USE CASE 01: Fish abundances from AODN RLS collection

SCOPE: As **Reef Outlook** I need **total reef fish abundance** per **GBR administrative region** at **5km² aggregates** per **year**

REQUIRES: python: geopandas

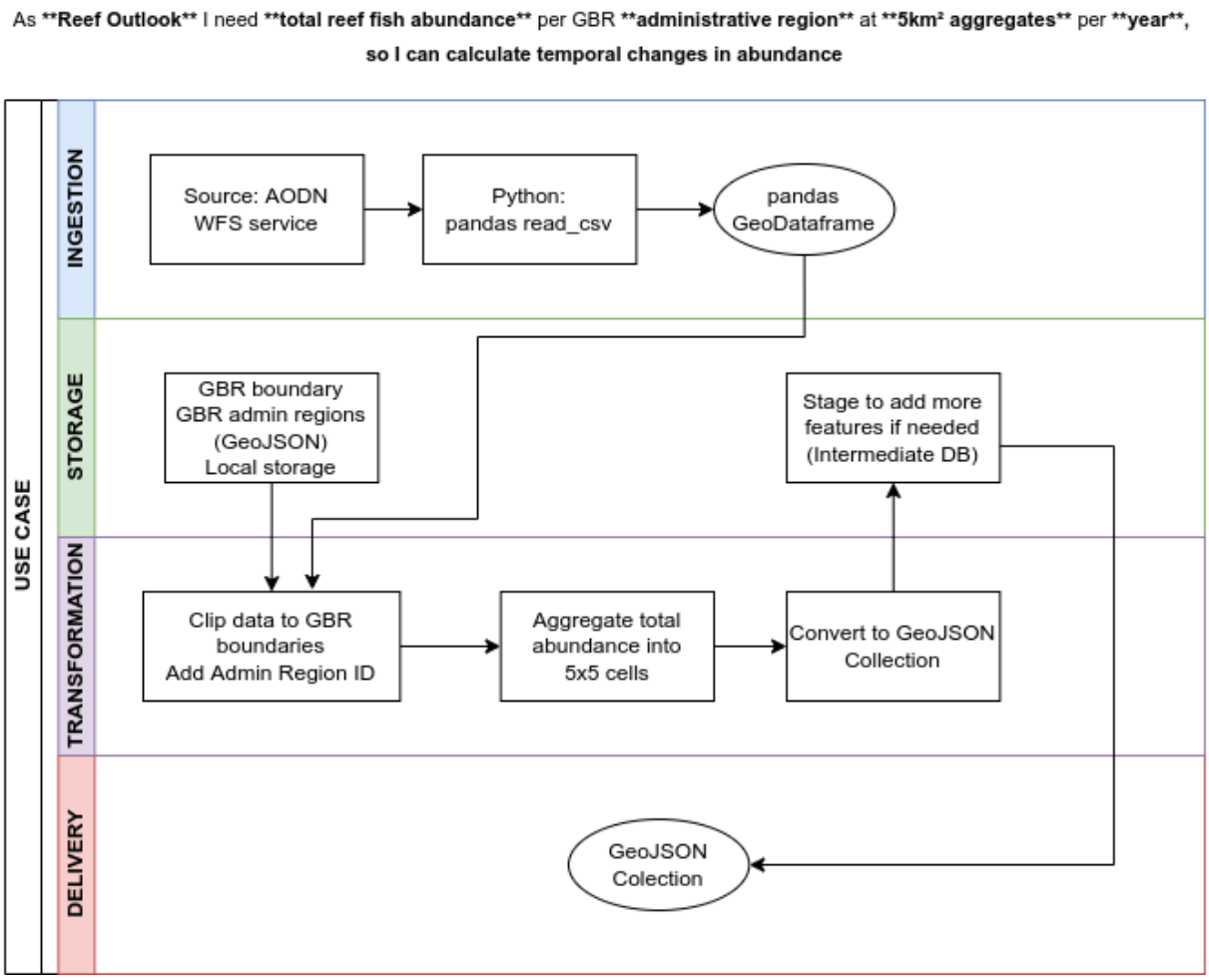
STORAGE: GBR boundary and GBR administrative layers are stored locally as GeoJSON. Local stage for results, if want to combine with other queries

RETURN: GeoJSON feature collection with adminID, year, cell center coordinates, total abundance, total biomass

WORKFLOW:

1. Collect RLS fish abundance data from AODN WFS service "https://geoserver-portal.aodn.org.au/geoserver/ows?typeName=imos:ep_m1_public_data&SERVICE=WFS&outputFormat=csv&REQUEST=GetFeature&VERSION=1.0.0&CQL_FILTER=(ecoregion%20LIKE%20'Coral%20Sea')"
2. Clip data to GBR region and add administrative region attributes
3. Aggregate total abundance per year at 5x5km squares
4. Save the GeoJSON collection

WORKFLOW DIAGRAM:



SAMPLE CODE:

https://gist.github.com/diodon/6a4a2787b82e1c79571feb5039417514

SAMPLE OUTPUT:


```
{
  "type": "FeatureCollection",
  "features": [
    {
      "id": "0",
      "type": "Feature",
      "properties": {
        "UNIQUE_ID": "MGMT_1",
        "biomass": 802.4795713513514,
        "index": 0,
```

```
        "latBin": -23.225,
        "level_0": 0,
        "lonBin": 150.925,
        "total": 74.03783783783784,
        "year": 2010
      },
      "geometry": {
        "type": "Point",
        "coordinates": [
          150.925,
          -23.225
        ]
      }
    },
    {
      "id": "1",
      "type": "Feature",
      "properties": {
        "UNIQUE_ID": "MGMT_1",
        "biomass": 344.9927512077295,
        "index": 1,
        "latBin": -23.225,
        "level_0": 1,
        "lonBin": 150.975,
        "total": 14.038461538461538,
        "year": 2010
      },
      "geometry": {
        "type": "Point",
        "coordinates": [
          150.975,
          -23.225
        ]
      }
    },
…
    }
    ]
}
```


SAMPLE MAP:

Plotted in QGIS using the GeoJSON output

(size of the circle proportional to total abundance. Orange diamonds survey sites)