



STScI | SPACE TELESCOPE
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

MIRI

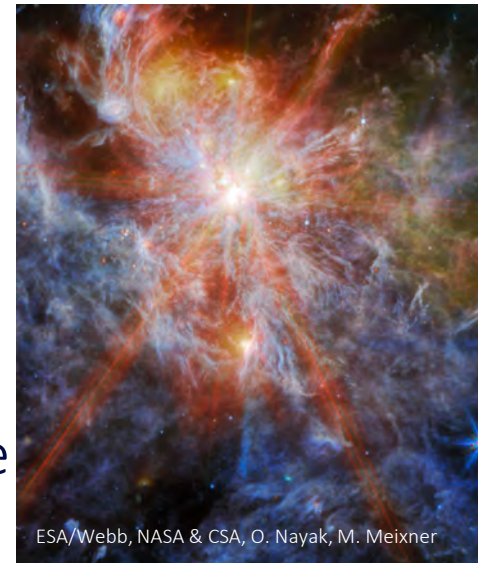
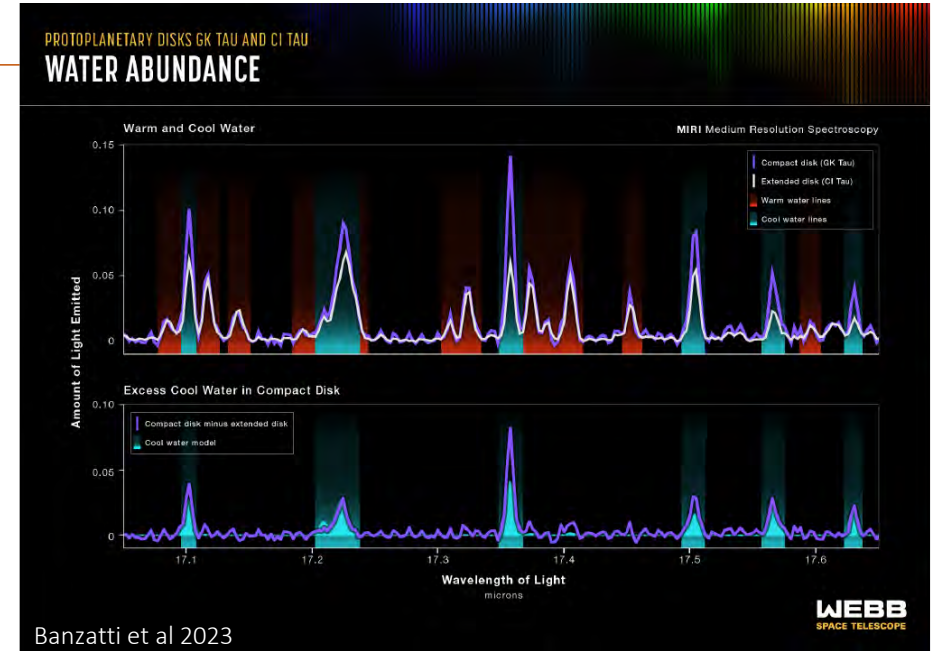
Sarah Kendrew, MIRI Team Lead (on behalf of the MIRI Team)

JWST Users Committee Meeting, 18 March 2024

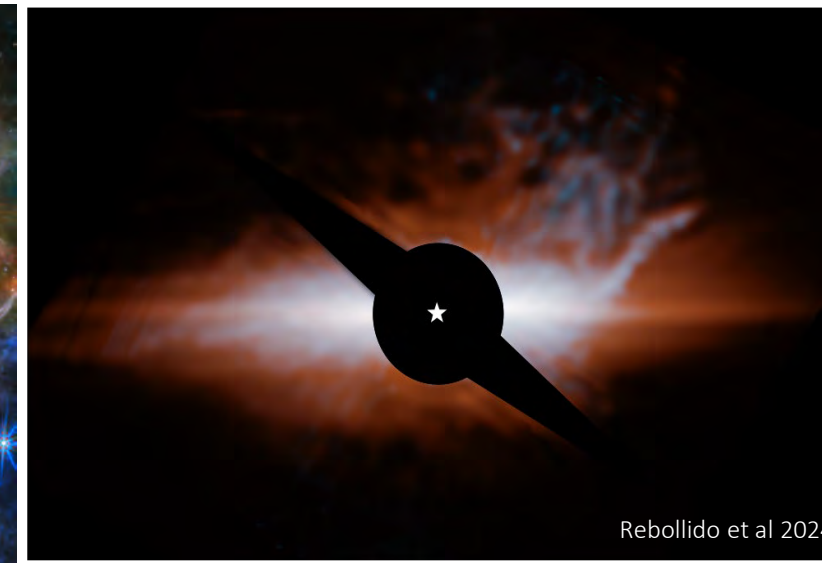


General Status

- MIRI continues to perform extremely well and enabling a steady flow of great new science
- Several significant pipeline + reference file updates providing improvements to calibration across all modes
- 2 ongoing anomalies:
 - DGA-A friction monitoring – monitoring continues, no significant changes
 - Long-wavelength count rate loss – [see dedicated presentation](#)
- Providing direct & indirect support to the community on a daily basis



ESA/Webb, NASA & CSA, O. Nayak, M. Meixner



Rebollido et al 2024



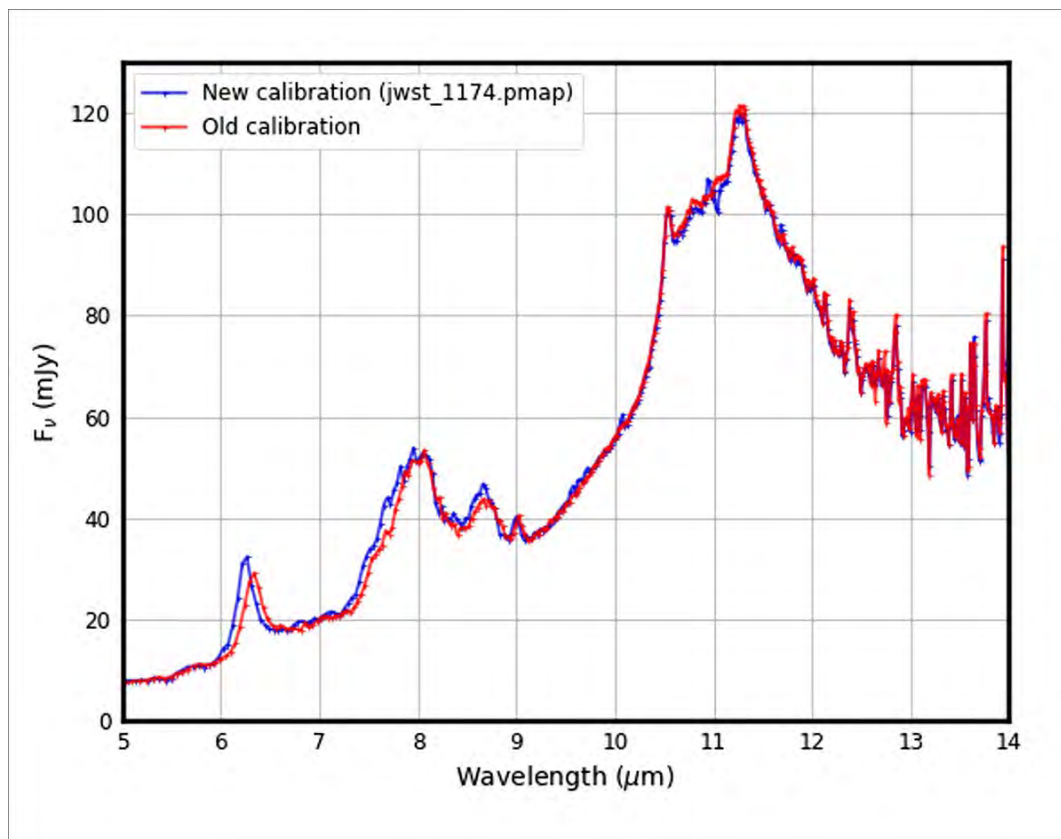
Calibration + Pipeline updates (1)

- Major effort to mitigate for the long-wavelength count rate loss anomaly: see next presentation
- Significant improvement to the LRS fixed-slit wavelength calibration (now < 20 nm accuracy in the core wavelength range) and improvements to flux cal, aperture corrections and spectral extraction ([public statement](#))
- Implementation of new step emicorr for removal of EMI noise at $10 + 390$ Hz (B10.1)
 - 390 Hz noise affected most subarrays and was particularly problematic for LRS slitless spectroscopy (e.g. for transiting exoplanet observations)
- Empirical PSFs for the MIRI imager, described in [Libralato et al \(in press 2024\)](#)
 - code and PSFs publicly available
- Further improvements:
 - Bad pixel management for MRS, with depth-dependent bad pixel maps
 - Jump step for detection of cosmic rays & showers
 - Updated MRS flats
 - MRS point source & aperture corrections



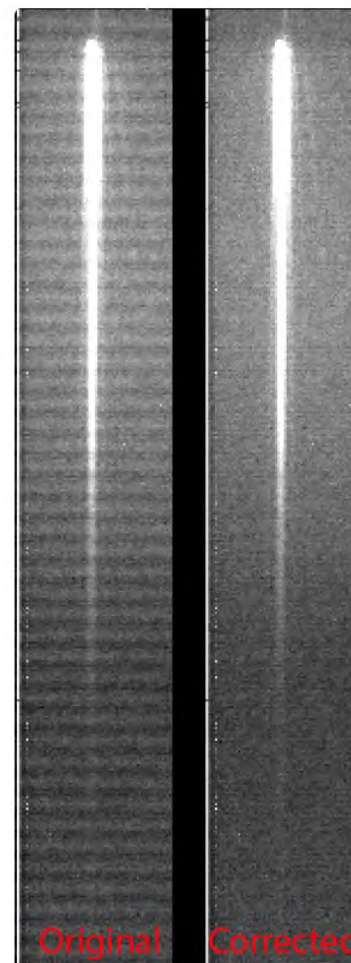
Calibration + Pipeline updates (2)

LRS fixed-slit spectrum of SMP LMC 058



Effect of emicorr step on LRS TSO data (rate file)

Plot: E. Bergeron





User support activities

- Continuing work in Jdox, Helpdesk
- MIRI supported Jwebbinars
 - MRS in Dec 2023
 - Imager in Feb 2024
- Materials and support for the ESA-led JWST data analysis workshop hosted at ESAC, 12-14 December 2023
 - Data reduction tutorials for MIRI imaging, MRS, LRS (fixed-slit and TSO)
- Supported the JWST Office Hours initiative started by the JWMO
- Recent publications:
 - D. Law et al, A 3D Drizzle Algorithm for JWST and Practical Application to the MIRI Medium Resolution Spectrometer (AJ, 2023)
 - M. Libralato et al, High-precision astrometry and photometry with the JWST/MIRI Imager (PASP in press, 2024)
 - D. Dicken et al, MIRI Imager Flight Performance (PASP in press, 2024)

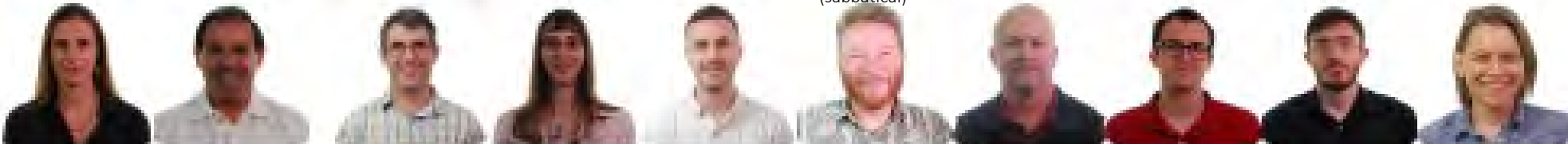


Focus areas for the coming 6-12 months

- Continuing with enhanced flux calibration program to monitor our long-wavelength count rates (→ see dedicated presentation)
- Deeper analysis into TSO systematics + optimizing the pipeline and data reduction strategies
- Improved calibration data for
 - Detector darks
 - LRS wavelength calibration and slit throughput corrections
 - Coronagraph filter offsets
- Development of new capabilities
 - Coronagraphy in FULL frame
 - Fully implemented in APT
 - Dedicated CAL program to be executed in March/April 2024 to demonstrate pipeline readiness
 - Will be publicly announced following successful on-sky testing
 - Supporting a community-led CAL program for Time Series Observations with LRS fixed-slit
 - Low-resolution Wide-Field Slitless Spectroscopy mode: awaiting formal green light



Kendrew Noriega-Crespo Aguilar Cracraft Engesser Gordon (sabbatical) Hines Holler Law Larson



Murray Nickson O'Sullivan (eng) Petric Regan Sargent Sloan Trahin Long (eng) Robinson (eng)