



The Spot orbit is polar, circular, sun-synchronous and phased.

A polar orbit

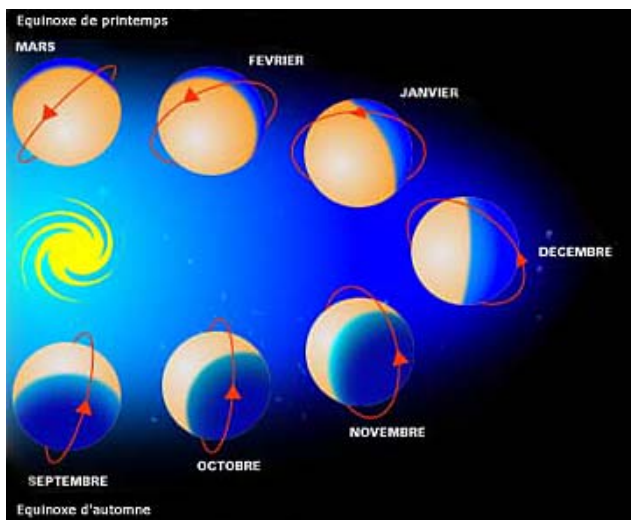
In conjunction with the rotation of the earth around the polar axis, the inclination of the orbital plane (98 degrees) allows the satellite to fly over any point of the earth during a 26-day cycle.

A circular orbit

- altitude: 832 km
- inclination: 98 degrees (i.e near-polar orbit)
- revolutions per day: $14 + 5/26$
- period: 101 minutes
- westward drift between successive ground tracks: 2823 km
- cycle duration: 26 days
- orbital revolutions per cycle: 369

If images of different locations are to be suitable for comparison, they must be acquired from the same altitude. Thus, the orbit must be circular, or have a constant altitude relative to the Earth's surface.

A sun-synchronous orbit



Because the valid comparison of images of a given location acquired on different dates depends on the similarity of the illumination conditions, the orbital plane must also form a constant angle relative to the sun direction. This is achieved by ensuring that the satellite over flies any given point at the same local time, which in turn requires that the orbit be sun-synchronous (descending node at 10:30 a.m).

Phased orbit

Every 26 days, each Spot satellite flies over the same points on the ground. During this period of time, it will make an integer number of revolutions (369) following one complete track cycle (the satellite performs $14 + 5/26$ revolutions per day). The same pattern is then repeated over and over. The orbit is said to be "phased".

To ensure that the satellite covers every point on the earth's surface during the cycle, HRV (High Visible Resolution) and HRG (High Geometric Resolution) imaging instruments offer a combined field-of-view that is wider than the greatest distance between two adjacent tracks. The inter-track distance is 108 km at most (on the equator) and the total field covered by the two instruments when viewing almost vertically below the satellite is 117 km.

The Earth can therefore be completely covered in a 26-day cycle.