Progress and plans for FA/LFI

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- Current status

- Recent achievements

- Plans for the next years

- Living without FA and LFI ?

What is FA exactly ?

- Software layer to handle encoding and decoding of 2D fields + keep track of the geometry

- Written in Fortran; 20 years old

- Ported to scalar machines over the last few years (thread-safe, reduce memory usage, etc...)

- Easy to add other encoding methods

What is LFI exactly ?

- Software layer to retrieve and store encoded fields ; key/value interface

- Written in Fortran ; 20 years old

- Ported to scalar machine over the last few years ; rewritten in C ; handle output of the IO server (data scattered among several files)

- Easy to add other storage methods

Encoding methods in FA

- Until recently : only non-standard methods based either on GRIB0 or GRIB1 (**limits** on field size)

- In cycle 43t1, GRIB2 (relying on grib_api) will be possible for ARPEGE (both spectral and grid-point), ALADIN/AROME (grid-point only) and lat/lon domains.

- It will be possible to try a prototype of GRIB2 for ALADIN/AROME spectral fields

LAM fields

- Grid-point is possible, but for now it is not possible to encode the dimensions of the extension and coupling zone (does not exist in GRIB2).

- Encoding of spectral fields is not defined in the GRIB2 standard, but could be very interesting for cubic grids.

LAM fields

A proposal for an extension of GRIB2 will be issued by Météo-France to WMO ; this should allow :

- A normalized encoding of spectral fields

- Encoding of extension and coupling zone dimensions

All of this has already been implemented in grib_api, and will (hopefully) be integrated by ECMWF.

grib_api developments

- Implement LAM spectral and grid-point fields encoding

- Reduce packing error

- Implement translation from FA naming to GRIB2

- Implement a standard GRIB2 second order packing

- Fix (quite) a few bugs

MARS

- Météo-France is looking at MARS as a possible back-end for storing NWP field data (lat/lon and historic data)

- A project « MARS at Météo-France » may start this year

- A pre-requisite is encoding all data into GRIB2

Recent developments on LFI

- Two years ago, Météo-France has started using an IO server for forecast output (also used by Sweden and ECMWF)

- The output of the IO server is a set of regular LFI files ; but the model does expect a single file

- We added a new layer to handle a list of indexed LFI files

- We archive only regular LFI files

Beyond FA and LFI

Should we give up FA and LFI ? Why not but…

– Useful to keep the control on encoding and storage layers

– Some features may be difficult to handle with pure GRIB data

– We have a few Pb of data encoded in FA