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EXCELSIOR Project

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Author(s):	ECoE: Christos THEOCHARIDIS	
Contributor(s):	ECoE: Kyriacos THEMISTOCLEOUS CUT: Diofantos HADJIMITSIS DLR: Gunter SCHREIER NOA: HARIS KONTOES TROPOS: Albert ALNSMANN DEC-DMRID: George KOMODROMOS	
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Document Sign-off				
Nature	Name	Role	Partner	Date
DRAFT	Christos THEOCHARIDIS	WP10 Participant		13/09/2023
REVIEWED	Kyriacos THEMISTOCLEOUS Diofantos HADJIMITSIS	Project Manager Project Coordinator		25/09/2023
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Executive Summary

The Deliverable 10.9 Data Management Plan (Update 1) aims to update the data management policy of the EXCELSIOR Phase II Teaming Project as it was described for the first time at the D10.8 for the Reporting Period (RP) 1. Moreover, the deliverable elaborates on the appropriate framework for accessing, utilising, and re-using the four data types collected or generated by the EXCELSIOR Phase II Teaming Project.

The Data Management Plan of the EXCELSIOR Project initially provides a summary of the four types of datasets (i.e., Communication, Scientific Publications, Deliverables and Training), followed by the procedures adopted to make the data discoverable, accessible, interoperable and reusable (FAIR). The resources available to the Data Management Plan and the provisions made for data security are also outlined. The Data Management Plan also includes a template for describing the data according to the H2020 recommendations.



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Abbreviations

CA	Consortium Agreement
CUT	Cyprus University of Technology
DMP	Data Management Plan
EMMENA	Eastern Mediterranean Middle East and North Africa
EO	Earth Observation
ERATOSTHENES CoE	Eratosthenes Centre of Excellence
EXCELSIOR	Eratosthenes: Excellence Research Centre for Earth Surveillance and Space-based Monitoring of the Environment
FAIR	Findable, Accessible, Interoperable, Reusable
GBS	Ground-based Remote Sensing Station
GDPR	General Data Protection Regulation
UAV	Unmanned Aerial Vehicle



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1 Introduction

Deliverable 10.9 is an update of the framework established in D10.8, the “Data Management Plan” (DMP) of the EXCELSIOR Phase 2 Teaming Project in RP1. The DMP continues to be a vital component in defining the structured management lifecycle for the diverse array of data generated and collected throughout the progression of the EXCELSIOR Phase II Teaming Project. These data encompass a wide spectrum comprising documentation, input, output and an array of critical resources directly linked to endeavours of the ERATOSTHENES Centre of Excellence (ERATOSTHENES CoE), a strategic initiative supported by the European Commission. In the broader context, “data management” envelops various data sources, including geospatial information, satellite datasets, modelled data, active remote sensing data, meteorological products, questionnaires, studies and more. The overarching aim remains consistent with the principles outlined in the H2020 Data Management Manual and section 2.2.2, emphasising the principles of making research data Findable, Accessible, Interoperable and Reusable (FAIR). Apart from making FAIR these data, the DMP retains its pivotal role in articulating the strategies and practices for handling the data during and after the end of the project. It encompasses the procedures, standards, and resources deployed to achieve FAIR principles, addressing data curation preservation and ensuring continued accessibility even after the project's completion.

This task aligns closely with the establishment of the appropriate infrastructures and procedures that the ERATOSTHENES CoE is committed to, ensuring the seamless acquisition, management, storage, and dissemination of scientific data (through the activities of T5.6 “ECoE “Big Data” Infrastructure” and T7.2 “ECoE Data Cube”).

The DMP, as a dynamic document, undergoes periodic updates to reflect the evolving landscape of data management. As a leading partner in this initiative, Cyprus University of Technology (CUT) will continue to steer this task with active contributions from all Project partners. In essence, D10.9 reinforces our unwavering commitment to effective data stewardship and underscores the indispensable data management in advancing the objectives of the EXCELSIOR Phase 2 Teaming Project and the ERATOSTHENES Centre of Excellence mission.

The responsibility for the data management of the EXCELSIOR Project remains with the Leader of WP10 (Dissemination and Exploitation), who will continue to oversee this crucial aspect of the project. This role will continue to be supported by the Quality Assurance Manager of the Project, ensuring that data management adheres to the highest standards. Regarding the long-term preservation of data, the EXCELSIOR project maintains its commitment to storing the project's datasets in the KTISIS repository, proving its reliability. The costs associated with this preservation will continue to be covered by the in-kind financial contribution of the CUT. Data security remains a paramount concern for the EXCELSIOR project, as described in D10.8 in section 5.

In the following sections, this deliverable explores the practical implementation of the EXCELSIOR Data Management Plan, spanning from RP1 to RP3, highlighting data uploading to the KTISIS repository and integrating ORCID accounts for staff members. Discussion also about the updates for managing ERATOSTHENES CoE data, focusing on the Centre's commitment to open science practices, training



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initiatives, and the introduction of the Altmetric system. Furthermore, reports are made for the data summary, detailing the types, sources, forms, formats, and access classifications across the thematic research areas, emphasising the “Server of ERATOSTHENES” as a preferred storage solution for various data types and formats, reflecting the dedication to tailored managed solutions.

1.1 General Data Protection Regulation

To comply with the General Data Protection Regulation (GDPR) (European Parliament and the Council, 2016) as well as the Consortium Agreement (CA) of the EXCELSIOR Project, the following provisions apply to the Project's Data Management Plan. As a general rule, all acquired data will be treated and handled under the guidelines of the EU's GDPR.

Security and Confidentiality:

- Personal Data will be treated as confidential information and will be treated according to section 10 of the EXCELSIOR Project CA.
- The data controller will take technical and organisational security measures appropriate to the risks presented by the processing, such as unauthorised access. Any person acting under the authority of the data controller, including a processor, will not process the data except on instructions from the controller.
- The project will notify within seventy-two (72) hours the Parties and/or Personal Data Subjects concerned with potential Personal Data breach.

Accountability, Transparency and Rights of Access:

- Personal Data Subjects will be provided with information as to the purposes of the processing and the identity of the data controller, and other information insofar as this is necessary to ensure fair processing.
- Data Subjects will have a right of access to all data relating to them that are processed and, as appropriate, the right to the rectification, erasure or blocking of data the processing of which does not comply with the principles set out in the GDPR, in particular, because the data are incomplete or inaccurate. They will also be able to object to processing the data relating to them on compelling, legitimate grounds relating to their particular situation.

Accuracy, Quality and Proportionality:

- Personal Data will be accurate and, where necessary, updated. The data will be adequate, relevant and not excessive concerning the purposes for which they are collected and further processed.
- Personal Data will be processed and subsequently used or further communicated only to carry out its relevant part of the EXCELSIOR Project.

Storage Limitation:

- Personal data will not be kept longer than necessary for the purposes for which they are collected and processed. All remaining personal data will be deleted at the end of the EXCELSIOR project. However, if personal data is required after the end of the project (for further scientific research purposes), Article 89 of the GDPR will be applied.



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2 Implementation of the EXCELSIOR DMP

Implementing the EXCELSIOR Data Management Plan (DMP) continued to be developed from RP1 to RP3. This activity included uploading the EXCELSIOR data and outputs to KTISIS¹, i.e., CUT’s certified repository. As aforementioned, four types of data are collected in the KTISIS repository. Output with public dissemination status (e.g., publications and public deliverables) is openly accessible. In contrast, output with confidential dissemination status is available (via secured login) only to members of the EXCELSIOR consortium.

As described in the EXCELSIOR Technical Report for RP2, 140 documents in total have been uploaded to the KTISIS repository, where more details about the number of each data type can be found in Table 14 of the Technical Report for RP2, as mentioned. For the RP3, the numbers have been increased where 170 documents have been deposited in the KTISIS repository, with 10 scientific publications created directly from the activities of the EXCELSIOR project and 92 publications arising from the joint activities of the CUT and the ERATOSTHENES CoE.

Table 1: EXCELSIOR project and ERATOSTHENES CoE output uploaded on the KTISIS repository.

Open Access (Public) Datasets	Number of documents	Restricted Access (Confidential) Datasets	Number of documents
Communication	24	Communication	-
Deliverables	13	Deliverables	23
Trainings	-	Trainings	8
Scientific Publications: EXCELSIOR project under the auspices of EXCELSIOR	10	Scientific Publications	-
	92		
TOTAL	139	TOTAL	31

To ensure the integrity of the datasets, each ERATOSTHENES staff member has individual accounts within the KTISIS repository. These accounts serve as authenticated access points, allowing the team members to interact with and contribute to the repository’s contents. Each staff member’s account is integrated with the ORCID platform, and they can log in only through their ORCID account, providing a standardised means of linking their professional and academic activities to their contributions within the KTISIS repository. This integration aligns FAIR data with best practices for scientific data management. Moreover, some ERATOSTHENES staff members hold administrative rights in the KTISIS repository, undertaking responsibilities such as dataset upload and editing, metadata enrichment, and quality assurance. Some screenshots from the EXCELSIOR datasets in the KTISIS repository can be found in Appendix A – EXCELSIOR datasets.

¹ <https://ktisis.cut.ac.cy>



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3 Update of DMP for other ERATOSTHENES data

3.1 General

As described in the D10.8 of the RP1, the EXCELSIOR Phase 2 Teaming Project remains steadfast in its primary goal is to upgrade the ERATOSTHENES Research Centre, established within the Cyprus University of Technology (CUT), into a sustainable and viable ERATOSTHENES CoE for Earth Surveillance and Space-Based Monitoring of the Environment. The upcoming establishment within ERATOSTHENES CoE of the Earth Observation (EO) Satellite Data Acquisition Station (DAS) and an Atmospheric Ground-based Remote Sensing Station (GBS) Supersite dedicated to Aerosol and Cloud Monitoring (which will also be used for calibration and validation of satellite data).

In alignment with the commitment to fostering open science practices, the principles of FAIR data remain the same. However, it is essential to note that specific policies apply to data generated from Horizon H2020 research projects where the data are as open as possible as closed as necessary. Under the two principles mentioned above, data originating from Horizon H2020 research projects follow a nuanced trajectory. This approach seeks to strike a delicate balance, ensuring that research data remains as openly accessible as feasible while recognising the legitimate requirements for data protection and intellectual property rights. A deep commitment to transparency, collaboration, and the broader principles of open science underpins this perspective on data access.

Following the frameworks regarding the open access policy data, new collections in the KTISIS repository were explicitly created for the ERATOSTHENES Centre of Excellence of the Cyprus University of Technology. These collections are divided into two categories: the first concerns a collection with an open access policy, and the second with restricted access. Inside these collections are four types of datasets: Communication, Deliverables, Scientific Publication, and Training. More specifically, the deliverables dataset will contain all the deliverables from the different research projects of ERATOSTHENES CoE. The publications dataset will be used as a repository for all the scientific publications that will be created in the context of each research project. Regarding the communication and training datasets, these two categories referred to repositories, where each research project will store data pertaining to project communication and outreach efforts and data for capacity-building initiatives (if applicable).

Other collected data from each thematic cluster of the ERATOSTHENES CoE, which can be utilised for the activities of these projects, are described below in **section 3.2**.

As part of the in-kind contribution of the CUT to ERATOSTHENES CoE and the EXCELSIOR project, Training was conducted about effectively utilising the KTISIS repository (Figure 1). Under the guidance of the Library Director of CUT, Mr. Marios Zervas and the Assistant Librarian, Mr. Petros Artemi, the staff members of ERATOSTHENES CoE made hands-on Training covering essential aspects such as data uploading, editing, effective data search in KTISIS collections and efficient organisation within the repository's framework. The ERATOSTHENES staff members have been equipped with the skills required to ensure that their research outputs are securely stored, readily discoverable, and accessible



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to the broader academic community. During the Training, a demonstration of the Altmetric system was conducted. The Altmetric system goes beyond the traditional citation counts and journal impact factors to capture the diverse ways. This system allows the users to track and analyse how often ERATOSTHENES CoE publications are mentioned, shared and discussed online on various platforms, including social media, news outlets, policy documents and more. Generally, it offers a real-time dashboard of our research's online presence, offering a comprehensive view of its influence and visibility. Integrating systems like these into the Centre's data management and dissemination practices, ERATOSTHENES staff members will be ready to exploit the power of contemporary digital networks, amplifying the reach and relevance of their research.



Figure 1: Training in the ERATOSTHENES CoE premises regarding the KTISIS repository from the CUT Library staff.

3.2 Data summary

In the framework of an effective DMP, each thematic research area² of the ERATOSTHENES CoE undertakes a comprehensive approach to define the specific data that will either be collected or generated. This process is vital in shaping the data management strategy, ensuring that research outputs are meticulously curated and effectively disseminated (if they have an open-access policy) to maximise their societal and scientific impact.

Each thematic research area has created a detailed table outlining the specifications of the data they have or will collect to facilitate this effort. These tables serve as a foundational resource, capturing critical information such as data types, data source description, data form and data format, and storage requirements. Furthermore, within these tables, each thematic research area makes a crucial determination regarding whether the data will be openly accessible to the public or classified under restricted access, reflecting data sensitivity and confidentiality.

² The thematic research areas of the ERATOSTHENES CoE are: Atmosphere, Agriculture, Water, Land, Disaster Risk Reduction, Access to Energy, Marine Safety and Security, Information Extraction / Visual Exploration & Visualisation / Crowd Sourcing & Data Fusion, Geo-informatics. The Geo-informatics cluster is excluded from the tables since it will be the connecting link that will collect the data from each cluster in order to make further process and generate maps to share with the public.



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More specifically, 83 data sources were added to the table, where 40 are duplications since some of the thematic research areas use the same data sources (e.g., Sentinel, Landsat, Planet data). Regarding the type of data, there is a variety of different types of data, for instance, material generated or collected by ERATOSTHENES CoE, e.g., Earth Observation datasets, Raw data(level 0) and/or processed data (e.g., level 1, level 2 etc) from in-situ measurements, Raw data(level 0) and/or processed data (e.g., level 1, level 2 etc) from Ground remote sensing techniques, data from GIS databases, spatial data, data from Aerial and UAV. Most data types concern material generated and collected by ERATOSTHENES CoE and less than other data sources, e.g., governmental agencies. For the form of data category in the tables, the majority concerns the Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral) and secondly Binary Data of Atmospheric State as indicated in Figure 2 below.

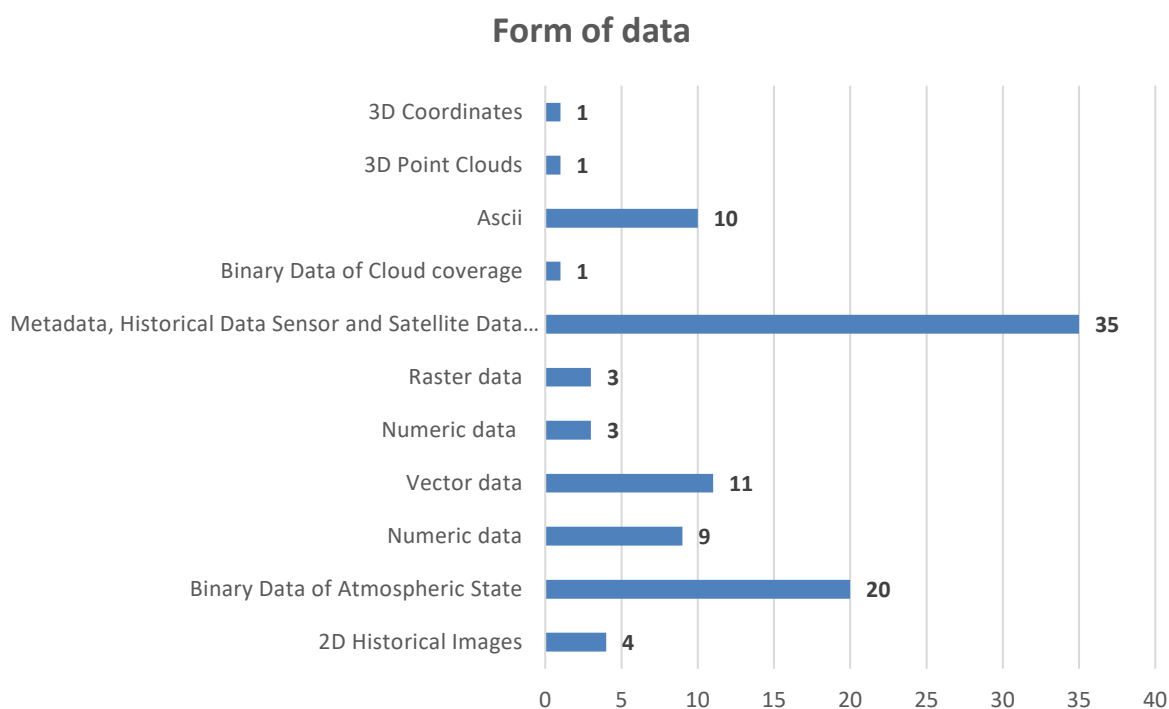


Figure 2: Form of data that the thematic areas of ERATOSTHENES CoE will either collect or generate.

Concerning the format of the data, there are plenty of different extensions such as csv, txt, xml, JPEG 2000, tiff, Geotiff, kml, kmz, ply, las, obj, text, Netcdf, hdf5, bfr, xls, shp, geojson in which most of the data are csv, Geotiff and jpeg2000.

Data licensing plays a decisive role in defining whether the research outcomes will be disseminated and shared with the public or not. These licenses serve as the legal framework determining the terms and conditions under which others can access and exploit the data. Most data that the thematic research areas of ERATOSTHENES CoE will either collect or generate have an open access policy (Public



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Domain Mark – Public Domain) with 48%. On the other hand, the other 52% is about the restricted access policy in data; specifically, the 29% have Creative Commons – Commercial use Not allowed policy, and the remaining 23% have No public dissemination (for ERATOSTHENES CoE data) policy (Figure 3).

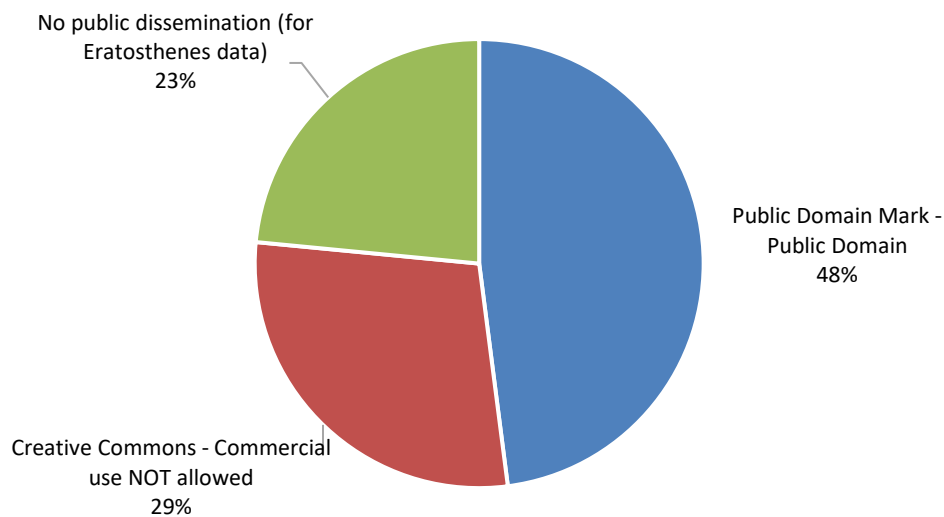


Figure 3: Pie chart of Licensing of data regarding the upcoming collected/generated data from the thematic research areas of ERATOSTHENES CoE.

3.3 Allocation of resources for ERATOSTHENES CoE data

As the storage needs are growing day by day, it becomes clear that some data types and formats demand more storage space than others. Among the various storage options available, it is noteworthy that based on the tables given to the clusters, most of the thematic research areas of ERATOSTHENES CoE have chosen the Server of ERATOSTHENES for the 83 data sources (Figure 4), highlighting it as a secure and accessible repository for a substantial portion of our diverse datasets.

More details about the response of each cluster can be found in Appendix B – DMP data types tables.



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Storage requirements

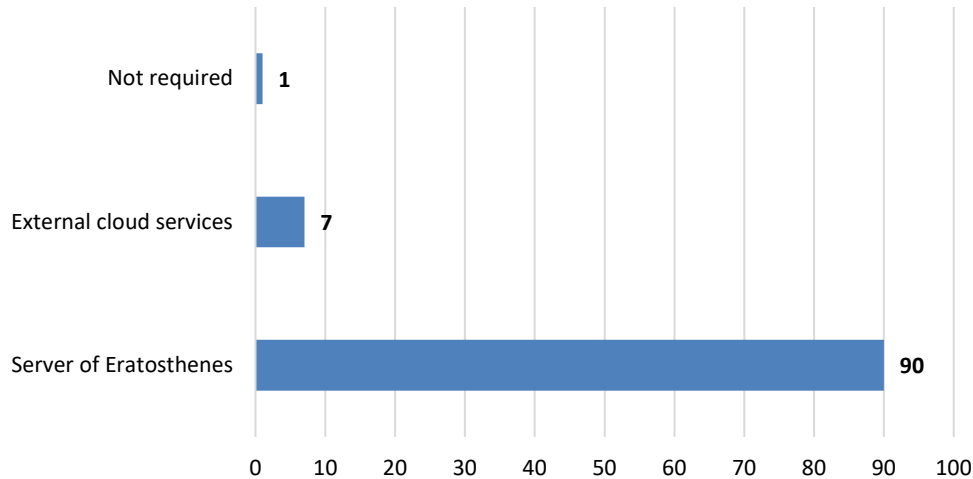


Figure 4: Storage requirements about the DMP data types.

4 Conclusions

In conclusion, Deliverable 10.9 represents a significant step forward in the ongoing efforts to manage and disseminate data effectively within the EXCELSIOR Phase II Teaming Project and the ERATOSTHENES CoE. This updated DMP builds upon the foundation established in D10.8, aligning with the principles of making research data Findable, Accessible, Interoperable and Reusable and complying with the General Data Protection Regulation and the Consortium Agreement of the EXCELSIOR Project. The DMP identified the diverse array of data generated and collected throughout the project's progression, encompassing geospatial information, satellite datasets modified data, active remote sensing data, meteorological products, questionnaires, and studies.

Taking into consideration the foundations established in D10.8, we have achieved measurable progress in several key areas:

1. **Implementation progress:** Throughout RP1 to RP3, 170 documents have been successfully uploaded to the KTISIS repository, increasing from the initial 139 documents, and the number will keep growing. This expansion signifies our commitment to managing and disseminating data effectively.
2. **ORCID Integration:** Integration with the ORCID platform for ERATOSTHENES staff members has demonstrated a standardised and efficient means of linking their professional and academic activities to their contributions within the KTISIS repository. This achievement aligns with best practices for scientific data management.
3. **Detailed Data Summary:** The comprehensive tables given in Appendix B presenting data types, sources, forms, formats, and access classifications for each thematic research area within ERATOSTHENES CoE provide a clear snapshot of our data landscape. This detailed information updates our data management strategies and highlights the diverse nature of our datasets.
4. **Data Licensing Breakdown:** The breakdown of data licensing shows that 48% of our upcoming collected/generated data follow an open-access policy, while 52% adhere to restricted access



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policies. These figures reflect our commitment to balancing open access with data sensitivity and confidentiality.

5. **Resource Allocation:** Most of the preferences regarding the server of ERATOSTHENES as the primary storage solution for most of our datasets imply our focus on secure and accessible data storage.

Further improvements are expected in the Data Management Plan (DMP), optimising data management. Some of these advancements could be:

1. **Continued Data Expansion:** As our research activities progress, we anticipate further growth in our data holdings. The DMP will continue to evolve to accommodate new data types and sources.
2. **Enhanced Training:** Continue investing in training initiatives to ensure ERATOSTHENES CoE staff members are well-equipped to manage and disseminate their research outputs effectively.
3. **Monitoring Data Impact:** Using the Altmetric system, we will actively monitor and analyse the online presence, influence, and visibility of our research outputs. This will enable the amplification of our research's reach and relevance.
4. **Data Preservation:** Long-term data preservation remains a priority. Commitment to securely storing project datasets, even beyond the project's completion, and exploring opportunities for further scientific research will be done while adhering to data protection regulations.
5. **Adaptation to New Policies:** Flexibility and responsibility to shifts in data management policies will ensure that our DMP will remain aligned with best practices and regulations.

In summary, Deliverable 10.9 reflects our tangible progress in data management and sets the stage for continued improvements and adaptation. The ERATOSTHENES CoE is committed to effective data stewardship and the principles of open science, and we are eager to leverage these achievements to further our research objectives and impact.



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Appendix A – EXCELSIOR datasets

Deliverables Dataset [Collection home page](#)

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Issue Date	Title	Author(s)
30-Sep-2021	D10.1 Report on the dissemination activities and Conference organisation	Loulli, Eleni; Prodromou, Maria; Papoutsas, Christiana; Hadjimitsis, Diofantos G.; Themistocleous, Kyriacos; Neocleous, Kyriacos; Schreier, Gunter; Schwarz, Egbert; Krauss, Thomas; Kontoes, Haris; Kaskara, Mariza; Ansmann, Albert; Bühl, Johannes; Seifert, Patric; Komodromos, Georgios; Tziortzis, Stelios
28-Feb-2022	D7.1 Report on the ECoE research clusters and research groups: management, function and technical capacity	Themistocleous, Kyriacos; Hadjimitsis, Diofantos G.; Michaelides, Silas; Neocleous, Kyriacos; Mamouri, Rodanthi-Elisavet; Tzouvaras, Marios; Mettas, Christodoulos; Schreier, Gunter; Kontoes, Charalambos Haris; Ansmann, Albert; Komodromos, George
30-Sep-2021	D6.2 Workplan for transfer of knowledge and experience	Themistocleous, Kyriacos; Schreier, Gunter; Kontoes, Charalambos Haris; Bühl, Johannes; Seifert, Patric; Neocleous, Kyriacos; Hadjimitsis, Diofantos G.; Schwarz, Egbert; Krauss, Thomas; Kaskara, Maria; Ansmann, Albert; Komodromos, Georgios; Tziortzis, Stelios
31-Mar-2022	D1.15 Impact Assessment Report for RP 2	Tzouvaras, Marios; Loulli, Eleni; Prodromou, Maria; Leventis, Georgios; Papoutsas, Christiana; Hadjimitsis, Diofantos G.; Evagorou, Evagoras S.; Polydorou, Thomaïda; Theocharidis, Christos; Schreier, Gunter; Kontoes, Charalambos Haris; Ansmann, Albert; Themistocleous, Kyriacos; Neophytides, Stelios; Pekri, Marina; Komodromos, George; Tziortzis, Stelios
31-Mar-2020	D9.5 Project Website, WP9	Papoutsas, Christiana; Hadjimitsis, Diofantos G.
31-Dec-2020	D1.14 Impact Assessment Report for RP 1, WP1	Tzouvaras, Marios; Leventis, Georgios; Loulli, Eleni; Hadjimitsis, Diofantos G.; Papoutsas, Christiana; Mettas, Christodoulos; Nisantzi, Argyro

Appendix Figure 1: EXCELSIOR Deliverables Dataset (Open Access).



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31-Mar-2022	D1.7 Thematic Coordination Progress Report for RP2	Neocleous, Kyriacos ; Nisantzi, Argyro ; Themistocleous, Kyriacos ; Hadjimitsis, Diofantos G. ; Schreier, Gunter; Kontoes, Haris; Ansmann, Albert ; Michaelides, Silas ; Georgiou, Kleopatra; Komodromos, George
31-Mar-2022	D1.20 External Boards establishment for RP 2	Polydorou, Thomaida ; HADJIMITSIS, DIOFANTOS ; Michaelides, Silas ; Neocleous, Kyriacos ; Nisantzi, Argyro ; Schreier, Gunter ; Kontoes, Haris ; Ansmann, Albert ; Pekri, Marina ; Themistocleous, Kyriacos ; Komodromos, George; Tziortzis, Stelios
31-Mar-2022	D1.3 Project Action Plan (PAP) for RP3	HADJIMITSIS, DIOFANTOS ; Themistocleous, Kyriacos ; Neocleous, Kyriacos ; Nisantzi, Argyro ; Mettas, Christodoulos ; Tzouvaras, Marios ; Schreier, Gunter; Kontoes, Haris ; Ansmann, Albert ; Michaelides, Silas ; Neophytides, Stelios ; Komodromos, George; Tziortzis, Stelios
31-Mar-2022	D3.2 Report on the Research & Education Strategic Plan for RP 2	Kyriakides, Nicholas ; Hadjimitsis, Diofantos G. ; Buhl, Johannes ; Themistocleous, Kyriacos ; Neocleous, Kyriacos ; Kyriakidis, Phaedon ; Danezis, Chris ; Akylas, Evangelos ; Anayiotos, Andreas ; Loulli, Eleni ; Leventis, Georgios ; Papoutsas, Christiana ; Schreier, Gunter ; Kontoes, Haris ; Kaskara, Mariza ; Ansmann, Albert ; Michaelides, Silas ; Komodromos, George
31-Mar-2022	D.3.12 Report on Joint Exploitation Strategy and IPR Management for RP1	Anayiotos, Andreas ; Hadjimitsis, Diofantos G. ; Themistocleous, Kyriacos ; Neocleous, Kyriacos ; Schreier, Gunter ; Kontoes, Haris ; Ansmann, Albert ; Michaelides, Silas ; Komodromos, George

Appendix Figure 2: EXCELSIOR Deliverables Dataset (Restricted Access).



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7-Jun-2023	Time series analysis: Calculation of trends and driving variables	Üreyen, Soner ; Bachofer, Felix
8-Nov-2022	Training on Sentinel 1 Products, Data Access and Processing	Krauss, Thomas
17-Nov-2022	Workshop on Solar Radiation/Energy measurements, modeling and applications	Kazadzis, Stelios ; Masoom, Akriti ; Grobner, Julian ; Fountoulakis, Ilias ; Papachristopoulou, Kyriakoula
20-Mar-2023	Training on Optical Remote Sensing Data Analysis in Google Earth Engine,with Applications to Cultural Heritage	Cerra, Daniele
7-Feb-2023	Training in principles of SAR-based maritime information retrieval for maritime safety and security	Jacobsen, Sven ; Wiehle, Stefan ; Singha, Suman ; Frost, Anja ; Tings, Björn ; Pleskachevsky, Andrey
21-Feb-2022	Introduction to Earth observation data processing In cloud environments	Bachofer, Felix ; Ottinger, Marco ; Gessner, Ursula ; Huth, Juliane
3-Feb-2022	Earthquakes/Landslides: Training on data processing to ECoE based on the NOAA's workflow for GEObservatory	Alatza, Stavroula ; Apostolakis, Alexis ; Loupasakis, Constantinos ; Kontoes, Haris
26-Nov-2021	Seminar on crop classification using Sentinel data for the monitoring of the CAP	Sitokonstantinou, Vasilis

Appendix Figure 3: EXCELSIOR Trainings Datasets (Restricted Access).



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26-Aug-2023	Earth Observation in the EMMENA Region: Scoping Review of Current Applications and Knowledge Gaps	Marinos, Eliades ; Silas, Michaelides ; Evagorou, Evagoras S. ; Fotiou, Kyriaki ; Fragkos, Konstantinos ; Leventis, Georgios ; Theochandis, Christos ; Panagioutou, Constantinos F. ; Mavrouvoniotis, Michalis ; Neophytides, Stelios ; Papoutsas, Christiana ; Neocleous, Kyriacos ; Anayiotos, Andreas ; Komodromos, George ; Schreier, Günter ; Kontoes, Charalampos ; Hadjimitsis, Diofantos G.
4-May-2023	Oil spill detection and monitoring in the Cyprus region	Melillos, George ; Kalogirou, Eleftheria ; Makri, Despina ; Hadjimitsis, Diofantos G.
2-May-2023	Seagrass mapping in Cyprus area of interest with pixel-based image analysis	Makri, Despina ; Melillos, George ; Kalogirou, Eleftheria ; Hadjimitsis, Diofantos G.
1-Oct-2022	The study of urban heat island effect in Cyprus using Sentinel-3 data	Themistooleous, Kyriacos
20-Sep-2020	The contribution of the EXCELSIOR Project for cultural heritage	Themistooleous, Kyriacos ; Hadjimitsis, Diofantos G. ; Schreier, Günter ; Krauss, Thomas ; Kontoes, Charalambos Haris
20-Sep-2020	Mashup Tools for Big Data Analysis in Maritime Surveillance	Melillos, George ; Themistooleous, Kyriacos ; Danezis, Chris ; Michaelides, Silas ; Hadjimitsis, Diofantos G. ; Jacobsen, Sven ; Tings, Björn
20-Sep-2020	Detecting Migrant Vessels in the Cyprus Region using Sentinel-1 SAR data	Melillos, George ; Themistooleous, Kyriacos ; Danezis, Chris ; Michaelides, Silas ; Hadjimitsis, Diofantos G. ; Jacobsen, Sven ; Tings, Björn

Appendix Figure 4: EXCELSIOR H2020 Teaming Project Publications (Open Access).



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Appendix B – DMP data types tables

Department of Environment and Climate

Appendix Table 1: Thematic research area of Agriculture.

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	Sentinel	Material collected by ERATOSTHENES, e.g., earth observation datasets, Sentinel Hub API	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
2	Planet	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	External cloud services
3	Landsat	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
4	Google Earth	Material generated by ERATOSTHENES, e.g., geospatial data	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	KML, KMZ	Public Domain Mark - Public Domain	Server of Eratosthenes



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5	MODIS	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	HDF, csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
6	Department of Meteorology	Material generated by ERATOSTHENES, e.g., raw data	Vector data	csv, shp, geojson	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
7	Copernicus Atmosphere Monitoring Services	Material collected by ERATOSTHENES, e.g., forecasts	Numeric data	tabular data saved in a MongoDB, csv, NetCDF	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
8	Cyprus Agricultural Payments Organization	Material collected by ERATOSTHENES, e.g., geospatial data	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
9	ECoE personnel (UAV flights)	Material collected by ERATOSTHENES, e.g., raster data from in-situ observation	Raster data	Geotiff	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
10	OpenDataCy	Material collected by ERATOSTHENES, e.g., agricultural yearbook	Numeric data	xlsx	No public dissemination (for	Server of Eratosthenes



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					Eratosthenes data)	
11	Phassouri Plantations	Material collected by ERATOSTHENES, e.g., measurements, chemical analysis	Numeric data	xlsx	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
12	ECoE personnel (spectroradiometric data)	Material collected by ERATOSTHENES, e.g., in-situ measurements	Numeric data	sig	No public dissemination (for Eratosthenes data)	Server of Eratosthenes

Appendix Table 2: Thematic research area of Land.

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	Sentinel	Material generated by ERATOSTHENES, data from Copernicus	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
2	Planet	Material generated by ERATOSTHENES, data from Planet	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Creative Commons - Commercial use NOT allowed	External cloud services
3	Landsat	Material generated by ERATOSTHENES, data from Landsat	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes



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4	Google Earth	Material generated by ERATOSTHENES	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	KML, KMZ	Public Domain Mark - Public Domain	Server of Eratosthenes
5	MODIS	Material generated by ERATOSTHENES, data from MODIS	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	HDF, csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
6	Geological Survey Department	Governmental data	Metadata, Historical Data and Sensor Data	csv, txt	Public Domain Mark - Public Domain	Server of Eratosthenes
7	Water Development Department	Governmental data	Metadata, Historical Data, Sensor and Satellite Data	csv, txt, raster, vector	Public Domain Mark - Public Domain	Server of Eratosthenes
8	Department of Forests	Governmental data	Metadata, Historical Data, Sensor and Satellite Data	csv, txt, raster, vector	Public Domain Mark - Public Domain	Server of Eratosthenes
9	Department of Land and Surveys	Governmental data	Metadata, Historical Data, Sensor and Satellite Data	csv, txt, raster, vector	Public Domain Mark - Public Domain	Server of Eratosthenes

Appendix Table 3: Thematic research area of Atmosphere

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	GBS - PollyXT Raman lidar	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes



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2	GBS - Doppler Cloud radar 35 GHz	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	NetCDF, mmclx, binary proprietary	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
3	GBS - Doppler lidar	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	txt, NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
4	GBS - Microwave radiometer	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	binary proprietary, NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
5	GBS - Ceilometer	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
6	GBS - Disdrometer	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
	GBS - sunphotometer	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Binary Data of Atmospheric State	Ascii	Public Domain Mark -	Server of Eratosthenes



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					Public Domain	
7	ESA EO - Sentinel 5P	Material collected by Eratosthenes ESA EO	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes
8	ESA EO - EarthCARE	Material collected by Eratosthenes ESA EO	Binary Data of Atmospheric State	NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
9	ESA EO - Aeolus	Material collected by Eratosthenes ESA EO	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes
10	ACTRIS	Material generated /collected by Eratosthenes, ACTRIS Aerosol and Cloud Remote Sensing products	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Not required
11	Copernicus	Material collected by Eratosthenes, ECMWF, Copernicus - Climate Data Store	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes
12	NASA EO - CALIPSO	Material collected by Eratosthenes, NASA EO	Binary Data of	hdf5	Public Domain	Server of Eratosthenes



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			Atmospheric State		Mark - Public Domain	
13	NASA EO - CLOUDSAT	Material collected by Eratosthenes, NASA EO	Binary Data of Atmospheric State	hdf5	Public Domain Mark - Public Domain	Server of Eratosthenes
14	NASA EO- GPM	Material collected by Eratosthenes, NASA EO	Binary Data of Atmospheric State	hdf5	Public Domain Mark - Public Domain	Server of Eratosthenes
15	DoM- X-Band rain radar	Material collected by Eratosthenes, data from Ground remote sensing techniques	Binary Data of Atmospheric State	NetCDF	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
16	DoM- Radiosondes	Material collected by Eratosthenes, data from in situ measurements	Binary Data of Atmospheric State	bfr	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes

Department of Resilient Society



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Appendix Table 4: Thematic research area of Access to Energy

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1						
2	Pyranometers (2) in Limassol solar radiation station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
3	Pyrheliometer in Limassol solar radiation station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
4	Pyrgeometer in Limassol solar radiation station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
5	UV actinometer in Limassol solar radiation station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes



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6	DMc150 Double Monochromator Bentham Instrument in Limassol Solar Radiation Station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
7	Sky camera in Limassol solar radiation station	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
8	Pyranometers (4) in other solar radiation stations located in meteorology department facilities	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	External cloud services
9	UV actinometers (4) in other solar radiation stations located in meteorology department facilities	Material generated by ERATOSTHENES, data from Ground remote sensing techniques	Ascii	Text	Creative Commons - Commercial use NOT allowed	External cloud services
10	Copernicus	Material collected by Eratosthenes, ECMWF, Copernicus - Atmosphere Data Store (CAMS)	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes
11	CM SAF	Material collected by Eratosthenes, EUMETSAT CM SAF Climate Monitoring	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes



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12	EUMETSAT MSG/MGT SEVIRII	Material collected by Eratosthenes, EUMETSAT Data Store	Binary Data of Cloud Coverage	Nat (Native format)	Public Domain Mark - Public Domain	Server of Eratosthenes
13	OMI Ozone/UV	Material collected by Eratosthenes, NASA AURA Validation Data Center	Ascii	Text	Public Domain Mark - Public Domain	Server of Eratosthenes
14	Ozone Forecast	Material collected by Eratosthenes, Tropospheric Emission Monitoring Service Internet Service	Ascii	Text	Public Domain Mark - Public Domain	Server of Eratosthenes

Appendix Table 5. Thematic research area of Disaster Risk Reduction

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	Sentinel	Material collected by ERATOSTHENES, e.g., earth observation datasets, SentinelHub API, Alaska Space Facility	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
2	Planet	Material collected by ERATOSTHENES, e.g., earth observation datasets	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and	csv, xml jpeg, jpeg	Public Domain Mark	External cloud services



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			radar data sets, RGB, Infrared, Hyperspectral)	2000, tiff, Geotiff	- Public Domain	
3	Landsat	Material collected by ERATOSTHENES, e.g., earth observation datasets	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
4	COSMO-SkyMed	Material collected by ERATOSTHENES, e.g., earth observation datasets	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
5	Google Earth	Material generated by ERATOSTHENES, e.g., geospatial data	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	KML, KMZ	Public Domain Mark - Public Domain	Server of Eratosthenes
6	MODIS	Material collected by ERATOSTHENES, e.g., earth observation datasets	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	HDF, csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
7	Geological Survey Department	Material collected by ERATOSTHENES, e.g., geospatial data, seismic risk zones, geological suitability, hazard maps, etc.	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes



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8	Town Planning and Housing Department	Material collected by ERATOSTHENES, e.g., geospatial data, building valuations, planning permissions	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
9	Lands and Surveys Department	Material collected by ERATOSTHENES, e.g., geospatial data, DEM, etc.	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
10	Department of Meteorology	Material collected by ERATOSTHENES, e.g., forecasts, rainfall. Temperature	Numeric data	tabular data saved in a MongoDB, csv, NetCDF	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
11	Cyprus Agricultural Payments Organization	Material collected by ERATOSTHENES, e.g., geospatial data, cultivated areas	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
12	ECoE personnel (UAV flights)	Material collected by ERATOSTHENES, e.g., raster data from in-situ observation	Raster data	Geotiff	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
13	ECoE personnel (Spectroradiometric data)	Material collected by ERATOSTHENES, e.g., in-situ measurements	Numeric data	sig	No public dissemination (for	Server of Eratosthenes



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					Eratosthenes data)	
14	ECoE personnel (Site photos)	Material collected by ERATOSTHENES, e.g., raster data, photos	Raster data	jpg, png, tiff	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
15	ECoE personnel (Soil moisture)	Material collected by ERATOSTHENES, e.g., in-situ measurements	Numeric data	sig	No public dissemination (for Eratosthenes data)	Server of Eratosthenes

Appendix Table 6. Thematic research area of Cultural Heritage.

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1		Material generated by ERATOSTHENES	3D point clouds	ply, las, obj	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
2	Range-based 3D Sensors	Material generated by ERATOSTHENES	2D images	jpeg, tiff, Geotiff	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
3	Topographic measurements	Material generated by ERATOSTHENES	3D coordinates	ASCII	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes



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4	Department of Land and Survey Cyprus, NCA	Historical Aerial Image datasets	2D Historical Images	tiff	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
5	Aerial Image-based sensors (UAV)	Material generated by ERATOSTHENES	2D images	jpeg, tiff, Geotiff	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
6	Sentinel	Material generated by ERATOSTHENES, data from Copernicus	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
7	PlanetScope	Material generated by ERATOSTHENES, data from Planet Labs	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
8	Landsat	Material generated by ERATOSTHENES, data from Landsat	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
9	Google Earth	Material generated by ERATOSTHENES	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes



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10	PRISMA	Material generated by ERATOSTHENES, data from ASI	Metadata, Historical Data Sensor and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
11	Hyperspectral High Spatial Resolution (TRIQUETRA)	Material generated by DLR-ERATOSTHENES	Aerial/satellite Data Images (Multispectral, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff		Server of Eratosthenes
12	Department of Land and Survey Cyprus, NCA	Digital Elevation Model (DEM) dataset	2D images	tiff	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
13	OpenStreetMap	Road network dataset	vector (polygons)	shapefile	Public Domain Mark - Public Domain	Server of Eratosthenes

Appendix Table 7. Thematic research area of Marine Safety and Security.

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	Sentinel	Material generated by ERATOSTHENES, data from Copernicus	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
2	Planet	Material generated by ERATOSTHENES, data from Planet	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark	External cloud services



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					- Public Domain	
3	Landsat	Material generated by ERATOSTHENES, data from Landsat	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
4	Google Earth	Material generated by ERATOSTHENES	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	KML, KMZ	Public Domain Mark - Public Domain	Server of Eratosthenes
5	Copernicus Atmosphere Monitoring Service (CAMS)	Material collected by Eratosthenes, ECMWF, Copernicus - Climate Data Store	Binary Data of Atmospheric State	NetCDF	Public Domain Mark - Public Domain	Server of Eratosthenes
6	Cyprus Meteorology Department	Material generated by CMD, collected by Eratosthenes	Numeric data	CSV, XML	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
7	Joint Rescue Coordination Center	Material generated by JRCC, collected by Eratosthenes	Numeric data	CSV, XML, XLSX, KML, HTML	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes
8	Marine Police	Material generated by MP, collected by Eratosthenes	Numeric data	CSV, XML, XLSX, KML, HTML	Creative Commons - Commercial use NOT allowed	Server of Eratosthenes



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Department of Big Earth Data Analytics

Appendix Table 8. Thematic research area of Information Extraction \ Visual Exploration & Visualisation \ Crowd Sourcing & Data Fusion.

	Description of Data Source	Type of Data	Form of Data	Format of Data	Licensing of Data	Storage requirements
1	Sentinel	Material collected by ERATOSTHENES, e.g., earth observation datasets, Sentinel Hub API	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
2	Planet	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	External cloud services
3	Landsat	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
4	Google Earth	Material generated by ERATOSTHENES, e.g., geospatial data	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	KML, KMZ	Public Domain Mark - Public Domain	Server of Eratosthenes



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5	MODIS	Material collected by ERATOSTHENES, e.g., earth observation datasets,	Metadata, Historical Data Sensor, and Satellite Data (Multispectral, optical and radar data sets, RGB, Infrared, Hyperspectral)	HDF, csv, xml jpeg, jpeg 2000, tiff, Geotiff	Public Domain Mark - Public Domain	Server of Eratosthenes
6	Meteorology department	Material generated by ERATOSTHENES, e.g., raw data	Vector data	csv, shp, geojson	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
7	Copernicus Atmosphere Monitoring Services	Material collected by ERATOSTHENES, e.g., forecasts	Numeric data	tabular data saved in a MongoDB, csv, NetCDF	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
8	Cyprus Agricultural Payments Organization	Material collected by ERATOSTHENES, e.g., geospatial data	Vector data	csv, geojson, gdb	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
9	EMMENA Stakeholder (Prof. Anis Chkirkbene)	Material collected by ERATOSTHENES, e.g., data from in-situ measurements	Numeric data	csv	No public dissemination (for Eratosthenes data)	Server of Eratosthenes
10	Open Street Map (OSM)	Material collected by ERATOSTHENES, e.g., geospatial data	Vector data	shp, geojson, gdb	No public dissemination (for	Server of Eratosthenes



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					Eratosthenes data)	
11	MS Building - Google Earth Engine	Material collected by ERATOSTHENES, e.g., geospatial data	Vector data	shp	No public dissemination (for Eratosthenes data)	Server of Eratosthenes