GRIST模式使用简介
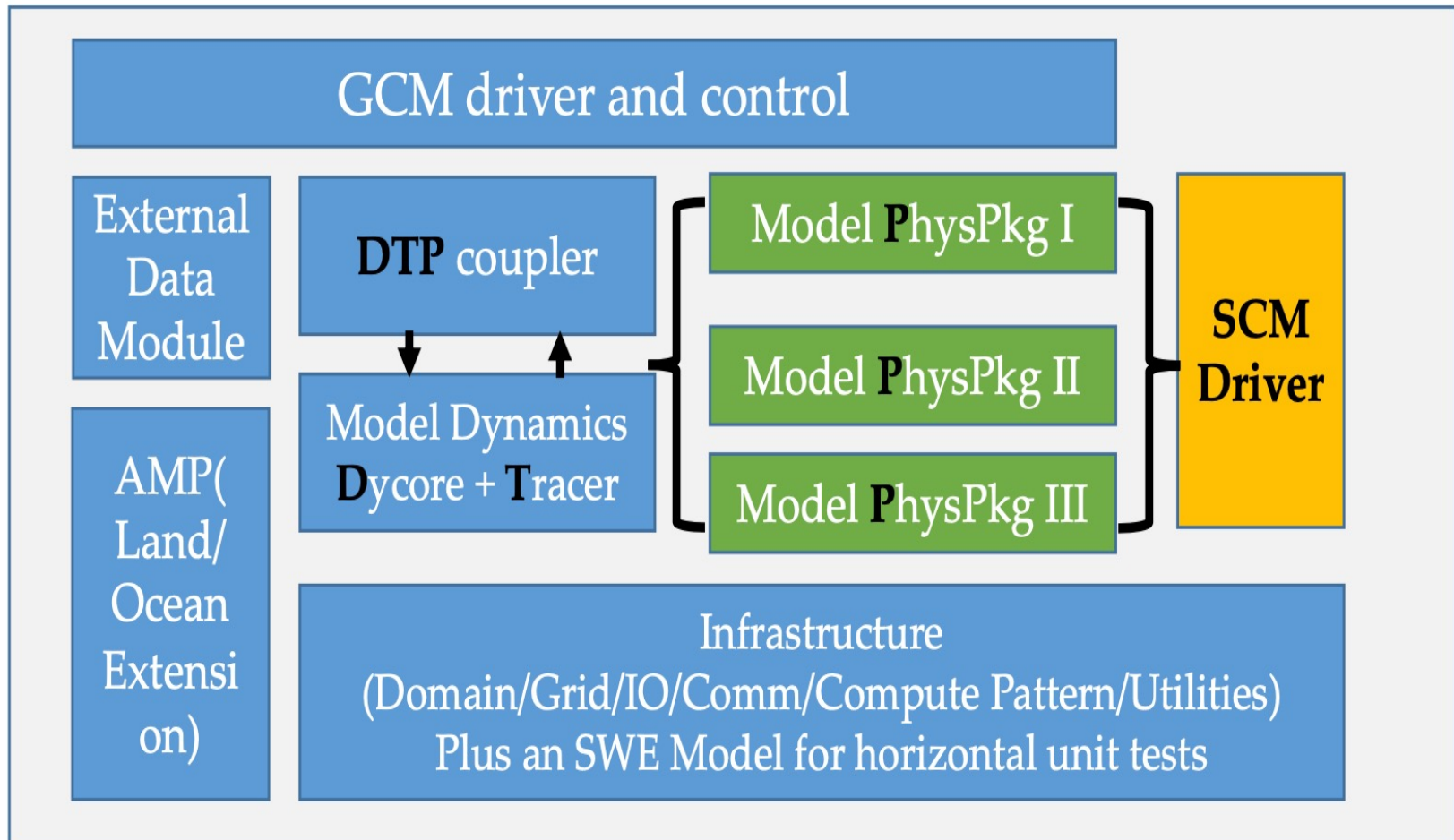
GRIST开发团队

提纲

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- 算例演示
- 数据处理

代码结构

The Current Structure of GRIST Atmosphere Model Framework

代码结构

ParGRIST-A22.5.1 ...

```
Update README.md
        Update README.md
```

```
    ▶ 📁 scm
    ▶ 📁 scmNew
    ☰ CMakeLists.txt
    📄 README
▼ 📁 grist_lib
    ▶ 📁 bld
    ▶ 📁 src
    ▶ 📁 test
▼ 📁 infrastructure
    ▶ 📁 core
    ▶ 📁 grid
    ▶ 📁 namelist
    ☰ CMakeLists.txt
▶ 📁 swe
    ☰ CMakeLists.txt
```

```
▼ 📁 src
    ▼ 📁 atmosphere
        ▼ 📁 amp
            ▶ 📁 LSM
            ▶ 📁 ocean
            ▶ 📁 seaice
        ▶ 📁 datam
        ▶ 📁 dtp
        ▼ 📁 dynamics
            ▶ 📁 dycore
            ▶ 📁 tracer_transport
        ▼ 📁 gcm
            ▶ 📁 io_lixh
            ▶ 📁 io_UrTemplate
            ▶ 📁 io_wrfphys
            ▶ 📁 io_zy
            ☰ CMakeLists.txt
            /* grist_atmos.F90
            /* grist_gcm_control_driver.F90
            /* grist_gcm_dycore_control_driver.F90
            /* grist_gcm_restart_module.F90
            /* grist_gcm_tracer_control_driver.F90
        ▼ 📁 physics
            ▶ 📁 cam5_old_version
            ▶ 📁 cam5_physics_v3
            ▶ 📁 simple_physics
            ▶ 📁 wrf2_physics
            ☰ CMakeLists.txt
            /* grist_physics_data_structure.F90
            📄 README
            /* wv_saturation.F90
```

外部环境

Requirements:

(1) The METIS library (built with 32 bits data type, i.e. IDXTYPEWIDTH = 32 (the default), since the input data of the node indices are of type integer(4) in GRIST)

(2) The NetCDF library

(3) The PnetCDF library

(4) The Lapack library

All the external libraries should be built with the same C, Fortran, and CXX compilers of those building GRIST.

Recommended lib versions are:

lapack-3.8.0

metis-5.1.0

netcdf-3.6.3

pnetcdf-1.12.2

intel compiler&mpi 2018

编译运行

The parallel version of GRIST can then be built within two steps:

1. Build the grist_lib library

$ cd par_grist/grist_lib/bld

Make the following changes to the Makefile:
Modify FC, CC, and CXX for Fortran, C, and CXX compilers, respectively (For the Intel compilers, an example configuration:
FC=mpiifort, CC=mpiicc, CXX=mpiicpc). Then modify METIS_LIB to specify your METIS lib directory.
After the modifications, type

$ make lib

to finish building of grist_lib.

2. Build the GRIST executable program

$ cd par_grist/bld/build_${ur_target_dir}

Make the following changes to the Makefile:
Modify NETCDF, PNETCDF, LAPACK, and METIS to specify your Netcdf, PnetCDF, Lapack, and METIS lib directories. Modify EXEDIR
to specify the directory for the target binary executable of GRIST. Then modify FC to specify the Fortran compiler.
After the modifications, type
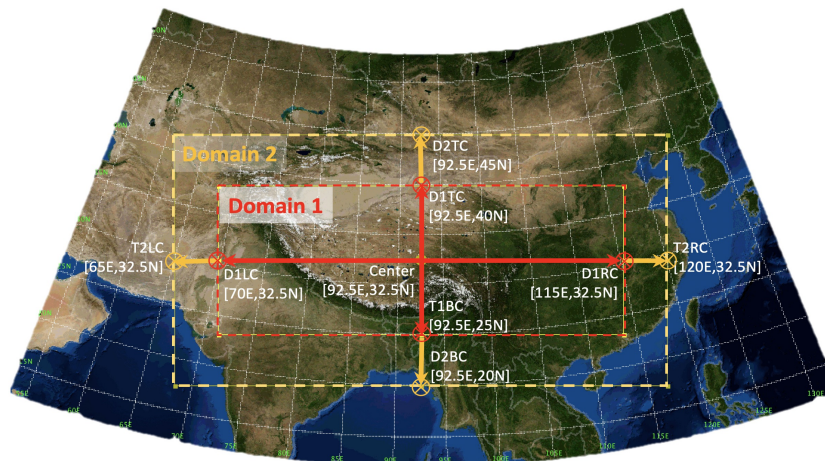
$ ./make.sh

to finish building of GRIST.

If sucessfully done, one should have two executable binaries: ${model}.exe and partition.exe.

运行依赖

- 模式可执行文件
- Namelist (grist.nml; grist_amipw_phys.nml; grist_lsm_noahmp.nml)
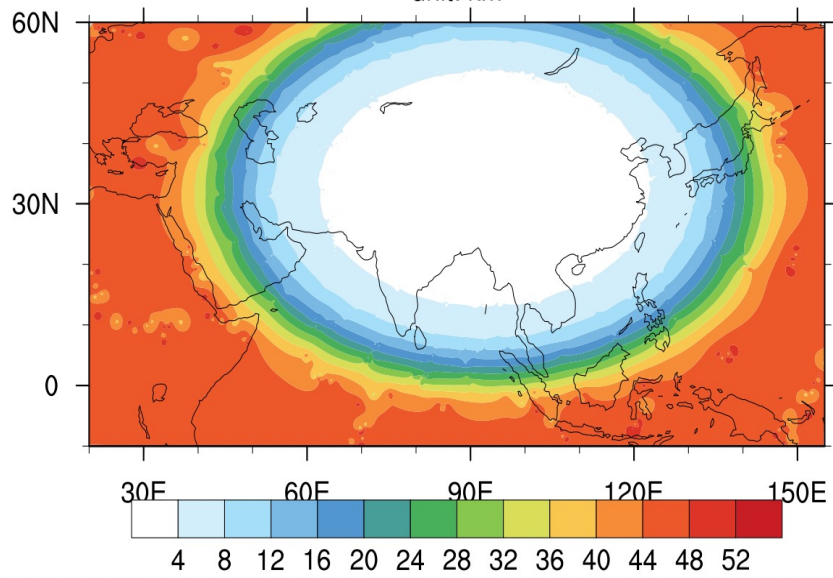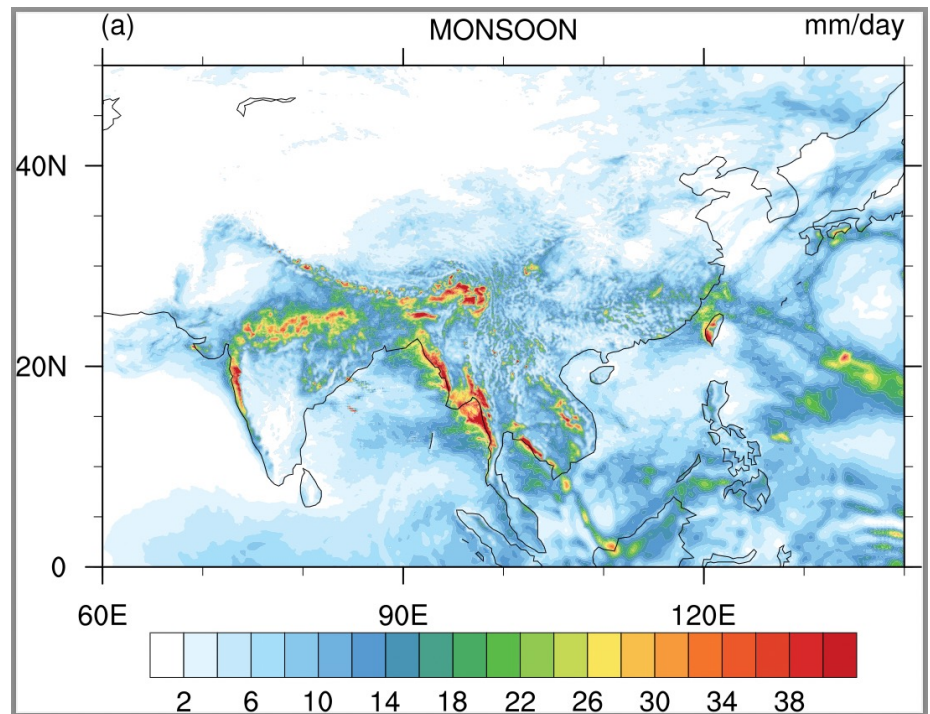- 外部数据（网格文件；静态数据；大气/陆地初值文件；边值文件sst/sic)

算例演示

GRIST domain setup

Fig. 1 - Common domain setup. The rectangles show an example domain for the Weather Research and Forecasting (WRF) model.　(CPTP experimental protocol）

2014-07-27至2014-09-01

数据处理

- 使用NCO/CDO以高效处理GRIST非结构网格数据（区域水平插值到规则网格; remapdis; remapycon）
- 使用NCL线性垂直插值函数插值到等压面/等高面
- 按照传统经纬度模式数据处理方式分析后续数据
- 详见示例脚本

流程总结

获取代码
配置环境

模式配置
模式运行

模式编译
准备数据

数据分析

谢谢