Feedbacks on implementing VO standards in Aladin Lite in the frame of SKA

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IVOA Sydney - - 20th of May 2024

Exploring the SKA dataset through Aladin Lite

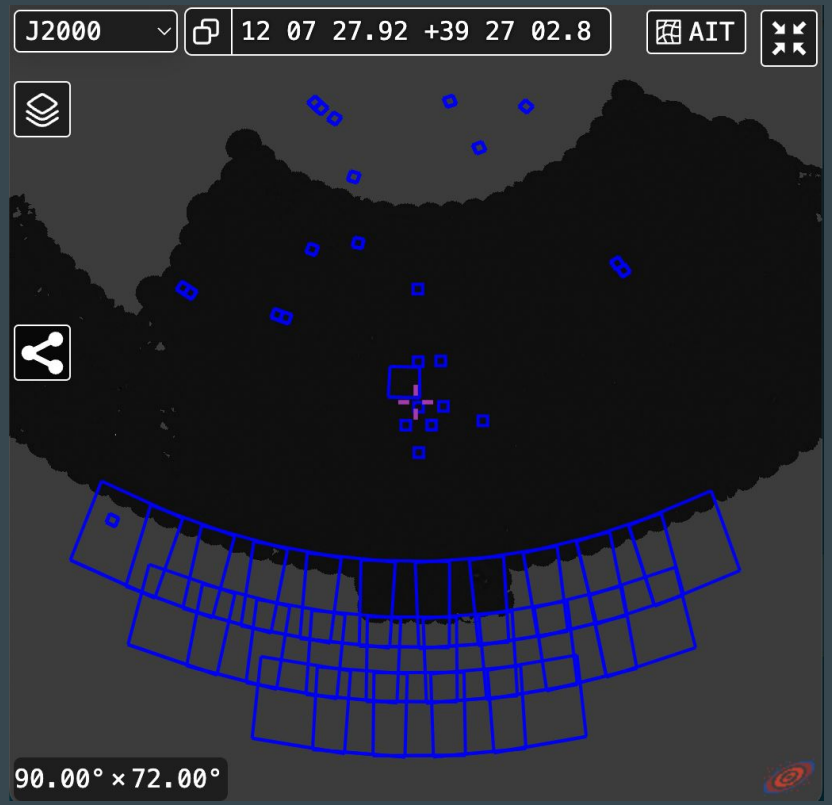
1. **Query** the **SRCNet discovery service** with a position/radius (cone)
2. Get back an **ObsCore** table storing dataset **metadata**: position, footprint (STC-S region), data type (image, cube, spectra…),
3. Links to **Datalink** table for related data/services:
    a. Download the full dataset
    b. or a subset of it (query a SODA service)
    c. Visualize related dataset i.e. moment map HiPS, cubes

1. Query the SRCNet discovery service

- JS API: Query the service

```
aladin.addCatalog(
    A.catalogFromSKAORucio("m51", 90, {
        onClick: "showTable",
        hoverColor: "yellow",
    })
);
```

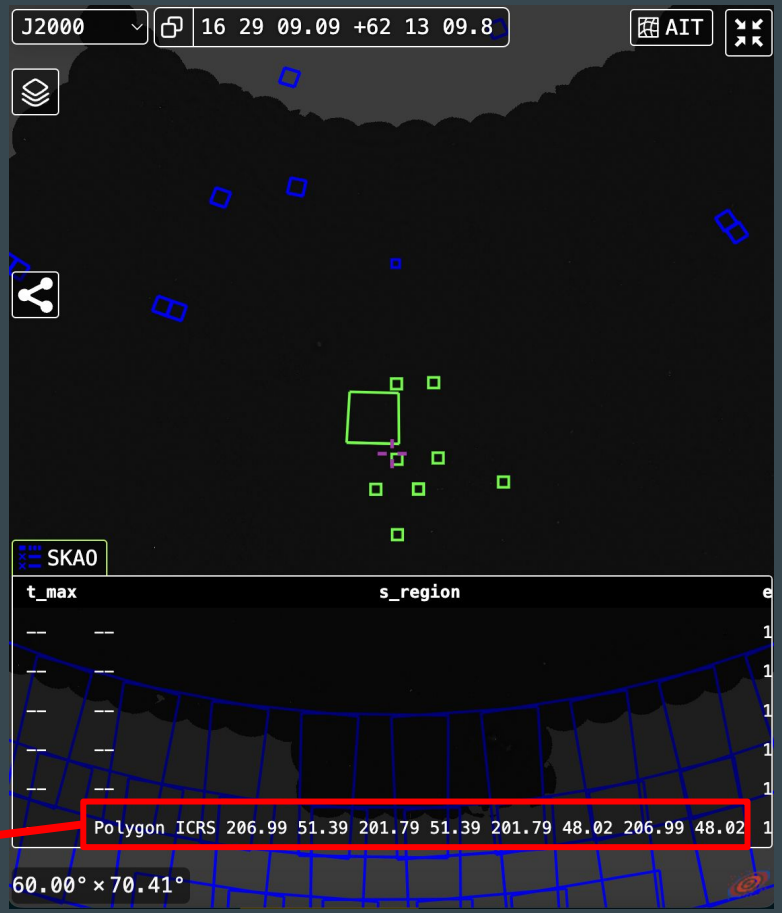
- Service URL: https://ivoa.dachs.srcdev.skao.int/rucio/rucio/cone/form



API doc: https://cds-astro.github.io/aladin-lite/A.html#.catalogFromSKAORucio

2. ObsCore VOTable display

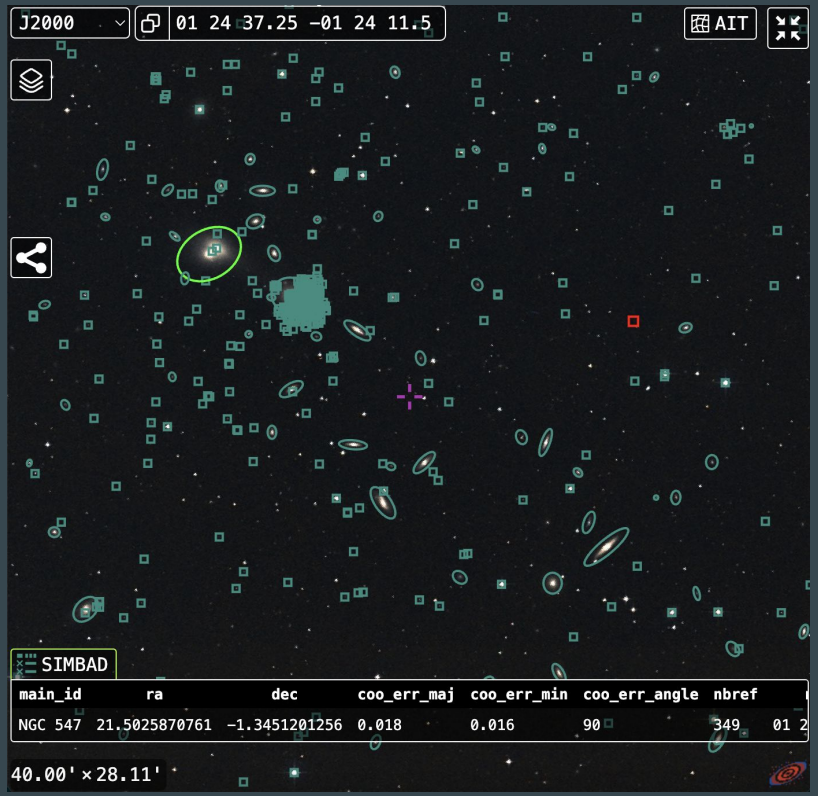
- **Footprint drawn** when `**s_region**` is present
- More generally: Possible to associate a Footprint (Circle, Polygon, Ellipse, …) to any source of a catalog



STC-S footprint support

2. Example: SIMBAD HiPSCat with ellipse footprints

```
var hips = A.catalogHiPS(
 "https://axel.u-strasbg.fr/HiPSCatService/Simbad",
   {
       onClick: "showTable",
       name: "Simbad",
       color: "cyan",
       hoverColor: "red",
       shape: (s) => {
           let galaxy =
["Seyfert","Gin","StarburstG","LINER","AGN","Galaxy
"].some((t) => s.data.main type.indexOf(t) >= 0);
           if (!galaxy) return;
           // draw a point source if not a galaxy
           let a = +s.data.size maj; // major axis
           let b = +s.data.size_min; // minor axis
           let theta = +s.data.size angle || 0.0;
           return A.ellipse(s.ra, s.dec,
              a / 60, // arcmin to deg
              b / 60, theta, // arcmin to deg
              { color: "cyan" }
           );
       },
   }
);
aladin.addCatalog(hips);
```



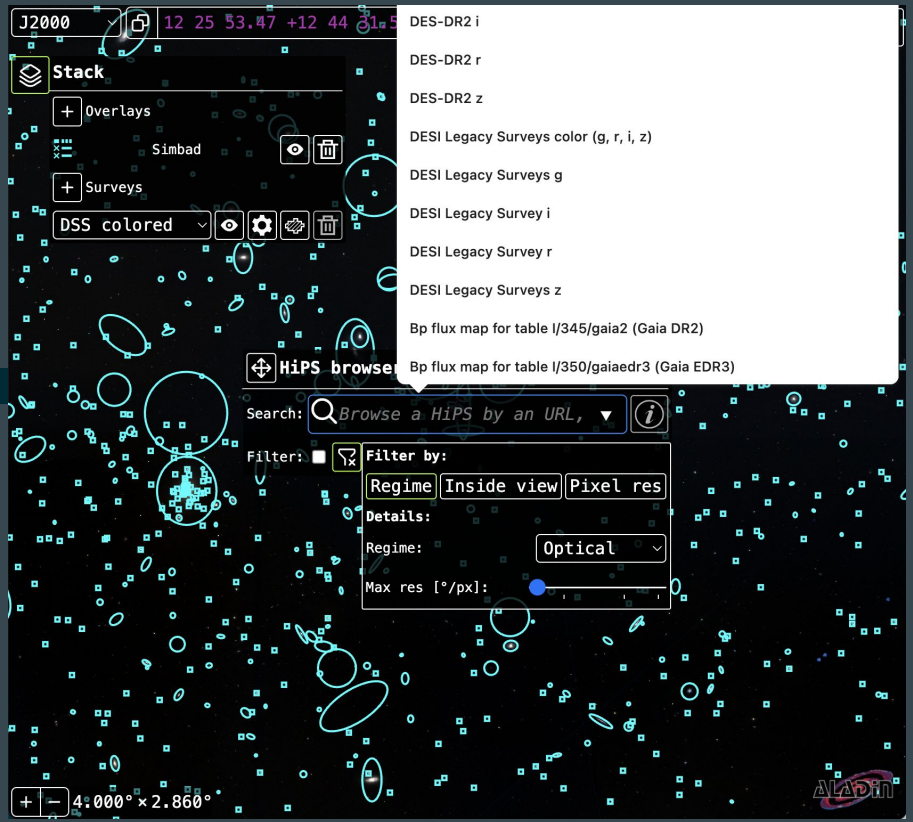
3. Demo: Datalink support for accessing related dataset/services

1. Proper motion display around LMC
2. UI: new search box, HiPS browser box + filter box: spatial, pixel angular resolution, obs regime
3. Datalinks for discovering SKA dataset:
   a. Moment zero HiPS around Abell 194 access
   b. On the fly HiPS generation service access (see Thomas Boch's ASOV 2024 talk): https://alasky.cds.unistra.fr/onthefly-cube-hips/

Other misc developments

- JS API: **new hipsList** option keyword

```
let aladin = A.aladin("#aladin-lite-div", {
    fullScreen: true,
    target: "M51",
    fov: 90,
    projection: "AIT", // Hammer-Aitoff rendering
    hipsList: [ // Some predefined HiPS surveys
        // Radio
      "CDS/P/MeerKAT/Galactic-Centre-1284MHz-StokesI",
      "CSIRO/P/RACS/low/I",...
    ],
});
```



- MOC drawing
- New API documentation (W.I.P): https://cds-astro.github.io/aladin-lite/

Feedbacks

- ObsCore: Links in SKA discovery service not accessible: **authentification required (403 forbidden)**, same **obs_publisher_did,** difficulty to keep the rucio datalinks alive (502 bad gateway)
- **CORS** issues found at many levels: accessing FITS, HiPS tiles, datalink tables, SODA services… => as a recommendation somewhere in DALI ?
- Datalink impl in Aladin Lite not user friendly, find a way to enhance user experience, deal with recursive datalink
- We appreciate collaboration: https://github.com/cds-astro/aladin-lite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Thank you!


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