



Deployment of New Satellite Products in AWIPS via TOWR-S RPM Version 22 (Feb 2022)

*Satellite Book Club presentation
Thursday, February 3, 2022*

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- Description of the TOWR-S RPM
- Overview of TOWR-S RPM Version 22
- RPM Installation Overview
- Post-Installation Steps



Description of the TOWR-S RPM

- *TOWR-S = Total Operational Weather Readiness - Satellites (a team supporting the NWS Office of Obs and GOES-R)*
- *RPM = RPM (or: Redhat) Package Manager, a way to bundle files for deployment on Linux systems*
- TOWR-S RPMs increase AWIPS' agility
 - Streamline deployment of new capabilities ahead of AWIPS baseline releases
 - Mature configurations are targeted for the AWIPS baseline
- TOWR-S RPM content is based on input from the user community -- e.g.,
 - Satellite product evaluations
 - Satellite Book Club presentations and discussions
- TOWR-S RPMs undergo end-to-end testing and early evaluation:
Many thanks to RPM v22 evaluators of content and instructions!
 - *Southern Region: ABQ, OHX*
 - *Eastern Region: CAE, LWX, PBZ, VUY*
 - *Western Region: MFR*
 - *Central Region: BCQ, IND*

RPM updates are also possible w/ the help of OCLO, OPGA, Regional focal points, APO, NCF, and OPPSD staff



Contents of a TOWR-S RPM

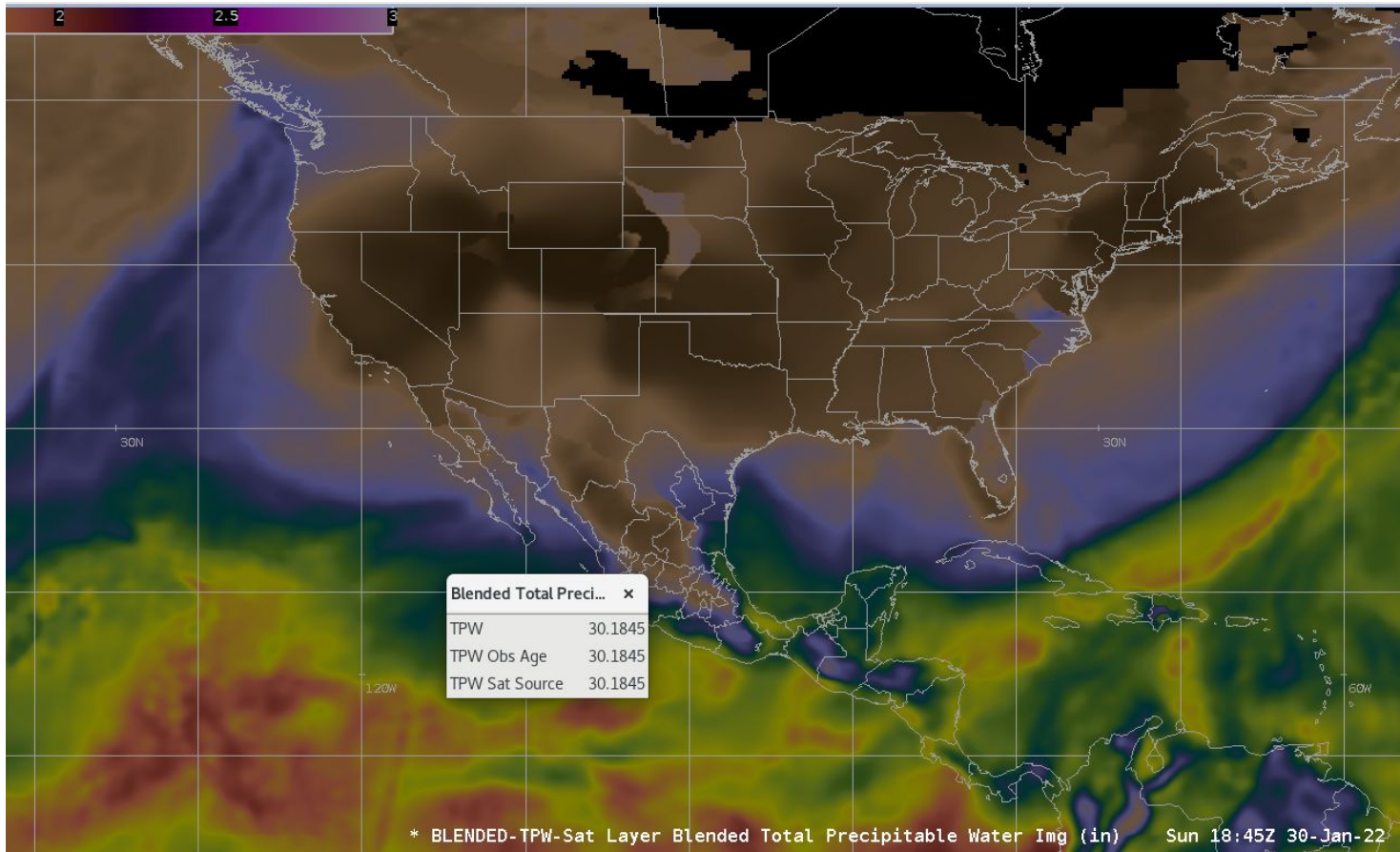
- New or modified configuration files:
 - EDEX configurations to route incoming products to specific plugins
 - CAVE configurations: modified menus, bundles, attributes, colormaps, or style rules
 - Plugin configurations to handle new data products
 - File types: *.xml, *.svg (vector graphics), *.py (derived parameters), *.cmap (color maps), *.txt (text files -- svg lookups, etc.)
- Installing a TOWR-S RPM adds or changes files only at the AWIPS site level. These override the baseline, but do not interfere with, or alter baseline AWIPS configs or code.
 - Files installed from the RPM populate only site-level sub-directories
 - Files installed from the RPM override their namesakes in the AWIPS baseline
- TOWR-S RPM updates are cumulative -- e.g., v22 includes content from v21
 - Installing an RPM may also remove content that is outdated or has become part of the AWIPS baseline



Readiness for a Change to Polar Blended Hydrology Products

An upstream product metadata change is planned

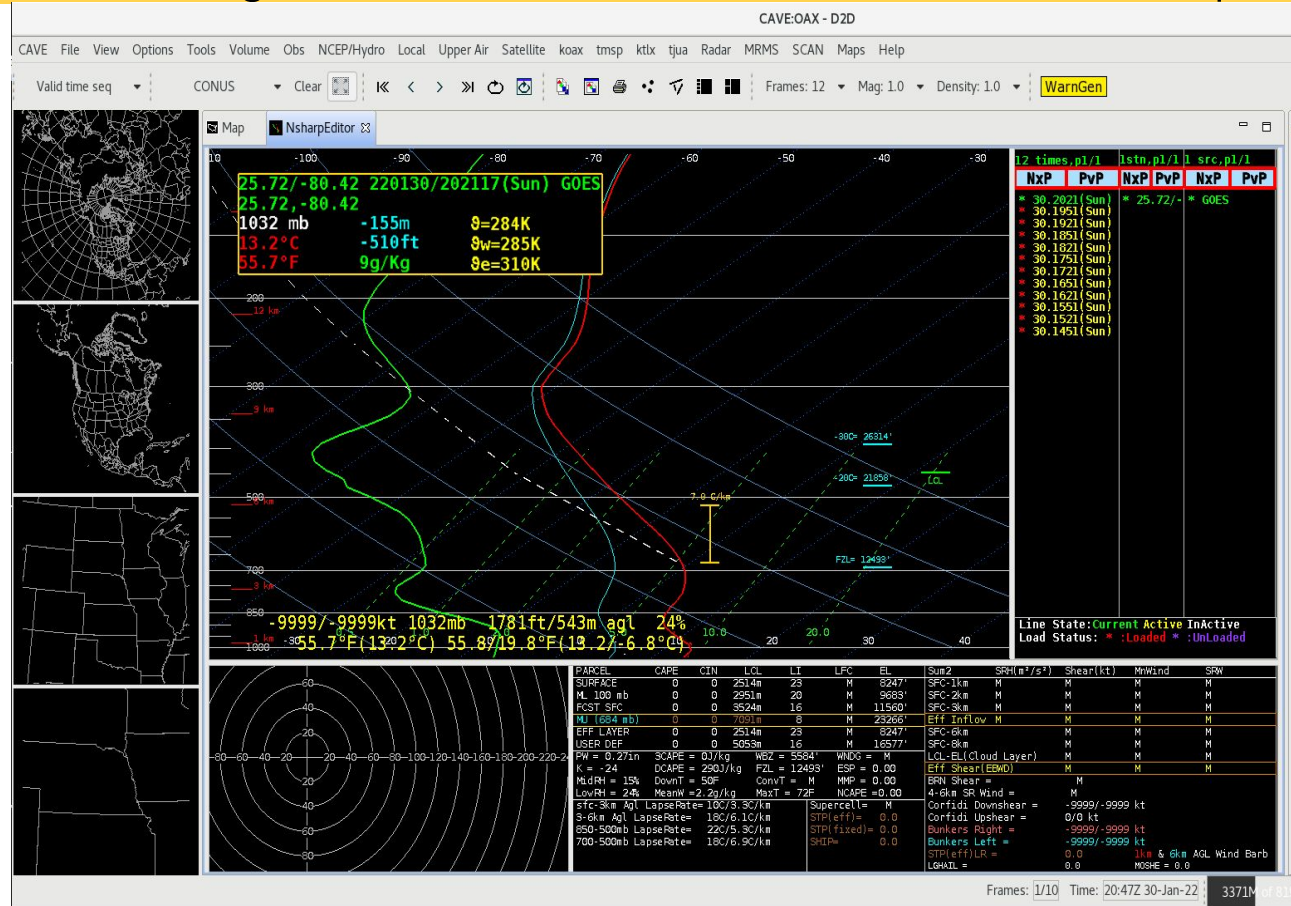
Requires change in edex ingest rule only.



Readiness for a Change to GOES Vertical Moisture and Temp Profiles

TOWR-S RPM v22 supports reduced level GOES vertical temp / moisture soundings from 101 to 34 levels

The new reduced version of these sounding products will be available over SBN in mid-March 2022



Feature of TOWR-S RPM v22: Legend Updates

- Updates GOES-R Imagery and Channel Difference style rules to include the sector in the legend:

* GOES-16 ECONUS CH-02-0.64um Sun 20:21Z 30-Jan-22

* GOES-16 ECONUS Split Window [10.3-12.3 um] Thu 19:01Z 27-Jan-22



GOES RGBs w/ Derived Product Values in Cursor Readouts

The screenshot displays a weather application interface with several key components:

- Satellite Menu:** A list of satellite products including GOES-East and GOES-West By Sector, Conus GOES-East and West, Visible (0.64 μm), Shortwave Window IR (3.90 μm), Mid-level Water Vapor (6.93 μm), and Clean Window IR (10.33 μm). It also includes Full Disk GLM and GOES-15 Imagery (Legacy).
- Local Menu Items:** A sub-menu containing 'GOES RGBs w/Derived Product Readouts', 'Conus GOES-East Total Precip Water', 'Conus GOES-West Total Precip Water', 'Conus GOES-East IFR Fog Probability', 'Conus GOES-West IFR Fog Probability', and 'Rocket Plume RGBs'.
- Cursor Readouts:** A central display showing derived product values:
 - GOES Rain Rate: 0.2 in/h
 - Cloud Top Phase: Ice
 - Cloud Top Height: 39841.7ft
 - TPW: NO DATA
 - 11.2 um IR: -60.7°C
 - 0.64 um Vis: 36.3%
 - 10.35 um IR: -59.3°C
- East Conus Menu:** A detailed menu for the East Conus region, listing various product combinations such as 'Day Cloud Phase Distinction RGB + Cloud Products', 'Nighttime Microphysics RGB + FLS Products', and 'Day Convection RGB + Cloud Products'.



Please join us next week at the SBC on February 10 2022, for a presentation by Bill Line featuring these new thematic menu items

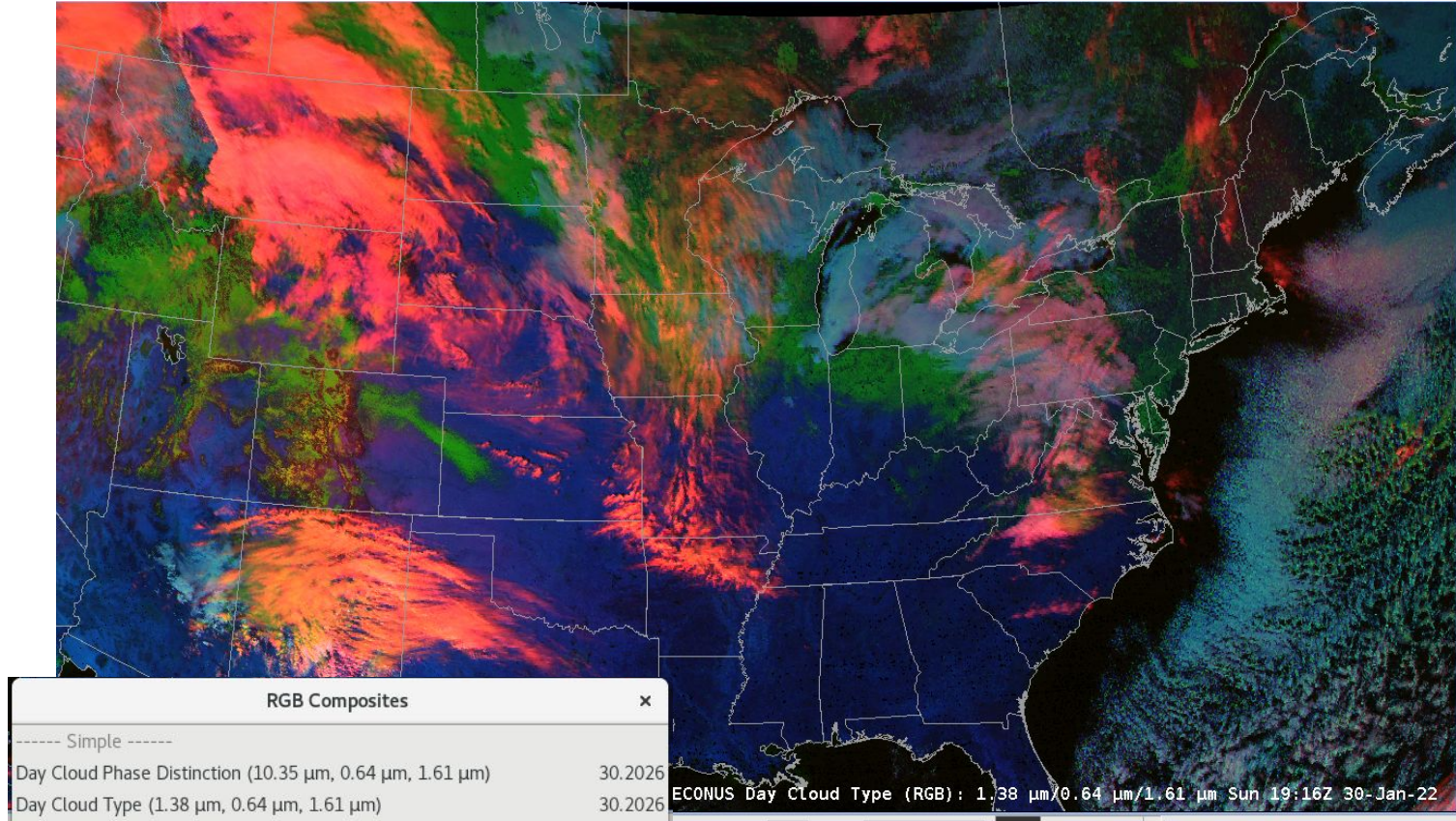
Thanks to Bill Line and Tim Schmit

GOES Cloud Type RGB

New RGB incorporating Band 4 (Cirrus NIR) to improve detection of thin cirrus

For more information [see this Vlab link](#) to Andy Heidinger's SBC presentation (or youTube link [here](#))

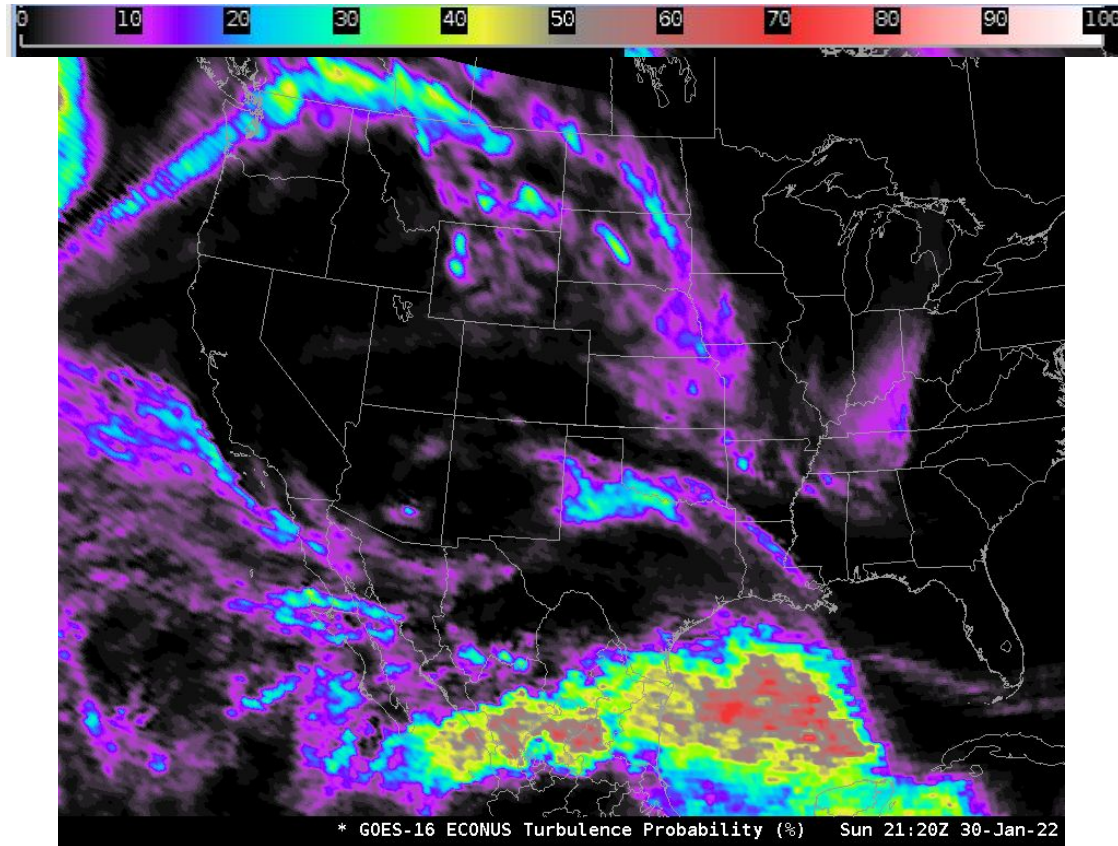
VLab Quick Guide [link here](#)



Thanks to Andy Heidinger and Scott Lindstrom

Updated Colormap for CIMSS Turbulence Probability

Updates colormap to mask Turbulence Probability values under 5%.

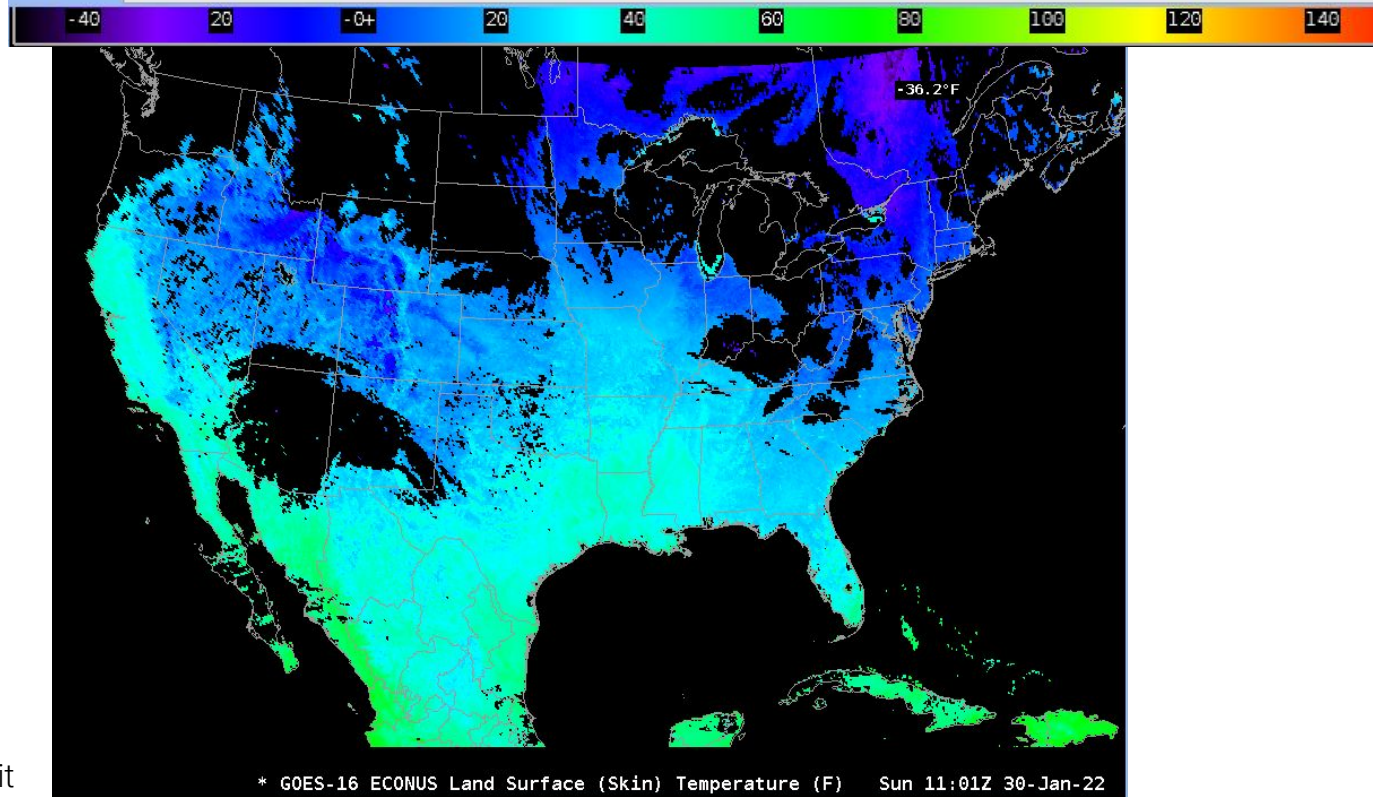


Courtesy of Derek Van Pelt.

CWSU-developer technical interchanges led by Sean Campbell, CWSU ZDC

Range Change for GOES-R Land Surface Temperature

- Updates GOES-R Land Surface Temperature Min/Max display range to capture broader range of temperatures, especially colder temperatures



Gridded NUCAPS Updates

Precipitable Water now in units of inches

2-m Temp is in degF

Adds 3-layer Haines Index (previously one layer)

The screenshot shows the TOWR-S RPM software interface with several data panels open over a map of the United States. The 'Gridded NUCAPS' panel is highlighted with a blue box and contains the following data:

Gridded NUCAPS	
----- Level/Layer Products -----	
Temperature	
Dewpoint Temperature	
Dewpoint Depression	
Relative Humidity	
Lapse Rate	
Theta-E	
Theta-E Lapse Rate	
Precipitable Water	
----- Single Level Products -----	
Temperature 2m	15.1700
Relative Humidity 2m	15.1700
Ozone Anomaly	15.1700
Total Ozone	15.1700
Tropopause Level	15.1700
Haines Index	
Quality Control	15.1700

The 'Haines Index' panel is also highlighted with a blue box and contains the following data:

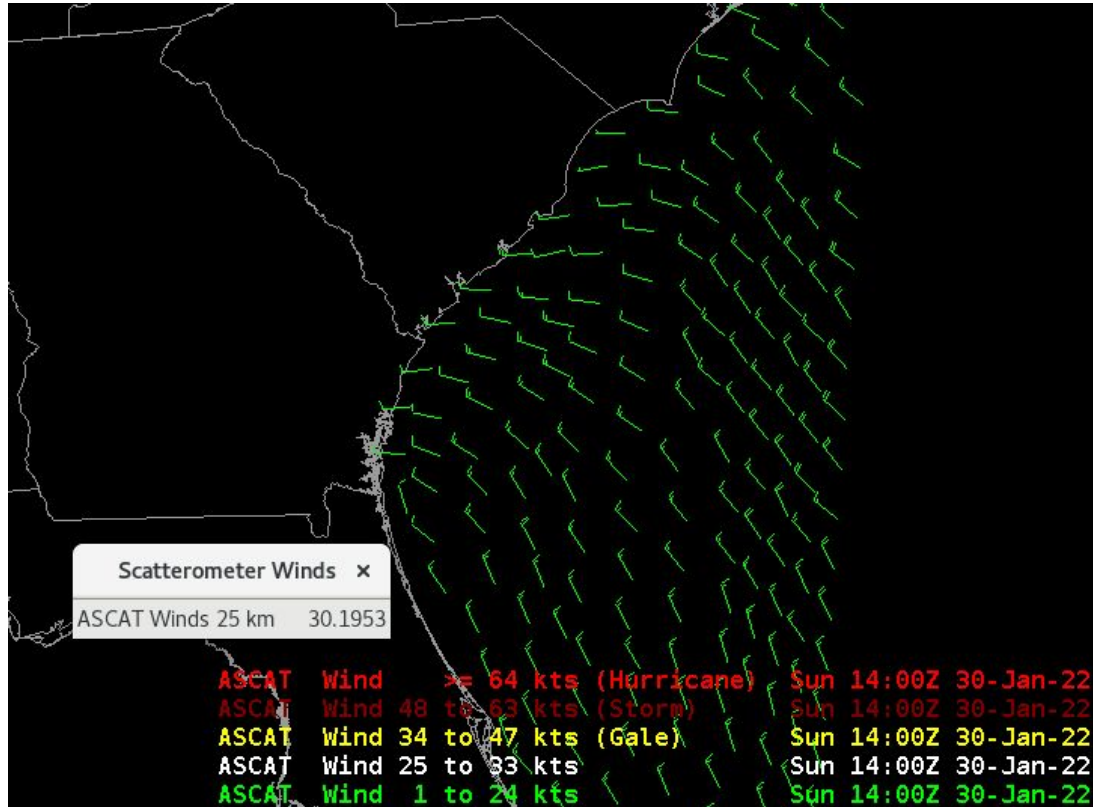
Haines Index	
Haines Index Low (950-850 mb)	15.1700
Haines Index Middle (850-700 mb)	15.1700
Haines Index High (700-500 mb)	15.1700

Thanks to Kris White of WFO HUN and the NASA SPoRT Team



New ASCAT Wind Category

- Updates ASCAT-B colormap to include a 25-33 Knot category



Thanks to Michael Stroz of the CHS WFO

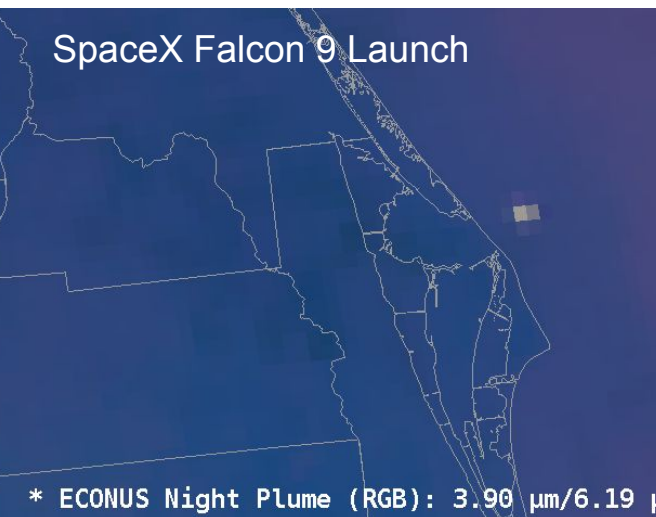


GOES-R Rocket Plume RGBs

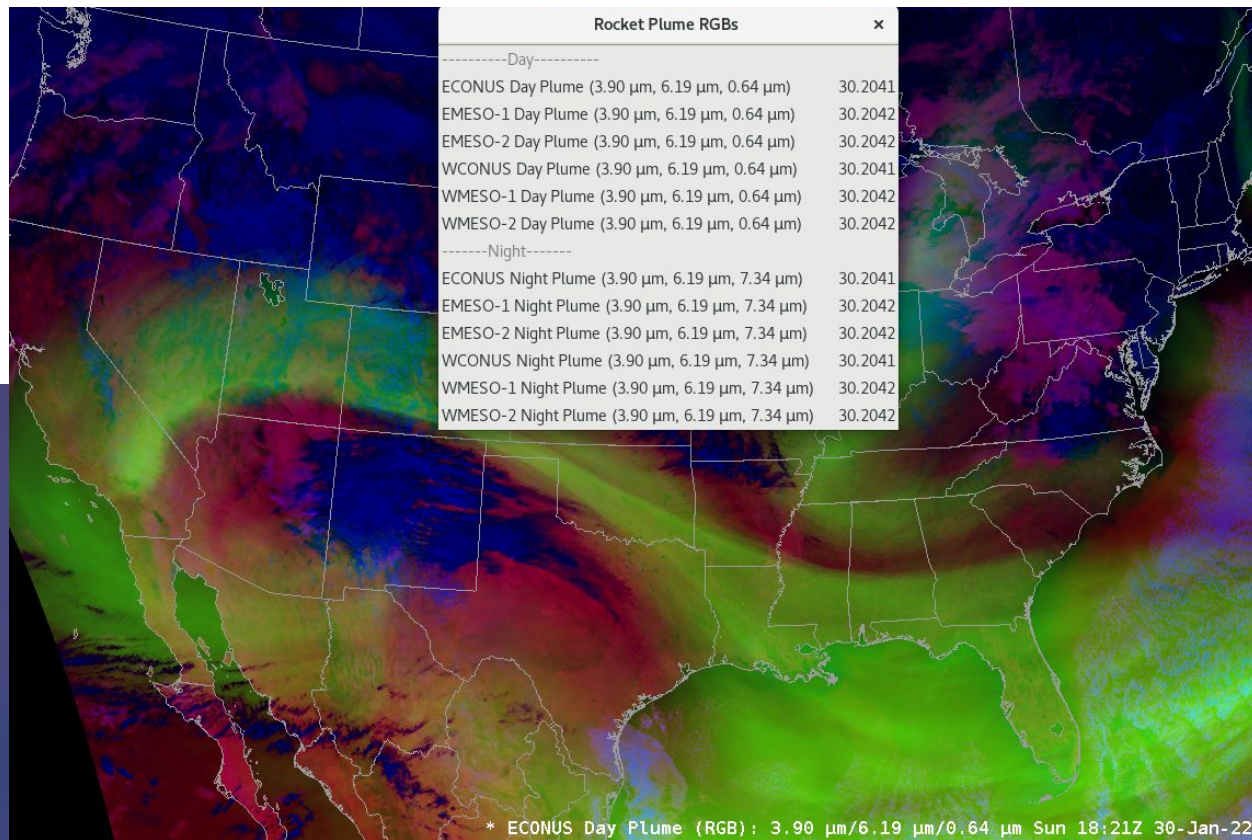
New RGB in Local Options to detect rocket exhaust plumes

VLab Quick Guides: [Day Plume](#) and [Night Plume](#) menu buttons

SpaceX Falcon 9 Launch



* ECONUS Night Plume (RGB): 3.90 μm /6.19 μm /7.34 μm Mon 23:11Z 31-Jan-22



* ECONUS Day Plume (RGB): 3.90 μm /6.19 μm /0.64 μm Sun 18:21Z 30-Jan-22

Thanks to Tim Schmit, Tim Garner, Bill Line, Scott Lindstrom

Other Changes in TOWR-S RPM v22

- **Removes** a number of GOES-R RGB and derived product bundle configurations which have been baselined
- **Removes** three satellite colormaps which have been baselined
 - NDVI, nrlcirorain_swaths, and Beaufort_Winds
- **Removes** a number of GOES derived parameter definitions and functions which have been baselined, including the GOES-R Sandwich RGB
- **Removes** Polar Blended Hydro (TPW/Rain Rate) configurations which have been baselined
 - Exception: retains edex ingest configurations to reflect a forthcoming change to product attributes (*see earlier slide*)
- **Removes** GOES East-West Conus derived motion wind combo menu button
- **Removes** a geographic filter for products storing the derived motion wind (DMW) table (see back-up slide and install instructions for more information)



Data product configs retained from TOWR-S RPM v21

- GLM Flash Extent Density, Min Flash Area, Total Optical Energy ([Regional LDM](#))
- GOES-R Turbulence Probability for CONUS/PACUS sectors ([Regional LDM](#))
- GOES Fire Hotspot Meso Sectors. Fire Mask all sectors ([SBN](#). West Meso also on [Regional LDM](#))
- GOES CIRA Geocolor ingest and menu/display configuration ([Via preprocessor App](#). In work)
- GOES Fog and Low Stratus ingest and menu/display configuration ([SBN](#))
- 5-Sat Geostationary Composite ingest and menu/display configuration ([SBN](#))
- VIIRS Active Fires products from S-NPP and NOAA-20 ([Regional LDM](#). I-band update in-work)
- GCOM AMSR-2 Ocean Surface Winds and 36.5/89.5 GHz (Microwave) Imagery ([Data Delivery](#))
- ATMS MiRS products from NOAA-20 ([Data Delivery](#))
 - Total Precipitable Water, Rain Rate, Sea Ice Concentration, Snowfall Rate, Cloud Liquid Water, Snow Water Equivalent, Snow cover, Skin Temp

For more on the previous RPM (v21), see May '21 SBC [presentation](#) slides, and [recording](#) on VLab (or youTube [link](#))



TOWR-S RPM Installation overview

Steps for making Updates:

1. Uninstall any previous TOWR-S RPM

<https://vlab.noaa.gov/web/towr-s/rpm/installation-instructions>

2. Install the new TOWR-S RPM

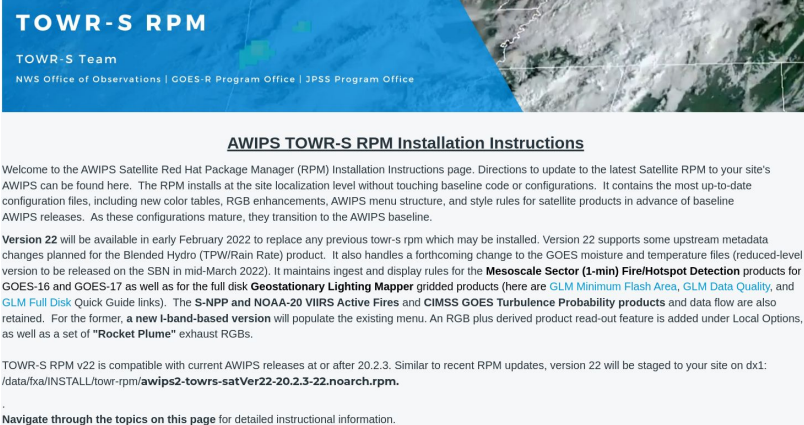
<https://vlab.noaa.gov/web/towr-s/rpm/installation-instructions>

- ~~3. Update LDM configuration (e.g. pqact.conf.xyz)~~

~~<https://vlab.noaa.gov/web/towr-s/rpm/site-preparation-guide>~~

No new site updates are required for v22. The Site Prep Guide contains instructions for previous updates.

TOWR-S RPM v22 will be available on Tuesday, Feb 8th, 2022



TOWR-S RPM
TOWR-S Team
NWS Office of Observations | GOES-R Program Office | JPSS Program Office

AWIPS TOWR-S RPM Installation Instructions

Welcome to the AWIPS Satellite Red Hat Package Manager (RPM) Installation Instructions page. Directions to update to the latest Satellite RPM to your site's AWIPS can be found here. The RPM installs at the site localization level without touching baseline code or configurations. It contains the most up-to-date configuration files, including new color tables, RGB enhancements, AWIPS menu structure, and style rules for satellite products in advance of baseline AWIPS releases. As these configurations mature, they transition to the AWIPS baseline.

Version 22 will be available in early February 2022 to replace any previous towr-s rpm which may be installed. Version 22 supports some upstream metadata changes planned for the Blended Hydro (TPW/Rain Rate) product. It also handles a forthcoming change to the GOES moisture and temperature files (reduced-level version to be released on the SBN in mid-March 2022). It maintains ingest and display rules for the **Mesoscale Sector (1-min) Fire/Hotspot Detection products** for GOES-16 and GOES-17 as well as for the full disk **Geostationary Lighting Mapper** gridded products (here are [GLM Minimum Flash Area](#), [GLM Data Quality](#), and [GLM Full Disk](#) Quick Guide links). The **S-NPP** and **NOAA-20 VIIRS Active Fires** and **CIMSS GOES Turbulence Probability** products and data flow are also retained. For the former, a **new I-band-based version** will populate the existing menu. An RGB plus derived product read-out feature is added under Local Options, as well as a set of **"Rocket Plume"** exhaust RGBs.

TOWR-S RPM v22 is compatible with current AWIPS releases at or after 20.2.3. Similar to recent RPM updates, version 22 will be staged to your site on dx1: /data/xa/INSTALL/towr-rpm/awips2-towrs-satVer22-20.2.3-22.noarch.rpm.

Navigate through the topics on this page for detailed instructional information.



- After restarting EDEX and CAVE, check for new menu items in CAVE
<https://vlab.noaa.gov/web/towr-s/rpm/installation-instructions>
(See “II. Instructions: Ensuring Satellite Products Ingest and Display in CAVE”)
- In CAVE, some check that data products are displaying include:
 - Satellite -> GOES-East and GOES-West By Sector -> East Conus -> Channel Differences -> Split Window (Make sure ECONUS appears in the legend) (new)
 - Satellite -> GOES-East 5min GLM Flash Extent Density (*continuity*)
 - Satellite -> S-NPP and NOAA-20 -> Gridded Nucaps -> Haines Index (Should show 3 layers) (new)
- Please reach out to the TOWR-S Team for assistance



Additional / Optional Configurations

I. Installation Instructions
II. Instructions: Ensuring Satellite Products Ingest and Display
III. FAQs and Known Issues
IV. GLM Troubleshooting
V. Instructions to Activate the Geostationary Scales provided in the RPM
VI. Site Procedures/Perspectives
VII. Purge Rule Information

From <https://vlab.noaa.gov/web/towr-s/rpm/installation-instructions>



For further information or assistance:

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Also in the tow-r-s room on NWS Chat:
<https://nwschat.weather.gov/live>





Removal of Derived Motion Wind (DMW) Plugin Filters config.

- *v22 no longer includes a site configuration to tailor DMW coverage (dmw_filters.xml)*
 - Previous TOWR-S RPMs overwrote existing site versions of the same file
 - This file can set geographic filter to products assigned to the derived motion winds (DMW) database table, keeping only specific records in a bounding Lat/Lon range
 - The baseline file does not activate any geographic filtering
 - v21 and earlier applied a filter to keep records ranging 2S-75N Lat & 180 to 30W Lon
 - Many sites already customize this file for their CWA to further limit DMW record storage
 - **Caution:** during the v21 de-installation process, this file gets removed because it was a feature of v21. We advise sites to back up this file prior to removing v21. After installing v22, copy it back to the plugin-filters dir and bounce edex to retain existing filter rules
 - See dx1: /common_static/site/<site>/plugin-filters/dmw_filters.xml
 - More details are provided in the [TOWR-S RPM installation instructions](#)



Legacy GOES-15 Menu Items (retained in v22)

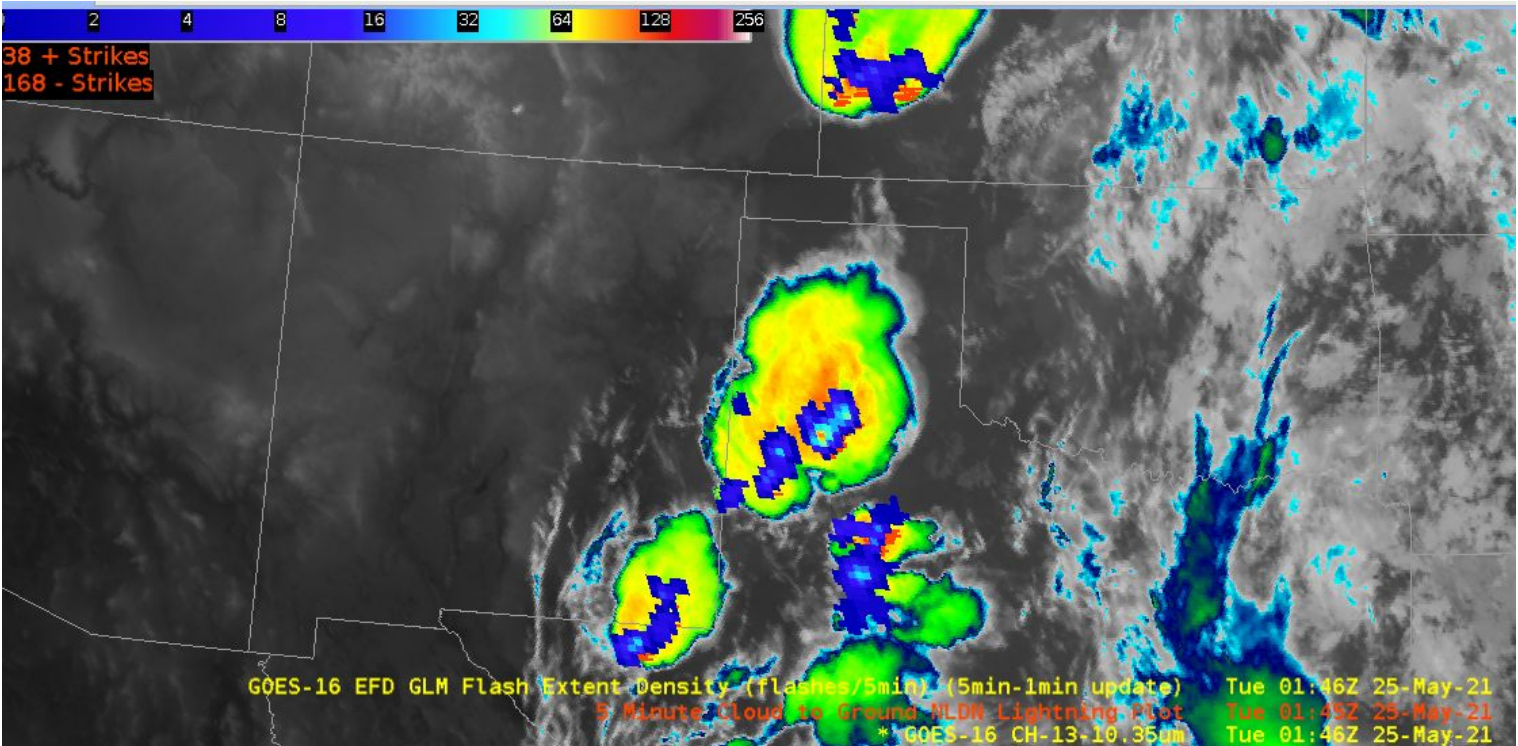
The screenshot displays the CAVE software interface. The menu bar includes: CAVE, File, View, Options, Tools, Volume, Obs, NCEP/Hydro, Local, Upper Air, Satellite, koax, tmsp, ktlx, tjua, Radar, MRMS, SCAN, Maps, Help. The toolbar shows navigation and display controls, including a 'WarnGen' button. The main window displays a satellite map of the CONUS region. The 'Satellite' menu is open, listing various satellite products. The 'GOES-15 Imagery (Legacy)' menu item is highlighted with a blue box. Other visible menu items include 'GOES-East and GOES-West By Sector', 'CIRA Geocolour', 'Visible (0.64 µm)', 'Shortwave Window IR (3.90 µm)', 'Mid-level Water Vapor (6.93 µm)', 'Clean Window IR (10.33 µm)', 'Full Disk GLM', 'GOES-East 5min GLM Flash Extent Density', 'GOES-West 5min GLM Flash Extent Density', 'Local Menu Items', 'S-NPP and NOAA-20', 'Polar Derived Products Imagery', 'Derived Products Plots', 'OCONUS Imagery', and 'Global 5 Sat Composites'. The 'GOES-15 Imagery (Legacy)' sub-menu is also visible, listing: 'Conus GOES-16 with GOES-15', 'Sounder Imagery (Legacy)', 'IR Window', 'Water Vapor', 'Visible', '3.9u', '13u', '11u-3.9u', '11u-13u', 'WV/IR', and '4 panel (GOES M-Q)'. Other floating windows show data for 'Conus GOES-16', 'Sounder Imagery (Legacy)', 'N. Atlantic and Gulf o...', and 'N. Pacific'.

Item	Value
Conus GOES-16 with GOES-15	
Sounder Imagery (Legacy)	
IR Window	---
Water Vapor	---
Visible	---
3.9u	---
13u	---
11u-3.9u	---
11u-13u	---
WV/IR	---
4 panel (GOES M-Q)	---



Available
on regional
LDM

Replaced
Conus /
Pacus GLM
in Jan '21



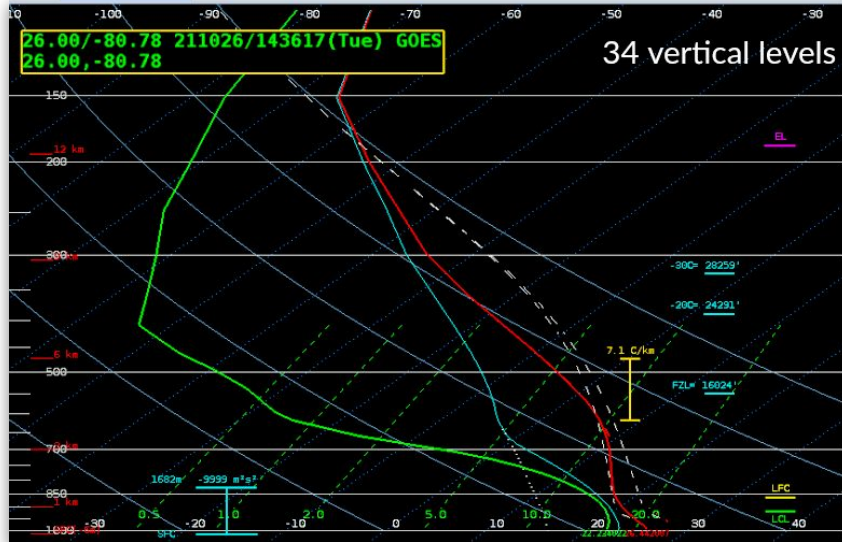
Links: [GLM Quick Guide](#). SBC Presentations by [S. Cobb/J. Patton](#), and [Jason Jordan](#)



Readiness for a Change to GOES Vertical Moisture and Temp Profiles

TOWR-S RPM v22 supports reduced level GOES vertical temp / moisture soundings from 101 to 34 levels

A new reduced version of the products will be available over SBN in mid-March 2022



h/t Lee Byerle

