



JWST Update

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Wolf-Rayet 124





Science Highlights

- Direct observations of plume materials from Saturn's moon Enceladus
 - Enceladus is an extraordinary moon that, even though it is located far from the classical habitable zone, harbors a sub-surface ocean. The presence of fractures on the surface of the moons polar regions allows water mixed with other materials to escape into space, forming large plumes. JWST observations have shown that the water plumes surround the moon and extend far beyond it.
 - [Villanueva, Presented during the First Science with JWST conference at STScI](#)
- First detection of SO₂ in an exoplanet
 - Atmospheric photochemistry – the formation of new molecules by ultraviolet light from the host star – is thought to be fundamental for the evolution of planetary atmospheres, including habitable ones like the Earth. This detection of SO₂ in a transit spectrum of the hot Jupiter WASP-39b is the first time a photochemical by-product has been detected in an exoplanet atmosphere.
 - [Shang-Min Tsai, under review at Nature](#)
- Confirmation of abundant organic molecules in ices around a very young protostar
 - Complex organic molecules have long been hypothesized to be formed in ices prior to incorporation into planet-forming disks, and ultimately planets. This result demonstrates that this is happening around at least one nearby protostar.
 - [Yang et al. 2022, ApJ](#)
- Finding Extremely Metal Poor Galaxies at intermediate-z
 - JWST data has been used to identify galaxies at redshifts between 4-5 with lower metal content ([OIII]) than that of local and high-z galaxies, thus challenging the lowest metallicity limit known to this date.
 - [Nishigaki et al. ApJ submitted](#)
- The existence of galaxies up to redshift 13 (400 Myrs after the Big Bang) was demonstrated
 - [Curtis-Lake et al.](#)



JWST Awards...(so far)

- Public

- [Space Symposium](#)
- [National Air and Space Museum](#)
- [National Space Club and Foundation](#)
- [Aviation Week](#)
- [Bloomberg Businessweek](#)
- [Popular Science](#)
- [American Institute of Aeronautics and Astronautics](#)
- [TIME](#)
- Explorers Club

- NASA/Science

- George Rieke
- Marcia Rieke
- Charles Bowers
- Randy Kimble
- Gillian Wright
- Pierre Ferruit
- René Doyon
- Jane Rigby
- Michael McElwain
- Massimo Stiavelli
- JWST Project Science Team
- JWST Science & Ops Center Development Team
- JWST Science Operations Team



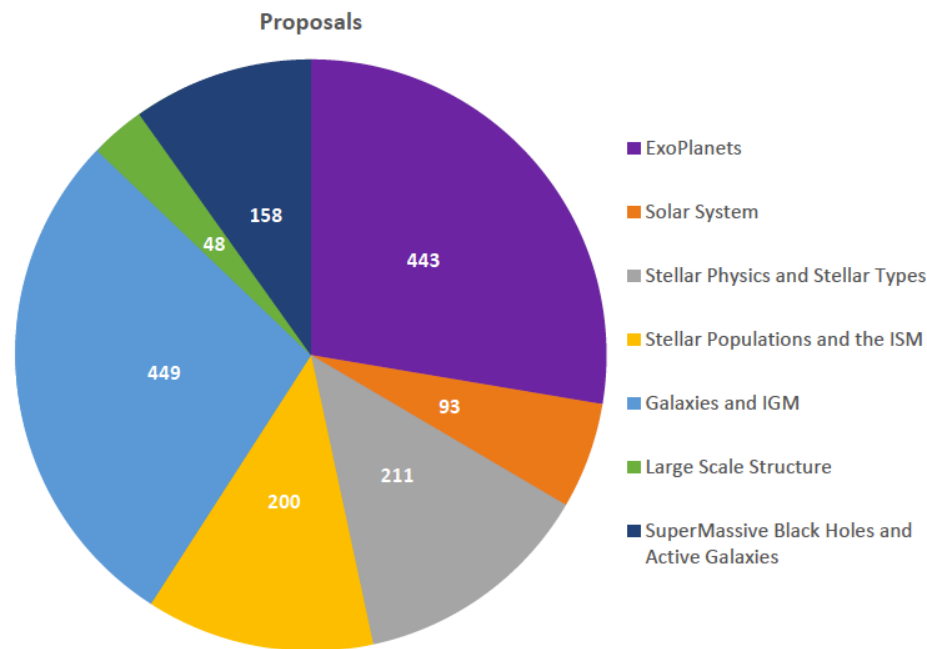
Observatory Status

- Observatory remains in good health, operating in normal science mode
- Micrometeoroid Avoidance Zone (MAZ) being implemented for Cycle 2, (Astronomers Proposal Tool and planning and scheduling software updated)
- Several anomalies encountered since normal operations began,
 - Software related (software fixed)
 - MIRI grating wheel (wheel motion range restricted)
 - DSN latency (at Canberra and Madrid stations, fixed)
- One of the two 34m antennas at the DSN Goldstone station (DSS-24) is down for maintenance until December. Will be watching for impacts to JWST support (none to date).
- Archive contains 117 TB of data ~56% is public (includes commissioning and calibration data)



Cycle 2

- The 1601 complete proposals received (46 states*, 52 countries) comprise:
 - 1466 GO proposals requesting ~36,508 hours
 - 31 Survey proposals requesting up to 4,070 targets
 - 104 AR proposals
 - 527 proposal led by ESA PIs (32.9%)
 - 54 proposals led by Canadian PIs (3.4%)
 - 17987 Co-investigators in total
 - 5450 Unique investigators
 - 15.3% Student PIs, highest fraction ever
- May 10, 2023 PI notification letters
- Cycle 3(!)
 - Proposal call August 15, 2023
 - Deadline October 27, 2023



*Plus, DC, Puerto Rico, Virgin Islands

Data courtesy Christine Chen, STScI