

### LIBRARY

## RESEARCH DATA MANAGEMENT FOR HIE HDR STUDENTS

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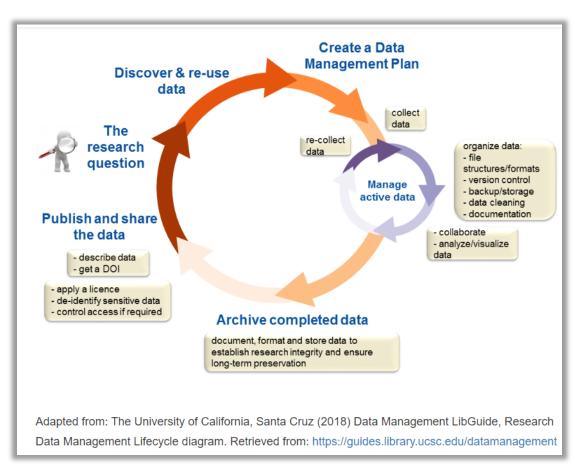
## Research data management HDR students

- What is research data?
- Make research data FAIR
- Publish research data for compliance
- Publish research data for social benefit
- Research Data Management Lifecycle
- Concept to publication
- Creating a RDMP
- HIE specifics for Working Data (Alf)
- Library topics (Kaysha)

#### What is Research data?

#### The evidence that validates research findings

- All hard copy material generated during research
- All digital material on which research findings, interpretations and/or observations may rely
- Outlined in the ethics approval
- The future use of research data should be considered at all stages of the research lifecycle



## Make research data FAIR Global benefits

Making research data more Findable, Accessible, Interoperable and Reusable (FAIR) provides a range of benefits to researchers, research communities, research infrastructure facilities and research organisations alike.

- Democratises access to information
- Maximum potential from existing data assets
- Maximum impact from research
- Greater reproducibility and reliability of research
- New research questions to be answered



## Research Data Management Lifecycle Why publish data for policy compliance?

#### **Compliance with policy**

#### **Open Access to Research Policy**

"Maximise the integrity and impact of research by ensuring that all of the products and outputs of research, including publications and research data, have been appropriately archived; and openly available in ResearchDirect for re-use and citation wherever possible."

#### **Research Data Management Policy**

Researchers and HDR Candidates, in consultation with supervisors, must:

Develop a research data management plan at the beginning of their research project to ensure a robust data management framework is in place prior to starting research at the University. It can begin as a basic plan and further information can be added as the project progresses;

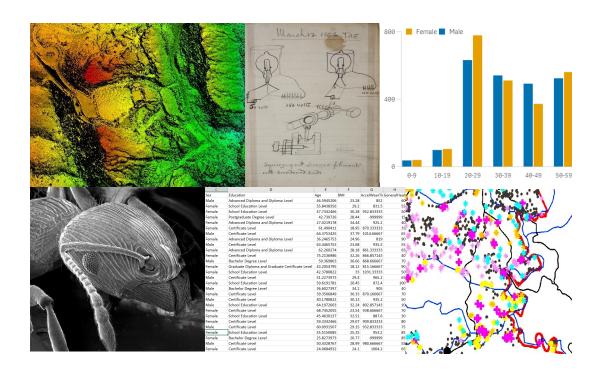
Ensure the research data management plan describes how research data will be managed throughout the research project

Ensure they understand and are aware of their legal, contractual, and legislative obligations around the use of data in research activity and Research Integrity and Ethics

## Research Data Management Lifecycle Why publish data for social benefit?

#### Benefits to researcher, institution and society

- Research community best practice
- Improved efficiency and reduced costs
- Reduced duplication
- Reduced participant fatigue
- Higher discoverability
- Higher citation rate
- Higher researcher profile
- Future collaboration opportunities



#### Five stages of research data

Plan your data collection

Complete ethics approval

Complete your Research Data Management Plan

Detail what, how, when, where and why

Detail privacy considerations and storage

Search for previous datasets

Plan for future data reuse

Describe fields consistently

#### Five stages of research data

Plan your data collection

Store the working data

Store the data securely

OneDrive or cloud storage or HIE options (later)

Keep physical copies secure

Try to use non-proprietary file formats

Establish naming conventions

Back up and digitise as required

#### Five stages of research data

Plan your data collection

Store the working data

Archive data permanently

Revisit ethics approval

Participant information or permissions

What data can be shared?

Describe data for reuse

Library will arrange a permanent archive location

Library will assign the dataset a unique DOI

#### Five stages of research data

Plan your data collection

Store the working data

Archive data permanently

Publish your archived data

Publish either raw data or a record-only

Connect the DOI to your ORCID profile

Promote the publication on social media

Receive enquiries from future researchers

Future collaboration opportunities

More research outputs to include on applications

Increase research profile





#### Five stages of research data

Plan your data collection

Store the working data

Archive data permanently

Publish your archived data

Reuse existing data

Data is discoverable in Research Data Australia database

Directs user to WSU repository

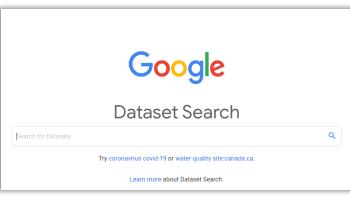
Directions to contact researcher

Builds researcher profile

Encourages collaboration

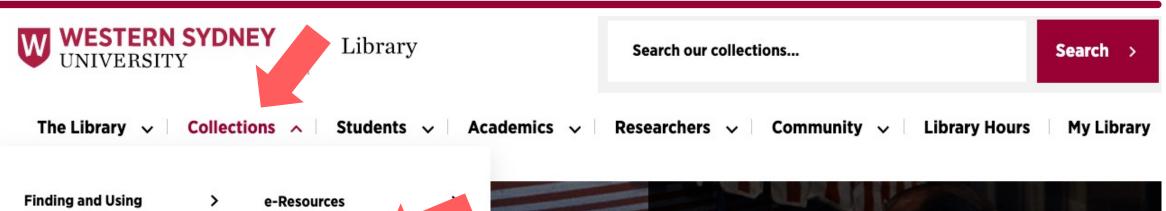








#### Where do I create my DMP?



On the library website.

Whitlam Prime Ministerial >

**Dharawal Pharmacopeia** 

Resources

Collection

Locate Collections drop down menu.

ResearchDirect

**Indigenous Resources** 

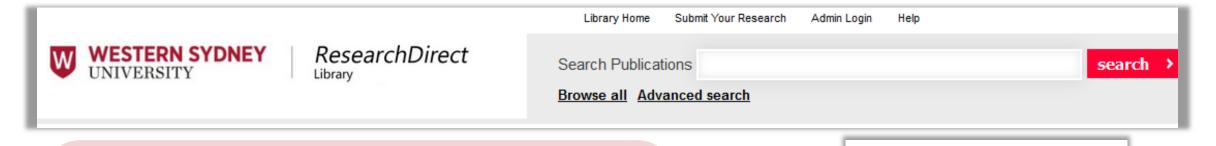
>

Select ResearchDirect.



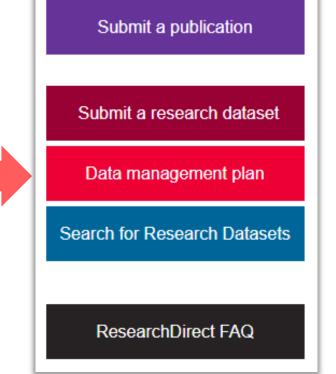


#### Where do I create my RDMP?



- On the ResearchDirect homepage.
- Click the Data management plan button to access the Researcher Dashboard.
- Select Create a new RDMP.

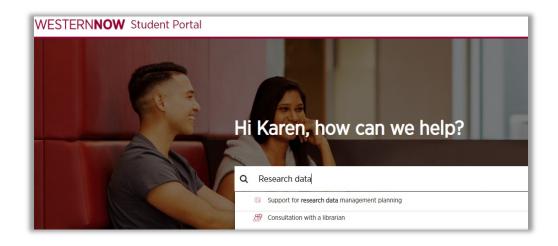




#### Where do I create my RDMP?

#### Researcher name not available to select





If your name doesn't appear in this field drop down list, use the Research Data Management Planning form in WesternNow to contact the Library.

#### Library guide: Research Data Management



Library

Find in our collections...



Library e-Resources / LibGuides / Research Data Management / Research Data at Western Sydney

#### Research Data Management



#### **Data Management Resources**

Researcher Dashboard

Create a shareable Research Data Management Plan (RDMP) which complies with the University's RDM Policy

Use the 'Create Archival Data Record' option to create a detailed description of your completed dataset. You can then choose whether to submit this for further curation and eventual inclusion in ResearchDirect and Research Data Australia (using the Publish and Share option).

#### Research Data Management at Western Sydney University

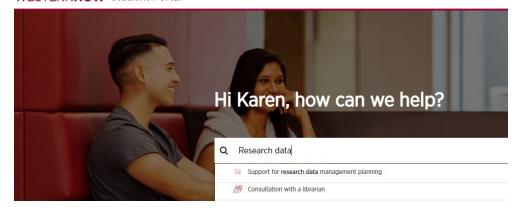
Managing your research data is an important task which should be planned from the beginning of any research project.

https://subjectguides.library.westernsydney.edu.au/rdm

#### **Actions after today**

- Complete your Research Data Management Plan
- Revisit your ethics approval
- Detail privacy considerations
- Plan for future data reuse
- Search for previous datasets
- Contact Library

#### WESTERN**NOW** Student Portal



#### Data publishing scenario

#### You have a research project with accompanying data that can be published openly

Revisit your Data Management Plan and ethics approval

Contact the Library using the WesternNow for Support for Research Data Management planning

Provide the dataset or link to location

Library and IT or HIE DM will provide a permanent archive location

Library will create a record and assign your dataset a DOI

Library will publish to Research Direct repository, indexed by Research Data Australia

Add the DOI to your ORCID profile and promote via your channels

Future researchers can access the data without restriction

Citations increase



#### Data publishing scenario

#### You have a research project with sensitive (or controlled) data

Revisit your Data Management Plan and ethics approval

Contact the Library using the WesternNow for "Support for Research Data planning"

Provide the dataset or link to location

Library and IT or HIE DM will provide a permanent archive location

Library will create a record and assign your dataset a DOI

Library will publish a metadata record only to Research Direct repository

Add the DOI to your ORCID profile and promote via your channels

Future researchers will contact you to discuss or gain access to the data

Citations increase



#### You have lots of options for storing working data!

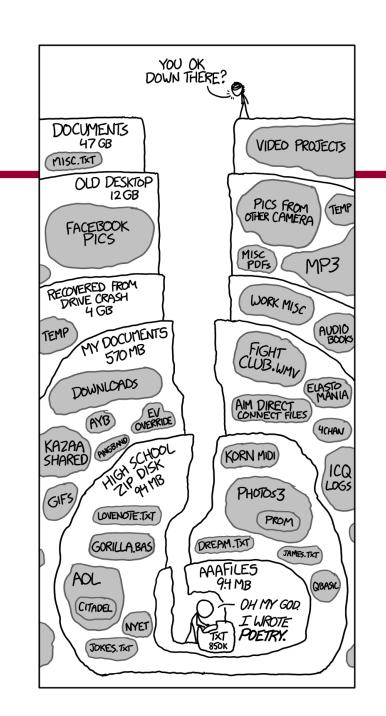
Project/Lab hard-drives
OneDrive, CloudStor
Network Folders, HIE-Storage

NextCloud, dropbox, Google Drive, ...

Specialist repositories: HIEv and friends.

Everything I will talk about is (mostly) described at...

http://hie-dm.westernsydney.edu.au/



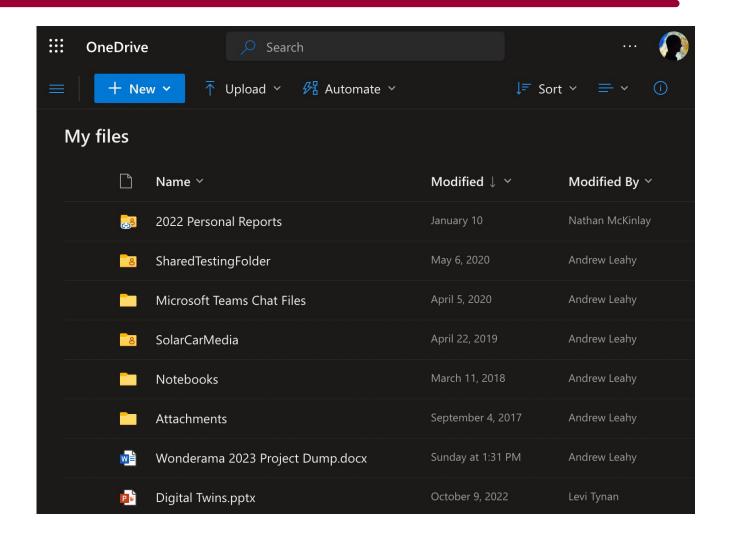
#### **Project and Lab Hard Drives**

- They have a place!
- Please get the data onto managed backed up storage as soon as you can
- 3-2-1 backup strategy



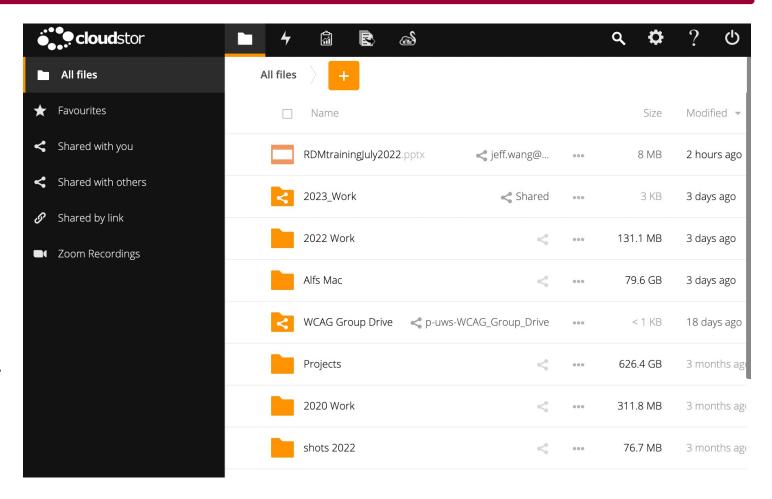
#### **OneDrive**

- Great for personal document stash
- OK for small datasets
- Can be shared with collaborators.
- Available everywhere
- 1-5Tb's
- Is backed up!
- Has quirks with very long filenames and deep paths



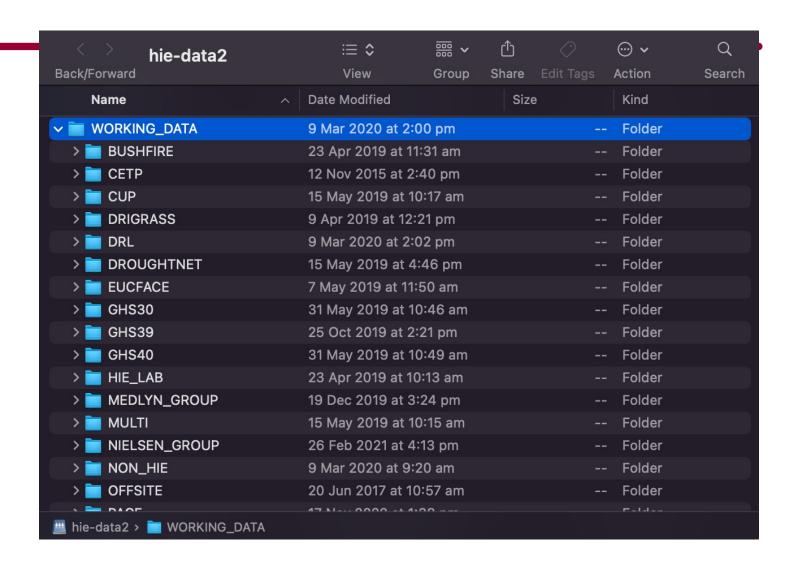
#### **AARNet CloudStor**

- Great for document stash
- OK for small-medium datasets
- Can be shared with collaborators
- 1-5Tb's or bigger
- Desktop sync client is good!
- Is going away by the end of the year.
- To be replaced with ????



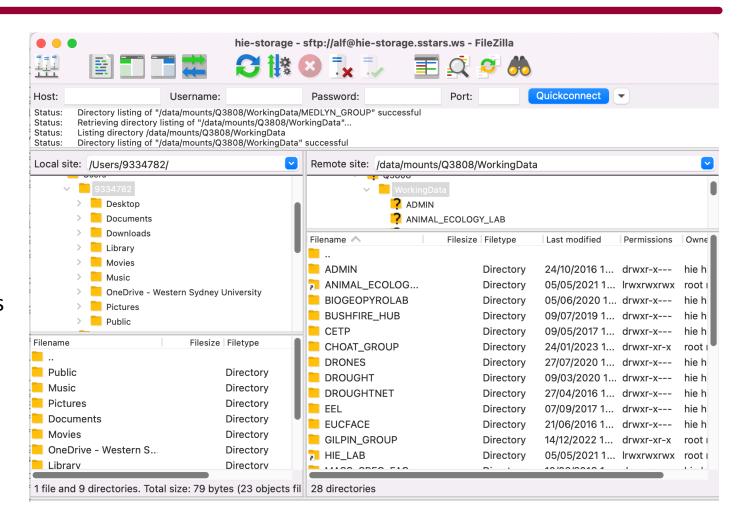
#### **HIE-Data2 – Network Folder**

- Great for small groups on-campus
- Sometimes called Network Drive or R: Drive
- Requires campus cable connection
- 1-5Tb's
- Is better than hard-drives!



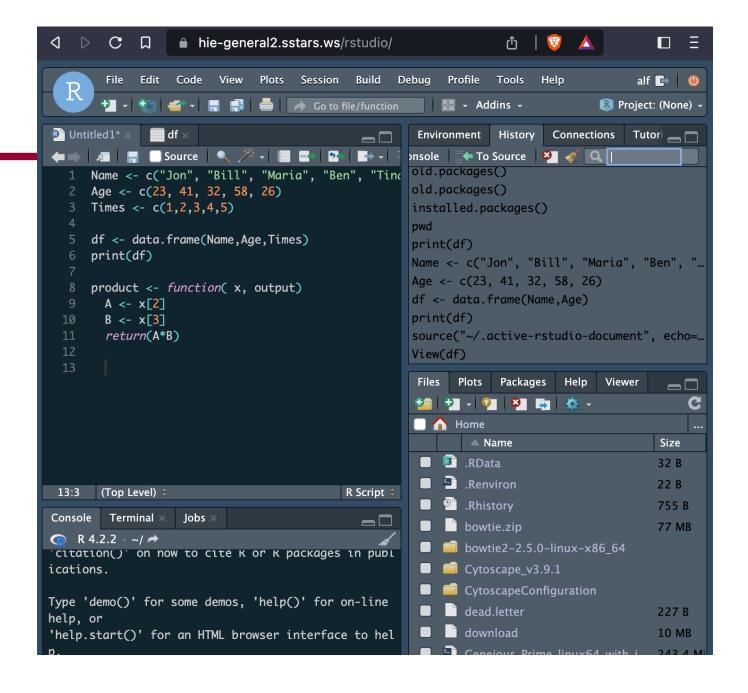
#### HIE-Storage – big data storage

- Good for large folders that need to be shared everywhere
- Can be accessed by HIE compute servers
- Dozens.. hundreds of Tb's.
- Uses account:ssh keys
- Can grant access to external collaborators
- CAN map hie-storage as a drive!



#### HIE-Storage – plus analysis tools

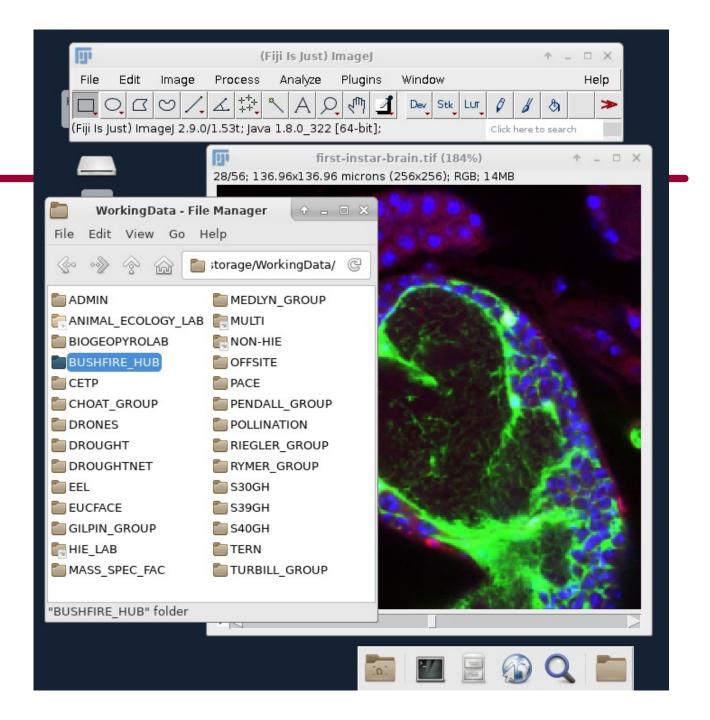
- "big" Linux computers typically 64-128 cores, 256Gb-1.5TB RAM
- Example: R Studio Server (web)
   https://hie-general2.sstars.ws/rstudio/
- Downloaded and compiled apps, ...



#### **HIE-Storage – analytics tools**

Example

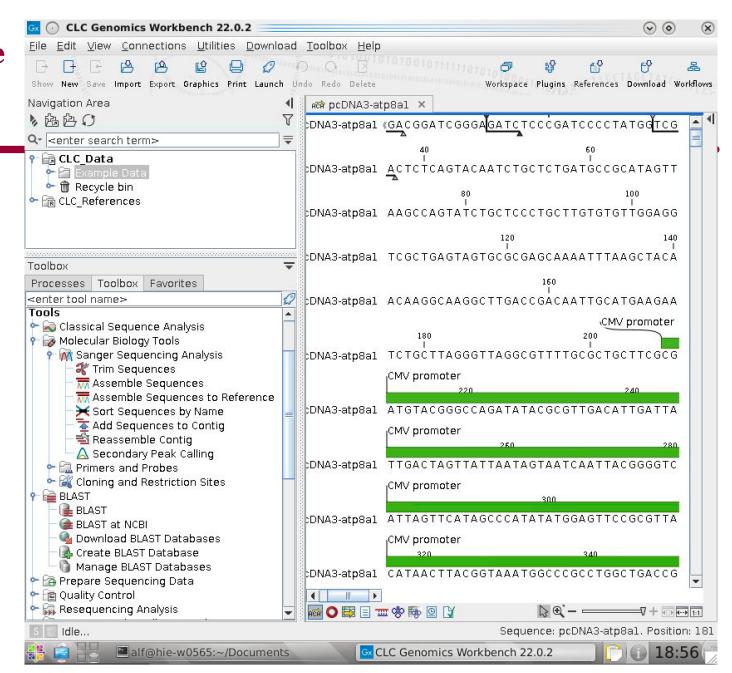
ImageJ via X2Go / mobaxterm



#### **HIE-Storage – analytics tools**

- Example

CLC Genomics Workbench (licensed software) via X2Go



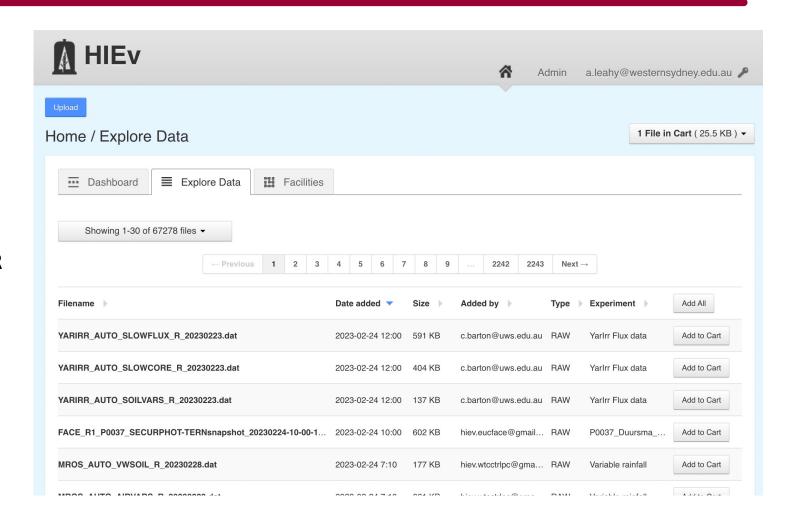
#### HIEv – data repository

Injests data from several HIE facilities like EucFACE, ROS and Glasshouses.

Provides a web interface for query and upload/download, also API for Python & R

https://hiev.westernsydney.edu.au/

https://hortgh.westernsydney.edu.au/



#### HIEv – automatic field data

Is particularly useful for tablebased time series data

#### Example:

https://hiev.uws.edu.au/data\_file s/452337

Column	Column Mapping	Unit	Measurement Type
TIMESTAMP		TS	
RECORD		RN	
t_hmp_Avg		С	Avg
rh_hmp_Avg		percent	Avg
SBTempC_Avg(1)			Avg
SBTempC_Avg(2)			Avg
SBTempC_Avg(3)			Avg
SBTempC_Avg(4)			Avg
TargTempC_Avg(1)			Avg
TargTempC_Avg(2)			Avg
TargTempC_Avg(3)			Avg
TargTempC_Avg(4)			Avg
Net_SW_Avg		W/m2	Avg
Net_LW_Avg		W/m2	Avg
LI190SB_PAR_Den_Avg		uMole s-1 m-2	Avg
SlrW_Avg		W/m2	Avg

#### **HIE Practices for Data Storage**

#### Save RDMP PDF to your Working Storage

You might see a PROJECT\_DETAILS.txt or

README.md in group folders these are helpful!

I often create HOWTO.txt files to remind myself where something came from

WorkingData/EUCFACE/PROJECTS/P0028/Project\_Details.txt

Project Title: P0028

Project Description:

Using multispectral stereo imaging to determine the impacts of free air CO2 enrichment on grassy understory vegetation in Cumberland Plain woodland.

Point clouds from the EucFACE vegetation plots (text files that occupy several Gb). This is raw data required to estimate plant heights and predict aboveground biomass.

HIE facility: EucFACE

Types of data expected: Mainly text files

Project Contact/Data Lead: Matthias Boer, HIE

Data Collaborators: None

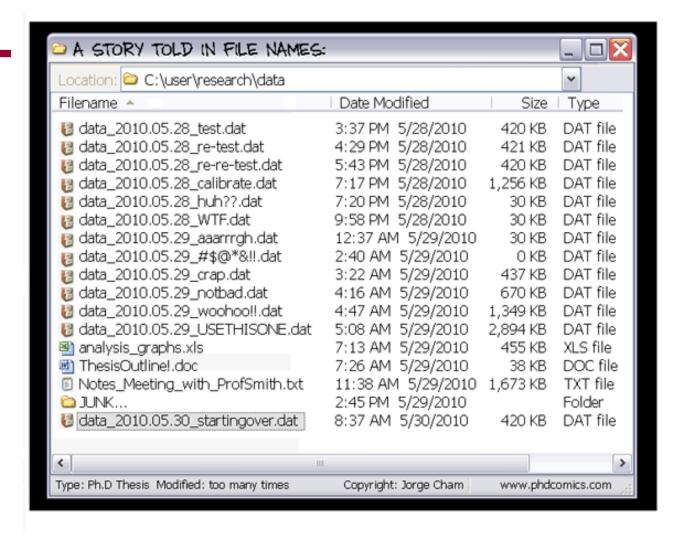
Access: Share folder access given to Matthias Boer

Project Start Date:

Data Review Date: 1st May 2018

#### **HIE Practices for Data Storage**

```
$ head strength_3.csv
Var1, Var2, SpearmanRho, MICe
Pm_1, Pm_4, -0.463558, 0.816519
Pm_1,Pm_9,0.579412,0.827820
Pm_1, Pm_17, 0.761765, 0.954434
Pm_1,Pm_22,-0.508824,0.827820
Pm_1,Pm_32,-0.573529,0.827820
Pm_1, Pm_38, 0.732353, 0.816519
Pm_1, Pm_45, -0.658824, 0.816519
Pm_1, Pm_47, -0.714706, 0.827820
Pm_1, Pm_49, -0.822845, 0.896038
$ wc -1 strength_3.csv
```



Good file naming is crucial to data management (and your future sanity). Here are some guidelines:

- · Name your files consistently
- Use short but descriptive filenames (<25 characters)
- Avoid special characters or spaces in a file name
- Use capitals and underscores instead of periods or spaces or slashes
- Use date format ISO 8601: YYYYMMDD
- Include a version number in the filename if you don't have version control software (eg. 20210913-Example\_Data-V1.csv)





#### Q & A: ASK US ANYTHING!

Karen Sheehy, Library Research Data

Andrew (Alf) Leahy, HIE Data Manager a.leahy@westernsydney.edu.au

Up next...

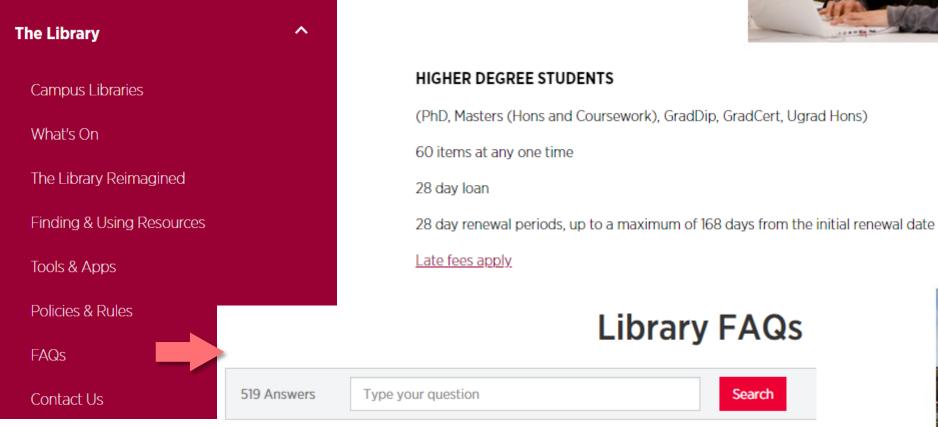
Kaysha Carroll, HIE Liaison Librarian

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#### The Library V WSU Library

Campus Libraries

#### https://library.westernsydney.edu.au/







Online Librarian





#### When might I want to contact the Library?

Milestone	Issue	Support Offered
Early Candidature Plan	Online Profile . eg. ORCID, Google Scholar	Assistance
Confirmation of Candidature	Data Management Plan	Assistance and curation
Literature Review (Narrative or Systematic)	Structuring the review Locating items for review	Subject Guides Database access Consultation
Searching / Reading	Search strategies Videos Data Management Alerts	Endnote download and support Workshops Consultations
Writing	Structure and formatting	Research Direct Repository Study Smart
Referencing	Style features	The Refencing Style Guides Referencing Library guide / Citation Manager (Endnote) Referencing consultation with SL
Publishing	When and where to publish and how to choose	Journal finder



#### Why should I meet with a Institute Librarian?



Library

Find books, journals, databases and more...

Search >

The Library V Collections V Students V Academics V Researchers V Community V

Library Hours

My Library

#### A School Librarian can assist you through all stages of your HDR journey

- Guide you to the services that can support your research.
- Develop an effective search strategy.
- Access literature resources and data sets.
- Assess quality outlets for publication.
- Manage and publish your original research data.
- Establish your identity as a researcher.
- Build your online presence.
- Increase your research impact.
- Track and measure the impact of your research.

#### Researchers

Conducting Research

Data Management

Scholarly Publishing

Open Access Publishing Fee Support

ResearchDirect

**Evaluating Success** 

Requesting Items

Using Australian Bureau Statistics (ABS) DataLab for Research



#### **Searching for information**

The library has access to a large number of resources to help you find relevant information:

Library search box	Print, eBooks and more		
eResources	Use the subject guides, or access A-Z list of databases; also A-Z list of journal titles		
Theses	WSU: ResearchDirect Australia: TROVE International: ProQuest Dissertations & Theses A&I		
Grey literature	Use specific search techniques in Google Scholar and Google, or search APO to locate information that falls outside the mainstream publishing channels		

If you find something the Library does not have full text access to, our Document Delivery service will source it for you.





The Library supplies items not held by Western Sydney University Library to clients who meet the following eligibility criteria in support of teaching, learning and research.

#### **ELIGIBILITY**

- Current Western Sydney University staff
- · PhD, Masters and Honours students enrolled in courses at Western Sydney University.



#### **Searching strategically**

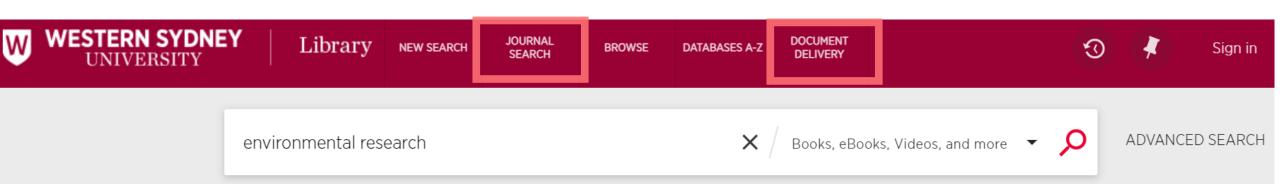


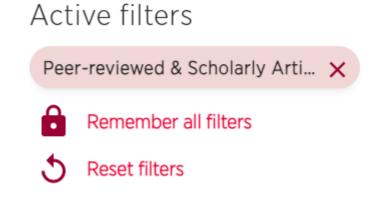
#### **Effective search strategies**

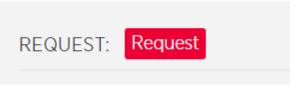
- Not all databases are equal or suitable for different discipline areas.
- Use the best keywords or keyword combinations.
- Tracking citations & research threads.
- Identify key works and writers in your area.
- Set alerts to keep you informed.
- Check and decide on methodologies.



#### **Library Search Box**







#### **Requesting books between campuses**

https://www.youtube.com/watch?v=yJGl8olJL38







#### **Library E-resources**





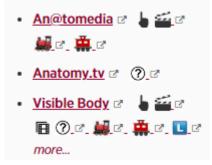








CAS Analytical Methods makes it simple to locate, compare, and understand analytical methods published in top journals.













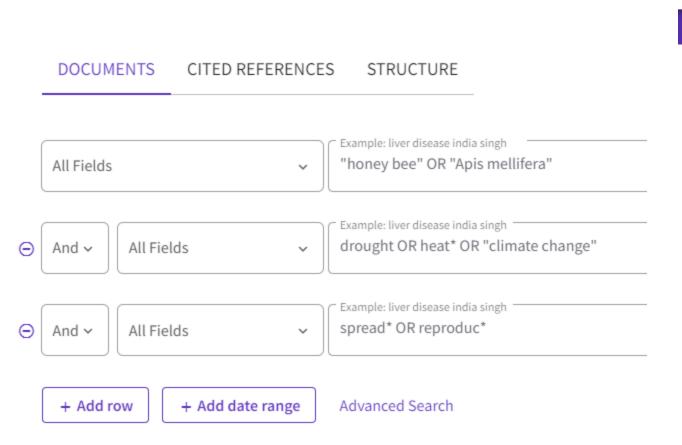


Wiley Online Library



#### Web of Science<sup>™</sup>

# My Web of Science Marked List View your search history Profile Saved Searches and Alerts



English v

Sign In v

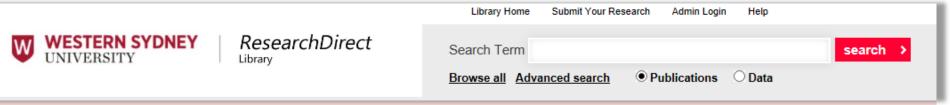
**Ⅲ** Products

Register



#### **Research Direct**





- Western Sydney University research is made searchable and accessible to the global community via the Library's institutional repository.
- Publication records are harvested by Google, Google Scholar, and Trove, increasing the visibility of these research outputs.
- Access to the full text of the publication or output will be made available where possible
- Create and maintain your data management plan.
- Access to Western Sydney University datasets.
- Research dataset records are harvested by Research Data Australia.





#### Researcher profiles

#### **Identity management and getting noticed**

## ORCID DISTINGUISH YOURSELF

orcid.org

Connecting Research and Researchers

- Check Library FAQs to help set up and edit your ORCID record.
- Populate the record with your affiliation and key contact details.
- Import details of your publications from your Google Scholar profile.

## Google Scholar

scholar.google.com.au

- Check Library FAQs to help manage your Google Scholar profile.
- Make your profile public and use a verified email (institutional email address) to link your name to your profile in any search results.
- Manage your Google Scholar profile if you choose automatic updates, check regularly.



#### **Publishing strategically**



#### Where you publish can help or hinder your career

- Identify relevant publication outlets for your research.
- Assess publication outlets to ensure quality.
- Avoid predatory journals and conferences.
- Pages to compare a range of journal metrics and evaluation measures.



#### **EndNote**

#### The Library

Campus Libraries

What's On

The Library Reimagined

Finding & Using Resources

Tools & Apps

Policies & Rules

**FAQs** 

Contact Us

#### **Program for storing and managing your references**

- Imports references from Library catalogue, databases and Google Scholar.
- Instantly formats bibliographies and in-text citations in Word documents in the referencing style of your choice.
- Visit the Library website to:
  - Download EndNote.
  - Access support documentation EndNote training notes, EndNote FAQs,
     EndNote libguide.
  - Book into an EndNote training session.



#### **Institute Librarian – Kaysha Carroll**

# Kaysha Carroll School of Science MARCS/ICNS

HIE





Email - kaysha.carroll@westernsydney.edu.au

**Book a zoom appointment -**

https://westernsydney.libcal.com/appointments/consult?u=55125

**WesternNow form - Consultation with a School Librarian** 

Twitter @WSU\_Scien\_Lib

## Subject specific assistance for the entire research lifecycle

Kaysha can meet with you individually and outline Library resources and services that can assist with your specific research topic or need:

- Getting started with the Library for your PhD and locating theses and material for your COC
- Research skills and using the advanced features
   Library databases to save yourself time with research
- Getting started with Research Data Management
- Strategically publishing including Open Access and Article Processing Charges considerations for your research
- Getting your research noticed outside academia, and ensuring impact metrics in Library resources