



Schweizerische Eidgenossenschaft
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Swiss Confederation



COSMO WG3b

Other activities

Jean-Marie Bettems / MeteoSwiss

WG3b / SOILVEG Workshop

20.03.2014



Other WG3b activities

R & D

- Estimation of optimal model parameters: **PP CALMO** → *afternoon session*
- Urban parameterization: **TERRA-URB** → *candidate for COSMO 5.2*
- Parameterization of organic soil: **TERRA-Mire** → *candidate for COSMO 5.2*

Support

- Software for derivation of external parameters: **EXTPAR** → *this talk*
- Sharing soil & surface observations over Europe: **data pool** → *this talk*

Management

- COLOBOC **final report** → *COSMO Technical report, before Eastern*
- Update COSMO WG3b **web pages** → *please contribute !!!*
- COSMO release **5.2** → *this talk*
- **Science Plan** → *this talk*
- Call for **new priority project** → *this talk*



EXTPAR 2.0



- **First common COSMO release**
- Released in **February 2014**
- Software **extensively tested** at MeteoSwiss / ETHZ / DWD
- Full **working installation** at CSCS, incl. raw data and documentation
- **Version control** of code at CSCS (SVN)
- **Source code administrator** is Daniel Luethi / ETHZ
- **Mailing list** cosmo-extpar@cosmo-model.org



EXTPAR 2.0

Main features

- Merged with [DWD release 1.13](#)
- Added topo related parameters based on [ASTER DEM](#) (in domain [60S,60N])
- Implemented production of parameters for [topo corrected radiation](#)
- Added support for [topo smoothing](#) (optional)
- Added support for [scale separation](#) (SSO and z0, only GLOBE, optional)
- Improved implementation of [HWSD](#) soil data (high resolution, deep soil)
- Added [soil albedo](#) similar to what is used in the Community Land Model
- Improved implementation of [GLOBCOVER](#) land use data
- Added [ECOCLIMAP](#) land use data (with seasonal cycle of LAI, PLCOV and Z0)
- Added additional aerosol climatologies [AEROCOM](#) and [MACC](#)
- Many [bug fixes](#) and [code cleanup](#)
- **Still some problems with GRIB 2 output,
no direct access to the software outside of CSCS**





EXTPAR

Outlook

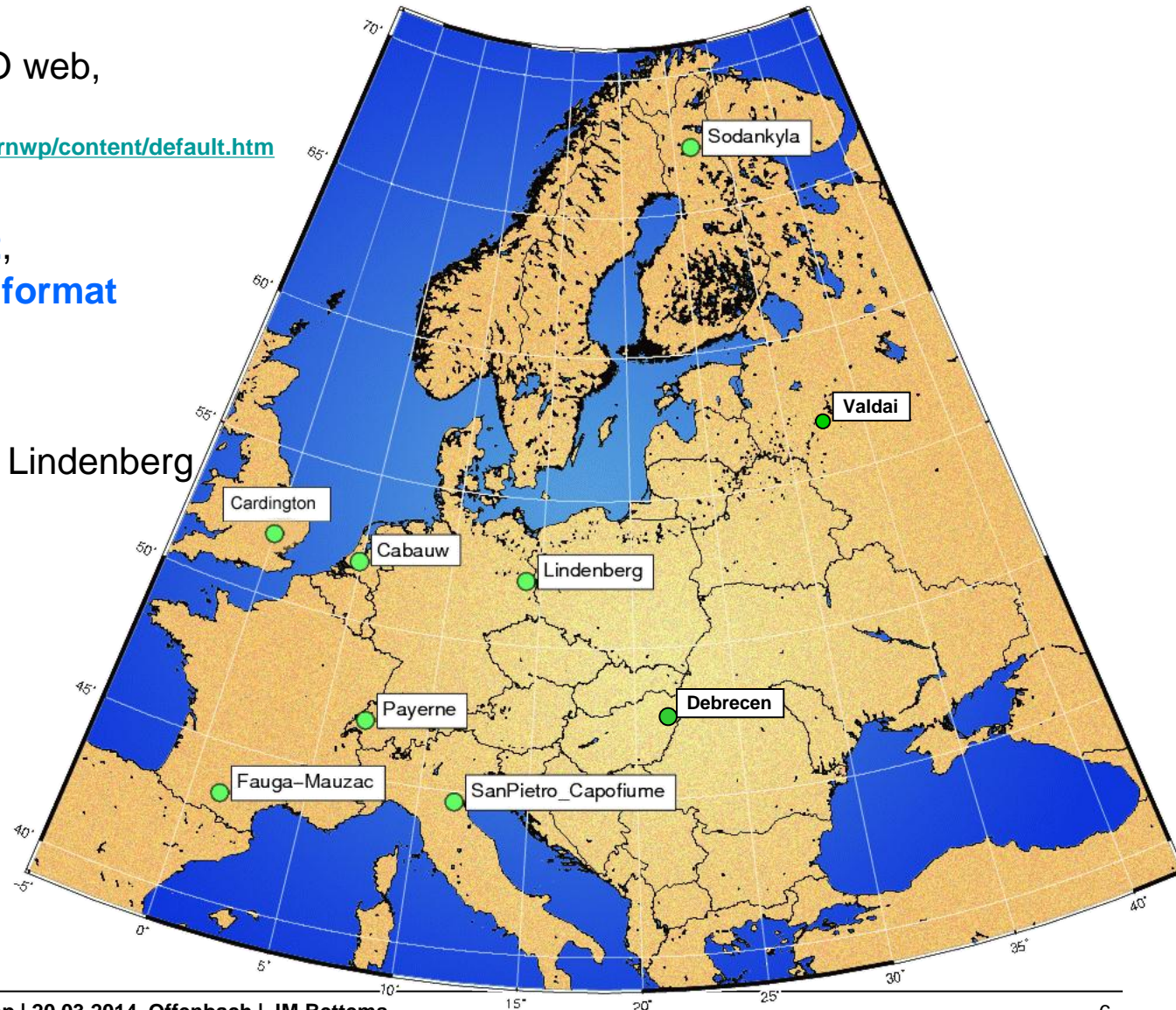
Planned for the **next COMO GM (09.2014)**

- Copy **documentation** on COSMO web [D. Luethi, T. Andreadis]
- **Web access** through CLM portal open to all authorized [D. Luethi]
- Reduction of **memory usage** [D. Luethi]
- Improve **user interface** [D. Luethi]
 - Add sensible default values and meaningful messages related to namelist
- **Merge** latest developments from DWD [J. Helmert]
- Further **tests** at DWD (OpenMP, ICON, GRIB 2) [J. Helmert]



Data pool action

- Access from COSMO web, password protected
<http://www.cosmo-model.org/srnwp/content/default.htm>
- Currently **9 sites**, data from **2006-2012**, in a **common ASCII format**
- **Soil, surface** and **BL** observations
- Work done at DWD / Lindenberg (C.Heret)





Data pool action

Status

- Data available from **2006 to 2012** :
Cabauw (NL), **Capofiume** (IT), **Lindenberg** (DE), **Payerne** (CH)
- Data available from **2008 to 2012** :
Sodankyla (FI)
- Data available from **2006 to 2012** , (some) 2012 data missing :
Faug-Mauzac (FR), **Cardington** (GB)
- Very few data :
Debrecen (HU)
- New site :
Valdai (RU)
... but no fluxes measurements, no soil measurements
... work in progress

- Action supported by COSMO SMC and by EUMETNET SRNWP Program
- Mailing list srnwp_data_pool@cosmo-model.org ... send feedback !!!



COSMO release 5.2

- Target release **2015Q1** (?)
- **TERRA-URB** (H. Wouters) is a candidate
 - Direct implementation of **urban effects** in TERRA
 - Successfully **implemented** and **tested** on 1km resolution over Belgium
 - Additional **computational cost** is negligible (+3% CPU-time)
 - Number of needed **extra parameters** is small and readily available
 - Kristina Trusilova could be the **responsible person**.
- **TERRA-Mire** (A. Yourova) is a candidate
 - Parameterization of **organic soil** (mire) in TERRA
 - Successfully **implemented**
 - Being **tested** in production at RHMN
 - **Responsible person** has still to be defined



COSMO release 5.2

- **Any other candidates ?**
- **COSMO standard** rules should be followed :
 - Prepare document showing **usefulness of development**,
inform WG coordinator
→ *first SMC decision*
 - **Implement, document, test** according to COSMO standard,
define a **person responsible** for this code,
inform WG coordinator
→ *second SMC decision*
 - COSMO SCA implements changes in **official COSMO release**





Science Plan

- Covers period **2015 - 2020**
- Describes COSMO **goals and strategy** (but not implementation)
- Current release is **1.2**, which includes **StC feedback**
- **External review** by panel of reviewers till mid May
 - JF. Mahfouf / MeteoFrance for WG3b aspects
- Final approval by StC planned for **September 2014**

- **WG3b related content**
 - Land-surface scheme
 - Parameterisation of sea ice
 - Parameterisation of lakes
 - External parameters



Science Plan

COSMO strategy : land-surface scheme

Due to the numerous dependencies between the overall NWP system and the SVAT model itself, a deep understanding of the capabilities and limitations of the SVAT model is required in the *operational services*. The TERRA model, which was developed at DWD, fulfils this condition; moreover, TERRA is running safely and efficiently since many years at all scales. For these reasons, although more advanced SVAT's are also coupled with COSMO and employed by the COSMO-CLM community (CLM, Veg3D), **TERRA is chosen as the basis for further developments** in the frame of NWP applications.

Within this strategy, the more advanced SVAT models coupled with COSMO (CLM, Veg3D) will be used for **regular inter-comparison and validation studies** for supporting the further development of TERRA.

In terms of scientific goals, the further development of TERRA will focus on

- processes with expected **large impact on the NWP forecast**;
- improved **coupling to the atmosphere** (...);
- stronger integration of **data assimilation**;
- implementation of the **stochastic physics** approach.



Call for new Priority Project

- One of the problems of the surface model and the transfer scheme is the **missing canopy layer**. The motivation is the **energy budget** at the surface and the description of **snow in forest**. Here I see a potential topic for a PT/PP [J. Helmert].
- **Any other proposal ?**
- Difficulties:
 - find **educated** contributors
 - find **resources** for project administration and coordination (even more when resources are geographically distributed)
- Chances:
 - **concentrate** resources following SP priorities



Thank you for your attention!