GRIB edition 2

Currently (at Météo-France):

- Lat/lon fields encoded in GRIB edition 2
- ARPEGE fields encoded in GRIB edition 2

Coming soon:

- AROME fields encoded in GRIB edition 2

Details

- Encoding performed in FA library, relying on grib_api/eccodes
- Historic data → GRIB2 embedded in FA
- Lat/lon data → option to write GRIB message to a plain file
- AROME fields encoding relies on the new WMO standard for LAM model, implemented in grib_api
- Meta-data selection using grib_api configuration files
- Correct handling of missing values (eg SURFEX)

FA

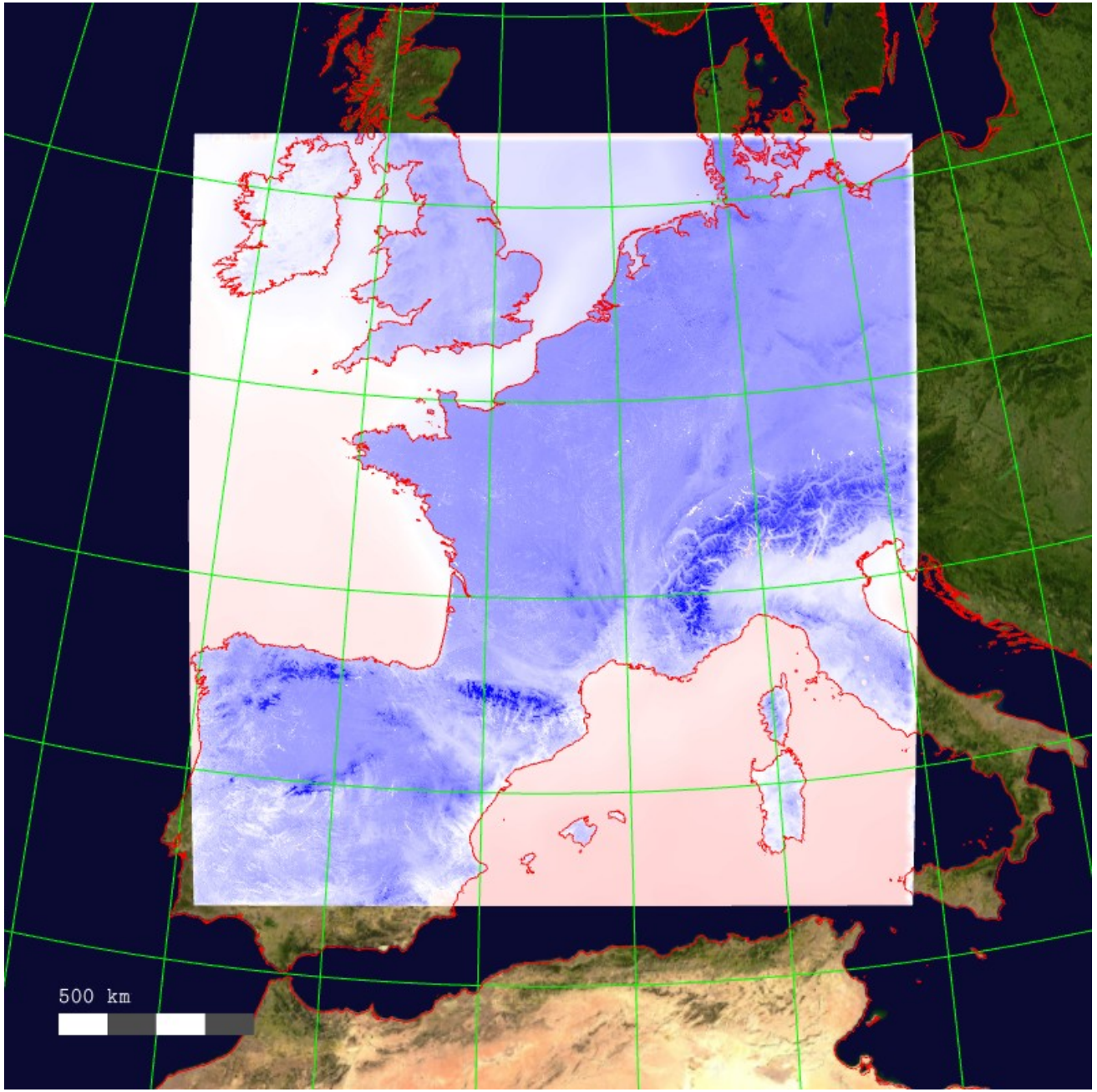
A few namelist bits:

```
&NAMFA
  NVGRIB=123,  ! Encode grid-point & spectral historic fields with GRIB2
  LEXTERN=.TRUE., ! Write lat/lon data to plain file
  CMODEL=”arpege-4dvarfr-assim-oper-fc”,  ! Model name
  NIDCEN=85, ! Centre id
/
&NAMFPC
  NFPGRIB=121,  ! Encode lat/lon fields to GRIB2
/
```

AROME fields

- Metadata to describe extension zone (different for spectral & grid-point)
- Standard for spectral data, with packing similar to GRIB0
- Lambert, polar stereographic, Mercator
- Centre of projection = centre of C+I

AROME fields



GRIB edition 2

- Implemented in grib_api/eccodes; maintained by ECMWF
- No known limitations on size of fields, metadata (eg datation, grid definitions, etc...)
- Up to date metadata system
- Powerful encoding methods (eg second order, JPEG, CCSDS, Szip, etc...)

But... we still keep the possibility to use other encoding methods

Configuration

ECcodes/grib_api definitions :

```
definitions/grib2/local.85.0.def
definitions/grib2/local.85.1.def
definitions/grib2/local.85.2.def
definitions/grib2/local.85.def
```

→ Easy to copy/adapt for your own centre

+ configuration files versioned by GCO & provided at run time:

```
grib1/localConcepts/lfpw/faFieldName.def
grib1/localConcepts/lfpw/faLevelName.def
grib1/localConcepts/lfpw/faModelName.def
grib2/localConcepts/lfpw/faFieldName.def
grib2/localConcepts/lfpw/faLevelName.def
grib2/localConcepts/lfpw/faModelName.def
```

faModelName.def

```
'arpege-4dvarfr-assim-dble-fc'           = { generatingProcessIdentifier =  22; }

'arpege-4dvarfr-assim-oper-fc'           = { generatingProcessIdentifier =  12; }

'arpege-pearp-production-dble-fc_m001'   = { generatingProcessIdentifier = 212;
numberOfForecastsInEnsemble = 035; perturbationNumber = 001; productDefinitionTemplateNumber
= 11; }

'arpege-pearp-production-dble-fc_m002'   = { generatingProcessIdentifier = 212;
numberOfForecastsInEnsemble = 035; perturbationNumber = 002; productDefinitionTemplateNumber
= 11; }

'arome-3dvarfr-assim-dble-fc'            = { generatingProcessIdentifier = 210; }
```

faLevelName.def

```
'S' = {
  parameterCategory                    =          255;
  parameter-number                     =          255;
  scaleFactorOfFirstFixedSurface       =            0;
  scaledValueOfFirstFixedSurface       =            0;
  typeOfFirstFixedSurface              =          119;
  typeOfSecondFixedSurface             =          255;
}
'H' = {
  parameterCategory                    =          255;
  parameterNumber                      =          255;
  scaleFactorOfFirstFixedSurface       =            0;
  scaledValueOfFirstFixedSurface       =            0;
  typeOfFirstFixedSurface              =          103;
  typeOfSecondFixedSurface             =          255;
}
```

faFieldName.def

```
# Liquid water cloud specific content
"CLOUD_WATER" = {
    discipline = 0 ;
    parameterCategory = 1 ;
    parameterNumber = 83 ;
    tablesVersion = 15 ;
}

# "Zonal component of 180 min gust wind (maximum between two outputs)"
"CLSU.RAF180M.XFU" = {
    discipline = 0 ;
    parameterCategory = 2 ;
    parameterNumber = 23 ;
    productDefinitionTemplateNumber = 8 ;
    scaleFactorOfFirstFixedSurface = 0 ;
    scaledValueOfFirstFixedSurface = 10 ;
    tablesVersion = 15 ;
    typeOfFirstFixedSurface = 103 ;
    typeOfStatisticalProcessing = 2 ;
    indicatorOfUnitForTimeRange = 1 ;
    lengthOfTimeRange = 3 ;
    LSTCUM=2;
}
```