Unified Forecast System Steering Committee (UFS-SC)
SIP Coordination Meeting

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for the UFS – SC
August 1, 2018
Outline

• A little background
• What we are doing
• Role of Steering Committee in Guiding
  • How do we steer?
Unified Forecast System – Steering Committee

• Governance Strategy
  • Facilitates community model research, development, and applications (Includes policy, practice, tools, ... )
  • Focuses on near-term projects that have long-term consequences
  • Improves scientific integrity at organizational level
  • Leads towards unified forecast suite with coupled predictive models
    • Define the end-to-end system

• Meeting Weekly since March 2, 2018.
  • Presentations from invited working groups on priority items defined by SIP plan and Steering Committee members
  • Meet Friday at 11 Eastern
  • All presentation materials and minutes are posted (link )
Unified Forecast System – Definition

• The Unified Forecast System (UFS) is a community-based, coupled comprehensive Earth system modeling system. The UFS numerical applications span local to global domains and predictive time scales from sub-hourly analyses to seasonal predictions. It is designed to support the Weather Enterprise and to be the source system for NOAA's operational numerical weather prediction applications.

• Further description is found here: https://www.earthsystemcog.org/projects/ufs-sc/definition_ufs
UFS – SC Updates: “Describe” r2o process

- Define the scope of the activities of the UFS – SC
- Provide the foundation for improving the transition of research to operations (r2o)
  - Define current process
  - Identify barriers
  - Identify gaps
  - Common language
- Materials and Community Document
  - https://www.earthsystemcog.org/site_media/projects/ufs-sc/20180525_Background_UFS_SC.pdf
  - https://docs.google.com/document/d/1qcRwEWVaInN7YywVrV5nwmU5dqyX2kWiliB3IYi6nyc/edit#
Candidates for Inclusion in UFS Repositories

Integration into UFS Candidate Systems

Candidate for Operations

Transition to Operations
UFS – SC: Updates: Convective Allowing Model

- Convective Allowing Model: Updates from Spring Experiment
  - Can we move from exploratory experiments to verifiable experimental design?
  - Can we advance the deployment of an FV-3 CAM system by 1 year?
  - Can we develop a UFS strategy for experimentation with physics?
    - How do we integrate CAM physics experiments with the activities of the Physics Working Group?
  - Are we ready for controlled experiments with the stand alone FV3?
    - Where does this fit with operational systems and variable resolution grids?
  - How do we handle the code management of the different versions of FV-3 with multiple physics.
    - Where does the stand alone FV3 reside in the repository strategy?
  - Do the CAM experiments and verification strategy adequately consider the role of convection in the tropics?
    - Situations other than severe weather in the continental U.S.?
    - How do we integrate (unify?) CAM with Hurricane?
  - What is the role of multi-model ensemble?
  - Can we develop a good use case that spans CAM - Global - S2S to develop multi-application verification strategies? (MJO > Atmospheric Rivers?)

- CAM panel on Thursday morning
UFS – SC: Updates: Data Assimilation

• What is status of current data assimilation?

• What is the scientific plan for data assimilation?
  • Coupled Data Assimilation
    • Requirements for coupled model to support assimilation development

• What are the highest risks and the risk management strategies?

• How are the interests of applications suite being considered?

• Data Assimilation panel on Thursday afternoon.
UFS – SC: Updates

• Repositories and community
  • major issue in SIP plans and meetings
• End-to-End UFS System: Definition, emergence, coordination
  • *Special Thanks to Systems Architecture, Infrastructure, and EMC*
  • Repositories (Repositories Sub-WG, Coordination with EMC)
• Graduate Student Test
• EMC – FV3-GFS Release
• NGGPS Proposal Cohort

• Communications Working Group (ref. Communications Working Group Plan)
  • UFS – NGGPS Portal
  • Mailing lists: Inventories, tools, span the community (people, groups, meetings)
  • Frequently Asked Questions
  • Glossary

https://www.earthsystemcog.org/site_media/projects/ufs-sc/20180303_SAWG_Briefing_UFS_SC_GraduateST.pptx
UFS – SC: Updates

• Facilitate formation of Common Community Physics Package (CCPP) Governance model

• Coordinate with Verification and Validation Workshop (July 30 – Aug 1, 2018)
  • Opportunity of Seasonal-to-Sub-seasonal activity to advance the goals of a unified, coupled forecast system.
UFS – SC Role:
Working Groups: From Charter

• Important fact from the Governance Plan:
  • It evolves to meet the needs of the community

• From Governance Charter
  • UFS governance system comprised of a UFS Steering Committee (UFS SC) and a set of Working Groups
  • Steering committee assumes - Oversight of activities of working groups
  • Using input from the NGGPS/SIP working groups, develop a recommended UFS strategic plan
Role of UFS – SC: Learning to Steer

• Steering Committee does not task the Working Groups
• Steering Committee does not have resources or expertise for technical and scientific research and implementation

• The expertise and resources lie in the Working Groups, centers, and laboratories

• **Steering Committee:** Identify important issues, Get the expertise together, identify and remove barriers, obtain agreements on executable plans –
Working Groups: UFS – SC Prompts Discussion Items

• Steering Committee seeks inputs from Working Groups as Expert content and analysis providers.
• Steering Committee passes to Working Groups issues that require Expert deliberation and implementation.
• Steering Committee works with Program Office to assure alignment WRT the Working Groups
Fundamental issues of r2o

- integrated management of interests of science, technical, engineering, cost, and end user
- management of code in a known and documented matter - repository management, documentation, ...
- hierarchical testing, verification, and validation, with agreed-to metrics and associated targets
- the need to integrate together pieces into a coherent whole - building systems from subsystems
- the need to define and negotiate interfaces and behavior at those interfaces
UFS - SC

• Governance Strategy
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• UFS – SC
  • Identify priority items based on input from WGs, Program Office, Steering Committee Members, EMC, our evaluation of SIP plans ->
    • Those vested in the UFS – SC
    • Risk analysis, integration, facilitate projects that address strategic goals
  • Our goal is to be useful, identify and reduce barriers
  • UFS requires functional, working groups to succeed
UFS - SC

- UFS – SC
  - Focus on describing and defining to develop a systems approach to forecast system development and implementation
  - Identify priority items based on input from WGs, Program Office, Steering Committee Members, EMC, our evaluation of SIP plans ->
    - Those vested in the UFS – SC
      - Risk analysis, gap analysis, integration, facilitate projects that address strategic goals
  - Our goal is to be useful, identify and reduce barriers
  - UFS requires functional, working groups to succeed
Supplemental Slides
UFS – SC

• UFS – SC has outreach meeting to Working Groups on April 20, 2018
  • UFS – SC relies on Co-chairs to communicate and represent the Working Groups
• May 11, 2018 UFS – SC sends questionnaires to Working Groups on current activities
  • Some are active: Some are not. Communications uneven.
• May 18, 2018 and later, SIP – WG Co-chair’s invited to all Steering Committee meetings
  • Will continue except for UFS – SC Executive Sessions
Working Groups: UFS – SC Discussion Prompts from Meeting on WGs

• UFS - SC works to keep the Working Groups aligned towards the development of the UFS
• The Working Groups escalate issues to the UFS - SC issues that need resolved or require system-scale consideration
• Steering Committee seeks inputs from Working Groups as Expert content and analysis providers.
• Steering Committee passes to Working Groups issues that require Expert deliberation and implementation.
• Steering Committee works with Program Office to assure alignment WRT the Working Groups
• Communications Working Group Plan describes communication strategy and protocols for Working Groups
Abbreviations

- UFS-SC = Unified Forecast System Steering Committee
- SIP = Strategic Implementation Plan
- WG = Working Group
- NGGPS = Next Generation Global Prediction System
- FV3 = Finite Volume 3 (Dynamical Core)
- GFS = Global Forecast System
- CCPP = Common Community Physics Package
- NOAA = National Oceanic and Atmospheric Administration
- NCEP = National Centers for Environmental Prediction
- EMC = Environmental Modeling Center
Unified Forecast System – Steering Committee

• Given Initial Charter: Includes defining the governance we need as we evolve.
  • Link to charter (pre-signature):

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  • Focuses near-term projects that have long-term consequences
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SIP WG Questionnaire.

• **Link to Form:**
  • [https://docs.google.com/forms/d/e/1FAIpQLSe9b6PXpCjOYbEGj0F3KfxYQChf9prAHgudTxxE8HAR7HNqtg/viewform?c=0&w=1&usp=mail_form_link](https://docs.google.com/forms/d/e/1FAIpQLSe9b6PXpCjOYbEGj0F3KfxYQChf9prAHgudTxxE8HAR7HNqtg/viewform?c=0&w=1&usp=mail_form_link)

• Do you have any issues that you want to bring to the Steering Committee?