STAC API Introduction

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STAC API

- Specification at https://github.com/radiantearth/stac-api-spec
- REST / JSON
- based on the STAC specification + extensions
  - it defines the “metadata language”
  - static catalogs
  - Collection + Catalogs + Items + Assets
- mostly based on / compatible to OGC API - Features
- STAC API Foundation
  - Core
  - Collections
  - Features
  - Item Search
- Extensions

STAC API - Core

- Defines the “landing page”
    - GET /
    - GET /conformance
    - …
- Basically a STAC catalog
    - + conformance classes (we mirror GET /conformance)
    - + specific links (e.g. collection overview, search, API documentation, etc)
- STAC-specific conformance classes
    - e.g. to differentiate between OGC API and STAC API

STAC API - Collections / Features

- basically OGC API - Features, but extended with STAC
  - GET /collections/…
  - GET /collections/…/items/…
- extensible
  - Filter (CQL2)
  - Query (simply STAC query language)
  - Fields (only return a subset of fields)
  - Sort
  - Transactions (CRUD for Features)
- Sort and Filter aligned with OGC APIs

STAC API - Item Search

- global search across all Items (Features)
    - GET /search
- extensible
    - Filter (CQL2)
    - Query (simply STAC query language)
    - Fields (only return a subset of fields)
    - Sort
    - Context (more info for e.g. pagination)
- Sort and Filter aligned with OGC APIs

Other Extensions

- API Versioning
- Children
- Organization for extensions: https://github.com/stac-api-extensions/

API Implementations

- List of APIs: https://stacindex.org/catalogs?type=api
  - good for experiments is e.g. Microsoft Planetary Computer
- Browse them with STAC Browser

Ecosystem

- List of software: https://stacindex.org/ecosystem
- Server implementations in Python, Scala, Node.js, PHP, …
  - good for experiments is e.g. stac-fastapi
- Client implementations in Python, C#, R, JavaScript, Scala, Rust, …
  - good for experiments is e.g. pystac-client (APIs) or pystac (static catalogs)
- Validators in Node.js, Python, … (limited for APIs)
- QGIS Plugin