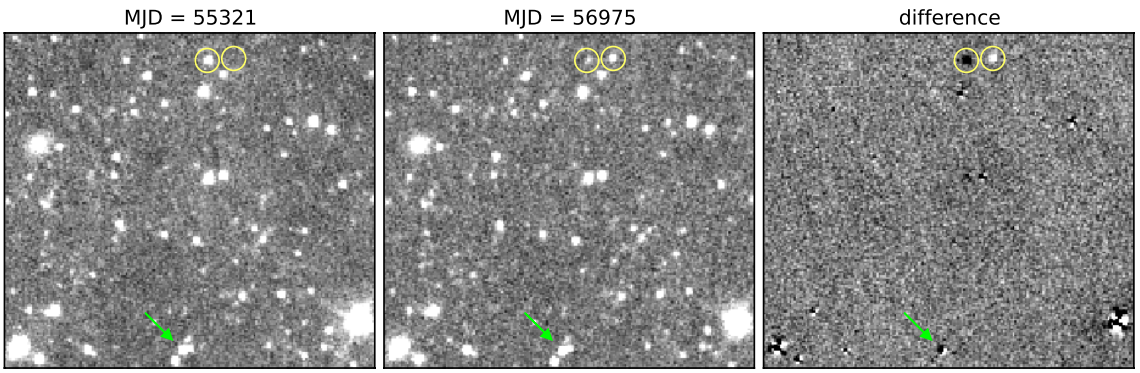

Figure 3: Example of two $W2$ epochal coadds, spaced $\sim$4.5 years apart. The exceptionally cold brown dwarf WISE J085510.83−071442.5 is indicated with yellow circles. The green arrow indicates a moving object serendipitously discovered while creating this figure due to its dipole residual, with proper motion $\sim 0.35''$/yr confirmed by 2MASS/DSS. The "pinwheel" residuals near the centers of bright sources highlight the need for accurate modeling of the time-varying *WISE*/*NEOWISE-R* PSF.

3.1 Mid-infrared quasar variability

The proposed forced photometry will provide six-epoch $W1/W2$ light curves for all $\sim$500,000 quasars spectroscopically confirmed by SDSS/BOSS. Quasar variability is well studied in the optical, while quasars are generally thought to be less variable in the infrared. Our proposed time-resolved *WISE* data products will for the first time provide a uniform mid-infrared view of quasar variability, for a very large sample and on long time scales of 6 months to 5.5 years. In particular, we will address the following questions:

- Are quasars sufficiently variable in the mid-infrared to enable their selection based on $W1/W2$ light curves? Applying the time-scale versus amplitude characterization of Palanque-Delabrouille et al. (2011), we will evaluate the extent to which *WISE* variability represents a new, full-sky mechanism for identifying quasar spectroscopy targets.

- Which quasars show the largest amplitude $W1/W2$ variations over 5.5 years? *WISE* may well represent an untapped, full-sky resource for discovering so-called 'changing-look' quasars.

- Do any SDSS spectroscopic galaxies show large increases in $W1/W2$ emission, consistent with being 'changing look galaxies' that have recently entered an AGN phase?