No two comets ever look identical, but they have basic features in common, one of the most obvious of which is a coma.

A coma looks like a misty, patch of light with one or more tails often streaming from it in the direction away from the Sun.

At the heart of a comet's coma lies a nucleus of solid material, typically no more than 10 kilometers across.

The visible coma is a huge cloud of gas and dust that has escaped from the nucleus, which it then surrounds like an extended atmosphere.

The coma can extend as far as a million kilometers outward from the nucleus.

Around the coma there is often an even larger invisible envelope of hydrogen gas.

The most graphic proof that the grand spectacle of a comet develops from a relatively small and inconspicuous chunk of ice and dust was the close-up image obtained in 1986 by the European Giotto probe of the nucleus of Halley's Comet.

It turned out to be a bit like a very dark asteroid, measuring 16 by 8 kilometers.

Ices have evaporated from its outer layers to leave a crust of nearly black dust all over the surface.

Bright jets of gas from evaporating ice burst out on the side facing the Sun, where the surface gets heated up, carrying dust with them.

This is how the coma and the tails are created.

Comets grow tails only when they get warm enough for ice and dust to boil off.

As a comet's orbit brings it closer to the Sun, first the coma grows, then two distinct tails usually form.

One, the less common kind, contains electrically charged (i.e., ionized) atoms of gas, which are blown off directly in the direction away from the Sun by the magnetic field of the solar wind.

The other tail is made of neutral dust particles, which get gently pushed back by the pressure of the sunlight itself.

Unlike the ion tail, which is straight, the dust tail becomes curved as the particles follow their own orbits around the Sun.