

CCPP Training

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CCPP Training Day 2 Wrap-up

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Changes in the horizon

- Models using CCPP today
 - UFS and Single-Column Model
- Model possibly using CCPP in the future
 - WRF, MPAS, CESM
 - NEPTUNE
- This means that changes may occur in the framework to accommodate new models (without breaking UFS+CCPP!!!)

Upcoming Changes in Metadata

Today: Table with long lines

```
I> \section arg_table_rftim_run Argument Table
!! | local_name | standard_name | long_name | units | rank | type | kind | intent | optional |
!! |-----|-----|-----|-----|-----|-----|-----|-----|-----|
!! | im | horizontal_loop_extent | horizontal loop extent | count | 0 | integer | | in | F |
!! | lat | latitude | latitude | radians | 1 | real | kind_phys | in | F |
!! | lon | longitude | longitude | radians | 1 | real | kind_phys | in | F |
!! | islmsk | sea_land_ice_mask | sea/land/ice mask (=0/1/2) | flag | 1 | integer | | in | F |
!! | rh2 | relative_humidity_at_2m | relative humidity 2m above ground | percent | 1 | real | kind_phys | in | F |
!! | ws6 | wind_speed_at_6m_in_miles_per_hour | wind speed 6m above ground in miles per hour | mi h-1 | 1 | real | kind_phys | in | F |
!! | rftim | modified_red_flag_threat_index | modified red flag threat index | index | 1 | real | kind_phys | out | F |
!! | errmsg | ccpp_error_message | error message for error handling in CCPP | none | 0 | character | len=* | out | F |
!! | errflg | ccpp_error_flag | error flag for error handling in CCPP | flag | 0 | integer | | out | F |
```

Coming soon

- Each scheme will have an accompanying config file describing each variable
- An automatic converter will be used to update all files

New parameterizations/suites

- RRTMGP radiation (R. Pincus of NOAA PSD)
- Unified Gravity Wave Drag (V. Yudin of NOAA SWPC)
- RAP/HRRR Gravity Wave Drag (M. Toy & J. Olson of GSD)
- HWRF suite (GMTB Hurricane Hurricane Supplemental Project)
- Etc.

Additional Applications

- GMTB/EMC are working on a plan to expand CCPP to all UFS applications, including coupled
 - S2S, GFS, GEFS, SAR etc.
- Involves work on
 - Build system
 - Workflows
 - Having all parameterizations be CCPP-compliant
 - More training

Review of Training

- Overall understanding of the CCPP
- Status of CCPP development/use and future plans
- How to get the CCPP code and build/run with NEMSfv3gfs
 - How to switch suites
- How to do development with the CCPP
 - Change existing schemes
 - Add new schemes
 - Contribute code back
- Availability of documentation, resources, and help

How to Get Help

- Visit CCPP website
<https://dtcenter.org/gmtb/users/ccpp/>
 - Scientific documentation
 - CCPP Developer's Guide
 - Technical and Users Guide for CCPP + SCM
- Please direct questions to gmtb-help@ucar.edu
 - Questions are recorded in ticketing system and can be answered by various GMTB team members
- Stay tuned for a broader CCPP Tutorial later this year

Q&A

