MODEL ANALYSES AND GUIDANCE (MAG) WEB APPLICATION

MAG User's Manual

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Prepared by: Systems Integration Branch/Software Development Team NCEP Central Operations NOAA

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Introduction

The Model Analysis and Guidance website displays GIF (Graphical Interchange Format) images of the output of NCEP's weather prediction models; observational data in the form of SKEW-T and station plots; output from the Real Time Data Analysis model and hurricane model information when storms are active.

The application runs in two environments:

- 1) The Weather and Climate Operational Supercomputer System (WCOSS) to consume gridded model data and produce images.
- 2) A public facing Web Server farm where web navigation code provides an organized interface to the data and a set of bookmark able URLs that customers can use to directly access the latest images.

The Model Analyses and Guidance (MAG) website is available at http://mag.ncep.noaa.gov

MAG home page

The MAG website's Home page presents the user with the choice of three categories:

- **Model Guidance**: Provides a path to view products created from the National Weather Service's (NWS) numerical model output including regional and global models.
- Observations and Analyses: Provides a path to view the Real-Time Mesoscale Analysis (RTMA) products, Upper Air(UAIR) Height Plots, and Upper Air Sounding Plots (Skew T plots)
- **Tropical Guidance**: Provides a path to view products created by the National Weather Service's Tropical Cyclone models. These products are only available when tropical cyclones that meet stated criteria are active in the Atlantic or Pacific areas.

Site users can obtain a description for each category by hovering the mouse pointer over each selection. A text window appears further describing each category.

The world map graphic displays a rectangle around each geographic area selected in the Model Guidance and Observations and Analyses pages. When a user clicks on the map, at the home page, a text box appears alerting the user to "Select Model Guidance, Observations and Analyses, or Tropical Guidance".

Users can access the following information by clicking the links below the world map or expanding the Website Information menu at the top right of the main page:

- Upcoming Changes A list of changes, improvements and fixes to the site. These are most often derived from requests and inquiries from our user community.
- Users Guide This document.
- Frequently Asked Questions A list of questions from our user community where issues are encountered that are outside the control of the web application programmer. These may be related to system configuration tips, or required software and browser plug-ins to quirks we have noted or that have been reported with a particular browser model or version.
- Product Description Document A document describing the models themselves and the products, the combination of meteorological fields that comprise each product, and the geographic areas covered by each model.

A schedule of proposed changes and the latest news are available by clicking the link: "Check here for the latest news" near the top of the page, below the page title.

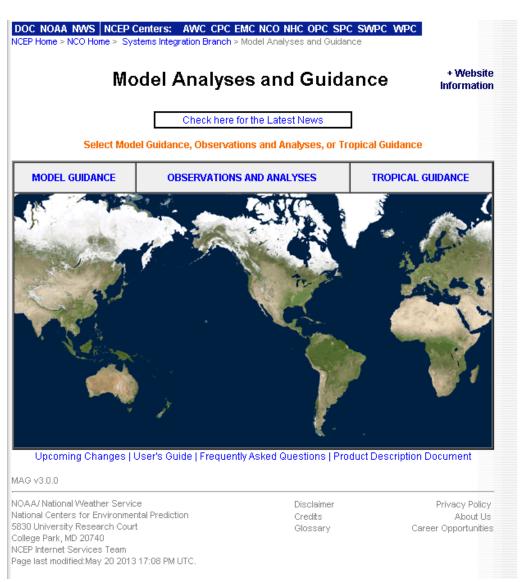


Figure 1: MAG home page

Model Guidance Page

The user arrives at this page by clicking on the 'Model Guidance' category from the home page. (See Figure 1)

- 1. Select the model name of choice from the model list
- 2. Select the model type or model area of interest from the appropriate list
 - o If the Model Type is selected first the interface highlights the model areas available for a selected model in red. All other regions are un-selectable and gray.
 - o If the region is selected first, then the models available for the selected region are highlighted in red while all other models are un-selectable and gray.
- 3. The map below the Model Type and Area lists will show an approximate size and location of the area selected.
- 4. Click the button 'Reset Selection' to reset choices made in the Model Area or Model Type lists.
- 5. Click the 'Back' button to go back one page.
- 6. Click the 'Home' to return to the home page.
- 7. To get a brief description of any of the models/regions, hover over the mode/region names, and a tool tip will appear with a description.

After the user has made the selection for Model and Region, the Parameter page (see Figure 3) for the chosen model/region is displayed.

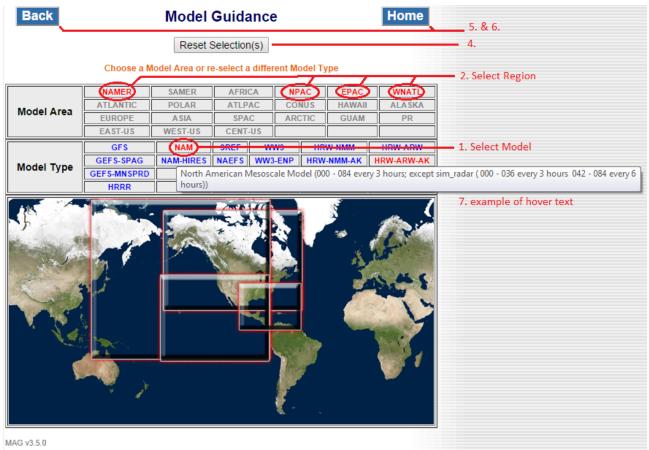


Figure 2: Model Guidance page

Model Guidance Parameter Page

The user is presented with the parameter page after the Model and Region are chosen from the Model Guidance page.

The Parameter Page presents the user with

- The parameter names available for a selected Model and Region.
- The available model cycles. Note: the cycles are displayed with the latest cycle as the default and is displayed on the right most cell and is highlighted in white
- The available forecast hours and animations (loops) for days or over the entire forecast period once a parameter is selected.

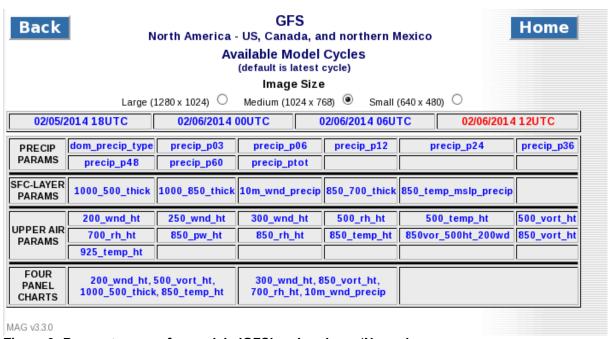


Figure 3: Parameter page for model ='GFS' and region = 'Namer'

Once a specific parameter is chosen forecast guidance time interval and animation options are shown.

Note: Forecast guidance intervals that are not available are not selectable. In most browsers an available time will appear blue and will be "clickable" with the mouse. Objects that are black static text are either unavailable for that product or not available yet because the model is currently running and has not competed.

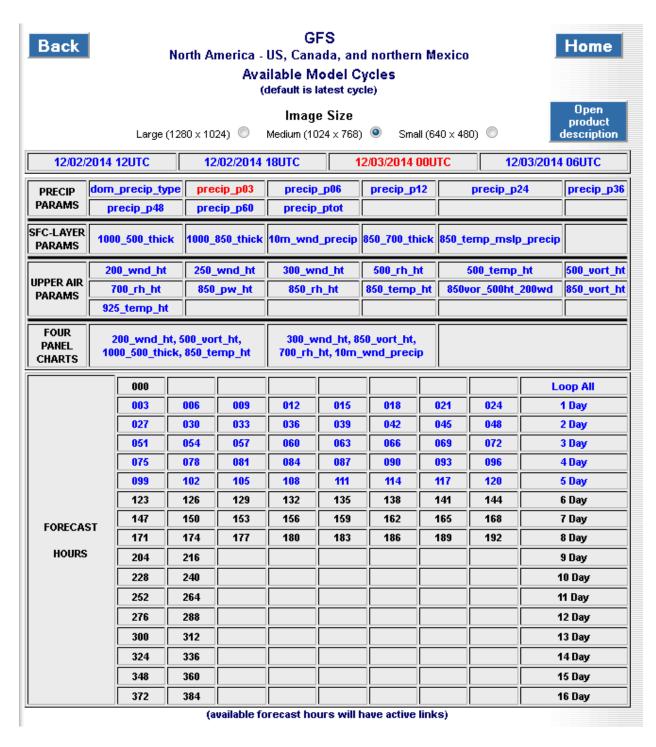
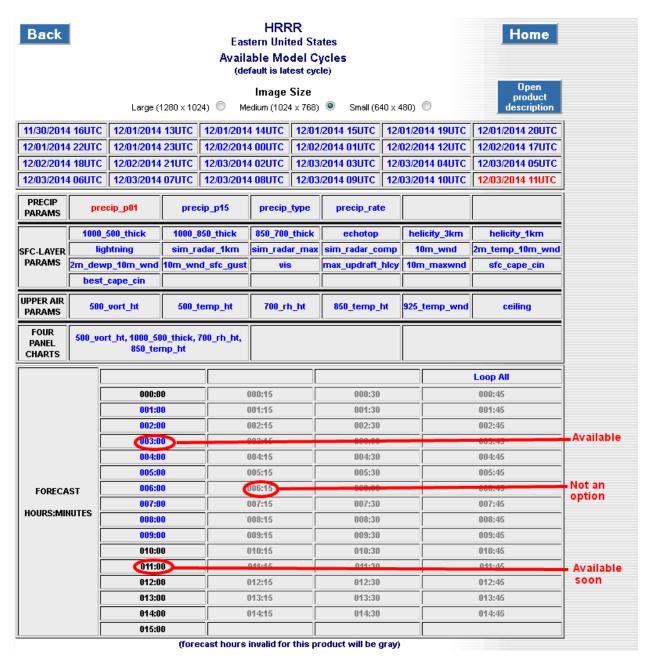


Figure 4: Parameter page with available forecast hours & loops (once parameter is chosen)

New Product Availability Display Technique

Beginning with the High Resolution Rapid Refresh (HRRR) and transitioning to other models as development time permits; Blue (hypertext) links mean the product is available. Black means the product will become available as the model runs to completion. Gray means this time is not available for this product.

This was changed because the HRRR has some products that are available sub-hourly (i.e. at 15 minute intervals) and some products are only available at hourly intervals. This change in the way image selection possibilities are presented is meant to help customers more easily identify available products and available forecast guidance times.



Recap of the process for choosing & displaying Model Guidance Products

To view the graphics for any parameter:

- Select the
 - 1. parameter name
 - 2. model cycle
 - 3. forecast hour or loop option
- Once these selections have been made, the chosen graphic or loop is displayed.
- Loops (animations) are presented using a JavaScript based animation page that loops through all the images for all forecast hours as shown in Figure 6.
- If a distinct forecast hour is chosen, the user is shown a gif image as seen in Figure 5.

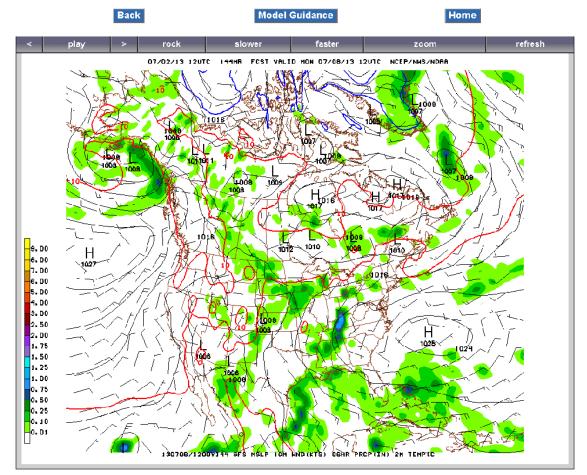


Figure 5: JavaScript Application to view the graphics in a loop

Animations

JSani, a JavaScript based animation application has replaced the Flash based application, and the earlier Java based application for displaying forecast hours from the models as a progressive series of images. The JSani application was built and is maintained by Bill Bellon of the University of Wisconsin-Madison Space Science & Engineering Center (SSEC). More information about the software can be found at http://www.ssec.wisc.edu/~billb/jsani

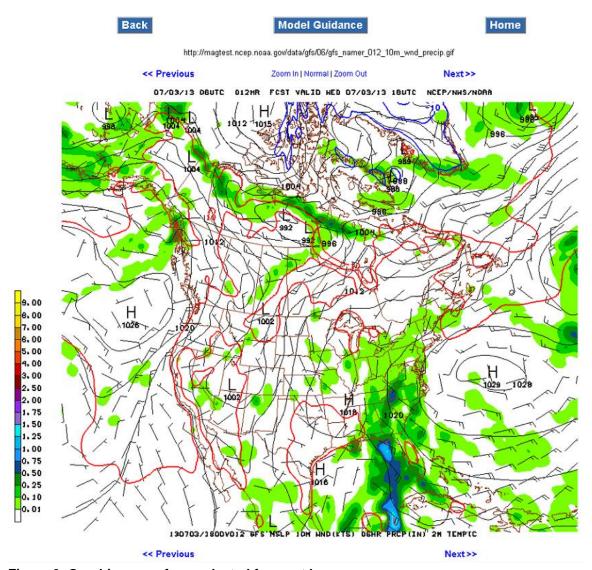


Figure 6: Graphics page for a selected forecast hour

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links, provided just above the image.

The static URL to bookmark and view the latest cycle of the image is provided just below the title of the page.

Displaying Product Descriptions

A description of the product may be displayed from the Parameter Page, Image Page, or Image Animation page.

On the Parameter Page, after a parameter has been selected, if a description of the product is available then a blue button will appear in the upper right hand section of the page, with the text "Display product description". Clicking the button will replace the forecast hour table with a

text box containing the product description. The text on the button will change to "Close product description". Click the button again to remove the text box and return to the forecast hour table. The text on the button will return to "Display product description".

On the Image and Image animation pages, if a description is available then the blue "Open product description" button will appear in the upper right hand section of the page. Clicking on the button will display a text box below the image display, and will scroll the page down to the box. Above the box is a "Close" button. Click this button to remove the text box and scroll back up to the image.

Observations and Analyses

Users can choose the "Observations and Analyses" category from the MAG home page to get to the Observations and Analyses page

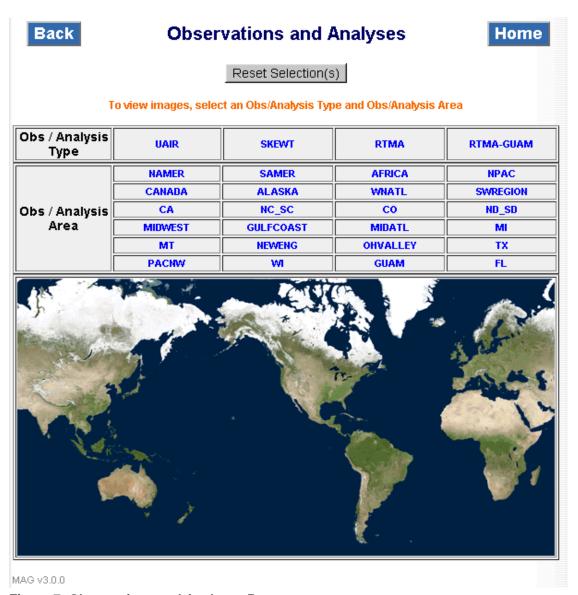


Figure 7: Observations and Analyses Page

This page (see Figure 7) provides the user with three types for Obs/Analyses:

- UAIR (Upper Air)
- SKEWT (Skew-T plots)
- RTMA (Real Time Mesoscale Analysis)
- RTMA-GUAM (Real Time Mesoscale Analysis for the Guam region)

Upper Air (UAIR)

When the user selects UAIR, the regions corresponding to Upper Air gets highlighted in red and the other regions are deselected and greyed out as shown in Figure 8.

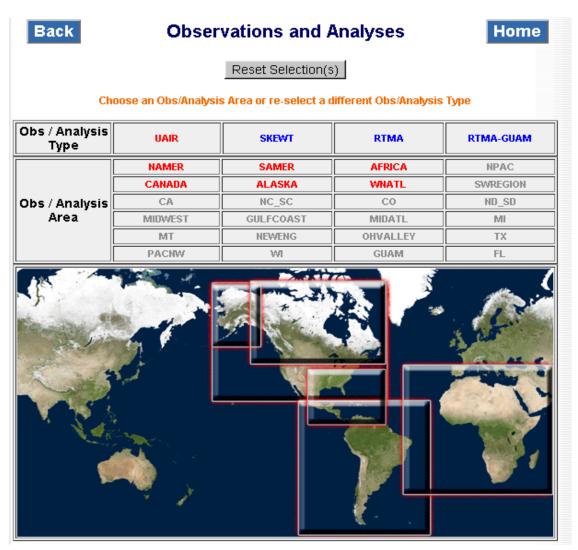


Figure 8: Observations and Analyses page for UAIR

To view the Upper Air Parameters, select a region of choice.

Note: The user can also choose a region first, and the corresponding Obs/Analysis Type is highlighted in red. The other types are "grayed out" / deselected.

UAIR parameter page

In this section, the Upper Air parameter page is explained when the user selects North America (Namer) as region of interest (see Figure 10). The page presents all the available model cycles in one row. The next row presents the available mandatory levels in millibars.

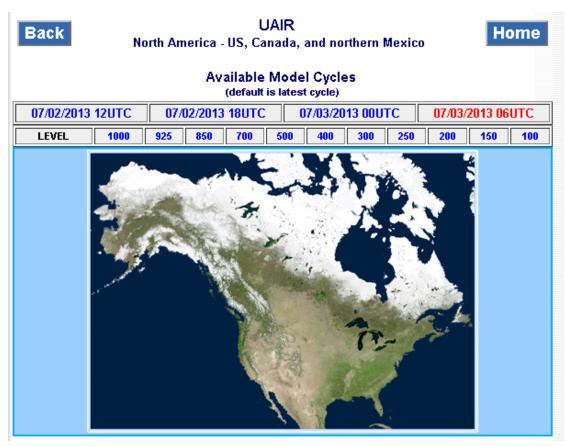


Figure 9: UAIR page for region 'Namer'

- Select any 'Available Model Cycles'. Note: the default is always highlighted in red and is displayed in the right most cell.
- Select a mandatory level.
- The user is presented with the graphic similar to what is shown in Figure 10.

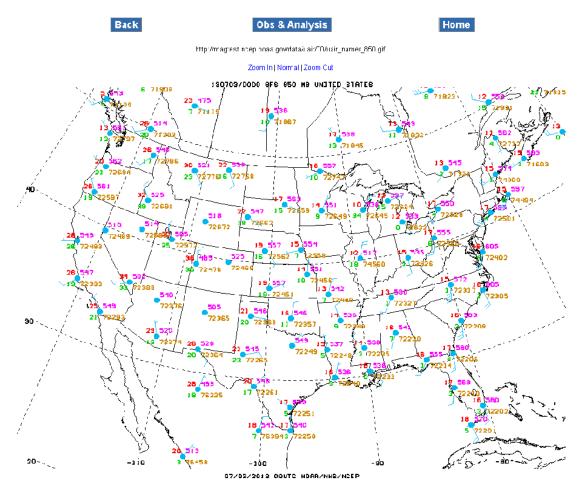


Figure 10: Upper Air graphics page

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links provided just above the image.

The static URL to view the image is provided just below the title of the page.

Skew-T

This section describes the usage of the MAG application to view Skew-t plots. Select the Observations/Analyses Type "SKEWT" from the Observations and Analyses page.

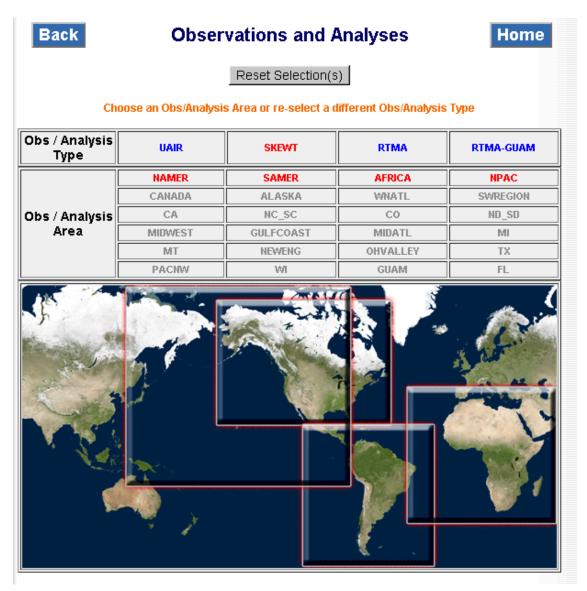


Figure 11: Obs/Analyses page for Skew-t plots

The geographic regions containing SKEWT plots are highlighted in red. Select the desired region.

Figure 12 shows the Skew-t page for region North America (Namer). The page presents the available cycles, defaulting to the latest cycle, displayed in the right most cell and highlighted in red.

Select the desired cycle, and the user is presented with the skewt-t plot as shown in Figure 13.

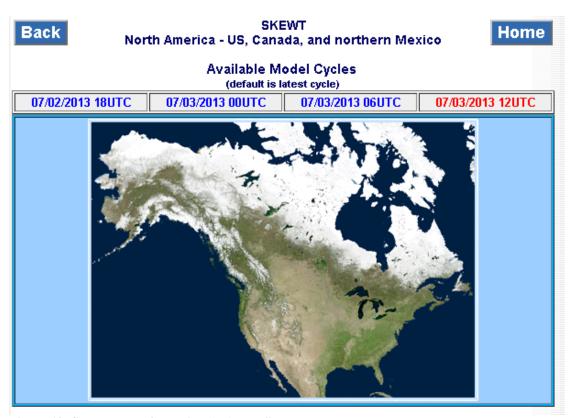


Figure 12: Skew-T page for region "NAMER"



Display table of stations

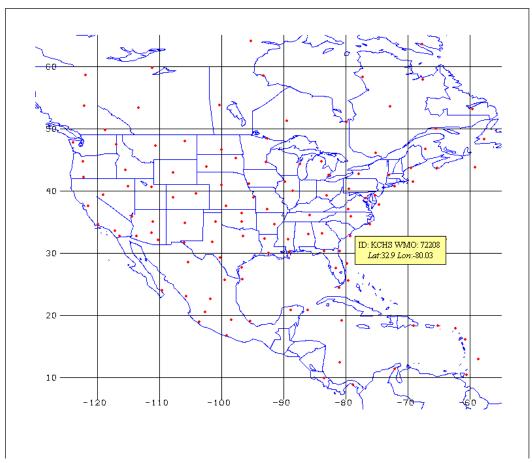


Figure 13: Skew-t plot

The user can click on the red dots, which represent various stations, to view the graphic. The user is presented with skew-t graphics as shown in Figure 14.



Skewt-T KCHS 20130703 12UTC



http:/magtest.ncep.noaa.gov/data/skewt/12/skewt_KCHS_skt.gif

Zoom In | Normal | Zoom Out

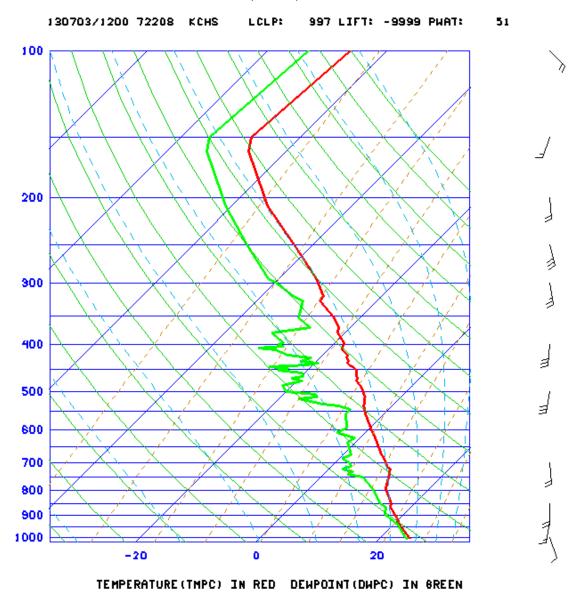


Figure 14: Skew-T graphics

Note: The display of Skew-T graphics available can be listed in a table rather than on a map. When the user chooses a desired cycle, click on the hypertext link "Display Table of Stations" to get a list of stations (as shown in Figure 16) instead of the regional map with red dots representing the various stations.

ID	Latitude	Longitude	Country code	WMO block/station	
FAPE	-33.98	26.62	ZA 688420		
FACT	-33.97	18.60	ZA	688160	
FADY	-30.67	24.00	ZA	685380	
FABL	-29.10	26.30	ZA	684420	
68312	-26.53	18.12	NM	68312	
FAIR	-25.92	28.22	ZA	682630	
FMSD	-25.03	46.95	MG	671970	
FYWW	-22.57	17.10	MM	681100	
FMMI	-18.80	47.48	MG	670830	
61901	-15.93	-5.67	HE	61901	
FCPP	-4.82	11.90	BC	644000	
FOOL	0.47	9.42	GO	645000	
FKKD	4.00	9.73	CM	649100	
DIAP	5.25	-3.93	IV	655780	
HAAB	9.03	38.75	ET	634500	
DFFD	12.35	-1.52	HV	655030	
DRRN	13.48	2.17	NR	610520	
GOTT	13.77	-13.68	SG	616870	
GOOY	14.73	-17.50	SG	616410	
DRZA	16.97	7.98	NR	610240	
GONN	18.10	-15.95	MT	614420	
GOPP	20.93	-17.03	MT	614150	
60680	22.78	5.52	AL	60680	
HESN	23.97	32.78	EG	624140	
62403	26.20	32.75	EG	62403	
62423	27.05	27.98	EG	62423	
60630	27.23	2.50	AL	60630	
DAOF	27.70	-8.17	AL	606560	
60018	28.32	-16.38	CR	60018	
HEMM	31.33	27.22	EG	623060	
DAOR	31.62	-2.23	AL	605710	
DTTZ	33.92	8.10	TS	607600	
DAAG	36.72	3.25	AL	603900	
DTTA	36.83	10.23	TS	607150	

Figure 15: Station table for Skew-T graphics
The user can click on the station code to view the skew-T graphic.

RTMA/RTMA-GUAM

When the user selects the 'RTMA' Obs/Analyses type from the Observations and Analyses page, the corresponding regions available for RTMA get highlighted in white. The remaining regions are de-selected. When the user selects a region of choice, the user is presented with the RTMA page as shown in Figure 16.

RTMA-GUAM is another model type provided specifically for the Guam region. The user interface provided for the Guam region is the same the other regions for the RTMA model.

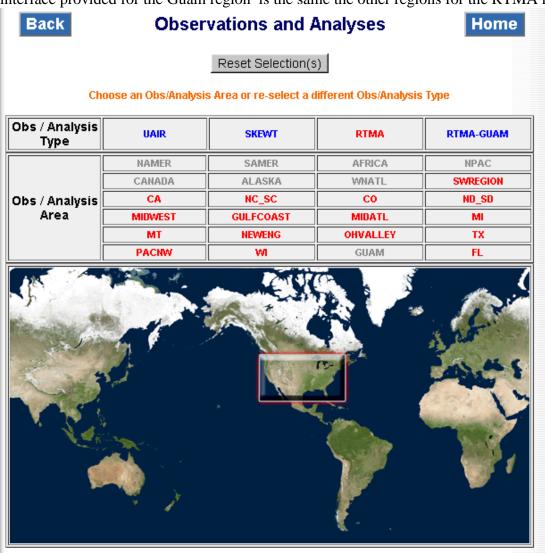


Figure 16: Observations and Analyses page for "RTMA"

The RTMA page presents the user with the available cycles with the default being latest cycle which is highlighted in red and is displayed in the right most cell as shown in Figure 16. The available Surface Parameter names are displayed above the map. When the user selects one of the parameters, the page is redirected to the graphics page as shown in Figure 17.

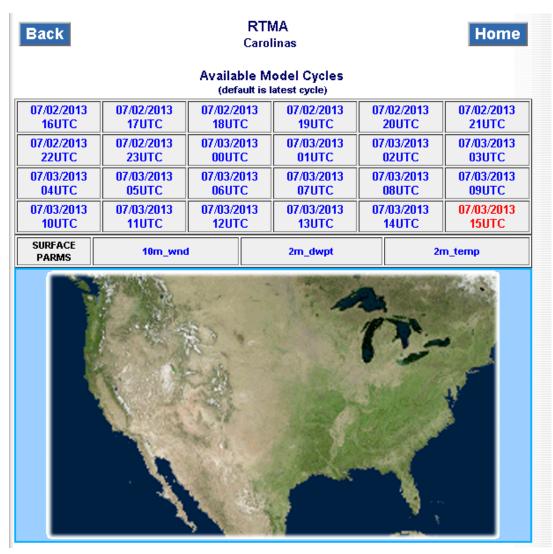


Figure 17: RTMA page

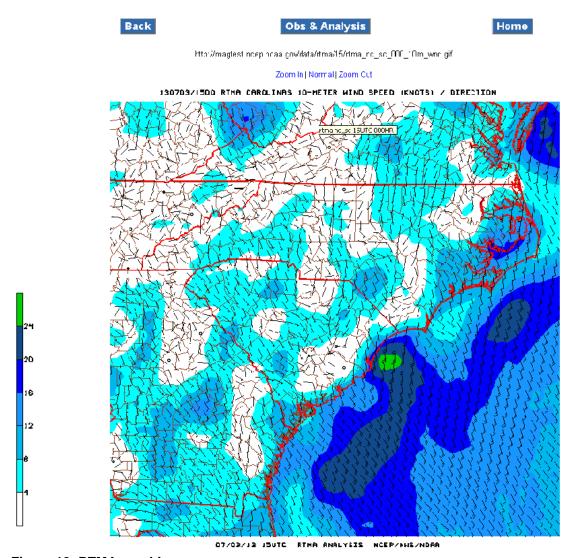


Figure 18: RTMA graphics

The user can zoom-in/zoom-out or choose a Normal size of viewing the image by clicking on the "Zoom In | Normal | Zoom Out " links provided just above the image.

The static URL to view the image is provided just below the title of the page.

Tropical Guidance

The Tropical Guidance Page displays the available Model type and the Storm name as shown in Figure 19. When the user selects a model the corresponding storm name is highlighted in white.

After the users select the desired storm name, then they are directed to the Tropical Guidance parameter page as shown in Figure 20.



Figure 19: Tropical Guidance page.

This page presents the user with

- The parameter names available for a selected Model and Storm name.
- The available model cycles. Note: the cycles are displayed with the latest cycle as the default and is displayed on the right most cell and is highlighted in red
- The available forecast hours are displayed once the parameter is selected (see Figure 22).

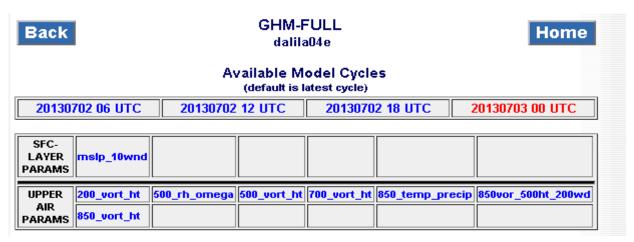


Figure 20: Tropical Guidance Parameter page

To view the graphics for any parameter:

- Select the
 - Model cycle
 - o Forecast hour (default is always 'loop all').
 - o Parameter name

User selection is highlighted in white.

• Once all the above three selections have been made the page automatically redirects to the graphics display page. If the forecast hour is 'Loop All' or "1/2/3/4/5 Day loop", then the user is presented with a JavaScript page that loops through all the images for all forecast hours as shown in Figure 22. If a distinct forecast hour is chosen from the drop down list, the user is shown a gif image.

Back	GHM-FULL dalila04e						
		-		Model Cycle: s latest cycle)	s		
20130702 06 UTC 20		2013070	130702 12 UTC 20		18 UTC :	0130703 00 UTC	
SFC- LAYER PARAMS	o_10wnd						
AIR 💳	vort_ht 500	_rh_omeg	ja 500_vort_	ht 700_vort_ht	850_temp_precip	850vor_500ht_200wd	
	000					Loop All	
FORECAST HOURS	006		012	018	024	1 Day	
	030		036	042	048	2 Day	
	054		060	066 072	072	3 Day	
	078		084	090	096	4 Day	
	102		108	114	120	5 Day	

Figure 21: Tropical Guidance Parameter page with available forecast hours and loop options

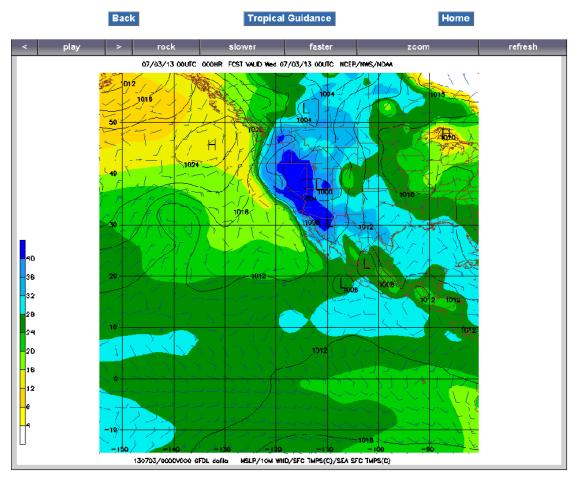


Figure 22: JavaScript animation page for Tropical Guidance parameter

When there are no active storms a page will be displayed notifying the user that no storms are available at this time.