MIAC

Meteorite Observation and Recording Program (MORP)

MORP camera stations

Twelve meteor tracking stations were established across the Prairie provinces in 1969, in a network stretching from Alonsa, Manitoba in the East to Lousana, Alberta in the West. They were situated sufficiently close together for a meteor to be recorded at two or more sites. The recorded tracks would then permit calculation of both the orbit in space and also the likely area of fall. The situation in the central and southern parts of the Prairies where farmland is dominant, maximised the chances of recovering samples of any meteorites believed to have fallen. (Camera Stations had previously been established in Czechoslovakia and the U.S.A.). (Courtesy National Research Council of Canada; Ref. Halliday et al. (1978): J. Royal Astronom. Soc. Canada, v. 72 p. 15-39)

MORP station at Neilburg, Saskatachawan.

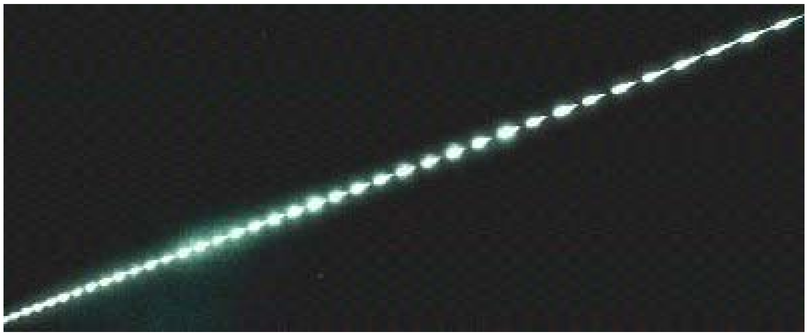
This is one of 12 identical observation stations which stretched across the Prairie Provinces. In the roof area 5 cameras were mounted to record the night sky and any meteor tracks that happened to fall within the view of the cameras. A sector rotating in each camera at a known and precise rate allowed a determination of the duration of the event and hence the speed (see slide 12). The MORP network was dismantled in 1985. (Courtesy of the National Research Council of Canada)

Fireball.

A rare photograph of a daytime fireball. What is seen here is actually not the luminous fireball itself but rather the fine debris from its ablation and final detonation. This is clearly apparent from the somewhat irregular line of dust which has already been affected by upper level winds. The trail of a fragment from the detonation can be seen plunging earthward near the centre of the picture.

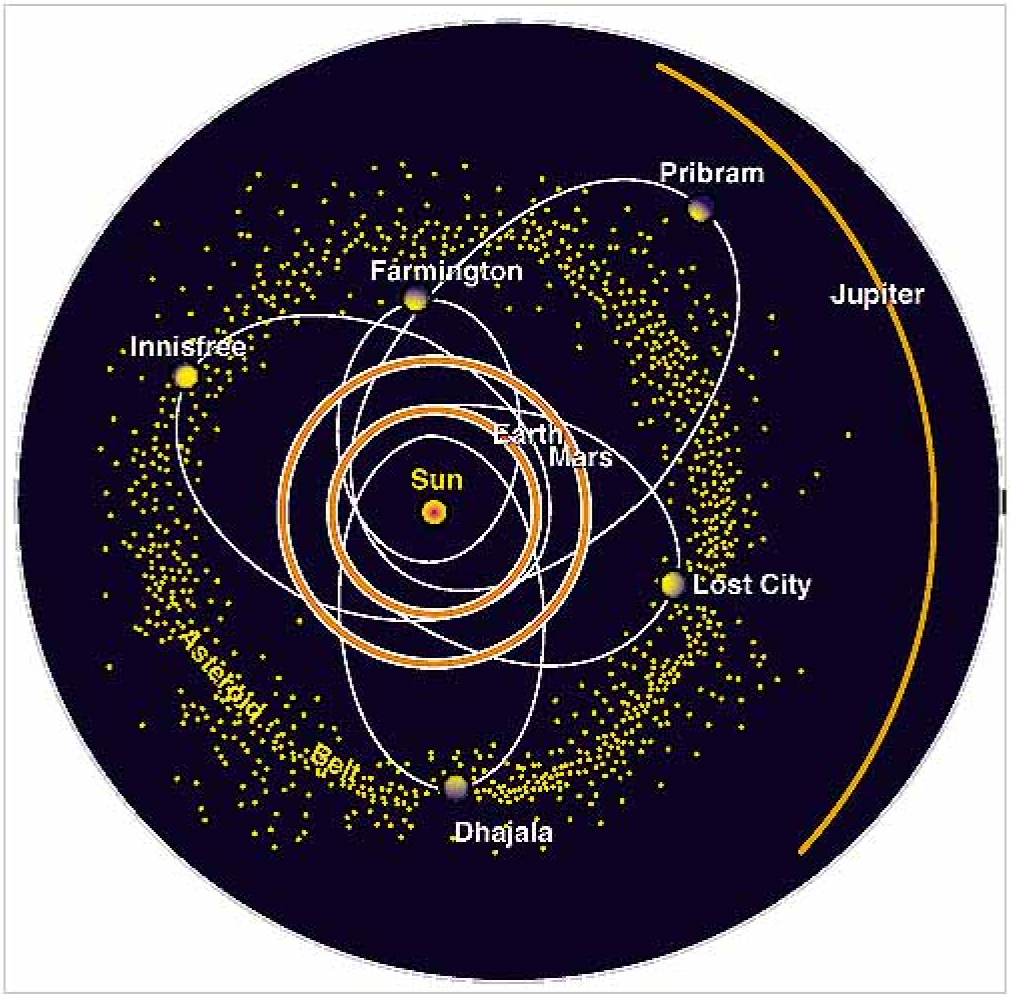
MORP recording at night..

The slide shows the path of a meteorite as recorded by one of the MORP stations. The trail is segmented because a filter wheel rotated in front of the camera lens to produce four segments/second. Thus the duration of the passage through the atmosphere seen here took some 10 seconds. The early part of the track, that above an altitude of 55°, was lost in the Station's blind spot. The slide is reproduced courtesy of the National Research Council of Canada.



Orbits of the planets and meteorite paths.

INNISFREE is one of only the few meteorites that have been recovered after the passage through the atmosphere has been accurately recorded photographically by cameras at more than one place. Others include PRIBRAM, Czechoslovakia and LOST CITY, U.S.A. Photographic data recorded at two or more localities permit the orbits of meteorites to be calculated as well as allowing the likely area of fall to be predicted. Note that the aphelia (farthest points from the sun) of INNISFREE, LOST CITY and PRIBRAM all lie in the Asteroid belt between Mars and Jupiter. INNISFREE belongs to the LL group, LOST CITY and PRIBRAM to the H group of ordinary chondrites.



Sample of Innisfree in the snow.

This slide shows the first fragment of INNISFREE as it was found. It proved to be the largest mass, weighing about 2 kg. Note how it sits on the snow with hardly any suggestion of a crater. During winter when the soil is frozen, a meteorite that simply falls under its own weight may penetrate a layer of snow and then bounce back to the surface off the frozen soil beneath. Thus, while snow is on the ground the possibilities for recovery are often best. The thin black fusion crust which covers most such meteorites if they have not disintegrated on impact, provides a strong contrast with the pure white of the snow. (Courtesy National Research Council of Canada; Ref.: Halliday et al.,1978, J. Roy. Astronom. Soc. Canada, v. 72 p. 15-39)

Innisfree.

The INNISFREE (Alberta) meteorite fell 13 km north of the town of this name at 7.17 pm on February 5th, 1977. An immediate search of the area by light plane and on foot, turned up nothing, but photographic records from two stations in the MORP network allowed a computer prediction of the most likely fall area. Dr. Ian Halliday of the Herzberg Institute of Astrophysics led an N.R.C. sponsored party to search the area some eleven days later. Within a few hours the first and largest piece (2.07 kg) had been found only a few hundred yards from the point predicted by the computer program. Subsequently 5 other fragments were found, bringing the total mass recovered to 3.79 kg. The meteorite turned out to be an LL5 hypersthene, olivine chondrite breccia and thus a member of a relatively rare group. It is a particularly important meteorite because its orbit in space has been calculated from the photographic data (see above; Ref.: Halliday et al., 1978: J. Roy Astronom., Soc. Canada, v.72 p. 15-39; D.G.W. Smith,1980, Can. Min. v. p. 433-442).

MIAC Slide Group and Michael Higgins