

Precipitation Datasets and More!

Philippe Papin – ATM 409/509 – 1 September 2016

Introduction

- There is a lot of weather data out there, and it can be difficult to sort through
- For ATM 409/509 final project + QPF exercise, its important to know where to go to view & download critical data
 - Numerical Weather Guidance
 - Observing Platforms
 - Verifying Datasets

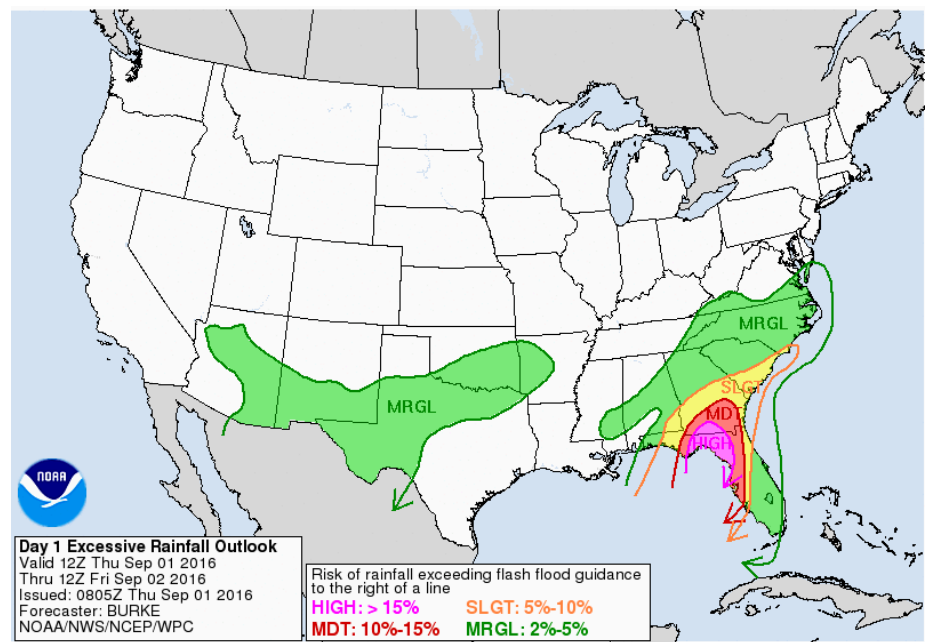
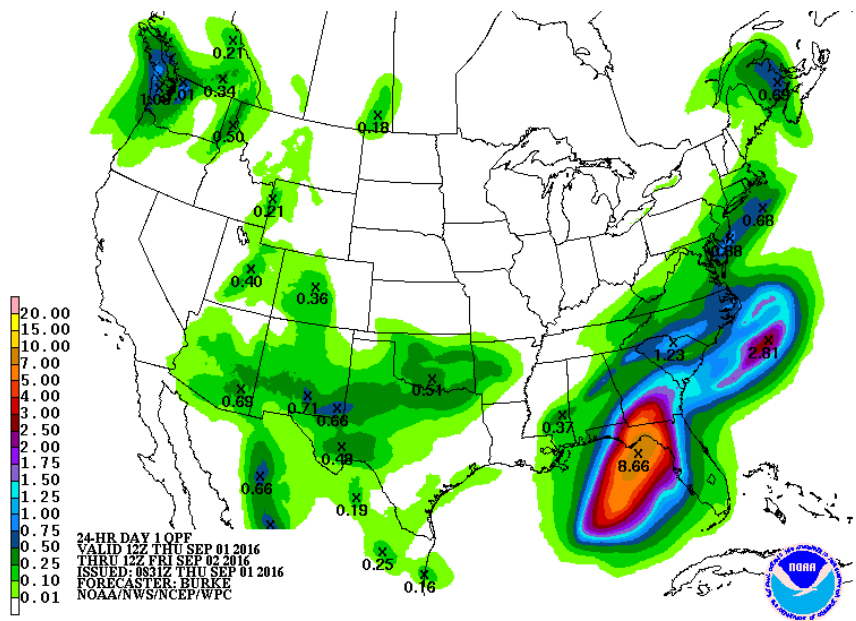
Outline

- Where to go to view/use forecast data
 - WPC, NWP Guidance
- Where to find observational data
- Where to find verification data
- A Few Examples

Note: Presentation uploaded online, so you can easily access links from today's class

Lets View and Use Real-Time Forecast Data

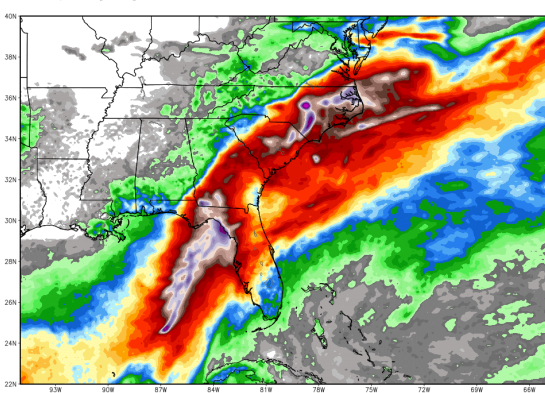
- Start with the WPC QPF Forecast:
 - <http://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml>
 - <http://www.wpc.ncep.noaa.gov/html/fam2.shtml#excessrain>
- They verify their forecasts too (to talk about more in a future class!)
 - <http://www.wpc.ncep.noaa.gov/html/hpcverif.shtml>



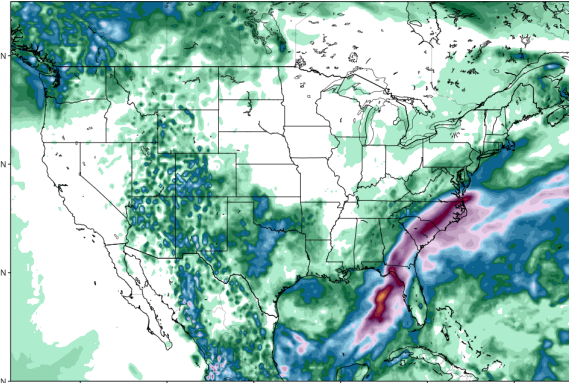
Lets View and Use Real-Time Forecast Data

- Find good model guidance! Some great sites
 - Weatherbell: <http://models.weatherbell.com/>
 - (department has a paid subscription)
 - Tropical Tidbits: <http://www.tropicaltidbits.com/analysis/models/>
 - College of Dupage: <http://weather.cod.edu/forecast/>
 - Pivotal Weather: <http://pivotalweather.com/>
 - Tomer's Maps: <http://www.atmos.albany.edu/student/tburg/analysis/>
 - Alicia's Maps: <http://www.atmos.albany.edu/student/abentley/realtime.html>
 - NCAR Convection Permitting Ensemble:
<http://www.image.ucar.edu/wrfdart/ensemble/index.php>

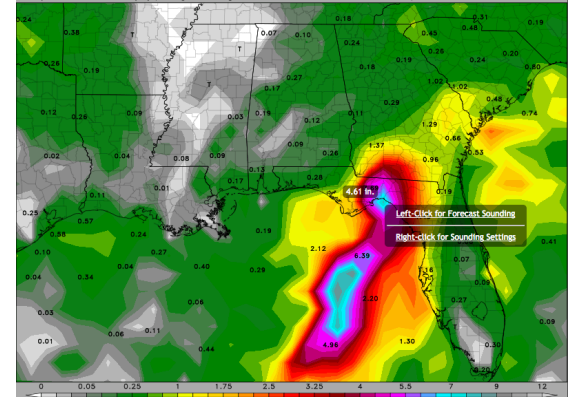
ECMWF Total Precipitation INIT: 00Z01SEP2016 fc: [072] hr --> Sun 00Z04SEP2016
Total Precipitation [inches] between 00Z01SEP2016 -- 00Z04SEP2016



GFS Total Accumulated Precipitation (inches) from 06z01Sep2016 to 12z03Sep2016
In: 06z Sep 01 2016 Forecast Hour: [54] valid at 12z Sat, Sep 03 2016

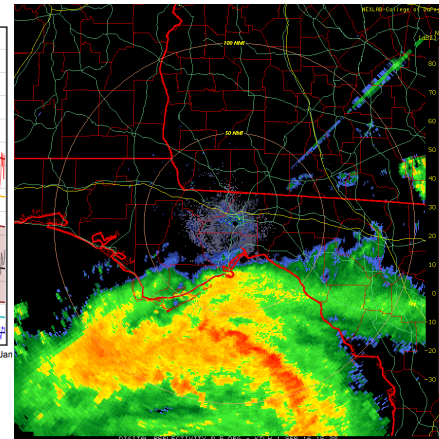
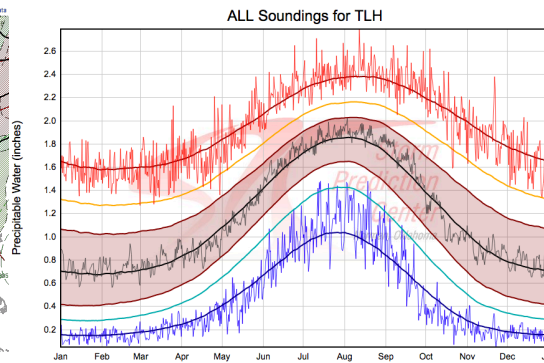
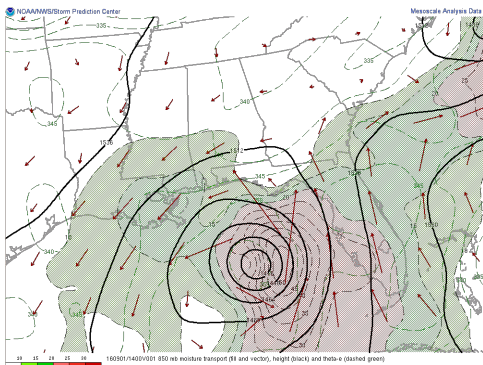


Precipitation Accumulation (in.) | College of DuPage NeXLoB 06Z GFS | F027 Valid: 09Z FRI SEP 02 2016



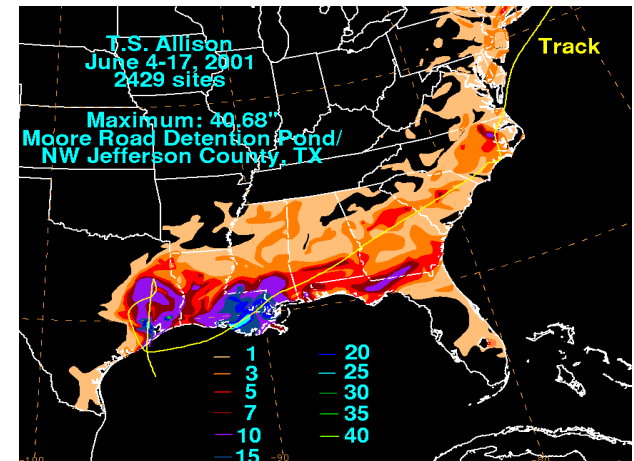
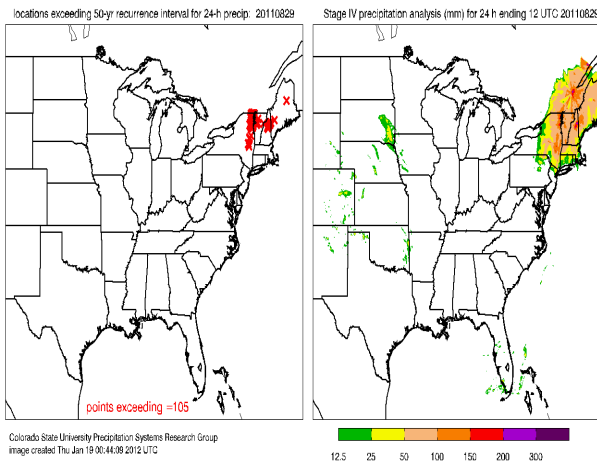
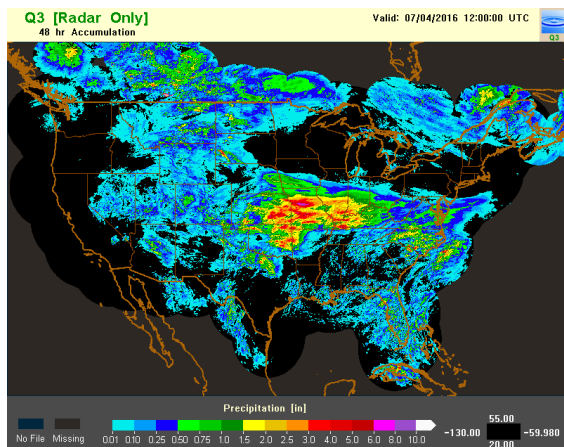
Lets View and Use Real-Time Observational Data

- SPC Meso Analysis: <http://www.spc.noaa.gov/exper/mesoanalysis/>
- SPC Sounding Page: <http://www.spc.noaa.gov/exper/soundings/>
- Sounding Climatology: <http://www.spc.noaa.gov/exper/soundingclimo/>
- Radar Data: <http://weather.cod.edu/satrad/> (my favorite radar page)



Lets View and Use Archive Data

- Multi-Radar Multi-Sensor System (MRMS): <http://nmq.ou.edu/>
 - Many usual products unavailable currently
 - Guide to use products: <http://www.wdtb.noaa.gov/courses/MRMS/ProductGuide/index.php>
- NCAR Radar Archive: <http://www2.mmm.ucar.edu/imagearchive/>
- Russ Schumacher's Extreme Precip Event Archive: http://schumacher.atmos.colostate.edu/precip_monitor/50y24h/event_images/year_list.php
- David Roth's TC Precipitation Archive: <http://www.wpc.ncep.noaa.gov/tropical/rain/tcrainfall.html>
- GIOVANNI Visualizations: <http://giovanni.gsfc.nasa.gov/giovanni/>



Downloadable Precip Datasets

- Stage IV Precipitation Data (4km resolution) 2002-Current:
http://data.eol.ucar.edu/cgi-bin/codiac/fgr_form/id=21.093
 - GRIB format
 - Only for United States
- PERSIDAN-CDR (0.25 degree resolution) 1983-2016:
<https://www.ncdc.noaa.gov/cdr/atmospheric/precipitation-persiann-cdr>
 - NetCDF format
 - Global Data (60°N – 60°S)
- TMPA Data (0.25 degree resolution) 2000-2014:
http://disc2.gesdisc.eosdis.nasa.gov/data/TRMM_RT/TRMM_3B42RT.7/
 - NetCDF Format
 - Global Data (60°N-60°S)
- IMERG Data (0.1 degree resolution): 2014-Current:
http://gpm1.gesdisc.eosdis.nasa.gov/data/GPM_L3/GPM_3IMERGHH.03/
 - HDF format
 - Global Data

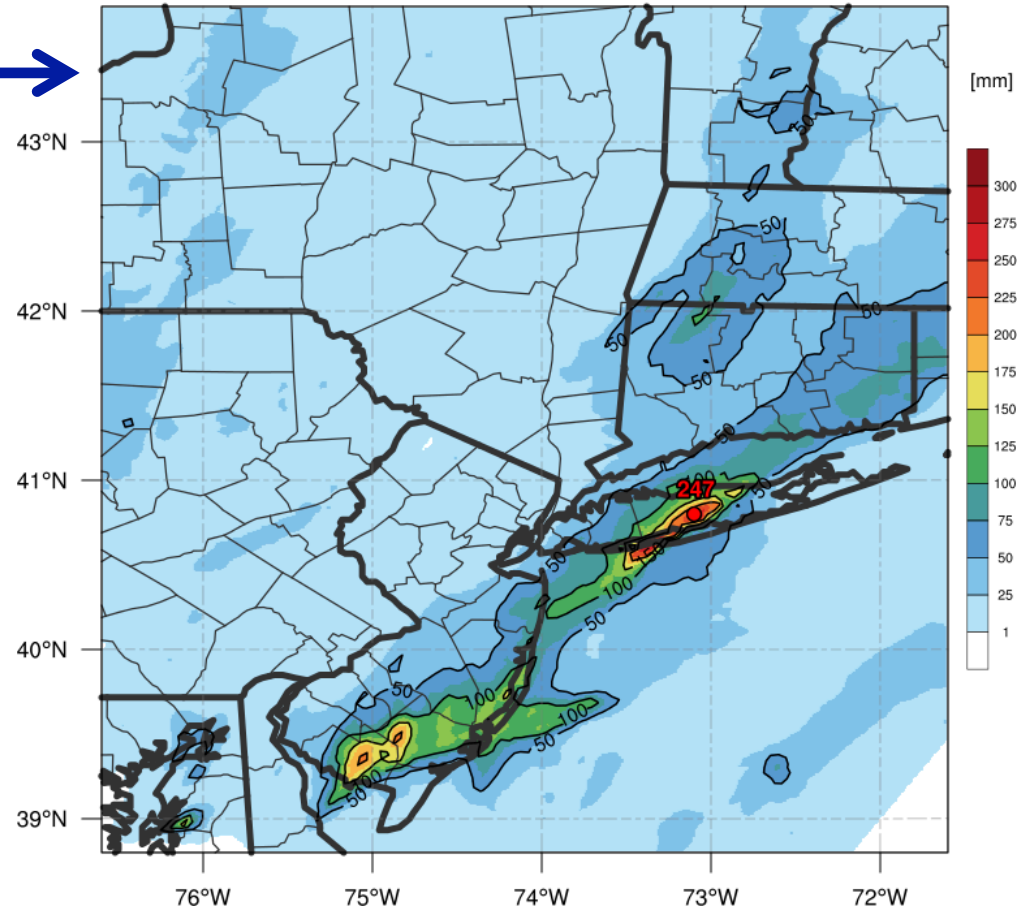
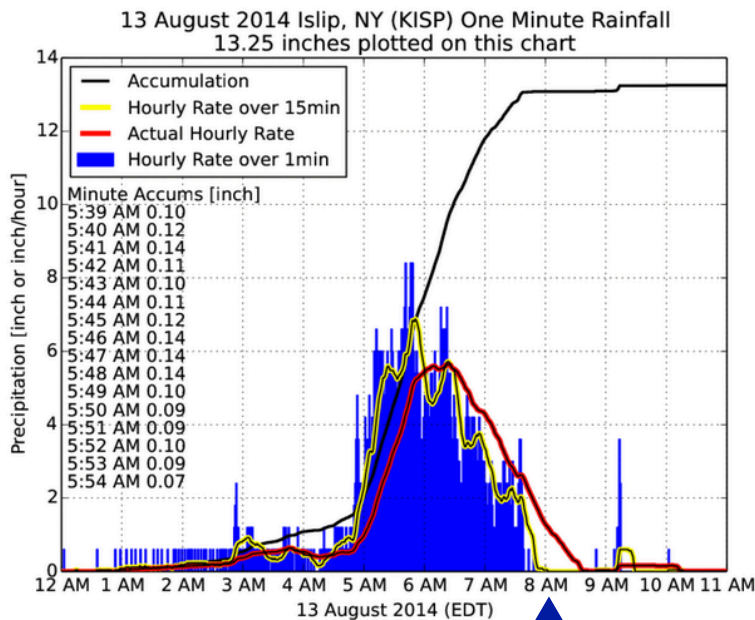
Other Downloadable Datasets

- Iowa State Archive Data Page: <http://mesonet.agron.iastate.edu/archive/>
- NCEP Data Product Repository:
<http://www.nco.ncep.noaa.gov/pmb/products/>
- NOMADS: <http://nomads.ncep.noaa.gov/>
- GridSat Satellite Imagery:
<https://www.ncdc.noaa.gov/thredds/catalog/cdr/gridsat/files/catalog.html>
- Archive NWS Watches/Warnings (useful to download issued Flood Watches/Warnings):
<https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>
- Find local data on our servers using the DAES Wiki:
<https://wiki.albany.edu/display/daes/Data> (username/password) same as linux username/password

Heavy Rainfall Event Examples

- Long Island Flooding 13 August 2014:

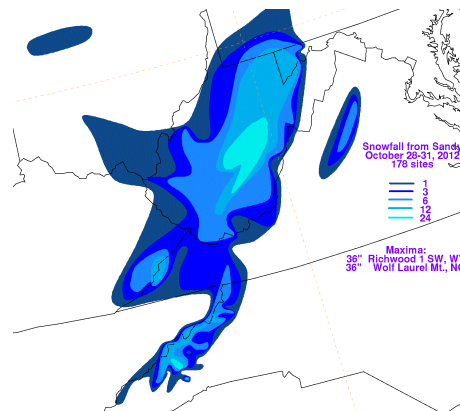
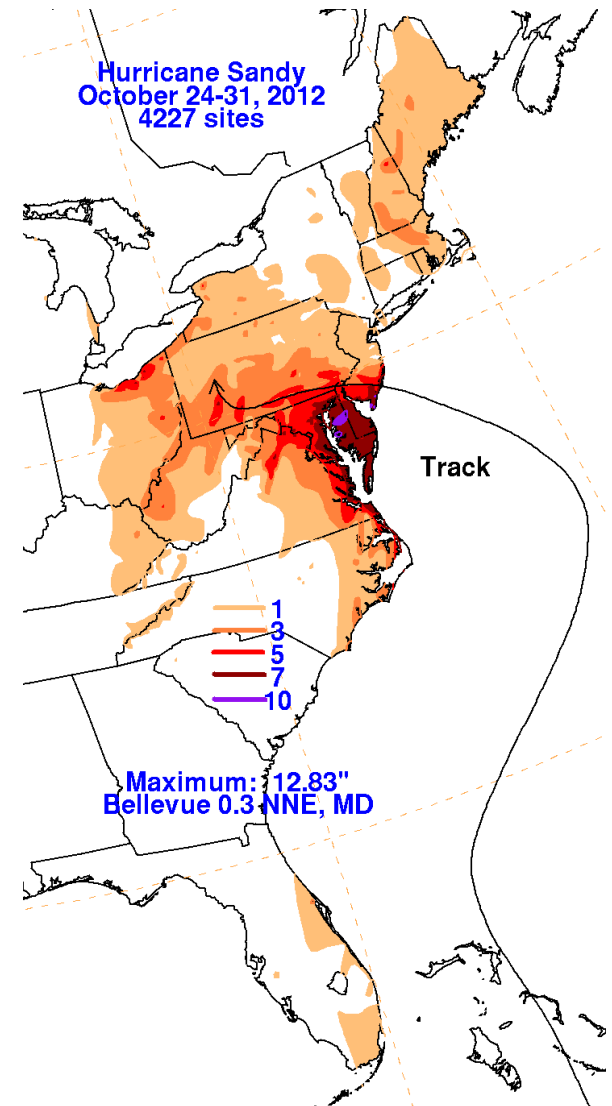
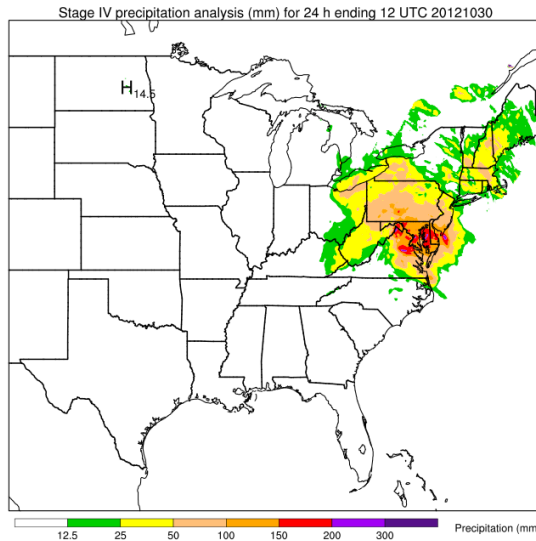
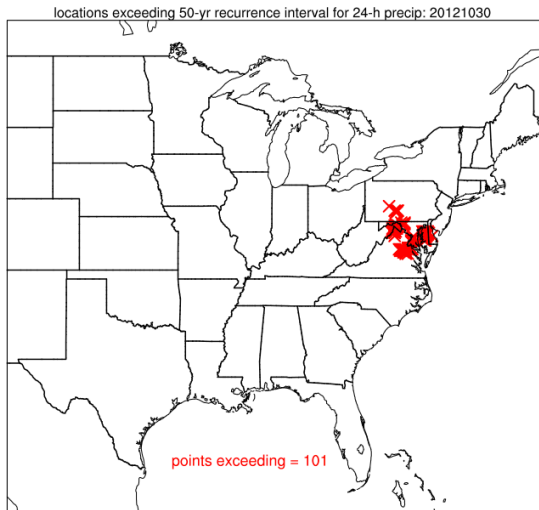
Using Stage IV Precipitation Data
0000 UTC 13 Aug – 1800 UTC 13 Aug



Courtesy of Daryl Herzmann from Iowa State University Using 1 minute ASOS Data

Heavy Rainfall Event Examples

- Hurricane Sandy (2012)



From Russ Schumacher's Extreme Precipitation Event Page

From David Roth's TC Rainfall Page

Heavy Rainfall Event Examples

- Nashville Flooding: May 2010

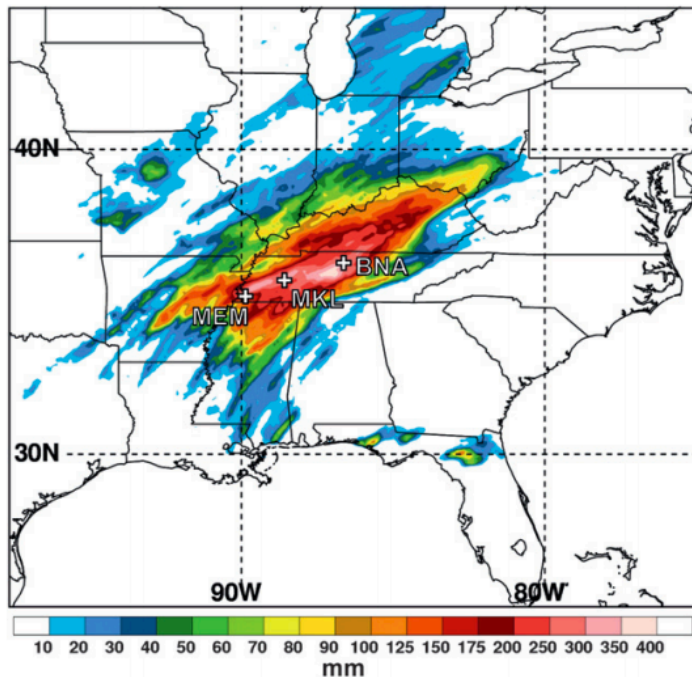
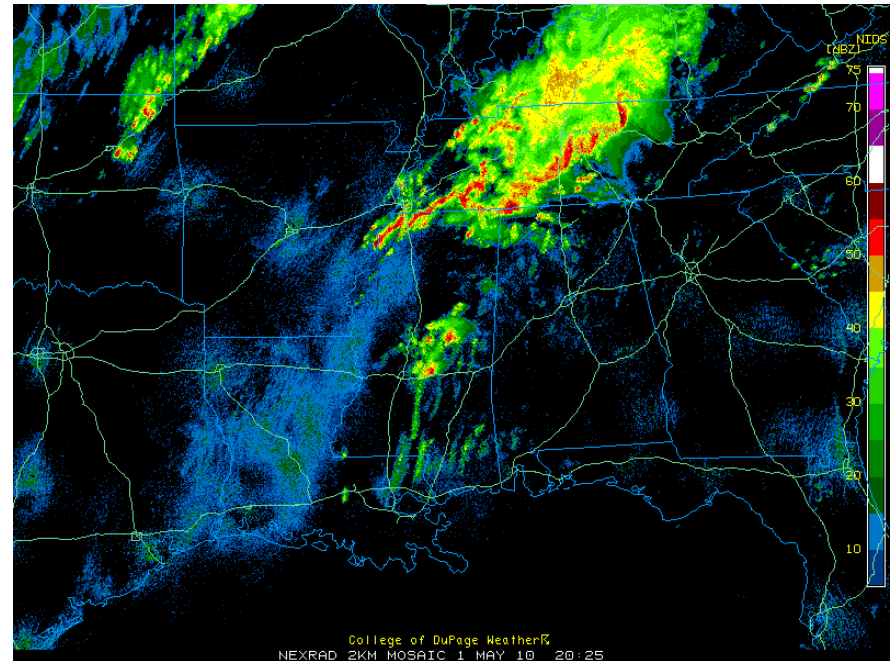



FIG. 2. Total accumulated precipitation (shaded in mm according to the color bar) from the National Precipitation Verification Unit quantitative precipitation estimates product for 0000 UTC 1 May–0000 UTC 3 May 2010. The locations of Memphis, Jackson, and Nashville in TN are denoted as in Fig. 1.

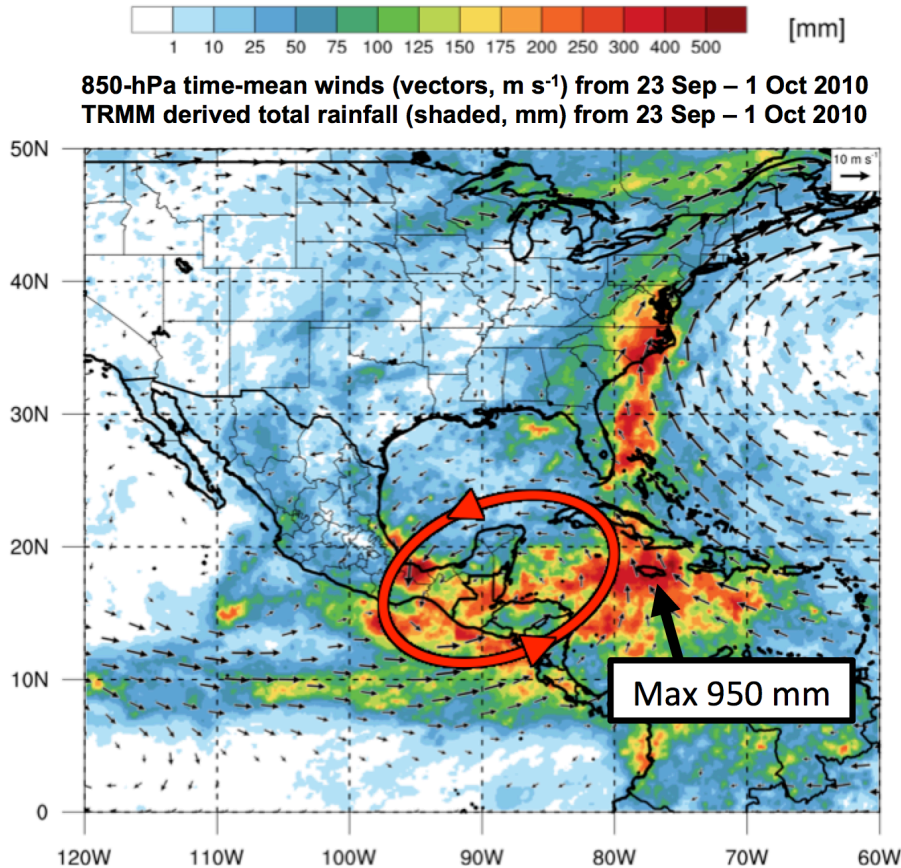


Radar from NCAR Radar Archive on
2025 UTC 1 May 2010

Using Stage IV Precipitation Data 
0000 UTC 13 Aug – 1800 UTC 13 Aug

Heavy Rainfall Event Examples

- Large scale cyclonic circulation over Central America (Central American Gyre)



Data from TRMM
derived precipitation
estimates