



Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

Introduction API

API Workshop

23 november 2022

Joske Brandsema

Rosina Derks



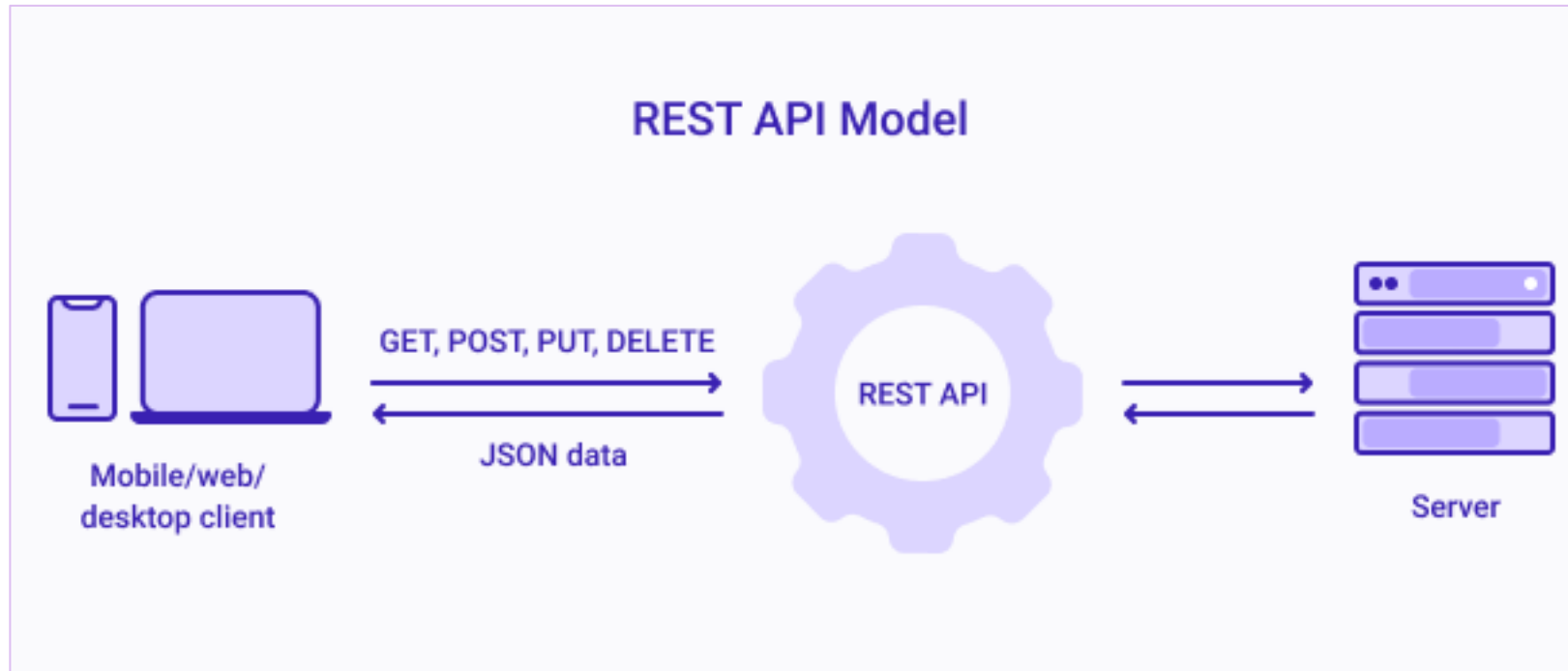
Goals:

- Support users
- Gain feedback

- 1 REST API
- 2 Examples in Postman
- 3 How to list and download data
- 4 Get started with Postman and Python
- 5 Feedback



What is a REST API?



REST = Representational State Transfer

API = Application Programming Interface

A way (set of rules) for systems to communicate



Request

A request needs:

- > HTTP verb to define operation
 - GET, POST, PUT, DELETE
- > Header to pass along information
 - API key for authorization if needed
- > Path to resource
- > Optional message body containing data

```
schayck:~$ curl --location --request GET \  
> "https://api.dataplatform.knmi.nl/open-data/v1/datasets/Actuele10mindataKNMIstations/versions/2/files" \  
> --header "Authorization: <API_KEY>"
```



Response

Status codes

- 100 – 199: **Informational** responses
- ✓ 200 – 299: **Successful** responses
- 300 – 399: **Redirection** messages
- ✗ 400 – 499: **Client** error responses
- ✗ 500 – 599: **Server** error responses

```
Body 200 OK 462 ms 4.37 KB Save Response
Pretty Raw Preview Visualize JSON
1  {
2    "isTruncated": true,
3    "resultCount": 30,
4    "files": [
5      {
6        "filename": "WINS50_43h21_fERA5_CTL_ptA_NETHERLANDS.NL_20190109.nc",
7        "size": 245739985,
8        "lastModified": "2021-07-07T10:05:18+00:00"
9      },
10     {
11       "filename": "WINS50_43h21_fERA5_CTL_ptA_NETHERLANDS.NL_20190110.nc",
12       "size": 247975325,
13       "lastModified": "2021-07-07T10:27:54+00:00"
14     },
15     {
16       "filename": "WINS50_43h21_fERA5_CTL_ptA_NETHERLANDS.NL_20190111.nc",
17       "size": 236103451,
18       "lastModified": "2021-07-07T10:04:42+00:00"
19     },
20     {
21       "filename": "WINS50_43h21_fERA5_CTL_ptA_NETHERLANDS.NL_20190112.nc",
22       "size": 235107262,
```



Open Data API

- › For access to all catalogue datasets
- › API keys
 - Anonymous vs Registered
 - Restrictions (for fair use)
 - Rate limited (requests per sec/min)
 - Quota (requests per hour/day)
 - Personal or per organisation
 - Open data key for regular access
 - Bulk key on request to download an entire dataset
- › API key as Authorization parameter in header

More information:
<https://developer.dataplatform.knmi.nl/get-started#obtain-an-api-key>



DEMO: Examples in Postman



How to list and download data

1. curl: Command Line Tool

LIST:

```
curl --location --request GET \ "https://api.dataplatform.knmi.nl/open-  
data/v1/datasets/Actuele10mindataKNMIstations/versions/2/files" \ --header "Authorization: <API_KEY>"
```

DOWNLOAD:

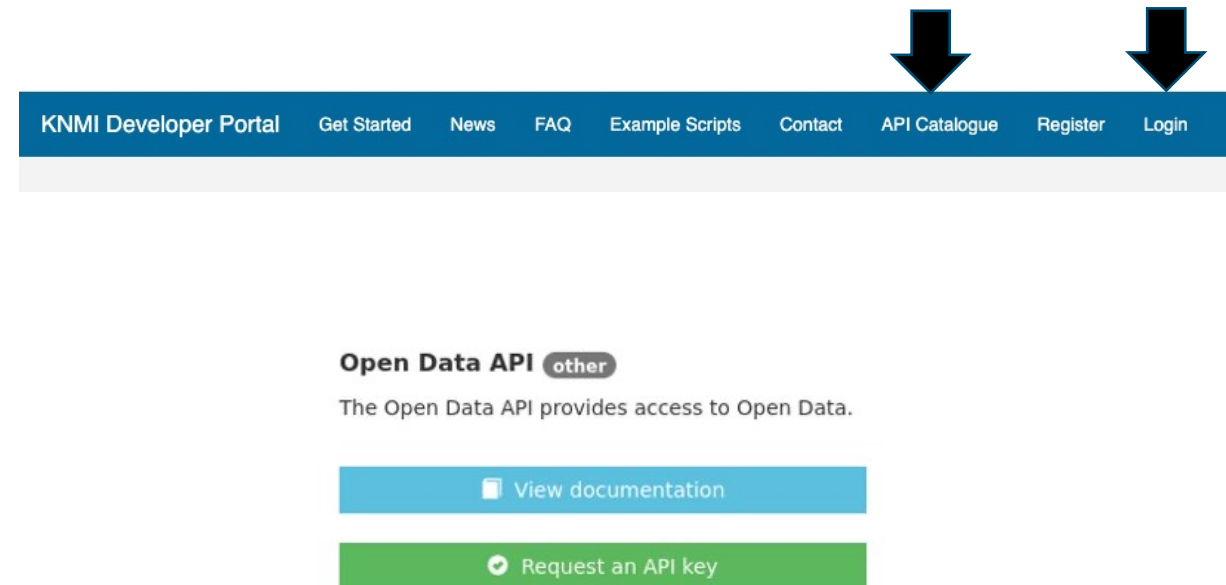
```
curl --location --request GET \ "https://api.dataplatform.knmi.nl/open-  
data/datasets/Tn1/versions/2/files/INTER_OPER_R___TN1____L3__20211020T000000_20211021T000000_0006.nc/url" \ --  
header "Authorization: <API_KEY>"
```

2. Programming language with HTTP library (Python i.e.)



Getting started

- > Materials:
 - <https://tinyurl.com/kdp-api-workshop>
 - Click on introduction-api
- > Register and request an API key
 - <https://developer.dataplatform.knmi.nl>
 - Create account via Login
 - Request an API Key via API Catalogue
- > Software:
 - Python 3.8 (or later)
 - Postman
- > Documentation:
 - <https://developer.dataplatform.knmi.nl/get-started>
 - <https://developer.dataplatform.knmi.nl/example-scripts>





Install Jupyter Notebook

Installation on Command line:

- > Install virtualenv:
 - `python3 -m pip install --user virtualenv`
- > Create folder for project and go to folder
 - `mkdir example-project`
 - `cd example-project`
- > Initialize virtual environment
 - `python3 -m venv env`
- > Activate virtual environment
 - `source env/bin/activate`
- > Install jupyterlab
 - `python3 -m pip install jupyterlab`

- > Launch jupyter lab
 - `jupyter lab`
- > When done: close jupyter lab
 - `deactivate`

Google Colab:

Try jupyter notebook without installation python and packages

- > Go to <https://colab.research.google.com/>
- > Upload the notebooks



Exercise

1. Look up a dataset in the Data Platform.
 - For example Actuele10mindataKNMIstations.
2. Get an Open API key at developer platform.
3. Retrieve the list of files for the dataset.
4. Download the latest file.
5. Explore the data.
6. Analyse the data.



Vragen en Feedback

opendata@knmi.nl

Joske Brandsma
Data Engineer
KNMI Data Platform

joske.brandsma@knmi.nl

Rosina Derks
Software Engineer
KNMI Data Platform

rosina.derks@knmi.nl