

FAIR UAV Metadata for a reproducible workflow: Leveraging GeoNetwork OpenSource

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GeoGeeks - 10/04/2024



About myself



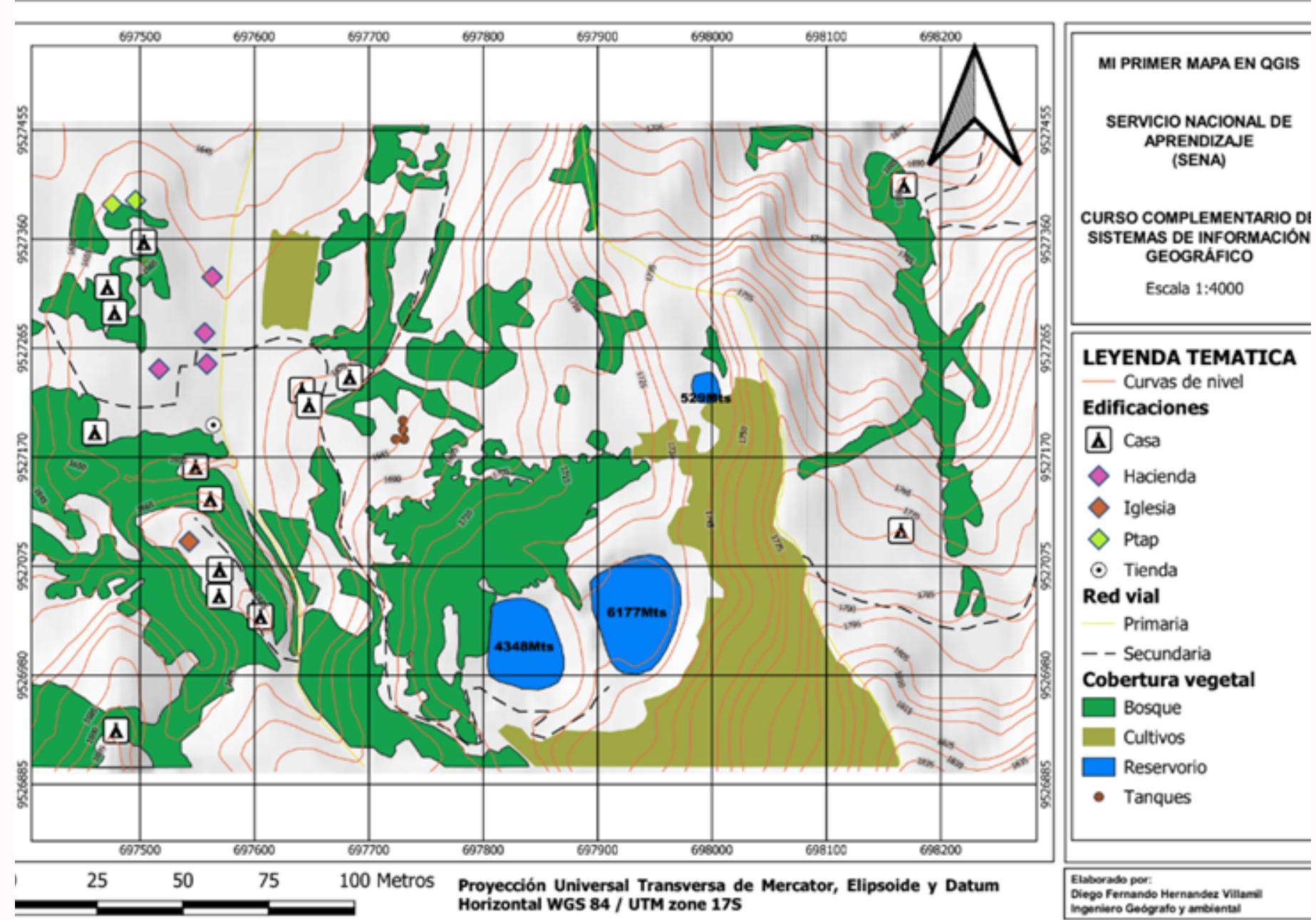
GAIA RESOURCES
ENVIRONMENTAL
TECHNOLOGY
CONSULTANTS



Curtin University

About myself

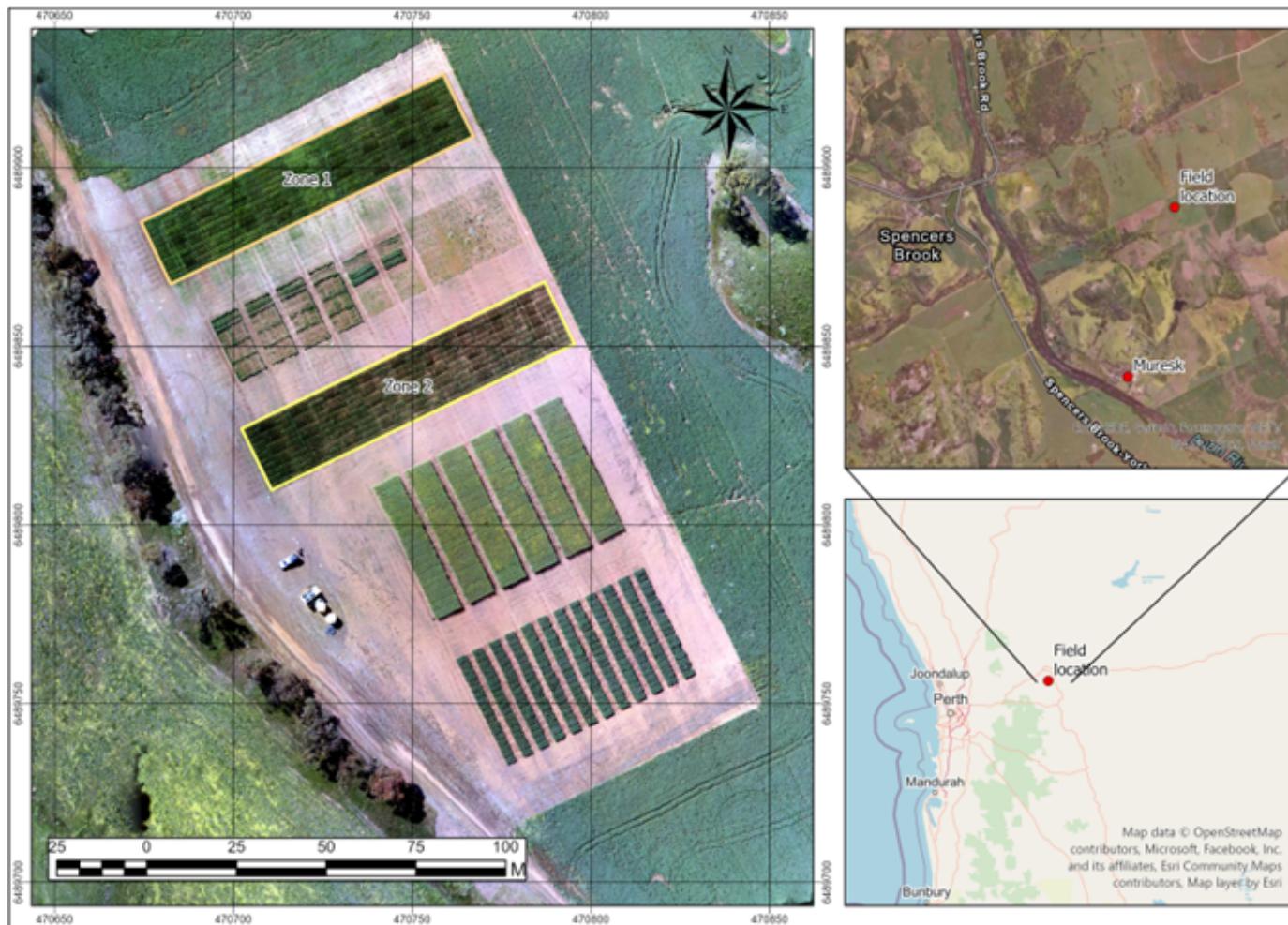
My experiences working with Drones



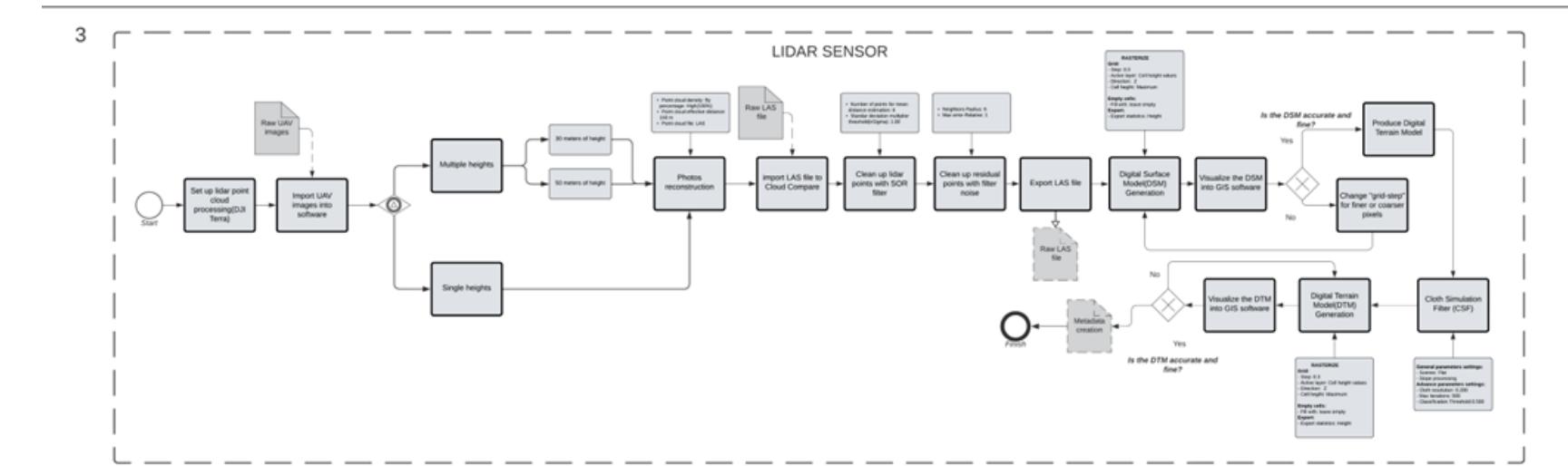
My First map using QGIS

Research project

STUDY AREA



DEVELOPMENT REPRODUCIBLE WORKFLOWS



Instruments



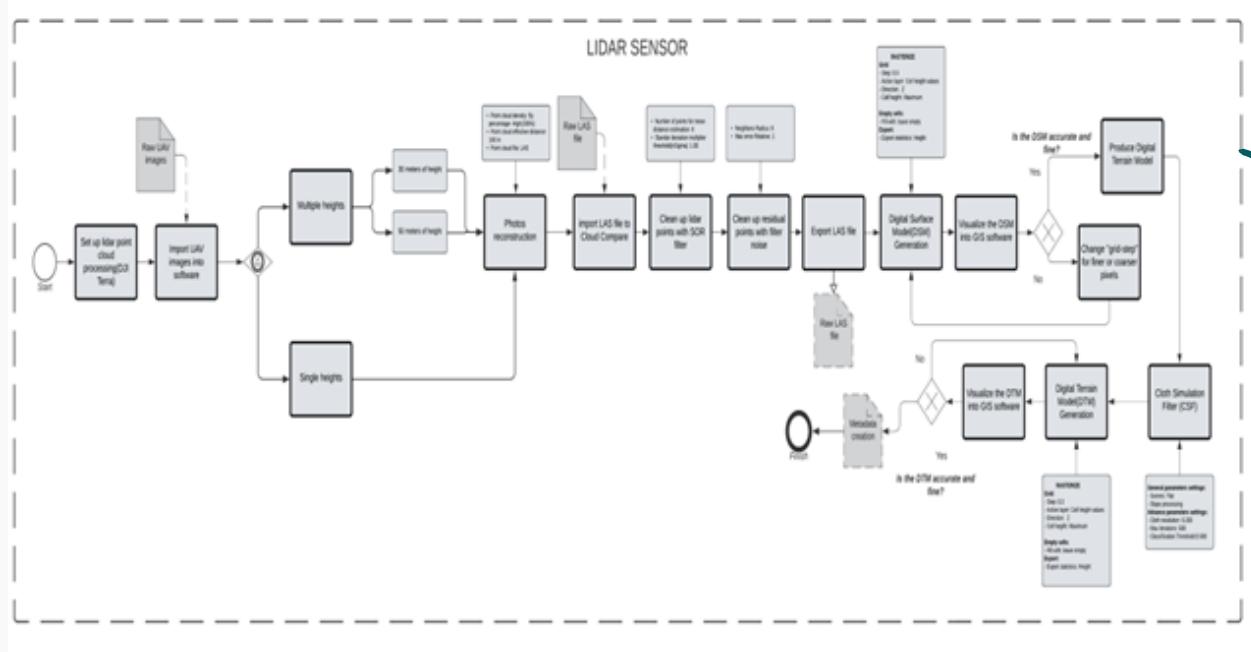
FLIGHT 1	FLIGHT 2	FLIGHT 3	FLIGHT 4
11-Aug-23	8-Sep-23	29-Sep-23	13-Oct-23

The importance of constructing reproducible workflows

Workflow addressed by

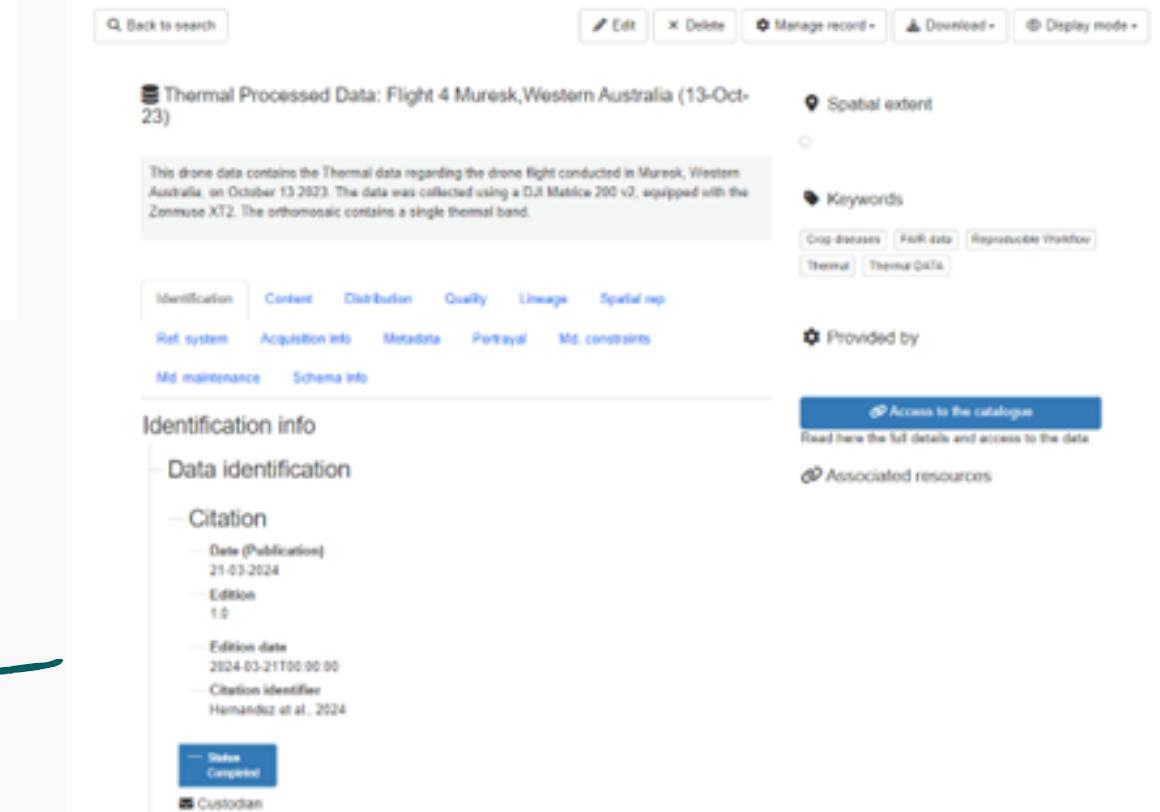
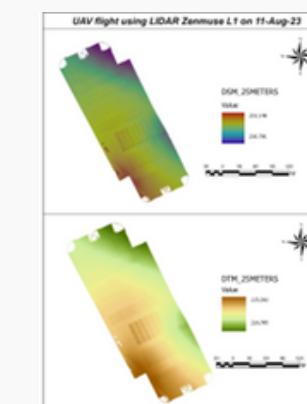


Workflow example



Metadata creation

Datasets

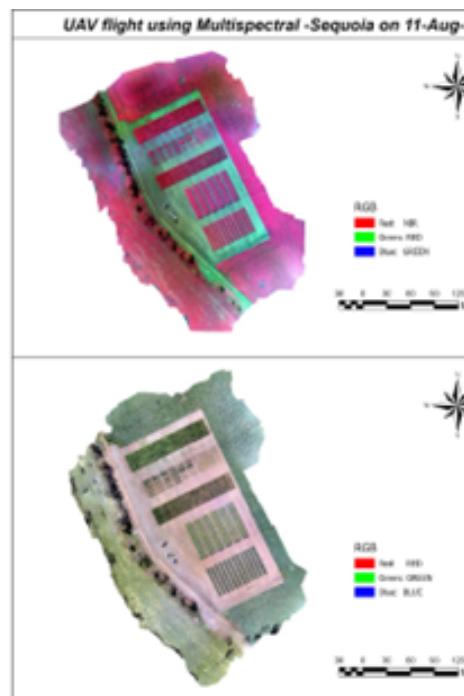


How do we construct a reproducible workflow?

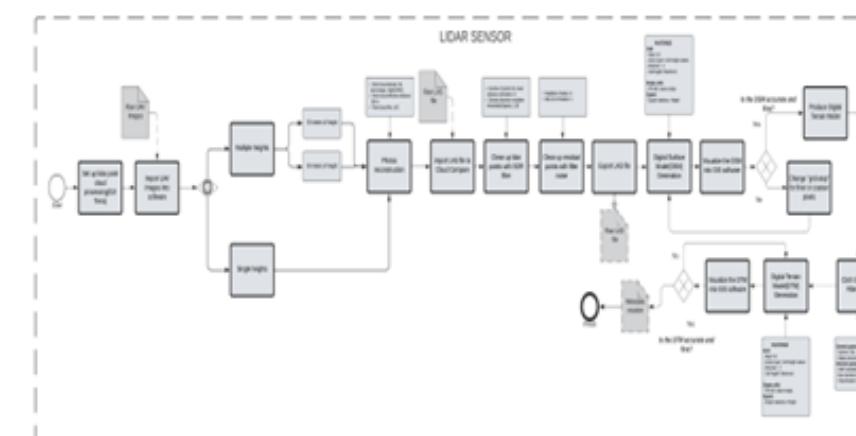
1.FAIR PRINCIPLES



Datasets

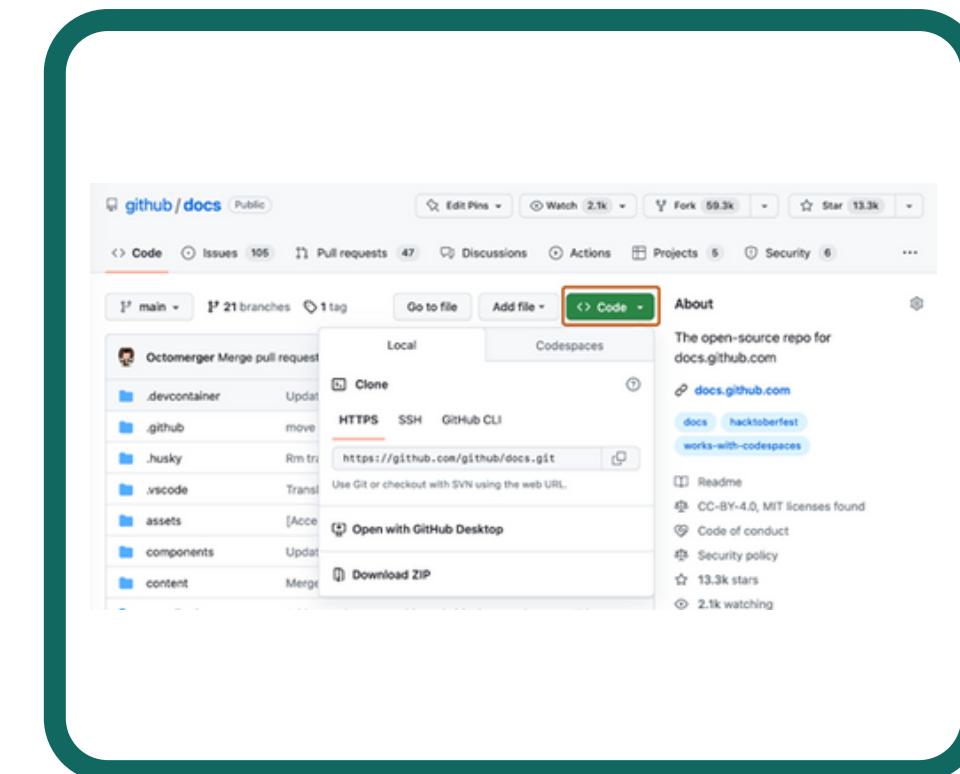


Workflows models



2.WEB ACCESIBLE

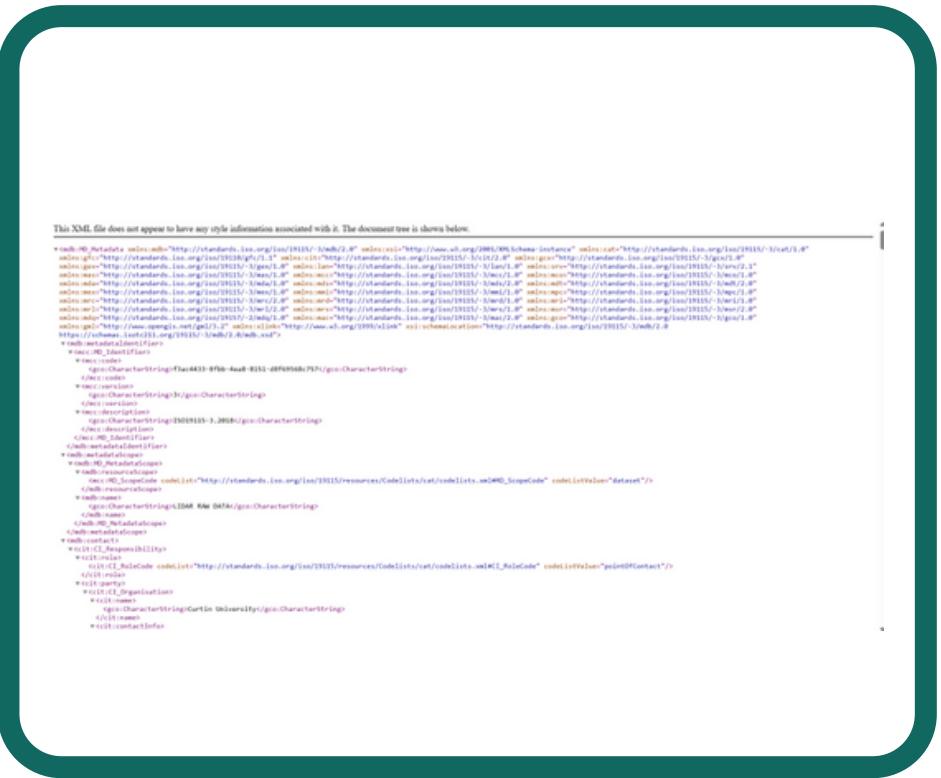
Repositories



How do we construct a reproducible workflow?

3. STANDARISATION

XML



4. METADATA STANDARDS



GeoNetwork and its significant role in this research

ISO STANDARD

	ISO 19115-1:2014
Class	Attribute Name
Identification information	Citation Title Abstract Point of Contact Resource Maintenance Date Identifier Resource Constraints Descriptive keywords Spatial resolution Topic category Extent Temporal extent Geographic Extent (Geographic bounding box)
Spatial Representation Information	Reference system identifier Coordinate system Codespace Version Authority
Reference System Information	Lineage Data quality scope Distribution format Distribution contact Online resource Transfer options Coverage description Feature catalog description Image description portrayal catalogue info
Data Quality information	Maintenance and update frequency Date of next update User-defined maintenance frequency Update scope Update scope description Maintenance note Contact Legal constraints Use Limitations Security constraints
Distribution Information	MD_MetadataExtensionInformation Metadata standard name Metadata standard version
Content information	
Portrayal catalogue information	
Application Schema info	
Maintenance information	
Constraint information	
Metadata extension information	

	19115-2:2019
Class	Attribute Name
Acquisition information	MI_AcquisitionInformation MI_Instrument Type Description MI_platform Type Description
Instrument	
Platform	
acquisition plan	ML_AcquisitionPlan Type Status MI_Objective Type Function
Objective	
Operation	MI_Operation Description Status
Environmental conditions	MI_EnvironmentalRecord

METADATA CONSTRUCTION

The screenshot shows the GeoNetwork interface for constructing metadata records. Two records are visible:

- Multispectral Processed Data: Flight 1 Muresk, West ... | All changes saved**
 - Platform**: Multispectral-CAMERA
 - Identifier**: Micasense Parrot Sequoia Camera
 - Description**: The parrot Sequoia is a precision instrument that belies its diminutive size and weight. It has 4 bands with...
 - Associated resources**: MULTISPECTRAL DATA FLIGHT 1/11-08-2023 REPOSITORY LINK BY REQUEST
- Multispectral Processed Data: Flight 1 Muresk, West ... | All changes saved**
 - Platform**: DJI Matrice 200 V2
 - Identifier**: DJI Matrice 200 V2
 - Description**: Authority: DJI Matrice 200 V2
 - Associated resources**: MULTISPECTRAL DATA FLIGHT 1/11-08-2023 REPOSITORY LINK BY REQUEST

Raw Dataset metadata

My GeoNetwork catalogue Search Map Contribute Admin console admin admin ADMINISTRATOR English

Back to search Edit Delete Manage record Download Display mode

Multispectral Raw Data: Flight 1 Muresk, Western Australia (11-Aug-23)

Spatial extent

This drone data contains the raw Multispectral data regarding the drone flight conducted in Muresk, Western Australia, on August 11 2023. The data was collected using a DJI Matrice 200 v2, equipped with the Parrot Micasense Sequoia. The raw data contains the images in each band such as Green, Red, Red Edge, Near Infrared and RGB. Also, the raw data has the calibration files.

Keywords

Crop diseases FAIR data
MULTISPECTRAL RAW DATA Multispectral
Reproducible Workflow

Identification Content Distribution Quality Lineage Ref. system

Acquisition info Metadata Portrayal Md. constraints Md. maintenance

Schema info

Identification info

Data identification

Citation

Date (Publication)
21-03-2024

Edition

Access to the catalogue
Read here the full details and access to the data.

Associated resources

Powered by GeoNetwork 4.2.8.0 About Github API

Workflow of Multispectral data processing

Spatial extent

The present model explains the steps to process Multispectral information, aiming at obtaining the Orthomosaic product.

Importantly, some relevant steps are conducted such as reflectance calibration, and GCP points placement. The parameters of the workflow for each step are specified through the use of "mit rationale".

Keywords

Crop diseases FAIR data Raw Multispectral data
Reproducible Workflow

Identification Content Distribution Lineage Acquisition info Metadata

Md. constraints Md. maintenance Schema info

Access to the catalogue
Read here the full details and access to the data.

Associated resources

Resource lineage

Lineage

Statement
The raw Multispectral data is acquired by flying the DJI Matrice 200 at an altitude of 30 meters over the study area, maintaining a flight speed of 3.4 m/s, with a side overlap of 75% and a forward overlap of 70%.

Process step

Description
Set up image processing software (Agisoft)

Process step

Process step (imagery)

Description
Import multiple bands into Agisoft

Source (imagery)

Description
Raw Multispectral UAV images

Powered by GeoNetwork 4.2.8.0 About Github API



**THANKS FOR YOUR
ATTENTION**

Any questions?