



# NGGPS Update: NOAA Testbeds-related Projects

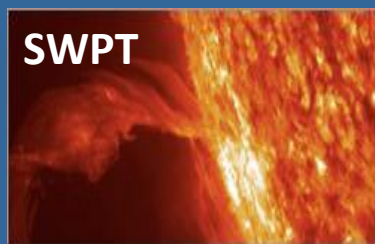
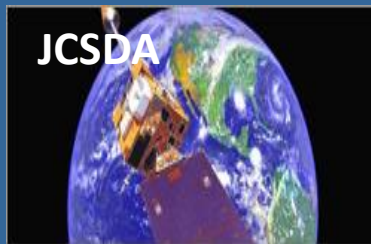
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# Current NOAA TBPG

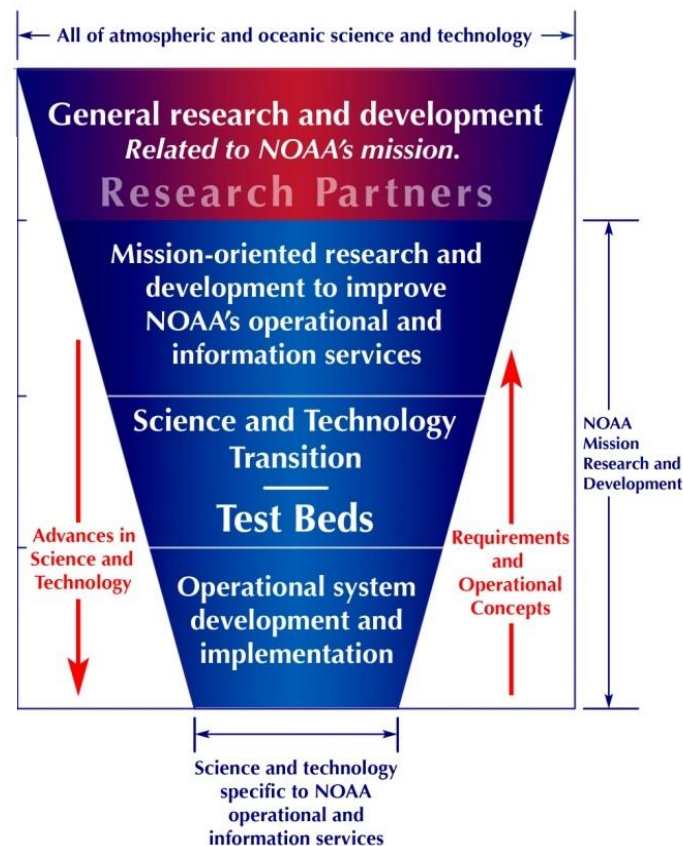


<http://www.testbeds.noaa.gov> (thanks to: Rich Lataitis & Barb deLuisi)



# Framework for Transition: NOAA and Partners

	Phase	Key Q	Key Metric	Facility
	R&D	Does it work?	Peer-reviewed Publication	Universities, Government Labs, Private Industry
TR ➔	Developmental Testing	Works with operational systems?	Feasibility/ Engineering Analysis Successful	Testbed with operations-like environment
PG ➔	Experimental Testing	Meets operational performance criteria?	Go/No Go based on: Objective Performance (e.g. accuracy) Subjective Feedback Production Readiness	Operational proving ground for clinical tests and full "dress rehearsal"
	Operations	Maintains required performance?	Objective criteria: accuracy and reliability	Operations





# TBPG Strategy

## Role in NGGPS

### Conduct testing needed to exploit NGGPS advances for service improvements

- Testing forecast service impacts for NGGPS prototypes, **establish skill baselines**/improvement targets
- Testing **advanced forecaster tools/applications** needed to exploit NGGPS in achieving service improvements
- Initial Focus Areas for Service Improvements:
  - Weeks 3-4 Forecasts
  - Days 6-10 Forecasts
  - Storm-scale and High Resolution applications (Day 0-3)



# Week 3-4 Forecasts

- **Current gap in explicit forecast products despite widespread user demand; NNGPS to provide basis for high-impact forecast information**
  - **Beginning baseline skill assessments in forecast guidance for significant large-scale events, e.g. hurricane, drought/floods, prolonged heat/cold**
  - **Extending object-oriented evaluation, identification of signal from noise in coupled model/ensemble guidance for reliable, consistent forecast information**
- **TBPG testing forecast service impacts for NNGPS components, coupled system prototypes and feedbacks**



# Day 6-10 Forecasts

- **Current NWS detailed forecasts only through Day 7; NGGPS advances in skill/reliability provide basis for extending to Day 10.**
  - **Rapid drop in skill for forecasts of “sensible” weather**
  - **Beginning evaluations of reliable skill in model guidance to be mined for potential useful information for decision support**
- **TBPG engaged in evaluating guidance and translation into consistent, actionable products & services**



# High-impact weather forecasts (Stormscale) for US

- **Current NWS forecasts for high-impact weather including tornado outbreaks, flash floods, major aviation disruptions from thunderstorms do not yet contain the temporal and spatial detail needed to support optimal decision making; NNGPS to provide framework**
  - **Lack of operational guidance from convection-allowing ensembles at high spatial/temporal resolutions**
  - **Beginning to ingest high-resolution, rapidly updating observations from radar; satellites next**
- **TBPG engaged in evaluating guidance and translation into consistent, actionable products & services**





# Round II Sponsored Projects: Testbeds-related activities

Focus Area		Project	Outcomes*
Global-scale & extended-range weather apps	Weeks 3-4	Advanced diagnostics for tropical-midlatitude interactions and teleconnections on intraseasonal timescales (Stan)	EBS, ATA
		Data Assimilation in the vertically extended global atmosphere models of NEMS (Yudin)	EBS
	Days 6-10	Developing and testing a High-resolution ensemble-based 6-10 Day forecast system for atmospheric rivers and heavy precipitation over the western US (Mass/Hakim)	EBS
		Evaluation of model forecasts of high impact precipitation and temperature for Days 8-10 (Nelson)	EBS
Storm-scale & high-resolution applications Day 0-3		Assimilation of GOES-R total lightning into GSI to improve short-term forecasts of high impact weather events at cloud resolving scales (Fierro)	EBS
		Information Extraction and Verification of Convection-allowing models for Tornado Forecasting (Jirak)	EBS, ATA

\* Projected Outcomes: Establish Baseline Skill (EBS), Advanced Forecaster Tools /Applications





# Round II Project Leads and TB Partners

Focus Area	Principal TB Partners
<b>Week 3-4</b>	Stan: CTB Yudin: CTB (also EMC, SWPC)
<b>Day 6-10</b>	Mass/Hakim: HMT (also WPC, EMC, Western Region) Nelson: HMT (EMC, CPC, AK Region)
<b>Day 0-3 high impact weather</b>	Fierro: HWT (also EMC) Jirak: HWT (also EMC)



# NGGPS Testbeds and Proving Grounds (TBPG) Team

Member	Organization
Paula Davidson (Lead)	NWS/STI
Michael Ek	NWS/NCEP/EMC
James Nelson	NWS/NCEP/WPC
Russell Schneider	NWS/NCEP/SPC
Kevin Kelleher	OAR/ESRL/GSD



# Round I Sponsored Projects: Testbeds-related activities

Focus Area		Project	Outcomes*
Global-scale & extended-range weather applics	Weeks 3-4	Exploitation of Ensemble Prediction System Information in support of Atlantic Tropical Cyclo-genesis Prediction (Thorncroft)	EBS, ATA
		Application of a Hybrid Dynamical-Statistical Model for Week 3-4 Forecast of Atlantic/Pacific Tropical Storm and Hurricane Activities (Schemm)	ATA
	Days 6-10	An Investigation of the Skill of Week Two Extreme Temperature and Precipitation Forecasts at NCEP-WPC (Bosart)	EBS
		Validation of Significant Weather Features and Processes in Operational Models Using a Cyclone Relative Approach (Colle)	EBS
Storm-scale & high-resolution applications Day 0-3		Test and Evaluation of Rapid Post-Processing and Information Extraction from Large Convection 3hr Tornado Outlooks (Correia)	ATA
		Data Mining of High-resolution Storm-scale Data Sets (Smith)	ATA
		Information Extraction and Verification of Numerical Weather Prediction for Severe Weather Forecasting (Jirak)	EBS, ATA
		Improvement of Convective/Severe Weather Prediction through an Integrative Analysis of WRF Simulations and NEXRAD/GOES Observations over the CONUS (Dong)	EBS
Cross-cutting		Incorporation of near real-time Suomi NPP Green Vegetation Fraction and Land Surface Temp data into the NCEP Land modeling suite (Csiszar)	ATA, EBS

\* Projected Outcomes: Establish Baseline Skill (EBS), Advanced Forecaster Tools /Applications



# Sponsored Projects and Partners

Focus Area	Projects	Principal TB Partners
<b>Week 3-4</b>	Global-scale and extended range weather (Thorncroft, Schemm, Csiszar)	Thorncroft: JHT (also EMC) Schemm: CTB Csiszar: JCSDA (EMC, NESDIS/STAR)
<b>Day 6-10</b>	Extended range weather (Thorncroft, Bosart, Colle, Csiszar)	Bosart: HMT (also EMC) Colle: HMT (also EMC)
<b>Day 0-3 high impact weather</b>	Storm-scale and high-resolution applications (Correia, Smith, Jirak, Dong, Csiszar)	Correia: HWT Smith: HWT Jirak: HWT (also EMC) Dong: HWT