



Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

RODEO WP5: Towards unified and uniform access to European climate data using the OGC EDR API

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Obtaining European climate data

- > From NHMSs:
- > Can be quite a hassle
 - Multiple sources
 - Multiple formats



European Climate
Assessment &
Dataset

Time series



Gridded

- > Copy of source data
- > Can be outdated
- > Limited in metadata



RODEO

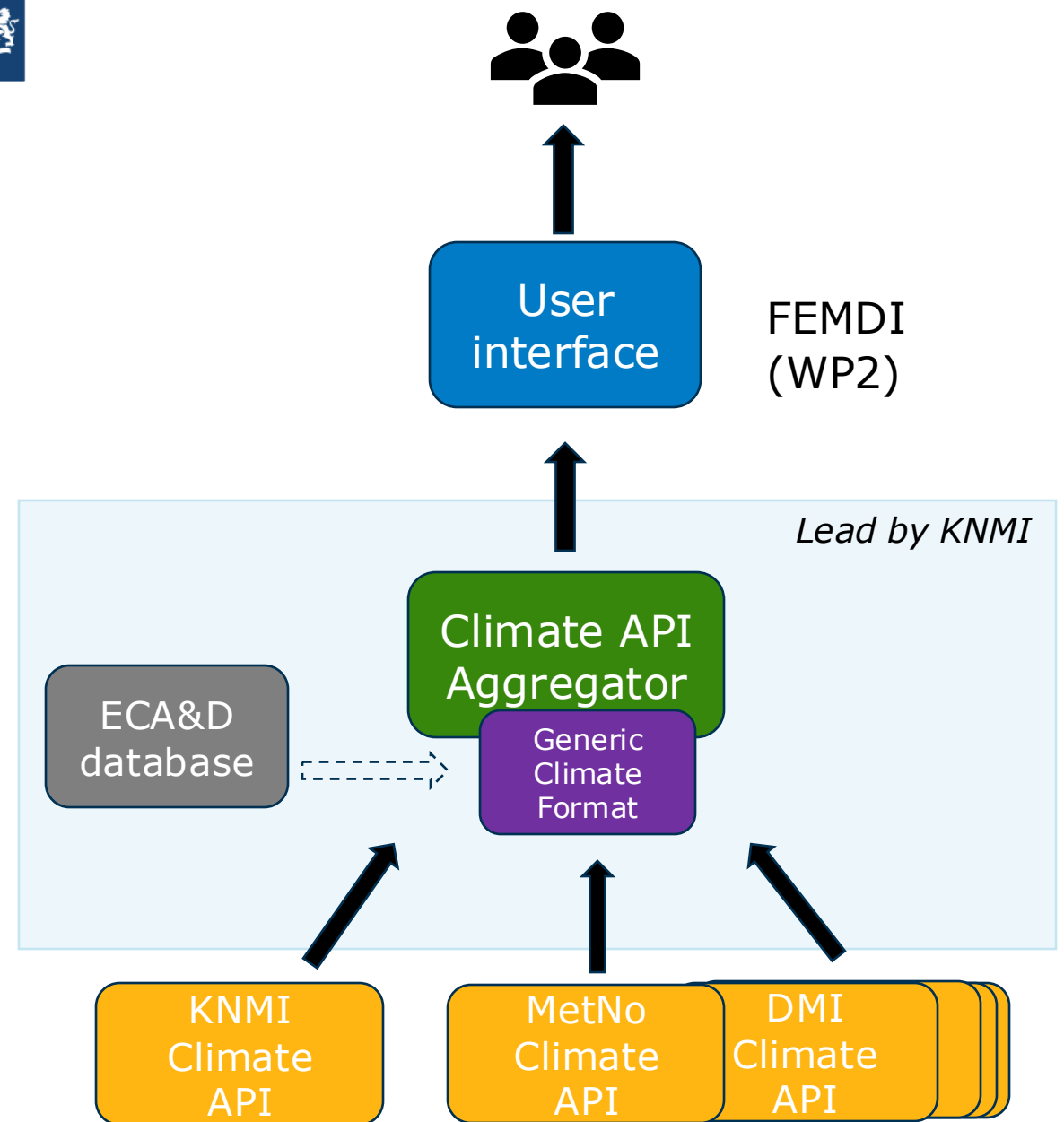
The provision of open access to public meteorological data and development of shared federated data infrastructure for the development of information products and services.

- > High Value Dataset
- > EU & EUMETNET
- > Work Package 5 (WP5)
 - Climate data
- > Application Programmable Interfaces (APIs)
 - Uniform
 - Machine readable
 - Data at the source





Architecture RODEO WP5





Generic Climate Format

Variables: Temperature, precipitation, wind pressure, surface radiation
(*minimum set*)

Granularity: Daily station data

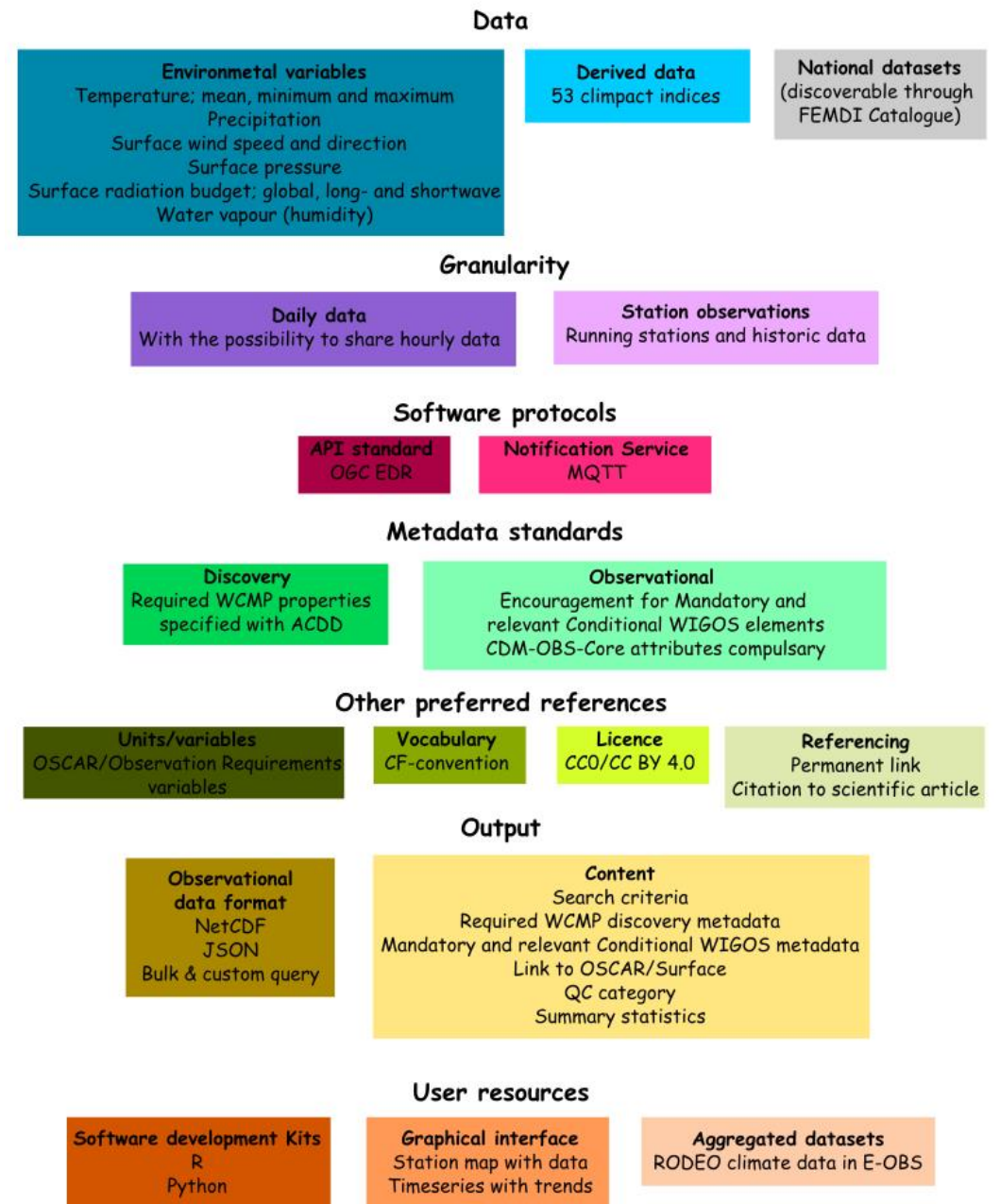
Derived data: Climpact Indices

Metadata: CF-conventions

Open: CC-0 or CC-BY-4.0

API: OGC EDR

Output: CoverageJSON





Why OGC EDR?

- › Environmental Data Retrieval
- › OGC standard
 - Open Geospatial Consortium
 - Since 2016
- › Discoverable
- › Filtering in space and time
- › Multiple datasets
- › Also used by RODEO ESOH (sub hourly synoptic observations)



How to use an EDR API?

- > Any HTTPS client
 - e.g. from web browsers to Python
- > GUI client
 - In development
 - Using OpenGeoWeb
 - a RODEO effort (WP2: FEMDI)

Capabilities Essential characteristics of the information available from the API.

GET /collections List The Available Collections From The Service

GET / Landing Page Of This Api

Collection metadata Description of the information available from the collections

GET /collections/{collection_id} List Query Types Supported By The Collection

Collection data queries Data queries available.

GET /collections/{collection_id}/position Query End Point For Position Queries O

GET /collections/{collection_id}/locations List Available Location Identifiers For

GET /collections/{collection_id}/locations/{location_id} Query End Point

GET /collections/{collection_id}/cube Query End Point For Cube Queries Of Collecti



CoverageJSON

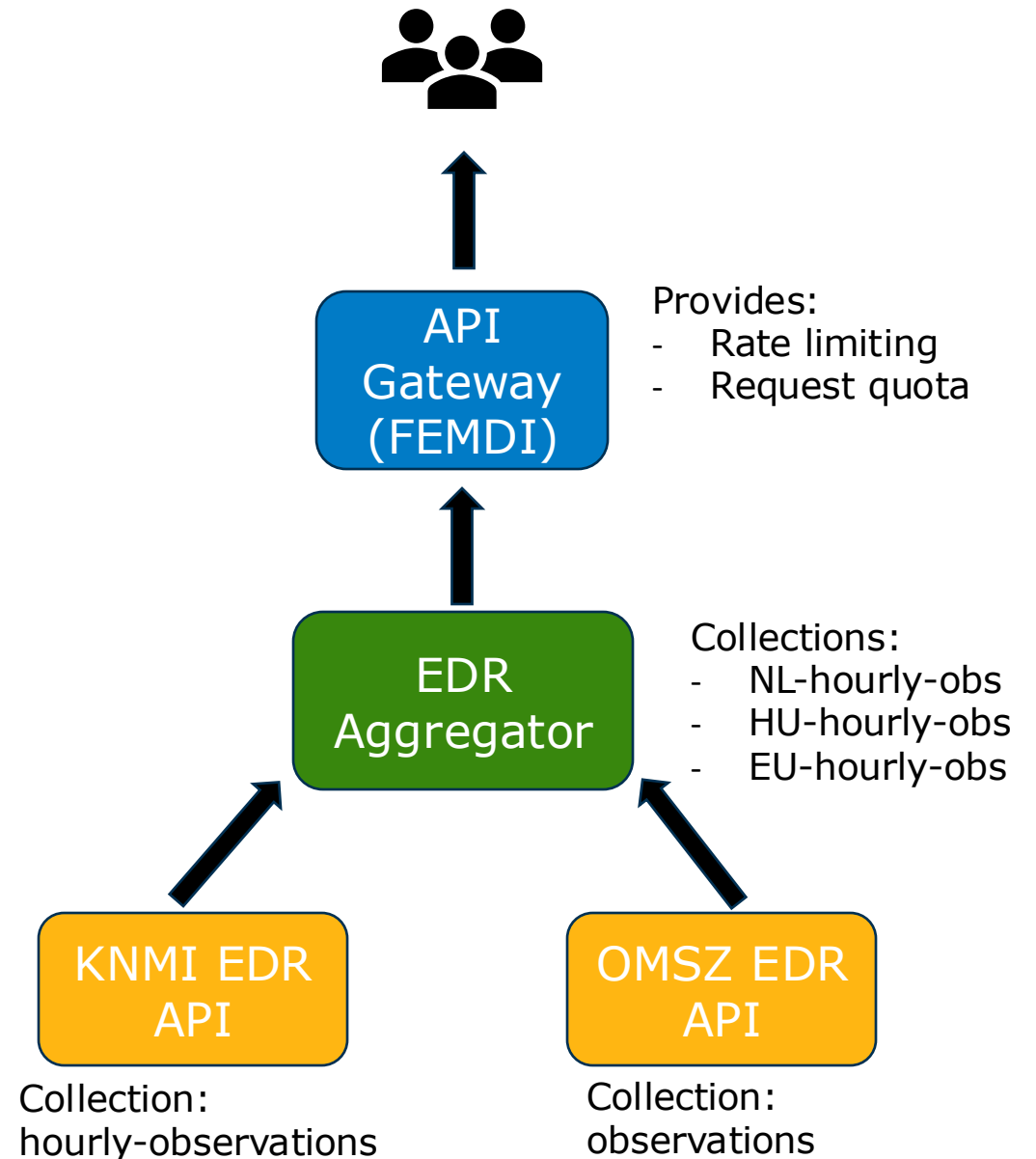
- > Recommended EDR output
- > A format for publishing geotemporal data (on the web)
 - Time series
 - Gridded
- > Format: JSON
 - Easier than NetCDF?
 - Better than CSV
- > More info:
 - <https://covjson.org/>

```
1 {
2   "type": "Coverage",
3   "domain": {
4     "type": "Domain",
5     "domainType": "PointSeries",
6     "axes": {
7       "x": {
8         "values": [
9           3.275
10        ]
11      },
12     "y": {
13       "values": [
14         51.9978
15       ]
16     },
17     "t": {
18       "values": [
19         "2023-01-22T11:10:00Z"
20       ]
21     }
22   },
23   "referencing": [ + 2 + ]
24 },
25 "parameters": {
26   "t_dryb_10": { + 4 + }
27 },
28 "ranges": {
29   "t_dryb_10": {
30     "type": "NdArray",
31     "dataType": "float",
32     "axisNames": [ + 3 + ],
33     "shape": [ + 3 + ],
34     "values": [
35       4.4
36     ]
37   }
38 },
39 "inspiregloss:Identifier": "06321"
40 }
```




Work in Progress: EDR Aggregator

- > Unify multiple EDRs into one
- > (Proposed) functionality:
 - Output conversion: NetCDF, CSV
 - Caching
 - Merged collections
- > Benefits for NMHSs:
 - Simplify EDR implementation and deployment
 - Implementation agnostic
- > Benefits for users:
 - One endpoint and one query
- > Work in progress:
 - 1st version in operation at KNMI since July
 - To be released as OSS





What to expect from RODEO WP5?

- › Individual APIs can come available from Q4 2024 and onwards
- › Aggregator and connection to FEMDI after this
- › Build your own EDR API
 - Workshop (8-9 April 2025, Vienna)
 - Aimed at NHMS software developers
 - Not only climate data



Questions?

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- > Want to test out an EDR API?
 - [KNMI Developer Portal](#)
 - [KNMI EDR Documentation](#)
 - [CovJSON playground](#)

- Want to build your own EDR API?
 - [CovJSON Pydantic package](#)
 - [EDR Pydantic package](#)
 - [EDR spec](#)
 - [CovJSON spec](#)