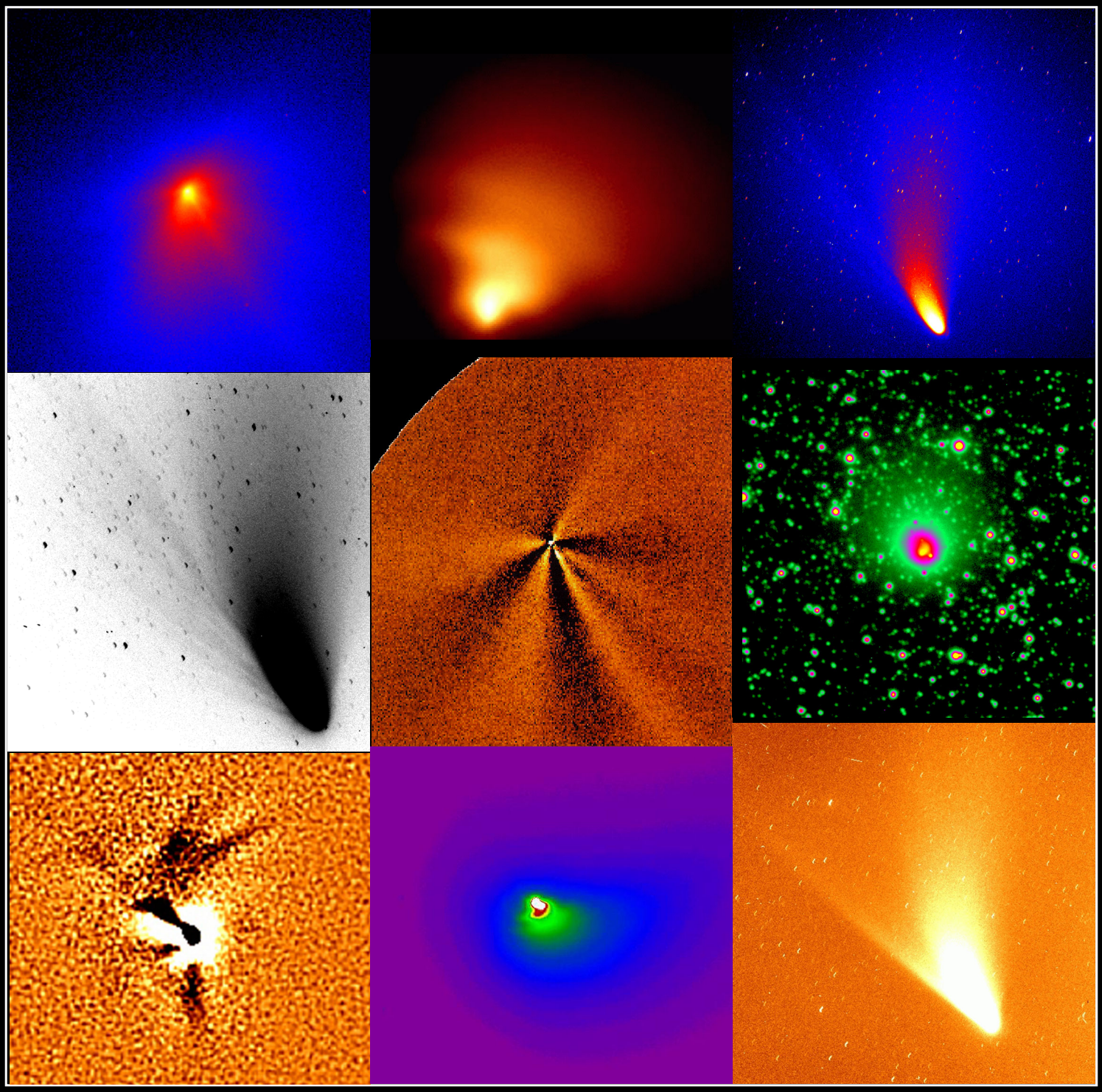
# Comet Hale-Bopp



Comets are icy bodies orbiting in the Solar System, which partially vaporize when it nears the Sun, developing a diffuse envelope of dust and gas and, normally, one or more tails. Ground-based observations of the behaviour of many comets support the view first proposed by F. Whipple in about 1949 that the nuclei of comets are essentially *dirty snowballs* a few kilometres across. They appear to be composed of frozen water, carbon dioxide, methane and ammonia, in which dust and rocky material is embedded. As a comet approaches the Sun, solar heating starts to vaporize the ices, releasing gas that forms a diffuse luminous sphere, called the coma, around the nucleus. The coma may be up to a million kilometres across. The nucleus itself is too small to be observed directly. Dust and gas leave the comet's nucleus in the form of jets on the side facing the Sun, then stream away under the Sun's influence. Electrically charged ionized atoms are swept away directly by the magnetic field of the solar wind, forming straight ion tails (alternatively called Type I, plasma or gas tails). Variations in the solar wind cause the ion tail to take on structure, or even break off in a disconnection event. Small neutral dust particles are not carried along by the solar wind but get 'blown' gently away from the Sun by radiation pressure. Dust tails (also called Type II tails) are often broad and flat. The tail grows as a comet approaches the Sun and are always directed away from the Sun: they can be as much as a hundred million kilometres long. Large dust particles become strewn along the comet's orbit and form meteor streams. Shown here are images taken using the ING telescopes. The morphological features explained above are clearly visible.

*Credit: The European Comet Hale-Bopp Team.*

*1995 - 1997*