McIDAS-X Software Development and Demonstration

Dave Santek and Jay Heinzelman

16 September 2019

Overview

- McIDAS-X 2018.2, 2019.1

- McIDAS-XCD 2018.2, 2019.1

- Software development and plans for 2020 and beyond…

Plans from last MUG meeting May 2018

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

Plans from last MUG meeting May 2018

- ✓ Promote from –XRD to core:
  - ✓ VIIRS server
  - ✓ SCMI server
    - ✓ Most functionality included in ABI server
  - ✓ ~~GLMIMG~~

Imagery
GOES-R Series ABI

- Updates to ABI server for NOAAPORT Level 2 image products
- Temperature Data Quality Flag (TDQF) information listed:
  - IMGLIST FORM=AUX
- ABI mode noted in memo field:
  - IMGLIST FORM=MEMO (or ALL)

Imagery
GOES-R Series ABI

- In addition to the 'projected' lat/lon of the data, add the 'actual' subpoint of satellite
- Allow the map to be drawn beyond limits of image:
  - Useful for getting context for Meso
- Allow more special characters in directory pointing to ABI netCDF files

Imagery
GOES-R Series ABI

- Distinguish between 'space' pixels and 'no data'

- Improve detection of corrupt files and ignore

- Update satellite definition file (CORE.SAT) to include satellites out to GOES-19

Imagery
VIIRS

- Significant updates: Move from –XRD to core

- Auto-stretch of Day/Night band
  - Radiance ranges from 10^{-9} to 10^{-2}
  - Scaled log10(1/radiance)

- Shortwave IR (band 18) uses enhanced stretch

Imagery
VIIRS

- Plot VIIRS swath coverage with NAVDISP
- Increased the maximum number of files in a collection to 20,000

Imagery
Meteosat

- Corrected an error in computing satellite zenith angle
  - Assumed satellite was at zero longitude
- Updated the Meteosat archive server for Met-11
  - MSGS server for reading *.nat files

Imagery
Other Geo

- Himawari
  - Update HimawariCast server for H-9
  - Update calibration module coefficients with more precision
- GVAR
  - Increased to 2 digits of precision for brightness temperature

Imagery
Other

- Polar
  - Added satellite ID in server for Metop-C
  - Improved contrast for MODIS product band 49: Cloud Effective Radius
- GINI
  - Updates to GINI server for radar to enable calibration for Area file copies

Imagery
other

- IMGPROBE
  - Added ability to work directly with archive servers
  - Retain scanline times for ABI and Himawari
- Increased block size for lat/lon by pixel navigation

Imagery
other

- Added ability to write GeoTIFF files with floating point numbers

- Better error handling in IMGREMAP with PRO=DEST

- Filter out non-Area files when using wildcards (e.g., /data/A*)

- Enable radar data to work with IMGFILT, IMGOPER, etc.

Display

- MAP: Correct labeling of lat/lon lines with small INT= values
- FRMLABEL: Correct labeling of RGB frames
- RGBDISP: Ensure memory is freed
- COMBINE: Fix for graphics colors
- IMGDISP: Better labeling for GOES-16, etc.

Point
Geostationary Lightning Mapper (GLM)

- Added LOC= keyword to GLMDISP
  - Specify symbol to plot and size
- Corrected inconsistencies in the use of TIME= and NAV= keywords
- Added ability to work with archive data and span days
- Update switching/combining data from GOES-East and -West

Point

- PTDISP (HDF reader server):
  - Plot across dateline
  - Increase max points to 10 million
- SFCLIST:
  - List specials near day boundary

Grid

- Correctly list Probabilistic Extratropical Storm Surge (PETS) grids
- Correct listings with FTIME=0
- Allow for units of NONE: LEV[NONE]
- Number of undecoded grids listed was incorrect
- Ensure that global grids completely wrap

McIDAS-XCD

- Update to decode TEMP SHIP reports
- Added over 500 Brazil synoptic stations

McIDAS-XRD

- ABITRUCOL.MCB
- SANDWICH
- County Warning Areas (CWA)
- VIRN servers (NASA VIIRS)
- Python scripts:
  - Make compatible with Python 2 and 3
  - Necessary changes for macOS

Miscellaneous

- ADDE:
  - Improve network connections and timeouts
  - Updates for access restrictions (SERVER.IP, etc.)
  - Improve port allocation for SSH tunneling

Miscellaneous

- DSSERVE:
  - Check added for missing INFO= file
  - Add new options for replaceables
  - Improve handling of special characters in DIRFILE=

Miscellaneous

- Correct return code for errors accessing an archive server

- Update to maps and station database (NOAA sources)

- Correct Fortran coding errors (detected on macOS)

- Allow up to 99 input parameters for BATCH

Plans for 2020 and beyond

- Investigate replacement environment for McIDAS-X for Windows 10:
  - Windows Subsystem for Linux (WSL)
  - Linux Virtual Machine
- Support for VIIRS EDR data
- Support Python ADDE servers
- Promote from -XRD: GLMIMG