

INTERNATIONAL VIRTUAL OBSERVATORY ALLIANCE
US National Virtual Observatory

Observation Data Model Data Products and Observations

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Dataset Types

- **Data products**
 - Limited to science-ready data products
 - Individually accessible archive files
 - High level products (images, spectra, etc.) or instrumental data
 - Can be associated to describe an observation
- **Observations**
 - Instrumental data (level 0–1)
 - Contents are instrument-specific
 - Requires client knowledge of instrument to process
 - Internal structure not described at level of ObsCore
- **Data Linking**
 - Can be used to link to additional non-science data products or other resources such as services or processing tasks.

Data Product Metadata

- **Collection (obs_collection)**
 - Data collection, e.g., instrument or survey
- **Data Product Type (dataproduct_type)**
 - The type of science data product being described
- **Calibration Level (calib_level)**
 - The overall processing level of the dataset (0,1,2,3)

Data Product Metadata

- **Observation ID (obs_id)**
 - Unique ID for an "observation".
 - If multiple data products they share the same Obs_ID
- **Publisher Dataset Identifier (obs_publisher_id)**
 - Unique ID for an individual data product
- **Access Format (access_format)**
 - Astronomy-specific file type
- **Estimated Dataset Size (access_estsize)**
 - Approximate estimate of dataset size

Data Product Type

- **Concept**

- Some standard types are predefined
- Data provider can extend this list to describe their local data
- Search with "image.*", "image.cube.*" etc.
- Search is by prefix, keyword, or entire dataproduct_type

- **Image**

- Image.2DSkyImage, Image.2D, Image.Longslit
- Image.Cube, Image.Cube.Spectral, Image.Cube.Time, etc.

- **Spectrum**

- Spectrum.1D, Spectrum.SED, Spectrum.Echelle, Spectrum.IFU, etc.

Data Product Type

- **TimeSeries**
 - TimeSeries, TimeSeries.LightCurve
 - TimeSeries.RadialVelocity, etc.
- **Visibility**
 - Visibility (radio) data
 - Normally instrument-specific
- **Event**
 - Event (high energy) data
 - Normally instrument-specific

Multi-Band Observation

- Collection SDSS-DR7
- Obs_Id sdss-274-51913-230
- Dataproduct_Type image.2D
- Target_Name NULL
- Calib_Level 2
- Access_Format fits.image (fits.mef, fits.image.gz, etc.)
- Access_Estsize 33.5 MB

- Image 1, Band=U appropriate em_min,em_max
- Image 2, Band=G appropriate em_min,em_max
- Image 3, Band=R appropriate em_min,em_max

- Other Char metadata is same for each image
- obs_publisher_did is different for each image
- access_url if provided is different for each image

High Energy Observation

- Collection ROSAT
- Obs_Id rosat-rh110590
- Dataproduct_Type event.rosat.hri
- Target_Name 3c273
- Calib_Level 1
- Access_URL <http://...>
- Access_Format directory
- Access_Estsize 21.7 MB
- No additional information at this level for the instrumental data products in the referenced directory (event list, HRI image, good time intervals, history, etc.).
- Char metadata describes the entire observation
- obs_publisher_did refers to the entire observation

Interferometer Observation

- **Collection** NRAO-EVLA
- **Obs_Id** evla-1254+324
- **Target_Name** 3c273

- **Visibilities**
 - Dataproduct_Type visibility.evla
 - Calib_Level 1
 - Access_URL http://...
 - Access_Format fits.uvfits (or ASDM, MS)
 - Access_Estsize 63 GB

- **2D Reference Image**
 - Dataproduct_Type image.2D
 - Calib_Level 2
 - Access_URL http://...
 - Access_Format fits.image

- **(etc.)**