



Status of EXTPAR

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Recent updates of EXTPAR

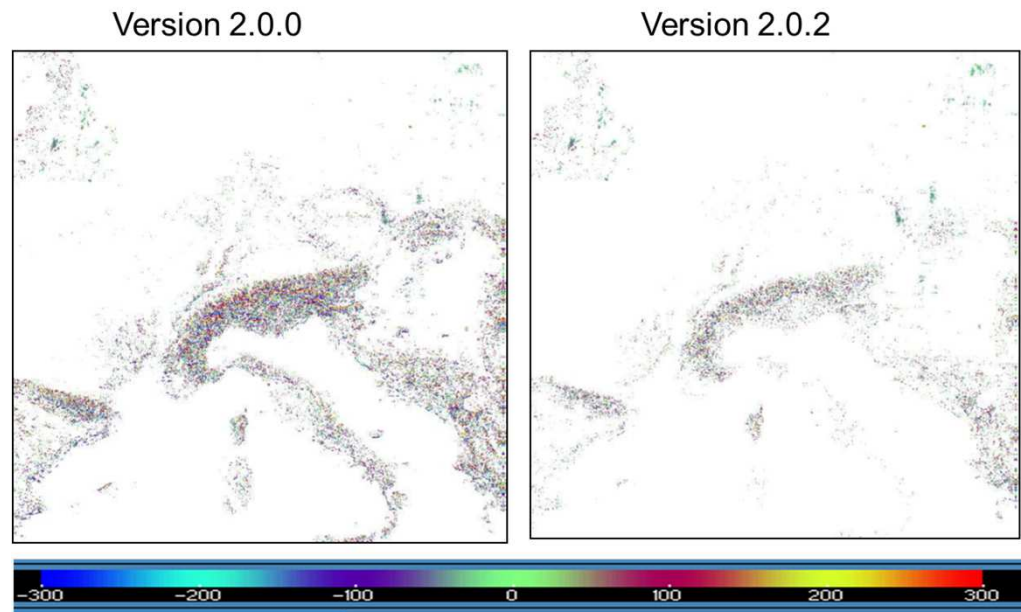
- **Version 2.0.1 (June 2014)**
 - new `itype_albedo=3` (omit calculation of NIR and UV albedo fields)
 - reduce memory needs for globcover land-use raw data
 - use of single tiles with globcover data (J. Helmert)
 - correct bugs reported by GNU compiler (B. Rockel)
- **Version 2.0.2 (August 2014)**
 - correct geolocation error in aggregation of topography data (southward shift of 30 m ASTER and 1km GLOBE)
 - added meta-data information in NetCDF output with respect to version used and filter options applied to topography
 - added namelist parameters to suppress either NetCDF or GRIB output

Geolocation error orographic data

Orographic height difference ASTER–GLOBE dataset at 1km resolution

When is this error relevant?

- Grid resolution is same order as resolution of raw data
ASTER (**grid res. < 150 m**)
GLOBE (**grid res. < 5km**)
- no or only weak smoothing applied to orography



WebPEP

- **WebPEP is a browser based frontend tool to EXTPAR**
- **WebPEP is also accessible for all COSMO Users**
- **WebPEP is set up, operated and maintained by HZG Geesthacht (B. Rockel)**
- **URL for WebPEP:**
<http://www.clm-community.eu/index.php?menuid=221>
- **WebPEP uses most recent version of EXTPAR (2.0.2)**
It is intended to keep it in sync also in the future

WebPEP

www.clm-community.eu / Model / Preprocessing / External Data (WebPEP)

WebPEP

Version: EXTPAR-2.0.2

README

origin lon	<input type="text" value="8"/>
origin lat	<input type="text" value="47"/>
ie_tot	<input type="text" value="1000"/>
je_tot	<input type="text" value="1000"/>
startlon	<input type="text" value="-10"/>
startlat	<input type="text" value="-10"/>
dlon	<input type="text" value="0.02"/>
dlat	<input type="text" value="0.02"/>
Orography	<input type="text" value="ASTER"/>
Orographic Filtering	<input type="text" value="Yes"/>
Land use	<input type="text" value="GLOBCOVER"/>
Soil	<input type="text" value="FAO-DSMW"/>
Aerosols	<input type="text" value="NASA/GISS"/>
Surface Albedo	<input type="text" value="MODIS dry & sat"/>
E-mail	<input type="text" value="dl@env.ethz.ch"/>
View mode	<input type="text" value="2D (Google Maps)"/>

Logos | Namelist-tool

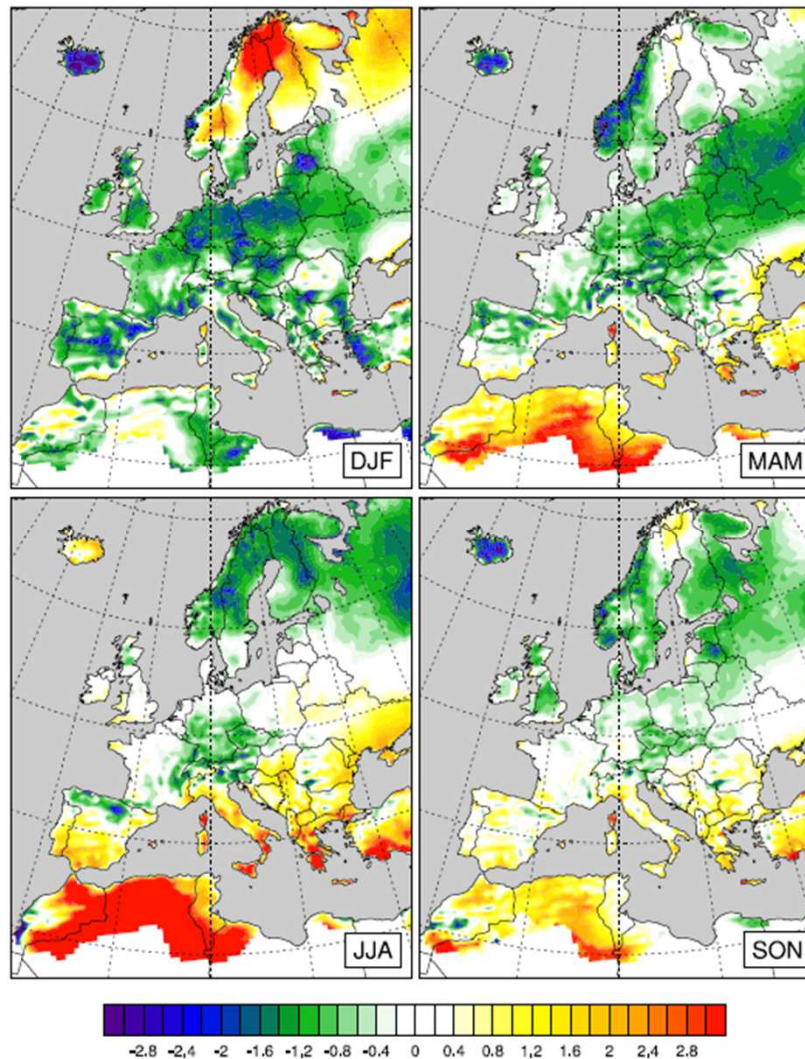
What you need to know about WebPEP

- **WebPEP was designed with ease of use and robustness in mind**
- **WebPEP expects origin of rotated coordinates instead of north pole for domain definition**
- **Domain size of target grid limited to 2000x2000 GP**
- **ASTER only allowed for grid mesh size ≤ 5 km**
- **WebPEP output files only in NetCDF-Format**
- **WebPEP doesn't allow yet to specify orography filtering options: assumes filter options used for MCH COSMO-1**

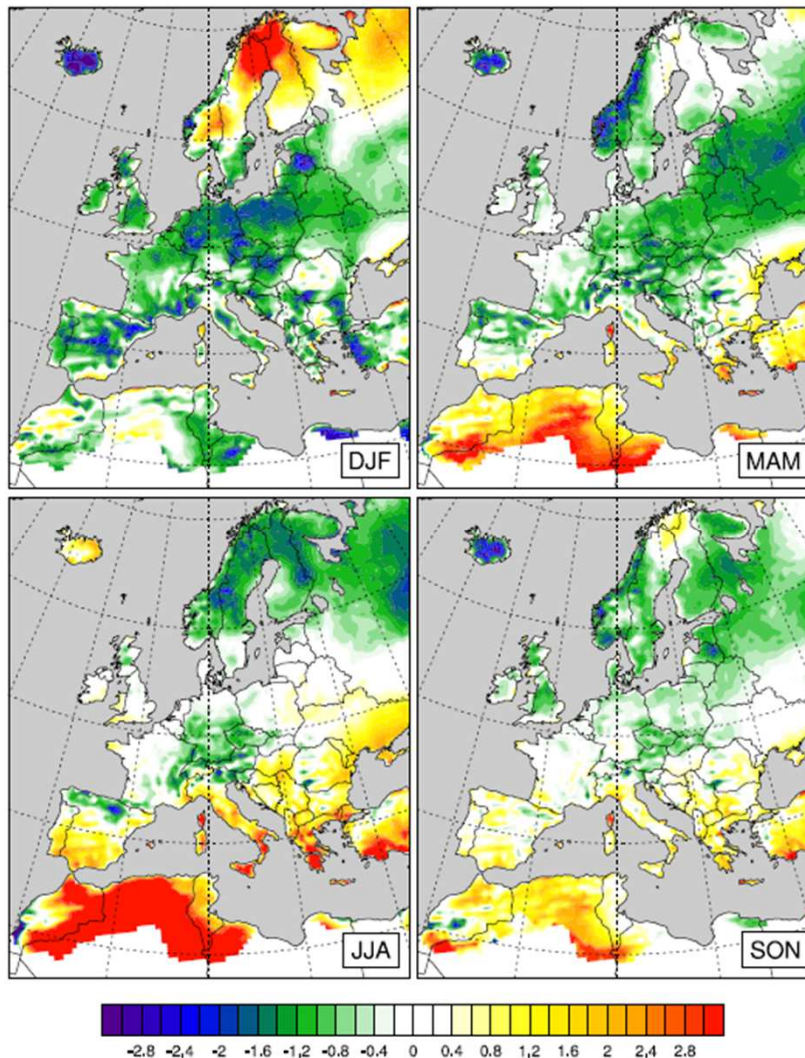
plans for future releases

- **Version 2.0.3 (bug fix release) will include**
 - bug fixes contributed by J. Helmert with respect to albedo and NDVI data
 - bug fixes contributed by B. Rockel with respect to file system paths of raw data
 - bug fixes with respect to problems at date-line
- **Version 2.1 new features and new bug fixes**
 - Support for external parameters needed by urban model (currently under development by Hendrik Wouters)
 - support for updated lake dataset (probably version 3)

Seasonal bias of T_{2M} for control simulation 1981-1984



Typical seasonal bias of T_{2M} for control simulation 1981-1985



Question:
To what extent can more accurate external data sets help to reduce bias of COSMO-CLM?

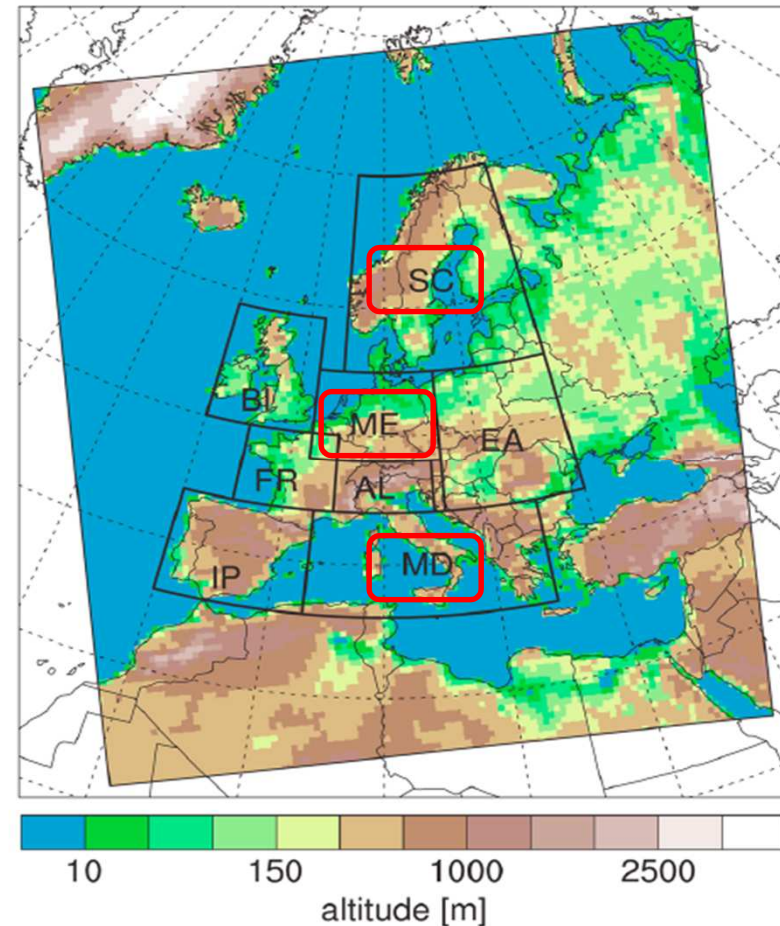
Sensitivity experiments of European Climate to use of alternative external data sources

- **work done in collaboration with Anne Roches in the framework of the coordinated evaluation of COSMO 5 in climate mode**
- **Model version: cosmo5.0_clm1 Resolution: 0.44 degree**
- **Initial and boundary data: reference simulation by K. Keuler**
- **Ensemble of 6 simulation with standard settings (control)**
- **11 sensitivity simulations with alternative settings related to external data sets covering years 1979-1985 used for analysis years 1981-1985**
- **Shown here only: sensitivity of 2m temperature**

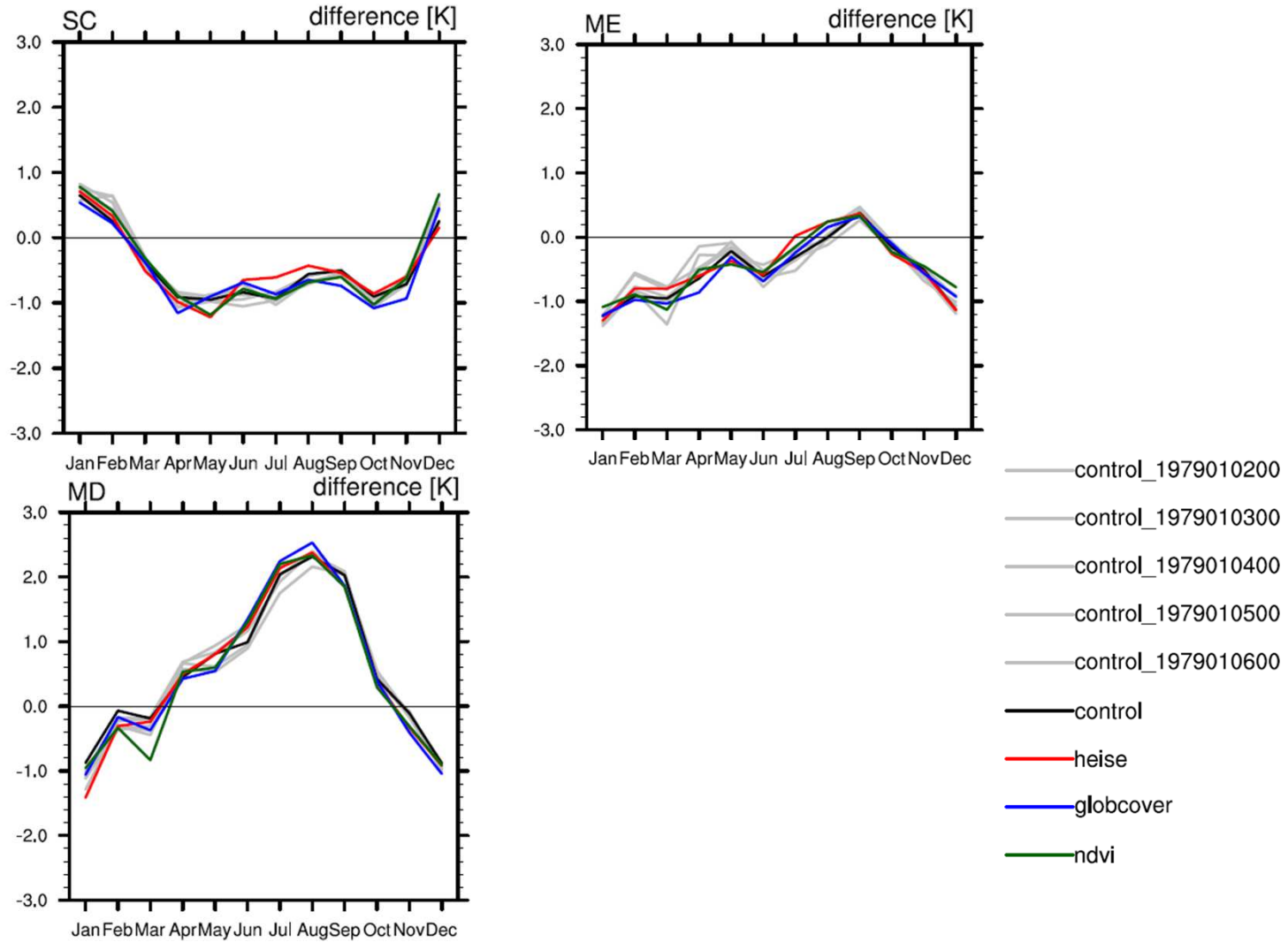
PRUDENCE evaluation domains

Evaluation of simulation results on PRUDENCE domains:

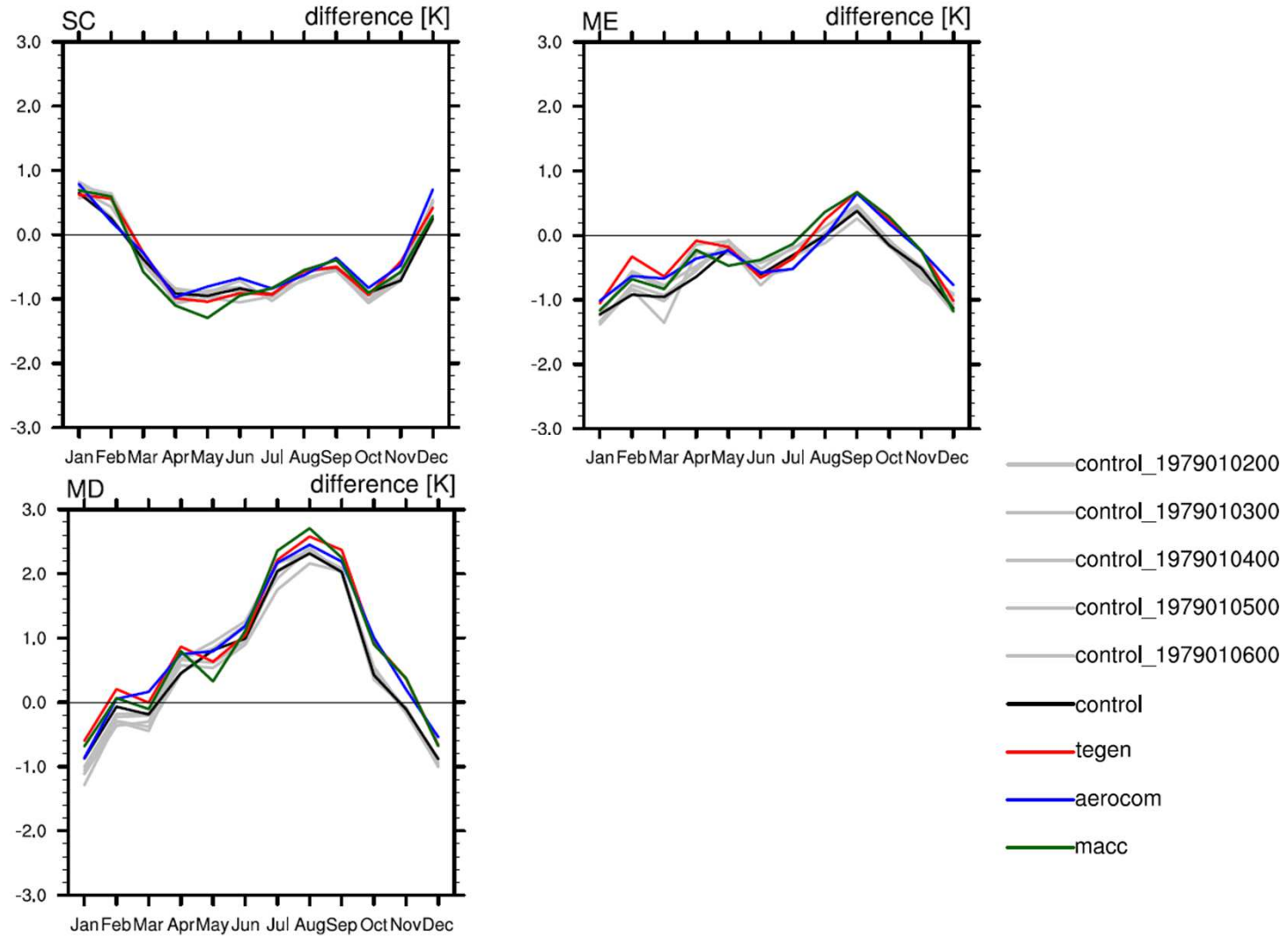
- Seasonal and monthly biases averaged over all land points of PRUDENCE domains with respect to EOBS version 10.0 gridded observation data
- Shown are only the domains depicted by the red rectangles (SC, ME, MD)
- In climate simulations we also need to consider internal variability when evaluating sensitivity experiments



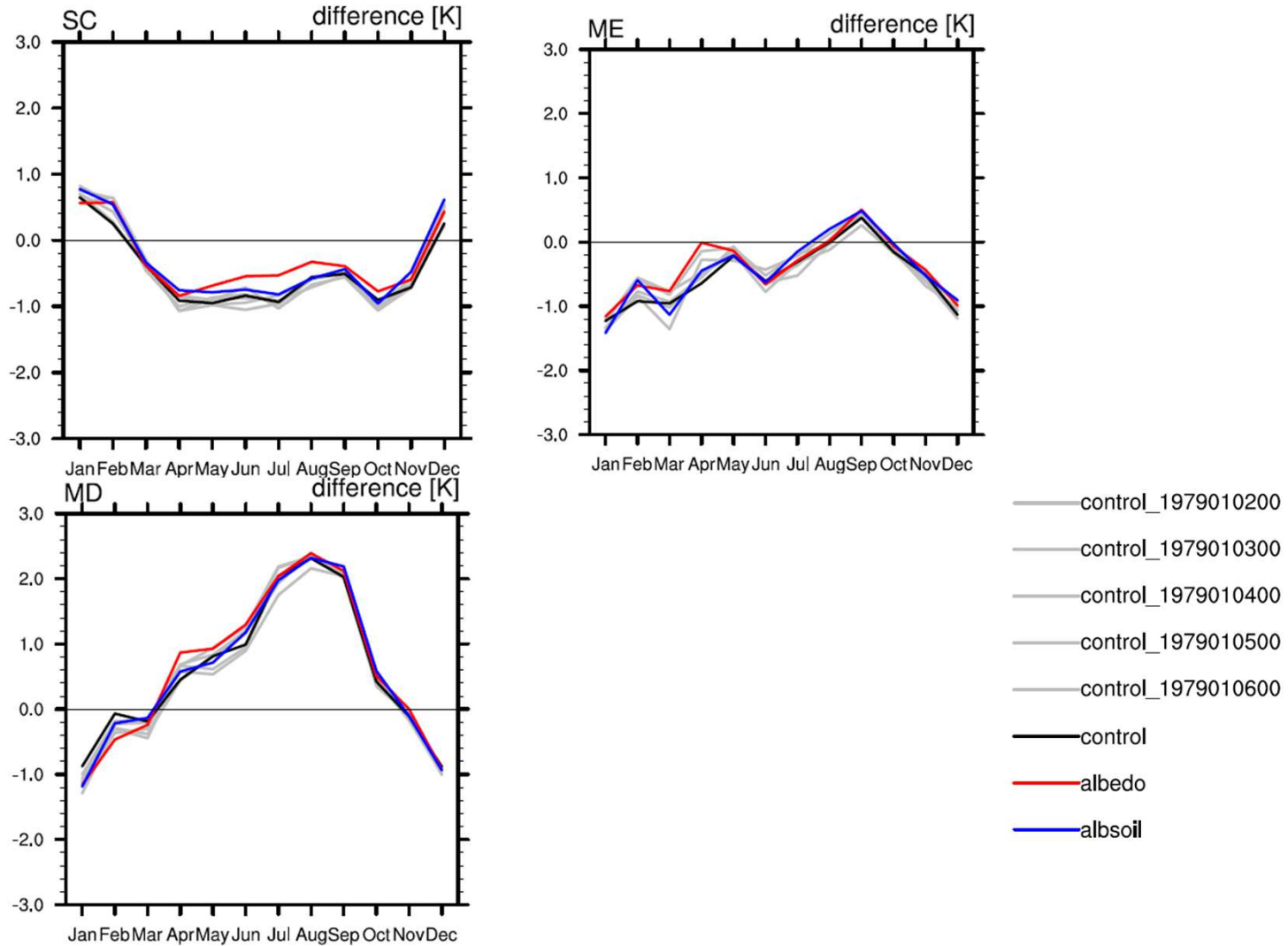
Sensitivity T_{2M} to land-use dataset



Sensitivity T_{2M} to aerosol dataset



Sensitivity T_{2M} to albedo dataset



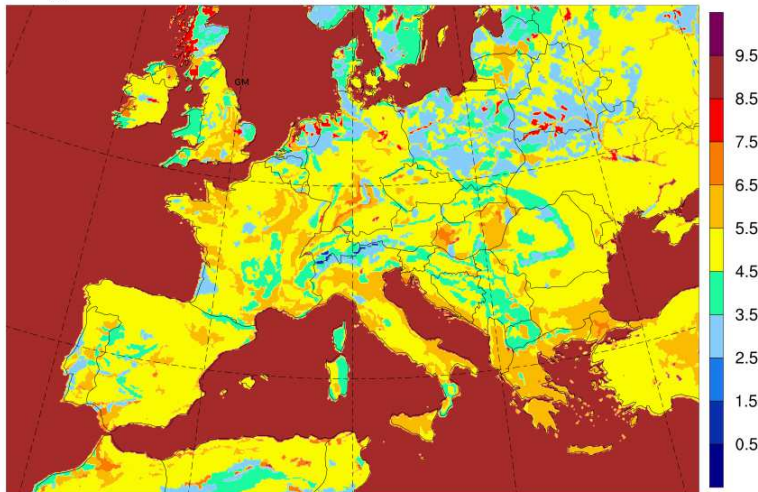
Conclusions

- **Alternative external parameter sets in general result in small modification of 2m temperature climatology**
- **Mostly they are same order as internal variability**
- **Alternative aerosol datasets lead to significant increase in autumn and winter temperatures in southern half of model domain**
- **Some alternative data sets have the potential to decrease model temperature biases in some domains by a few %**
- **Does not contradict studies showing significant improvements on local scale by use of new highres datasets**

Thank you for
your attention!!

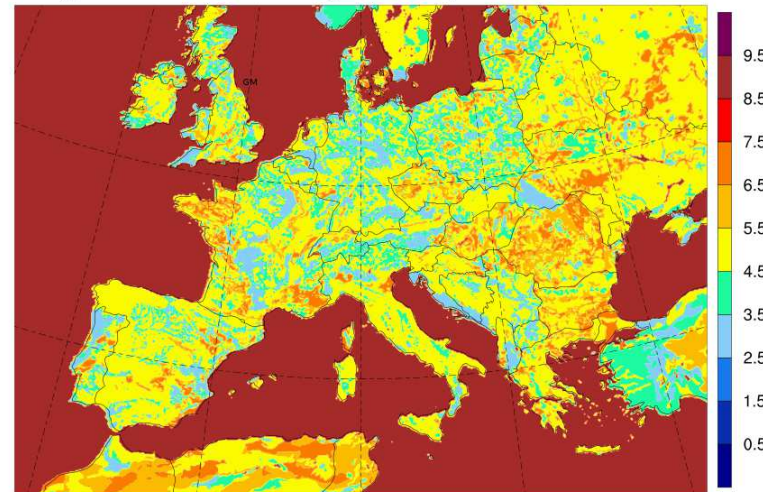
Soil types on a 7 km grid

soil type derived from FAO Digital Soil Map of the World



soiltype based on FAO/DSMW

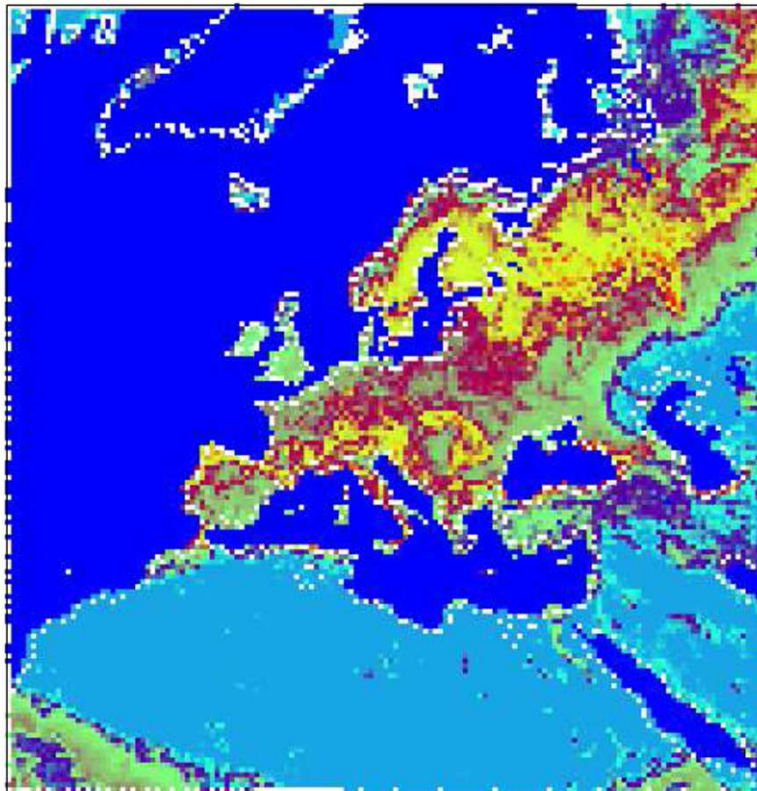
soil type derived from HWSD Digital Soil Map of the World



soiltype based on HWSD upper

LAI_MX for different land-use data-sets

LAI_MX from GLC2000 (Ritter table)



LAI_MX from GLOBCOVER

