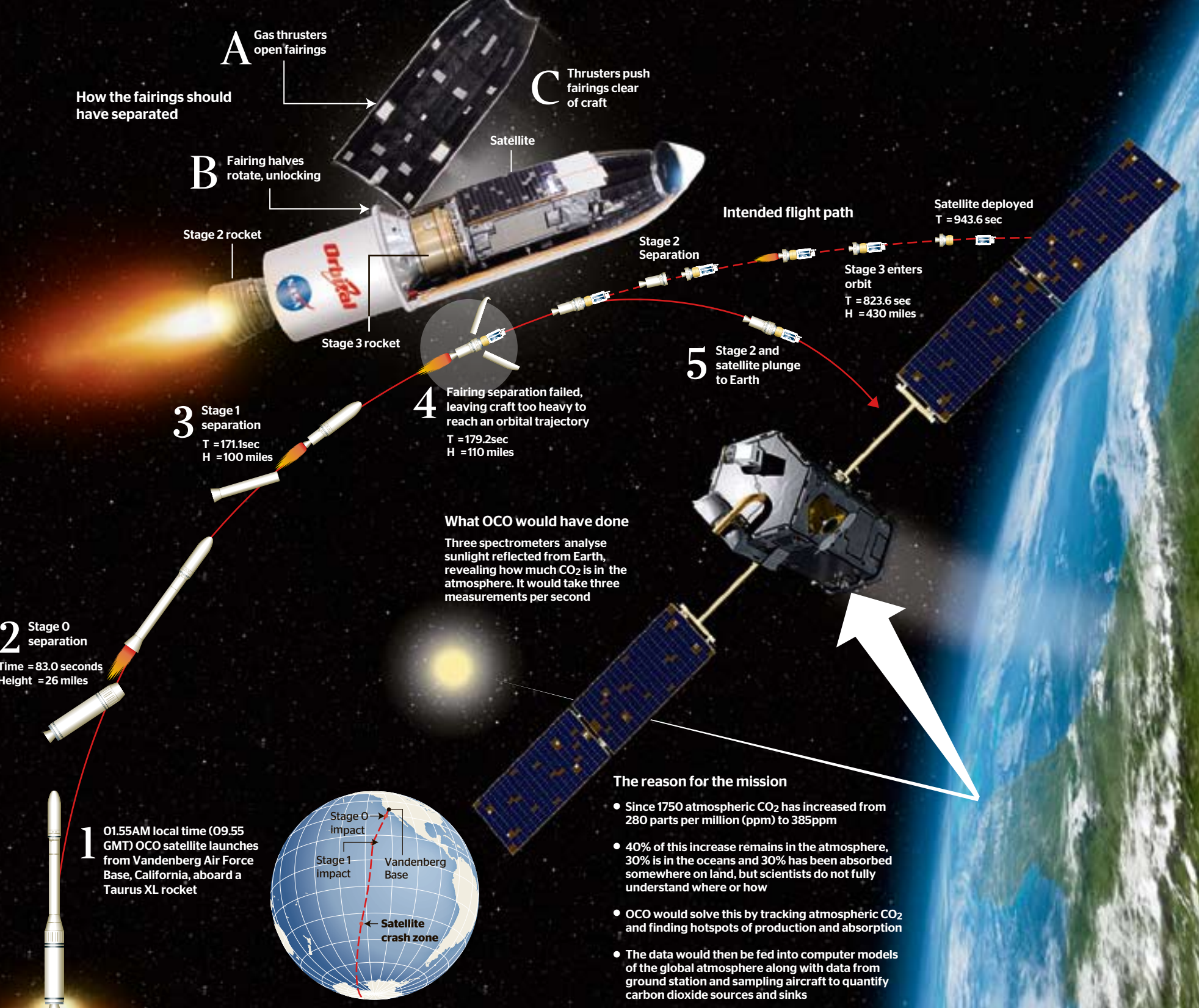


# Orbiting Carbon Observatory (OCO) mission



How the fairings should have separated

**A** Gas thrusters open fairings

**C** Thrusters push fairings clear of craft

**B** Fairing halves rotate, unlocking

Stage 2 rocket

Stage 3 rocket

Satellite

Intended flight path

Satellite deployed  
T = 943.6 sec

Stage 2 Separation

Stage 3 enters orbit  
T = 823.6 sec  
H = 430 miles

**3** Stage 1 separation  
T = 171.1sec  
H = 100 miles

**4** Fairing separation failed, leaving craft too heavy to reach an orbital trajectory  
T = 179.2sec  
H = 110 miles

**5** Stage 2 and satellite plunge to Earth

**2** Stage 0 separation  
Time = 83.0 seconds  
Height = 26 miles

**What OCO would have done**  
Three spectrometers analyse sunlight reflected from Earth, revealing how much CO<sub>2</sub> is in the atmosphere. It would take three measurements per second

### The reason for the mission

- Since 1750 atmospheric CO<sub>2</sub> has increased from 280 parts per million (ppm) to 385ppm
- 40% of this increase remains in the atmosphere, 30% is in the oceans and 30% has been absorbed somewhere on land, but scientists do not fully understand where or how
- OCO would solve this by tracking atmospheric CO<sub>2</sub> and finding hotspots of production and absorption
- The data would then be fed into computer models of the global atmosphere along with data from ground station and sampling aircraft to quantify carbon dioxide sources and sinks

**1** 01:55AM local time (09:55 GMT) OCO satellite launches from Vandenberg Air Force Base, California, aboard a Taurus XL rocket

