Plan Overview

A Data Management Plan created using DMPonline

Title: AshTraj

Creator: Catherine Hayer

Principal Investigator: Mike Burton

Data Manager: Catherine Hayer

Project Administrator: Catherine Hayer

Contributor: Catherine Hayer, Chris Johnson

Affiliation: University of Manchester

Funder: Natural Environment Research Council (NERC)

Template: NERC Template Customised By: University of Manchester

ORCID iD: 0000-0003-3779-4812

Project abstract:

Application of the PlumeTraj analysis toolkit to the modelling of volcanic ash plumes using Geostationary satellites. Data plan developed for the NERC Exploring the Frontiers of Science, June 2022 call.

ID: 101735

Start date: 01-01-2023

End date: 31-12-2023

Last modified: 08-06-2022

Grant number / URL: https://www.ukri.org/opportunity/exploring-the-frontiers-of-environmental-science-research-2022/

Copyright information:

The above plan creator(s) have agreed that others may use as much of the text of this plan as they would like in their own plans, and customise it as necessary. You do not need to credit the creator(s) as the source of the language used, but using any of the plan's text does not imply that the creator(s) endorse, or have any relationship to, your project or proposal

AshTraj - Outline DMP

Manchester Data Management Outline

1. Will this project be reviewed by any of the following bodies (please select all that apply)?

- Funder

2. Is The University of Manchester collaborating with other institutions on this project?

- Yes - Part of a collaboration and owning or handling data

Project partners within the project are another researcher within the University of Manchester (Dr. Chris Johnson, Dept. of Maths) and Dr. Claire Witham at the UK Met Office.

3. What data will you use in this project (please select all that apply)?

- Acquire new data
- Re-use existing data (please list below)

Satellite data, looking at volcanic plumes, from ESA and EUMETSAT will be used. Meteorological data from NOAA and the UK Met Office will be used.
Analysed data, output from the project, combines the satellite data with trajectory models which use the meteorological data.

4. Where will the data be stored and backed-up during the project lifetime?

- Other storage system (please list below)

Local hard drives in the interim will be used. Long term storage is expected at the NERC CEDA storage facility.

5. If you will be using Research Data Storage, how much storage will you require?

- 1 - 8 TB

6. Are you going to be receiving data from, or sharing data with an external third party?

- Yes

Receiving data from ESA, EUMETSAT, NOAA, UK Met Office.
Data will be shared with the UK Met Office and the British Geological Survey, as well as any local civil defence, monitoring, or scientific groups requiring it for disaster response or long term monitoring of target volcanoes.

7. How long do you intend to keep your data for after the end of your project (in years)?

- 5 - 10 years

Guidance for questions 8 to 13
Highly restricted information defined in the Information security classification, ownership and secure information handling SOP is information that requires enhanced security as unauthorised disclosure could cause significant harm to

individuals or to the University and its ambitions in respect of its purpose, vision and values. This could be: information that is subject to export controls; valuable intellectual property; security sensitive material or research in key industrial fields at particular risk of being targeted by foreign states. See more examples of highly restricted information .

Personal information, also known as personal data, relates to identifiable living individuals. Personal data is classed as special category personal data if it includes any of the following types of information about an identifiable living individual: racial or ethnic origin; political opinions; religious or similar philosophical beliefs; trade union membership; genetic data; biometric data; health data; sexual life; sexual orientation.

Please note that in line with data protection law (the UK General Data Protection Regulation and Data Protection Act 2018), personal information should only be stored in an identifiable form for as long as is necessary for the project; it should be pseudonymised (partially de-identified) and/or anonymised (completely de—identified) as soon as practically possible. You must obtain the appropriate ethical approval in order to use identifiable personal data.

8. What type of information will you be processing (please select all that apply)?

- No confidential or personal data

9. How do you plan to store, protect and ensure confidentiality of any highly restricted data or personal data (please select all that apply)?

- Not applicable

10. If you are storing personal information (including contact details) will you need to keep it beyond the end of the project?

- Not applicable

11. Will the participants' information (personal and/or sensitive) be shared with or accessed by anyone outside of the University of Manchester?

- Not applicable

12. If you will be sharing personal information outside of the University of Manchester will the individual or organisation you are sharing with be outside the EEA?

- Not applicable

13. Are you planning to use the personal information for future purposes such as research?

- No

14. Will this project use innovative technologies to collect or process data?

- No

15. Who will act as the data custodian for this study, and so be responsible for the information involved?

Catherine Hayer

16. Please provide the date on which this plan was last reviewed (dd/mm/yyyy).

2022-06-08

Outline DMP

Project Title

AshTraj

Principal Investigator(s) / Grant Holder

Mike Burton

Will the grant produce data?

- Yes

Nominated Data Centre(s)

- Other e.g. Archaeology Data Service

NERC's CEDA (Centre for Environmental Data Archival) Archive

Briefly list the datasets that the project will produce. If the total is likely to be larger than 1TB please indicate.

Volcanic ash emission time series for volcanoes in Iceland, Europe, Africa, the Caribbean.
Verification output model data for various test and true eruptions.

AshTraj - Full DMP

Project information

Project Name

AshTraj

Project Number (NERC PIs only)

Question not answered.

Grant Reference

Question not answered.

Principal Investigator

Mike Burton

Organisation

Nominated Data Centre

- Other e.g. Archaeology Data Service

NERC's Centre for Environmental Data Archival (CEDA)

Data Centre Contact

data.management@ceda.ac.uk

Project Data Contact

Catherine Hayer

Please specify any other team members with responsibility for data

Prof. Mike Burton
Dr. Chris Johnson

Roles and Responsibilities

Please state all roles and responsibilities throughout the project

Catherine Hayer: Code writing, maintenance, documentation; data acquisition, analysis, curation, metadata production, documentation; long-term data storage transition

Data Generation Activities

What data will be created and how?

Volcanic plume (primarily ash) emission time series (NetCDF data files, image files)

In-Project Data Management Approach

How will the data be managed?

Satellite and meteorological data will be download from online repositories via Python-based UIs. These data are stored on local hard drives.
Output model data are stored on local hard drives, with additional ones used for periodic back up of intermediate and final output results.
Periodic moves of data to the CEDA archive will ensure off site backups of final results

Metadata and Documentation

Outline plans for metadata, noting standards that will be used

All output data files use NetCDF4 format for interoperability. They are formatted according to CF (Climate-Forecast) standards to allow for use in all model forms.
Summary files containing run parameters and summary results are produced with all models runs, are stored with the appropriate model run results, and are stored as .txt files for maximum utility

Data Quality

What procedures will be used to control data quality?

Manual inspection (automated analysis is not expected during this project)

Exceptions or Additional Services

Clarify any support needed from data centres that exceeds the norm, and show this has been planned / costed.

No additional support requirements expected

Data Management Plan Information

Author

Question not answered.

Date

Question not answered.

Version Number

Question not answered.

Approved by PI/PM

Question not answered.

Approved by (Data Centre)

Question not answered.

New Datasets

Digital Information

Dataset Description	Contact	Data Volume	Data Format	Issues	Delivery Date	Embargo Date	Reuse Scenario	Preservation Plan
AshTraj flux results	*Catherine Hayer*	<100 Mb/file	NetCDF4	*N/A*	*Daily*	*No embargo*		*5 year retention*

Hardcopy Records

Dataset Name	Contact	Data Volume	Data Format	Issues	Delivery Date	Preservation Plan
N/A	*Dataset contact name*			*Any issues with the data, e.g. legal, access, retention, etc.*	*Date expect to receive data*	*e.g. Keep indefinitely, Do not keep, etc.*

Physical Collections & Samples

Dataset Name	Contact	Data Volume	Data Format	Issues	Delivery Date	Preservation Plan
N/A	*Dataset contact name*			*Any issues with the data, e.g. legal, access, retention, etc.*	*Date expect to receive data*	*e.g. Keep indefinitely, Do not keep, etc.*

Third Party/Existing Datasets

Third Party/Existing Datasets

Dataset Name	Contact	Location	Contents	Estimated Size	Responsibility	Licence Issues	Comments
GFS meteorological data	*NOAA*	ftp://ftp.arl.noaa.gov/pub/archives/gfs0p25	NOAA Global Fo*recast System 0.25deg meteorological data*	2.7 Gb/day	Catherine *Hayer*	None	June 2019 to present
GDAS	NOAA	ftp://ftp.arl.noaa.gov/pub/archives/gdas0p5	*NOAA Global Data Assimilation System 0.5deg meteorological data*	0.67 Gb/day	*Catherine Hayer*	None	Sept 2007 - June 2019
UM meteorological data	UK Met Office	NERC CEDA archive	Unified Model meteorological data		Catherine Hayer	Only authorised personnel	Available after several days to a couple of weeks
SEVIRI satellite data	EUMETSAT	EUMETSAT data store	SEVIRI satellite data for the full observation disk	185 Mb/file 96 files/day	Catherine Hayer	None	Files will be downloaded on an as-needed basis (when there is a volcanic event)