Plan Overview

A Data Management Plan created using DMPonline

Title: Vulnerability of karst groundwater systems to contamination by pesticides

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Template: Health Research Board DMP Template

Project abstract:

This project aims to increase the understanding of leaching in karst to give scientifically sound recommendations for farmers in those regions, responding to the specific aquifer protection needs in each area. More specifically it will research different international approaches to defining the vulnerability of karst aquifers in agricultural terrains and then develop a refined conceptual and then modelling approach which is focuses on the pesticide contaminant transport and attenuation. These models will be tested on publicly available data as well as data from the industrial sponsor for the project.

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Copyright information:

Vulnerability of karst groundwater systems to contamination by pesticides

Data description and collection or re-use of existing data

How will new data be collected or produced and/or how will existing data be re-used?

It is anticipated that the following data / digital outputs will be collected / used:

·   Field data – provided directly by the industrial partner in the catchments and/or stored on dataloggers, including meteorological data, water level data in springs and wells, and derived flow data from gauged sites.

·   Remotely sensed data – mainly from Sentinel-2 which is freely available and also some drone and derived metrics from this data (such as NDVI etc.)

·   Synthetic / simulated data: this includes derived datasets from model simulations as well as synthetically generated data for use to verify the outputs from the machine learning based models.

What data (for example the kind, formats, and volumes), will be collected or produced?

Documentation and data quality

What metadata and documentation (for example the methodology of data collection and way of organising data) will accompany data?

The metadata included will be:

- ·   Title
- ·   Description
- ·   Format
- ·   Spatial extent
- ·   Contact info
- ·   Coordinate reference system (CRS)
- ·   Spatial accuracy
- ·   Any other useful info

What data quality control measures will be used?

Storage and backup during the research process

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

Data and metadata will be stored locally on the workstation desktop used to carry out the research work, synchronised on the cloud provided by Trinity College Dublin and accessible to all team members, and backed up weekly on a separate external hard drive.

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

Data will be accessible to team members only through password protection. It is not expected that there are any sensitive data issues.

Legal and ethical requirements, codes of conduct

If personal data are processed, how will compliance with legislation on personal data and on security be ensured?

No personal data will be processed

How will other legal issues, such as intellectual property rights and ownership, be managed? What legislation is applicable?

IPR issues are unlikely to arise as a result of the research but will be dealt with via the university's Technology Transfer Office (Trinity College Dublin's Research and Innovation division).

What ethical issues and codes of conduct are there, and how will they be taken into account?

It is not considered there are any ethical issues related to data collection.

Data sharing and long-term preservation

How and when will data be shared? Are there possible restrictions to data sharing or embargo reasons?

Data will be made as open as possible to commercial and non-commercial users, as soon as the scientific results from this project have been published. It is not expected that there are any sensitive data issues but this will need to be discussed with the industrial partner before any data is released.

How will data for preservation be selected, and where data will be preserved long-term (for example a data repository or archive)?

At present the options that could be considered would be repositories such as DataONE; Directory Interchange Format (DIF) - a metadata initiative from the Earth sciences community, intended for the description of scientific data sets; Common European Research Information Format (CERIF) - the standard that the EU recommends to its member states for recording information about research activity or; the Dublin Core - a basic standard which can be easily understood and implemented, and is one of the most widely used metadata standards.

What methods or software tools are needed to access and use data?

Any Geographical Information System software, whether open source (e.g. QGIS) or proprietary (e.g. ArcGIS) , will be a suitable tool to access and used the data.

How will the application of a unique and persistent identifier (such as a Digital Object Identifier (DOI)) to each data set be ensured?

Research data linked to publication outputs will also be deposited on a free, open access repository such as Mendeley Data which will have its own unique digital object identifier (DOI) code.

Data management responsibilities and resources

Who (for example role, position, and institution) will be responsible for data management (i.e. the data steward)?

The Project Coordinator will develop and oversee the Data Management Plan for the project and ensure that it meets FAIR principles.

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)?