

Prospecting for Brown Dwarfs in  
Space Infrared Telescope Facility (SIRTF)  
Legacy Science Datasets

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We discuss the prospects for brown detections in the field and in star-forming regions using data from two SIRTF Legacy Science Programs. The SWIRE program (SIRTF Wide-area InfraRed Extragalactic survey; PI C. Lonsdale) will map up to 70 square degrees of high galactic latitude sky using both the IRAC and MIPS instruments, providing wavelength coverage from 3.6 to 160 microns. SWIRE's estimated 5 sigma sensitivity of 10 microJy at 4.5 microns and its relatively large areal coverage will make it uniquely sensitive to the population of extremely cool ( $T < 600$  K) field brown dwarfs thus far undetected in other surveys. The legacy program "From Cores to Disks" (PI N. Evans) will map up to 20 square degrees in nearby ( $d < 300$  pc) star-forming molecular clouds over the wavelength range 3.6 - 70 microns. With a 4.5 micron sensitivity of 30 microJy, this survey will detect a large number of young (ages near 1 Myr) brown dwarf candidates, potentially reaching down to isolated objects below the deuterium-burning limit. Taken together, these two SIRTF datasets will offer a unique opportunity to take a census of the low mass/temperature members of the brown dwarf population. We will discuss predicted brown dwarf number counts and strategies for identifying and confirming brown dwarf candidates in these SIRTF Legacy databases.

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