The place of Schema.org in Linked Ocean Data

Adam Leadbetter[1]
Rob Thomas[1]
Adam Shepherd[2]
Doug Fils[3]
Kevin O'Brien[4]

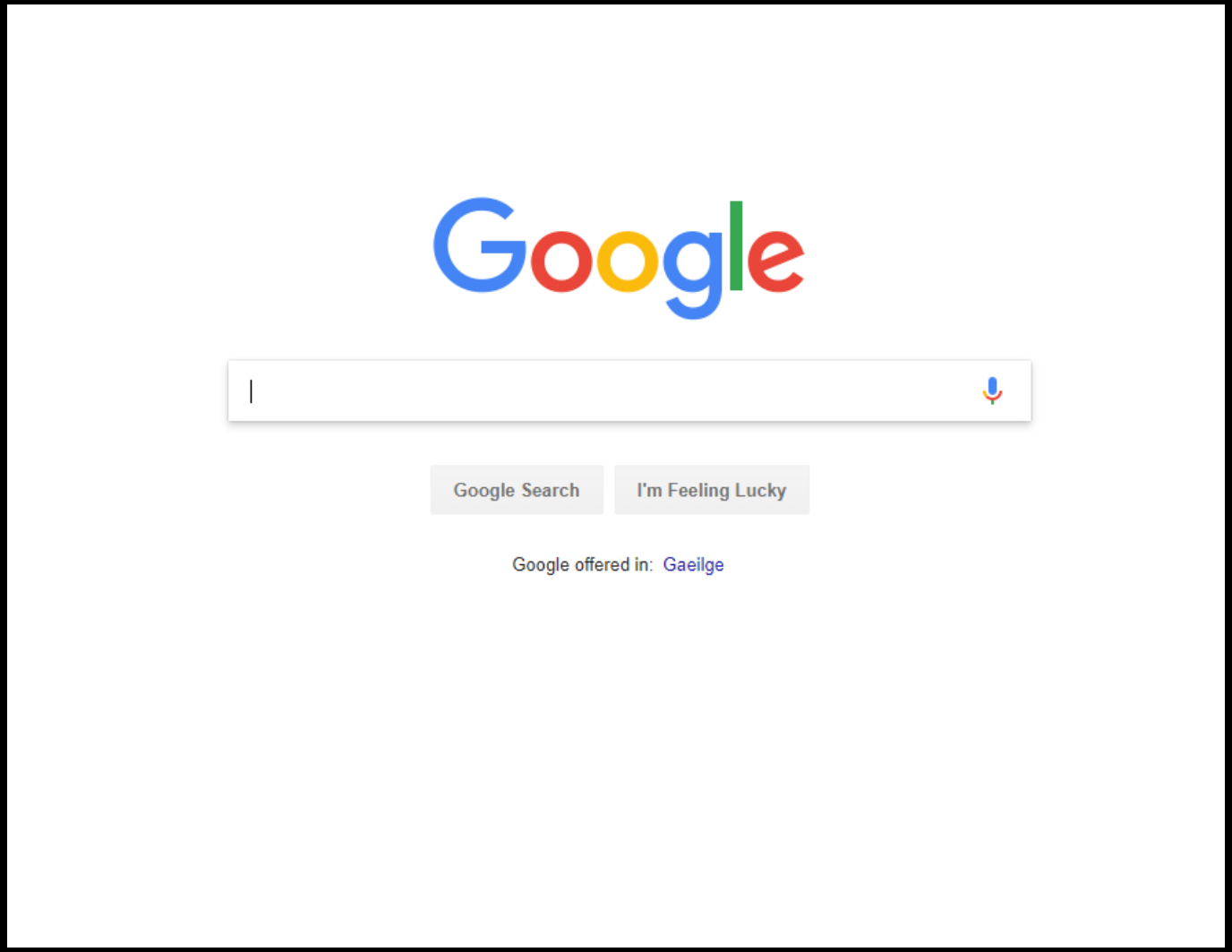
1. Marine Institute, Ireland
2. Woods Hole Oceanographic Institution, USA
3. Consortium for Ocean Leadership, USA
4. National Oceanic and Atmospheric Administration, USA

Why?

Why?

https://ogsl.ca/en/fair-principles

Why?



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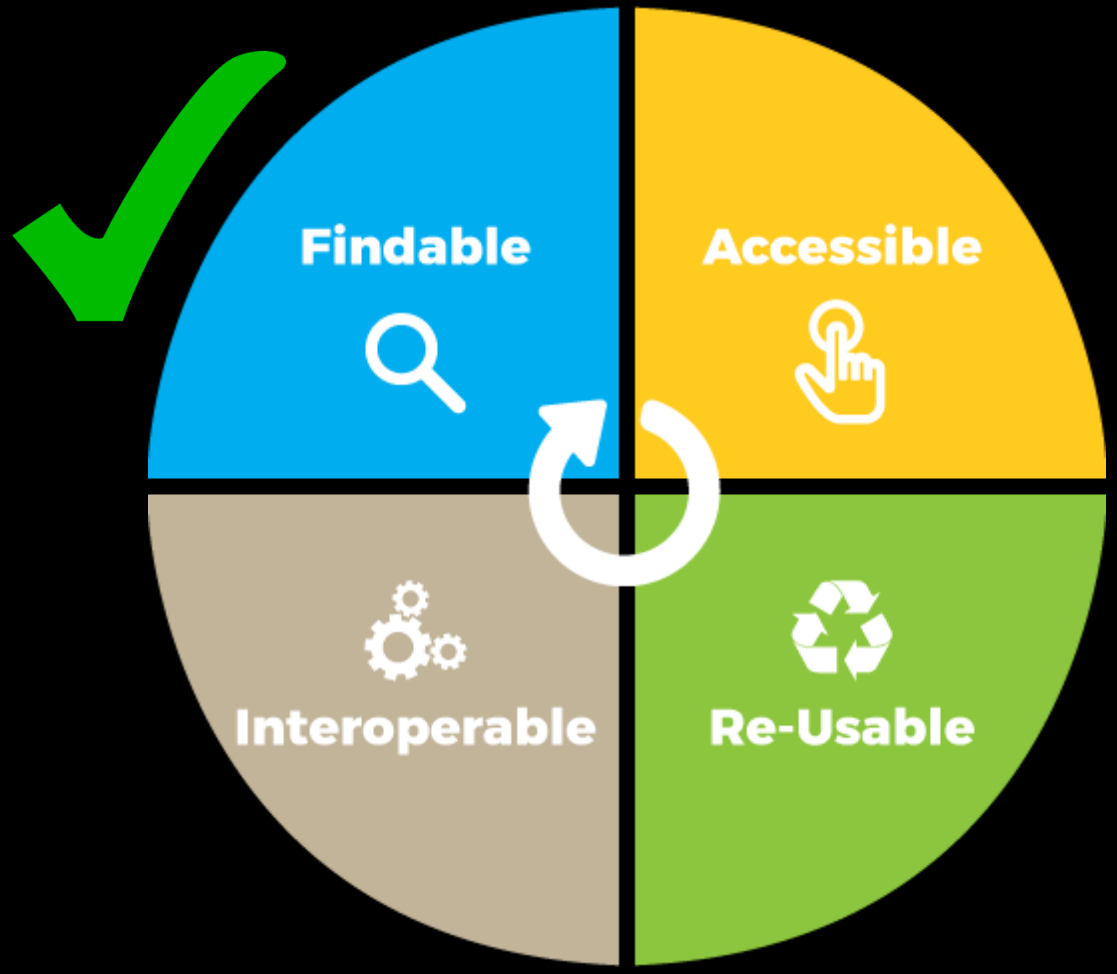
Why?



Why?

http://forgeofempires.wikia.com/wiki/Tower_of_Babel

Why?

https://www.wikihow.com/Say-Some-Common-Phrases-in-Esperanto

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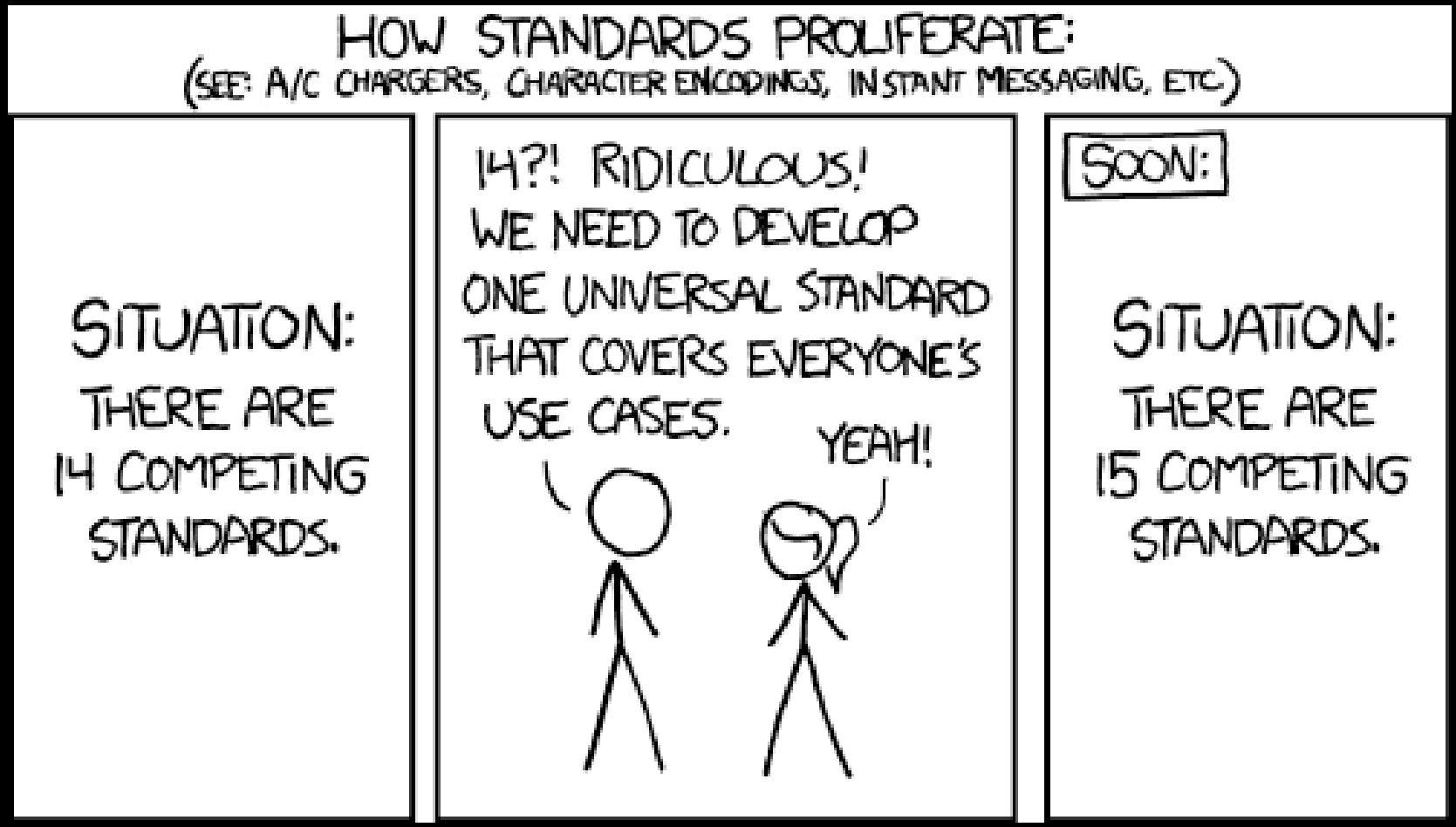
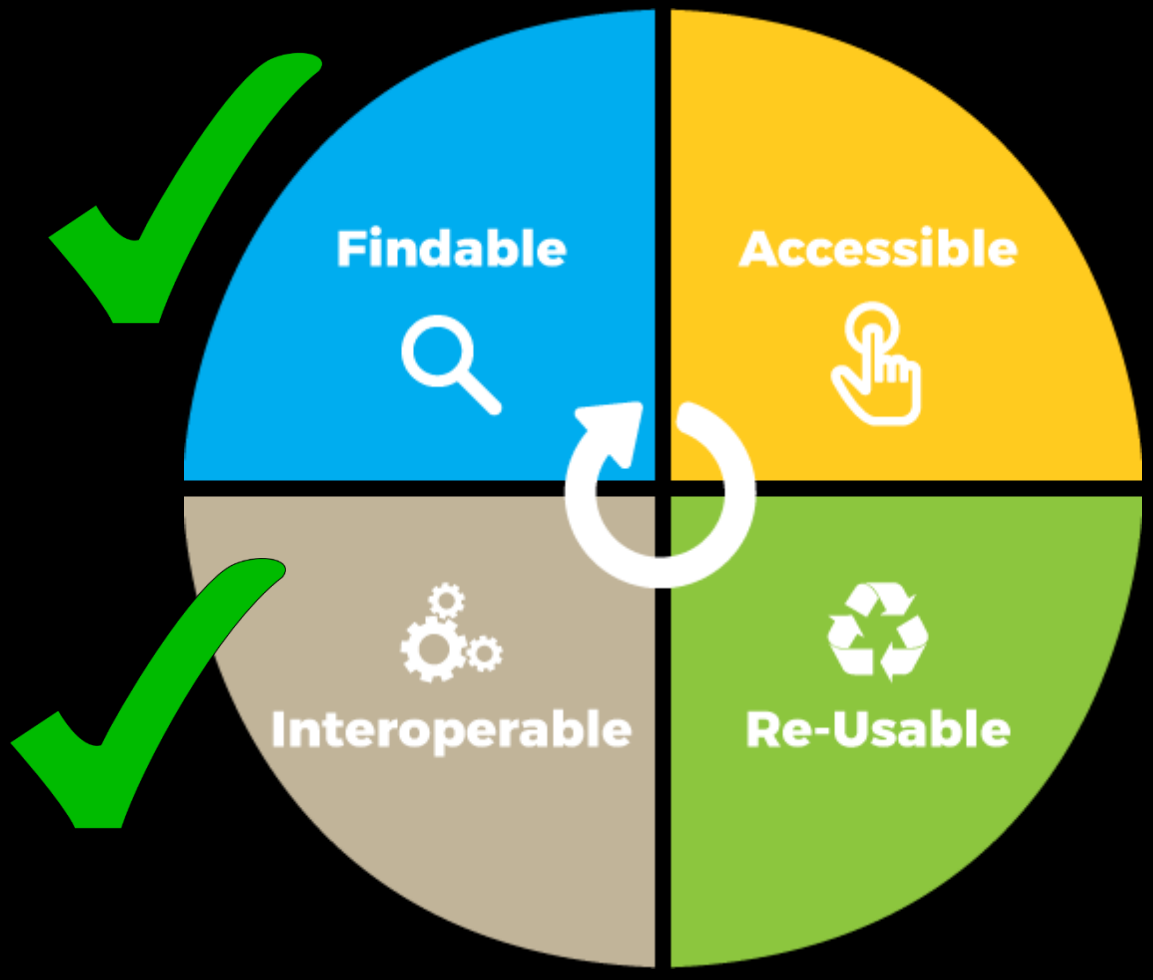


https://xkcd.com/927/

Why?



Why?

Background

Background

“The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data. With Linked Data, when you have some of it, you can find other, related, data.”

Sir Tim Berners-Lee, 2006

Background

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2. Allow those addresses to be looked up
3. Use web standards when the addresses are looked up
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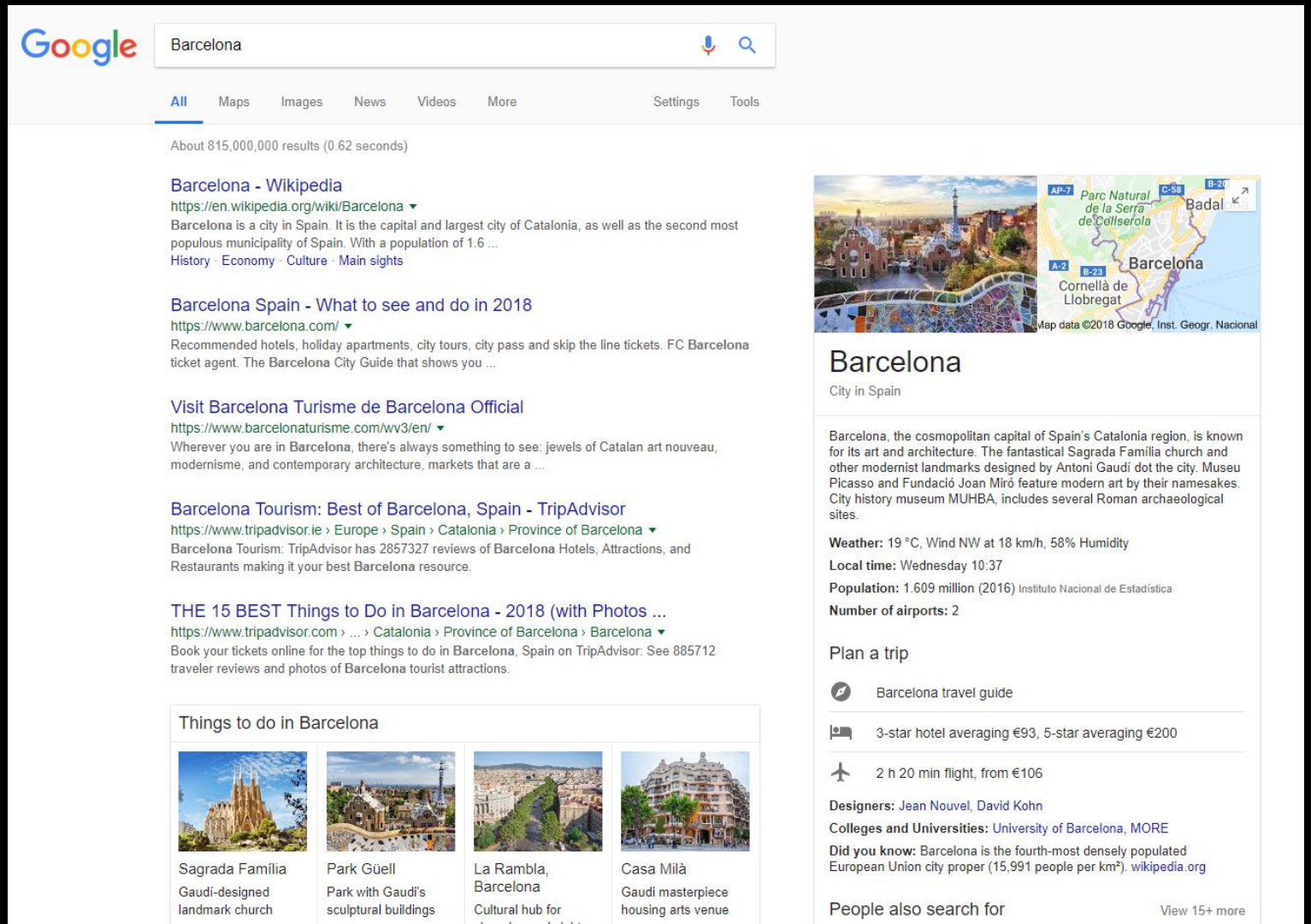
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AP-7
C-58
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B-23
Map data ©2018 Google, Inst. Geogr. Nacional
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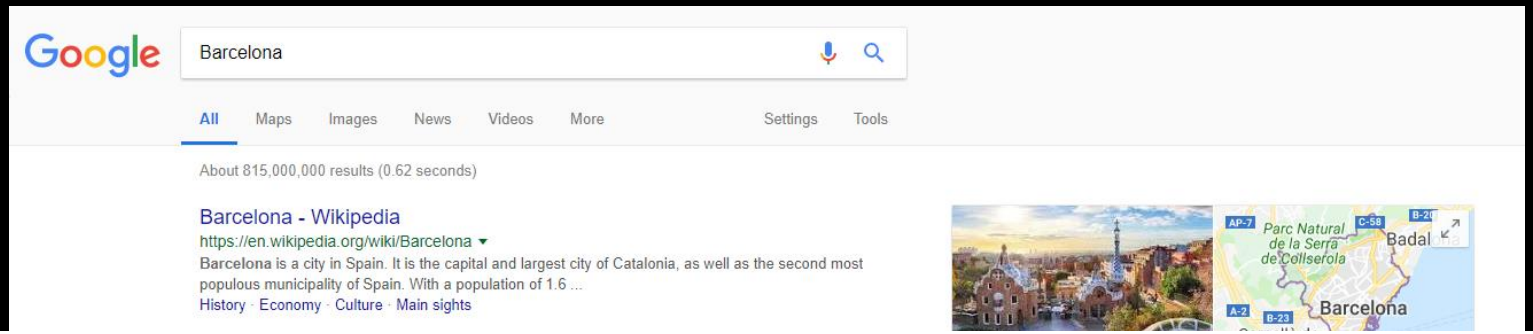

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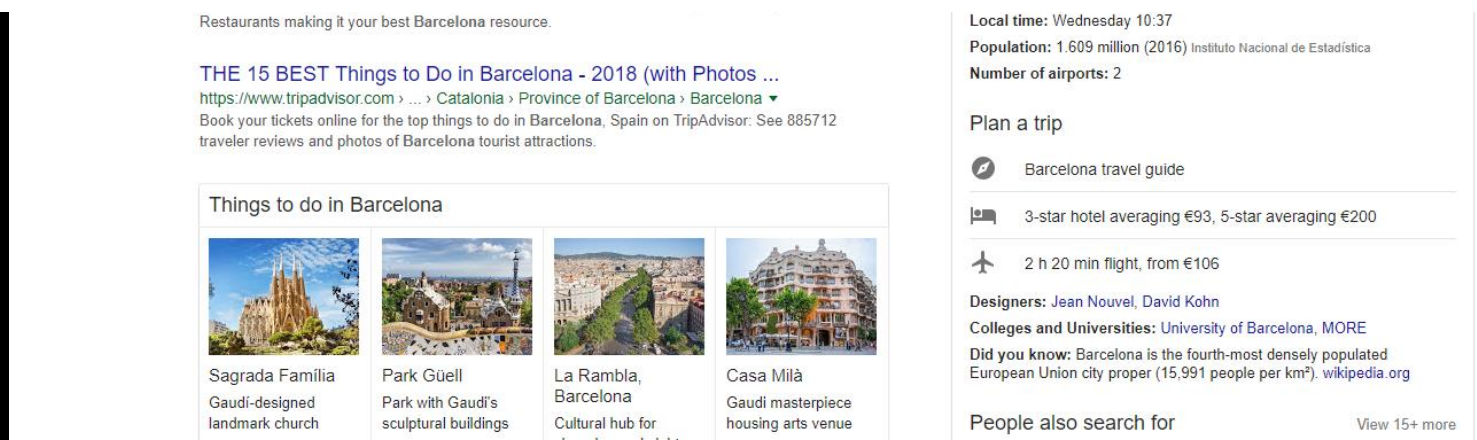

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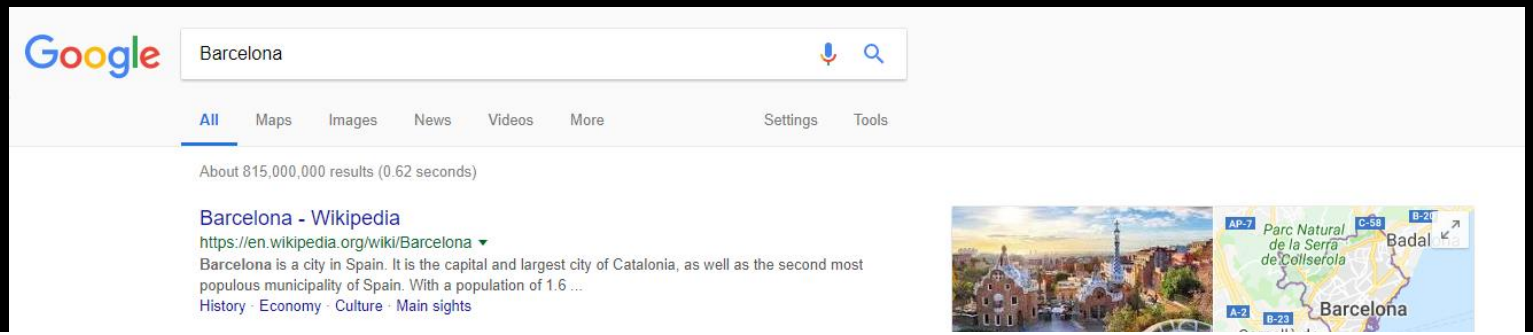

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THE 15 BEST Things to Do in Barcelona - 2018 (with Photos ...

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Book your tickets online for the top things to do in **Barcelona**, Spain on TripAdvisor: See 885712 traveler reviews and photos of **Barcelona** tourist attractions.

Things to do in Barcelona


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Barcelona

From Wikipedia, the free encyclopedia

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Barcelona (/ˌbɑːrsəˈloʊnə/ *BAR-sə-LOH-nə*, Catalan: [bərsəˈlonə], Spanish: [barθeˈlona]) is a city in Spain. It is the capital and largest city of Catalonia, as well as the second most populous municipality of Spain. With a population of 1.6 million within city limits,[5] its urban area extends to numerous neighbouring municipalities within the Province of Barcelona and is home to around 4.8 million people,[3][7] making it the sixth most populous urban area in the European Union after Paris, London, Madrid, the Ruhr area and Milan.[3] It is one of the largest metropolises on the Mediterranean Sea, located on the coast between the mouths of the rivers Llobregat and Besòs, and bounded to the west by the Serra de Collserola mountain range, the tallest peak of which is 512 metres (1,680 feet) high.

Founded as a Roman city, in the Middle Ages Barcelona became the capital of the County of Barcelona. After merging with the Kingdom of Aragon, Barcelona continued to be an important city in the Crown of Aragon as an economic and administrative centre of this Crown and the capital of the Principality of Catalonia. Barcelona has a rich cultural heritage and is today an important cultural centre and a major tourist destination. Particularly renowned are the architectural works of Antoni Gaudí and Lluís Domènech i Montaner, which have been designated UNESCO World Heritage Sites. The headquarters of the Union for the Mediterranean are located in Barcelona. The city is known for hosting the 1992 Summer Olympics as well as world-class conferences and expositions and also many international sport tournaments.

Barcelona is one of the world's leading tourist, economic, trade fair and cultural centres, and its influence in commerce, education, entertainment, media, fashion, science, and the arts all contribute to its status as one of the world's major global cities.[8][9] It is a major cultural and economic centre in southwestern Europe, 24th in the world (before Zürich, after Frankfurt)[10] and a financial centre. In 2008 it was the fourth most economically powerful city by GDP in the European Union and 35th in the world with GDP

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City and municipality

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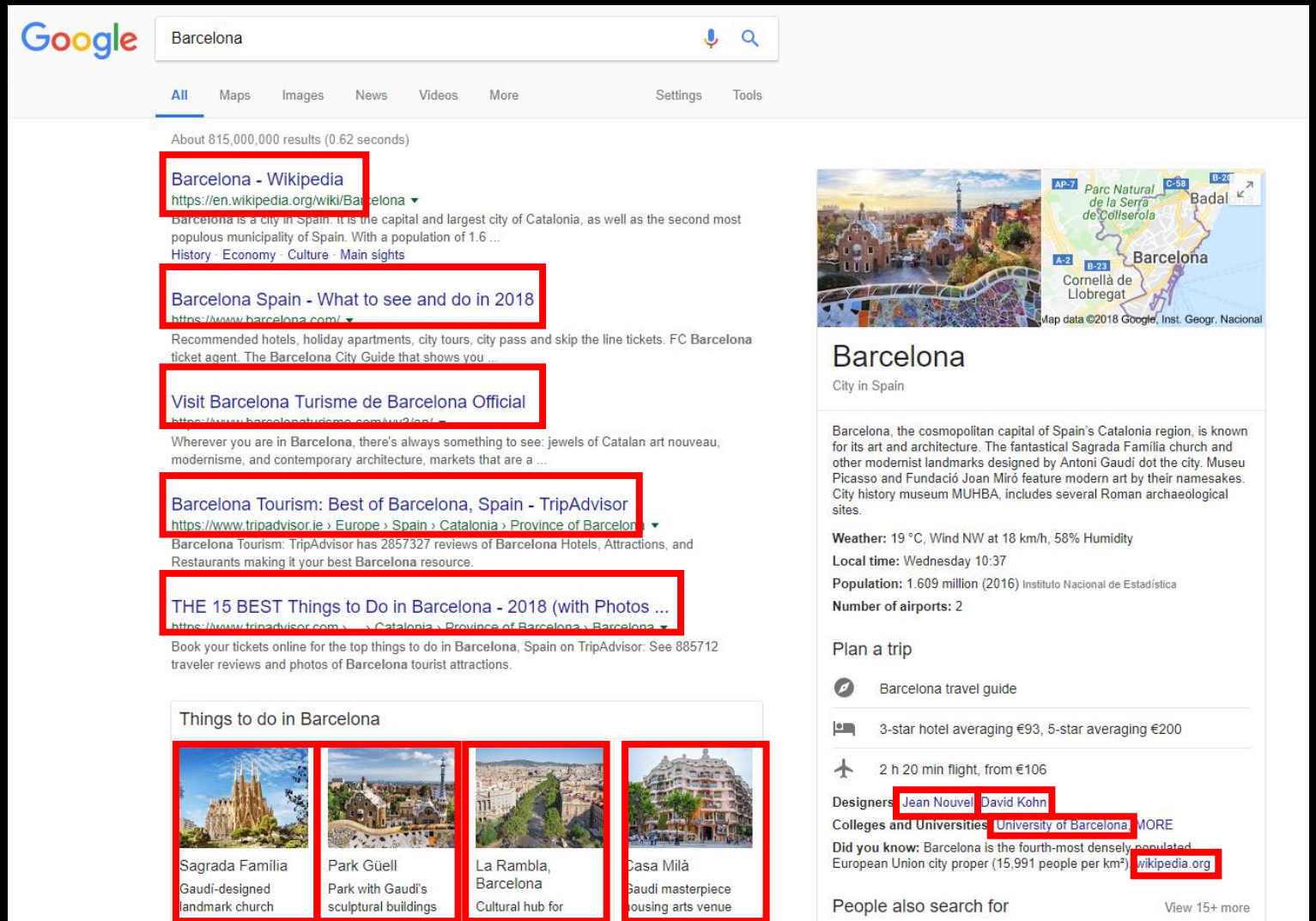
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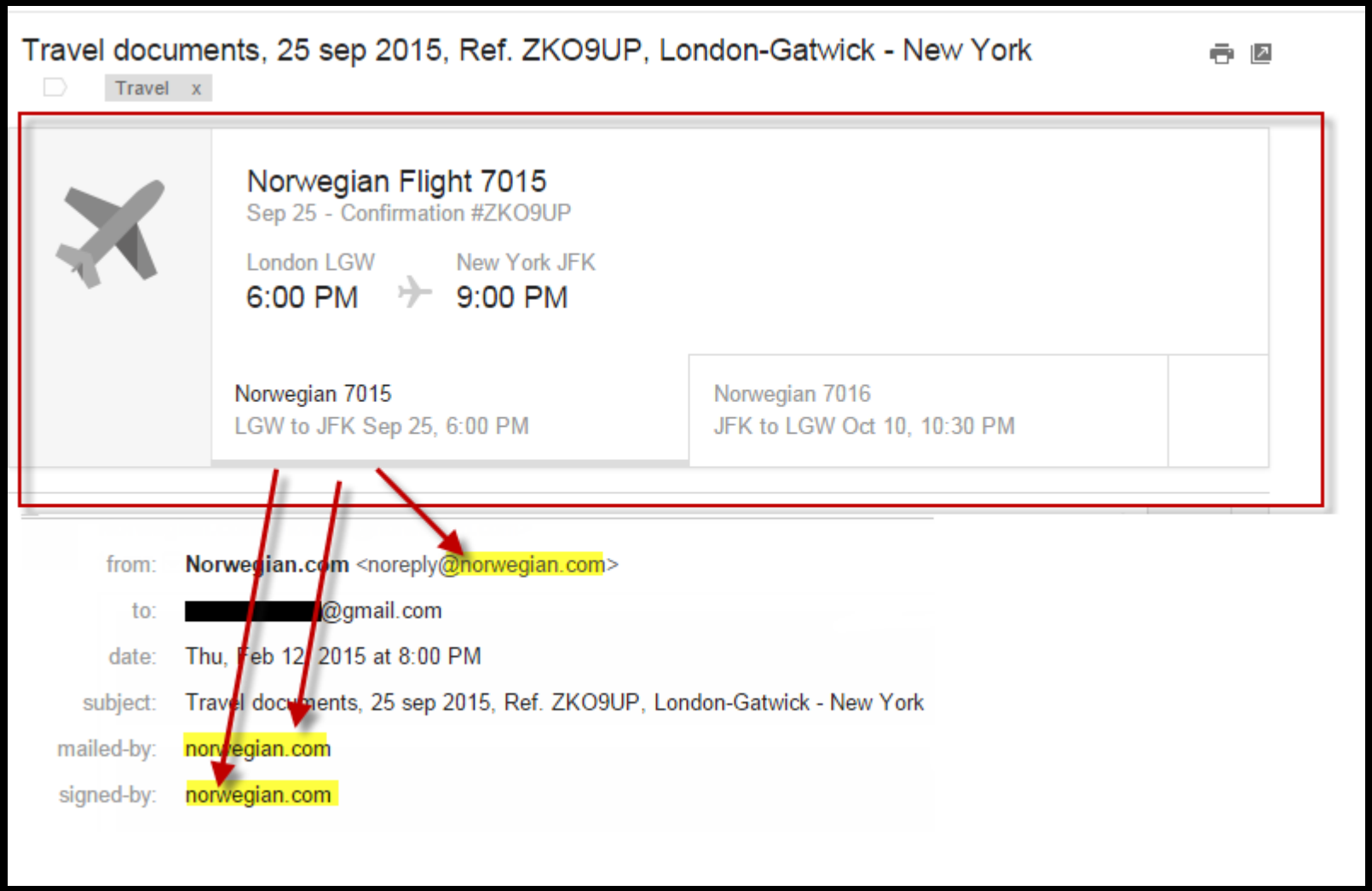

https://www.hallaminternet.com/using-schema-org-markup-for-email/

Background

https://www.proprofs.com/quiz-school/story.php?title=pq-what-english-dialect-do-you-speak

Background

Google

Microsoft

Yandex

YAHOO!

Background

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Yandex

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What about marine data?

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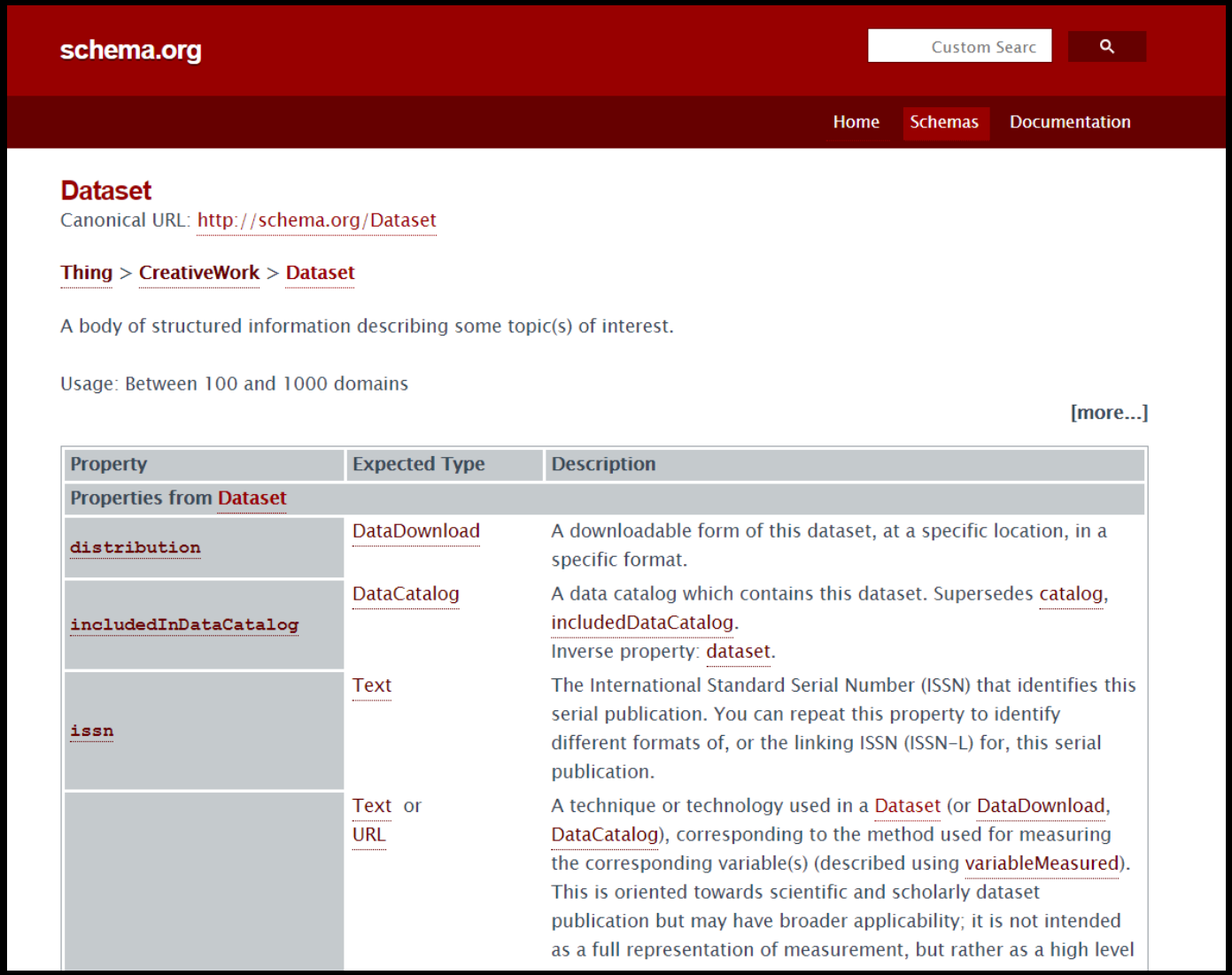


schema.org

Custom Searc

Home Schemas Documentation

Dataset

Canonical URL: http://schema.org/Dataset

Thing > CreativeWork > Dataset

A body of structured information describing some topic(s) of interest.

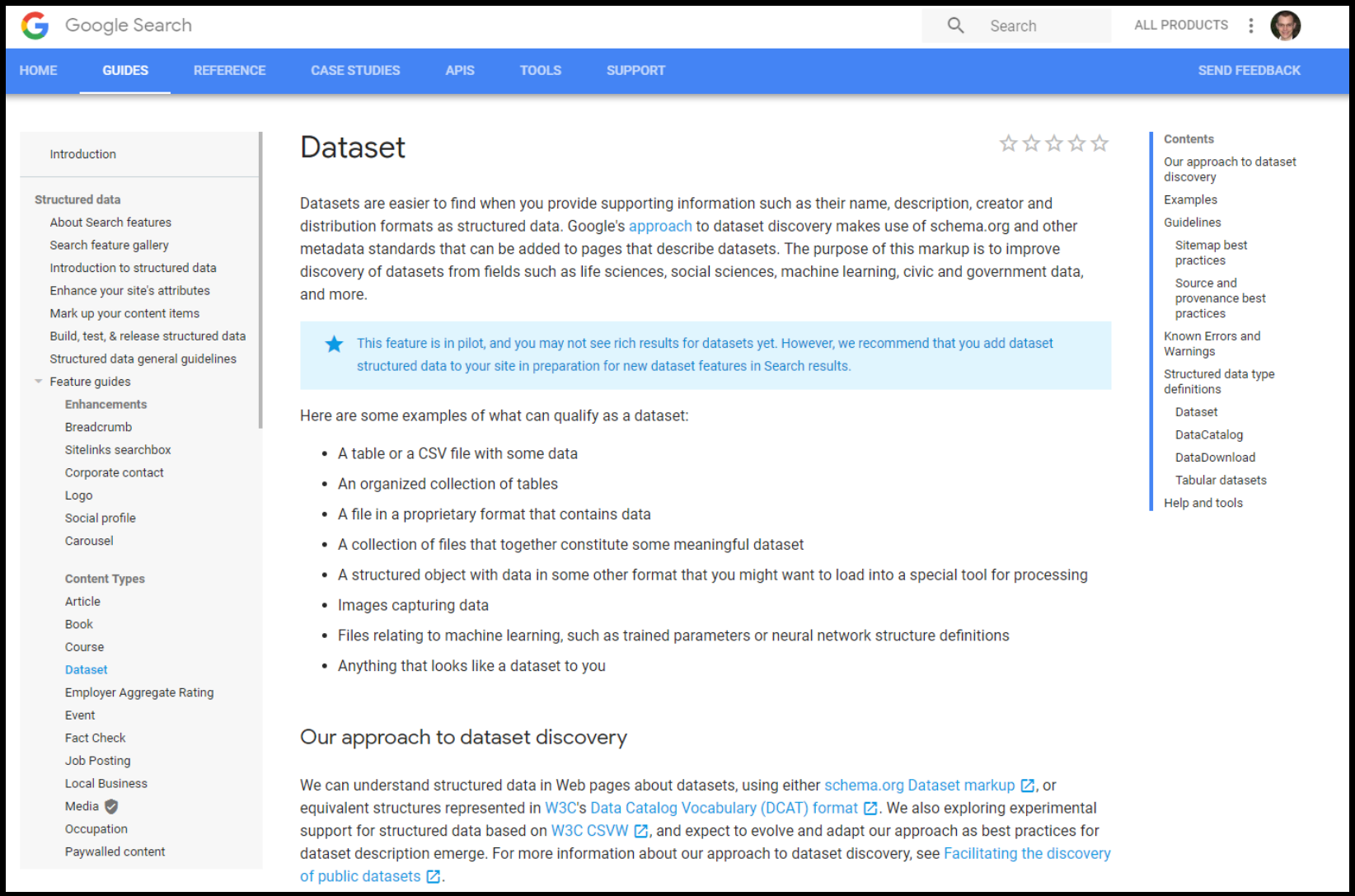
Usage: Between 100 and 1000 domains

[more...]

Property	Expected Type	Description
Properties from Dataset		
distribution	DataDownload	A downloadable form of this dataset, at a specific location, in a specific format.
includedInDataCatalog	DataCatalog	A data catalog which contains this dataset. Supersedes catalog, includedDataCatalog. Inverse property: dataset.
issn	Text	The International Standard Serial Number (ISSN) that identifies this serial publication. You can repeat this property to identify different formats of, or the linking ISSN (ISSN-L) for, this serial publication.
	Text or URL	A technique or technology used in a Dataset (or DataDownload, DataCatalog), corresponding to the method used for measuring the corresponding variable(s) (described using variableMeasured). This is oriented towards scientific and scholarly dataset publication but may have broader applicability; it is not intended as a full representation of measurement, but rather as a high level

https://schema.org/Dataset

What about marine data?



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What have we done so far?

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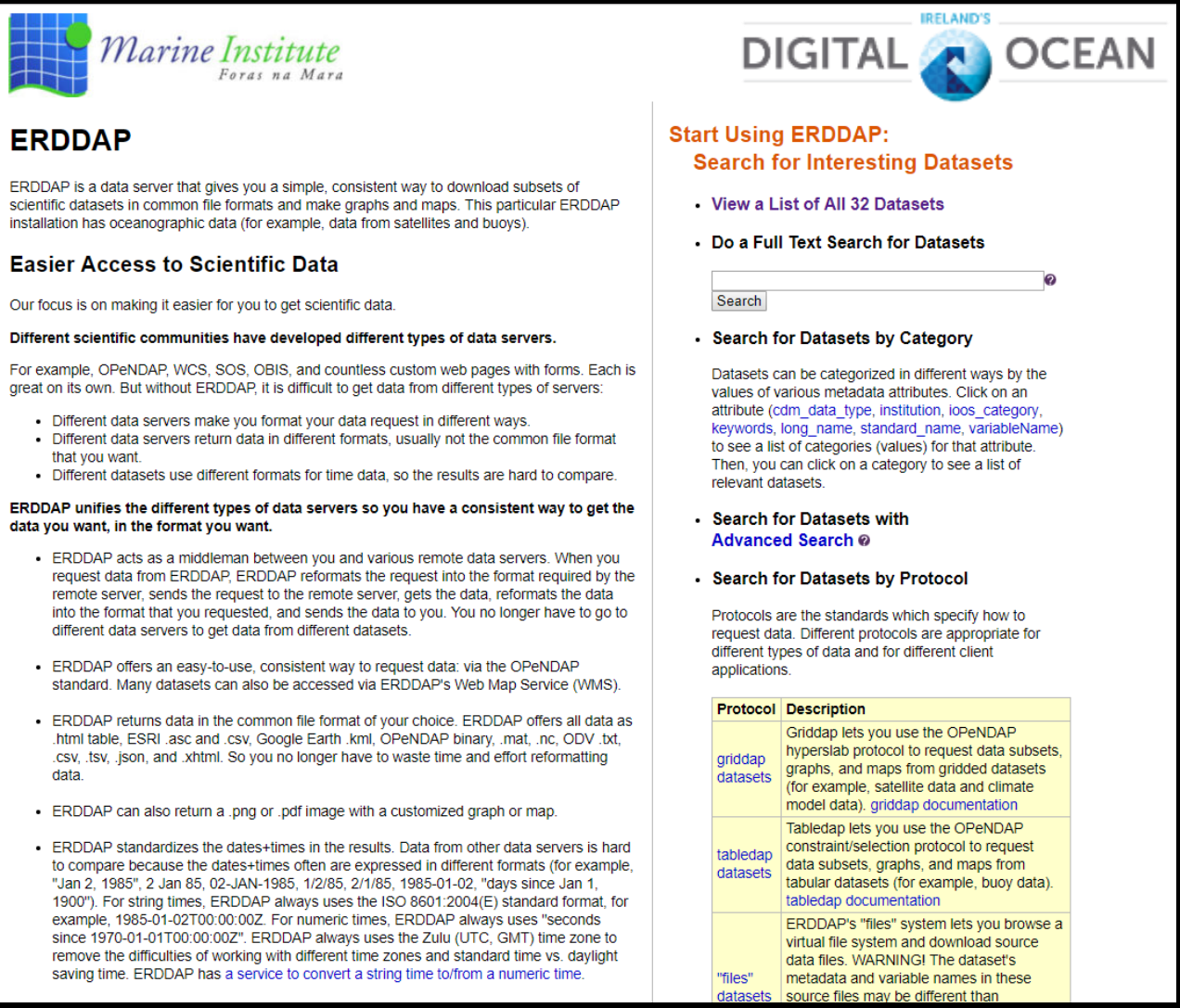


Marine Institute
Foras na Mara

IRELAND'S DIGITAL OCEAN

ERDDAP

ERDDAP is a data server that gives you a simple, consistent way to download subsets of scientific datasets in common file formats and make graphs and maps. This particular ERDDAP installation has oceanographic data (for example, data from satellites and buoys).

Easier Access to Scientific Data

Our focus is on making it easier for you to get scientific data.

Different scientific communities have developed different types of data servers.

For example, OPeNDAP, WCS, SOS, OBIS, and countless custom web pages with forms. Each is great on its own. But without ERDDAP, it is difficult to get data from different types of servers:

- Different data servers make you format your data request in different ways.
- Different data servers return data in different formats, usually not the common file format that you want.
- Different datasets use different formats for time data, so the results are hard to compare.

ERDDAP unifies the different types of data servers so you have a consistent way to get the data you want, in the format you want.

- ERDDAP acts as a middleman between you and various remote data servers. When you request data from ERDDAP, ERDDAP reformats the request into the format required by the remote server, sends the request to the remote server, gets the data, reformats the data into the format that you requested, and sends the data to you. You no longer have to go to different data servers to get data from different datasets.
- ERDDAP offers an easy-to-use, consistent way to request data: via the OPeNDAP standard. Many datasets can also be accessed via ERDDAP's Web Map Service (WMS).
- ERDDAP returns data in the common file format of your choice. ERDDAP offers all data as .html table, ESRI .asc and .csv, Google Earth .kml, OPeNDAP binary, .mat, .nc, ODV .txt, .csv, .tsv, .json, and .xhtml. So you no longer have to waste time and effort reformatting data.
- ERDDAP can also return a .png or .pdf image with a customized graph or map.
- ERDDAP standardizes the dates+times in the results. Data from other data servers is hard to compare because the dates+times often are expressed in different formats (for example, "Jan 2, 1985", 2 Jan 85, 02-JAN-1985, 1/2/85, 2/1/85, 1985-01-02, "days since Jan 1, 1900"). For string times, ERDDAP always uses the ISO 8601:2004(E) standard format, for example, 1985-01-02T00:00:00Z. For numeric times, ERDDAP always uses "seconds since 1970-01-01T00:00:00Z". ERDDAP always uses the Zulu (UTC, GMT) time zone to remove the difficulties of working with different time zones and standard time vs. daylight saving time. ERDDAP has a service to convert a string time to/from a numeric time.

Start Using ERDDAP: Search for Interesting Datasets

- View a List of All 32 Datasets
- Do a Full Text Search for Datasets

  Search

- Search for Datasets by Category

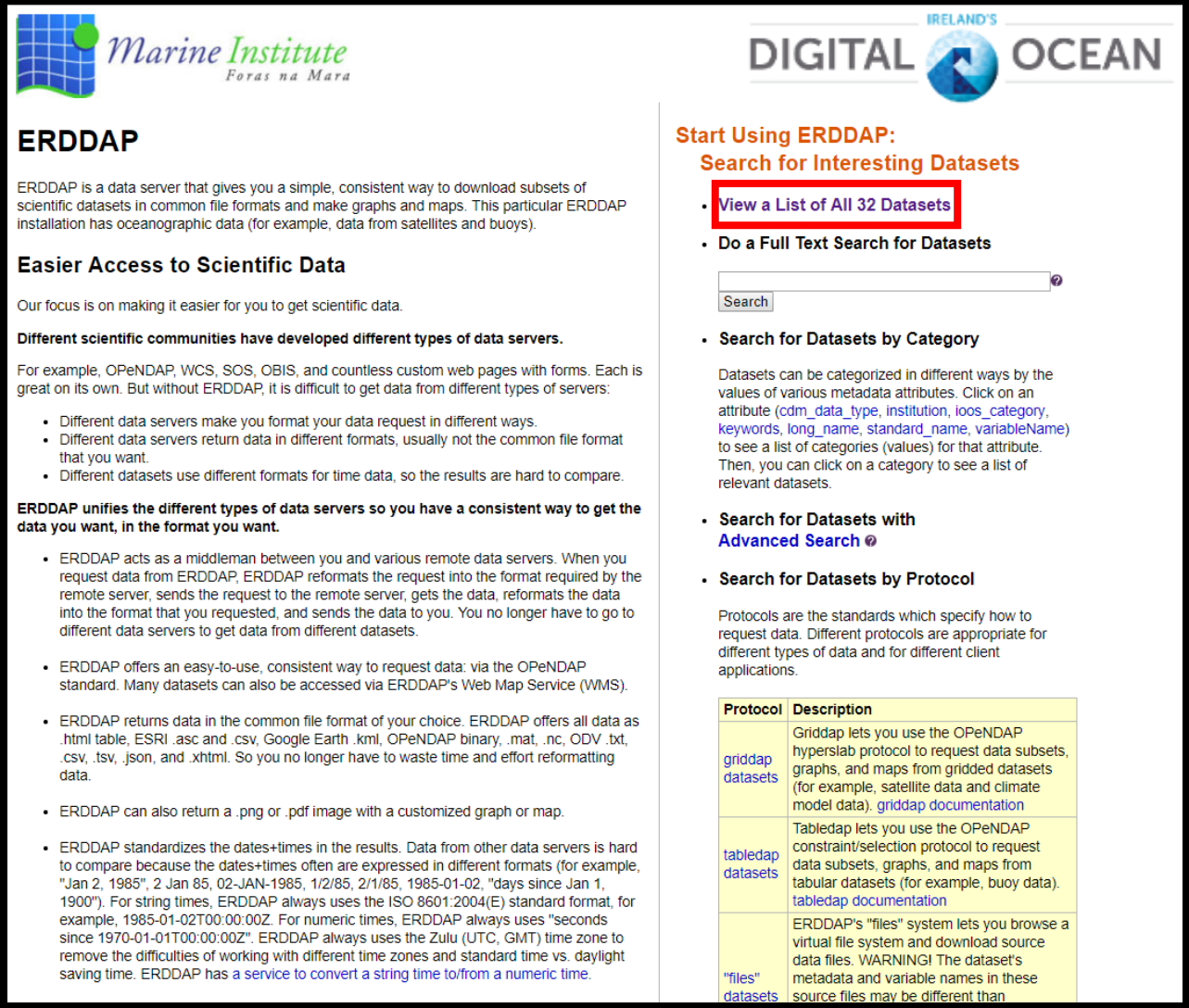
  Datasets can be categorized in different ways by the values of various metadata attributes. Click on an attribute (cdm_data_type, institution, ioos_category, keywords, long_name, standard_name, variableName) to see a list of categories (values) for that attribute. Then, you can click on a category to see a list of relevant datasets.

- Search for Datasets with Advanced Search
- Search for Datasets by Protocol

  Protocols are the standards which specify how to request data. Different protocols are appropriate for different types of data and for different client applications.

Protocol	Description
griddap datasets	Griddap lets you use the OPeNDAP hyperslab protocol to request data subsets, graphs, and maps from gridded datasets (for example, satellite data and climate model data). griddap documentation
tabledap datasets	Tabledap lets you use the OPeNDAP constraint/selection protocol to request data subsets, graphs, and maps from tabular datasets (for example, buoy data). tabledap documentation
"files" datasets	ERDDAP's "files" system lets you browse a virtual file system and download source data files. WARNING! The dataset's metadata and variable names in these source files may be different than

What have we done so far?



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ERDDAP > List of All Datasets

32 matching datasets, listed in alphabetical order.

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	Institution	Dataset ID
	set	data	graph			* The List of All Active Datasets in this ERDDAP *		M	background		Marine Institute ...	allDatasets
	set	data	graph			AIS Met Hydro		F I M	background	RSS	Marine Institute	ais_met_hydro
	set	data	graph			Argo Float Vertical Profiles		F I M	background	RSS	Argo	argoFloats
data			graph	M		Bantry Bay model particle track analysis		F I M	background	RSS	Irish Marine Inst...	BANTRY_PARTICLES
	set	data	graph			Coastal Temperature Network		F I M	background	RSS	Marine Institute	ICTempNetwork
	set	data	graph			Coastal Temperature Network - Freshwater sites		F I M	background	RSS	Marine Institute	ICTempNetworkFreshwater
data			graph	M		East Atlantic SWAN Wave Model		F I M	background	RSS	Irish Marine Inst...	IMI_EATL_WAVE
	set	data	graph			EPA Beaches Model Predicted Tide Level		F I M	background	RSS	Marine Institute	IMI-TidePrediction_epa
	set	data	graph			Furnace Weather Station Daily averages		F I M	background	RSS	Met Eireann	imiFurnaceWSdaily
	set	data	graph			Galway Bay Observatory ADCP data		F I M	background	RSS	Irish Marine Inst...	spiddal_obs_adcp
	set	data	graph			Galway Bay Observatory CTD data		F I M	background	RSS	Marine Institute	spiddal_obs_ctd
	set	data	graph			Galway Bay Observatory Fluorometer Data		F I M	background	RSS	Marine Institute	galway_obs_fluorometer
	set	data	graph			GFS weather forecast at selected locations		F I M	background	RSS	NOAA/NCEP	GFS-WeatherTimeSeries
	set	data	graph			IBTS Trawl Surveys		F I M	background	RSS	Marine Institute	milbts
data			graph	M		Irish Marine Institute Connemara Model CONN2D		F I M	background	RSS	Irish Marine Inst...	IMI_CONN_2D
data			graph	M		Irish Marine Institute Connemara Model CONN3D		F I M	background	RSS	Irish Marine Inst...	IMI_CONN_3D
data			graph	M		Irish Marine Institute Northeast Atlantic Model		F I M	background	RSS	Irish Marine Inst...	IMI_NEATL
	set	data	graph			Irish National Tide Gauge Network		F I M	background	RSS	Marine Institute	IrishNationalTideGaugeNetwork
	set	data	graph			Irish National Tide Gauge Network River Gauges		F I M	background	RSS	Marine Institute	IrishNationalTideGaugeNetworkRiverGauges
	set	data	graph			Irish Wave Buoys		F I M	background	RSS	Marine Institute	IWaveBNetwork
	set	data	graph			Irish Wave Buoys 30 Min		F I M	background	RSS	Marine Institute	IWaveBNetwork30Min
	set	data	graph			Irish Wave Buoys Spectral Data		F I M	background	RSS	Marine Institute	IWaveBNetwork_spectral
	set	data	graph			Irish Wave Buoys Zero crossing Data		F I M	background	RSS	Marine Institute	IWaveBNetwork_zerocrossing
	set	data	graph			Irish Weather Buoy Network		F I M	background	RSS	Marine Institute	IWBNetwork
	set	data	graph			MESTECH Multiparameter Sonde data		F I M	background	RSS	Dublin City Unive...	mestech
	set	data	graph			MI Tide Prediction		F I M	background	RSS	Marine Institute	IMI-TidePrediction
	set	data	graph			MI Wave Forecast at buoy locations		F I M	background	RSS	Marine Institute	IMI-WaveBuoyForecast
	set	data	graph			MI Wave Forecast at undefined Atlantos project locations		F I M	background	RSS	Marine Institute	waveatlantos00
data			graph	M		Model Monthly Means		F I M	background	RSS	Irish Marine Inst...	IMI_Model_Stats
	set	data	graph			Newport Buoys hiRes		F I M	background	RSS	Marine Institute	IMINewportBuoys

What have we done so far?

Marine Institute
Foras na Mara

IRELAND'S DIGITAL OCEAN

ERDDAP > List of All Datasets

32 matching datasets, listed in alphabetical order.

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	Institution	Dataset ID
	set	data	graph			* The List of All Active Datasets in this ERDDAP *		M	background		Marine Institute ...	allDatasets
	set	data	graph			AIS Met Hydro		F I M	background	RSS	Marine Institute	ais_met_hydro
	set	data	graph			Argo Float Vertical Profiles		F I M	background	RSS	Argo	argoFloats
data			graph	M		Bantry Bay model particle track analysis		F I M	background	RSS	Irish Marine Inst...	BANTRY_PARTICLES
	set	data	graph			Coastal Temperature Network		F I M	background	RSS	Marine Institute	ICTempNetwork
	set	data	graph			Coastal Temperature Network - Freshwater sites		F I M	background	RSS	Marine Institute	ICTempNetworkFreshwater
data			graph	M		East Atlantic SWAN Wave Model		F I M	background	RSS	Irish Marine Inst...	IMI_EATL_WAVE
	set	data	graph			EPA Beaches Model Predicted Tide Level		F I M	background	RSS	Marine Institute	IMI-TidePrediction_epa
	set	data	graph			Furnace Weather Station Daily averages		F I M	background	RSS	Met Eireann	imiFurnaceWSdaily
	set	data	graph			Galway Bay Observatory ADCP data		F I M	background	RSS	Irish Marine Inst...	spiddal_obs_adcp
	set	data	graph			Galway Bay Observatory CTD data		F I M	background	RSS	Marine Institute	spiddal_obs_ctd
	set	data	graph			Galway Bay Observatory Fluorometer Data		F I M	background	RSS	Marine Institute	galway_obs_fluorometer
	set	data	graph			GFS weather forecast at selected locations		F I M	background	RSS	NOAA/NCEP	GFS-WeatherTimeSeries
	set	data	graph			IBTS Trawl Surveys		F I M	background	RSS	Marine Institute	milbts
data			graph	M		Irish Marine Institute Connemara Model CONN2D		F I M	background	RSS	Irish Marine Inst...	IMI_CONN_2D
data			graph	M		Irish Marine Institute Connemara Model CONN3D		F I M	background	RSS	Irish Marine Inst...	IMI_CONN_3D
data			graph	M		Irish Marine Institute Northeast Atlantic Model		F I M	background	RSS	Irish Marine Inst...	IMI_NEATL
	set	data	graph			Irish National Tide Gauge Network		F I M	background	RSS	Marine Institute	IrishNationalTideGaugeNetwork
	set	data	graph			Irish National Tide Gauge Network River Gauges		F I M	background	RSS	Marine Institute	IrishNationalTideGaugeNetworkRiverGauges
	set	data	graph			Irish Wave Buoys		F I M	background	RSS	Marine Institute	IWaveBNetwork
	set	data	graph			Irish Wave Buoys 30 Min		F I M	background	RSS	Marine Institute	IWaveBNetwork30Min
	set	data	graph			Irish Wave Buoys Spectral Data		F I M	background	RSS	Marine Institute	IWaveBNetwork_spectral
	set	data	graph			Irish Wave Buoys Zero crossing Data		F I M	background	RSS	Marine Institute	IWaveBNetwork_zerocrossing
	set	data	graph			Irish Weather Buoy Network		F I M	background	RSS	Marine Institute	IWBNetwork
	set	data	graph			MESTECH Multiparameter Sonde data		F I M	background	RSS	Dublin City Unive...	mestech
	set	data	graph			MI Tide Prediction		F I M	background	RSS	Marine Institute	IMI-TidePrediction
	set	data	graph			MI Wave Forecast at buoy locations		F I M	background	RSS	Marine Institute	IMI-WaveBuoyForecast
	set	data	graph			MI Wave Forecast at undefined Atlantos project locations		F I M	background	RSS	Marine Institute	waveatlantos00
data			graph	M		Model Monthly Means		F I M	background	RSS	Irish Marine Inst...	IMI_Model_Stats
	set	data	graph			Newport Buoys hiRes		F I M	background	RSS	Marine Institute	IMINewportBuoys

What have we done so far?

Marine Institute
Foras na Mara

IRELAND'S DIGITAL OCEAN

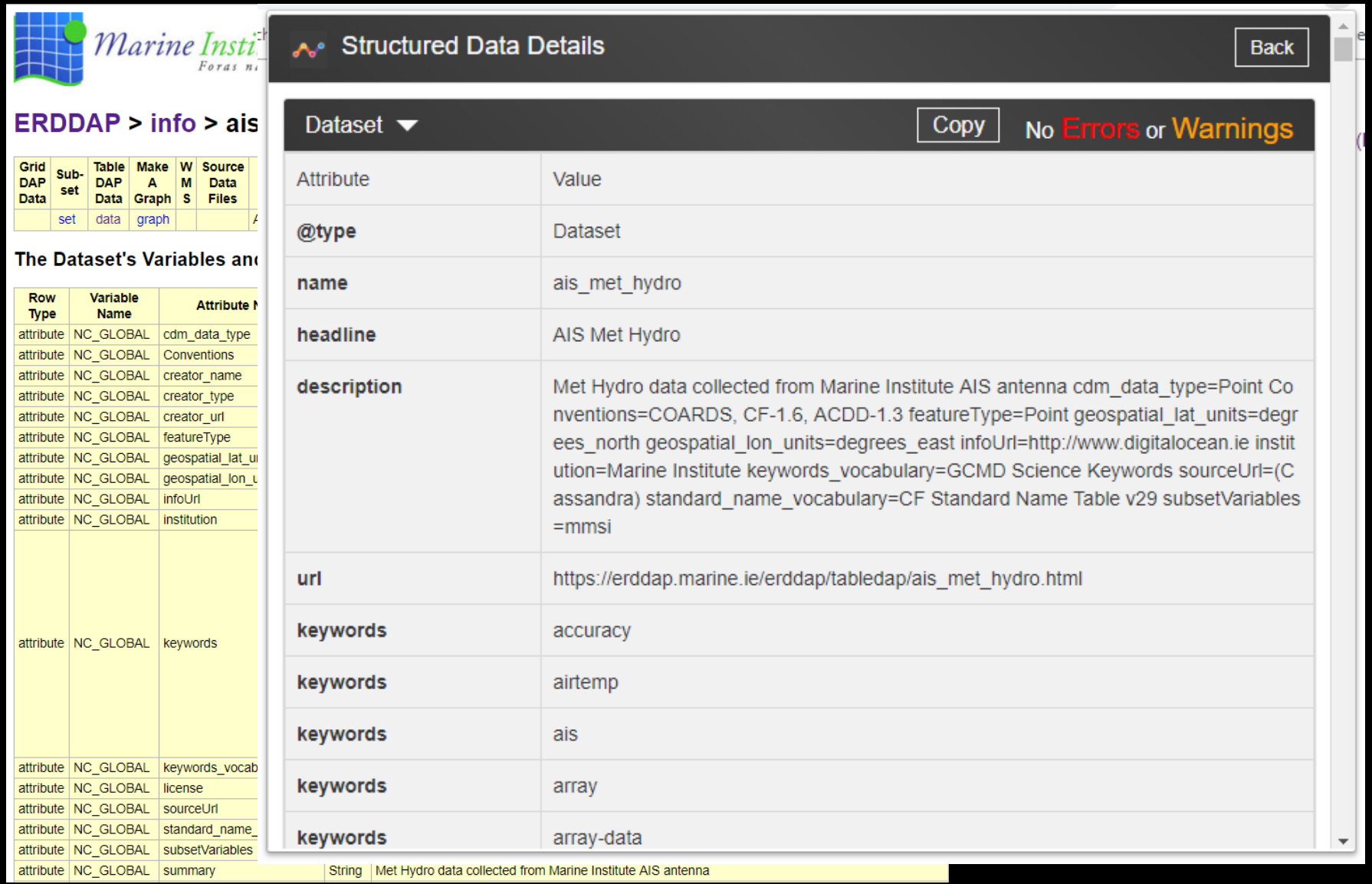
ERDDAP > info > ais_met_hydro

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	Institution	Dataset ID
	set	data	graph			AIS Met Hydro		F I M	background	RSS	Marine Institute	ais_met_hydro

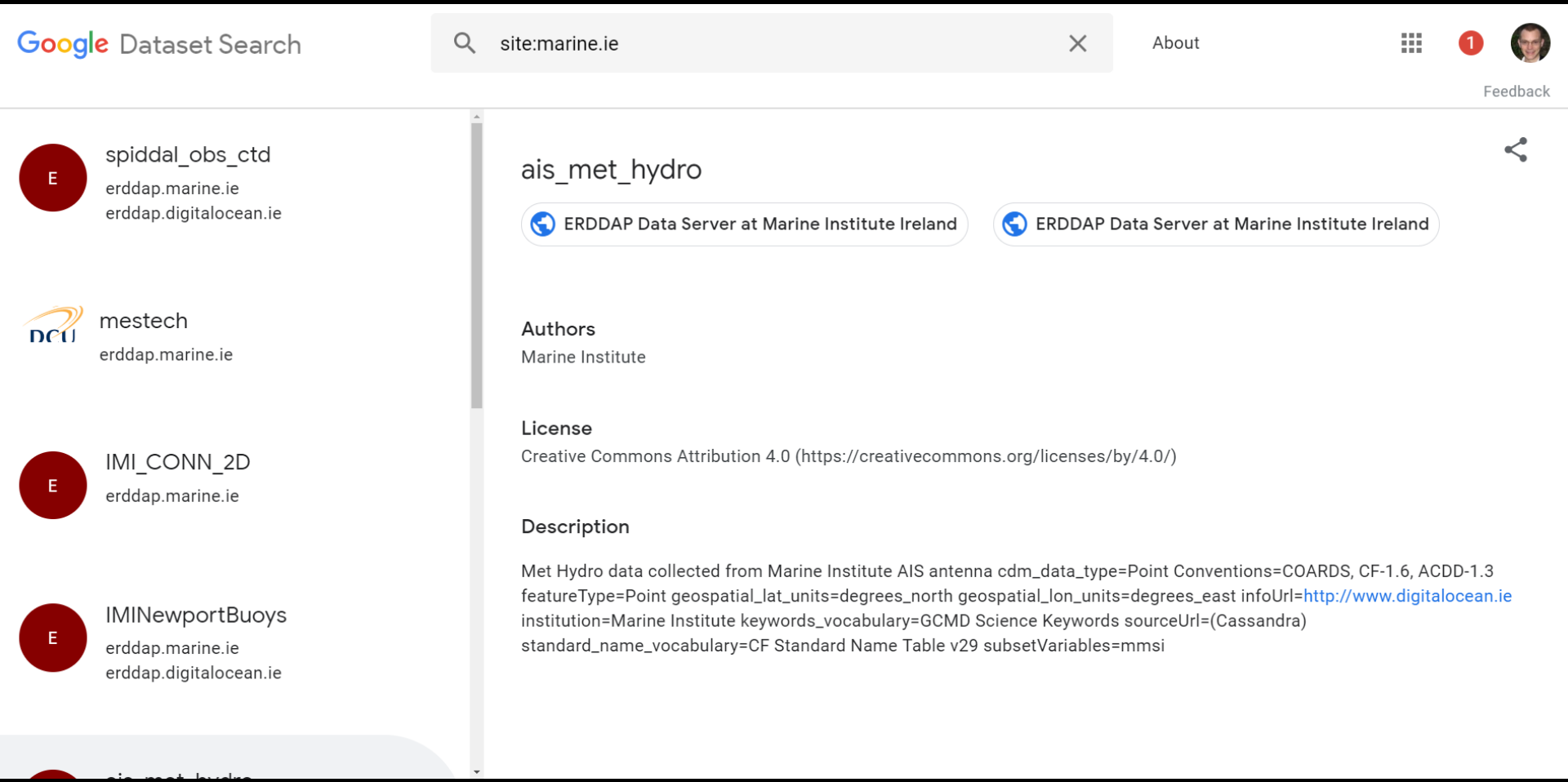
The Dataset's Variables and Attributes

Row Type	Variable Name	Attribute Name	Data Type	Value
attribute	NC_GLOBAL	cdm_data_type	String	Point
attribute	NC_GLOBAL	Conventions	String	COARDS, CF-1.6, ACDD-1.3
attribute	NC_GLOBAL	creator_name	String	Marine Institute
attribute	NC_GLOBAL	creator_type	String	person
attribute	NC_GLOBAL	creator_url	String	http://www.digitalocean.ie
attribute	NC_GLOBAL	featureType	String	Point
attribute	NC_GLOBAL	geospatial_lat_units	String	degrees_north
attribute	NC_GLOBAL	geospatial_lon_units	String	degrees_east
attribute	NC_GLOBAL	infoUrl	String	http://www.digitalocean.ie
attribute	NC_GLOBAL	institution	String	Marine Institute
attribute	NC_GLOBAL	keywords	String	accuracy, airtemp, ais, array, array-data, atmosphere, atmospheric, cdepth2, cdepth3, cdir, cdir2, cdir3, class, comprehensive, cspeed, cspeed2, cspeed3, currents, dac, data, density, device, dew, dew point, dewpoint, direction, earth, Earth Science > Atmosphere > Atmospheric Winds > Surface Winds, Earth Science > Oceans > Ocean Waves > Significant Wave Height, Earth Science > Oceans > Ocean Waves > Swells, Earth Science > Oceans > Ocean Waves > Wave Period, Earth Science > Oceans > Ocean Waves > Wave Speed/Direction, Earth Science > Oceans > Salinity/Density > Salinity, fid, flowtimestamp, gust, height, humidity, hydro, institute, large, latitude, level, leveltrend, longitude, marine, met, meteorology, mmsi, ocean, oceans, period, point, practical, preciptype, pressure, pressuretend, recordedtime, repeat, salinity, scaled, science, sea, sea level, sea_surface_swell_wave_period, sea_surface_wave_significant_height, sea_surface_wave_to_direction, sea_water_practical_salinity, seastate, seawater, significant, speed, stewardship, surface, surface waves, swell, swelldir, swellheight, swellperiod, swells, system, temperature, time, timestamp, type, visgreater, visibility, water, waterlevel, watertemp, wave, wavedir, waveheight, waveperiod, waves, wdir, wgust, wgustdir, wind, wind_speed_of_gust, winds, wspeed
attribute	NC_GLOBAL	keywords_vocabulary	String	GCMD Science Keywords
attribute	NC_GLOBAL	license	String	Creative Commons Attribution 4.0 (https://creativecommons.org/licenses/by/4.0/)
attribute	NC_GLOBAL	sourceUrl	String	(Cassandra)
attribute	NC_GLOBAL	standard_name_vocabulary	String	CF Standard Name Table v29
attribute	NC_GLOBAL	subsetVariables	String	mmsi
attribute	NC_GLOBAL	summary	String	Met Hydro data collected from Marine Institute AIS antenna

What have we done so far?



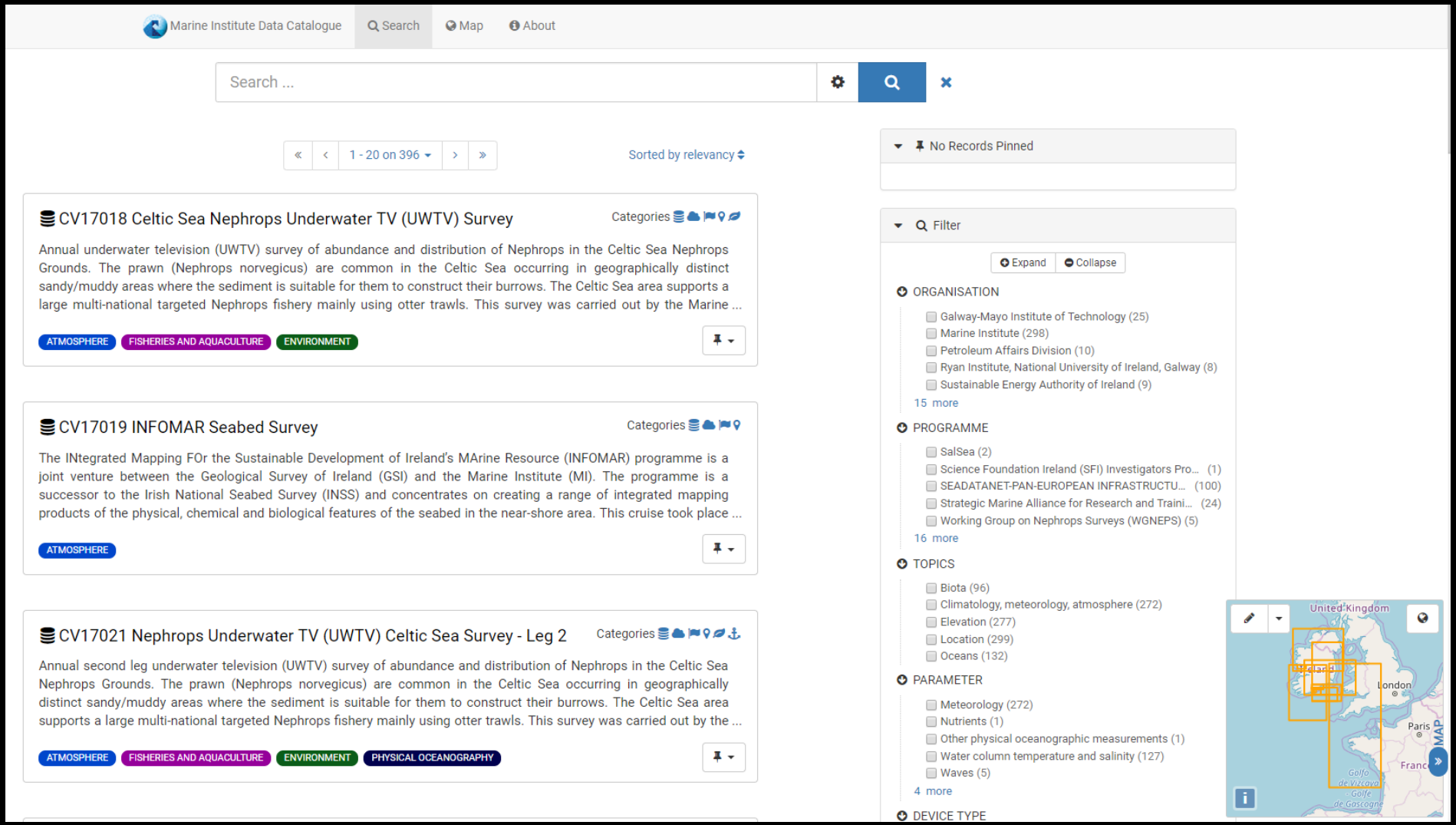
What have we done so far?



https://toolbox.google.com/datasetsearch/search?query=site%3Amarine.ie&docid=ku6SAZZKhVNKgC0sAAAAAA%3D%3D

What have we done so far?

What have we done so far?



http://data.marine.ie

What have we done so far?

Marine Institute Data Catalogue | Search | Map | About

Back to search | Download record | Display mode

CV17019 INFOMAR Seabed Survey

The INtegrated Mapping FOr the Sustainable Development of Ireland's MArine Resource (INFOMAR) programme is a joint venture between the Geological Survey of Ireland (GSI) and the Marine Institute (MI). The programme is a successor to the Irish National Seabed Survey (INSS) and concentrates on creating a range of integrated mapping products of the physical, chemical and biological features of the seabed in the near-shore area.

This cruise took place on board the R.V. Celtic Voyager in 2017 from 14th-22nd of July in the Celtic Sea.

Surveys conducted include:
Multibeam Echo Sounder (MBES) hydrographic survey to International Hydrographic Organisation (IHO) Order 1a standard.
Bathymetry survey: to produce bathymetry shaded relief and backscatter mosaic products which provide depth, seabed features and seabed hardness information.
Sub Bottom Profiler (SBP) survey: to acquire data of the shallow (up to 30 metres) sub seabed to determine the existence of buried objects and ascertain the sub-seabed character.
A magnetometer was used to acquire data on sub seabed geology to provide information on manmade seafloor debris.
No wrecks were mapped or no groundtruthing took place.

An area of 300km2 was covered during this survey.

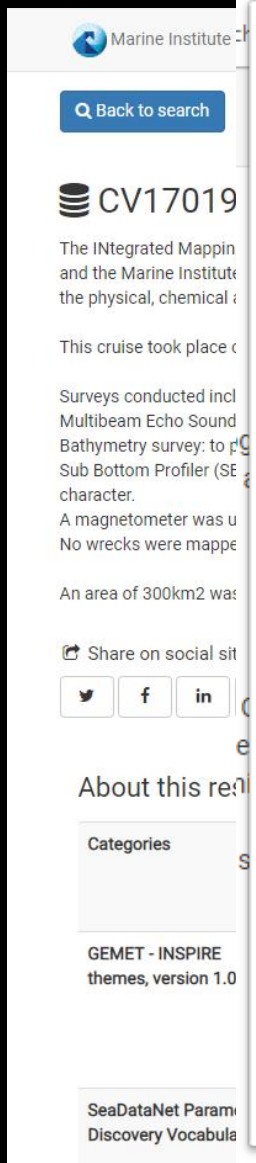
Share on social sites

About this resource

Categories	Datasets, Climatology, meteorology, atmosphere, Elevation, Location
GEMET - INSPIRE themes, version 1.0	Atmospheric conditions Elevation Oceanographic geographical features Geographical grid systems Meteorological geographical features
SeaDataNet Parameter Discovery Vocabulary	Air pressure Air temperature Vertical spatial coordinates

Location

What have we done so far?



Attribute	Value
@type	Dataset
name	CV17019 INFOMAR Seabed Survey
description	The INtegrated Mapping FOr the Sustainable Development of Ireland's MArine Resou rce (INFOMAR) programme is a joint venture between the Geological Survey of Irelan d (GSI) and the Marine Institute (MI). The programme is a successor to the Irish Natio nal Seabed Survey (INSS) and concentrates on creating a range of integrated mappin g products of the physical, chemical and biological features of the seabed in the near-shore area. This cruise took place on board the R.V. Celtic Voyager in 2017 from 14th-22nd of July in the Celtic Sea. Surveys conducted include: Multibeam Echo Sounder (MBES) hydrographic survey to International Hydrographic Organisation (IHO) Order 1a standard. Bathymetry survey: to produce bathymetry shaded relief and backscatter mosaic products which provide depth, seabed features and seabed hardness informati on. Sub Bottom Profiler (SBP) survey: to acquire data of the shallow (up to 30 metres) sub seabed to determine the existence of buried objects and ascertain the sub-seabe d character. A magnetometer was used to acquire data on sub seabed geology to pro vide information on manmade seafloor debris. No wrecks were mapped or no groundtr uthing took place. An area of 300km2 was covered during this survey.
url	https://data.marine.ie/dataset/1928
temporalCoverage	2017-07-14T06:00:00/2017-07-22
keywords	Atmosphere
keywords	Meteorology
variablesMeasured	Pressure (measured variable) exerted by the atmosphere

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	
Datasets (EDMED)	
Projects (EDMERP)	
Common Data Inventory	
Cruise Summary Reports	
Observing Systems (EDIOS)	

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	
Projects (EDMERP)	
Common Data Inventory	
Cruise Summary Reports	
Observing Systems (EDIOS)	

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	Datasets
Projects (EDMERP)	
Common Data Inventory	
Cruise Summary Reports	
Observing Systems (EDIOS)	

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	Dataset
Projects (EDMERP)	Project *(pending Schema)*
Common Data Inventory	
Cruise Summary Reports	
Observing Systems (EDIOS)	

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	Dataset
Projects (EDMERP)	Project
Common Data Inventory	Dataset
Cruise Summary Reports	
Observing Systems (EDIOS)	

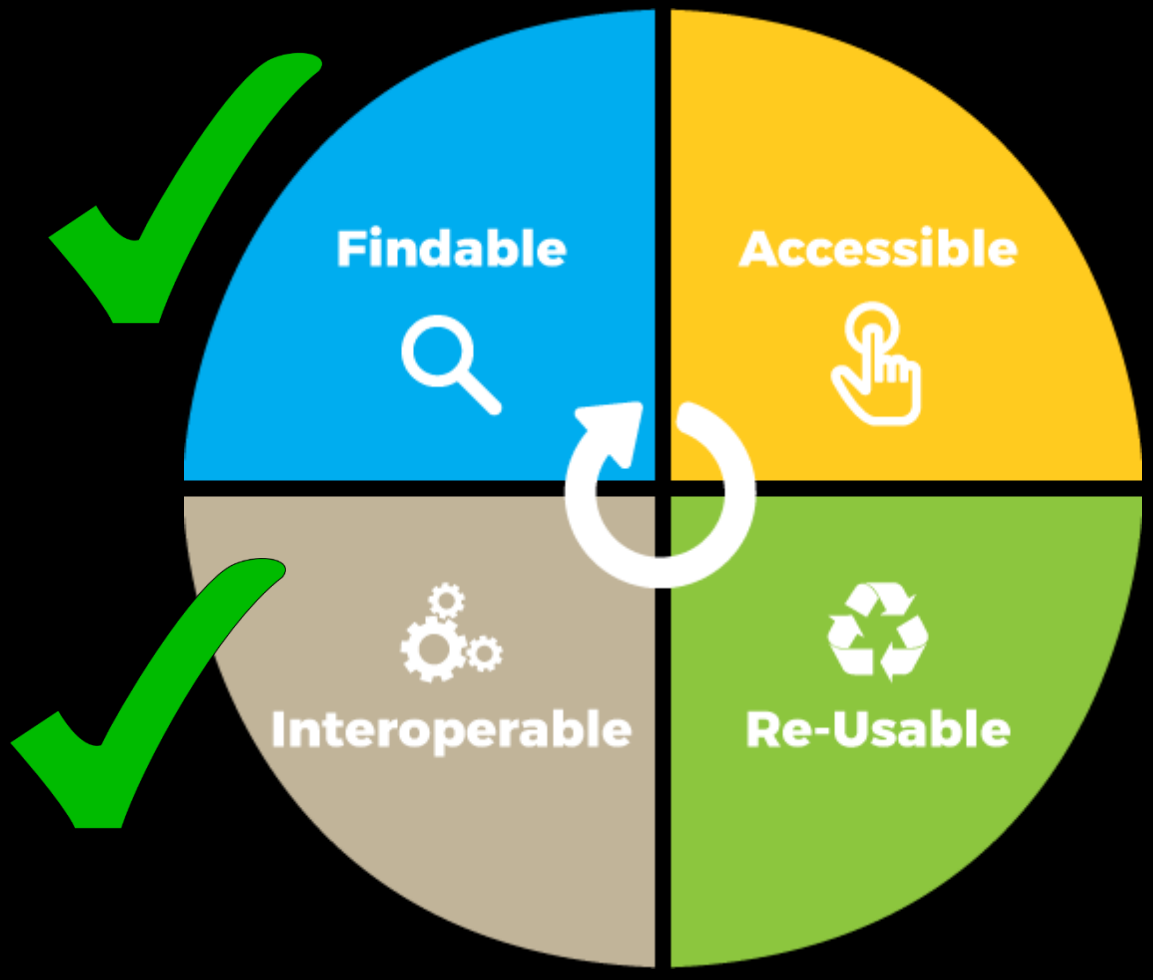
What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	Dataset
Projects (EDMERP)	Project
Common Data Inventory	Dataset
Cruise Summary Reports	Event
Observing Systems (EDIOS)	

What have we done so far?

Catalogue	Schema.org schema
Organisations (EDMO)	Organization
Datasets (EDMED)	Dataset
Projects (EDMERP)	Project
Common Data Inventory	Dataset
Cruise Summary Reports	Event
Observing Systems (EDIOS)	Thing

What have we done so far?



What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

Project 418: Goals

Worked with NSF data facilities to leverage schema.org for dataset *description*, *indexing* and *discovery*

What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

Project 418: Goals

	Describing	Publishing	Indexing	Serving
GOAL				
STATUS	P418 Vocabulary approaches developed, now working with ESIP on governance and evolution			

What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

Project 418: Goals

	Describing	Publishing	Indexing	Serving
GOAL				
STATUS	P418 Vocabulary approaches developed, now working with ESIP on governance and evolution	Worked with facilities to adapt approach to their existing metadata workflow and software.		

What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

Project 418: Goals

	Describing	Publishing	Indexing	Serving
GOAL				
STATUS	P418 Vocabulary approaches developed, now working with ESIP on governance and evolution	Worked with facilities to adapt approach to their existing metadata workflow and software.	Code developed to collect and index the descriptions. Indexes include: text, spatial and graph.	

What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

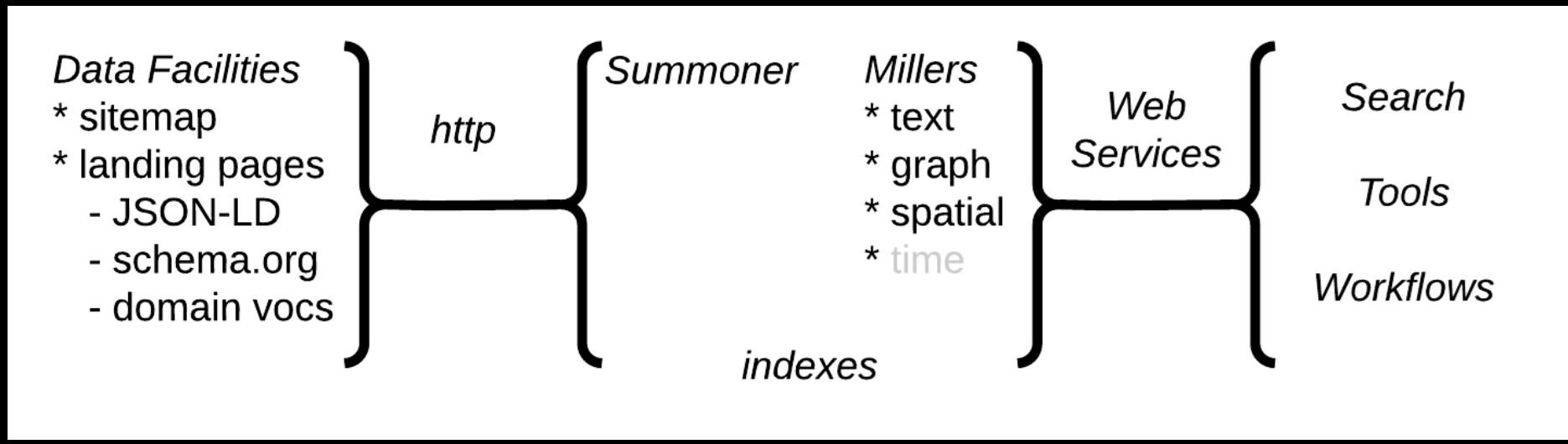
Project 418: Goals

	Describing	Publishing	Indexing	Serving
GOAL				
STATUS	P418 Vocabulary approaches developed, now working with ESIP on governance and evolution	Worked with facilities to adapt approach to their existing metadata workflow and software.	Code developed to collect and index the descriptions. Indexes include: text, spatial and graph.	Geodex.org, example notebooks and APIs.

What have we done so far?

EARTHCUBE
TRANSFORMING GEOSCIENCES RESEARCH

Project 418: Goals



How to do it?

How to do it?

- Add some JSON to your web pages

How to do it?

- Add some JSON to your web pages

```
<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",
```

How to do it?

- Add some JSON to your web pages
- Make sure the pages are in your sitemap

How to do it?

- Add some JSON to your web pages
- Make sure the pages are in your sitemap
- Submit your sitemap to Google…

Thoughts for the future

Thoughts for the future

Thoughts for the future

Thoughts for the future

‘A tabular dataset is one organized primarily in terms of a grid of rows and columns. For pages that embed tabular datasets, you can also create more explicit markup, building on the basic approach described above. At this time we understand a variation of CSVW (“CSV on the Web”), provided in parallel to user-oriented tabular content on the HTML page.’

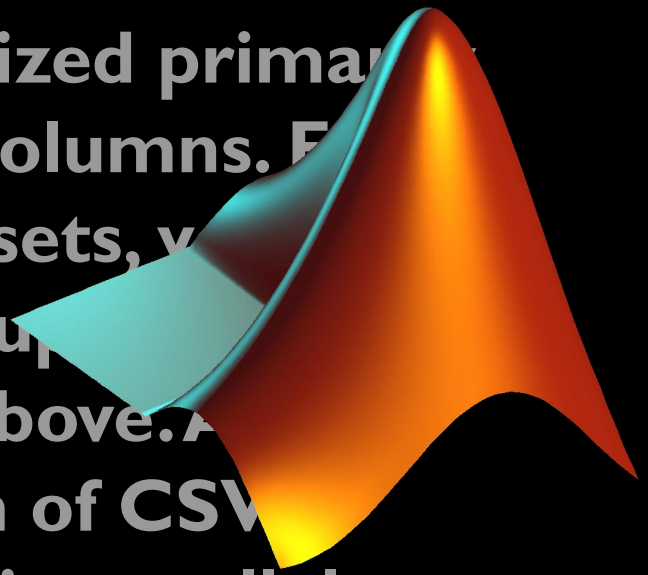
https://developers.google.com/search/docs/data-types/dataset

Thoughts for the future

‘A tabular dataset is one organized primarily in terms of a grid of rows and columns. For pages that embed tabular datasets, you can also create more explicit markup, building on the basic approach described above. At this time we understand a variation of CSVW (“CSV on the Web”), provided in parallel to user-oriented tabular content on the HTML page.’

Thoughts for the future

Ocean Data View



rganized prima
nd columns. F
s that embed tabular datasets, y
create more explicit marku
s approach described above. A
we understand a variation of CSV
v on the Web"), provided in parallel to
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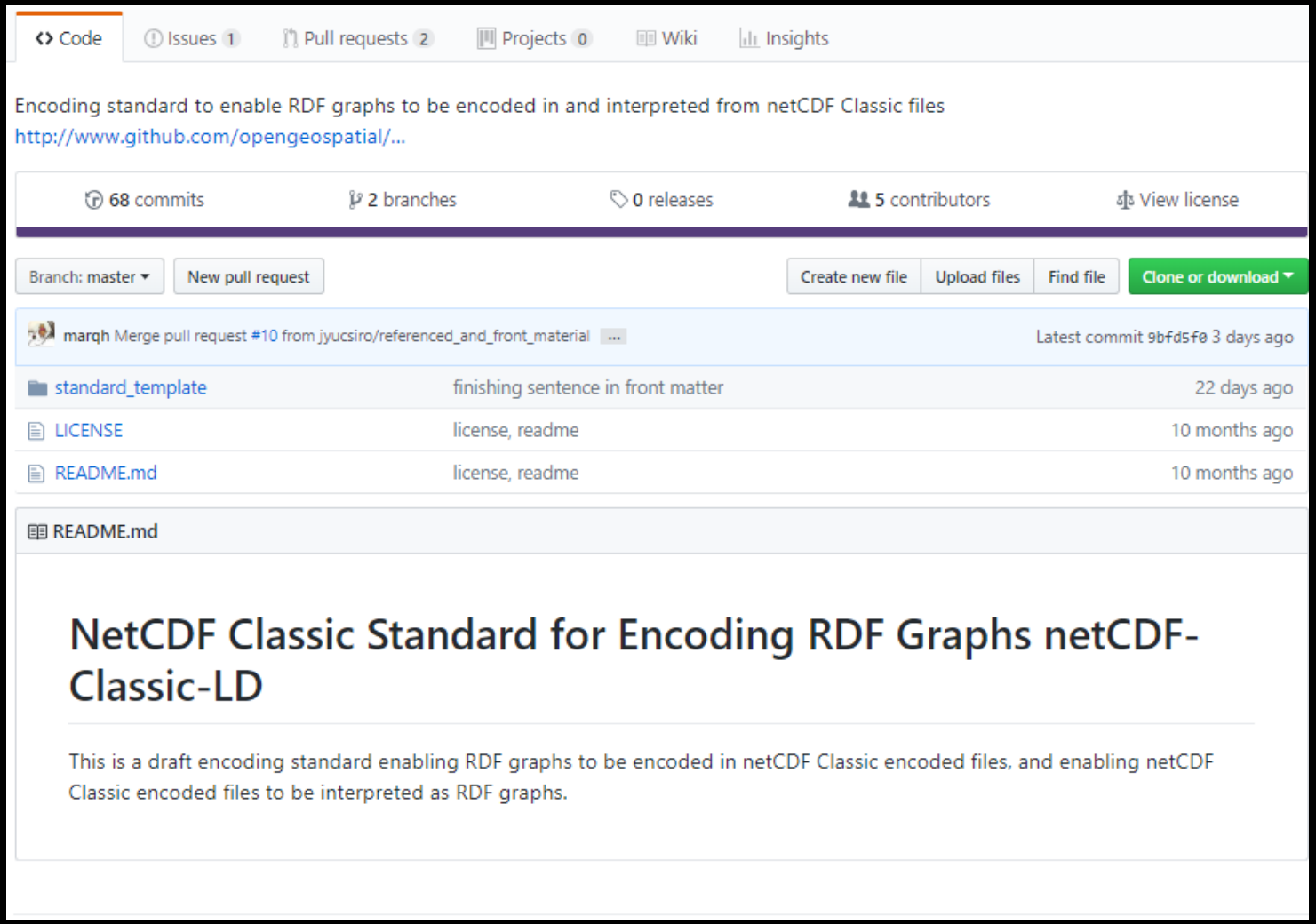
page."

Thoughts for the future



https://github.com/opengeospatial/netCDF-Classic-LD

Thoughts for the future

⇑ -- **Sigma-theta of the water body by CTD and computation from salinity and potential temperature using UNESCO algorithm** --

URI	http://vocab.nerc.ac.uk/collection/P01/current/SIGTPR01/
Identifier ()	SDN:P01::SIGTPR01
Preferred label (en)	**Sigma-theta of the water body by CTD and computation from salinity and potential temperature using UNESCO algorithm**
Alternative label (en)	SigTheta
Definition (en)	This is the preferred term for this definition. Alternative term SIGTPR02 is included to cover cases where there are two sensors of the same type contributing to the data set and referential integrity considerations prevent a usage of a single code.
Version Info ()	1
Has Current Version	http://vocab.nerc.ac.uk/collection/P01/current/SIGTPR01/1/
PAV Version ()	1
PAV Authored On ()	2009-11-03 16:19:38.0
Deprecated()	false
Same as	http://vocab.nerc.ac.uk/collection/OG1/current/SIGTHETA/
Broader	http://vocab.nerc.ac.uk/collection/P02/current/SIGT/
Broader	http://vocab.nerc.ac.uk/collection/S26/current/MAT00640/
Broader	http://vocab.nerc.ac.uk/collection/P07/current/CFSN0333/
Related	http://vocab.nerc.ac.uk/collection/P06/current/UKMC/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0002/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0040/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0041/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0042/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0058/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0144/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0149/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0035/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0451/
Related	http://vocab.nerc.ac.uk/collection/S02/current/S032/
Related	http://vocab.nerc.ac.uk/collection/L22/current/TOOL0018/
Date ()	2009-11-03 16:19:38.0

http://vocab.nerc.ac.uk/collection/P01/current/SIGTPR01/

Thoughts for the future

Useful Links

Google Dataset Search

- https://toolbox.google.com/datasetsearch

Schema.org Datasets

- https://schema.org/Dataset
- https://developers.google.com/search/docs/data-types/dataset

Structured Data Testing Tools

- https://search.google.com/structured-data/testing-tool
- http://linter.structured-data.org/

Project 418

- Code: https://github.com/earthcubearchitecture-project418
- Implementation: https://geodex.org/

The place of Schema.org in Linked Ocean Data

Adam Leadbetter
adam.leadbetter@marine.ie