



Coordination Meeting for the Unified Forecast System (UFS) Strategic Implementation Plan (SIP) Annual Update

Hurricane Supplemental Overview 1 August 2018

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Bipartisan Budget Act of 2018



ORF:

\$120,904,000, to remain available until September 30, 2019, as follows:

- (1) \$12,904,000 for repair and replacement of observing assets, Federal real property, and equipment;
- (2) \$18,000,000 for marine debris assessment and removal;
- (3) \$40,000,000 for mapping, charting, and geodesy services; and
- (4) \$50,000,000 to improve weather forecasting, hurricane intensity forecasting and flood forecasting and mitigation capabilities, including data assimilation from ocean observing platforms and satellites**

PAC:

\$79,232,000, to remain available until September 30, 2020, as follows:

- (1) \$29,232,000 for repair and replacement of Federal real property and observing assets; and
- (2) \$50,000,000 for improvements to operational and research weather supercomputing infrastructure and for improvement of satellite ground services used in hurricane intensity and track prediction**



Approved Spend Plan



1	Accelerate Improvements in Weather Forecasting	18,440,000
2	Accelerate Improvements in Flood Forecasting & Mitigation	8,252,000
3	Accelerate Improvements in Hurricane Intensity Forecasting	10,548,000
4	Accelerate Data Asssimation from Observations to Improve Forecasting	12,760,000
	Total	50,000,000



Approved Spend Plan by PPA



PPA	Projects	New Spendplan
Labs & Cis (OAR)	1A, 4A	\$14,500,000
JTTI (OAR)	1B	\$5,190,000
IOOS (NOS)	2A	\$1,252,000
Navigation, Obs, Pos (NOS)	2B	\$250,000
STI (NWS)	2C, 3A, 4B	\$19,000,000
Dissemination (NWS)	2D	\$2,000,000
Sustained Ocean Observations (OAR)	3B	\$2,750,000
Aviation Operations (OMAO)	3C	\$548,000
PDR&A (NESDIS)	4C	\$4,510,000
Total		\$50,000,000



Workshop to Define Project Scopes and Leads (2-3 April)



- 64 attendees representing NWS, OAR and NESDIS
- Agreed on overall scope of projects
- Agreed on lead and collaborating organizations for project teams
- Each team charged to
 - Define detailed work plan
 - Propose allocation of resources
 - Propose project duration
 - Identify constraints challenges
- Revised guidance received 06/15/2018

NOTE: Subsequent to the meeting and initially drafted project plans, NOAA revised some of the preliminary funding amounts. The revised funding levels are reflected in this presentation (“approved spend plan”).



Project Plans Status: Accelerate Improvements in Weather Forecasting



Task ID	Project Name	Funding	Task ID	Project Name	Funding
1	Accelerate Improvements in Weather Forecasting	18,440,000			
A	Labs & CIs	13,250,000	1 B	JTTI	5,190,000
1	Accelerate Improvements in prediction of Extreme Precipitation	1,000,000	1	Enhance Operational MRMS to improve Model Initialization and forecaster situational awareness of Severe Weather	3,690,000
2	Accelerate Improvements in Model Physics	4,000,000	2	Accelerate Effective Communication of weather forecasts and warnings to decision makers	1,500,000
3	Accelerate the development of Common Infrastructure	3,000,000			
4	Accelerate NGGPS elements related to severe weather prediction, especially landfalling tropical storms and hurricanes (a+ne sts)	2,500,000			
5	Accelerate FV3-based ensemble prediction system	2,750,000			



Project Plans Status: Accelerate Improvements in Flood Forecasting & Mitigation



Task ID	Project Name	Funding	Task ID	Project Name	Funding
2	Accelerate Improvements in Flood Forecasting & Mitigation	8,252,000	2 C	NWS/STI - Improving Prediction of Inland Flooding	4,750,000
A	NOS/IOOS - Regional Obs - IOOS support to integrated water level Modeling	1,252,000	1	Accelerate Coupling NWM with ESTOFS	3,000,000
B	NOS/COOPS Tampa Bay Improvements	250,000	2	Accelerate Flood Inundation mapping Improvements (HAND+DEMs)	1,750,000
			D	NWS/DIS - Ensure effective Dissemination of new and improved data and information	2,000,000



Project Plans Status: Accelerate Improvements in Hurricane Intensity Forecasting



Task ID	Project Name	Funding	Task ID	Project Name	Funding
3	Accelerate Improvements in Hurricane Intensity Forecasting	10,548,000	3 B	Sustained Ocean Observations	2,750,000
A	Accelerate Improvements in Hurricane Intensity Forecasting	7,250,000	C	OMAO - Test and Evaluation of next-generation in-situ measurement systems	548,000
1	Accelerate Hurricane Forecast Improvement Plan	2,000,000			
2	Accelerate re-Engineering of Hurricane Analysis and Forecasting System (HAFS)	2,150,000			
3	Improve Storm Surge Modeling	1,650,000			
4	Accelerate Improvements in Hazard Guidance and Risk Communication	0			
5	Accelerate Improvements in NHC Forecast Techniques	750,000			
6	Improve Seasonal Hurricane Forecasts	700,000			



Project Plans Status: Accelerate Data Assimilation from Observations to Improve Forecasting



Task ID	Project Name	Funding	Task ID	Project Name	Funding
4	Accelerate Data Asssimation from Observations to Improve Forecasting	12,760,000	4 B	NWS/STI: Accelerate Data Assimilation from observations to Improve Forecasting - develop tools	7,000,000
A	Accelerate Data Assimilation from observations to Improve Forecasting - convection allowing capabilities	1,250,000	1	Mitigate drop outs in forecast skill; EFSO study	2,500,000
1	Optimize current observing system to improve prediction of extreme weather	750,000	2	Accelerate development of JEDI infrastructure, testing and evaluation of assimilating new satellite data, global and CAM FV3-based data, and marine and hydrologic data	3,850,000
2	Observing System Simulation Experiments (OSSEs)	500,000	3	Observation Processing	650,000
3	Accelerate improving extreme events monitoring and forecasting	0	C	NESDIS Product Development and Readiness	4,510,000
			1	Recapitalize S4 Infrastructure; Support Coud computing allocations	0
			2	Other STAR related JCSDA projects	1,500,000
			3	Contribution to JEDI Development	3,010,000



Planning Schedule



Milestone	Date	Status
Appropriation	2/7/2018	Completed
NOAA Submitted draft Spend Plan to DOC/OMB/Congress	Late February	Completed
Spend Plan Approved by OMB and Congress	Q3FY18	Completed
Workshop to Define Detailed Project Scope and Lead	4/2/2018	Completed
Detailed Project Work Plans submitted	5/15/2018	Completed
Submit revised work plans	8/1/2018	Delayed
STI/OWAQ/STAR Directors Approve Work Plans	9/15/2018	Planned
NWS/OAR/NESDIS CFO and AA Approval	Q4FY18	Planned
Contract and Grant Actions Initiated	Q1FY19	Planned



Approval/Funding



- Ming Ji, John Cortinas and Harry Cikanek will recommend final project proposals for approval by AAs
- Funding will be disbursed when final projects are approved by collaborating organizations, as well as NWS, OAR, and NESDIS management



Near-term Challenges

- Ensure Jet (Hurricane research) HPCC remains active and borrow time for 18 months to mitigate near-term shortfall in HPCC availability
- Plans need to clearly distinguish between ongoing and Hurricane Supplemental efforts
- Although not known at this time, we anticipate that all Contracting Actions will need to be new (segregated from existing tasks)
- AGO deadlines for contract actions in 2018 cannot realistically be met: funds will need to carry-over to 1st quarter FY2019
- We will work with AGO to expedite tasks awarded competitively (try to execute in 2nd quarter FY2019)
- Initiate new multi-year tasks / award CI grants / award UCAR grants where not possible under existing rules



Hurricane Supplemental ↔ SIP



- The Hurricane Supplemental comes with stringent reporting requirements.
- Hurricane Supplemental projects cannot require continuation or follow-up. Each project must reach a definitive conclusion (new products, prototype system, operations-ready program, completed and documented experiment, populated database, etc.)
- SIP working group leads and Hurricane Supplemental project leads need to coordinate to solidify a plan that uses this opportunity to identify efforts that are outside of or can be “carved out from” the SIP and accelerate the overall SIP outcome.
- There needs to be a clear delineation between work already funded and new work proposed, even if the new work is an augmentation or acceleration of current work.

The following tables give an overview of where Hurricane Supplemental plans add to the SIP Annexes (↑) and where those plans draw from previous and ongoing SIP efforts (←). Entries where plans both enhance and draw from SIP Annexes require particular attention to distinguish between already funded and proposed work.



Hurricane Supplemental & SIP



		Annex #	1	2	3	4	5	6	7	8	9	10	11	12	13
Task ID	Project Name		Global Model Suites Planned for Ops	System Architecture (coupling)	Infrastructure	Dynamics and Nesting	Model Physics	Data Assimilation	Convection-Allowing Models	Marine Models	Land Surface Models and Hydrology	Aerosols and Atmos Composition	Ensembles	Post-processing	Verification
1	Accelerate Improvements in Weather Forecasting														
	A	Labs & CIs													
	1	Accelerate Improvements in prediction of Extreme Precipitation							←						
	2	Accelerate Improvements in Model Physics			↑		↑								
	3	Accelerate the development of Common Infrastructure		↑	↑									↑	↑
	4	Accelerate NNGPS elements related to severe weather prediction, especially landfalling tropical storms and hurricanes (a+nests)			↑	↑			↑						
	5	Accelerate FV3-based ensemble prediction system						↑	←↑				↑		←
	B	JTTI													
	1	Enhance Operational MRMS to improve Model Initialization and forecaster situational awareness of Severe Weather			←										
	2	Accelerate Effective Communication of weather forecasts and warnings to decision makers							←					←	

↑ Project enhances Annex
 ← Project draws from Annex



Hurricane Supplemental & SIP



		SIP Annex:	1	2	3	4	5	6	7	8	9	10	11	12	13
Task ID	Project Name	Global Model Suites Planned for Ops	System Architecture (coupling)	Infrastructure	Dynamics and Nesting	Model Physics	Data Assimilation	Convection-Allowing Models	Marine Models	Land Surface Models and Hydrology	Aerosols and Atmos Composition	Ensembles	Post-processing	Verification	
2	Accelerate Improvements in Flood Forecasting & Mitigation														
A	NOS/IOOS - Regional Obs - IOOS support to integrated water level Modeling														
B	NOS/COOPS Tampa Bay Improvements														
C	NWS/STI - Improving Prediction of Inland Flooding														
1	Accelerate Coupling NWM with ESTOFS									←	← ↑				
2	Accelerate Flood Inundation mapping Improvements (HAND+DEMs)									?	↑				
D	NWS/DIS - Ensure effective Dissemination of new and improved data and information														

↑ Project enhances Annex

← Project draws from Annex

? Anticipated connection not explicitly planned



Hurricane Supplemental & SIP



		Annex #	1	2	3	4	5	6	7	8	9	10	11	12	13
Task ID	Project Name		Global Model Suites Planned for Ops	System Architecture (coupling)	Infrastructure	Dynamics and Nesting	Model Physics	Data Assimilation	Convection-Allowing Models	Marine Models	Land Surface Models and Hydrology	Aerosols and Atmos Composition	Ensembles	Post-processing	Verification
3	Accelerate Improvements in Hurricane Intensity Forecasting														
	A	Accelerate Improvements in Hurricane Intensity Forecasting													
		1 Accelerate Hurricane Forecast Improvement Plan				←↑	←	←	←↑	←↑	←↑		←↑	↑	
		2 Accelerate re-Engineering of Hurricane Analysis and Forecasting System (HAFS)		←↑	←	←	←↑	←↑	←	↑					←
		3 Improve Storm Surge Modeling								←↑			←	←↑	
		4 Accelerate Improvements in Hazard Guidance and Risk Communication												↑	
		5 Accelerate Improvements in NHC Forecast Techniques						↑						↑	
		6 Improve Seasonal Hurricane Forecasts	?	←↑				↑							
	B	Sustained Ocean Observations						↑		↑					
	C	OMAO - Test and Evaluation of next-generation in-situ measurement systems													

- ↑ Project enhances Annex
- ← Project draws from Annex
- ? Anticipated connection not explicitly planned
-
 Project funding redirected



Hurricane Supplemental & SIP



		Annex #	1	2	3	4	5	6	7	8	9	10	11	12	13
Task ID		Project Name													
4		Accelerate Data Assimilation from Observations to Improve Forecasting													
	A	OAR/Weather and Air Chemistry Research Labs: Accelerate Data Assimilation from observations to Improve Forecasting - convection allowing capabilities													
		1 Optimize current observing system to improve prediction of extreme weather						?							?
		2 Observing System Simulation Experiments (OSSEs)						↑	↑	↑					↑
		3 Accelerate improving extreme events monitoring and forecasting						↑							↑
	B	NWS/STI: Accelerate Data Assimilation from observations to Improve Forecasting - develop tools													
		1 Mitigate drop outs in forecast skill; EFSO study													↑
		2 Accelerate development of JEDI infrastructure, testing and evaluation of assimilating new satellite data, global and CAM FV3-based data, and marine and hydrologic data			↑			↑		↑	↑				
		3 Observation Processing			↑										
	C	NESDIS Product Development and Readiness													
		1 Recapitalize S4 Infrastructure; <u>Support Cloud computing all locations</u>						?							
		2 Other STAR related JCSDA projects						↑							
		3 Contribution to JEDI Development						↑							

↑ Project enhances Annex

← Project draws from Annex

? Anticipated connection not explicitly planned

 Project funding redirected



Hurricane Supplemental Overview

Bottom Line



- Supplemental funding enables significant acceleration of priority SIP activities
 - Hurricane observing and forecast technology
 - Atmospheric and oceanic data assimilation
 - NGGPS Physics
 - Community Infrastructure (obsproc, UPP, CROW, V&V, NEMS, coupling, and CCPP framework)
- Hurricane Supplemental funding adds significant complexity to SIP planning
 1. Need to integrate accelerated activities in the updated annexes
 2. Need to maintain reporting integrity of supplemental activities



Hurricane Supplemental Overview



Questions?