Using McIDAS to perform validation and applications for Himawari and ABI

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The authors wish to extend their appreciation to JMA for the use of AHI data during PLT

Overview

- Introduction
- AHI analysis and applications
- ABI analysis and applications
- Conclusions

Introduction

- McIDAS-X and McIDAS-V have been used successfully to visualize output from AHI and ABI
- Both have provided useful visualization to aid in cal/val activities for AHI
- McIDAS-V has been used to visualized and provide feedback to Harris regarding output from the GOES-R Ground System

AHI

AHI

- Both McIDAS-V and McIDAS-X can read in AHI data in a variety of formats
  - McIDAS-X
    - ADDE server can be used to serve AHI HSF (raw data) directly to users
    - Ability to display AHI HSF to McIDAS-X clients
    - Ability to download (IMGCOPY) AHI data to local AREA files
    - Fast track is currently in testing
  - McIDAS-V
    - Can display AHI data from
      - McIDAS-X ADDE server
      - JMA netCDF files
      - netCDF4 output from libHimawari output
      - Algorithm output from various processing frameworks
    - Utilizing various plugins, provides the ability to create combination products.
    - Allows for overlaying of output from various processing frameworks for quick analysis

AHI

- CIMSS scientists currently working with the McIDAS User Group in the development of McIDAS ADDE server to ensure scientific accuracy of the data shown in McIDAS

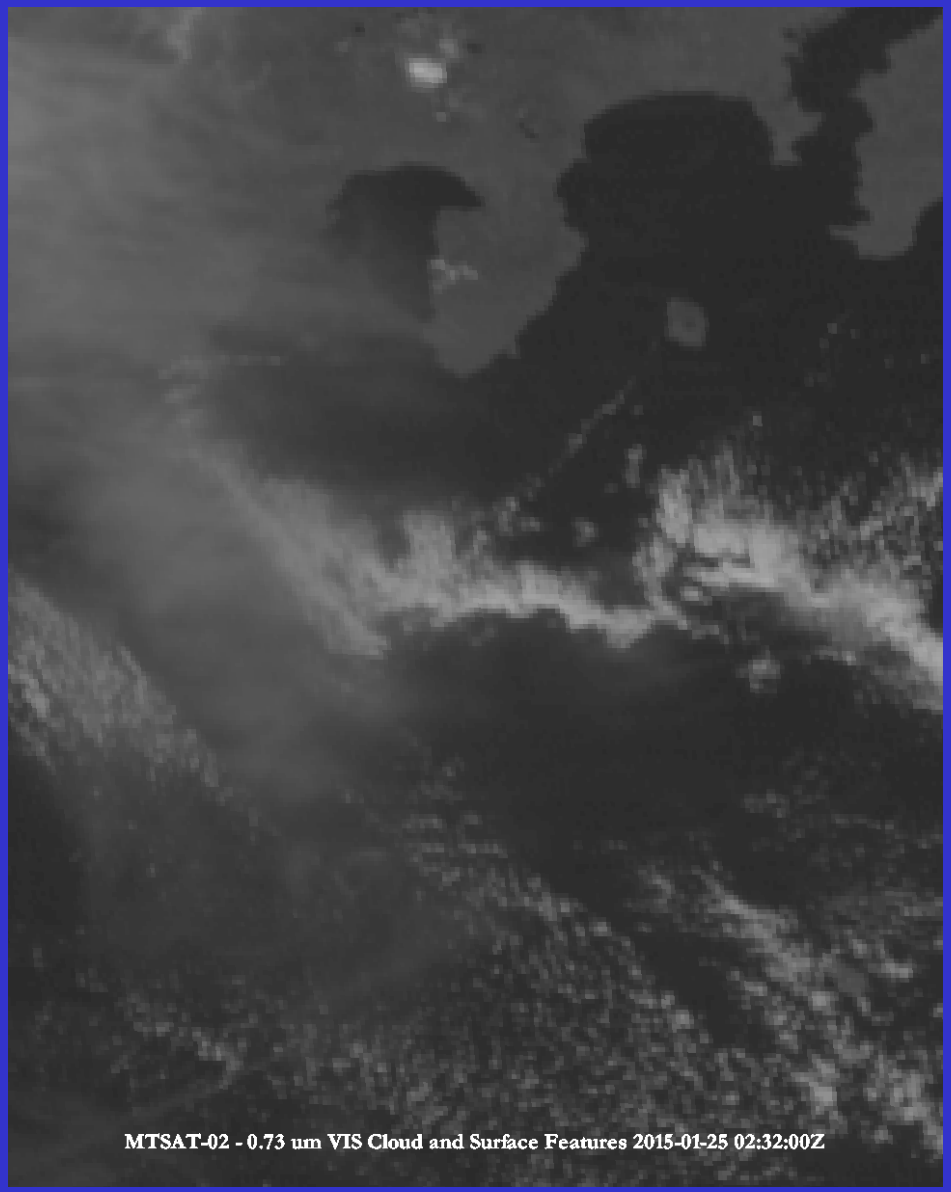
- The ability to read in the AHI data using McIDAS-X and McIDAS-V provides the ability for quick and easy comparisons for scientists

AHI

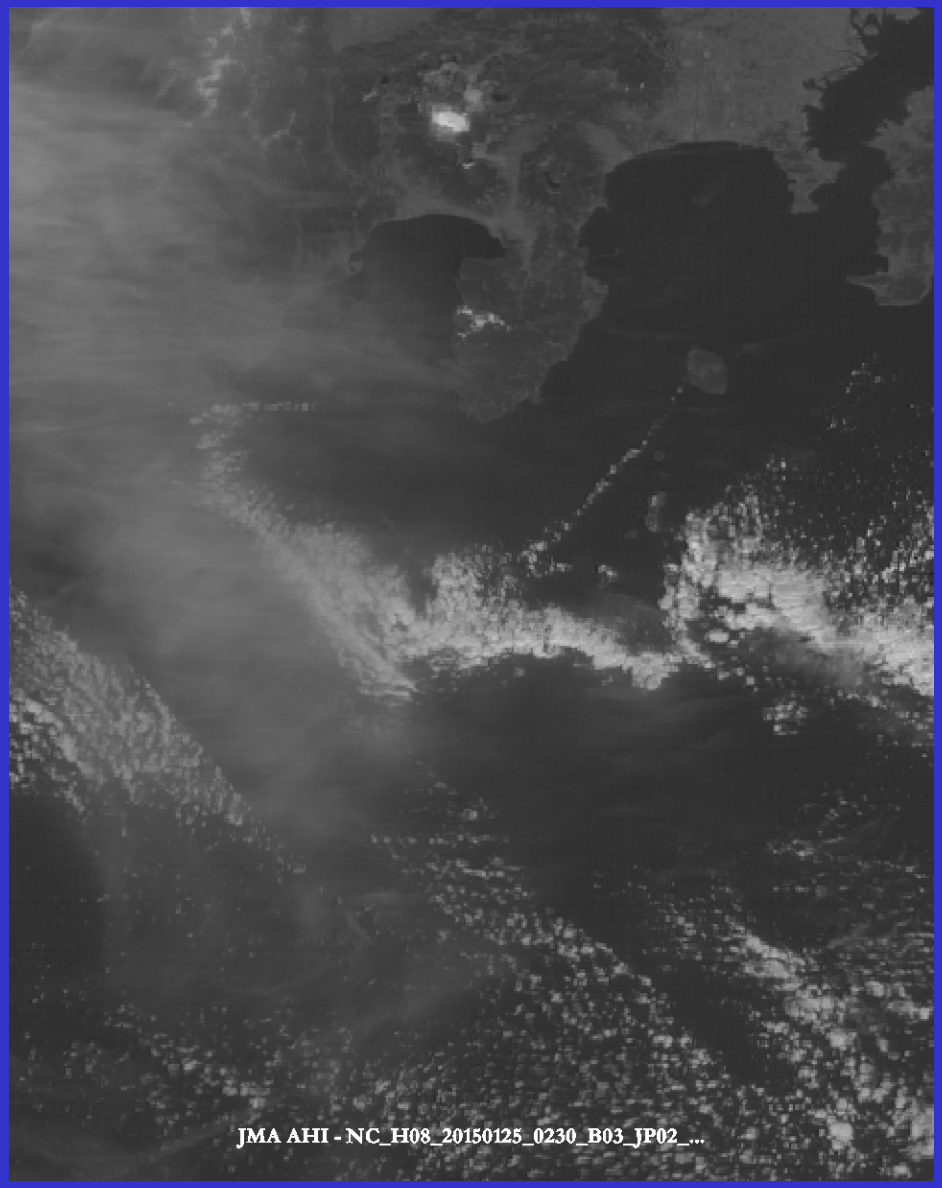
- Both AHI PLT and publically released data has been used to perform many different validation and applications
  - Validation
    - Ability to visually show artifacts in data, which are then passed to the CWG and JMA for analysis
    - Demonstration of Stray-light and other features for users
    - INR comparison
  - Applications
    - RGB composites (ex. Dust/airmass)
    - Side-by-side channel display
    - Overlay different channels/satellites

MTSAT and AHI (visible)

McIDAS-V

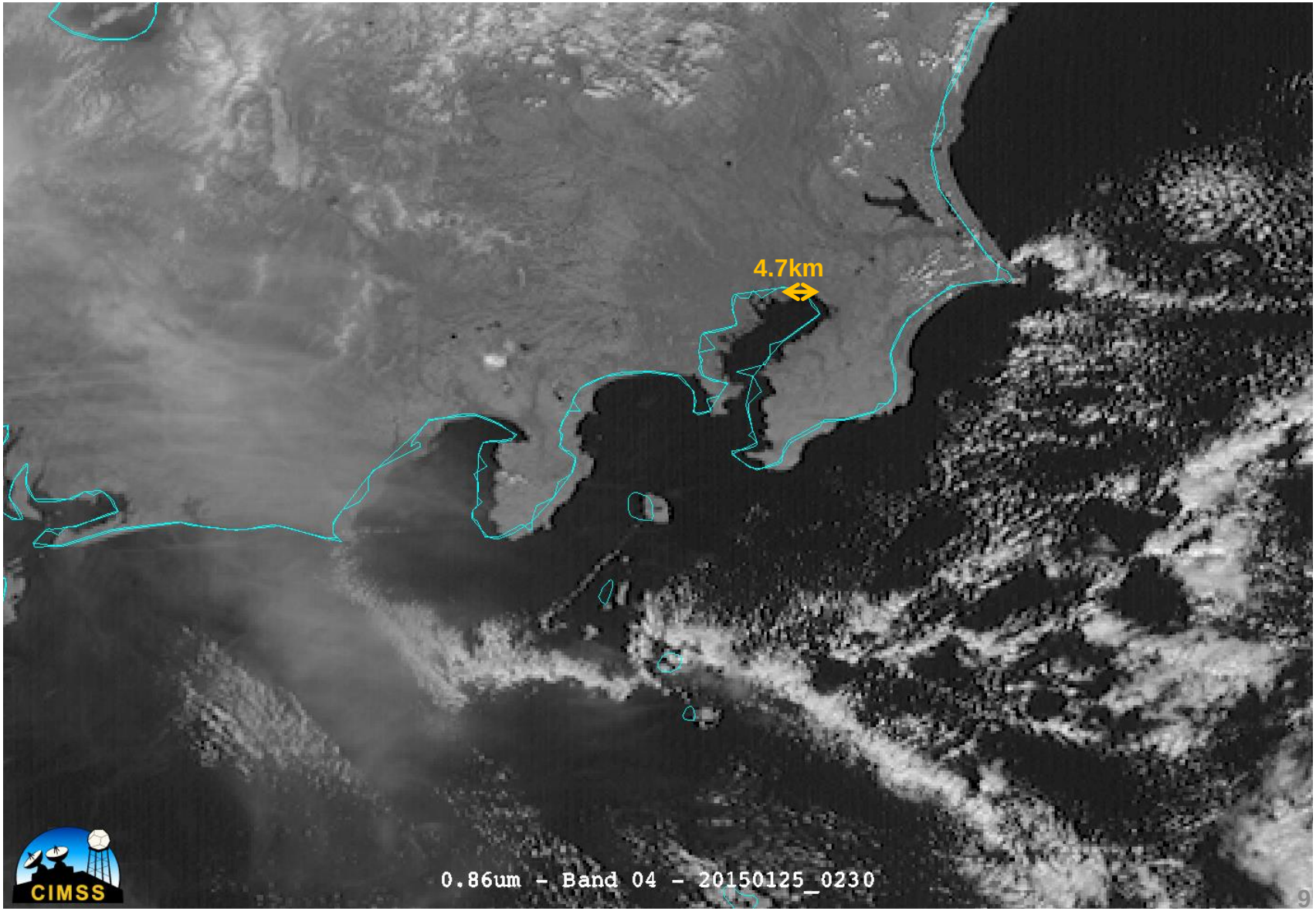


Approximate spatial resolution: 1 km

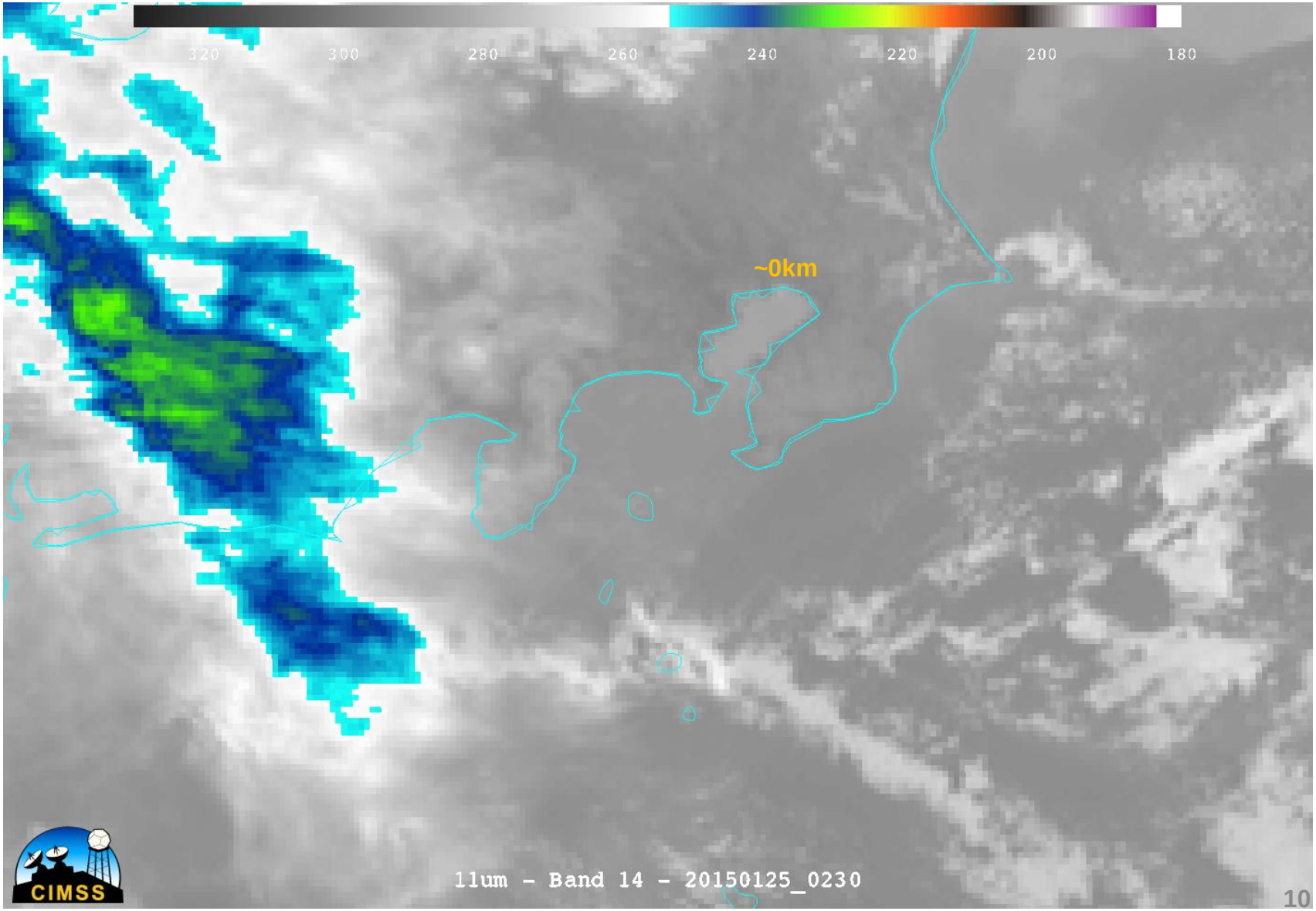


Approximate spatial resolution: 0.5 km

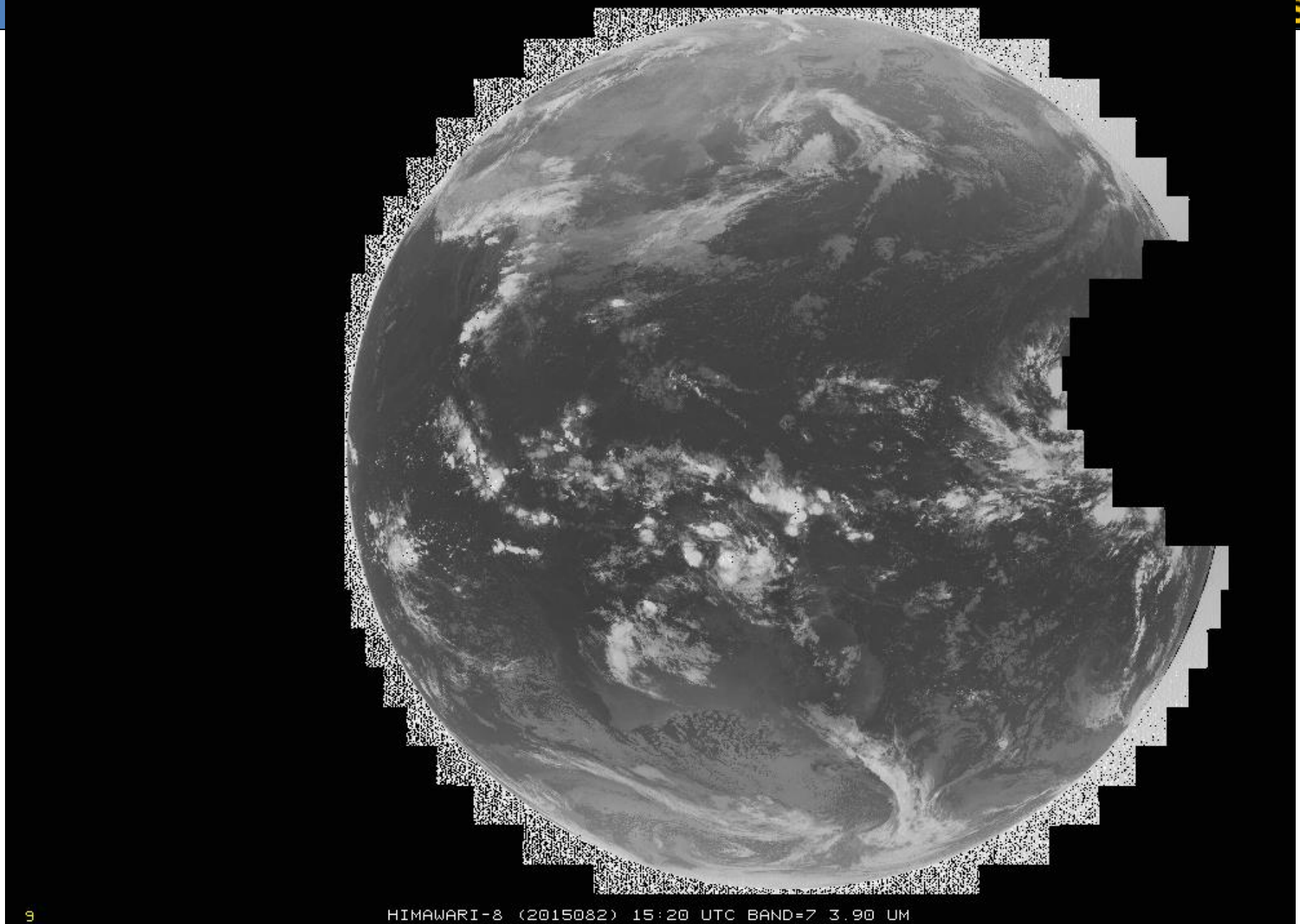
INR observations
25 Jan 2015, 0230Z
0.86μm, Band 4



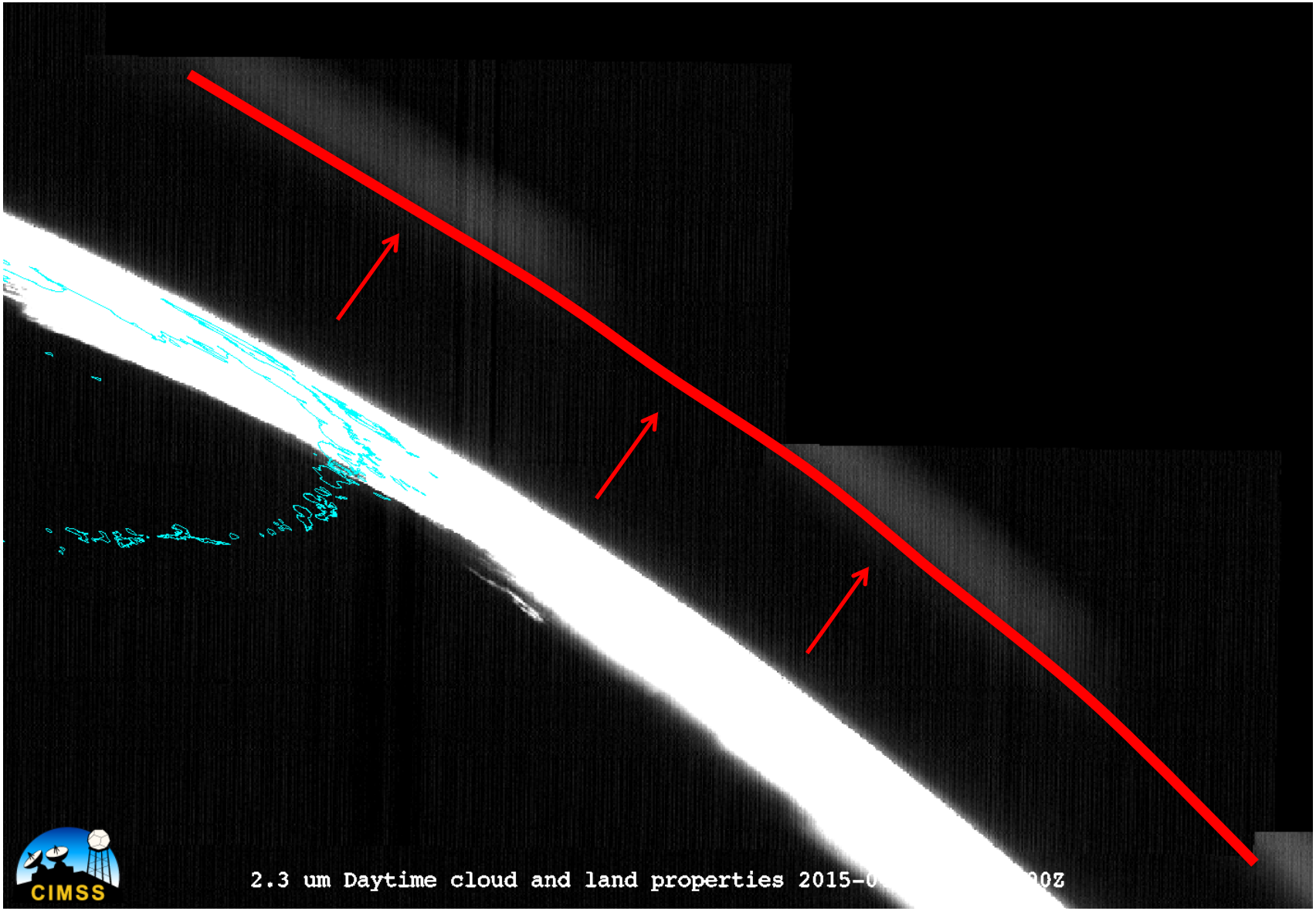
INR observations
25 Jan 2015, 0230Z
11.2μm, Band 14



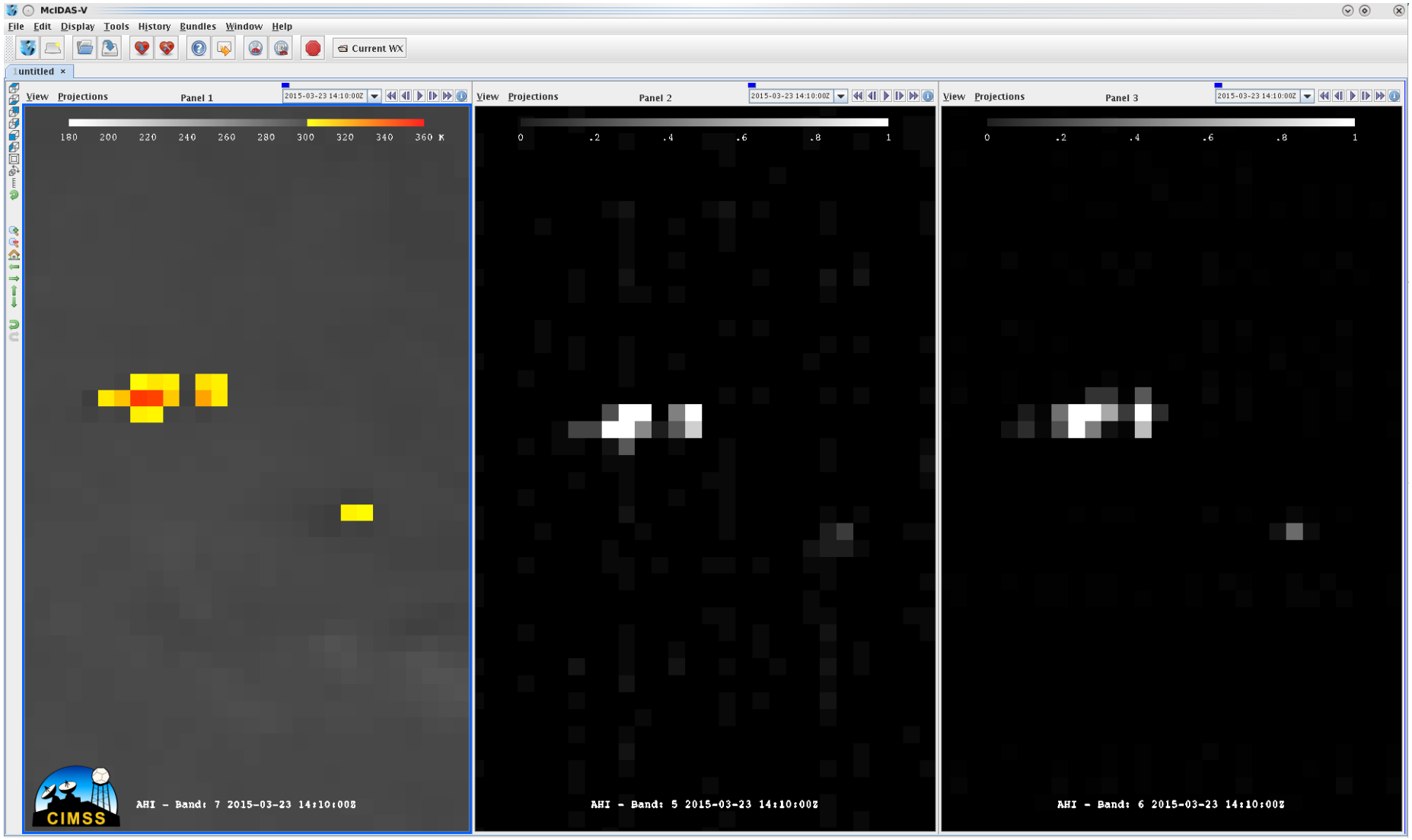
23 Mar 2015, 15:20 UTC
AHI Band 7 (3.9um)



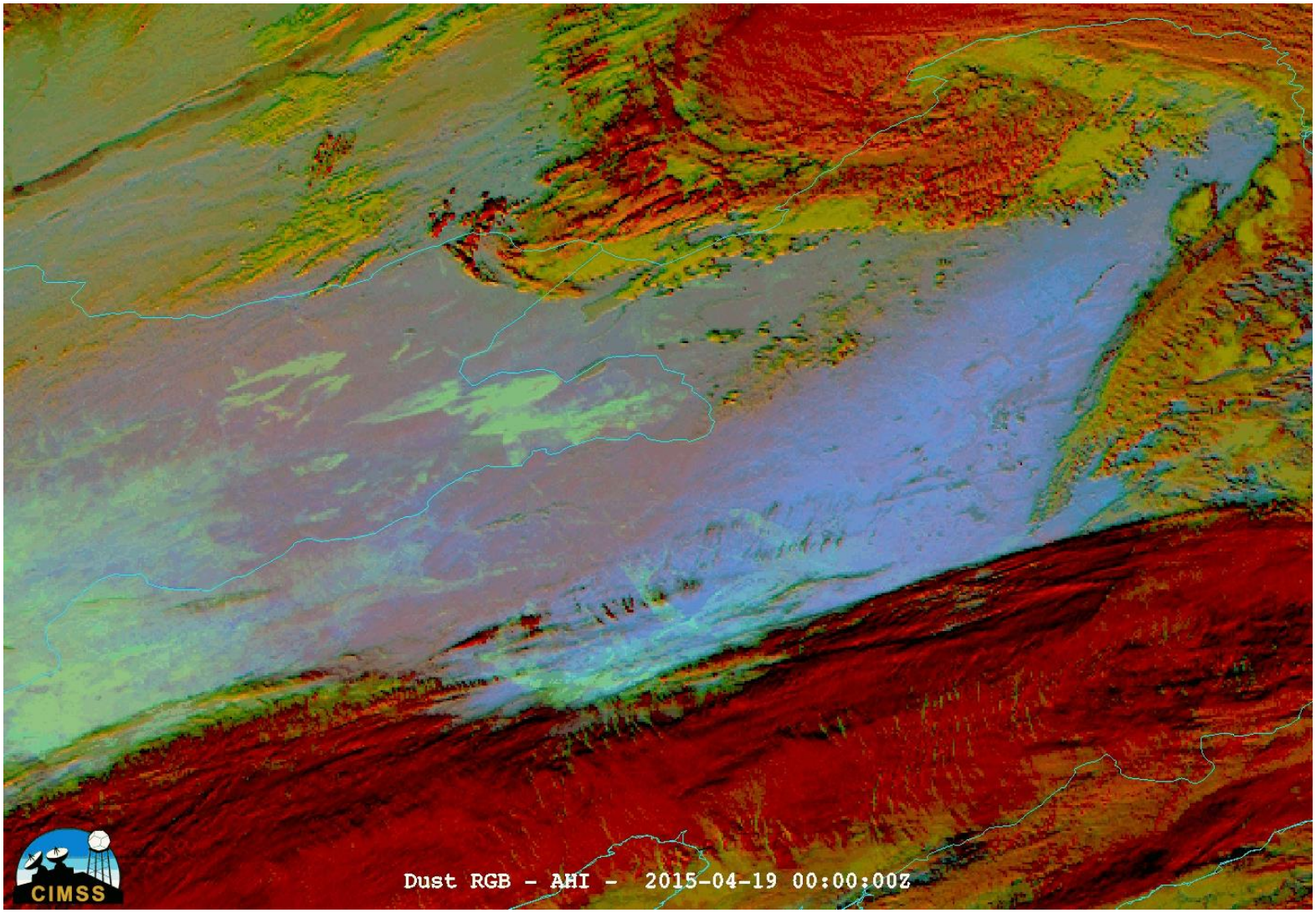
Stray light artifact analysis - B06



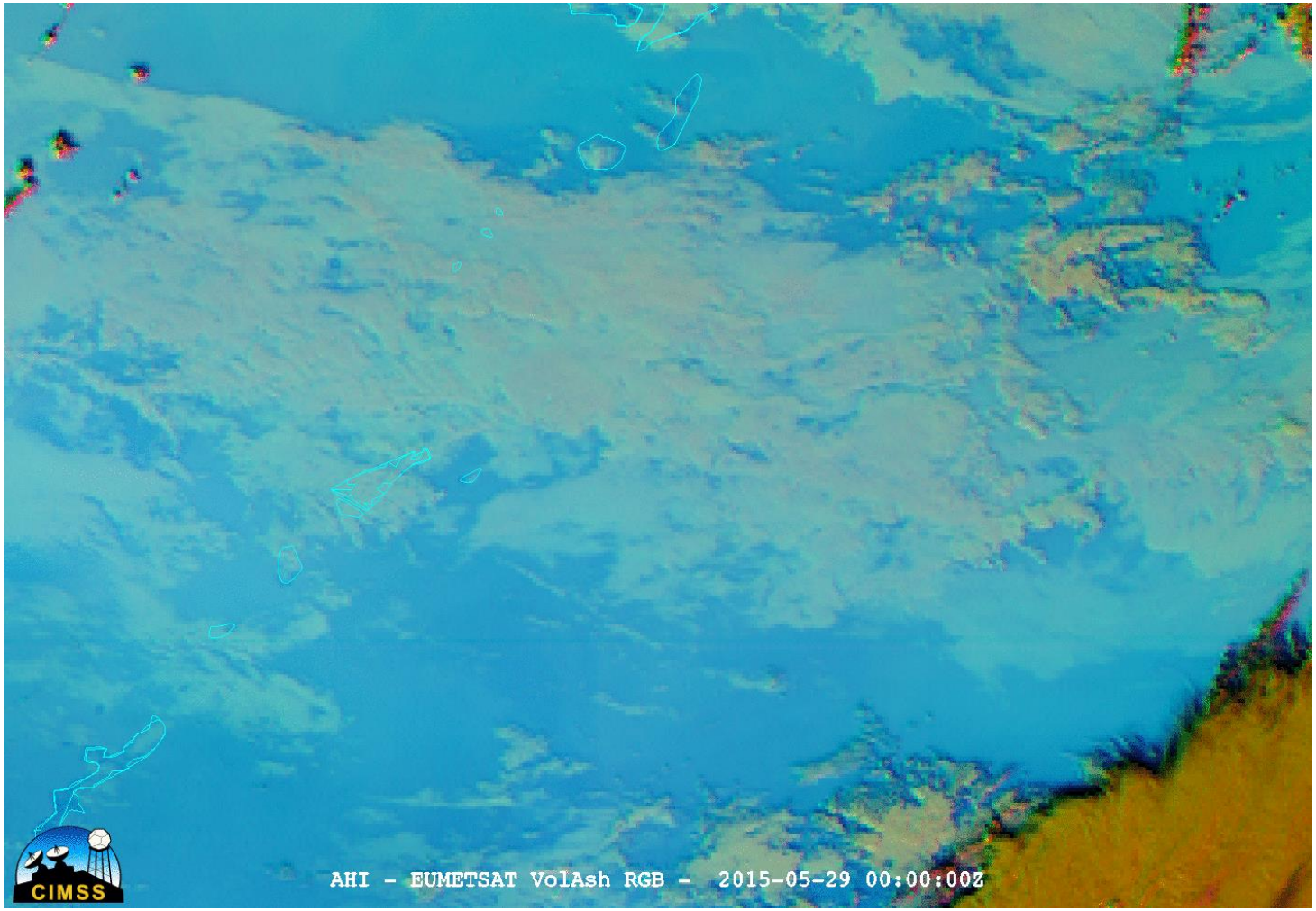
Product applications - Fires



Product Applications – Dust RGB



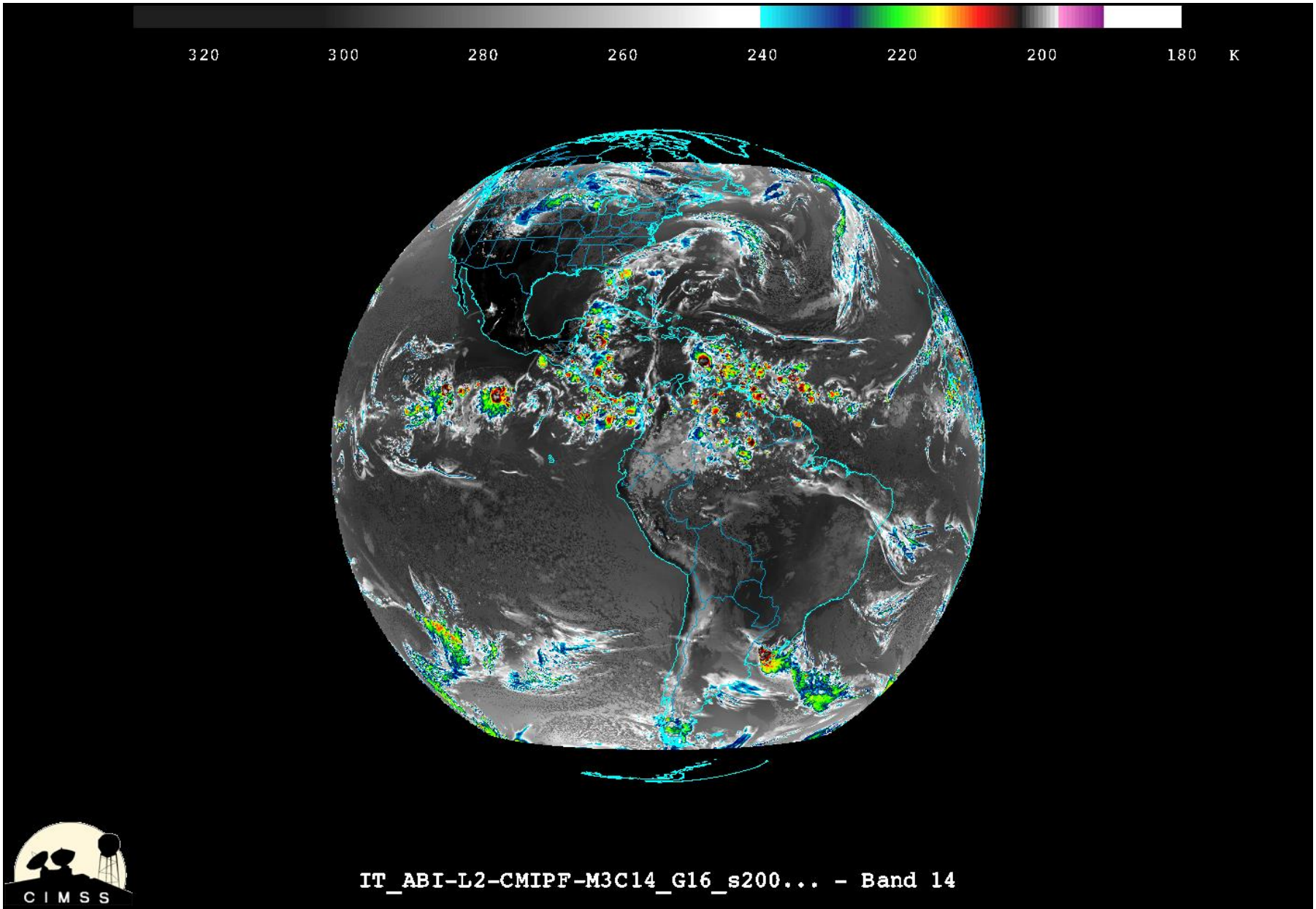
Product Applications – Vol Ash RGB



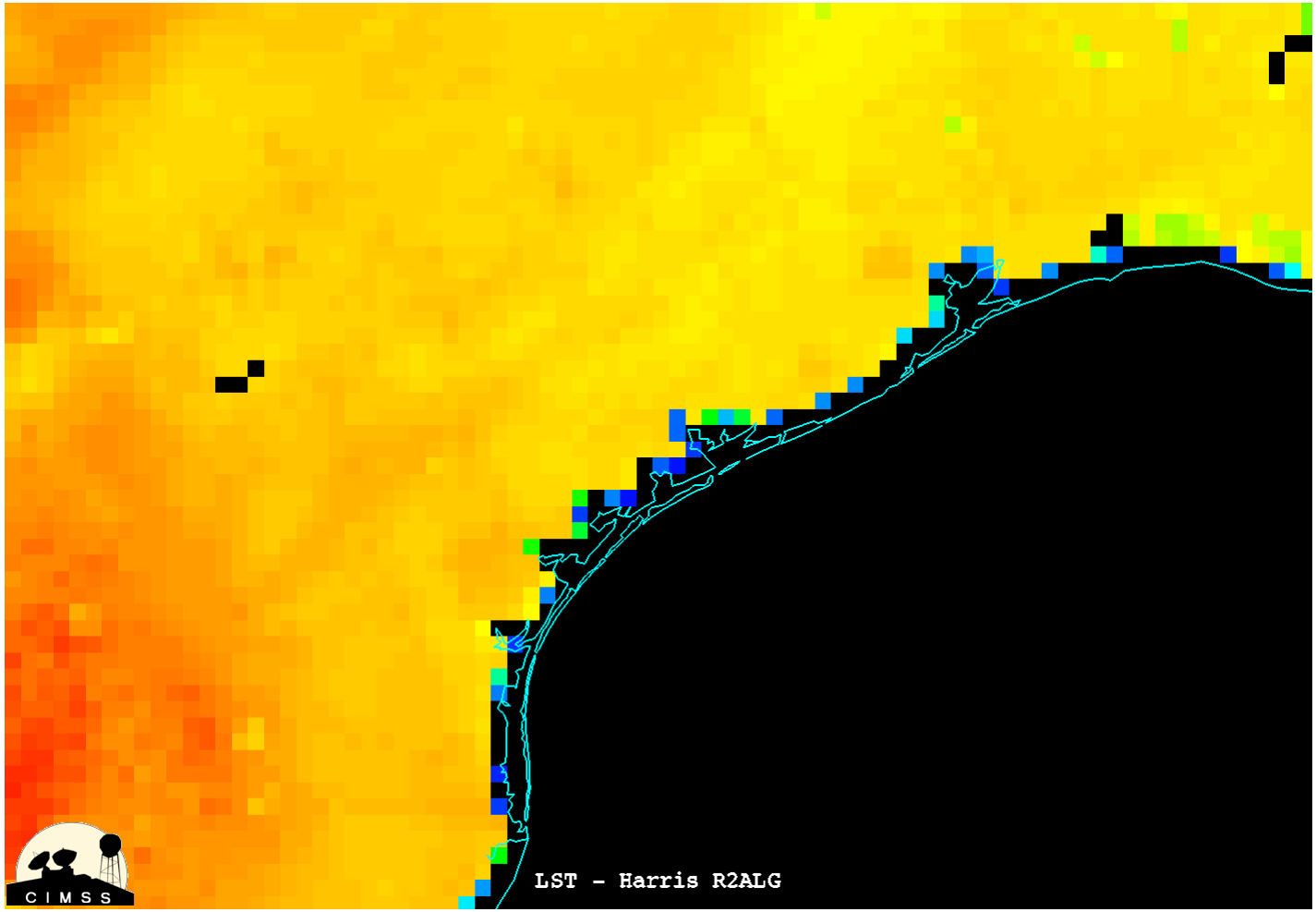
ABI

- McIDAS-V has the ability to read in CF-compliant netCDF4 files
- McIDAS-V can currently navigate and display GOES-R ground system (GS) files
- Allows for quick analysis and identification of potential issues from GS output

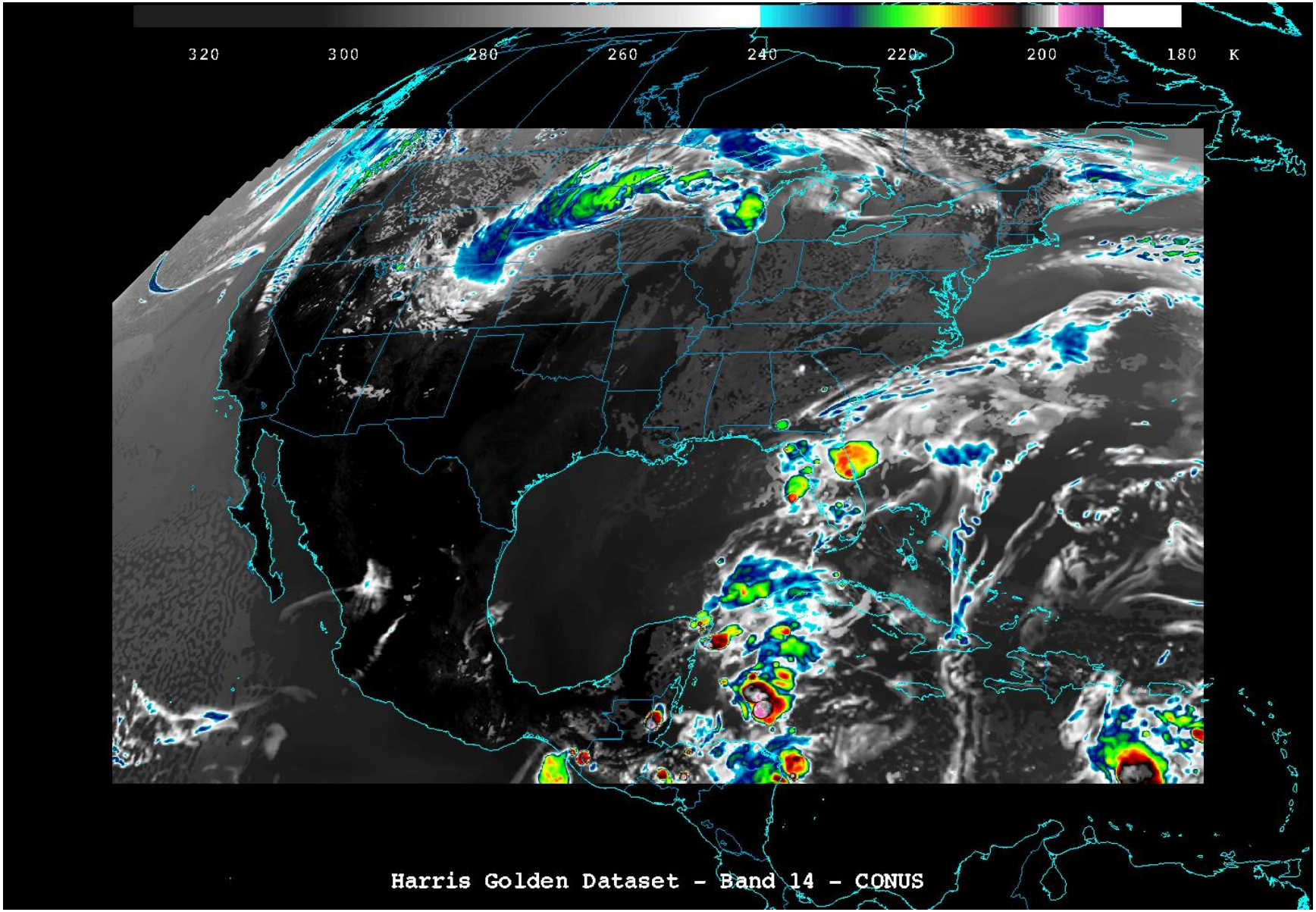
Band 14 (11.2 μm)



LST
Mode 3 – Full Disk
Galveston Bay



GOES-R GS Output



ABI
McIDAS-V Issues

- Issues with Mc-V
  - Due to the large file sizes of ABI, only 1 channel of Full Disk Bands 1,3,5 (1km) can be read in per session at full resolution along with long load times
  - The Full Disk of Band 2 (0.5km) cannot be read in at native resolution with 20GB of RAM
  - Both issues could be mitigated by striding the data, when this becomes available
    - Not currently working in McV 1.5, but inquiry submitted
    - However this means that the visual quality of the data is reduced
  - Another possibility is using an ADDE server to read in high resolution data
    - Example: Band 3 of AHI, which is also a 0.5km resolution image, can be read in with McIDAS-V 1.5 with no issues via the 2015.1 ADDE server.

CONCLUSIONS

Conclusions

- McIDAS-X and McIDAS-V are currently being used by CIMSS and other scientists for analysis and product applications for AHI
- McIDAS-V is being used at CIMSS and other places for analysis of output from the GOES-R Ground System (GS)
  - McIDAS-V is ready on “day one” to read in output from the GS
  - Some issues remain, such as striding the output, which will be resolved soon
- Anticipating the GOES-R ABI McIDAS-X ADDE server