



Troubleshooting for the COSMO-Model

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Problems that can occur during the single phases you are going through when installing and running the model

Compiling and Linking

- Find some proper **compiler and linker options**, if there are no example Fopts-files given in the delivered version
- Try a **moderate optimization first!** Many compiler problems come from very high optimizations.

- Error message like **Unable to access module symbol file for module netcdf**

When you have a library for NetCDF available and add that to the LIB-definition in the Makefile,

you also have to give a compiler option: `-I xxx/include`, indicating the path, where the compiled module files for NetCDF are lying.

- In the linking process, you can get error messages like:

Unsatisfied external references: . __netcdf_NMOD_nf90_def_dim or
Undefined symbol .rttov7_rttvi

Then you forgot to link a certain library, to activate a certain dummy xxx module in the file ObjFiles or you unintentionally specified a preprocessor directive

You can get these messages, even if you put all libraries to the LIB Variable, e.g.

```
#LIB = /rhome/routarz/libdwd/lib/libgrib1.a \  
LIB=   /uhome/trngxyz/lib/libgrib1.a   \  
       /uhome/trngxyz/lib/libnetcdf.a
```

Note: Some systems treat all these lines as a comment, because the first line has the comment-sign and a continuation-sign at the end.

Running INT2LM

The most common mistakes, when running INT2LM, are the treatment of bitmaps (if necessary) and the specification of the COSMO-Model domain. Unfortunately, the error messages are sometimes misleading.

&DATA

```
-----  
ie_ext=961, je_ext=769,  
ylmext_lfn='lm_d1_07000_961x769_new.g1',  
ylmext_cat='$LM_EXT'
```

```
-----  
yin_cat='$IN_DIR',  
ybitmap_cat='$IN_DIR',  
ybitmap_lfn='bitmp410',  
nbitmap=48000,
```

&LMGRID

```
-----  
startlat_tot = -16.5, startlon_tot = 4.0,  
pollat=32.5,      pollon=-170.0,  
dlon=0.0625,     dlat=0.0625,  
ielm_tot=201,    jelm_tot=177,    kelm_tot=40,
```

The COSMO domain must be inside the COSMO constant file provided by DWD.

`ylmext_lfn='lm_d1_07000_961x769_new.g1'`

Possible errors that may occur

Error 1

INPUT OF THE NAMELISTS

*** NOTE: Old 10 digit date format is used for output files of INT2LM

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*** Default specifications of input soil main levels are used ***

*** Default specifications of LM soil main levels are used ***

*** A default set for vcoord parameters is used: 1

*** A default set for refatm parameters is used: 2

INFO *** We assume the prefix "igfff" for all ICON data

This prefix comes from the namelist variable "yicon_input_prefix".

* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED

* IN ROUTINE: read_basic_patch

*

* ERROR CODE is 2041

* ERROR: grid_root (number of sections of root division) not in ICON grid file
/export/home/cosmo/COSMO_OPERATIV/COSMO_7km/CONST/icon_grid_roman
ia_R03B07.nc and not explicitly specified by namelist para

Solution 1

Please check in **&GRID_IN**

If the following parameters are set properly

`nrootdiv_icon=03, nbisect_icon=07,`

`nrootdiv_icon` and `nbisect_icon` are set depending on your

`icon_grid_<your-domain-name>_RxxByy.nc` file:

`nrootdiv_icon=xx, nbisect_icon=yy`

Possible errors that may occur

Error 2

OPEN: grb1-file:

*/export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/lm_d1_07000_961x769_n
ew.g1*

CLOSING grb1 FILE

OPEN: grb1-file:

/export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/invar.i384a

CLOSING grb1 FILE

** PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED*

** IN ROUTINE: int2lm_org*

** ERROR CODE is 10*

** Not all necessary fields could be read or interpolated*

Solution 2

Please check in **&CONTRL**

If the following parameters are set properly

```
itype_albedo=3  
lprog_qi=.TRUE., lprog_qr_qs=.TRUE.,  
lso=.FALSE., lforest=.TRUE.,  
lseaice=.TRUE., lprog_rho_snow=.TRUE.,
```

Running INT2LM using the DWD GRIB1 library

- All programs that are doing GRIB I/O, have to be linked with the library libgrib1.a
- There are two additional issues that have to be considered when running programs using this GRIB library:
 - DWD still uses a GRIB file format, where all records start and end with additional bytes, the so-called CONTROL WORDS.
 - An implementation of the GRIB library is prepared that also deals with pure GRIB files, that do not have these control words. Still, we guarantee correct execution ONLY if these control words are used. To ensure this you have to set the environment variable.

export LIBDWD FORCE CONTROLWORDS=1.

in all your run-scripts.

- Another environment variable has to be set, if INT2LM is interpolating GME data that are using ASCII bitmap files:

export LIBDWD BITMAP TYPE=ASCII.

(because this library can also deal with binary bitmap files, which is the default).

Possible errors that may occur

Error 1

OPEN: grb1-file:

/export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/lm_d1_07000_961x769_new.g1

CLOSING grb1 FILE

OPEN: apix-file: /export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/invar.i384a

CLOSING apix FILE

*** WARNING: isolated points cannot be calculated due to missing land-sea-mask

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* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED

* IN ROUTINE: int2lm_org

*

* ERROR CODE is 10

* Not all necessary fields could be read or interpolated

*** WARNING: isolated points cannot be calculated due to missing land-sea-mask

Solution 1

&DATA

yinx_t_lfn='invar.i384a',
yinx_t_form_read='apix',

yinx_t_form_read='grb1',

Possible errors that may occur - Error 2

OPEN: grb1-file: /export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/lm_d1_07000_961x769_new.g1

CLOSING grb1 FILE

OPEN: grb1-file: /export/home/cosmo/COSMO_5.0_Bogdan/RUN/CONST/invar.i384a

CLOSING grb1 FILE

OPEN: apix-file: /export/home/cosmo/COSMO_5.0_Bogdan/RUN/DATA00/giff00000000

CLOSING apix FILE

Not all data necessary could be read!!!

Level	U	V	T	QV	QC	QI	QR	QS
1	F	F	F	F	F	F	F	
2	F	F	F	F	F	F	F	

PS: F
FIC: F
T_SNOW: F
W_SNOW: F
W_I: F
QV_S: F
Level T_SO W_SO
0 F
1 F F
2 F F

FRESHSNW: F
RHO_SNOW: F
T_ICE: F
H_ICE: F

* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED
* IN ROUTINE: org_gme_interpol
*
* ERROR CODE is 5051
* *** ERROR: Not all data available ***

Solution 2

&DATA

yin_form_read='apix',

yin_form_read='grb1',

Possible errors that may occur

Error 3

Current start time : 2014-02-06 08:58

Running on nodes ..:

Data decomposition :

==== End of code information ====

```
*-----*
* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED
*   IN ROUTINE:  int2lm_org
*
* ERROR CODE is      1113
* ERROR   *** Error while opening file YUDEBUG ***
*-----*
```

Solution 3

Please remove the YU* files before running the int2lm

Running the COSMO model

ERROR 1

INPUT OF THE NAMELISTS FOR DYNAMICS
DOMAIN SIZE (approx.) in m: L_x = 1300680.5140631699
L_y = 1188438.4943563333

INPUT OF THE NAMELISTS FOR PHYSICS

*** Default specifications of soil main levels are used ***

INPUT OF THE NAMELISTS FOR DIAGNOSTICS

INPUT OF THE NAMELISTS FOR GRIB-IO

INPUT OF THE NAMELISTS FOR RTTOV SYNSAT

ERROR *** itype_rttov = 9, but RTTOV9 is not defined for compilation

* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED

* IN ROUTINE: organize_satellites: input

*

* ERROR CODE is 9103

* ERROR *** Wrong values occurred in NAMELIST INPUT_SAT ***

Solution 1.

Please set in `&RUNCTL :`

`luse_rttov = .TRUE.`

`luse_rttov = .FALSE.`

ERROR 2

H_ICE , level:	1	F
FR_LAKE , level:	1	F
DEPTH_LK , level:	1	F
T_MNW_LK , level:	1	F
T_WML_LK , level:	1	F
T_BOT_LK , level:	1	F
C_T_LK , level:	1	F
H_ML_LK , level:	1	F

* PROGRAM TERMINATED BECAUSE OF ERRORS
DETECTED

* IN ROUTINE: organize_input

*

* ERROR CODE is 2004

* Not all data available

Solution 2.

Please set in &GRIBIN

&GRIBIN

```
lan_t_so0=.TRUE., lan_t_cl=.TRUE., lan_w_cl=.TRUE., lan_vio3=.TRUE.,  
lan_hmo3=.TRUE., lan_plcov=.TRUE., lan_lai=.TRUE., lan_rootdp=.TRUE.,  
lan_t_snow=.TRUE., lan_w_i=.TRUE., lan_w_snow=.TRUE., lan_rho_snow=.TRUE.,  
lan_w_so=.TRUE.,
```

For using GME analysis file (soil parameters)

```
! lan_t_so0=.FALSE., lan_t_cl=.FALSE., lan_w_cl=.FALSE., lan_vio3=.FALSE.,  
! lan_hmo3=.FALSE., lan_plcov=.FALSE., lan_lai=.FALSE., lan_rootdp=.FALSE.,  
! lan_t_snow=.TRUE., lan_w_i=.TRUE., lan_w_snow=.TRUE., lan_rho_snow=.TRUE.,  
! lan_w_so=.FALSE.,
```

For using COSMO analysis file (soil parameters)

ERROR 3

CLOSING grb1 FILE

*** Not all variables / levels could be read for initial data ***

*** The following levels are missing: ***

SSO_STDH , level:	1	F
SSO_GAMMA , level:	1	F
SSO_THETA , level:	1	F
SSO_SIGMA , level:	1	F
FR_LAKE , level:	1	F
DEPTH_LK , level:	1	F
T_MNW_LK , level:	1	F
T_WML_LK , level:	1	F
T_BOT_LK , level:	1	F
C_T_LK , level:	1	F
H_ML_LK , level:	1	F

* PROGRAM TERMINATED BECAUSE OF ERRORS DETECTED

* IN ROUTINE: organize_input

*

* ERROR CODE is 2004

* Not all data available

Solution 3.

Please set in `&PHYCTL`

`itype_albedo=3` to `itype_albedo=1`

`ltkesso=.TRUE.` to `ltkesso=.FALSE.`



Thank you!