
Astronomy in the Classroom
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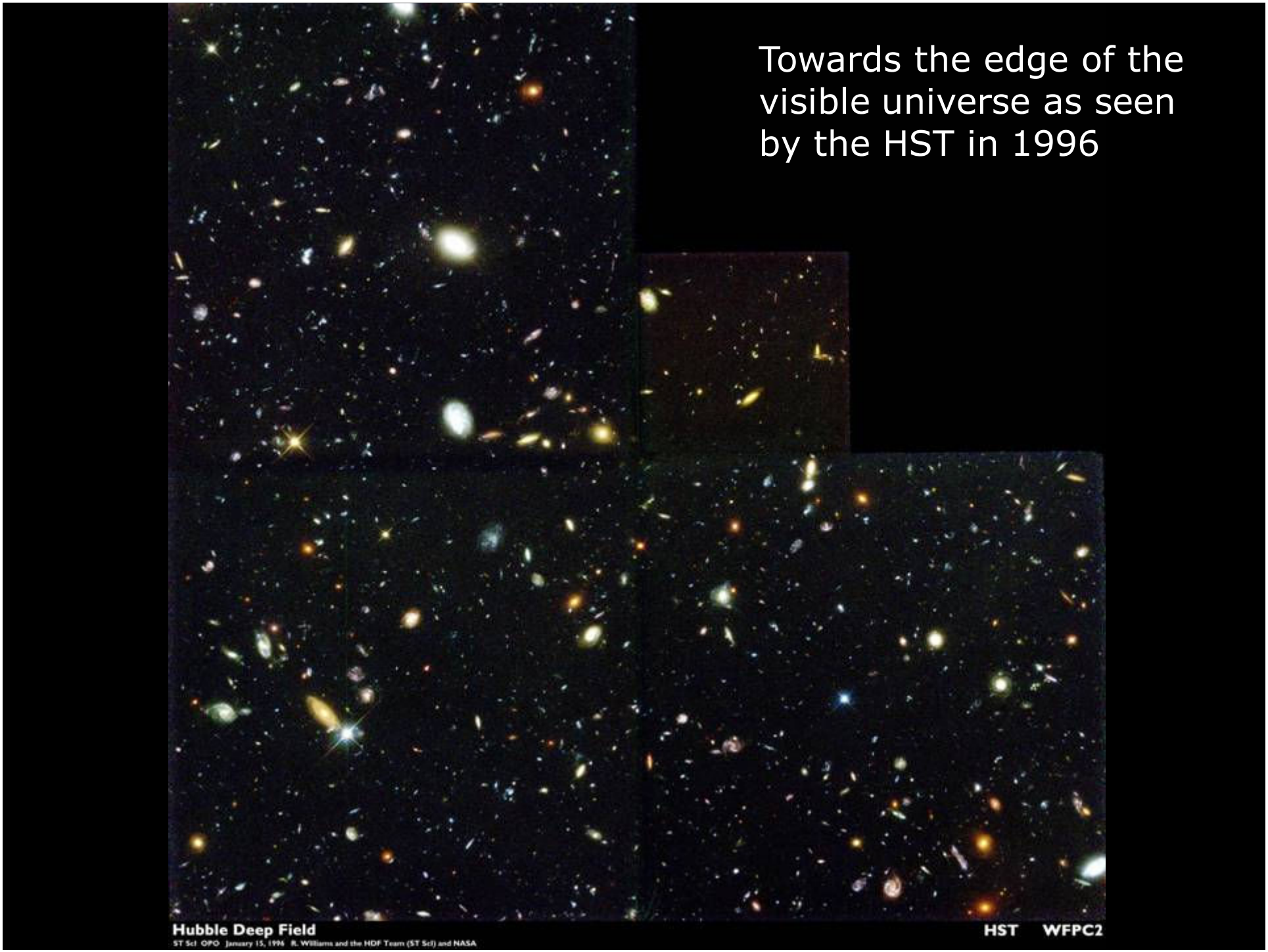
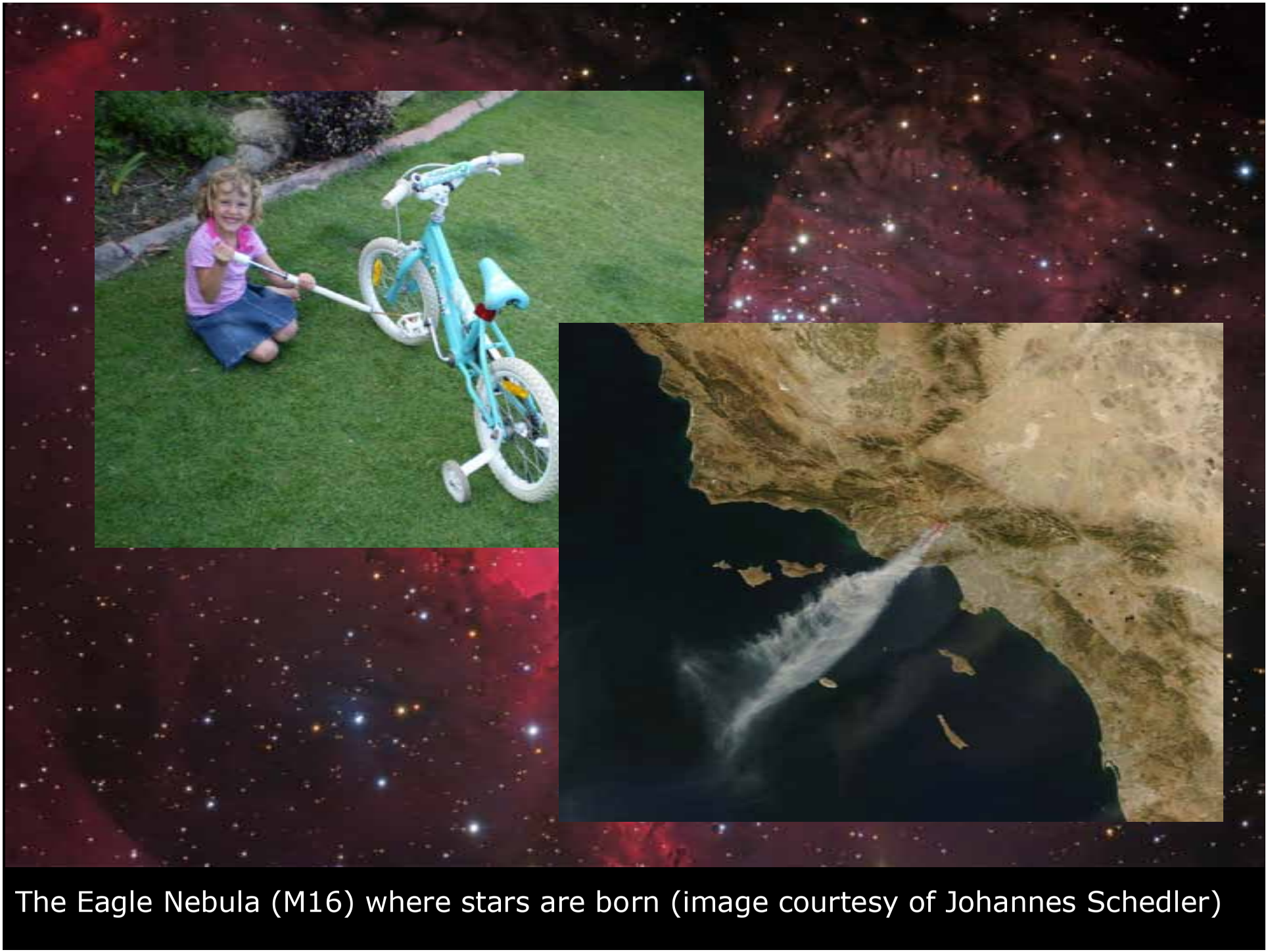

Towards the edge of the visible universe as seen by the HST in 1996
Hubble Deep Field
ST ScI OPO January 15, 1996 R. Williams and the HDF Team (ST ScI) and NASA
HST WFPC2

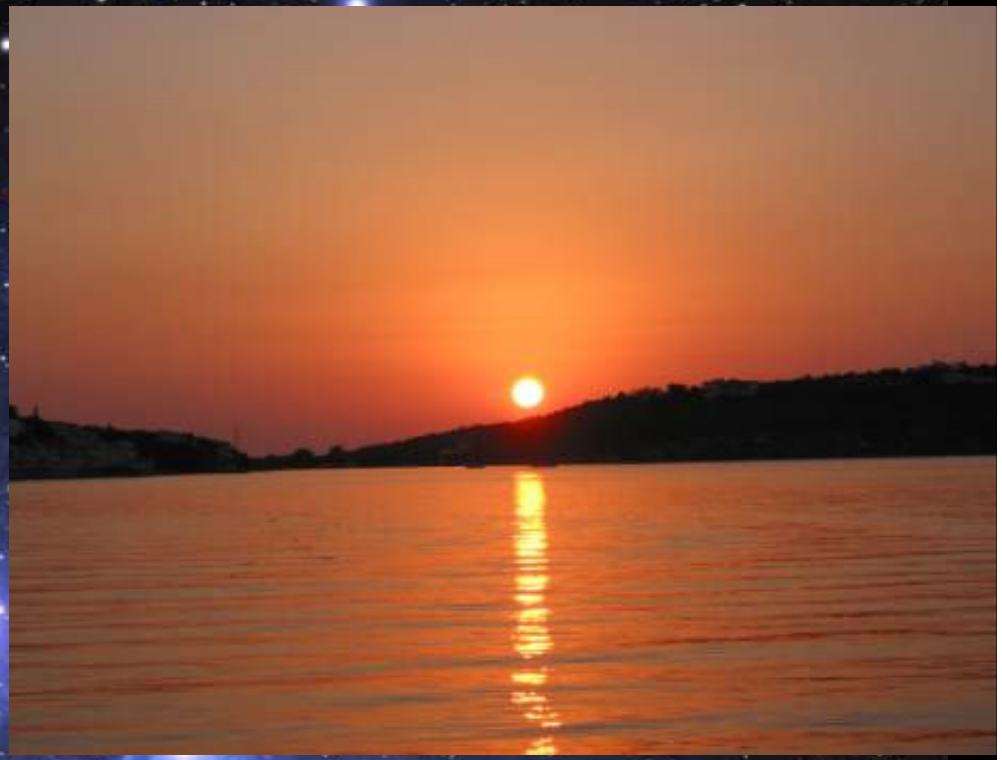
Andromeda galaxy – closest neighbour to the Milky Way - home to billions of stars - at a distance of over 2 million light years this is the furthest object visible to the naked eye

There are more stars in the visible universe than grains of sand on all the beaches and deserts of the earth combined!



The Eagle Nebula (M16) where stars are born (image courtesy of Johannes Schedler)

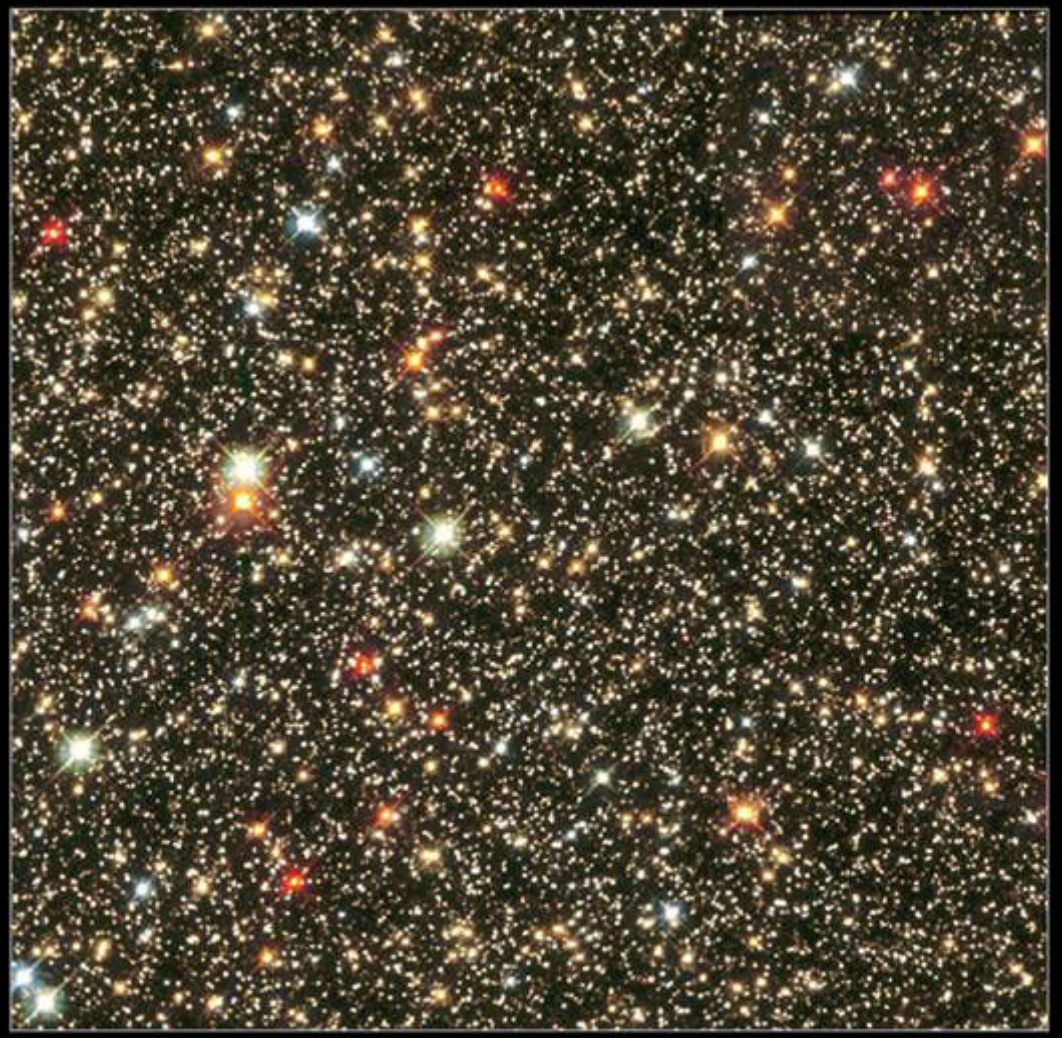
Pleiades Star Cluster



The Pleiades star cluster is blue for the same reason the sky is blue on Earth - scattered light. The Sun appears redder at sunrise and sunset because the light comes through a greater thickness of atmosphere and so is scattered more.

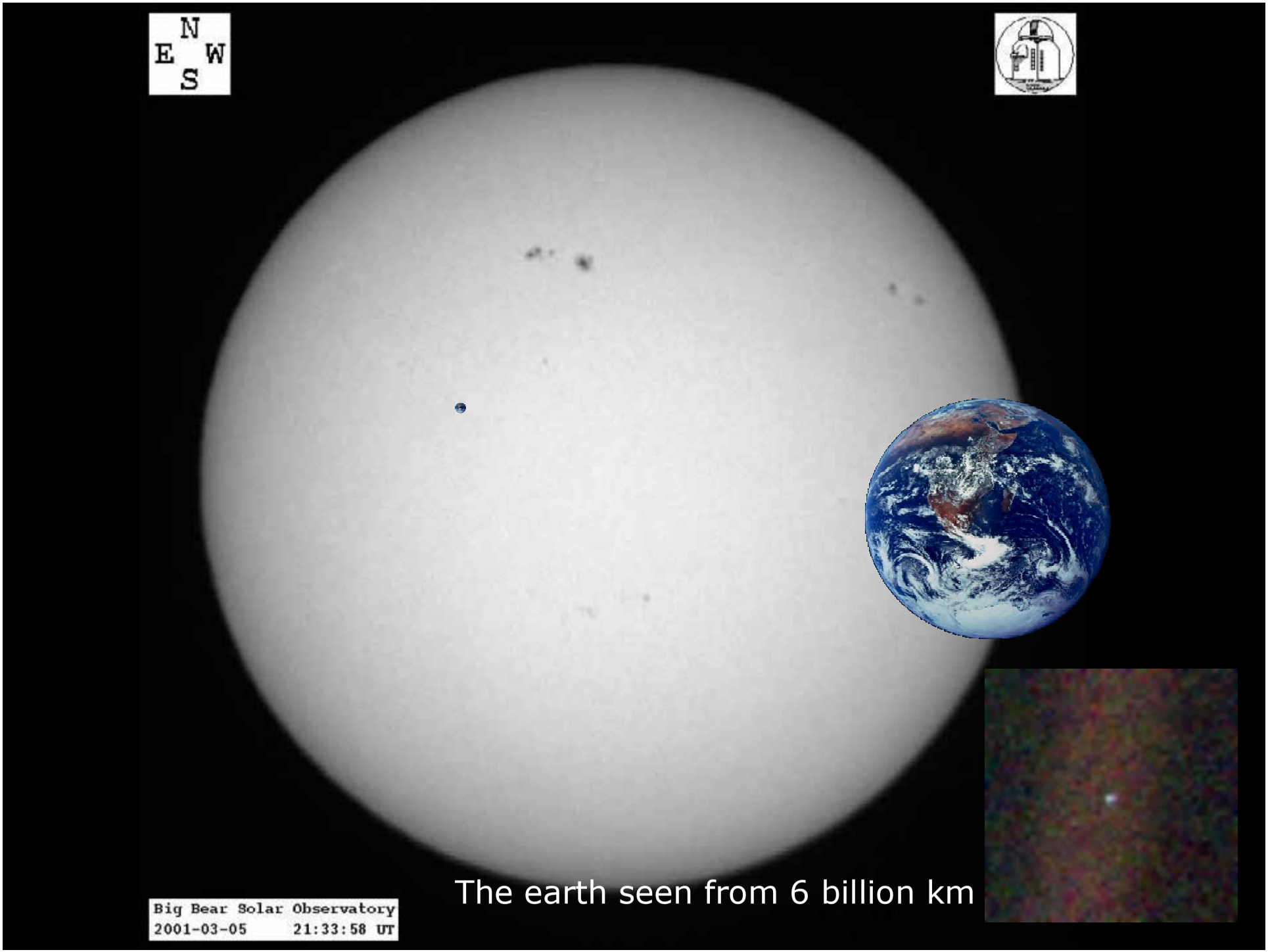
A key-hole view into the centre of our galaxy. Most of the centre of the Milky Way is obscured by dust, but this view was obtained by Hubble through a gap in the dust. The myriad colours indicates stars of different age and temperature.

Sagittarius Star Cloud



Hubble Heritage

PRC98-30 • Space Telescope Science Institute • Hubble Heritage Team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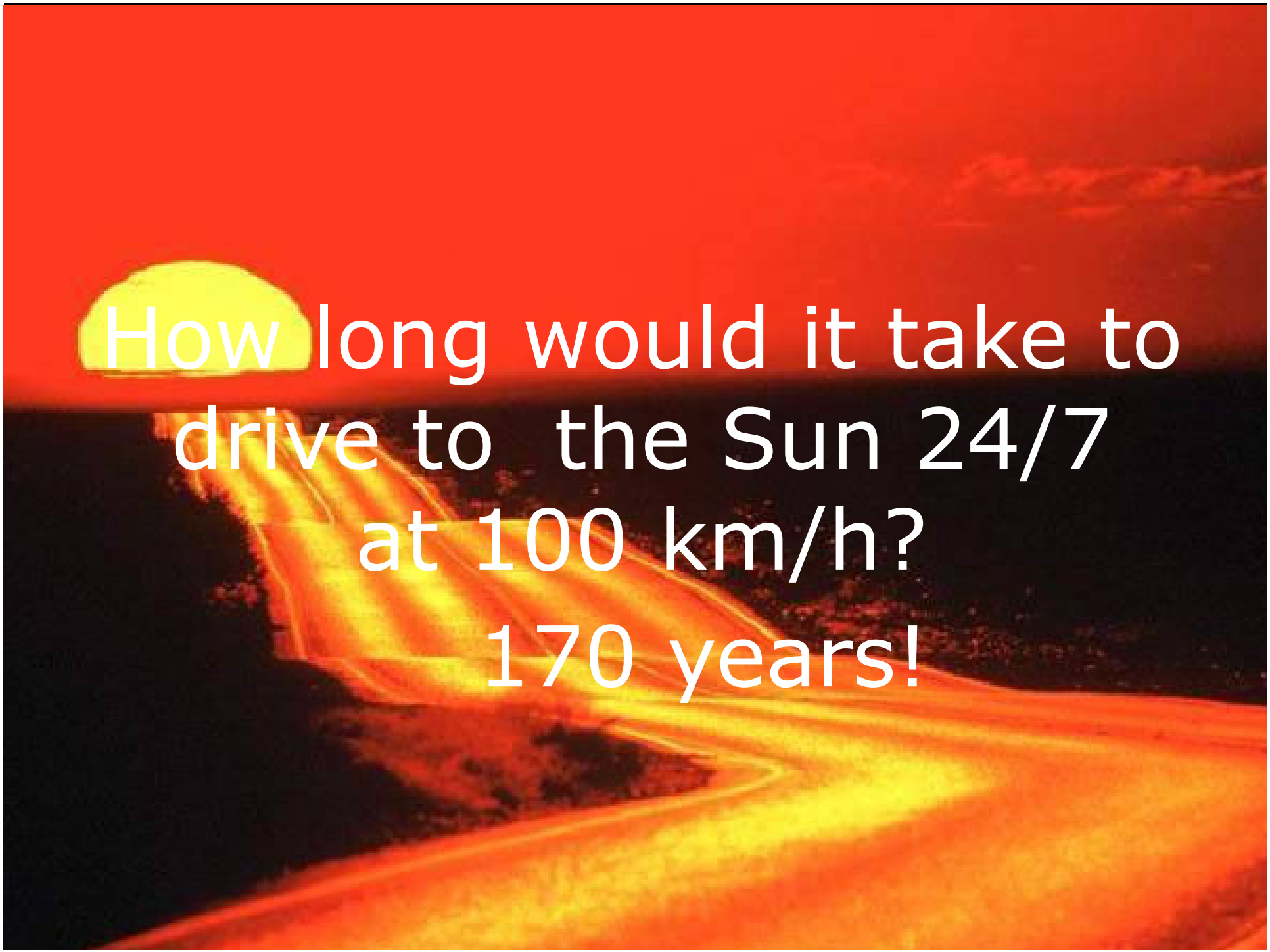
E W
S
Big Bear Solar Observatory
2001-03-05 21:33:58 UT
The earth seen from 6 billion km


How long would it take to
drive to the Sun 24/7
at 100 km/h?
170 years!

5800 K

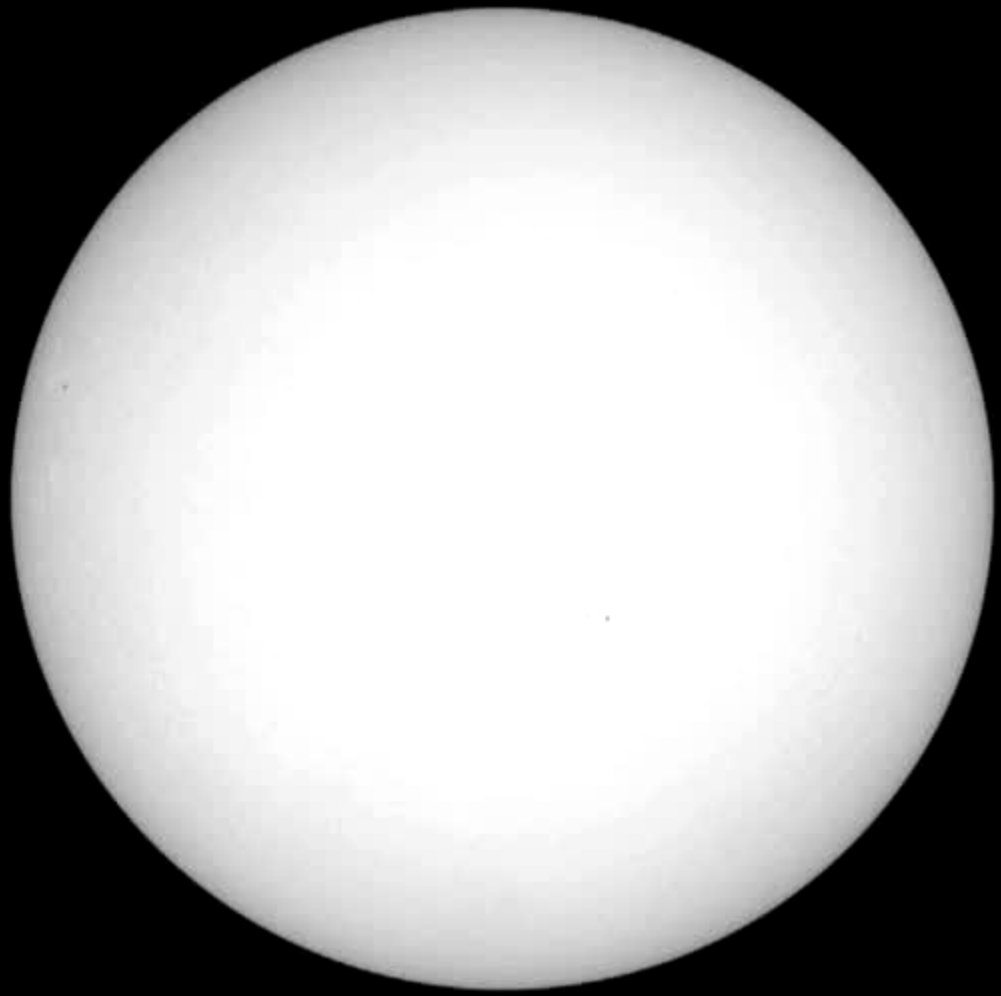
Spica – a blue giant star
23,000 K

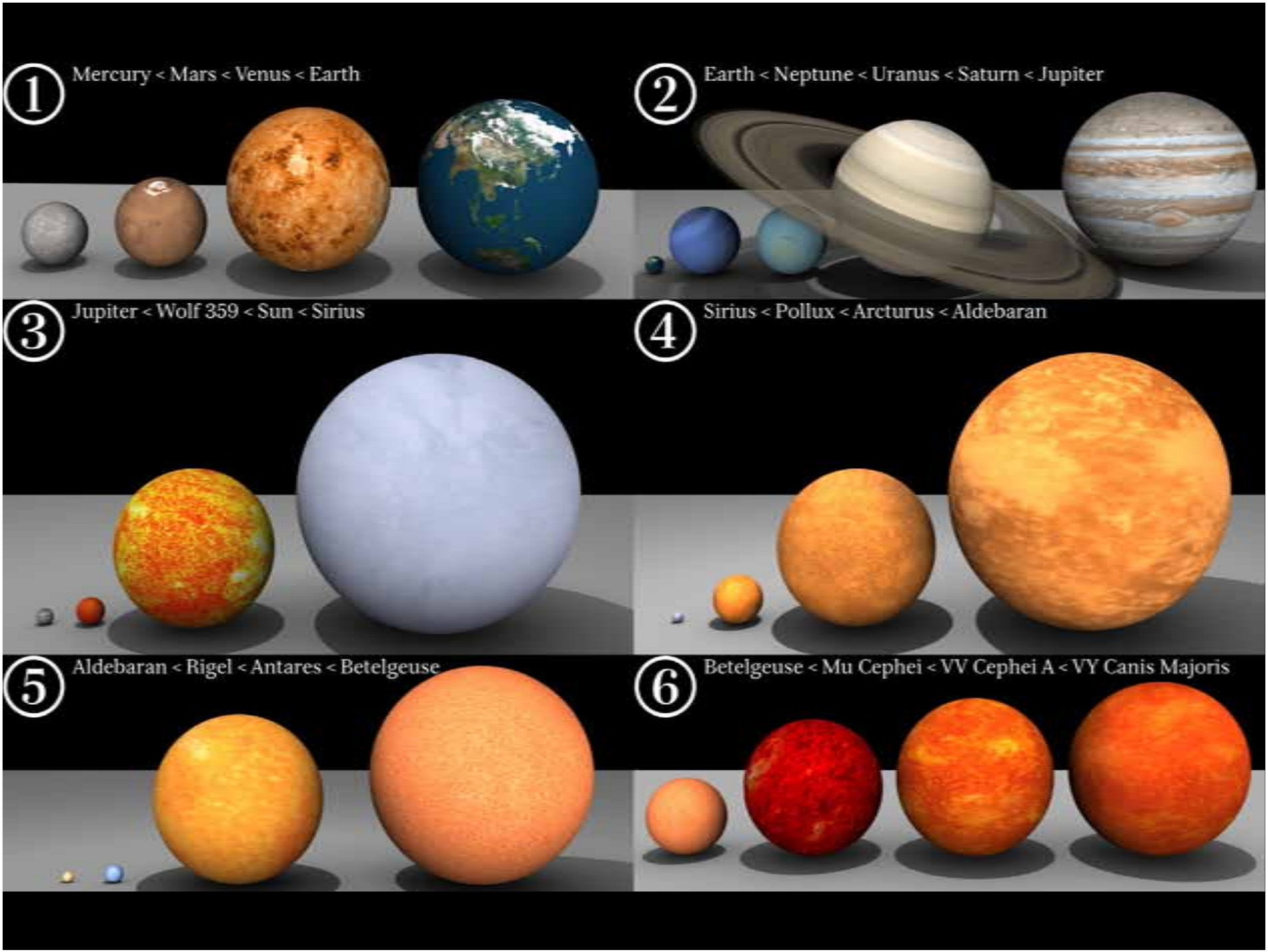
23,000 K

15 million K

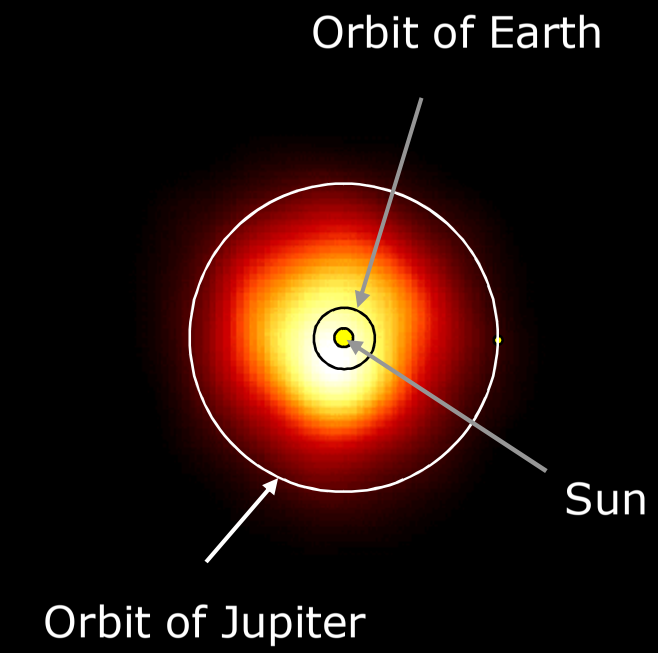
Tarong power station, Queensland
Power output = 1400 MW.
Tarong power station would have to run for 9 billion years to produce the same amount of energy that the sun produces every second!

Movies of the Sun taken by space telescopes




1
Mercury < Mars < Venus < Earth
2
Earth < Neptune < Uranus < Saturn < Jupiter
3
Jupiter < Wolf 359 < Sun < Sirius
4
Sirius < Pollux < Arcturus < Aldebaran
5
Aldebaran < Rigel < Antares < Betelgeuse
6
Betelgeuse < Mu Cephei < VV Cephei A < VY Canis Majoris

HST image of Betelgeuse, the brightest star in the constellation Orion, about



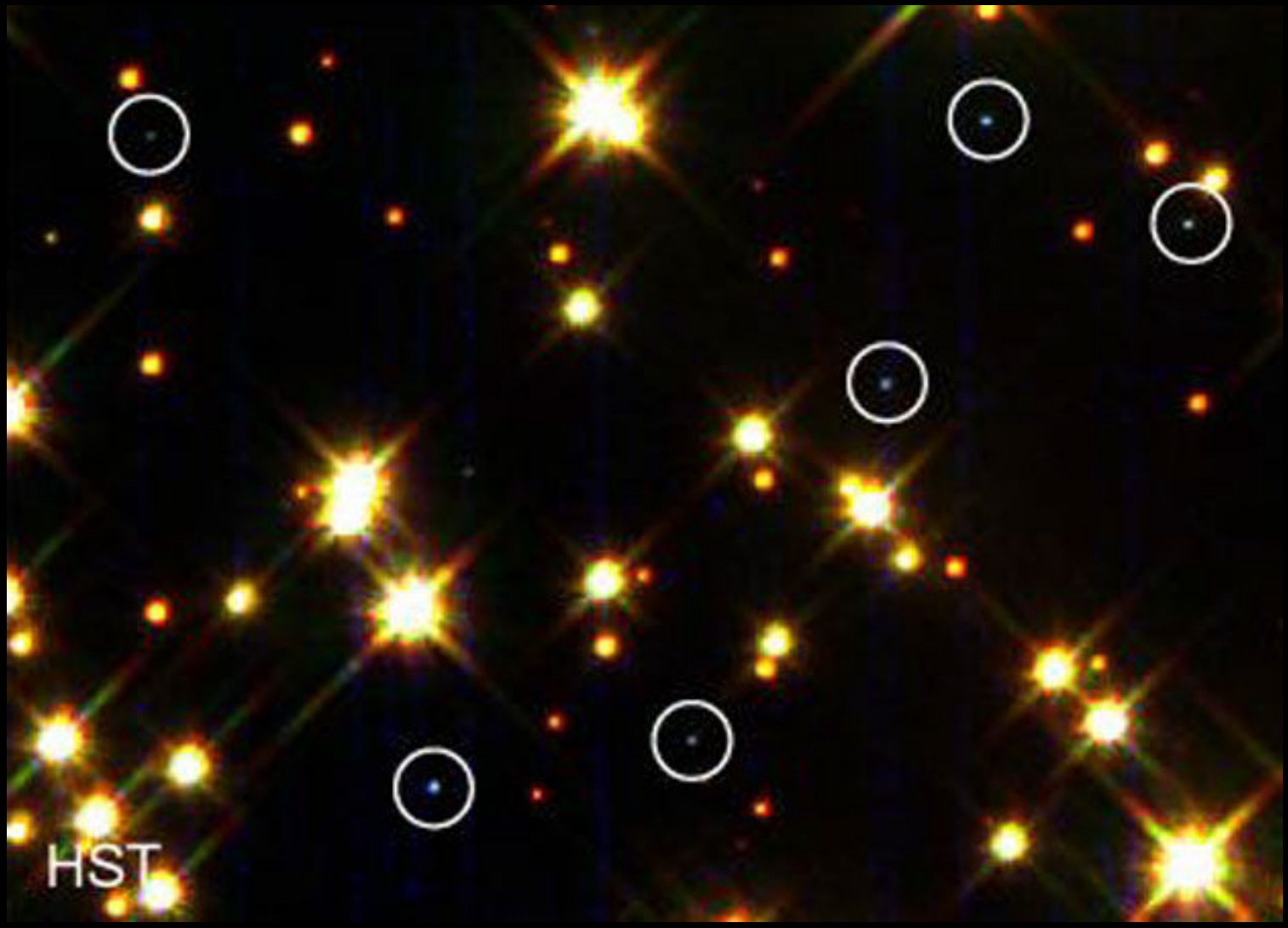
The red giant star Betelgeuse is so huge that our solar system out to Jupiter would fit inside the star!

The Eskimo nebula - a planetary nebular is made from material ejected from a red giant star leaving behind a white dwarf

Sirius A

Sirius B

Sirius B – a White Dwarf



White dwarfs photographed by the Hubble Space Telescope. When WDs cool the carbon in the centre turns into diamond - exactly as in ‘Twinkle, twinkle little star…’

A distant type Ia supernova explosion (SN1994D) in galaxy NGC4526 ~53 light years away from the Earth

Crab nebula in Taurus, remnant of a SN observed by the Chinese in 1054 AD. At the centre of this nebula lies a pulsar.

The lovely song of the pulsar

Parkes radio telescope, NSW, Australia

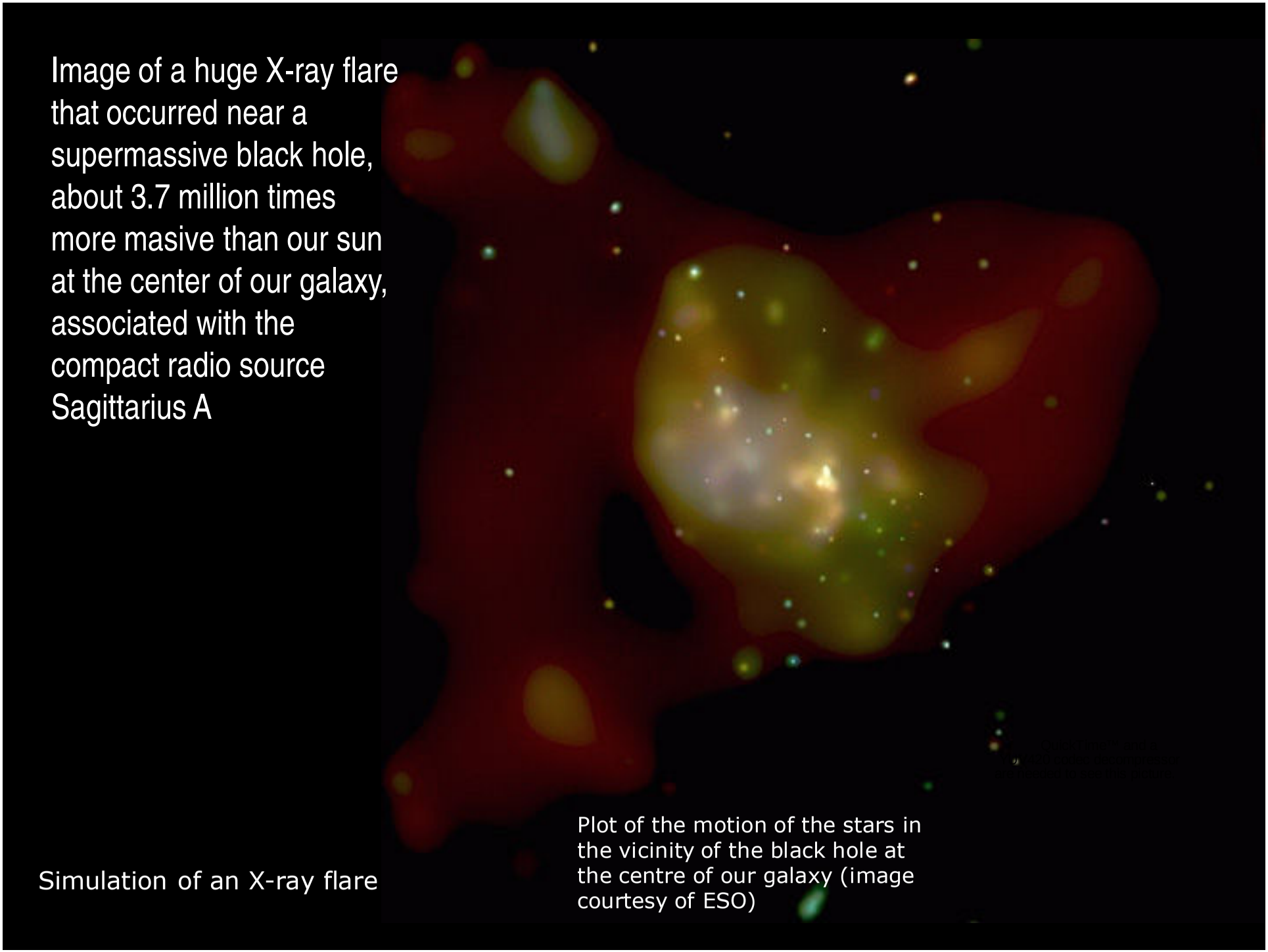
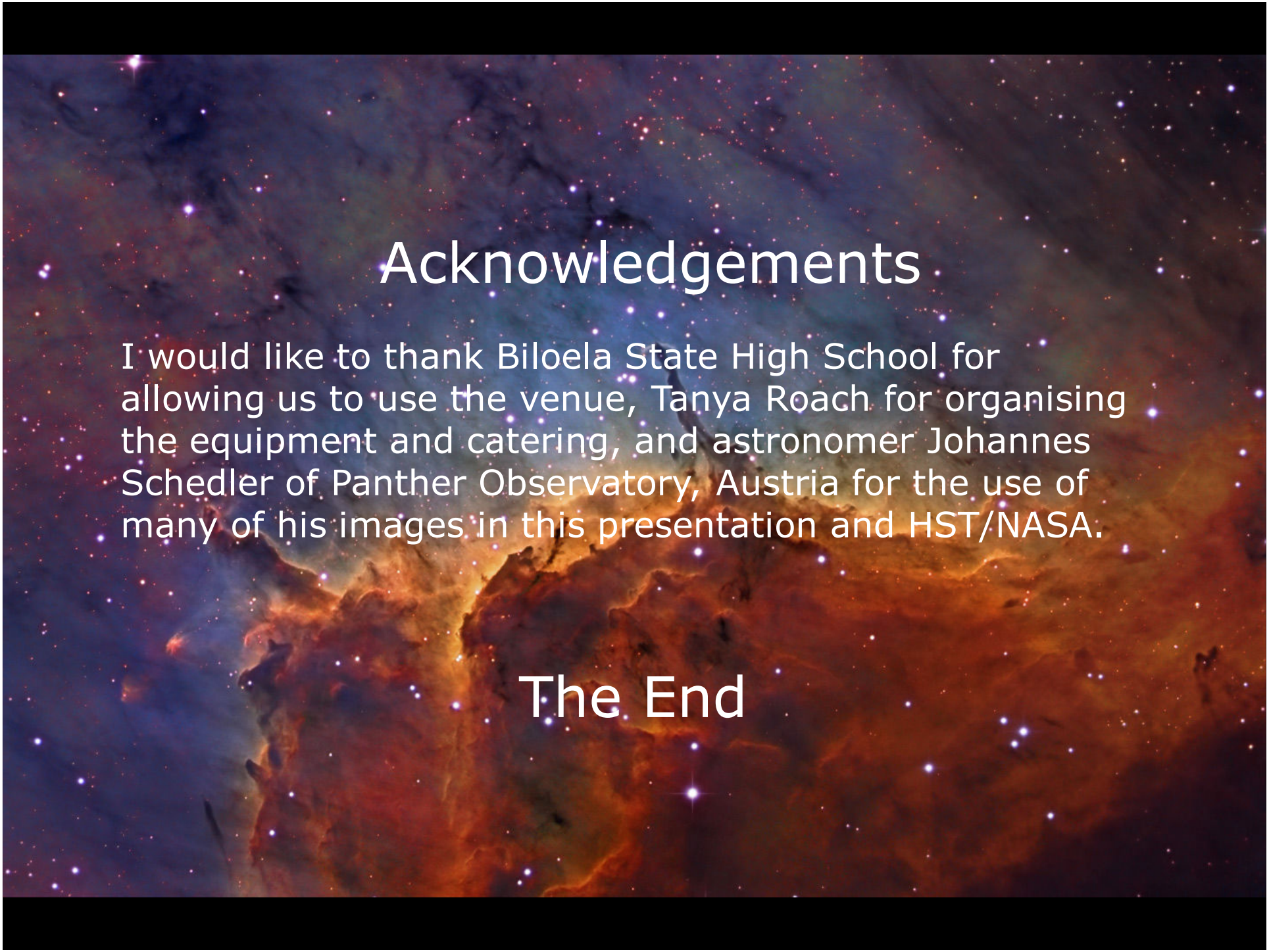


Image of a huge X-ray flare that occurred near a supermassive black hole, about 3.7 million times more masive than our sun at the center of our galaxy, associated with the compact radio source Sagittarius A

Simulation of an X-ray flare

Plot of the motion of the stars in the vicinity of the black hole at the centre of our galaxy (image courtesy of ESO)



Acknowledgements

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The End