

McIDAS-X Software Development and Demonstration

Dave Santek and Jay Heinzelman

22 May 2018

Overview

- McIDAS-X 2017.1, 2017.2, 2018.1
- McIDAS-XCD 2017.2, 2018.1
- Software development and plans for 2018 and beyond...

Plans from last MUG meeting November 2016

- ✓ VIIRS ADDE Server to –XRD
- ✓ Multi-band transfers for GOES-R ABI
- ✓ Increase maximum image size beyond 4096 elements (graphics limitation)
- ✓ Next generation ADDE servers

Imagery

GOES-R ABI

- ABI ADDE servers released
 - Level 1B
 - Multi-band IMGCOPY
 - From NOAA PDA server or output from CSPP Geo
 - Compatible with PLAX (parallax)

Imagery

MCSTRETCH

- Improved display of water vapor, shortwave IR, and specific visible channels
 - Modification to **calibration** modules and **ADDE servers**
 - Initial changes for **operational satellites** and sensors
 - Based on ‘**stretch tables**’ (SU command and keyword)

Imagery

MCSTRETCH

Water vapor bands

- ABI, AHI: 8, 9, 10
- SEVIRI: 5, 6
- GVAR, COMS: 3
- MODIS: 27, 28

Old: 163 – 330 K

New: 180 – 280 K

Imagery

MCSTRETCH

Shortwave IR bands

- ABI, AHI: 7
- SEVIRI: 4
- GVAR, COMS: 2
- MODIS: 20, 21, 22
- AVHRR: 3

Old: 160 – 330 K New: 190 – 400 K

Imagery MCSTRETCH

Visible bands

- ABI: 2
- AHI: 3

Old: 0 – 100 %

New: 0 – 116 %

Imagery

MCSTRETCH= keyword

- Improved stretch is the default
 - Can be overridden with environment variable (MCSTRETCH) or MCStretch= command line keyword
 - Options are EXPanded or ORIGinal
- EU CONV to convert enhancement tables to match new stretch

http://www.ssec.wisc.edu/mcidas/software/x/mcstretch_info.html

Imagery

ABI Level 2 Products

- Satellite-derived products
- Some netCDF files contain more than one product
- Color tables (*.ET) that are similar to those in AWIPS

Imagery

ABI Level 2 Products

McIDAS name	Product name
CMSK	Cloud Mask
CTPR	Cloud Top Pressure
CTH	Cloud Top Height
CTT	Cloud Top Temperature
CTPH	Cloud Top Phase
COD	Cloud Optical Depth
CPS	Cloud Particle Size
LI	Lifted Index
CAPE	CAPE

Imagery

ABI Level 2 Products

McIDAS name	Product name
TT	Total Totals
SI	Showalter Index
KI	K-Index
TPW	Total Precipitable Water
FARA	Fire Detection Area
FT	Fire Detection Temp
FMSK	Fire Detection Mask
FPWR	Fire Detection Power
LST	Land Surface Temperature

Imagery

ABI Level 2 Products

McIDAS name	Product name
ARSL	Aerosol Detection
SMOK	Aerosol Detection Smoke
DUST	Aerosol Detection Dust
AOD	Aerosol Optical Depth
FSC	Fractional Snow Cover
QPE	Rain Rate / QPE
SST	Sea Surface Temperature
VAH	Volcanic Ash Height
VAML	Volcanic Ash Mass Loading

GLM

Global Lightning Mapper

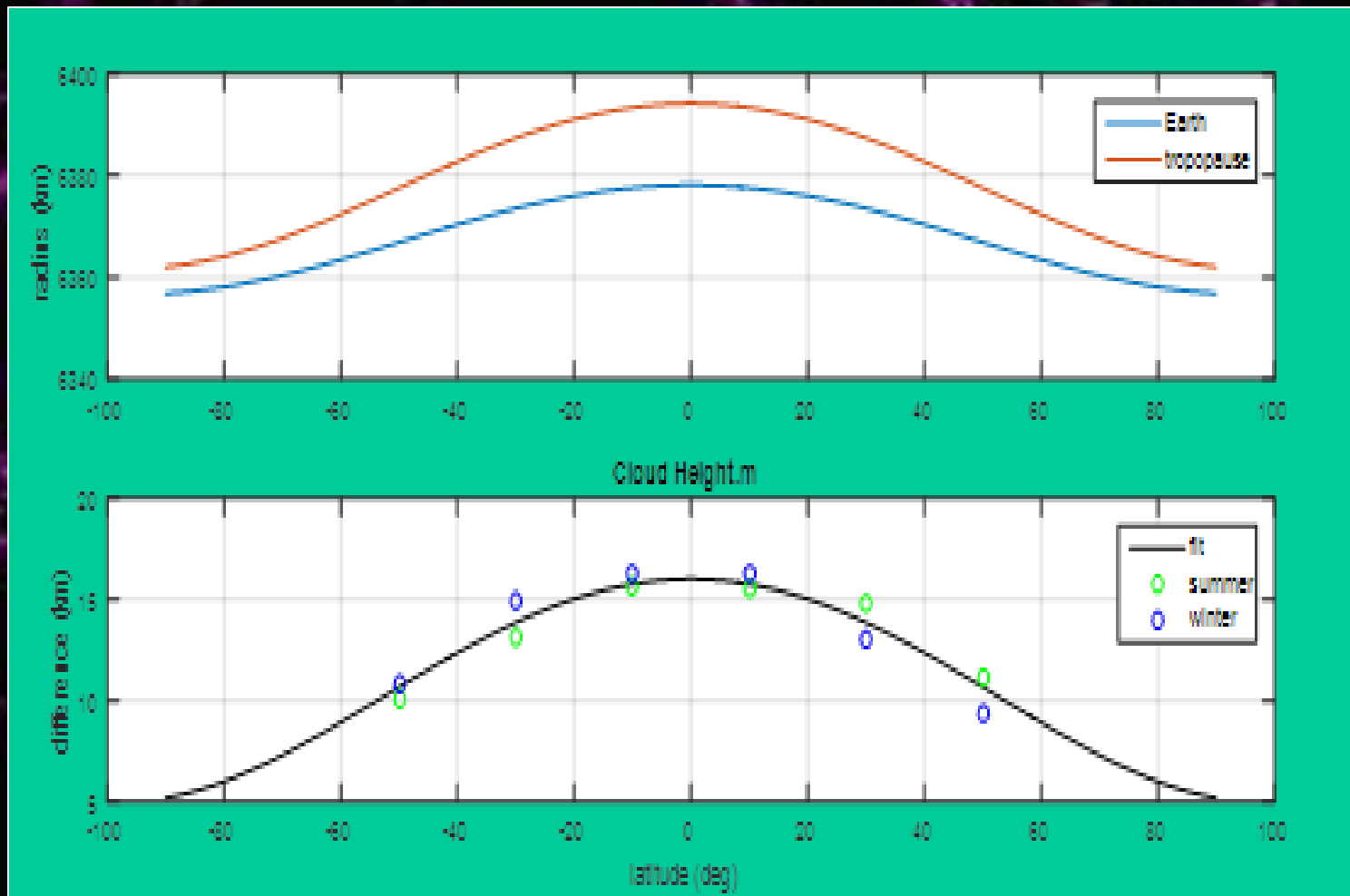
- Events, Groups, Flashes
- Parallax corrected

GLM

Global Lightning Mapper

- Ground System groups lightning flashes from the smallest increments (Events) to aggregates of Events (Groups) to aggregates of Groups (Flashes)
- **Events** are on a grid; each gridpoint is a GLM Field of View
- **Groups** are at the centroid of the Events that comprise the Group
- **Flashes** are at the centroid of the Groups that comprise the Flash
- Number of Events > number of Groups > number of Flashes
- Real-time GLM datasets consist of netCDF files; each with 20 seconds of data

GLM Parallax Model



GLM products are geolocated assuming latitude dependent cloud height.

Display

- Large frame size
 - From 4000x4000 to 32,000x32,000
- Large number of frames
 - 999 increased to 9999
- RGBDISP
 - Examples from GOES-16, Himawari, and Meteosat

Imagery

Himawari

- Updates for Himawari data (*WARI*)
 - Support for landmark regions
 - Handling undefined values

Imagery

Meteosat

- Updates to correct for navigation error
 - $\frac{1}{2}$ visible line and element error
 - Corrected at EUMETSAT in December 2017

Miscellaneous

- Update to maps and station database (NOAA sources)
- More precision in output from DIST

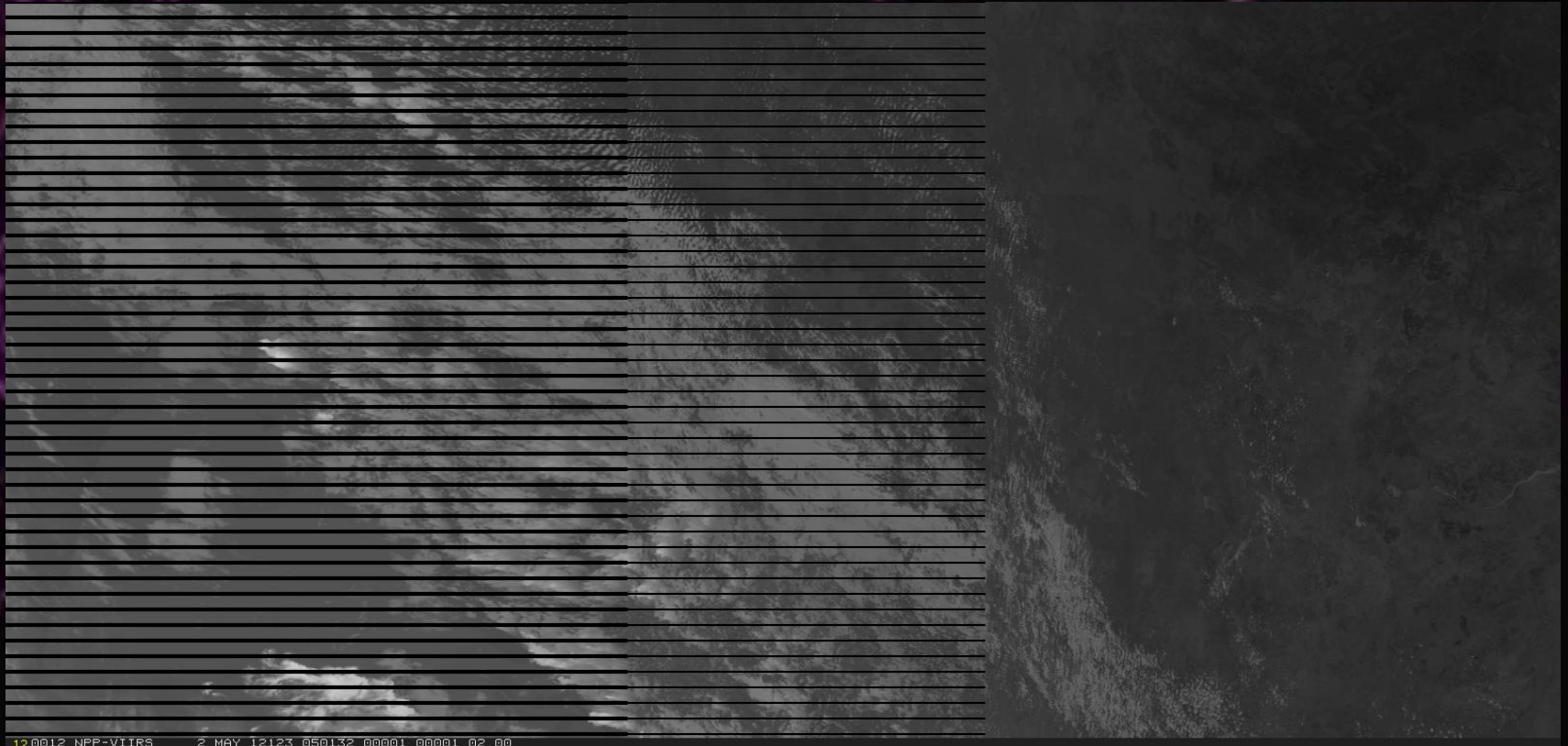
McIDAS-XCD

- WWDISP, WWLIST
 - Cancellations, updates, etc.
 - Polygons
- Hourly synoptic
- More stations for both METARs and synoptic reports
- Case sensitive searching

McIDAS-XRD

- GLMIMG
 - Density image
- VIIRS server
 - S-NPP and NOAA-20
- Unidata: ABI Sectorized Cloud and Moisture Imagery (SCMI) ADDE server

VIIRS ADDE Server



Left half of VIIRS granule with bowtie deletion

Plans for 2018 and beyond

- Refine major recent changes:
 - Number of frames and large frames
 - MCSTRETCH
 - RGB display

Plans for 2018 and beyond

- Promote from -XRD:
 - VIIRS server
 - SCMI server
 - GLMIMG