COSMO-CLM

CONSORTIUM FOR SMALL SCALE MODELING

COSMO

b·tu

Brandenburgische
Technische Universität
Cottbus - Senftenberg

02·03·2015

Why do we need the namelist-tool?

Andreas Will, **Tom Seemann**, BTU

U. Blahak, B. Früh, U. Schättler,
A. Thomas, DWD Offenbach

B. Geyer, HZG Geesthacht

T. Andreadis, HNMS Athens

What's the aim of the tool?

- Availability of standard configurations

- Fast access to namelist parameter descriptions

- Efficient inter-comparison of configurations across model versions

- Support of preparation of own configurations

1. Input data

- Operational NWP configurations

- CLM-Community reference configurations

- Namelist parameter description for:
  - INT2LM
  - COSMO
  - COSMO-CLM

2. Overview of the functionality

Functionality of the Tool

- Find

- Show

- Compare

- Upload of own configurations

- Dependencies

Availability

- For all COSMO and COSMO-CLM users:

www.clm-community.eu

www.cosmo-model.org/content/tasks/operational

EVENTS

The main events organized by the community are the yearly Assembly, User Training and the User Seminar.
More...

OUTCOME

The wide use of COSMO-CLM is reflected by in the increasing number of publications.
More...

ARCHIVE

Community members have access to the archive of the events, documents, newletter, etc.
More...

Logos | Namelist-tool

Availability

CHOOSE YOUR MODEL

INT2LM COSMO

iguration

ou can choose between different groups of model configurations

d all reference configurations for the preparation of the time invariant data describing the properties of th
parameters. They are used by int2lm for preparation of initial and boundary conditions.

d all reference configurations for preparation of initial and boundary conditions of the COSMO model an
ogether with one or more of the reference COSMO (or CLM) configurations for NWP, CLM or ART appli

Availability

Brandenburgische Technische Universität
Cottbus - Senftenberg

		COSMO-4	
Selection	**Namelist (Download)**	**Author**	**Description**
☑	cosmo-DE-2011120500_4.19	DWD	This is the operational configuration of the DWD at resolution in the domain of Germany for the model
☐	cosmo-DE-2012070100_4.22	DWD	This is the operational configuration of the DWD at resolution in the domain of Germany for the model
☑	cosmo-EU-2011120500_4.19	DWD	This is the operational configuration of the DWD at resolution in the domain of Europe for the model v are used as initial and boundary conditions for CO
☑	cosmo-EU-2012070100_4.22	DWD	This is the operational configuration of the DWD at in the domain of Europe for the model version cosi initial and boundary conditions for COSMO-DE-20
☐	cosmo-SW2_20130608_4.19	MeteoSwiss	This is the operational configuration for NWP of Mi horizontal resolution in the domain of Switzerland.
☐	cosmo-SW7_20130608_4.19	MeteoSwiss	This is the operational configuration of MeteoSwiss resolution in the domain of Europe.
☐	cosmo-RO2.8_20130702_4.25	NMA Romania	This is the operational configuration for NWP of NI horizontal resolution in the domain of Romania. It i of DWD.

'Show' function

CHOOSE YOUR CONFIG

START TOOL FOR COSMO | SELECT: ALL DEFAULT CLM 3 COSMO-4 COSMO
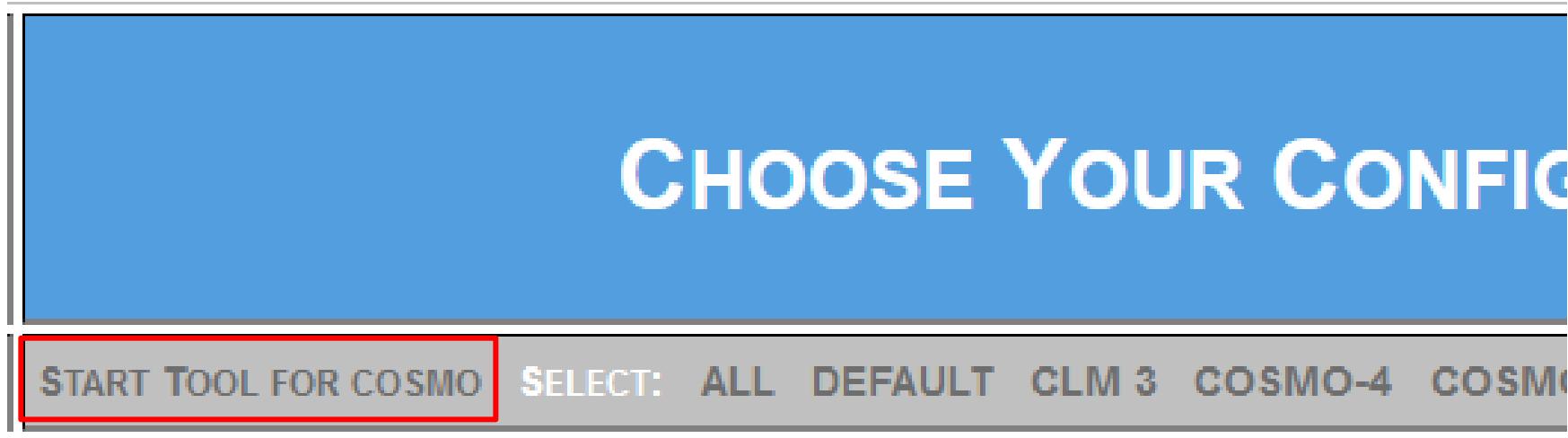
d all reference configurations for the COSMO model in NWP, CLM or ITC n
found following the corresponding link below. The namelist for the preparat
vention for the configuration is MODEL-CONFIG_VERSION_DATE, where
configuration, VERSION is the version of the model used and DATE is the
plications.

Availability

'Show' function

Problem: You want to see 'cosmo-EU-2011120500_4.19' and 'cosmo-EU-2012070100_4.22'.

Solution: Use the 'show' function
- shows all parameters of one or more configuration files

'Show' function

COSMO NAMELISTS: LMGRID RUNCTL DYNCTL PHYCTL TUNING DIACTL NUDGING INICTL EPSCTL IO
GRIBOUT-5 GRIBOUT-6 GRIBOUT-7 SATCTL

CHOOSE YOUR CONFIGURATIONS
☐ COSMO-DE-2011120500_4.19 ☑ COSMO-EU-2011120500_4.19 ☑ COSMO-EU-2012070100_4.22

SHOW COMPARE UPLOAD PRINT VIEW RESET

Cosmo-All namelists

There are many different "versions" of Cosmo model, since all the consortium members run the configuration (some times more than one, e.g. one 7km and one 2.8km version).

The most "immediate" difference among such "versions" come from the different run-time config Fortran namelist variables. The configuration namelists are these:

Name	Usage	Variables
LMGRID	specifying the domain and the size of the grid	10
RUNCTL	parameters for the model run	53
DYNCTL	parameters for the adiabatic model	74

'Show' function

Namelist NUDGING		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-201207(
lnudge	**.true.**	**.true.**
nudgsta	*0*	*0*
nudgend	*0*	*0*
lverif	**.true.**	**.true.**
lverpas	*.TRUE.*	*.TRUE.*
l1dvar	*N/A*	*N/A*
nversta	*0*	*0*
nverend	*0*	*0*
mruntyp	**2**	**2**
mveripr	*N/A*	**2**

- **Bold black:** explicitly specified in configuration file

- Red: not explicitly specified, default value of the corresponding model version shown

- Grey: N/A, not available in this particular model version

12

'Show' function

Namelist NUDGING		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-201207(
lnudge	.true.	.true.
nudgsta	0	0
nudgend	0	0
lverif	.true.	.true.
lverpas	.TRUE.	.TRUE.
l1dvar	N/A	N/A
nversta	0	0
nverend	0	0
mruntyp	2	2
mveripr	N/A	2

- **Bold black:** explicitly specified in configuration file

- Red: not explicitly specified, default value of the corresponding model version shown

- Grey: N/A, not available in this particular model version

'Show' function

Namelist NUDGING		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-201207(
lnudge	.true.	.true.
nudgsta	0	0
nudgend	0	0
lverif	.true.	.true.
lverpas	.TRUE.	.TRUE.
l1dvar	N/A	N/A
nversta	0	0
nverend	0	0
mruntyp	2	2
mveripr	N/A	2

- **Bold black:** explicitly specified in configuration file

- Red: not explicitly specified, default value of the corresponding model version shown

- Grey: N/A, not available in this particular model version

14

'Compare' function

Problem: The parameter list is too long to find all the differences between the configurations selected.

Solution: Use the 'compare' function
- it hides all equal parameters of chosen configuration files

'Compare' function

OUR CONFIGURATIONS

SMO-**DE-2011120500_4.19** ☑ COSMO-**EU-2011120500_4.19** ☑ COSMO-**EU-2012070100_4.22**

COMPARE | UPLOAD | PRINT VIEW | RESET   ... ▾ D

no-All namelists

are many different "versions" of Cosmo model, since all the consortium members run the r onfiguration (some times more than one, e.g. one 7km and one 2.8km version).

ost "immediate" difference among such "versions" come from the different run-time configu ed as Fortran namelist variables. The configuration namelists are these:

	Usage	Variables
RID	specifying the domain and the size of the grid	10
CTL	parameters for the model run	53
CTL	parameters for the adiabatic model	74

16

'Compare' function

Namelist RUNCTL		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-2012070100_4.22 (cosmo-default_4.22)
ydate_ini	'2011120500'	'2012070100'
ydate_bd	'2011120500'	'2012070100'

Namelist DYNCTL		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-2012070100_4.22 (cosmo-default_4.22)
l_diff_Smag	N/A	.false.

Namelist PHYCTL		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-2012070100_4.22 (cosmo-default_4.22)
ltkecon	N/A	FALSE.

Namelist TUNING		
Var	cosmo-EU-2011120500_4.19 (cosmo-default_4.19)	cosmo-EU-2012070100_4.22 (cosmo-default_4.22)
mu_rain	0.5	0.0
rain_n0_factor	N/A	1.0

'Find' function

Problem: There is a difference in 'Itkecon' but you have no idea what is behind this parameter.

Solution: Use the 'find' function
- you'll get a description of the parameter
- you'll get the default value
- you only have to type a few letters to find the parameter

'Find' function

'Find' function

Parameter | Description

limpltkediff (PHYCTL) Switch to include horizontal turbulent diffusion. ...

ltkesso (PHYCTL) Switch, to calculate SSO-wake turbulence production for TKE. ...

ltkecon (PHYCTL) Switch to consider convective buoyancy production for TKE. ...

Name	Type	Definition / Purpose / Comments	Default	Depend.
ltkecon	LOG	Switch to consider convective buoyancy production for TKE. Implemented in Version 4.20.	.FALSE.	-
itype_sher	INT	Type of shear production for TKE. Implemented in Version 4.10. 1: Only vertical shear. 2: Full isotropic 3D-shear. 3: Vertical shear and separated horizontal shear mode.	1	-

'Upload' function

Problem: You have a 'yuspecif' configuration (cosmo_5.0) and want to figure out the differences to 'cosmo-DE_140424_5.0' .

Solution: Upload it to the namelist-tool
- you can use all functions from the namelist tool
- you are the only one who can see the uploaded file

'Upload' function

'Upload' function

Upload of personal Namelist (not visible for other users)

Upload: Namelist ⦿ / Default ○

Enter ID for your namelist: [   ]

Enter Model Version: [   ]

Namelist: [---   ]

Select the type of your upload file: [Please Select ▾]

Select default for Namelist: [cosmo-default_4.8_clm17 ▾]

Select file: [Durchsuchen…] Keine Datei ausgewählt.

[Submit]

'Upload' function

Upload of personal Namelist (not visible for other users)

Upload: Namelist ◉ / Default ○

Enter ID for your namelist: seeman

Enter Model Version: 5.0

Namelist: cclm-seeman_5.0

Select the type of your upload file: Please Select ▼

Select default for Namelist: cosm | Please Select
Namelist / Runscript
YUSPECIF

Select file: Durchsuchen_ Keine Datei ausgewählt.

Submit

'Upload' function

Upload of personal Namelist (not visible for other users)

Upload: Namelist ◉ / Default ◎

Enter ID for your namelist: seeman

Enter Model Version: 5.0

Namelist: cclm-seeman_5.0

Select the type of your upload file: YUSPECIF ▼

Select default for Namelist: cosmo-default_4.8_clm17 ▼

- cosmo-default_4.8_clm17
- cosmo-default_4.19
- cosmo-default_4.22
- cosmo-default_4.25
- cosmo-default_4.27
- cosmo-default_5.0
- cosmo-default_5.01

Select file: Durchsuchen_ K

Submit

'Upload' function

'Upload' function

NAMELIST-TOOL	COSMO NAMELISTS: LMGRID RUNCTL DYNCTL PHYCTL TUNING DIACTL NUDGIN GRIBOUT-5 GRIBOUT-6 GRIBOUT-7 SATCTL
12.02.2015 : TOOL: BETA 0.9.1.8 27.02.2015 : DESCRIPTIONS: BETA 0.9.3.5 CHANGE-LOG	CHOOSE YOUR CONFIGURATIONS ☐ COSMO-DEFAULT_5.0 ☐ COSMO-DE_140424_5.0 ☐ CCLM-SEEMAN_5.0
FIND varName	SHOW COMPARE UPLOAD UPLOAD-LOG DELETE UPLOADS PRINT VIEW RESET

Cosmo-All namelists

There are many different "versions" of Cosmo model, since all the consortiur configuration (some times more than one, e.g. one 7km and one 2.8km vers

The most "immediate" difference among such "versions" come from the diffe Fortran namelist variables. The configuration namelists are these:

- Visible for the user and on the computer on which it was uploaded only!!!

'Feedback' function

Problem: There is no description for a namelist-parameter, or

the information given is confusing, or

you found a bug, or

you like to suggest a new namelist-tool functionality.

Solution: Use the 'feedback' function

- you can upload a note

- you can upload a screenshot

'Feedback' function

Feedback

If there are any Problems with the namelist tool or functions you want to have implementet please leave a note or check the feedback history.

Name*:	Tom Seemann
E-Mail:	seematom@tu-cottbus.de
Screenshot:	Durchsuchen… Keine Datei ausgewählt.
Type of Feedback:	Functionality ▾
Message*:	

This is an example feedback.

3. Ongoing work

- 'dependency' function
- new configurations
- improvement of usability

'Dependency' function

Problem: You want to see the parameters which

depend on region, resolution or time step

Solution: Use the 'dependency' function

- it shows all dependend parameters

- is based on expert knowledge

'Dependency' function

| NACTL | NUDGING | INICTL | EPSCTL | IOCTL | DATABASE | GRIBIN | GRIBOUT-1 | GRIBOUT-2 |

☑ COSMO-**EU-2012070100_4.22**

... ▼ DEPENDENCIES (INCOMPLETE)

...
dlon
dt
region
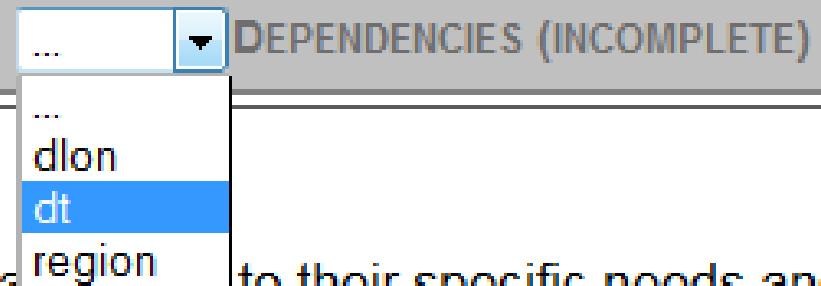
he consortium members run the model according to their specific needs and
e 2.8km version).

from the different run-time configuration options each centre uses. These op
se:

'Dependency' function

COSMO-**EU-2012070100_4.22**

dt ▾ DEPENDENCIES (INCOMPLETE)
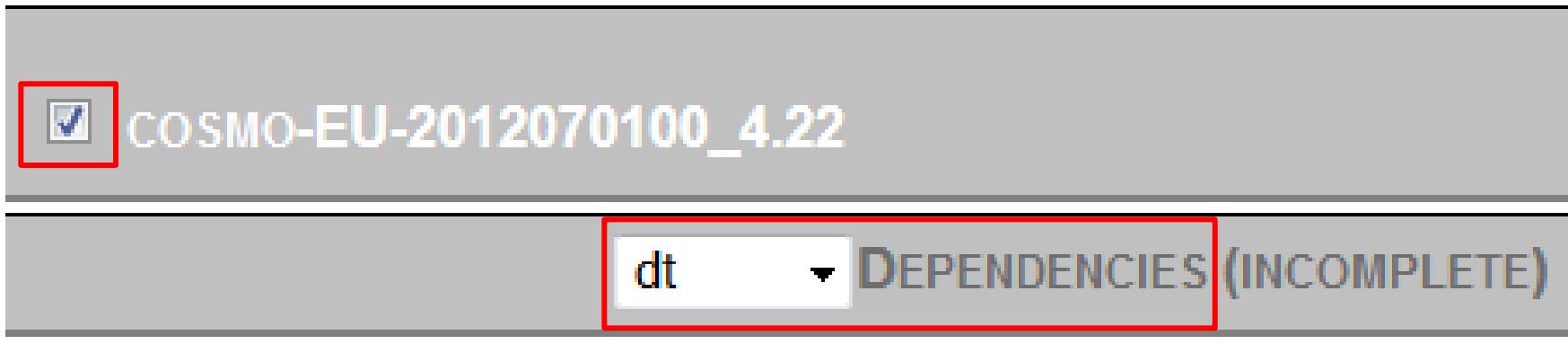
the consortium members run the model according to their s
nd one 2.8km version).

from the different run-time configuration options each centi
elists are these:

'Dependency' function

Namelist DYNCTL	
Var	cosmo-EU-2012070100_4.22 (cosmo-default_4.22)
crltau (dt)	1.0
nrdtau (dt)	5
hincrad (dt)	1.0
nincrad (dt)	0

- Shows parameters, which need to be adjusted together with the dependend parameter.
- Based on expert knowledge

Last but not least

- All results of comparisons might contain errors
- Might be misinterpreted

Therefore: We do not take over the responsibility for mistakes, errors or unwanted simulations resulting from usage of the namelist-tool.

The tool results cannot replace your expertise !

Support

- Andreas Will: will@tu-cottbus.de
- Tom Seemann: seematom@tu-cottbus.de

- 'Feedback' button

- Update frequency: 2 - 4 times a month

We are looking forward to your feedbacks