A Science-Ready Co-Added Mosaic Of TESS Full-Frame Images

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A proof-of-concept mosaic to address the science question: "Can TESS study the Faint Diffuse Universe?"

Mosaic of FFIs for Sectors 1-5 in camera 4, centered on the South Ecliptic Pole. Over sampled x3.5 at 6.5 arcsec . Equatorial Gnomonic projection (TAN) with North up.

*Berriman et al (2019) RNAAS **3** 94; Holwerda (2018) RNAAS **2** 53*
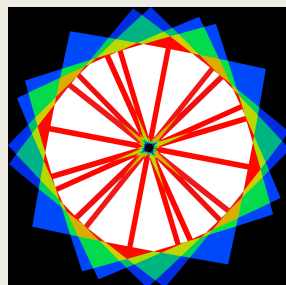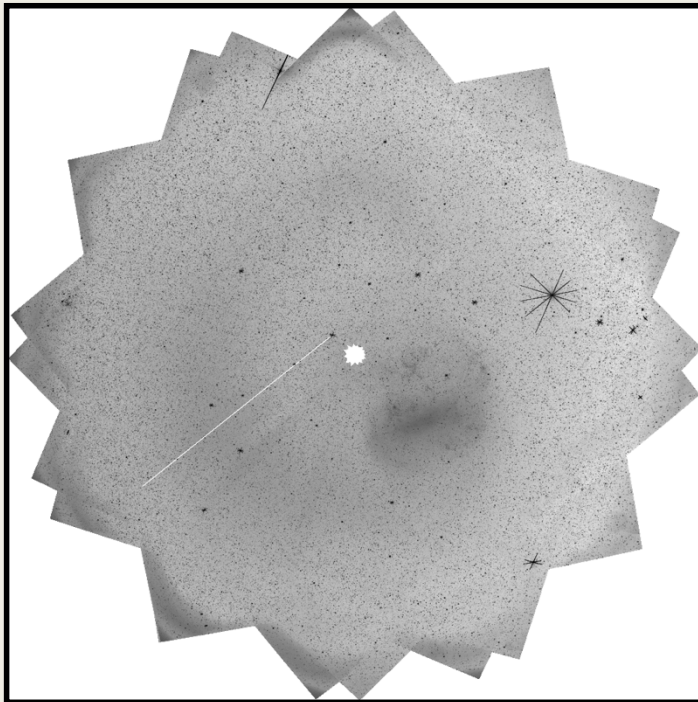
Mosaic coverage map:
Blue:1, Green:2, Orange:3, Red:4, White: 5.

Mosaic Freely Available

https://exofop.ipac.caltech.edu/tess/contributed/TESSMosaic/
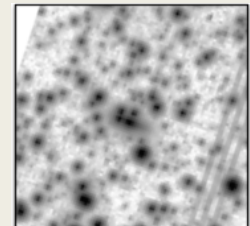
Built With The Montage Image Mosaic Engine

- Preserves calibration and astrometric fidelity of input images.
- Models background levels and rectified them to a common level.
- http://montage.ipac.caltech.edu

Artifacts in Mosaic Complicate Analysis

- Fuzzy ring near $\beta=-83°$ due to scattering and/or extended emission from high-latitude clouds.
- The corners of the camera field show background scattering.
- Pronounced spikes in brighter objects
- Gaps between the four CCDs associated with each camera are not always filled in.
- Also: vertical strips in images due to strapping run across the backs of the CCDs.

Next Step: Mosaic All Year One images with custom approaches to handling artifacts