

DARK CLOUD AND GLOBULE DISTRIBUTION FOR GALACTIC LONGITUDES

230 TO 360 DEGREES

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ABSTRACT

A catalogue of dark nebulae and globules has been compiled from a study of the ESO-B and SRC-J sky atlas for galactic longitudes $230^{\circ} < l < 360^{\circ}$. This catalogue closes the great southern gap open since the work of Lynds (1962). We have listed 489 dark nebulae and 311 globules. The catalogue contains positions, sizes, opacities and the van den Bergh classification (1972) on the filamentary morphology of dark clouds. We present statistics concerning the northern and southern distributions and sizes of the nebulae.

THE CATALOGUE

The 606 fields of the southern atlas were examined for the presence of dark clouds; for $|b| > 30^{\circ}$ no dark clouds are found, although our search extended up to $|b| = 90^{\circ}$. The overlapping regions between the POSS-Lynds survey and our work were used to calibrate our opacity classes. This linkage secures the equality of the opacity classes in both surveys, inspite the differing limiting magnitudes. The distribution of the dark clouds (> 0.01 sqdeg) in galactic coordinates is shown in Fig.1. The map of this survey exists in a machine readable, digitized form as a 500 x 1400 pixel image (1 pixel = 0.1°). In Fig.2 we present the distribution of the globules defined as ≤ 0.01 sqdeg. The numbers count globules almost at the same position. Besides their different opacities interstellar clouds show a bewildering variety of shapes and sizes. To take this fact into account we supplemented the catalogue by descriptive categories (for example: worm track, cometary globule) and the classification scheme of van den Bergh (1972) (for example: amorphous cloud, very fuzzy).

STATISTICS AND COMPARISONS

The percentage of the sky obscured by dark clouds is 4.98% for the northern ($0^{\circ} < l < 240^{\circ}$) and 1.92% for the southern part ($240^{\circ} < l < 360^{\circ}$). The absolute numbers are: $N=1273$ clouds, area=1396 sqdeg, north and $N=437$ clouds, area=264 sqdeg, south. This reflects the well known fact that the visible Milky Way band

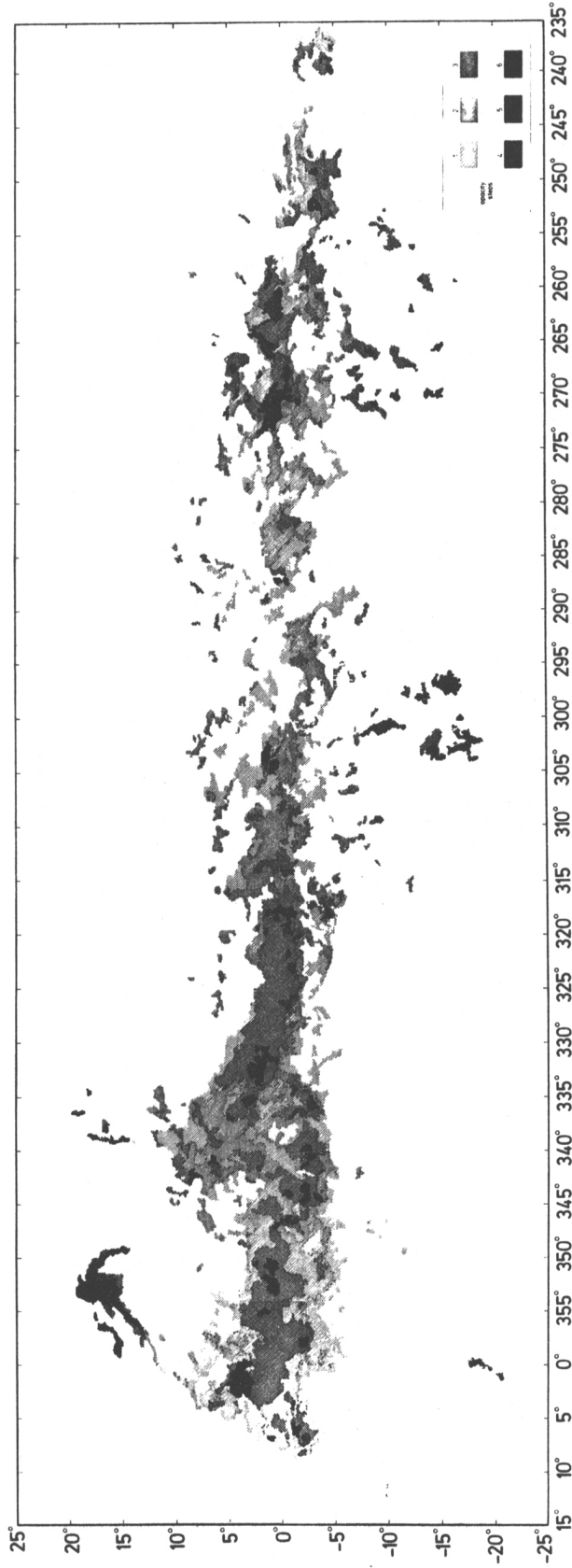


Fig.1 Distribution of dark clouds (> 0.01 sqdeg)

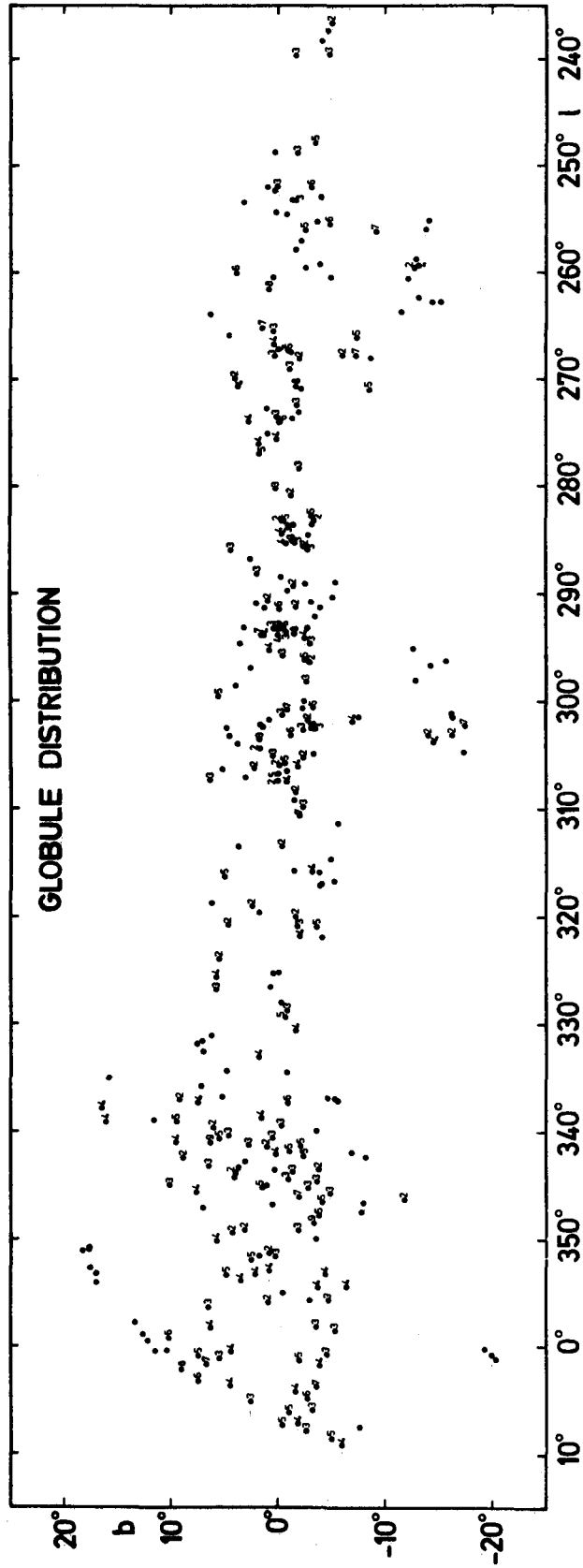


Fig.2 Distribution of globules (0.01 sqdeg). The numbers count globules almost at the same position.

changes its morphological appearance from north to south. In Fig.3 we discriminate between the northern, southern and the anticenter regions. The percentage of area covered by the different opacity classes for the northern and southern regions are nearly the same. The percentage of obscured area as a function of $|b|$ in Fig.4 reveals that the southern distribution is much more smoother as the northern distribution. This is a consequence of the absence of the Great Northern Rift in the southern Milky Way and results in fewer clouds of high opacity, which are responsible for the ruggedness. Furthermore the southern part is much brighter also a reason for greater homogeneity of the Milky Way band.

An extended version of this paper will be published elsewhere.

REFERENCES

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 van den Bergh S., 1972, Vistas 13, 265

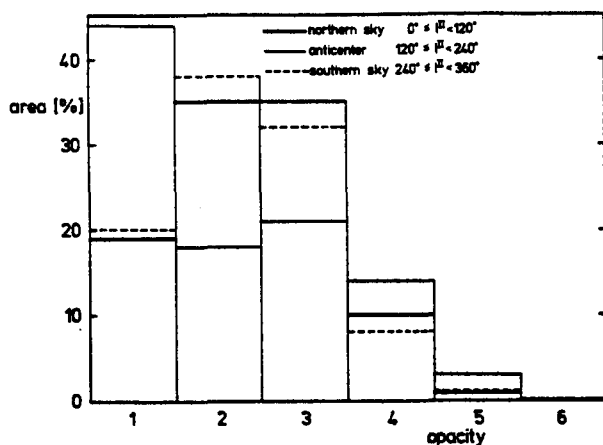


Fig.3 Percentage of obscured area as function of the opacity classes

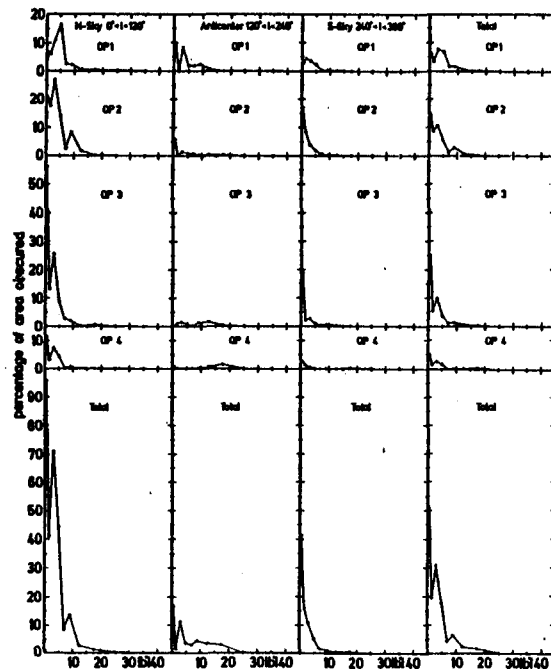


Fig.4 Percentage of obscured area as function of the galactic latitude $|b|$ and the opacity classes