ECCODES ERROR : Wrong number of fields ... Try using the -T option

Last modified on Feb 27, 2024 15:06

The error

You try to retrieve data from the ECMWF data archive in NetCDF format but the retrieval fails with this message:

```
ECCODES ERROR : Wrong number of fields
ECCODES ERROR : File contains 806 GRIBs, 806 left in internal description, 745 in request
ECCODES ERROR : The fields are not considered distinct!
ECCODES ERROR : Hint: This may be due to several fields having the same validity time.
ECCODES ERROR : Try using the -T option (Do not use time of validity)
```

Cause

This is a known issue and occurs if

- you request data in NetCDF format, and
- you request forecast data, and
- your data request contains overlapping "time"+"step" specifications

For example, for the ERA-Interim dataset there are two daily forecasts (00:00, 12:00), with 3-hourly forecast steps. So one could specify in a data retrieval script:

```
"date":"2016-12-01"
"type":"fc"
"time": "00:00/12:00",
"step": "3/6/9/12/15",
"format": "netcdf"
```

With the above specification you get data for the following validity times:

- time 00:00 + step 3 validity time 2016-12-01, 03:00
- time 00:00 + step 6 validity time 2016-12-01, 06:00
- time 00:00 + step 9 validity time 2016-12-01, 09:00
- time 00:00 + step 12 validity time 2016-12-01, 12:00
- time 00:00 + step 15 validity time 2016-12-01, 15:00
- time 12:00 + step 3 validity time 2016-12-01, 15:00
- time 12:00 + step 6 validity time 2016-12-01, 18:00
- time 12:00 + step 9 validity time 2016-12-01, 21:00
- time 12:00 + step 12 validity time 2016-12-02, 00:00
- time 12:00 + step 15 validity time 2016-12-02, 03:00

In this example you get two data values at the same validity time 2016-12-01, 15:00. The NetCDF format does not support multiple data values at a single time, hence the creation of the output NetCDF file fails, triggering the error message.

Workarounds

- Retrieve the data in its native GRIB format, which supports multiple data values at any one validity time. Then convert the data from GRIB to NetCDF format:
  - For CAMS Global data use ECMWF's ecCodes, and then the grib_to_netcdf tool with the -T option.
  - For CAMS Regional data see here.
- Retrieve data for each forecast "time" separately, for example for ERA-Interim:
  - first with time = 00:00 and all required steps
  - then with time = 12:00 and all required steps

Related articles

- ECCODES ERROR : Wrong number of fields ... Try using the -T option
- ERA5: What is the spatial reference
- Extract data from GRIB/NetCDF for a specific location and time
- How to convert GRIB to CSV
- How to convert NetCDF to CSV