3rd SC SURFEX

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Outline

- Current use of SURFEX
- Planned (short-term) evolutions
- Summary of needs from GMAP
  - Technical aspects
  - Scientific aspecs

Current use of SURFEX

- Operational use of SURFEX in NWP Météo-France models :
  - **AROME** (12/2008)
  - **ALADIN « overseas »** {4 domains} (09/2010)
  - soil analysis (OI_MAIN) in AROME (11/2010) and ALADIN (09/2011)
  - Main features : ECOCLIMAP/HWSD/GTOPO30, tiles, ISBA-3L, CANOPY, TEB
- **ARPEGE** and **ALADIN « dynamical adaptation »** :
  - ISBA-2L without SURFEX
- Current versions : CY37T1_op1 + SURFEX V6+ (since september 2012)

Short-term evolutions

- Current experimental suite : CY38T1_op1 + SURFEX V7.2 (operational June 2013)
- Use of HWSD for ALADIN
- Use of FA file format (instead of LFI) – no lossy data compression
- Soil analysis OI_MAIN called from CANARI analysis (=> parallel task + reduced I/O)
- ECOCLIMAP 2 : negative impacts in AROME
- Preparation of CY39T1 with SURFEX V7.2

Needs on technical aspects (1)

- Improved performances of PGD and PREP (monoproc)
  - **Issues : CPU time and memory**
  - CPU time can be improved for PGD by the pre-computation of an index file
  - Optimisations of PREP examined within ALADIN consortium (P. Termonia's presentation)
  - Critical at GMAP when ARPEGE uses SURFEX (2015 ?)
  - **Long term strategy needed** (links PREP <-> Fullpos)
- Ascending compatibility should be kept between SURFEX versions regarding the initial conditions : currently there is a need to re-run PGD and PREP with new versions

Needs on technical aspects (2)

- Need of a reflexion regarding the creation of climatological files using PGD and ARPEGE/IFS 923 configuration : complex task, inconsistencies (regarding orography and orographic parameters), duplication (two types of FA files)

- Suppression of global variables (compulsory when moving to OOPS). Examined by CERFACS ?

Needs on technical aspects (3)

- Prints in listing of the main logical keys that can be activated in NAMELIST (pb when the default variable has changed between two versions but is not put in NAMELIST)

- Development of post-processing for SURFEX files (archive of useful fields in BDAP) – lossy compressed fields (list ?) + archive of forecast ranges after 3 or 6h (beyond the assimilation cycle)

- Interest for the parallel version of SURFEX « offline » that could allow the use of SODA-EKF « offline »

Needs on scientific aspects

- Interest of having GTOPO30 replaced by a new and improved elevation data base GMTED2010 potentially at higher resolution (e.g. GTOPO30 has no orography over Dominic island)

- Improved Lake Surface Temperature specification : Lake temperature climatology then Flake

- Sea ice model (for ARPEGE) -> satellite radiance assimilation

- Improved ISBA versions : ISBA-DIF + MEB => tests with Meso-NH useful to prepare the transfer in NWP models (more general for new SURFEX version)

- ISBA-DIF => soil analysis issue

GTOPO30

GMTED30

Guadeloupe

Dominic

Martinique