The COSMO NWP System

- The LM Package – Model Overview: Revisited
- Scheme of NWP-System using the LM
- The System at DWD
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- Developments for `INT2LM`
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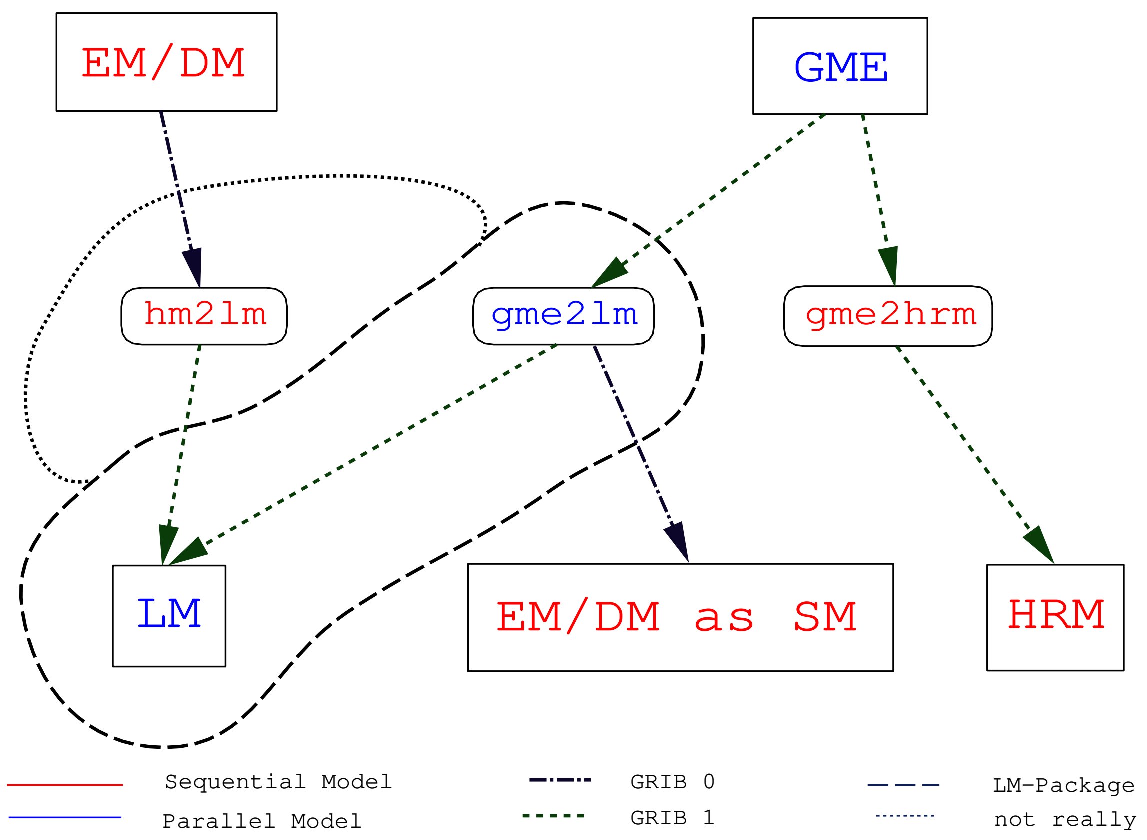
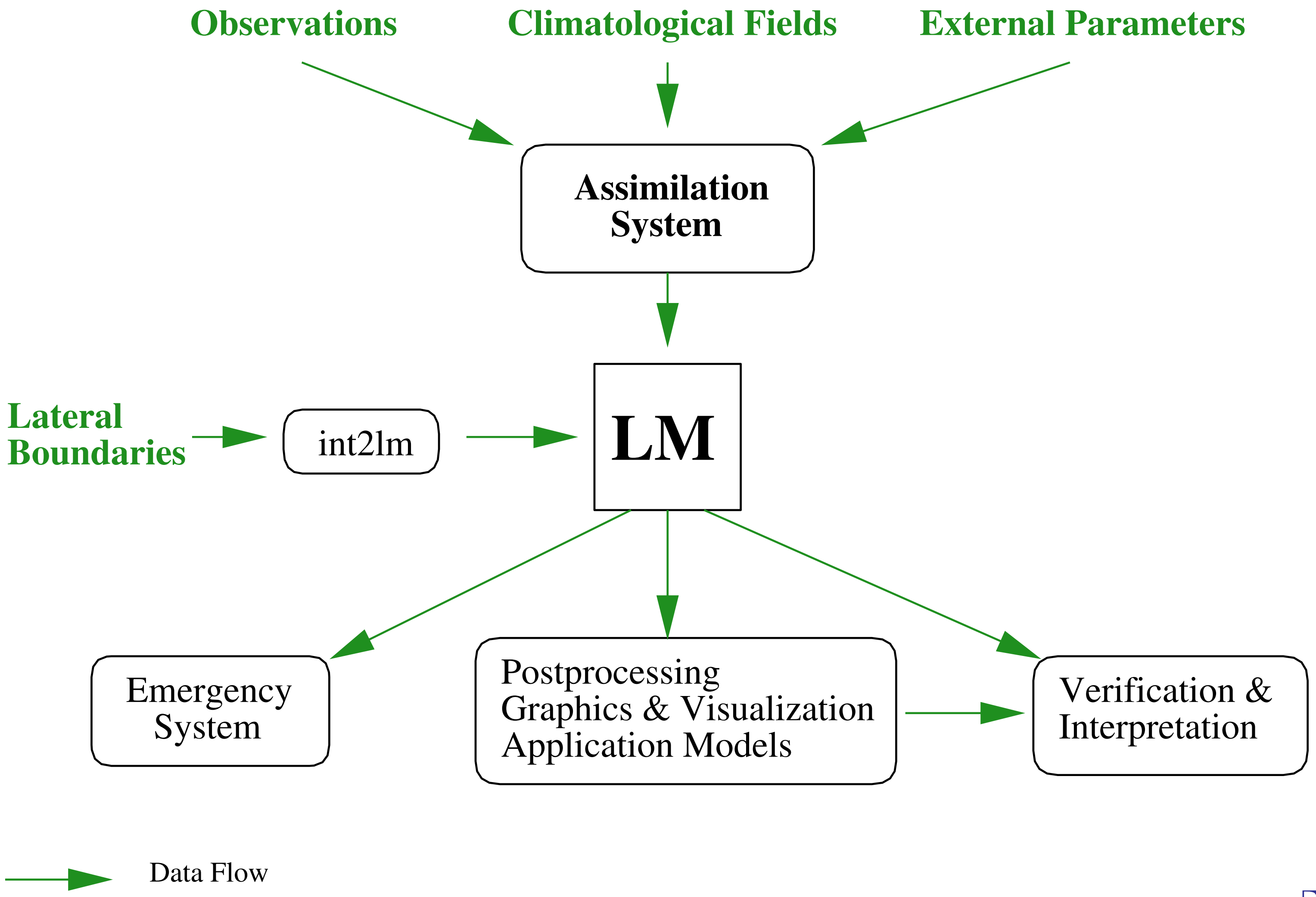
The LM Package – Model Overview Revisited



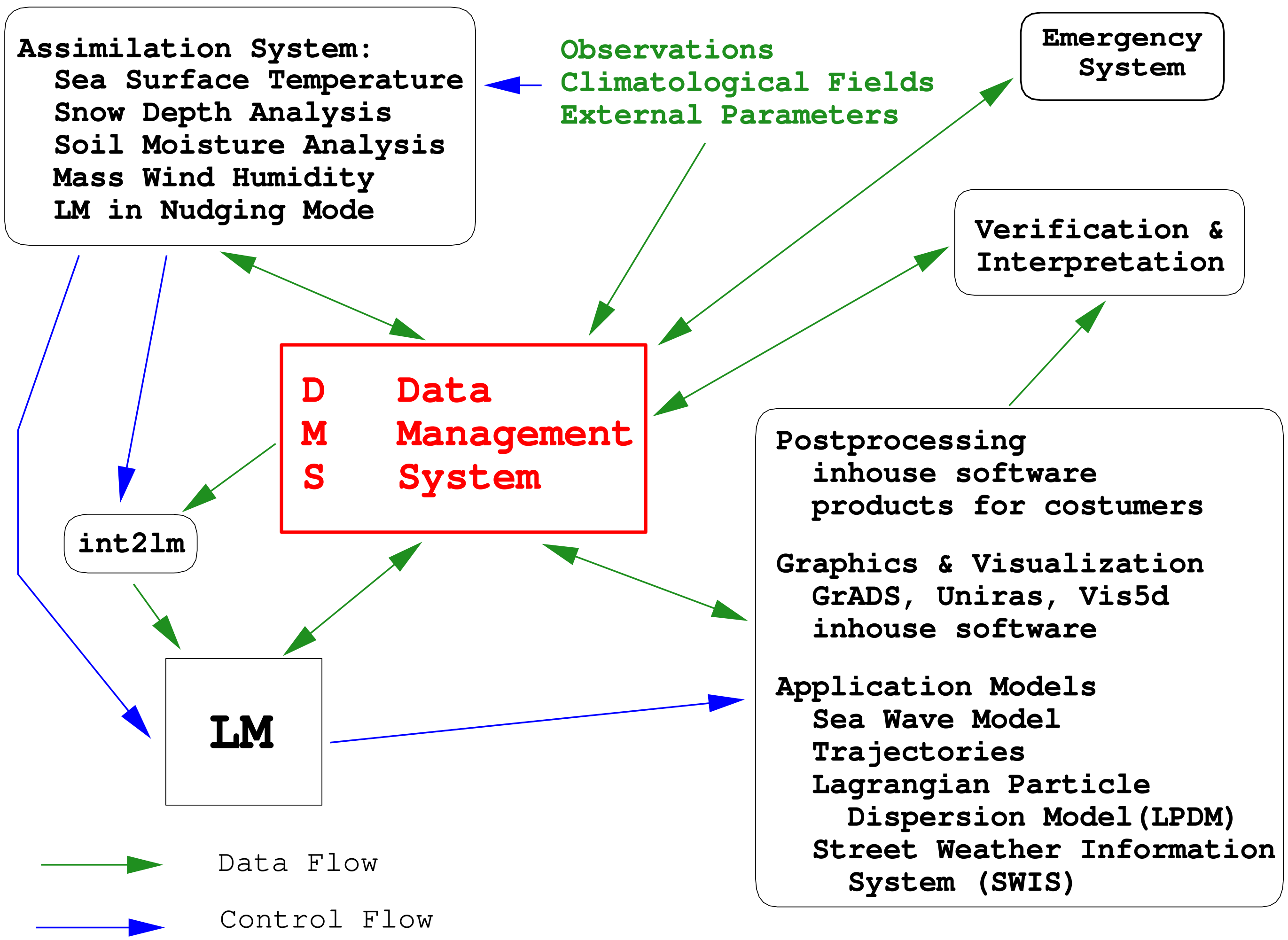
Scheme of NWP-System using the LM



NWP Scheme — Interesting Questions

- How to specify — and related COSMO activities
  - Assimilation System — R&D Area 1: mainly focused on Nudging
  - Postprocessing — —
  - Graphics & Visualization — R&D Area 6: work at SMR/ARPA and MeteoSchweiz
  - Application Models — —
  - Emergency System — —
  - Verification & Interpretation — R&D Area (4 and) 5:
- How to handle the data
- How to manage the scheduling

The System at DWD



Software Changes in 1999/2000

Major changes for LM:

01.07.99	More complete use of multi-level observations	1.31
10.12.99	Changes in the organization of the program (Part I)	1.34
24.02.00	Adaptation of observation processing to comply to 32-bit AOF	1.36
24.03.00	Changes to allow larger time steps for wind speeds close to the CFL stability limit	1.37
06.04.00	Extensions to quality control of observations; Adaptations of nudging to new surface layer parameterization	1.38
03.05.00	Changes in the organization of the program (Part II); introduced possibility to choose asynchronous I/O	1.39
04.08.00	Switched to Version Number 2.1	2.1

Major changes for GME2LM:

02.12.99	Normalization of climatological water content with pore volume	1.4
15.12.99	Correction update	1.6

Developments for `INT2LM`

- GME2LM
  - Need a correction update
  - Optimizations by NEC for vector processors (MeteoSchweiz)
- LM2LM and IFS2LM
  - Framework for (parallel) program has been setup (by DWD)
  - Routines for horizontal interpolations have been developed (by SMR/ARPA)
- Still missing
  - How to do the vertical interpolations
  - How to compute and interpolate some special fields

Considerations towards a COSMO NWP System I

- Right now we use the same core of the system: `LM, INT2LM`.
  What about the other components?
  - Do we also want to use the same?
  - Should COSMO offer a choice for (several) other components?
  - Who can provide software for these?
  - What about "copyright" or free availability of some parts?
- System (Software) Maintenance
  - Software must be: portable, documented, according to standards, . . .
  - Documentation must be: available, readable, . . .

Considerations towards a COSMO NWP System II

- The problems of System Maintenance are
  - to keep software portable, documented, according to standards, ...
  - to keep documentation available, readable, ...
  - to install the software at all sites
  - to combine different versions from the partners
  - to review the code design from time to time
- Would need at least 1 person working fulltime for COSMO

COSMO Integration Domains

Grid Sizes:

DWD	$325 \times 325 \times 35$
MeteoSchweiz	$385 \times 325 \times 45$
SMR-ARPA	$234 \times 274 \times 35$
HNMS	$95 \times 113 \times 35$

by the way:

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