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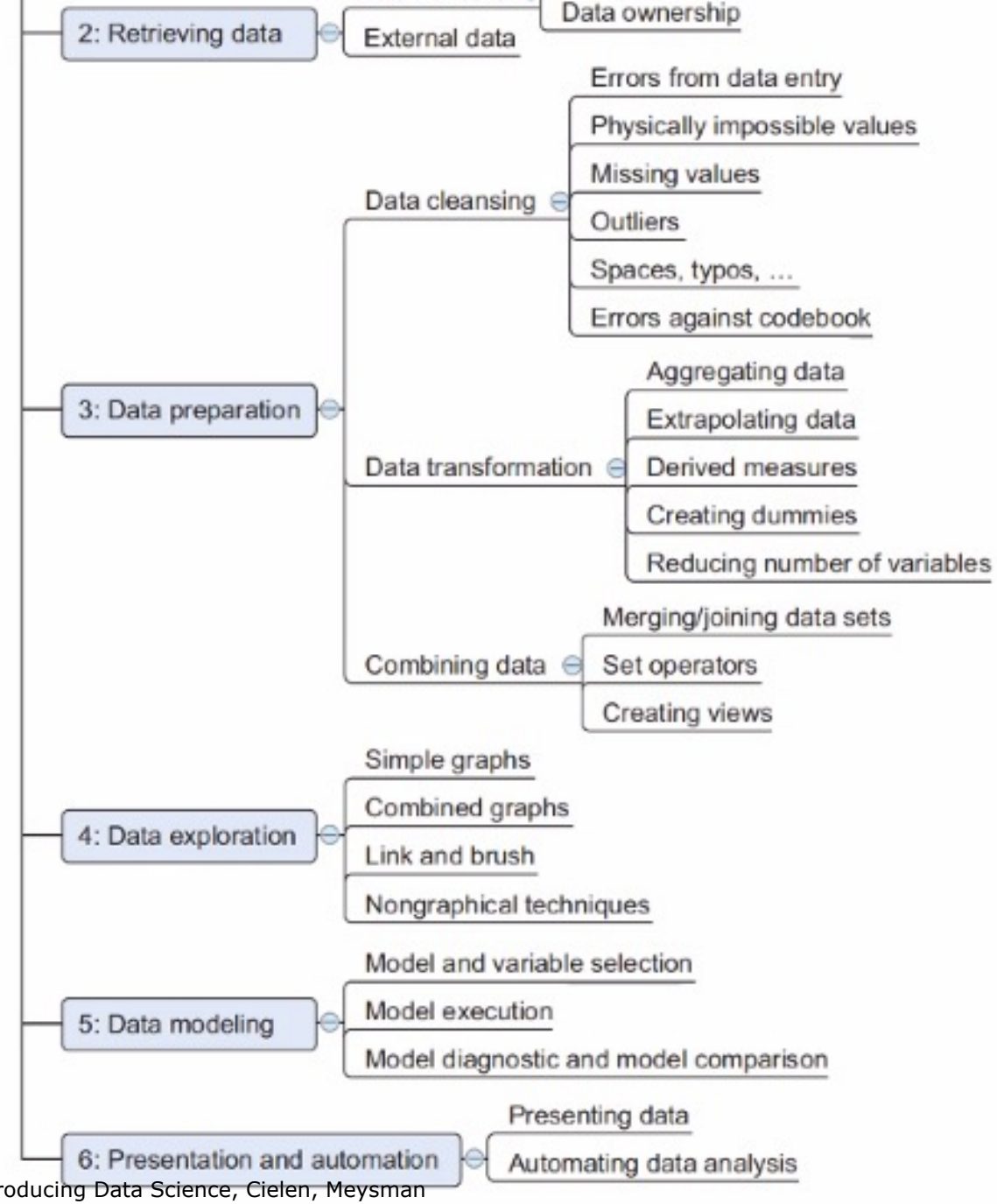
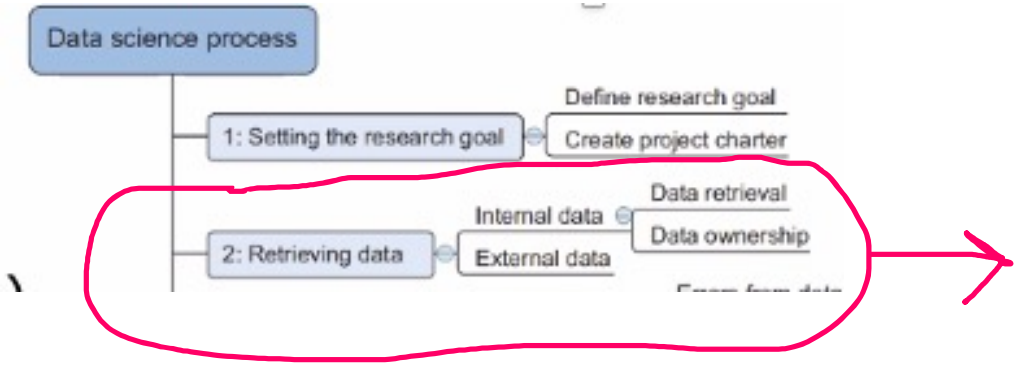
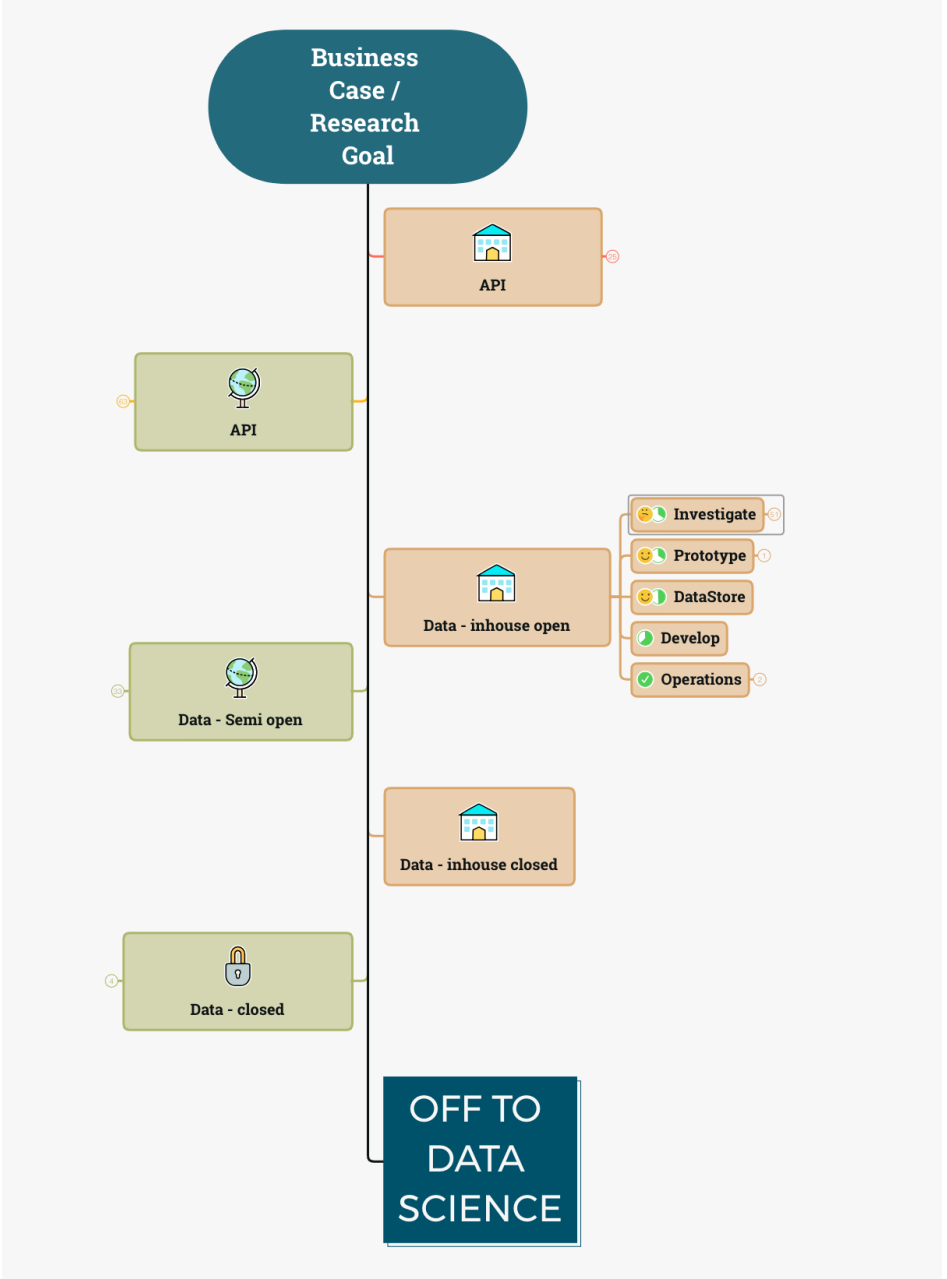


Kilde: Introducing Data Science, Cielen, Meysman & Ali, Manning

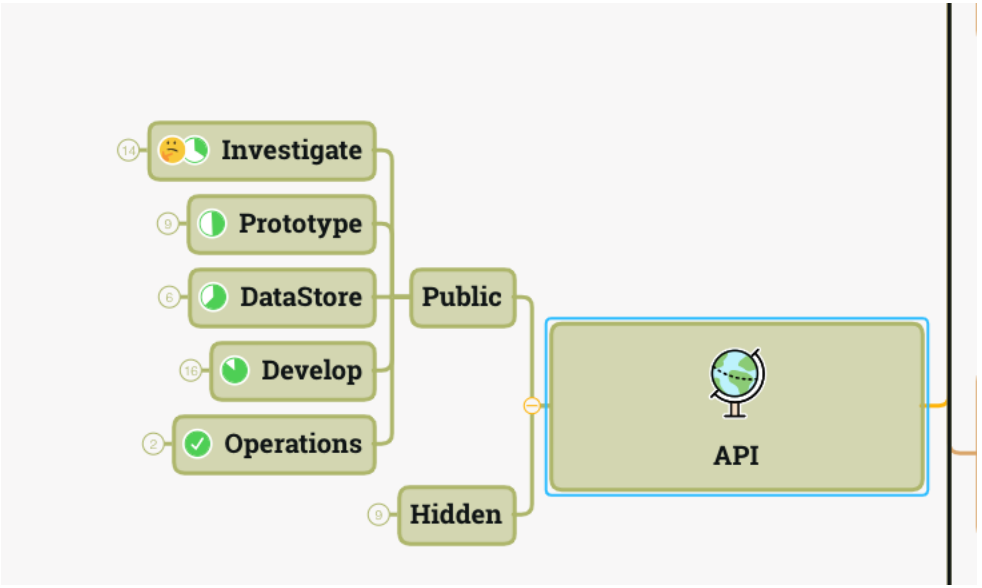
Data-retrieval





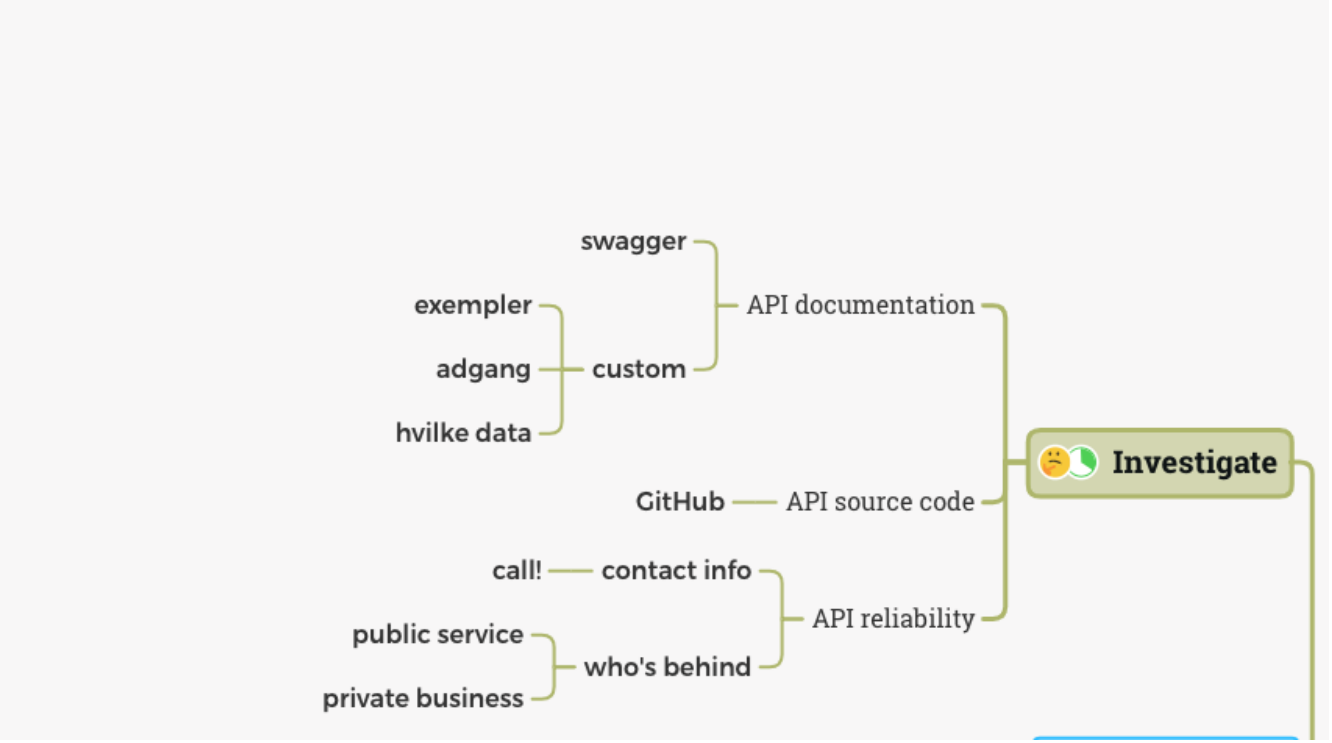
cphbusiness

Data-retrieval: Public API



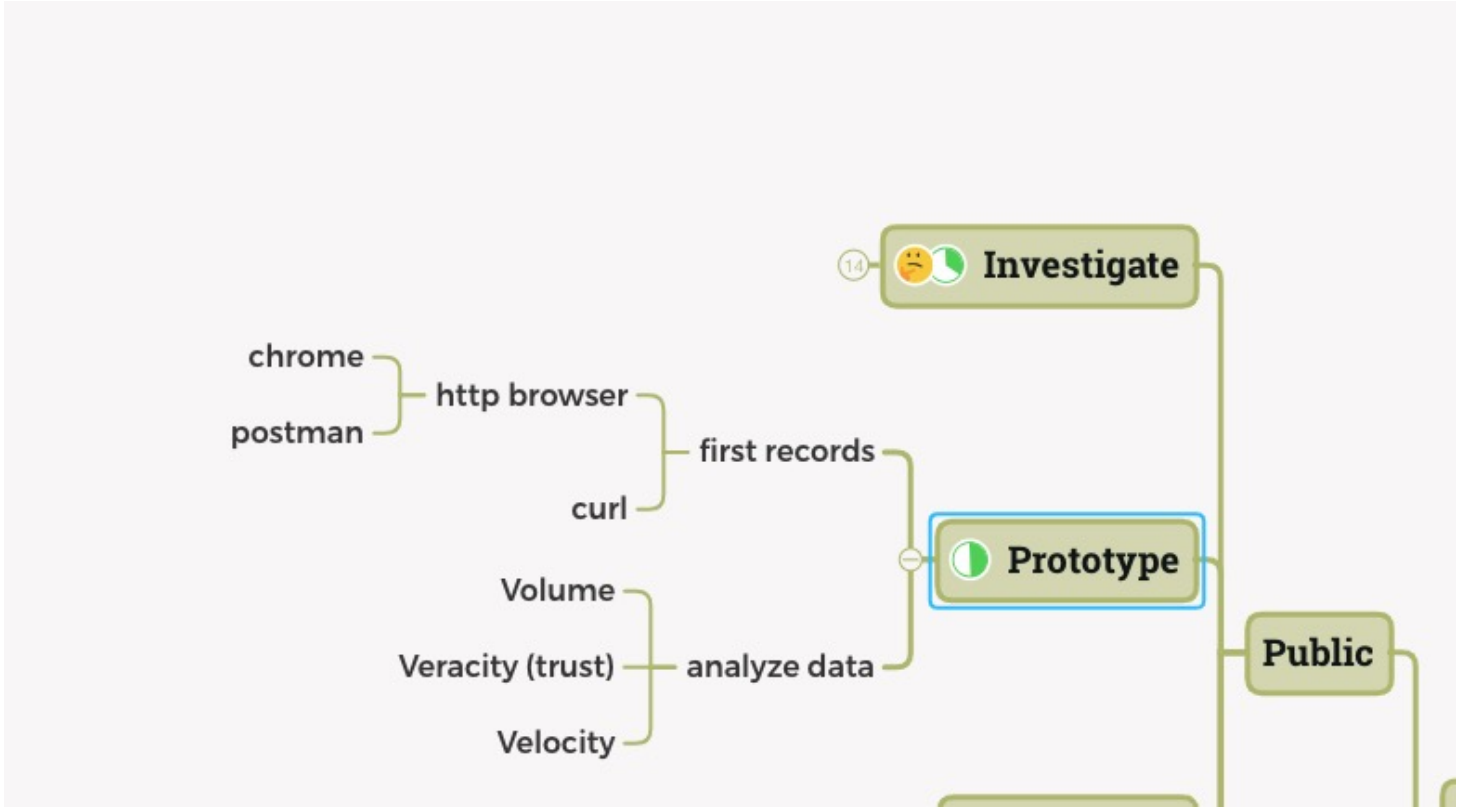
cphbusiness

Data-retrieval: Public API -> Investigate

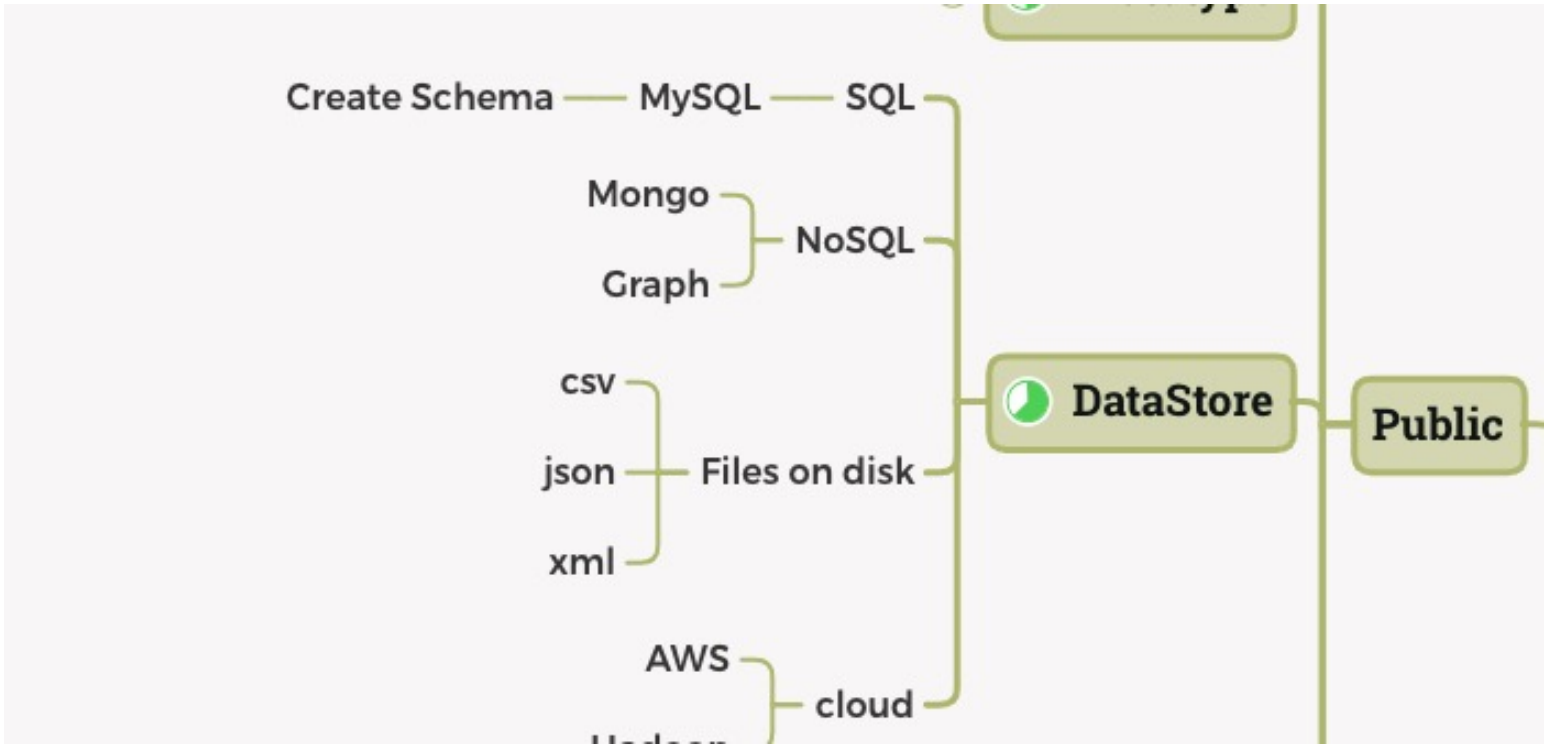


cphbusiness

Data-retrieval: Public API -> Prototype



Data-retrieval: Public API -> Datastore



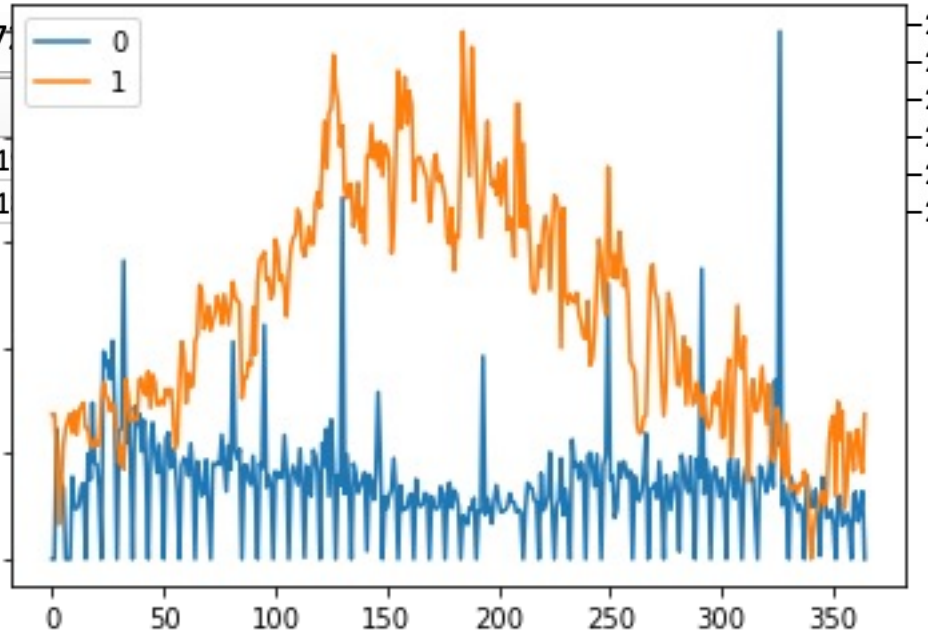
Data-retrieval CASE: DMI public API & SMK

DMI Open Data Developers portal


```
{"observed":"2019-12-30T18:00:00Z","value":7.4}
{"observed":"2019-12-29T18:00:00Z","value":4.6}
{"observed":"2019-12-28T18:00:00Z","value":0.4}
{"observed":"2019-12-27T18:00:00Z","value":2.7}
-26T18:00:00Z","value":5.4}
-25T18:00:00Z","value":6.5}
-24T18:00:00Z","value":7}
-23T18:00:00Z","value":7.4}
-22T18:00:00Z","value":6.2}
-21T18:00:00Z","value":7.6}
```

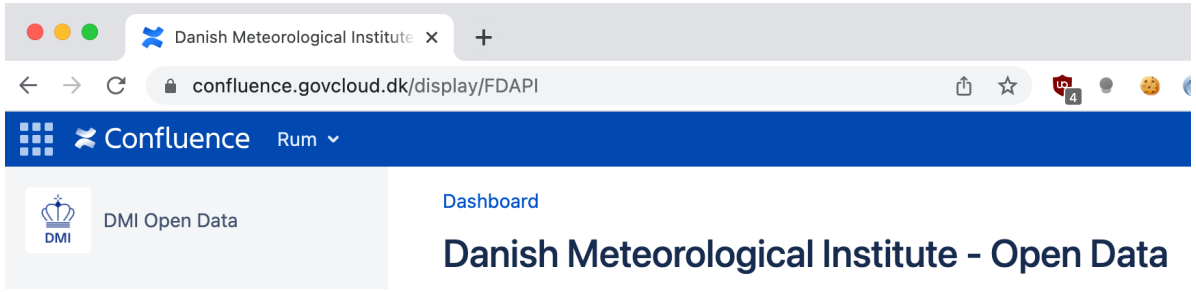

B2 fx 1

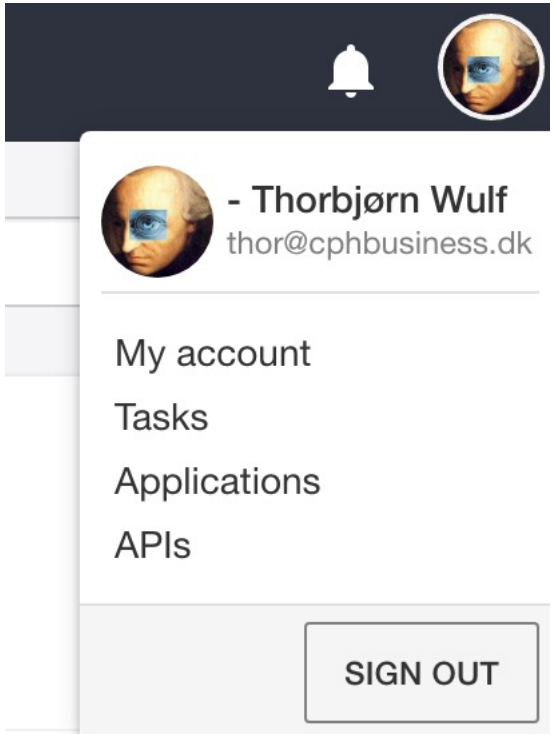
	A	B	C
1	01.jan.19	02.jan.19	03.jan.1
2	0	972	71



Data-retrieval CASE: Investigate

DMI Open Data Developers portal



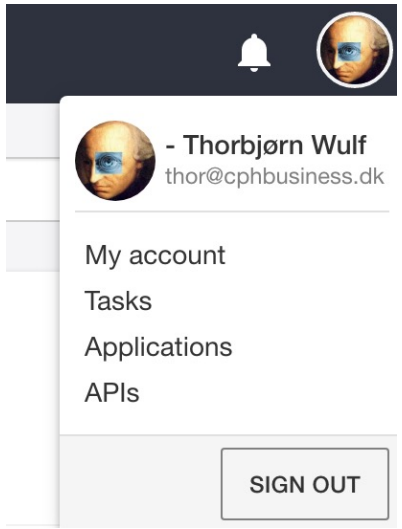


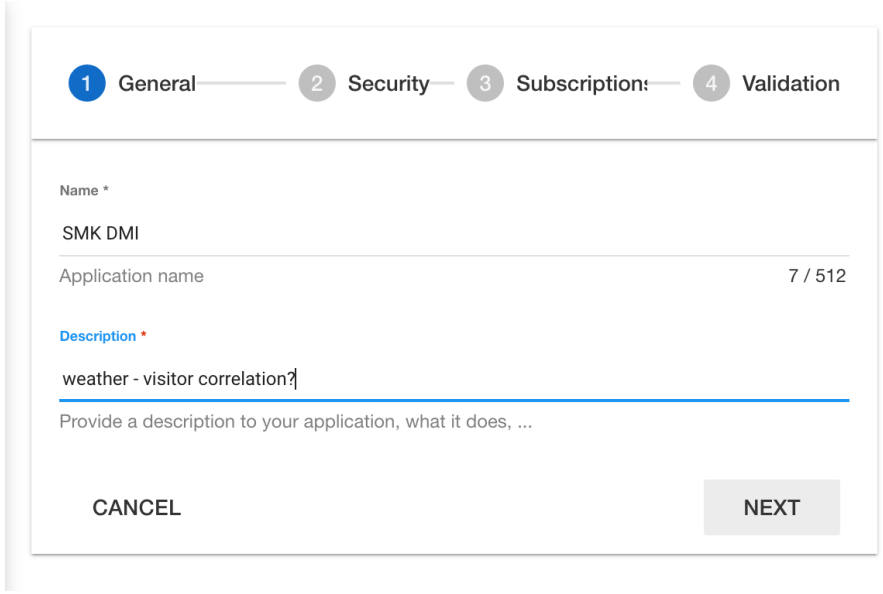
Before you start consuming data from the API, we ask you to:

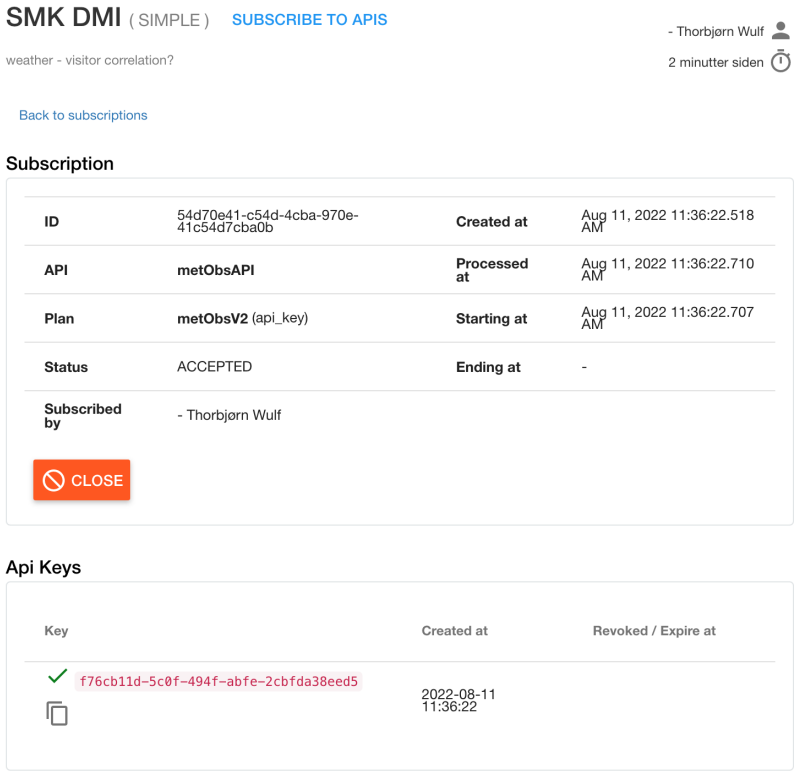
1. **Register as a user** in DMI's Developer Portal
2. **Register an application** in the Developer Portal and get your "API Key"
3. **Save the API key** somewhere safe, because you need it every time you make a request for the API. Otherwise you will not be authorized by the API.

Data-retrieval CASE: Investigate

DMI Open Data Developers portal







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Data-retrieval CASE: Investigate

DMI Open Data Developers portal

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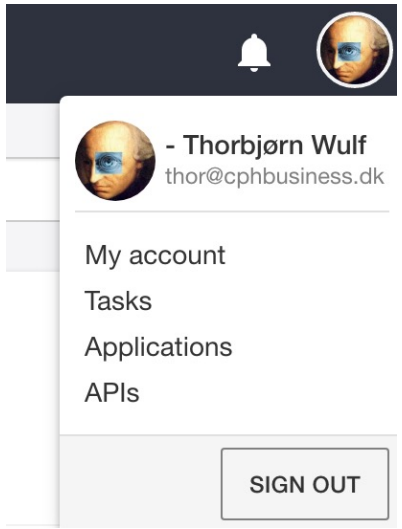


Subscriptions

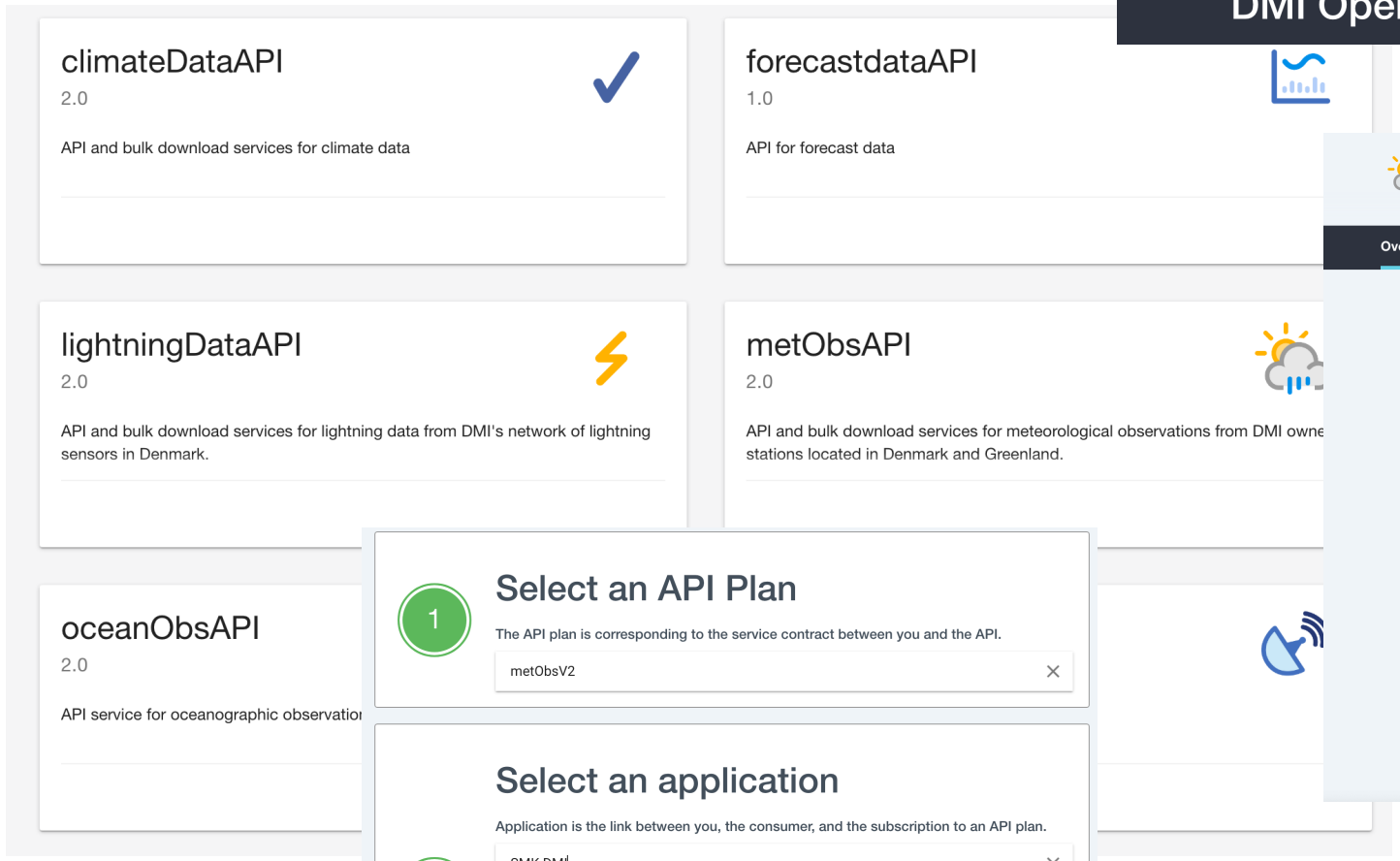
Apis | Status: Accepted, Paused, Pending | API key | SEARCH | CLEAR

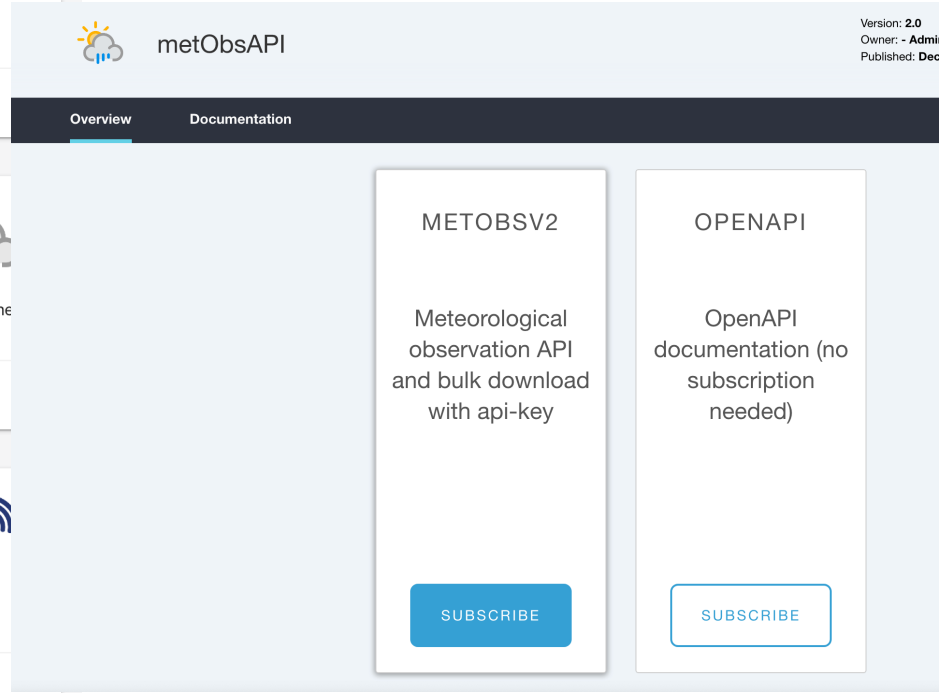
API	Plan	Created at	Processed at	Start at	End at	Status
metObsAPI	metObsV2	2022-08-11 11:36:22	2022-08-11 11:36:22	2022-08-11 11:36:22	-	Accepted

1 | 10 | 1 - 1 of 1

Data-retrieval CASE: Investigate

DMI Open Data Developers portal





Data-retrieval CASE: Investigate

DMI Open Data Developers portal

climateDataAPI
2.0

API and bulk download services for climate data

forecastdataAPI
1.0

API for forecast data

lightningDataAPI
2.0

API and bulk download services for lightning data from DMI's network of lightning sensors in Denmark.

metObsAPI
2.0

API and bulk download services for meteorological observations from DMI owned stations located in Denmark and Greenland.

Let's start to use "metObsAPI" with "SMK DMI"!

3

You can access the API using the following API Key:: `f76cb11d-5c0f-494f-abfe-2cbfda38eed5`

Request sample using curl:

```
curl -X GET "https://dmigw.govcloud.dk/v2/metObs" -
H "X-Gravitee-Api-Key: f76cb11d-5c0f-494f-abfe-
2cbfda38eed5"
```

Data-retrieval CASE: Investigate

DMI Open Data Developers portal

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Confluence Rum

DMI Open Data

SIDETRÆ

- Getting Started
- User Creation
- Meteorological Observation
  - Service Documentation (metObs
    - OpenAPI Specification (metOb
    - Schema (metObs)
    - **Request & Response Exampl**
    - Bulk Download Service (metOl
    - Release Notes (metObs)
  - Data Information (metObs)
- Oceanographic Observation
- Lightning data
- Climate data
- Radar Data
- Forecast Data

Service Documentation (metObs)

- OpenAPI Specification (metObs)
- Schema (metObs)
- Request & Response Examples (metObs)
- Bulk Download Service (metObs)
- Release Notes (metObs)

Data Information (m

- About Meteorologic
- Codes (metObs)
- Parameters (metOb
- Stations (metObs)

Schema (metObs)

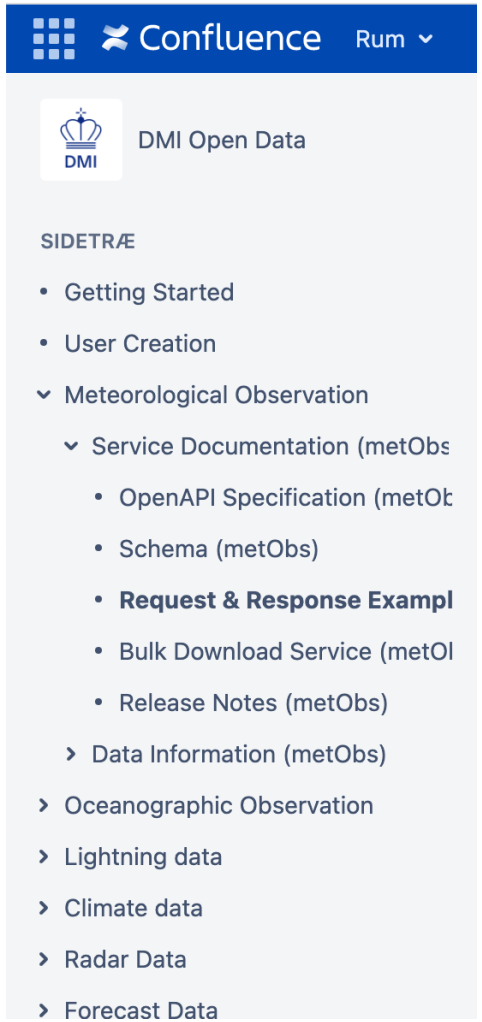
Oprettet af DMI Bruger, senest ændret d. feb. 03, 2022

Table of contents:

stationId	Narrow the search to a specific station ID	**stationId=SOME_ID**	**Example:** https://dmigw.govcloud.dk/v2/metObs/collections **Description:** Returns observations for the station with the i
datetime	Narrow the search to a date range or a specific date. The range can	**datetime=START_DATE/END_DATE** **datetime=../END_DATE** **datetime=START_DATE/..** **datetime=DATE**	**Example:** https://dmigw.govcloud.dk/v2/metObs/collections 02-12T00:00:00Z/2018-03-18T00:00:00Z **Description:** Returns observations within the dates UTC 20 03-18 at midnight. Both dates are inclusive.

Data-retrieval CASE: Investigate

DMI Open Data Developers portal



stationId	Narrow the search to a specific station ID	**stationId=SOME_ID**	**Example**: https://dmigw.govcloud.dk/v2/metObs/collections **Description:** Returns observations for the station with the i
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05735	Livgardens Kaserne	DNK	DMI	Pluvio	Active	6

https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?datetime=2018-02-12T00:00:00Z/2018-03-18T00:00:00Z

https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?datetime=2019-01-01T00:00:00Z/2019-12-31T00:00:00Z&stationId=057355

Data-retrieval CASE: Proto type

DMI Open Data Developers portal

Let's start to use "metObsAPI" with "SMK DMI"!

3

You can access the API using the following API Key:: `f76cb11d-5c0f-494f-abfe-2cbfda38eed5`

Request sample using curl:

```
curl -X GET "https://dmigw.govcloud.dk/v2/metObs" -H "X-Gravitee-Api-Key: f76cb11d-5c0f-494f-abfe-2cbfda38eed5"
```


```
{
    "type": "FeatureCollection",
    "features": [
        {
            "geometry": {
                "coordinates": [
                    9.7875,
                    56.1496
                ],
                "type": "Point"
            },
            "id": "3443db25-0689-fe40-3ebd-731665e5e4d5",
            "type": "Feature",
            "properties": {
                "created": "2022-02-22T18:55:50.406006Z",
                "observed": "2019-10-07T00:00:00Z",
                "parameterId": "precip_past1h",
                "stationId": "05185",
```


```
(base) _____________________________________________________________________________
| ~ @ 10153-62 (thor)
| => curl -X GET "https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?stationId=05185&datetime=2019-10-01T00:00:00Z/2019-10-07T00:00:
key=6b30cc3d-800f-4d8f-80a2-3a498de37b47" -s  | python -mjson.tool
```


```
            "type": "application/geo+json",
            "title": "Next set of results"
        }
    ]
}
```

Data-retrieval CASE:

Proto type

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18021 linjer …
Investigate some more!

Data-retrieval CASE: Investi gate

DMI Open Data Developers portal

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https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?datetime=2019-01-01T00:00:00Z/2019-12-31T00:00:00Z&stationId=057355&api-key=6b30cc3d-800f-4d8f-80a2-

parameterId	Narrow the search to a specific parameter id	**parameterId=SOME_ID**	**Example**: https://dmigw.govcloud.dk/v2/metObs/collections parameterId=pressure_at_sea **Description:** Returns observations having the parameter ID pressure reduced to mean sea level)

https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?datetime=2019-01-01T00:00:00Z/2019-12-31T00:00:00Z&stationId=057355&api-key=6b30cc3d-800f-4d8f-80a2-

	created	operationFrom	operationTo	updated	validFrom	validTo	
6	2022-02-25T14:23:15Z	2010-01-14T00:00:00Z	n/a	n/a	2019-10-25T10:54:22Z	n/a	n/a
6	2022-02-25T14:23:15Z	1983-06-16T00:00:00Z	n/a	n/a	2019-01-15T13:34:48Z	n/a	

Data-retrieval CASE: Proto type

DMI Open Data Developers portal

		terrain		
temp_max_past12h	°C	Last 12 hours maximum air temperature measured 2 m above ground. Measured at 0600 and 1800 UTC.	Twice a day	X

```
| => echo $tturl
https://dmigw.govcloud.dk/v2/metObs/collections/observation/items?
parameterId=temp_max_past12h&stationId=06180&datetime=2019-01-01T0
0:00:00Z/2019-12-31T00:00:00Z&api-key=6b30cc3d-800f-4d8f-80a2-3a49
8de37b47
```

```
| ~ @ 10153-82 (thor)
| => grep observe 12hm
                "observed": "2019-12-30T18:00:00Z",
                "observed": "2019-12-30T06:00:00Z",
                "observed": "2019-12-29T18:00:00Z",
                "observed": "2019-12-29T06:00:00Z"

    "observed": "2019-01-02T18:00:00Z",
    "observed": "2019-01-02T06:00:00Z",
    "observed": "2019-01-01T18:00:00Z",
    "observed": "2019-01-01T06:00:00Z",
```

(base)

Men jo kun om dagen?

Data-retrieval CASE: Data store

DMI Open Data Developers portal

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En fil i formatet JSON på 13125 linjer

thor — vim 12hm — 110×55


```
{
    "type": "FeatureCollection",
    "features": [
        {
            "geometry": {
                "coordinates": [
                    12.6455,
                    55.614
                ],
                "type": "Point"
            },
            "id": "71c8dc29-2972-8e4b-79a1-19190af02de4",
            "type": "Feature",
            "properties": {
                "created": "2022-02-23T06:25:43.486815Z",
                "observed": "2019-12-30T18:00:00Z",
                "parameterId": "temp_max_past12h",
                "stationId": "06180",
                "value": 7.4
            }
        },
            "rel": "next",
            "type": "application/geo+json",
            "title": "Next set of results"
        }
    ]
}
```

Data-retrieval CASE: Data prep

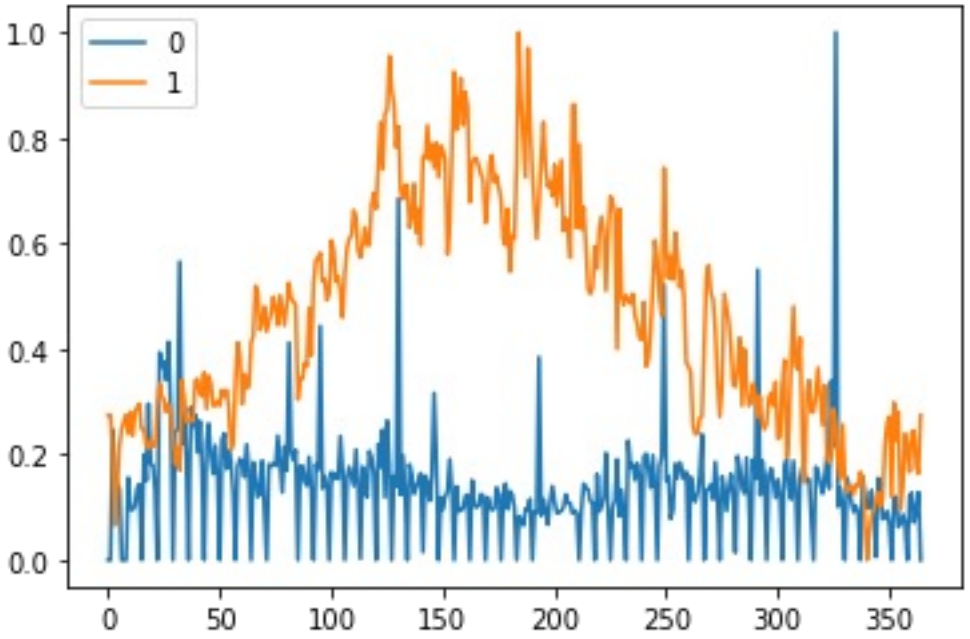
DMI Open Data Developers portal

cphbusiness

En fil i formatet csv på 365 linjer

	A	B	C
1	Date	Visitors	temp
2	31.dec.19	0	7.4
3	30.dec.19	0	7.4
4	29.dec.19	1872	4.6
5	28.dec.19	1264	0.4
6	27.dec.19	1082	2.7
7	26.dec.19	1026	5.4
8	25.dec.19	0	6.5
9	24.dec.19	0	7
10	23.dec.19	0	7.4
11	22.dec.19	1182	6.2

	visitors	temp
0	0.000000	0.274627
1	0.000000	0.274627
2	0.247031	0.191045
3	0.166799	0.065672
4	0.142782	0.134328
...	...	...
360	0.127342	0.241791
361	0.071127	0.244776
362	0.094748	0.176119
363	0.128266	0.164179
364	0.000000	0.274627



$$x' = \frac{x - \min(x)}{\max(x) - min(x)}$$

Data-retrieval CASE: Proto type

DMI Open Data Developers portal

cphbusiness

Google dmi open api tutorial

https://predictablysunny.com › posts ▾ Oversæt denne side

DMI API Tutorial - Predictably Sunny

This **tutorial** gives an introduction on how to use the Danish Meteorological Institute's (**DMI**) **API** to download meterological observation **data** (v2).

Adam R. Jensen

Solar | Storage | Open Science

I work with measurement and modeling of solar energy systems and the solar resource.

```
In [2]: import requests # library for making HTTP request
        import pandas as pd # library for data analysis
        import datetime as dt # library for handling date

In [3]: api_key = '6b30cc3d-800f-4d8f-80a2-3a498de37b47'

In [4]: DMI_URL = 'https://dmigw.govcloud.dk/v2/metObs/co
        r = requests.get(DMI_URL, params={'api-key': api_
        print(r, r.url)

In [5]: json = r.json()  # Extract JSON data
        print(json.keys())  # Print the keys of the JSON dictionary

        dict_keys(['type', 'features', 'timeStamp', 'numberReturned'

In [6]: json['features'][:2]

Out[6]: [{'geometry': {'coordinates': [8.0828, 55.5575], 'type': 'Po
          'id': '00000001-30ad-ae74-5b33-7ef0a1a6ef92',
          'type': 'Feature',
          'properties': {'created': '2022-02-23T04:38:59.325752Z',
           'observed': '2015-09-11T10:10:00Z',
           'parameterId': 'temp_dew',
           'stationId': '06081',
           'value': 11.4}},
```