

# ORA/STAR\* Roles and Interests in HMT

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\*Pending approval

# Possible ORA Roles: Information Derived from Remotely Sensed Data

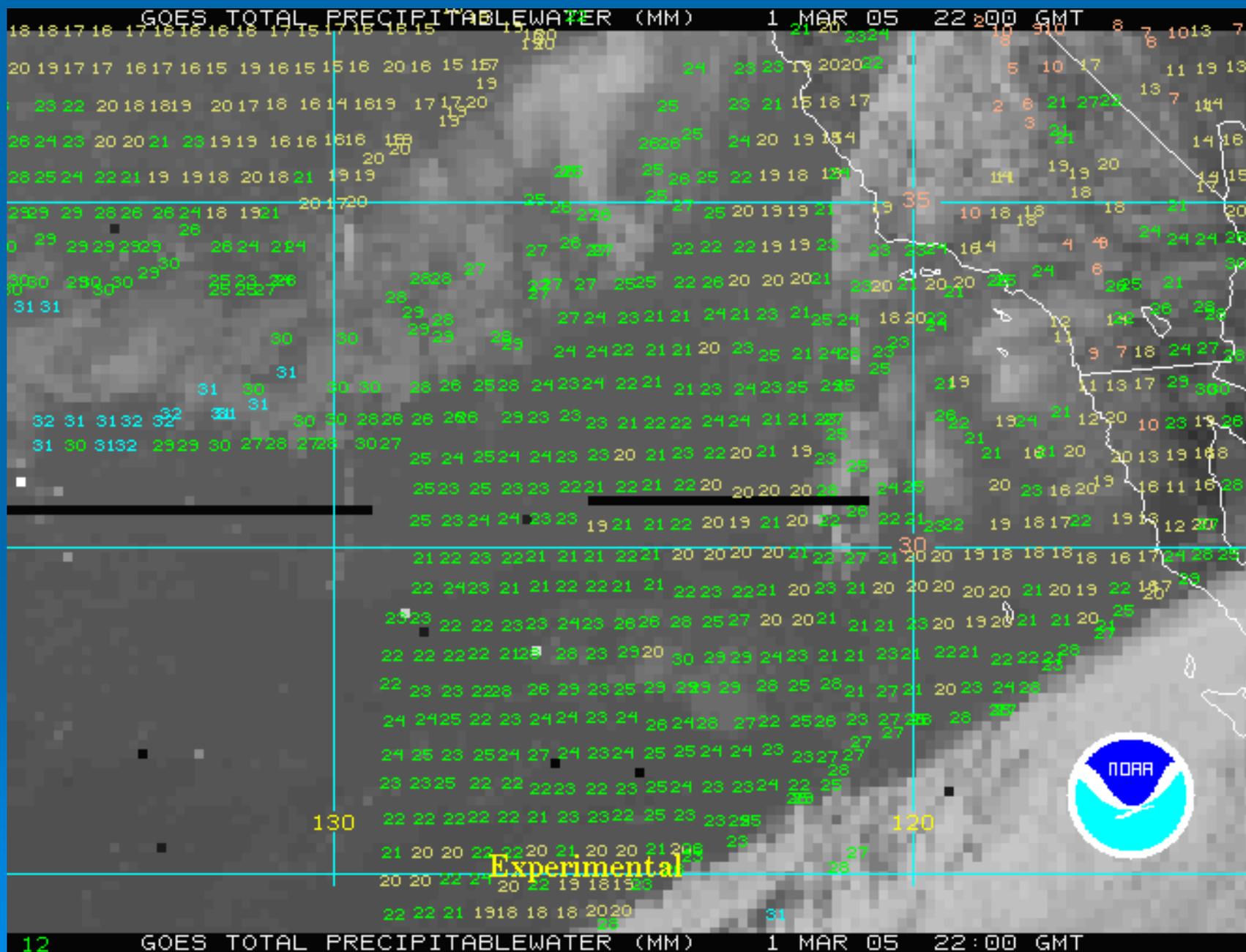
- Supplement to in-situ data:
  - Optimize spatial and temporal resolution
  - Fill in data gaps, esp. over oceans and mountains
  - Much work needed to determine optimal blend of remotely sensed and in situ data
- Applications for both observation (QPE) and forecasting (QPF)
- Broad range of available products:
  - Atmospheric Profiles
  - Atmospheric Water and Snow Information
  - Precipitation Estimates
  - Tropical Rainfall Potential (TRaP)



## GOES SOUNDINGS PRODUCTS DATA

<a href="#">Horizontal Soundings Fields</a>	TPW, LI, CAPE, and CINH fields. Full U.S., Pacific, and Regional displays
<a href="#">Archive of Soundings Fields</a>	24 hour archive of TPW, LI, CAPE, 850mb Temp, 700mb Temp, and 500mb Temp fields (for various regions)
<a href="#">Vertical Sounding Profiles</a>	Hourly Skew-T diagrams for over 450 sites across the U.S., Mexico, Caribbean, W Atlantic, E Pacific, and S Canada (including 24hr archive)
<a href="#">Vertical Profile Loops</a>	24 hour JAVA loops of Skew-T diagrams for all above mentioned 450 sites
<a href="#">Cross Sections</a>	Theta-E, Mixing Ratio, RH, and Wet Bulb cross sections for 18 selected pairs of end points
<a href="#">Cross Section Loops</a>	Theta-E, Mixing Ratio, RH, and Wet Bulb cross section loops for 18 selected pairs of end points
<a href="#">3-Hour Time Difference Fields</a>	TPW, LI, CAPE, and CINH fields showing 3 hour changes for various U.S. regional sectors
<a href="#">Derived Product Imagery (DPI)</a>	Images & Loops of various parameters derived from the GOES soundings.
<a href="#">PW Coverage and Adjustments</a>	Display showing latest GOES Soundings coverage with color coding showing GOES adjustments to first guess
<a href="#">Raw Soundings Files</a>	Binary format and McIDAS format Soundings data
<a href="#">Lake Effect Snow Support</a>	Hourly GOES Total Precipitable Water Estimates for Great Lakes Region (Seasonal)

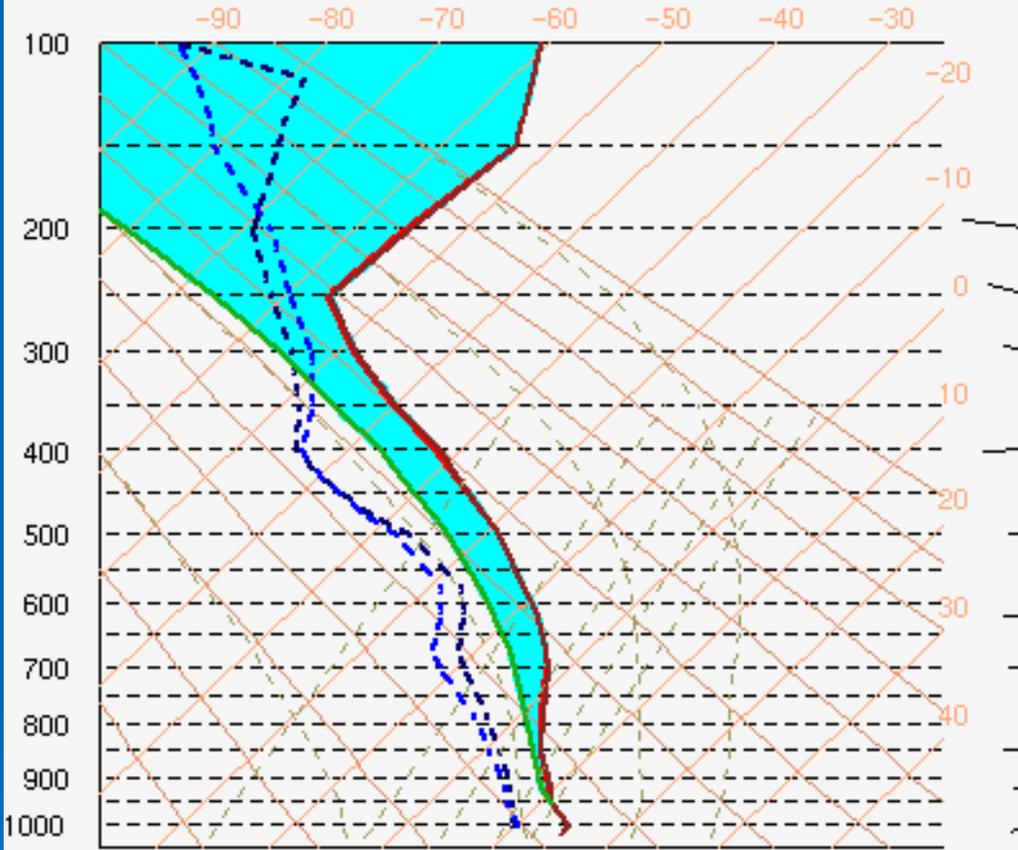
# Sample GOES-12 TPW off California Coast



# Sample GOES-12 Skew-T off California Coast

## 33N 122W

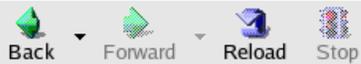
**33122**  
**1 MAR 05**  
**22GMT**



PARAM	GOES	AVN	Z	GOES PROFILE		
TIME=	2211	2211	Z	P<mb>	T<C>	TD<C>
ELEV=	0000	0000	m	1018	14	10
PARP=	0950	0950	mb	1000	14	09
PART=	11	11	C	950	11	07
PARD=	09	09	C	920	09	06
TSKN=	013		C	850	05	01
PW=	21	19	mm	780	02	-3
L.I.=	05	03	C	700	-2	-9
CAPE=	0000	0000	J/Kg	670	-4	-12
NCAP=	00	00	cm/s*s	620	-8	-14
MXHAIL=			cm	570	-12	-17
CINH=			J/Kg	500	-19	-27
K.I.=	18	15		475	-22	-32
TT=	44	44		430	-28	-40
SHOW=	05	05	C	400	-32	-45
SWEAT=	054			350	-40	-49
LR8-5=	C 06	06	C/km	300	-49	-54
CVT=	19	18	C	250	-56	-61
LCL=	0918	0922	mb	200	-55	-69
LFC=			mb	150	-54	-75
EL=			mb	135	-56	-76
ELT=			C	115	-58	-79
CCL=	0890	0896	mb	100	-61	-93
MCL=			mb			
-20C=	5790	5765	m			
15TH=	5508	5500	m			
87TH=	1565	1562	m			
FRZL=	2580	2561	m			
WBFR=	2089	1987	m			
TADV=	.04		C/Hr			
PCPT=	R	R				

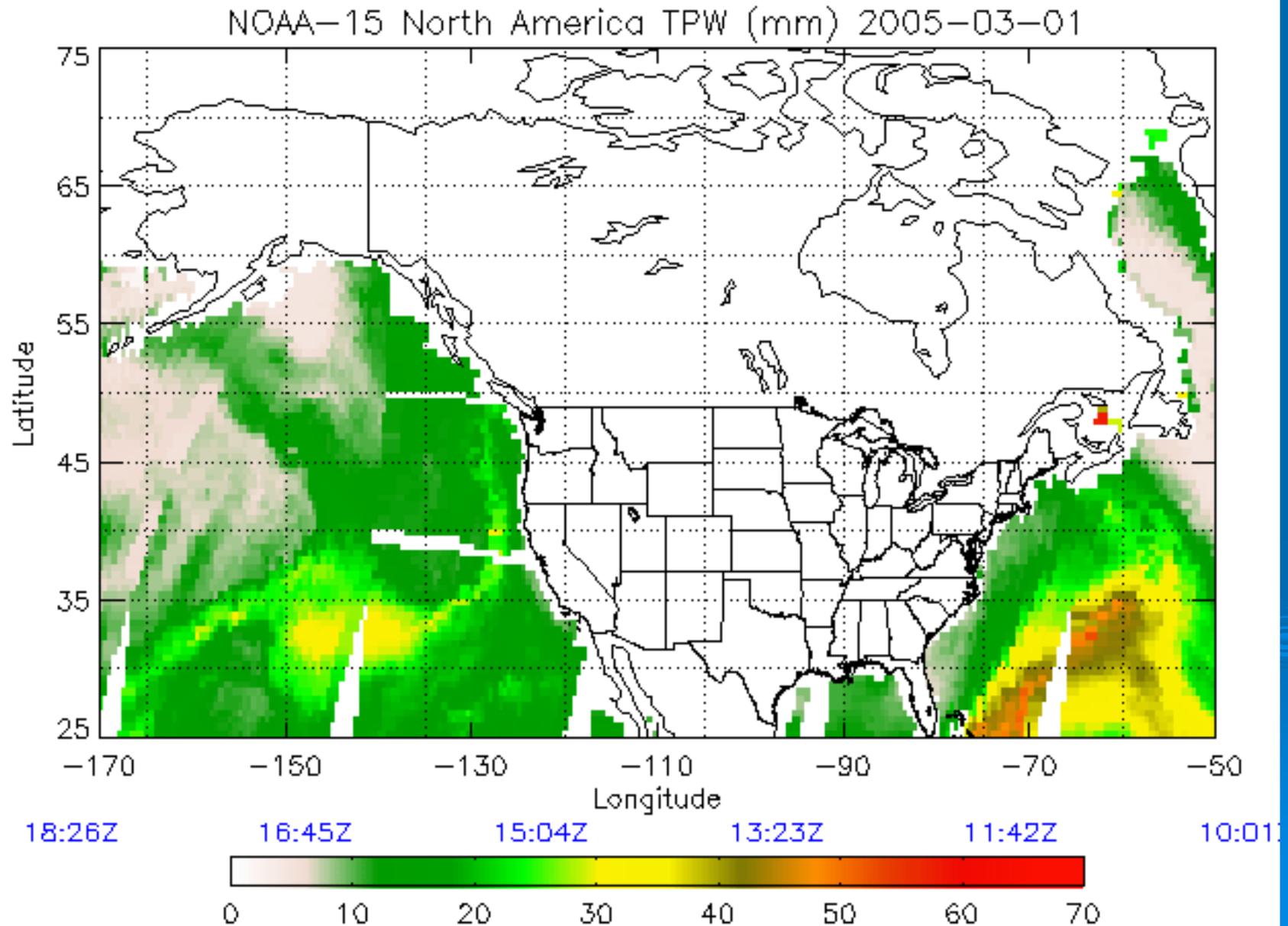
Sounding is 2 nm NE of station.

- GOES Temperature Profile
- Guess Temperature Profile
- GOES Dewpoint Profile
- Guess Dewpoint Profile
- GOES Parcel Profile
- Positive Area
- Negative Area



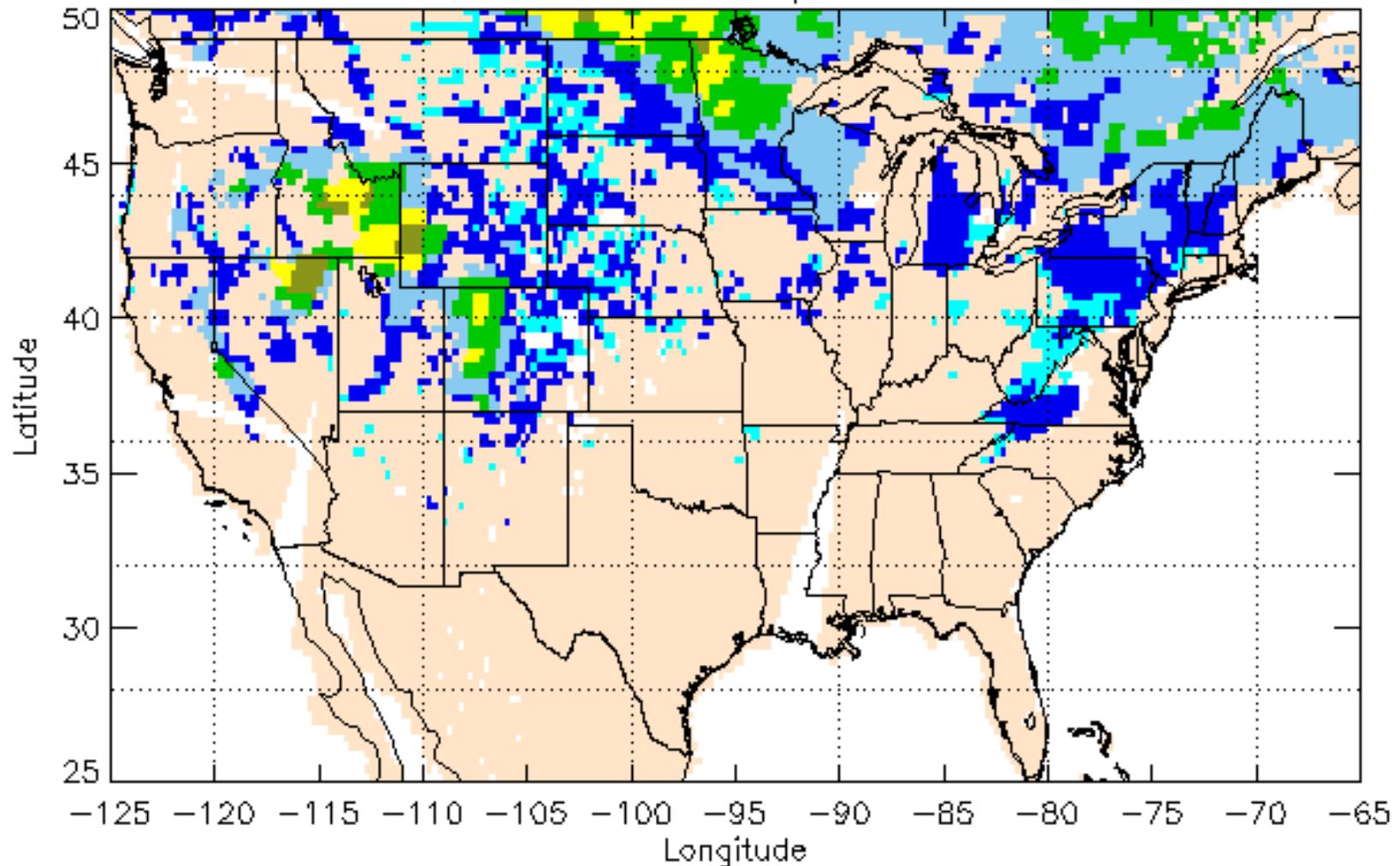
Global	North America	United States	Eurasia	West Atlantic	East Atlantic	Central Pacific	East Pacific
<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>	<a href="#">RR (Asc)</a>
<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>	<a href="#">RR (Des)</a>
<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>	<a href="#">IWP (Asc)</a>
<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>	<a href="#">IWP (Des)</a>
<a href="#">TPW (Asc)</a>	<a href="#">TPW (Asc)</a>	<a href="#">Snow (Asc)</a>	<a href="#">Snow (Asc)</a>	<a href="#">TPW (Asc)</a>	<a href="#">TPW (Asc)</a>	<a href="#">TPW (Asc)</a>	<a href="#">TPW (Asc)</a>
<a href="#">TPW (Des)</a>	<a href="#">TPW (Des)</a>	<a href="#">Snow (Des)</a>	<a href="#">Snow (Des)</a>	<a href="#">TPW (Des)</a>	<a href="#">TPW (Des)</a>	<a href="#">TPW (Des)</a>	<a href="#">TPW (Des)</a>
<a href="#">CLW (Asc)</a>	<a href="#">CLW (Asc)</a>	<a href="#">SWE (Asc)</a>	<a href="#">SWE (Asc)</a>	<a href="#">CLW (Asc)</a>	<a href="#">CLW (Asc)</a>	<a href="#">CLW (Asc)</a>	<a href="#">CLW (Asc)</a>
<a href="#">CLW (Des)</a>	<a href="#">CLW (Des)</a>	<a href="#">SWE (Des)</a>	<a href="#">SWE (Des)</a>	<a href="#">CLW (Des)</a>	<a href="#">CLW (Des)</a>	<a href="#">CLW (Des)</a>	<a href="#">CLW (Des)</a>
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<a href="#">Snow (Des)</a>	<a href="#">Snow (Des)</a>						
<a href="#">SWE (Asc)</a>	<a href="#">SWE (Asc)</a>						
<a href="#">SWE (Des)</a>	<a href="#">SWE (Des)</a>						
<a href="#">Slce (Asc)</a>							
<a href="#">Slce (Des)</a>							
<a href="#">Tsfc (Asc)</a>							
<a href="#">Tsfc (Des)</a>							
<a href="#">Em1 (Asc)</a>							
<a href="#">Em1 (Des)</a>							
<a href="#">Em2 (Asc)</a>							
<a href="#">Em2 (Des)</a>							
<a href="#">Em3 (Asc)</a>							
<a href="#">Em3 (Des)</a>							

# Sample NOAA-15 TPW



# Sample Experimental NOAA-15 SWE

NOAA-15 US Snow Water Equivalent 2005-03-01



15:08Z

13:27Z

11:46Z





## FLASH FLOOD HOME PAGE

**Hydro-  
Estimator**

**Hydro-  
Nowcaster**

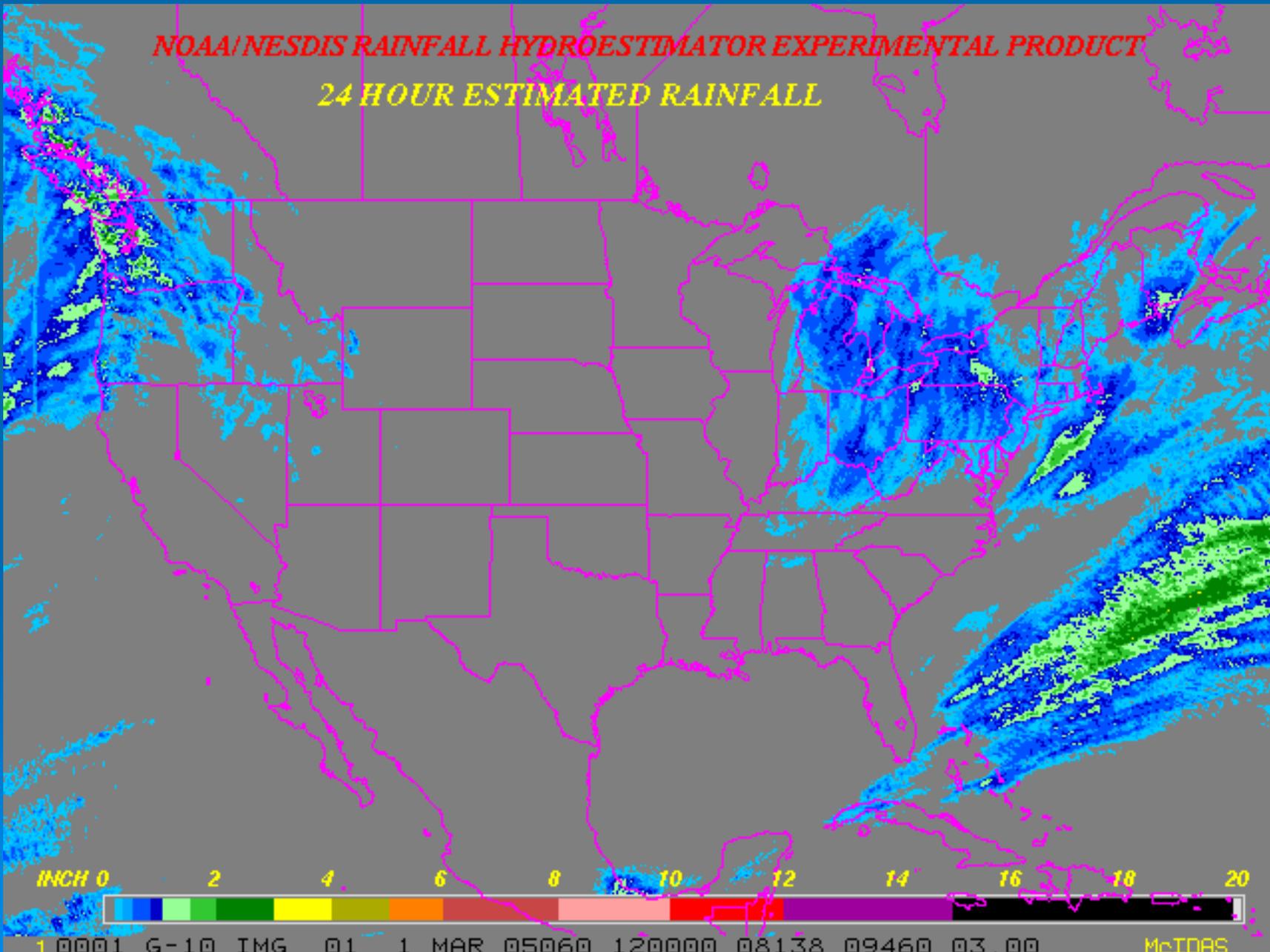
**Multispectral  
Precipitation  
Products**

**Blended  
IR/microwave  
Precipitation  
Products**

**Moisture  
Products**

**Validation**

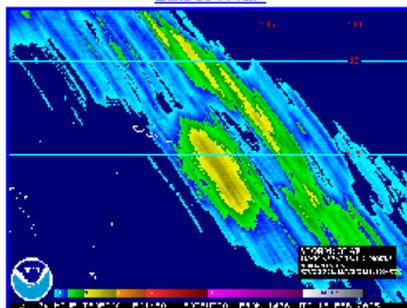
# Sample GOES-10/12 Hydro-Estimator



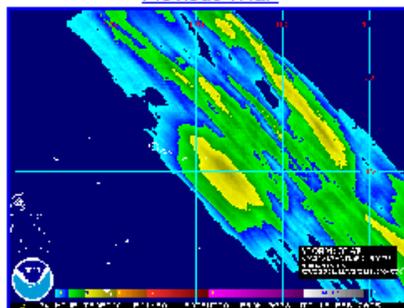
## SAB Areal Tropical Rainfall Potential

The [Satellite Analysis Branch \(SAB\)](#) of NOAA's [Satellites and Information Service](#) produces a graphical representation of the forecast Tropical Rainfall Potential (TRaP) for any tropical system in the Western Hemisphere and many in the Eastern Hemisphere. This is an objective analysis done by taking the latest microwave rain rate data from the Defense Meteorological Satellite Program's (DMSP) Special Sensor Microwave Imager (SSM/I), the NOAA Advanced Microwave Sounder Unit (AMSU), or the NASA Tropical Rainfall Measuring Mission (TRMM) Microwave Imager (TMI) and performing an extrapolation of the rain rate values based on the latest forecast track and speed of the storm. Rain Rates depicted below are areal averages on the order of 15 KM for AMSU, 13x15 KM for SSM/I, and 5 KM for TRMM (at nadir). Therefore, the rain rates may seem lower than what is intuitive for a tropical cyclone. Official forecast bulletins issued by NOAA's [National Center for Environmental Prediction \(NCEP\) Tropical Prediction Center \(TPC\)](#) and the National Weather Service [Central Pacific Hurricane Center](#) for the Western Hemisphere are used in the extrapolation. In addition to performing the extrapolations for Eastern Hemisphere storms using [Joint Typhoon Warning Center \(JTWC\)](#) forecasts of storm speed and direction, TRaPs are now generated using forecasts from the Regional Specialized Meteorological Centers (RSMC) of Tokyo, La Reunion, Perth, Darwin, Brisbane, and Nadi. This can be done for tropical cyclones of an intensity of 35 knots (T2.5 on the Dvorak classification scale) or greater. [Read about limitations](#) of the Microwave TRaP technique.

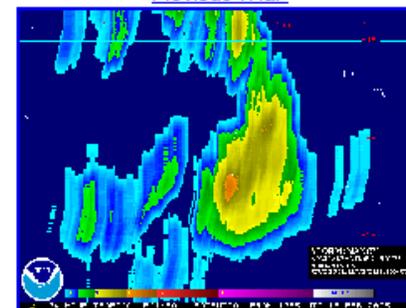
[Latest TRaP](#)



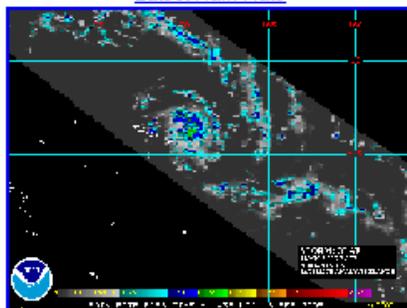
[Previous TRaP](#)



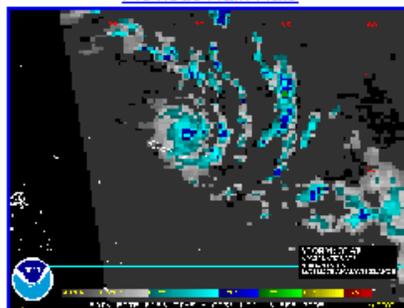
[Previous TRaP](#)



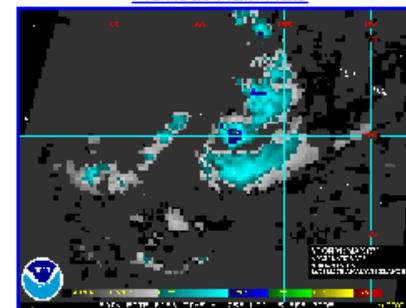
[Latest Rain Rate](#)



[Previous Rain Rate](#)



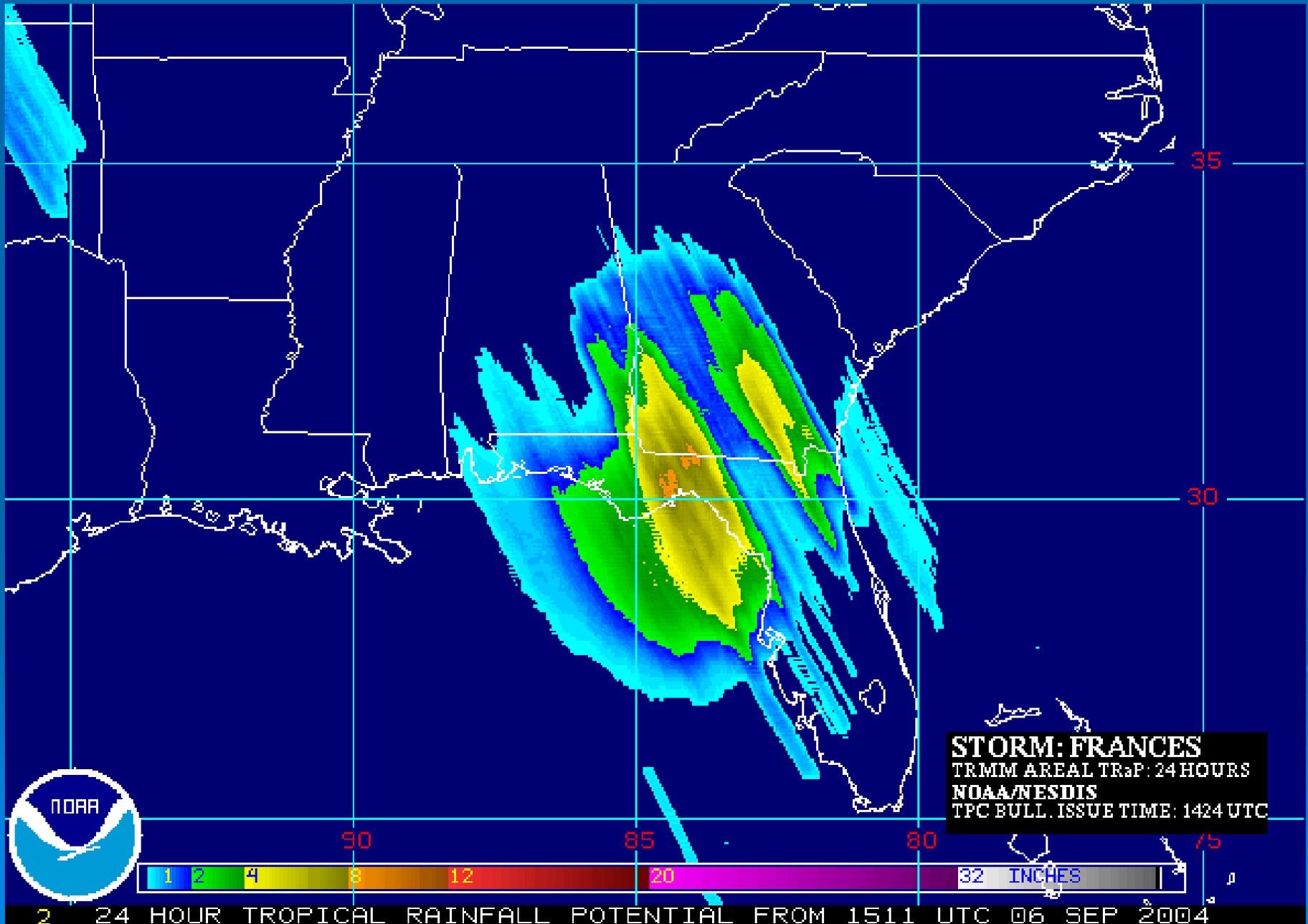
[Previous Rain Rate](#)



View [archived](#) Areal-TRaPs and Rain Rate images.

View [2003 Archived TRaPs](#) and Rain Rate Images.

# Sample TRMM-based TRaP



# ORA Interests: Validation and Algorithm Development

- Validation of Existing Products
  - Forecaster input is critical
- Development and Validation of New and/or Improved Products from New Instrument Platforms
  - NPOESS
  - GPM
  - GOES-R

# ORA Interests: User Applications

- ORA has traditionally had ties to operations (e.g., SAB) that have guided product development
- These ties are primarily national in scale
- Local collaborations to adjust / tailor and validate satellite-derived products would greatly enhance usefulness