

Migration to GRIB edition 2

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Guiding principles

Scope

- Migrate all parameters
- Only new data produced, no conversion of existing data
- Migrate our entire software stack: I/O routines in models, interpolation, plotting, indexing, archiving, dissemination

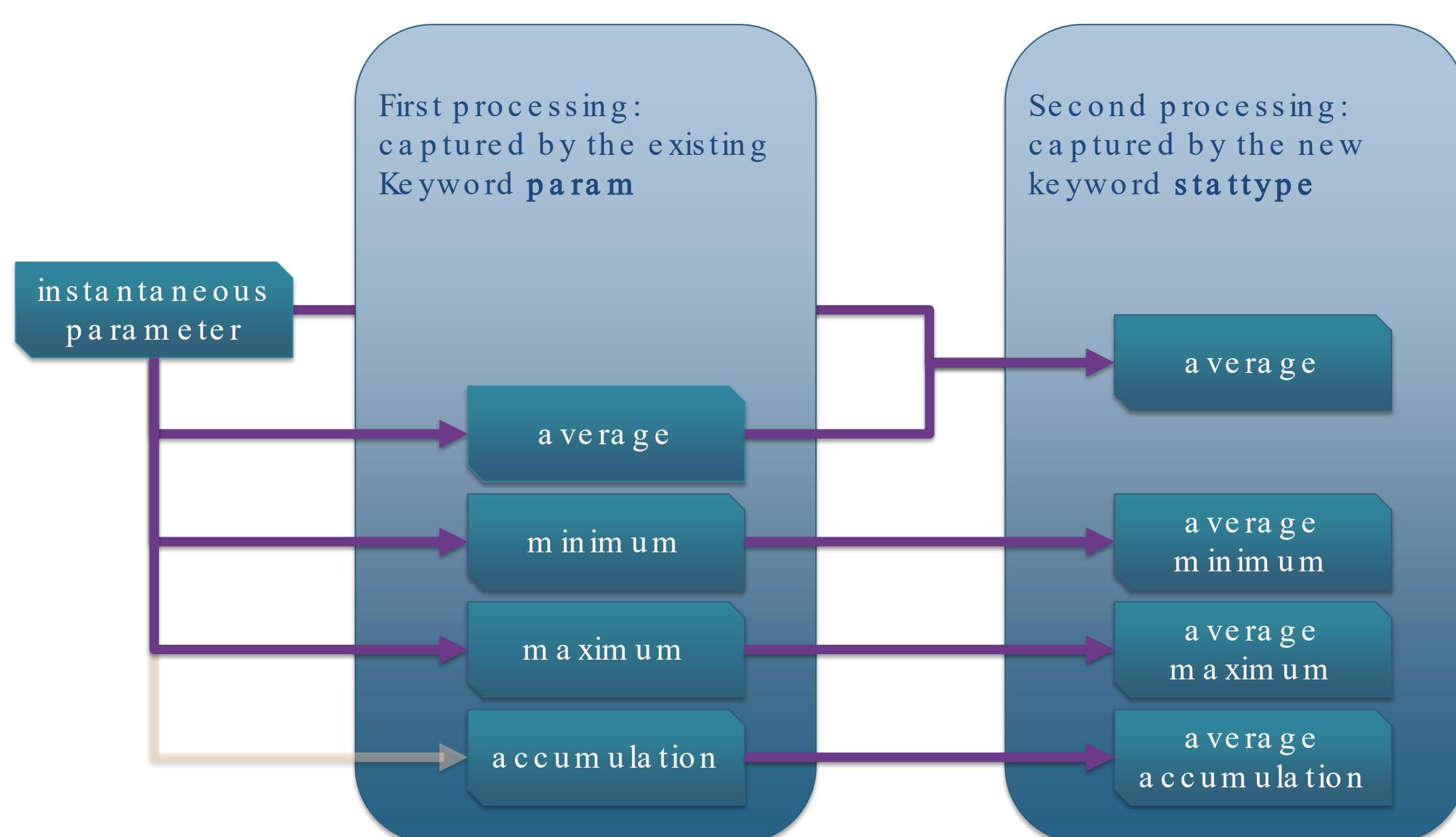
Requirements

- Minimise disruption to our operations and to our users
- Maintain compatibility with existing data
- Provide tools to ease the migration
- Take advantage of the rich metadata
- Support Member States
- Fully WMO compliant, avoid local encoding

Migration design

The GRIB2 data model for parameters with nested time processings:

Instantaneous parameter -> daily maximum -> monthly average of daily maximum



Alongside the new design, we are introducing a systematic naming convention for short names. Base instantaneous parameters can be prefixed by a `vg_`, `min_`, `max_`, `std_`, etc. to capture the type of processing applied to them:

`param=2t -> param=avg_2t/min_2t/max_2t`

The frequency of the processing is captured by the new keyword `timedelta`:

`timedelta=1h/3h/6h` for hourly, 3-hourly and 6-hourly processing

Example for 6-hourly minimum 2t: `param=min_2t, timedelta=6h, step=6/12/18/...`

Accumulations are handled differently as parameters on their own:

`param=tprate -> param=tp (acc_tprate)`

Accumulations from the start of the forecast use a special value of `timedelta`:

`timedelta=fs (from start)`

Subsequent type and length of processing (monthly average of maximum, monthly minimum of maximum, etc.) are captured by the `stattype` keyword:

`stattype=moav (monthly average)`

Example of monthly average of daily maximum of 2 metre temperature:

`stattype=moav, timedelta=24h, param=max_2t`

QR codes



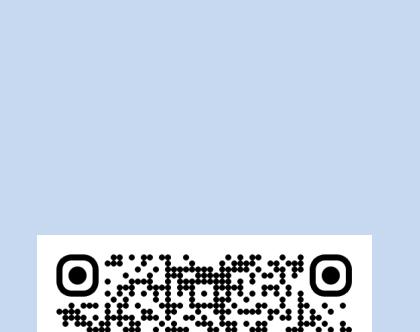
ecCodes release notes



MTG2 homepage



MTG2 reference dataset

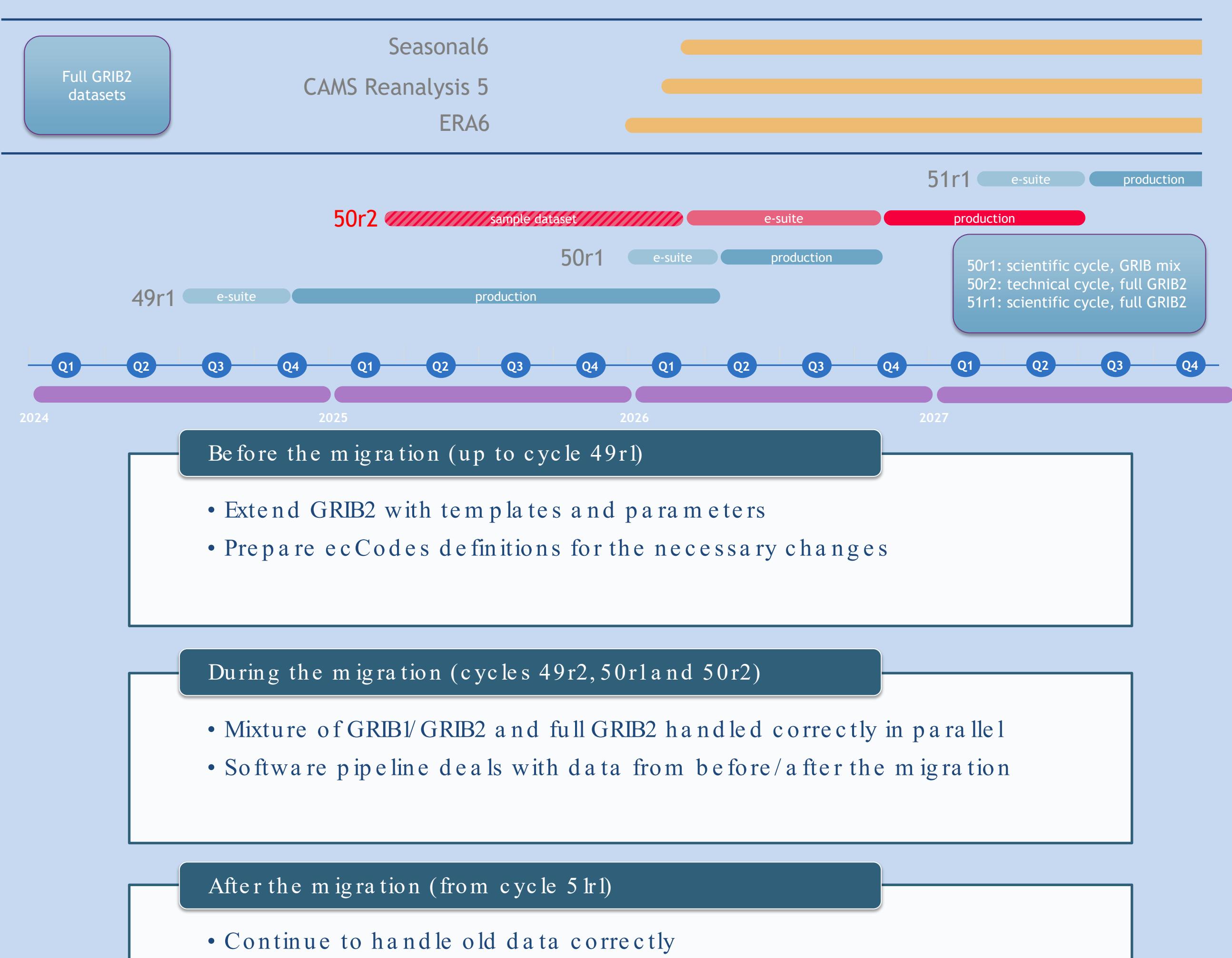


In Focus article



ECMWF newsletter

Provisional timeline



Other significant changes

As part of the migration, we are taking the opportunity to reorganise some parts of the MARS language.

We are introducing a new concept `paramtype` to help with the reorganisation:

- The `wave` parameters will no longer be separated in different streams. Their new home is side-by-side with the base IFS parameters under the same stream using `paramtype=wave` and `paramtype=base` respectively.
- In the future, the concept `paramtype` will be extended to accommodate new types of data, e.g. `tile`, `optical` and `chemical`.

The parameters of IFS-compo will move under `paramtype=chemical` and are reorganised to better represent their multidimensionality. We are introducing a new keyword `chem` to capture the chemical constituent part while the physical quantity is still captured by the keyword `param`. This reduces the set to a few tens of species and properties instead of thousands of combinations:

`param=e_ch4/e_co/e_o3/dv_co/dv_ch4/dv_o3`
vs
`param=em_i/drydep_vel,chem=ch4/co2/o3`

Many parameters are changing `paramId`, `shortName` and `typeOfLevel`. It is recommended to check the full list published in the dedicated area (see QR code)

Supporting our users

GRIB2 reference dataset

- Available to download (see QR code)
- Requires `ecCodes 2.42.0` or higher to decode

MARS request translator

- Provide a tool to help migrate requests
- Support conversion of dissemination requests

Conversion tool GRIB1 -> GRIB2

- Support only ECMWF data
- Reverse conversion not supported

GRIB checker

- Validate GRIB2 encoding

Migration to GRIB2 online resources

- MTG2 dedicated confluence page for users
- MTG2 mailing list
- Newsletter and In Focus articles