

WGISS-53 STAC primer

What is STAC?

From <https://stacspec.org/>

The SpatioTemporal Asset Catalog (STAC) specification provides a common language to describe a range of geospatial information, so it can more easily be indexed and discovered. A 'spatiotemporal asset' is any file that represents information about the earth captured in a certain space and time.

The goal is for all providers of spatiotemporal assets (Imagery, SAR, Point Clouds, Data Cubes, Full Motion Video, etc) to expose their data as SpatioTemporal Asset Catalogs (STAC), so that new code doesn't need to be written whenever a new data set or API is released.

STAC is a way to describe data that can be described in terms of time and space. In its simplest form, a STAC catalog describes a set of STAC collections. Each STAC collection contains a set of STAC items. These entities correspond to our notion of providers, collections/datasets and granules/files.

It provides the specification of a STAC catalog and a STAC API. The STAC catalog can be a static description of data or, when used in conjunction with STAC API, the result of a search of one or more STAC catalogs.

It is a metadata and discovery standard that is becoming widely adopted in the earth science data domain, especially in the cloud computing environment.

STAC components

STAC has two major components: A way to represent metadata (STAC Catalog) and a way to search for and leverage the data associated with that metadata (STAC API)

STAC catalog

Metadata is described in JSON format in a hierarchical manner. There are three main components to a STAC catalog.

STAC catalog

A STAC catalog is a representation of a repository of data. A catalog may contain other catalogs or STAC collections. In CWIC, a provider would map to a STAC catalog.

<https://github.com/radiantearth/stac-spec/blob/master/catalog-spec/catalog-spec.md>

STAC collection

A STAC collection contains assets grouped by commonalities such as common instrument, measurement or area of interest. In CWIC, a collection/dataset would map to a STAC collection.

<https://github.com/radiantearth/stac-spec/blob/master/collection-spec/collection-spec.md>

STAC item

A STAC item is the finest granularity of STAC and can represent a single data file or files representing a certain point in time and space. In CWIC, a granule/file would map to a STAC item.

<https://github.com/radiantearth/stac-spec/blob/master/item-spec/item-spec.md>

STAC API

You can query a STAC catalog using the STAC API to filter results in a number of parameters. Some of the filter parameters in the base specification are as follows;

- Bounding Box
- Date time duration
- One or more collection IDs

The API supports HATEOAS for result set navigation and searching within collections from collection results.

The results of a STAC API query will be in the STAC catalog format.

<https://github.com/radiantearth/stac-api-spec>

STAC usage

[STACBrowser](#) can visualize and explore your metadata catalogs.

[pyStac](#) and [intake-stac](#) provide python libraries for the discovery and efficient access of data on the cloud.