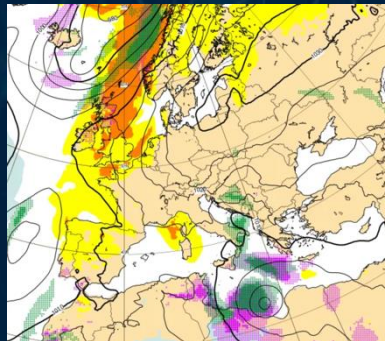


Earthkit-meteo introduction

Earthkit 1.0 training

Development Section



The earthkit module for meteorological functions



Many submodules

- Thermo
- Wind
- Score (linking with scores library)
- Extreme (EFI, SOT, etc.)
- Stats (Gumbel distribution, etc.)
- Vertical
- Solar
- Regimes
- ... and more to come!

```
from earthkit.meteo import thermo
import numpy as np

t = np.array([264.12, 261.45]) # Kelvins
p = np.array([850, 850]) * 100.0 # Pascals

theta = thermo.potential_temperature(t, p)
```

Functions

<code>celsius_to_kelvin</code> (t)	Converts temperature values from Celsius to Kelvin.
<code>dewpoint_from_relative_humidity</code> (t, r)	Compute the dewpoint temperature from relative humidity.
<code>dewpoint_from_specific_humidity</code> (q, p)	Compute the dewpoint temperature from specific humidity.
<code>ept_from_dewpoint</code> (t, td, p[, method])	Computes the equivalent potential temperature from dewpoint.
<code>ept_from_specific_humidity</code> (t, q, p[, method])	Computes the equivalent potential temperature from specific humidity.
<code>kelvin_to_celsius</code> (t)	Converts temperature values from Kelvin to Celsius.
<code>lcl</code> (t, td, p[, method])	Computes the temperature and pressure of the Lifting Condensation Level (LCL) from dewpoint.
<code>lcl_temperature</code> (t, td[, method])	Computes the Lifting Condensation Level (LCL) temperature from

API levels

- Low-level function implementations:
 - arrays (Numpy, Cupy, Torch, ...)
 - Xarray
 - FieldList
- High-level API dispatches automatically to low-level based on data type

earthkit.meteo.thermo.dewpoint_from_relative_humidity

```
earthkit.meteo.thermo.dewpoint_from_relative_humidity(t: ArrayLike, r: ArrayLike) → ArrayLike
```

```
earthkit.meteo.thermo.dewpoint_from_relative_humidity(t: xarray.DataArray, r: xarray.DataArray) → xarray.DataArray
```

```
earthkit.meteo.thermo.dewpoint_from_relative_humidity(t: earthkit.data.FieldList, r: earthkit.data.FieldList) → earthkit.data.FieldList
```

```
earthkit.meteo.thermo.dewpoint_from_relative_humidity(t: earthkit.data.Field, r: earthkit.data.Field) → earthkit.data.Field
```

Compute the dewpoint temperature from relative humidity.

PARAMETERS:

- `t` (array-like | xarray.DataArray | FieldList | Field) – Temperature (K)
- `r` (array-like | xarray.DataArray | FieldList | Field) – Relative humidity (%)

RETURNS:

Dewpoint temperature (K). For zero `r` values returns nan.

RETURN TYPE:

array-like | xarray.DataArray | FieldList | Field

Implementations

`dewpoint_from_relative_humidity()` calls one of the following implementations depending on the type of the input arguments:

- `earthkit.meteo.thermo.array.dewpoint_from_relative_humidity()` for array-like
- `earthkit.meteo.thermo.xarray.dewpoint_from_relative_humidity()` for xarray.DataArray
- `earthkit.meteo.thermo.fieldlist.dewpoint_from_relative_humidity()` for FieldList | Field

The function returns an object of the same type as the input arguments.