Plan Overview

A Data Management Plan created using DMPonline

Title: Simultaneous space-time solvers for parabolic data-assimilation problems

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Project abstract:

Mathematical models are often incomplete and need to be complemented by observations of the state, a process known as *data assimilation*.

For a parabolic PDE with unknown initial data, this leads to an ill-posed coupled system of two parabolic PDEs running in different time directions.

The common numerical solution method is by means of applying a classical time-marching scheme, as the Euler-Backward method, to both PDEs.

Based on our experiences with the initial value problem, we will apply modern*simultaneous space-time variational methods*.

They offer the advantages of an elegant mathematical theory, certified a posteriori error control, and, as we envisage, superior numerical results.

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Simultaneous space-time solvers for parabolic data-assimilation problems

General Information

Name applicant and project number

Rob Stevenson
90122

Name of data management support staff consulted during the preparation of this plan and date of consultation.

Tim van Erven
8-12-2021

1. What data will be collected or produced, and what existing data will be re-used?

1.1 Will you re-use existing data for this research?

If yes: explain which existing data you will re-use and under which terms of use.

- No

1.2 If new data will be produced: describe the data you expect your research will generate and the format and volumes to be collected or produced.

The only data that is going to be produced in this project is the output of numerical algorithms, and is therefore reproducible by re-running the code. There is therefore no need to store the data.
The numerical algorithms that are developed will be published in open access journals, and possibly also in the form of a computer code on Github.

1.3. How much data storage will your project require in total?

- 0 – 10 GB

2. What metadata and documentation will accompany the data?

2.1 Indicate what documentation will accompany the data.

2.2 Indicate which metadata will be provided to help others identify and discover the data.

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

3.1 Describe where the data and metadata will be stored and backed up during the project.

- Institution networked research storage

3.2 How will data security and protection of sensitive data be taken care of during the research?

- Not applicable (no sensitive data)

4. How will you handle issues regarding the processing of personal information and intellectual property rights and ownership?

4.1 Will you process and/or store personal data during your project?

If yes, how will compliance with legislation and (institutional) regulation on personal data be ensured?

- No

4.2 How will ownership of the data and intellectual property rights to the data be managed?

5. How and when will data be shared and preserved for the long term?

5.1 How will data be selected for long-term preservation?

- All data resulting from the project will be preserved for at least 10 years

5.2 Are there any (legal, IP, privacy related, security related) reasons to restrict access to the data once made publicly available, to limit which data will be made publicly available, or to not make part of the data publicly available?

If yes, please explain.

- No

5.3 What data will be made available for re-use?

- All data resulting from the project will be made available

5.4 When will the data be available for re-use, and for how long will the data be available?

- Data available as soon as article is published

5.5 In which repository will the data be archived and made available for re-use, and under which license?

Possibly software will be published on github.
The MIT license

5.6 Describe your strategy for publishing the analysis software that will be generated in this project.

6. Data management costs

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