Governance

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Global Model Test Bed (GMTB)

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Two CCPP Codebases to Govern: CCPP-Physics and CCPP-Framework

Reason to govern them separately:

- **Physics**
  - CCPP can have multiple sets of parameterizations and suites
  - Various organizations can contribute physics and decide what they want to support to meat their mission

- **Framework**
  - Goal is to have a single framework that can be used by various organizations (NCAR, Navy? etc.)
  - There needs to be joint governance

Both code have public authoritative repositories in GitHub

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CCPP Physics

This governance is under development and practices are expected to evolve

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Process for Creating Governance

- Discussion at NGGPS Physics Workshop: 2016

- Presentation to Unified Forecast System (UFS) Steering Committee and follow-up: April 2018

- Began draft document: September 2018

- Iterations with NGGPS program office, EMC, OAR: met four times in late 2018

- More work and wrap up needed on draft

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CCPP-Physics Draft Governance

Currently GMTB

CCPP-Physics Developer's Committee

- **Who:** Representatives of the institutions engaged in development, plus GMTB rep
- **What:**
  - Define criteria for acceptance of new schemes and phasing out of existing schemes
  - Define release content and calendar

CCPP-Physics Code Managers

- **Who:** Reps of the institutions responsible for code management, releases, support
- **What:** Coordinate/oversee technical aspects of code management, release, support

CCPP-Physics Developers

- **Who:** Anybody that contributes code
- **What:** Contribute innovations using governance and code management protocols, merge pull requests after they have been approved by reviewers

Criteria for Acceptance of parameterizations to master

DRAFT

- **Current**
  - NOAA programmatic interest
- **Potential**
  - Scientific
    - Has demonstrated merit as a mature development
    - Is sufficiently different from other schemes already in CCPP
    - NOAA/EMC interested for use of scheme in UFS
  - Technical
    - Meets the CCPP requirements and coding standards
    - Includes complete documentation
    - Passes the CCPP standard regression test suites
   - Considers run time performance and memory footprint

UFS Physics Working Group

- Is a community group focused on improving the UFS

- Provides guidance to NOAA as to where to focus its priorities in physics development and testing

- Does not have a direct role in the technical management of the CCPP

- Has a synergistic relationship with the CCPP Developers' Committee

- Similarly to the CCPP Developers' Committee, has representatives from UFS physics developers

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CCPP-Compliant versus Supported

A physical parameterization is deemed

- **CCPP-compliant** when it meets the software standards that allow it to be used with the CCPP Framework
- **Supported by NOAA** when it is accepted for the subset of NOAA-supported parameterizations
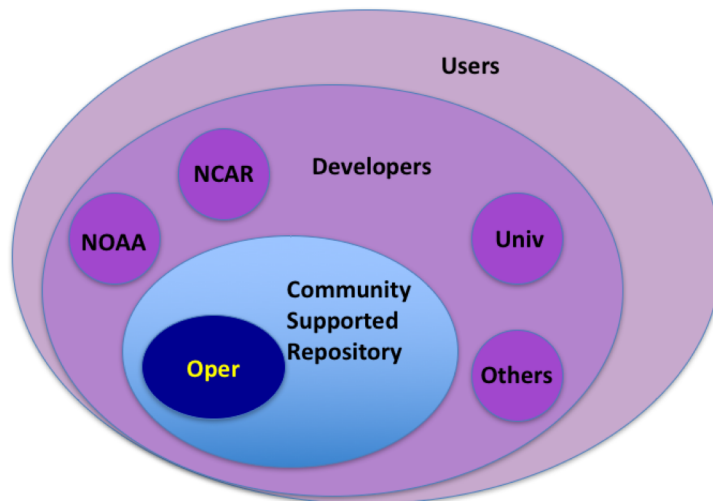
The light blue area represents the subset of CCPP-compliant physical parameterizations supported by NOAA to the community (operational + ~3y of planned development)

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Tiers of Support

	Tier 1 (operational)	Tier 2 (developmental)
Support	Full	Partial
Included in master	Yes	Yes
Distributed in public release	Yes	Possibly; depending on developer and agreement on providing support
Pre-release testing	Yes	Yes; for distributed schemes/suites
Follows code standards	Yes	Yes
Fully documented	Yes	Yes
Help requests answered	By GMTB and parameterization developers	Highly dependent on parameterization developers

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Support by GMTB

Support provided

- Access to code and prebuild/build with the UFS and the GMTB SCM

- How to make a parameterization CCPP-compliant

- How to contribute to the CCPP-Physics

- How to construct a new suite

- Information on the *host model caps* for using FV3 with the UFS or GMTB SCM

- Information on how to connect CCPP to a new host model

- Scientific aspects of the parameterizations or suites

Support not provided by GMTB

- Support to other UFS components, such as FV3, NEMS etc.

- Actively connect CCPP to a new host model

- Use of CCPP-Physics without the CCPP-Framework

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CCPP Framework

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The Rationale for Separate Governance for the Framework

- Several organizations may share the CCPP framework (NCAR MOA, Navy etc.) so governance needs to be larger than NOAA.

- This is a smaller project than the physics advancement enterprise

- There will be a smaller group of developers, but they are highly specialized

- The developers need to work together toward a common product (unlike physical parameterizations, which can be developed somewhat independently up to a certain point)

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CCPP-framework Governance

Overview

- https://github.com/NCAR/ccpp-framework/wiki
- https://github.com/NCAR/ccpp-framework/wiki/CCPP-Framework-Governance

Developer's Committee

- **Who:** Reps of funding agencies (currently NCAR and NOAA)
- **What**:
  - Review, provide feedback on, and approve new design documents and design changes
  - Review, provide feedback on, and approve code changes
  - Provide test cases and testing resources as necessary to ensure compatibility, viability, and correctness of all proposed code changes

Hierarchical Governance & Testing

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Tests

Current: Prior to changes to master

- NEMSfv3gfs regression tests (RTs) is run on Theia
  - EMC official RTs must pass (do not use CCPP)
  - GMTB RTs that invoke CCPP must pass

Upcoming

- Hurricane Supplemental project to develop a robust unit and regression test for CCPP
  - Multiple computational platforms
  - Multiple UFS applications

A Hierarchy of Governance

CCPP is one of many UFS elements. Examples of others are

- Atmospheric component dycore (FV3)
- Other components (ocean, sea ice etc.)
- Scripts and Workflow

Governance is needed to coordinate the use of all elements for the various applications (GFS, SFS etc.)

- Hierarchical governance is needed

Governance needs to be coordinates with other groups that also use these elements

- CCPP-Framework is used by NCAR