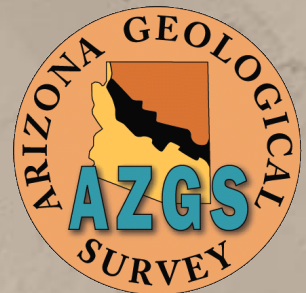


A Flexible Framework for Data Preservation and Distribution

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Arizona Geological Survey,
University of Arizona
Tucson, Arizona



Today's themes

Extensibility

- Your data WILL change
- Technology WILL change

Multi-Path

- Distribute your data widely
- Make your data adaptable

Enhancement

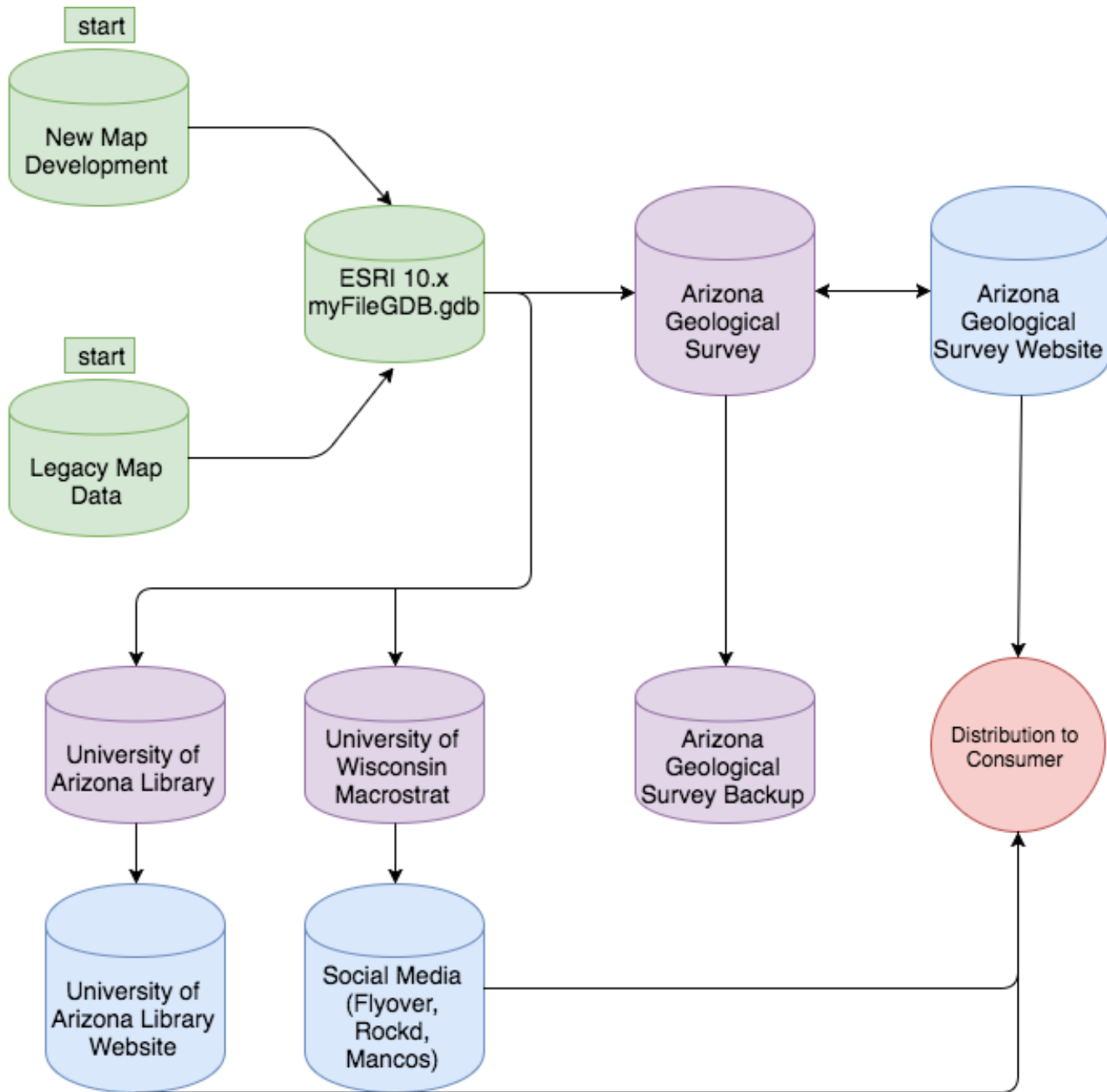
- Interpolating or Extrapolating info
- Don't stress about the front-end

Background

For nearly 120-years, Geologists of the Arizona Geological Survey and it's predecessors have explored, investigated, and mapped the geology of Arizona.

Their work is compiled in numerous geologic maps, circulars and reports, and now digital information datasets.





Creation

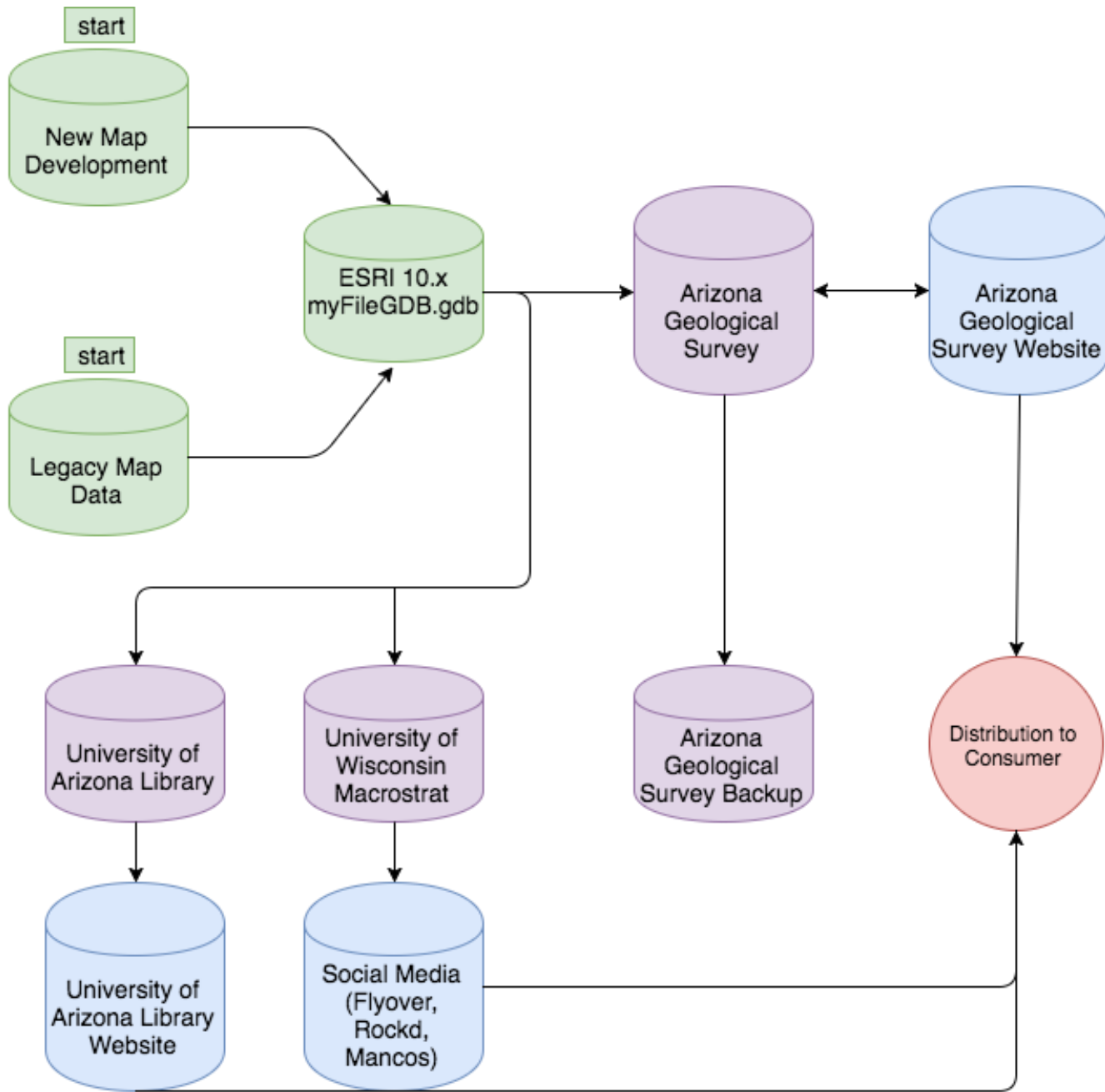
- Live Sync
- Conversion
- Documentation

Preservation

- Multi-path
- Open Source
- Searchable
- Automation
- Conversion

Distribution

- Multi-path
- Multi-format



Creation

- Live Sync
- Conversion
- Documentation

Preservation

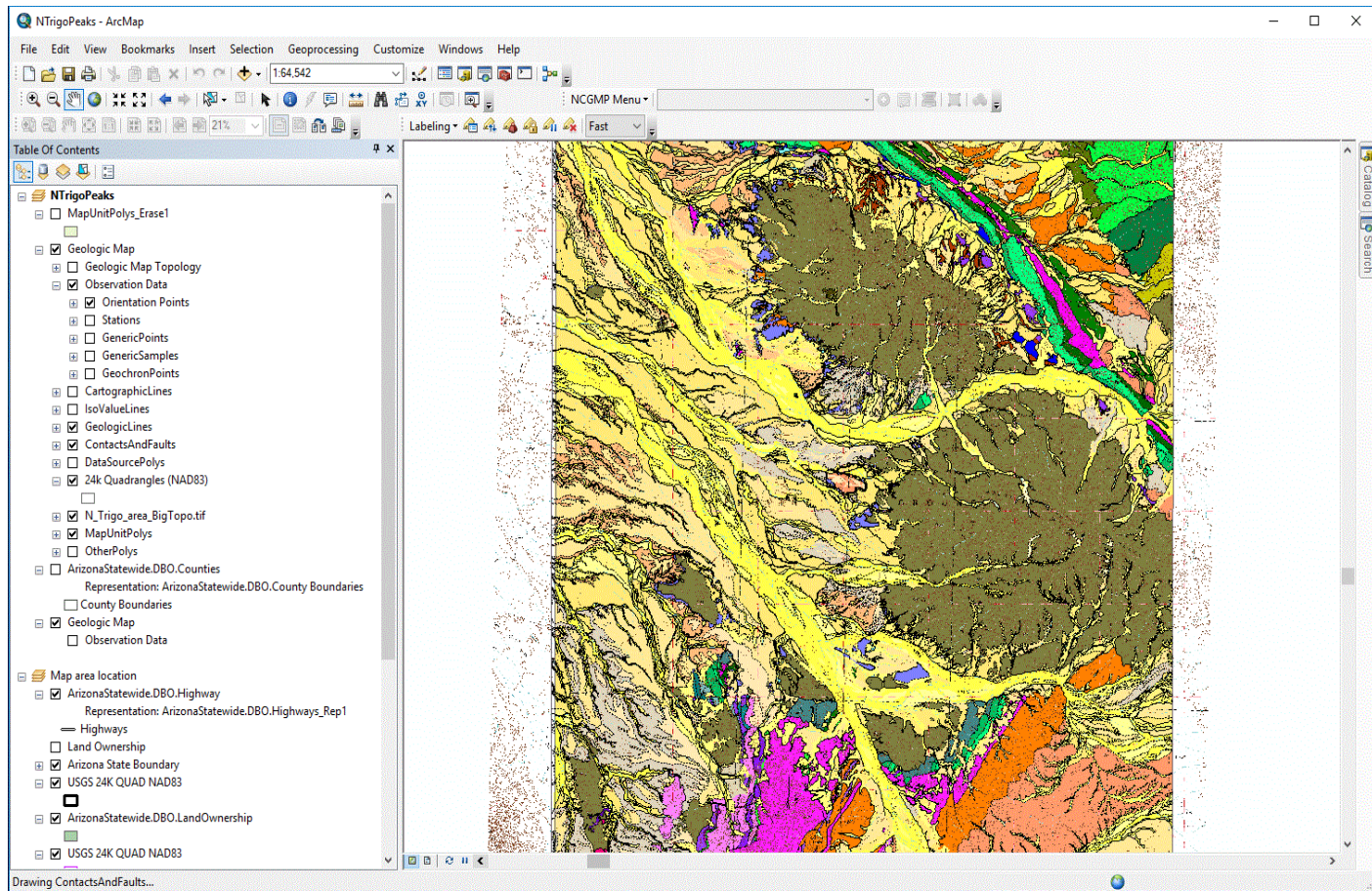
- Multi-path
- Open Source
- Searchable
- Automation
- Conversion

Distribution

- Multi-path
- Multi-format

Creation: Conversion

Since 2000, our geologic maps have been constructed using evolving versions of ESRI ArcGIS programs.



Creation: Conversion

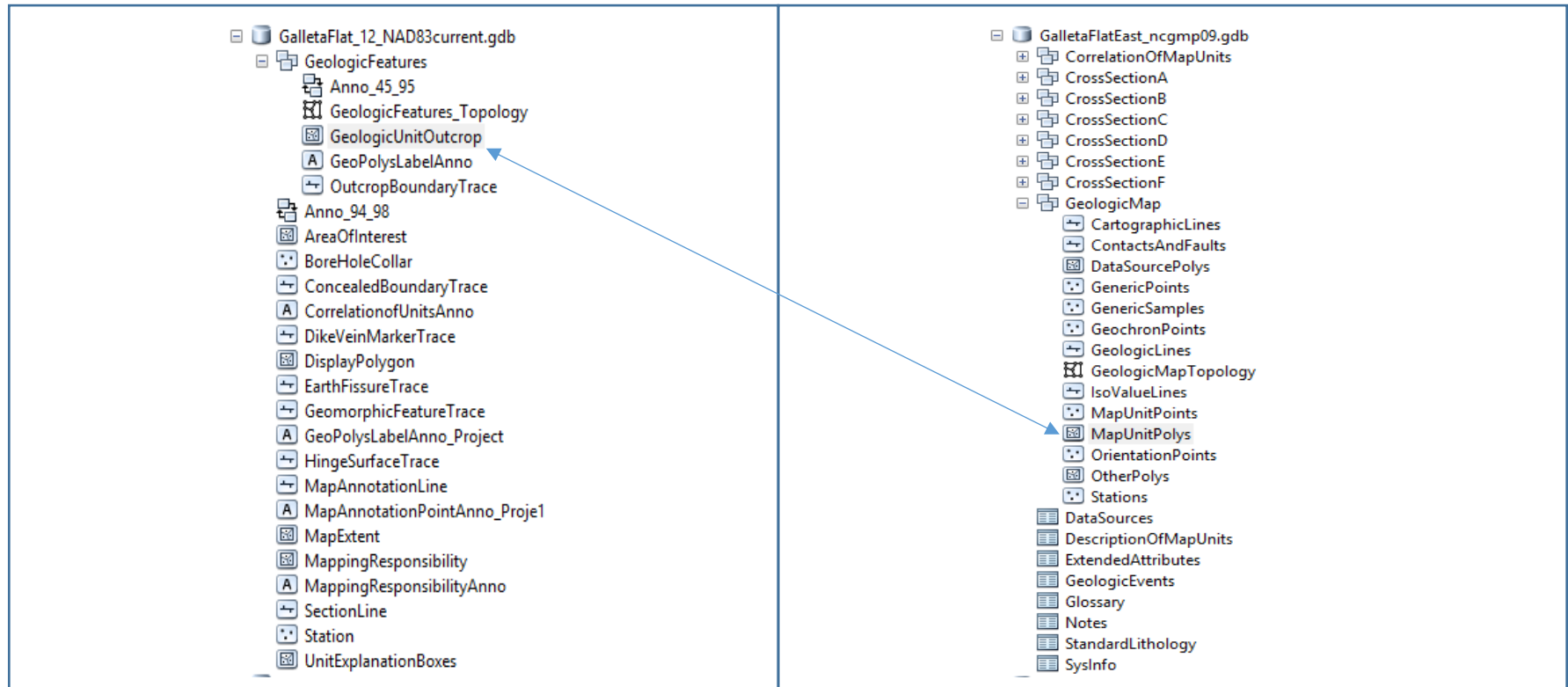
[-] GalletaFlatEast

- [+] Arcexports
- [+] Database
- [+] GeoJSON
- [+] GPS
- [+] Graphics
- [+] Imagery
- [+] KML
- [+] Layers
- [+] Layout
- [+] Metadata
- [+] Photos
- [+] Projects
- [+] Scans
- [+] Shapefiles
- [+] Support
- [+] Tables
- [+] TempSG
- [+] Text
- [+] topos

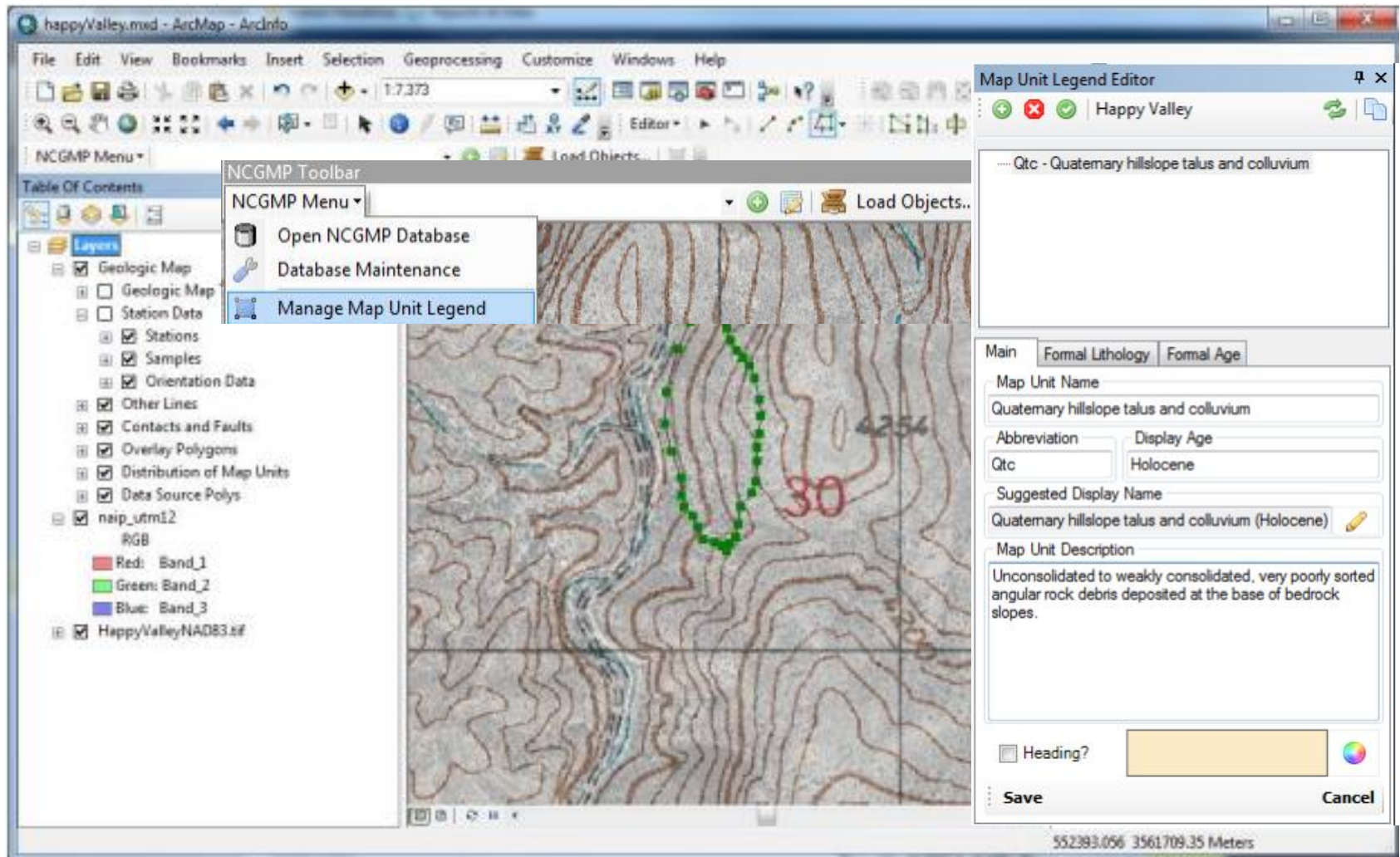
[-] Geologic Map Folders

- [+] Archive
- [+] Database
- [+] GeoJSON
- [+] Graphics
- [+] Imagery
- [+] KML
- [+] Layout
- [+] Projects
- [+] Shapefiles

Creation: Conversion



Creation: Live Sync



Creation: Documentation

[Code](#) [Issues 17](#) [Pull requests 0](#) [Projects 1](#) [Wiki](#) [Settings](#) [Insights](#)

Filters

LabelsMilestones

New issue

☐ 17 Open ☒ 3 Closed

AuthorLabelsProjectsMilestonesAssigneeSort

☐ **Change the primary key of each table to attempt_id** enhancement

#20 opened 11 days ago by aazaff

☐ **Add gzip support for uploadGDB.R** enhancement

#19 opened 18 days ago by aazaff

☐ **Geologic Map of the Corona de Tucson 7.5' Quadrangle, Pima County, Arizona** 1

#15 opened on 27 Jun by vricigliano 2 of 14

☐ **Surficial Geologic Map of Empire Ranch 7.5' Quadrangle, Pima County, Arizona** 1

#14 opened on 27 Jun by vricigliano 2 of 14

☐ **Bedrock Geologic Map of the Northern Part of the Empire Ranch 7.5' Quadrangle, Pima County, Arizona**

#13 opened on 27 Jun by vricigliano 2 of 14

☐ **Geologic map of the Middle Water Spring 7 1/2' Quadrangle, Mohave County, Arizona**

#12 opened on 27 Jun by vricigliano 2 of 14

☐ **Geologic Map of the Somerton 7 1/2' Quadrangle, Yuma County, Arizona**

#11 opened on 27 Jun by vricigliano 2 of 14


☐ **Geologic Map of the Yuma East 7.5' Quadrangle, Yuma County, Arizona**

#10 opened on 27 Jun by vricigliano 2 of 14

☐ **Geologic Map of the east half of the Black Canyon City 7.5' Quadrangle and the west half of the Squaw Creek Mesa 7.5' Quadrangle, Maricopa County, Arizona**

#9 opened on 27 Jun by vricigliano 2 of 14

Creation: Documentation



Write

Preview

Name

Update

Comments

Processing Checklist


- ☐ GeoDatabase Fields to latest NGCMP format
- ☐ GeoDatabase layer names updated to latest NGCMP format
- ☐ Create metadata for GeoDataBase
- ☐ Export all vector data to ESRI Shapefiles
 - ☐ Append unit descriptions to the attribute table
- ☐ Export all vector data to GeoJSON
 - ☐ Append unit descriptions to the attribute table
- ☐ Export all vector data to KML
- ☐ Place all other data in appropriate folders
 - ☐ Notes Directory
 - ☐ Layout Directory
- ☐ Metadata description and image


Publication Checklist


- ☐ Pushed to the University of Arizona Library
- ☐ Exposed for public download through AZGS


M3 Styling with Markdown is supported

Submit new issue

Assignees 
No one—assign yourself

Labels 
None yet

Projects 
None yet

Milestone 
No milestone


Creation: Documentation


<> Code ① Issues 17 Pull requests 0 Projects 1 Wiki Settings Insights ▾


Data Preservation

Filter cards


+ Add cards (2 new, ●) Fullscreen Menu


In Queue 13  +

 **Geologic Map of the Corona de Tucson 7.5' Quadrangle, Pima County, Arizona** ▾


 2 of 14


#15 opened by vricigliano

 **Surficial Geologic Map of Empire Ranch 7.5' Quadrangle, Pima County, Arizona** ▾


 2 of 14


#14 opened by vricigliano

 **Bedrock Geologic Map of the Northern Part of the Empire Ranch 7.5' Quadrangle, Pima County, Arizona** ▾


 2 of 14


#13 opened by vricigliano


 **Geologic map of the Middle Water Spring 7 1/2' Quadrangle, Mohave County, Arizona** ▾

 2 of 14

#12 opened by vricigliano


Processing 2  +


 **Geologic Map of The Helvetia 7 1/2' Quadrangle, Pima County, Arizona** ▾

 4 of 14


#1 opened by aazaff


high priority

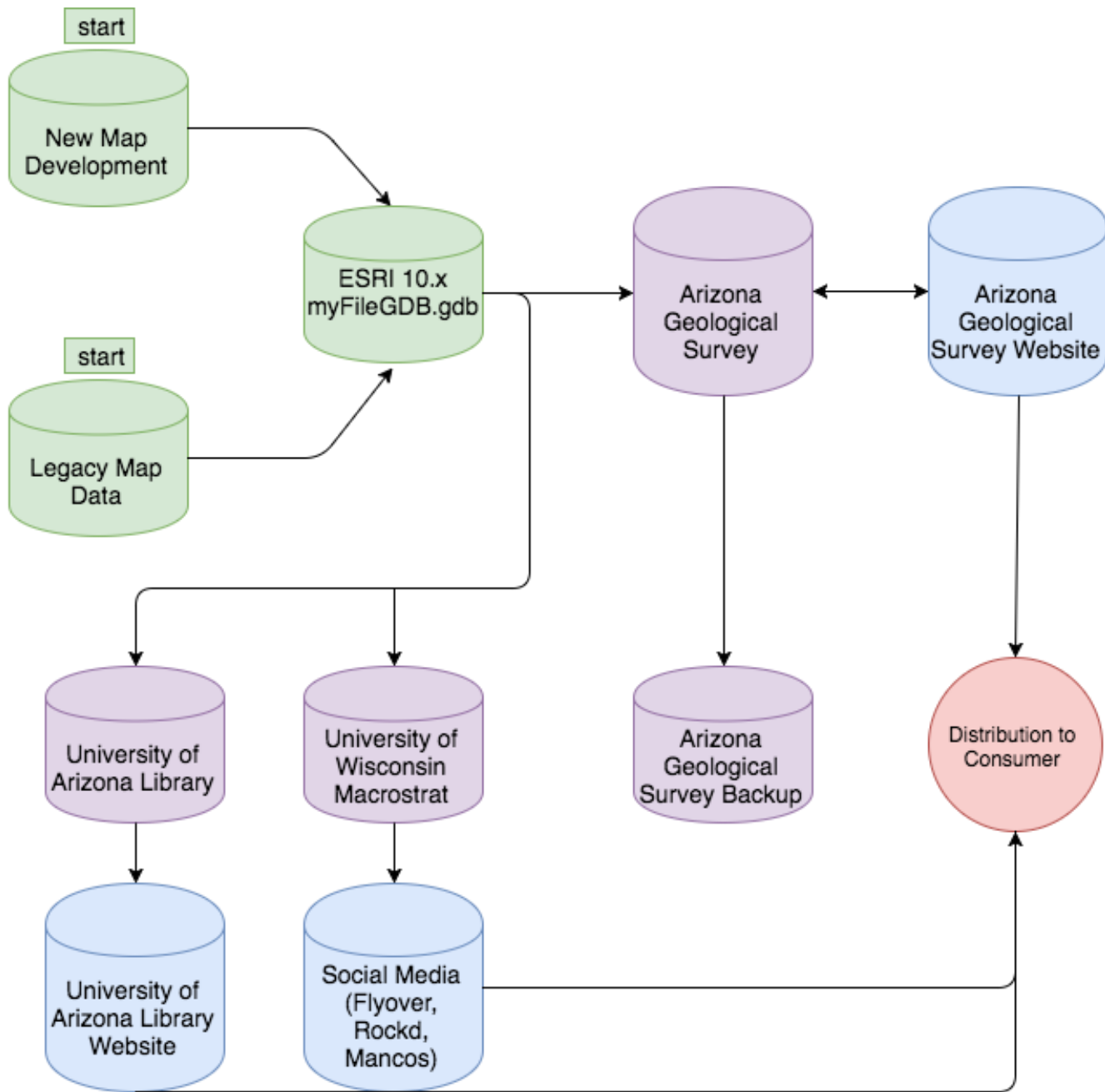
 **Geologic map of the Waterman Peak and northern La Tortuga Butte 7.5' Quadrangles, Pima County, Arizona** ▾

 3 of 14

#2 opened by vricigliano

Processed 0  +

Published 0  +



Creation

- Live Sync
- Documentation
- Low-Cost

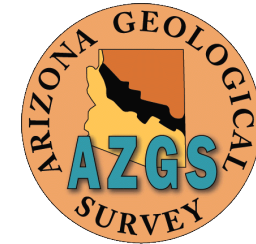
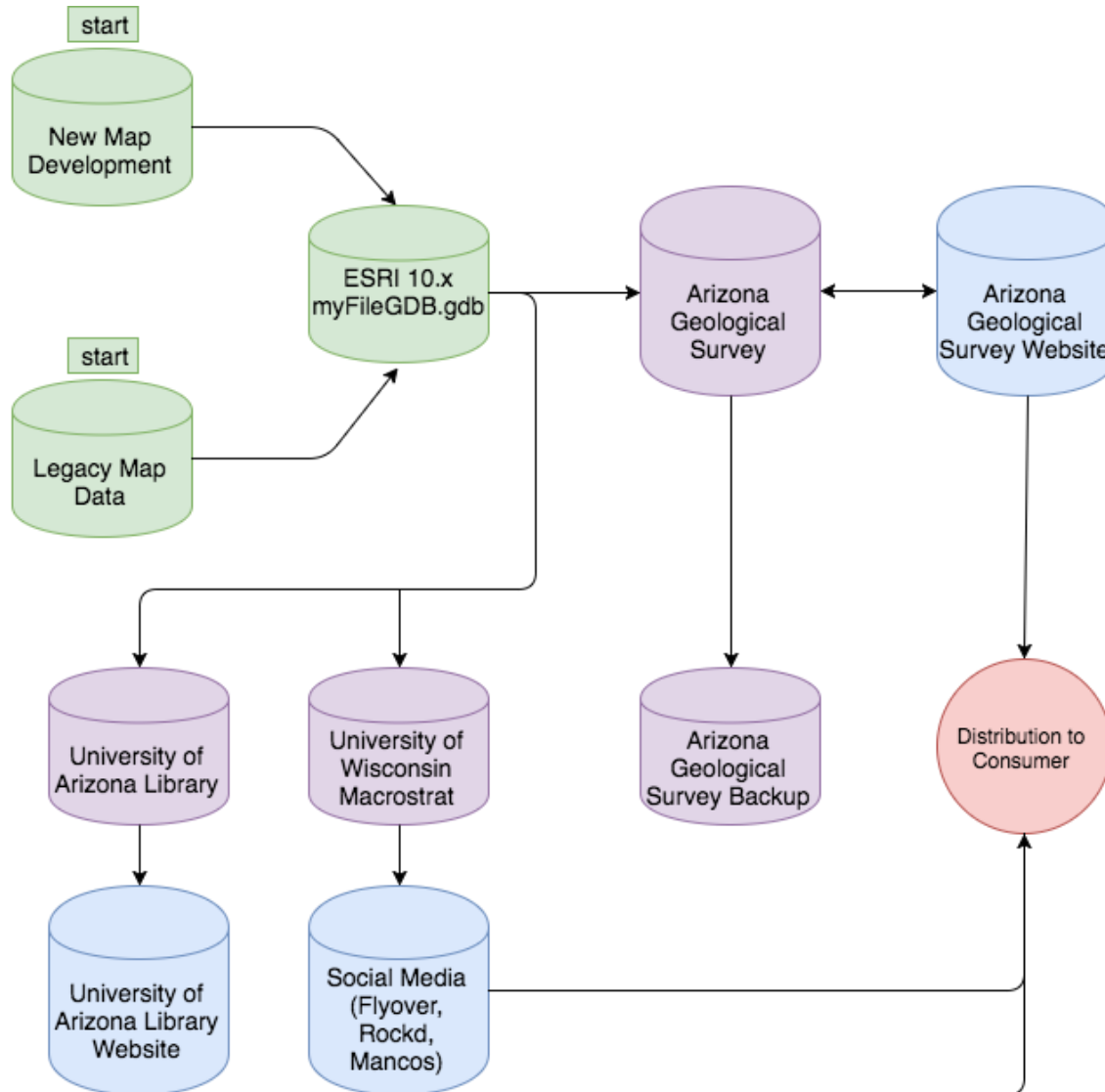
Preservation

- Multi-path
- Open Source
- Searchable
- Automation
- Conversion

Distribution

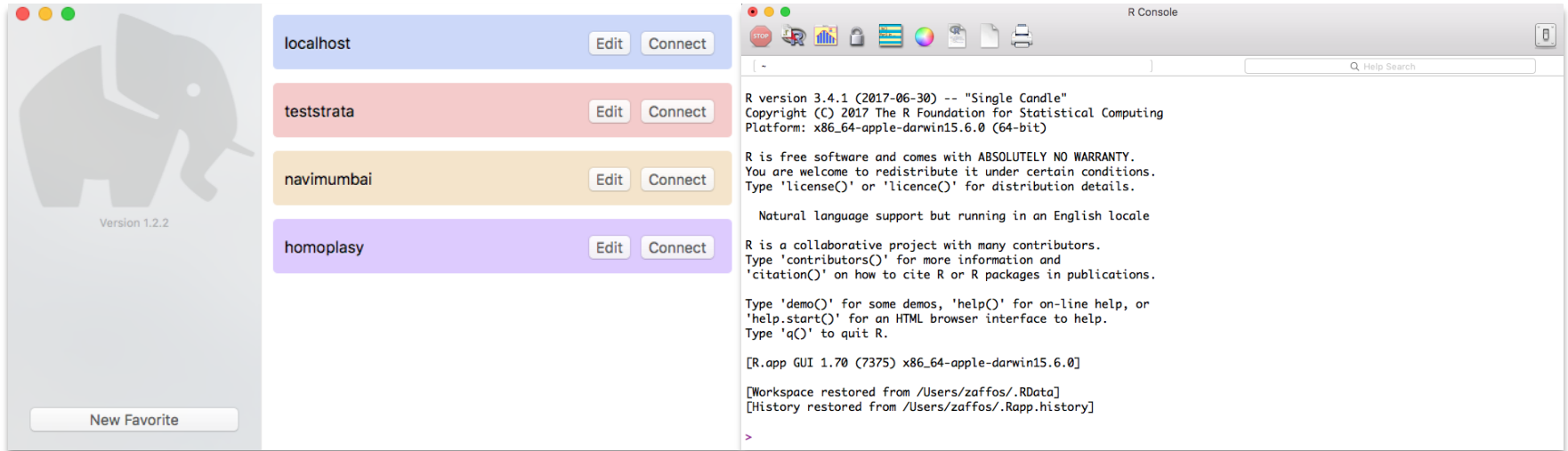
- Multi-path
- Multi-format

Preservation: Multi-path



The Macrostrat Database
integrated global stratigraphy

Preservation: Open Source



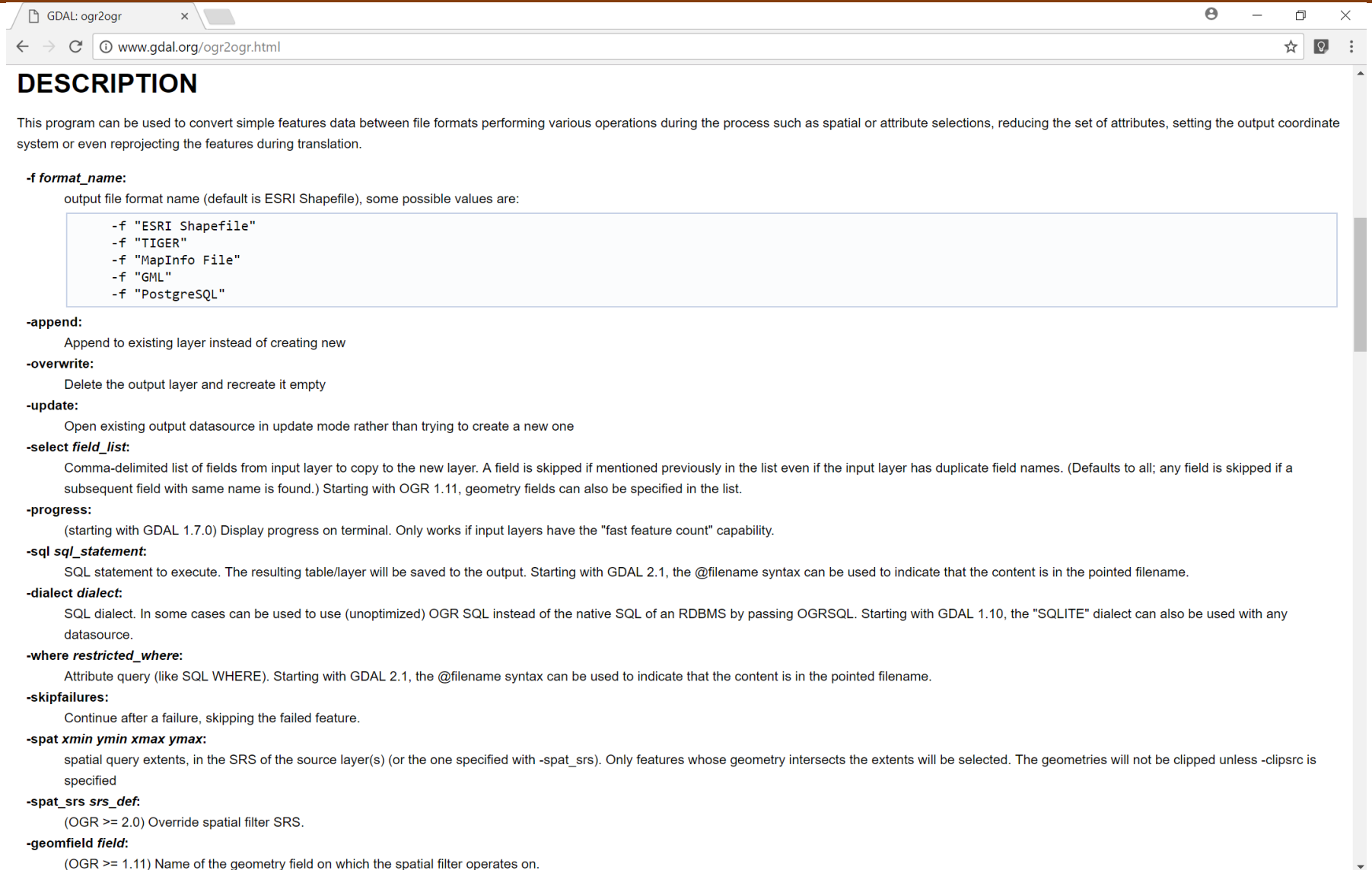
Benefits

- Free
- Community-Supported
- Computationally Fast
- Cross-Platform Compatible
- It's the right way to do it!!

Challenges

- Difficult to install
- Requires coding literacy

Preservation: Automation



DESCRIPTION

This program can be used to convert simple features data between file formats performing various operations during the process such as spatial or attribute selections, reducing the set of attributes, setting the output coordinate system or even reprojecting the features during translation.

-f *format_name*:
output file format name (default is ESRI Shapefile), some possible values are:

```
-f "ESRI Shapefile"
-f "TIGER"
-f "MapInfo File"
-f "GML"
-f "PostgreSQL"
```

-append:
Append to existing layer instead of creating new

-overwrite:
Delete the output layer and recreate it empty

-update:
Open existing output datasource in update mode rather than trying to create a new one

-select *field_list*:
Comma-delimited list of fields from input layer to copy to the new layer. A field is skipped if mentioned previously in the list even if the input layer has duplicate field names. (Defaults to all; any field is skipped if a subsequent field with same name is found.) Starting with OGR 1.11, geometry fields can also be specified in the list.

-progress:
(starting with GDAL 1.7.0) Display progress on terminal. Only works if input layers have the "fast feature count" capability.

-sql *sql_statement*:
SQL statement to execute. The resulting table/layer will be saved to the output. Starting with GDAL 2.1, the @filename syntax can be used to indicate that the content is in the pointed filename.

-dialect *dialect*:
SQL dialect. In some cases can be used to use (unoptimized) OGR SQL instead of the native SQL of an RDBMS by passing OGRSQL. Starting with GDAL 1.10, the "SQLITE" dialect can also be used with any datasource.

-where *restricted_where*:
Attribute query (like SQL WHERE). Starting with GDAL 2.1, the @filename syntax can be used to indicate that the content is in the pointed filename.

-skipfailures:
Continue after a failure, skipping the failed feature.

-spat *xmin ymin xmax ymax*:
spatial query extents, in the SRS of the source layer(s) (or the one specified with -spat_srs). Only features whose geometry intersects the extents will be selected. The geometries will not be clipped unless -clipsrc is specified

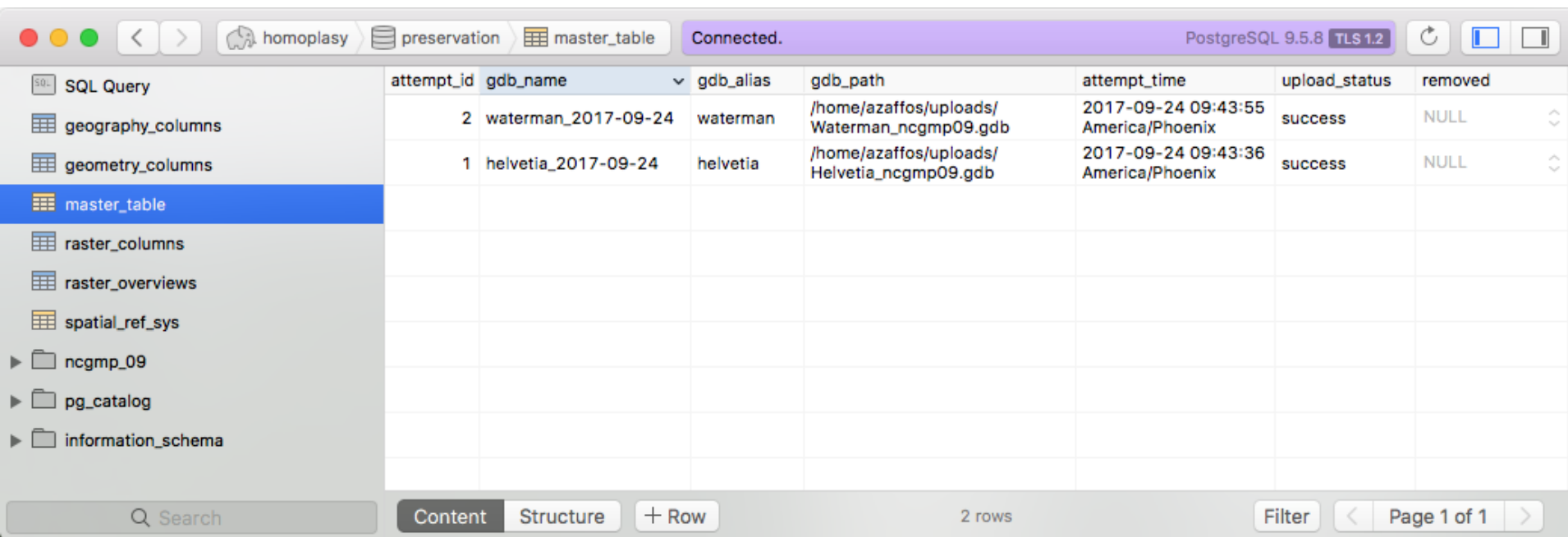
-spat_srs *srs_def*:
(OGR >= 2.0) Override spatial filter SRS.

-geomfield *field*:
(OGR >= 1.11) Name of the geometry field on which the spatial filter operates on.

Preservation: Automation

```
zaffos — azaffos@azaffos-development: ~/GitRepositories/data_preservation_processing/development — ssh -L 5444:127.0.0.1:5432 azaffos@10.208.1.128 — 172x34
azaffos@azaffos-development:~/GitRepositories/data_preservation_processing/development$ ls
configureDatabase.R downloadFile.R undoAttempt.R uploadGDB.R uploadShapes.R
azaffos@azaffos-development:~/GitRepositories/data_preservation_processing/development$ Rscript configureDatabase.R /home/azaffos/uploads/Helvetia_ncgmp09.gdb preservation
Loading required package: RPostgreSQL
Loading required package: methods
Loading required package: DBI
Loading required package: rgdal
Loading required package: sp
rgdal: version: 1.2-8, (SVN revision 663)
Geospatial Data Abstraction Library extensions to R successfully loaded
Loaded GDAL runtime: GDAL 2.2.1, released 2017/06/23
Path to GDAL shared files: /usr/share/gdal/2.2
Loaded PROJ.4 runtime: Rel. 4.9.2, 08 September 2015, [PJ_VERSION: 492]
Path to PROJ.4 shared files: (autodetected)
Linking to sp version: 1.2-5
<PostgreSQLResult>
<PostgreSQLResult>
<PostgreSQLResult>
<PostgreSQLResult>
azaffos@azaffos-development:~/GitRepositories/data_preservation_processing/development$ Rscript uploadGDB.R /home/azaffos/uploads/Helvetia_ncgmp09.gdb preservation helvetia
Loading required package: RPostgreSQL
Loading required package: methods
Loading required package: DBI
[1] TRUE
<PostgreSQLResult>
[1] TRUE
azaffos@azaffos-development:~/GitRepositories/data_preservation_processing/development$ Rscript uploadGDB.R /home/azaffos/uploads/Waterman_ncgmp09.gdb preservation waterman
Loading required package: RPostgreSQL
Loading required package: methods
Loading required package: DBI
[1] TRUE
<PostgreSQLResult>
[1] TRUE
azaffos@azaffos-development:~/GitRepositories/data_preservation_processing/development$
```

Preservation: Documentation



The screenshot shows a web-based database interface. At the top, there are navigation tabs: 'homoplasia', 'preservation', and 'master_table'. The 'preservation' tab is active, and the 'master_table' is selected. The interface shows a table with 8 columns: 'attempt_id', 'gdb_name', 'gdb_alias', 'gdb_path', 'attempt_time', 'upload_status', and 'removed'. The table contains 2 rows of data. The first row has 'attempt_id' 2, 'gdb_name' 'waterman_2017-09-24', 'gdb_alias' 'waterman', 'gdb_path' '/home/azaffos/uploads/Waterman_ncgmp09.gdb', 'attempt_time' '2017-09-24 09:43:55 America/Phoenix', 'upload_status' 'success', and 'removed' 'NULL'. The second row has 'attempt_id' 1, 'gdb_name' 'helvetia_2017-09-24', 'gdb_alias' 'helvetia', 'gdb_path' '/home/azaffos/uploads/Helvetia_ncgmp09.gdb', 'attempt_time' '2017-09-24 09:43:36 America/Phoenix', 'upload_status' 'success', and 'removed' 'NULL'. The interface also includes a sidebar with a list of tables and a search bar at the bottom.

attempt_id	gdb_name	gdb_alias	gdb_path	attempt_time	upload_status	removed
2	waterman_2017-09-24	waterman	/home/azaffos/uploads/Waterman_ncgmp09.gdb	2017-09-24 09:43:55 America/Phoenix	success	NULL
1	helvetia_2017-09-24	helvetia	/home/azaffos/uploads/Helvetia_ncgmp09.gdb	2017-09-24 09:43:36 America/Phoenix	success	NULL

Preservation: Search

homoplasy

preservation

ncgmp_09

MapUnitPolys

Connected.

PostgreSQL 9.5.8 TLS 1.2

SQL Query

geography_columns

geometry_columns

master_table

raster_columns

raster_overviews

spatial_ref_sys

ncgmp_09

CartographicLines

CMULines

CMUMapUnitPolys

CMUPoints

ContactsAndFaults

CSAContactsAndFaults

CSAMapUnitPolys

CSAOrientationPoints

CSBContactsAndFaults

CSBMapUnitPolys

CSBOrientationPoints

CSCContactsAndFaults

CSCMapUnitPolys

CSCOrientationPoints

CSDContactsAndFaults

CSDMapUnitPolys

CSDOrientationPoints

CSEContactsAndFaults

CSEMapUnitPolys

CSEOrientationPoints

CSFContactsAndFaults

CSFMapUnitPolys

CSFOrientationPoints

DataSourcePolys

DataSources

DescriptionOfMapUnits

ExtendedAttributes

GenericPoints

GenericSamples

OBJECTID	Shape_Length	Shape_Area	MapUnitPolys_ID	Map...	IdentityConfidence	Label	Symbol	Notes	DataSourceID	geom	gdb_name	attempt...
1693	195.613540195731	2505.97324445144	HLV.MapUnitPolys.37	YXga	certain	YXga	1111	NULL	HLV.DataSource.10	SRID=26912;MULTIPOLYGON(((5183 48.8219 3522000.6737,518336.99...	helvetia_2017-09-05	
1692	192.720734065129	1710.5471393245	HLV.MapUnitPolys.36	YXga	certain	YXga	1111	NULL	HLV.DataSource.10	SRID=26912;MULTIPOLYGON(((5183 90.0522 3521931.8982,518372.36...	helvetia_2017-09-05	
3481	22242.0090442137	4418087.04981587	HLV.MapUnitPolys.1825	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5188 09.0189 3512743.3124,518756.78...	helvetia_2017-09-05	
3476	70678.5721882877	15768394.1764508	HLV.MapUnitPolys.1820	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5192 36.0751 3519269.257,519243.899...	helvetia_2017-09-05	
3388	2397.73644469437	295330.589010467	HLV.MapUnitPolys.1732	YXg	certain	YXg	3019		HLV.DataSource.11	SRID=26912;MULTIPOLYGON(((5183 18.0103 3524382.683,518324.768...	helvetia_2017-09-05	
3385	76011.6907200553	11814531.8596341	HLV.MapUnitPolys.1729	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5217 81.7332 3521230.1661,521796.28...	helvetia_2017-09-05	
3383	18751.6958956309	3023112.44189375	HLV.MapUnitPolys.1727	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5218 01.0003 3520025.9998,521796.87...	helvetia_2017-09-05	
3368	222.776524208321	2038.86655240724	HLV.MapUnitPolys.1712	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5194 48.3135 3519559.2781,519418.16...	helvetia_2017-09-05	
3366	1177.79489397182	58615.0915981701	HLV.MapUnitPolys.1710	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5220 36.0936 3519463.3626,522034.76...	helvetia_2017-09-05	
3364	1103.81851369743	51864.0542657278	HLV.MapUnitPolys.1708	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5198 09.718 3519368.3374,519768.915...	helvetia_2017-09-05	
3333	252.644227810806	2098.12500764594	HLV.MapUnitPolys.1677	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5221 54.7046 3518415.2876,522175.95...	helvetia_2017-09-05	
3314	346.217271921387	2083.79506083397	HLV.MapUnitPolys.1658	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5151 39.8495 3515192.9056,515150.13...	helvetia_2017-09-05	
3302	173.867610599291	1583.59401913325	HLV.MapUnitPolys.1646	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5161 39.8778 3513905.2769,516120.81...	helvetia_2017-09-05	
3301	101.4231890131	469.328325070314	HLV.MapUnitPolys.1645	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5146 96.215 3515710.0928,514678.157...	helvetia_2017-09-05	
3298	411.742799502156	6899.39651440624	HLV.MapUnitPolys.1642	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5157 01.471 3514434.3233,515647.206...	helvetia_2017-09-05	
3297	756.840788855299	25719.3164143064	HLV.MapUnitPolys.1641	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5146 75.0483 3515401.0588,514622.08...	helvetia_2017-09-05	
3292	469.017246673612	7846.93600844294	HLV.MapUnitPolys.1636	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5151 12.0061 3515216.4095,515100.18...	helvetia_2017-09-05	
3285	410.807651413165	5068.98868514121	HLV.MapUnitPolys.1629	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5153 10.0768 3515056.3453,515313.05...	helvetia_2017-09-05	
3278	292.502944400394	2968.31958538295	HLV.MapUnitPolys.1622	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5156 16.2345 3514724.5739,515596.69...	helvetia_2017-09-05	
3274	195.491803310105	1188.6369387997	HLV.MapUnitPolys.1618	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5158 31.7412 3514602.4455,515812.70...	helvetia_2017-09-05	
3271	803.275523920844	18938.7041622274	HLV.MapUnitPolys.1615	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5155 48.9669 3514152.9222,515515.87...	helvetia_2017-09-05	
3267	631.824871158713	15913.2064883961	HLV.MapUnitPolys.1611	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5157 35.3672 3513964.367,515707.660...	helvetia_2017-09-05	
3266	264.133679826627	2912.94546431015	HLV.MapUnitPolys.1610	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5158 56.5887 3513941.617,515846.945...	helvetia_2017-09-05	
3264	383.816634260045	5472.08130896651	HLV.MapUnitPolys.1608	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5163 14.1997 3513793.5963,516315.83...	helvetia_2017-09-05	
3261	379.011317970964	7211.00085652937	HLV.MapUnitPolys.1605	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5167 41.4027 3513432.1562,516720.92...	helvetia_2017-09-05	
3257	189.562846176979	1888.78516668099	HLV.MapUnitPolys.1601	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5168 92.1928 3513341.914,516871.055...	helvetia_2017-09-05	
3254	359.833668154369	3109.84725723913	HLV.MapUnitPolys.1596	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5171 34.2738 3513236.9436,517109.46...	helvetia_2017-09-05	
3253	101.376021298874	529.728369532918	HLV.MapUnitPolys.1597	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5172 19.6833 3513255.201,517208.764...	helvetia_2017-09-05	
3251	669.801250104278	3654.450064670878	HLV.MapUnitPolys.1595	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5176 08.3837 3513073.6117,517549.78...	helvetia_2017-09-05	
3225	474.521457693115	11790.1627240743	HLV.MapUnitPolys.1569	YXg	certain	YXg	3019		HLV.DataSource.10	SRID=26912;MULTIPOLYGON(((5186 78.4011 3520846.3295,518636.25...	helvetia_2017-09-05	
3200	80.1864257573916	109.608180736762	HLV.MapUnitPolys.1568	YXg	certain	YXg	3019		HLV.DataSource.26	SRID=26912;MULTIPOLYGON(((5224 14.1997 3513793.5963,516315.83...	helvetia_2017-09-05	

Content

Structure

+ Row

1-1000 of 3488

Filter

Page 1 of 4

Preservation: Search

The screenshot shows a PostgreSQL SQL Query interface. The top bar indicates the connection is to 'homoplas' on 'preservation' using 'PostgreSQL 9.5.8 TLS 1.2'. The SQL Query tab is active, showing the following query:

```
1 WITH A AS (SELECT ST_Envelope(geom) AS geom FROM ncgmp_09."MapUnitPolys" WHERE "OBJECTID"='203')
2 SELECT * FROM ncgmp_09."MapUnitPolys" AS B JOIN A ON ST_Intersects(A.geom,B.geom);
```

Below the query editor, there are buttons for 'Load Query...', 'Save Query...', 'Cancel', and 'Execute Statement'. The results are displayed in a table with 15 columns: OBJECTID, Shape_Length, Shape_Area, MapUnitPolys..., Map..., Identity..., La..., Sy..., N..., DataSourceID, geom, gdb_name, attempt_id, and geom. The table shows 4 rows of data.

OBJECTID	Shape_Length	Shape_Area	MapUnitPolys...	Map...	Identity...	La...	Sy...	N...	DataSourceID	geom	gdb_name	attempt_id	geom
203	411.596482 346207	4120.3808777 6304	HLV.MapUnitPol ys.203	Qy3	certain	Qy3	5035		HLV.DataSources. 16	01060000202069 00000100000000...	helvetia_201 7-09-24	1	0103000020206900 000100000005000...
235	4563.02286 654181	317586.80940 5853	HLV.MapUnitPol ys.235	Qi3	certain	Qi3	5052		HLV.DataSources. 16	01060000202069 00000100000000...	helvetia_201 7-09-24	1	0103000020206900 000100000005000...
957	8578.66469 622795	81292.166462 6225	HLV.MapUnitPol ys.957	Qyc	certain	Qyc	4981		HLV.DataSources. 16	01060000202069 00000100000000...	helvetia_201 7-09-24	1	0103000020206900 000100000005000...
1169	7638.75441 922014	133156.99941 3373	HLV.MapUnitPol ys.1169	Qy3	certain	Qy3	5035		HLV.DataSources. 16	01060000202069 00000100000000...	helvetia_201 7-09-24	1	0103000020206900 000100000005000...

At the bottom, there is a 'Result 1' dropdown, an 'Export...' button, and a status bar indicating '4 rows' and '4 ms' execution time.

Benefits

- Computationally Fast
- Geospatial or Text Search
- Live Geoprocessing

Challenges

- PascalCase and camelCase

Preservation: Geoprocessing

Who's On First

[data](#)

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[blog](#)

[get started](#)



A **gazetteer** or **big list of places**, each with a stable identifier and some number of descriptive properties about that location.

DOCS

What things mean, what things are called, where things are, where things come from, what we think about time, and what we think about

GET STARTED

How you can access WOF data, specifically venues and neighbourhoods.

Preservation: Geoprocessing

dropchop.io

← → ↻ https://macrostrat.org/api/places?name=Utah&format=geojson_bare&placetype=region&url=https://macrostrat.org/api/places?name=Moab&format=geojson_bare&placetype=... ☆ ⓘ

Toggle all layers

places?
name=Utah&format=geojson_bare&placetype=region

places?
name=Moab&format=geojson_bare&placetype=locality

Along
Takes a line and returns a point at a specified distance along the line.

Bezier
Takes a line and returns a curved version by applying a Bezier spline algorithm.

Buffer
Calculates a buffer for input features for a given radius. Units supported are miles, kilometers, and degrees.

Center
Creates a point in the center of the feature.

Centroid
Creates a point in the centroid of the features.

Destination
Takes a Point and calculates the location of a destination point given a distance in degrees, radians, miles, or kilometers; and bearing in degrees. This uses the Haversine formula to account for global curvature.

Envelope
Takes any number of features and returns a rectangular Polygon that encompasses all vertices.

Explode
Takes a feature or set of features and returns all positions as points.

Sample
Takes a FeatureCollection and returns a FeatureCollection with given number of features at random.

Mapbox Streets
Mapbox Outdoors
Mapbox Light
Mapbox Dark
Mapbox Satellite

Moab

POTASH RD

ARCHES HIKING

Castle Valley

Negro Bill Canyon Wilderness Study Area

Mill Creek Canyon Wilderness Study Area

SPANISH VALLEY DR

YOBERTS RD

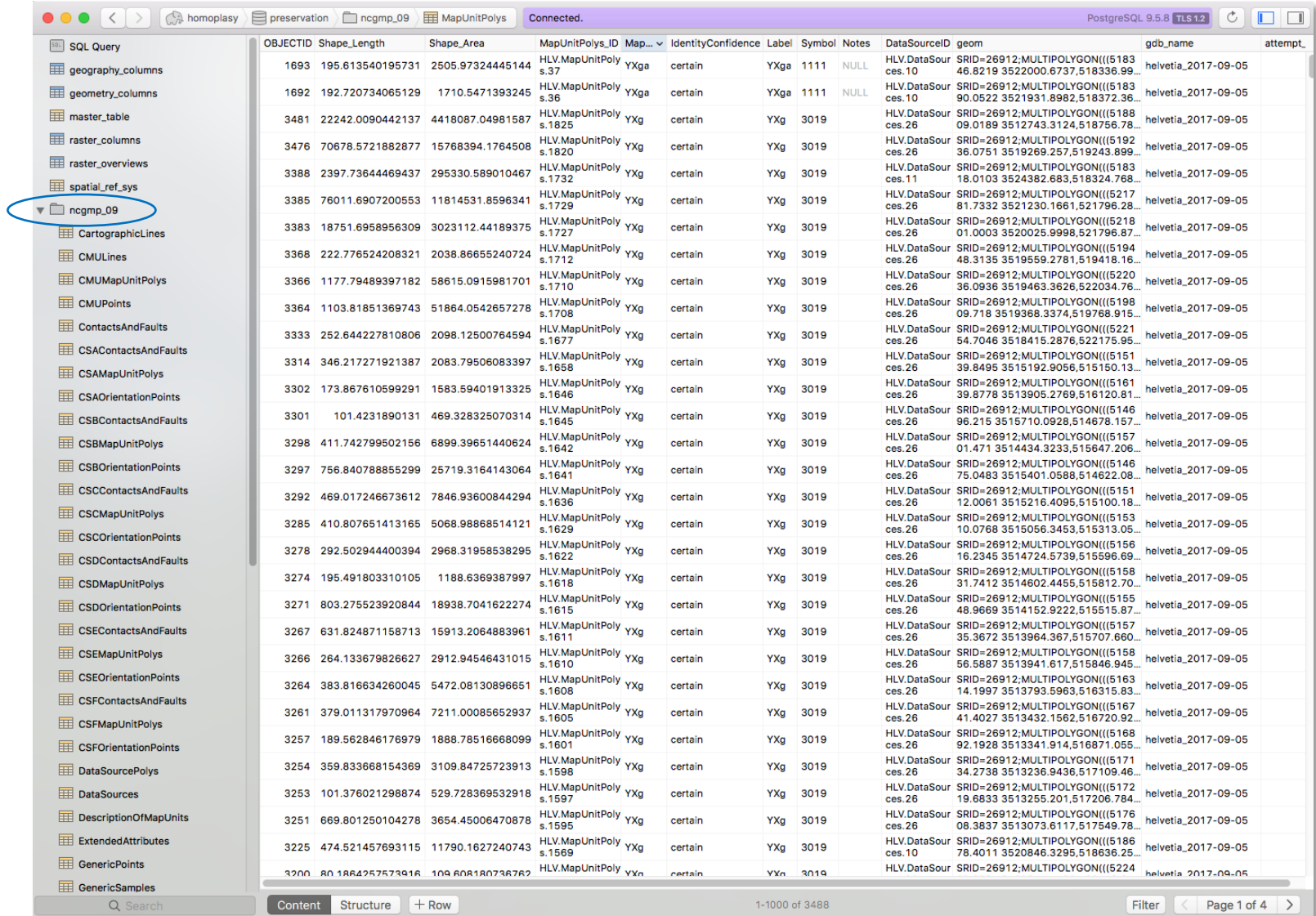
Behind The Rocks Wilderness Study Area

Sky Ranch All

KANE CREEK RD

© Mapbox © OpenStreetMap Improve this map

Preservation: Conversion



OBJECTID	Shape_Length	Shape_Area	MapUnitPolys_ID	MapUnitPolys_Label	IdentityConfidence	Label	Symbol	Notes	DataSourceID	geom	gdb_name	attempt
1693	195.613540195731	2505.97324445144	HLV.MapUnitPoly s.37	YXga	certain	YXga	1111	NULL	HLV.DataSource ces.10	SRID=26912;MULTIPOLYGON(((5183 46.8219 3522000.6737,518336.99...	helvetia_2017-09-05	
1692	192.720734065129	1710.5471393245	HLV.MapUnitPoly s.36	YXga	certain	YXga	1111	NULL	HLV.DataSource ces.10	SRID=26912;MULTIPOLYGON(((5183 90.0522 3521931.8982,518372.36...	helvetia_2017-09-05	
3481	22242.0090442137	4418087.04981587	HLV.MapUnitPoly s.1825	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5188 09.0189 3512743.3124,518756.78...	helvetia_2017-09-05	
3476	70678.5721882877	15768394.1764508	HLV.MapUnitPoly s.1820	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5192 36.0751 3519269.257,519243.899...	helvetia_2017-09-05	
3388	2397.73644469437	295330.589010467	HLV.MapUnitPoly s.1732	YXg	certain	YXg	3019		HLV.DataSource ces.11	SRID=26912;MULTIPOLYGON(((5183 18.0103 3524382.683,518324.768...	helvetia_2017-09-05	
3385	76011.6907200553	11814531.8596341	HLV.MapUnitPoly s.1729	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5217 81.7332 3521230.1661,521796.28...	helvetia_2017-09-05	
3383	18751.6958956309	3023112.44189375	HLV.MapUnitPoly s.1727	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5218 01.0003 3520025.9998,521796.87...	helvetia_2017-09-05	
3368	222.776524208321	2038.86655240724	HLV.MapUnitPoly s.1712	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5194 48.3135 3519559.2781,519418.16...	helvetia_2017-09-05	
3366	1177.79489397182	58615.0915981701	HLV.MapUnitPoly s.1710	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5220 36.0936 3519463.3626,522034.76...	helvetia_2017-09-05	
3364	1103.81851369743	51864.0542657278	HLV.MapUnitPoly s.1708	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5198 09.718 3519368.3374,519768.915...	helvetia_2017-09-05	
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3297	756.840788855299	25719.3164143064	HLV.MapUnitPoly s.1641	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5146 75.0483 3515401.0588,514622.08...	helvetia_2017-09-05	
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3285	410.807651413165	5068.98868514121	HLV.MapUnitPoly s.1629	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5153 10.0768 3515056.3453,515313.05...	helvetia_2017-09-05	
3278	292.502944400394	2968.31958538295	HLV.MapUnitPoly s.1622	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5156 16.2345 3514724.5739,515596.69...	helvetia_2017-09-05	
3274	195.491803310105	1188.6369387997	HLV.MapUnitPoly s.1618	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5158 31.7412 3514602.4455,515812.70...	helvetia_2017-09-05	
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3267	631.824871158713	15913.2064883961	HLV.MapUnitPoly s.1611	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5157 35.3672 3513964.367,515707.660...	helvetia_2017-09-05	
3266	264.133679826627	2912.94546431015	HLV.MapUnitPoly s.1610	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5158 56.5887 3513941.617,515846.945...	helvetia_2017-09-05	
3264	383.816634260045	5472.08130896651	HLV.MapUnitPoly s.1608	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5163 14.1997 3513793.5963,516315.83...	helvetia_2017-09-05	
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3253	101.376021298874	529.728369532918	HLV.MapUnitPoly s.1597	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5172 19.6833 3513255.201,517206.784...	helvetia_2017-09-05	
3251	669.801250104278	3654.45006470878	HLV.MapUnitPoly s.1595	YXg	certain	YXg	3019		HLV.DataSource ces.26	SRID=26912;MULTIPOLYGON(((5176 08.3837 3513073.6117,517549.78...	helvetia_2017-09-05	
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3200	80.1864257573916	109.608180736762	HLV.MapUnitPoly s.1568	YXg	certain	YXg	3019		HLV.DataSource ces.10	SRID=26912;MULTIPOLYGON(((5224 14.1997 3513793.5963,516315.83...	helvetia_2017-09-05	

Preservation: Search



Arizona Geological Survey Mining Data

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Cutter Quarries

This location is part of the Arizona Mineral Industry Location System (AzMILS), an inventory of mineral occurrences, prospects and mine locations in Arizona. Gila62 is located in T2S R16E Sec 3 E2 in the Cutter - 7.5 Min quad. This collection consists of various reports, maps, records and related materials acquired by the Arizona Department of Mines and Mineral Resources regarding mining properties in Arizona. Information was obtained by various means, including the property owners, exploration companies, consultants, verbal interviews, field visits, newspapers and publications. Some sections may be redacted for copyright. Please see the access statement.

Resource URL: <http://docs.azgs.az.gov/OnlineAccessMineFiles/C-F/CutterQuarriesGilaT2SR16ESec4.pdf>

Resource ID:

2011-01-1057

Resource Type:

Document: Text

Theme Keywords:

building stone resources

economic geology

maps and atlases

mineral resources

reports

rocks and deposits

subsurface maps

topographic maps

Calcium, Limestone

Place Keywords:

United States

Arizona

Gila County

Cutter - 7.5 Min

T2S R16E Sec 3 E2

Coordinates:**Publication Date:**

2013-07-31

Contributor:**Collection:**

ADMMR

Preservation: Search

ADOT proposes to acquire approximately 900,000 square feet of land for highway right of way through the Annabell claims. All of the proposed acquisition

```
{"ADOT","proposes","to","acquire","approximately","900,000","square","feet","of","land","for","highway","right","of","way","through","the","Annabell","claims","."}
```

```
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Preservation: Search

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BODY	
GRAPHIC	
GRAPHIC CAPTION	
REFERENCE	
OTHER	
Category	p
Body	2.51868368797e-05
Graphic	0.99444452522
Graphic caption	0.000199712102224
Header / Footer	0.00169473842919
Reference	0.000255681831584

Evenness through time

Both indexes, *J* and *Essmin*, indicate an increase in evenness through time, mostly concentrated at Tr2. This shift in sample evenness between Furongian–Tr1 and Tr2–Fl2 is statistically significant for both indexes (Table 2). Such an increase in evenness is much more pronounced in deep environments (shelf) than in shallower ones (deep subtidal). As a consequence, the difference in evenness between environments decreases through time. During the Furongian and Tr1, deep subtidal samples were significantly more even than shelf samples, while from the Tr2 onwards, both environments record similar evenness (Fig 8). The higher evenness in shelf samples relative to deep subtidal ones during the Tr3 is most probably an artefact caused by the small sample size.

The rise in evenness during the Tr2 supports the trend observed in diversity, indicating that the number of inter-

mediately abundant genera increased before the total number of genera.

Biotic controls on evenness. In addition to environmental constraints, there might be biotic factors controlling evenness. Indeed, many contributions have highlighted the importance of biotic factors, mostly functional diversity, on evenness. Because each functional group (= guild) exploits either different resources or the same resource in different ways (Simberloff and Dayan 1991), competition should be lowered between guilds, and species belonging to different guilds could coexist with similar abundances. Hence, communities with higher number of guilds present (i.e. functional diversity) should have higher evenness than those communities where species belong to fewer guilds. To test this possibility, we analyse the relationship between the number of families present in each sample and evenness measured as Pielou's *J*. As the change in evenness was concentrated in the intermediate abundant species, we analysed the familial richness of the first four top-ranked species in each sample.

A comprehensive analysis of functional groups in Trilobita is still lacking despite some important insights in their understanding (Fortey and Owens 1990, 1999; Hughes 2001). Different trilobite families account for major morphological differences that represent a range of functional attributes, mainly related to lifestyles and feeding behaviours. Although the specific habits involved are unresolved or a matter of discussion, familial diversity is here considered as a gross proxy for resource partitioning.

TABLE 1. Evenness among environments.

Index	Kruskal Wallis χ^2	Degrees of freedom	p-Value
<i>J</i> (richness)	21.28	2	2×10^{-05}
<i>J</i>	13.96	2	0.0009
<i>J</i>	10.82	2	0.004
<i>J</i>	5.93	2	0.05
<i>Essmin</i>	10.27	2	0.006

p-Values in *italics* indicate significant differences between environments.

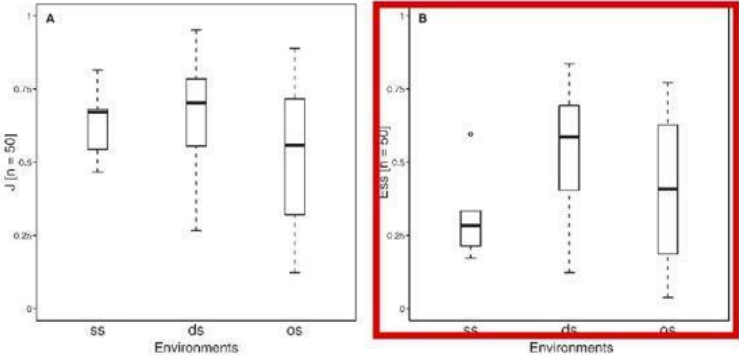
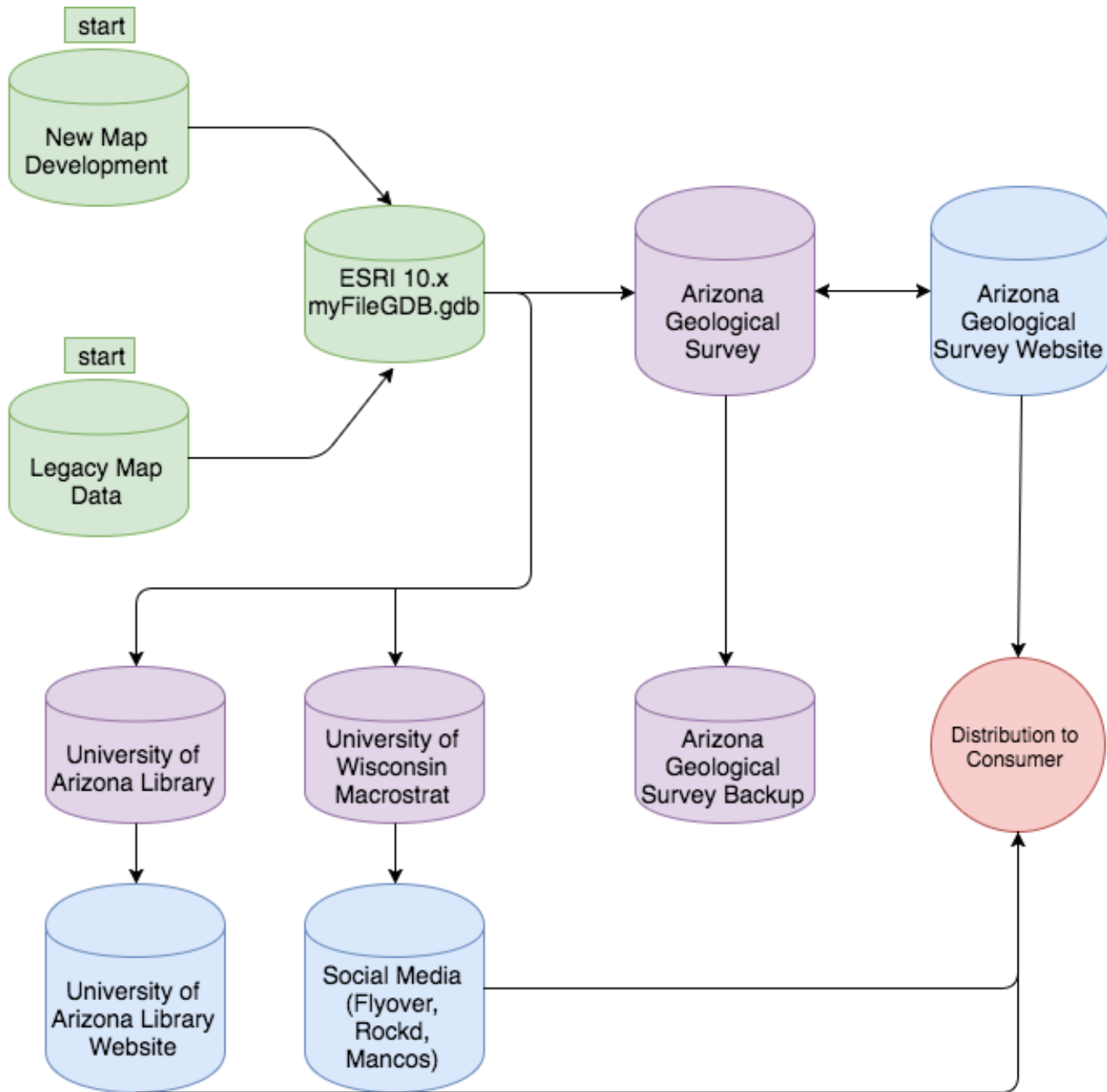


FIG. 5. Boxplots showing environmental trends in evenness. A, Pielou's *J*. B, Peters' *Essmin*. Abbreviations as in Figure 4.



Creation

- Live Sync
- Conversion
- Documentation

Preservation

- Multi-path
- Open Source
- Searchable
- Automation
- Conversion

Distribution

- Multi-path
- Multi-format

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- [Pinal County \(269\)](#)
- [Cochise County \(235\)](#)
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Temporal Keywords

- [Quaternary \(347\)](#)
- [Tertiary \(271\)](#)

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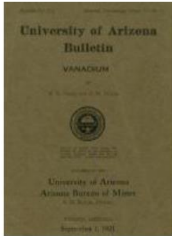



Holdings

There are currently
1229 metadata submissions (360 in preparation)
and **29 collections** in the repository's database.


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AZGS Publications Showcase

 Vanadium	 Minerals of Arizona	 Uranium and Radium	 Earth Fissure Map of the Bowie San Simon Study Area: Cochise County, Arizona
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[A Guide to the Geology of the Flagstaff Area](#) (95 visits)
Down-To-Earth Series


[A Guide to the Geology of the Sedona & Oak Creek Canyon area, Arizona](#) (70 visits)
Down-To-Earth Series

Distribution: Multi-Path



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These materials range from historical and archival documents, to technical reports, bulletins, community education materials, working papers, and other unique publications.

QUESTIONS?

Please contact the Office of Digital Innovation & Stewardship at repository@u.library.arizona.edu with your questions about items in these collections, or if you are affiliated with the University of Arizona and are interested in establishing a collection in the repository. We look forward to working with you.

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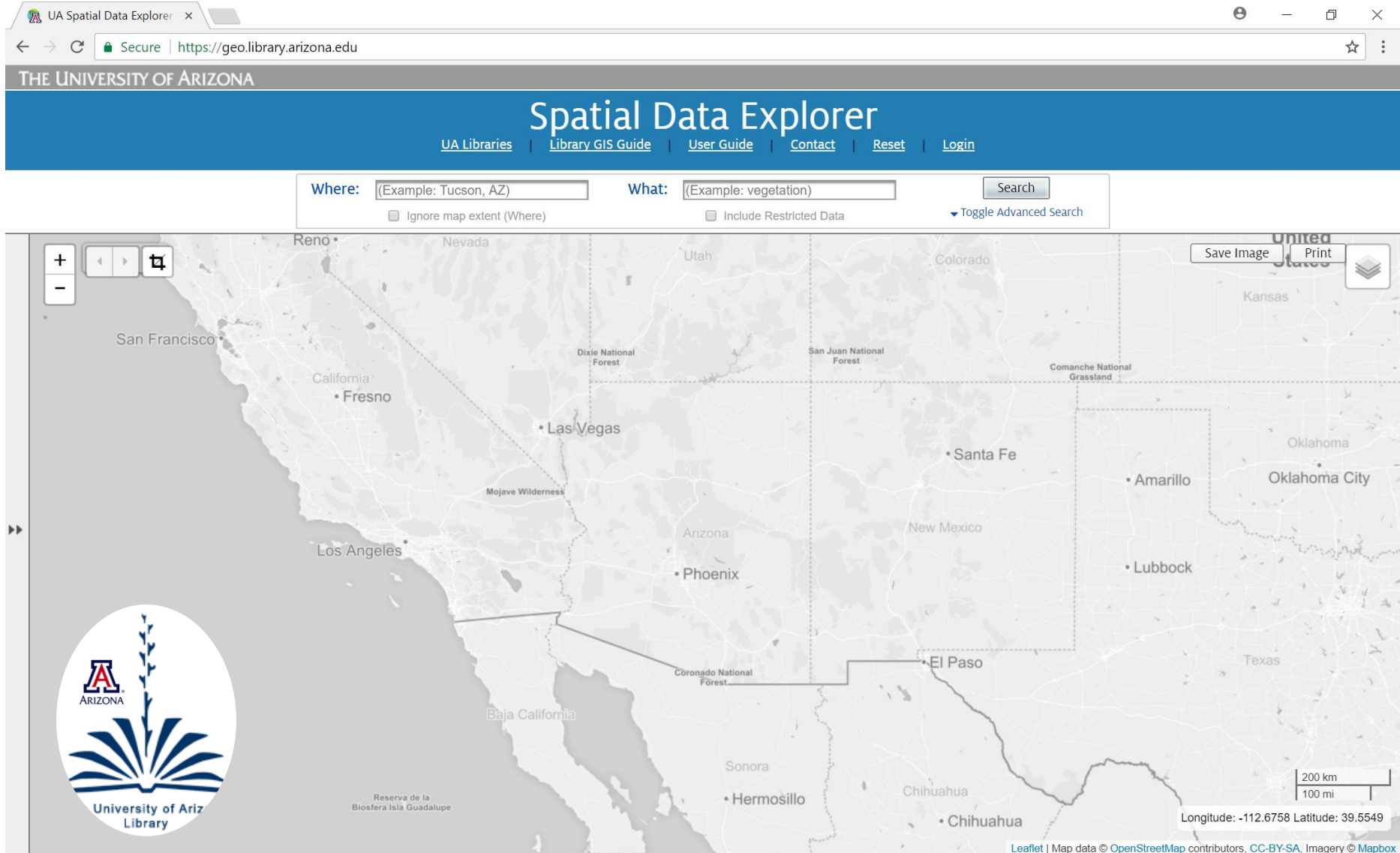
18
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2017

Types of Solar Photovoltaic Systems

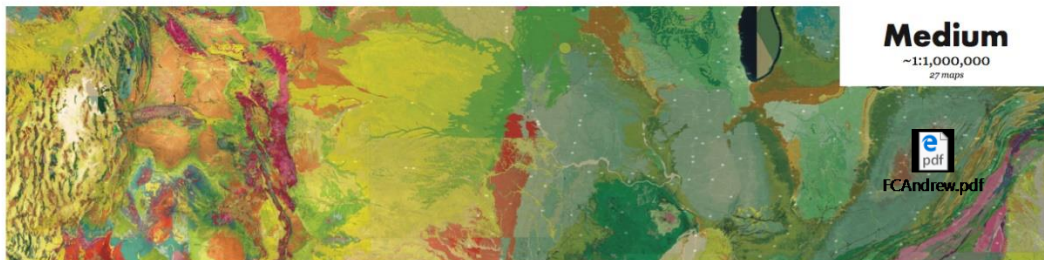
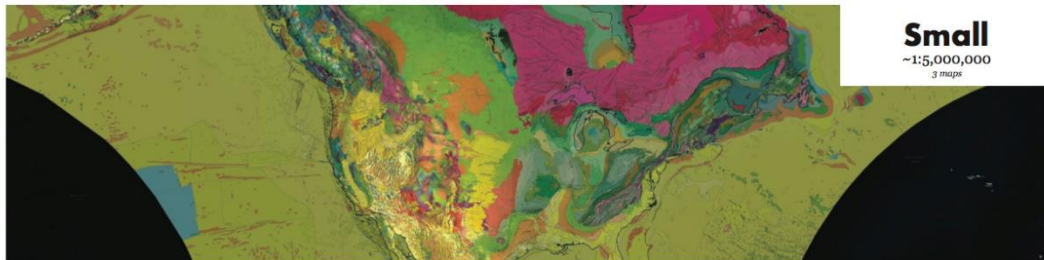
Franklin, Ed



Distribution: Multi-Path



Distribution: Multi-Path



<https://macrostrat.org/map>

Example: Rockd

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<https://rockd.org>



The dashboard presents the age, lithology, and name of the rock the user is currently standing on.

Data are dynamically assembled by querying and summarizing map and linked data.



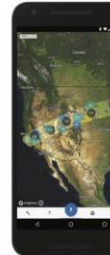
Map view gives local and regional context and exposes nearby user-contributed observations.

User interaction reveals detailed information and allows dynamic access to globally distributed data at multiple scales.



Example: Flyover Country

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flyovercountry.org



Choose a path or region of interest anywhere in the world.

Visualize geologic maps, fossil locations, physiographic points of interest, core samples, and more.

Save this information to your device for offline access, from 30,000 feet or a remote field area.



Identify and understand different landform types and the geologic processes behind them.

Explore field guides using an interactive map interface, supplemented by data from many sources.

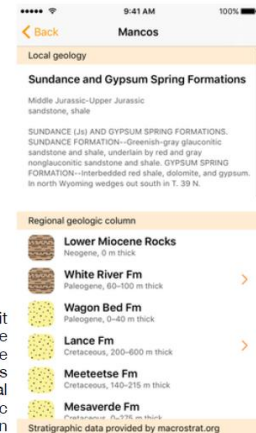


Example: Mancos

Download for iOS



The home screen displays a geologic map and the geology at the current location...



... tapping on it shows the details of the geology, plus the local stratigraphic column

Preservation: Multi-Format

ST_read

From [sf v0.1-1](#)
by [Edzer Pebesma](#) 88th
Percentile

Read Simple Features From File Or Database

read simple features from file or database

read PostGIS table directly through DBI and RPostgreSQL interface, converting wkb

Usage

```
st_read(dsn, layer, ...)  
  
st_write(sf, dsn = ".", layer, driver = "ESRI Shapefile", opts = character(), ...)  
  
st_read_pg(cn = NULL, query, dbname, geom_column = NULL, ...)
```

Arguments

- dsn** data source name (interpretation varies by driver - for some drivers, dsn is a file name, but may also be a folder)
- layer** layer name (varies by driver, may be a file name without extension)
- ...** parameter(s) passed on to [st_as_sf](#)
- sf** object of class `sf`
- driver** driver name
- opts** options to pass on to driver
- cn** open database connection
- query** SQL query to select records
- dbname** character; database name, only used if cn is `NULL`
- geom_column** character or integer: indicator of name or position of the geometry column; if not provided, the last column of type character is chosen

Contact Me

Complaints

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Compliments

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External Resources

- macrostrat.org
- postgis.org
- paleobiodb.org
- [github.org/azgs](https://github.com/azgs)
- geodeepdive.org
- mapzen.com