
Status of INT2LM (2.0) COSMO-Model (5.0) and the Documentation

COSMO Working Group 6: Reference Version and Implementation

Working Group Coordinator: Ulrich Schättler

Contents

- Developments in 2011/2012 for COSMO-Model / INT2LM
- The new versions: Planning and Reality
- Model Documentation
- COSMO Newsletter and Technical Reports

Developments in 2011/ 2012

→ COSMO-Model and INT2LM versions

Version	Implementation Date	Status
C 4.21	06.12.11	test
C 4.22	31.01.12	development
C 4.23	07.05.12	development
I 1.19	06.06.12	test
C 4.24	21.06.12	test
I 1.20	31.08.12	will be distributed for testing
C 4.25	21.09.12 (?)	will be distributed for testing

COSMO-Model 4.21 (tested; 06.12.11)

- Option for Smagorinsky Diffusion
- Adaptation in the Latent Heat Nudging to the microphysics bug fix (for density correction) in Version 4.20
- Microphysics: Introduction of a tuning factor `rain_n0_factor` to modify the intercept parameter `n0` in the rain drop size distribution
- Added another option for computing wind gusts

COSMO-Model 4.22 (development; 31.01.12)

- Revised modular nudging code
- Zenith angle update for solar radiation now done in every time step

COSMO-Model 4.23 (development, 07.05.12)

- Changes in the parameterization of the cloud cover for ice clouds
- Restructuring of metric organization
- Reorganization of positive definite advection schemes
- Bug fix in advection operator interfaces
- New variants of Bott advection (Strang splitting only at bottom levels)
- Technical Preparations for future developments
- CLM Extensions for next unified release:
 - Introduction of prescribed surface albedo
 - Introduction of new GHG concentration scenarios, RCPs
 - Implemented time dependent boundary data for aerosol optical depths
 - Support for a climatological year with 365 days
- Version provided to CLM Community for testing on 09.05.12

INT2LM 1.19 (test; 06.06.12)

- Initializations for FLake variables / FLake coldstart
- Vertical interpolation of GME soil layers to a different number of layers
- Changes for Interoperability / BCEPS
- Conditional compilation for Grib, NetCDF (not yet: MPI)
- Unification of utility modules with latest COSMO version
- CLM extensions for next unified release:
 - Introduction of prescribed surface albedo
 - Introduced possibility to interpolate data from hybrid height (HadGEM) and pressure (NCEP reanalysis) coordinates
 - Support for a climatological year with 365 days

- There are no changes of the NWP operational applications compared to Version 1.18

COSMO-Model 4.24 (test, 25.06.12)

- New fast waves solver
- Changes to subroutines computing the Reference Atmospheres to be able to calculate the reference states t_0 and p_0 analytically
- Adaptations for sub-hourly analysis update with LETKF
- Solved a grib-packing problem for FLake

- There are changes of the results compared to Version 4.23 because of numerical reasons.

- COSMO-Model 4.24 and INT2LM 1.19 provided to all COSMO partners and the CLM Community for testing on 25.06.12, but got very little feedback!

INT2LM 1.20 (31.08.12; will be distributed for testing)

- Unification of utility modules with COSMO-Model version 4.25, particularly
 - Changes to subroutines computing the Reference Atmospheres (necessary for new fast-waves solver) as in COSMO-Model 4.24
 - Adaptations for sub-hourly analysis update with LETKF as in COSMO-Model 4.24
- Changes for NetCDF I/O

- There are no changes of the NWP operational applications compared to Version 1.19

COSMO-Model 4.25 (expected for 21.09.12)

- Implementation of a new tracer module
- Implementation of interfaces for 2-moment microphysics
- Implementation of another option for the global communication in the output
- Several technical modifications
 - Grib values for the multi-layer snow model
 - limiting the ntag-value for boundary exchange communication
- CLM: implementation of IFS convection interface with `#ifdef CLM`
- Modifications for optimized asynchronous GRIB I/O: **Because of problems with the modified `mpe_io.f90`, the version could not yet be officially implemented! Problems are solved but need further testing!**
- still to come: asynchronous NetCDF I/O
- There are no changes of the results compared to Version 4.24!

What is missing for new Unified Release?

→ INT2LM 2.0

- Implementation of grib_api for writing (absolute necessary)
- Optimized asynchronous GRIB I/O
- Asynchronous NetCDF I/O
- Only technical changes without changes of the results!

→ COSMO-5.0

- Implementation of grib_api for reading and writing (absolute necessary)
- And there are some bugs (few already known, but also some rather new ones) which should be solved for a new version, but will definitely change the results again
- COSMO-MESSy interfaces

Planning ...

- Original plans (from SMC Meeting early February)
 - End of April: provide release candidate for testing
 - May-July: testing in NWP- and climate mode
 - August/September: Release COSMO-Model 5.0 / INT2LM 2.0

- Plans modified during SMC Video Conference mid of April
 - End of April: provide first test versions to CLM (with hopefully all modifications implemented that change the results)
 - End of May: provide consolidated test versions to COSMO-partners
 - but at the same time added other contributions for new unified release (new tracer module)
 - June-July: testing in NWP- and climate mode
 - August/September: Release COSMO-Model 5.0 / INT2LM 2.0

... and Reality

Version	Date	Contents (highlights)	Result Changes
C 4.22	31.01.12	revised modular nudging code	
C 4.23	07.05.12	CLM extensions	
	09.05.12	provided to CLM Community for testing	
I 1.19	06.06.12	CLM extensions	no changes
C 4.24	21.06.12	new fast waves sub-hourly analysis update	numerical changes
	25.06.12	provided to COSMO partners and CLM Community	
I 1.20	31.08.12	CLM: NetCDF I/O sub-hourly analysis update; changes for new fast-waves	no changes
C 4.25	21.09.12	new tracer module 2-moment micropysics interfaces more technical CLM extensions	no changes expected
C 5.0 I 2.0	xx.??.12	Implementation of grib_api Some more bug-fixes for COSMO	Changes for COSMO expected!

How to go on?

→ The problem is the prediction of „xx.?.12“

Documentation

- Model Documentation
 - Dynamics and Physics: Updated September 2011 (for Version 4.20)
 - Assimilation: Updated in February 2012 to the „modular nudging code“
 - Could not start with an „Implementation Documentation“
 - INT2LM: Updated already for Version 1.20, not yet on the Web
 - User Guide: Updated in June for Version 4.24
- Namelist Documentation Tool
 - CLM people instrumented the User Guides in order to extract Namelist description in html
 - Update of Namelist Tool on COSMO Web Site still has to be done
 - CLM proposed some extensions of that tool

COSMO Newsletter and Technical Reports

- COSMO Newsletter No. 12 has been published in April 2012 with 10 (!) contributions
 - An outside recommendation: add full source information in the footer:
„COSMO Newsletter No xy, Month 20xx“
 - And perhaps also the www-location
 - And even an abstract?
- No new Technical Reports

Status of the Web (Contents)

- Updated Pages
 - COSMO-Model (not yet visible)
 - Documentation (Dynamics, User Guides: but still not ready)
 - COSMO Tasks (WG, PP, Operational to some extent)
- Pages that need update
 - Organization - Events
 - Organization – Reports / Plans
 - Organization – Cooperations
 - Organization – Scientists
 - User Support: Restructuring in view of all the new Users / Licencees



Thank you
very much
for your
attention