

2023-03-13 updates

Authorization

See authorization article.

- OAuth2 Client
- OAuth2 Code
- Username and password
- Token refresh for code auth

```
library(arcgis)
```

```
auth_client()
```

```
<httr2_token>
```

```
token_type: bearer
```

```
access_token: <REDACTED>
```

```
expires_at: 2023-03-13 17:19:58
```

```
auth_user()
```

```
<httr2_token>
```

```
token_type: bearer
```

```
access_token: <REDACTED>
```

```
expires_at: 2023-03-13 15:20:58
```

```
# auth_code() - requires interactivity
```

Layer Querying

Supports the following endpoint parameters:

- outFields
- where
- outSR
- filter for a single geometry (excluding MULTIPOLYGON)
- spatialRel to determine spatial binary predicate
- resultRecordCount the maximum number of records to return

```
# define the feature layer url
furl <- "https://services.arcgis.com/P3ePLMYs2RVChkJx/ArcGIS/rest/services/USA_Counties_Geometry/FeatureServer/0"

# create a feature layer
county_fl <- feature_layer(furl)

# create a geometry object
west_coast_bbox <- sf::st_as_sfc(
  sf::st_bbox(c(xmin = -125, ymin = 32, xmax = -114, ymax = 49))
)

# spatial filter query
res <- query_layer(
  county_fl,
  fields = c("state_name", "population"),
  where = "state_name in ('California', 'Washington', 'Oregon', 'New Mexico', 'Wyoming')",
  filter_geom = west_coast_bbox,
  predicate = "intersects",
  n_max = 100
)
```

Registered S3 method overwritten by 'jsonify':

```
method      from
print.json  jsonlite
```

```
res
```

Simple feature collection with 100 features and 2 fields

Geometry type: MULTIPOLYGON

Dimension: XY

Bounding box: xmin: -124.7328 ymin: 32.53578 xmax: -114.1252 ymax: 48.54227

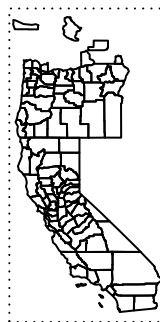
Geodetic CRS: WGS 84

A tibble: 100 x 3

	STATE_NAME	POPULATION	geometry
* <chr>	<int>	<MULTIPOLYGON [°]>	
1	California	1682353	(((-121.4721 37.47772, -121.8587 37.47649, -121.9145 3~
2	California	1204	(((-120.0152 38.43224, -120.05 38.44816, -120.0714 38.~
3	California	40474	(((-120.9838 38.22236, -121.0162 38.29933, -121.0163 3~
4	California	211632	(((-121.6148 39.30518, -121.8968 39.30258, -121.8822 3~
5	California	45292	(((-120.6423 37.82521, -120.9193 38.07883, -120.9838 3~
6	California	21839	(((-122.3475 38.9245, -122.4086 38.9736, -122.4093 39.~
7	California	1165927	(((-122.3076 37.89176, -122.3715 37.90935, -122.3797 3~
8	California	27743	(((-123.6481 41.37431, -123.7648 41.37502, -123.7653 4~
9	California	191185	(((-121.0163 38.50527, -121.1123 38.71713, -121.1248 3~
10	California	1008654	(((-120.6636 36.27876, -120.6663 36.30001, -120.6549 3~

... with 90 more rows

```
plot(res$geometry)
plot(west_coast_bbox, lty = 3, add = TRUE)
```



Modifying feature layers

- Add features: `add_features()`
- Delete features: `delete_features()`
 - supports where clause, `filter` geometries using predicates, or vector of object IDs
- Update features: `update_features()`

Basic image layer

- create an `ImageServer`

```
landsat <- image_server(  
  "https://landsat2.arcgis.com/arcgis/rest/services/Landsat/MS/ImageServer"  
)  
  
landsat
```

<ImageServer <11 bands, 26 fields>>

Name: Landsat/MS

Description: Multispectral Landsat image service covering the landmass of the W

Extent: -20037507.07 20037507.84 -9694091.07 9691188.93 (xmin, xmax, ymin, ymax)

Resolution: 30 x 30

CRS: 3857

Capabilities: Catalog,Image,Metadata

- export image to R session as terra

```
bbox <- sf::st_bbox(c(xmin = -71, ymin = 43, xmax = -67, ymax = 47.5), crs = 4326)  
  
res <- query_imagery(landsat, bbox, width = 500, height = 500)  
  
terra::plotRGB(res, 4, 3, 2, scale = 10000)
```

