SURFEX STEERING COMMITTEE
28th March 2013

Agenda :

1. News from the SURFEX team (E. Martin)

2. Review of optimization of the code, including PREP, parallel OFFLINE, removing of global variables (presentation by Daan Degrawe/Tayfun Dalkilic, Stéphanie Faroux, ...)

3. Review of general activities, including status of the 2012 workplan and plans for 2013 (presentation by each member of the SURFEX SC)

4. Discussion on the 2013 work plan and further cooperations.

5. Next meeting, AOB

Correspondence with atmospheric models

SFX	Release of SFX version	NWP	MNH	CNRM-CM	
V1	2005				
V4.8	2008	CY35t2	V4.8		
V5.8		CY36t1		CM5 (CY32+V5.8)	
V6	2010	CY37t1*			
V7.1	2011		V4.9		
V7.2	Feb 2012	CY38t1			
V7.2.1	Jan. 2013	CY39t1			
V7.3	Feb. 2013		V4.10 June (?)	CM6 (CY37t2+V7.3) (->2013/2014)	

* v6+ (V6.0+ GMAP optimisations)

Versions content

- V7.2 :

  - Technical :no duplication of PGD, XUNDEF, phasing with MUSC.

  - Physics : update of OI_main, ISBA improvement (DF, A-gs)

- V7.2.1 :

  - Bug corrections, SODA update (snow assimilation)

- V7.3 :

  - Technical : MPI/OpenMP development for offline

  - Scientific : TEB (BEM+green roofs...), CROCUS (various update and improvements), Flake and 1D ocean model (ECUME for Flake, relaxation, ...), ISBA (CC, soil properties, permafrost), ISBA-TopModel coupling, New albedo (based on covers and not PFTs), chemical fluxes (NO)

- V8 (time tbd)

  - Technical : PREP optimization, removing of global variables ...

  - Scientific : MEB, 1D sea-ice model ...

Examples of points to discuss today

- Technical aspects, SURFEX efficiency for NWP and other applications

- Sea-ice : status of the developments

- ISBA-MEB : plans for 2013

- Time and content of V8

SURFEX Licences

- 2012
  - NOAA/Remote sensing (USA)
  - University of Valencia (SP)
  - Univesity of Bergen (N)
  - Welsh school of architecture (UK)
  - Group of atmospheric modeling (Brasil)
  - PIK Postdam (Ger)
  - University of Utah (USA)
  - University of Cambridge (UK)
  - University of Singapore (Singapore)
  - CETE/Est (F)
  - University of Grenoble/GIPSA Lab (F)
  - LTHE/Grenoble (F)
  - University of Corsica (F)
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- 10 ECOCLIMAP Licences

- 2013
  - University of Loja (Equator)
  - University Laval (CA)
  - IHFR Oran (Algeria)
  - Université de Scherbrooke (CA)
  - Alberta university (CA)
  - Lund university (S)
  - University of Strasbourg/ICUBE (F)
  - Hany University, Séoul (Korea)

- 8 ECOCLIMAP Licences

SURFEX as open source

- Today : The MF licence is used

- After : open source, lesser general public licence

  - MF and CNRS has agreed

  - Few authors non MF/CNRS (when they worked on the code) : Andrey Bogatchev (service météo polonais), Rafiq Hamdi (RMI), Ulf Andrae (SMHI),Trygve Aspelien (Met.no), Rui Salgado (U. Evora).

  - Need to ask ECMWF for distribution of Dr Hook

Surfex courses

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  - 2010 : course in French for 20 students

  - 2011 : course in French for 20 students

  - 2012 : course in english for 16 students 1-4 october (Belgium, Bulgaria, Croatia, Finland, France, Hungary, Ireland, Slovakia, Romania, Spain)

  - 2013 : demand from LEGOS to have a session on ISBA/TRIP. Any other needs ?

SURFEX Reference publications

- The SURFEXv7.2 land and ocean surface platform for coupled or offline simulation of Earth surface variables and fluxes

- http://www.geosci-model-dev-discuss.net/5/3771/2012/gmdd-5-3771-2012.html

In discussion

- ECOCLIMAP-II/Europe: a twofold database of ecosystems and surface parameters at 1-km resolution based on satellite information for use in land surface, meteorological and climate models

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Accepted the 27 March 2013

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The GMD surfex special issue has 5 papers publisched, 1 in press and 2 in review(GMDD)

CEN activities

Applications/collaborations using SURFEX/ISBA-Crocus:

- Interactions with met.no regarding avalanche warning activities. Project in development phase, with numerous interactions.

- Requests from AEMET (Spanish met office) regarding avalanche warning activities. Contacts established, work should start soon.

- Actual collaborations with : NASA/Goddard (Greenland melt ponds and subsurface aquifers), LGGE Grenoble (snow modeling for microwave applications, coupling with the microwave emission model DMRTML), Univ. Edinburgh (R. Essery ; SEKF data assimilation in Crocus for snow depth, SWE and microwave brightness temperature).

- Model requests from Univ. Sherbrooke (CA), Univ. Washington (USA), PIK Potsdam (Ger), LGGE/LTHE (Grenoble, France, for work on glaciers and hydrological applications).

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CEN activities

Scientific developments:

- Work in progress on the reformulation of snow metamorphism laws (explicit and prognostic grain size)

- Work in progress on the renovation of optical radiative transfer (albedo, absorption etc.) using a 2-streams RT scheme.

- Planned work (pending requested PhD grant) on explicit handling of impurities in snow in Crocus.

Technical developments:

- Consolidation of OFFLINE runs on relief for distributed model runs

- Developments (shared with Toulouse) to handle thick snowpacks (100s meters) in the scope of ice-sheets and glaciers representation in Crocus.

- Development of operational model chain SAFRAN - SURFEX/ISBA-Crocus - MEPRA (S2M) for avalanche warning activities at Météo-France for high mountain and mid-altitude mountain ranges. Should be operational in 2014 (prototype ready by summer 2013)

Annex

Work plan 2012

2012 workplan

MesoNH :

Emission of NO by the soil (LA)

Test of v7.2 (GMME/MESONH)

ALADIN

Testing of SURFEX with all the configurations used by the consortium

HIRLAM

Development of ISBA-MEB (with GMME)

Introduction of the HIRLAM sea-ice parameterisation

work on data assimilation (workshop of the 5/6 march)

Testing of TEB

Feasibility study on using new high resolution surface elevation data (SRTM, ASTER)

GMAP :

- New version of the Ekf . The content of the new version will be defined according to the worhshop of the 5-6 March in Toulouse.

- optimisation of PGD and PREP (with the Surfex team, depending on the time available)

GMGEC :

Preparation of the next version of the coupled model CNRM-CM6 :

- optimisation and re-writing of some parts of ISBA-CC
- coupling with dynamic vegetation
- testing of ISBA-ES, ISBA-CROCUS and ISBA-MEB
- scientific work on permafrost and aquifers
- coupling AROME/NEMO (oceanic model)
- use of OASIS for coupling (rivers and ocean)
- introduction of GELATO1D

GMME :

ISBA :
  Development of ISBA-MEB (with HIRLAM)
  specific soil column for snow
  Coupling ISBA-TopModel
  validation of new versions of ISBA-A-gs (FluxNet/FaPar)
  removing obsolete versions of ISBA-A-gs

TEB :
  testing of TEB-BEM (building energy model)
  street orientations (patches)
  vegetated roofs (2012), street trees (2013)

Chemical emissions :
  new parameterisation of anthropic emissions.

SIM :
  preparation of a new SIM chain (use of ISBA-DF, ISBA-A-gs)
  impact of groundwater on evapotranspiration

CEN :

Development of CROCUS :
 new formulation of snow metamorphism
 new formulation of albedo and extinction
 taking into account the slopes

SURFEX Team
 Suppression of global variables will be undertaken by the CERFACS in 2012/2013 (in collaboration with the SURFEX team, MesoNH and GMAP)
 Development of a parallel driver for offline simulations