

Project Management Tutorial - GFS Projects

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December 19, 2016

Outline

- GFS implementation plan
- GFS Development Cycle
- Projects/sub-projects/tasks
- Project information
- Project templates

Scientific Changes Implemented/Planned (FY15-20)

(Blue represents significant upgrade)

GFS Implementation	Q3FY16 GFS V13.0	Q3FY17 GFS V14.0	FY18 GOES-R/ JPSS DA ONLY	Q3FY18 GFS V15x (beta)	Q3FY19 GFS V15.0	Q3FY20 GFS V16.0
Resolution	T1534 (13 km) L64	T1534 (13 km) L64	T1534 (13 km) L64	C768 (13 km) L64	C1152 (9 km) L128	C1152 (9 km) L128
Physics	Noah LSM Upgrades	NSST Noah LSM upgrades Scale-aware SAS & EDMF PBL		NUOPC Physics Driver	Advanced Physics TBD	Advanced Physics (TBD)
Dynamics	Semi-Lagrangian			FV3		
DA	- All-sky radiances - 4D Hybrid	JPSS, CrIS and GOES-R Ready SEVIRI IR; VIIRS GOES WV Winds GPSRO RARS & DBNET	- GOES-R & JPSS data assimilated	GSI for FV3	- JEDI/Unified forward operator - L128 mod	DA on FV3 grid
Products	- Hourly output - Five more levels	1/8 degree products		TBD	TBD	TBD
Significant Component	4D EnVAR LSM upgrades	NEMS/ESMF LSM upgrades	GOES-R/JPSS Data	GFS/FV3 (prototype experimental parallel)	Operational GFS/ FV3	- Advanced Physics/ CCPP - DA on FV3 grid
	May 11, 2016 Done	May 10, 2017 Planned	Planned	Planned	Planned	Planned

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Implementation Plan of FV3GFS (FY17-FY19)

FY17				FY18				FY19			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Evaluate FV3 structure and document FV3 modeling system											
	Implement FV3 dycore in NEMS®										
		Couple FV3 to GFS physics (NUOPC physics driver) perform forecast-only experiments, tuning and testing ^{&}									
			Develop DA techniques [%] (native grid vs physics grid; New data)								
				Cycled experiments, New physics options, benchmarking, computational efficiency & optimization							
					Preprocessing and post-processing, up & downstream dependencies						
Q3FY19 FV3GFS Configuration						Test and Implement NGGPS Verification tools					
						3-year retrospective + real-time parallels, EMC and Community Evaluation					
						Early experimental FV3GFS		Code delivery, NCO Parallel & operations		NEMS/ FV3GFS in operations	

@ The targeted FV3GFS resolution is ~10km L128 with model top ~80 km.

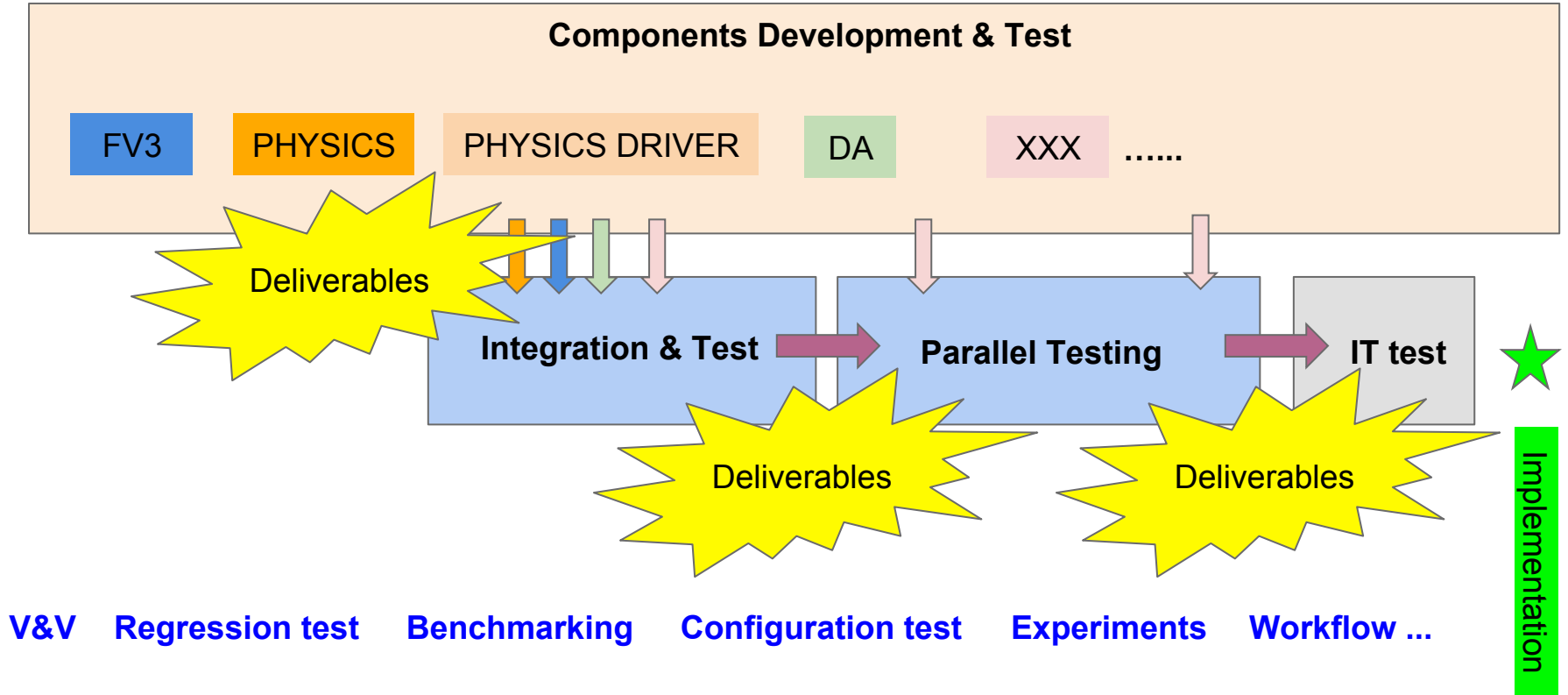
& New physics: Scale-aware convection and PBL, Double-moment cloud and aerosol-aware microphysics, Unified convective and orographic gravity wave drag etc

% ~25km L128 4D-EnVAR data assimilation

GFS Implementation Schedule

		2016				2017		2017		2017		2018		2018		2018		2019		2019		2019		
		J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S	O-D	J-M	A-J	J-S
Implementation	Task	FY16Q2	FY16Q3	FY16Q4	FY17Q1	FY17Q2	FY17Q3	FY17Q4	FY18Q1	FY18Q2	FY18Q3	FY18Q4	FY19Q1	FY19Q2	FY19Q3	FY19Q4								
GFS FY17Q3 NEMS/GSM T1534 L64	Cray Transition																							
	NEMS Transition																							
	NEMS/GSM Transition																							
	Components Development																							
	Components Integration																							
	DA development																							
	Benchmarking with Cycled experiment																							
	Pre Processing																							
	Post Processing																							
	Pre-Implementation test																							
	V&V																							
	Implementation																							
FV3GFS FY18Q2 Early version Experimental ~13km L64	Components Development																							
	Components Integration																							
	DA development																							
	Benchmarking with Cycled experiment																							
	Pre Processing																							
	Post Processing																							
	Pre-Implementation test																							
	V&V																							
	Early experimental Implementation																							
GFS FY19Q2 NEMS/FV3GFS ~10km L128	Study & Separate FV3																							
	NEMS/FV3 Integration																							
	Components development																							
	Physics Driver Development																							
	FV3/Physics/Physics Driver Integration																							
	DA development																							
	Benchmarking with Cycled experiment																							
	Pre Processing																							
	Post Processing																							
	3 year retro/real parallels																							
	Verification Tools implementation																							
	V&V																							
	Implementation																							

GFS Development Cycle



Projects/sub-projects/tasks assignment

- List of GFS projects/tasks

<https://drive.google.com/open?id=1yH3mCt1Kq05NIOVYkUYTFKpLbmTp-O8mkgEI-qvQH6w>

What you need to know

- Understand your project scope and your end goal (what & when)
- Estimate and identify resources (both human & compute)
- Locate your project in the development cycle
- Generate task list or Work Breakdown Structure (WBS)
- Create a project timeline with milestones; build slack in your timeline
- Identify your dependencies
- Identify your deliverables and stakeholders; including receivers of your deliverables
- Track progress; spreadsheet (see example) – weekly
- Share your tracking spreadsheet with the GFS team
- Status your project to management; quad chart (see example) – monthly

Templates

- Project Tracking Template

https://drive.google.com/open?id=1psq-T4fim-JZjHVoBny9Yg_8eblyDmZlleLuMp9tGaQ

- Quad Chart Template

<https://drive.google.com/open?id=1f0lRQMa0oHCXiHGS8sQbZSvMb-d2UfsXiDSOkeHW68l>

- Contact Vijay for questions related to scope and/or schedule
- Contact Farida for questions related to project management