Toitū Te Whenua
Land Information
New Zealand

Toitū Te Whenua LINZ Update

ANZ Metadata Working Group - Meeting 9

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7th October 2021

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Geospatial Data Management Strategy Review

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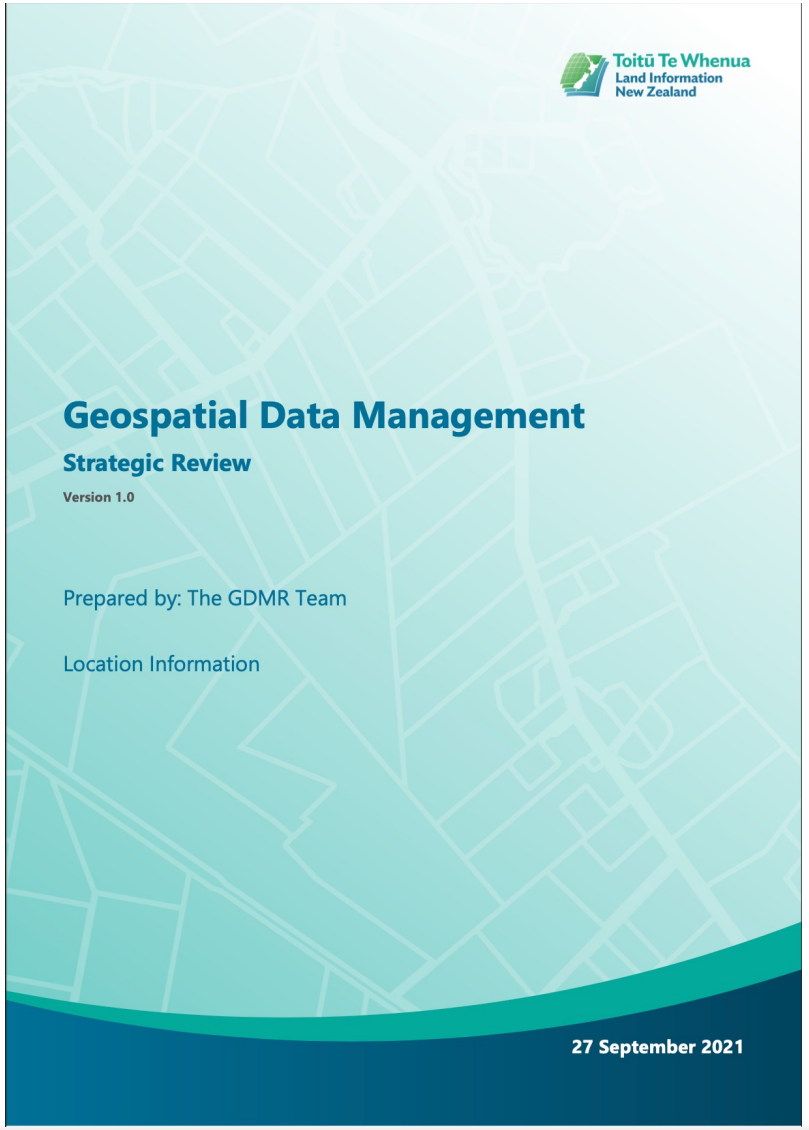
Goals

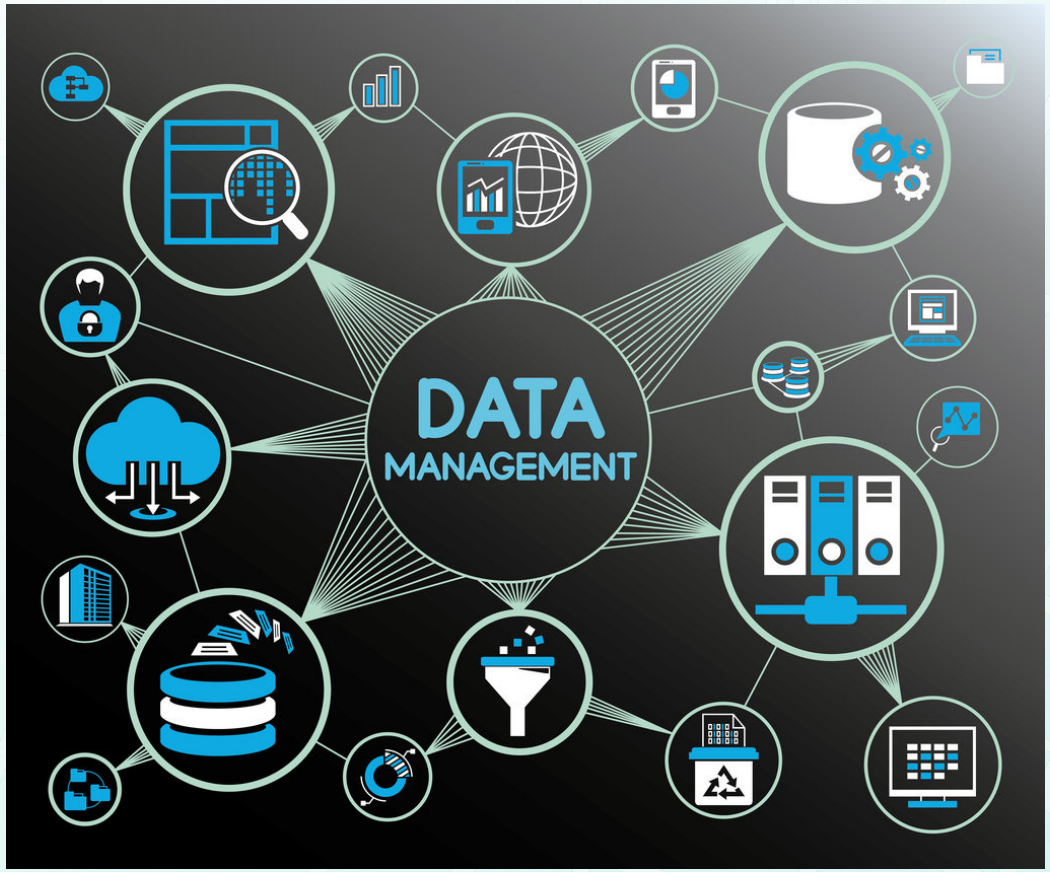
- Better data management
- Better customer value
- Improved way of work
- Cloud native systems
- Better intelligence



Background

- LINZ's systems organic growth
- Landscape developed by siloed projects
- Lack of enterprise investment
- Significant data management risk

Improving Data Management



- Data Governance
- Master Data Management
- Metadata Management
- Common Data Tools
- Data Supply
- Data Quality

Metadata Review

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Metadata Goals

- A need for modern standards
- Basic but extendable
- Community driven collaboration and improvement
- Support for cloud-based workflows
- Better internal management

Solution Epics

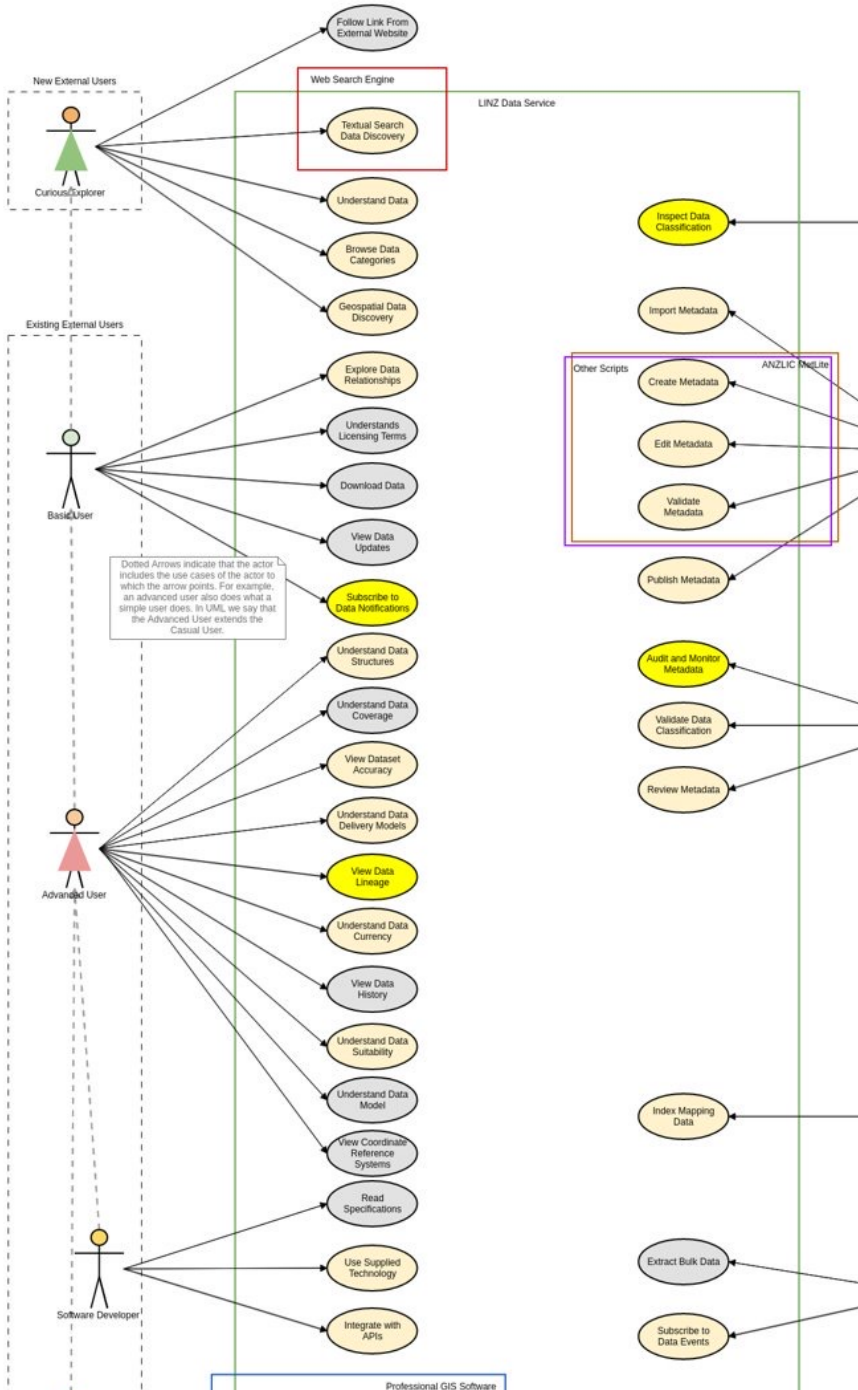
Redefined Internal Standards

Modern Publishing Standards

Central Metadata Catalogue

Metadata Management Requirements

- Engage with domain experts and consumers
- Inform metadata field specification
- Identify user roles
- Understand use cases



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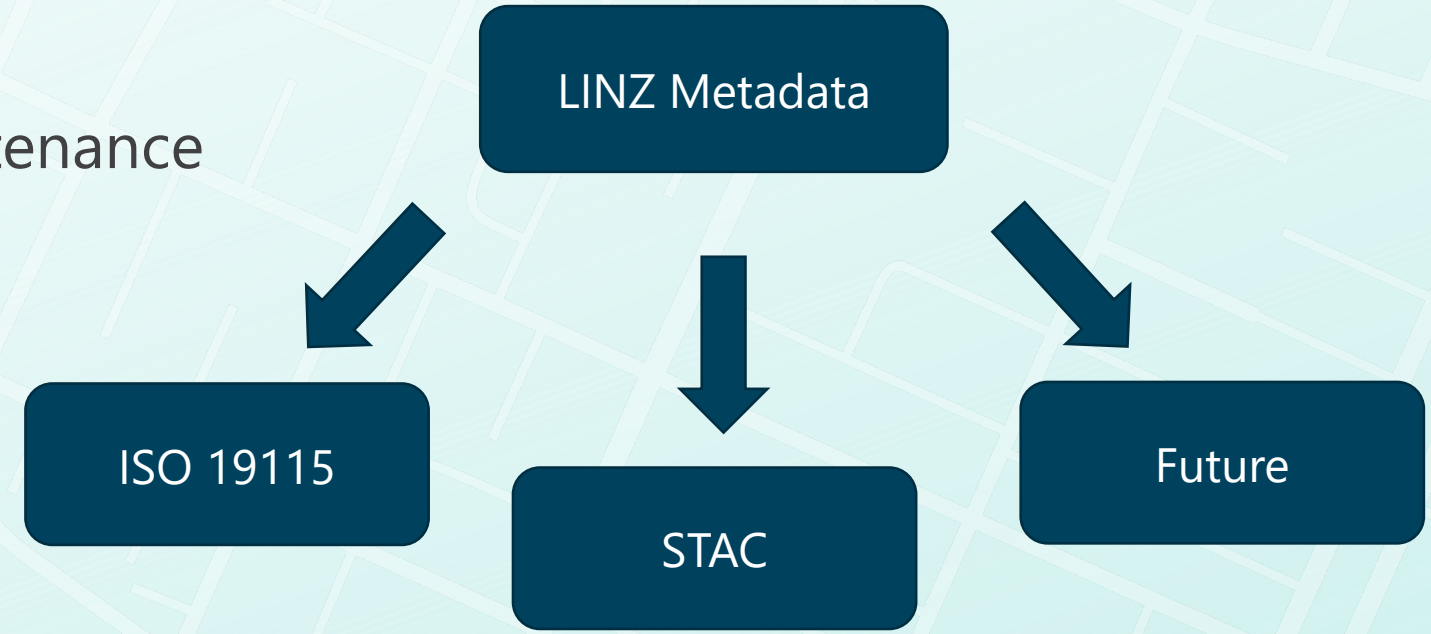
Internal Metadata Fields

- Simplify data management
- Maximise value
- Bridge legacy & future

Field	Internal	Published	Description	Example
Collection Identifier	MANDATORY ★	MANDATORY ★	Persistent unique identifier for the Collection. **Guidelines:** • The Identifier must never change, irrespective of where the dataset is stored. • Should be system generated.	`c75800c4-8157-11eb-8dcd-0242ac130003`
Collection Title	MANDATORY	MANDATORY	The name by which the Collection is known. **Guidelines:** • Same as dataset title field	`"NZ Aerial Imagery"` or `"Historic Aerial Photos (1939-2008)"` **Not recommended**: `"Historic Aerial Photos"` (when the date range is known)
Collection Description	MANDATORY	MANDATORY	Narrative summary of the content. **Guidelines:** • Same as dataset title field	**Recommended:** `"The NZ Aerial Imagery set provides a collection of all of the available aerial imagery for New Zealand. The collection is part of the National Imagery Coordination programme and contains rural and urban imagery from 2002 onwards"`

Metadata Publishing

- Internal specification to STAC
- Internal specification to ISO
- Smart defaults reduce maintenance



Central Metadata Catalogue

- **Productivity** – Quickly find and get access to data
- **Agility** – Collaboration across all LINZ's datasets and their metadata
- **Control** – A central location facilitates data governance
- **Consistency** – Same tool to manage all metadata
- **Discoverability** – Enable the searching across all datasets

Topographic Data Management Improvements

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Background

- LINZ did not hold a "master data" copy of all Aerial Imagery.
- Aerial Imagery data structure wasn't standardised.
- Data cleansing had to be completed in order to use Aerial Imagery.
- Metadata held in a table with a custom schema.
- Historic Aerial Photos and Elevation Data on hard drives in office.

Problems

LINZ needs to manage its own "master data" assets with standardised data formats, data structures and metadata.

Existing quality control, processing and publishing workflows often involve transferring large amounts of data using hard drives and specialised software or hardware.

Solutions

Improve metadata and master data management.

Solutions

Enable bulk data processing in the cloud.

Value Proposition

Creating easy, informative and consistent cloud based

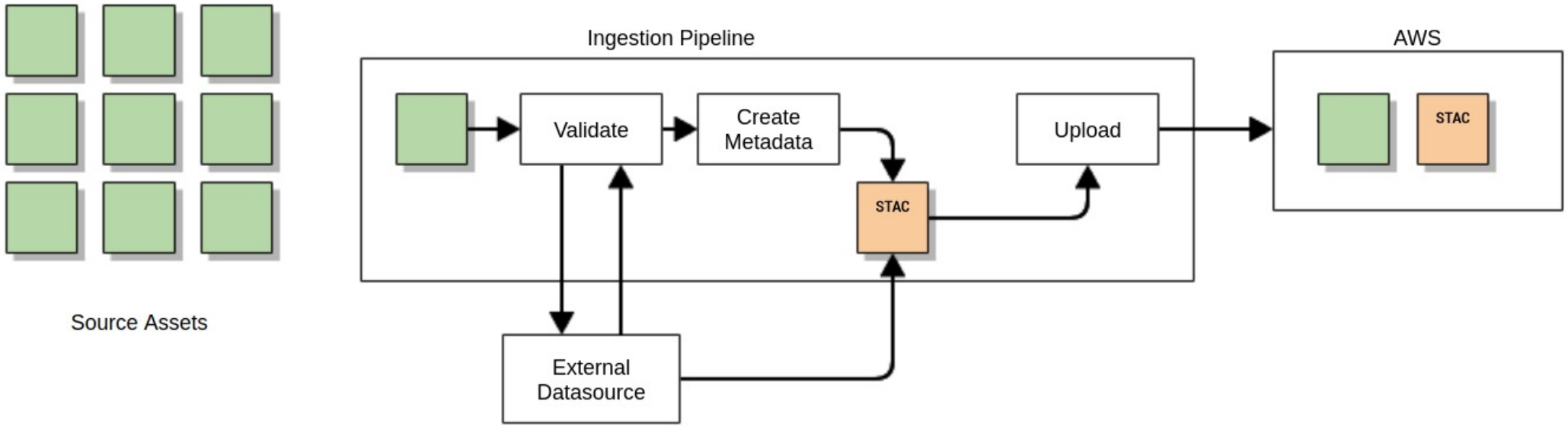
- metadata creation
- data transformation
- quality control / validation

workflows for topographic data.

Target Outcomes

- Secure our "master data" assets
- Standardise metadata creation
- Utilise cloud optimised data formats
- Automate existing processes where possible
- Shorten timeframes from data delivery to feedback or publishing
- Enable new derived products / innovation

Topo Processor Workflow



LINZ STAC Extensions

https://github.com/linz/stac

Aligned with https://stac-extensions.github.io

Schema and website soon to be available from stac.linz.govt.nz

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linz / stac Public

Unwatch 9 | Star 4 | Fork 0

Code | Issues 7 | Pull requests 2 | Discussions | Actions | Projects | Wiki | Security | Insights

master | 13 branches | 7 tags | Go to file | Add file | Code

billgeo Add more info to README (#83) 4d1b0a3 18 hours ago 77 commits

.github	build(deps): bump cachix/install-nix-action from 13 to 14 (#81)	2 days ago
extensions	Add more info to README (#83)	18 hours ago
.editorconfig	feat: Add editor configuration (#54)	13 days ago
.envrc	feat: Support Nix (#67)	3 days ago
.eslintrc.cjs	feat: unit testing with ospec (#76)	3 days ago
.gitignore	feat: Introduce STAC template (#9)	2 months ago
.kodiak.toml	feat: add kodiak toml file (#17)	2 months ago
.prettierrc.cjs	ci: create release pipeline (#30)	20 days ago
CHANGELOG.md	v0.0.7	3 days ago
LICENSE	chore: use license plain text (#19)	2 months ago
README.md	docs: Mention how to push branch and tag at the same time (...	18 hours ago
package.json	v0.0.7	3 days ago
shell.nix	feat: Support Nix (#67)	3 days ago
validate.sh	feat: Create aerial photography extension (#66)	10 days ago
yarn.lock	feat: unit testing with ospec (#76)	3 days ago

About

Toitū Te Whenua LINZ STAC extensions.

stacspec.org/

metadata

Readme

CC-BY-4.0 License

Releases 7

v0.0.7 Latest
3 days ago

+ 6 releases

Contributors 12

Environments 1

github-pages Active

README.md

Toitū Te Whenua LINZ STAC Extensions

The SpatioTemporal Asset Catalog (STAC) family of specifications aim to standardize the way geospatial assets are exposed online and queried.

This repository is for STAC Extensions that Toitū Te Whenua LINZ is working on. These may become STAC Community Extensions if other data managers find them to be useful.

Extensions

- Aerial Photography: Aerial photography details for photos.
- Camera: Camera details for photos.
- Film: Film details for photos.
- Historical Imagery: Aerial survey photos.
- LINZ: Toitū Te Whenua LINZ-specific settings.
- Quality: Dataset accuracy.
- Scanning: Scanning details for photos.

Collection Example

```
{
  "stac_version": "1.0.0",
  "stac_extensions": [
    "https://linz.github.io/stac/_STAC_VERSION_/linz/schema.json",
    "https://stac-extensions.github.io/version/v1.0.0/schema.json",
    "https://stac-extensions.github.io/projection/v1.0.0/schema.json"
  ],
  "type": "Collection",
  "id": "collection",
  "title": "A title",
  "description": "A description",
  "license": "Apache-2.0",
  "linz:created": "2015-06-23T00:00:00Z",
  "linz:lifecycle": "Under Development",
  "linz:providers": [
    {
      "name": "Example",
      "description": "Example description.",
      "roles": ["custodian"],
      "url": "https://www.exampleurl.com"
    }
  ],
  "linz:security_classification": "Unclassified",
  "linz:updated": "2015-06-23T00:00:00Z",
```

Collection Example cont.

```
25    "extent": {
26      "spatial": {
27        "bbox": [[172.9, 1.3, 173, 1.4]]
28      },
29      "temporal": {
30        "interval": [["2015-06-23T00:00:00Z", null]]
31      }
32    },
33    "summaries": {
34      "datetime": {
35        "minimum": "2015-06-23T00:00:00Z",
36        "maximum": "2019-07-10T13:44:56Z"
37      }
38    },
39    "links": [],
40    "quality:description": "Example quality description",
41    "quality:horizontal_accuracy": 1,
42    "quality:horizontal_accuracy_type": "Nominal",
43    "quality:lineage": "This is an example dataset lineage description.",
44    "version": "2.0.0",
45    "proj:epsg": 32659,
46    "proj:shape": [5558, 9559],
47    "proj:transform": [0.5, 0, 712710, 0, -0.5, 151406, 0, 0, 1]
48  }
```

Catalog Layout in AWS S3

```
s3://linz-elevation/dem/
├── catalog.json
├── 2020-wellington-city-1m/
│   ├── collection.json
│   ├── BP31_2020_1000_5044.tiff
│   ├── BP31_2020_1000_5044.json
│   ├── BP31_2020_1000_5045.tiff
│   ├── BP31_2020_1000_5045.json
│   ├── BP31_2020_1000_5046.tiff
│   └── BP31_2020_1000_5046.json
├── 2016-otago-1m/
│   ├── collection.json
│   ├── CB12_2016_1000_0147.tiff
│   └── CB12_2016_1000_0147.json
```

Thank you!