PDS Data Review –Tony Farnham

Main Belt Comet Imaging - Gemini N

Main Belt Comet Imaging - Gemini S

May 13, 2022

Data Set

- Two data sets providing ground-based images of Main belt comets from the Gemini North and Gemini South telescopes
  - Largely the same overall, just dividing the two telescopes into their own dataset

- FITS files with 3 CCDs creating 6 or 12 extensions (some don’t contain data)
  - Raw data not included (archived at Gemini)
  - Processed image data being archived here have been extracted and presented in individual files for each of the 3 CCDs
  - Calibration files:
    - Master bias files are provided for each amplifier (extension)
    - Master flat files have been combined to represent each CCD

- Documentation
  - Overview document
  - Machine-readable “log files” listing observational and geometric parameters for each data image

General Comments

- North: 1440 data files, 908 calibration files
  - 55 nights from 2016 - 2019
- South: 900 data files, 616 calibration files
  - 31 nights from 2016-2018

- Overall, data sets are in good shape

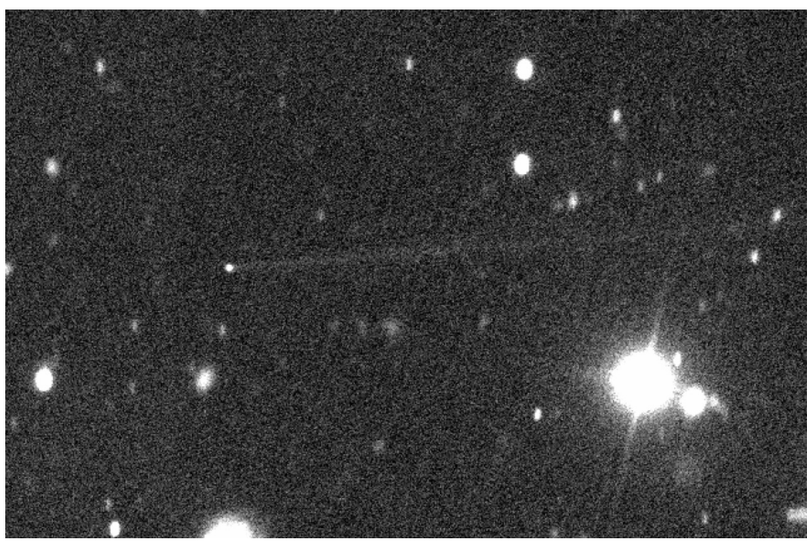
- Could use some more documentation and some corrections to labels

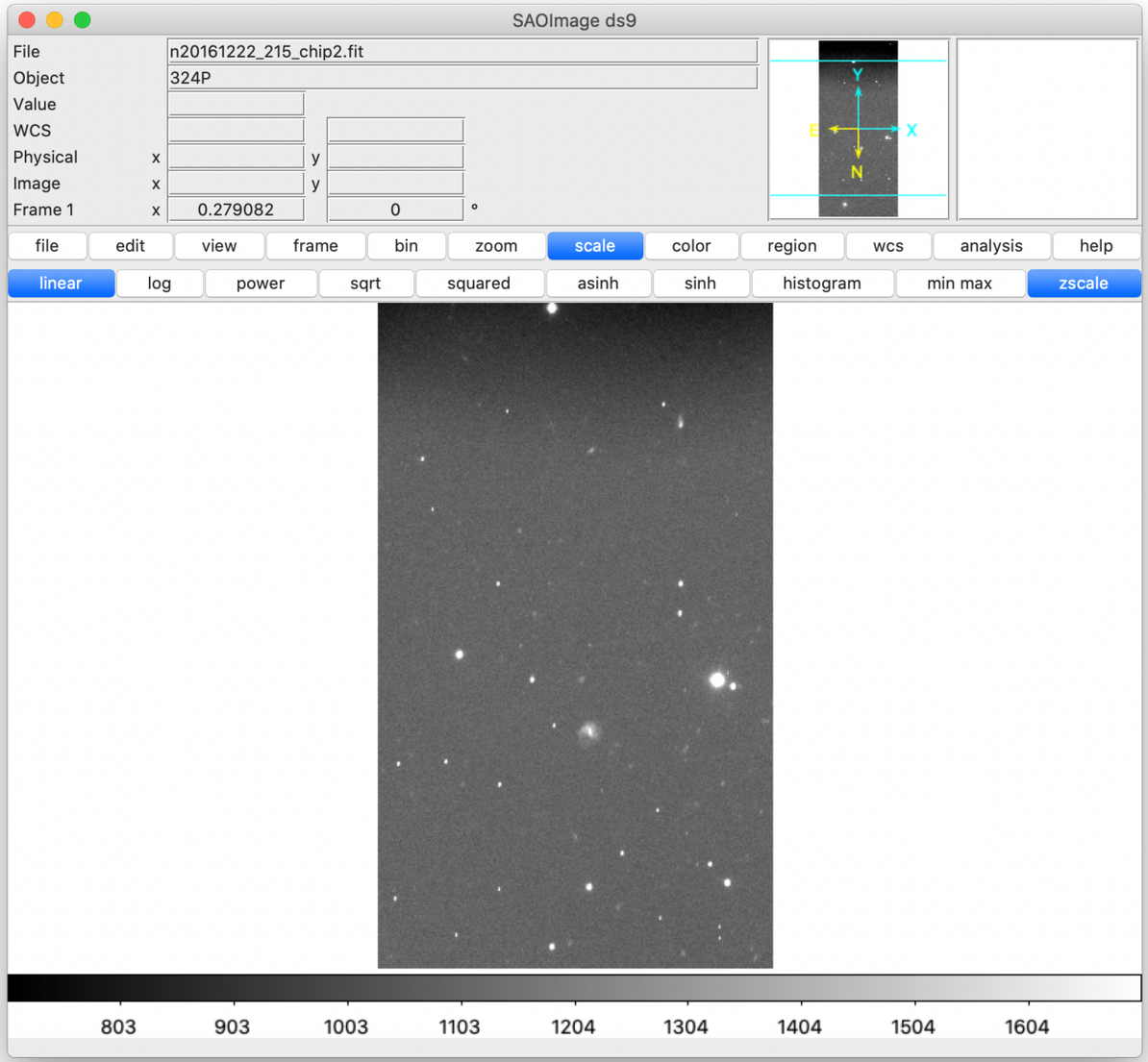
Documentation

- Overview.pdf document is well-written and helpful for understanding the data
  - For telescope/instrument information, it refers to the Gemini website and a couple published papers
  - Is there a manual that can be included as documentation?
  - Or can the website be captured as a PDF to “freeze” it for the time of obs?
- Tables logging the data and providing geometry are helpful as well
- Spot-checked XML labels – mostly fine

Data

- Data are in good shape
  - Read with IDL FITS readers and PDS_READ
  - Read and displayed every image
  - Tested to make sure data could be manipulated and measured



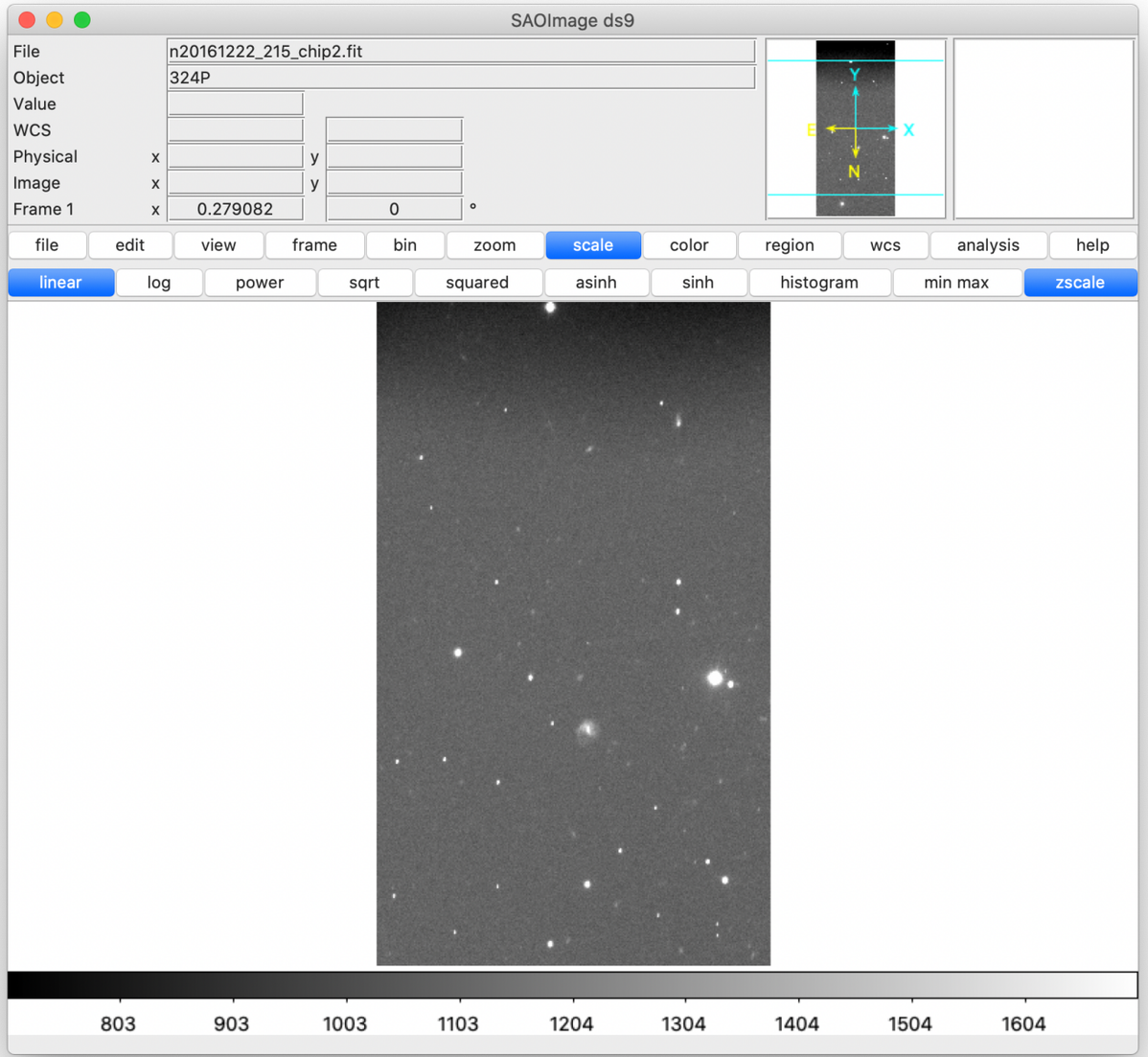


Data

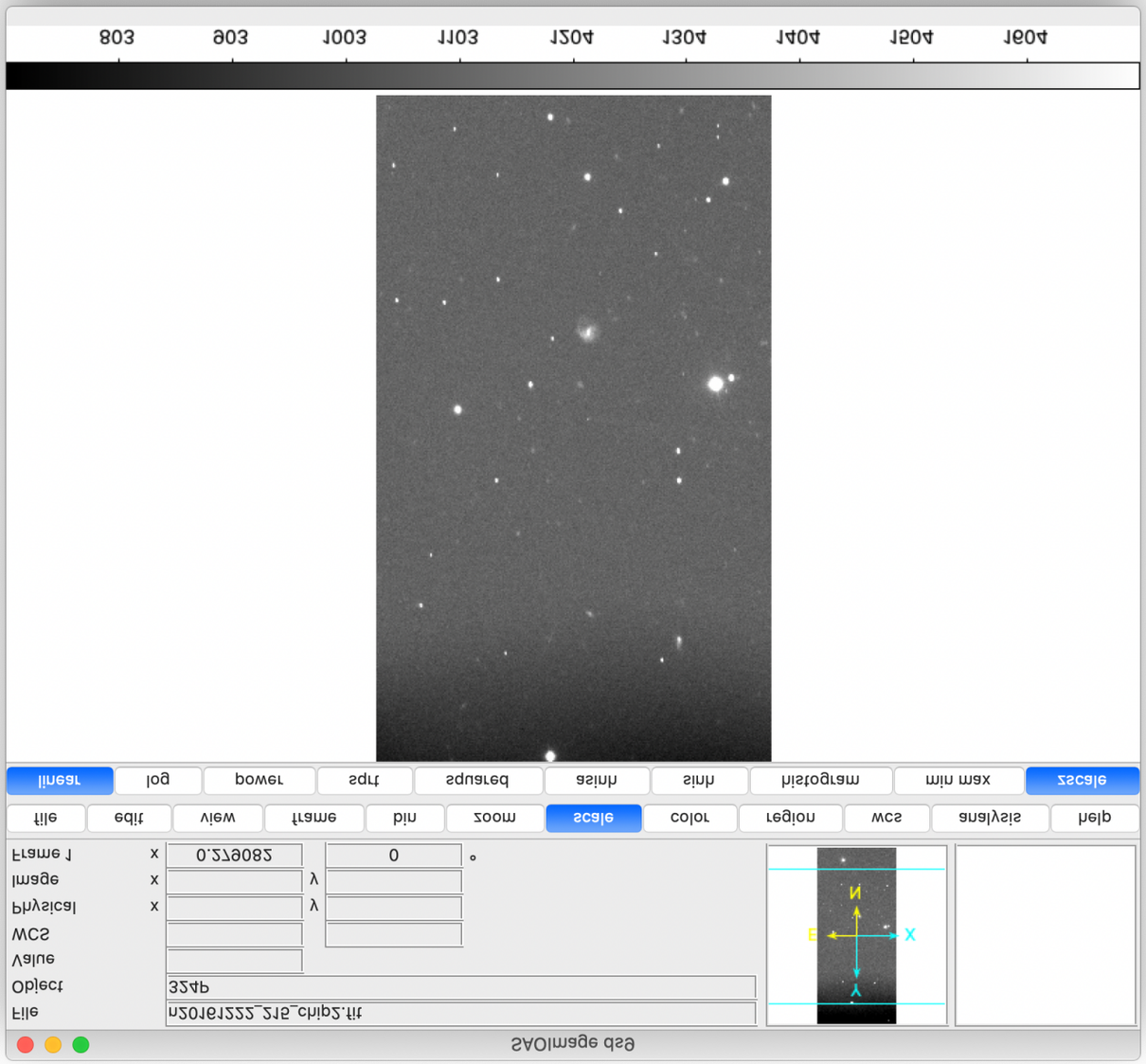
- One problem in XML labels
  - Vertical_display_direction is incorrect
  - Should be “Top to Bottom” for proper orientation
  - Note: Neither PDS_READ nor PDS4 Viewer seem to recognize this attribute

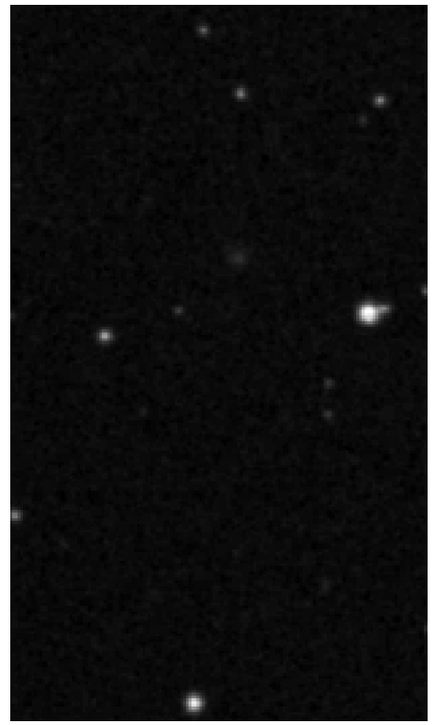
n20161222_215_chip2.xml

```
        <reference_type>is_instrument</reference_type>
      </Internal_Reference>
    </Observing_System_Component>
  </Observing_System>
  <Target_Identification>
    <name>324P/2010 R2 (La Sagra 4)</name>
    <type>Comet</type>
  </Target_Identification>
  <Discipline_Area>
    <geom:Geometry>
      <geom:Image_Display_Geometry>
        <geom:Display_Direction>
          <geom:horizontal_display_axis>Sample</geom:horizontal_display_axis>
          <geom:horizontal_display_direction>Left to Right</geom:horizontal_display_direction>
          <geom:vertical_display_axis>Line</geom:vertical_display_axis>
          <geom:vertical_display_direction>Bottom to Top</geom:vertical_display_direction>
        </geom:Display_Direction>
        <geom:Object_Orientation_RA_Dec>
          <geom:right_ascension_angle unit="arcsec">37.43099366</geom:right_ascension_angle>
          <geom:declination_angle unit="arcsec">31.32093606</geom:declination_angle>
          <geom:celestial_north_clock_angle unit="arcsec">0</geom:celestial_north_clock_angle>
          <geom:Reference_Frame_Identification>
            <geom:name>J2000</geom:name>
          </geom:Reference_Frame_Identification>
        </geom:Object_Orientation_RA_Dec>
      </geom:Image_Display_Geometry>
```



Data Display Direction





DSS image (N at top)

Summary

- Data are in good shape
- One problem with XML labels
- Additional documentation if possible
- Otherwise, the data are certifiable