DTC Update on Hurricane Supplemental Projects

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Outline

- HAFS Infrastructure – Evan Kalina
- HWRF Physics in CCPP at NOAA/GSL – Man Zhang
- HWRF Physics in CCPP at NCAR – Mike Ek

HSUP Resources

$135 K (PoP: Jul 2019-Jun 2021)

HAFS Infrastructure

PI: Evan Kalina

Deliverables:

Establish an authoritative UFS workflows repository in GitHub with CROW code as the starting point (HU 12/2019)

Review the design and implementation of CROW with community partners (HU 06/2020)

Demonstrate that CROW or a CROW alternative can interact with the Common Infrastructure for Modeling the Earth (CIME) for building and running simple forecast model configurations (HU 06/2020)

Plan and document the design of the transition-to-operations workflow for the UFS hurricane application based on collected requirements and review with technical and scientific partners (HU 09/2020)

Demonstrate a workflow for a HAFS configuration that is suitable for simplified benchmarking that is part of a transition to operations, including the ability to do cycling without full DA (HU 06/2021)

CROW review status

- Integrated into broader UFS Workflows Workshop
  - April 28–30, 2020
  - College Park, MD (NCWCP)

- Agenda and registration coming soon; read-ahead materials to follow

- CROW review POCs: think about who you would like to represent your institution

HAFS workflow requirements collection

- Limited input from the community thus far via issue tracker in GitHub repository: github.com/NCAR/ufs_workflows_sandbox
- Working on an anonymous survey with mixture of direct and open-ended questions to supplement the issue tracker
- All community model users and developers are welcome to take this survey
  - Should be sent out next week

HSUP Resources

$62 K (PoP: Aug 2019 -Jul 2021)

HWRF Physics in CCPP (GSL)

PI: Man Zhang

Deliverables：

- HWRF F-A, saSAS, and RRTMG parameterizations in CCPP (Jan 2020)
- HWRF Physics Suite Test Plan (Apr 2020)
- **Successful HAFS v0.a runs using the HWRF suite (Apr 2020)**
  - Finishing sanity check of a prototype (partial) HWRF physics suite on Hera with 3-km Regional FV3 via CCPP configuration
- Inform preliminary results to EMC (Mid-May 2020)
- Report on final test results (Jul 2020)

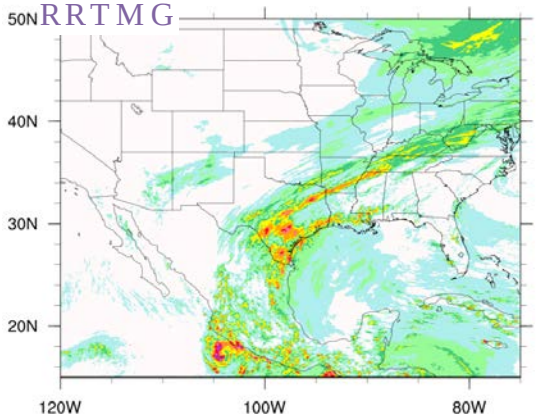
2018-10-15 00Z Continental Flooding Case

3-km Regional FV3 via CCPP

Sanity Check Purpose Only
*saSAS is not activated

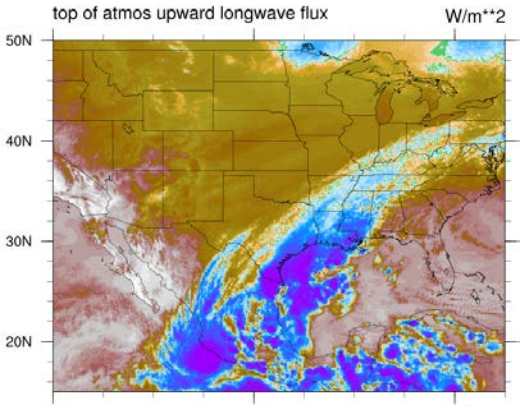
TP06h

GFDL MP + GFSv15 RRTMG



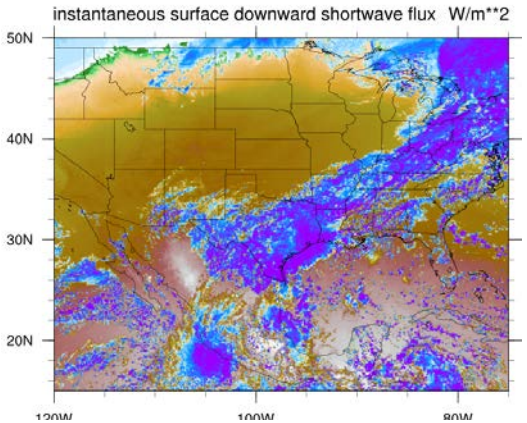
TOA LW/UP

F-A MP + GFSv15 RRTMG f24h

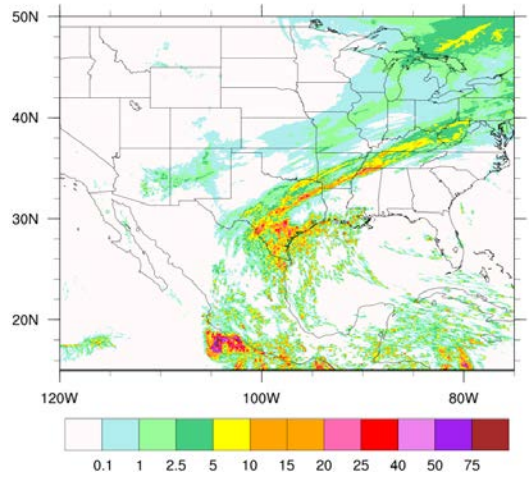


SFC SW/DN

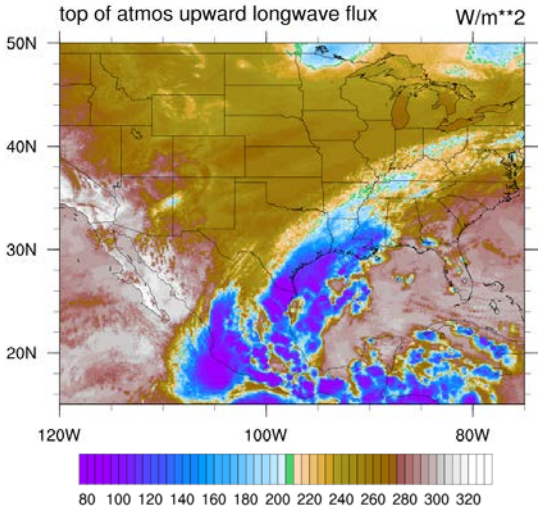
F-A MP + GFSv15 RRTMG f18h



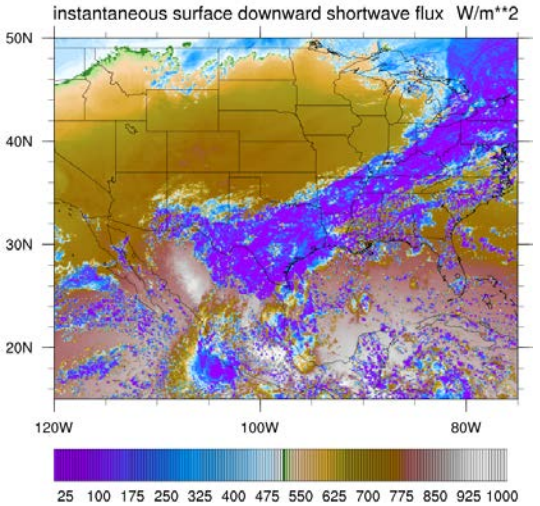
F-A MP + GFSv15 RRTMG f24h



F-A MP + HWRF RRTMG f24h



F-A MP + HWRF RRTMG f18h



The f24h precipitation, LW/SW flux results look reasonable

HSUP Resources

$62 K (PoP: Aug 2019 -Jul 2021)

HWRF Physics in CCPP (GSL)

PI: Man Zhang

Next Step :

- Assemble a prototype HWRF physics suite with physics on NCAR side
- Start HAFS v0 .a runs on MSU Orion in consultant with EMC
- Conduct standard assessment for tropical cyclone, such as track error, intensity bias and error using MET-TC (Model Evaluation tools for Tropical -Cyclone) tool

HSUP Resources

$86K (PoP: Aug 2019-July 2021)

HWRF Physics in CCPP (NCAR)

PI: Mike Ek

Deliverables:

(1) Implement parameterizations from NOAA WRF model physics suite into the Common Community Physics Package (CCPP): EDMF PBL, GFDL surface-layer, and Noah land model schemes.

(2) Test this suite in a prototype configuration of the Hurricane Analysis and Prediction System (HAFS), for a number of test case hurricanes.

Status:

PBL code: HAFS changes compile fine and runs with the CCPP Single Column Model (SCM). Noah land code: initialization phase working in the new CCPP version. (Slight delay in finalizing incorporating Noah land code into CCPP, but should be finished in a few weeks.)

Next Quarter:

PBL code: Test in FV3 before merging in CCPP repository. Noah land code: test together with other HWRF changes. Surface-layer: complete putting full GFDL surface layer scheme in the CCPP. Begin Prototype testing per #2 above.