



FAIR: A project to make weather information more usable

Dr. Richard Figura, Dr. Alexander Willner, Dr. Christopher Frank



Bundesministerium
für Verkehr und
digitale Infrastruktur



Data Week 2022

06.07.2022 (11:45 – 12:00)

CISS TDI GmbH

<https://www.fair-opendata.de>



about us

*The greatest sight there is is the world
- go see it.*

– Kurt Tucholsky





CISS TDI GmbH



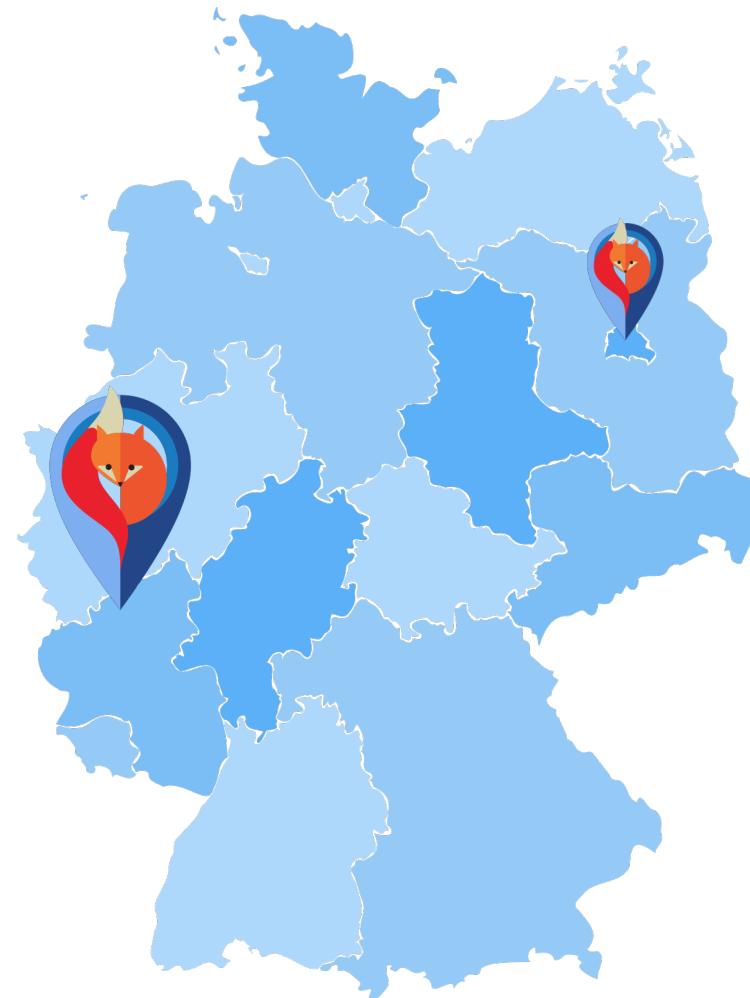
Established: 1982

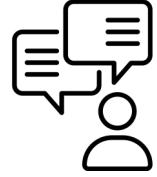


HQ: Sinzig / Rhein



Employees: ~37





Authors



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Managing Director

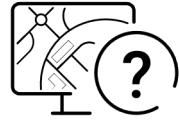
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Head of Research

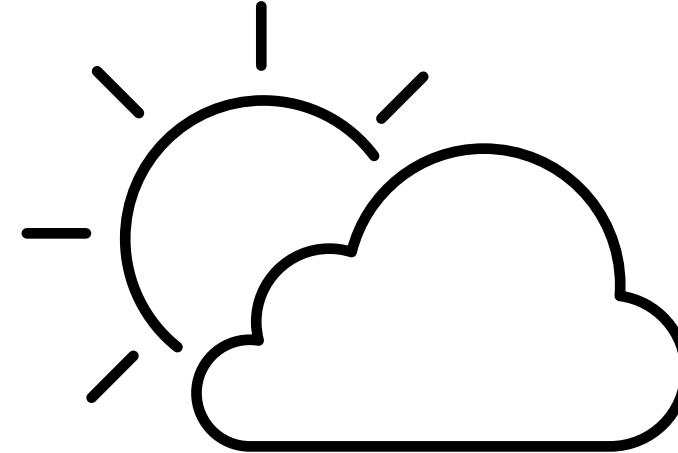
c.frank@ciss.de
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motivation



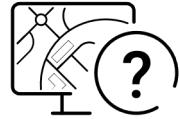
Why to talk about weather?

*It's the #1 topic for small talk.**



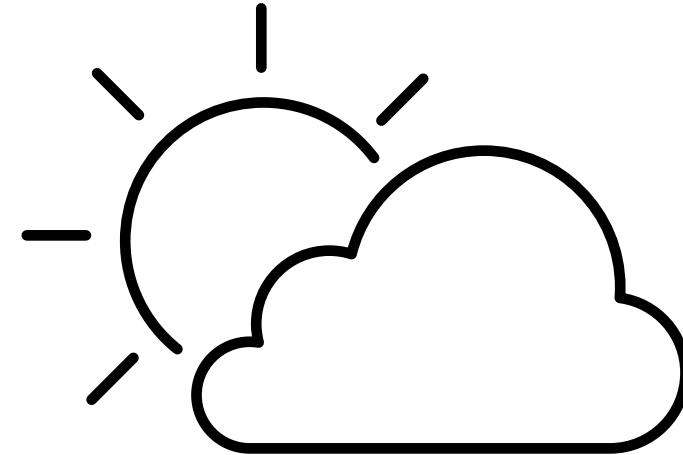
*So, after this presentation,
let's talk about weather ;)*

* citation needed

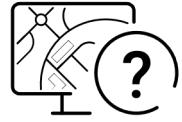


Why to talk about weather?

*Around 80% of the world-wide economy depends on weather conditions (and the climate).**



* <https://www.op-online.de/offenbach/wenn-stuerme-gewitter-bilanzen-verhageln-2295582.html>

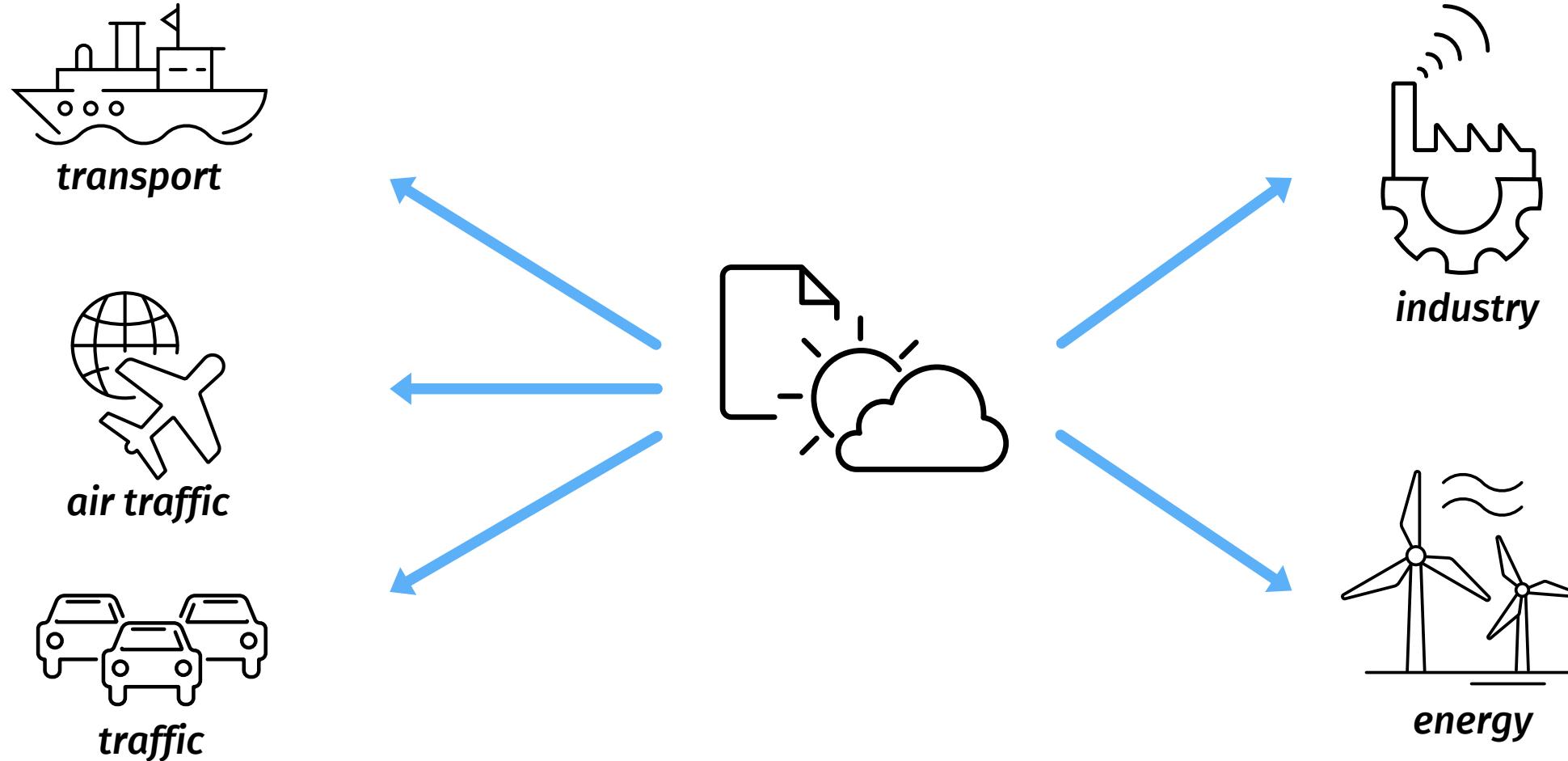


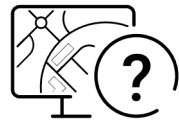
Why to talk about data?

*Open data is the basis for new business ideas,
allow for economic growth
and support innovation in business, administration
and society.**

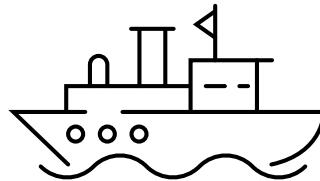
*<http://datenwirken.de>

Where is the data coming from?





What is the task of the German weather service?



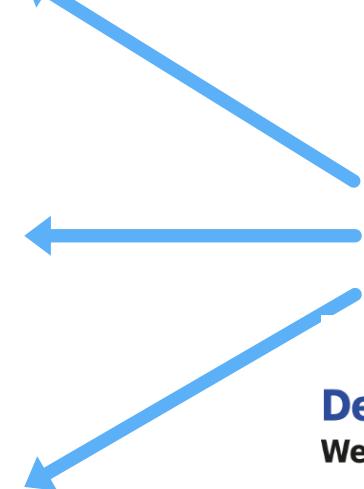
transport



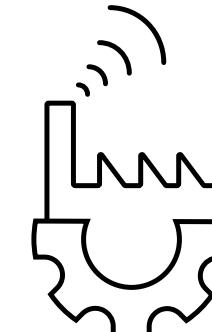
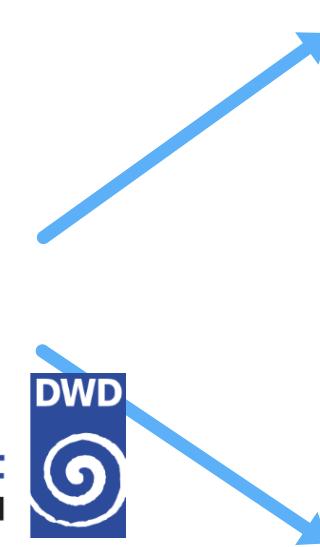
air traffic



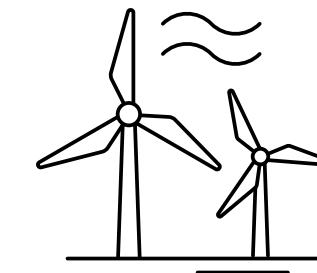
traffic



Deutscher Wetterdienst
Wetter und Klima aus einer Hand



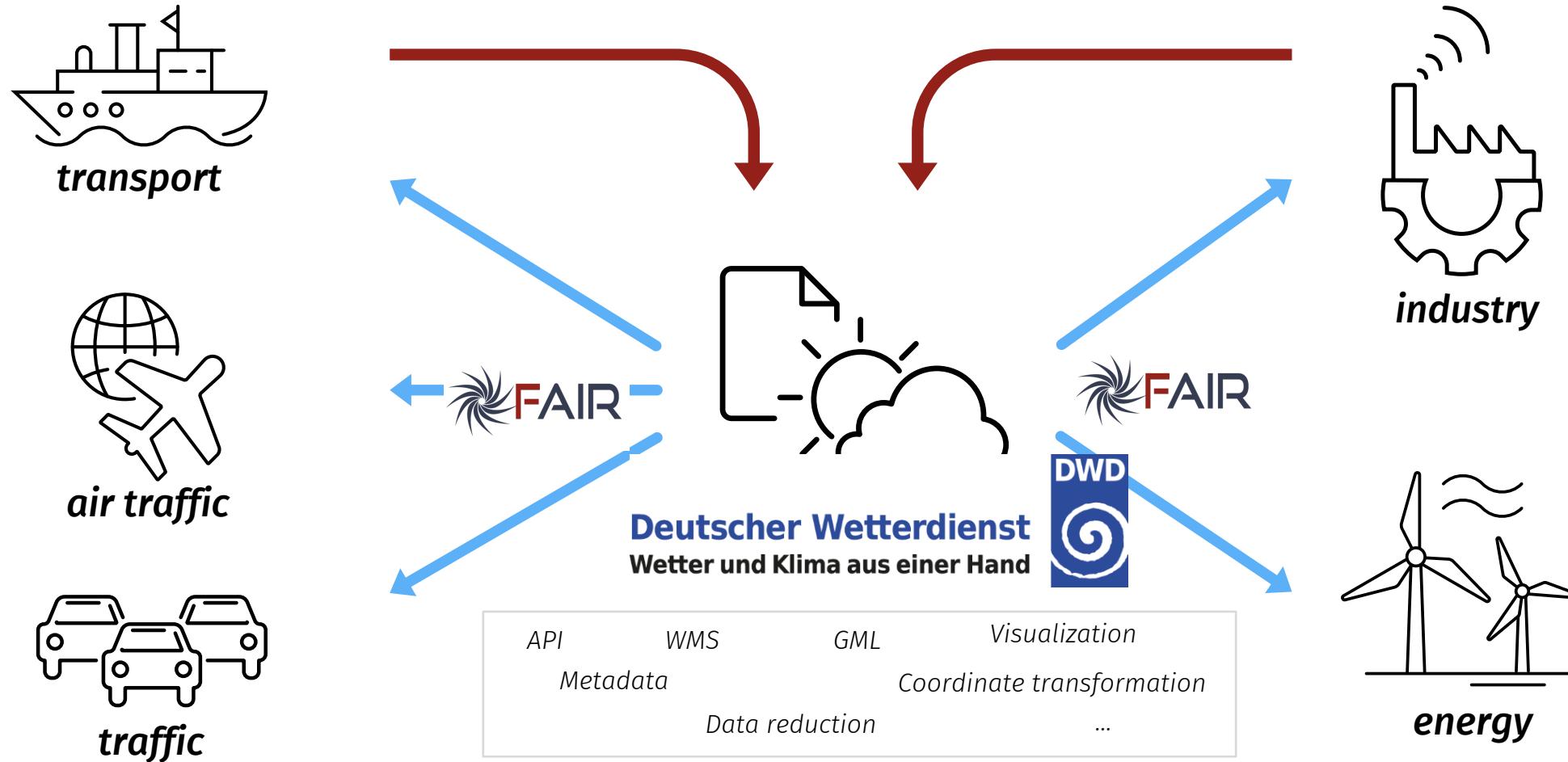
industry



energy

Offer open geo data and allow usage for third parties.

What is the goal of the project?



Target: Make weather information of the DWD more usable



current situation



Access open data via <https://opendata.dwd.de>

Index of /

..		
climate_environment/	13-Mar-2022 22:57	-
test/	16-Apr-2020 10:51	-
weather/	04-Jul-2022 12:32	-
LIESMICH.txt	03-Feb-2022 15:52	1362
README.txt	03-Feb-2022 15:52	1357
erklaerung_barrierefreiheit.txt	18-Sep-2020 10:59	3312



Access open data via <https://opendata.dwd.de>

so we're done, aren't we?

(I think next on the agenda is lunch anyways)



Current situation in Germany

Nice: Open weather data is available!

Not so nice: Just a part of the data is handy to use

Most data is published at <https://opendata.dwd.de/>

Still challenging

- Little Metadata
 - Few Interfaces
 - Huge Data files
 - No (on demand) pre-processing
- Additional resources are required for processing and integration of the provided data

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FAIR approach



The FAIR-enrichment process

<https://opendata.dwd.de/>

Aquire

- Automatic download
- Automatic updating

Process

- Coordinate transformation
- Remove redundancy and unneeded data
- Enrichment (e.g., wind speed and direction) with further sources
- Import to PostGRES for accessing, filtering, ...

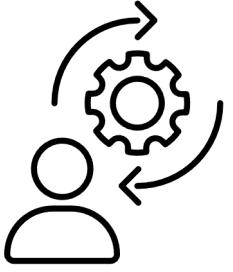
Provide

- FAIR-Portal
- API
- Apps



The FAIR applications

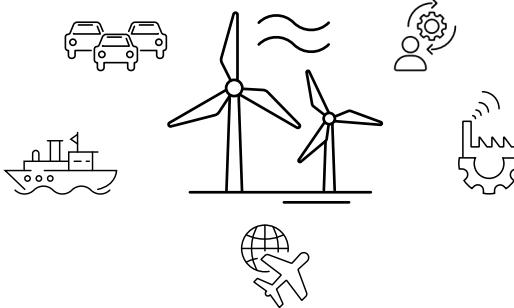
Event management



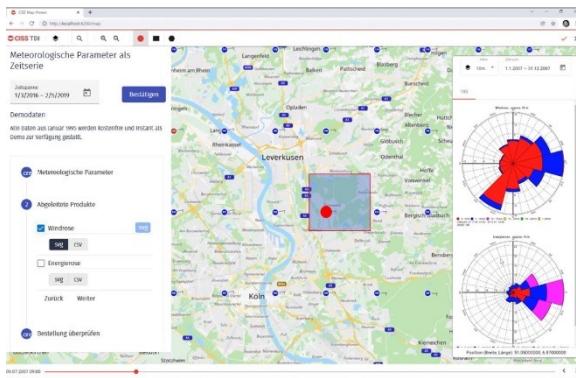
- Enriched weather information
- Weather-App



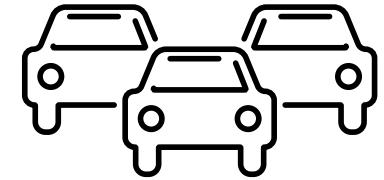
Energy industry



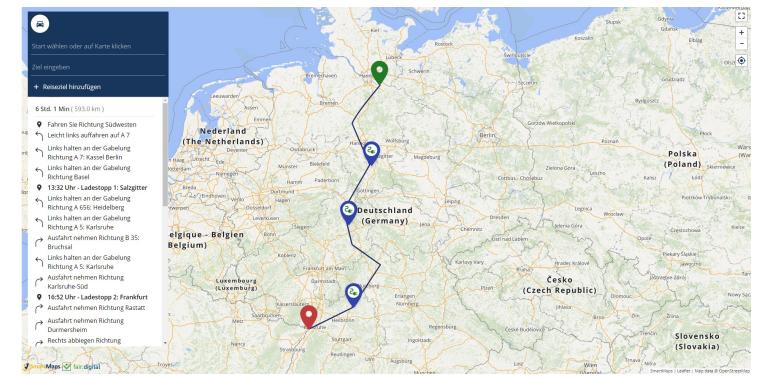
- Enriched weather information
- FAIR-Portal



Traffic



- Weather along route (SmartMaps)
- E-Range (API)



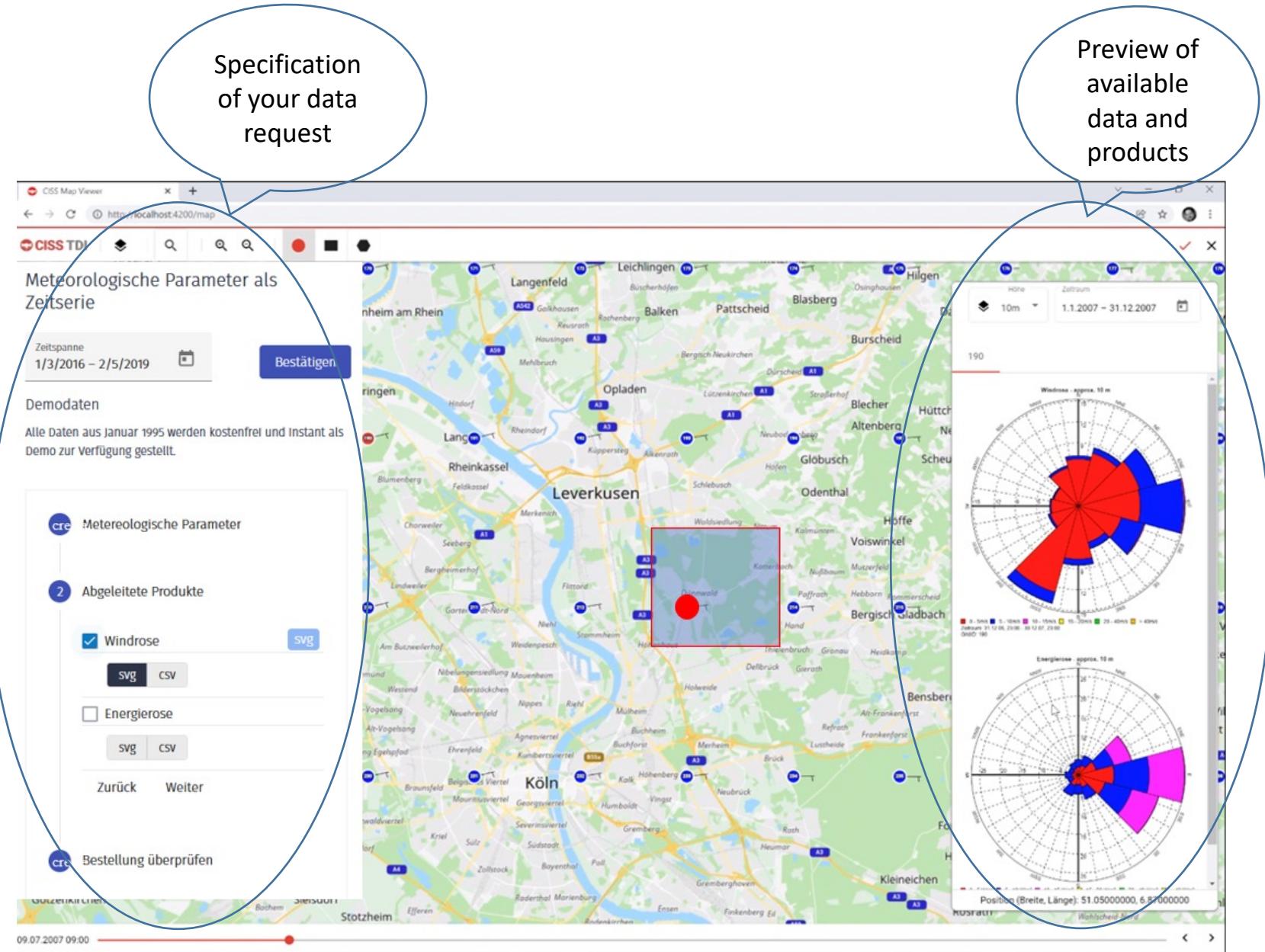


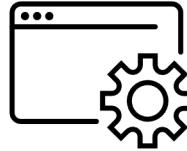
FAIR-Portal

Example: COSMO-REA6

Points of interest:

- Shopping cart
- Filtering
- Convert in formats
- Derived products
- Planned payment for services

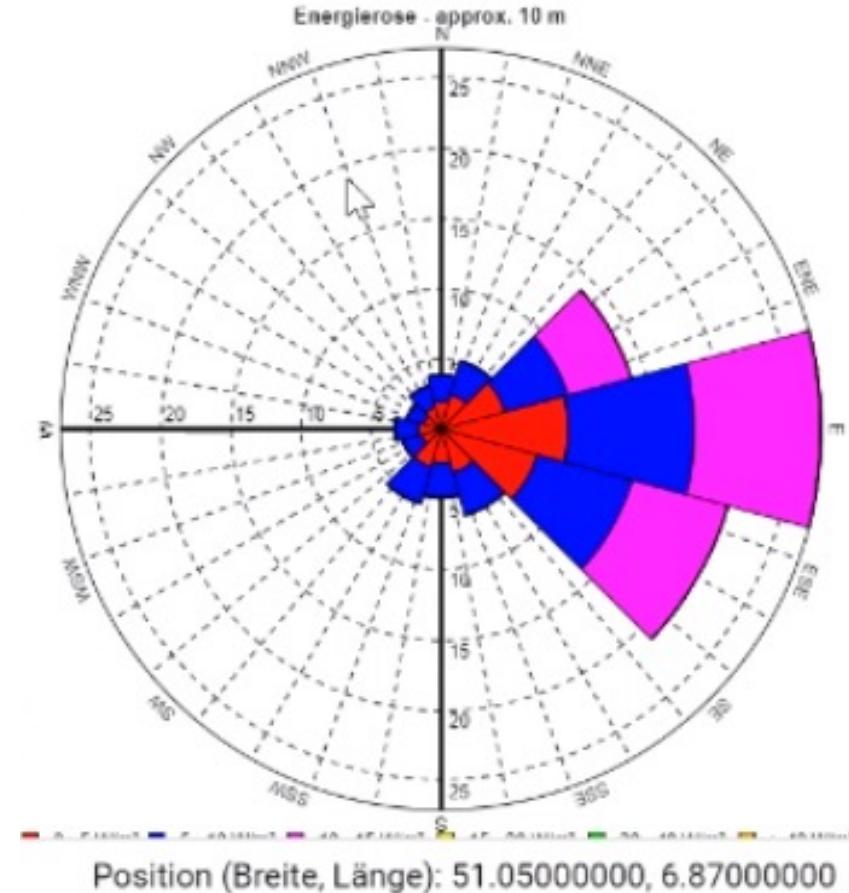




Example: energy rose API

To generate an energy rose

- Visualization of the energy contained in the wind in W/m^2
- Delivery as vector graphic in SVG
- Delivery of the data in CSV





Integration into a GeoNetwork Catalog at <https://fair-metadata.de/geonetwork>

FAIR GeoNetwork catalogue Q Suche Karte

Zurück Zurück Nächster Herunterladen Anzeigemodus

Regionale Reanalyse COSMO-REA6 (Sammlung)

35 zweidimensionale Parameterfelder werden in stündlicher, täglicher und monatlicher Auflösung im originalen COSMO grib1 Format zur Verfügung gestellt wie z.B. Luftdruck, Niederschlag, Temperatur, Strahlungsparameter und Windkomponenten auf 10m und 100m Höhe. Windgeschwindigkeit und Windrichtung auf verschiedenen festen Höhen zwischen 40m und 200m über Grund werden ebenfalls in stündlicher, täglicher und monatlicher Auflösung, aber im netCDF Format, zur Verfügung gestellt. Eine genaue Auflistung der zwei- und dreidimensionalen Parameter kann hier gefunden werden: https://opendata.dwd.de/climate_environment/REA/ParameterTabellen.pdf.

5 dreidimensionale Parameterfelder gibt es in stündlicher, täglicher, und monatlicher Auflösung für Temperatur, spezifische Feuchte, Windkomponenten, und turbulente kinetische Energie. Für die dreidimensionalen Felder werden die untersten 6 COSMO Modell-Level ausgegeben. Deren Höhen sind zeitlich unveränderlich, aber variieren mit der Topographie. Über dem Meer entsprechen die untersten 6 Modell-Level 10m, 35m, 69m, 116m, 178m und 258m Höhe. Konstante Parameter, wie z.B. die Höhe der Modell-Level, Höhe des Modellbodens, usw., sind in https://opendata.dwd.de/climate_environment/REA/COSMO_REA/constant/ abgelegt. Hier sind auch die Zuordnungen der geografischen Längen und Breiten zum rotierten Längen-Breiten-Gitter von COSMO-REA6 zu finden.

Kontinuierliche Aktualisierung

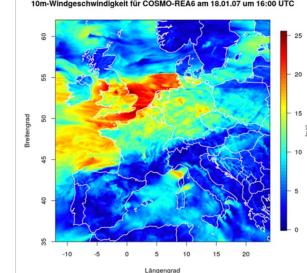
Downloads und Links

DWD opendata Ordner für COSMO-REA6
https://opendata.dwd.de/climate_environment/REA/COSMO_REA_6/

Verlinkte Ressourcen

Regionale Reanalyse COSMO-REA6: monatliche Auflösung
35 zweidimensionale Parameterfelder werden in monatlicher Auflösung im originalen COSMO grib1 Format zur Verfügung gestellt wie z.B. Luftdruck, Niederschlag, Temperatur, Strahlungsparameter und Windkomponenten auf 10m und 100m Höhe. Windgeschwindigkeit und Windrichtung auf verschiedenen

Überblick
10m-Windgeschwindigkeit für COSMO-REA6 am 18.01.07 um 16:00 UTC



Keine Bewertungen ★

Alle Bewertungen anzeigen Fügen Sie Ihre Bewertung hinzu

Räumliche Ausdehnung

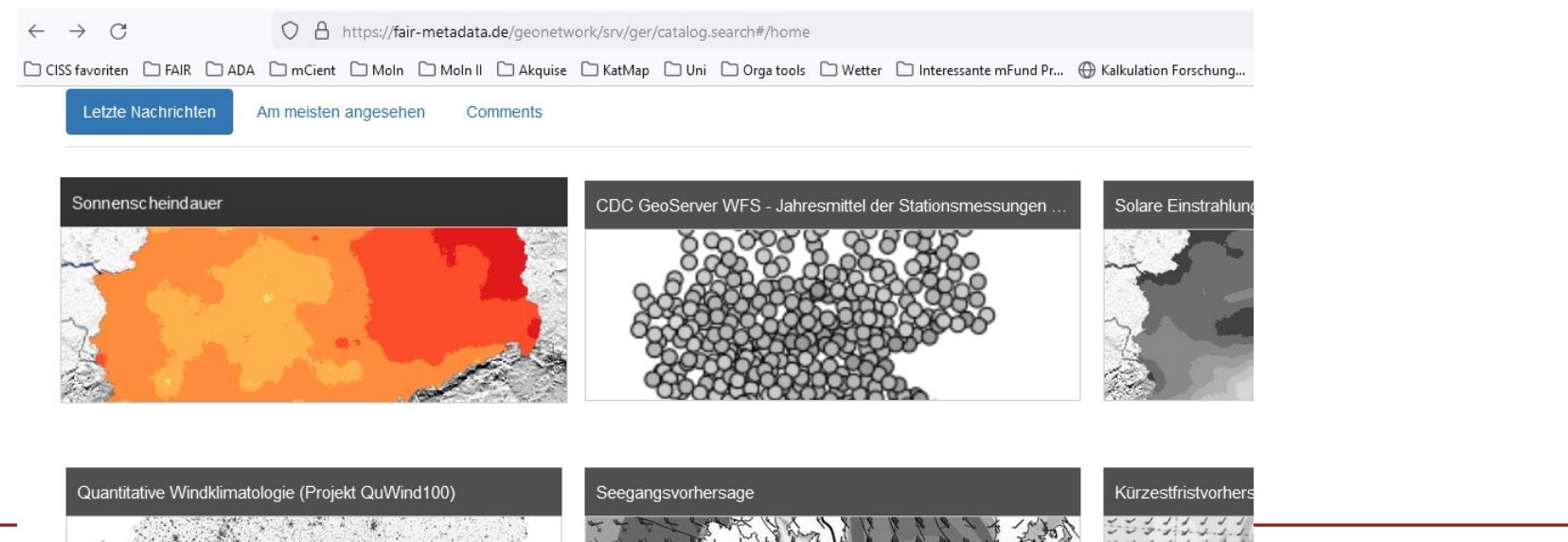
Deutschland



meta data service

For metadata-based search of meteorological data

- *Fast findability*
- *Clear data description*
- *Link to source and other submitting agencies (FAIR portal)*





summary



Summary in three points

1

*Weather information is
difficult to assess*

2

*FAIR makes weather data easy
to assess*

3

*FAIR enriches raw data and
provides easy-to-use formats*



Architecture

