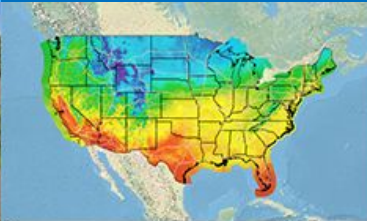# Overview of NOAA's Environmental Modeling Center

August 22, 2023
Brian Gross, Director
NOAA/NWS/NCEP/Environmental Modeling Center

NATIONAL WEATHER SERVICE
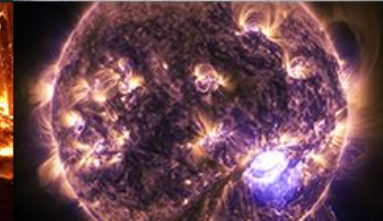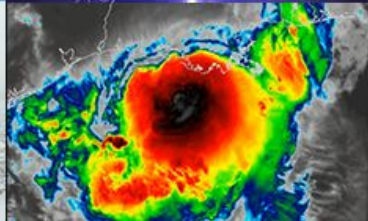
Target: Simplifying the NCEP Production Suite
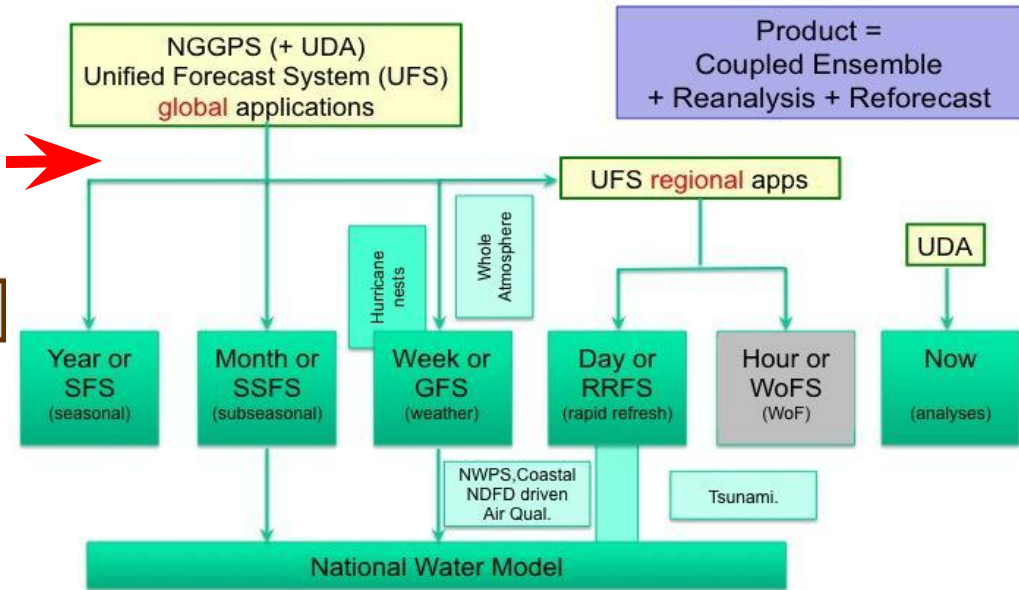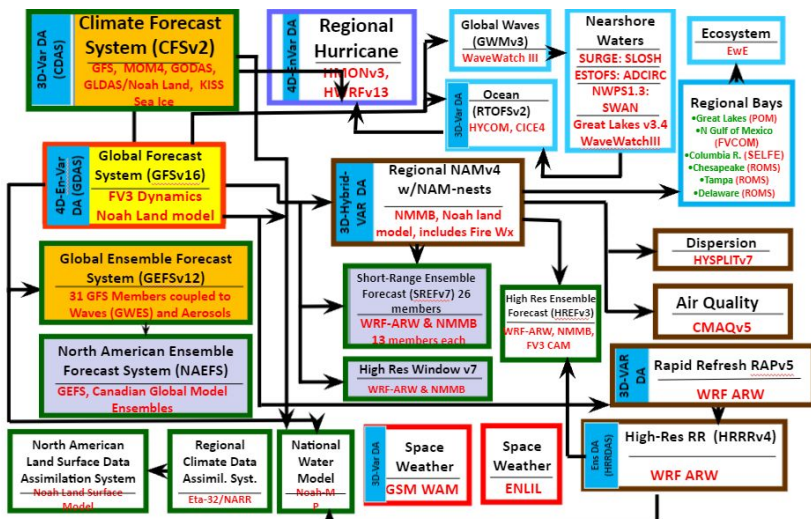
NOAA's Operational Numerical Model Guidance Suite

Climate Forecast System (CFSv2)
3D-Var DA (CDAS)
GFS, MOM4, GODAS, GLDAS/Noah Land, KISS Sea Ice

Regional Hurricane
4D-EnVar DA
HMONv3, HWRFv13

Global Waves (GWMv3)
WaveWatch III

Nearshore Waters
SURGE: SLOSH
ESTOFS: ADCIRC
NWPS1.3: SWAN
Great Lakes v3.4
WaveWatchIII

Ecosystem
EwE

Ocean (RTOFSv2)
3D-Var DA
HYCOM, CICE4

Regional Bays
•Great Lakes (POM)
•N Gulf of Mexico (FVCOM)
•Columbia R. (SELFE)
•Chesapeake (ROMS)
•Tampa (ROMS)
•Delaware (ROMS)

Global Forecast System (GFSv16)
4D-En-Var DA (GDAS)
FV3 Dynamics
Noah Land model

Regional NAMv4 w/NAM-nests
3D-Hybrid-VAR DA
NMMB, Noah land model, includes Fire Wx

Dispersion
HYSPLITv8

Global Ensemble Forecast System (GEFSv12)
31 GFS Members coupled to Waves (GWES) and Aerosols

Short-Range Ensemble Forecast (SREFv7) 26 members
WRF-ARW & NMMB
13 members each

High Res Ensemble Forecast (HREFv3)
WRF-ARW, NMMB, FV3 CAM

Air Quality
CMAQv6

North American Ensemble Forecast System (NAEFS)
GEFS, Canadian Global Model Ensembles

High Res Window v8
WRF-ARW, NMMB & FV3

Rapid Refresh RAPv5
3D-VAR DA
WRF ARW

North American Land Surface Data Assimilation System
Noah Land Surface Model

Regional Climate Data Assimil. Syst.
Eta-32/NARR

National Water Model
Noah-MP

Space Weather
3D-Var DA
GSM WAM

Space Weather
ENLIL

High-Res RR (HRRRv4)
Ens DA (HRRDAS)
WRF ARW

RTMA URMA v2

Simplifying the NCEP Production Suite

Global Weather, Waves & Global Analysis - GFS/ GDAS		GFSv17/ GEFSv13	Seasonal Reforecast Production	GFSv18/ GEFSv14/ SFSv1	Medium Range & Subseasonal
Global Weather and Wave Ensembles, Aerosols - GEFS					
Short-Range Regional Ensembles - SREF					Marine & Cryosphere
Global Ocean & Sea-Ice - RTOFS	RTOFSv3				
Global Ocean Analysis - GODAS	GODASv3				Seasonal
Seasonal Climate - CDAS/ CFS					
Regional Hurricane 1 - HWRF	HAFSv1	HAFSv2	HAFSv3	HAFSv4	Hurricane
Regional Hurricane 2 - HMON					
Regional High Resolution CAM 1 - HiRes Window		RRFSv1	RRFSv2	RRFSv3/ WoFSv1	Short-Range Regional & Regional Atmospheric Composition
Regional High Resolution CAM 2 - NAM nests/ Fire Wx					
Regional High Resolution CAM 3 - RAPv5/ HRRR					
Regional HiRes CAM Ensemble - HREF					
Regional Mesoscale Weather - NAM					
Regional Air Quality - AQM					
Regional Surface Weather Analysis - RTMA/ URMA	3DRTMA/URMA v3		” v4	” v5	
Atmospheric Transport & Dispersion - HySPLIT	HySPLITv8	HySPLITv9		HySPLITv10	Air Dispersion
Coastal & Regional Waves - NWPS	NWPSv1.4	RWPSv1	RWPSv2		Coastal
Great Lakes - GLWU	GLWUv1.2	GLWUv2	GLWUv3		Lakes
Regional Hydrology - NWM	NWMv3				Hydrology
Space Weather 1 - WAM/IPE		WAM/IPEv2			Space Weather
Space Weather 2 - ENLIL					