

CCPP SCM Development (Subproject 1A-2-2b)

Augment Unified Forecast System (UFS) Hierarchical Testing Framework (HTF) or Hierarchical System Development (HSD) to facilitate innovations in physical parameterizations development, and transition to operations. NCAR-NOAA Developmental Testbed Center (DTC) project.

- **This project concentrates on simpler tiers of the HTF/HSD, through expansion of the utility of the UFS Common Community Physics Package (CCPP) Single Column Model (SCM) with the primary goal to: *Increase applicability of SCM by expanding type & breadth of input data sets on which it can operate, and harden and improve its ability to drive any number of physics parameterizations in the UFS.***
- **Recent progress:**
 - **Column replay mode:** drive SCM with UFS model output, ~~specifically the capability to work for global MRW App) and limited-area (e.g. SRW App) UFS runs; output in the international DEPHY standard format for SCM data sets for future sharing with other SCM groups.~~
- **Future work:**
 - **Expanding SCM cases** (using DEPHY format):
 - **GABLS:** Southern Great Plains, US. Very useful for land, surface layer, and PBL scheme testing/development, and land-atmosphere interaction study.
 - **Wangara:** Classic PBL field campaign in Australia. Nearly ideal conditions for convective PBL study.
 - **Green Ocean Amazon (DOE):** Tropical rainforest case being developed, to augment tropical maritime cases.
 - **Arbitrary physics subsets:** replace selected physics with data components; allows a given physical



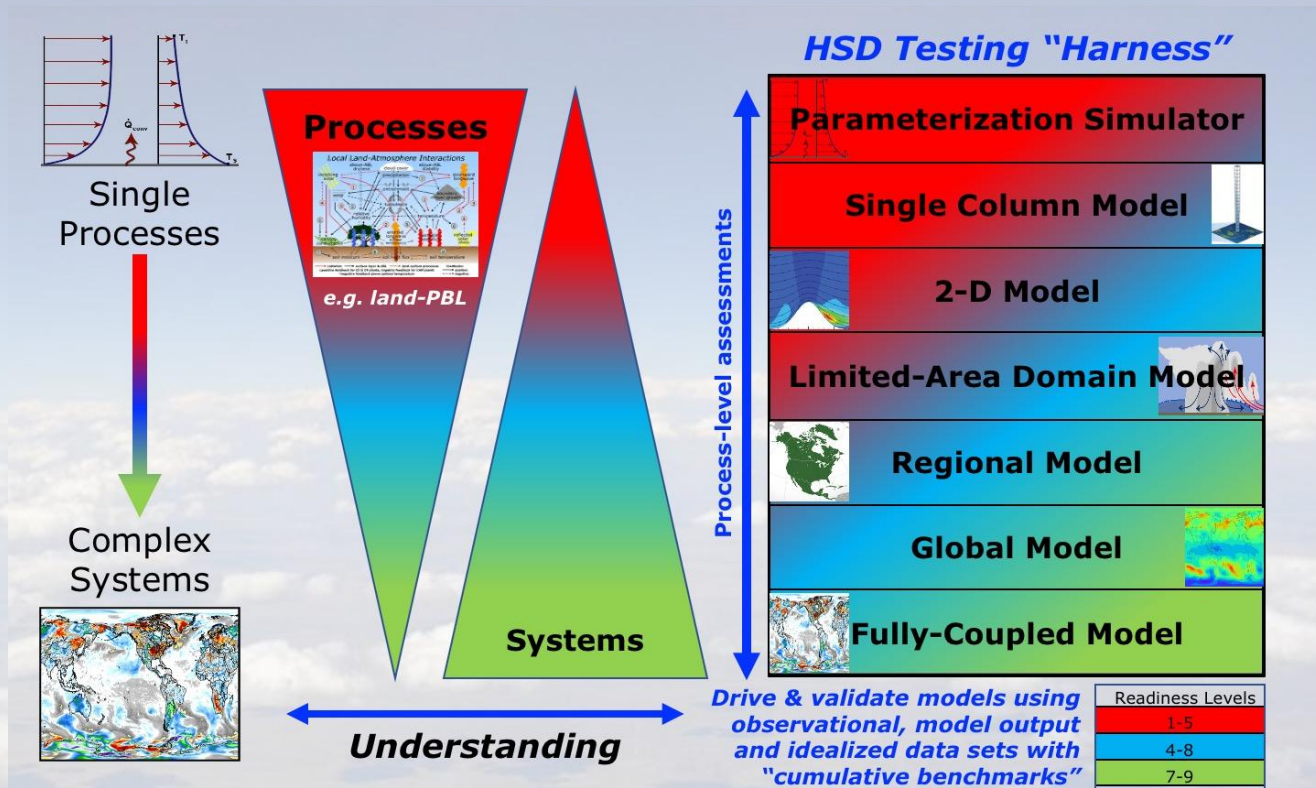
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What is Hierarchical System Development (HSD)?

<https://www.ufscommunity.org/articles/hierarchical-system-development-for-the-ufs/>

A simple-to-more-complex comprehensive approach to identify systematic biases and improve models



NCAR
UCAR

RAL/Joint Numerical Testbed



Developmental Testbed Center