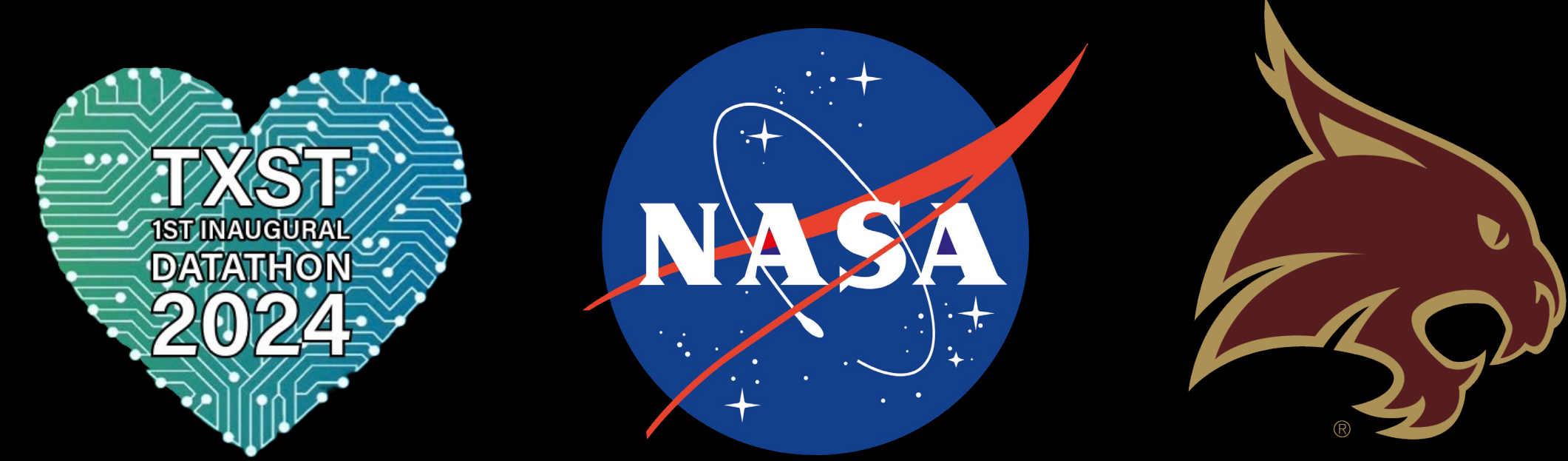


# From Texas to the Cosmos: The James Webb Telescope, Open Source, and the Bobcats' Stellar Journey

The Micronauts - Evan Ortiz, Taylor Ranson



## Background Information

### Open Data:

- Easily accessible, free, reusable, redistributable, and used universally
- Mikulski Archive for Space Telescopes provides all James Webb Telescope images

### James Webb Space Telescope (JWST):

- Used to acquire deep space images of galaxies, planets, and protoplanets from millions to billions of years away using infrared light
- Near Infrared Spectrograph and Mid-Infrared Instrument:
  - NIRSPEC acquires images at a wavelength of 0.6 to 5 microns which reveals cooler red stars
  - MIRI acquires images at a wavelength of 5 to 28 microns which reveals planets, comets, asteroids, dust warmed by starlight, and protoplanetary disks

### Water Detection:

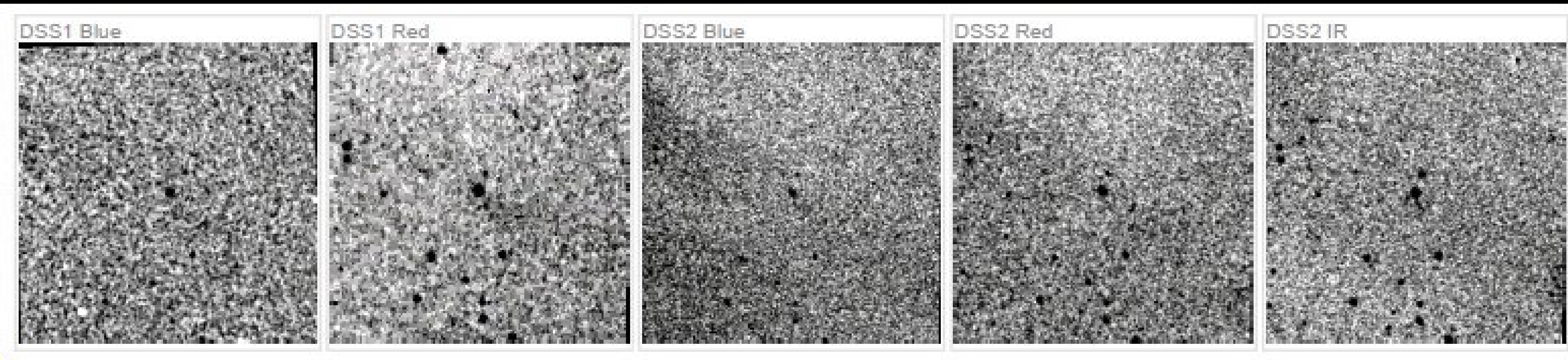
- Infrared does not distinguish the state of water
- Ice detection of protoplanets
- By the time these are seen, some of them will be planets
- Correlation of protoplanets to JWST:
  - Light spectra used to detect water in protoplanets is applied to the planets we see now

## Research Question

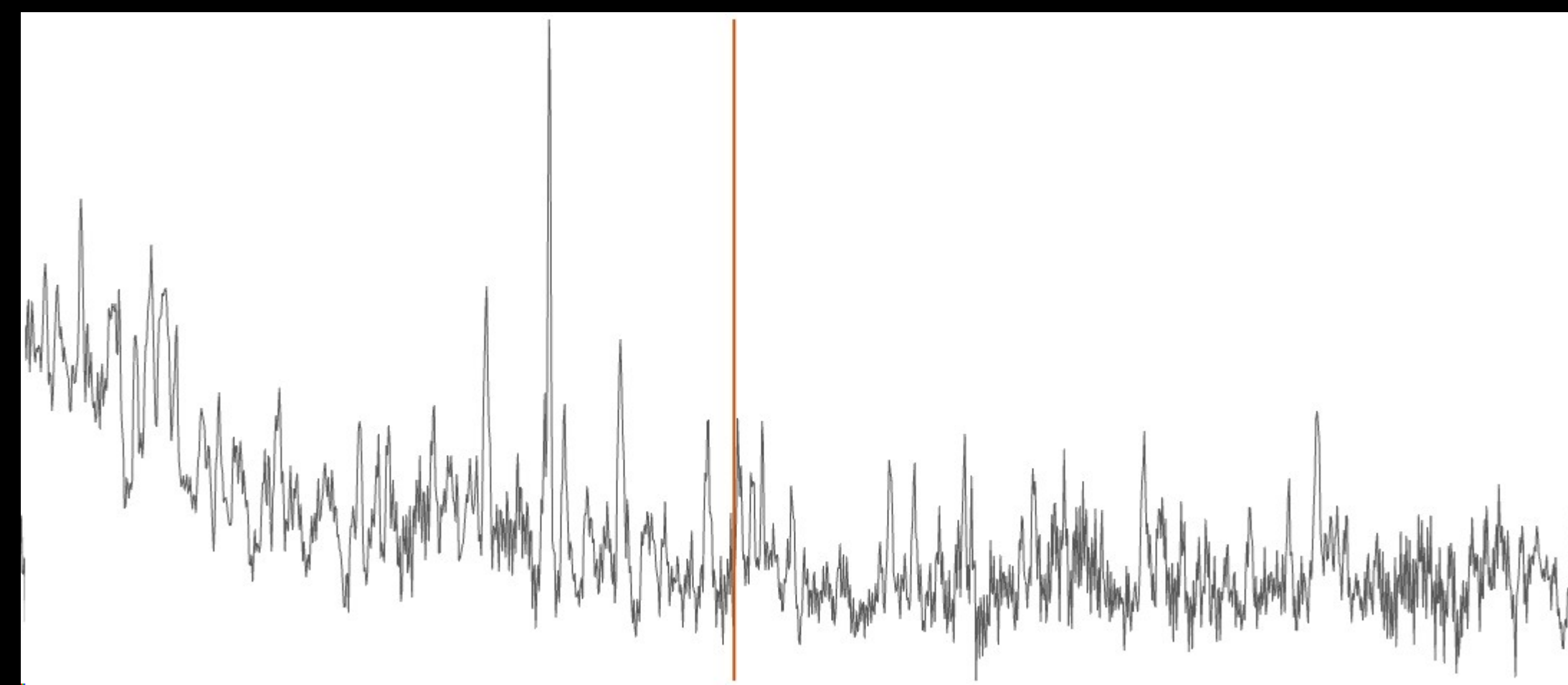
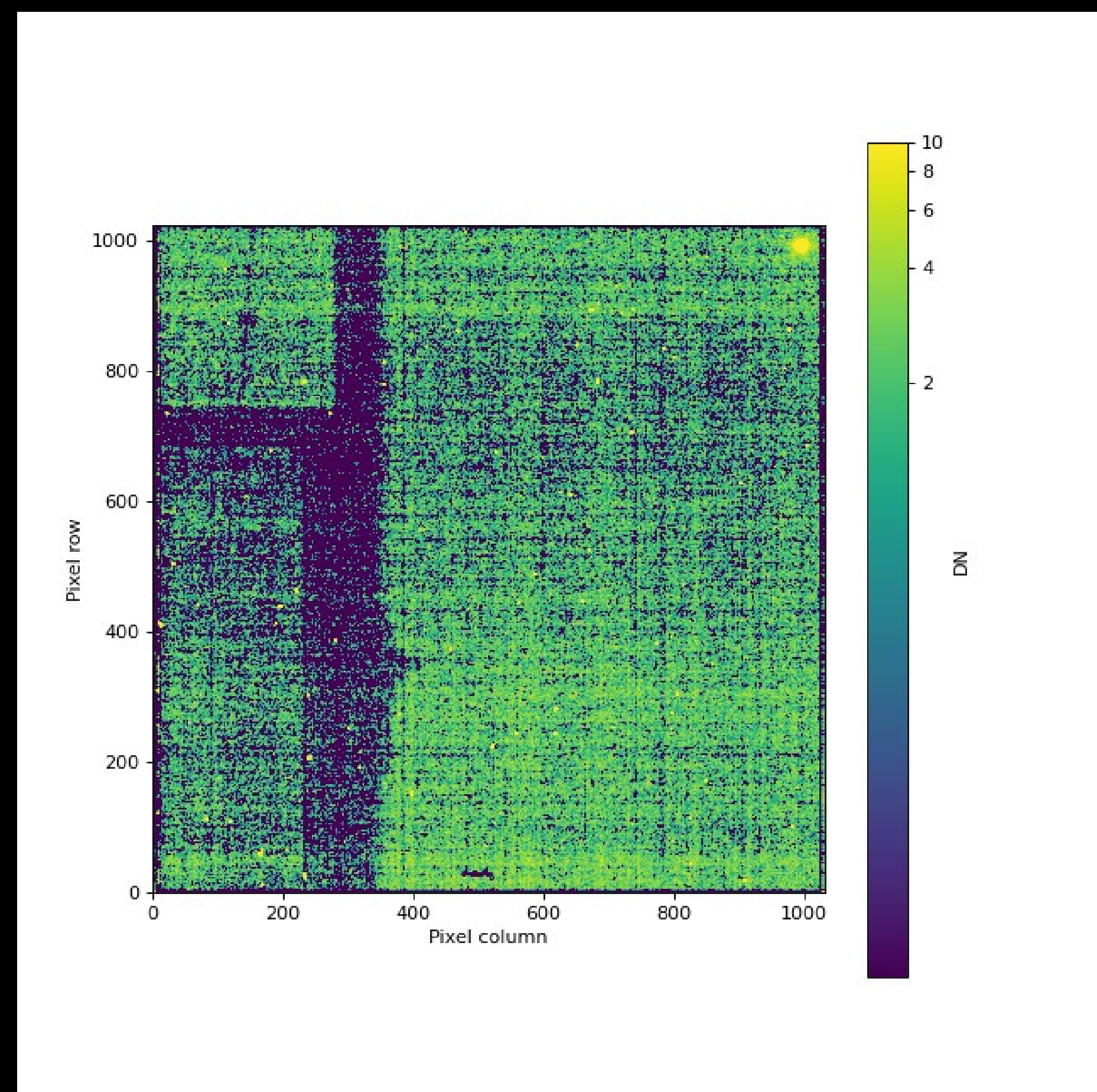
Can we use the JWST infrared data to find life on other planets?

## Methodology

- Acquired JWST images from Dr. Andrea Banzatti's dataset, analysed infrared spectrum, and compared it to the IR spectra of water



## Results & Interpretation



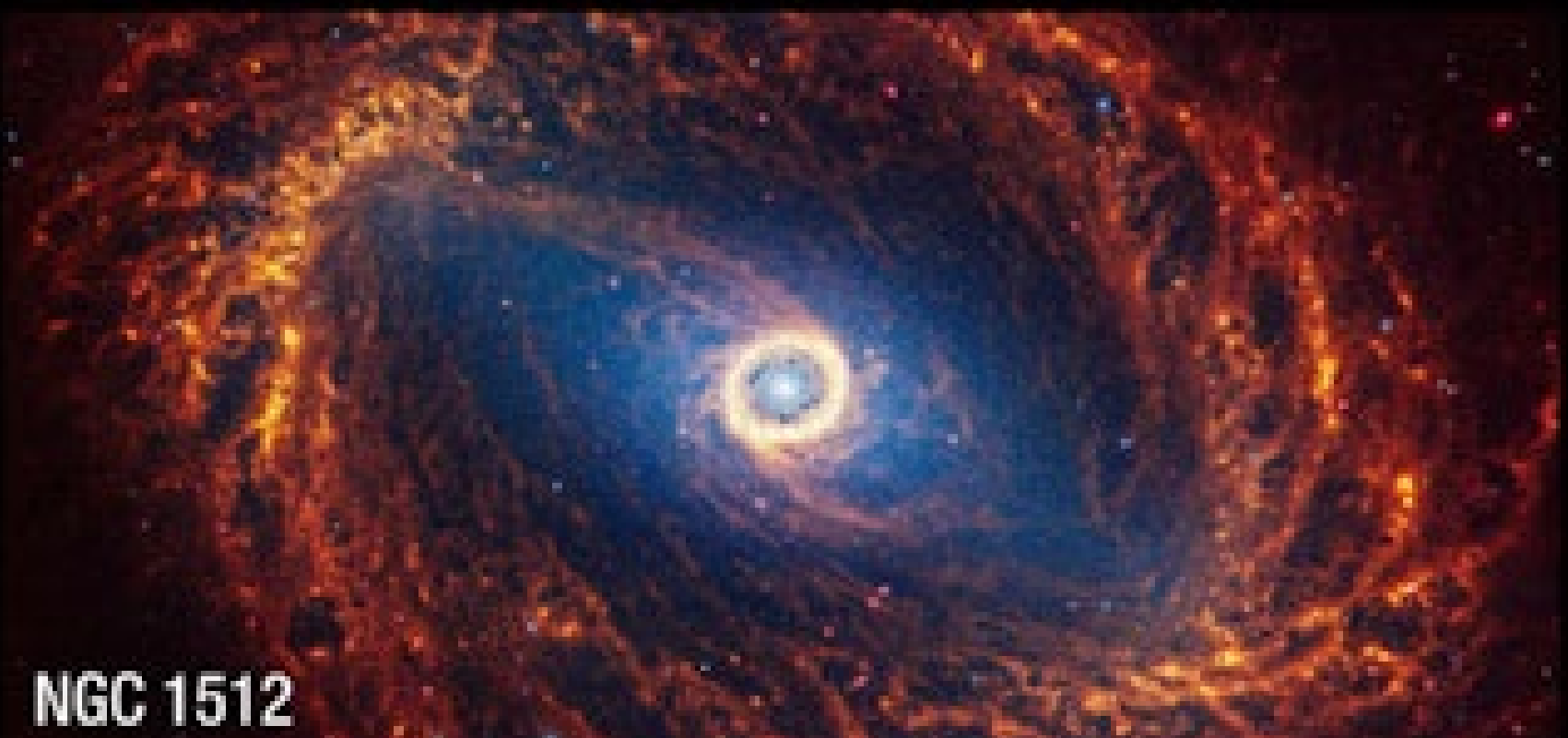
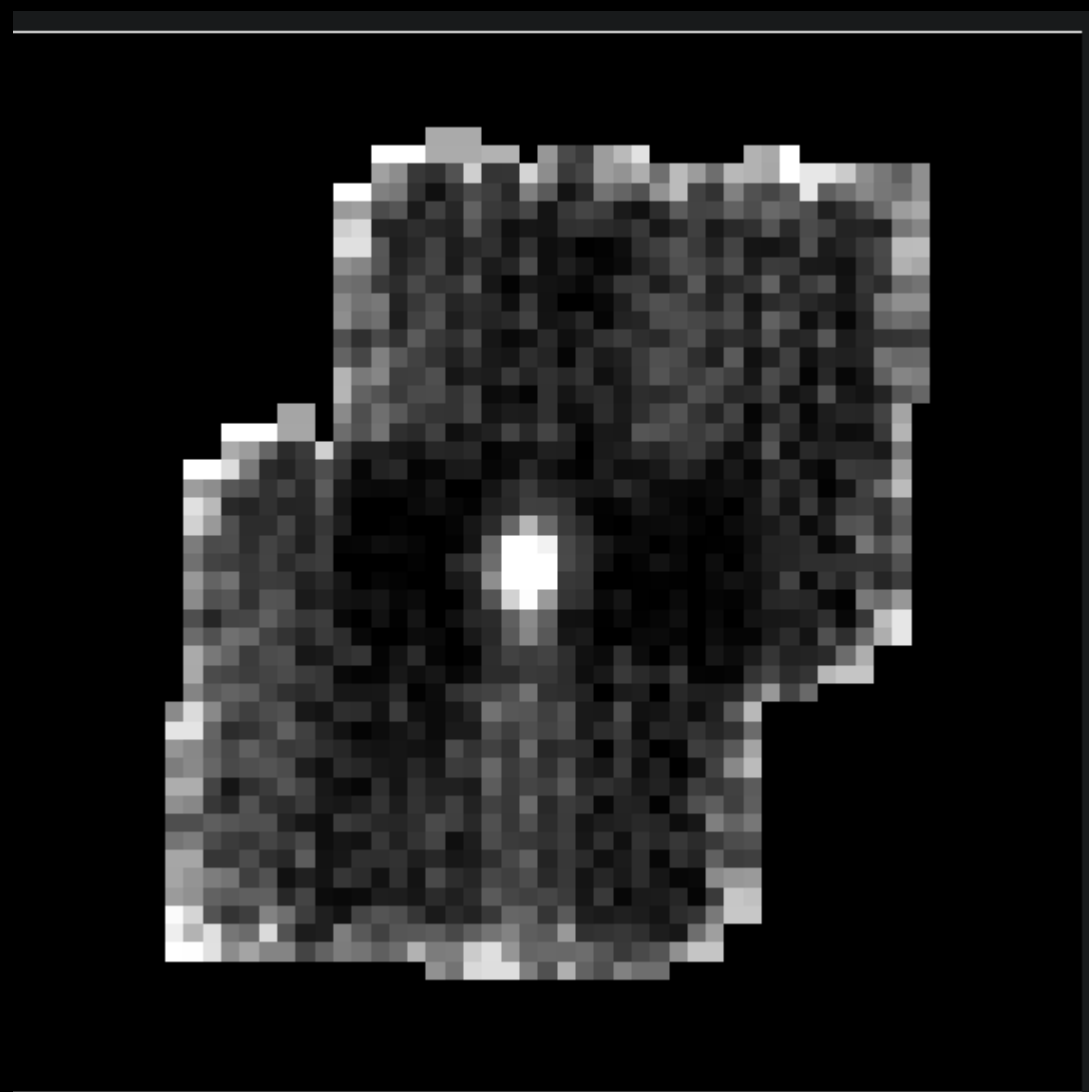
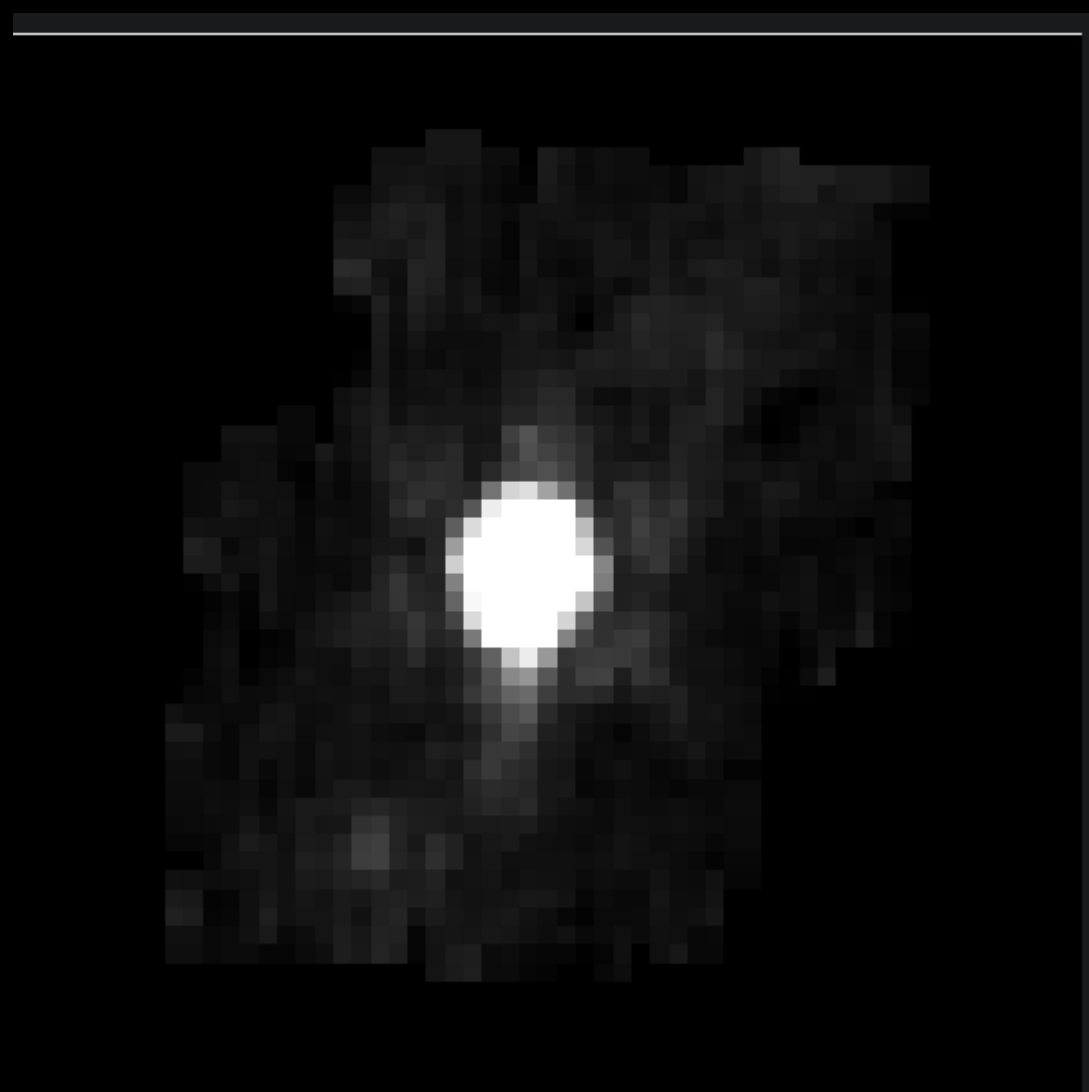
## Impact and Applications

### Increase Knowledge of Our Solar System:

- Only ~5% of the universe is known. This data could reveal more information about life on other planets millions to billions of years away

### Space Travel:

- If water is found on another planet, it could lead to space exploration to see if humans could survive on another planet



## Conclusions

- Open source data is extremely useful in collaboration efforts to expand our knowledge and share our findings
- We were able to use the JWST open data to think of a question and determine the answer which could affect not just us Bobcats, but the universe

...to infinity and beyond!

