Triggered Star Formation in a Turbulent ISM
Proceedings IAU Symposium No. 237, 2006
B. G. Elmegreen & J. Palouš, eds.

doi:10.1017/S1743921307002116

IRSF/SIRIUS near-infrared survey of the Magellanic Clouds: triggered star formation in N11 in the Large Magellanic Cloud

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Abstract. A near-infrared survey of the Magellanic Clouds has been carried out with IRSF/SIRIUS. As a part of the results, we present a study of triggered star formation in N11 in the LMC.

We have completed a near-infrared (J, H, and Ks bands) survey of the Magellanic Clouds with IRSF/SIRIUS, covering a total area of about 40 square degree of the Large Magellanic Cloud (LMC) and 15 square degrees of the Small Magellanic Cloud (SMC). The data of the survey allow us to detect OB and Herbig Ae/Be (HAEBE) stars (down to $\sim$3 $M_{\odot}$) with a limiting magnitude of K$\sim$17 mag, and to investigate the mechanism underlying star formation in the Magellanic Clouds.

We have explored star formation in N11 in the LMC. A total of 559 OB and 127 HAEBE star candidates were selected based on their near-infrared colors and magnitudes. Spatial correlations of the OB and HAEBE star candidates with CO clouds and Hα emission suggest that the birth of the young stellar populations in peripheral molecular clouds was triggered by an expanding shell blown by LH9 (see Fig. 1). This star formation activity has been propagated radially.

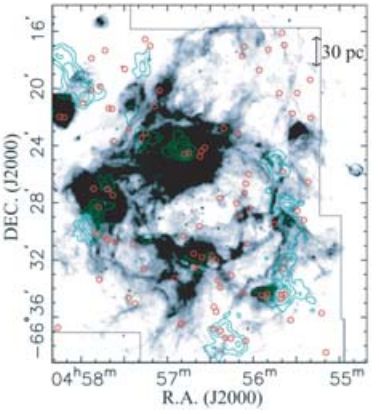

Figure 1. N11 is the second largest HII region in the LMC after 30 Dor. Distributions of Hα emission (inverted gray scale; Mac Low *et al.* 1998), ^{12}CO (1-0) integrated emission (contours; Israel *et al.* 2003), and the HAEBE star candidates (circles) are shown. The solid lines indicate our observed area. Hα emission nebulae and filaments, and CO clouds form shell structures surrounding the central OB association LH9. Many HAEBE star candidates are distributed around the periphery of LH9, and associated with the molecular cloud shell.

References

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