
Plan Overview

A Data Management Plan created using DMPOnline

Title: Identifying and targeting Ireland's deep groundwater resources using seismic reflection data

Creator: Abdoulie Faal

Affiliation: University College Dublin

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Project abstract:

Groundwater resources make up about 16 percent of Ireland's public water supply, but the nature and extent of the resource distribution at depth (>100m) is poorly understood. The broad context of this project is to develop a better understanding of deep groundwater resources in Irish limestones using existing seismic data sets. Anecdotal and field evidence suggests that deeper groundwater resources are largely untapped and uncharacterised. The aim of this project is to model water-bearing features using existing seismic and drill data, and to develop a direct detection method for locating these deep-seated, water-bearing features. These data sets will be used to characterise the appearance of deep-seated karst features, allowing for the development of synthesised seismic sections. Original seismic data sets will then be reprocessed with the aim of highlighting water-, air- or water and air-filled features. The approaches developed can be used to identify potential deep groundwater resources, and these resources could have multiple users: including augmenting and enhancing water supplies, providing a stable saline water resource for desalination, and providing targets for geothermal use (at local and district level, for agricultural use, and to data centres as potential independent sources of heating and cooling).

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Identifying and targeting Ireland’s deep groundwater resources using seismic reflection data

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?

The seismic data using in the project is provided by GSI.

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

Type of data	How will data be collected?	Purpose of data collection?	File format(s)	Volume
observational and numerical seismic data.	recording_field work	The aim of the processing was to produce sections suitable for structural interpretation.	SEG-Y (msdos IEEE 32 bit)	138.9 GB.

Documentation and data quality

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

The following summary report accompany the data:

Data recorded: Sept 26 - 30, 2019

Receiver Parameters

Type of receiver: Geophones.

Model: Z – Land, 1c nodal,

Frequency: 10 Hz

Number of geophones: 1

Receiver station interval: 10 m

Range receiver station: 1001 - 2028

Receiver station increment: by 1 (1001, 1002, 1003 ...)

Total receiver station: 1028

Source Parameters

Type of Source: Vibroseis

Model: AHV-IV PLS 362

Nominal number of Vibrators: 3

Size: 59840 lb.

Sweep: 0.20 Db/Hz log, 24 seconds, 1 to 90 Hz.

Source interval: 5 m

Range source station: 1001.25 – 202875.

Source station increment: by 50 (100125, 100275, 100325, 100375 ...)

Total sources recorded: 1829

Spread Parameters

Type of spread: Symmetrical full spread / Roll-on, Roll-off
Spread: 400 channels rear, 400 channels front
Maximum channels: 800
Minimum offset: 5.0 m
Maximum offset: 3995.0 m

Recording Parameters

Instrument: Seismic Source UEII
Total live channels: 800
Number of auxiliary channel: 2
Aux 1: Predictive time break (PTB)
Aux 2: True reference (TREF)

Data Format

SEG-Y (msdos IEEE 32 bit)
Sample rate: 2.0 ms
Record length: 5000 ms
Low cut filter: 0 Hz
High cut filter: 206 Hz

Data Media

Disk type:
Hard disk (SEG-Y)
Range FFID : 100125 – 202875

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?

The data has been stored in my laptop and in 2 separate external hard drive.

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

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?

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

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

Data sharing and long-term preservation

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

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

The data has been stored in my laptop and 2 copies in 2 separate external hard drive

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

I am using ReflexW software for reading and working on 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?

Data management responsibilities and resources

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

The data has been provided by GSI.

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)?