



How to Prepare Atmospheric Model Data for Publication with the ATMODAT Standard

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A New Standard for Atmospheric Model Data – Why?

Atmospheric model data are of interest to a wide community.

The number of atmospheric model data publications is increasing, *but* often they are ***not reusable*** because they are, e.g.

- not adequately described with metadata,
- stored in proprietary file formats,
- not findable by search engines.

⇒ Atmospheric modellers need ***specific instructions*** to make their data publications more FAIR*.

* *Findable, Accessible, Interoperable, and Reusable* (Wilkinson et al. 2016)

The ATMODAT Standard (Ganske et al., 2021*)

- **guideline** for a **FAIR** publication of atmospheric model data with **open licences**.
- **guides data producers** and **data curators**.
- **specifies requirements** for data and metadata.

- ATMODAT-compliant data publications ⇨



*previous
talk*

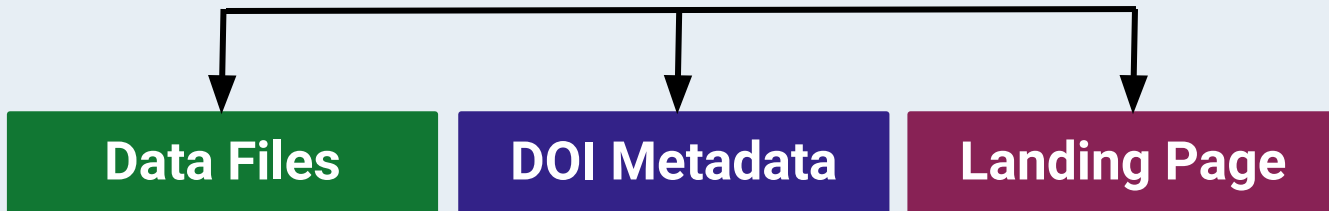
* *ATMODAT standard (v3.0)*

https://doi.org/10.35095/WDCC/atmodat_standard_en_v3_0

ATMODAT Standard: Key Elements

- assumes a data publication with a DataCite DOI.
- defines netCDF as data format.
- defines adherence to the Climate and Forecast (CF) conventions.
- defines mandatory, recommended and optional metadata.

ATMODAT standardisation



Requirements for Data Files

Always netCDF

Controlled vocabulary
CF conventions

Global metadata:
Mandatory (M)
Recommended (R)
Optional (O)

ncdump BSH_simple-Lamb-weather-type-and-gale-calendar_North-Sea.nc
dimensions: [...]
variables:

```
short winddir(time) ;  
    winddir:standard_name = "wind_from_direction" ;  
    winddir:units = "degree" ;                [...]
```

// global attributes:

```
M :Conventions = "CF-1.8 ATMODAT-3.0" ;  
M :institution = "Bundesamt für Seeschifffahrt [...], Hamburg, Germany" ;  
R :institution_id = "https://ror.org/03ycvrj88" ;  
R :title = "Lamb weather types (reduced set) and gale days over [..]" ;  
M :source = "Weather-type and gale classification have been performed a [..]" ;  
R :keywords = "Earth Science > Atmosphere > Atmospheric Pressure >  
              Sea Level Pressure, North Sea [...]" ;  
O :keywords_vocabulary = "GCMD, geonames, [...]" ;  
R :license = "CC BY 4.0" ;  
R :product_version = "1.0" ;  
R :publisher_name = "World Data Center for Climate (WDCC) at DKRZ" ;  
R :publisher_url = "https://www.wdc-climate.de" ;
```

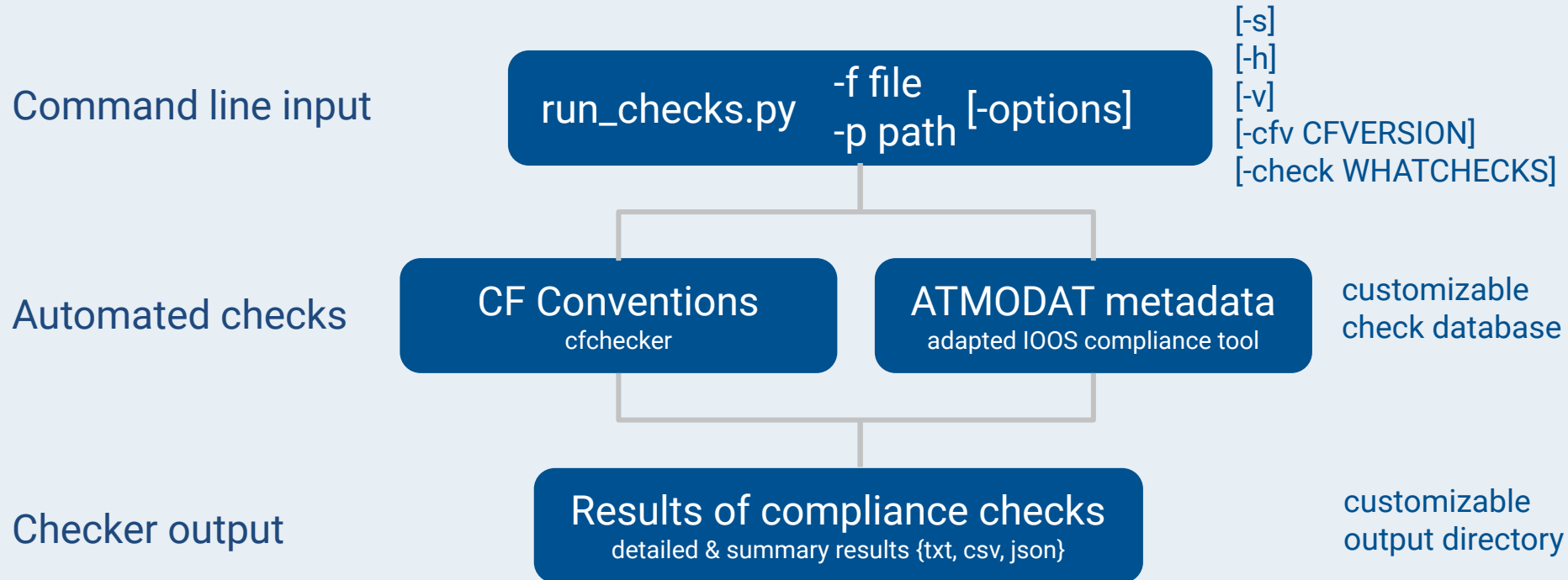
....

Other ATMODAT global attributes, e.g. references, summary, geospatial_bounds,
geospatial_bounds_crs, history, contact, comment,

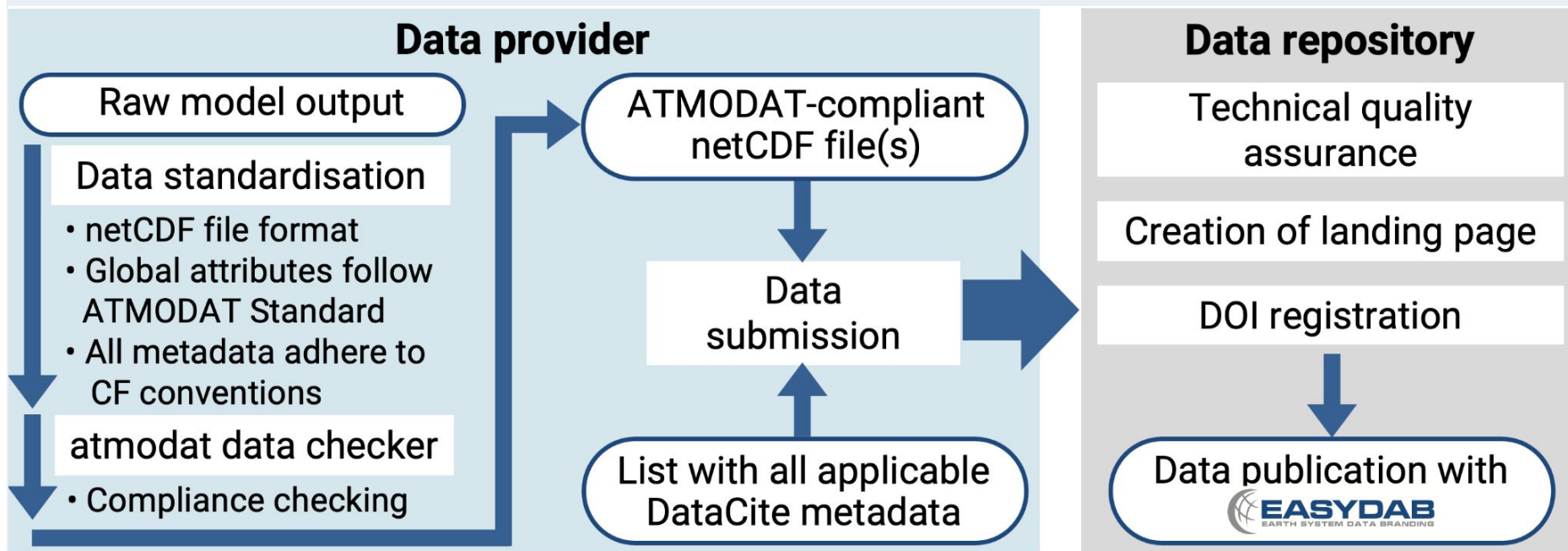
atmodat checker

https://github.com/AtMoDat/atmodat_data_checker

An open source tool to check if data files comply with the ATMODAT standard.



EASYDAB Publication with ATMODAT: Workflow



EASYDAB Publication with ATMODAT: Example

Lamb weather types (reduced set) and gale days over the North Sea since 1948
based on NCEP/NCAR Reanalysis 1 daily mean sea level pressure fields

doi:10.26050/WDC/LambWTyRSetAndGaleDaysOverTheNo

Loewe, Peter

Experiment

DOI



General Information

Quality

Contacts

References

Data Hierarchy

ATMODAT

atmos

atmosphere

Atmospheric dynamics

climate

EASYDAB

FOS: Earth and related environmental science

NCEP/NCAR Reanalysis

North Sea

Summary

Sea level pressure is a fu

Daily sea level pressure

flow, weather activity, an

<https://www.wdc-climate.de/ui/entry?acronym=LambWTyRSetAndGaleDaysOverTheNo>

&exporttype=json-ld

{ "@context": "http://schema.org",

"@type": "Dataset",

"publisher": { "@type": "Organization",

"name": "World Data Center for Climate (WDCC) at DKRZ",

"logo": "https://www.wdc-climate.de/ui/img/WDCC-Logo-regular.png",

"url": "https://www.wdc-climate.de/ui/" },

"@id": "https://doi.org/10.26050/WDC/LambWTyRSetAndGaleDaysOverTheNo",

"license": "https://creativecommons.org/licenses/by/4.0/",

"temporalCoverage": "1948-01-01/2021-12-31",

"spatialCoverage": { "@type": "Place", "geo": { "@type": "GeoShape", "box": "50 0 60 10" }

[1

DOI Landing Page
human & machine readable

EASYDAB Publication with ATMODAT: Example

Lamb weather types (reduced set) and gale days over the North Sea since 1948
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Scientific and Technical Quality Assurance Information

General Information

Quality

Contacts

References

Data Hierarchy

Accuracy report

An evaluation of the weather type classification based on NCEP/NCAR reanalyses is given by Loewe et al. (2013); see references. [...]

SQA - Scientific Quality Assurance 'approved by author'; TQA - Technical Quality Assurance 'approved by WDCC'

Specification

=== Short summary ===

ATMODAT Standard Compliance Checker Version: 1.2.0

Checking against: ATMODAT Standard 3.0, CF Version 1.8

Checked at: 2022-02-10T16:47:15

Number of checked files: 74

Mandatory checks passed: 296/296 (0 missing, 0 error(s))

Recommended checks passed: 1258/1480 (222 missing, 0 error(s))

CF checker errors: 0

[]

atmodat checker summary report



Thank you!

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