
The oscillation and eruption of solar prominence

A Data Management Plan created using DMPonline.be

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Project abstract:

In this project, I will mainly study the oscillation and eruption of solar prominence through numerical simulations and compare it with observations.

So, the data related to our study is all digit data from simulations which will be saved in hard disks. In this DMP, I will introduce how will we manage the data.

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FWO DMP (Flemish Standard DMP)

1. Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

				Only for digital data	Only for digital data	Only for digital data	Only for physical data
Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)	Physical volume
		Please choose from the following options: <ul style="list-style-type: none"> Generate new data Reuse existing data 	Please choose from the following options: <ul style="list-style-type: none"> Digital Physical 	Please choose from the following options: <ul style="list-style-type: none"> Observational Experimental Compiled/aggregated data Simulation data Software Other NA 	Please choose from the following options: <ul style="list-style-type: none"> .por, .xml, .tab, .cvs, .pdf, .txt, .rtf, .dwg, .gml, ... NA 	Please choose from the following options: <ul style="list-style-type: none"> <100MB <1GB <100GB <1TB <5TB <10TB <50TB >50TB NA 	
simulation data	simulation results	new	digital	simulation data	NA	<50 TB	
post process script	scripts used to visualize results	new	digital	software	.py	<100 MB	
source code	simulation code	new	digital	software	.f90	<1GB	

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

NA

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, ...)? If so, please comment per dataset or data type where appropriate.

- No

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- No

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- No

2. Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).

The code we use for simulations is open source and has full documentation at its website.

Using the file to specify initial and boundary conditions and some other parameters, all data could be reproduced. The file will be uploaded to Github after the research has been published. A README will be included together.

Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.

- Yes

We use our AMRVAC's own *.dat file format, which is described in detail on the code website.

From it, we visualize the results through the yt-package in Python language or other similar softwares.

3. Data storage & back-up during the research project

Where will the data be stored?

We will store data on local external hard disks, which could be connected to desktops or laptops.

With these data, we can regenerate any figure or analysis used in the peer-reviewed papers.

How will the data be backed up?

The code itself is open source on Github.

The user file which specify the initial and boundary conditions will be kept on the my home directory, which is backed up by our ESAT

team everyday. After the results led to a publication, it will also be uploaded to the Github repository.
The data file will be kept and backed up on local hard disks and external hard disks.

**Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.
If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.**

- Yes

Yes. We have local powerful desktops with TBs local hard disks, as well as tens of TBs external hard disks.
For the home directories which is maintained by the ESAT team, they are automatically backed up.

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

All the disks are located in my office, they could only be accessed through my own desktop.
The desktop is maintained by our ESAT team so that it is monitored permanently, and only authorized persons login the system.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

We will use some of the project requested consumable costs to purchase some external hard disks for backup.
The running costs for the ESAT team is covered by the hosting department.

4. Data preservation after the end of the research project

Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

We will not deviate the 5 year preservation principle.
All the codes and user files will be stored on Github as well as our own disks.
The data on disks will be kept for 5 years, after which the data volumes can be recovered for new projects.

Where will these data be archived (stored and curated for the long-term)?

The source code itself is open source on Github.
Using the user file, we can reproduce the simulations results and these user files.
These user files will be uploaded to Github together with the source code after publication.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

Using the external hard disks, next to the servers of the KU Leuven, we will cover costs from consumables as well as from running departmental funds.

5. Data sharing and reuse

Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.

- Yes, in an Open Access repository

The code itself is open source.

User files that can reproduce the simulation will be uploaded to the Github repository after publication.

The raw data produced from the simulations are kept in our hard disks to guarantee access to all information.

If access is restricted, please specify who will be able to access the data and under what conditions.

NA.

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.

- No

Where will the data be made available? If already known, please provide a repository per dataset or data type.

On Github, through our website amrvac.org.

When will the data be made available?

The code itself is open-source and available on Github anytime.

The user file will be uploaded to Github upon publication of the research results.

Which data usage licenses are you going to provide? If none, please explain why.

Our simulation code use the GNU general public license, which could be checked on the github repository.

The user file will also be uploaded to Github after publication, under the same license.

Using the code and user file, one can reproduce the simulation results.

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- No

The code and user files will be uploaded to Github which could be accessed by everyone.

The local hard disk will keep the data for 5 years and then be recovered for new project.

What are the expected costs for data sharing? How will these costs be covered?

The code is maintained by the KU Leuven team, they will pay a minor annual cost which documents the code through their available fundings.

6. Responsibilities

Who will manage data documentation and metadata during the research project?

Myself Yuhao ZHOU

Who will manage data storage and backup during the research project?

Myself Yuhao ZHOU

Who will manage data preservation and sharing?

Myself Yuhao ZHOU

Who will update and implement this DMP?

Myself Yuhao ZHOU