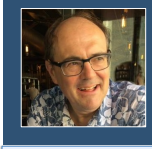
Expanding The Breadth of Use of the Montage Image Mosaic Engine



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http://montage.ipac.caltech.edu https://github.com/Caltech-IPAC/Montage

How Do We Ensure The Community Can Use Montage?

Keep It Simple and Keep It Flexible!

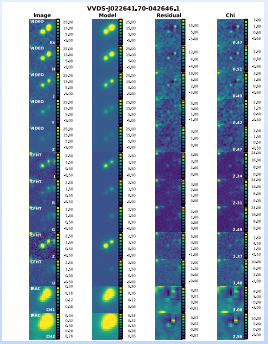
- ANSI-C for performance and portability.
- Science-grade: preserves calibration and positional fidelity.
- Models background radiation and rectifies difference in flux among images to a common level.
- Toolkit design: use for re-projection, background rectification, image sub-setting, and many others.
- Scalable: runs on desktops and high-performance platforms.

Keep It Sustainable!

- Compatible with evolving platforms.
- Builds with GNU `gcc` and a simple `make` command.
- No reliance on shared memory, specific databases, or platform-specific dependencies.
- Development priorities are based on requests from users.
- A community resource: advise users on processing plans and seek feedback on performance and priorities.

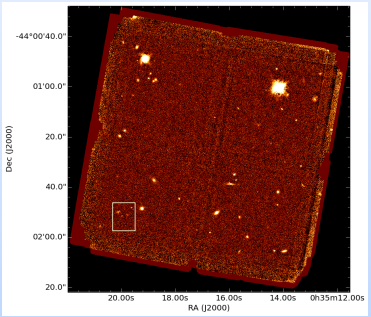
New Ways The Community Is Using Montage

Supporting enhanced photometry with the Spitzer Extragalactic Representative Volume Survey (SERVS)

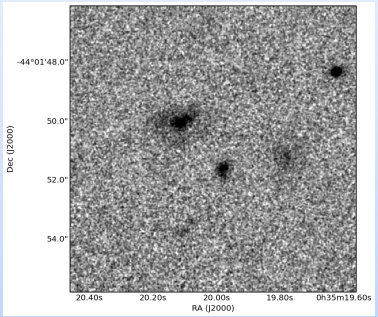


Multi-wavelength fitting over 12 near-infrared and optical bands. Montage was used to make accurate cutouts from much larger mosaics to derive more accurate photometry of blended and faint sources.

Creating mosaics of Gemini GEMS adaptive optics images: combining images of four chips into a single mosaic

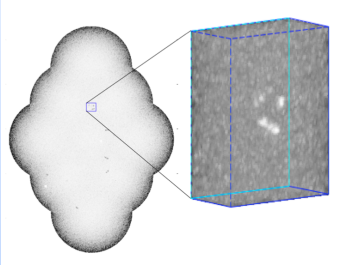


Full Field
The box at the bottom-left is shown on the image on the right.



Zoomed image of a group of galaxies at z~1.5

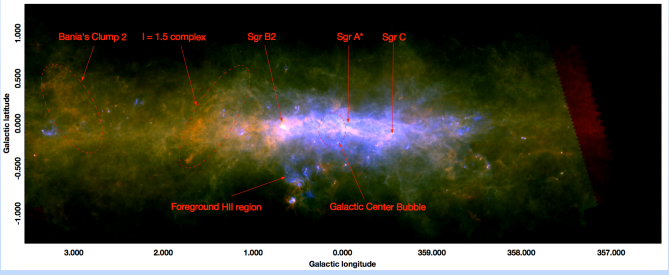
Sub-setting image cubes that are up to 1 TB each in the CSIRO ASKAP Science Data Archive (CASDA), which stores 5 petabytes/year



Left: An 800x1100x300-pixel image cube of the IC 1459 galaxy group, covering over 9 square degrees and a 240 km/s velocity range.

Right: A 97x97x51-pixel sub-cube around IC 5270 extracted using Montage. The sub-cube covers 24 arcmin on a side and 40 km/s velocity range.

Creating a full-resolution, five-color mosaic of the Herschel Hi-GAL Survey of the Galactic plane, for display on the Fiske Planetarium dome



Sample image of the Central Molecular Zone (CMZ) from l=357 to 3.5 degrees. The full-dome presentation covers 360 by 2 degrees of the Galactic plane in all 5 wavelengths of the Hi-GAL Survey.

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