

SLOSH Display Program (SDP) 101

**Storm Surge Workshop
Mobile - May 26, 2011**

**Arthur Taylor
arthur.taylor@noaa.gov**

NOAA - NWS - OST - MDL



SLOSH Display Program (SDP)



- What is the SDP?
 - A GIS provided by NOAA to display storm surge output and related information such as tides and observations
- What should it be used for?
 - Examine MOMs and MEOWs
 - Look at vulnerability of critical locations/sites
 - Animate real-time and historic Rex Files
 - Convince management that there's a problem



How to get the SDP



- URL for downloading the SDP
 - <http://slosh.nws.noaa.gov/sloshPriv/>
 - Username = Gustav2008, Password = Ike2008
- More information on the SLOSH model
 - http://www.nhc.noaa.gov/ssurge/ssurge_slosh.shtml
 - <http://slosh.nws.noaa.gov/sloshPub/>



<http://slosh.nws.noaa.gov/sloshPriv>
 user = Gustav2008, pass = Ike2008



SLOSH Display Package: About - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://slosh.nws.noaa.gov/sloshPriv/

SLOSH Display Package: About

National Weather Service
SLOSH Display Package

weather.gov

Site Map News Organization Search [] NWS All NOAA Go

National Hurricane Center

Meteorological Development Laboratory

Public SLOSH page

- SLOSH Display
 - About
 - Registration
 - Download**
 - MEOWs/MOMs
 - MOM as shapefile
 - MEOw as shapefile
 - Rexfiles
- SLOSH Display Documentation
 - Training PDF
 - Training PPT
- Contact us
 slosh_webmaster@noaa.gov

About the SLOSH Display Package

The SLOSH Display Program's (SDP) primary purpose is to display the results of the SLOSH model. The main outputs of the SLOSH model are the **MEOWs** (Maximum Envelope of Water) and **MOMs** (Maximum Of MEOWs) which are generated as part of the SLOSH simulation studies. A **MEOw** is generated by compositing several hypothetical SLOSH runs, each of which has the same category, forward speed and direction (but different landfall locations). The maximum value a grid cell attained at any time during those runs is plotted in the MEOw. A **MOM** is created by compositing MEOWs of the same category hurricane, and plotting the maximum surge for that category. The simulation studies consisting of the MEOWs and MOMs are used to estimate the potential flooding, which aids state and local decision makers with evacuation decisions.

SLOSH output is available for three types of storms: **Hypothetical, Historical** and **Real-Time/Storm Specific** Forecasts. **Hypothetical** SLOSH runs are described above. **Historical** SLOSH runs are based on the best post-storm estimates of track, intensity, and size for the historical hurricane. These runs are used to educate people about the timing and impact of a historical storm and to validate the SLOSH model. **Real-Time/Storm Specific Forecast** SLOSH runs are produced by the National Hurricane Center (NHC) starting 24 hours before a hurricane makes landfall. They provide the best estimate of the surge based on the current NHC advisory. Storm surge is very sensitive to storm intensity, size, and speed and direction of movement. Small changes in track/intensity forecasts can have large impacts on local storm surge. NHC hurricane track and intensity forecasts are inherently uncertain and subject to error. Thus, users of real-time/storm specific storm surge forecasts should be sensitive to potential track/intensity forecast errors, and use the storm surge forecasts with caution.

Done

Start SLOSH Display P... Inbox - Mozilla Thu... atlanta SDP101_Atlanta20... MDL_SLOSH-101_2... FEMA_NHC_2010... SDP_Background.ppt Wed_Intro_Surge_... 4:32 PM



<http://slosh.nws.noaa.gov/sloshPriv/register.php>



SLOSH Display Package: Register - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://slosh.nws.noaa.gov/sloshPriv/register.php?L=6

Google

SLOSH Display Package: Register

weather.gov



National Weather Service MDL Evaluation Branch



Site Map

News

Organization

Search

NWS All NOAA Go

National Hurricane Center

Meteorological Development Laboratory

Public SLOSH page

SLOSH Display

- About
- Registration
- Download
- MEOws/MOMs
- MOM as shapefile
- MEOw as shapefile
- Rexfiles

SLOSH Display Documentation

- Training PDF
- Training PPT

Contact us

slosh_webmaster@noaa.gov

SLOSH Display Package: Registration

Do you want us to alert you to bug fixes, new release, and interesting SLOSH related events? You **can** download the program **without** registering. If you are trying to decide whether to register, past release notes can be seen here: [Release Notes](#)

1. Yes
2. No

If so, please provide your email address:

Submit

Next [Download Page](#)

US Dept of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
[Meteorological Development Lab: Evaluation Branch](#)

Author arthur.taylor@noaa.gov
1325 East West Highway
Silver Spring, MD 20910
Page last Modified: November 19, 2008.

Disclaimer
Privacy Policy

Done



<http://slosh.nws.noaa.gov/sloshPriv/download.php>



SLOSH Display Package: Download - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SLOSH Display Package: Download

http://slosh.nws.noaa.gov/sloshPriv/download.php?L=6

Google



National Weather Service MDL Evaluation Branch



Site Map

News

Organization

Search

NWS All NOAA Go

National Hurricane Center

Meteorological Development Laboratory

Public SLOSH page

SLOSH Display

- About
- Registration
- Download
- MEOWs/MOMs
- MOM as shapefile
- MEOw as shapefile
- Rexfiles

SLOSH Display Documentation

- Training PDF
- Training PPT

Contact us
slosh_webmaster@noaa.gov



SLOSH Display Package: Download

Please remember to [Register](#)

SLOSH Package. This consists of everything needed to run the program. (Data downloaded separately).

- For MS-Windows: [sloshdsp-install.exe](#) (Version 1.64 : 67,388,162 bytes : 5/26/2011)
(md5sum=ee505011cc856c50aac84e1f650a1ff67)
This install program has the option to create short cuts, so please run it with the appropriate permissions.
Please verify that you get the full 67,388,162 bytes.
- For linux: [sloshdsp-all.tar.gz](#) (Version 1.64 : 68,013,728 bytes : 5/26/2011)
(md5sum=81bdc9d0b63e4b2142b6c7155d37af29)
Expand with 'tar -xzf sloshdsp-all.tar.gz'.
Run with 'cd sloshdsp; ./sloshdsp.sh'
Please verify that you get the full 68,013,728 bytes.

Click here for [MEOw/MOM data sets](#)

Click here for [MOM files in .shp file format](#)

Click here for [MEOw files in .shp file format](#)

Click here for [Rexfile data sets](#)

Click here for [rexout-1.30-20090820.tar.gz](#) (Version 1.3 : 1,598,929 bytes : 8/20/2009)
(md5sum=499cc04fb914d956a16b8cdb6d8bab29) **rexout program to probe rexfiles at given points.**



<http://slosh.nws.noaa.gov/sloshPriv/momShp.php>



SLOSH Display Package: MOM Shapefile Download - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SLOSH Display Package: MOM Shapefile Dow... +

http://slosh.nws.noaa.gov/sloshPriv/momShp.php?L=6

Google



National Weather Service MDL Evaluation Branch



Site Map

News

Organization

Search

NWS All NOAA Go

National Hurricane Center

Meteorological Development Laboratory

Public SLOSH page

SLOSH Display

- About
- Registration
- Download
- MEOWs/MOMs
- MOM as shapefile
- MEOW as shapefile
- Rexfiles

SLOSH Display Documentation

- Training PDF
- Training PPT

Contact us

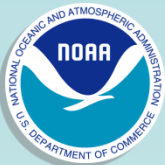
slosh_webmaster@noaa.gov



SLOSH Display Package: MOM Shapefile Download

Available SLOSH Basins as of 5/03/2011

#	Basin Name	Abbrev 1	Abbrev 2	Abbrev 3	Abbrev 4	Abbrev 5	Abbrev 6	Abbrev 7	Abbrev 8
1	Penobscot Bay	pn2	pnbmom.zip NGVD-29, 09/29/2000 547,369 bytes						
2	Boston Harbor	pv2mom.zip NAVD-88, 02/02/2009 3,079,742 bytes	bos						
3	Narragansett/Buzzards Bay	pv2mom.zip NAVD-88, 02/02/2009 3,079,742 bytes	pvd						
4	Providence/Boston	pv2mom.zip NAVD-88, 02/02/2009 3,079,742 bytes							
		ny3mom.zip NAVD-88,							



<http://slosh.nws.noaa.gov/sloshPriv/rexfile.php>



SLOSH Display Package: Rexfile download - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SLOSH Display Package: Rexfile download

http://slosh.nws.noaa.gov/sloshPriv/rexfile.php?L=6

Google



National Weather Service MDL Evaluation Branch



Site Map

News

Organization

Search

NWS All NOAA Go

National Hurricane Center

Meteorological Development Laboratory

Public SLOSH page

SLOSH Display

- About
- Registration
- Download
- MEOWs/MOMs
- MOM as shapefile
- MEOW as shapefile
- Rexfiles

SLOSH Display Documentation

- Training PDF
- Training PPT

Contact us
slosh_webmaster@noaa.gov



SLOSH Display Package: Rexfile Download

Please note that you can **automatically download** the historical Rex files using the SLOSH Display Program: "**menu Download->Download Rexfiles**"

To manually download a Rexfile, click on the desired file below, and (assuming a default installation) store it in **c:\slosh.pkg\sloshdsp\rexfiles\download**. Then go to "Animate->Animate .rex file" and click on "Update list of Animations".

#	Rexfile Name	As of Date	Size
1	Rex 2000-2010	rex2000.zip 5/26/2011	14,164,759 bytes
2	Rex 1990-2000	rex1990.zip 5/26/2011	13,187,660 bytes
2	Rex 1950-1990	rex1950-1980.zip 5/26/2011	7,753,376 bytes
2	Rex 1630-1940	rex1630-1940.zip 5/26/2011	10,660,549 bytes

New



#	Rexfile Name	As of Date	Size	MD5Sum
1	2008like_gl2.rex	6/03/2009	1,692,440 bytes	2ceff32d632bfff98468847a94d6b8c96
2	2008Gustav_msb.rex	6/03/2009	3,608,272 bytes	2bec472b523e9c8c988a0331aae83cfa
3	2005Katrina_msk.rex	9/11/2006	5,200,397 bytes	378e9d648a94ce96438fa91813b6d746
4	2005Katrina_mob.rex	9/11/2006	898,572 bytes	53541a3b2a2ebdaaad7d70767c83cc28
5	2005Katrina_bix.rex	9/11/2006	3,615,828 bytes	ab0ff8a52a063df924550ec7645c7821



Install



SLOSH Display 1.64 Setup

Choose Install Location
Choose the folder in which to install SLOSH Display 1.64.

SLOSH Display 1.64 Setup: Start Menu Folder

Choose Install Location
Choose the folder in which to install SLOSH Display 1.64.

SLOSH Display 1.64 Setup: Desktop Shortcuts

Choose Install Location
Choose the folder in which to install SLOSH Display 1.64.

SLOSH Display 1.64 Setup

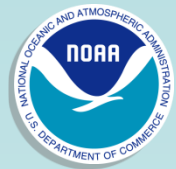
Completing the SLOSH Display 1.64 Installation Wizard

SLOSH Display 1.64 has been installed on your computer.

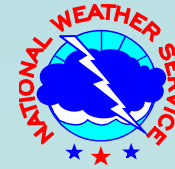
Click Finish to close this wizard.

Start SLOSH Display

< Back Finish Cancel



Get Data (MEOW/MOM)

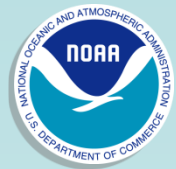


The screenshot shows the SLOSH Display application window. The title bar reads "SLOSH Display". The menu bar includes "File", "Display", "Change-Basin", "Select-Storm", "Animate", "Tides", "Download", and "Help". The "Download" menu is open, showing options: "Download MEOW/MOMs", "Download Rexfiles", and "Update Program".

On the left, the "Basin:" section is active, and the "Configure Layers" panel is visible with the following checked items: User Profiles, Units, Scales, Probe Flag, IOOS Observation Sites, Locations, Tracks, SLOSH Surge, lakes.shp, roads_limitedaccess.shp, roads_highway.shp, roads_other.shp, rivers.shp, urbanareas.shp, States/Countries, and Lat/Lon Grid.

The main map area displays a geographic map of the Washington D.C. region, including counties like Loudoun, Fairfax, Montgomery, Howard, Anne Arundel, and Prince George's. A red rectangle highlights the Baltimore area. A white star marks Annapolis. A NOAA logo is centered on the map. A scale bar indicates 25 km. The status bar at the bottom shows "Lat: 39.4540N Lon: 77.4771W" and "Height:". The Windows taskbar at the bottom shows the Start button and several open applications: "SLOSH Display Package: ...", "SDP101_Atlanta2011_N...", "untitled - Paint", and "SLOSH Display". The system clock shows "5:27 PM".

A dialog box titled "Update MEOW/MOM catalog." is overlaid on the map, with the text "About to download MEOW/MOM catalog." and buttons for "Continue" and "Cancel".



Get Data (MEOW/MOM)

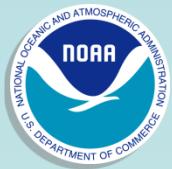


The screenshot shows the SLOSH Display application window. The main map displays the Chesapeake Bay region, including Baltimore, Howard, Anne Arundel, and Prince George's counties. A dialog box titled "Download MOM/MEOW" is open, listing various basins and their status. The dialog box has a "Status" column and a "Basin" column. The "Status" column contains the word "Installed" for each entry. The "Basin" column lists the basin names and their versions. The dialog box also has a "Progress" section with a status bar and "Install" and "Uninstall" buttons.

Status	Basin
Installed	pnb: Penobscot Bay v1
Installed	pv2: Providence/Boston
Installed	ny3: New York v3
Installed	de3: Delaware Bay v3
Installed	acy: Atlantic City
Installed	oce: Ocean City
Installed	cp2: Chesapeake Bay v2
Installed	eorForf: Norfolk
Installed	eht2/ht2: Pamlico Sound (2007) v3
Installed	il3: Wilmington/Myrtle Beach (2010) v3
Installed	hchs/che: Charleston Harbor v2
Installed	esv3/sv3: Savannah/Hilton Head v3
Installed	ejax/jax: Jacksonville v1
Installed	co2: Cape Canaveral v2
Installed	pb3: Palm Beach v3
Installed	eok2/ok2: Okeechobee (2007) v3
Installed	hmi3/hm3: Biscayne Bay v4
Installed	eke2/ke2: Florida Bay v3
Installed	efm2/fm2: Fort Myers v3
Installed	...

Progress
Status: Please select then press install/uninstall.

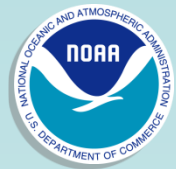
Install Uninstall



Get Data (Rex File)



The screenshot shows the SLOSH Display application interface. The main window displays a map of the Annapolis, Maryland area, with labels for Loudoun, Fairfax, Prince George's, Anne Arundel, and Baltimore. A dialog box titled "Get Rexfile catalog" is open in the center, asking "About to download the Rexfile catalog. Continue?" with "Yes" and "No" buttons. A context menu is also visible over the map, with options: "Download MEOW/MOMs", "Download Rexfiles", and "Update Program". The "Download Rexfiles" option is highlighted. The application's status bar at the bottom shows "Lat: 39.4528N Lon: 77.5220W" and "Height:". The Windows taskbar at the very bottom shows the Start button and several open applications: "SLOSH Display Package: ...", "SDP101_Atlanta2011_N...", "untitled - Paint", and "SLOSH Display". The system clock shows "5:54 PM".



Get Data (Rex File)



SLOSH Display
File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: [Empty] **Storm:** [Empty]

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
- IOOS Observation Sites
 - Locations
 - Tracks
 - SLOSH Surge
 - lakes.shp
 - roads_limitedaccess.shp
 - roads_highway.shp
 - roads_other.shp
 - rivers.shp
 - urbanareas.shp
 - States/Countries
 - Lat/Lon Grid

Download Rexfile

Status	Rex file
Installed	2008Ike_g12.rex
Installed	2008Gustav_msb.rex
Installed	2005Katrina_msk.rex
Installed	2005Katrina_mob.rex
Installed	2005Katrina_bix.rex
Installed	2005Dennis_pa.rex
Installed	2005Dennis_pns.rex
Installed	2005Dennis_key.rex
Installed	2005Dennis_gll.rex
Installed	2005Dennis_cdr.rex
Installed	2005Dennis_apc.rex
Installed	2004Charley_fmj.rex
Installed	2003Isabel_orf.rex
Installed	2003Isabel_ht2.rex
Installed	2003Isabel_cp2.rex
Installed	2002Lili_ms2.rex
Installed	2002Lili_lft.rex
Installed	2002Isidore_ms2.rex
Installed	2002Isidore_bix.rex
Installed	1999Floyd_fmj.rex

Progress
Status: Please select then press install/uninstall.

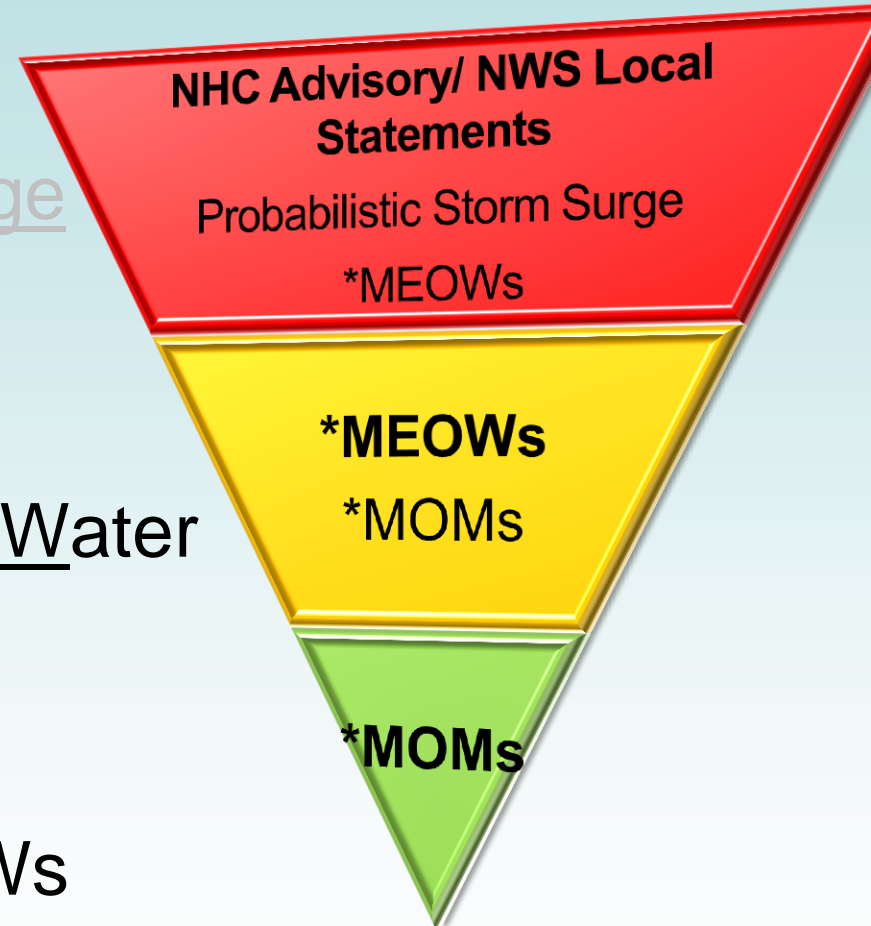
Install Uninstall

Lat: 38.8722N Lon: 77.0465W Height: [Empty]

Start SLOSH Display Package: ... SDP101_Atlanta2011_N... untitled - Paint SLOSH Display Download Rexfile 5:57 PM

MEOW / MOM Module

- P-Surge
 - Probabilistic Storm Surge
- MEOW
 - Maximum Envelope Of Water
- MOM
 - Maximum Of the MEOWs





Select Basin



SLOSH Display [File] [Display] [Change-Basin] [Select-Storm] [Animate] [Tides] [Download] [Help]

Basin: **Operational** Storm:

Configure Layer: **Atlantic All** **Pacific All**

Units: Done

Scales

Probe Flag

IOOS Observation Sites

Locations

Tracks

SLOSH Surge

lakes.shp

roads_limitedaccess.shp

roads_highway.shp

roads_other.shp

rivers.shp

urbanareas.shp

States/Countries

Lat/Lon Grid

Lat: 39.4300N Lon: 77.8117W Height:

Start | SLOSH Display Package: ... | SDP101_Atlanta2011_N... | untitled - Paint | SLOSH Display | 6:31 PM



Select Basin



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

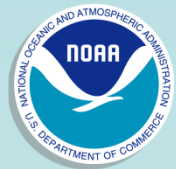
Basin: Operational Storm:

Basin: Atlantic All Pacific All Done

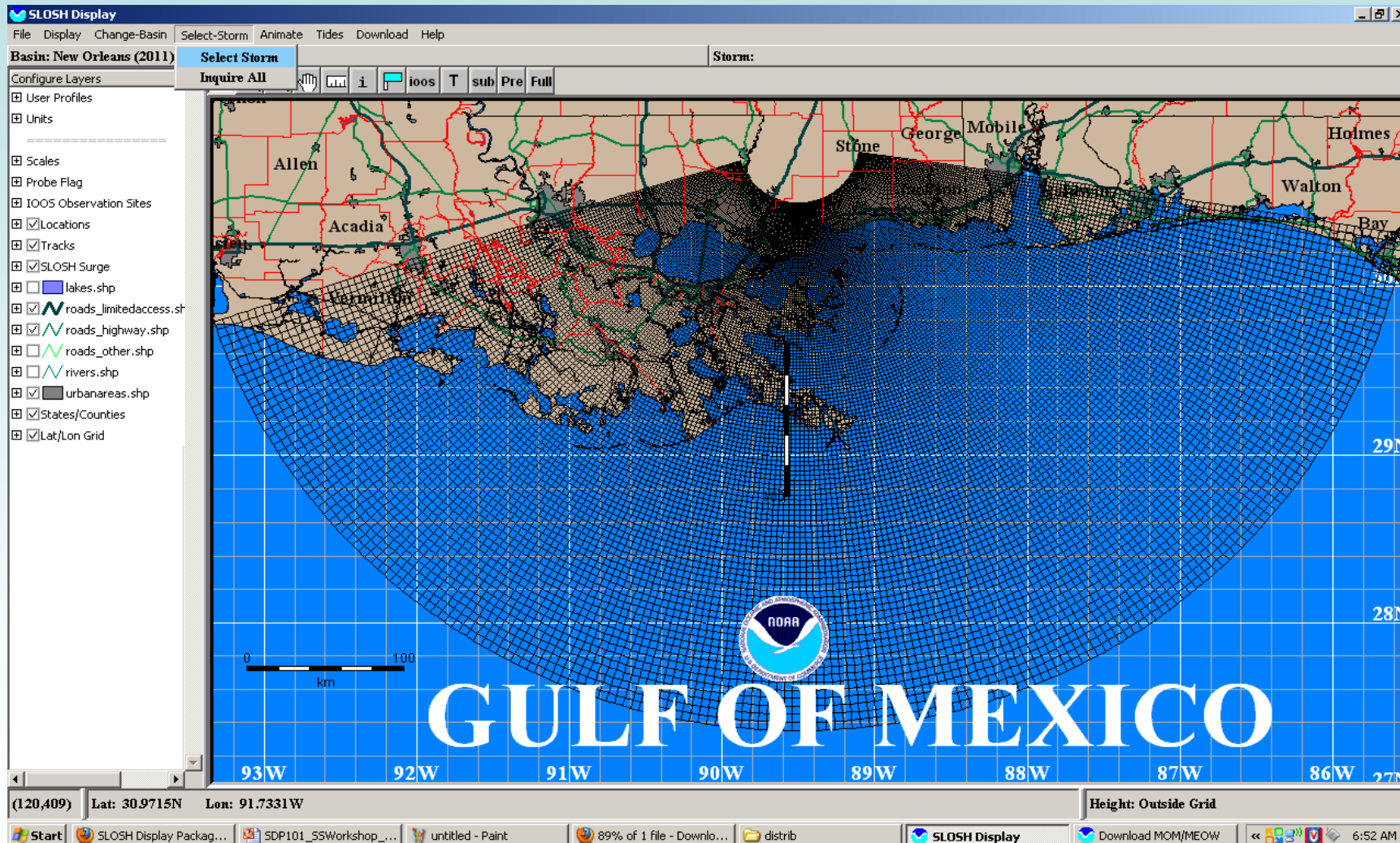
- pub Penobscot Bay v1
- pv2 Providence Bay v1
- ny3 New York v1
- de3 Delaware Bay v1
- acy Atlantic City v1
- oce Ocean City v1
- cp2 Chesapeake Bay v2
- eorf Norfolk v1
- eht2 Pamlico Sound (2007) v1
- il3 Wilmington/Myrtle Beach v1
- lchs Charleston Harbor v2
- esv3 Savannah/Hilton Head v1
- ejax Jacksonville v1
- co2 Cape Canaveral v2
- ph3 Palm Beach v3
- ok2 Okkeechobee (2007) v3
- lmi3 Biscayne Bay v4
- eke2 Florida Bay v3
- efm2 Fort Myers v3
- etp3 Tampa Bay v3
- cd2 Cedar Key v2
- ap2 Apalachicola Bay v2
- lpa2 Panama City (2009) v3
- epn3 Pensacola Bay v4
- emo2 Mobile Bay (2008) v3
- hbix MS-Gulf Coast v1
- ms6 New Orleans (2011) v8**
- lft Vermilion Bay v1
- ehp3 Sabine Lake v5
- eg12 Galveston Bay (2002) v3
- ps2 Matagorda Bay (2007) v2
- cr2 Corpus Christi Bay v2
- chr3 Laguna Madre v3
- bha Bahamas v1
- hsju Puerto Rico v2
- evi2 Virgin Islands v2
- lul1 Oahu, Hawaii v1

Lat: 45.7695N Lon: 112.7369W Height:

Start SLOSH Display Packag... SDP101_SSWorkshop... untitled - Paint 76% of 1 file - Downlo... distrib SLOSH Display Download MOM/MEOW 6:50 AM



Select Storm (MEOW)





Select Storm (MEOW) Direction: N, Category: 3, Speed: 25 MPH (Mean)

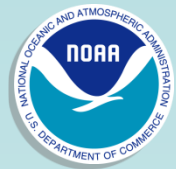


Direction	Category	Speed
East	Tropical Storm	05 mph Mean Tide
East North East	Cat 1	05 mph High Tide
North East	Cat 2	10 mph Mean Tide
North North East	Cat 3	10 mph High Tide
North	Cat 4	15 mph Mean Tide
North North West	Cat 5	15 mph High Tide
North West		25 mph Mean Tide
West North West		25 mph High Tide

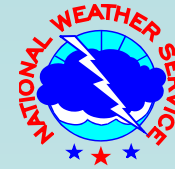
Direction of Hurricane Track

Category of Hurricane

Speed of Hurricane



Select Storm (MEOW)



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: New Orleans (2011)v8 <ms6> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
- IOOS Observation Sites
- Locations
- Tracks
- SLOSH Surge
- lakes.shp
- roads_limitedaccess.shp
- roads_highway.shp
- roads_other.shp
- rivers.shp
- urbanareas.shp
- States/Countries
- Lat/Lon Grid

Stm Tide ft NAVD 1988

22
20
17
14
11
8
5
2
-1
Tide level: 0.0 ft

Allen Acadia Stone George Mobile Holmes Walton Bay

29N
28N
27N

93W 92W 91W 90W 89W 88W 87W 86W

GULF OF MEXICO

(162,111) Lat: 27.4527N Lon: 88.2556W Height: Outside Grid

Start SLOSH Display Pac... SDP101_SSWorks... untitled - Paint Downloads distrib SLOSH Display Download MOM/M... Select Storm 6:56 AM

Select Storm

New Orleans (2011)v8 <ms6> Historical MOM

Dir: s6.kit.mount/data/ms6

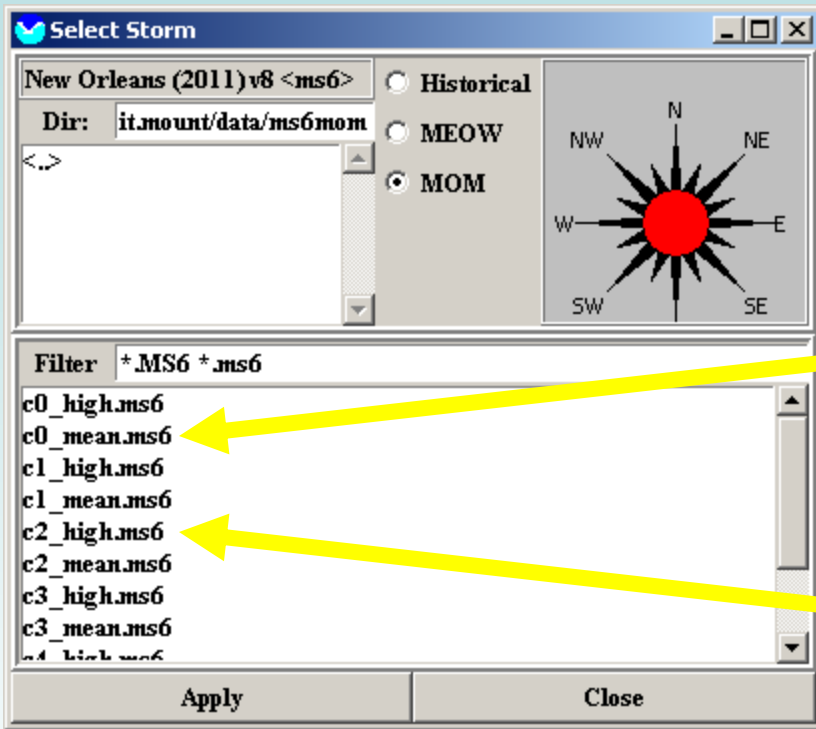
Direction Category Speed

Direction	Category	Speed
East	Tropical Storm	05 mph Mean Tide
East North East	Cat 1	05 mph High Tide
North East	Cat 2	10 mph Mean Tide
North North East	Cat 3	10 mph High Tide
North	Cat 4	15 mph Mean Tide
North North West	Cat 5	15 mph High Tide
North West		25 mph Mean Tide
West North West		25 mph High Tide

Apply Close

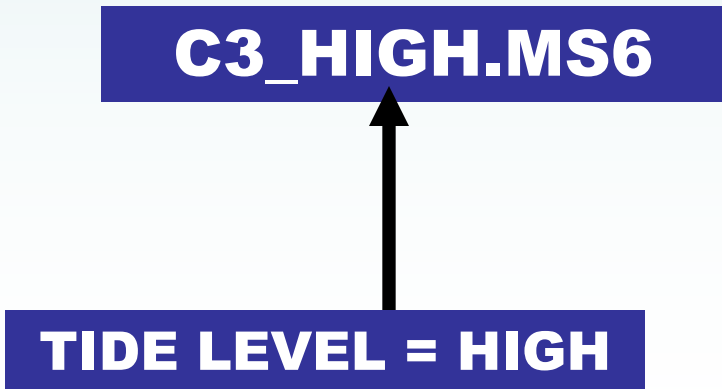
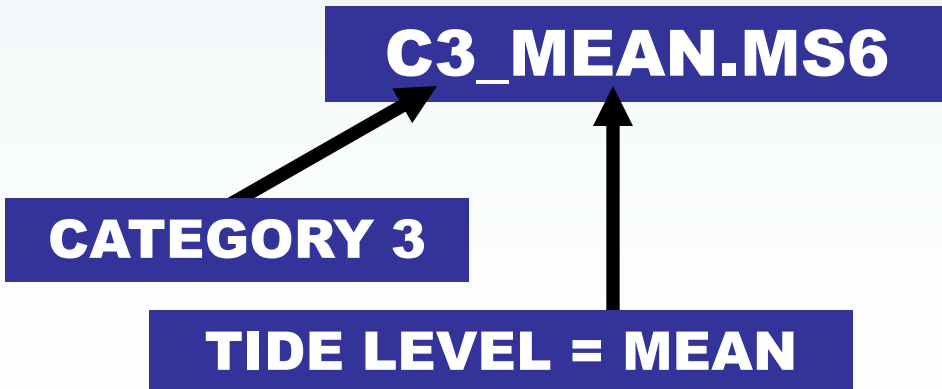


Select Storm (MOM)



MOMs for Each Category at Mean Tide

MOMs for Each Category at High Tide

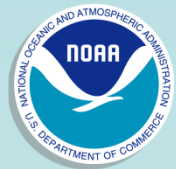




Select Storm (MOM)



The screenshot shows the SLOSH Display application interface. The main window displays a map of the Gulf of Mexico with a storm surge overlay. The surge is color-coded by height, with a legend on the right showing a scale from -7 to 28 feet. The map includes labels for various coastal areas like Allen, Acadia, Vermilion, George, Mobile, and Holmes. A 'Select Storm' dialog box is open in the foreground, showing a list of storm files and the 'MOM' option selected. The dialog box also includes a compass rose and a filter field. The application title bar shows 'SLOSH Display' and the current basin is 'New Orleans (2011)v8 <ms6>'. The status bar at the bottom shows the current location (Lat: 27.2743N, Lon: 87.7167W) and the height setting 'Outside Grid'. The Windows taskbar at the bottom shows several open applications, including SLOSH Display and a 'Select Storm' window.



Select Storm (MEOW)



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: New Orleans (2011)v8 <ms6> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
- IOOS Observation Sites
- Locations
- Tracks
- SLOSH Surge
- lakes.shp
- roads_limitedaccess.shp
- roads_highway.shp
- roads_other.shp
- rivers.shp
- urbanareas.shp
- States/Countries
- Lat/Lon Grid

Stm Tide ft NAVD 1988

22
20
17
14
11
8
5
2
-1

Tide level: 0.0 ft

Allen Acadia George Mobile Holmes Walton Bay

29N
28N
27N

93W 92W 91W 90W 89W 88W 87W 86W

GULF OF MEXICO

(168,125) Lat: 27.4463N Lon: 87.3790W Height: Outside Grid

Start SLOSH Display Pac... SDP101_SSWorks... untitled - Paint Downloads distrib SLOSH Display Download MOM/M... Select Storm 7:00 AM

Select Storm

New Orleans (2011)v8 <ms6>

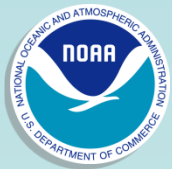
Dir: s6.kit.mount/data/ms6

Historical
MEOW
MOM

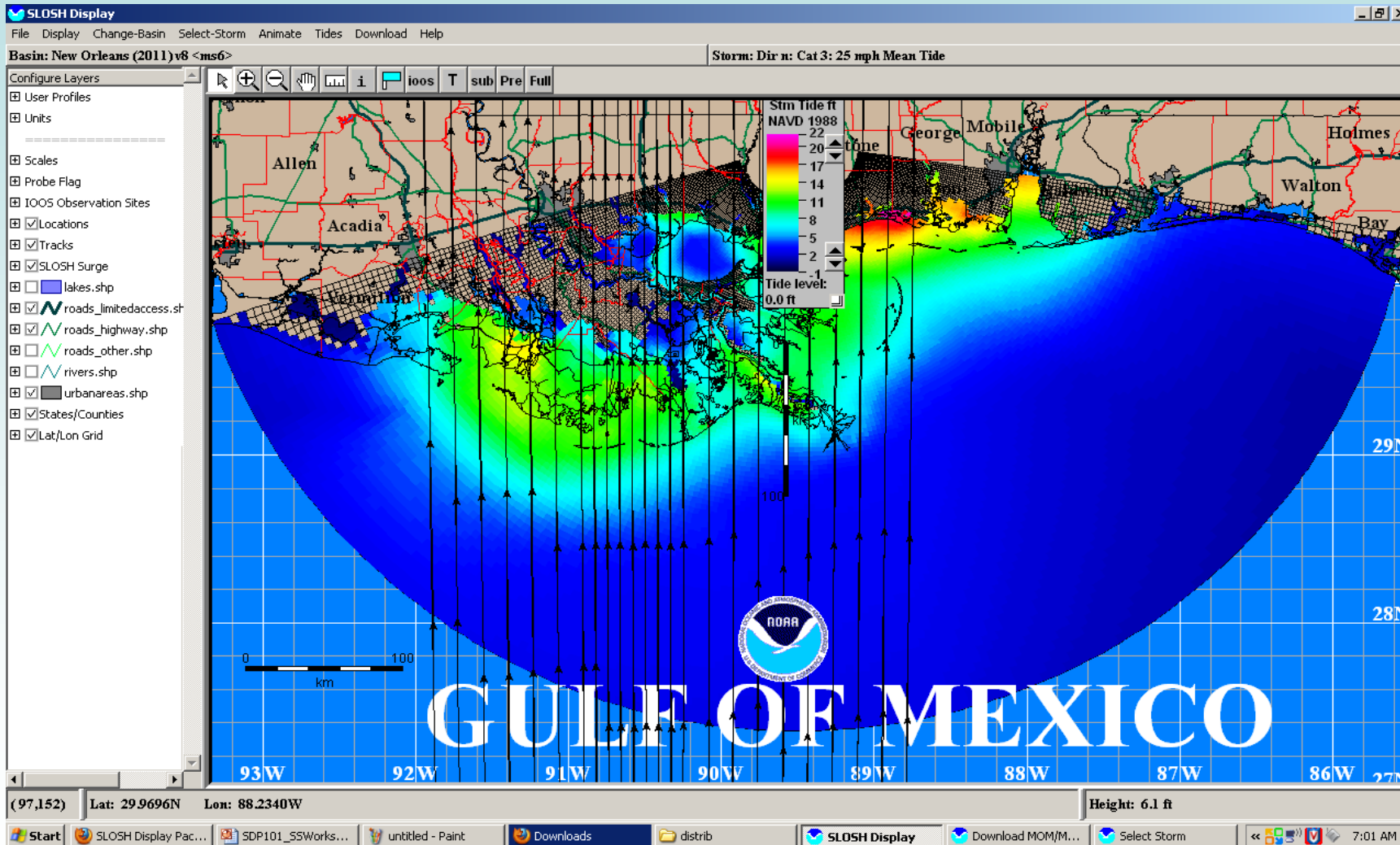
Direction Category Speed

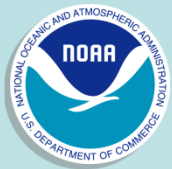
Direction	Category	Speed
East	Tropical Stor	05 mph Mean Tide
East North East	Cat 1	05 mph High Tide
North East	Cat 2	10 mph Mean Tide
North North East	Cat 3	10 mph High Tide
North	Cat 4	15 mph Mean Tide
North North West	Cat 5	15 mph High Tide
North West		25 mph Mean Tide
West North West		25 mph High Tide

Apply Close

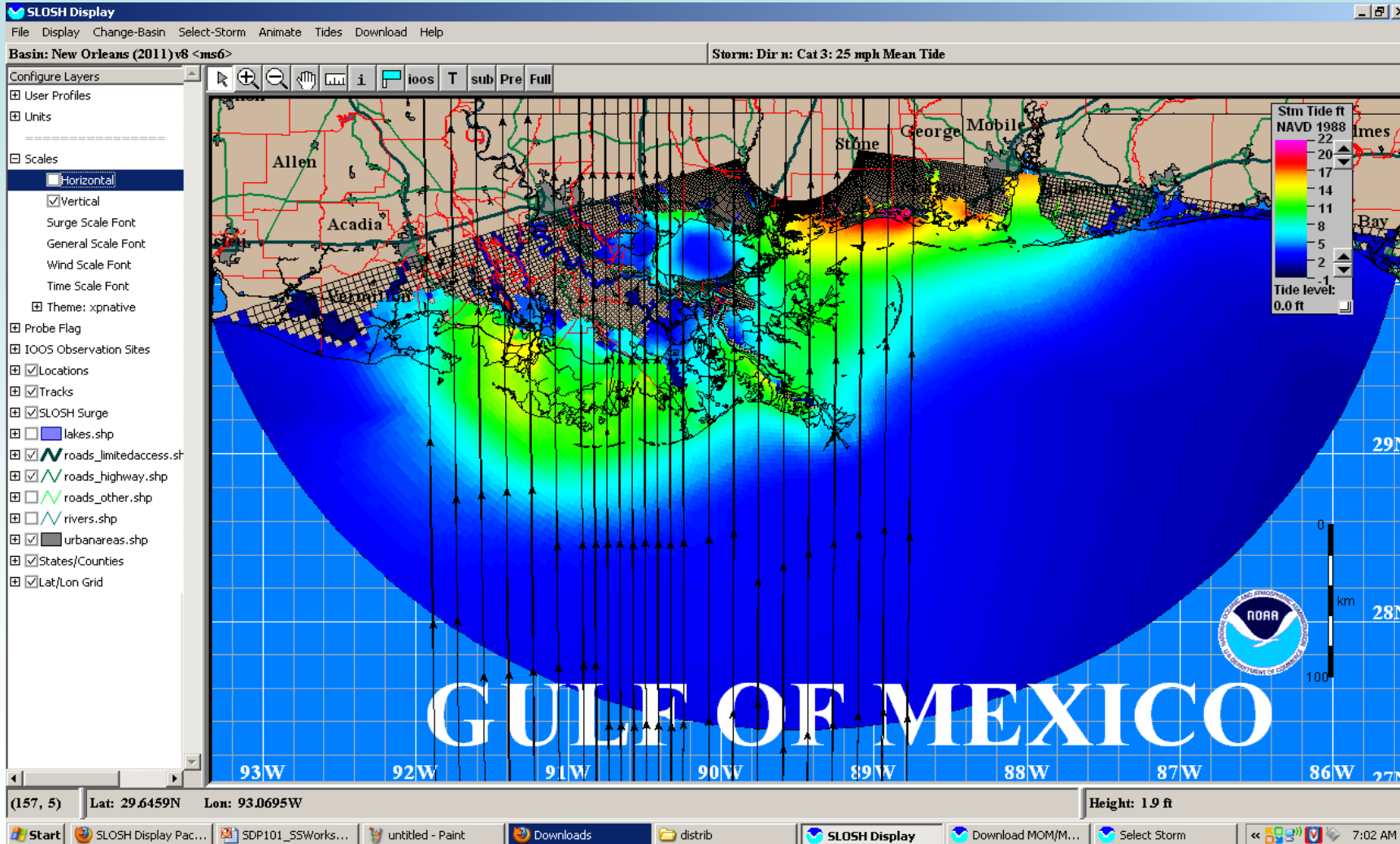
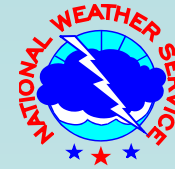


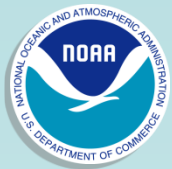
Select Storm (MEOW)



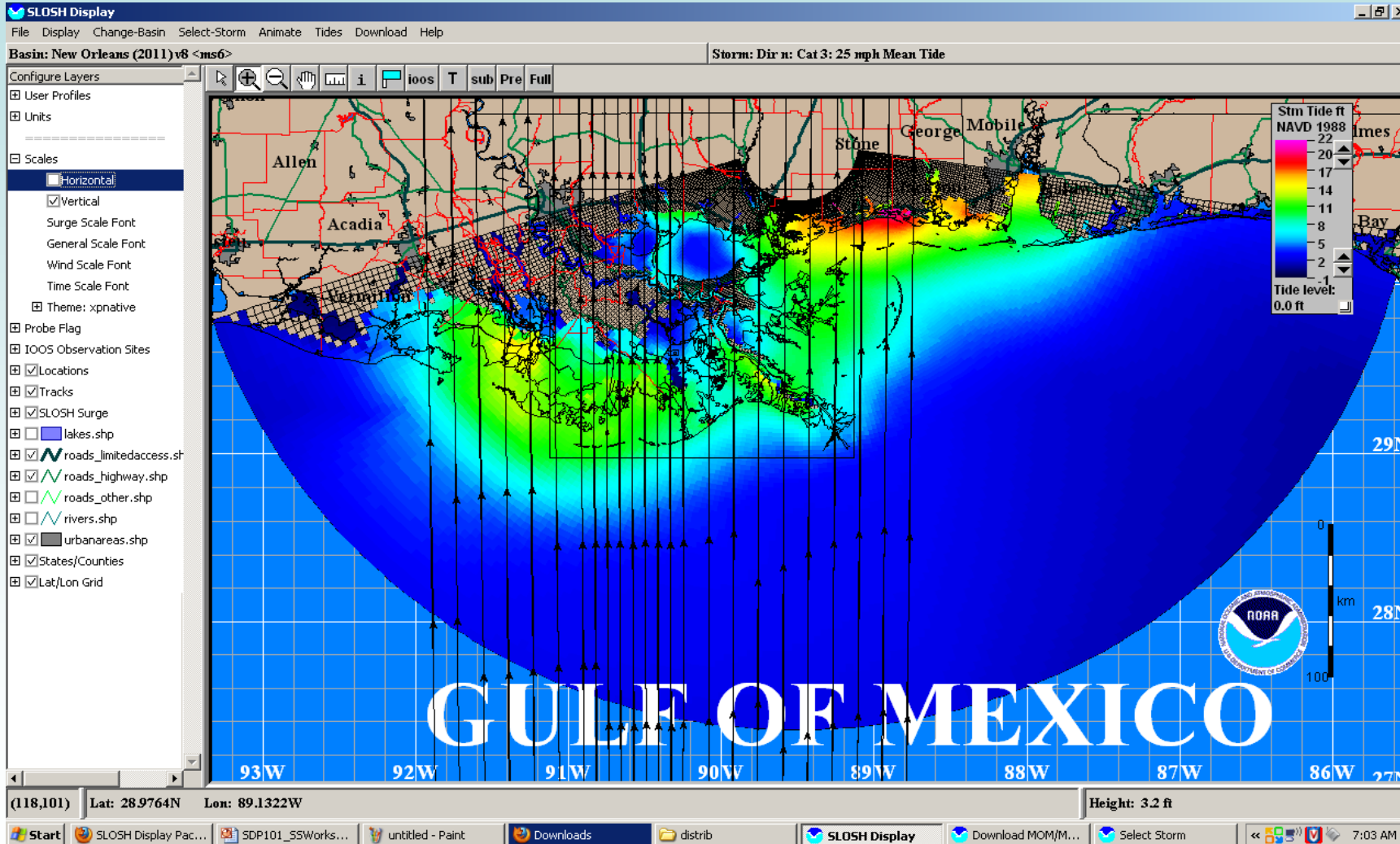
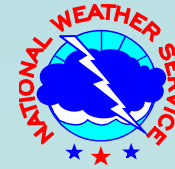


Move Labels



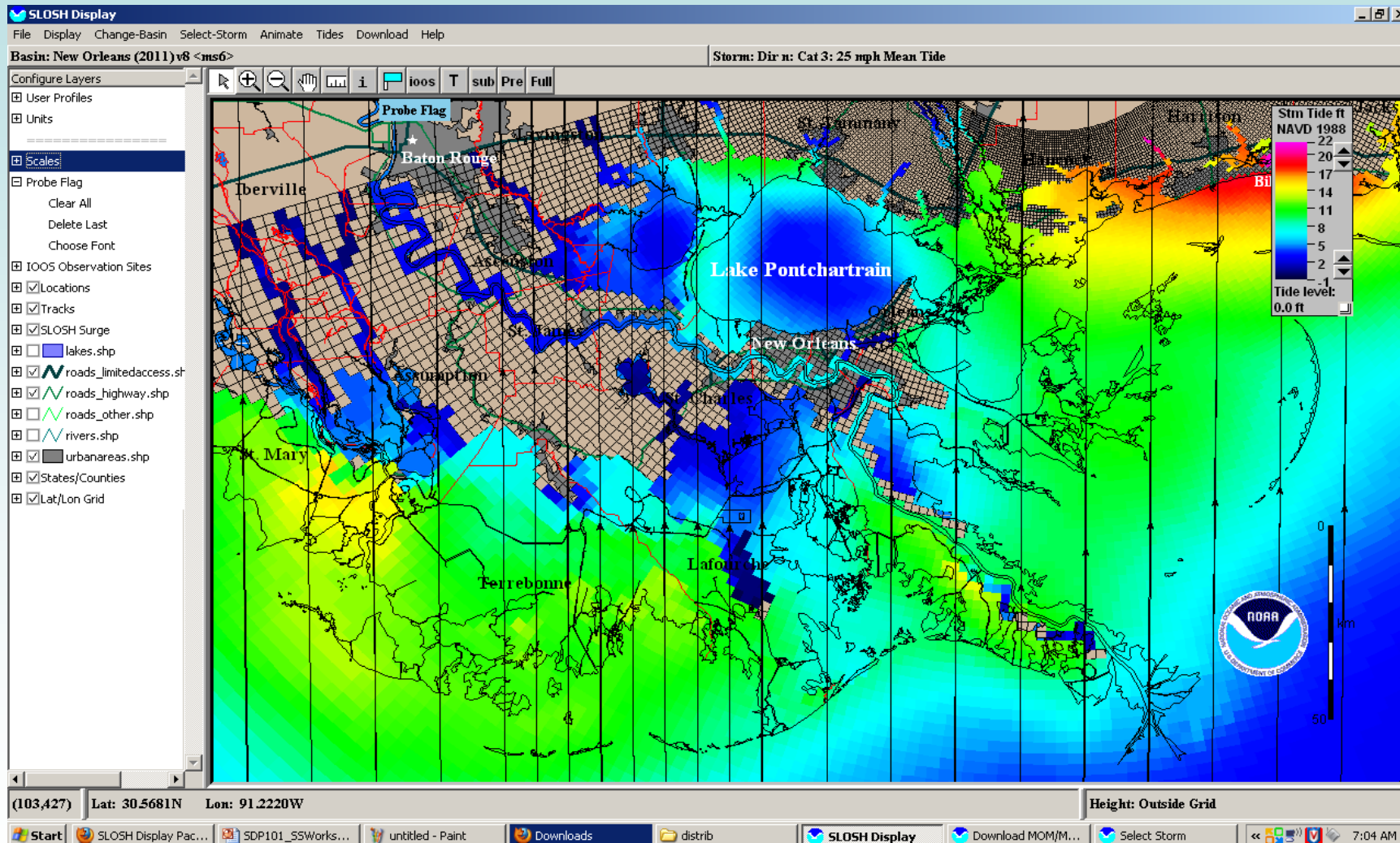


Zoom In

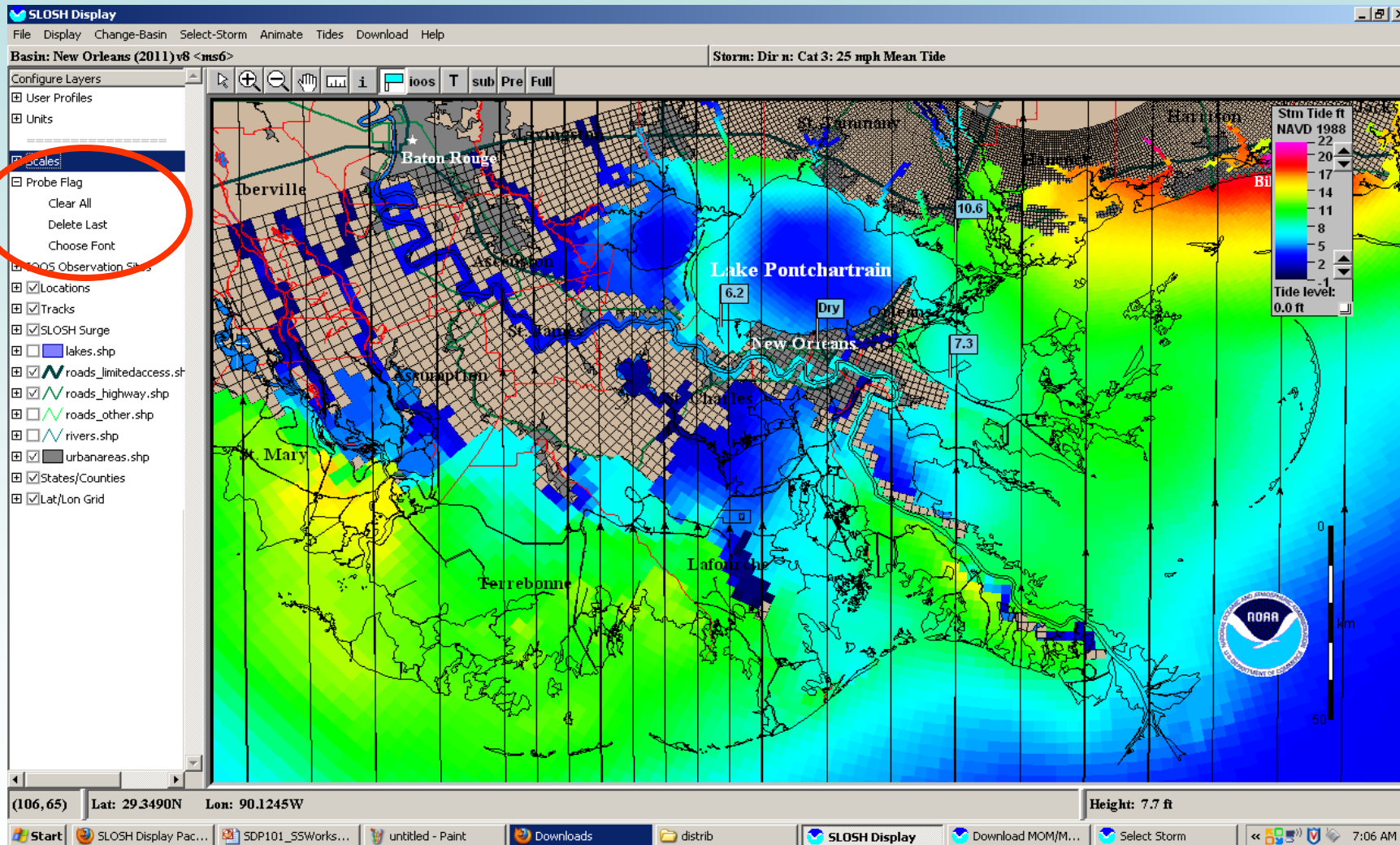




Probe Points

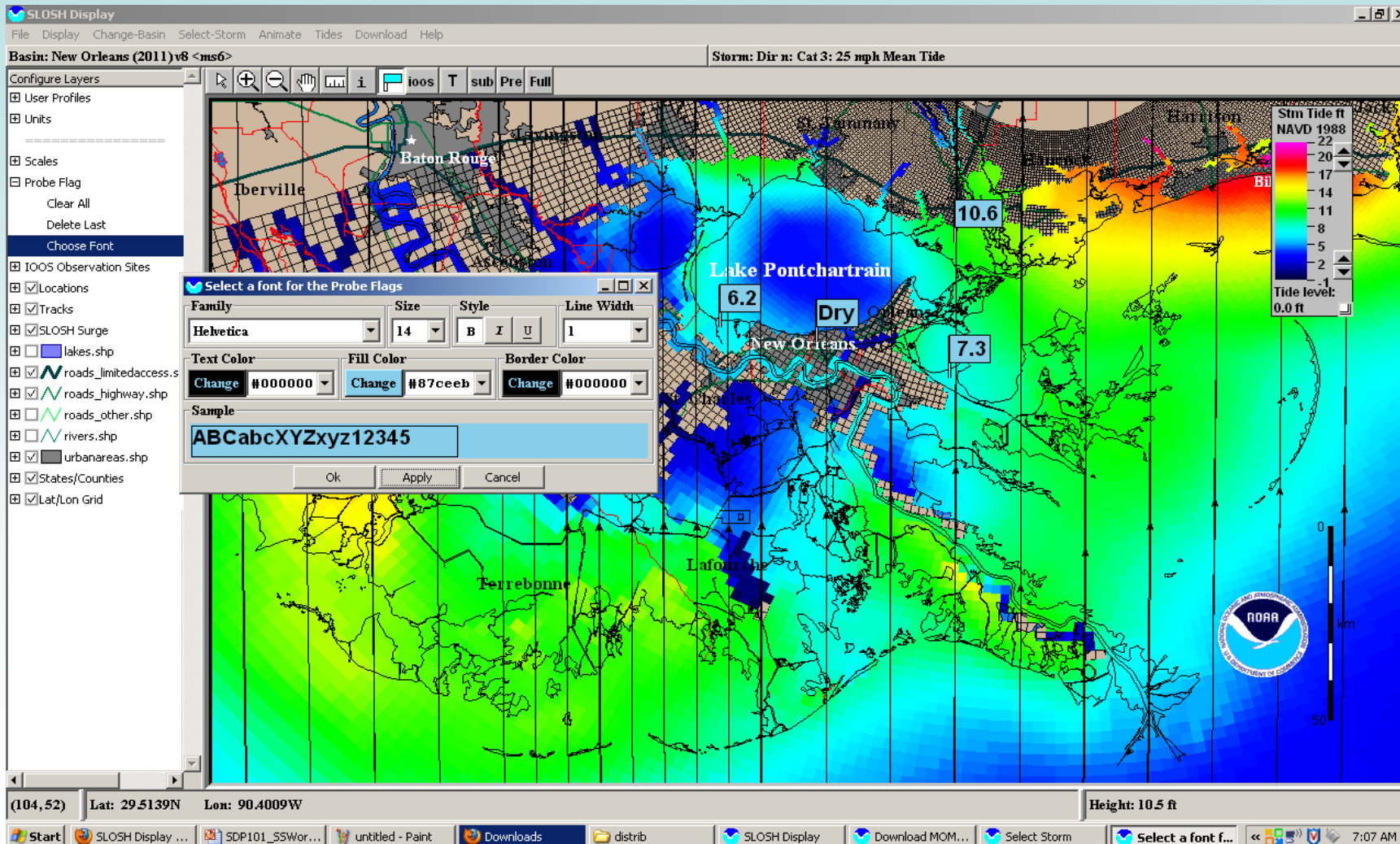


Probe Points



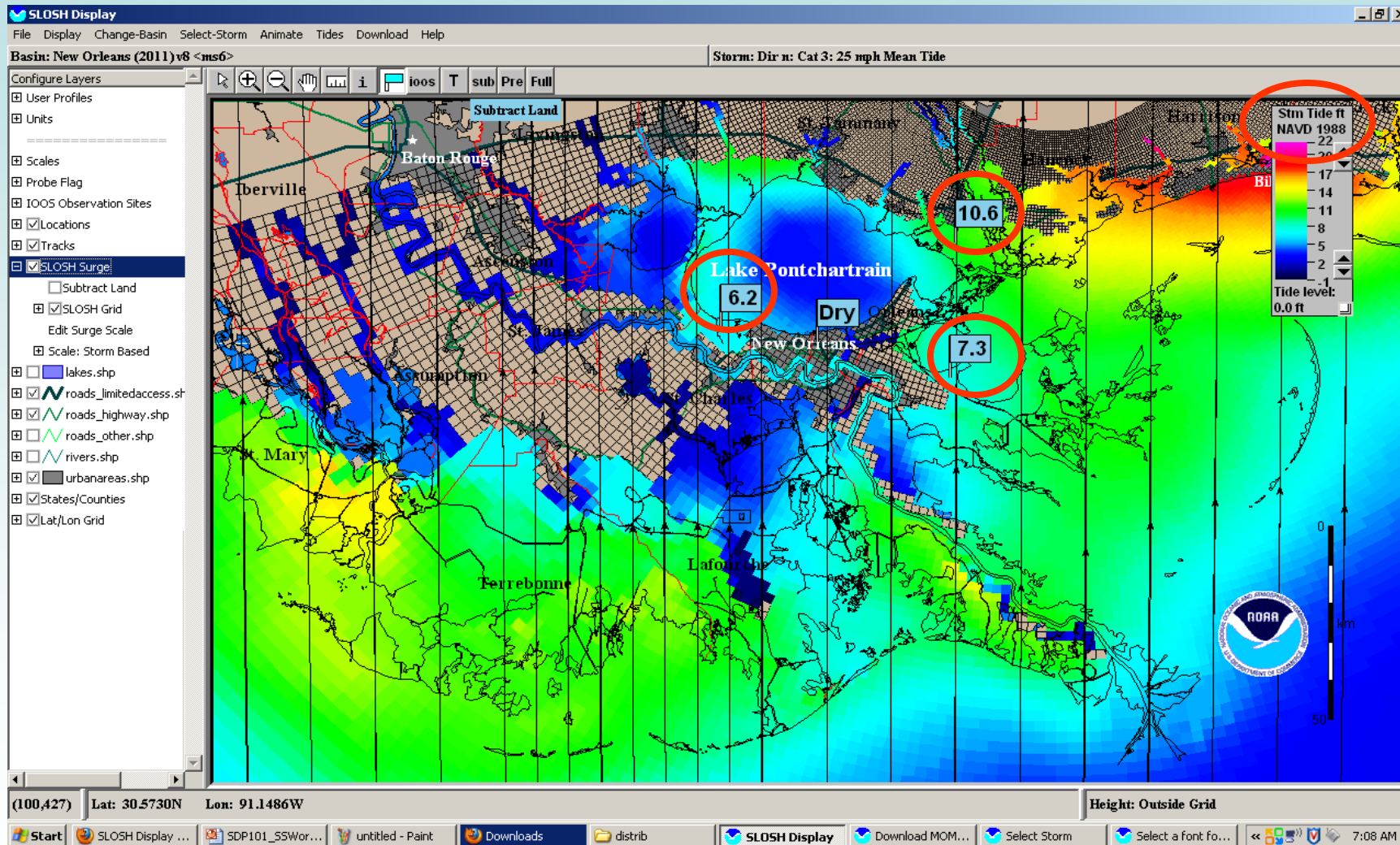


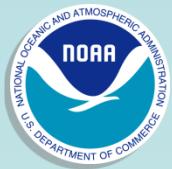
Probe Points



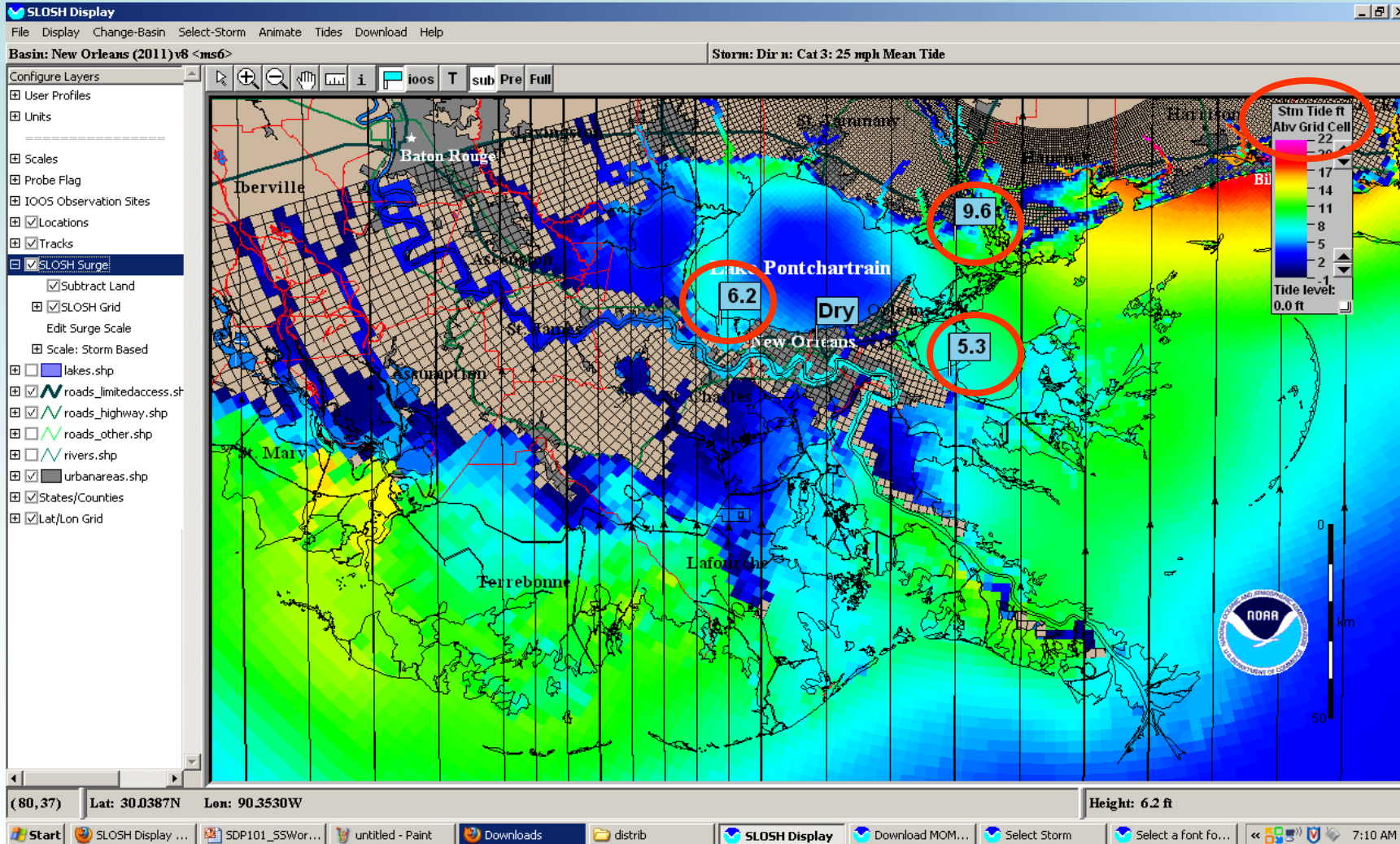


Subtract Land



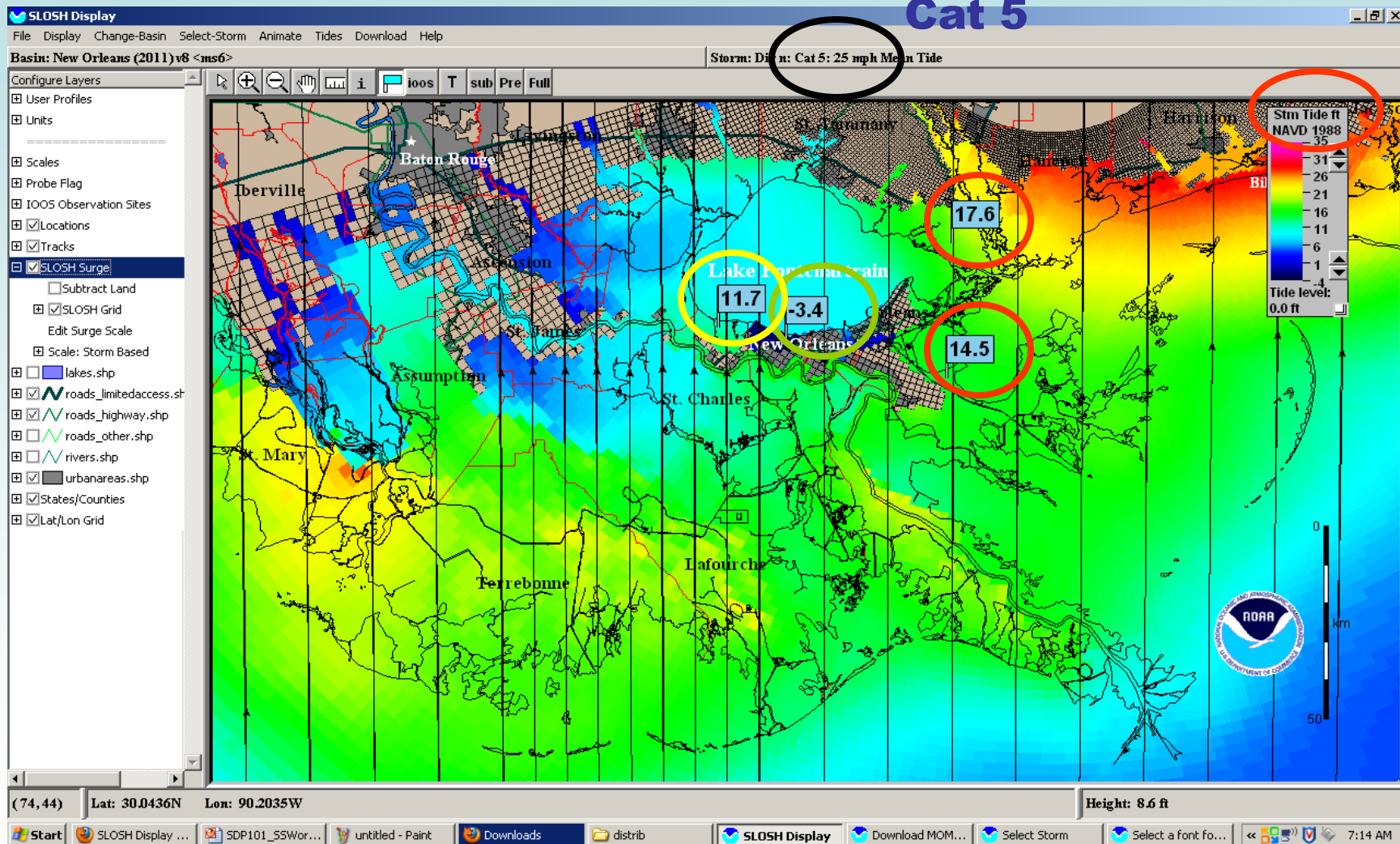


Subtract Land



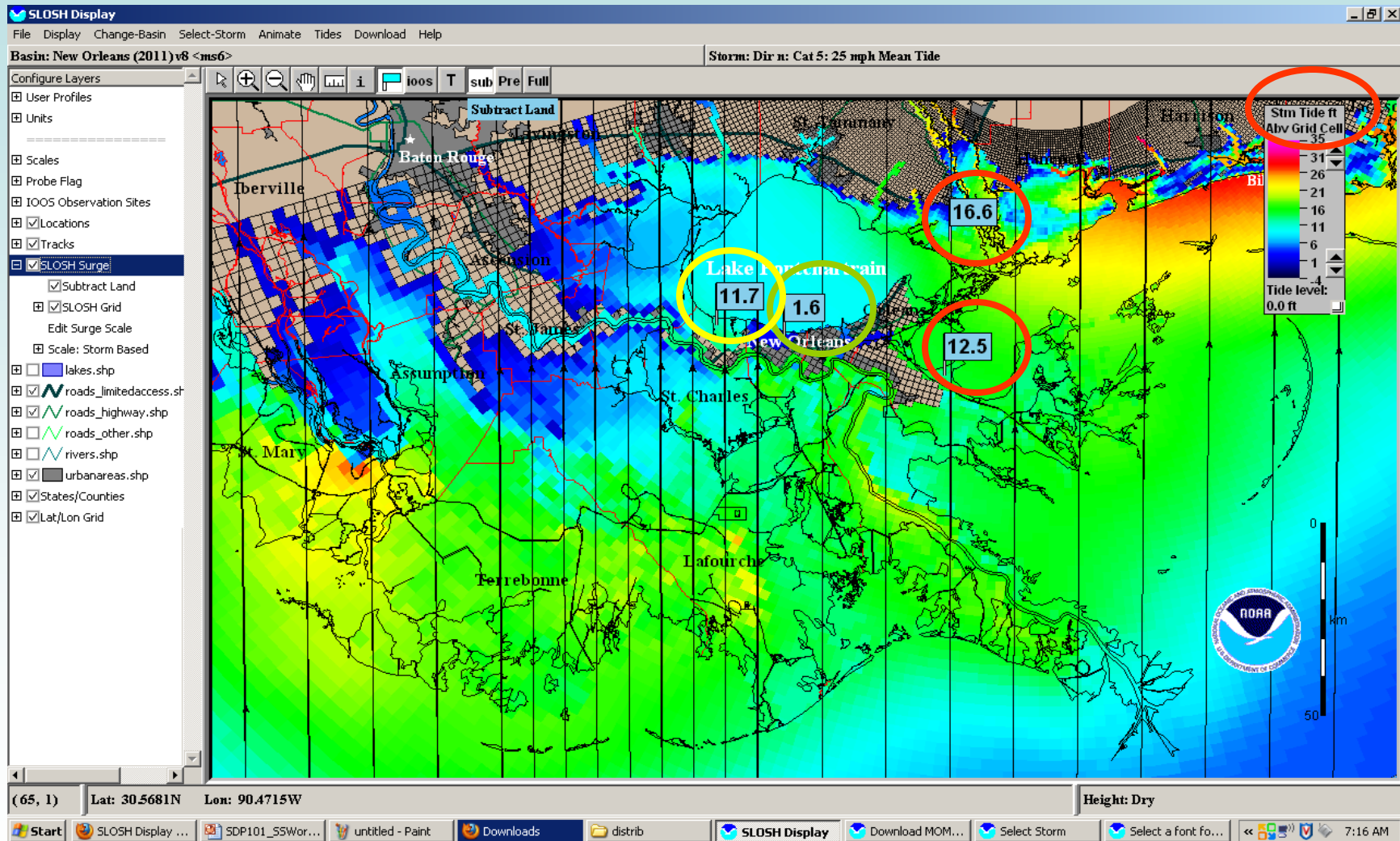


Subtract Land (New Orleans)



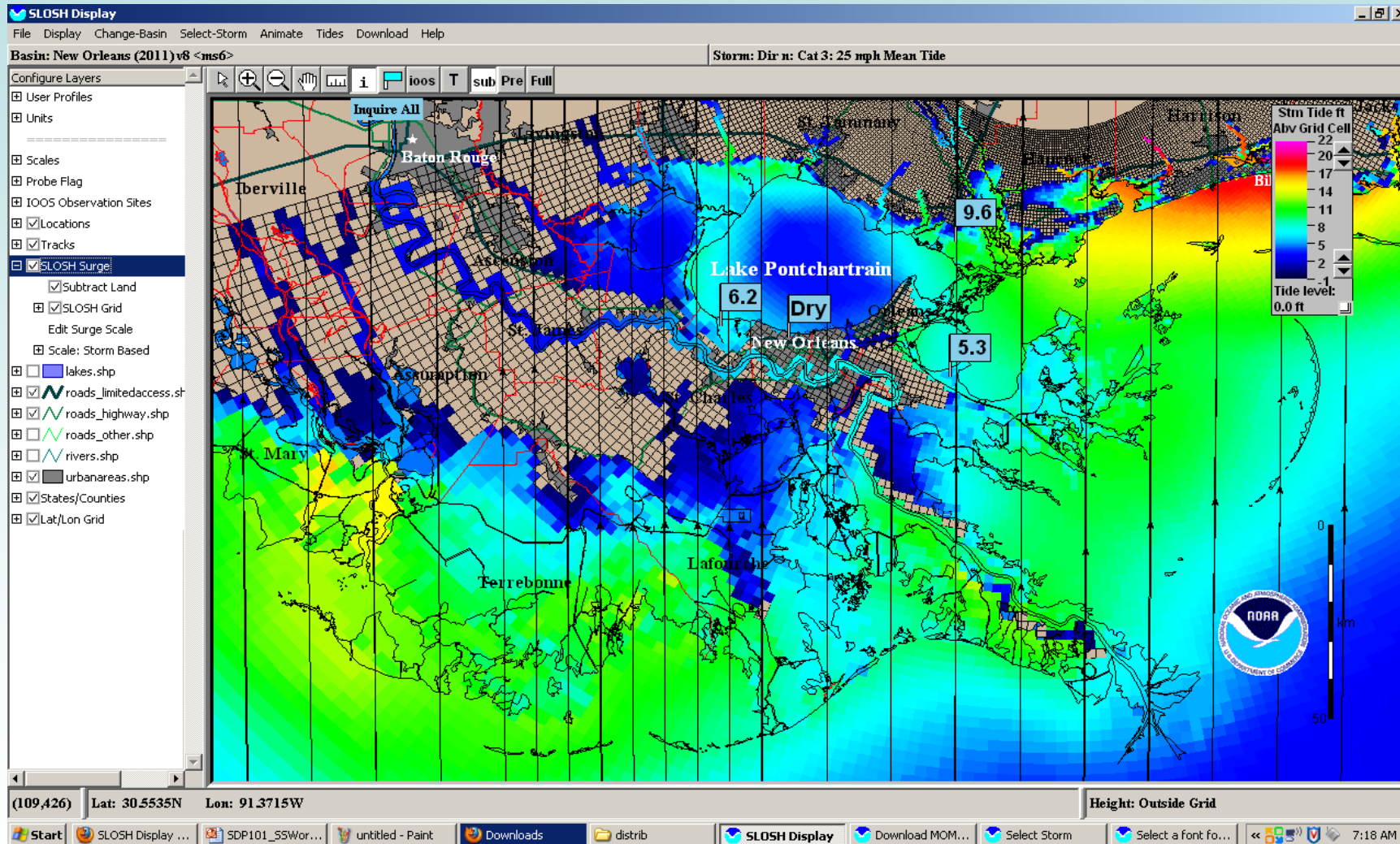


Subtract Land (New Orleans)





Inquire All



Inquire All

Recent Fixes:

- Double click select
- Abv Grid Cell label

SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: New Orleans (2011)v8 <ms6> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

Sub Pre Full

Stm Tide ft Abv Grid Cell

22
20
17
14
11
8
5
2
-1
Tide level: 0.0 ft

Lake Pontchartrain

9.6

AVAILABLE MEOWS

Tropical Storm Feet Abv Grid Cell		Category 1 Feet Abv Grid Cell		Category 2 Feet Abv Grid Cell		Category 3 Feet Abv Grid Cell	
n 05 I2	2.2	nw 05 I2	5.0	nw 15 I2	10.7	w 25 I0	10.3
nw 05 I2	2.2	nw 05 I2	4.9	ww 15 I2	10.7	nw 15 I2	10.2
nw 05 I2	2.1	ww 05 I2	4.8	nw 10 I2	10.2	e 05 I2	10.1
ww 05 I2	2.1	n 05 I2	4.5	nw 25 I2	10.2	ne 10 I2	9.8
ne 05 I2	1.3	nw 10 I2	4.4	nw 05 I2	10.1	ne 05 I0	9.7
e 05 I2	1.0	nw 10 I2	4.2	nw 15 I2	10.1	nw 10 I0	9.7
e 10 I2	1.0	nw 10 I2	4.1	ww 10 I2	10.1	n 25 I0	9.6
e 15 I2	1.0	nw 15 I2	3.7	nw 05 I2	10.0	nne 25 I2	8.8
e 25 I2	1.0	w 05 I2	3.6	ww 25 I2	10.0	ene 05 I0	8.7
ene 05 I2	1.0	nne 05 I2	3.5	nw 10 I2	9.9	n 15 I2	8.7
ene 10 I2	1.0	ww 15 I2	3.4	ww 10 I0	9.8	ene 10 I2	8.6
ene 15 I2	1.0	n 10 I2	3.1	n 05 I2	9.7		
ene 25 I2	1.0	ne 05 I2	3.1	ww 15 I0	9.7		
n 15 I2	1.0	nw 15 I2	3.0	nw 25 I2	9.6		

Sort by height Sort by Direct Clockwise Starting Directw

Double click on list item to load MEOW

SLOSH Coordinates: (43,65) Latitude: 30.2342 Longitude:

Save to file Close

(117,66) Lat: 29.0752N Lon: 90.1865W Height: 8.0 ft

N=North, 25=Fwd Speed
I0=Mean Tide or 0 foot
Initial Height

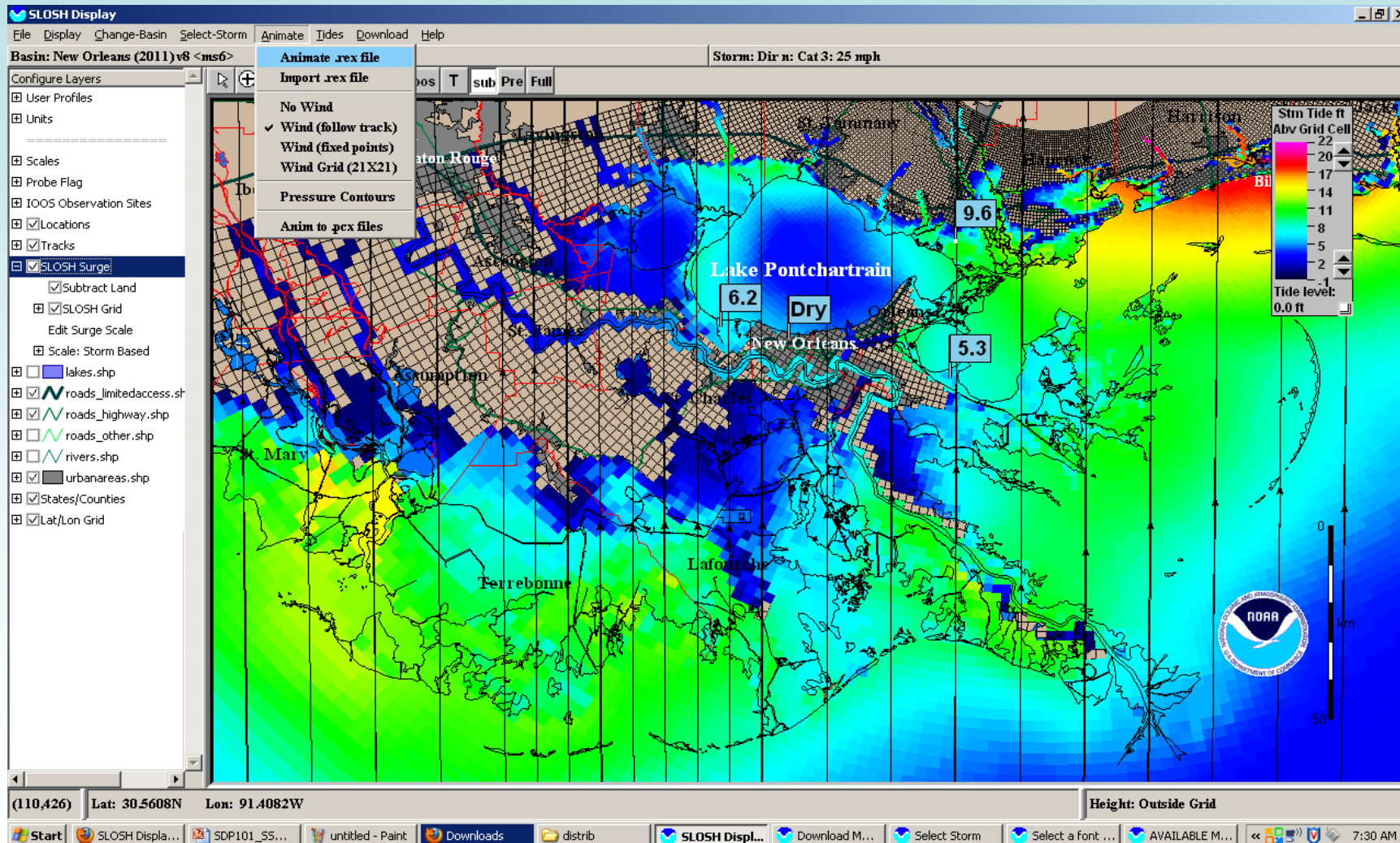
Rex Module



- While thinking about animation files and walking my dog Rex in '97, I asked: If its raining “Cats and Dogs”, we’ve got Cats, where are the Dogs?
- Thus was created the “Rex File”



Animate a Rex File





Animate a Rex File



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: New Orleans (2011)v8 <ms6> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
- IOOS Observation Sites
- Locations
- Tracks
- SLOSH Surge**
 - Subtract Land
 - SLOSH Grid
 - Edit Surge Scale
 - Scale: Storm Based
 - lakes.shp
 - roads_limitedaccess.shp
 - roads_highway.shp
 - roads_other.shp
 - rivers.shp
 - urbanareas.shp
 - States/Countries
 - Lat/Lon Grid

Animation Setup

Animation Filename	Basin Name
2005Dennis_key.rex	ekey: Florida Bay v2
2005Dennis_pns.rex	epns: Pensacola Bay v2
2005Dennis_tpa.rex	etpa: Tampa Bay v2
2005Katrina_bix.rex	bbix: MS- Gulf Coast
2005Katrina_mob.rex	emob: Mobile Bay v2
2005Katrina_msk.rex	mks: New Orleans (2006)v3
2008Gustav_msb.rex	msb: New Orleans v5
2008Ike_g12.rex	eg12: Galveston Bay (2002)v3
lunia_e10.rex	lunia: Biscayne Bay v3
lunia_gt4.rex	lunia: Biscayne Bay v3

Full path of files Update list of Animations

Sort by Year?

Hurricane IKE
Delta P=54 MB; RMW= 30 St. Mi.; Datums: 1.0 OCEAN, 1.0 INLAN

Animation Info:	Surge Limits:	Basin Dimensions:
Start Frame: 0	max feet: 22.0	i-min: 0
Stop Frame: 284	min feet: 0.0	i-max: 75
Total Frames: 284	<input type="checkbox"/> P.Rex?	j-min: 0
Frames per sec: 10.0	P.Rex Level 0	j-max: 99

Start Store Settings Cancel

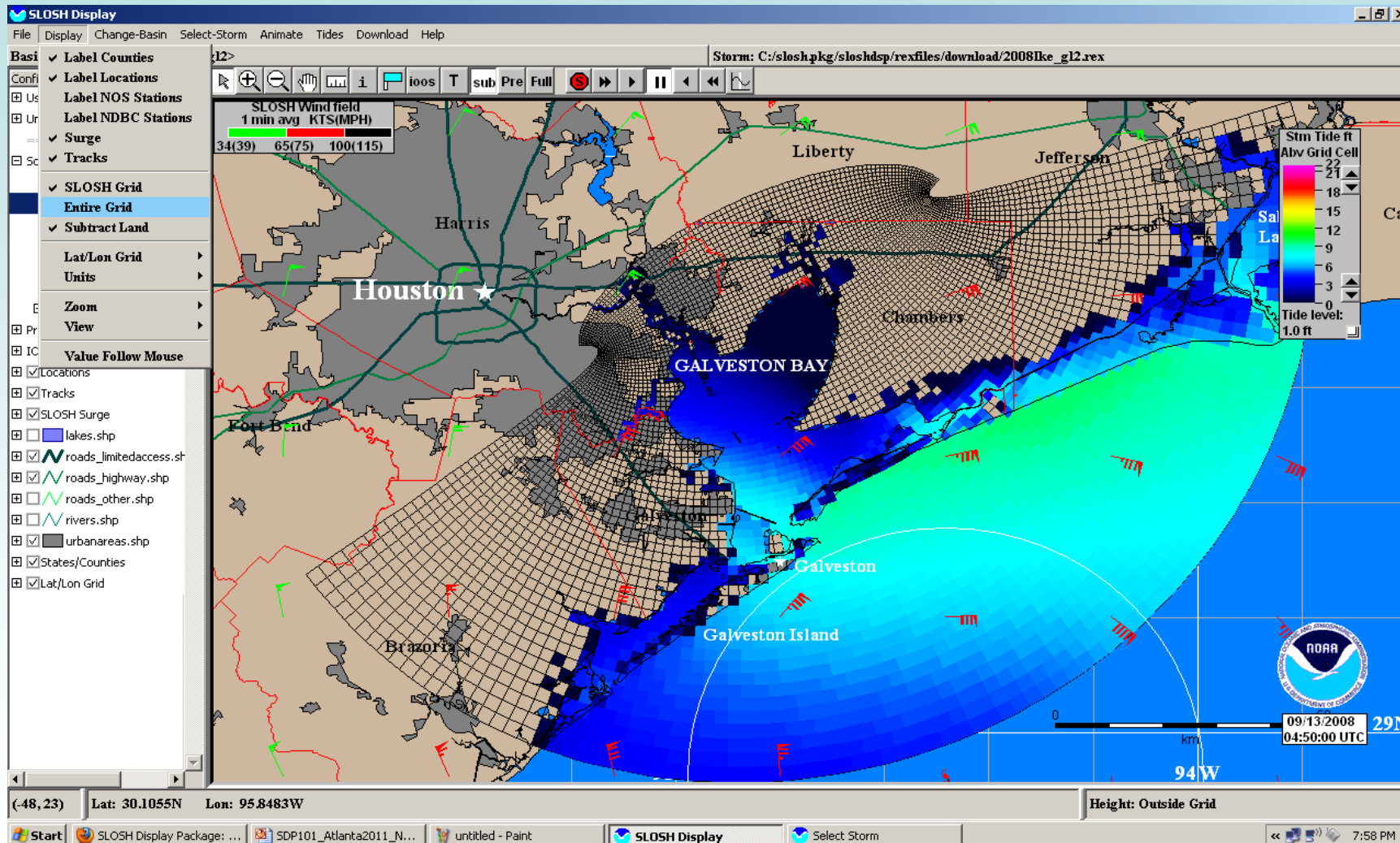
Stm Tide ft
Abv Grid Cell
22
20
17
14
11
8
5
2
Tide level: 0.0 ft

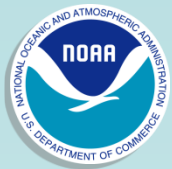
Lat: 30.3138N Lon: 89.6022W Height: Dry

Start SLOSH Displa... SDP101_SS... untitled - Paint Downloads distrib SLOSH Display Download M... Select a font ... Select Storm Animation ... 7:39 AM

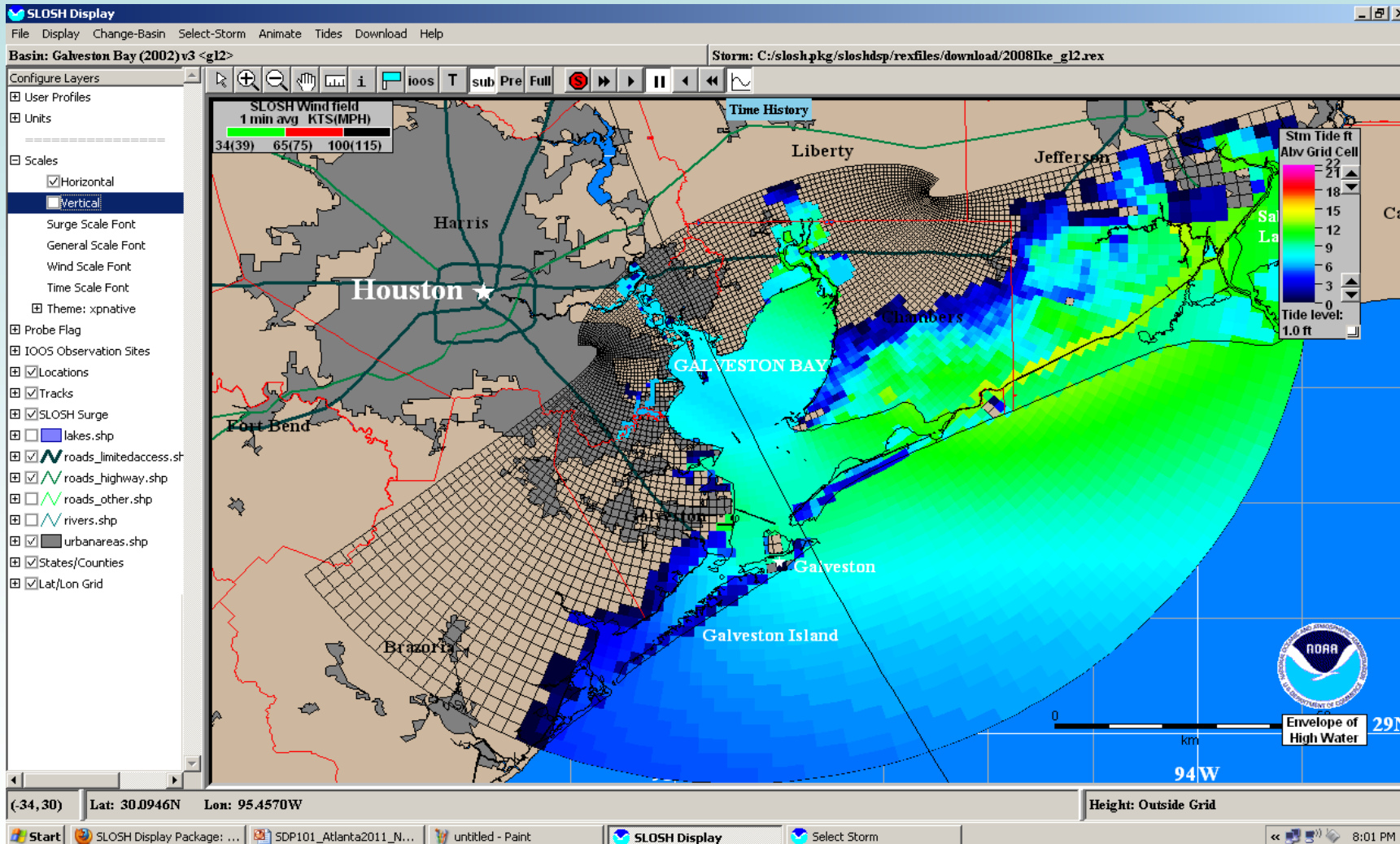
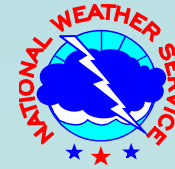


Animate a Rex File



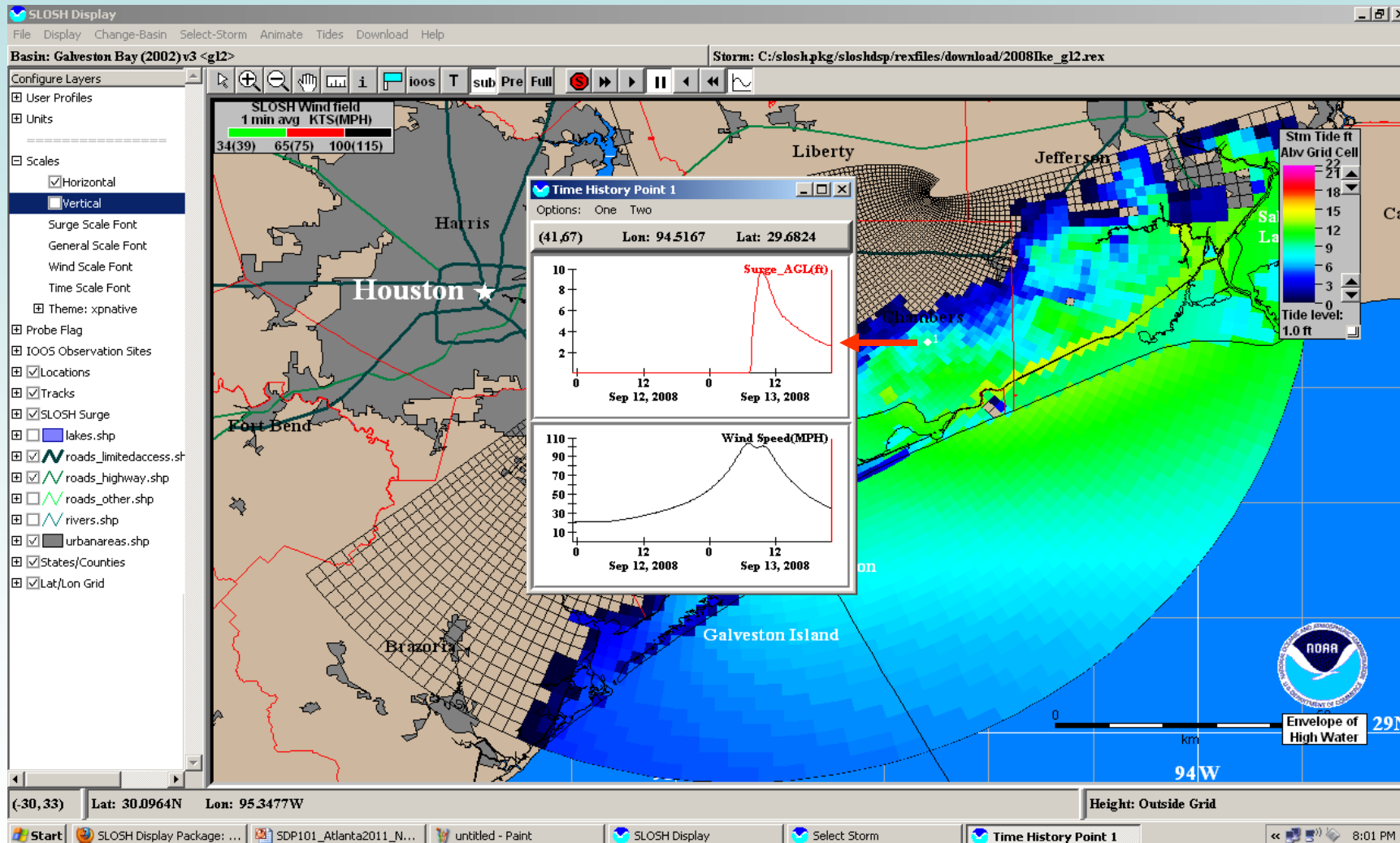


Animate a Rex File



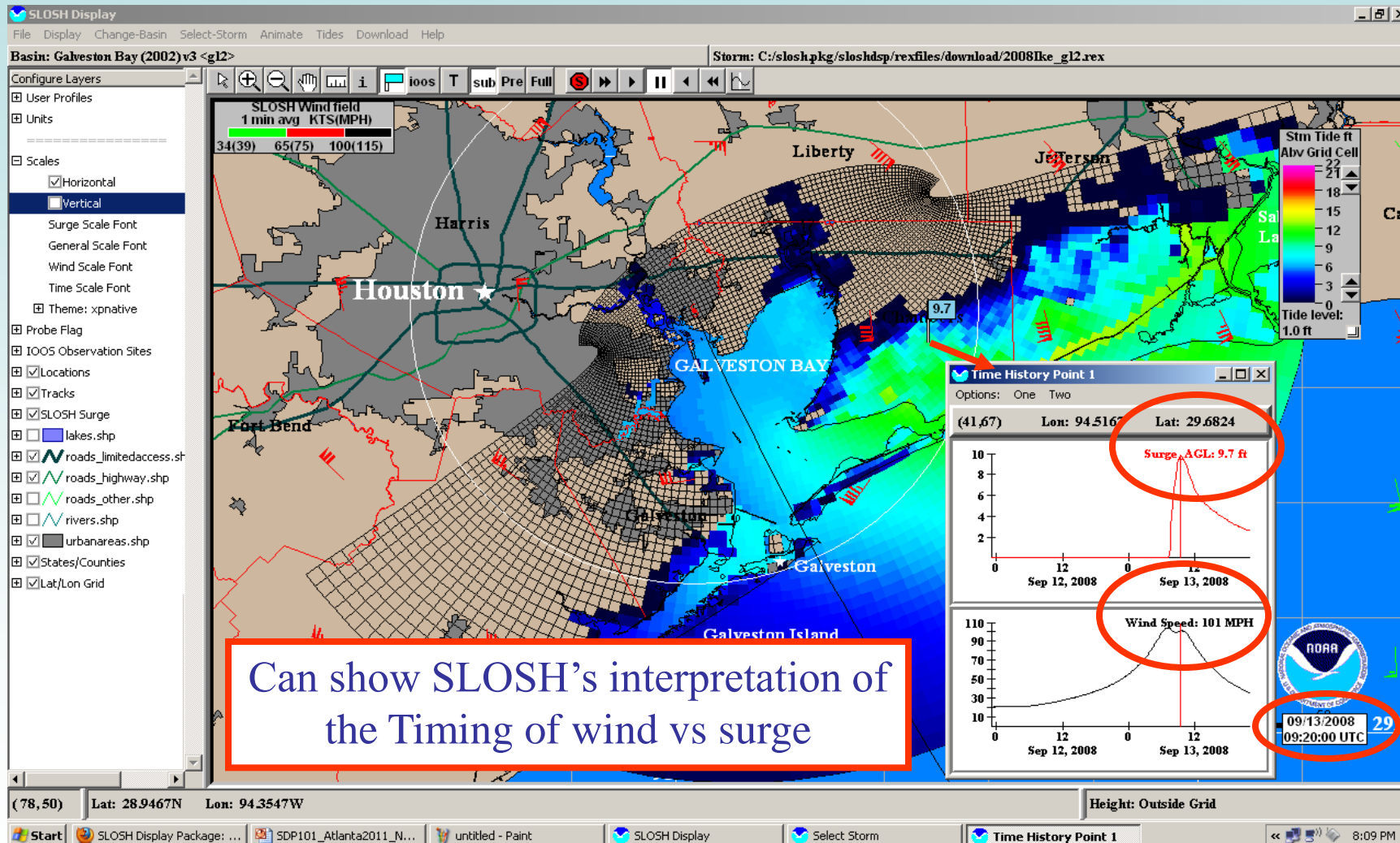


Time History Point



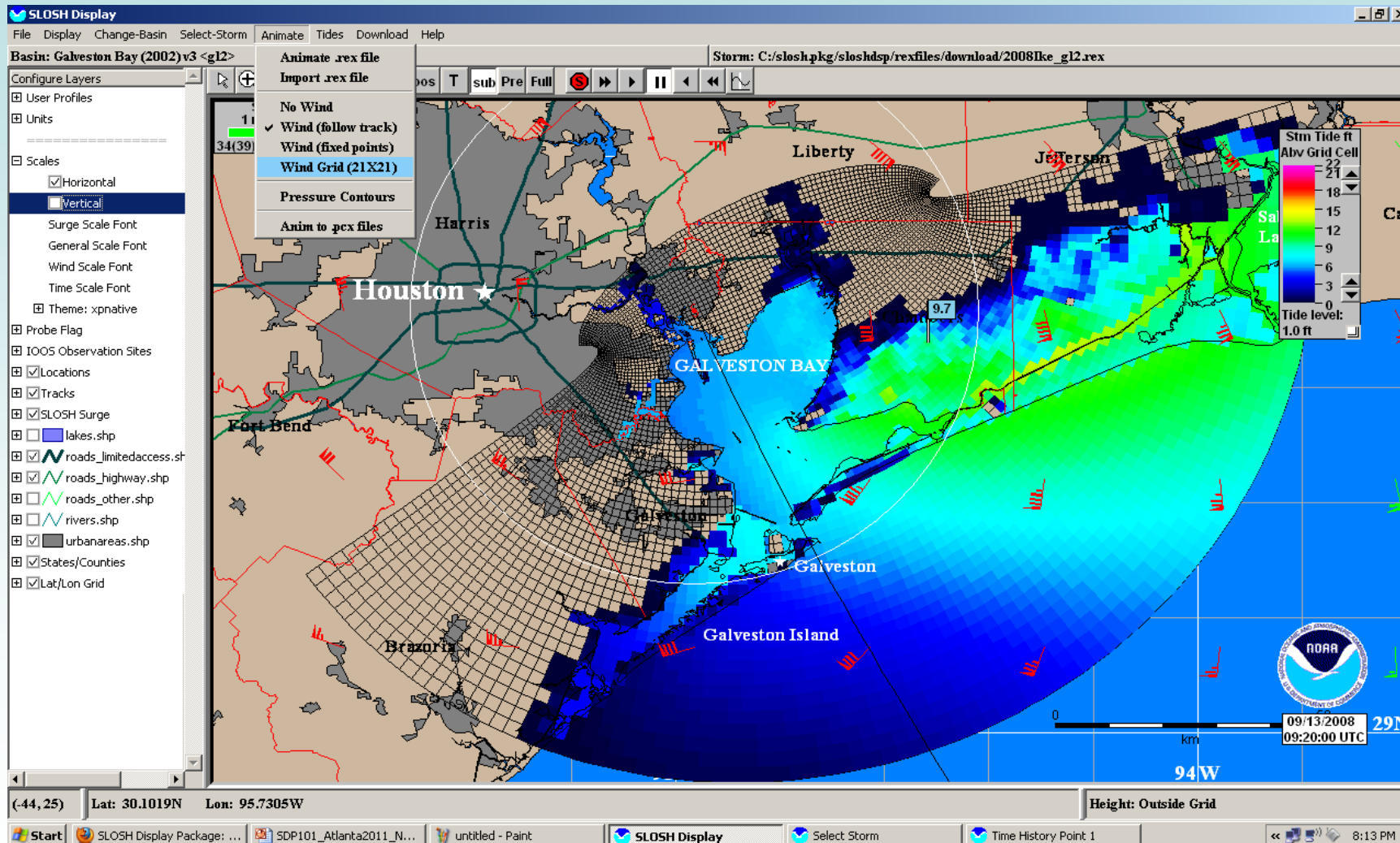


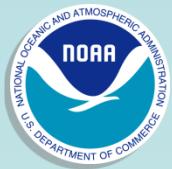
Time History Point



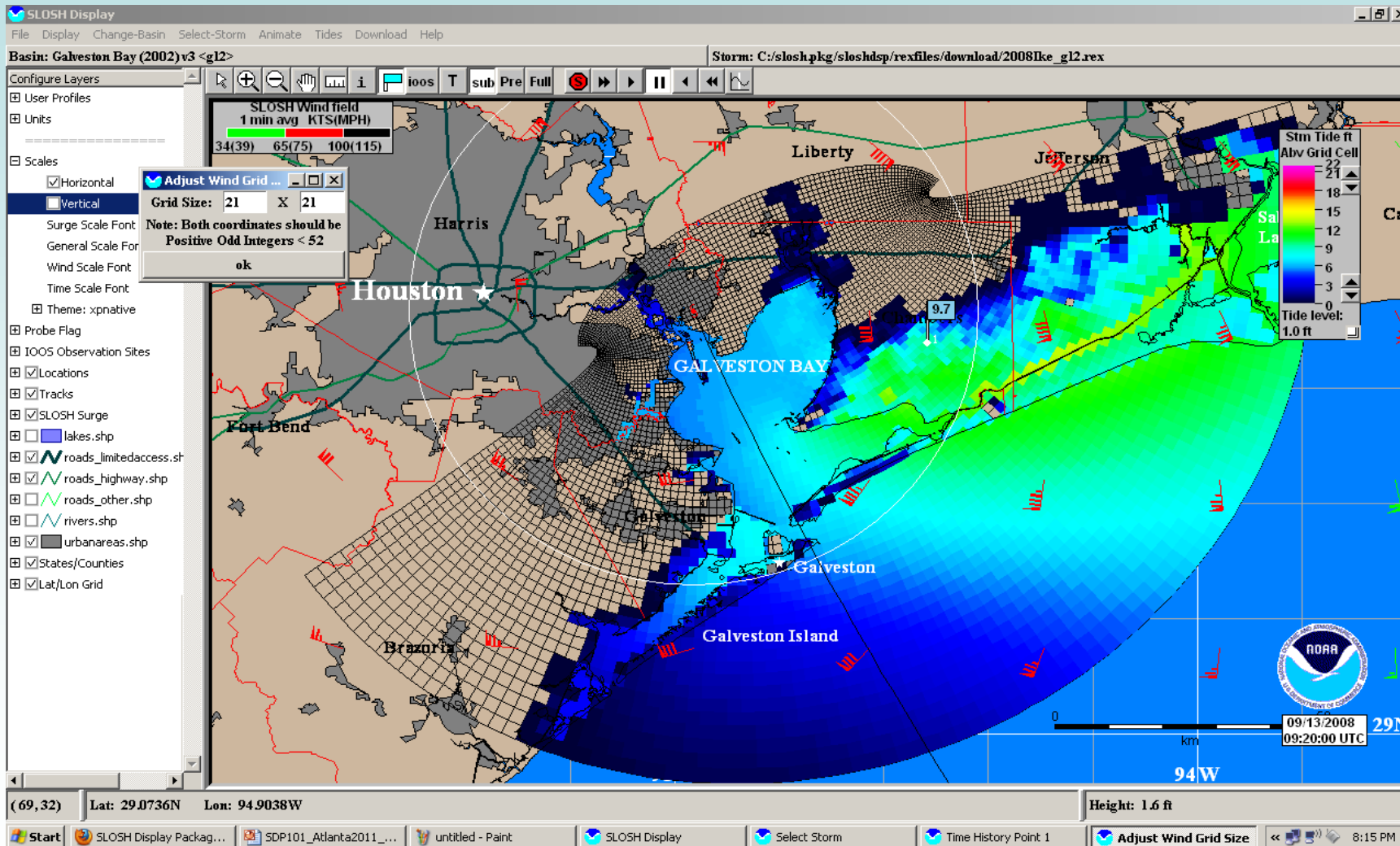


Wind Barbs



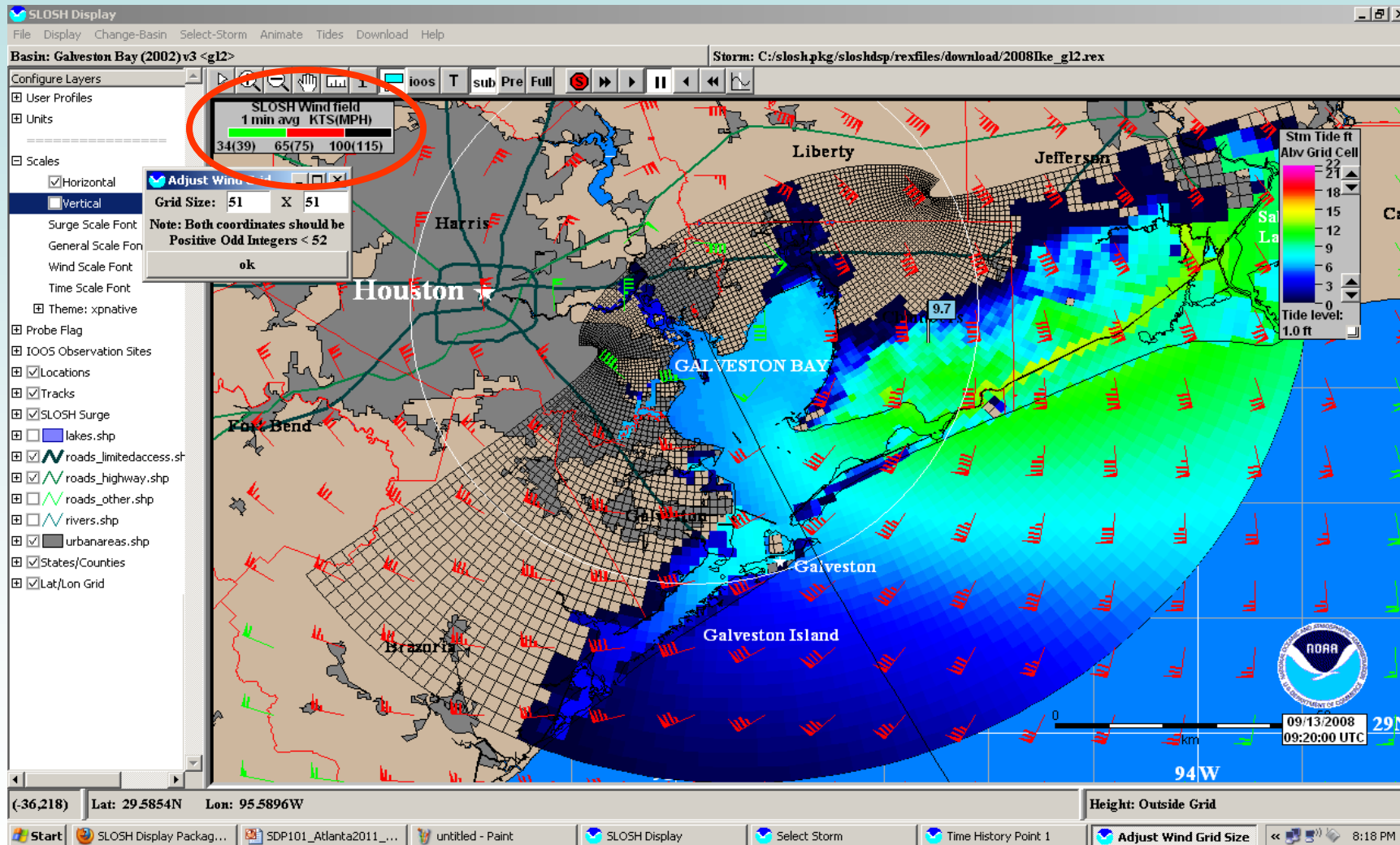


Wind Barbs



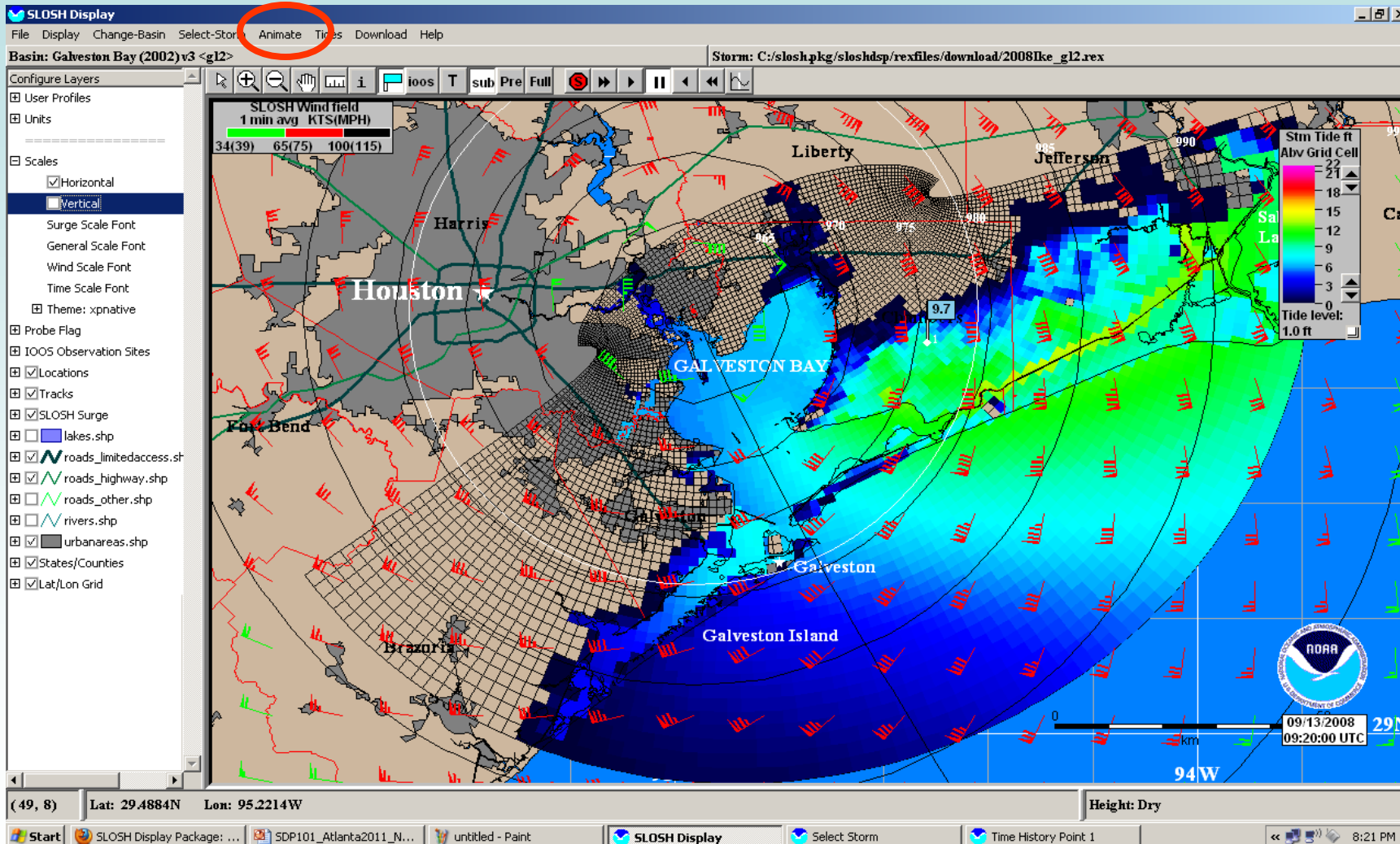


Wind Barbs



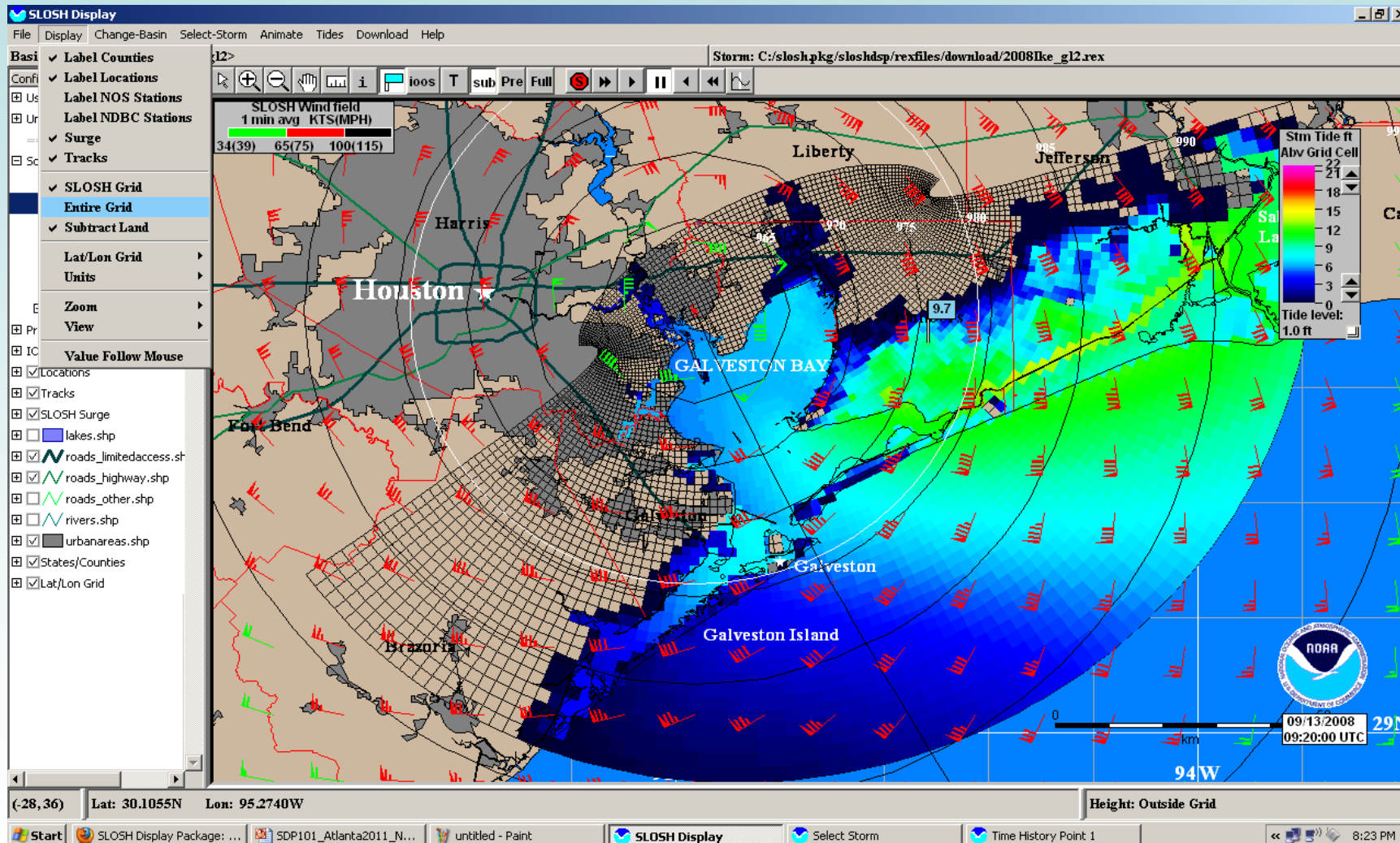


Pressure Contours



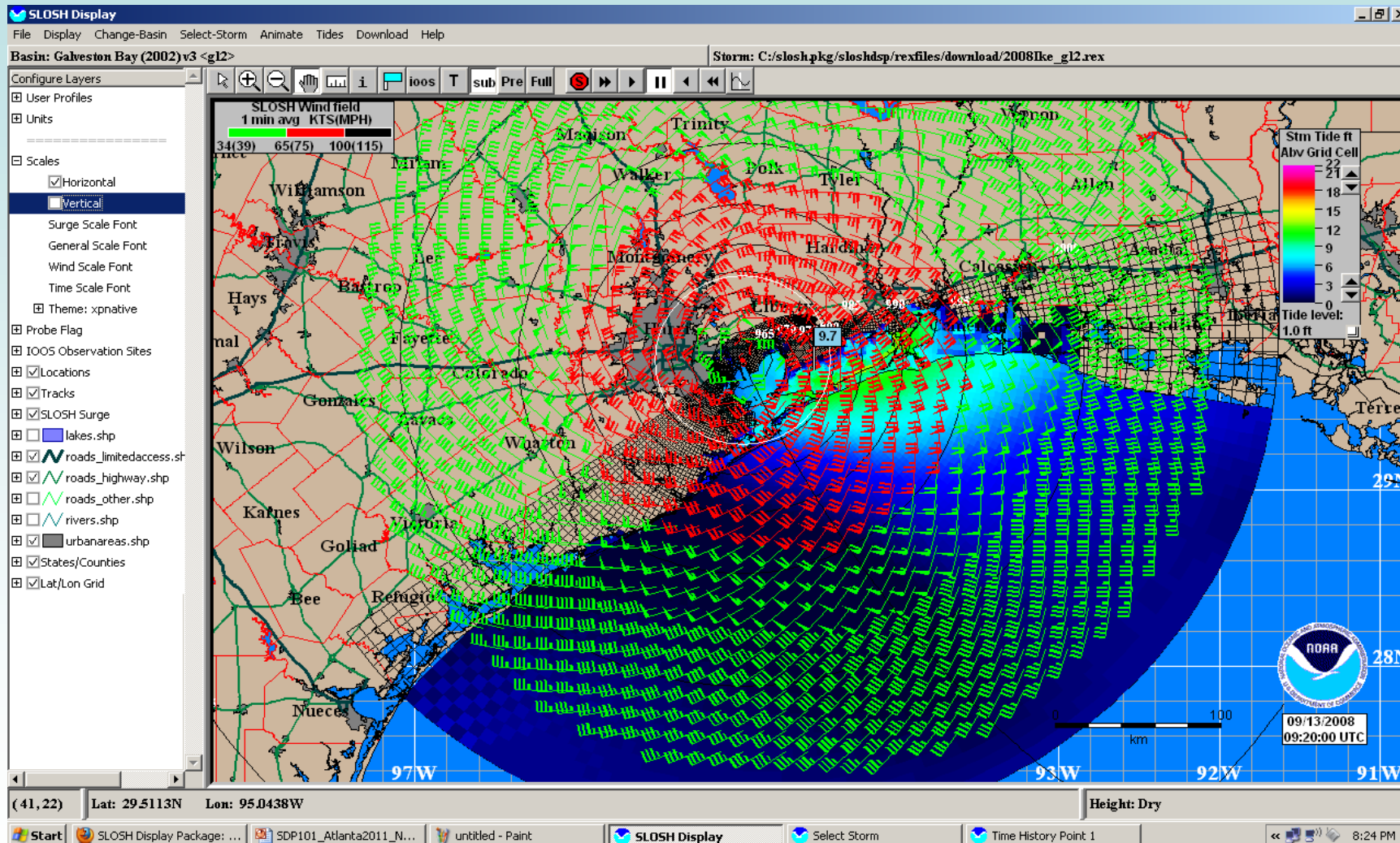


Entire Grid



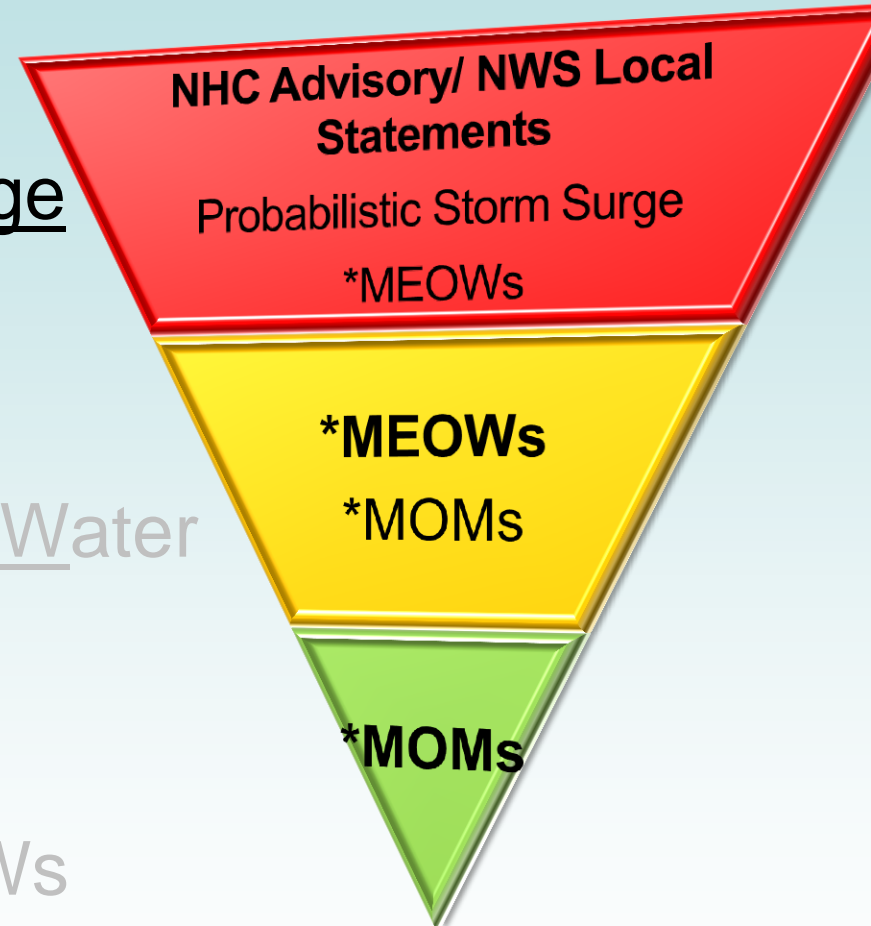


Entire Grid

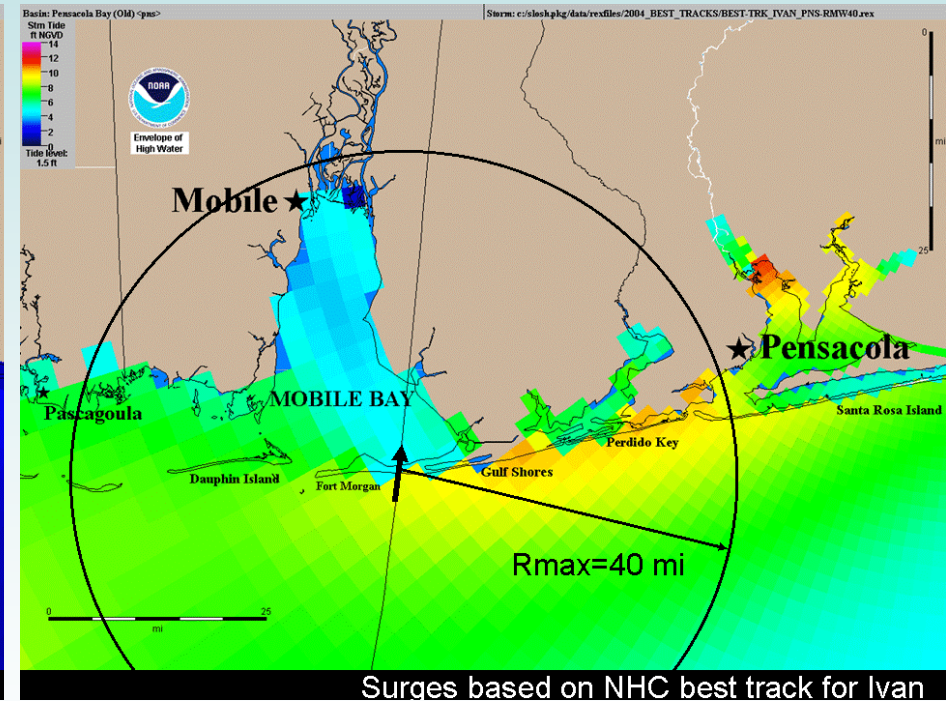
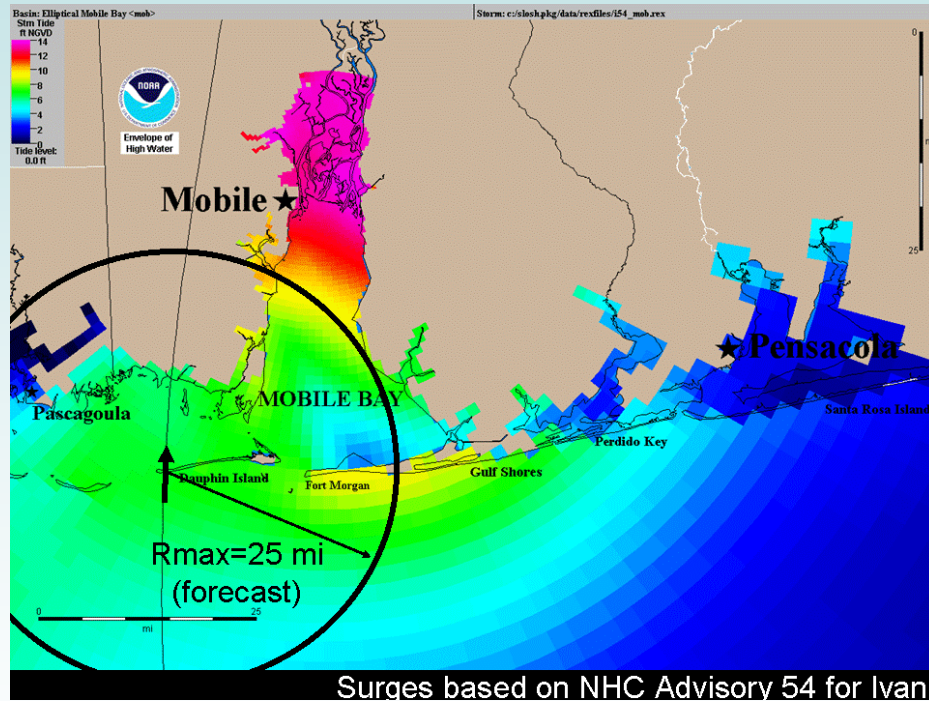


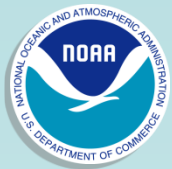
Ensemble Products

- P-Surge
 - Probabilistic Storm Surge
- MEOW
 - Maximum Envelope Of Water
- MOM
 - Maximum Of the MEOWs

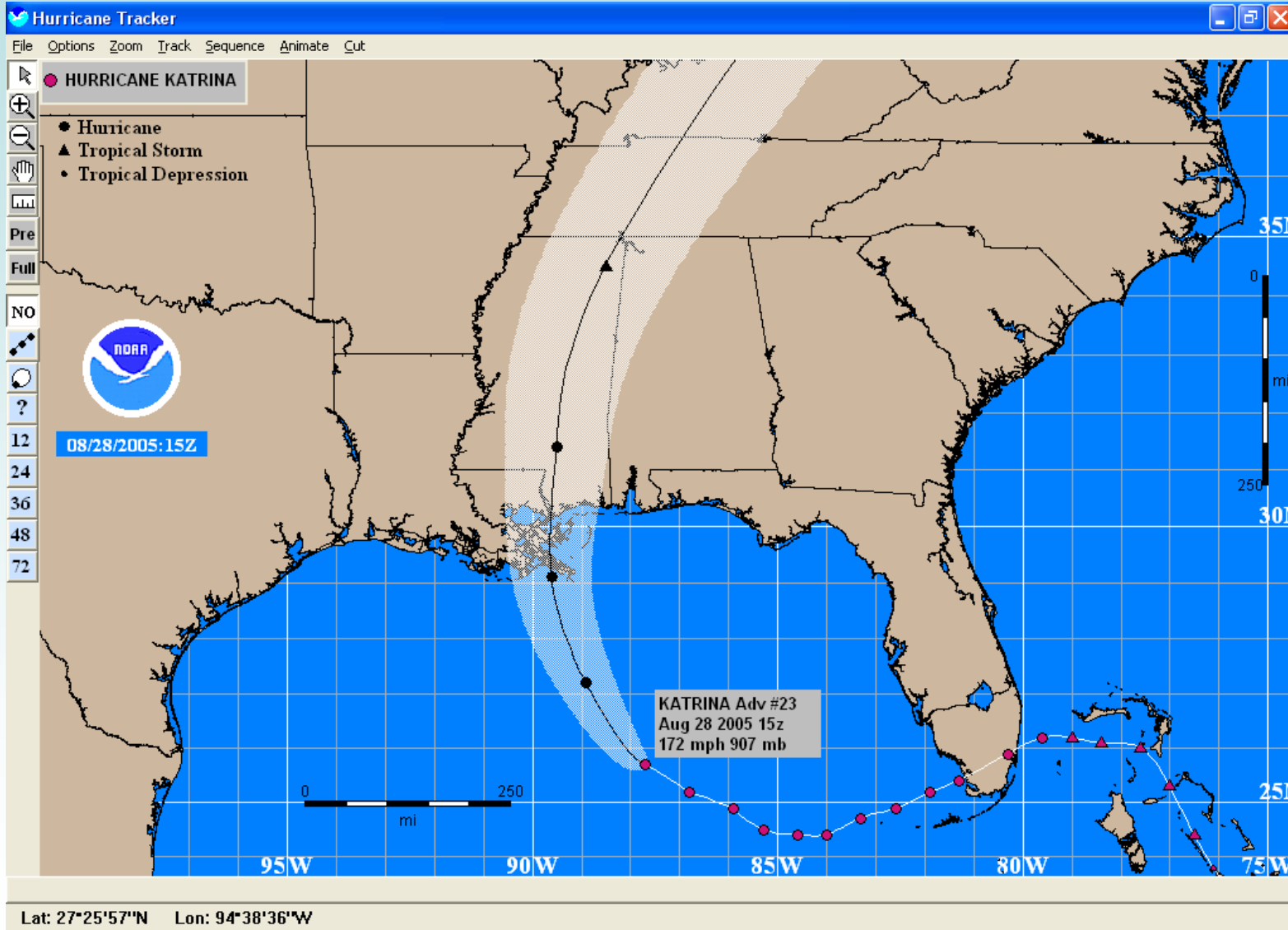


Hurricane Ivan: A case study

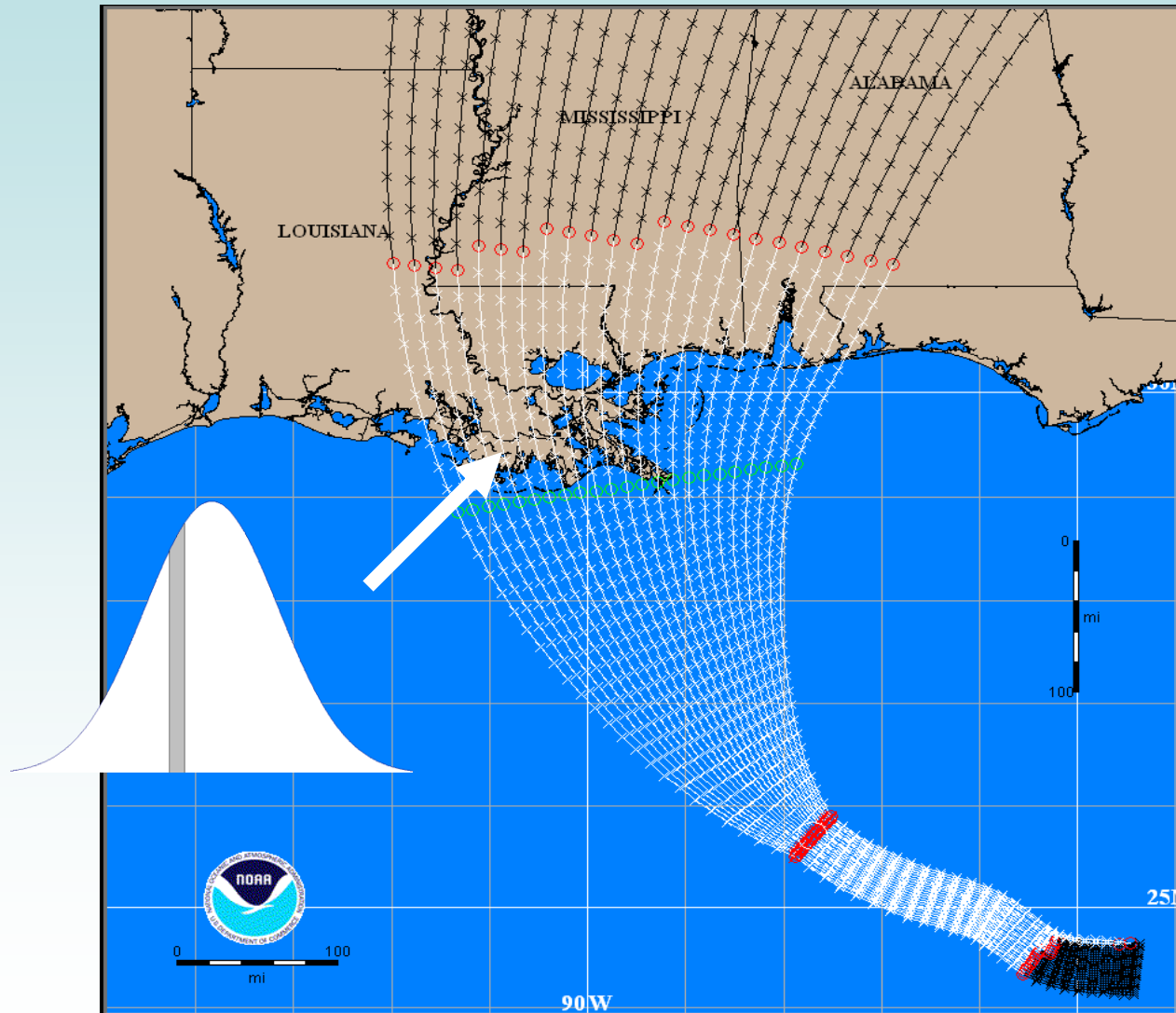




Katrina Advisory 23



P-surge - Vary Cross Track

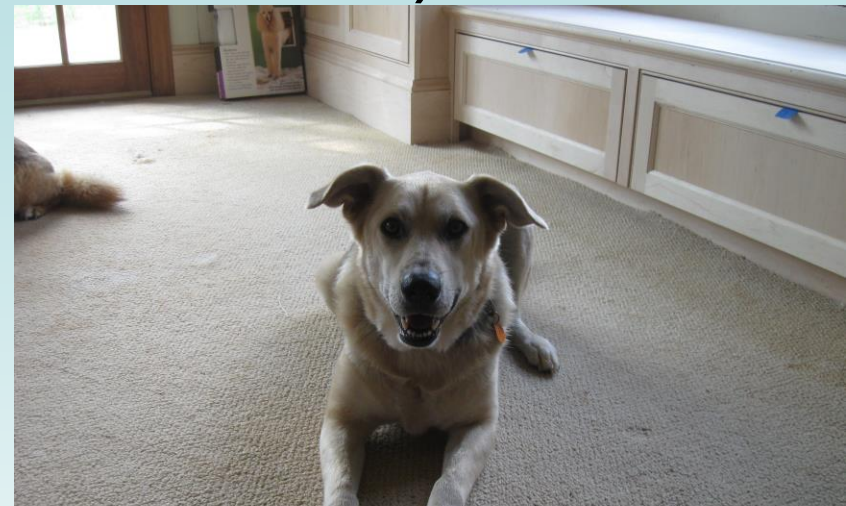




But wait, I have more dogs (all adopted from shelters)



**Adventure:
Small, Intense,
Slower**

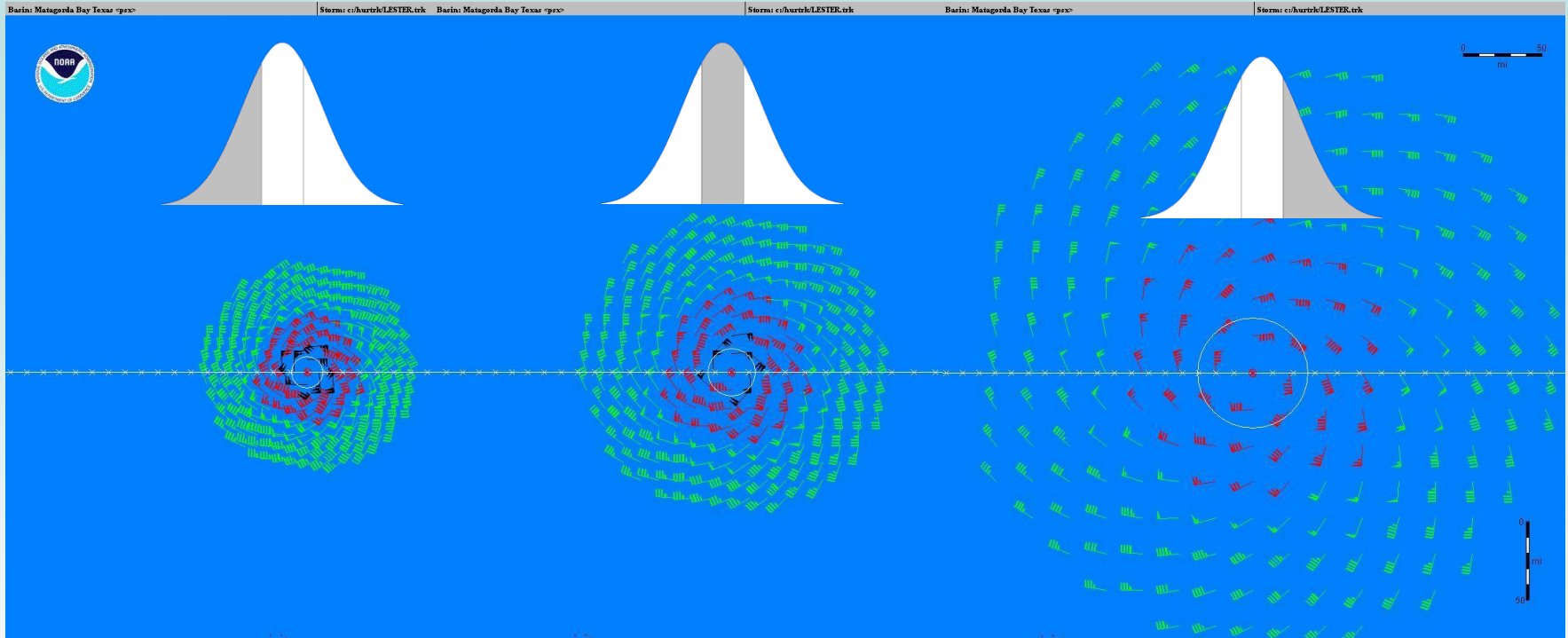


**Buddy:
Large, Laid Back,
Medium speed**



**Sandy: Medium Size,
Medium Intensity,
Fast**

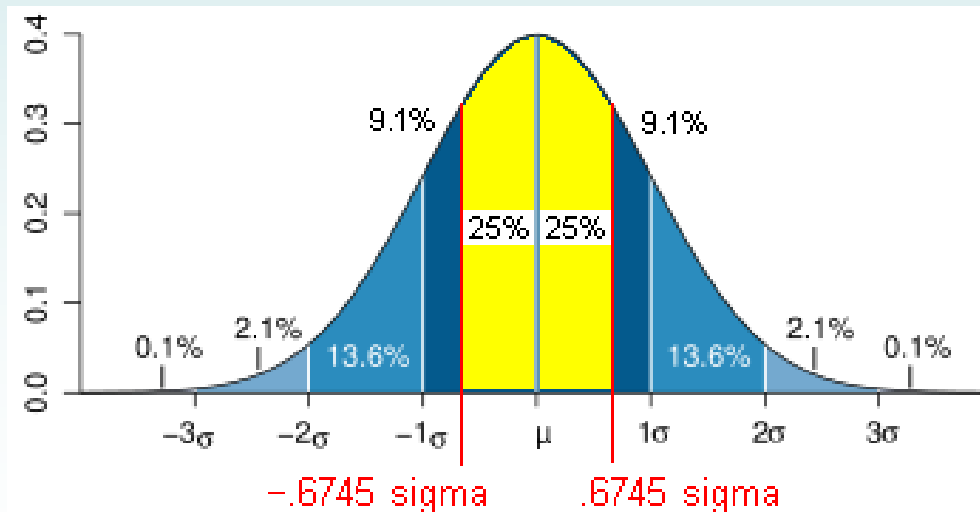
P-Surge – Vary Other Variables



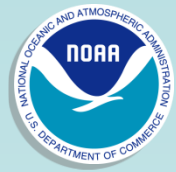
- Size: Small (30%), Medium (40%), Large (30%)
- Forward Speed: Fast (30%), Medium (40%), Slow (30%)
- Intensity: Strong (30%), Medium (40%), Weak (30%)

P-surge Error Distributions

- Error distributions are computed for cross track, along track and intensity by:
 - Assuming a normal distribution
 - Using a 5-year “mean absolute error” and getting the standard deviation (sigma) from:



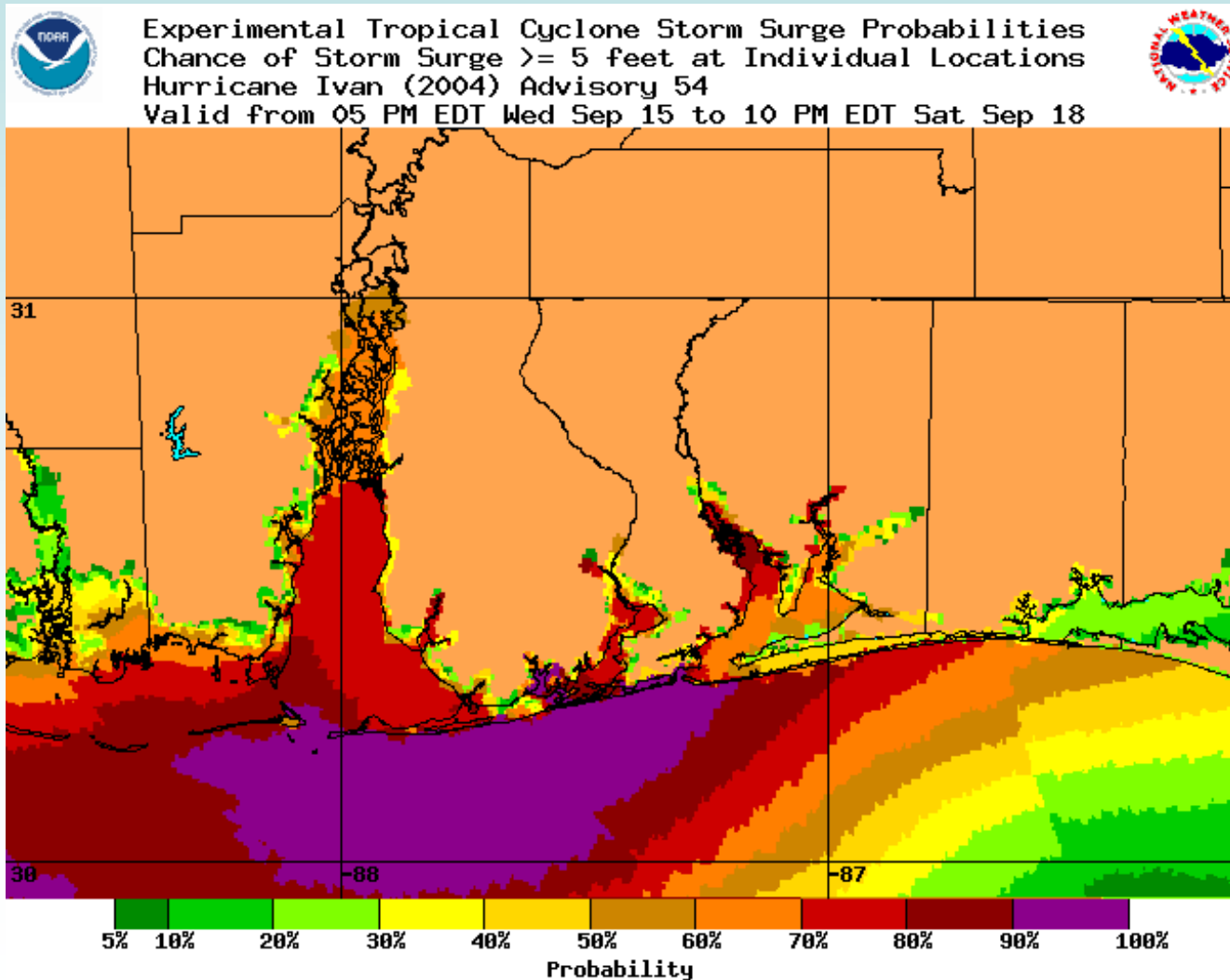
Mean absolute error occurs at $.6745\sigma$

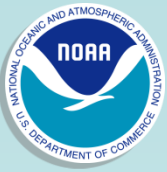


Probability of ≥ 5 feet of Surge



<http://www.weather.gov/mdl/psurge/>

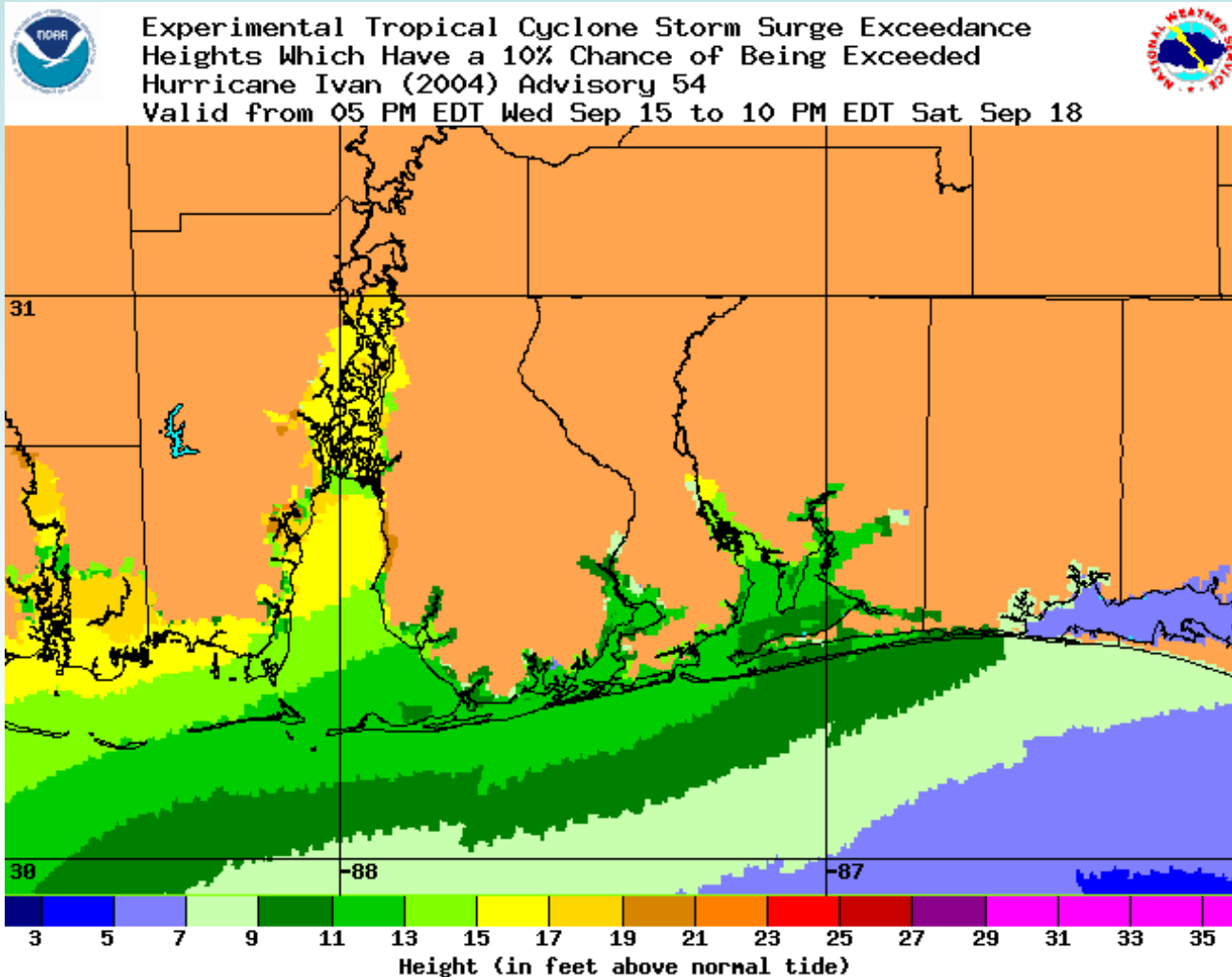




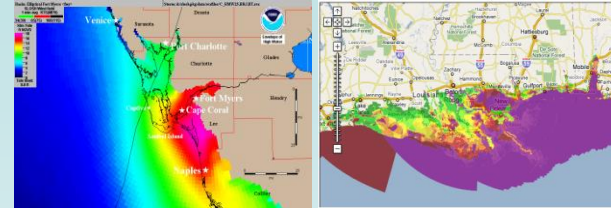
Surge Height Exceeded by 10% of Ensemble Members



<http://www.weather.gov/mdl/psurge/>



- Mix Surge model output



- with Tide predictions

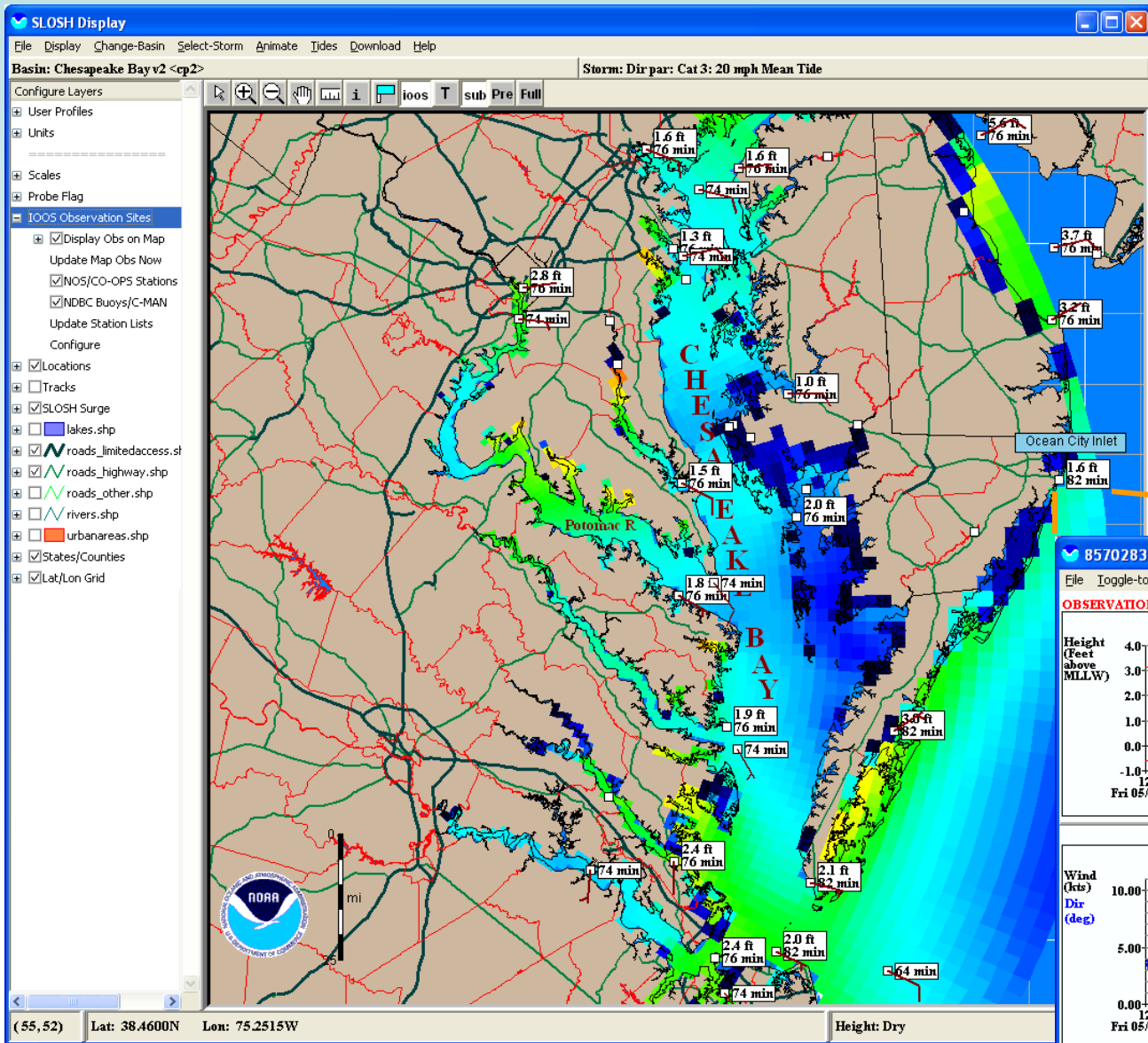
Tides
NOAA-NOS
(CO-OPS)

- and compare to Observations



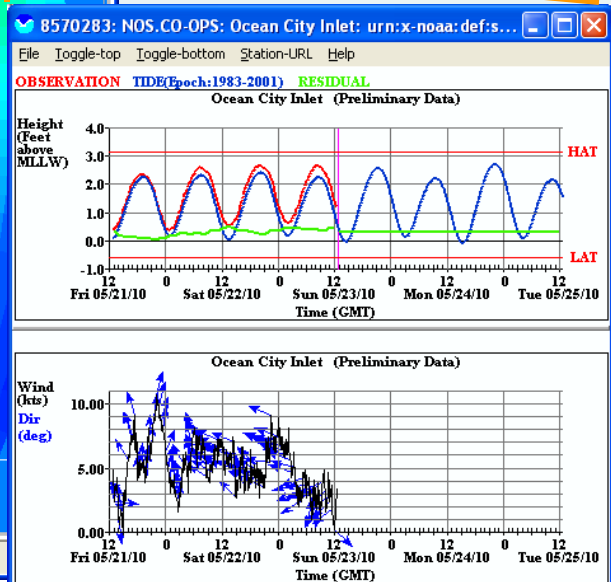


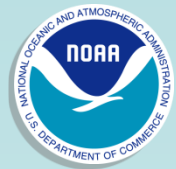
Observational Enhancements to SDP



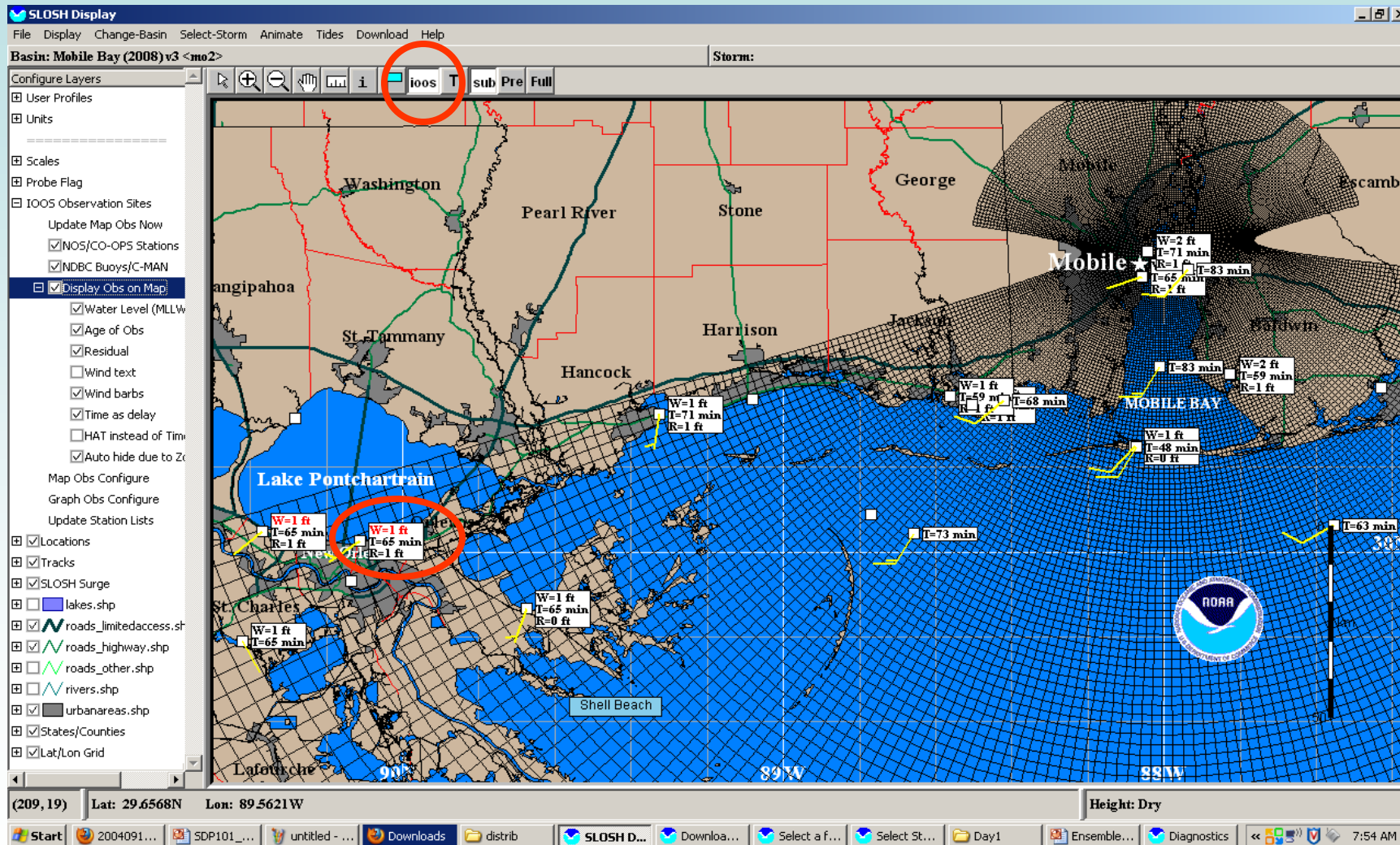
Observed water level, winds, and computed residual displayed on the map at each station.

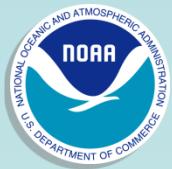
Graphs for NOS/NDBC stations depict observed water level and winds, various datums, predicted tide and surge, calculated residual, and storm tide



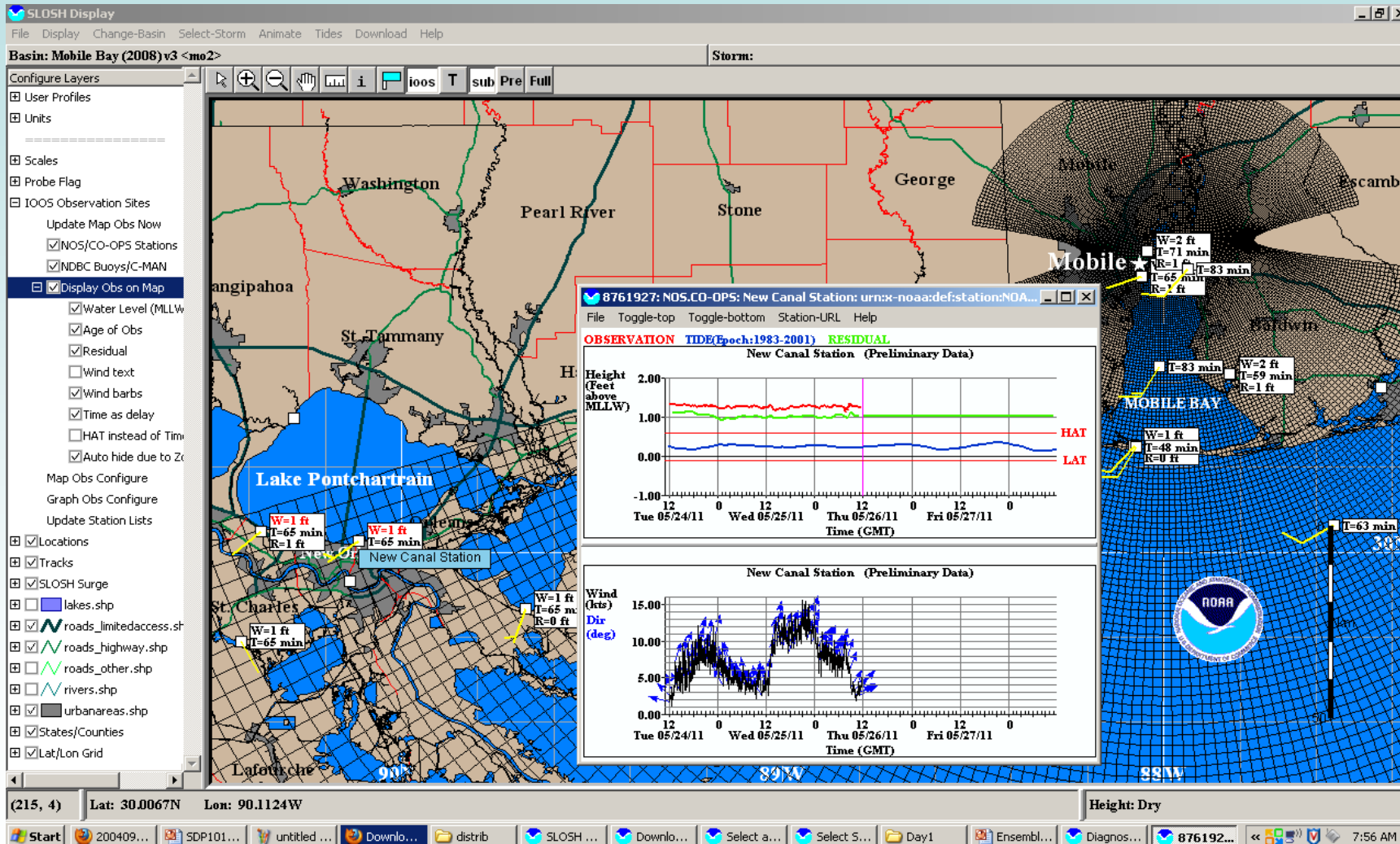


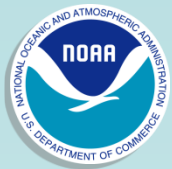
Observed water level, winds, and computed residual displayed on the map



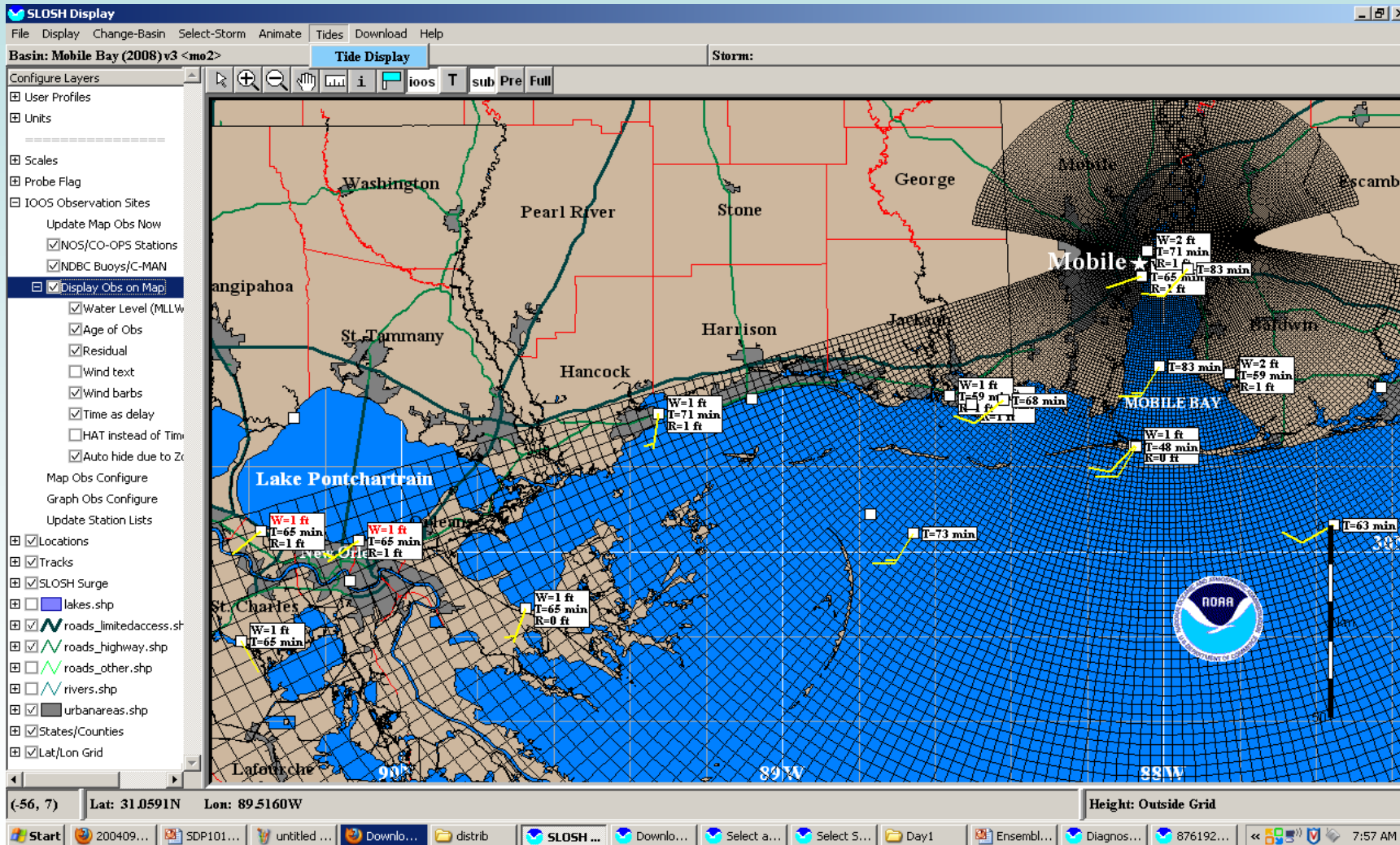
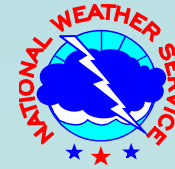


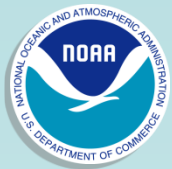
Observational Enhancements to SDP



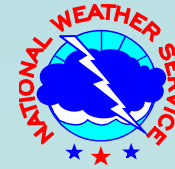


Tide Program





Tide Program



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: Savannah/Hilton Head v3 <sv3> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
- IOOS Observation Sites
 - Update Map Obs Now
 - NOS/CO-OPS Stations
 - NDBC Buoys/C-MAN

Map showing Jenkins area

Edit Station

Station 1: Myrtle Beach, SC

- Holden Beach, NC
- Beaufort, Duke, NC
- Ocracoke, NC
- Myrtle Bch(Springmd P) SC
- Myrtle Beach, SC
- Charleston, SC
- Cooper River, SC
- Savannah, GA

Station 2: Charleston, SC

- Holden Beach, NC
- Beaufort, Duke, NC
- Ocracoke, NC
- Myrtle Bch(Springmd P) SC
- Myrtle Beach, SC
- Charleston, SC
- Cooper River, SC
- Savannah, GA
- Savannah R. Entrance, GA
- Kings Bay, Cumberland GA
- Fernandina, FL
- Mayport, FL

Station 3: Savannah, GA

- Holden Beach, NC
- Beaufort, Duke, NC
- Ocracoke, NC
- Myrtle Bch(Springmd P) SC
- Myrtle Beach, SC
- Charleston, SC
- Cooper River, SC
- Savannah, GA
- Savannah R. Entrance, GA
- Kings Bay, Cumberland GA
- Fernandina, FL
- Mayport, FL

Stm Tide ft

Abv Grid Cell

16

14

12

10

8

6

4

2

0

Tide level: 0.0 ft

Astronomical Tide Prediction

File Options Station Data Toggle Stations Inquire Help

ASTRONC

Change Current Stations

Change Starting Date

Adjust Reference Level

Include Seasonal Adjustments (SA and SSA)

Myrtle Beach, SC

Charleston, SC

Savannah, GA

height (feet)

6

4

2

0

-2

-4

-6

Apr 20, 2011

Apr 21, 2011

Apr 22, 2011

Apr 23, 2011

Local Standard Time

Seasonal Adjustments Included

MSL Datum

Geographical Alphabetical

OK Cancel

Map showing Hilton Head Island, Daufuskie Island, Tybee Island, Wassaw Island, Ossabaw Island

W=7 ft

T=84 min

R=0 ft

T=72 min

W=8 ft

T=84 min

R=0 ft

0 50 km

NOAA

U.S. DEPARTMENT OF COMMERCE

(-23,190) Lat: 32.6983N Lon: 81.7120W

Height: Outside Grid

Start Extra-tropical Storm S... SDP101_Atlanta2011... untitled - Paint SLOSH Display Select Storm Astronomical Tide P... Edit Station 10:27 PM



Tide Program



SLOSH Display
File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: Savannah/Hilton Head v3 <sv3> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers
User Profiles
Units
Scales
Probe Flag
IOOS Observation Sites
Update Map Obs Now
NOS/CO-OPS Stations

Astronomical Tide Prediction
File Options Station Data Toggle Stations Inquire Help

ASTRONOMICAL TIDE PREDICTION
DATE: 4/20/2011
TIME: 22:00
Charleston, SC: 3.60

height (feet)
4
3
2
1
0
-1
-2
-3
-4

Apr 20, 2011 12 0 Apr 21, 2011 12 0 Apr 22, 2011 12 0 Apr 23, 2011 0

Local Standard Time
Seasonal Adjustments Included MSL Datum

Stm Tide ft
Abv Grid Cell
16
14
12
10
8
6
4
2
0
Tide level: 0.0 ft

Charleston
I=30 min

I=90 min

Hilton Head Island
Daufuskie Island
Tybee Island
Wassaw Island
Wassaw Island

W=9 ft
I=48 min
R=-0 ft

NOAA
U.S. DEPARTMENT OF COMMERCE

(98,174) Lat: 32.7626N Lon: 79.9362W Height: 10.3 ft

Start Extra-tropical Storm S... SDP101_Atlanta2011... untitled - Paint SLOSH Display Select Storm Astronomical Tide P... Diagnostics 10:30 PM

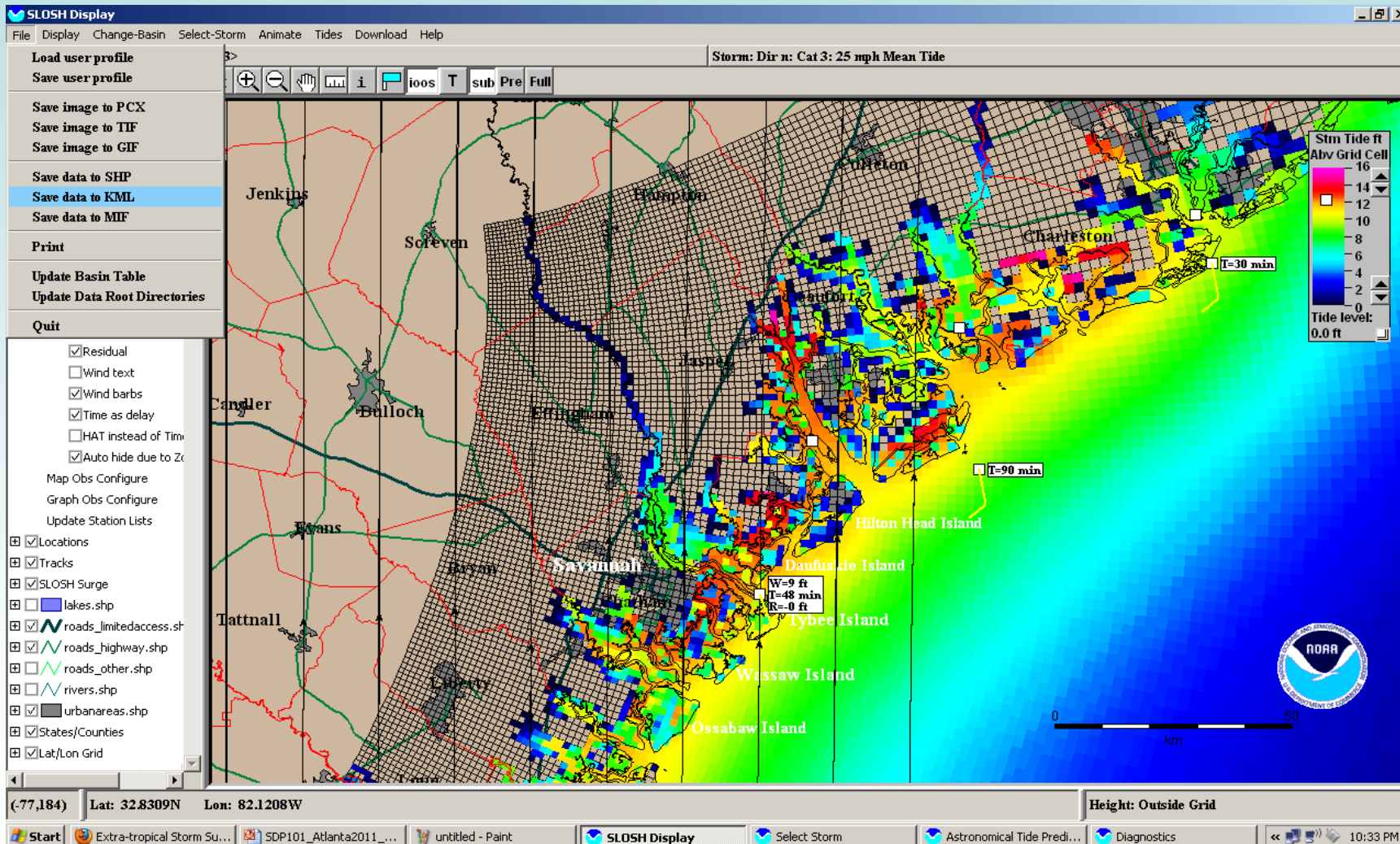
What's Left?

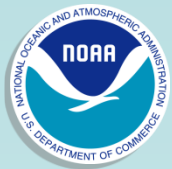


Kitchen sink

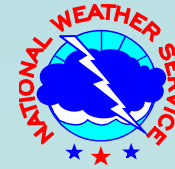


Save to KML, Shp, MIF, PCX, TIF, GIF and Printing





Save to KML



Google Earth
File Edit View Tools Add Help

Search
Fly To Find Businesses Directions
Fly to e.g., Reservoir Rd, Clayville, NY

Places
My Places
Sightseeing Tour
Temporary Places
n32510 (MEOW for Savannah/Hiltc)
National Weather Service
Legend
Storm Surge (n32510)

Layers
Earth Gallery >>
Primary Database
Borders and Labels
Places
Photos
Roads
3D Buildings
Ocean
Street View
Weather
Gallery
Global Awareness
More

Stm Tide ft Abv Grid Cell
16
14
12
10
8
6
4
2
0
Tide level: 0.0 ft

© 2011 Google
Image USDA Farm Service Agency
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2011 Europa Technologies
32°14'55.18" N 79°30'55.94" W elev -106 ft
Eye alt 174.71 mi

©2010 Google

Start Extra-tropical S... SDP101_Atlant... untitled - Paint SLOSH Display Select Storm Astronomical Tid... Diagnostics sv3 Google Earth 10:35 PM



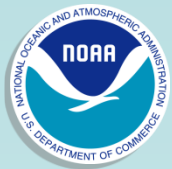
Annotation



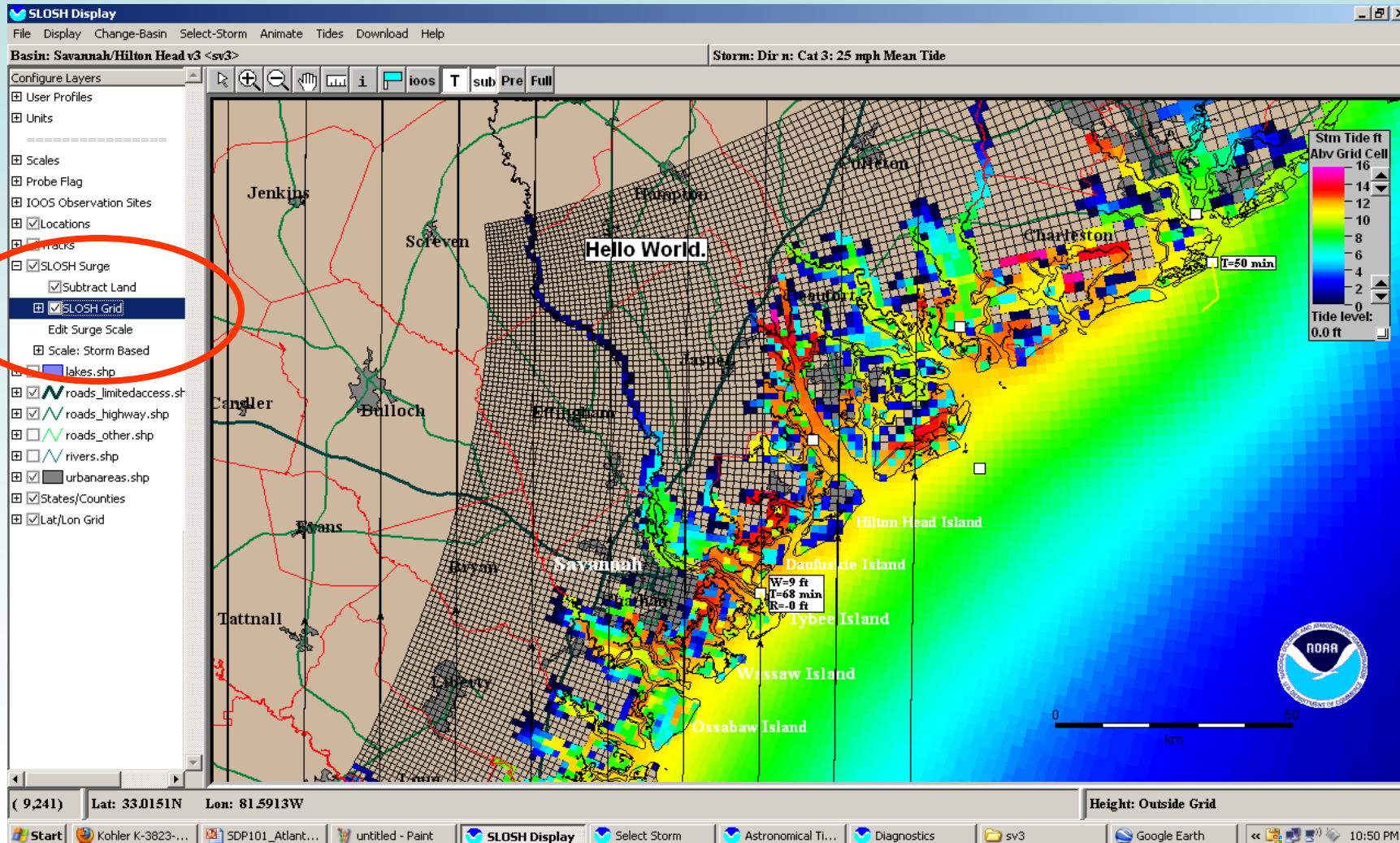
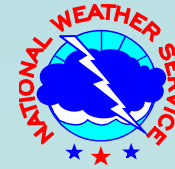
The screenshot shows the SLOSH Display application window. The title bar reads "SLOSH Display". The menu bar includes "File", "Display", "Change-Basin", "Select-Storm", "Animate", "Tides", "Download", and "Help". The main window displays a map of the Savannah/Hilton Head region, showing a grid overlay and a color-coded storm surge prediction. A "Text Editor" dialog box is open, allowing the user to add annotations to the map. The dialog box has the following fields and options:

- Family:** Arial
- Size:** 14
- Style:** Bold (B), Italic (I), Underline (U)
- Line Width:** 1
- Text Color:** #000000
- Fill Color:** #ffffff
- Border Color:** #000000
- Text:** Hello World.

The map shows various locations including Candler, Bulloch, Savannah, Hilton Head Island, Daufuskie Island, Tybee Island, Wassaw Island, and Ossabaw Island. A color scale on the right indicates "Stm Tide ft Abv Grid Cell" ranging from 0.0 ft (blue) to 16 ft (red). A scale bar at the bottom right shows 0 to 50 km. The status bar at the bottom displays coordinates: (9,241) Lat: 33.0151N Lon: 81.5913W and Height: Outside Grid. The Windows taskbar at the bottom shows several open applications, including SLOSH Display, Select Storm, Astronomical..., Diagnostics, sv3, Google Earth, and Add annota... The system clock shows 10:48 PM.

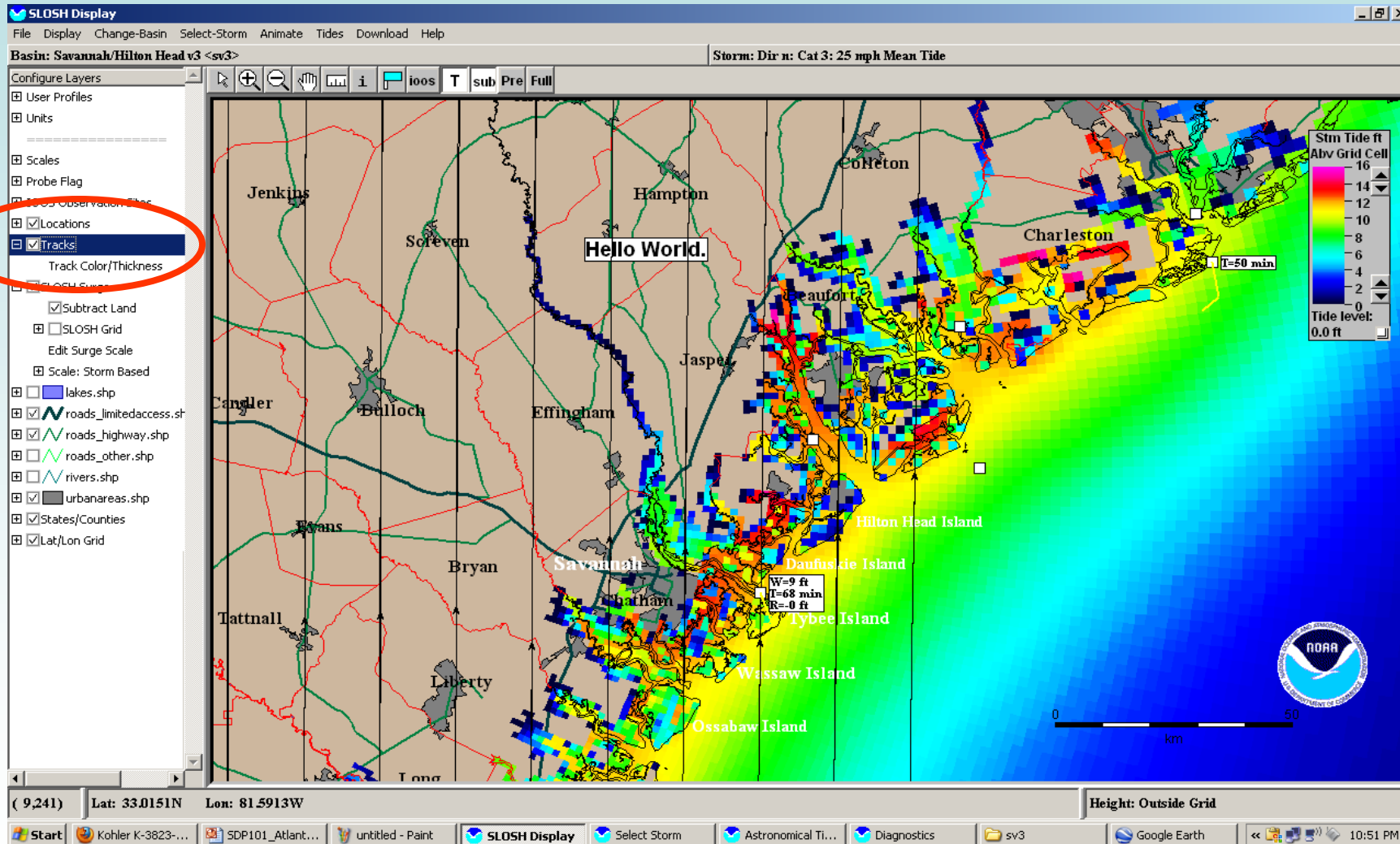


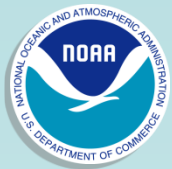
Toggle Grid off



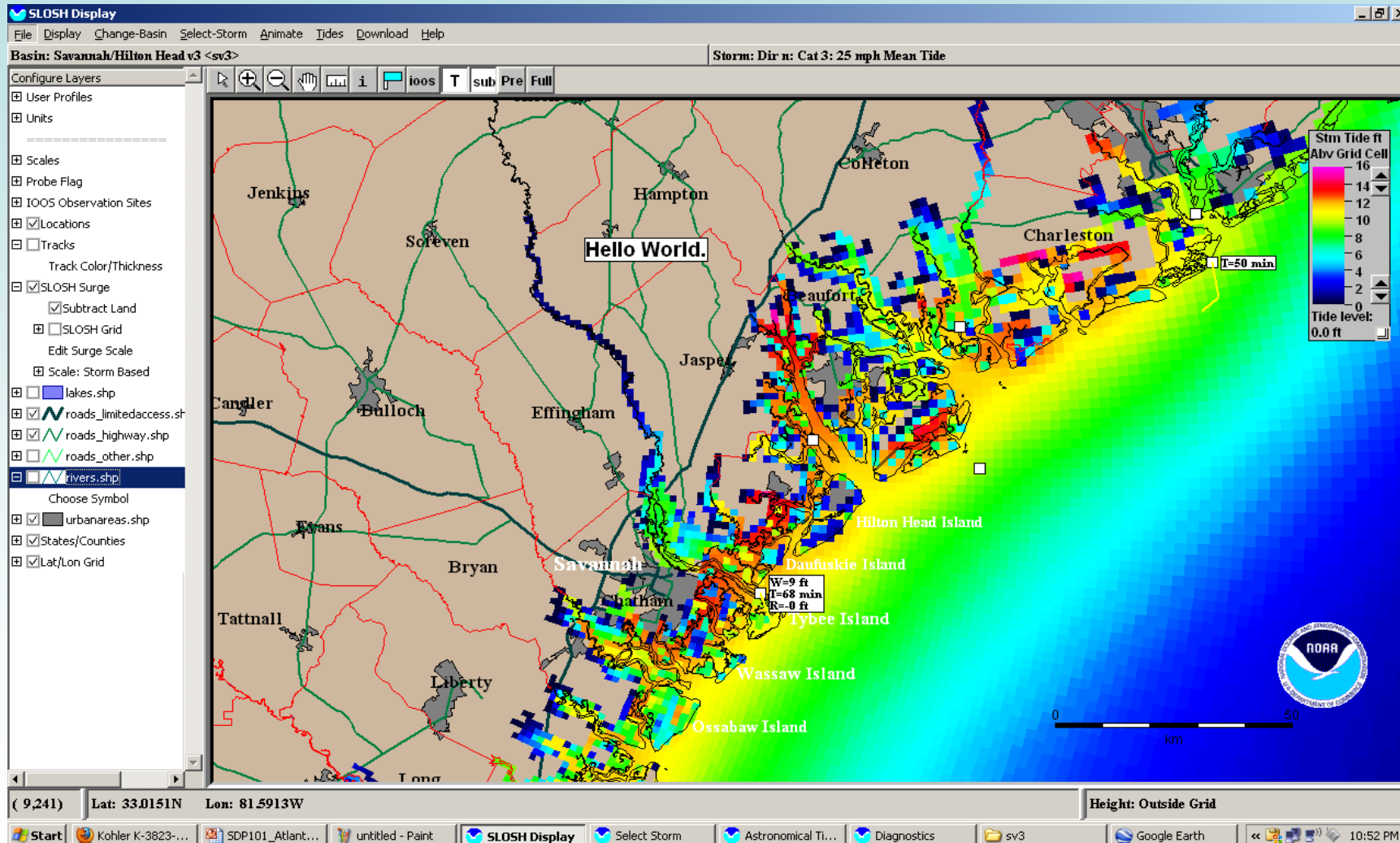
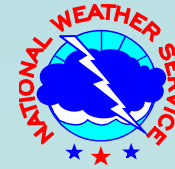


Toggle Tracks off





Toggle Rivers on





Change County Border Color



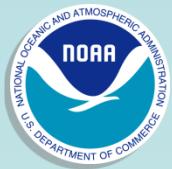
The screenshot shows the SLOSH Display application window. The title bar reads "SLOSH Display". The menu bar includes "File", "Display", "Change-Basin", "Select-Storm", "Animate", "Tides", "Download", and "Help". The status bar at the top indicates "Basin: Savannah/Hilton Head v3 <sv3>" and "Storm: Dir n: Cat 3: 25 mph Mean Tide".

The main map area displays a coastal region with various counties labeled: Jenkins, Screven, Effingham, Jasper, Bulloch, Candler, Glynn, Liberty, Tattnall, Long, and Ogeechee. A "Hello World." text box is overlaid on the map. A color scale legend on the right indicates "Sim Tide ft Abv Grid Cell" ranging from 0 to 16 feet. A scale bar at the bottom right shows 0 to 50 km.

A dialog box titled "Select a font for the Counties" is open in the foreground. It has fields for "Family" (Times), "Size" (-17), "Style" (B, I, U), and "Line Width" (1). Below these are three color selection fields: "Text Color" (Change #000000), "Fill Color" (Change #cdb79e), and "Border Color" (Change #ff0000). The "Border Color" field is circled in red. A "Sample" field shows "ABCabcXYZxyz12345".

The "Configure Layers" panel on the left is also visible, with "States/Countries" and "County Font" circled in red. The "County Font" option is selected.

The taskbar at the bottom shows the Start button and several open applications: Kohler K-382..., SDP101_Atl..., untitled - Paint, SLOSH Display, Select Storm, Astronomical..., Diagnostics, sv3, Google Earth, and Select a fon... The system clock shows 10:54 PM.



Color Scale



SLOSH Display

File Display Change-Basin Select-Storm Animate Tides Download Help

Basin: Savannah/Hilton Head v3 <sv3> Storm: Dir n: Cat 3: 25 mph Mean Tide

Configure Layers

- User Profiles
- Units
- Scales
- Probe Flag
 - Clear All
 - Delete Last
 - Choose Font
- IOOS Observation Sites
- Locations
- Tracks
- Track Color/Thickness
- SLOSH Surge
 - Abstract Land
 - SLOSH Grid
 - Edit Surge Scale
 - Scale: Storm Based
 - Storm Based
 - Fixed Storm Based
 - Constant
 - roads.shp
 - roads_limitedaccess.shp
 - roads_highway.shp
 - roads_other.shp
 - rivers.shp
 - Choose Symbol
 - urbanareas.shp
 - States/COUNTIES
 - Label
 - County Font
 - State Border Color
 - Lat/Lon Grid

Surge Scale Editor

File

Surge Scale File: continuous.leg Grid Color: #000000 Width: 1

Surge Scale

Symbol	Range (ft)	Range (m)	Storm Based
#00008b	1.6, 1.8	0.49, 0.55	0.92, 1.04
#000080	1.4, 1.6	0.43, 0.49	0.81, 0.92
#000075	1.2, 1.4	0.37, 0.43	0.69, 0.81
#00006a	1.0, 1.2	0.30, 0.37	0.58, 0.69
#00005f	0.8, 1.0	0.24, 0.30	0.46, 0.58
#000055	0.6, 0.8	0.18, 0.24	0.35, 0.46
#00004b	0.4, 0.6	0.12, 0.18	0.23, 0.35
#000041	0.2, 0.4	0.06, 0.12	0.12, 0.23
#000037	0.0, 0.2	0.00, 0.06	0.00, 0.12

Sim Tide ft

Abv Grid Cell

16

14

12

10

8

4

2

0

Tide level: 0.0 ft

11.6

T=50 min

Hilton Head Island

Danfuskie Island

Tybee Island

W=9 ft

T=68 min

R=-0 ft

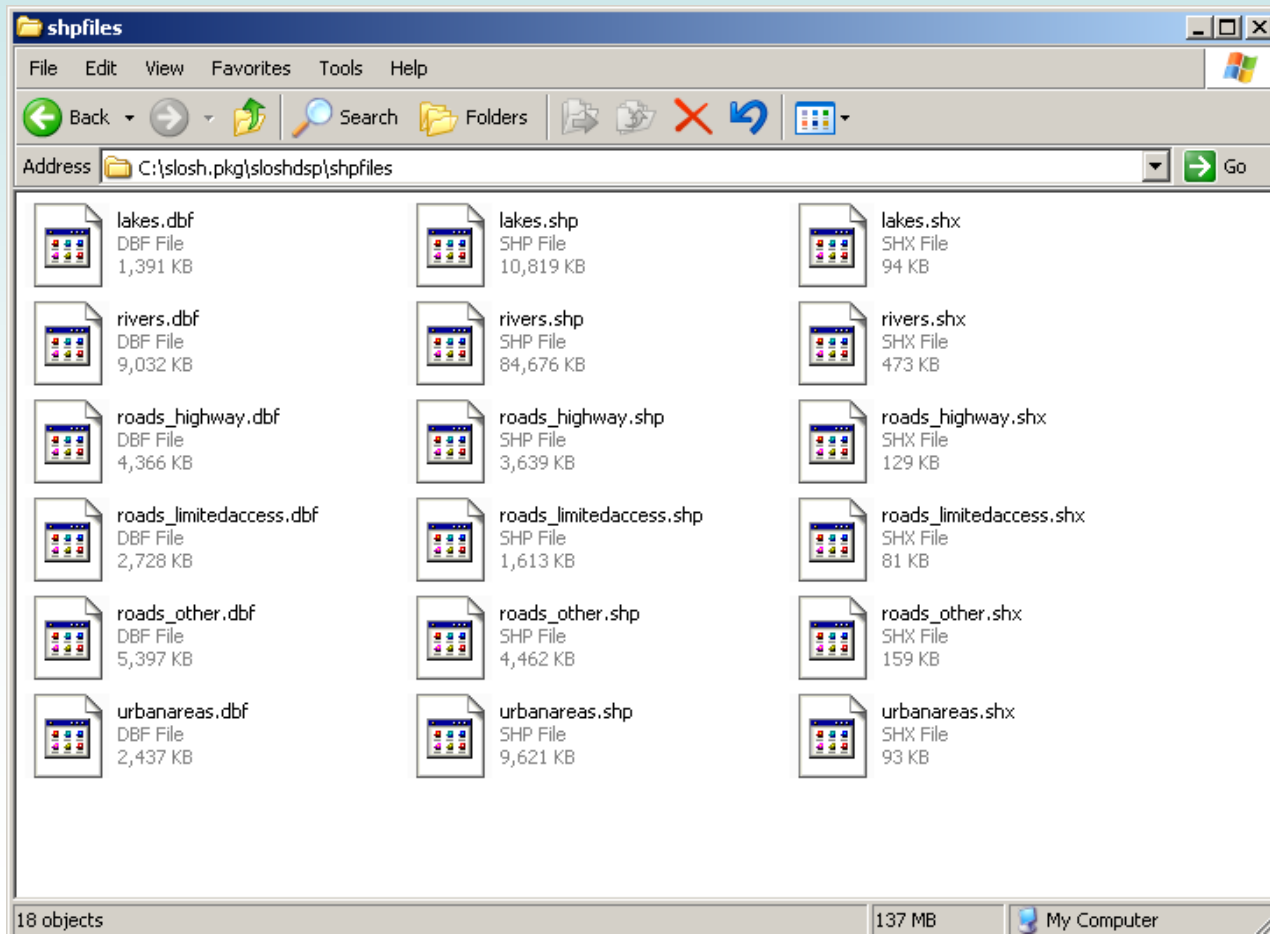
0 50 km

(-51.145) Lat: 32.4345N Lon: 82.0962W Height: Outside Grid

Start Kohler K-3... SDP101_At... untitled - P... SLOSH Dis... Select Storm Astronomic... Diagnostics sv3 Google Earth SDP101 Surge Sca... 10:59 PM

User Provided Shp files

- Place your own data in
“c:/slosh.pkg/sloshdsp/shpfiles





Backup





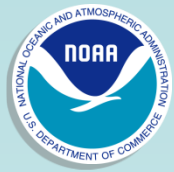
Storm Surge Cheat Sheet



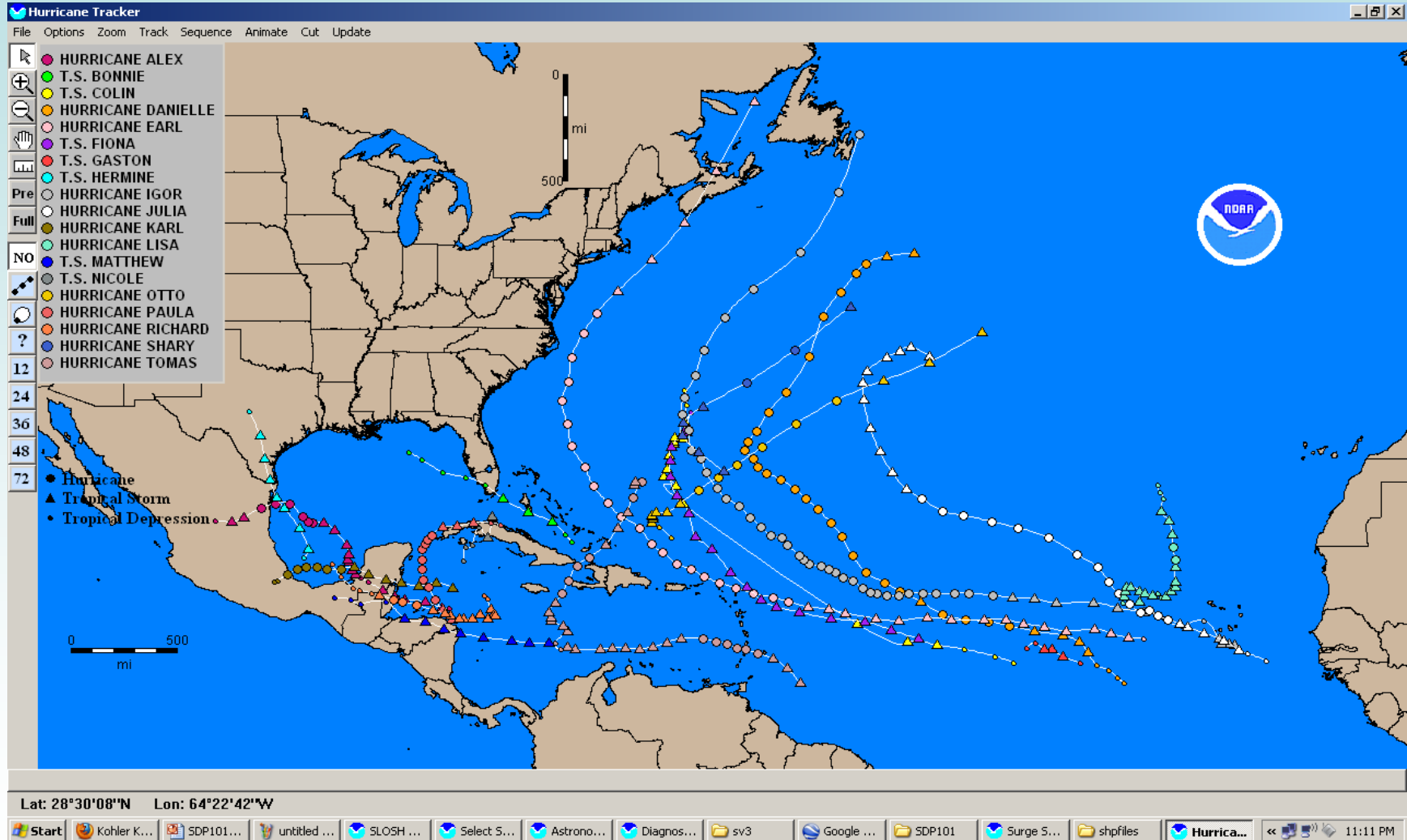
- Highest surges usually occur to the right of the storm track
- Fast moving = high surges along the open coast
- Slow moving = greater flooding inside bays and estuaries
- Direction of storm approach often impacts the extent of flooding

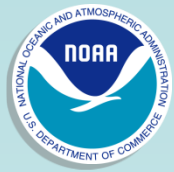
- More intense storms cause higher surges
- Larger storms affect longer stretches of coastline

- Shallow coastal slopes allow greater storm surge with small waves
- Steeper coastal slopes cause less storm surge, but larger breaking waves can occur.

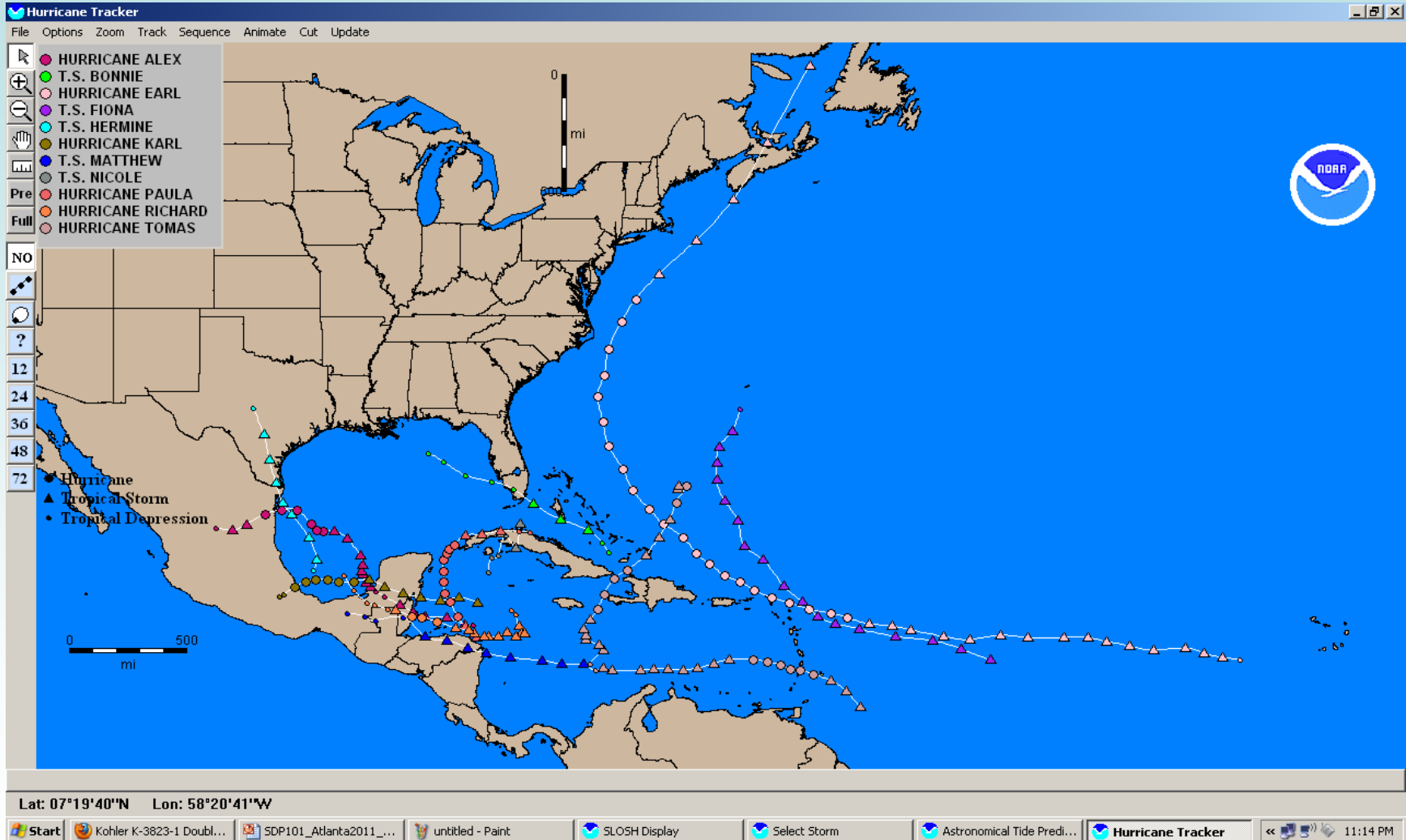


Bonus: SLOSH Track Program





Bonus: SLOSH Track Program





<http://www.weather.gov/mdl/etsurge/index.php?page=map®ion=me>



Extra-tropical Storm Surge: map - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.weather.gov/mdl/etsurge/index.php?page=map®ion=me

dictionary.com

Extra-tropical Storm Surge: map

National Weather Service
Meteorological Development Laboratory

weather.gov

Site Map News Organization Search [] NWS All NOAA Go

Main Site
Mirror Site

ABOUT
Manual
Disclaimer

REGIONS

- Northeast
- Mid-Atlantic
- Southeast
- Gulf
- Northwest
- Alaska
- Gulf of Alaska

STATUS MAP

- Map(0-48)
- Map(0-12)
- Map(12-24)
- Map(24-48)
- Map(48-72)
- Map(72-96)
- Map(0-96)

STATIONS

