McIDAS-X Software Development and Demonstration

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Overview

- McIDAS-X 2010.2, 2011.1
- McIDAS-XRD 2010.2, 2011.1
- McIDAS-XCD 2010.2, 2011.1, 2012.1
- Software development and plans for version 2012.1 and beyond…

McIDAS-X 2010.2 and 2011.1

- POES server LINELE= with TIME=
- Radar
- Kalpana updates
- IMGPROBE enhancements
- EU TAB expanded listing
- Specify sigma levels with grids
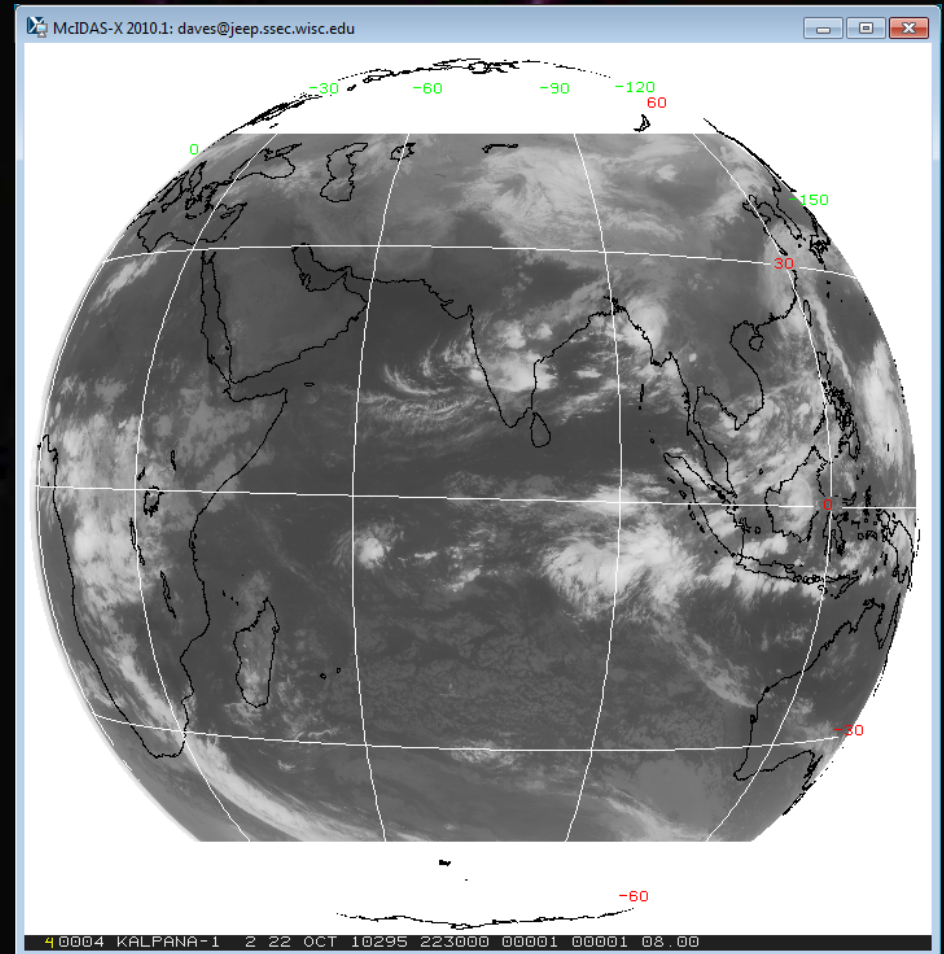- IMGRGB BASETHRESHOLD=

POES Server

- Previously: The real-time POES server would use TIME= to search all files for that scanline time within. It did not have to correspond to the start time of the file.

- Now: LINELE= can be used with TIME=. In this case, the time specified is matched to the start time of a file; beginning line from file extracted based on LINELE= value.

Radar

- NEXRAD dataset went away in December 2010

- Replaced by WSR and TDWR datasets
  - Higher bit depth and geographic resolution for some products
  - 45 new TDWR sites
  - Sites continue to be updated.

Kalpana

- HDF5 ADDE server
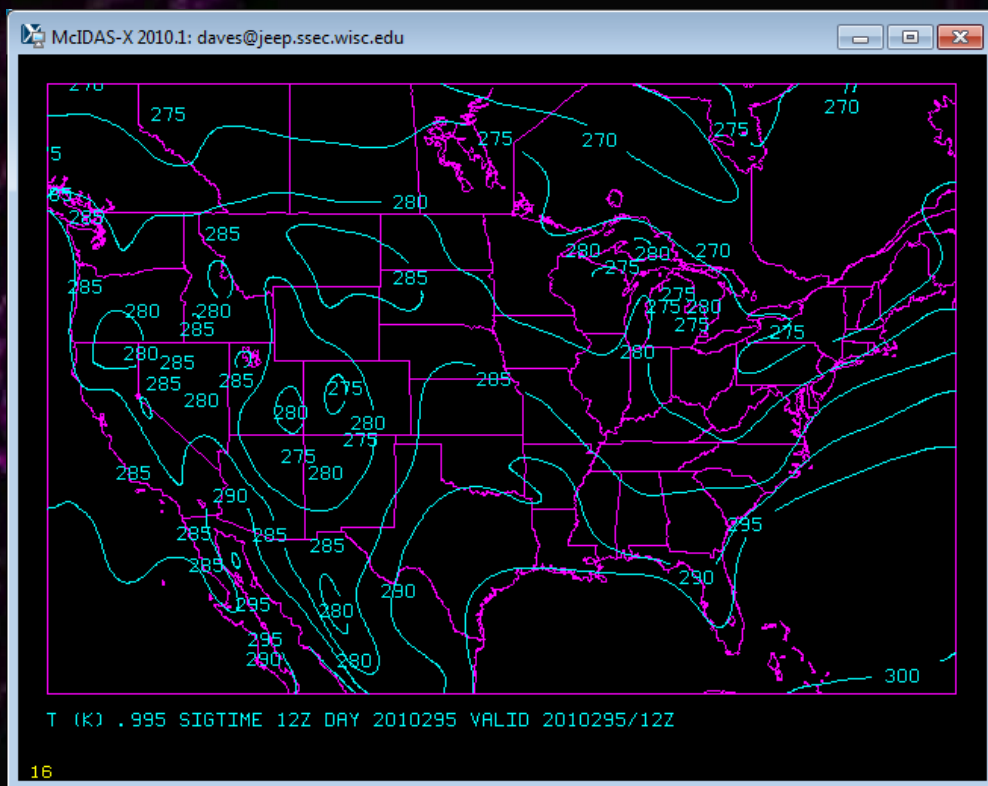- Uses grid of latitude/longitude for navigation
- Updated for multi-banded data

IMGPROBE

- Provide more information from STAT, HIST and PLOT options

- Corrected scan line time for MTSAT and added for MSG

EU TAB

- RGB values for each brightness value

- Portable to other software packages - AWIPS

Sigma Levels with Grids

IMGRGB

- New keyword BASETHRESHOLD= specifies a brightness threshold for pixels to be considered a map outline. Transparency of satellite image decreased by 50%.
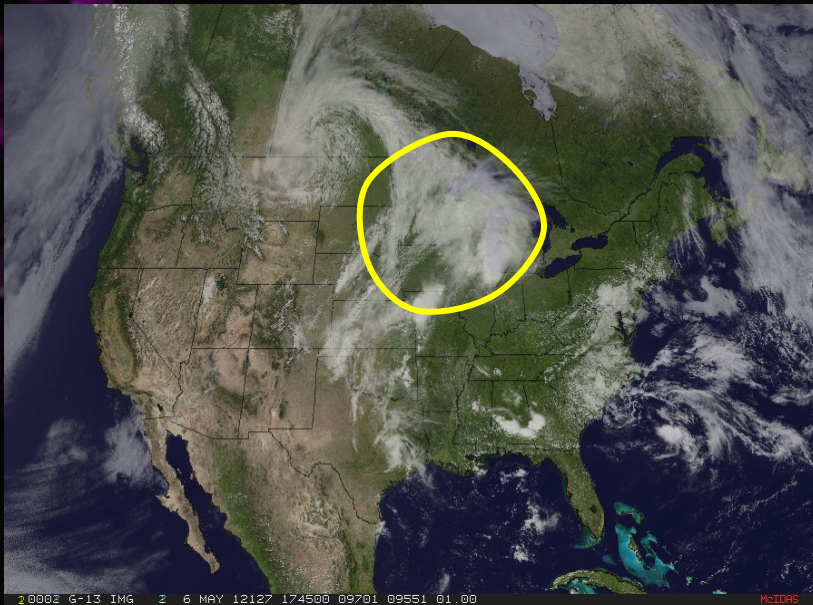
Before
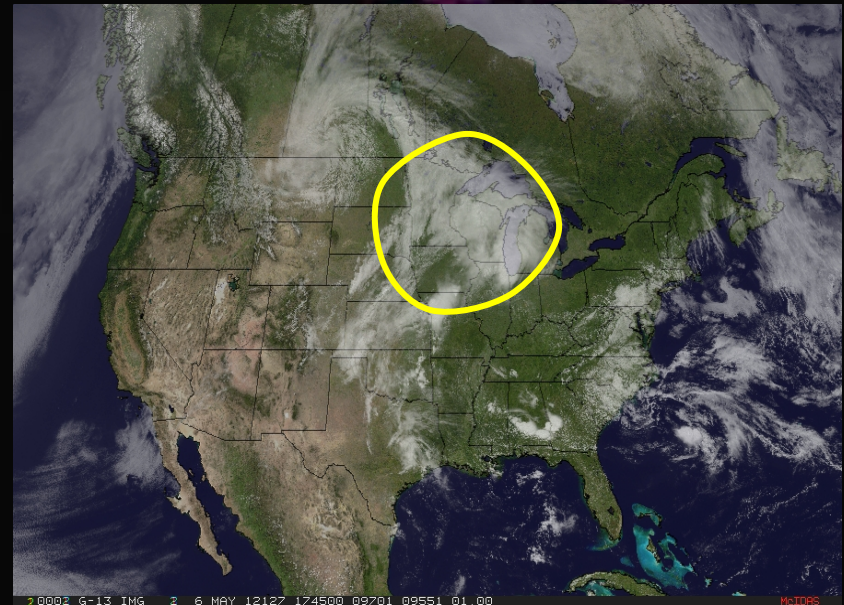
After

McIDAS-XCD 2010.1

- Added support for WSR-88D and TDWR radar products

- Updated the station database, STNDB.CORE
  - 20 new METAR stations
  - 18 oil platforms in the Gulf of Mexico

- Updated the Ship/Buoy/CMAN decoder: Properly decode MISSING wind direction

McIDAS-XCD 2011.1

- Added support for the NAM Fire Weather / IMET nest GRIB files (CONDUIT only)

- Updated the GRIB decoder for NDFD grids

- Updated the SAO/METAR decoder for wind gusts with VRB (variable) designation

- Update the Pilot Report (PIREP) decoder for errors with icing reports

- Updated the station database, STNDB.CORE:

  - 11 new TAF stations

  - Corrected errors in database

McIDAS-XCD 2012.1

- NWS has renamed the Rapid Update Cycle (RUC) forecast model to the Rapid Refresh (RAP) Analysis and Forecast System

- Since RAP and RUC have same model ID numbers, current versions of –XCD will continue to work

- There is an update to the navigation parameters to allow data to be correctly filed into the RTGRIB2/RAP-USLC20KM dataset

McIDAS-XRD
Current and Future

- IMGPARM
- COMP_ALLBAND
- Canada radar decoder
- TAFLIST
- ADDE Servers

IMGPARM

Multi-banded file containing quantities at each pixel:

1.   Gray scale values

2.   Time difference from a nominal time (sec)

3.   Distance from satellite subpoint (km)

4.   Pixel area (km*km)

5.   Satellite Sensor (SS)

6.   Wavelength

7.   Parallax distance (km*10)

8.   Parallax direction (degrees)

COMP_ALLBAND

- Composite satellite image of the highest resolution pixels

- Retains all eight bands from IMGPARM

Canada Radar Decoder

- Decode text data on the ldm

- Converted to McIDAS Area format served via ADDE
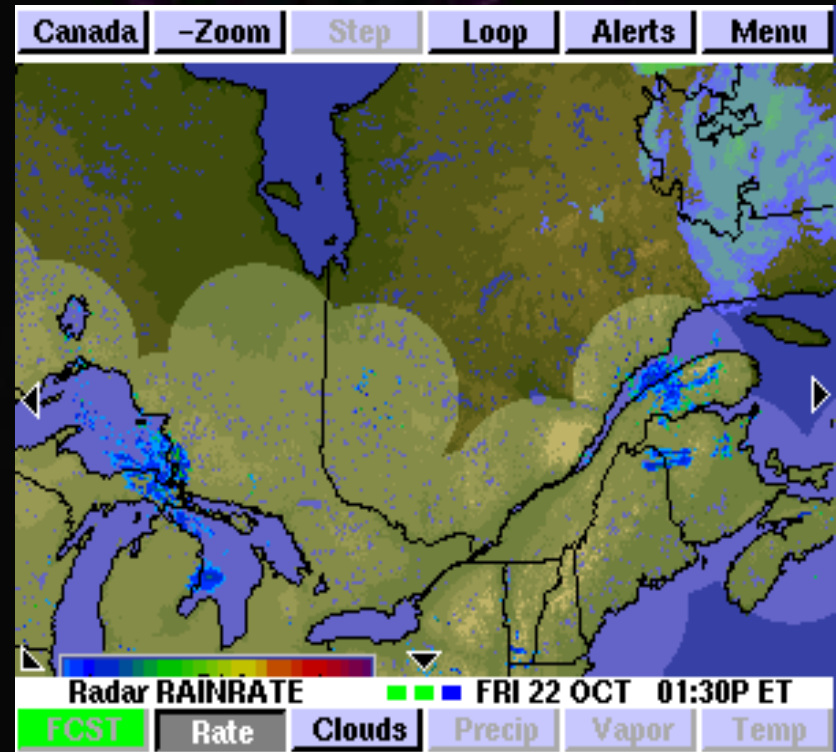
TAFLIST

- Decodes Terminal Aerodrome Forecast (TAF)
- Graphical depiction of expected conditions
- PDA Animated Weather

ADDE Servers

- Clouds from AVHRR Extended (CLAVR-x) products
  - Cloud type
  - SST
  - Volcanic Ash
- GEOCAT products
  - Cloud type
  - Fog mask, probability, and depth

ADDE Servers

- Additional MODIS products from GEOCAT
  - Fog product
  - Volcanic ash

McIDAS-X 2012.1

- Tracking real-time satellite data
- Access pre-KLM AVHRR Level 1b files
- NAV=LALO for AVHRR Level 1b files
- MODIS with bow tie correction
- Updates for COMS data

McIDAS-X 2012.1

- ADDE with ssh tunneling
- Updated map files
- Dual polarization radar

Tracking

- User configurable for GVAR and MTSAT
  - Only from SDI-104 ingestor or when reading raw files locally
  - TRACKING= YES/NO; default is set by server administrator with MCTRACK environment variable
  - Initially done for McIDAS-V

Pre-KLM AVHRR Level 1b
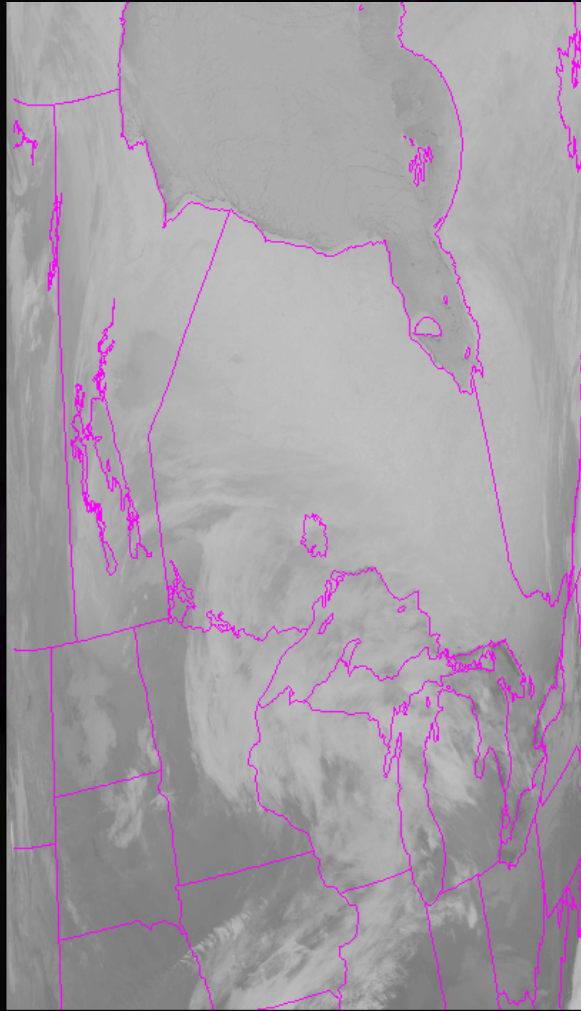
NOAA-11
3 January 1989

NAV=LALO for Level 1b files

- NAV=LALO keyword will be valid in IMG* commands to access the lat/lon navigation of AVHRR Level 1b files

Bow Tie Correction

(correction for MODIS scanning using MRTswath)
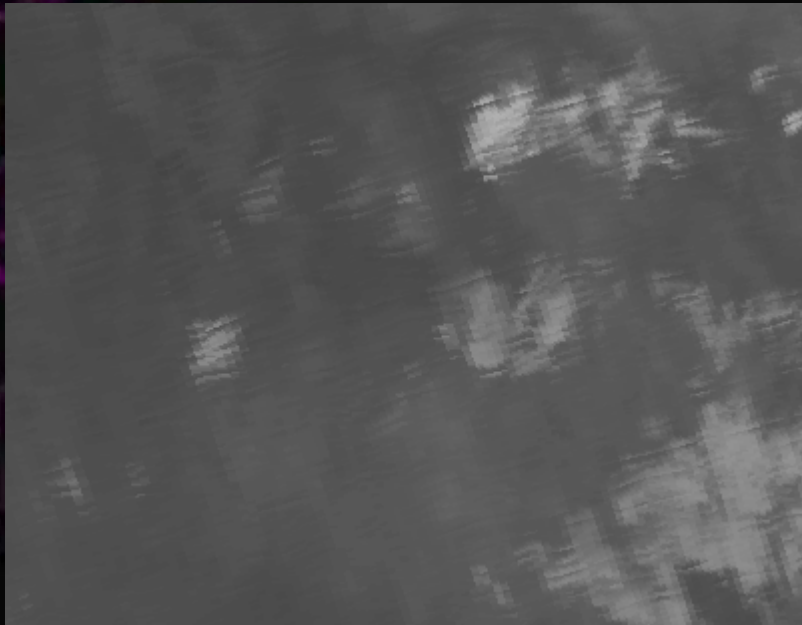
IMGREMAP

Bow tie corrected

COMS

Based on MTSAT HRIT server
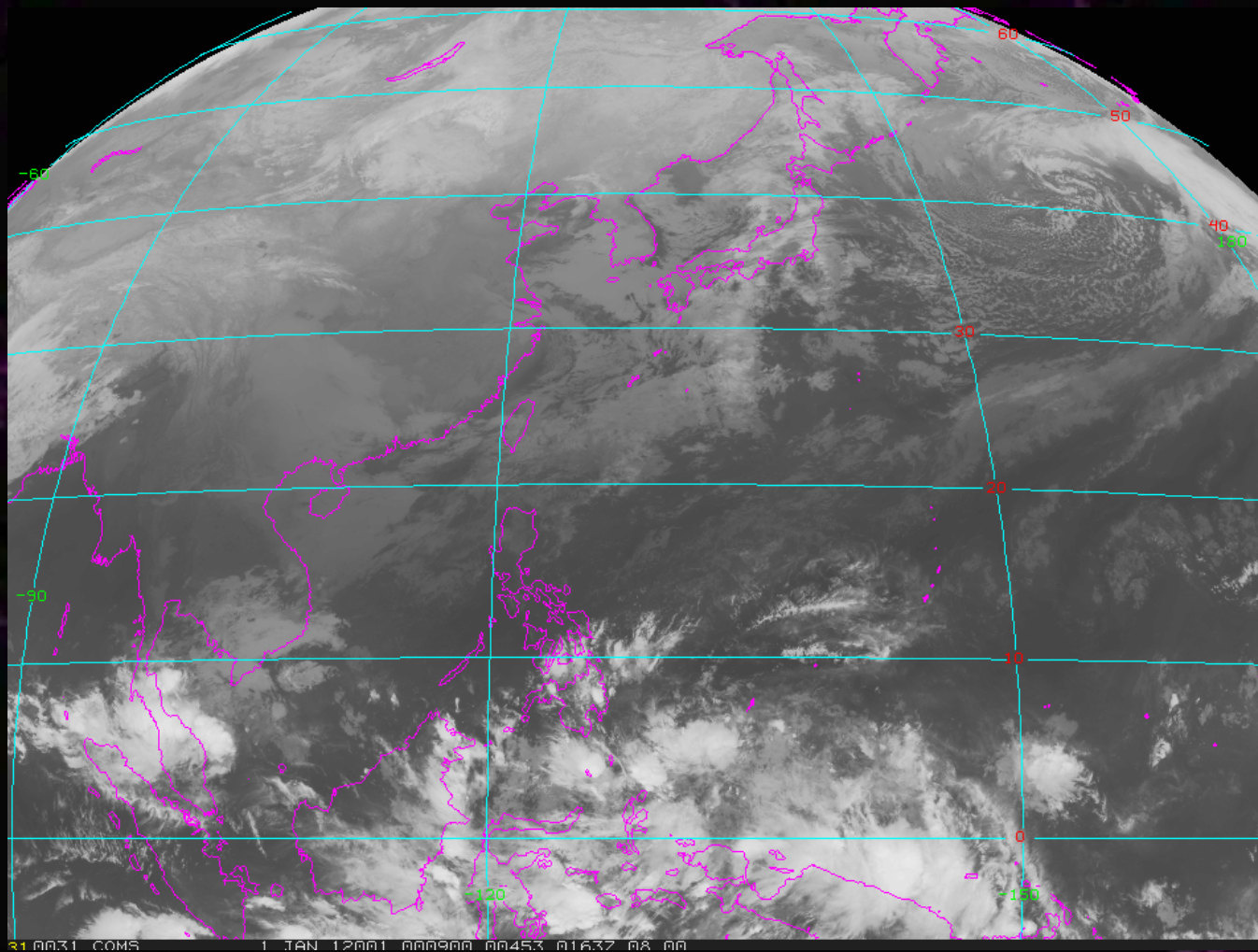
SSH Tunneling with ADDE

- User configurable through DATALOC
  - Keywords SSHADD, SSHLIST, SSHDEL used when servers are in a secure environment
  - Funded by JSC who has a two factor authentication requirement

Updated Map Files

- USCOUNTY.MAP, USZONE.MAP, USSTATE.MAP
  - Better WWDISP & WWLIST performance
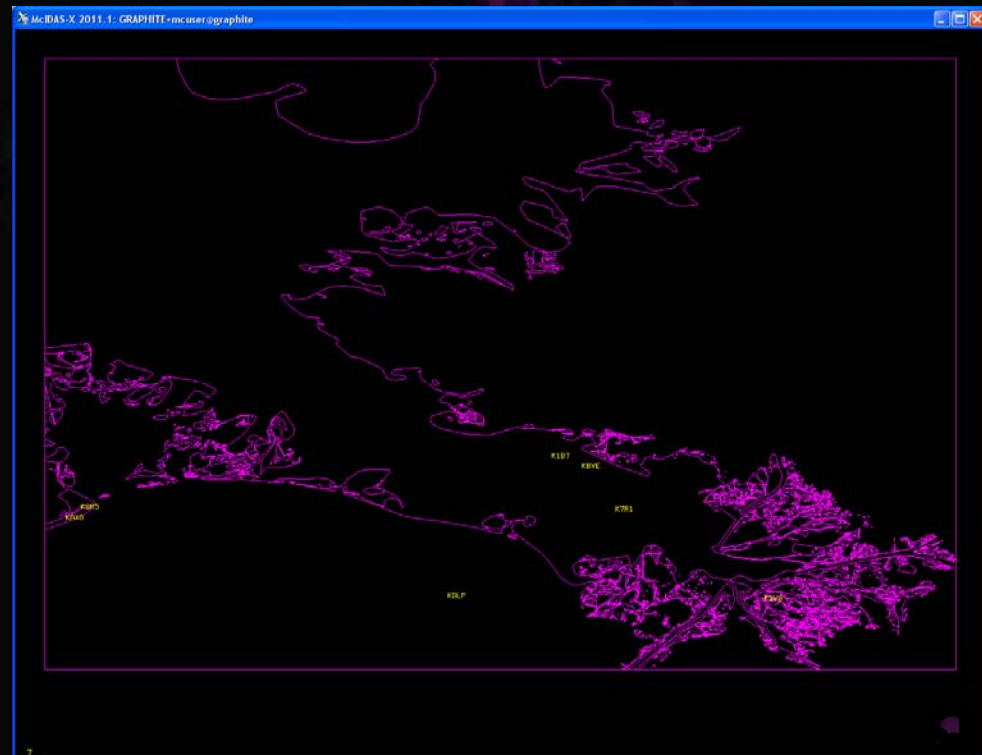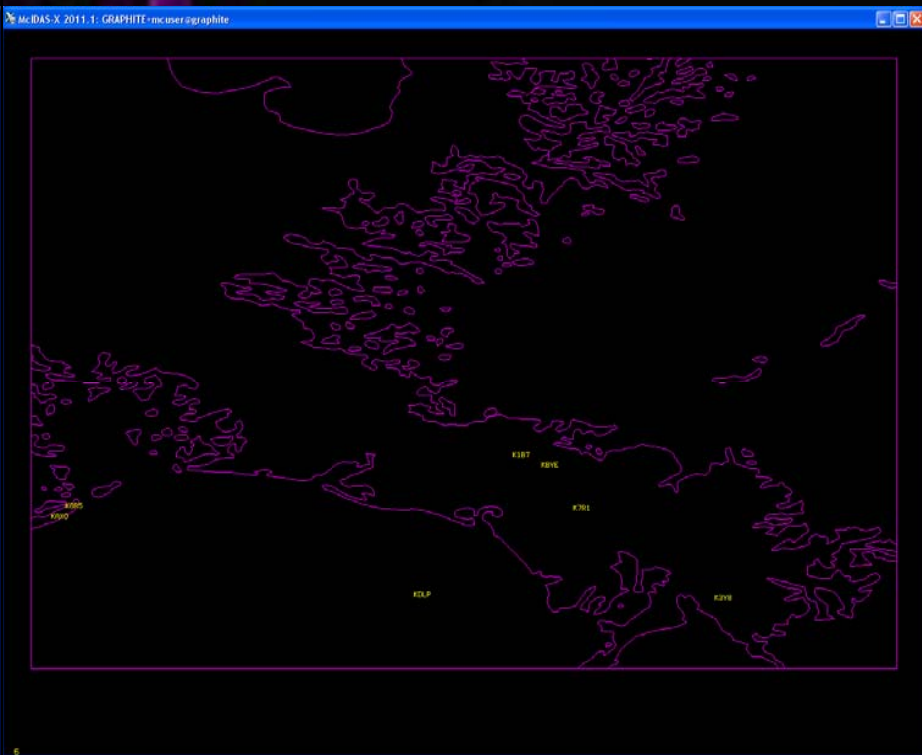
NEXRAD Level III Dual Polarization

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TABLE 1:  WMO HEADINGS FOR WSR-88D RADAR PRODUCT ADDITIONS

#  TTUSII NNN PRODUCT DESCRIPTION                      DIRECTORY
1 SDUS8I NOX DIFFERENTIAL REFLECTIVITY 159/DZD 0.5DEG  DS.159X0
2 SDUS8I NAX DIFFERENTIAL REFLECTIVITY 159/DZD 0.9DEG  DS.159XA
3 SDUS8I N1X DIFFERENTIAL REFLECTIVITY 159/DZD 1.5DEG  DS.159X1
4 SDUS8I NBX DIFFERENTIAL REFLECTIVITY 159/DZD 1.8DEG  DS.159XB
5 SDUS8I N2X DIFFERENTIAL REFLECTIVITY 159/DZD 2.4DEG  DS.159X2
6 SDUS8I N3X DIFFERENTIAL REFLECTIVITY 159/DZD 3.4DEG  DS.159X3
7 SDUS8I NOC CORRELATION COEFFICIENT 161/DCC 0.5DEG    DS.161C0
8 SDUS8I NAC CORRELATION COEFFICIENT 161/DCC 0.9DEG    DS.161CA
9 SDUS8I N1C CORRELATION COEFFICIENT 161/DCC 1.5DEG    DS.161C1
10 SDUS8I NBC CORRELATION COEFFICIENT 161/DCC 1.8DEG    DS.161CB
11 SDUS8I N2C CORRELATION COEFFICIENT 161/DCC 2.4DEG    DS.161C2
12 SDUS8I N3C CORRELATION COEFFICIENT 161/DCC 3.4DEG    DS.161C3
13 SDUS8I NOK SPECIFIC DIFFERENTIAL PHASE 163/DKD 0.5DEG DS.163K0
14 SDUS8I NAK SPECIFIC DIFFERENTIAL PHASE 163/DKD 0.9DEG DS.163KA
15 SDUS8I N1K SPECIFIC DIFFERENTIAL PHASE 163/DKD 1.5DEG DS.163K1
16 SDUS8I NBK SPECIFIC DIFFERENTIAL PHASE 163/DKD 1.8DEG DS.163KB
17 SDUS8I N2K SPECIFIC DIFFERENTIAL PHASE 163/DKD 2.4DEG DS.163K2
18 SDUS8I N3K SPECIFIC DIFFERENTIAL PHASE 163/DKD 3.4DEG DS.163K3
19 SDUS8I NOH HYDROMETEOR CLASSIFICATION 165/DHC 0.5DEG  DS.165H0
20 SDUS8I NAH HYDROMETEOR CLASSIFICATION 165/DHC 0.9DEG  DS.165HA
21 SDUS8I N1H HYDROMETEOR CLASSIFICATION 165/DHC 1.5DEG  DS.165H1
22 SDUS8I NBH HYDROMETEOR CLASSIFICATION 165/DHC 1.8DEG  DS.165HB
23 SDUS8I N2H HYDROMETEOR CLASSIFICATION 165/DHC 2.4DEG  DS.165H2
24 SDUS8I N3H HYDROMETEOR CLASSIFICATION 165/DHC 3.4DEG  DS.165H3
25 SDUS8I NOM MELTING LAYER 166/ML 0.5DEG               DS.166M0
26 SDUS8I NAM MELTING LAYER 166/ML 0.9DEG               DS.166MA
27 SDUS8I N1M MELTING LAYER 166/ML 1.5DEG               DS.166M1
28 SDUS8I NBM MELTING LAYER 166/ML 1.8DEG               DS.166MB
29 SDUS8I N2M MELTING LAYER 166/ML 2.4DEG               DS.166M2
30 SDUS8I N3M MELTING LAYER 166/ML 3.4DEG               DS.166M3

32 SDUS8I HHC HYBRID SCAN HYDROMETEOR CLASSIFIC. 177/HHC DS.177HH
33 SDUS8I OHA ONE HOUR ACCUMULATION 169/OHA             DS.169OH
34 SDUS8I DAA DIGITAL ACCUMULATION ARRAY 170/DAA        DS.170AA
35 SDUS3I PTA STORM TOTAL ACCUMULATION 171/STA          DS.171ST
36 SDUS8I DTA DIGITAL STORM TOTAL ACCUMULATION 172/DSA  DS.172DT

39 SDUS8I DOD DIGITAL ONE HOUR DIFFERENCE 175/DOD       DS.174OD
40 SDUS8I DSD DIGITAL STORM TOTAL DIFFERENCE 175/DSD    DS.175SD
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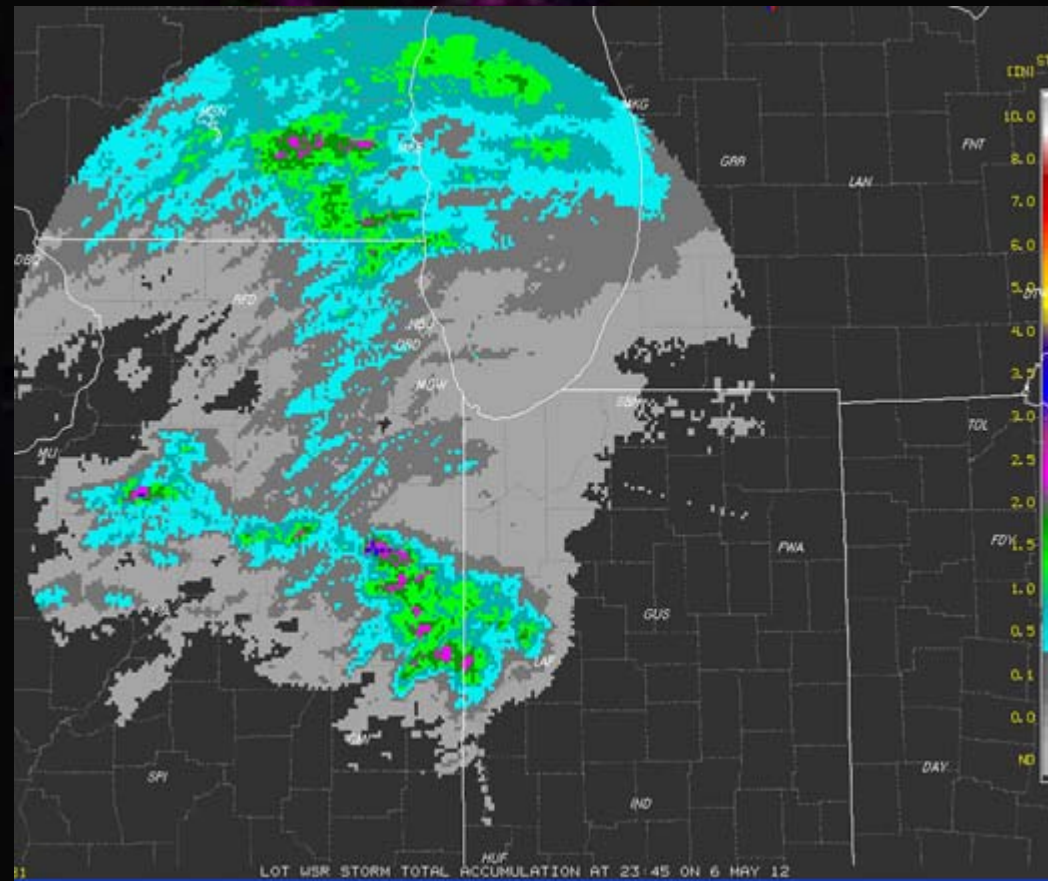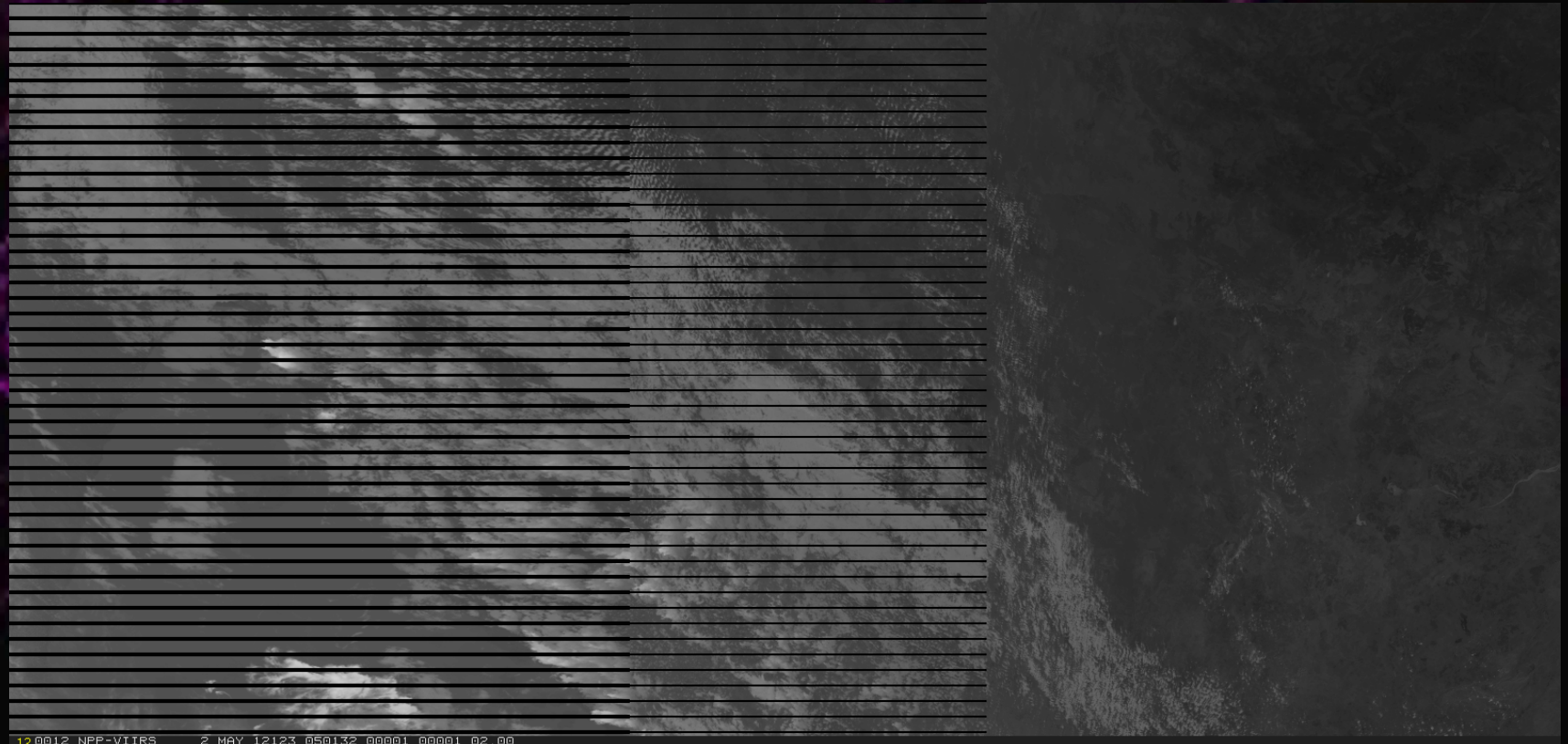
LOT WSR STORM TOTAL ACCUMULATION AT 23:45 ON 6 MAY 12

…..and beyond

- VIIRS ADDE Server
  - Prototype: very limited functionality
  - MS2GT (3rd party package) will be used to remove bow tie and store in a reprojected Area file.
- Next generation ADDE servers

VIIRS ADDE Server

Left half of VIIRS granule with bowtie deletion

Next Generation ADDE

- Still in the planning stage

- Expecting the servers to based on Java:

  - Make use of McIDAS-V file adapters

  - Interface to the netCDF 4 library

  - All data formats that McIDAS-V can read locally, will also work remotely