



- How much time takes meteo input ?
- According to anonymous user: “too long”
- But how much is it ?
- Test run on ECMWF/c1a :
 - TM5 fresh from SVN (dec 2009)
 - L60, glb6x4 / eur3x2 / eur1x1
 - test ‘chemistry’ (5 transported tracers)



timer	system_clock	(%)
root	2566.69	
field2d	37.36	(1.5 %)
field3d	1392.87	(54.3 %)
other	1136.46	(44.3 %)
field3d	1392.87	
field3d read	1322.58	(95.0 %)
field3d transform hori	66.50	(4.8 %)
field3d transform vert	3.57	(0.3 %)
other	0.22	(0.0 %)

- **Most expensive :**
 - reading 3D fields : 95% !
- **Less important:**
 - re-gridding
 - surface fields

- Could the format be too slow ?
- Current format has a long history :
 - **HDF4**
 - **internally compressed (“deflated (=zlib), level 6”)**
 - **3D field for each time record**
- **Better to use NetCDF4 ?**
 - **based on HDF5**
 - **supports parallel read/write**
- **Test: converted temperature file:**
 - **single 4D record per file (instead of 8 3D records)****to formats:**
 - **NetCDF4**
 - **NetCDF4 incl compression (deflate, level 6)****and measure reading time ...**



format	records	compression	time
HDF4	8 x 3D	yes	100 %
NetCDF4	4D	yes	27 %
NetCDF4	4D	no	19 %

- New file structure/format is 5 times faster

- Convert the complete archive ?
 - Faster reading
 - Opportunity to clean up existing archives
- Does not solve everything ...
 - Current parallelization requires ALL meteo on ALL processors
→ limits the speedup
 - Archive size still huge ...
- In a future, far far away ...
 - Domain-decomposition with parallel i/o

- Proposal for archive conversion:
 1. Continue current 1.00x1.00 stream(s) daily!
 2. Convert existing archive:
 - NetCDF4
 - 4D records
 - CF-conventions etc
 - no internal compression
 - packing (offset/factor) ?
 - compress tar files ?
 3. Support new format in TM5
 4. Switch processing to new format

- Still necessary to keep re-gridded archives (6x4 etc) ?
 - Current reason (speed) might not be valid anymore with new format
 - Better approach:
 - Keep 1.00x1.00 archive only at ECFS
 - Get files to local computer, re-grid temporary
 - Facilitated using 2 meteo rc files:

```
#include rc/meteo-ec-od-regrid.rc  
!include rc/meteo-ec-od-regridded.rc
```