The HII Region Discovery Survey (HRDS)

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The HII Region Discovery Survey (HRDS) uses the Green Bank Telescope, Arecibo Observatory, and Australia Telescope Compact Array (ATCA) to measure the radio recombination line emission from all Galactic HII Region candidates with cm-wave radio continuum flux densities >60mJy. The HRDS flux limit corresponds to the emission from HII regions surrounding stars more massive than B2 across the entire Galactic disk. Therefore, we can use the HRDS-detected HII regions to trace global massive star formation in the Milky Way. We have found interesting populations of extremely distant nebulae in the Outer and Outer Scutum-Centaurus spiral arms, and a large population of HII regions in the nuclear disc. To date, the HRDS has discovered nearly 1000 HII regions, doubling the previously-known population. This talk will focus on our most recent survey a 900-hour ATCA project to complete the HII region census in the southern hemisphere by late 2018, which we call the Southern HRDS or SHRDS. All HRDS (and SHRDS) targets share the same characteristic HII region mid-infrared morphology: ∼10um emission surrounding ∼25um emission, with the latter being coincident with the ionized gas traced through radio continuum emission. As in the north, the SHRDS has doubled the number of known HII regions over the survey area.

Galactic Scale