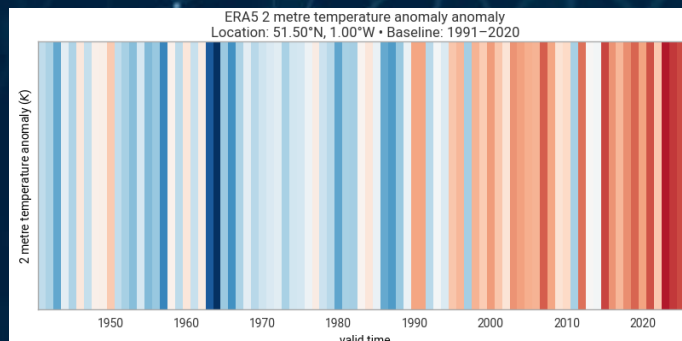


Earthkit-transforms introduction

Earthkit 1.0 training

Development Section



The earthkit module for hypercube transformations



Provides a human readable API to complex Xarray
and Pandas computations

The earthkit module for hypercube transformations



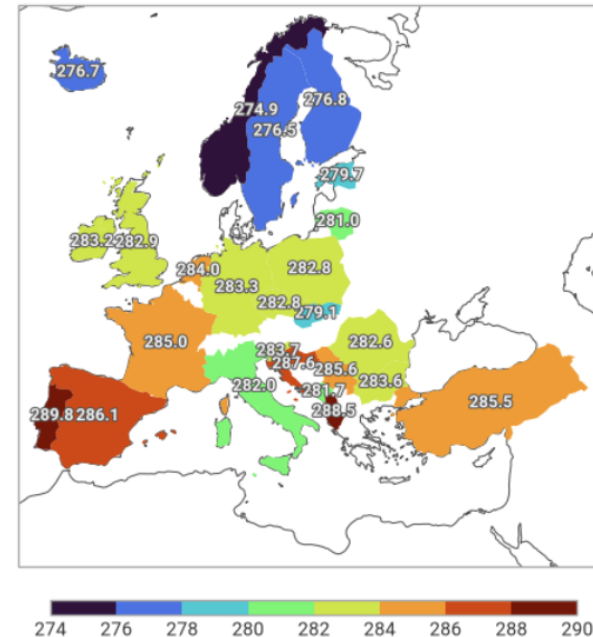
Provides a human readable API to complex Xarray and Pandas computations

Sub-packages and modules structured by domain:

- Spatial

<https://ecmwf-training.github.io/2026-earthkit-training/content/earthkit-transforms/spatial/>

```
1 from earthkit import data as ekd
2 from earthkit import transforms as ekt
3 from earthkit import plots as ekp
4 from earthkit.transforms.tools import earthkit_remote_test_data_file
5
6 remote_era5_file = earthkit_remote_test_data_file("era5-Europe-sfc-2m-temperature-3deg-2015-2017.grib")
7 era5_data = ekd.from_source("url", remote_era5_file)
8
9 remote_geometry_url = earthkit_remote_test_data_file("NUTS_RG_60M_2021_4326_LEVL_0.geojson")
10 geometry_data = ekd.from_source("url", remote_geometry_url).to_geopandas()
11
12 # Calculate area mean
13 area_mean = ekt.spatial.reduce(
14     era5_data, geometry_data, how="mean", weights="latitude",
15     extra_reduce_dims=["forecast_reference_time"], return_as="pandas"
16 )
17
18 ekp.geo.choropleth(area_mean, z="2t", cmap="turbo", labels="{2t:0.1f}", domain="Europe")
✓ 6.5s
```



The earthkit module for hypercube transformations



Provides a human readable API to complex Xarray and Pandas computations

Sub-packages and modules structured by domain:

- Spatial
- Temporal

<https://ecmwf-training.github.io/2026-earthkit-training/content/earthkit-transforms/temporal>

```
1 era5_daily_mean = ekt.temporal.daily_mean(era5_xr)
2 era5_daily_std = ekt.temporal.daily_std(era5_xr)
3 era5_daily_mean
```

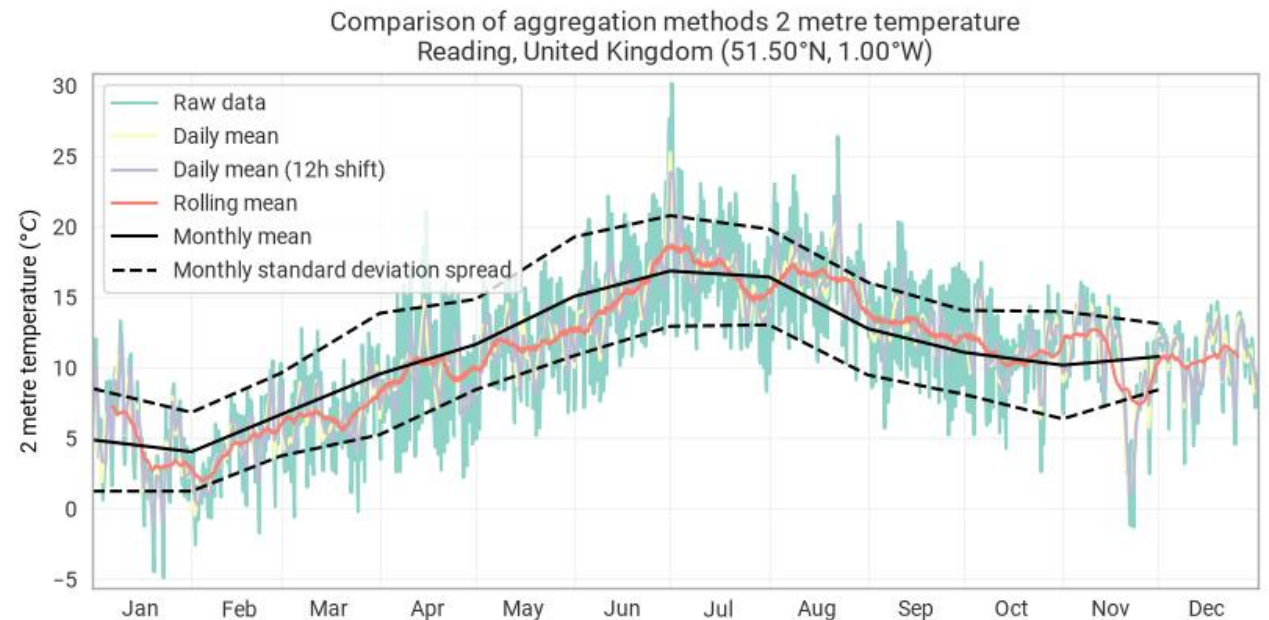
✓ 1.9s

Python

```
1 era5_monthly_mean = ekt.temporal.monthly_mean(era5_xr)
2 era5_monthly_std = ekt.temporal.monthly_std(era5_xr)
3 era5_monthly_std
```

✓ 1.7s

Python



The earthkit module for hypercube transformations



Provides a human readable API to complex Xarray and Pandas computations

Sub-packages and modules structured by domain:

- Spatial
- Temporal
- Climatology

<https://ecmwf-training.github.io/2026-earthkit-training/content/earthkit-transforms/climatology/>

```
1 from earthkit import transforms as ekt
2
3 annual_anomaly = ekt.climatology.auto_anomaly(
4     era5_data, climatology_range=("1981", "2010"), frequency="year"
5 )
6
7 # Plot the climate stripes with earthkit-plots.
8 ekt.timeseries.stripes(annual_anomaly, cmap="RdBu_r").xticks(frequency="5Y").show()
```

✓ 2.3s

Python

