A NEW CO OUTFLOW SOURCE NEAR NGC 2071

T. Iwata, Y. Fukui
Nagoya University, Japan

The region of NGC 2071 and NGC 2068 is one of the active sites of star formation in Orion. An extended CO cloud in this region has been studied previously (e.g., White *et al.* 1981). Here, we report new J = 1-0 CO, ^{13}CO, and C^{18}O observations of this region with a 2.7' beam. Up to the present, we have obtained 400, 800, and 100 spectra for CO, ^{13}CO, and C^{18}O lines, respectively. The data cover an area of $\sim 1° \times 2°$.

Main points of the results can be summarized as follows: (1) A new bipolar CO outflow source has been detected at $\sim$ 20' north of NGC 2071 (R.A. (1950) = 5^h45^m and Dec. (1950) = 0°40'). This outflow source is located toward a small molecular cloud of molecular column density $> 10^{22}$ cm^{-2} having a total mass of $\sim$ 200 $M_\odot$. The CO spectra show moderately broad CO wings ($\Delta V \sim$ 10 km/s) and the wings are confined to an area of $\sim$ 1 pc in radius. The small molecular cloud contains an IRAS source of $> 20\ L_\odot$, which might be driving the outflow, although the position of the IRAS source is by $\sim$ 1 pc shifted from the apparent center of the outflow.

(2) There is a large elongated cloud of $\sim$ 4 pc × 2 pc toward NGC 2071. This cloud has a total mass of $\sim$ 3000 $M_\odot$ and consists of two components at V_{LSR} = 8 km/s and 11 km/s, respectively. We suggest that the cloud is rotating around the infrared sources driving the outflow in NGC 2071 with a rotation period of $\sim 6 \times 10^6$yr. The total mass of this cloud is nearly equal to the dynamical mass of this cloud, if we assume rotational equilibrium.

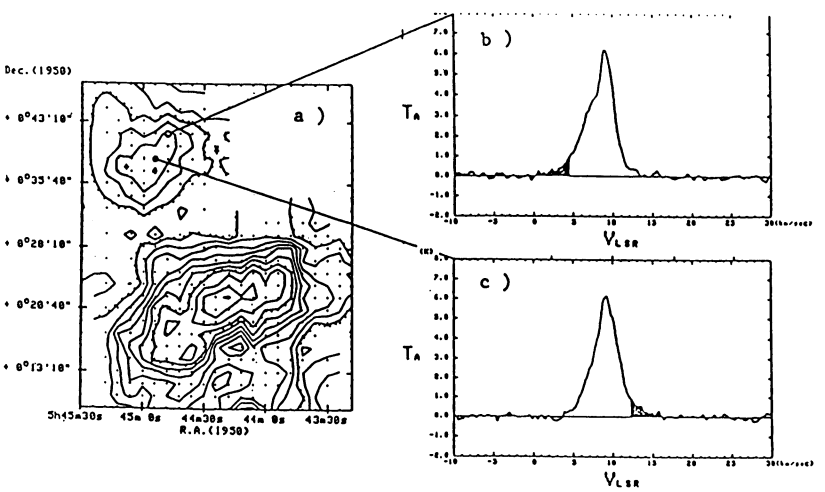

Fig. 1. a) Integrated intensity map of ^{13}CO (J = 1-0) in the NGC 2071 region. ^{12}CO wings are shown in b) and c).

https://doi.org/10.1017/S0074180900095838 Published online by Cambridge University Press