

# Uploading data to Geochron.org with AgeCalcML format



ARIZONA  
LASERCHRON  
CENTER

Department of Geosciences  
University of Arizona

## A step-by-step guide from the Arizona LaserChron Center

### Step 1. Download the template spreadsheet

- [Download a blank template \(link here!\)](#)
- [Download a completed template \(link here!\)](#)

### Step 2. Add data and metadata to the spreadsheet

- Here's a blank template:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Aliquot Name																			
2	Stratigraphic Formation Name																			
3	Stratigraphic Age																			
4	Rock Type																			
5	Mineral																			
6	Method																			
7	Latitude																			
8	Longitude																			
9	Internal Uncertainty Level																			
10	External Uncertainty 206/238 (% two sigma)																			
11	External Uncertainty 206/207 (% two sigma)																			
12	Analysis Purpose																			
13	Laboratory Name																			
14	Analyst Name																			
15	Aliquot Reference																			
16	Aliquot Instrumental Method																			
17	Aliquot Instrumental Reference																			
18	IGSN																			
19																				
20																				
21																				
22																				
23																				
24	Analysis	U	206Pb	U/Pb	206Pb*	ε	207Pb*	ε	206Pb*	ε	error	206Pb*	ε	207Pb*	ε	206Pb*	ε	Best age	ε	Conc
25		(ppm)	(%)		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(ppm)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(%)
26																				
27																				
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- Here's a template with data added:

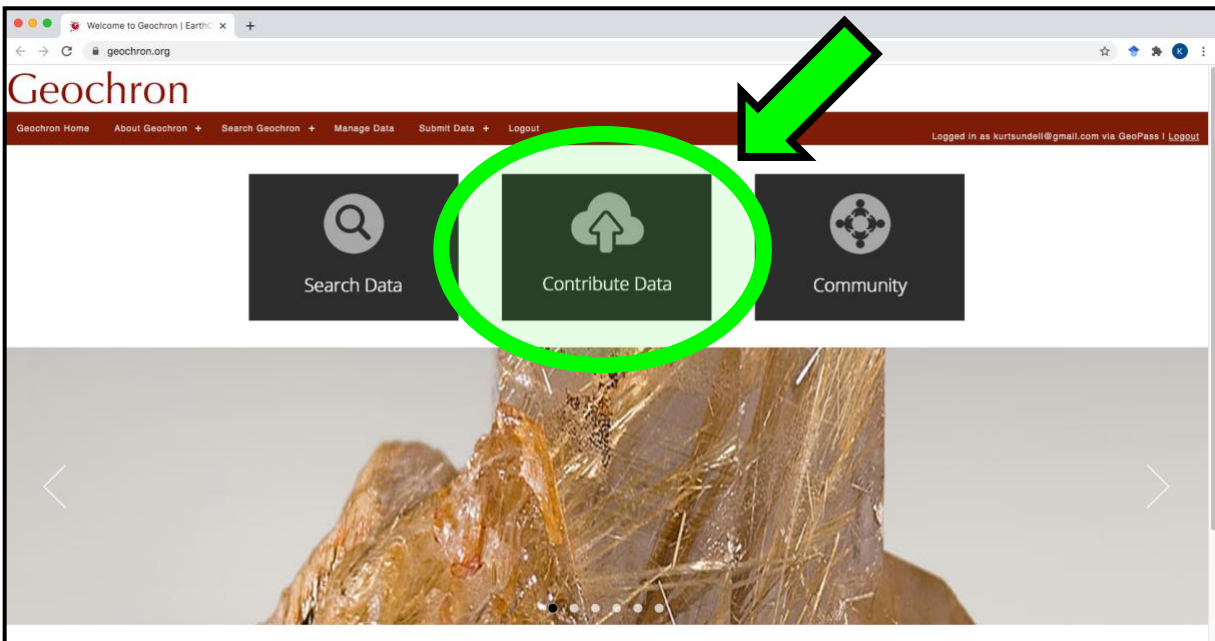
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Aliquot Name	OPND_300_1																		
2	Stratigraphic Formation Name	Winnepes																		
3	Stratigraphic Age	Late Cretaceous																		
4	Rock Type	Sandstone																		
5	Mineral	Zircon																		
6	Method	U-Pb																		
7	Latitude	37.62266																		
8	Longitude	111.89270																		
9	Internal Uncertainty Level	one sigma																		
10	External Uncertainty 206/238 (% two sigma)	0.97																		
11	External Uncertainty 206/207 (% two sigma)	0.87																		
12	Analysis Purpose	Dental Zircon																		
13	Laboratory Name	Arizona LaserChron Center																		
14	Analyst Name	Kurt Sundell																		
15	Aliquot Reference	Sundell, K.E., Gehrels, G., Pecha, M. (2008). Rapid U-Pb geochronology by laser ablation multicollector ICP-MS, Geostandards and Geoanalytical Research.																		
16	Aliquot Instrumental Method	LA-ICP-MS																		
17	Aliquot Instrumental Reference	Gehrels, G.E., Valencia, V., Ruiz, J., (2008). Enhanced precision, accuracy, efficiency, and spatial resolution of U-Pb ages by laser ablation-multicollector-inductively coupled plasma-mass spectrometry. Geochemistry, Geophysics, Geosystems, v. 9, Q03017, doi:10.1029/2007GC001805.																		
18	IGSN																			
19																				
20																				
21																				
22																				
23																				
24	Analysis	U	206Pb	U/Pb	206Pb*	ε	207Pb*	ε	206Pb*	ε	error	206Pb*	ε	207Pb*	ε	206Pb*	ε	Best age	ε	Conc
25		(ppm)	(%)		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(ppm)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(Ma)	(%)
26																				
27	Spot 1	108	10983	3.0	13.5725	2.5	1.8789	2.7	0.1690	0.8	0.31	1006.6	7.7	1000.6	17.1	988.3	61.9	1006.6	7.7	101.9
28	Spot 2	136	6996	1.5	13.6361	3.6	0.5649	4.7	0.6660	1.1	0.23	415.3	4.3	461.7	17.2	601.0	97.8	415.3	4.3	62.8
29	Spot 3	136	16442	4.4	12.7378	1.6	0.9945	2.0	0.1871	1.0	0.52	1105.7	10.5	1113.6	13.4	1130.1	33.6	1105.7	10.5	97.6
30	Spot 4	746	87811	4.2	11.0207	0.9	2.9514	1.3	0.2362	0.9	0.74	1377.1	11.8	1367.8	8.7	1430.3	16.5	1430.3	16.5	96.3
31	Spot 5	1422	47096	30.7	13.5509	0.8	1.6959	1.2	0.1652	0.8	0.73	866.4	8.3	995.6	7.9	1018.9	17.2	995.6	8.3	96.7
32	Spot 6	317	8589	2.0	13.9586	4.0	0.2812	4.2	0.0313	1.0	0.25	198.4	2.0	236.6	8.8	658.2	87.2	198.4	2.0	31.7
33	Spot 7	81	4568	1.1	13.8151	4.7	0.8150	4.2	0.0445	1.2	0.19	522.7	6.0	635.2	26.4	638.8	26.6	620.7	6.0	56.3
34	Spot 8	187	53247	2.8	4.9126	0.7	14.6451	1.3	0.5247	1.1	0.63	2719.1	24.1	2792.5	13.5	2846.6	11.9	2846.6	11.9	65.5
35	Spot 9	108	22914	1.6	8.9564	1.0	4.8951	1.4	0.3211	0.9	0.62	1785.2	14.1	1801.4	12.2	1809.4	20.5	1809.4	20.5	99.2
36	Spot 10	774	30747	7.8	13.4360	0.8	1.6661	1.3	0.1648	1.0	0.77	983.7	9.1	995.7	8.3	1023.1	17.1	983.7	9.1	96.1
37	Spot 11	84	7696	2.4	13.1216	3.1	1.6768	3.5	0.1644	1.0	0.28	981.0	8.7	999.9	22.1	1042.1	67.4	981.0	8.7	84.1
38	Spot 12	224	27573	1.7	13.1600	1.3	1.8837	1.6	0.1819	0.8	0.52	1077.3	8.1	1075.4	10.4	1072.4	26.7	1077.3	8.1	100.6

■ **The metadata is very important! Some clarifications on what to include:**

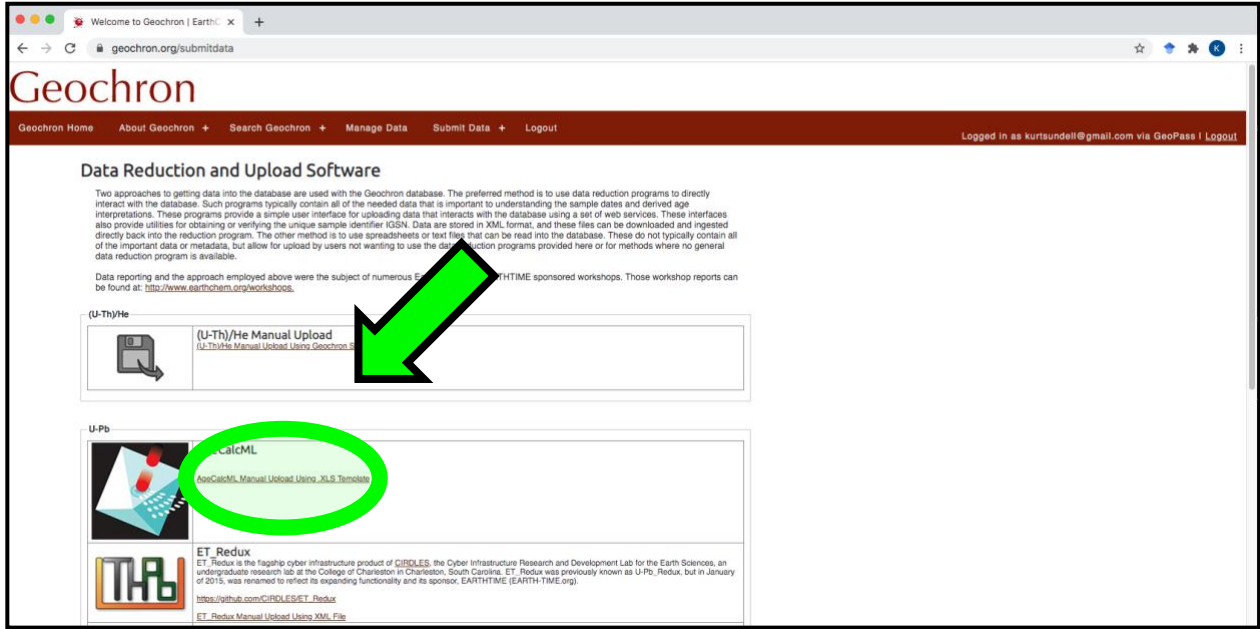
- Aliquot Name – sample fraction name or just the sample name.
- Formation name – if applicable, otherwise leave blank.
- Stratigraphic Age – if applicable, can be Geologic (e.g., Miocene, Paleozoic) or numeric (e.g., 15 Ma, 400 Ma, etc.)
- Rock Type, Mineral, Method – make sure you are consistent with how the database is structured. For example, capitalize Sandstone to make it searchable. If you have any doubts, you can search the database for examples.
- Latitude & Longitude – Doesn't hurt to test in Google Earth before uploading.
- IGSN – If you have one, great! If not, don't worry, leave it blank.

	A	
1	Aliquot Name	CP40_300_1
2	Stratigraphic Formation Name	Wahweap
3	Stratigraphic Age	Late Cretaceous
4	Rock Type	Sandstone
5	Mineral	Zircon
6	Method	U-Pb
7	Latitude	37.62085
8	Longitude	-111.89270
9	Internal Uncertainty Level	one sigma
10	External Uncertainty 206/238 (% two sigma)	0.97
11	External Uncertainty 206/207 (% two sigma)	0.87
12	Analysis Purpose	Detrital Zircon
13	Laboratory Name	Arizona LaserChron Center
14	Analyst Name	Kurt Sundell
15	Aliquot Reference	Sundell, K.E., Gehrels, G., Pecha, M. (2020), Rapid U-Pb geochronology
16	Aliquot Instrumental Method	LA-ICPMS
17	Aliquot Instrumental Reference	Gehrels, G.E., Valencia, V., Ruiz, J., (2008), Enhanced precision U-Pb geochronology
18	IGSN	
19		

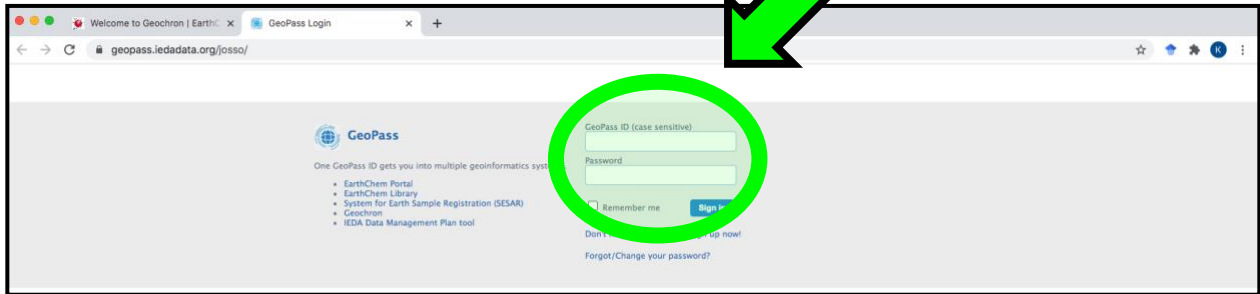
**Step 3. Go to [Geochron.org](http://Geochron.org) and select "Contribute Data"**



**Step 4. Select AgeCalcML Manual Upload Using .XLS Template (do not select the AgeCalcML icon, that will send you to the LaserChron lab page)**



**Step 5A. If you have a GeoPass login then sign in**



**Step 5B. If you do not have a GeoPass login, no problem! It only takes a minute to create one**



The image shows a screenshot of the GeoPass registration page. The page has a header with the GeoPass logo and the title "Create an Account". Below the header, there is a paragraph of text: "After registration you will receive an email. Follow the instructions to activate your account. If you do not receive a message with an activation link, please check your [junk/spam](#) folder. If you need assistance, please contact [geopass@iedadata.org](mailto:geopass@iedadata.org)." The main content area is divided into two sections: "Personal Information" and "Other Information". The "Personal Information" section contains several input fields: Title (dropdown), First Name, Last Name, Email Address (with a red warning note: "(This will be your login name and is case sensitive. Please do not use a qq.com email address. The activation email will be blocked by qq.com.)"), Password, Retype Password, ORCID, Institution, Department, City, State (dropdown with "Select One" selected), and Postal Code. The "Other Information" section contains a field for "Residence (City/State/Zip)". A large green oval highlights the "Personal Information" section, and a green arrow points to the "Submit Registration" button at the bottom of the form.

- **Add all the necessary information and press Submit Registration.**
- **Don't stress over the ORCID ID (leaving it blank will not keep you from adding data to Geochron.org!). But, definitely include it if you have it on hand.**

## Step 6. Select your file to upload (the completed template above)

Geochron

Geochron Home About Geochron + Search Geochron + Manage Data Submit Data + Logout

### Upload AgeCalcML Data

Please upload your AgeCalcML file (file must be in .xls or .xlsx format):

**Sample File**

AgeCalcML File:  No file chosen

Overwrite?:  No  Yes

Public?:  No  Yes

[Geochron\\_AgeCalcML\\_Template.xls](#)

- **Select the completed template from your computer**
- **Select overwrite options**
- **Set Public options**
  - **Select **No** if you do not want to let anyone see your data (for example if the data is not yet published); you and only you will be able to see and search your data, nobody else!**
  - **Select **Yes** if you are ready to make your data searchable!**
  - **If **No** is selected and your data is eventually published, don't forget to go back and set to public so other researchers can find your data!**
  - **Note, this can be used in lieu of putting together a data repository for a publication. In fact, it is much more efficient, easier, and follows FAIR (Findable, Accessible, Interoperable, Reusable) practices (Wilkinson et al., 2016)! If you set this up right after you collect your data, then you never have to think about it again and can sleep well knowing your data is archived in a safe place, and because you've contributed to the greater Earth Science community!**
  - **Press **Submit!****

Welcome to Geochron | EarthC x Welcome to Geochron | EarthC x +

geochron.org/age\_calcm\_l\_upload

# Geochron

Geochron Home About Geochron + Search Geochron + Manage Data Submit Data + Logout

## Success!

Your sample was uploaded successfully. Below is the data as it was uploaded.

[Upload Another Sample](#) [Go to Data Manager](#)

### Sample Details

Aliquot Name: CP40\_300\_1  
 IGSN:  
 Stratigraphic Formation Name: Wahweap  
 Stratigraphic Age: Late Cretaceous  
 Rock Type: Sandstone  
 Mineral: Zircon  
 Latitude: 37.62085  
 Longitude: -111.8927  
 Internal Uncertainty Level: one sigma  
 External Uncertainty 206/238 (% two sigma): 0.96522799864318  
 External Uncertainty 206/207 (% two sigma): 0.8737812856306  
 Analysis Purpose: DetritalSpectrum  
 Laboratory Name: Arizona LaserChron Center  
 Analyst Name: Kurt Sundell  
 Aliquot Reference: Sundell, K.E., Gehrels, G., Pecha, M. (2020), Rapid U-Pb geochronology by laser ablation multicollector ICP-MS, Geostandards and Geoanalytical Research.  
 Aliquot Instrumental Method: LA-ICPMS  
 Aliquot Instrumental Reference: Gehrels, G.E., Valencia, V., Ruiz, J., (2008), Enhanced precision, accuracy, efficiency, and spatial resolution of U-Pb ages by laser ablation-multicollector-inductively coupled plasma-mass spectrometry: Geochemistry, Geophysics, Geosystems, v. 9, Q03017, doi:10.1029/2007GC001805.  
 Aliquot Instrumental Reference:

### Spot(s)

ANALYSIS NAME	U	206PB/204PB	U/TH	206PB/207PB	± (%)	207PB/235U	± (%)	206PB/238U	± (%)	ERROR CORR.	206PB/238U AGE	± (MA)	207PB/235U AGE	± (MA)	206PB/207PB AGE	± (MA)	BEST AGE	± (MA)	CONC.
Spot 1	108	10983	3.0	13.5725	2.5	1.6789	2.7	0.169	0.8	0.31	1006.6	7.7	1000.6	17.1	988.3	51.9	1006.6	7.7	101.9
Spot 2	136	6906	1.5	15.6391	3.6	0.5649	4.7	0.0665	1.1	0.23	415.3	4.3	454.7	17.2	660.0	97.8	415.3	4.3	62.9

- **Congratulations, you've just contributed data to Geochron.org!**
- **You're actually done at this point. But, why not search for your data?!**

**Step 7. Search for your sample – this is good practice to make sure everything went to plan....**

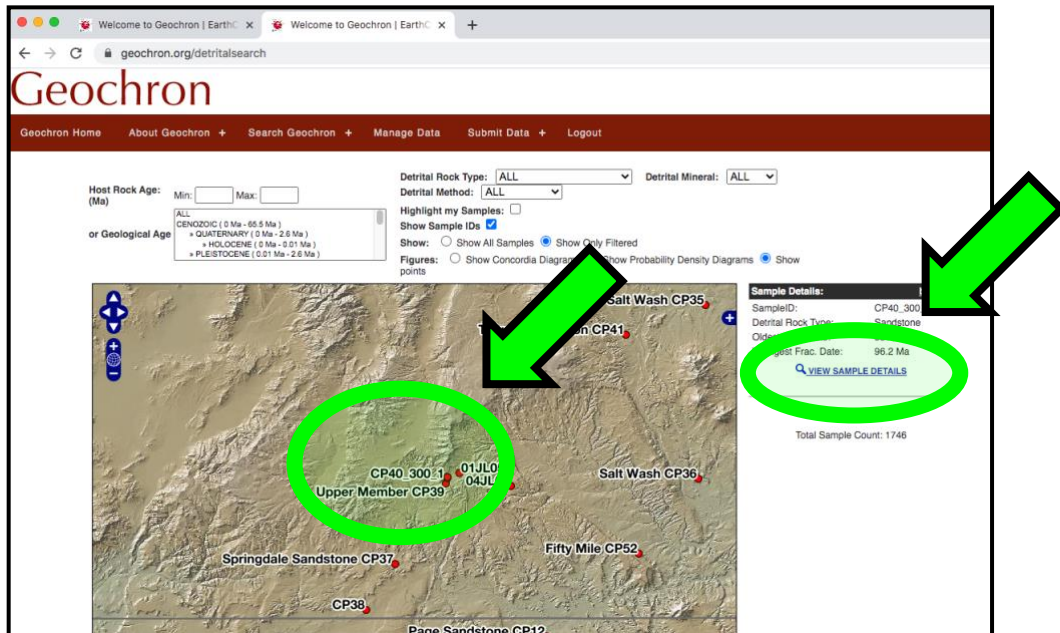
■ **Select Search Geochron**

The screenshot shows the Geochron website interface. At the top, there is a navigation bar with 'Search Geochron' highlighted by a green circle and a green arrow pointing to it. Below the navigation bar, a 'Success!' message indicates that a sample was uploaded. Underneath, there are buttons for 'Upload Another Sample' and 'Manage Data'. The main content area displays 'Sample Details' for a sample with Aliquot Name CP40\_300\_1. The details include IGSN, Stratigraphic Formation Name (Wahweap), Rock Type (Sandstone), Mineral (Zircon), Latitude (37.62085), Longitude (-111.8927), and various uncertainty levels. A table at the bottom shows 'Spot(s)' with columns for ANALYSIS NAME, U, 206PB/204PB, U/Th, 206PB/207PB, and other parameters.

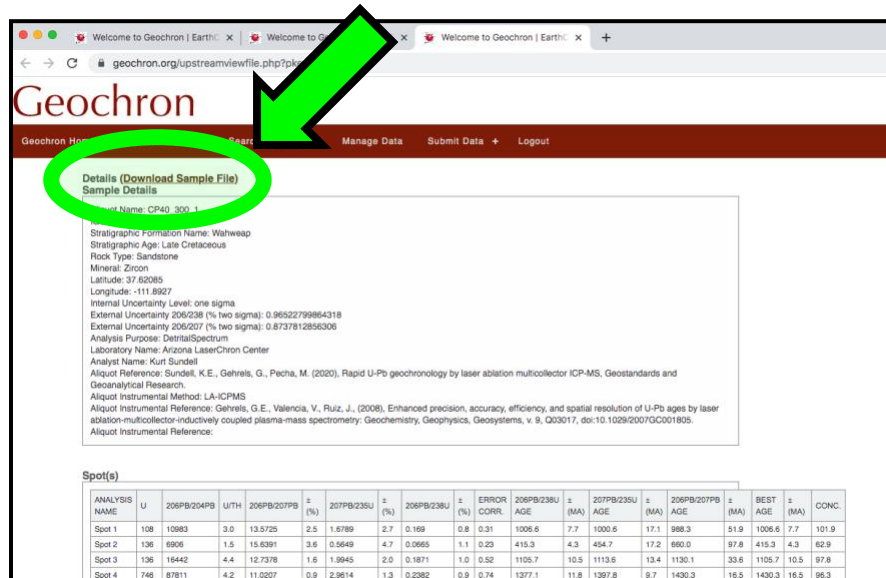
■ **Use your mouse to scroll or use the map zoom option.**

The screenshot shows the Geochron website interface with a map of sample locations. The map is centered on the United States and is populated with numerous red dots representing sample locations, each labeled with a sample ID. A green circle highlights a zoomed-in view of a specific area on the map, and a green arrow points to the zoom controls. Above the map, there are search filters for 'Host Rock Age (Ma)', 'Detrital Rock Type', and 'Detrital Mineral'. The 'Host Rock Age' filter is set to 'Min: 0 Ma - 2.8 Ma'. The 'Detrital Rock Type' and 'Detrital Mineral' filters are both set to 'ALL'. There are also options to 'Highlight my Samples', 'Show Sample IDs', and 'Show' (with radio buttons for 'Show All Samples' and 'Show Only Filtered'). The 'Total Sample Count' is displayed as 1746.

■ **Select View Sample Details to look at your data**



■ **You can also download the data you uploaded by pressing Download Sample File.**



■ **That's it! Contact Kurt at [sundell@arizona.edu](mailto:sundell@arizona.edu) with any questions!**

**References**

Wilkinson, M.D., Dumontier, M., Aalbersberg, I.J., Appleton, G., Axton, M., Baak, A., Blomberg, N., Boiten, J.W., da Silva Santos, L.B., Bourne, P.E. and Bouwman, J., 2016. The FAIR Guiding Principles for scientific data management and stewardship. *Scientific data*, 3(1), pp.1-9.