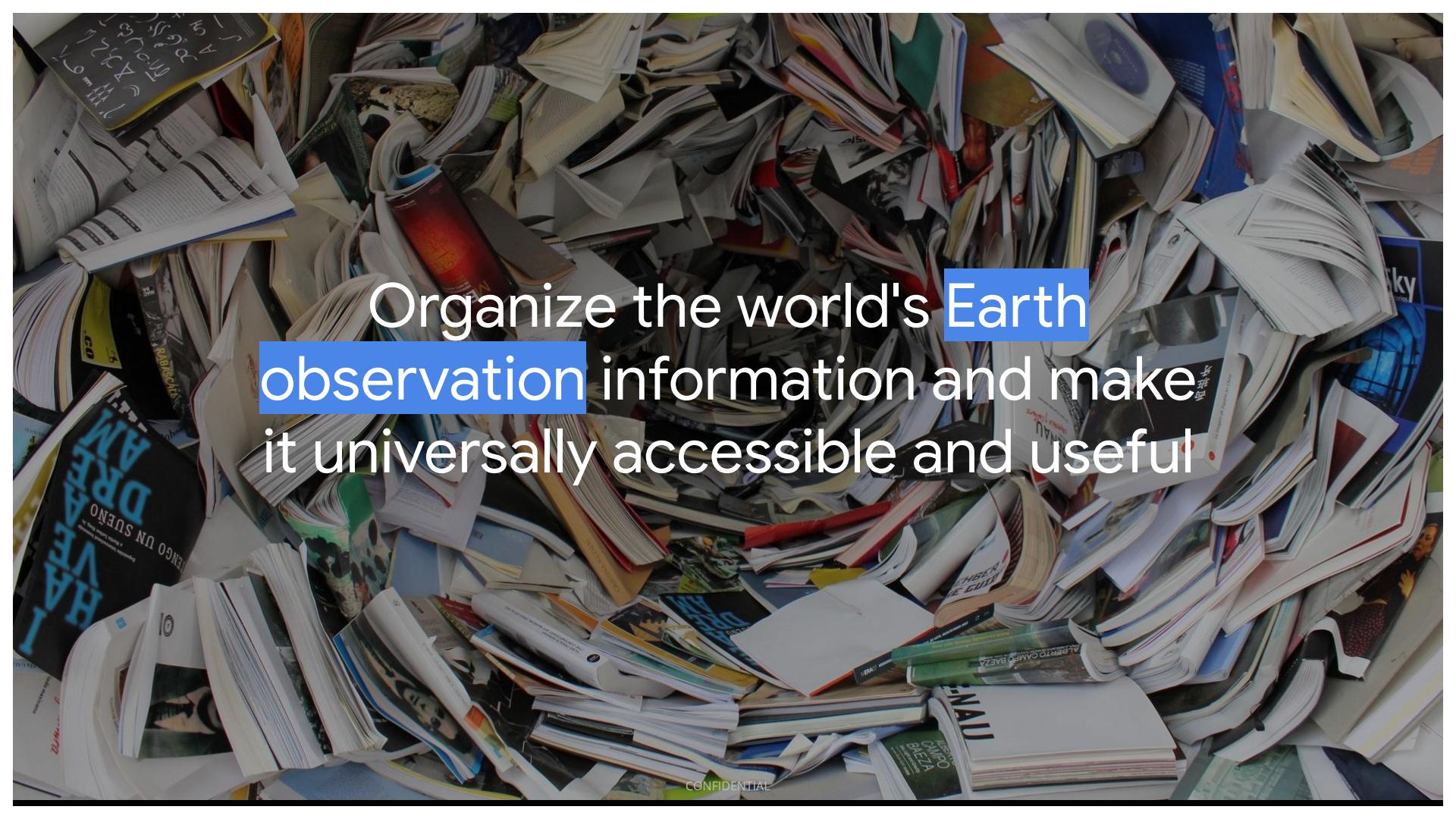




Google

Analysis to Impact

Chris Herwig, Google



Organize the world's Earth
observation information and make
it universally accessible and useful

What does impact mean to
you in your organization?

Who is your audience?

Audience

- Who is your intended audience?
- How should you frame your message to appeal to this audience?
- How should you distribute your message to reach this audience?
- What is your audience's technical ability and familiarity with topic of interest?
- What's in it for them?
- What types of communication does your audience expect?

What is analysis to impact?

Science

Contribute **knowledge** to existing academic discussion

Produce **datasets** to be used for new/related research

Policy

Decision-support tools

Audience-specific **dataset explorers** and viewers

Reports for decision makers

Tools and datasets to **support government workflows**

Content to support advocacy/lobbying

General public

Public-facing **consumer applications**

Science distilled into **digestible stories**

Global analysis ▷ **local stories**

Mainstream news outlets

Social media

Who is your audience?

How have you shared the
result of your analyses?

A dark silhouette of a person stands in the foreground, facing away from the viewer towards a vast, star-filled night sky. The stars are captured with long exposure, creating bright, glowing radial streaks that radiate outwards from the center, resembling a celestial sunburst or a black hole's accretion disk. The colors of the stars range from deep blues and purples to bright whites.

Google Tools

What is Earth Engine?



Data

An exhaustive catalog of remote sensing datasets, including multispectral, radar, aerial, climate, land cover, and vector.



Computation

Colocated data storage + computation



API

Simple, yet powerful JavaScript* API, with support for Python (and more to come)



Browser-based IDE

No software to download or keep up to date. All you need is a modest internet connection.

Sharing through Earth Engine

The screenshot shows the Google Earth Engine code editor interface. At the top, there's a browser-like header with a red, yellow, and green window control buttons, a gear icon labeled '*New Script - Earth Engine Co...', and a tab icon. Below this is a toolbar with back, forward, refresh, and home buttons, followed by a secure connection indicator and the URL <https://code.earthengine.google.com>.

The main area has a "Google Earth Engine" logo on the left and a search bar with the placeholder "Search places and datasets..." on the right.

The navigation bar at the bottom includes tabs for "Scripts" (which is selected), "Docs", and "Assets". To the right of the tabs are buttons for "Get Link" (which is highlighted with a red box), "Save", "Run", "Reset", and a gear icon.

The code editor itself displays a "New Script *" titled "ee.BLOB". It contains the following code:

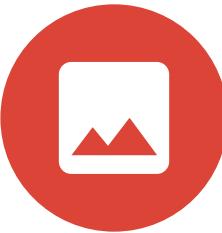
```
Imports (1 entry) ↗  
var table: Table users/herwig/eeus/google_shapefile  
Map.addLayer(table);
```

Sharing through Earth Engine

The screenshot shows the Google Earth Engine code editor interface. At the top, there's a browser-style header with a red box highlighting the URL bar which contains the URL <https://code.earthengine.google.com/b279dd78a2e2b2d72c1ad7dcdecc0877>. Below the header, the main interface has a blue header bar with tabs for "Scripts", "Docs", and "Assets". The "Scripts" tab is selected. On the left, there's a sidebar with a list of modules: "ee.BLOB", "ee.Classifier", "ee.Clusterer", "ee.ConfusionMatrix", and "ee.Date". The main workspace is titled "New Script *". It contains a single line of code: "Map.addLayer(table);". Above this code, there's an "Imports (1 entry)" section with a "var table: Table" entry. To the right of the workspace are buttons for "Get Link", "Save", "Run", and "Reset". A search bar at the top right says "Search places and datasets...".



Chart



Image



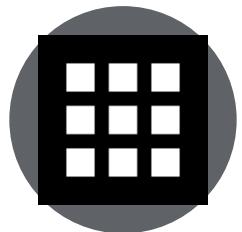
Map



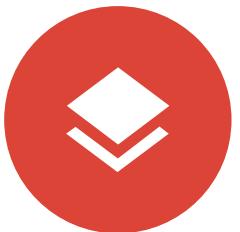
Video



Table



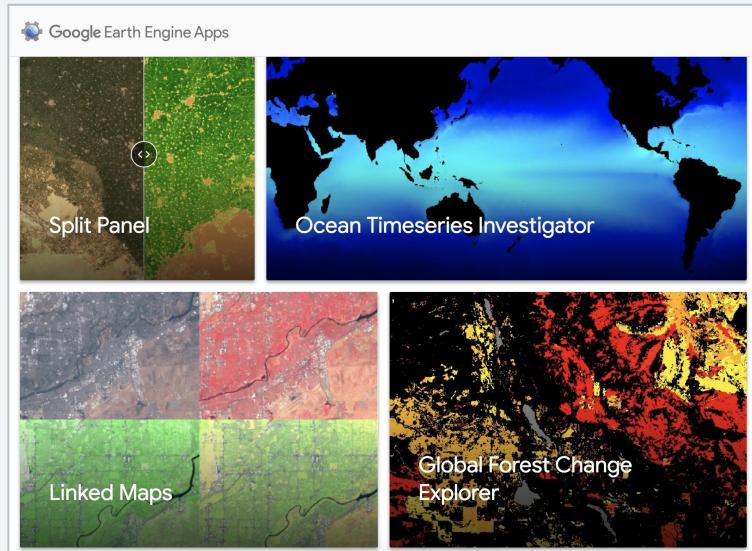
App



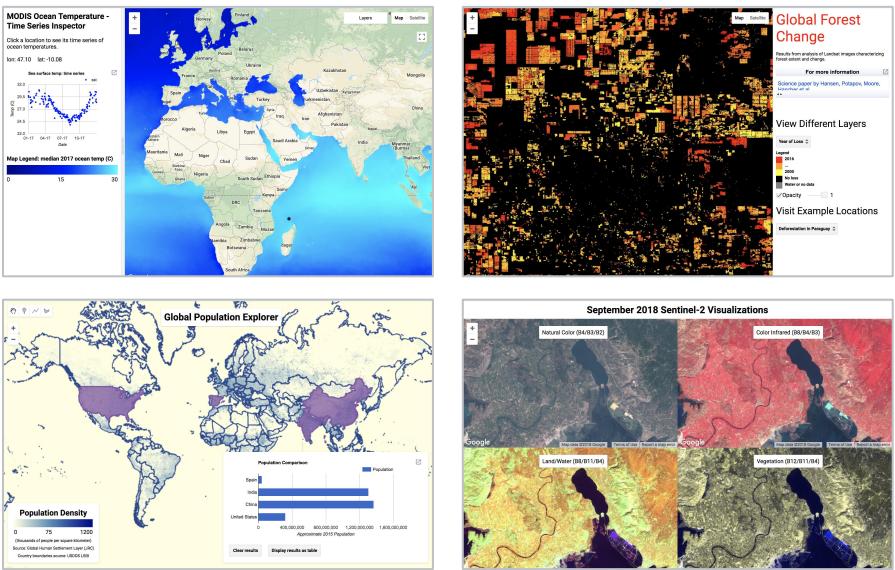
Earth Engine Asset

Earth Engine Apps

- Earth Engine Apps are **dynamic, publicly accessible user interfaces** for your analysis.
- You can share with whomever you like – **no Earth Engine account required**.
- You control what that viewport looks like, thanks to the broad suite of widgets, UI components, and interactivity tools built into the User Interface API.



<https://earthengine.app>



Earth Engine App

developers.google.com/earth-engine/apps

Publish New App

Owner

users/abcd ▾

App Name ?

Burning Bright

Your App ID will be burning-bright Edit ▾

Google Cloud Project API Key ?

[Click here](#) to create an API Key, and paste it below.

AlzaSyDTCBb8cLdtFgnpR2D2OzKufhPcp30d7Z4

URL: <https://abcd.users.earthengine.app/view/burning-bright>

Feature this app in your [Apps Gallery](#)

Reset Thumbnail

Description (Optional)



This app was created by me using Google Earth Engine. It maps changes on the Earth's surface at a global scale.

Source Code ?

Current contents of editor

Repository script path

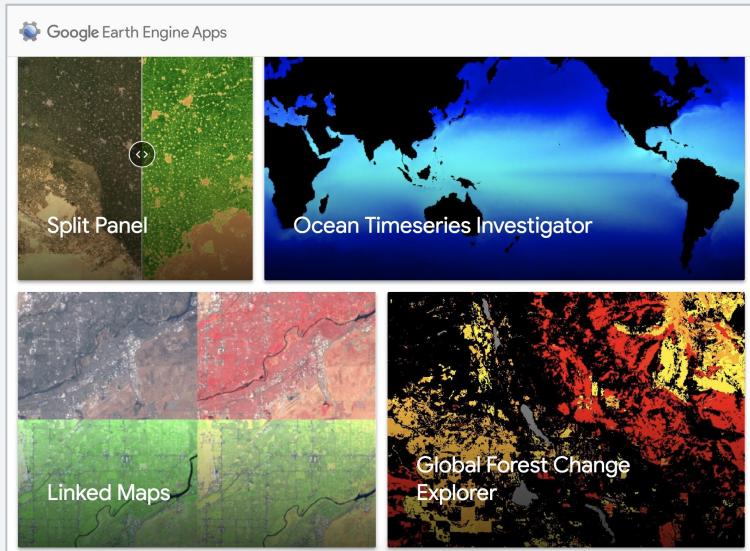
When an app is published, it's public, and anyone can view it. The published source code will be publicly readable. All assets must also be shared publicly for the app to display properly.

CANCEL

PUBLISH

Earth Engine Apps

- Apps work best for research and scientific collaboration specialized audiences, so please keep in mind that they may not scale well to wide audiences.
- Similar to Earth Engine's per-user quota, Apps have usage quotas on concurrent queries.
- App performance will depend on the computational intensity of the specific app, with simpler apps able to serve more concurrent users than complex ones.
- For more on quota and tips on how to optimize your App, check out the [Apps FAQ](#).



Export Map Tiles

- fileFormat: map tiles' format jpg/png/auto ["auto"]
- path: The string used as the output tiles prefix[task description].
- writePublicTiles: write public tiles or use bucket's default ACL. [true]
- maxZoom: maximum zoom level tiles to export
- scale: The max image resolution in meters per pixel, as an alternative to maxZoom
- minZoom: min map tile level to export. [zero]
- See [scale and zoom docs](#)

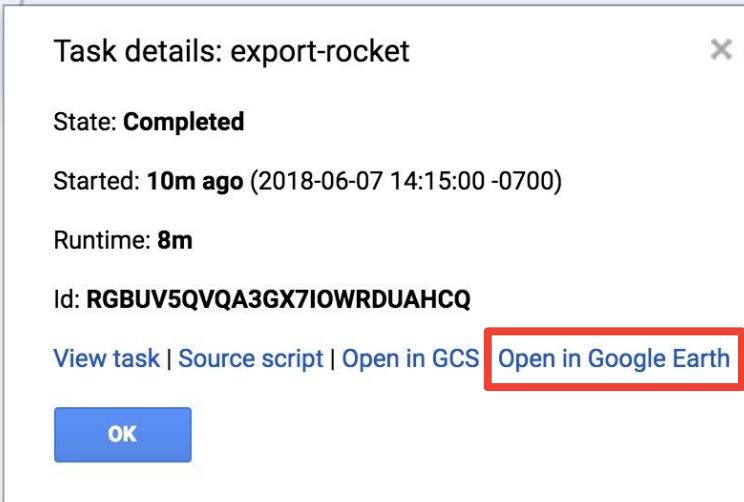
```
1 var image = ee.Image("users/herwig/eeus/rocket_tiled");
2 Map.addLayer(image)
3
4 var southBounds = ee.Geometry.Polygon([-180, 85, 0, 85, 179.998, 85, 179.998, -85, 0, -85]);
5
6 Export.map.toCloudStorage(
7   {
8     image: image,
9     bucket: 'herwig-export-tests',
10    description: 'export-rocket',
11    path: 'maps/20180118/rocket',
12    minZoom: 0,
13    maxZoom: 6,
14    region: southBounds,
15  })
})
```

export-rocket

RUN

export-rocket

✓ 8m





- +

Globe

Publish your results



Maps



Earth



Tour Builder



My Maps



Street View

Cloud + Maps Platform Credits Programs

Cloud: Geo for Good Cloud Credits Program:

g.co/earth/cloud-credits

Maps: Eligible nonprofits, startups, crisis response, and news media organizations may apply for Google Maps Platform credits through the following programs:

- Nonprofits can apply for [Google for Nonprofits](#)
- Startup organizations can apply to the [Google Cloud Startup Program](#)
- Crisis response organizations can learn more about our [Crisis Response efforts](#)
- News media organizations can learn more about the [Google News Initiative](#)

Sharing your data +Markup!

Provenance

Methodology + list any other data sources used

Access

Choose the right distribution method for your target audience.
EE Users? Earth Engine asset.
Cloud users? BigQuery public data, etc.

License

Include a license when you release your data. Open licenses, like Creative Commons, can encourage others to build on your work.

How do I make my data open?

The screenshot shows a web browser window with the title 'What is Open Data?' from 'opendatahandbook.org'. The page includes a sidebar with 'GUIDE' and a main content area with the heading 'What is Open Data?'. It lists languages available: de, el, en, es, fr, hr, id, is, it, ja, ko, lt, lv, my, ne, nl_BE, pt_BR, ro, ru, zh_CN, zh_TW. Below this, a text block states: 'This handbook is about open data but what exactly is it? In particular what makes open data open, and what sorts of data are we talking about?'. A section titled 'What is Open?' follows, with a note: 'This handbook is about open data - but what exactly is open data? For our purposes, open data is as defined by the [Open Definition](#):'. At the bottom, a quote is displayed: 'Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike.'

opendatahandbook.org



okfn.org

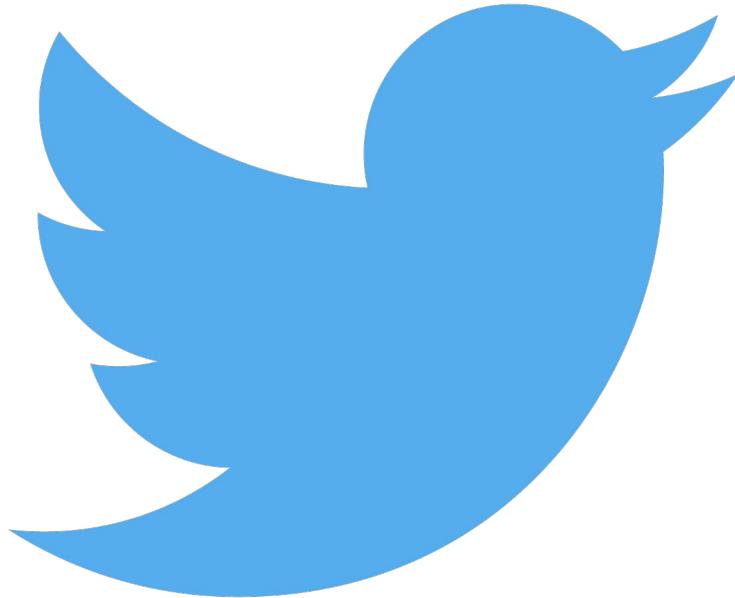
Google

Website markup for scientists and researchers

A brief introduction on using structured data to enhance the
findability of your datasets and other web content



Shareability



Twitter Cards



Google

Twitter Cards

<https://developer.twitter.com/en/docs/tweets/optimize-with-cards/overview/abouts-cards.html>



```
<meta name="twitter:card" content="summary" />
<meta name="twitter:site" content="@flickr" />
<meta name="twitter:title" content="Small Island Developing States Photo Submission" />
<meta name="twitter:description" content="View the album on Flickr." />
<meta name="twitter:image" content="https://farm6.staticflickr.com/5510/14338202952_93595258ff_z.jpg" />
```



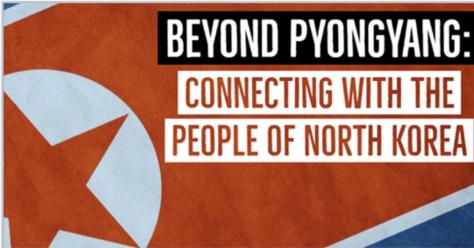
Facebook Open Graph Markup

2018 Google Earth Engine User Summit

Who: The summit is designed for mapping and technology specialists, researchers and instructors who are actively working on projects or teaching courses related to remote sensing or mapping. You will learn highly practical online tools to collect, analyze, visualize, and publish map data using Earth...

SITES.GOOGLE.COM

[Without OG markup](#)



Beyond Pyongyang: Connecting with the People of North Korea
— NATIONAL ENDOWMENT FOR DEMOCRACY

Beyond Pyongyang: Connecting with the People of North Korea June 13, 2018 8:30 am -
12:00 pm RSVP About the event As the world's attention has been focused on efforts of the...
NED.ORG

[With OG markup](#)

Facebook Open Graph Markup

<https://developers.facebook.com/docs/sharing/webmasters/#markup>



```
<meta property="og:url"
      content="http://www.nytimes.com/some-made-up-url" />
<meta property="og:type" content="article" />
<meta property="og:title" content="A made up article title" />
<meta property="og:description" content="A short description of
      said made up article" />
<meta property="og:image"
      content="http://static01.nyt.com/images/some-made-up-url/image.
      jpg" />
```

Validate your markup

Twitter card validator:

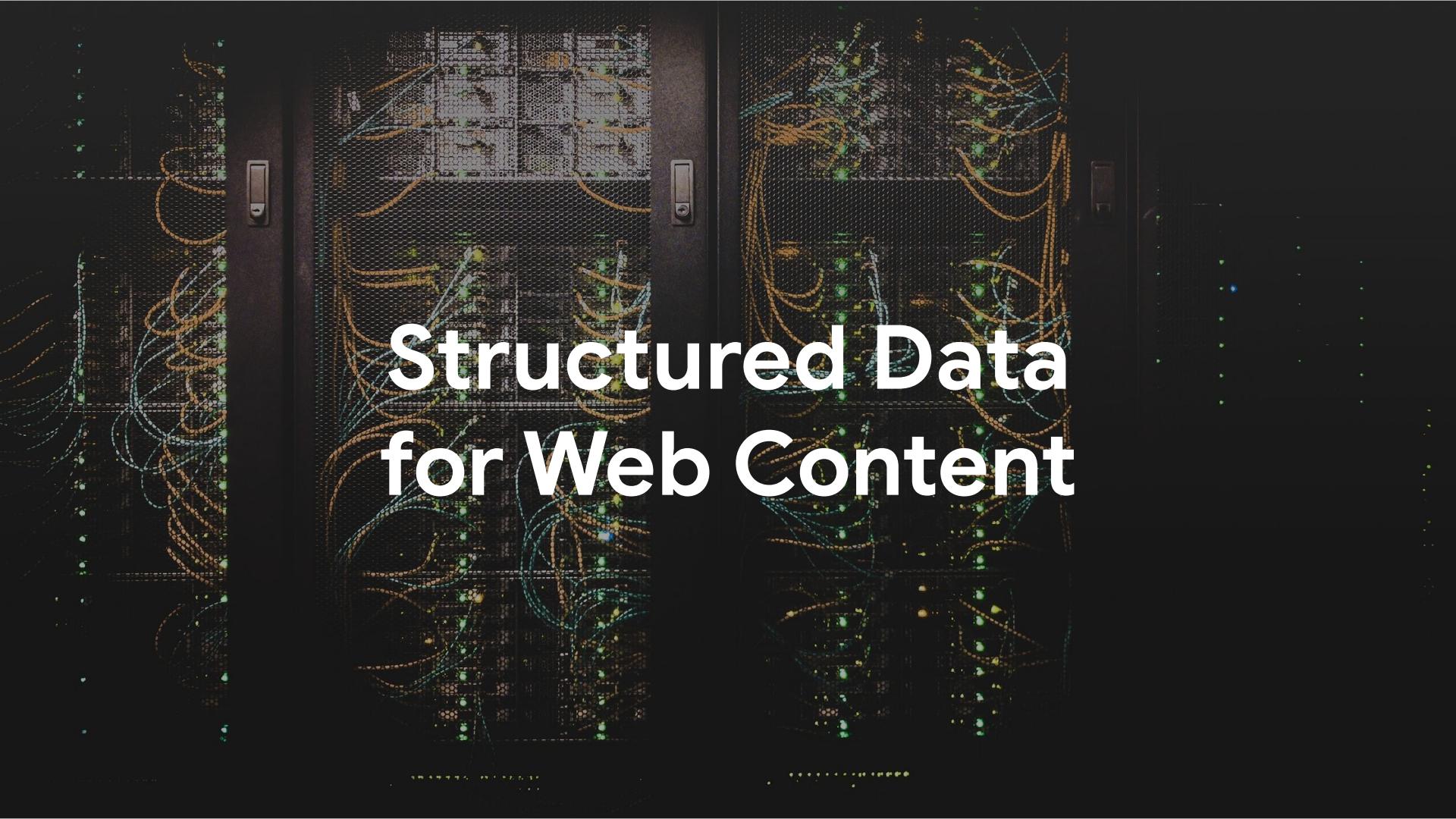
<https://cards-dev.twitter.com/validator>

Facebook markup validator:

<https://developers.facebook.com/docs/sharing/webmasters/#testing>

Google Structured Markup Testing tool:

<https://search.google.com/structured-data/testing-tool>

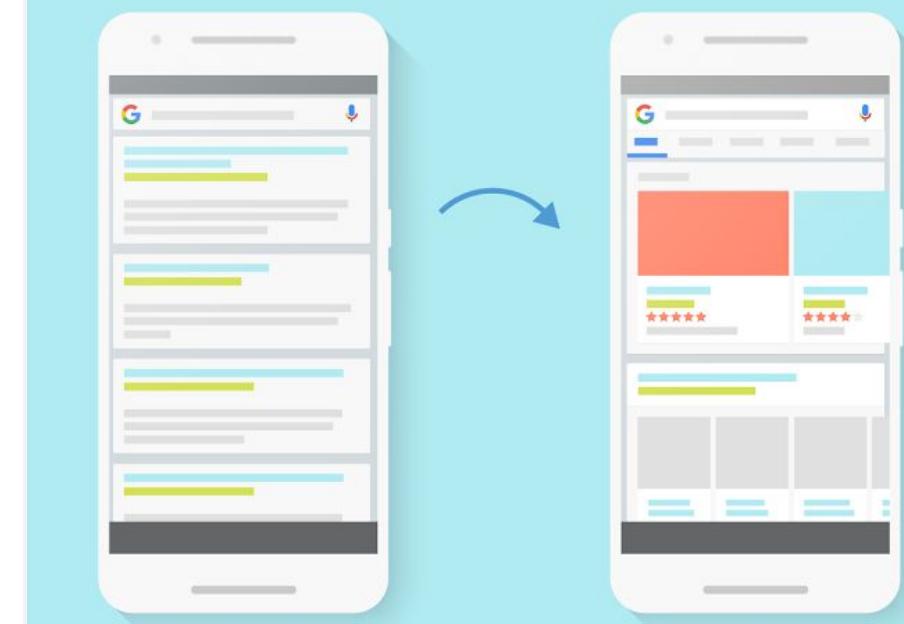


Structured Data for Web Content

What is structured data?

Search is evolving beyond ten blue links to bring your content to people in much richer and faster ways.

Structured data markup can drive users to your content and services with rich results on the Search results page.



What is structured data?

Explicit clues

Google Search works hard to understand the content of a page.

You can help us by providing explicit clues about the meaning of a page to Google by including structured data on the page.

Standardized format

Structured data is a standardized format for providing information about a page and classifying the page content.

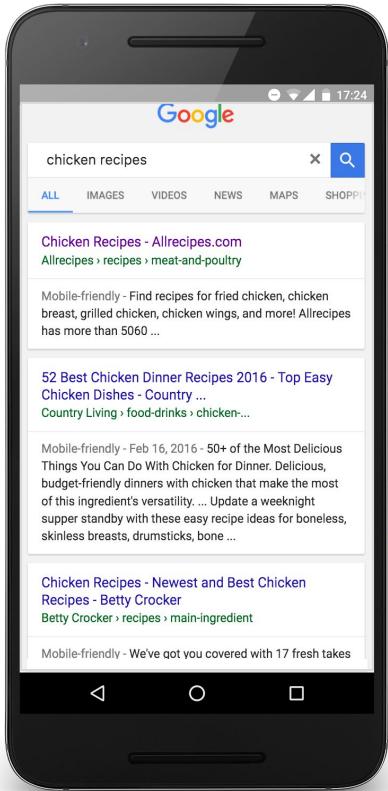
On a recipe page, what are the ingredients, the cooking time and temperature, the calories, and so on.

Richer understanding

Google uses structured data that it finds on the web to understand the content of the page, as well as to gather information about the web and the world in general.

Google Search also uses structured data to enable special search result features and enhancements.

Search Results

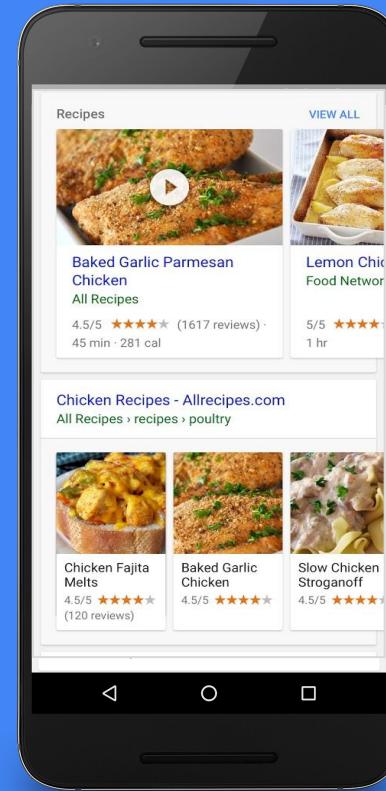


Before

Rich Cards

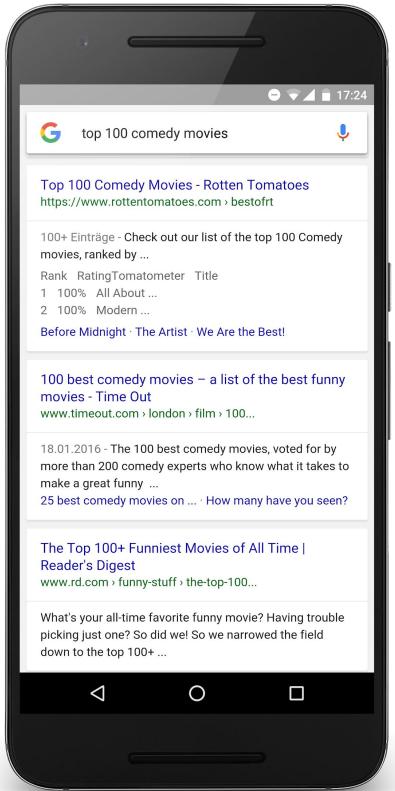
Recipe Rich Cards

Proprietary + Confidential



After

Search Results



Before

Google

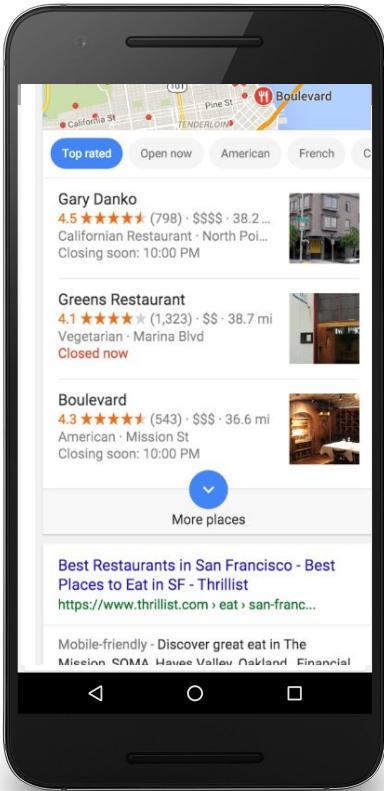
Rich Cards Movie Rich Cards

Proprietary + Confidential



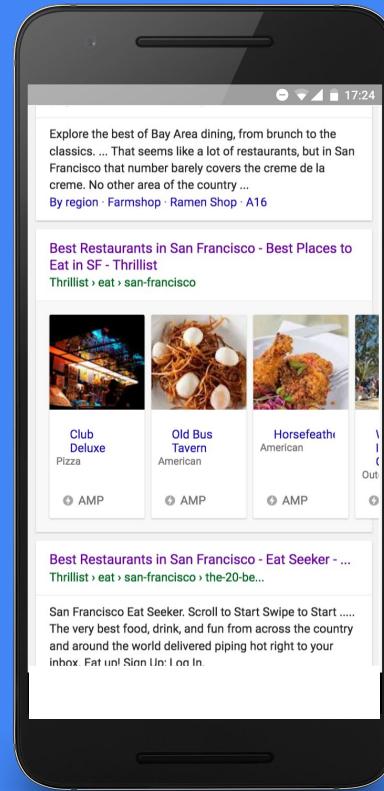
After

Search Results



Rich Cards Local Rich Cards

Proprietary + Confidential



Before

Google

Search Gallery

The search bar shows 'the world is flat'. Below it, the 'ALL' tab is selected. The results include a snippet from Square World Society, a claim from Example.com, and a fact check from Example.com.

Square World Society Insists the World is Flat - Example.com
www.example.com › square-world...

Claim: "The world is flat; you can sail over the edge"
Claimed By: Square World Society Press Corps
Fact check by Example.com: False

Fact Check

The search bar shows 'Android Courses | Coursera'. Below it, the 'ALL' tab is selected. The results list several Coursera courses related to Android development.

- Android Courses | Coursera**
Coursera › courses › query=android
- Android App Development**
This Specialization enables learners to successfully apply co... >
Vanderbilt University
- Java for Android**
This MOOC teaches you how to program core features and cl... >
Vanderbilt University
- Build Your First Android App (Project-Centered Cour...**
What you'll achieve: In this project-centered course*, you'll de... >
CentraleSupélec

Course

The search bar shows 'to kill a mockingbird'. Below it, the 'ALL' tab is selected. The results show a book snippet for 'To Kill a Mockingbird' by Harper Lee, with ratings from Goodreads and Barnes & Noble.

To Kill a Mockingbird
Novel by Harper Lee

4.2/5
Goodreads

4.5/5
Barnes & Noble

To Kill a Mockingbird is a novel by Harper Lee published in 1960. It was immediately successful, winning the Pulitzer Prize, and has become a classic of modern American literature. [Wikipedia](#)

Originally published: July 11, 1960
Author: Harper Lee

Book

The search bar shows 'Google'. Below it, the 'ALL' tab is selected. The results provide a general overview of Google's company information, including its logo, website, and various products and services.

Google
Technology company

[google.com](#)

Google is an American multinational technology company specializing in Internet-related services and products. These include online advertising technologies, search, cloud computing, and software. [Wikipedia](#)

CEO: Sundar Pichai
Founded: September 4, 1998, Menlo Park, CA
Subsidiaries: YouTube, ITA Software, AdMob, Google Japan, More
Video games: Tilt Brush, Google Lively
Founders: Larry Page, Sergey Brin
Parent organization: Alphabet Inc.

Profiles: Facebook, Twitter, YouTube, LinkedIn, Google+

People also search for:

Social Profile

Search Gallery

Top stories

Example Space Science
New photos of the red planet yield surprising results
🕒 AMP - 1 hour ago

Example News
Martian desert car food for explorers
🕒 AMP - 8 hours ago

Article

Recipes

Perfect Apple Pie
Pillsbury
4.5 ★★★★☆ 276 reviews
3 hr · 230 calories

Apple Pie by Grandm
Allrecipes
4.8 ★★★★★ 6,931 reviews
1 hr 30 min · 512 calories

Recipe

Chrome Enterprise Browser Specialist, Google Cloud

Google Mountain View, CA

[VIEW ON GOOGLE CAREERS](#)

2 days ago Full-time

As a member of the Google Cloud team, you inspire leading companies, schools, and government agencies to work smarter with Google tools like G Suite, Search, and Chrome. You champion the innovative power of our products to make organizations more productive, collaborative, and mobile. Using your passion for Google products, you help spread the magic of Google to organizations around the world.

Google's products are engineered for security, reliability and scalability, running the full stack...

Job Posting

The Nightingale by Kristin Hannah –
Reviews ...
Goodreads app · Installed

★★★★★ Rating: 4.5 - 159,018 votes
The Nightingale has 159018 ratings and 21386 reviews. Emily May said: "Oh, for heaven's ... More lists with this book.
Open on goodreads.com

Reviews

Schema.org

Launched in 2011 by Google, Microsoft, Yahoo,
joined by Yandex; recently e.g. contributions from
Apple, now many W3C community groups involved ...

Provides core vocabulary for people, places, events,
offers, actions, ...

Understood by the search engines, developed via
W3C communities and Github.

Most Google Search structured data uses
schema.org vocabulary.

Schema.org

A sampling of item types:

- Creative works:
 - CreativeWork
 - Book, Movie, MusicRecording, Recipe,
TVSeries ...
- Embedded non-text objects:
 - AudioObject, ImageObject, VideoObject
- Event
- Organization
- Person
- Place, LocalBusiness, Restaurant ...
- Product, Offer, AggregateOffer
- Review, AggregateRating
- **Dataset**

Supported structured data formats

Format	Description and Placement
<u>JSON-LD*</u> (Recommended)	JavaScript notation embedded in a <script> tag in the page head or body. The markup is not interleaved with the user-visible text, which makes nested data items easier to express, such as the Country of a PostalAddress of a MusicVenue of an Event. Also, Google can read JSON-LD data when it is dynamically injected into the page's contents, such as by JavaScript code or embedded widgets in your content management system.
<u>Microdata</u>	An open-community HTML specification used to nest structured data within HTML content. Like RDFa, it uses HTML tag attributes to name the properties you want to expose as structured data. It is typically used in the page body, but can be used in the head.
<u>RDFa</u>	An HTML5 extension that supports linked data by introducing HTML tag attributes that correspond to the user-visible content that you want to describe for search engines. RDFa is commonly used in both the head and body sections of the HTML page.

JSON-LD

Recipes

[VIEW ALL](#)



Apple Pie by Grandma
[Example.com](#)

4.8 ★★★★★ 7,462 reviews
1 hr 30 min · 512 calories



Grandma's Apple P
[Example.com](#)

4.8 ★★★★★ 2,055 re
1 hr 30 min · 512 calories

```
<script type="application/ld+json">
{
  "@context": "http://schema.org/",
  "@type": "Recipe",
  "name": "Grandma's Holiday Apple Pie",
  "author": "Elaine Smith",
  "image":
    "http://images.edge-general Mills.com/56459281-6fe6-4d9
d-984f-385c9488d824.jpg",
  "description": "A classic apple pie.",
  "aggregateRating": {
    "@type": "AggregateRating",
    "ratingValue": "4",
    "reviewCount": "276",
    "bestRating": "5",
    "worstRating": "1"
}
```

Microdata

Recipes [VIEW ALL](#)



Apple Pie by Grandma Example.com
4.8 ★★★★★ 7,462 reviews
1 hr 30 min · 512 calories

Grandma's Apple P Example.com
4.8 ★★★★★ 2,055 reviews
1 hr 30 min · 512 calories

```
<div itemtype="http://schema.org/Recipe" itemscope>
  <link itemprop="image"
    href="http://images.edge-general Mills.com/56459281-6fe
    6-4d9d-984f-385c9488d824.jpg" />
  <meta itemprop="recipeIngredient" content="..." />
  <meta itemprop="author" content="Elaine Smith" />
  <meta itemprop="recipeInstructions" content="2..." />
  <div itemprop="aggregateRating"
    itemtype="http://schema.org/AggregateRating"
    itemscope>
    <meta itemprop="reviewCount" content="276" />
    <meta itemprop="worstRating" content="1" />
    <meta itemprop="bestRating" content="5" />
    <meta itemprop="ratingValue" content="4" />
  </div>
```

RDFA

Recipes [VIEW ALL](#)



Apple Pie by Grandma Example.com
4.8 ★★★★★ 7,462 reviews
1 hr 30 min · 512 calories

Grandma's Apple P Example.com
4.8 ★★★★★ 2,055 reviews
1 hr 30 min · 512 calories

```
<div xmlns="http://www.w3.org/1999/xhtml"
      prefix=
        schema: http://schema.org/
        rdf: http://www.w3.org/1999/02/22-rdf-syntax-ns#
        rdfs: http://www.w3.org/2000/01/rdf-schema#"
>
<div typeof="schema:Recipe">
  <div property="schema:author" content="Elaine Smith"></div>
  <div property="schema:recipeInstructions" content="1... "></div>
  <div property="schema:prepTime" content="PT30M"></div>
  <div property="schema:recipeIngredient" content="6 cups thinly sliced, peeled apples (6 medium)"></div>
  <div property="schema:description" content="A classic apple pie."></div>
  <div rel="schema:nutrition">
    <div typeof="schema:NutritionInformation">
```

Validate your markup

<https://search.google.com/structured-data/testing-tool>

Dataset Findability

Why we're here

Dataset Content Type

Structured data can help Google surface datasets by identifying information such as the name, description, creator and distribution formats.

This feature is in beta, and you may not see rich results for datasets yet. However, we recommend that you add dataset structured data to your site in preparation for new dataset features in Search results.

Dataset Content Type

Required properties:

- @context - "http://schema.org/"
- @type- "Dataset"
- Description- Text
- Name- Text

Recommended properties:

- Citation- Text, *CreativeWork*
- Keywords- Text
- sameAs- *URL*
- spatialCoverage- Text, *Place*
- temporalCoverage- Text
- variableMeasured- Text, *PropertyValue*
- Version- Text, Number
- Url- *URL*

Google Dataset Search

A search bar with a light gray background and a thin gray border. It features a vertical black cursor line on the left side and a blue magnifying glass icon on the right side.

Why Dataset Search?



2,000 Data Repositories
and Science Europe's
Framework for
Discipline-specific
Research Data
Management

Nature Scientific Data
recommends 58 repositories



1,660 Data Centers



data.nodc.noaa.gov



data.world



www.datamed.org



www.europeandataportal.eu



figshare.com



zenodo.org



data.opendatanetwork.com



Why Dataset Search?

Nature Scientific Data recommends 58 repositories

2,000 Data Repositories and Science Europe's
Framework for Discipline-specific Research
Data Management

 data.nodc.noaa.gov

 data.opendatanetwork.com

 catalog.data.gov

 www.europeandataportal.eu

 [Kaggle](#)

 figshare.com

 [Harvard Dataverse](#)

 zenodo.org

 data.nasa.gov

 datadryad.org

 www.datamed.org



1,660 Data Centers

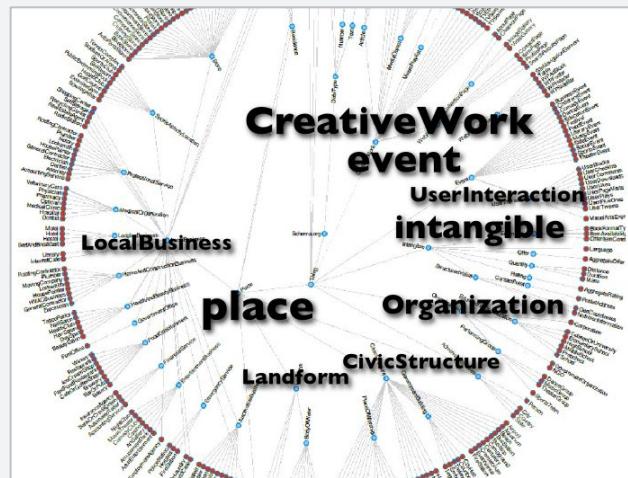
What is Dataset Search?

Google Dataset Search Beta

Search for Datasets



It's a search engine



It's a search engine over metadata



Oxford MAP EVI: Malaria Atlas Project Gap-Filled Enhanced Vegetation Index
developers.google.com



NAIP: National Agriculture Imagery Program
developers.google.com



Canada AAFC Annual Crop Inventory
developers.google.com



MOD08_M3.006 Terra Atmosphere Monthly Global Product
developers.google.com



MCD43A3.006 MODIS Albedo



malaria atlas project

Oxford MAP EVI: Malaria Atlas Project Gap-Filled Enhanced Vegetation Index



Dataset provided by
Malaria Atlas Project

Time period covered Feb 1, 2001 - Jun 1, 2015

Description

The underlying dataset for this Enhanced Vegetation Index (EVI) product is MODIS BRDF-corrected imagery (MCD43B4), which was gap-filled using the approach outlined in Weiss et al. (2014) to eliminate missing data caused by factors such as cloud cover. Gap-free outputs were then aggregated temporally and spatially to produce the monthly ≈5km product. Source: This dataset was produced by Harry Gibson and Daniel Weiss of the Malaria Atlas Project (Big Data Institute, University of Oxford, United Kingdom, <http://www.map.ox.ac.uk/>).

dataset name

provider

temporal coverage

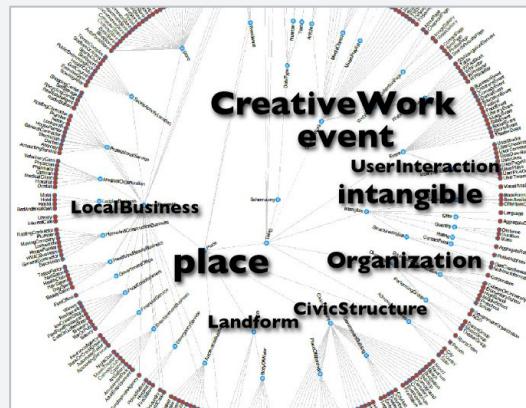
description

What is Dataset Search?

Google Dataset Search Beta

Search for Datasets 🔍

It's a search engine



It's a search engine over metadata

Google Search

Products > Search > Guides

Dataset

Contents ▾
Our approach to dataset discovery
Example
Guidelines
Sitemap best practices
...

Datasets are easier to find when you provide supporting information such as their name, description, creator and distribution formats as structured data. Google's approach to dataset discovery makes use of schema.org and other metadata standards that can be added to pages that describe datasets. The purpose of this markup is to improve discovery of datasets from fields such as life sciences, social sciences, machine learning, civic and government data, and more.

It's a search engine over metadata from data providers

Where is my dataset?

Does the page have schema.org metadata?

```
<script type="application/ld+json">
{
  "@context": "http://schema.org",
  "@type": "Dataset",
  "name": "NCDC Storm Events Database",
  "description": "Storm Data is provided by the National Weather Service (NWS) and contain statistics on...",
  "url": "https://catalog.data.gov/dataset/ncdc-storm-events-database",
  "sameAs": "https://gis.ncdc.noaa.gov/geoportal/catalog/search/resource/details.page?id=gov.noaa.ncdc:C00510",
  "keywords": [
    "ATMOSPHERE > ATMOSPHERIC PHENOMENA > CYCLONES",
    "ATMOSPHERE > ATMOSPHERIC PHENOMENA > DROUGHT",
    "ATMOSPHERE > ATMOSPHERIC PHENOMENA > FOG",
    "ATMOSPHERE > ATMOSPHERIC PHENOMENA > FREEZE"
  ],
  "creator": {
    "@type": "Organization",
    "url": "https://www.ncei.noaa.gov/",
    "name": "OC/NOA/NESDIS/NCEI > National Centers for Environmental Information, NESDIS, NOAA, U.S. Department of Commerce",
    "contactPoint": {
      "@type": "ContactPoint",
      "contactType": "customer service",
      "telephone": "+1-828-271-4800",
      "email": "ncei.orders@noaa.gov"
    }
  },
  "includedInDataCatalog": {
    "@type": "DataCatalog",
    "name": "data.gov"
  },
  "distribution": [
    {
      "@type": "DataDownload",
      "encodingFormat": "CSV",
      "contentUrl": "http://www.ncdc.noaa.gov/stormevents/ftp.jsp"
    },
    {
      "@type": "DataDownload",
      "encodingFormat": "XML",
      "contentUrl": "http://gis.ncdc.noaa.gov/all-records/catalog/search/resource/details.page?id=gov.noaa.ncdc:C00510"
    }
  ],
  "temporalCoverage": "1950-01-01/2013-12-18",
  "spatialCoverage": {
    "@type": "Place",
    "geo": {
      "@type": "GeoShape",
      "box": "18.0 -65.0 72.0 172.0"
    }
  }
}
</script>
```

Where is my dataset?

Do you have a sitemap?

sitemaps.org

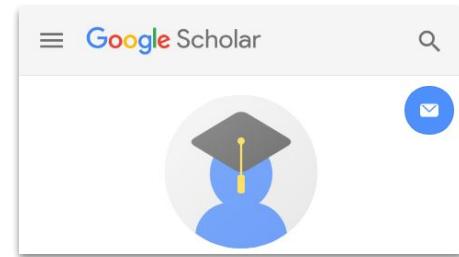
Where is my dataset?

Has it been indexed?



thousands of domains

millions of datasets



Google Dataset Search Beta

Search for Datasets



Google Dataset Search

Beta

Search for Datasets



Next Steps

Data providers

Publish structured metadata using community standards

Data consumers

Cite data properly, much as we cite scientific publications

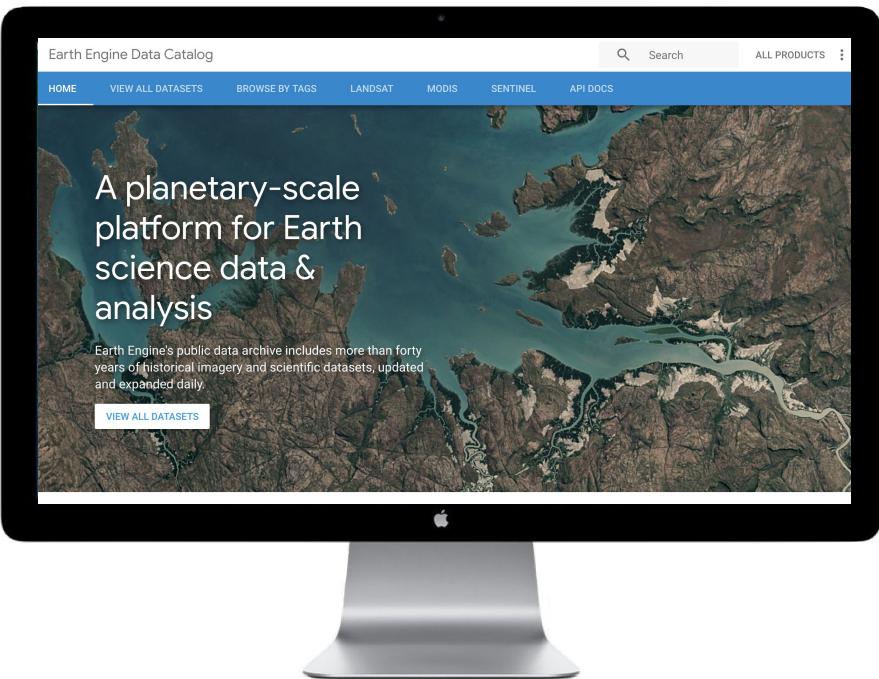
Developers

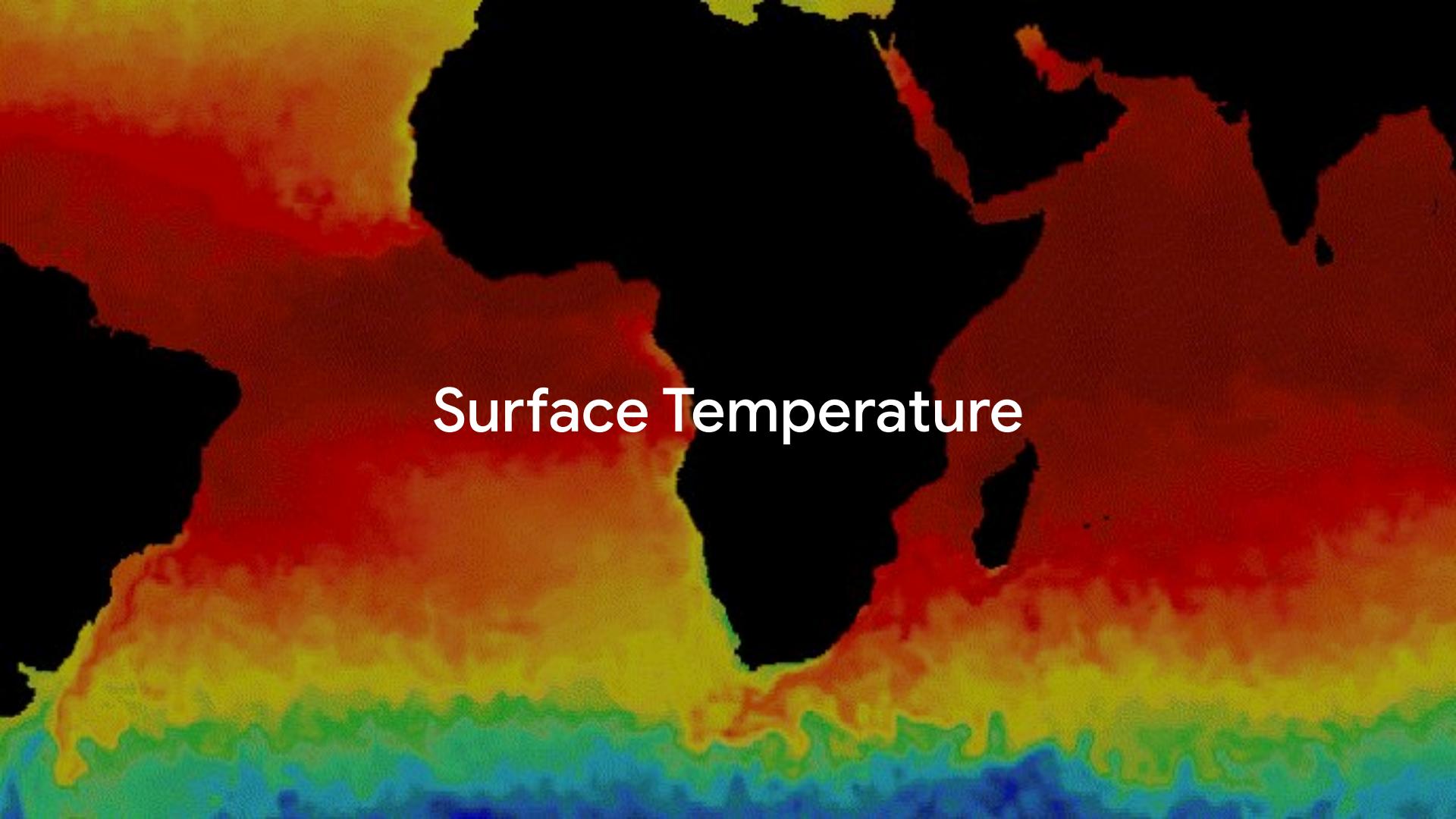
Contribute to expanding metadata for datasets

Create a healthy data ecosystem

What signals would be helpful for you to have to quantify impact in your organization?

[developers.google.com/
earth-engine/datasets/](https://developers.google.com/earth-engine/datasets/)





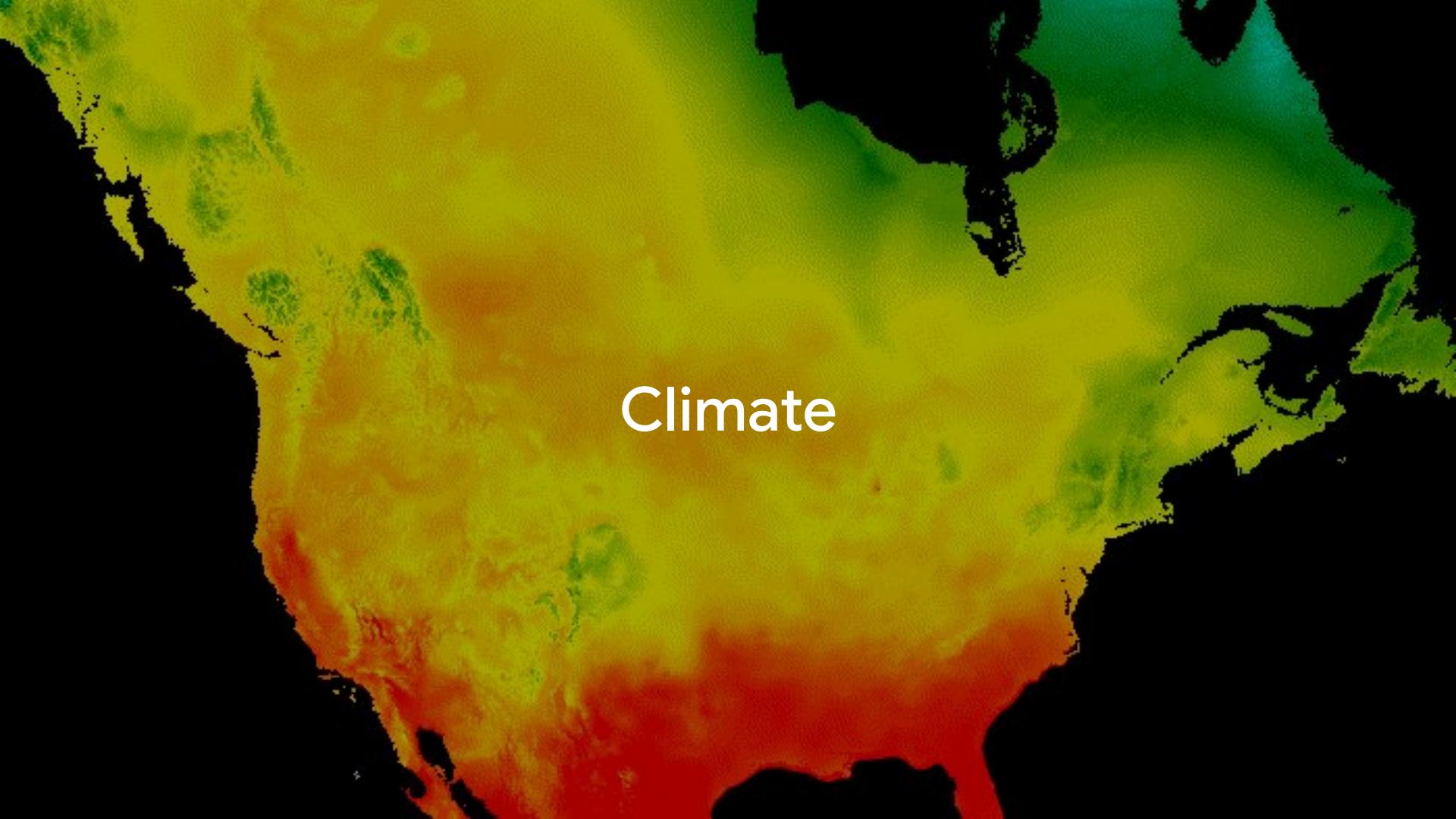
Surface Temperature

An aerial photograph of a park area. In the center is a large grassy field with several baseball diamonds. To the left, there are two basketball courts and a parking lot with many cars. To the right, there is a paved area with some buildings and a smaller parking lot. The image has a dark overlay with the text "High-res Imagery" centered in white.

High-res Imagery



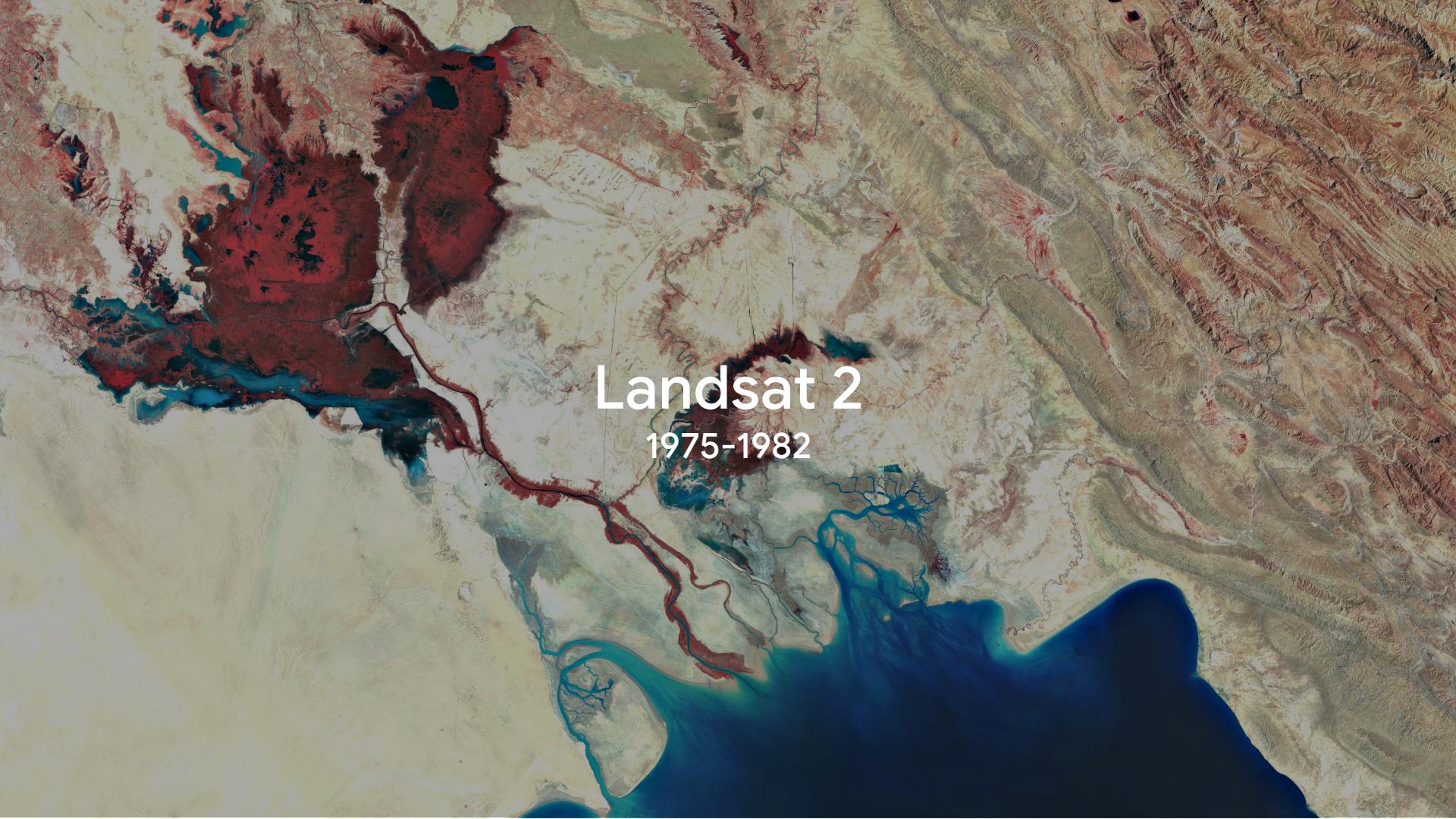
Terrain



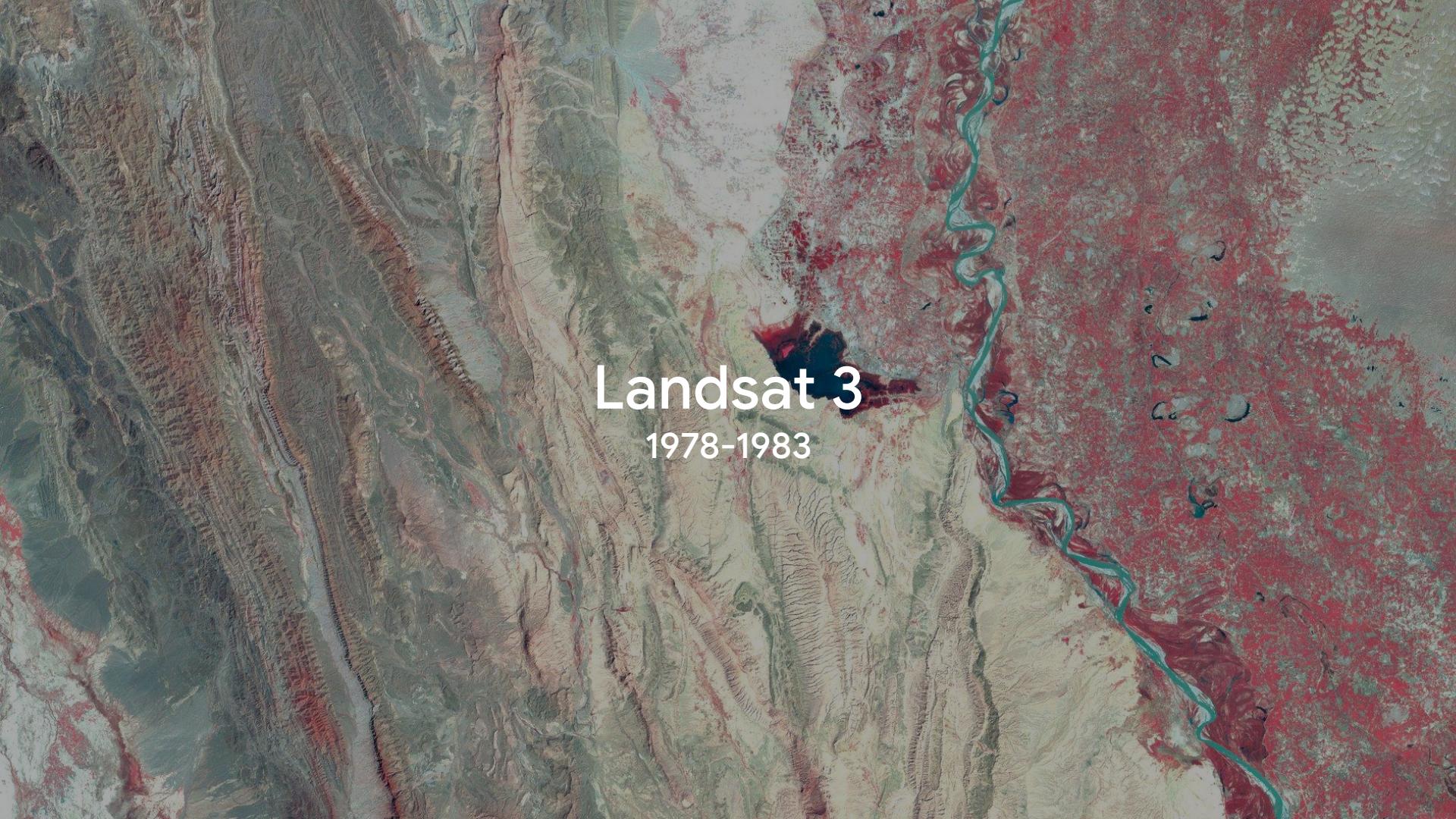
Climate



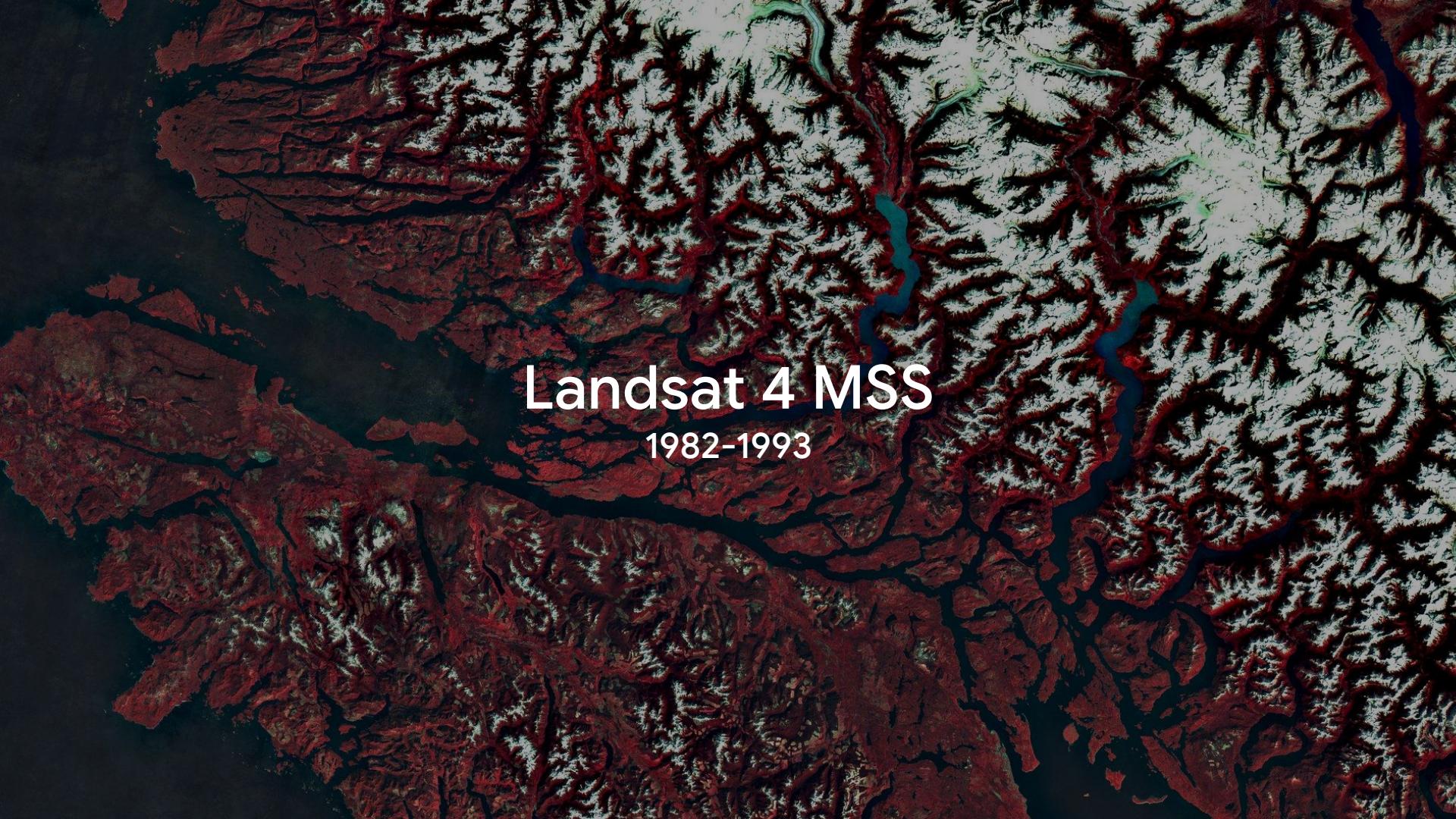
Landsat 1
1972-1978



Landsat 2
1975-1982



Landsat 3
1978-1983



Landsat 4 MSS

1982-1993

A satellite map of Lake Urmia, Iran, showing its dramatic shrinkage between 1982 and 1993. The lake, which was once a large body of dark blue-green water, has receded significantly, exposing large areas of brown, cracked earth and salt flats. The remaining water is concentrated in several large, irregularly shaped patches. The surrounding land appears dry and arid, with some sparse vegetation visible in the upper right corner.

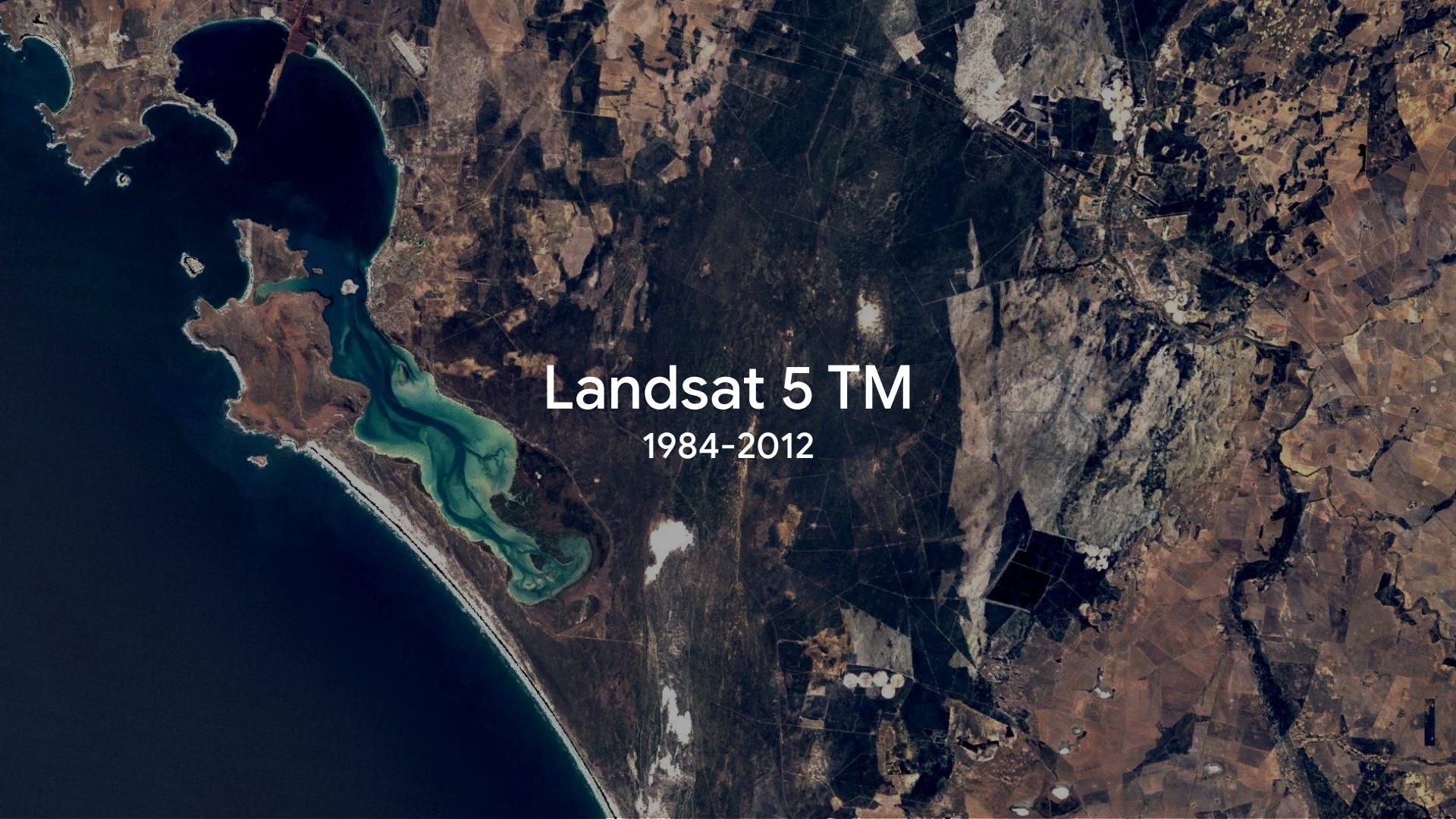
Landsat 4 TM

1982-1993



Landsat 5 MSS

1984-2012



Landsat 5 TM

1984-2012

A satellite image of the Detroit metropolitan area, showing a dense grid of urban development along the coast of Lake Michigan. A large river, likely the Detroit River, flows through the center of the city. To the east, there is a mix of urban areas and large agricultural fields in a grid pattern.

Landsat 7
1999-present

A satellite image showing a hilly terrain with various land cover types. A winding river or stream is visible in the lower-left quadrant. The surrounding land is a mix of reddish-brown and greenish-brown colors, suggesting different soil types or vegetation. Some darker, more forested areas are scattered throughout.

Landsat 8
2013-present



HOME

VIEW ALL DATASETS

BROWSE BY TAGS

LANDSAT

MODIS

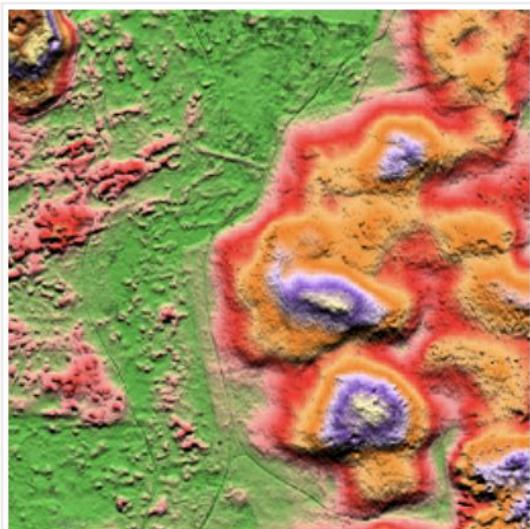
SENTINEL

API DOCS

SEND

>

AHN Netherlands 0.5m DEM, Interpolated



Dataset Availability

2012-01-01T00:00:00 - 2012-01-01T00:00:00

Dataset Provider

AHN

Earth Engine Snippet

```
ee.Image("AHN/AHN2_05M_INT")
```



Tags

lidar

elevation

netherlands

dem

geophysical

ahn



NEW TEST

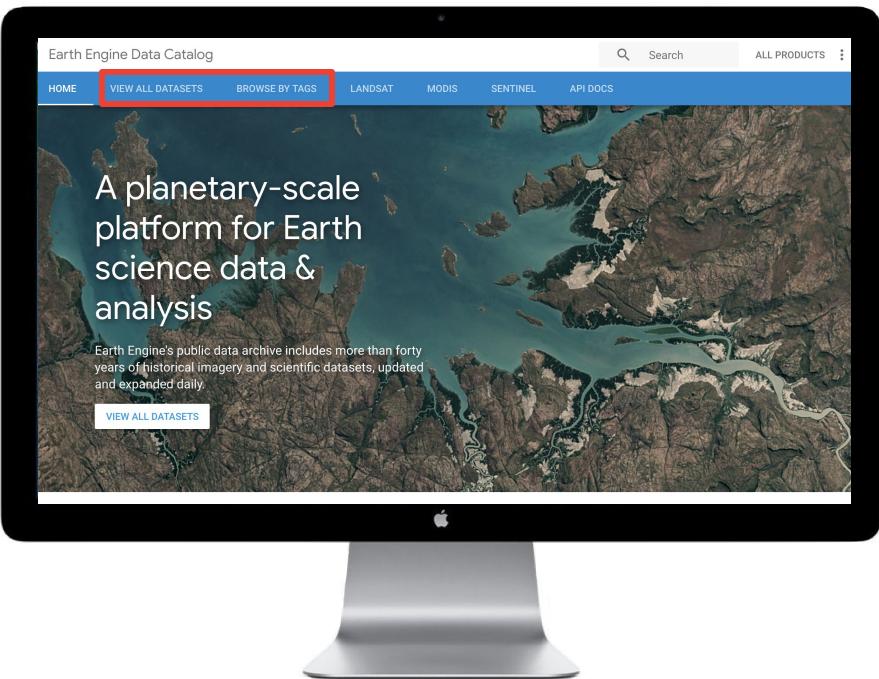
https://developers.google.com/earth-engine/datasets/catalog/AHN_AHN2_05M_INT

```
1 <!DOCTYPE html><html lang="en"
2   class=""><head><script>var a=window.devsite|||
3 {}>window.devsite=a;a.readyCallbacks=
4 []>window.devsite.readyCallbacks=a.readyCallbacks;a.ready=function(b)
5 {a.readyCallbacks.push(b)}>window.devsite.ready=a.ready;
6 </script><meta charset="utf-8"><meta name="xsrf_token"
7 content="UX5dFgJzFTlyFicC_UpcmgIiTfK8crve9RSsYlJOCPg6MTUzODU3NjAwMzMxODYzNQ" />
8 <link rel="canonical" href="https://developers.google.com/earth-
9 engine/datasets/catalog/AHN_AHN2_05M_INT"><link rel="alternate"
10 href="https://developers.google.com/earth-
11 engine/datasets/catalog/AHN_AHN2_05M_INT" hreflang="en"><link rel="alternate"
12 href="https://developers.google.cn/earth-
13 engine/datasets/catalog/AHN_AHN2_05M_INT" hreflang="en-cn"><link rel="alternate"
14 href="https://developers.google.com/earth-
15 engine/datasets/catalog/AHN_AHN2_05M_INT" hreflang="x-default"><link
16 rel="shortcut icon"
17 href="https://developers.google.com/_static/1e1304016d/images/favicon.png"><link
18 rel="apple-touch-icon"
19 href="https://developers.google.com/_static/1e1304016d/images/touch-icon.png">
20 <meta name="viewport" content="width=device-width, initial-scale=1"><link
21 rel="stylesheet"
22 href="//fonts.googleapis.com/css?
23 family=Google+Sans:400|Roboto:400,400italic,500,500italic,700,700italic|Roboto+Mo
24 no:400,500,700|Material+Icons"
25 ><link rel="stylesheet"
26 href="https://developers.google.com/_static/1e1304016d/css/devsite-light-
27 blue.css"><link rel="search"
28 type="application/opensearchdescription+xml"
29 title="Google Developers"
30 href="https://developers.google.com/s/opensearch.xml"><script
31 src="https://developers.google.com/_static/1e1304016d/js/jquery-bundle.js">
32 </script><meta property="og:site_name" content="Google Developers"><meta
33 property="og:type" content="website"><meta property="og:url"
34 content="https://developers.google.com/earth-
35 engine/datasets/catalog/AHN_AHN2_05M_INT"><meta property="og:locale"
36 content="en"><script>
```

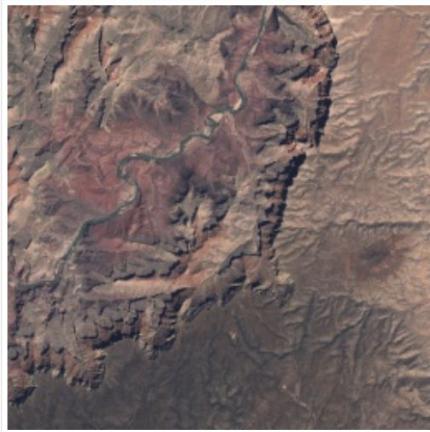
Dataset	0 ERRORS	0 WARNINGS
@type	Dataset	
thumbnailUrl	https://mw1.google.com/ges/dd/images/AHN_AH N2_05M_INT_sample.png	
description	The AHN DEM is a 0.5m DEM covering the Netherlands. It was generated from LIDAR data taken in the spring between 2007 and 2012...	
url	https://developers.google.com/earth- engine/datasets/catalog/AHN_AHN2_05M_INT	
name	AHN Netherlands 0.5m DEM, Interpolated	
description	The AHN DEM is a 0.5m DEM covering the Netherlands ...	
keywords	AHN/AHN2_05M_INT, lidar,elevation,netherlands,dem,geophysical,ahn	
temporalCoverage	2012-01-01T00:00:00/2012-01-01T00:00:00	
sameAs	http://www.ahn.nl/index.html	
provider		
@type	Organization	
url	http://www.ahn.nl/index.html	
name	AHN	
spatialCoverage		
@type	Place	
geo		
@type	GeoShape	
box	50.74 3.35 53.55 7.24	
includedInDataCatalog		
@type	DataCatalog	

[developers.google.com/
earth-engine/datasets/](https://developers.google.com/earth-engine/datasets/)

Hands-on: Find and use a dataset



USGS Landsat 8 Surface Reflectance Tier 1



Dataset Provider

USGS

Earth Engine Snippet

```
ee.ImageCollection("LANDSAT/LC08/C01/T1_SR")
```



Tags

global

sr

reflectance

l8sr

cloud

fmask

cfmask

lc08

landsat

usgs

DESCRIPTION

BANDS

IMAGE PROPERTIES

This dataset is the atmospherically corrected surface reflectance from the Landsat 8 OLI/TIRS sensors. These images contain 5 visible and near-infrared (VNIR) bands and 2 shortwave infrared (SWIR) bands, resulting in 7 surface reflectance bands. It includes the Operational Land Imager (OLI) bands (0.43–0.86 μm) and the Thermal Infrared Sensor (TIRS) bands (10.64–12.51 μm).

LANDSAT_LC08_C01_T1_SR.js

Get Link

Save ▾

Run

Reset ▾



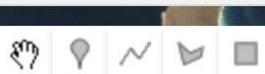
Inspector

Console

Tasks

```
1  /**
2   * Function to mask clouds based on the pixel_qa band of Landsat 8 SR data.
3   * @param {ee.Image} image input Landsat 8 SR image
4   * @return {ee.Image} cloudmasked Landsat 8 image
5   */
6  function maskL8sr(image) {
7    // Bits 3 and 5 are cloud shadow and cloud, respectively.
8    var cloudShadowBitMask = (1 << 3);
9    var cloudsBitMask = (1 << 5);
10   // Get the pixel QA band.
11   var qa = image.select('pixel_qa');
12   // Both flags should be set to zero, indicating clear conditions.
13   var mask = qa.bitwiseAnd(cloudShadowBitMask).eq(0)
14     .and(qa.bitwiseAnd(cloudsBitMask).eq(0));
```

Use print(...) to write to this console.



Layers

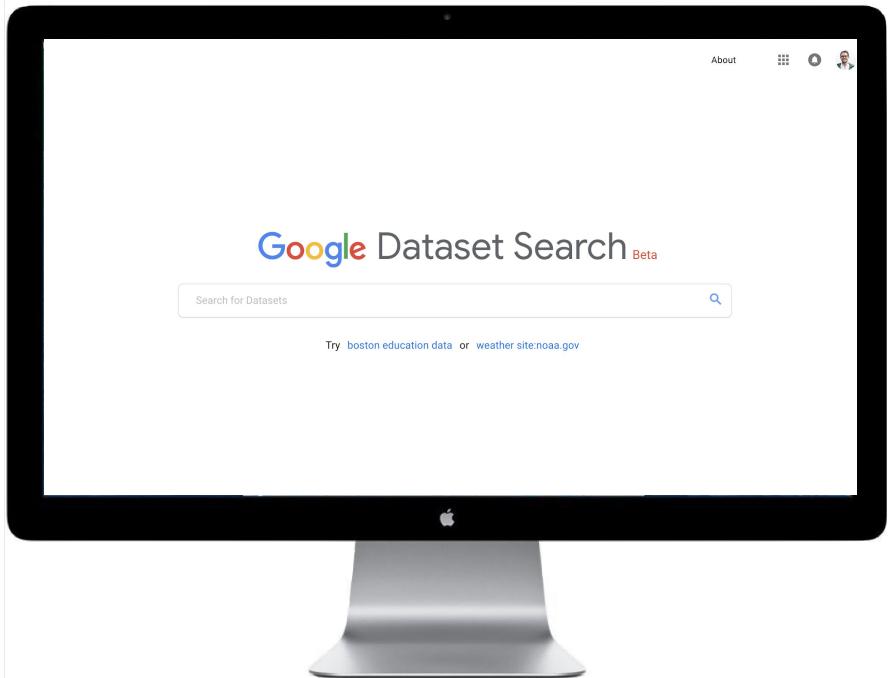
Map

Satellite



[toolbox.google.com/
datasetsearch](https://toolbox.google.com/datasetsearch)

Hands-on: Find and use a dataset with dataset search





Landsat 7 Collection 1 Tier 1 8-Day

NDSI Composite

developers.google.com



Canadian Digital Elevation Model



Google Earth Engine

96 scholarly articles cite this dataset ([View in Google Scholar](#))

Dataset provided by

[Natural Resources Canada](#)

Time period covered Jan 1, 1945 - Jan 1, 2011

Area covered

North America

Description

The Canadian Digital Elevation Model (CDEM) is part of Natural Resources Canada's (NRCan) altimetry system and stems from the existing Canadian Digital Elevation Data (CDED). In these data, elevations can be either ground or reflective surface elevations. The CDEM is comprised of multiple DEMs with varying resolutions.



Jet Propulsion Laboratory

California Institute of Technology

Data from: GRACE Monthly Mass Grids - Ocean

developers.google.com



Jet Propulsion Laboratory

California Institute of Technology

GRACE Monthly Mass Grids - Land

developers.google.com



LSIB: Large Scale International Boundary Polygons, Simplified

developers.google.com

Google