

A 22-GHz MAP OF THE 30-DORADUS REGION

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ABSTRACT. We present a preliminary map of the 30-Doradus region at 22 GHz with a HPBW of 4'.6 arc. The results are compared with those from maps at lower frequencies and at similar resolution. Three supernova remnants were detected: N157b, MC 78 and MC 89.

1. Observations

The observations were made at 22 GHz with the 13.7m (radome enclosed) Itapetinga Radiotelescope in Brazil: the HPBW was 4'.6 arc. The receiver was a K-Band mixer with 1 GHz d.s.b. bandwidth, a system temperature of 650 K and a sensitivity after 2hrs integration of ~0.5 Jy. It was operated in the total power mode. The map was made from scans in right ascension, separated by 2' arc in declination. The calibration was made on Virgo A, which has a flux density of 20.5 Jy at 22 GHz (Janssen *et al.* 1974). The S/T ratio is 58.6 Jy/K.

2. Results

The sources detected in the 30-Dor map (Fig. 1) and their physical parameters are listed in Table 1.

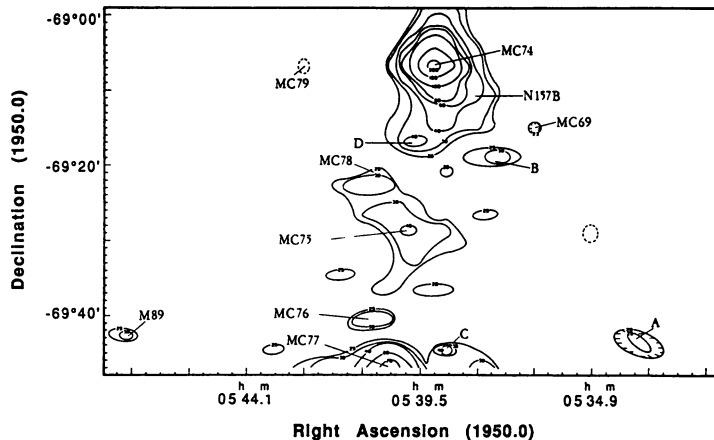


Figure 1. Radio continuum map at 22 GHz of the 30-Dor region, with a resolution of 4'.6 arc. Contour levels are: 25, 30, 40, 60, 80, 100, 150 & 200 mK in antenna temperature.

Table 1. 22 GHz sources in the 30-Dor region

Source	RA h m s	Dec ° ' "	Peak temp. mK	Peak flux density Jy	Size ' arc	Integ. flux density Jy	Spectrum	Remarks
A	05 33 42	-69 43.0	27	1.6	7.1	3.8	T	
MC 69	05 36 24	-69 15.0	23	1.3	point		T	30 Dor CB†
B	05 37 11	-69 19.0	33	1.9	4.8	2.0	T	
N157B	05 38 07	-69 11.3	35	2.0	-	-	NT	30 Dor B*
C	05 38 43	-69 45.0	42	2.5	-	-	T	
MC 74	05 39 04	-69 07.5	207	12.1	6.7	26.9	T	30 Dor A*
D	05 39 30	-69 17.0	41	2.4	7.3	6.1		
MC 75	05 39 53.4	-69 29.0	41	2.4	11.2	8.5	T	N158C
MC 77	05 40 24	-69 47.0	79	4.6			T	A 19, N159A
MC 78	05 40 39.5	-69 21.0	26	1.5	-	-	NT	N158A
MC 79	05 42 32	-69 07.9		0.5	point		T	
MC 76	05 40 20.8	-69 41.0	37	2.2	-	-	T	N160A
MC 89	05 40 27.9	-69 43.0	31	1.8			NT	

* The positions were given by McGee *et al.* (1972)

† Data compared with McGee *et al.* (1972) and Mills and Turtle (1984).

The sizes were derived assuming Gaussian models. Comparisons were made with the data from two other surveys at lower frequencies but at similar resolution (McGee *et al.* 1972; Clark *et al.* 1976) and the nature of the emission at 22 GHz: Thermal (T) or non-thermal (NT), is indicated. The non-thermal sources 30 Dor B, MC 78 and MC 89, reported as plerionic supernova remnants (Milne *et al.* 1980, Long *et al.* 1981, Clark *et al.* 1982, Mathewson *et al.* 1983, Mills *et al.* 1984, Mills & Turtle 1984) were all detected. The position of the maximum intensity in the source N158C coincides with the weaker component of two sources resolved in the 843 MHz map of Mills & Turtle (1984).

3. Acknowledgment

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