

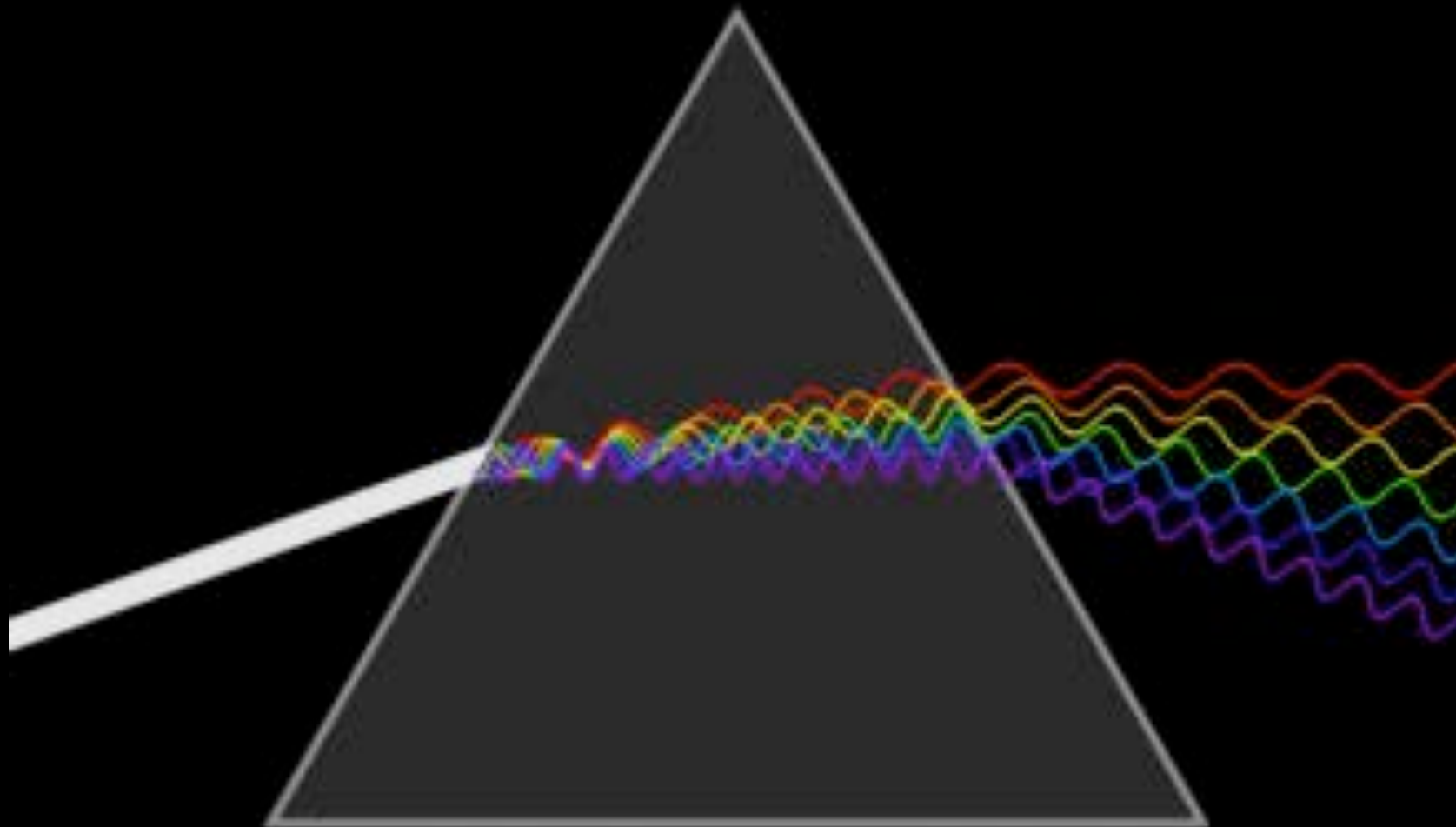
**Dos tipos de datos
astronómicos:
imágenes y espectros.**

Las láminas de la presentación están disponibles en

https://github.com/sundarjhu/UACJ_Jornada2021

Parte3y4_20210422.pdf

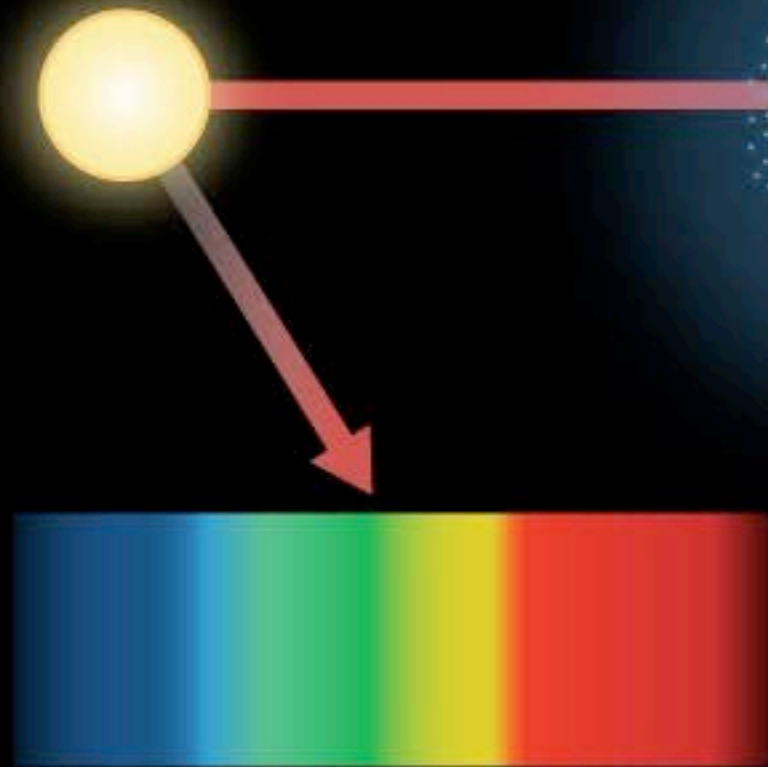
Espectro de luz.



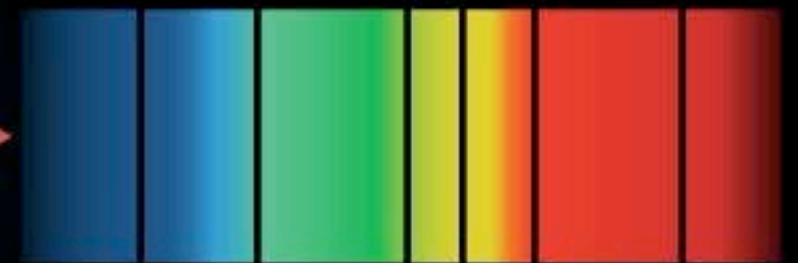
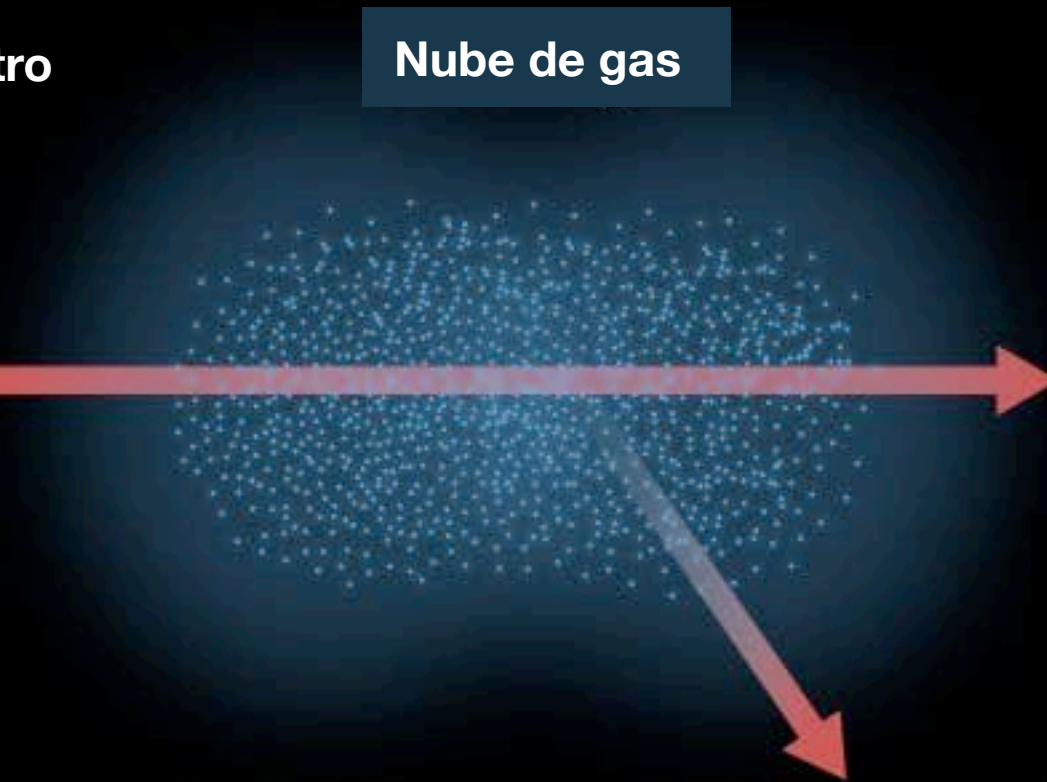
Tipos de espectros.

Fuente que emite un espectro continuo en todos los colores

Nube de gas



Espectro continuo

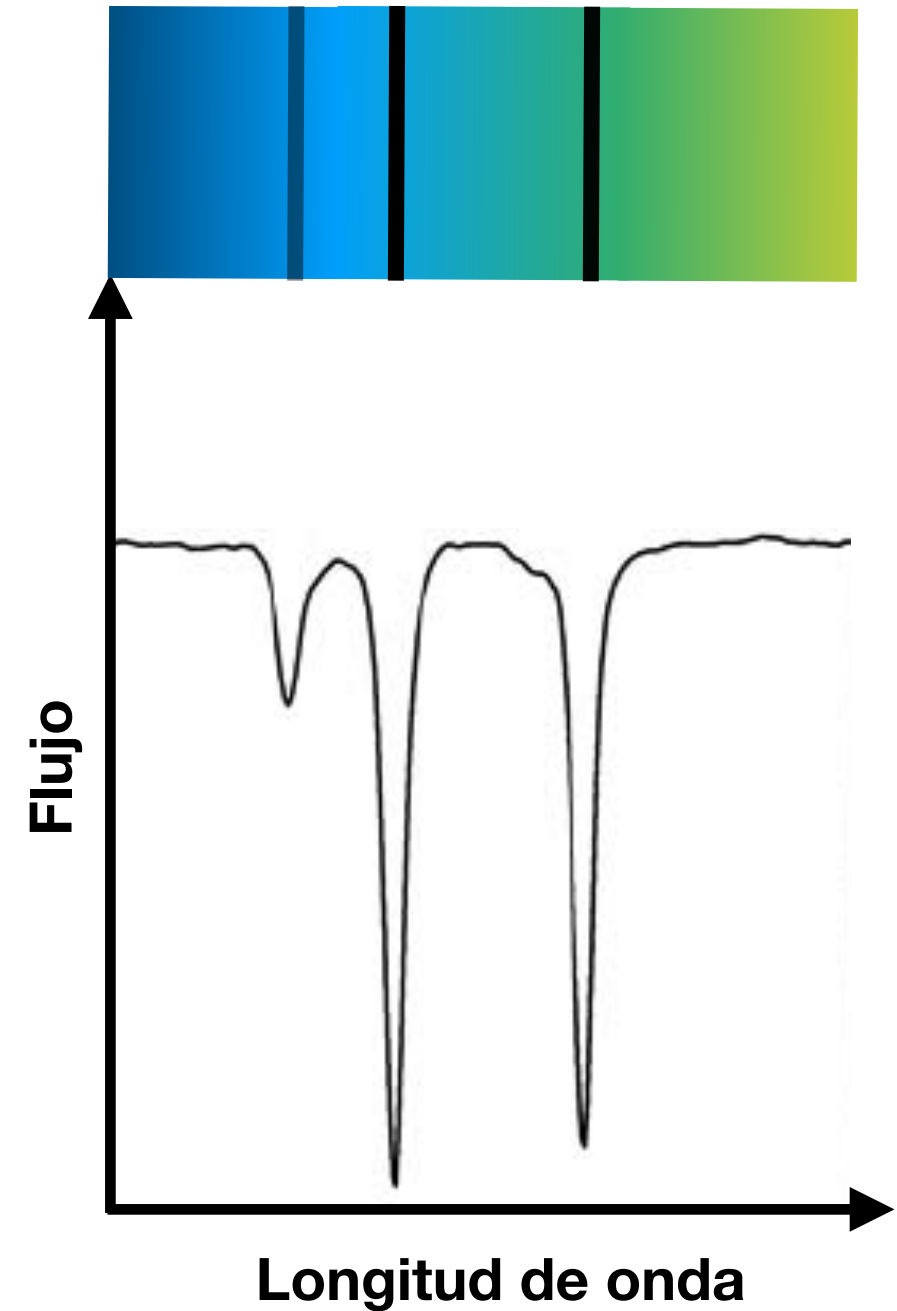
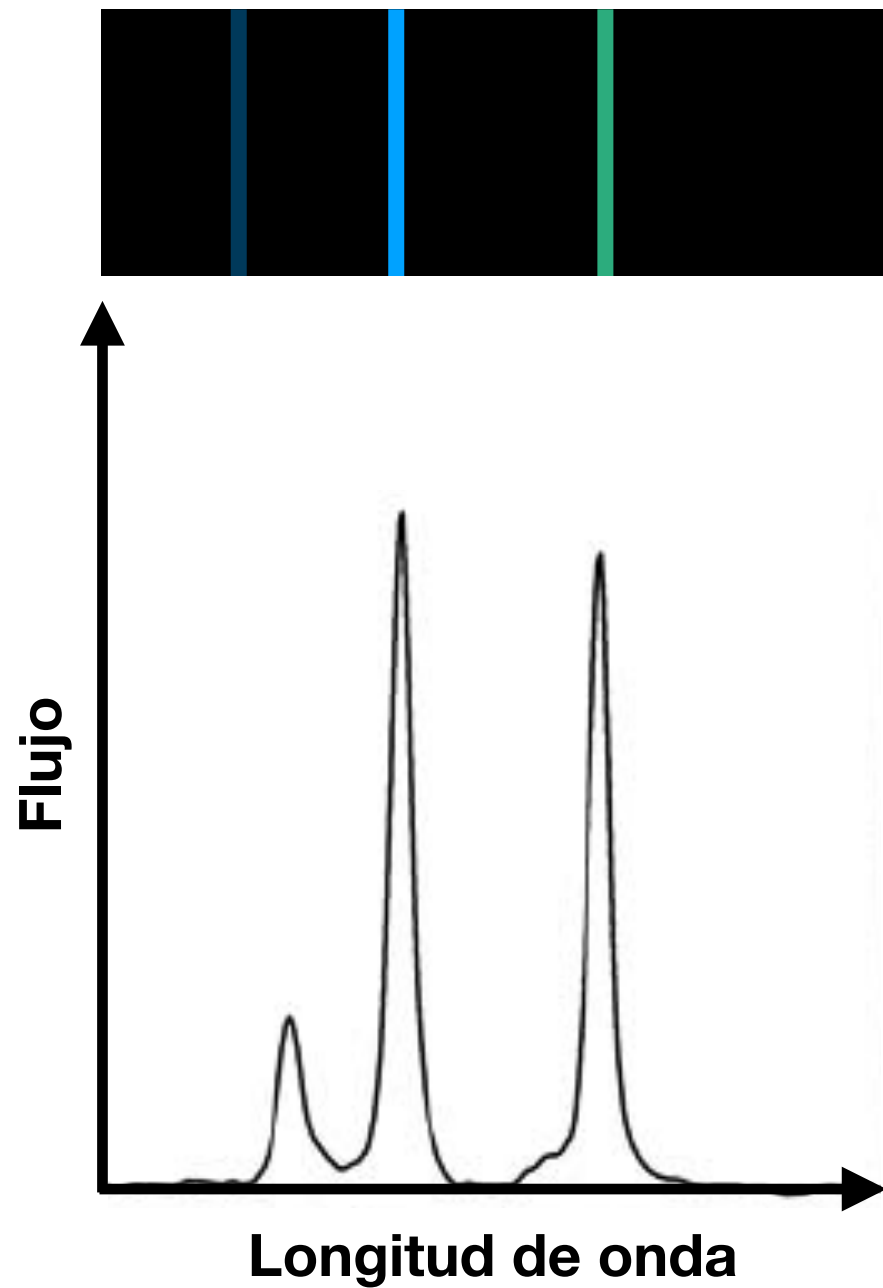


Espectro continuo con líneas oscuras

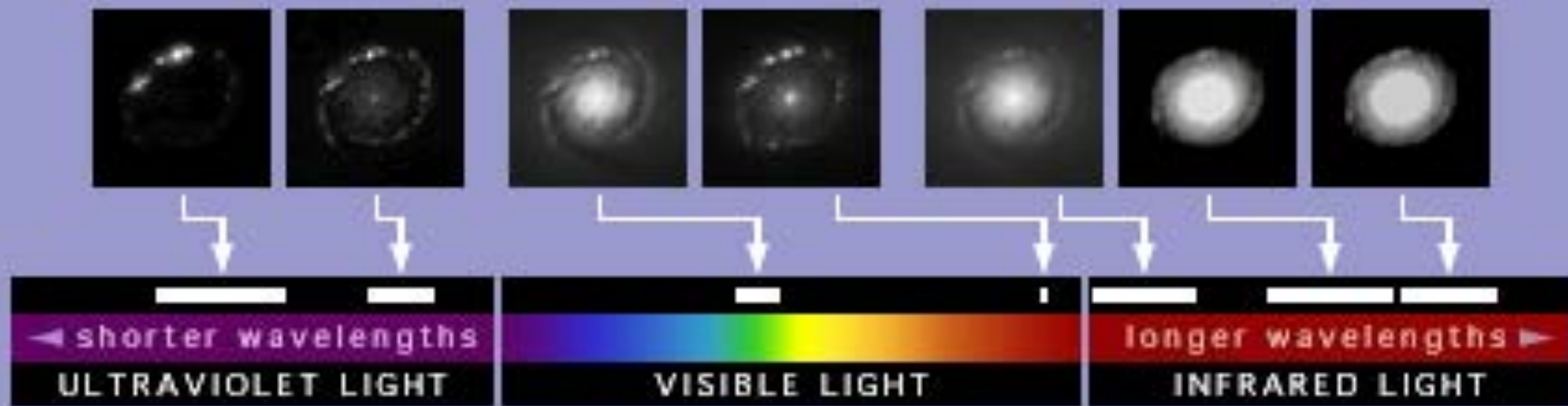


Espectro de líneas de brillantes.

Espectro de emisión y de absorción.



Filtros.



About Filters

Colored-Glass Window

A colored-glass window allows only its particular color of light to pass through — it filters out the other colors of the spectrum. Hubble's filters work the same way, allowing only a specific color of light to pass through.

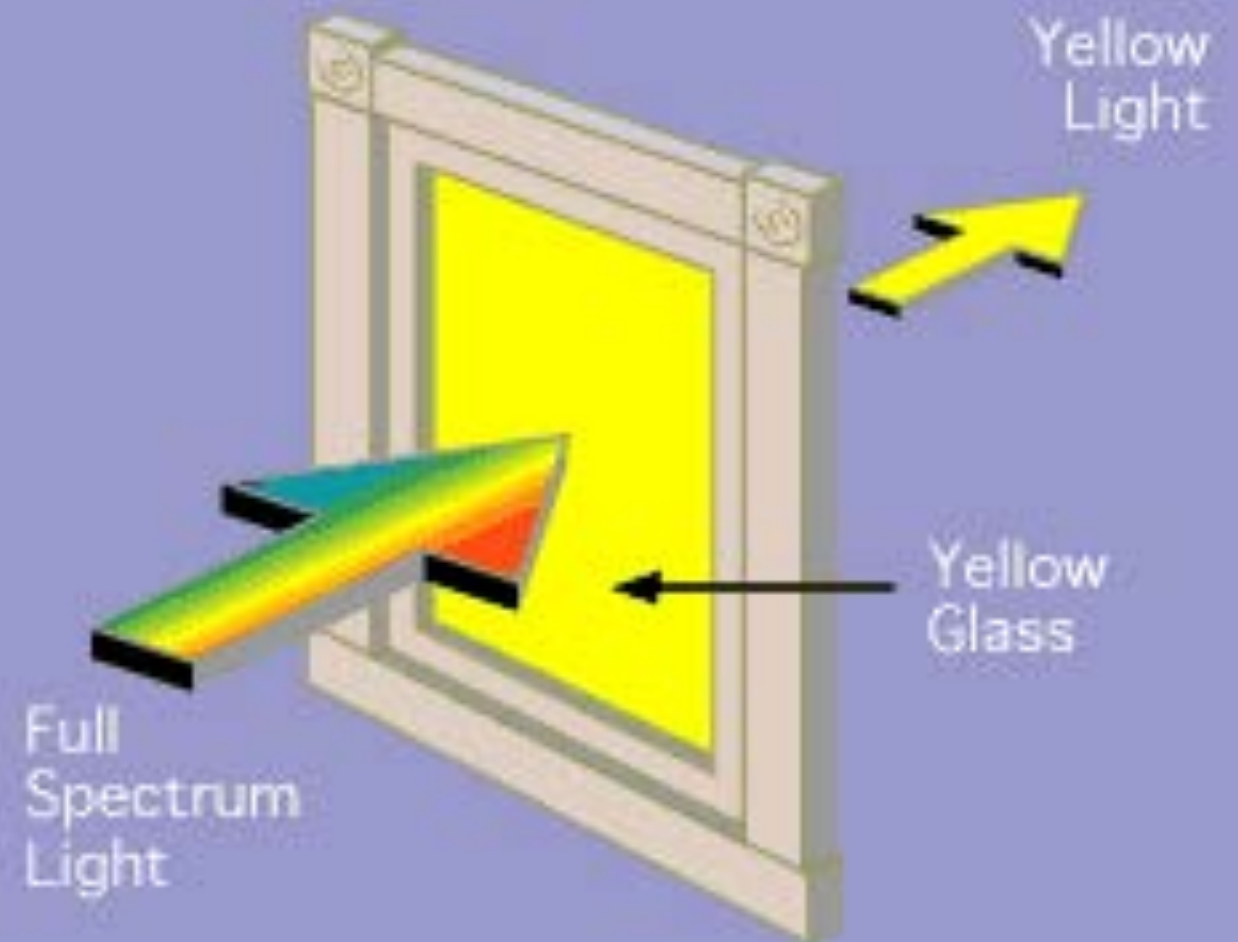
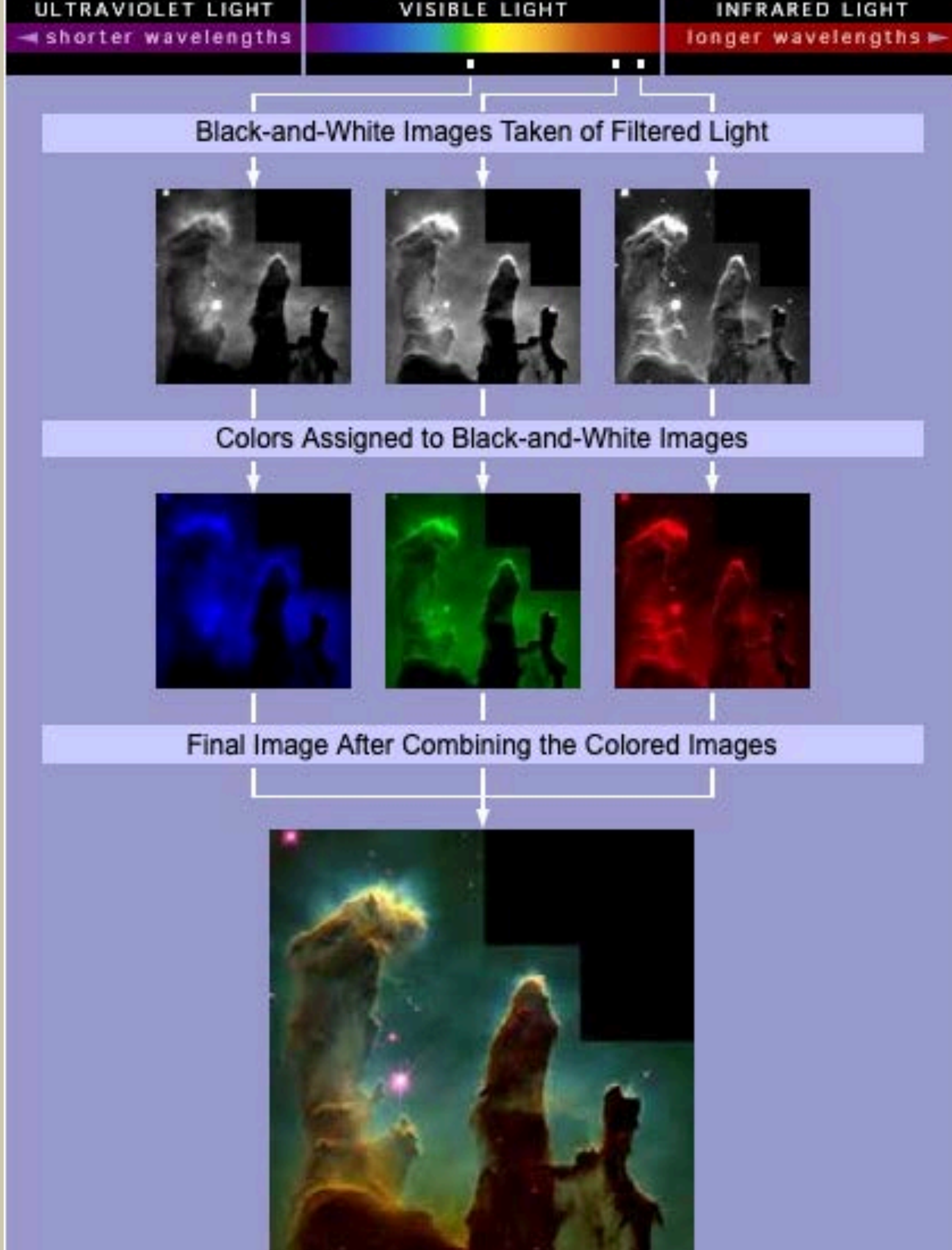


Imagen compuesta.



http://hubble.stsci.edu/gallery/behind_the_pictures/meaning_of_color/hubble.php

Hubble's Filters at Work

Click on each of the "Choose a Filter" buttons to see how galaxy NGC 1512 looks in seven different wavelength ranges.

CHOOSE A FILTER:

Ultraviolet 1

Ultraviolet 2

Green

Red

Infrared 1

Infrared 2

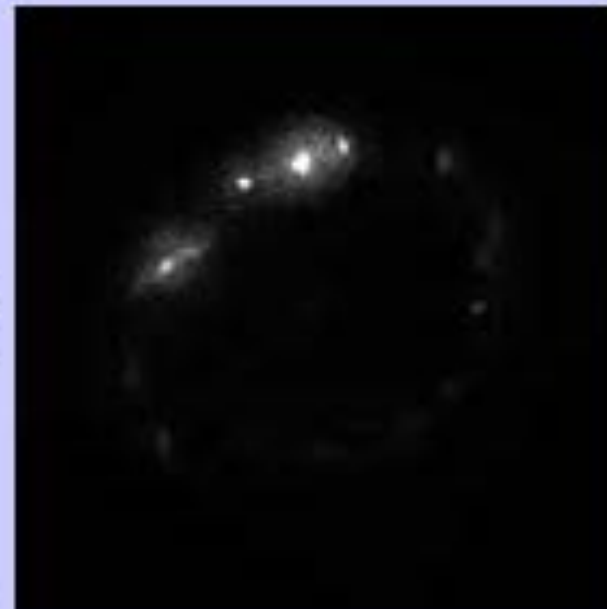
Infrared 3

ULTRAVIOLET FILTER 1



Full-Spectrum
Light

Ultraviolet
Light



Galaxy NGC
1512

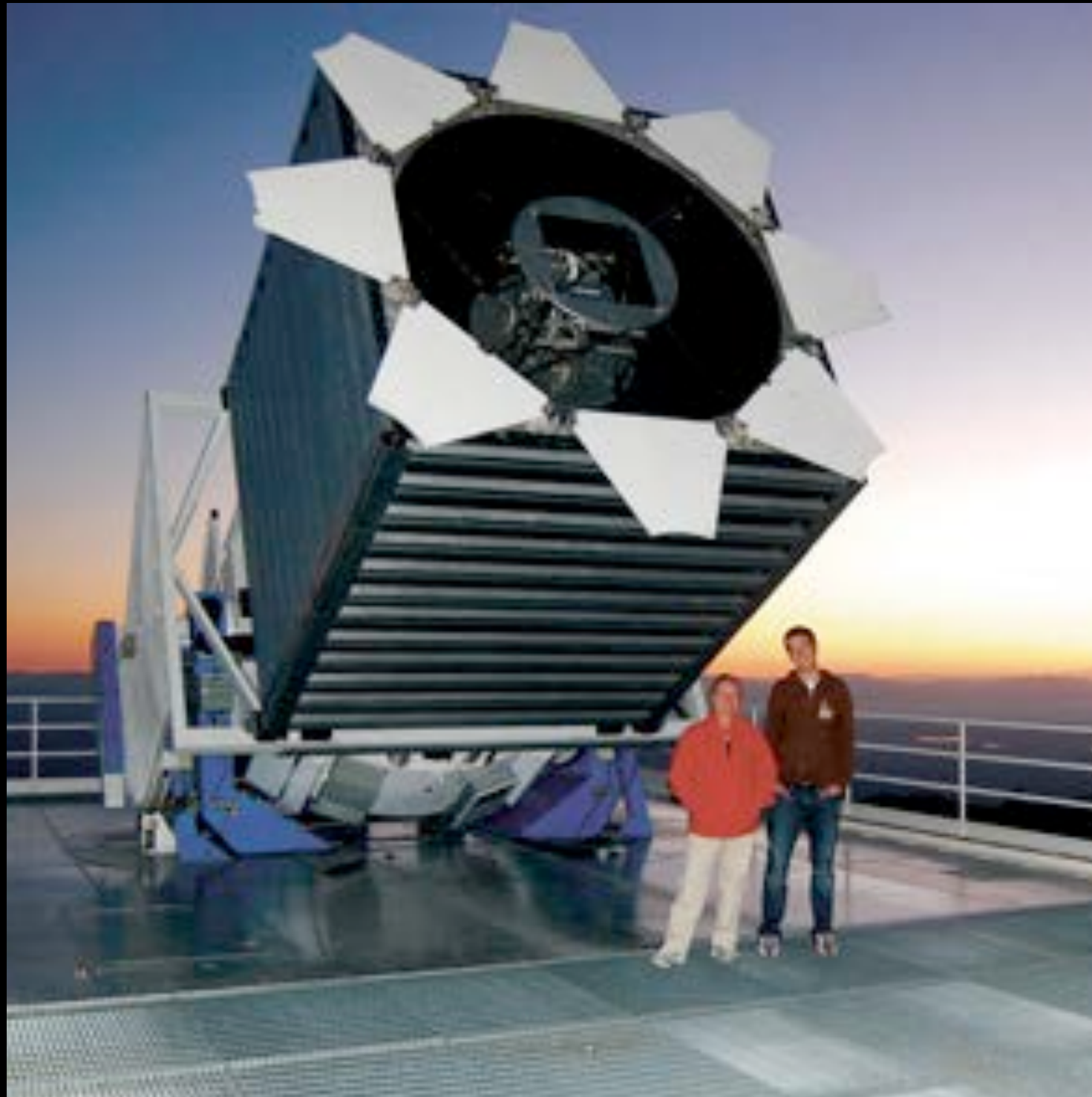
Filter range within the spectrum



Los telescopios e instrumentos empleados para obtener los datos.

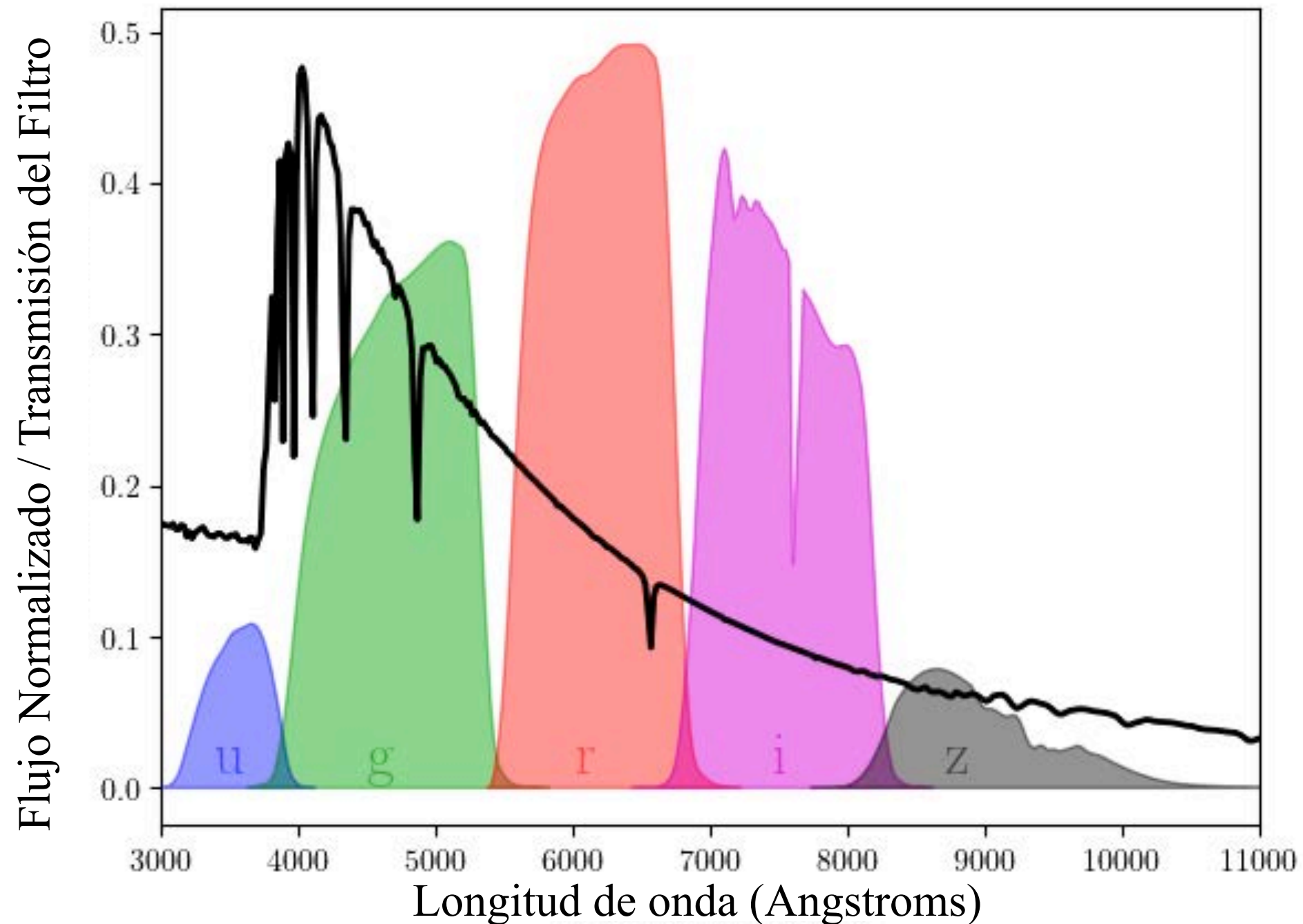
Se obtuvieron imágenes con el telescopio espacial Hubble y espectros con el telescopio terrestre del Sloan Digital Sky Survey.

**El telescopio de la Fundación Sloan en.
(Apache Point Observatory, Nuevo México, EUA, a 2800 m de altura)**



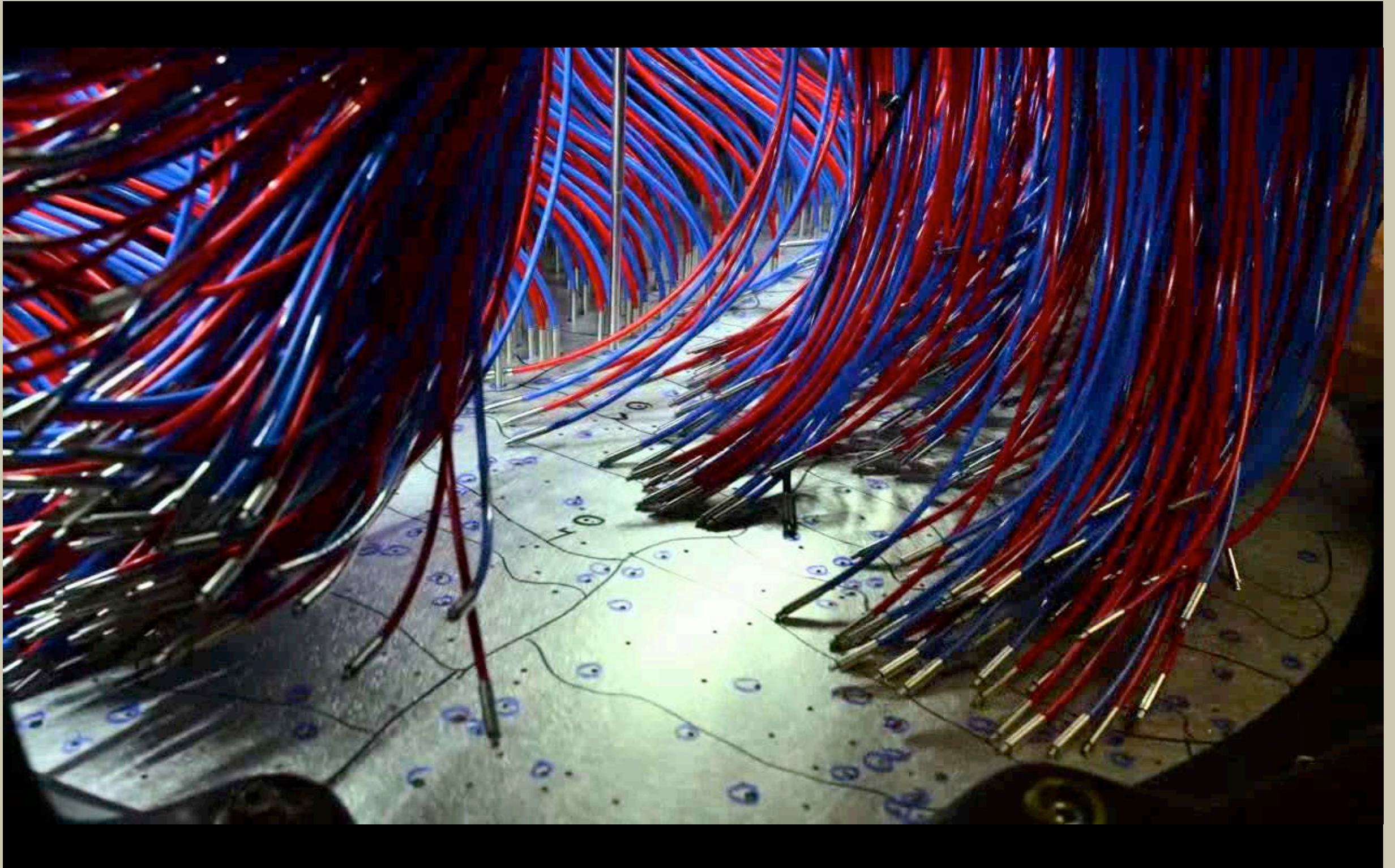
Tiene instrumentos para tomar imagenes y espectros.

Filtros de SDSS y Espectro de Referencia

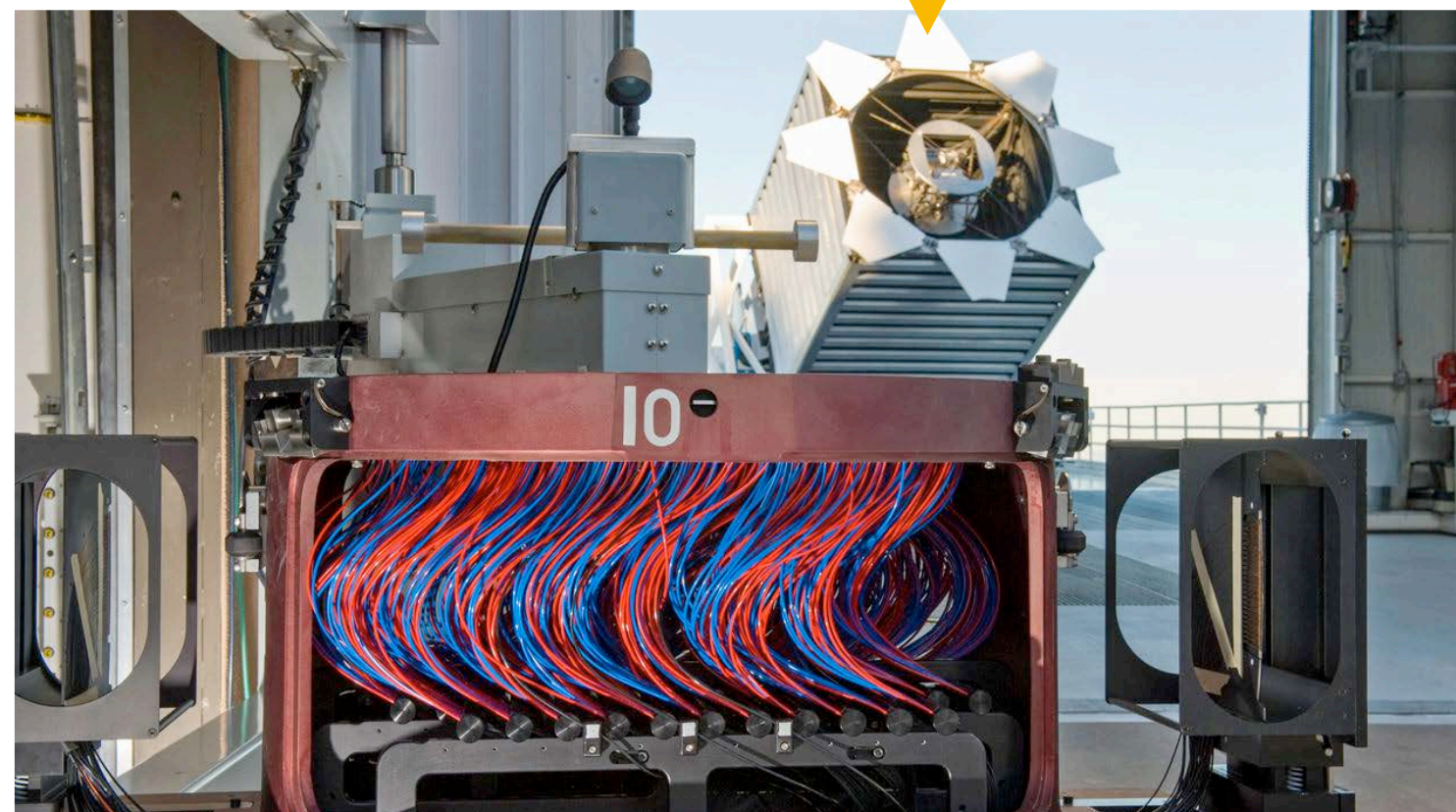


A circular astronomical chart, possibly a star map or a celestial globe, is displayed in a museum setting. The chart is circular and features a grid of lines representing celestial coordinates. It is populated with numerous small dots, likely representing stars. The chart is mounted on a stand and is surrounded by other exhibits, including a large cylindrical structure on the left and a large rectangular structure on the right. The chart is labeled with numbers and letters, and the background is a light-colored wall.

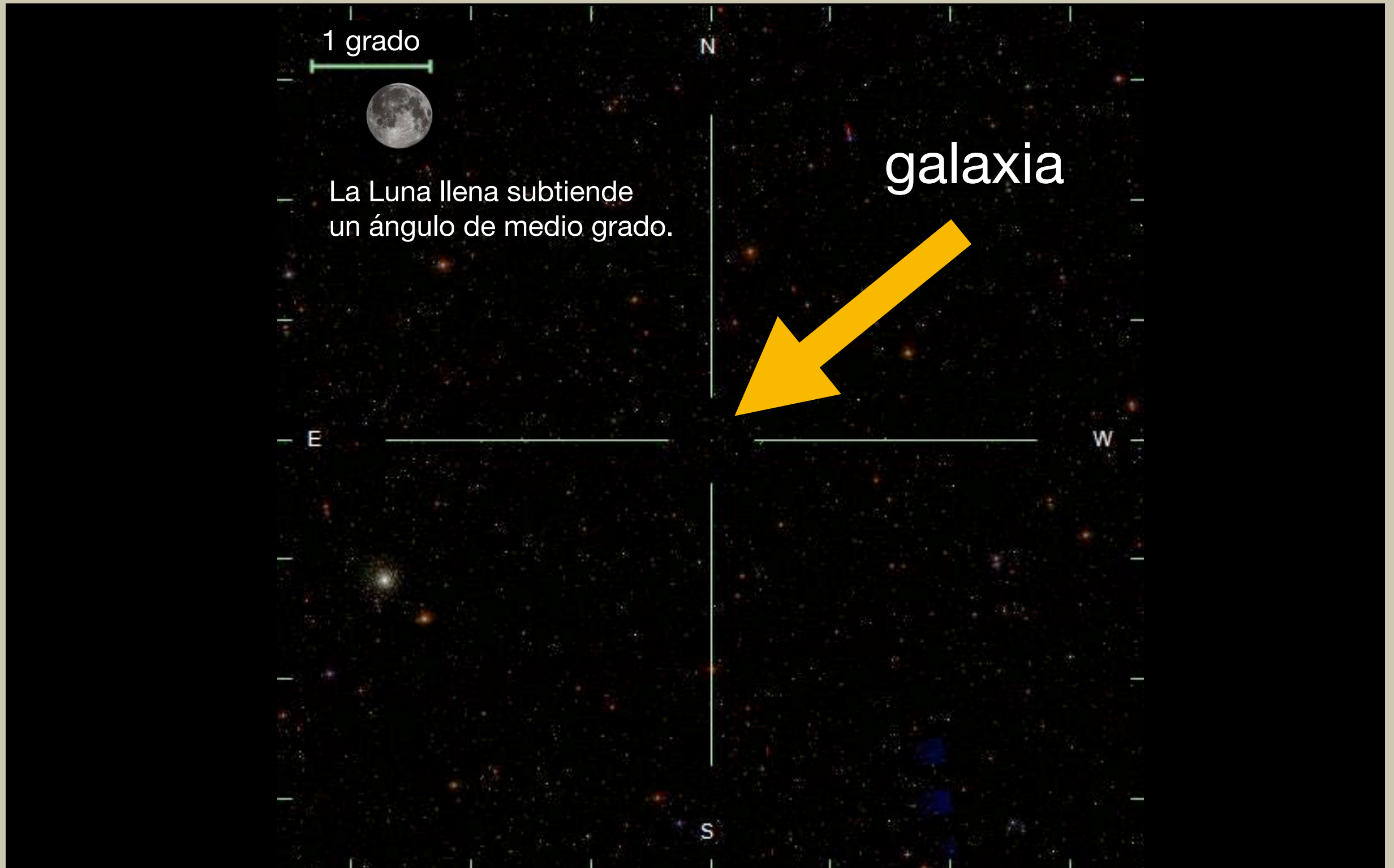
Una fibra óptica va conectada a cada agujero para llevar la luz del objeto al espectrógrafo.



Tiene un diámetro de 2.5 m



Tiene un campo de visión de 3° sin distorsión.



Magnificando una imagen del SDSS.

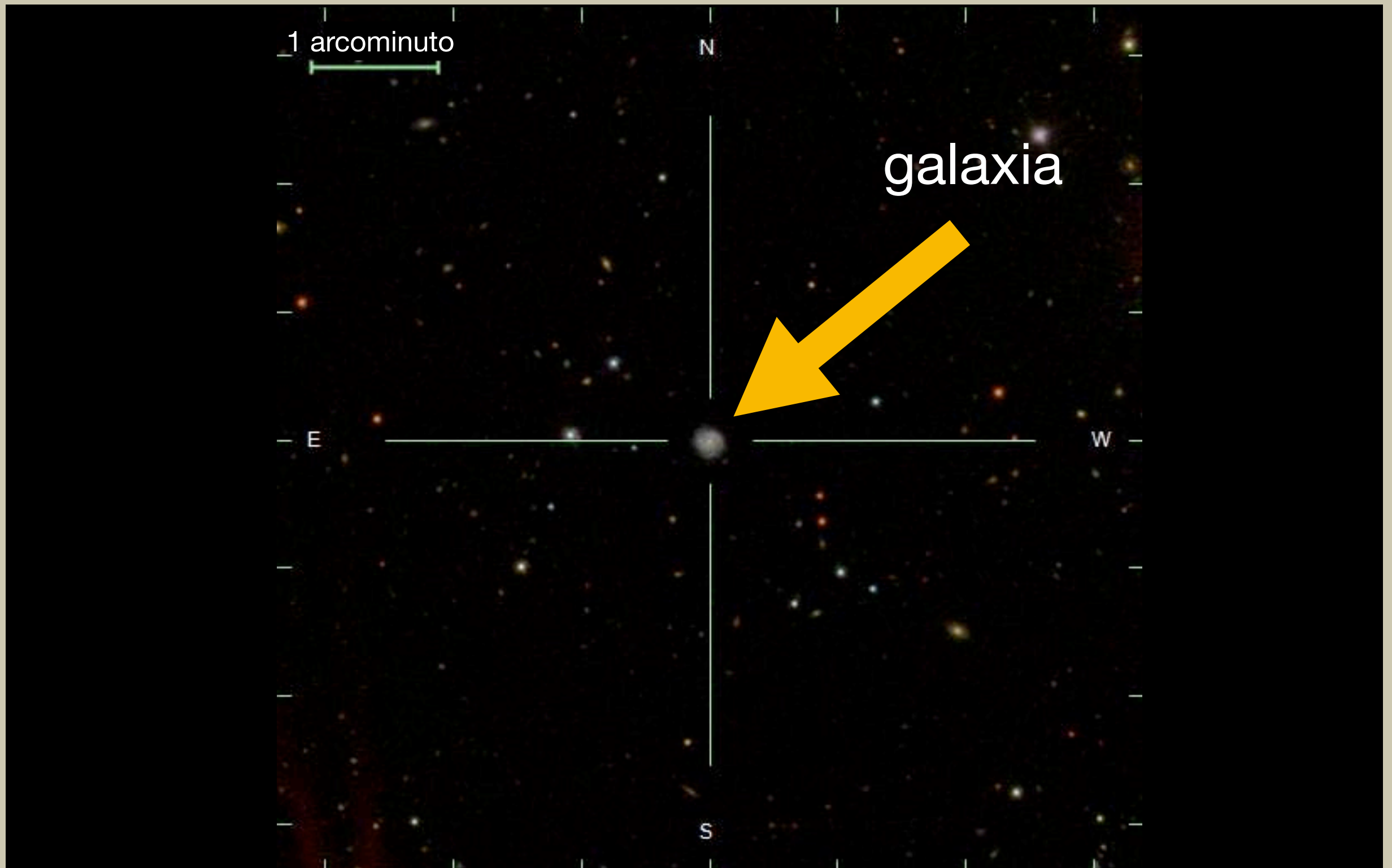
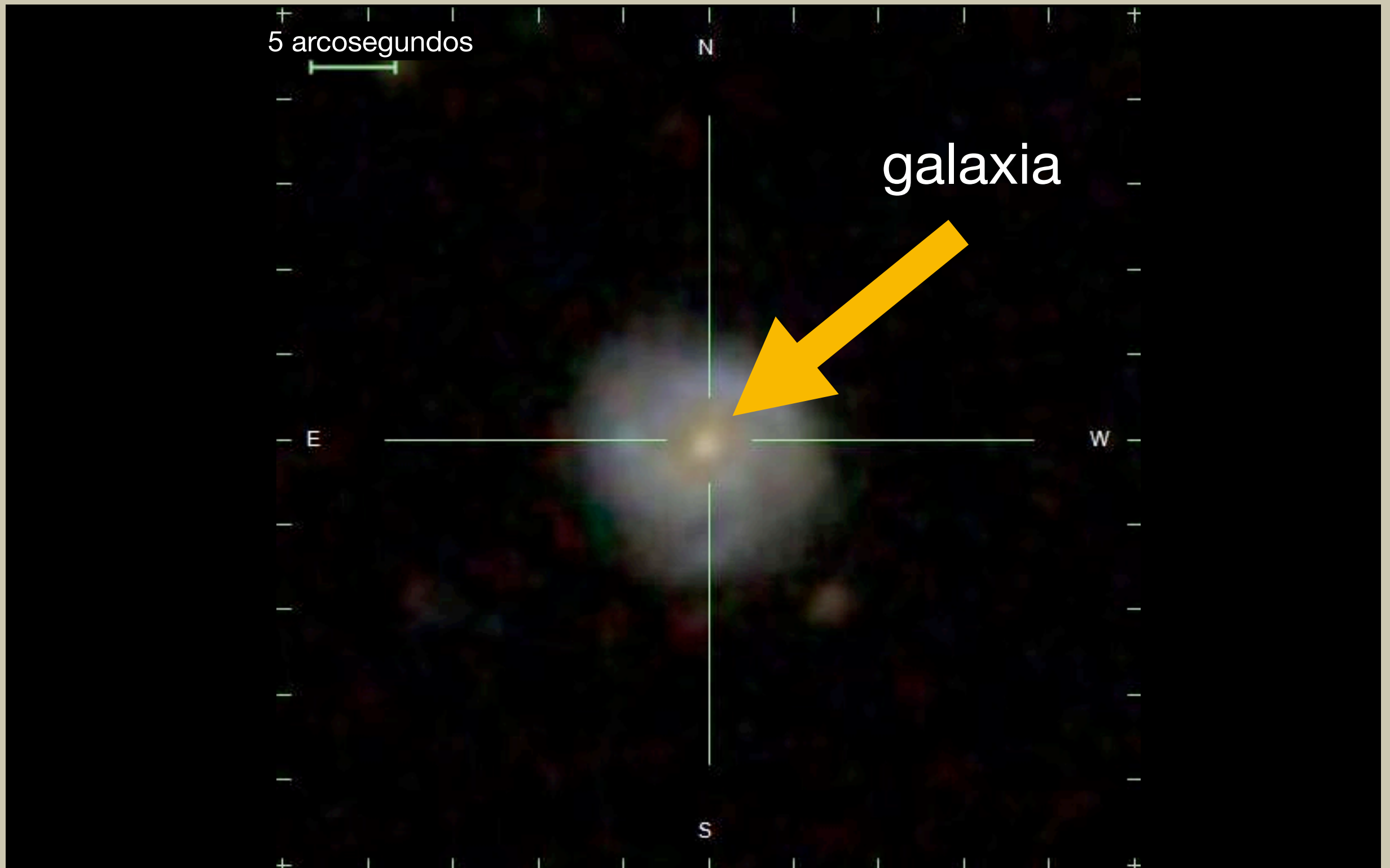


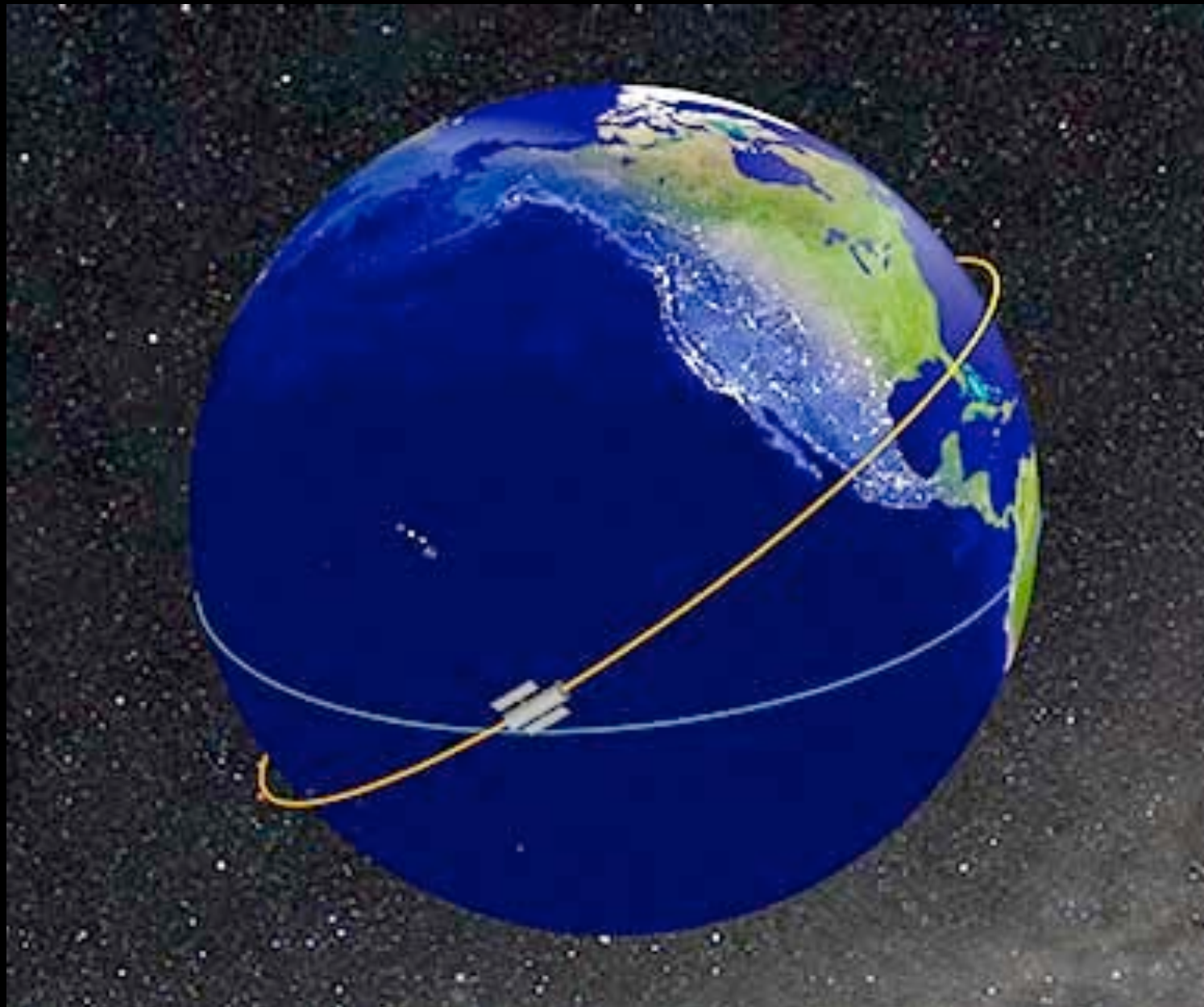
Imagen del SDSS de KISSR 298.



El Telescopio espacial Hubble.



Le da una vuelta a la Tierra en 97 min.

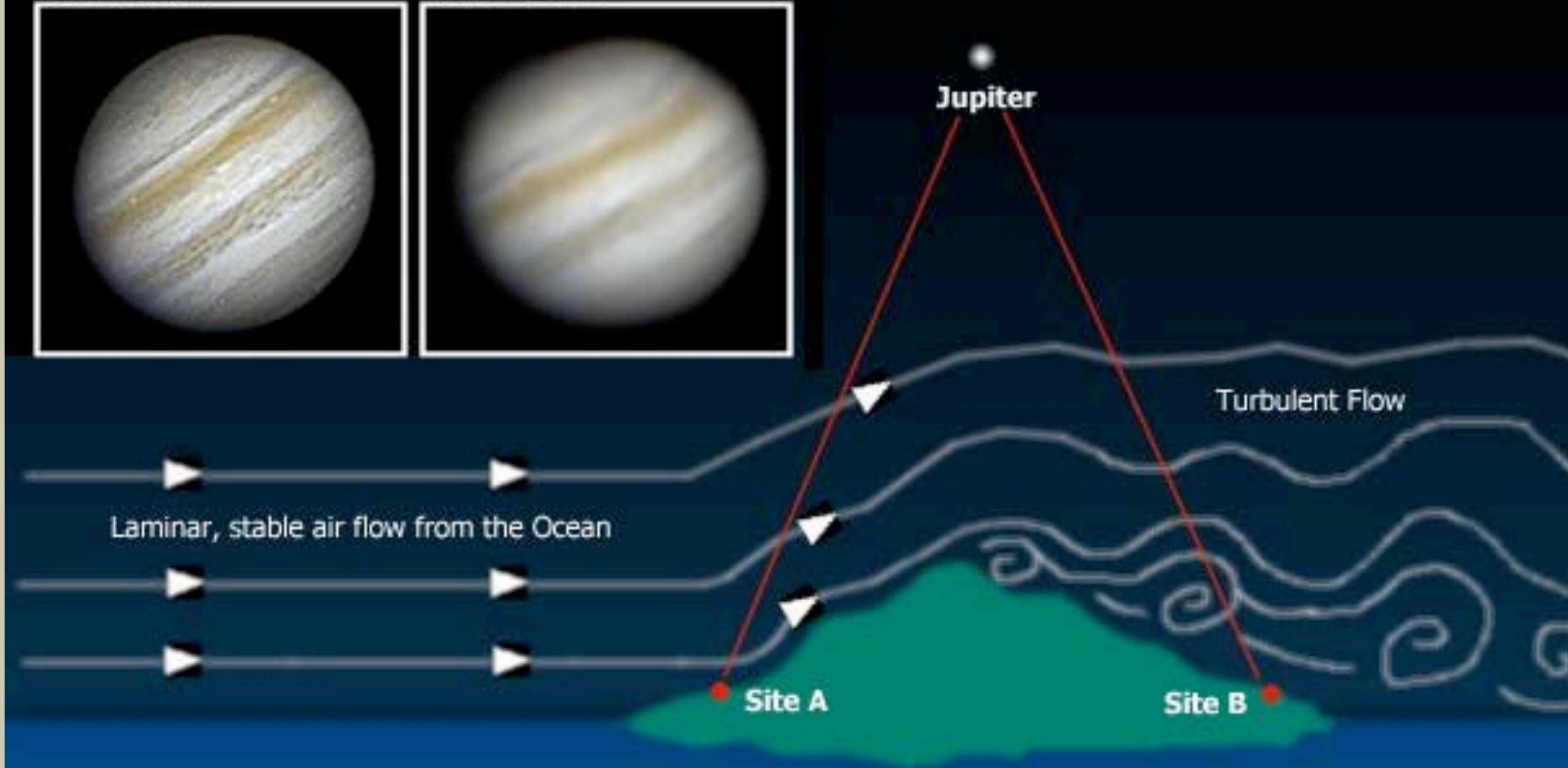


Estar por encima de la atmósfera permite evitar la turbulencia de la atmósfera, que afecta la nitidez de las imágenes.

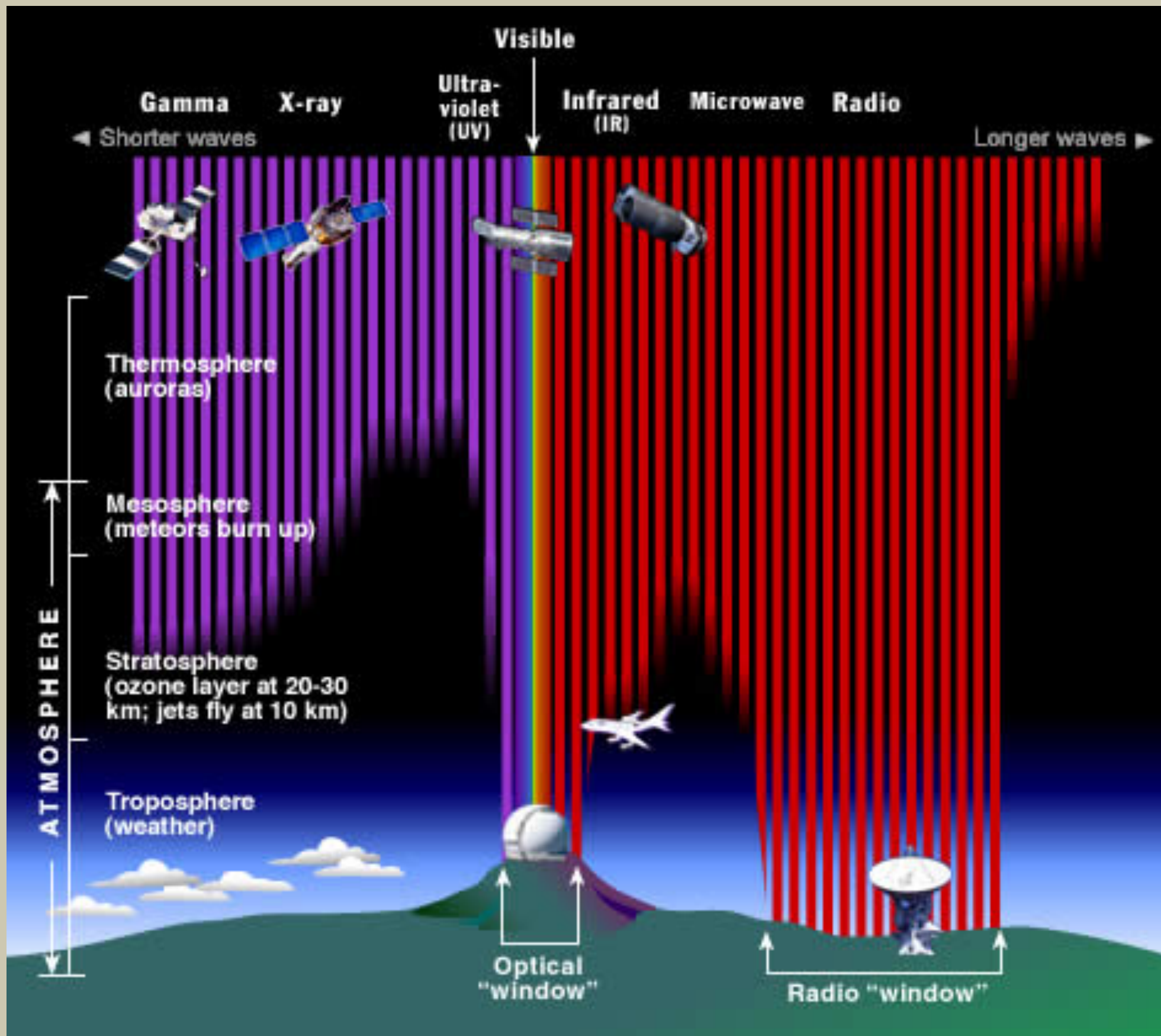
Site A view



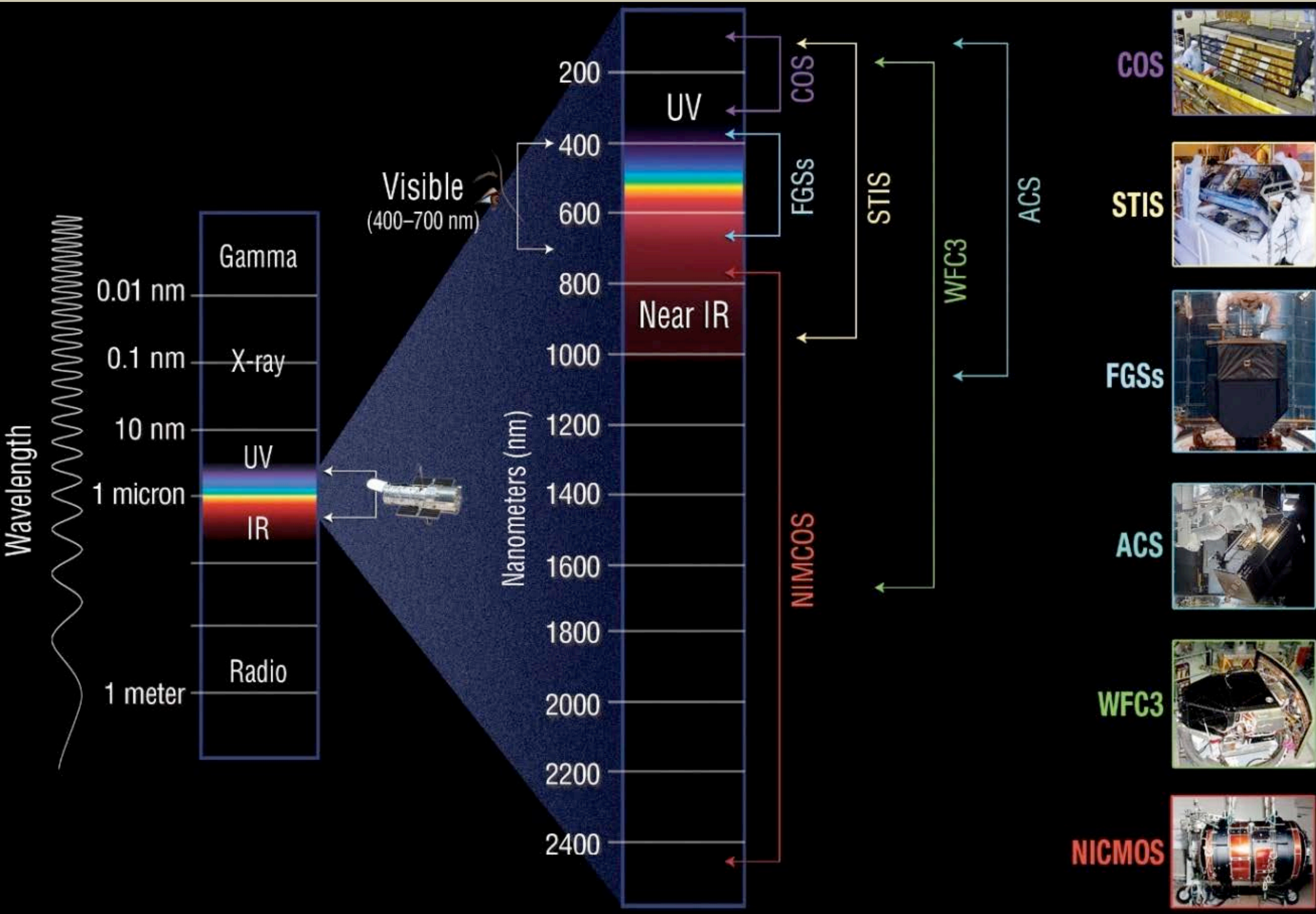
Site B view



Además, permite detectar longitudes de onda que la atmósfera no deja pasar.



Los instrumentos abordo del Hubble.



Imágenes vs. espectros.

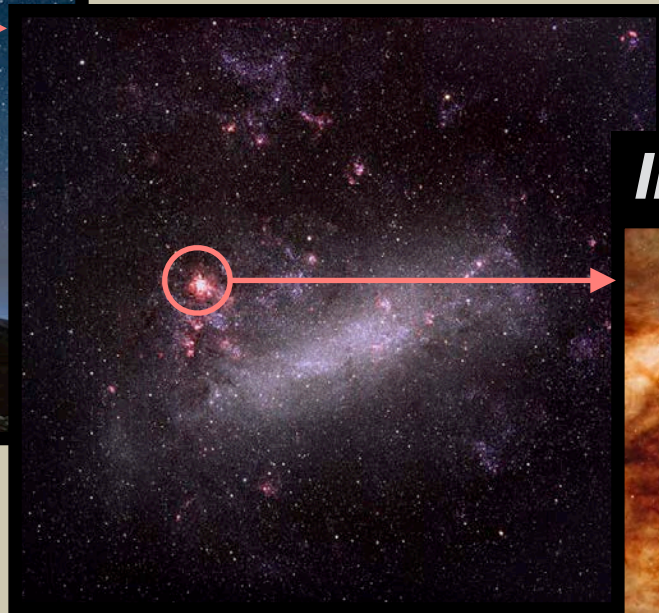
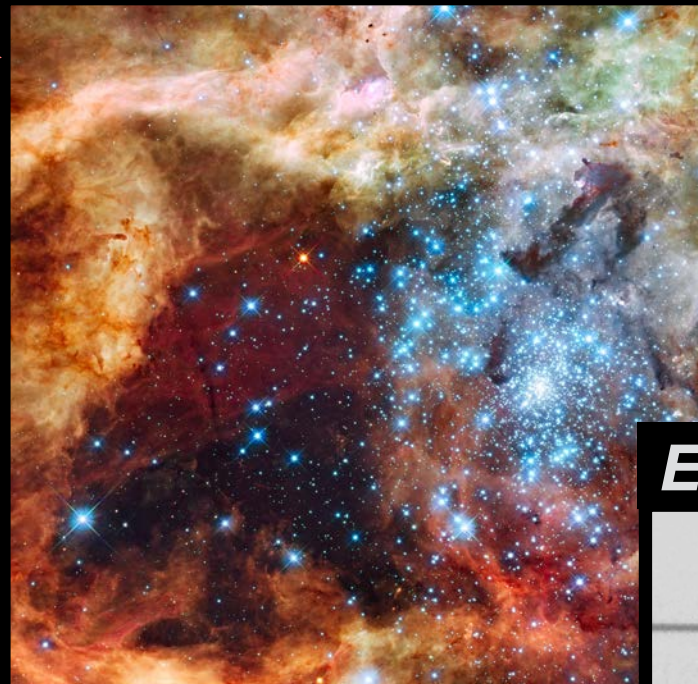
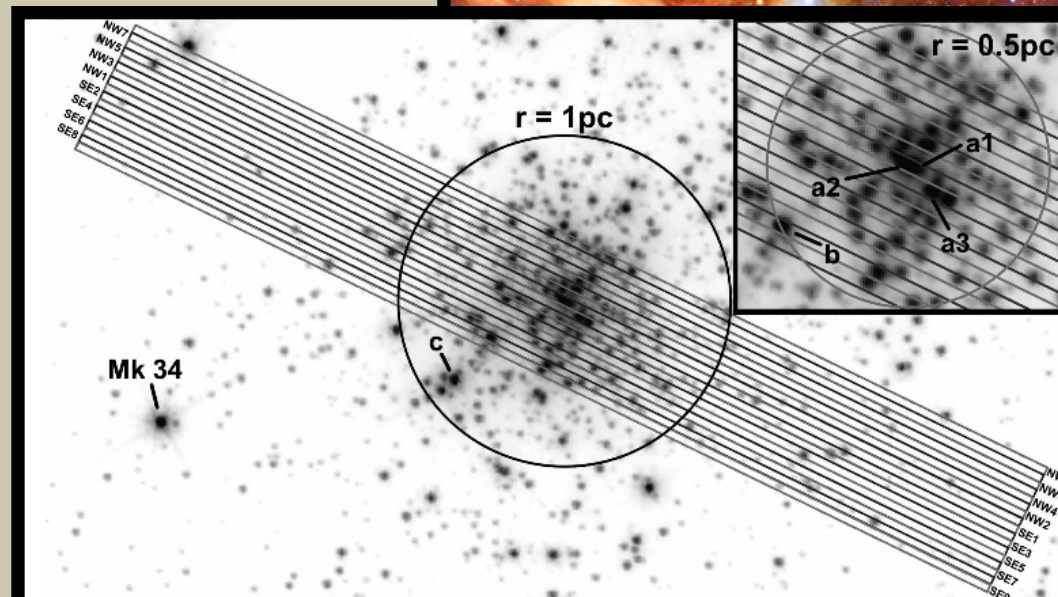


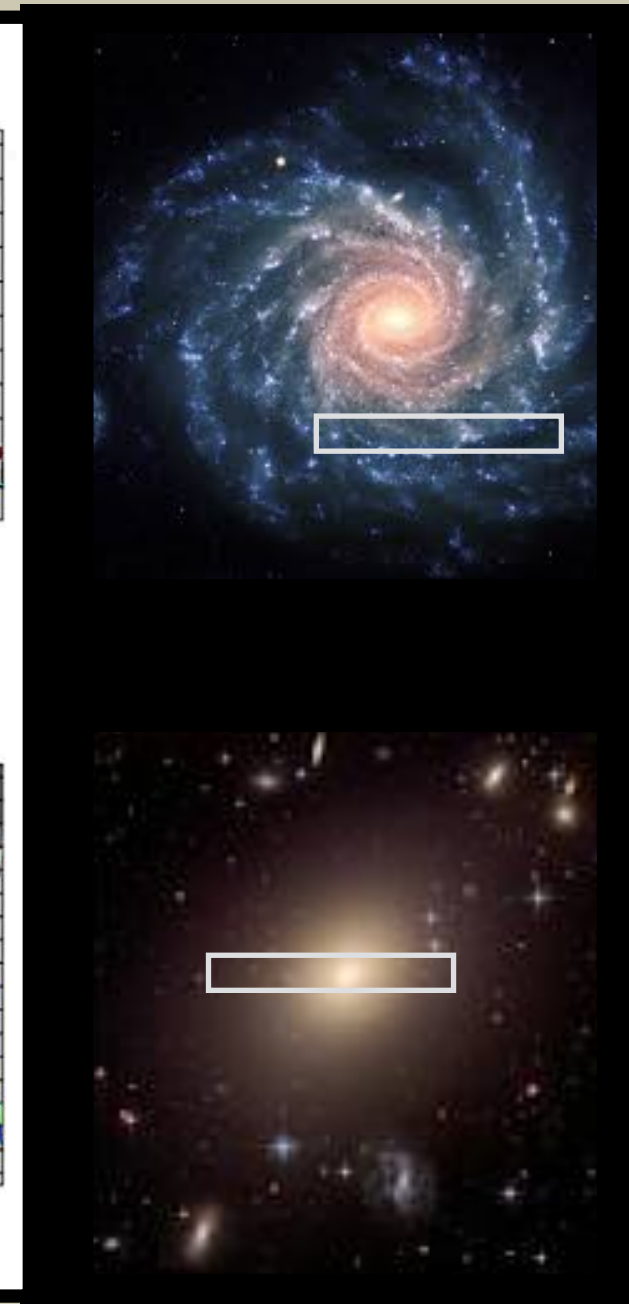
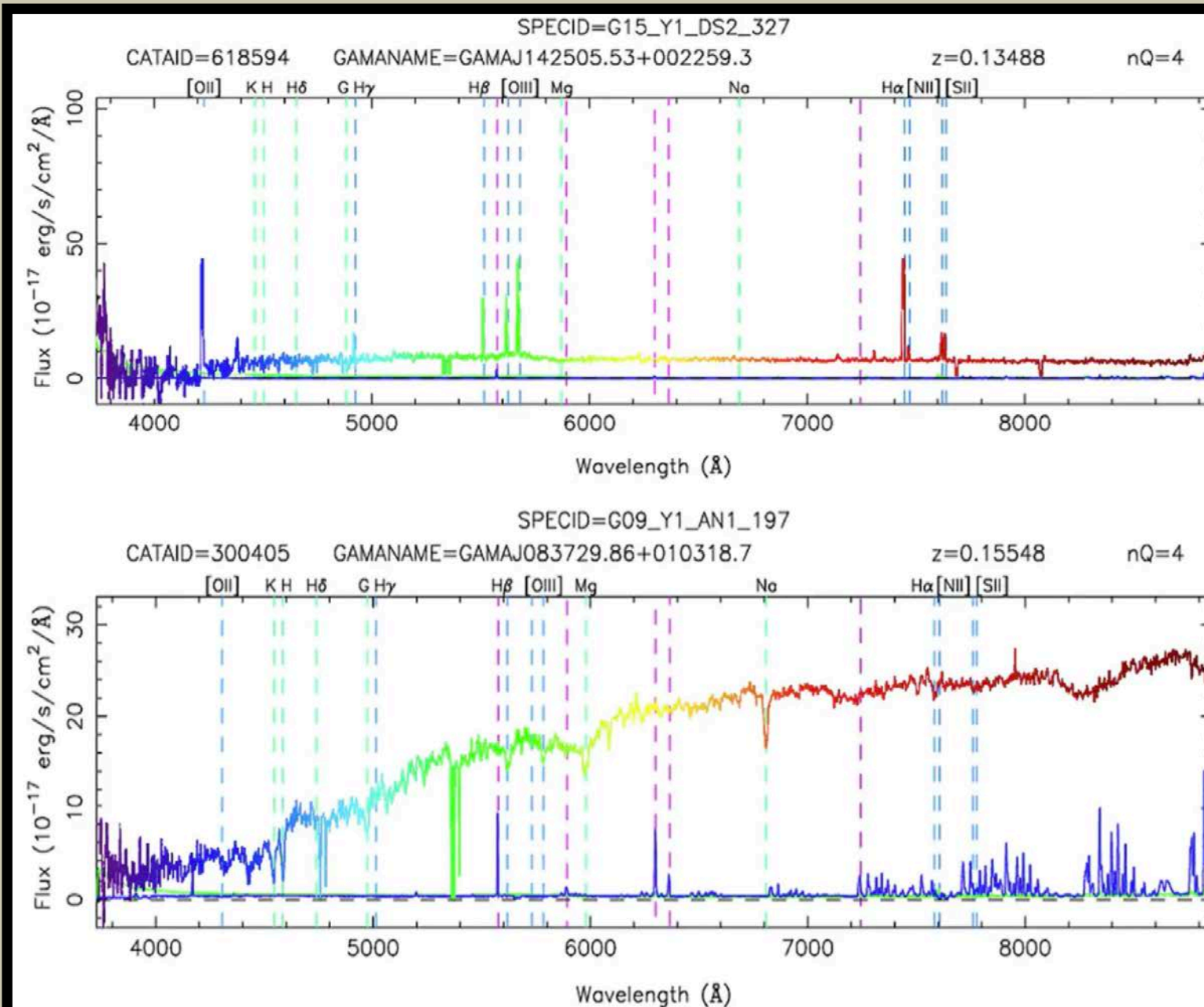
Imagen = mil palabras



Espectro = mil imágenes



Espectros de galaxias.

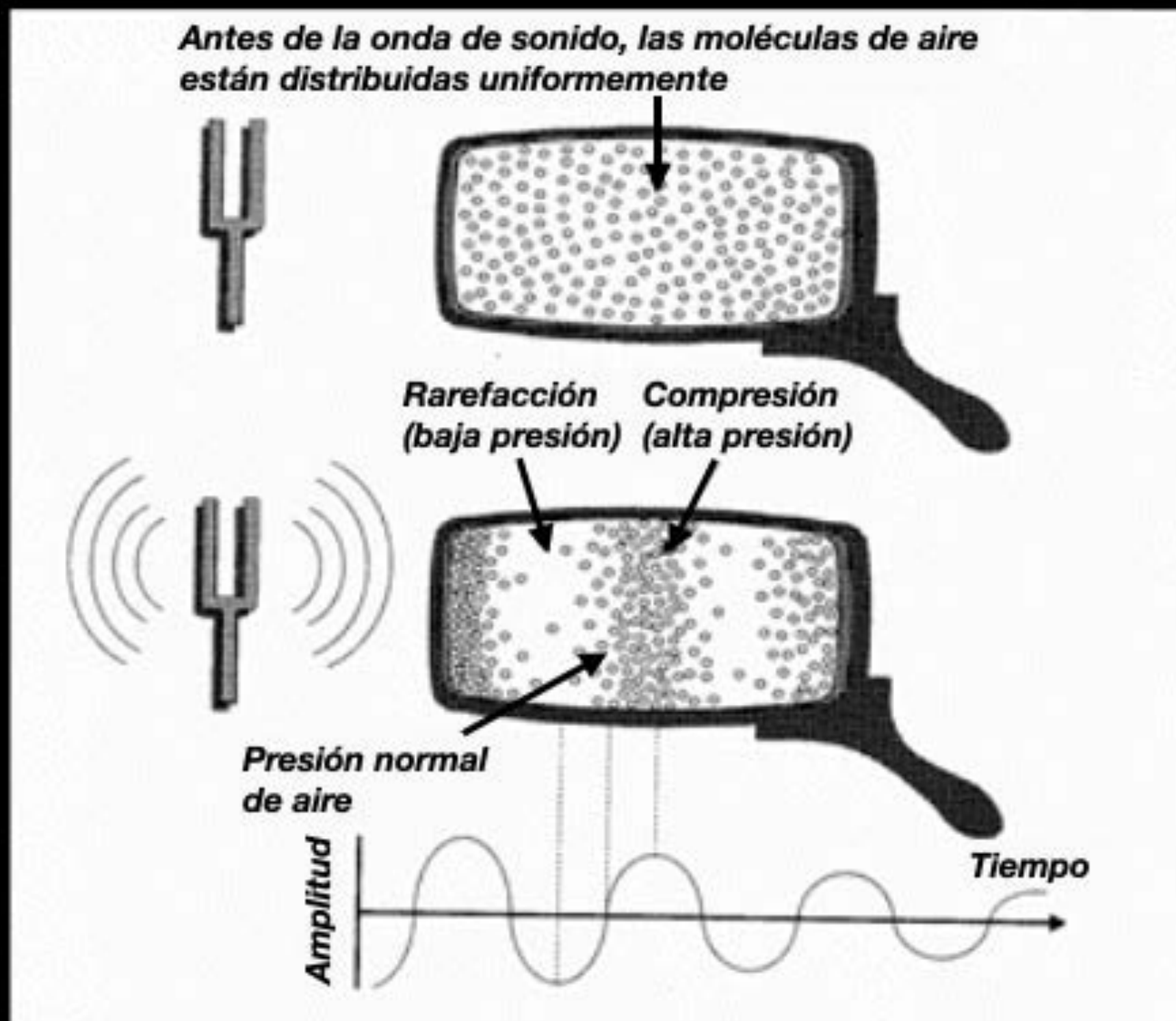


Gracias

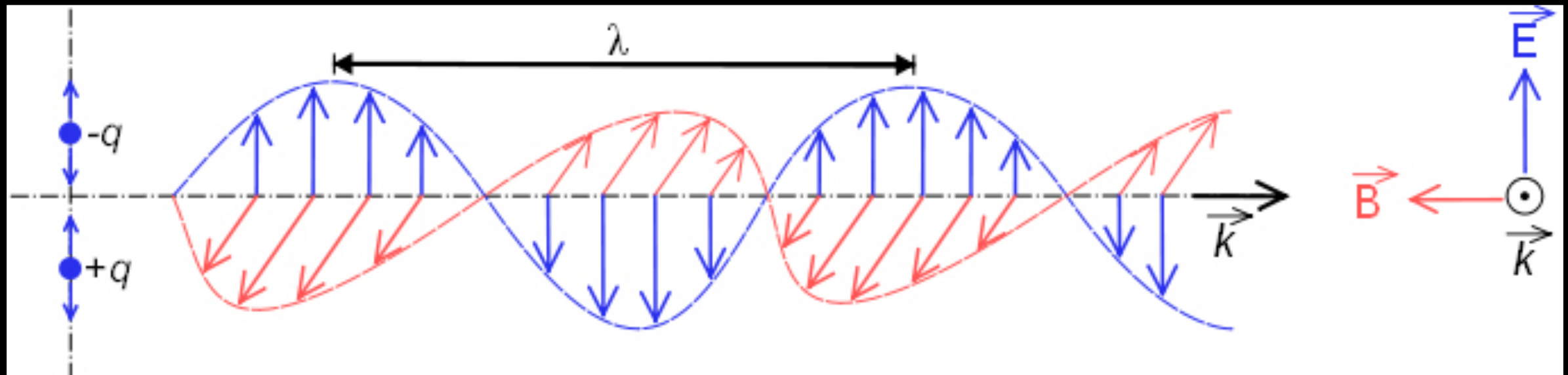


Extra

Ondas mecánicas, ej. ondas de sonido.



Ondas electromagnéticas, ej. ondas de radio



$$f = c / \lambda$$

f = frecuencia

c = velocidad de la luz

λ = longitud de onda

Efecto Doppler.

