2.3.1: Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?:** No data exchange is foreseen as it is only for internal project usage

- **DMP 2.1.4: Do you provide clear version numbers?:** Yes. With every new version of the document, the version number is incremented and the date of modification is appended at the end

Metadata:

- **DMP 2.1:Are the data produced and/or used in the project discoverable with metadata?:** NO

- **DMP 2.5: What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.:** Not applies

- **DMP 2.3.2: What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?:** Not applies

- **DMP 2.3.4: In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?:** Not applies

- **DMP 2.3.3: Will you be using standard vocabularies for all data types present in your data set, to allow inter-disciplinary interoperability ?:** Not applies

- **DMP 2.1.3: Will search keywords be provided that optimize possibilities for re-use?:** Not applies

Data management

Availability: data will be produced in the CLARITY project

Owner: ATOS

Open Access: no

The dataset will not be made openly available as its sole purpose for project internal use in order to keep track of the persons registered in the different CLARITY emails and the owncloud document repository

Access conditions:

This dataset is located within the CLARITY owncloud project folder. The file modified only by ATOS but is accessible by any CLARITY partner with an account in owncloud repository.

(Meta-) Data Repository

Data Repository Name: CLARITY Contact.xlsx

Data Repository Description: Project internal database to store project partners' contact

Data Repository Properties: internal (provided by CLARITY or a partner)

26. CLARITY Catalogue - User data

Responsible party

Internal database of CLARITY 's personnel who can access and edit the Drupal project catalogue . The person's information stored in the database refers to his/her name, email address, telephone number, institution name and an optional picture of the person.

Responsible Party (CLARITY): ATOS

Responsible Person (CLARITY): Miguel Esbri, Juan Alonso, Alejandro Barrio

WPs: CLARITY, WP1, WP2, WP3, WP4, WP5 and 6, WP7

Data provenance

Data provenance is direct input from the partners' persons that registered themselves in CLARITY catalogue in order to get access to it.

Intended use

User data is used for creating user accounts for the partners' personnel in CLARITY catalogue .

Relations to Building Blocks: There is no direct relation with CLARITY Building Blocks

Data description

Not applies. Data is stored internally in Drupal's database

Parameter information:

Username: person's user account in CLARITY catalogue site

Institution: name of the CLARITY partner institution which the person belongs to

e-mail address: person's contact email address

Phone number: person's contact telephone number

Photo: person's image (optional)

Coverage: Partners belonging to a European Country

Storage:

- **DMP 1.2: What is the type and format of the data that is generated/collected:** Excel file

- **DMP 1.5: What is the expected size of the data?:** Less than 1 MB

- **DMP 2.3.1: Are the data produced in the project interoperable, that is allowing data exchange and re-use between researchers, institutions, organisations, countries, etc. (i.e. adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins)?:** No data exchange is foreseen as it is only for internal project usage

- **DMP 2.1.4: Do you provide clear version numbers?:** Yes. With every new version of the document, the version number is incremented and the date of modification is appended at the end

Metadata:

- **DMP 2.1: Are the data produced and/or used in the project discoverable with metadata?:** NO

- **DMP 2.5: What metadata will be created? In case metadata standards do not exist in your discipline, please outline what type of metadata will be created and how.:** Not applies

- **DMP 2.3.2: What data and metadata vocabularies, standards or methodologies will you follow to make your data interoperable?:** Not applies

- **DMP 2.3.4: In case it is unavoidable that you use uncommon or generate project specific ontologies or vocabularies, will you provide mappings to more commonly used ontologies?:** Not applies

- **DMP 2.3.3: Will you be using standard vocabularies for all data types present in your data set, to allow inter-disciplinary interoperability ?:** Not applies

- **DMP 2.1.3: Will search keywords be provided that optimize possibilities for re-use?:** Not applies

Data management

Availability: data will be produced in the CLARITY project

Owner: ATOS

Open Access: no

The dataset will not be made openly available as its sole purpose for project internal use in order to keep track of the persons registered in CLARITY catalogue site.

Access conditions:

This dataset is located within Drupal database, enabling CLARITY catalogue . The database is only accessible to Drupal administrator (ATOS)

(Meta-) Data Repository

Data Repository Description: Project internal database to store CLARITY catalogue partners' details.

Data Repository Properties: internal (provided by CLARITY or a partner)