

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

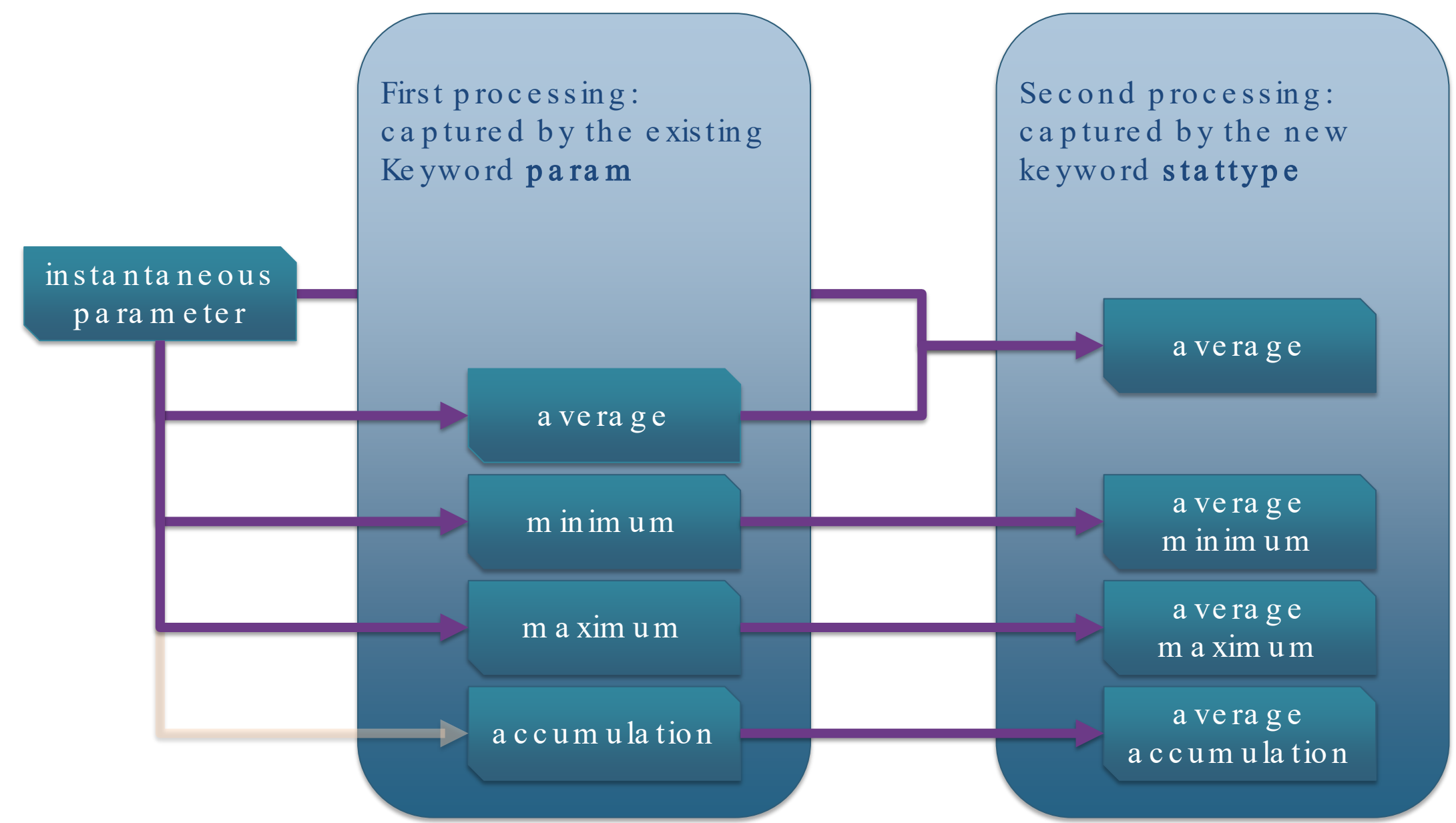
Requirements

- 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 `avg_`, `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 `timespan`:

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

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

Accumulations are handled differently as parameters on their own:

`param=tp rate -> param=tp (acc-tp rate)`

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

`timespan=fs (from start)`

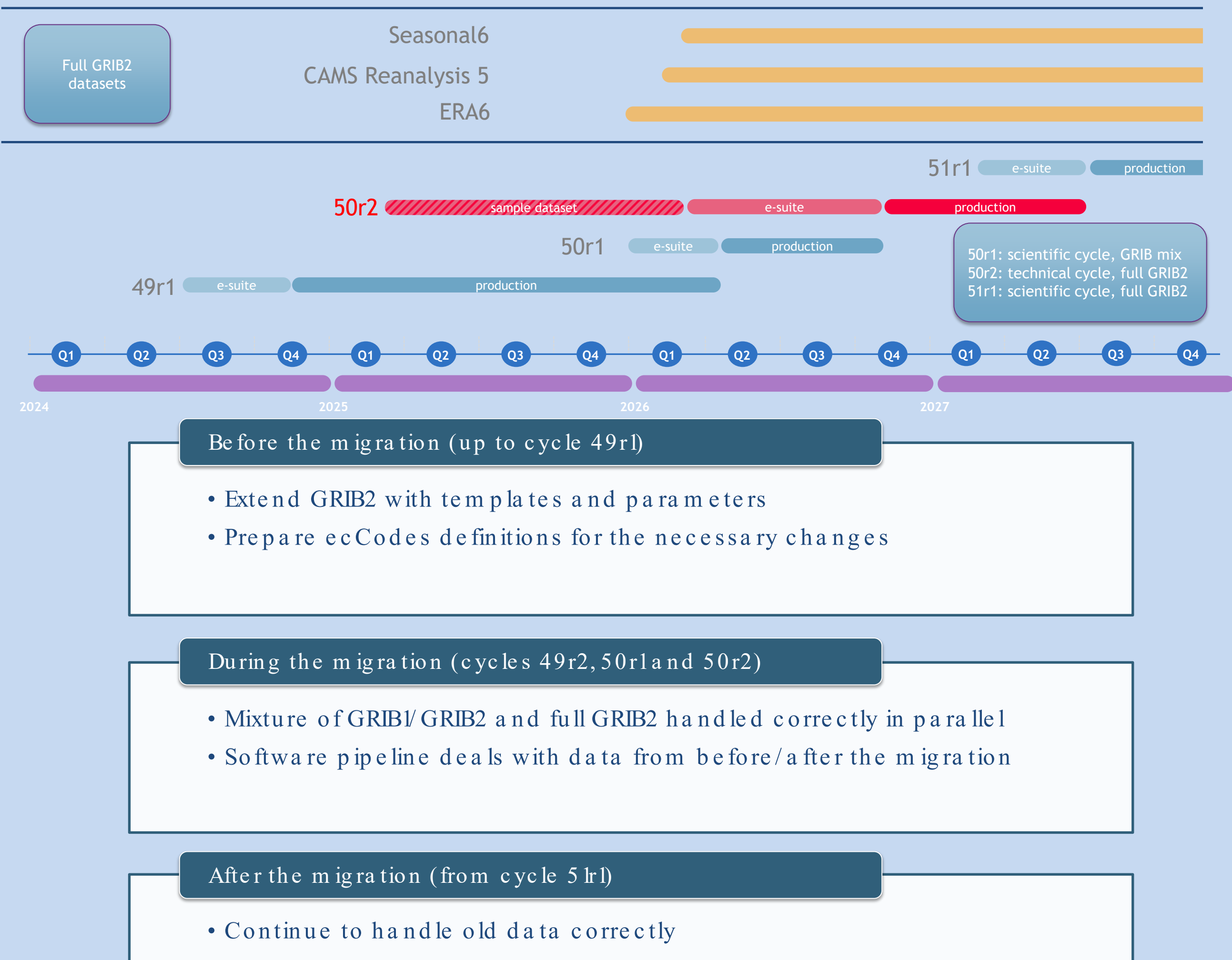
Subsequent type and length of processing (monthly average of maxima, monthly minimum of maxima, etc.) are captured by the `stattype` keyword:

`stattype=moav (monthly average)`

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

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

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 `param type` 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 `param type=wave` and `param type=base` respectively.
- In the future, the concept `param type` will be extended to accommodate new types of data, e.g. **tile**, **optical** and **chemical**.

The parameters of IFS-compo will move under `param type=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=emi/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

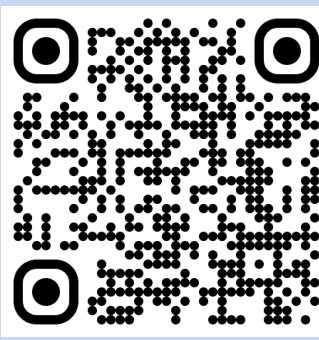
QR codes



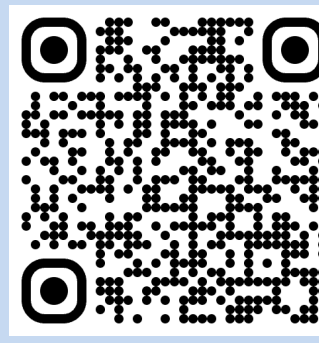
ecCodes release notes



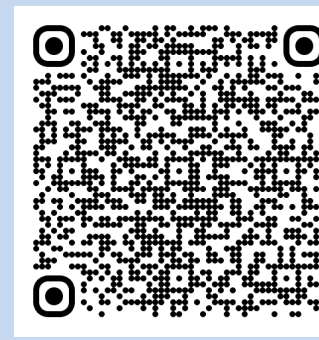
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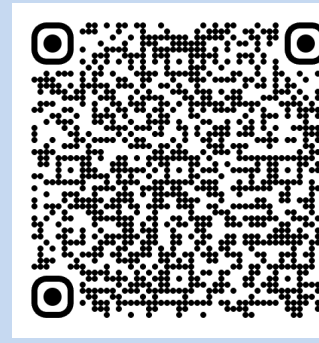
MTG2 homepage



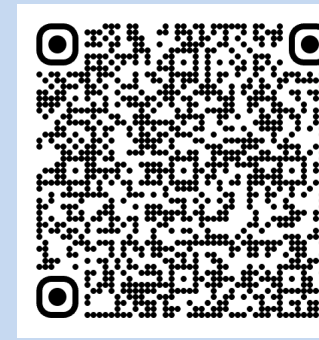
MTG2 reference dataset



Parameter changes



In Focus article



ECMWF newsletter