

THREE LARGE MOLECULAR COMPLEXES IN NORMA

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A segment of the Milky Way in Norma, from $\ell = 327^\circ$ to 335° , $|b| \leq 1^\circ$, has been studied as part of the Columbia CO survey of the fourth galactic quadrant. Description of the entire survey is given by Cohen elsewhere in this volume.

In this region, just as in the corresponding part of the first galactic quadrant (Dame et al., 1983), the CO emission is dominated by large molecular complexes. These complexes are organized into three distant features apparently associated with three spiral-arm segments. Each feature extends over the entire longitude range, covering about 1 kpc (Figure 1). The natural division of the CO emission into three velocity ranges is clearly seen in the latitude-velocity diagram (Figure 2). For each velocity range we have identified the largest molecular complex. Each complex has a mass greater than $10^6 M_\odot$. Complex 1 (Figure 3) is particularly massive ($M > 3 \times 10^6 M_\odot$), and may be the largest molecular complex in the Galaxy.

The positions of the three identified molecular complexes agree well with those of HII regions in the area. We find fifteen H 109 α regions between $\ell = 331^\circ$ and 334° (Georgelin and Georgelin, 1976). Their mean velocities can be assembled into three groups, centered at $v = -86 \pm 5$ km/s, -66 ± 2 km/s, and -53 ± 2 km/s. The highest-velocity group is shown with Complex 1 in Figure 3. There are also two SNRs near $\ell = 332^\circ$, Milne 41 and 42 (Clark and Caswell, 1976). OH absorption at -88 km/s detected in their directions (Caswell and Haynes, 1975) indicates their possible association with Complex 1.

Once our survey is complete, we will extend this type of analysis in an attempt to identify all the massive molecular clouds in the fourth galactic quadrant.

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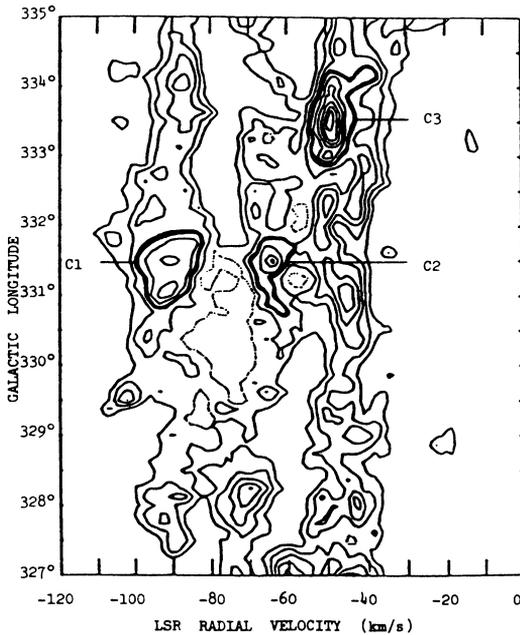


Figure 1. l, v diagram obtained integrating the CO emission across the galactic plane. For each velocity range the largest molecular complex is enclosed by a darkened contour.

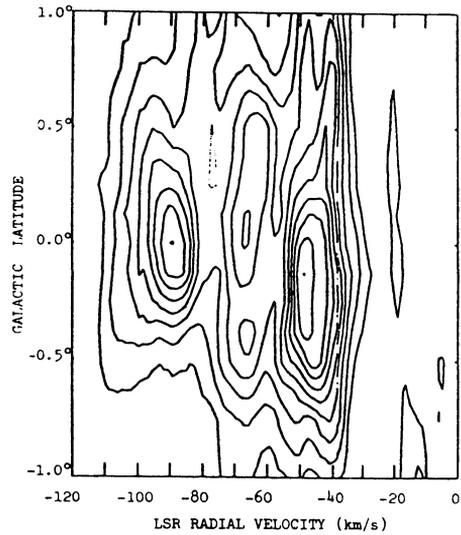


Figure 2. Latitude extent of the emission integrated over the whole longitude coverage. We can clearly distinguish three different velocity ranges.

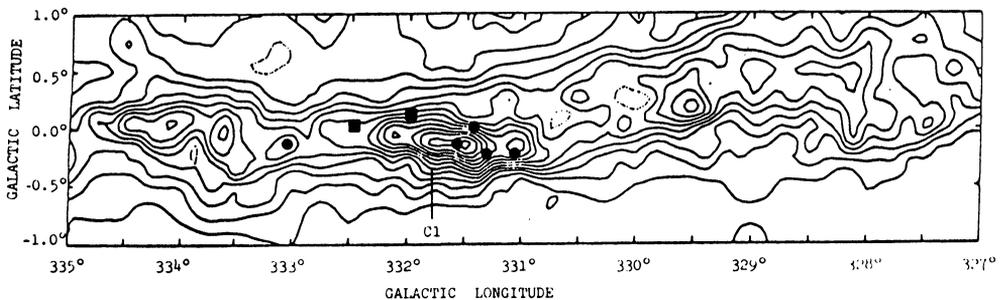


Figure 3. l, v map of CO emission integrated over the highest velocity range ($-120 < v < -80$ km/s). Complex 1, in the figure, has a kinematical (near) distance of about 7 kpc. HII regions in the area are shown as filled circles, and SNRs as filled squares.

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