

McIDAS-X Software Development and Demonstration

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Overview

- McIDAS-X 2009.2, 2010.1
- McIDAS-XRD 2009.2, 2010.1
- Software development and plans for version 2010.2 and beyond...

McIDAS-X 2009.2 and 2010.1

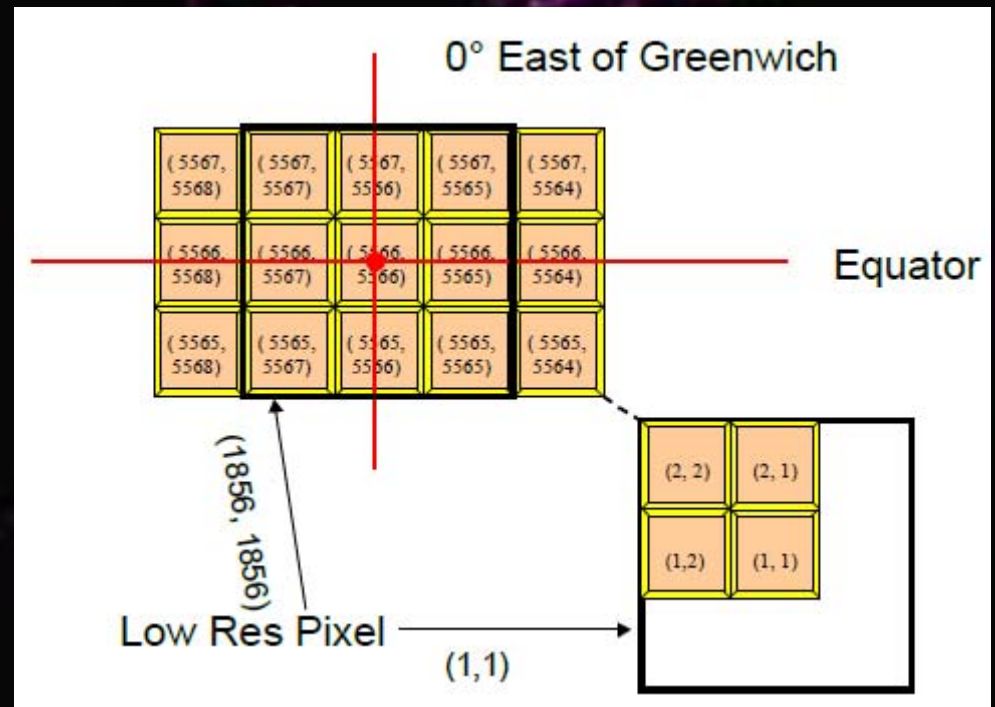
- NetCDF compliancy
- MSG, MTSAT, and ABI updates
- MODIS bowtie correction
- Level 1b server and NOAA-19 updates
- IMGCOPY with DOC= changes
- McIDAS-XCD updates

NetCDF Files

- NetCDF ADDE write server conforms to the Climate and Forecast (CF) Metadata Convention
 - IMGCOPY with CF=YES is the default
 - Files can be used with McIDAS-V
- Negative values are written correctly

MSG

- Navigation module
 - Transform was not invertible
 - Upper-left coordinate for full disk IR is 3,3
 - Client and server change needed



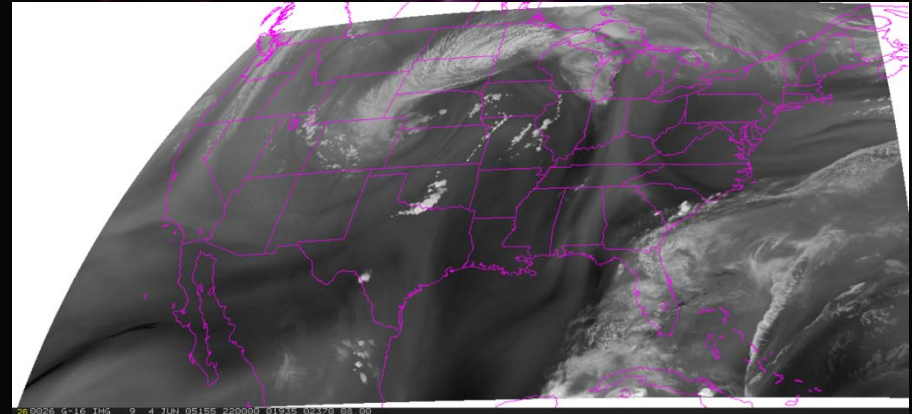
From EUMESAT:
pdf_ten_05105_msg_img_data.pdf

MTSAT

- Differentiate between MTSAT-1R and -2. It is not in the data stream!
- Server updated to handle rapid scan segments.
- Corrected equation that converts counts to albedo.
- Now has ability to read HRIT files on AIX.

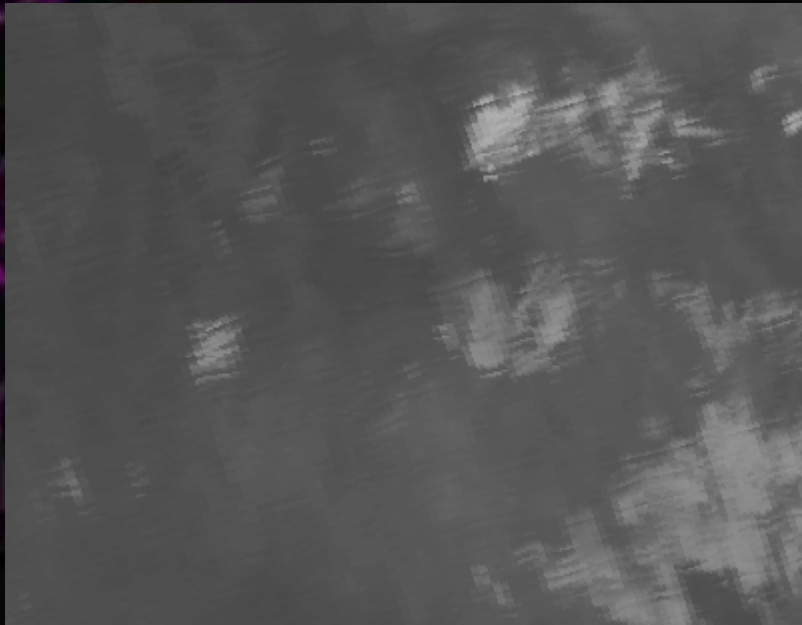
ABI

- Calibration
 - Bands 1-6 reflectance
 - Bands 7-16 infrared
- Navigation
 - Correct to make transform invertible
 - Added solar and satellite zenith angles

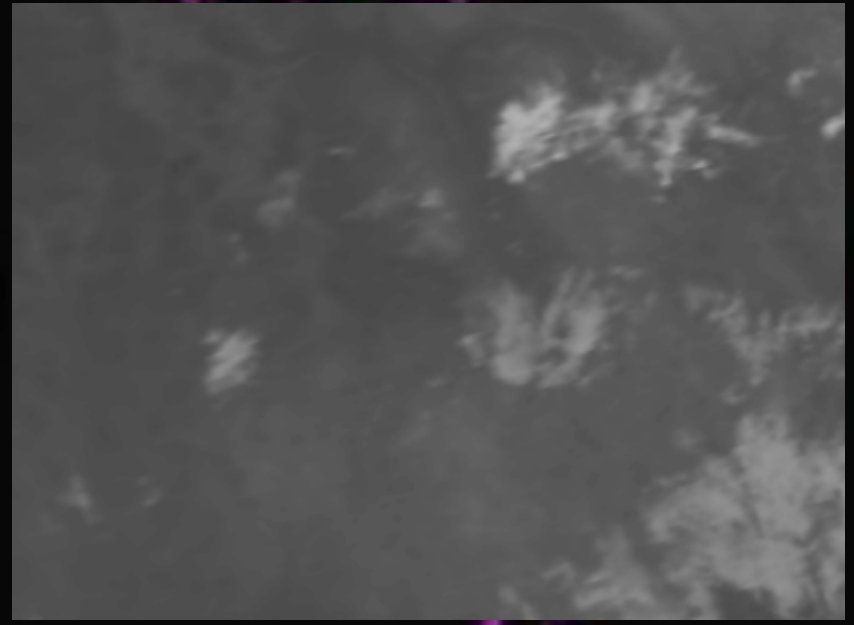


Bow Tie Correction

(correction for MODIS scanning using MRTswath)



IMGREMAP



Bow tie corrected

POES

- NOAA-19
 - Apply non-linear radiance correction
- Level 1b server
 - Correctly return raw values on 64-bit workstations
 - Updates for NOAA-19

IMGCOPY with DOC=

- DOC=NO and SIZE=SAME are no longer a valid keyword combination
- SIZE=SAME always includes image documentation
- STYPE=VISR includes the doc if DOC=YES or SIZE=SAME is specified

McIDAS-XCD

- Recognize FLDC and TRAN GRIB2 parameters
- Add oil platform locations
- Correct navigation for some GFS and ECMWF grids
- Correct filing of potential vorticity on sigma levels for 1 degree GFS grids

Software Plans for 2010.2 and beyond....

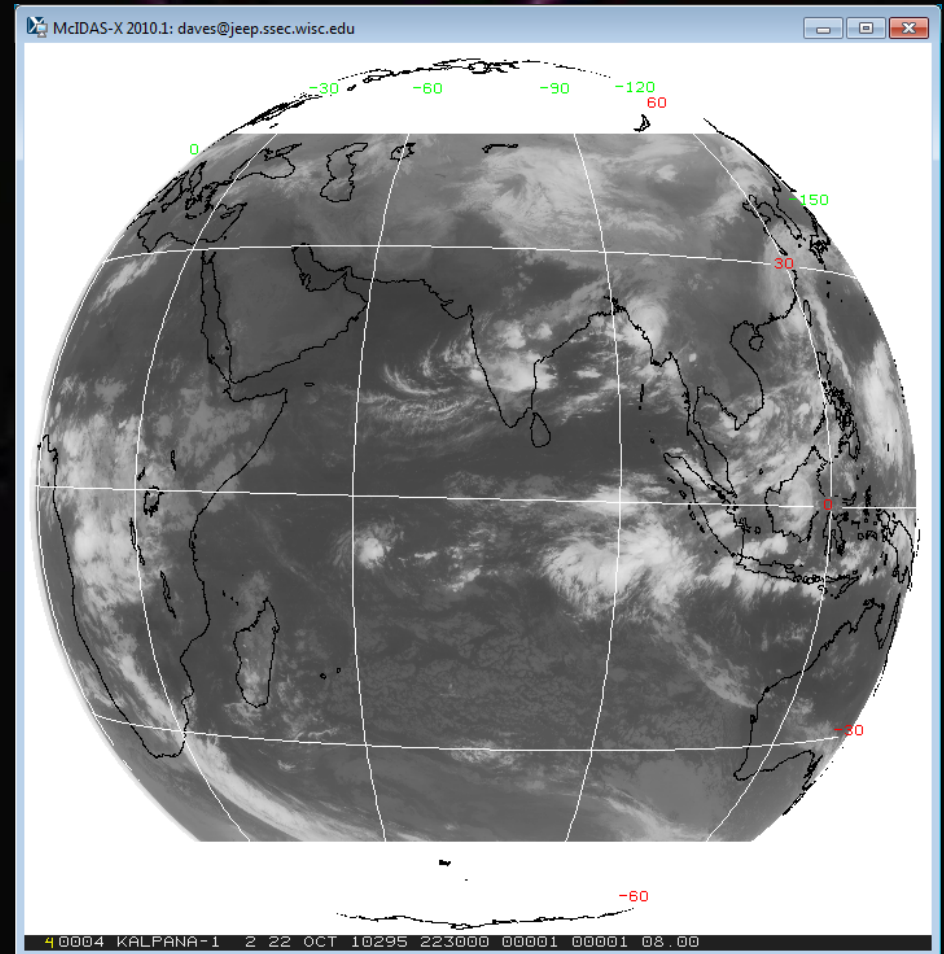
- Radar
- Kalpana updates
- IMGPROBE enhancements
- Real-time tracking
- Access pre-KLM AVHRR Level 1b
- EU TAB expanded listing
- Specify sigma levels with grids

Radar

- NEXRAD dataset going away in December 2010
- Being replaced by WSR and TDWR datasets
 - Higher bit depth and geographic resolution for some products
 - 45 new TDWR sites

Kalpana

- HDF5 ADDE server
- Uses grid of latitude/longitude for navigation



IMGPROBE

- Provide more information from STAT and HIST options
- Corrected scan line time for MTSAT and added for MSG

```
McIDAS-X 2010.1: daves@jeep.ssec.wisc.edu
IMGPROBE STAT BOX TEMP MODE=N
Beginning Image Data transfer, bytes= 56628

Name:KALH5/ALL
Calb  Pixels  Minimum  Maximum  Mean  Stn. Dev.
-----
TEMP  3844  215.67  288.93  262.80  17.364

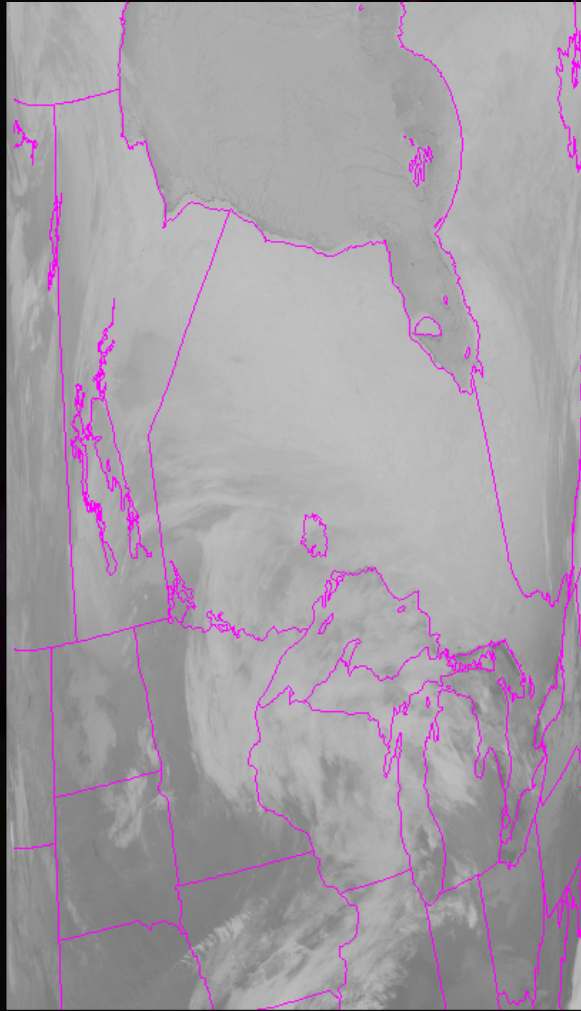
          Image Coord      Earth Coord
Minimum Value:  2045/2781  13:59:20/ -73:21:28
Maximum Value:  2217/2793  10:46:42/ -73:39:51

IMGPROBE: Done
IMA  GRA  Bounds  Switches          Date          Tim>
  4   4  random                23 Oct 2010  02:03>
```

Real-time Tracking

- Ability to turn off real-time tracking of GVAR and Area files
- At this time, only from McIDAS-V ADDE requests

Pre-KLM AVHRR Level 1b



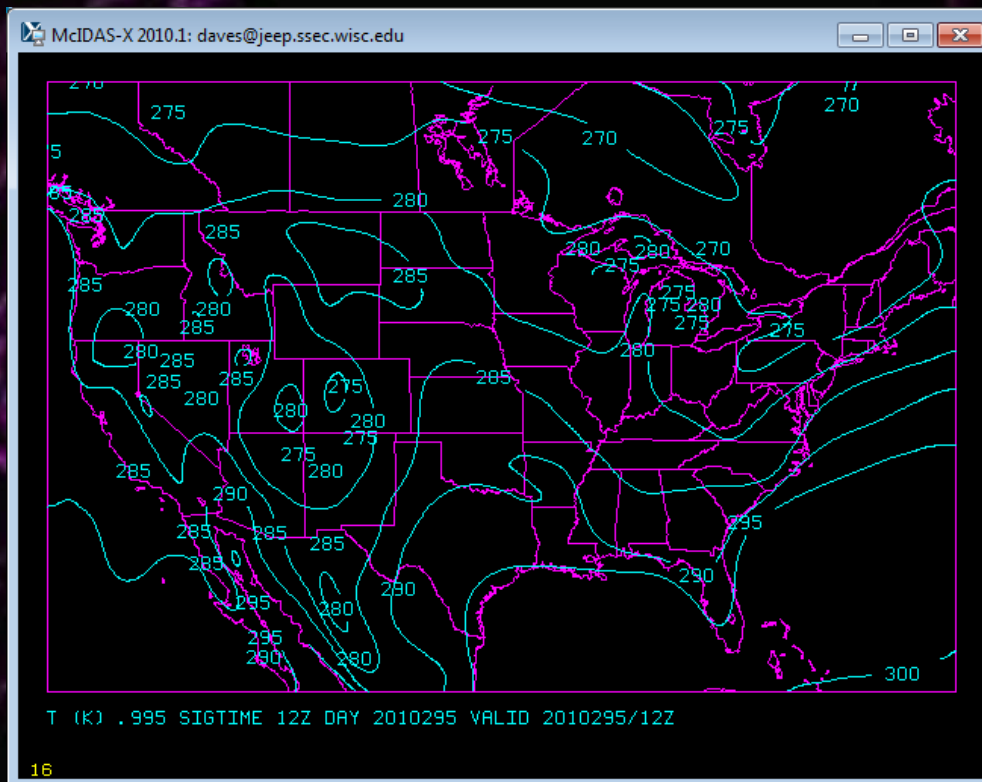
NOAA-11
3 January 1989

EU TAB expanded listing

```
McIDAS-X 2010.1: daves@jeep.ssec.wisc.edu
EU TAB WV
Brightness   Blue           Green           Red
  min max    min max    min max    min max
  --- ---    --- ---    --- ---    --- ---
    0 165      0  0      0  0      0  0
 166 193      9 254      9 254      9 254
 194 255     255 255     255 255     255 255
EU: Done
IMA GRA Bounds Switches          Da>
  1  1  1-15                      22 Oct >
```

```
McIDAS-X 2010.1: daves@jeep.ssec.wisc.edu
162      0      0      0
163      0      0      0
164      0      0      0
165      0      0      0
166      9      9      9
167     18     18     18
168     27     27     27
169     36     36     36
170     45     45     45
171     54     54     54
172     63     63     63
173     72     72     72
174     81     81     81
175     91     91     91
176    100    100    100
177    109    109    109
178    118    118    118
179    127    127    127
180    136    136    136
181    145    145    145
182    154    154    154
183    163    163    163
184    173    173    173
185    182    182    182
186    191    191    191
187    200    200    200
188    209    209    209
189    218    218    218
190    227    227    227
191    236    236    236
192    245    245    245
193    254    254    254
194    255    255    255
195    255    255    255
196    255    255    255
197    255    255    255
198    255    255    255
199    255    255    255
200    255    255    255
201    255    255    255
202    255    255    255
203    255    255    255
204    255    255    255
205    255    255    255
IMA GRA Bounds Switches          Da>
  1  1  1-15                      22 Oct >
```

Sigma Levels with Grids



```
GRDDISP RTGRIDS/GFS-GLME1P0D LEV=.995[SIGM] PAR=T DAY=295 TIME=12 FHOUR=0 MAP
GRDDISP: Done with graphic frame 16
GRDDISP - done
IMA GRA Bounds Switches
16 16 random
Date Time T
23 Oct 2010296 02:17:54 0
```

McIDAS-XRD

Current and Future

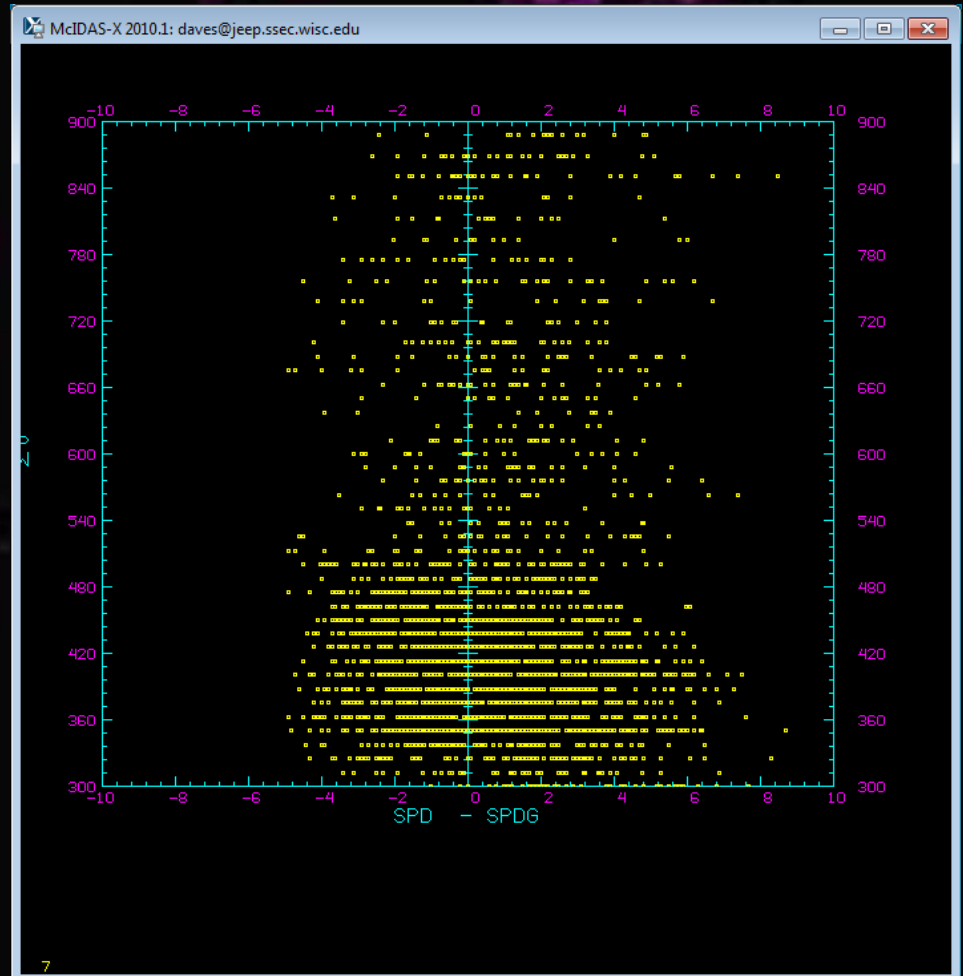
- IMGCOMBO
- MDSCAT
- IMGPARM
- COMP_ALLBAND
- Canada radar decoder
- TAFLIST
- WWDUMP
- SPOT

IMGCOMBO

- Combine single banded Area files into one multi-banded file
- This has only been tested with a limited number of cases

MDSCAT

- Scatter plot of two MD file variables
- Simple math operations
- Any of the parameters can be used as selection criteria



IMGPARM

Multi-banded file containing quantities at each pixel:

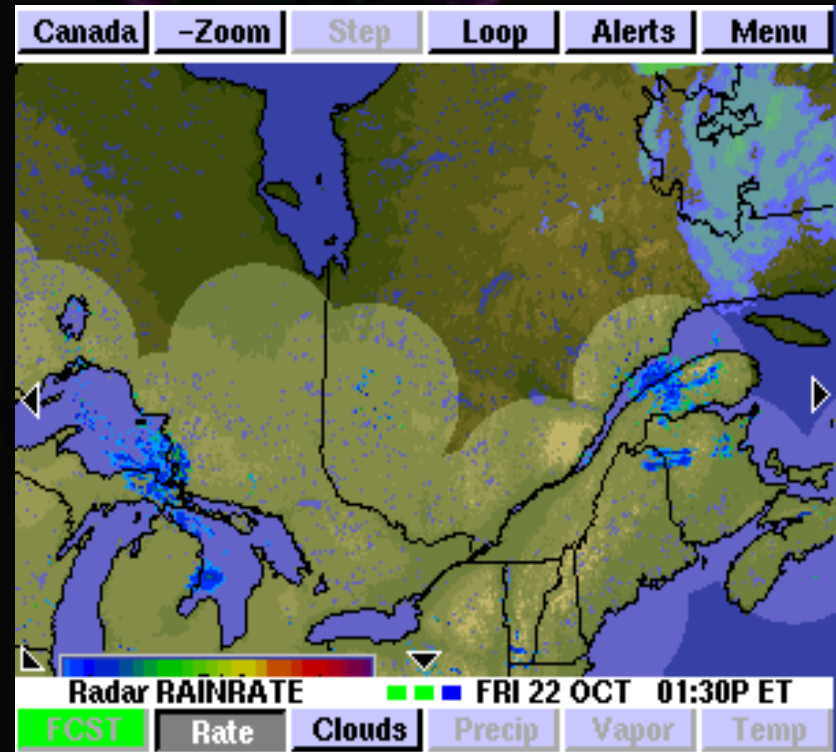
1. Gray scale values
2. Time difference from a nominal time (sec)
3. Distance from satellite subpoint (km)
4. Pixel area (km*km)
5. Satellite Sensor (SS)
6. Wavelength
7. Parallax distance (km*10)
8. Parallax direction (degrees)

COMP_ALLBAND

- Composite satellite image of the highest resolution pixels
- Retains all eight bands from IMGPARM

Canada Radar Decoder

- Decode text data on the Idm
- Converted to McIDAS Area format served via ADDE



TAF LIST

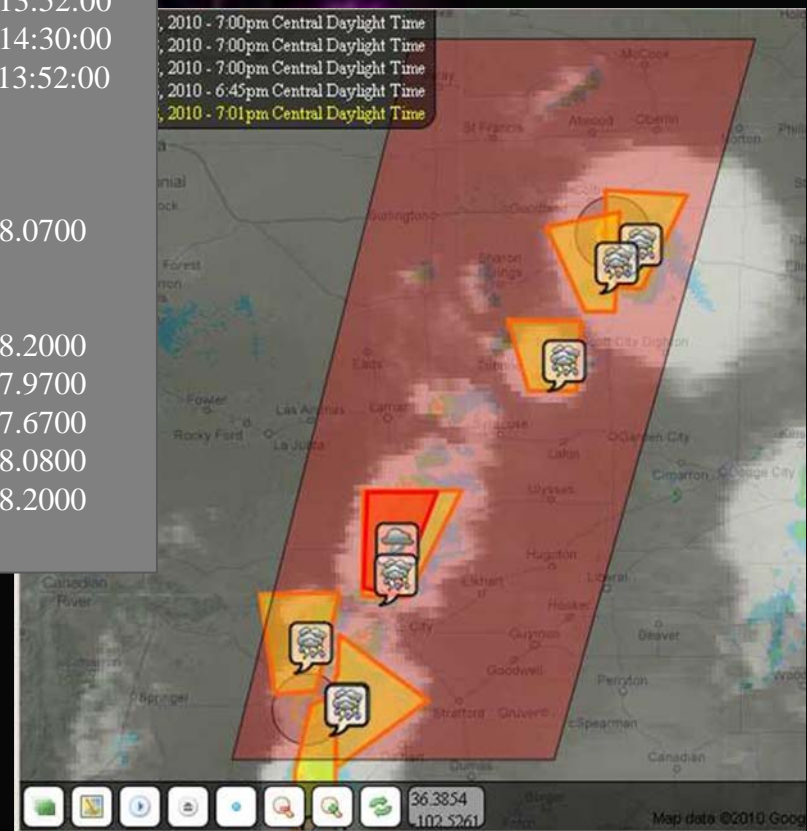
- Decodes Terminal Aerodrome Forecast (TAF)
- Graphical depiction of expected conditions

Radar	Fcst	SfcObs	Sat	Cam	Menu
Omaha, Eppley Airfield, US/NE					
Valid: 22 Oct 01:00P - 23 Oct 01:00P CT					
01:00P	Initially ... Wind: SSE 11 Vis: +6.0mi Sky: SCT 1000ft BKN 2000ft				
06:00P	Changing To ... Wind: SSE 10 Vis: +6.0mi Sky: BKN 5000ft				
07:00P	Occasionally ... Wind: SSE 10 Vis: 4.00mi (Fog) Sky: BKN 3000ft Pcp: Lt Rain Shower				
11:00P					
12:00A	Changing To ... Wind: SSE 09 Vis: +6.0mi Sky: SCT 2000ft BKN 5000ft		30% Probability ... Vis: 4.00mi Sky: OVC 2000ft Pcp: Lt Rain Shower		
06:00A	Changing To ... Wind: SSE 07 Vis: 4.00mi (Fog) Sky: OVC 1500ft		Occasionally ... Wind: SSE 07 Vis: 2.00mi (Fog) Sky: BKN 700ft OVC 1500ft		
01:00P					

WWDUMP

- Decode severe weather watches and warnings
- Text output converted to shape files

```
l: Thunderstorm Warning
t: 2
c: -999
j: 2010295
d: 2010/10/22 13:52:00
d: 2010/10/22 14:30:00
a: 2010/10/22 13:52:00
h: 38
s: 13
{
o: 34.9600 -98.0700
}
{
p: 34.9200 -98.2000
p: 35.3300 -97.9700
p: 35.1400 -97.6700
p: 34.8400 -98.0800
p: 34.9200 -98.2000
}
```



SPOT

Automatically locate and circle sparse pixels values

