

**Summary of the GMAP/COMPAS documentation on the E-suite  
Of November 2005-January 2006  
“new clim files”, CY29T2\_op2, GCO, January 19, 2006.  
translated into English by C. Fischer, February 5, 2006.**

**Overview:**

1. transmission, coupling and computational domain climatological (clim) files have all been re-built, for all MF models as well as all known domains from partner institutes. New geometry modules (JDG) and new file “cadre” specifications have been applied (new “cadres” are only accessible to centres who run CY26T1 or more). Several bugfixes have been taken into account in e923 (see appendix).
2. on Diapason, QuikSCAT, AQUA (AIRS and AMSU-A/B), GEOWIND extraction processes have been modified. This change concerns the BUFR format extraction and the “oulan” extraction tool. On VPP, the operational data handling of these observations has been adapted accordingly. QuikSCAT pre-treatment is now performed on VPP.
3. the original E-suite (August 2005) contained Lopez microphysics and 46 levels. These have been discarded end of November.
4. AIRS monitoring has been suspended in production (Arpège short cut-off and long range production forecasts). This change implies a different “bator\_map” procedure between assimilation (long cut-off extraction for the assimilation cycle) and production.
5. new radiosonde bias correction (inspired from ECMWF), in order to counter the problem with temperature and geopotential in the stratosphere due to the radiation scheme.
6. new bias correction coefficients for SEVIRI data
7. optimisations for memory usage
8. update of the most frequently used BDM flags

**Appendix: new clim files**

Description of modifications in configuration 923:

- the code changes are based on cycle CY29T2 (bugfix number 2) instead of CY25T1 used before. The changes mostly concern part 1 of configuration 923, plus some other updates in other parts. The changes do not have significant consequences on the values of the fields.
- Aerosols and ozone fields (7 fields on the whole) are now properly added to the clim data in parts 8 and 9 (they had to be added manually before).
- A finer orography input database is used in part 1, in order to improve the representation of orography (GTOPT030 instead of GLOB95). A modified land/sea mask has been introduced accordingly (for instance: 150 points in Arpège high resolution, mostly located near the poles).
- The input files for part 6 of c923 have been changed. Therefore, surface and deep soil temperature, surface and total water contents, soil snow content, all are modified for all 12 months. Temperature and snow content input fields have been obtained from Arpège data processed over the period 01/09/98 and 31/08/00, when the operational Arpège model was in T199C3.5. Model fields have been cast on a 1 deg. by 1 deg. grid, and averaged for every month. For soil water content, the input data have been obtained from the GSWP (Global Soil Wetness Project), using Arpège vegetation data from 1987/1988, also processed over a 1 deg. by 1 deg. grid (these fields were obtained before from a set of Arpège analyses, taken over 1 year in T79C1, with a 1.5 deg. by 1.5 deg. resolution).

List of modified input fields:

Due to change in orography:

- SURF GEOPOTENTIEL: g times grid-point orography
- SPEC SURFGEOPOTEN: g times spectral orography
- SURF ET.GEOPOTENT: g times sub-grid orography standard deviation
- SURF VAR.GEOP.ANI: sub-grid orography anisotropy
- SURF VAR.GEOP.DIR: sub-grid orography dominant direction
- SURF Z0REL.FOIS.G: g times bare soil roughness length
- SURF Z0.FOIS.G : g times mean soil roughness length

Due to change in part 6:

- SURF TEMPERATURE: surface temperature
- PROF TEMPERATURE: deep soil temperature
- RELA TEMPERATURE: relaxation value for soil temperature
- SURF RESERV.NEIGE: soil snow content, expressed in equivalent water content
- SURF PROP.RMAX.EA: surface water content
- PROF PROP.RMAX.EA: deep soil water content
- RELA PROP.RMAX.EA : relaxation value for soil water content

### **Expected impact:**

The biggest changes due to the new orography appear near the poles (due to the modified land/sea mask), and over significant mountain ridges (Antarctica, Andes, Himalaya). Elsewhere, differences are rather small, and globally negligible. Impact studies in Arpège have shown a rather neutral impact in terms of scores.

Changes due to the modified surface fields, and applied also in the surface analysis and for the model climatology (relaxation), have a negligible impact on altitude fields. They provide however a more realistic representation of soil water contents and snow contents, at large scale and over all continents. This allows for a better consistency between forecast and analysis, as concerns surface and soil fields.

Note that Fullpos also uses the new clim surface fields to post-process surface fields. Therefore, it is wise to modify also all post-processing clim files (Arpège, Aladin, BDAP). For old dates, a specific Olive task has been created to switch from old to new clim data.