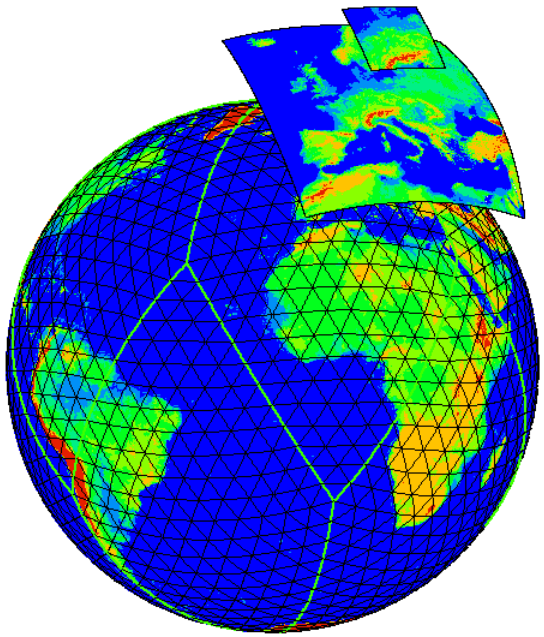
External Parameters at DWD
current status and new developments

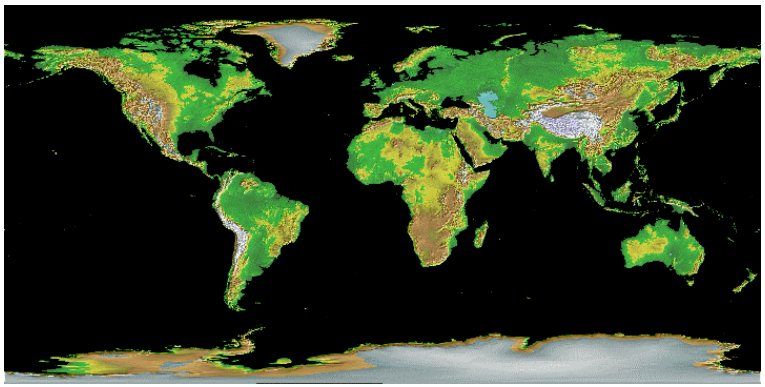
Hermann Asensio



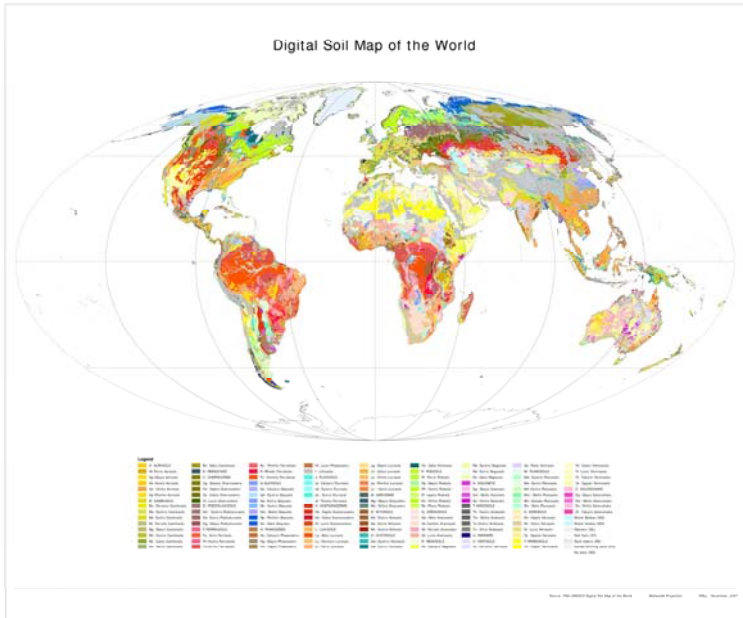
Outline

- raw data for external parameters
- current status of software system for external parameters
- planned extensions

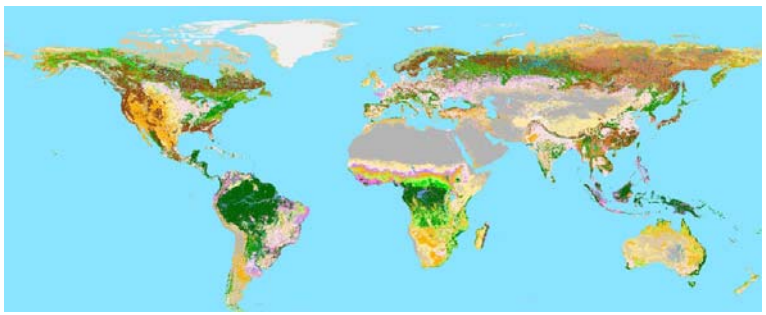
Currently used raw data for external parameters



GLOBE



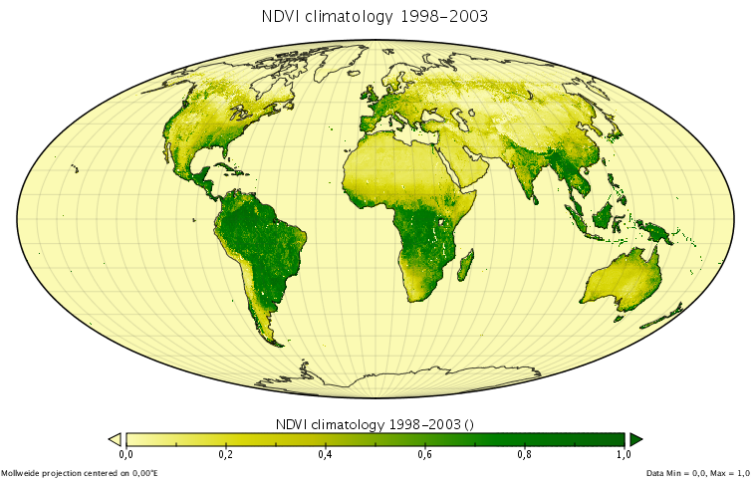
DSMW

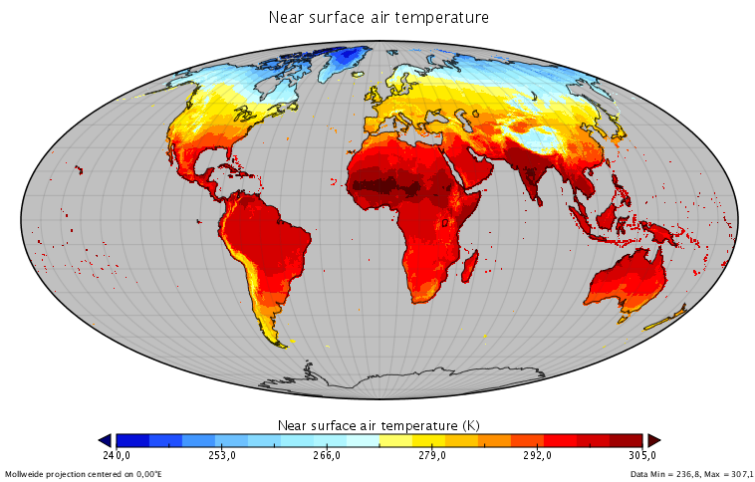


GLC2000

additional raw dataset

- NDVI
- climatology of near surface temperature
- lake database

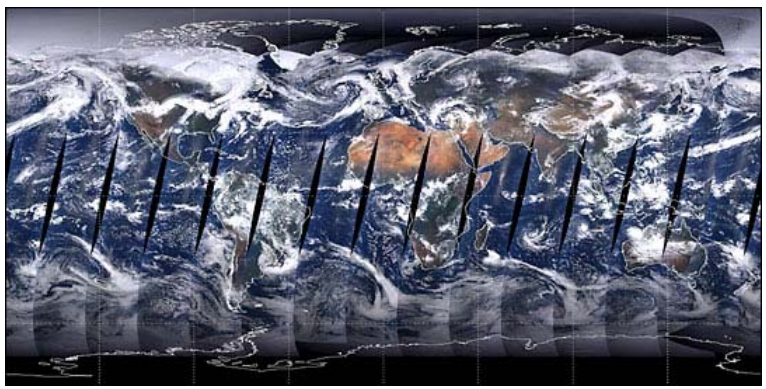


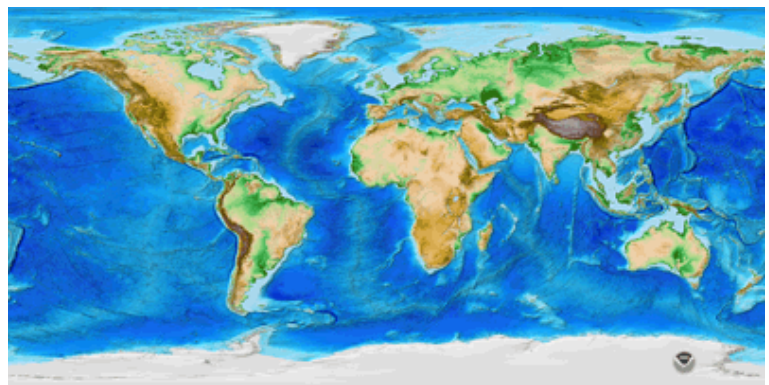


raw data for external parameters

alternative raw dataset

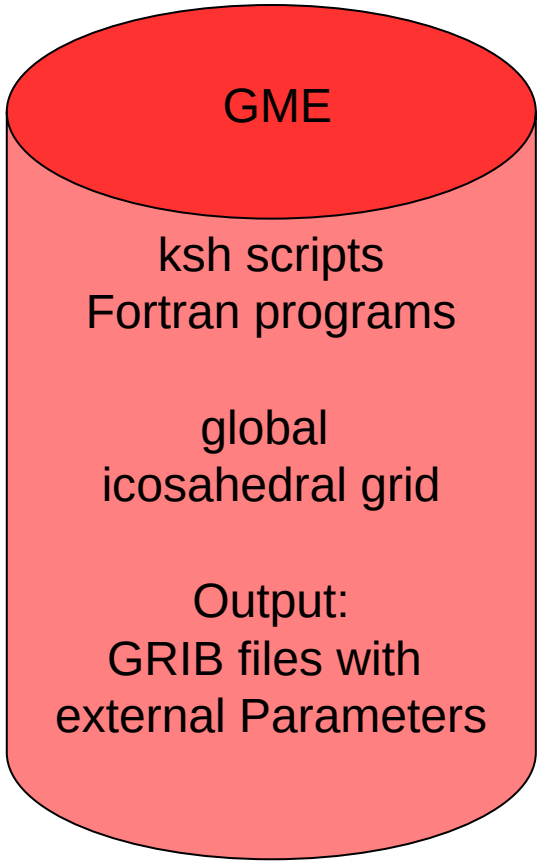
- Harmonized World Soil Database
- Modis data for albedo (?)
- ETOPO1 (?)

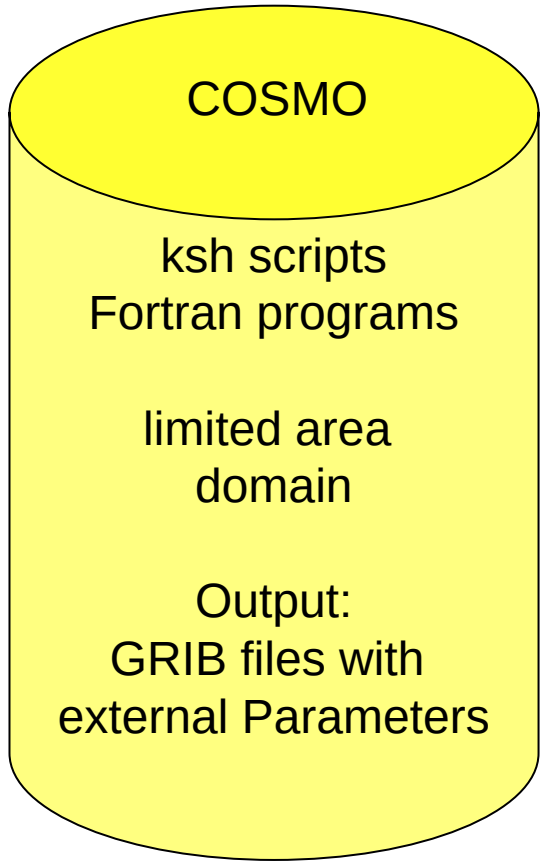




Deutscher Wetterdienst

current system for generation of external parameters

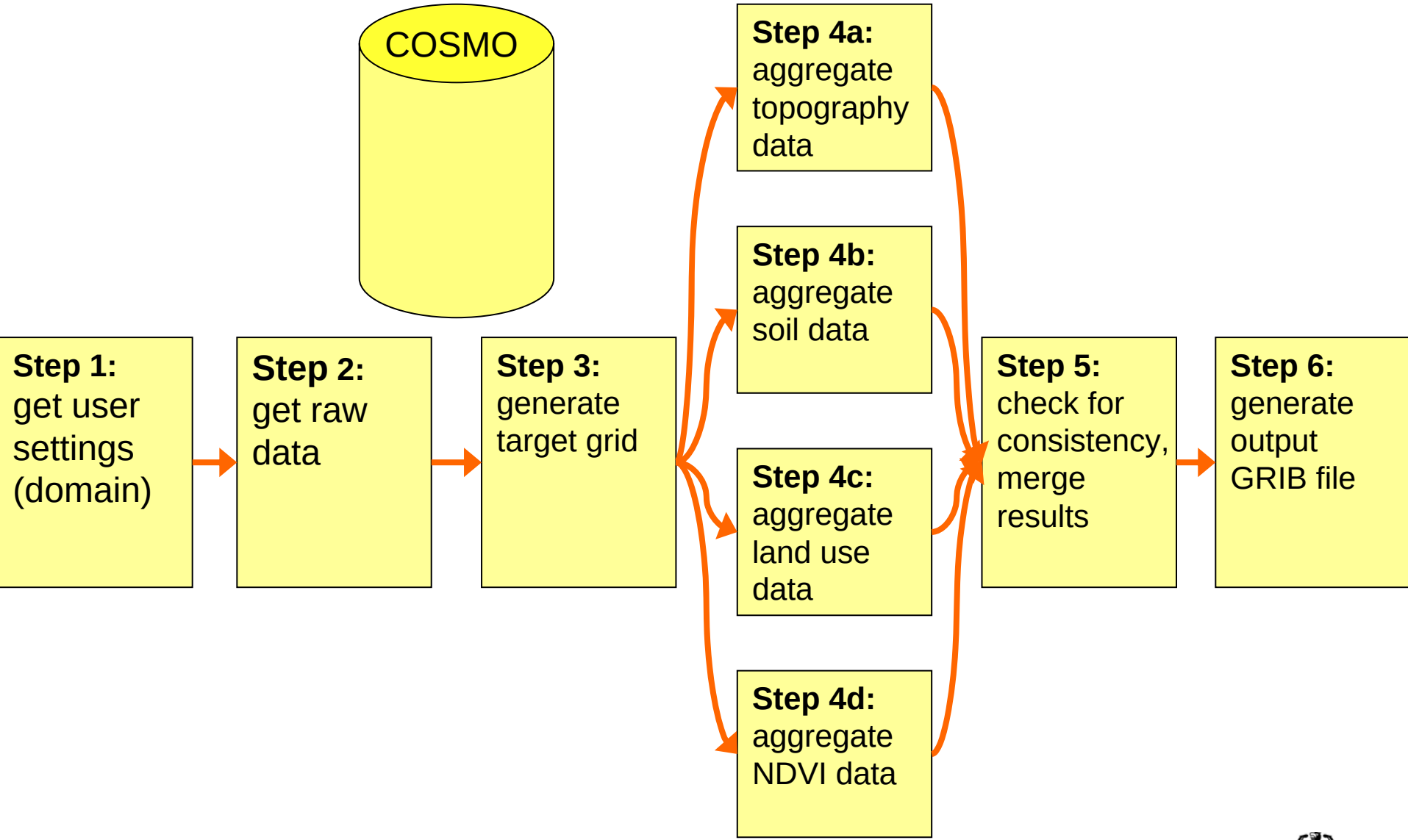




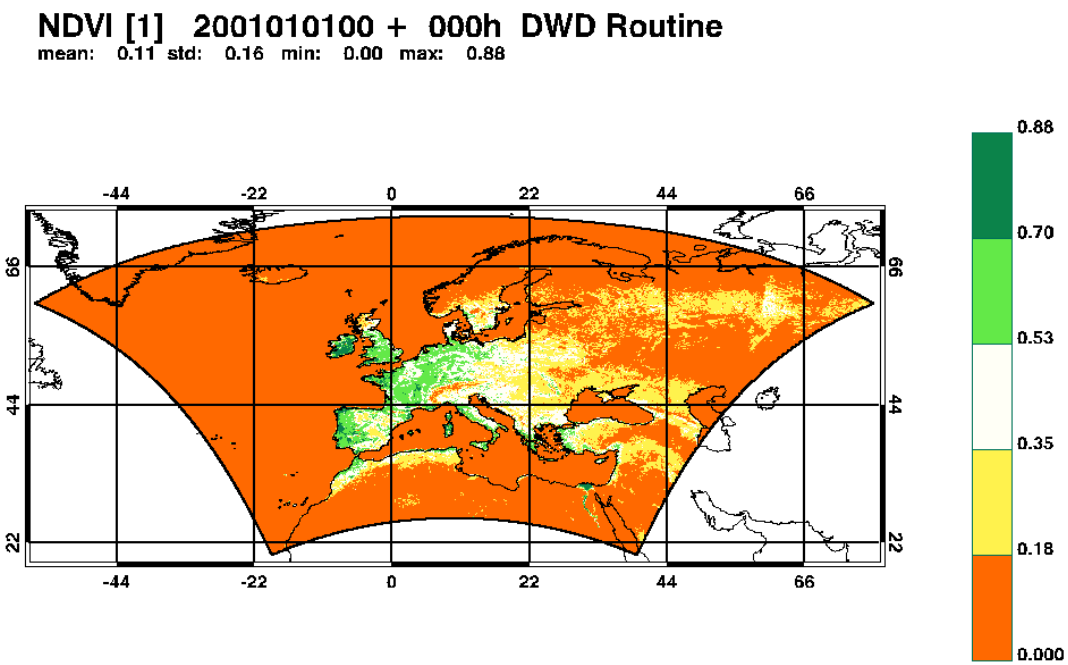
- Both systems use the same raw data sets.
- The software for the generation of external parameters for COSMO has been put to the DWD Version control system.

Deutscher Wetterdienst

current system for generation of external parameters

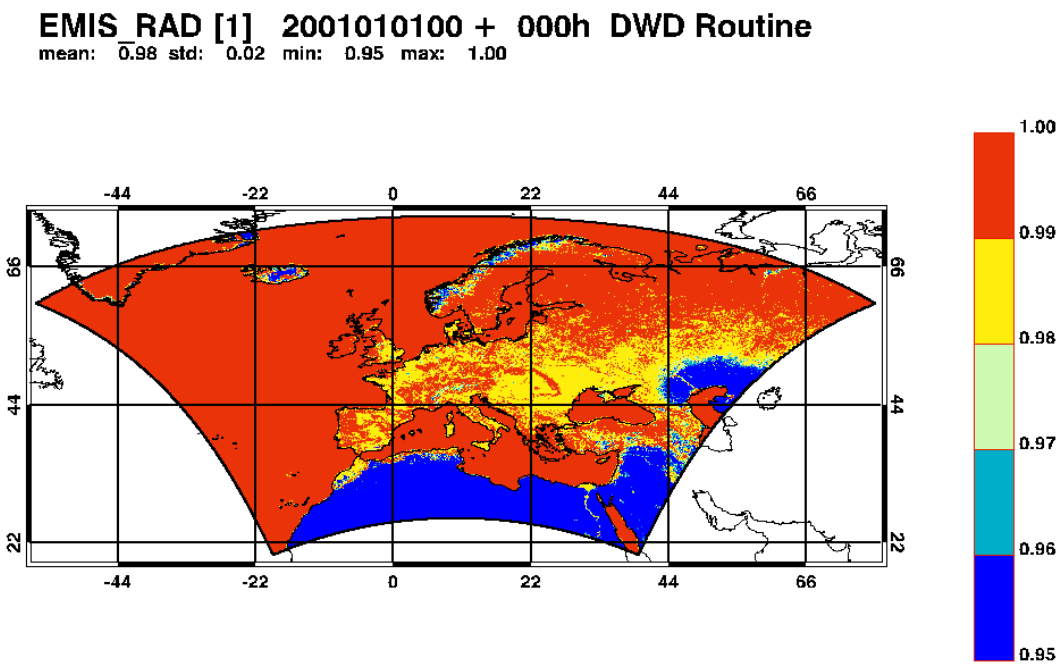


additional external parameters
Normalized Differential Vegetation Index (NDVI)



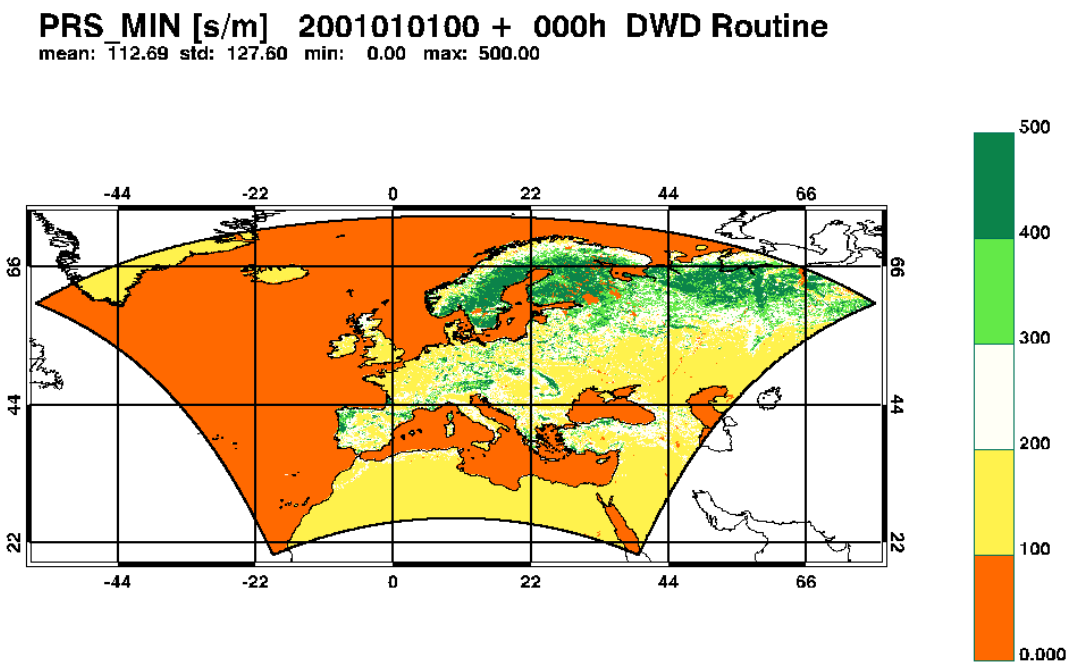
current system for generation of external parameters

additional external parameters
longwave surface emissivity



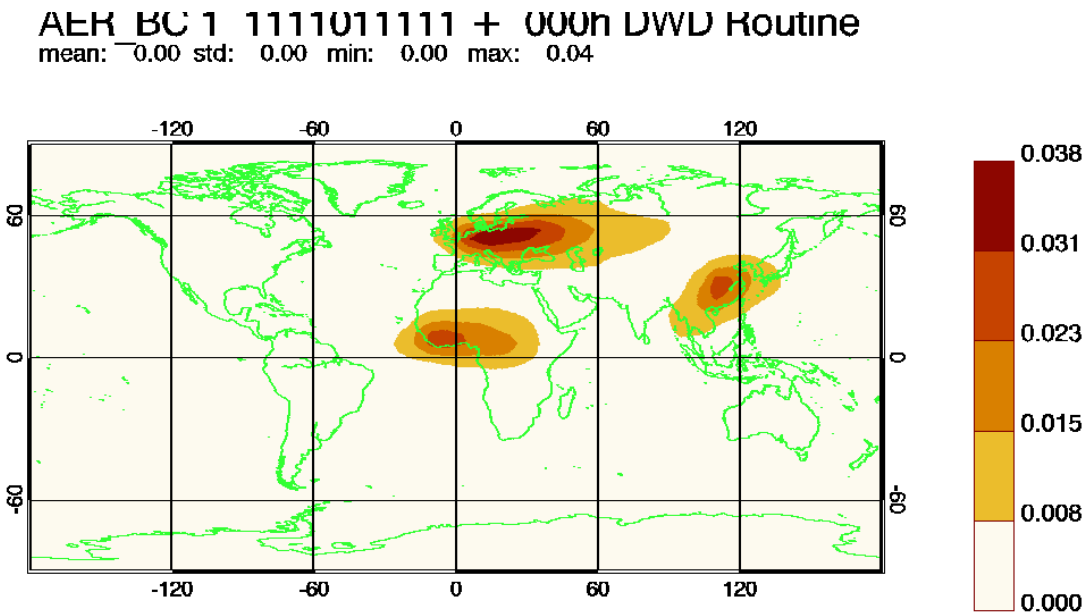
current system for generation of external parameters

additional external parameters
minimum stomata resistance of plants



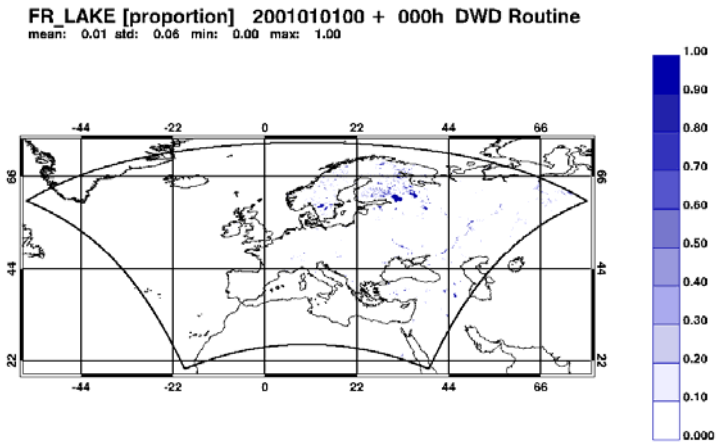
current system for generation of external parameters

additional external parameters
optical depth at 0.55 micrometer for aerosol
(GME)

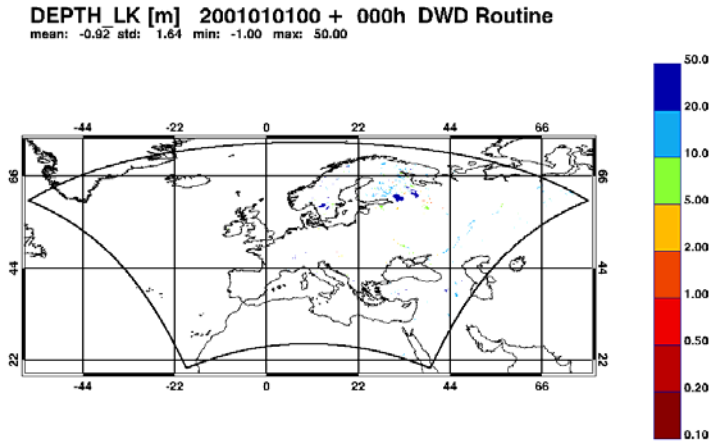


current system for generation of external parameters

additional external parameters
Lake Model Flake



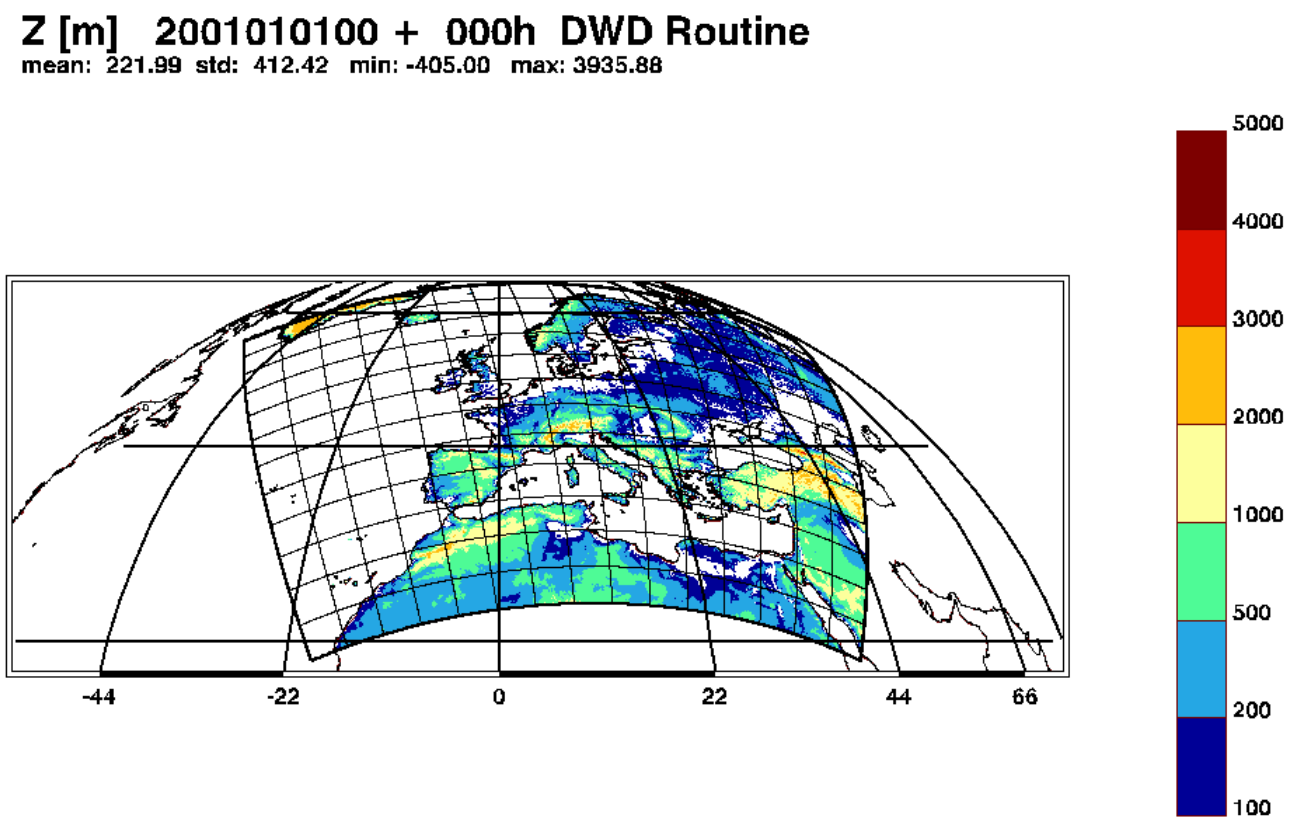
fraction of inland water



lake depth

current system for generation of external parameters

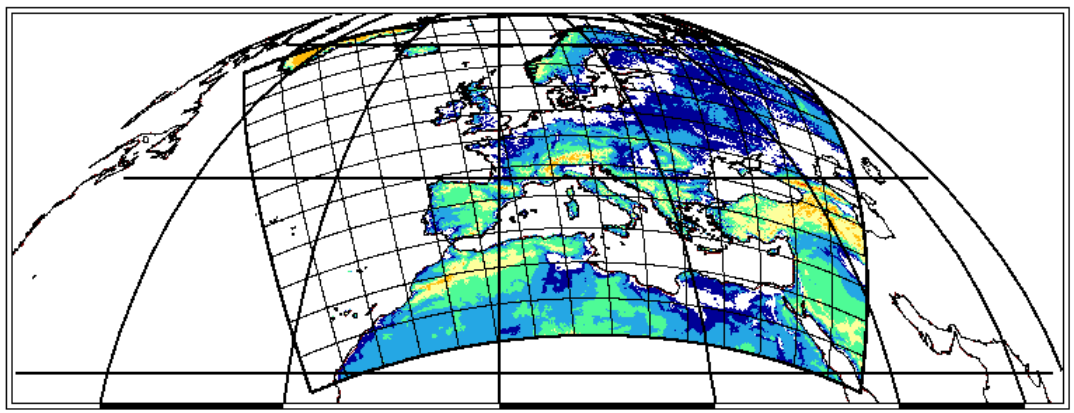
geometrical height [m]

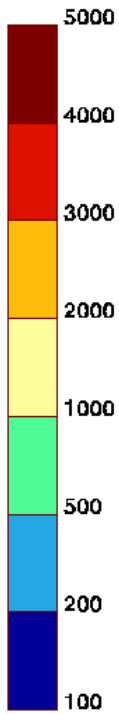


current system for generation of external parameters

geopotential [(m**2)/(s**2)]

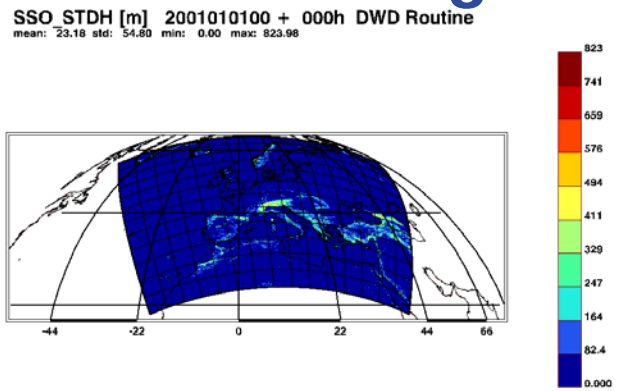
{ FIS [(m**2)/(s**2)] 2001010100 + 000h DWD Routine } * 0.10
mean: 217.72 std: 404.45 min: -397.17 max: 3968.13



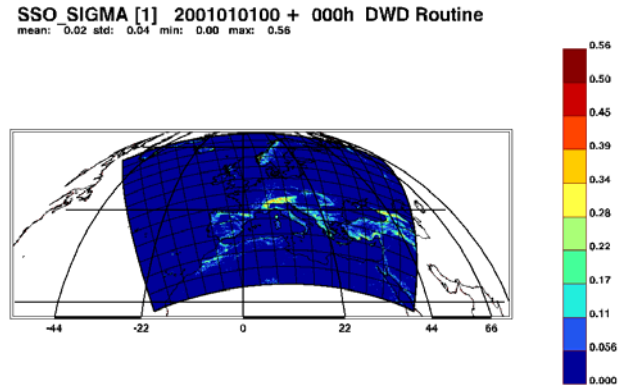


current system for generation of external parameters

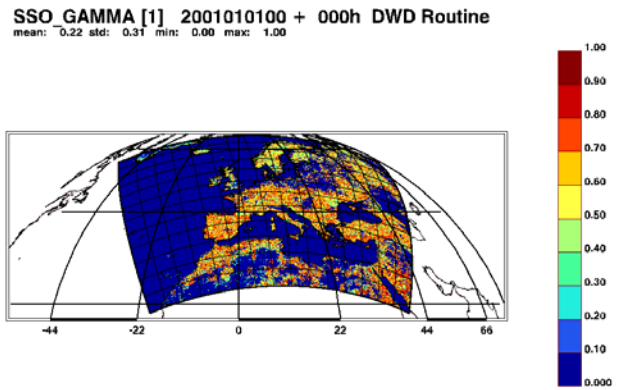
subgrid scale orography parameters



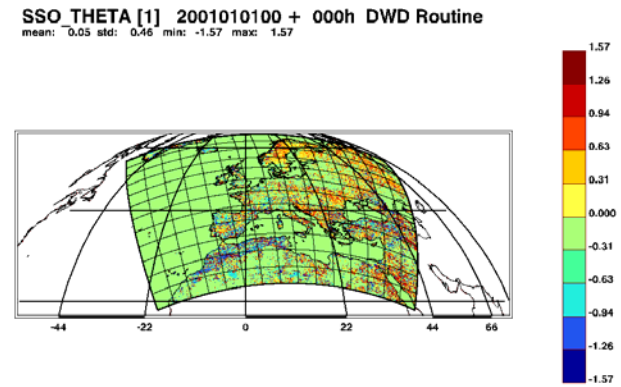
standard deviation of subgrid scale orogr. height



mean slope of subgrid scale orography

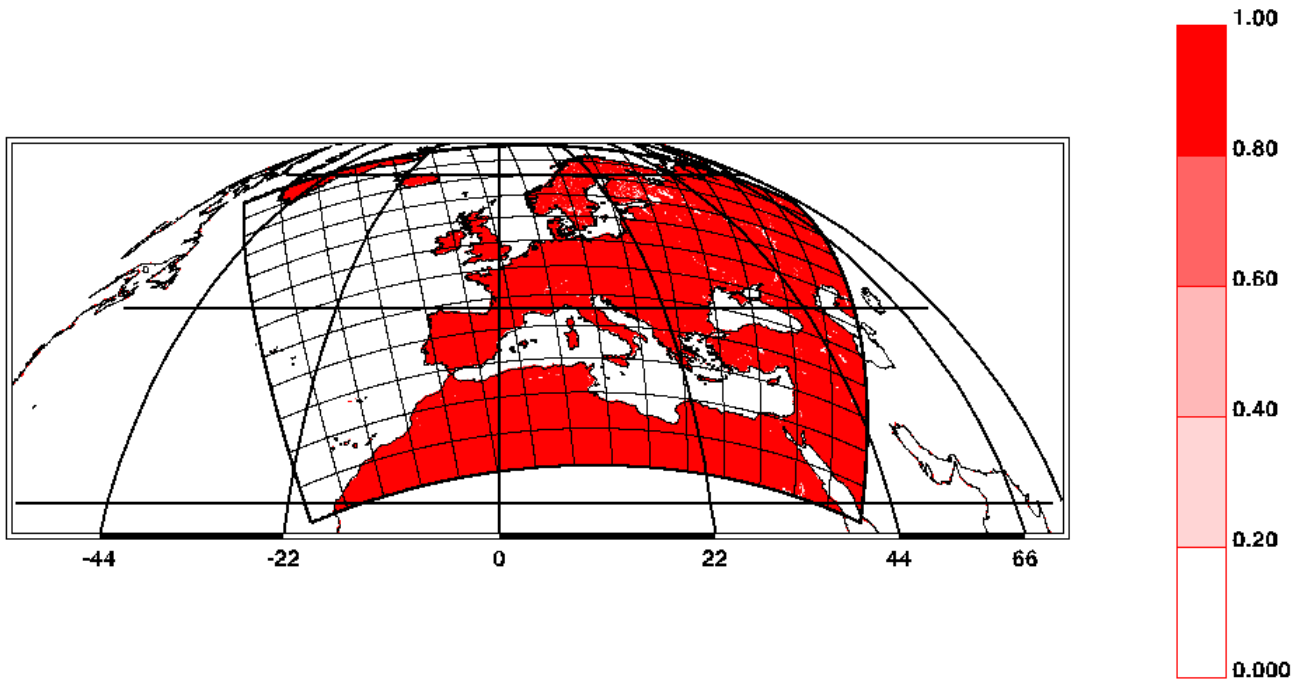


SSO_GAMMA anisotropy of topography



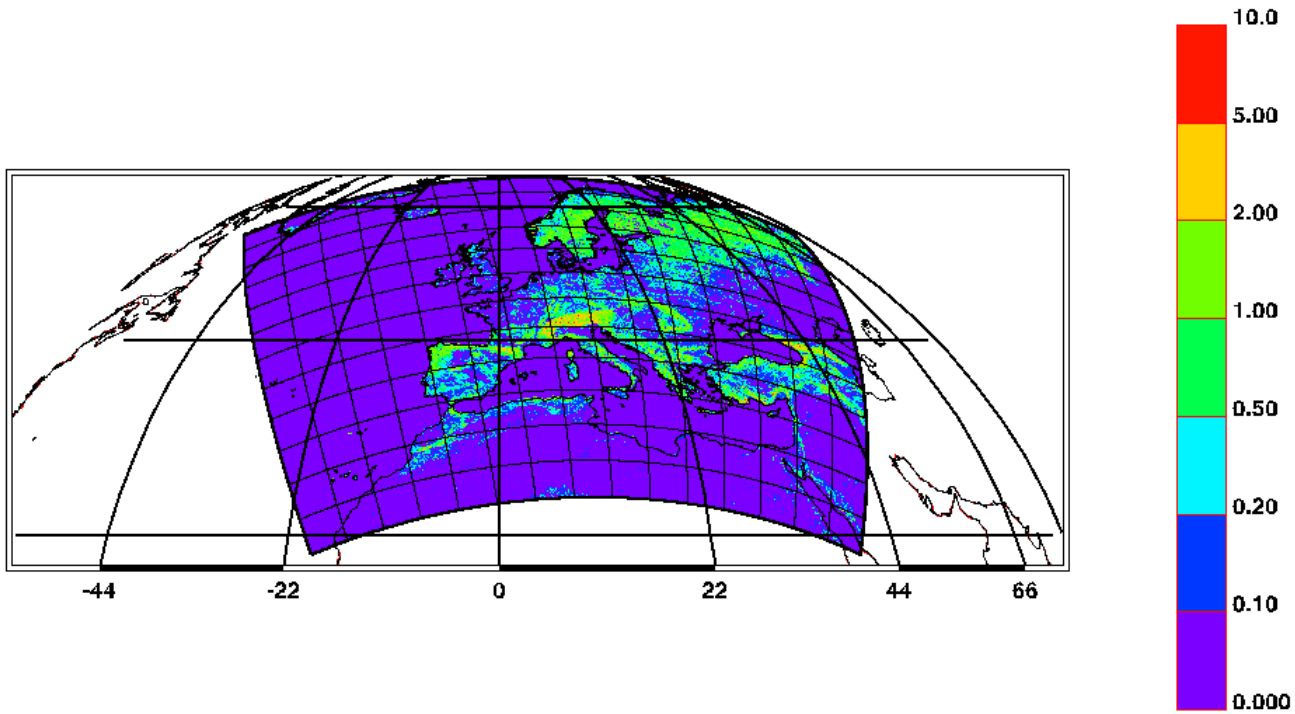
angle betw. principal axis of orogr. and global E

fraction land cover (land-sea mask)

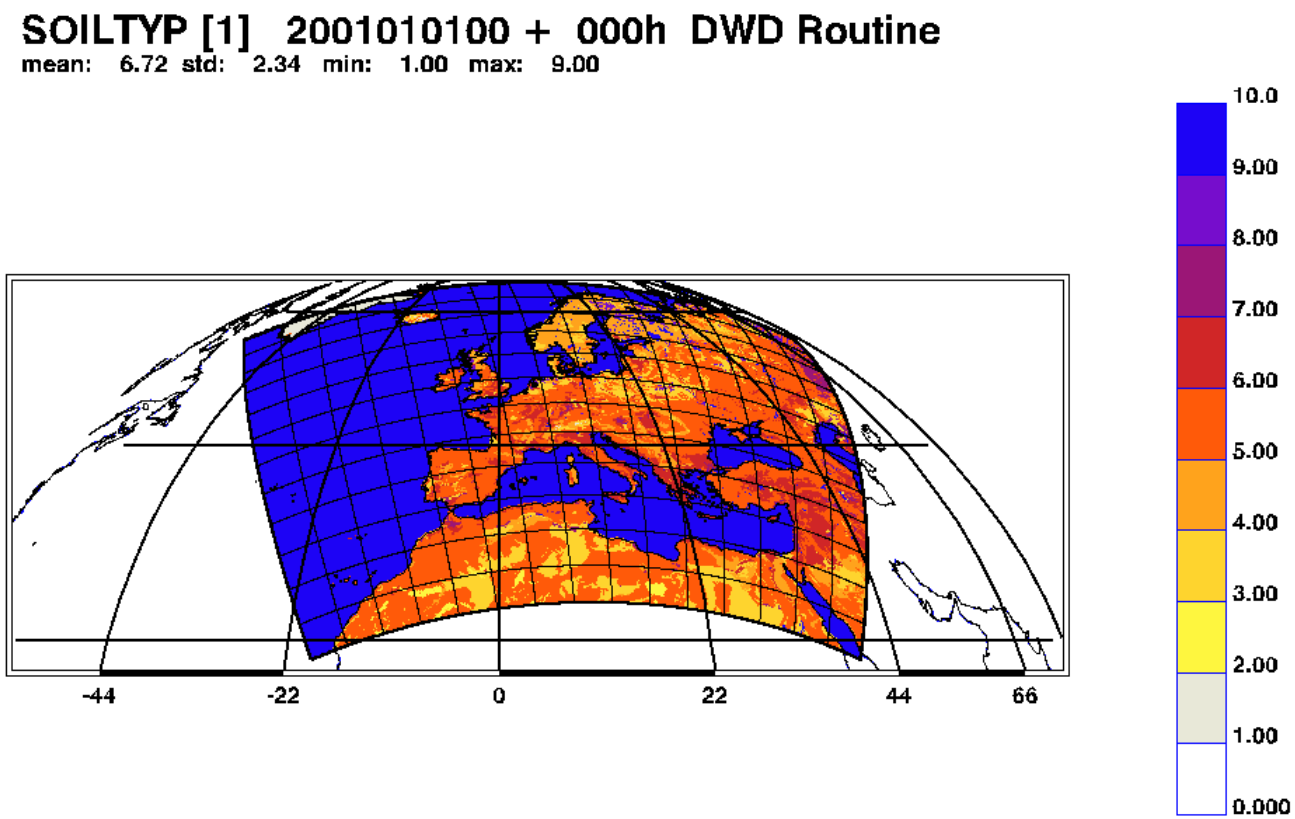


current system for generation of external parameters

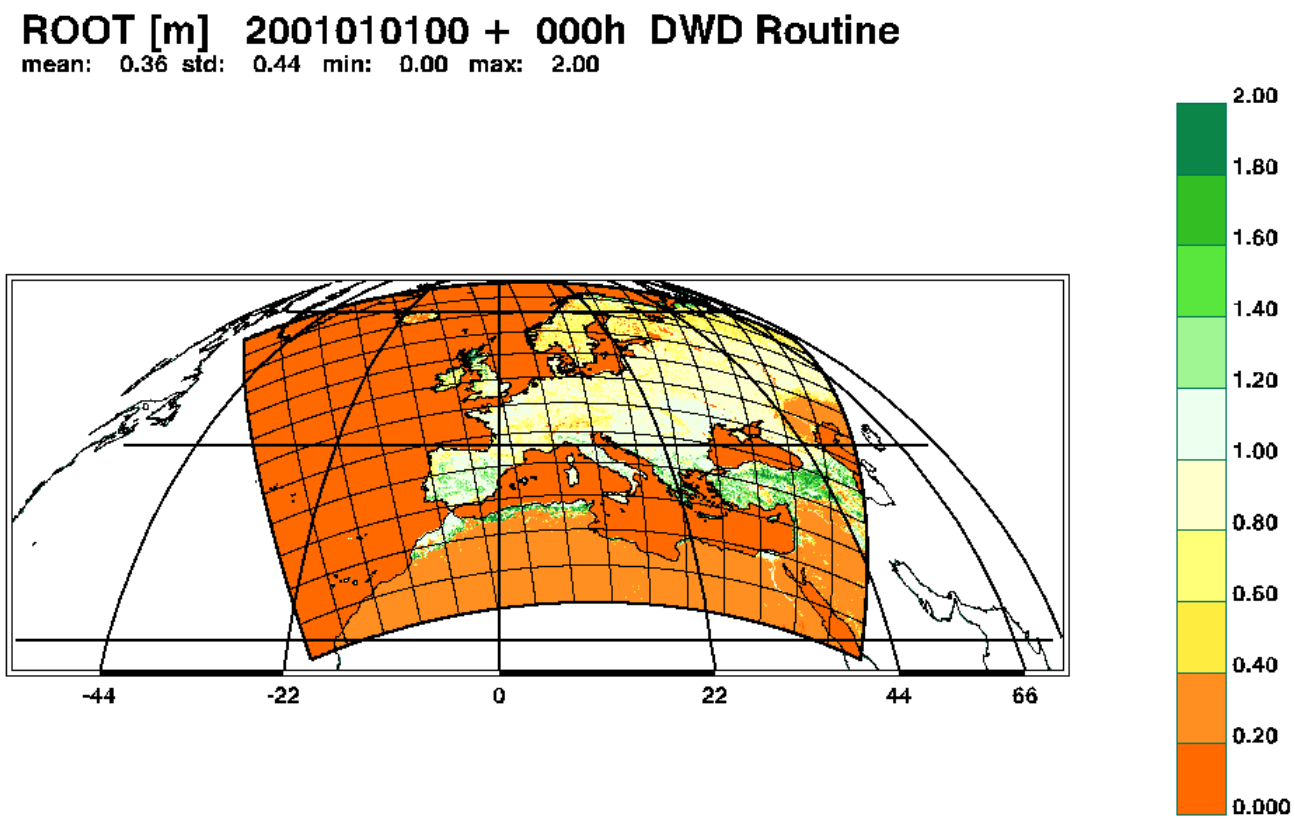
surface roughness



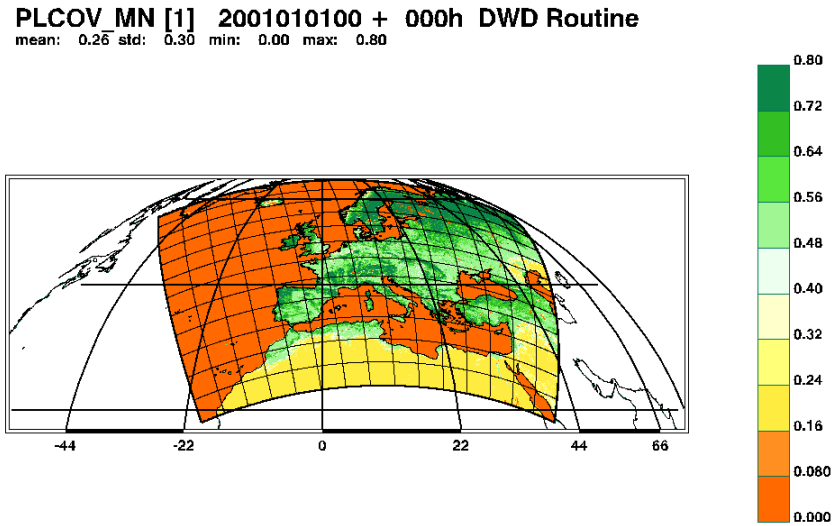
soil texture



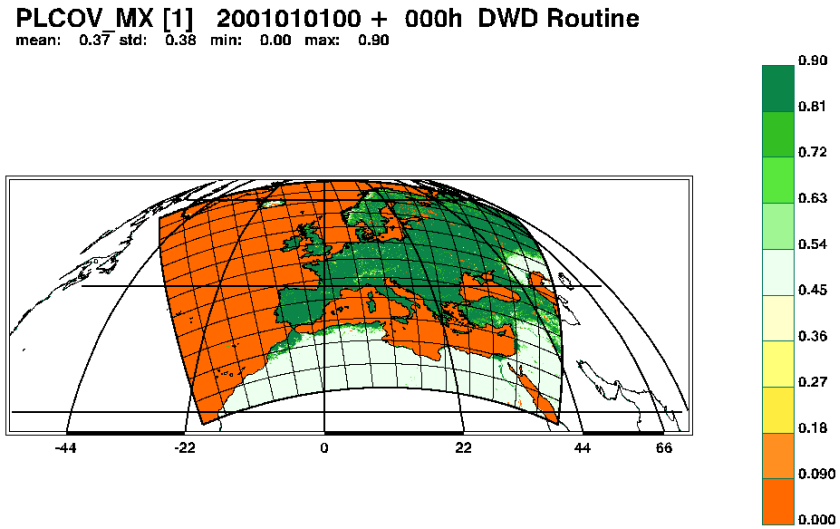
root depth


ROOT [m] 2001010100 + 000h DWD Routine
mean: 0.36 std: 0.44 min: 0.00 max: 2.00
-44
-22
0
22
44
66
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.000

plant cover



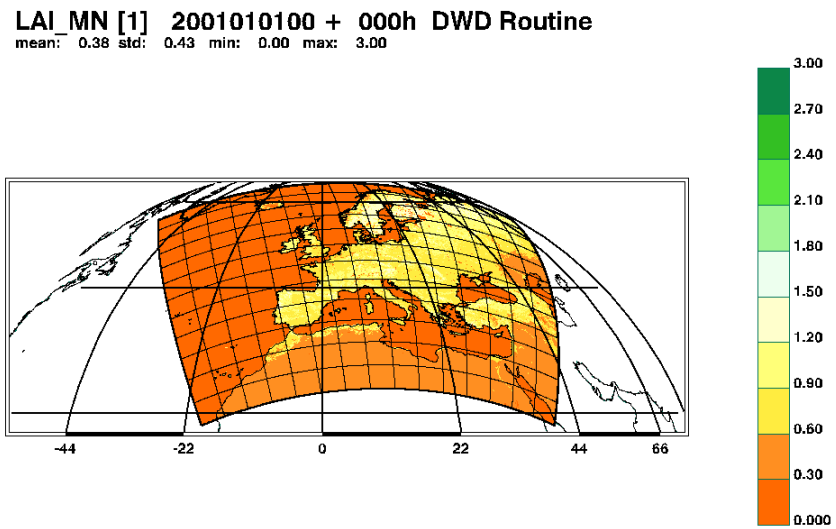
ground fraction covered by plants (time of rest)



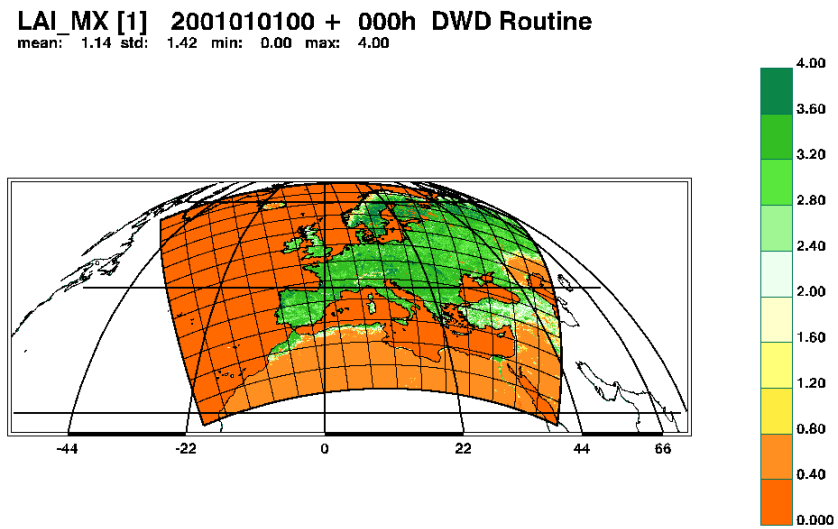
ground fraction covered by plants (vegetation period)

current system for generation of external parameters

leaf area index



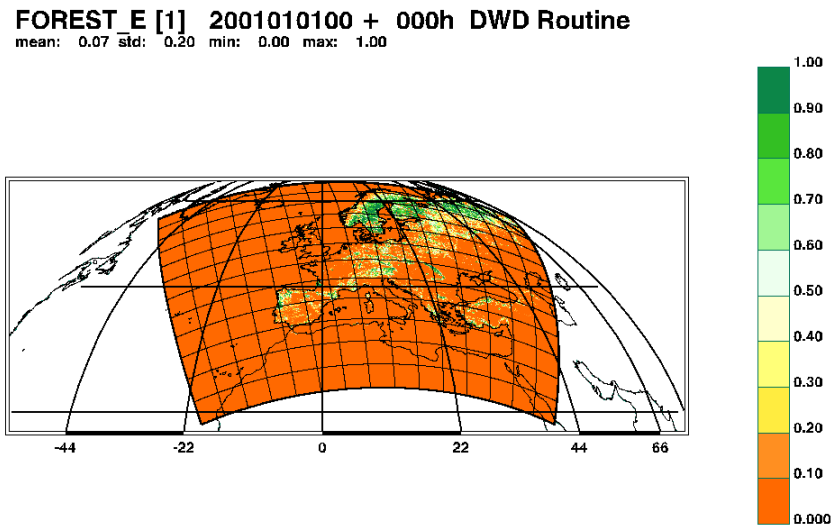
leaf area index (time of rest)



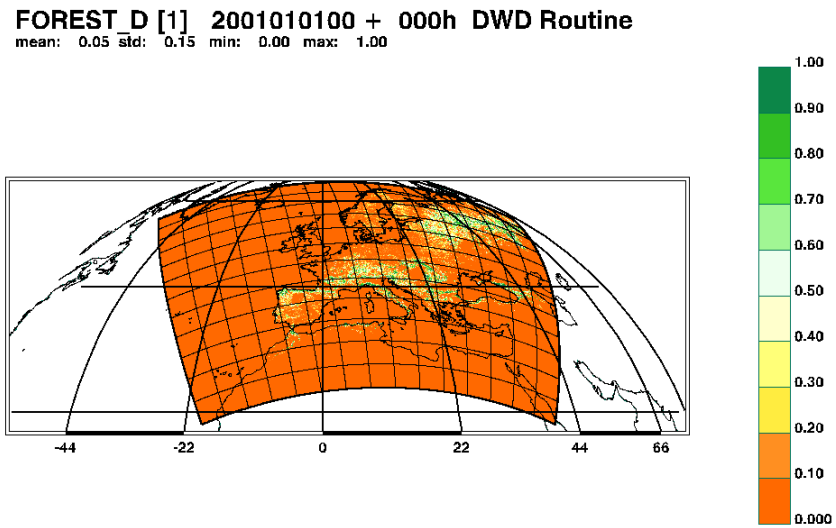
leaf area index (vegetation period)

current system for generation of external parameters

type of forest

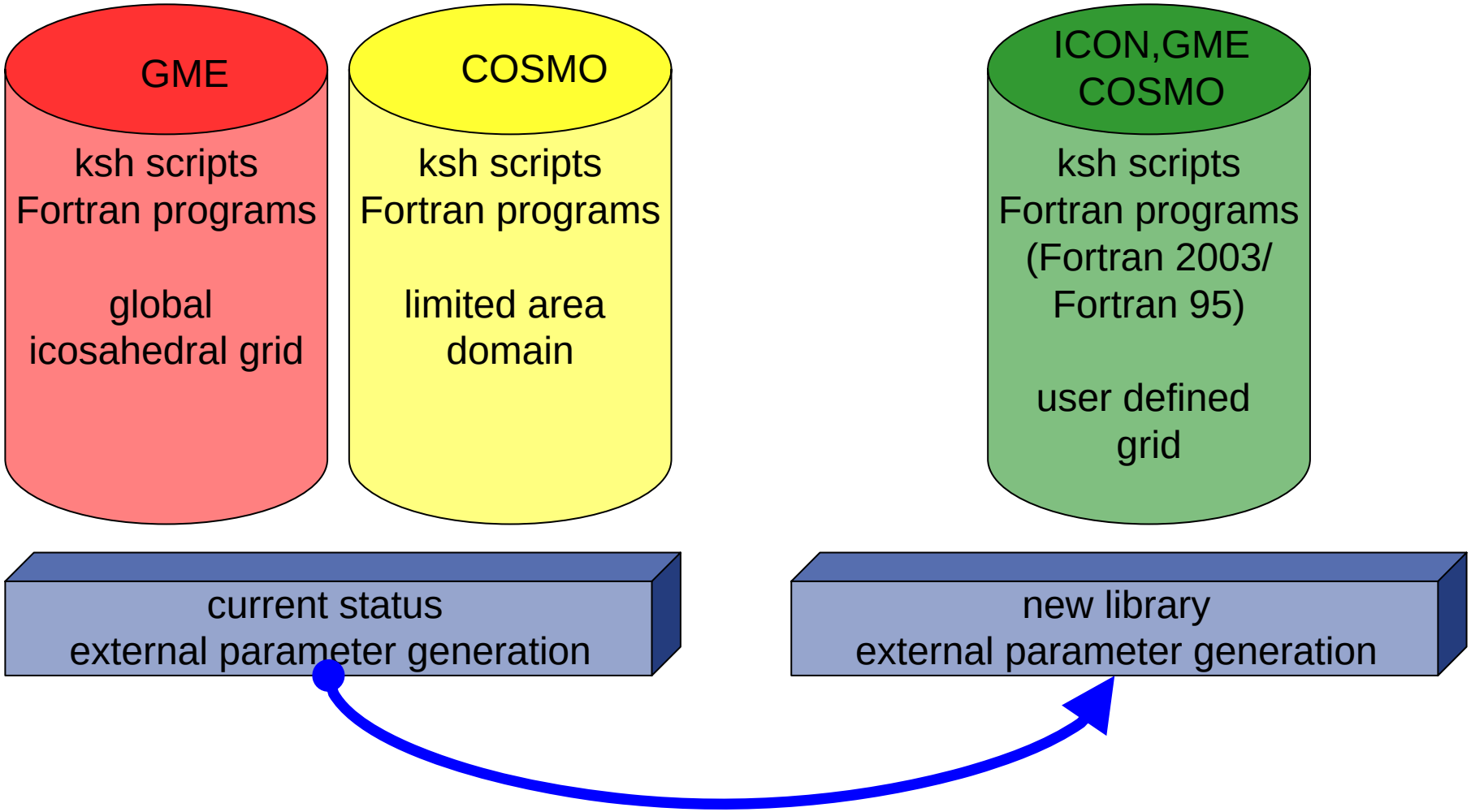


ground fraction covered by evergreen forest



ground fraction covered by deciduous forest

planned extensions

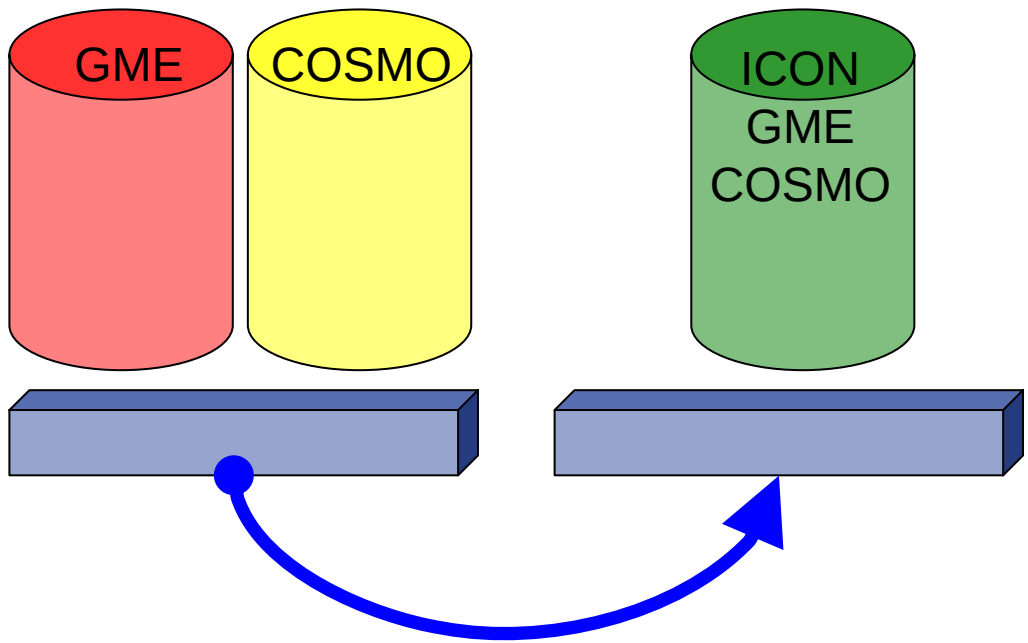


planned extensions

next steps in software development

general changes

- write software requirements specification
  - software design
  - additional external parameters
  - user interface
- put the software for the generation of external parameters for GME into the DWD Version control system

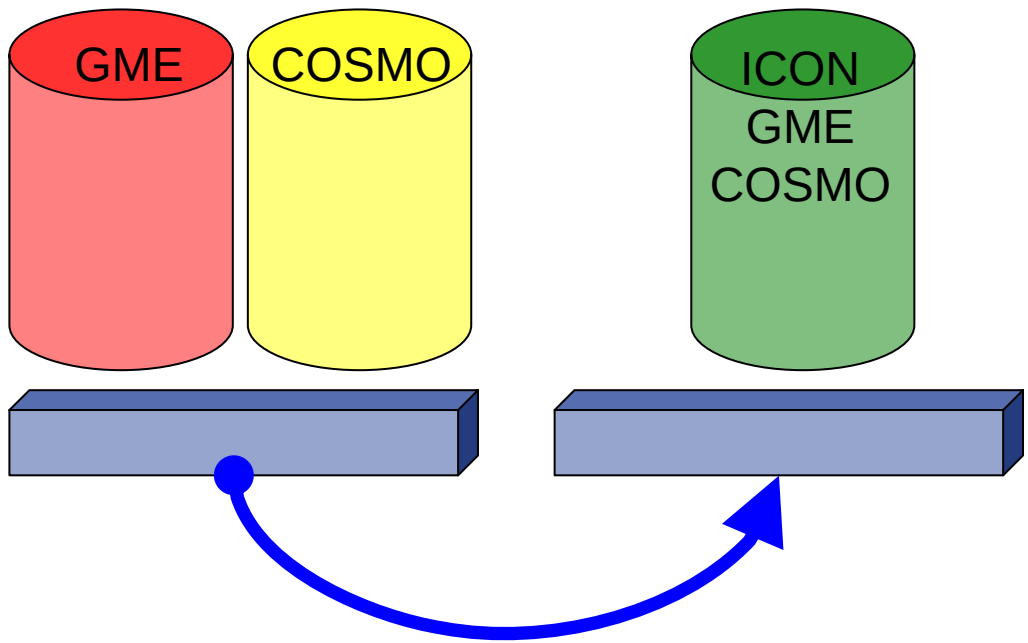


planned extensions

next steps in software development

general changes (long term)

- recode software according to the software requirements specification
- write documentation



Thank you for your attention!