Halo phenomena during the first five months of 1985

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Short Report

Halo Phenomena during the first five Months of 1985

Hiroyoshi Yoshimura
Toyama Science Museum

We can observe halos about 40 days a year at Toyama in the central districts of Japan. I could observe interesting halo effects three times during the first five months of 1985.

1) The Parry arcs (upper suncave Parry arc), 120-degree parhelia on 19 January 1985.

A part of the 22 and 46-degree halos appeared at 1335JST. The sun dogs and the upper tangent arcs to the 22-degree halo appeared after five minutes.

From 1345 (solar elevation 28 degrees) to 1350JST the most developed halo phenomena, which were shown in Fig. 1, 2, could be observed.

The parry arcs and the upper tangent arcs to the 22-degree halo disappeared at 1350JST. The 120-degree parhelia in the right hand and a part of the parhelic circle could be observed from 1407 to 1415JST (Fig. 3).

The 22-degree halo, sun dogs and circumzenithal arc could be seen until 1600JST.

Fig. 1. This photograph shows the Parry arcs, upper tangent arcs to the 22-degree halo, sundogs,a part of the parhelic circle, circumzenithal arc.

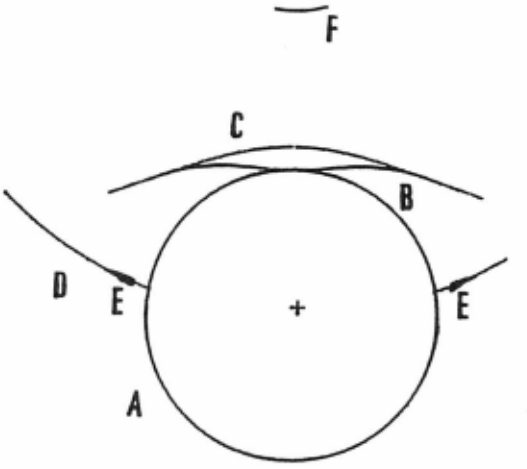

Fig. 2. (A) 22-degree halo
(B) upper tangent arcs
(C) Parry arcs
(D) parhelic circle
(E) sun dogs
(F) circumzenithal arc

2) The complete parhelic circle on 4 March 1985.

The complete parhelic circle, the circumscribed halo and the sun dogs could be observed from 1130 to 1230JST (Fig. 4).

Fig.3. This photograph shows the right hand 120-degree parhelia and a part of the parhelic circle.

3) The circumhorizontal arc on 15 May 1985.

The circumhorizontal arc with 22-degree halo was observed from 1045 to 1310JST on 15 May 1985. Especially it became very bright and beautifully coloured from 1130 (solar elevation 72 degrees) to 1145JST, when it was about 70 degrees in length and brighter than 22-degree halo (Fig. 5, 6).

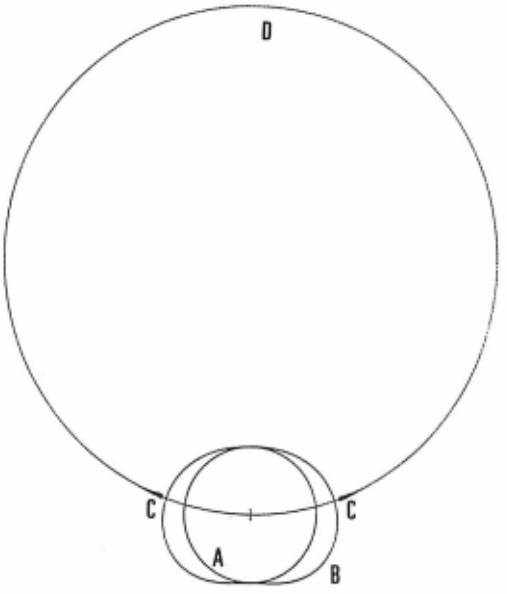

Fig. 4. (A) 22-degree halo
(B) circumscribed halo
(C) sun dogs
(D) parhelic circle

Fig. 5. Circumhorizontal arc and 22-degree halo.

This arc cannot be observed when the sun is below an elevation of 58 degrees. Since solar elevation is high in summer, when cirrostratus are less likely to form, the circumhorizontal arc is relatively rare.

I have observed that only a few times, though the circumzenithal arc (the theory of its formation is identical with that of the circumhorizontal arc) has been observed occasionally.

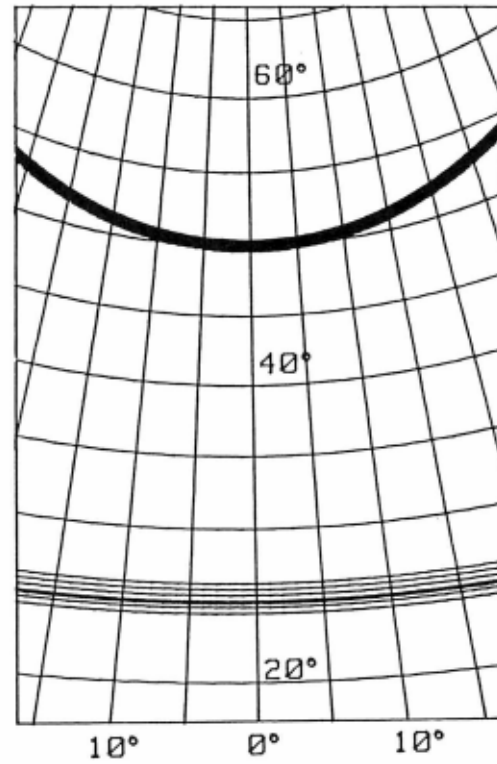

Fig. 6. Showing the position of the 22-degree halo and the circumhorizontal arc for a plane perpendicular to a line of sight 42° above the horizon.

Reference

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