

### 15.5.3 Transient phenomena: comets and meteor showers, satellites, eclipses

Comets are transient celestial phenomena in that they are not seen in the night sky every year. As comets get closer to the Sun, their tails get longer, and as they move away from the Sun, their tails get shorter. Whether approaching or retreating, comets tails always point away from the Sun. A comet can be visible in the night sky for several months, but usually only a few comets appear during one lifetime. We are fortunate to have seen three amazing comets in the Northern Hemisphere in the recent past: Halley in 1986, Hayakutake in 1996, and Hale–Bopp in 1997. People should remember these comets along with Comet McNaught in 2007 in the Southern Hemisphere, and perhaps know the local terms and stories about comets.

**Table 15.3.** Dates of annual meteor showers

Shower name	Dates	Shower name	Dates
Quadrantids	Jan 01-Jan 05	Draconids	Oct 06-Oct 10
Alpha Centaurids	Jan 28-Feb 21	Epsilon Geminids	Oct 14-Oct 27
Delta Leonids	Feb 15-Mar 10	Orionids	Oct 02-Nov 07
Gamma Normids	Feb 25-Mar 22	Leo Minorids	Oct 23-Oct 25
Lyrids	Apr 16-Apr 25	Southern Taurids	Oct 01-Nov 25
Pi Puppids	Apr 15-Apr 28	Northern Taurids	Oct 01-Nov 25
Eta Aquarids	Apr 19-May 28	Leonids	Nov 10-Nov 23
Eta Lyrids	May 03-May 12	Alpha Monocerotids	Nov 15-Nov 25
June Bootids	Jun 22-Jul 02	Dec Phoenicids	Nov 28-Dec 09
Piscis Austrinids	Jul 15-Aug 10	Puppids/Velids	Dec 01-Dec 15
Delta Aquarids	Jul 12-Aug 19	Monocerotids	Nov 27-Dec 17
Alpha Capricornids	Jul 03-Aug 15	Sigma Hydrids	Dec 03-Dec 15
Perseids	Jul 17-Aug 24	Geminids	Dec 07-Dec 17
Kappa Cygnids	Aug 03-Aug 25	Coma Berenicids	Dec 12-Jan 23
Alpha Aurigids	Aug 25-Sep 08	Ursids	Dec 17-Dec 26
September Perseids	Sep 05-Sep 16		
Delta Aurigids	Sep 18-Oct 10		

The normal rate for shooting stars is around one every ten minutes; this rate increases during meteor showers. Meteor showers occur when the Earth passes through the debris left by a comet. Meteor showers occur several times a year, but they vary in the rate of ‘shooting stars’. The Orionids which occur in October (see Table 15.3) have a rate of up to twenty-three meteors per hour.