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Total Solar Eclipse Observations MIG - 25 at 80,000 ft

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Abstract

The objective of this project was to take intensity and polarization measurements of extended solar coronal streamers, from a height of 75,000 to 80,000 feet above the ground Hitherto, no observations have been made of the total solar eclipse from such a height As the scattered light in the lower atmosphere, due to the dust particles, decreases exponentially, it was expected that we could observe the extended coronal streamers, upto 12-15 solar radii from such heights For these observations, a 70mm format Hasselblad camera with f/3 5 and f=100 mm lens was mounted on the desk board in the cockpit of MiG-25 trainer airplane of the Indian Air Force In front of the camera lens a plane polaroid filter was attached, which was rotated manually by the pilot, to take 2 exposures, at each of the three polaroid positions, 60 degree apart. After making 6 exposures, the polaroid filter was removed and direct white light pictures were obtained for recording coronal streamers The exposure times were 50 and 150 ms on Kodak Plus-X film and developed in D-78 for 9 minutes at 21 C Four good exposures have been obtained along with several beautiful pictures of the diamond ring During the totality, the flight path was from Kalpi to Ikdala, south of Allahabad, flying at a height of 80,000 ft at a speed of 2 5 mach Digitization and integration of the photographs are being carried out, to estimate the intensity gradient of the outer corona and the streamers First hand experience of MiG pilots, of visual observations of the total solar eclipse, from such a height were presented