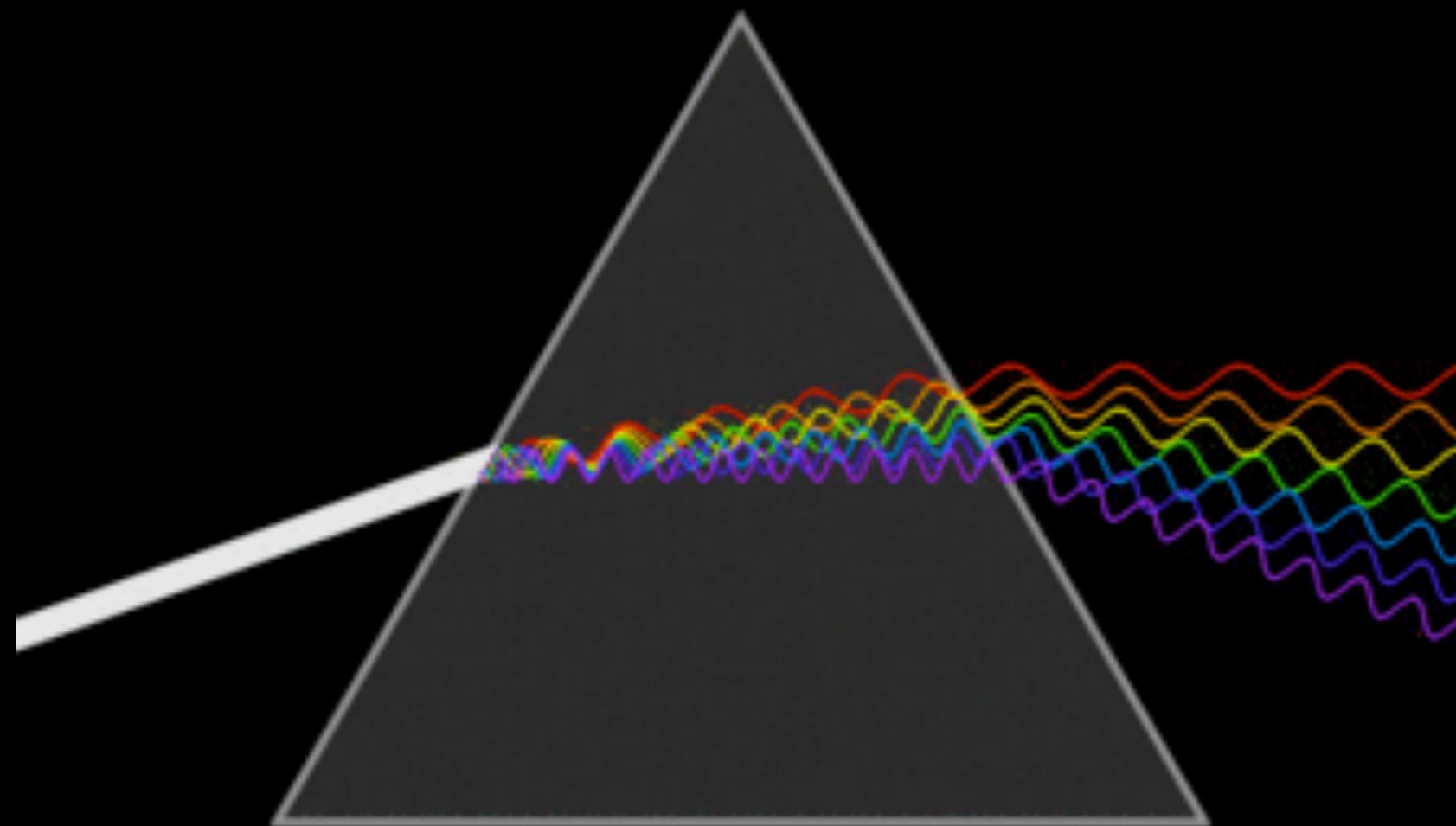


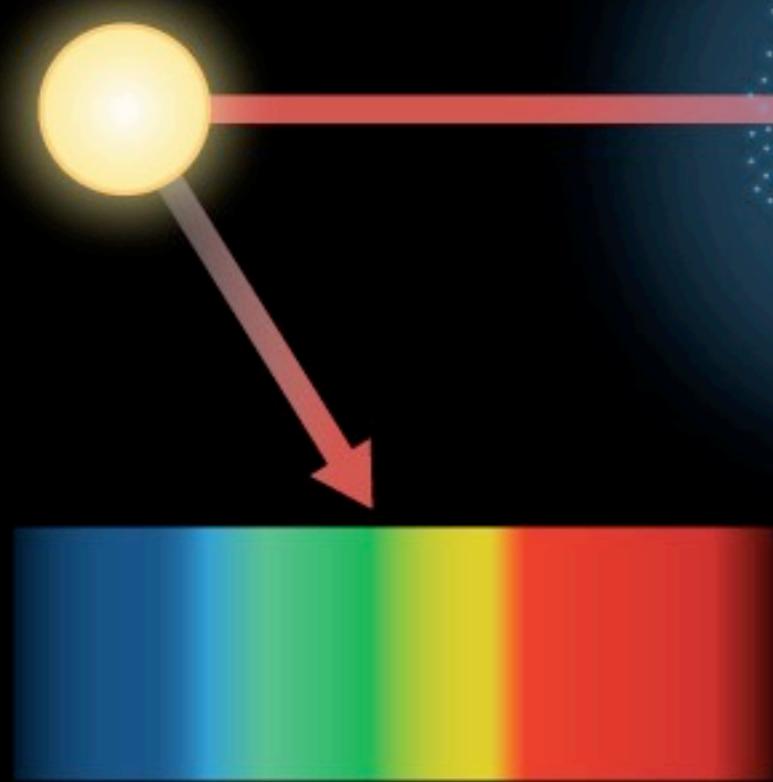
**Dos tipos de datos
astronómicos:
imágenes y espectros.**

Espectro de luz.



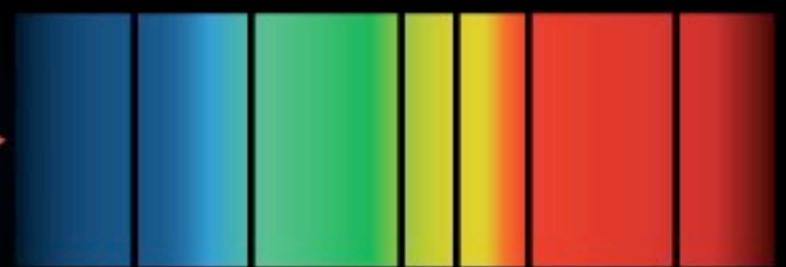
Tipos de espectros.

Fuente que emite un espectro continuo en todos los colores

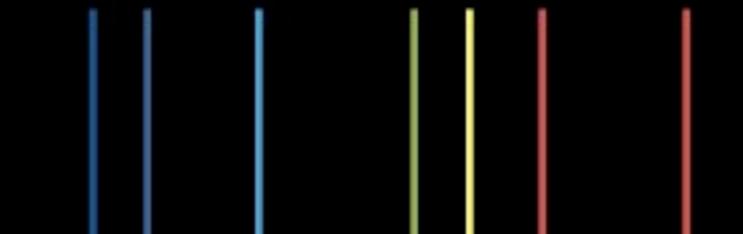


Espectro continuo

Nube de gas

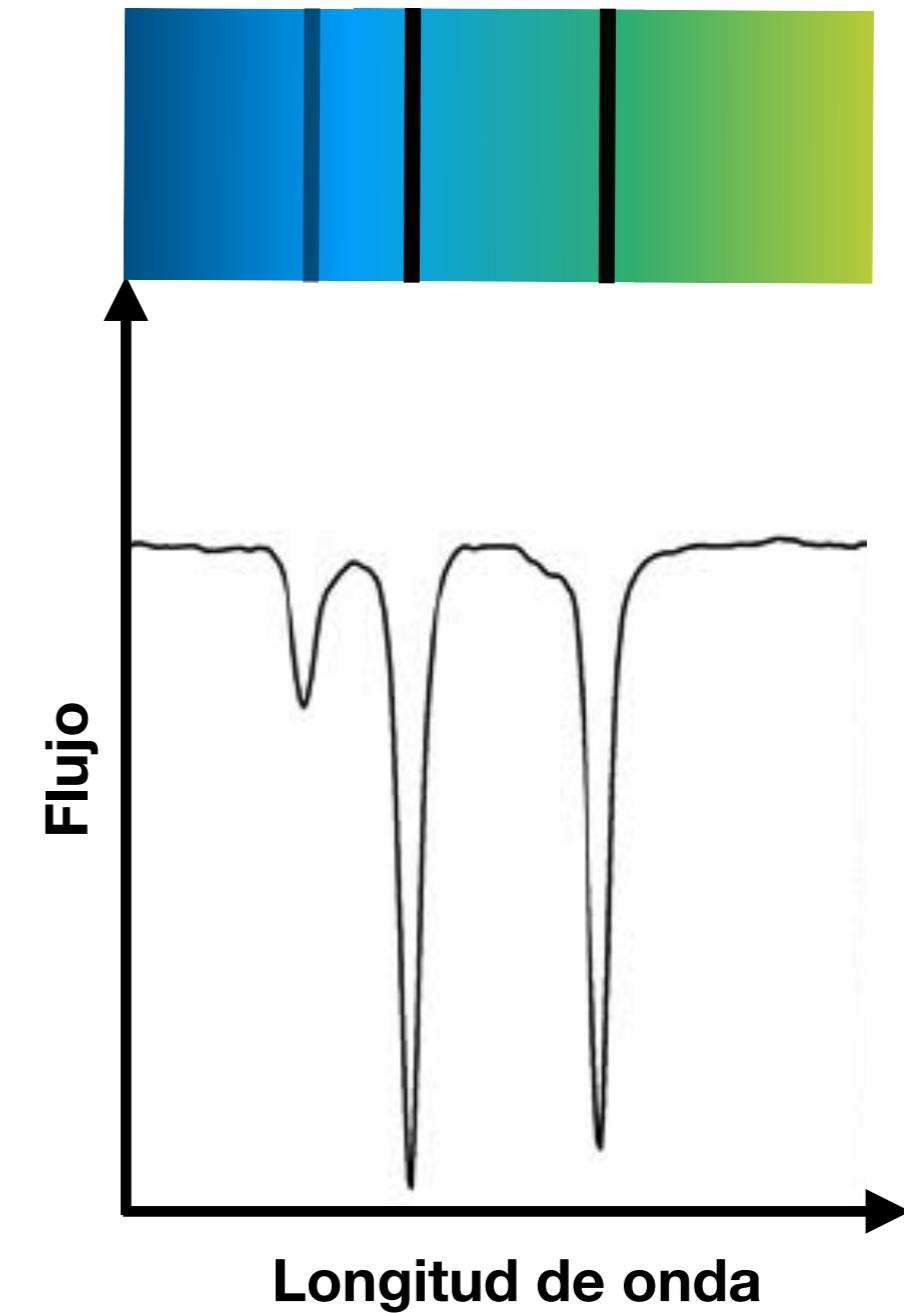
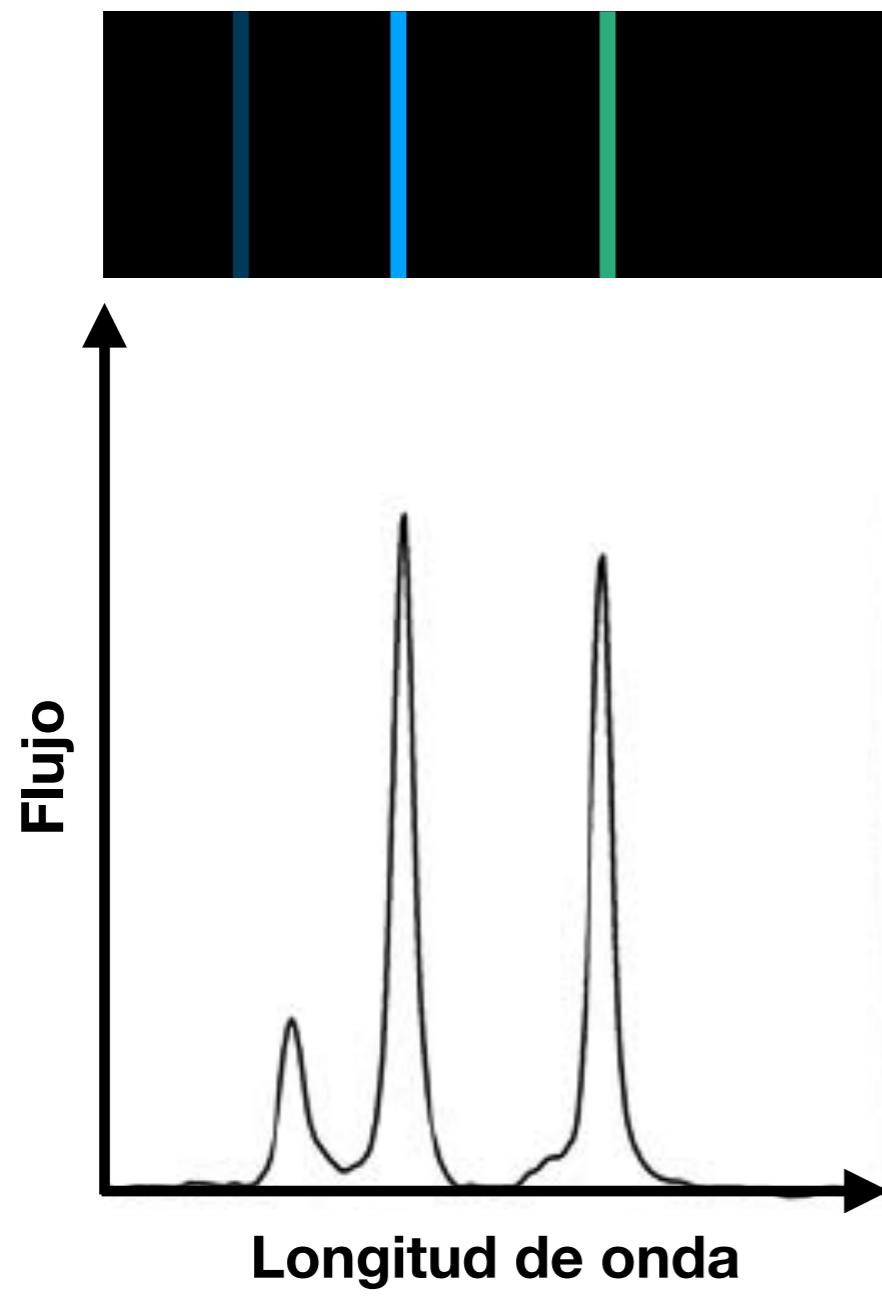


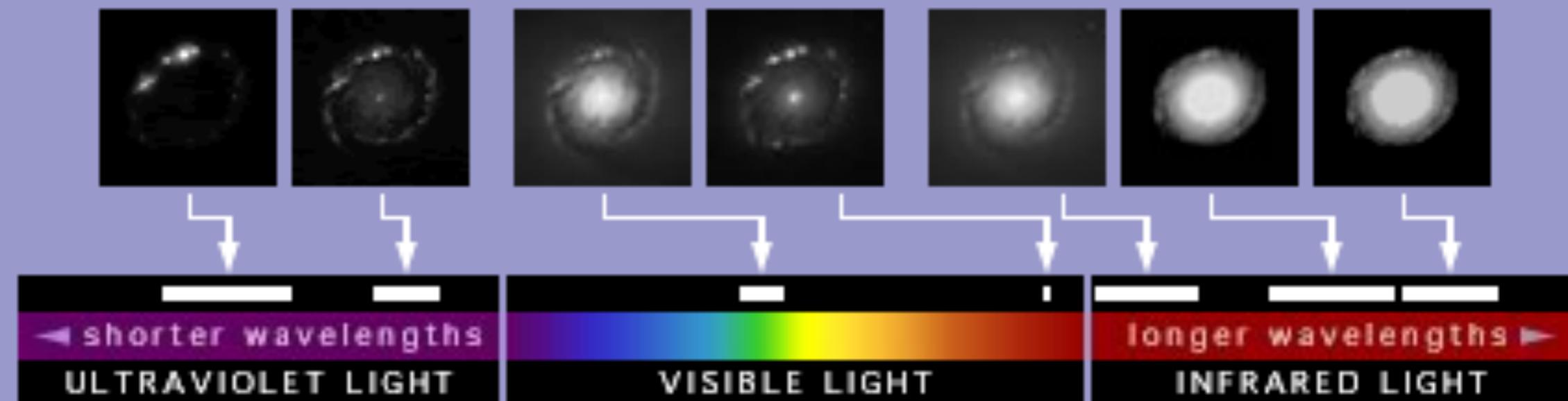
Espectro continuo con líneas oscuras



Espectro de líneas de brillantes.

Espectro de emisión y de absorción.





About Filters

Filtros.

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.

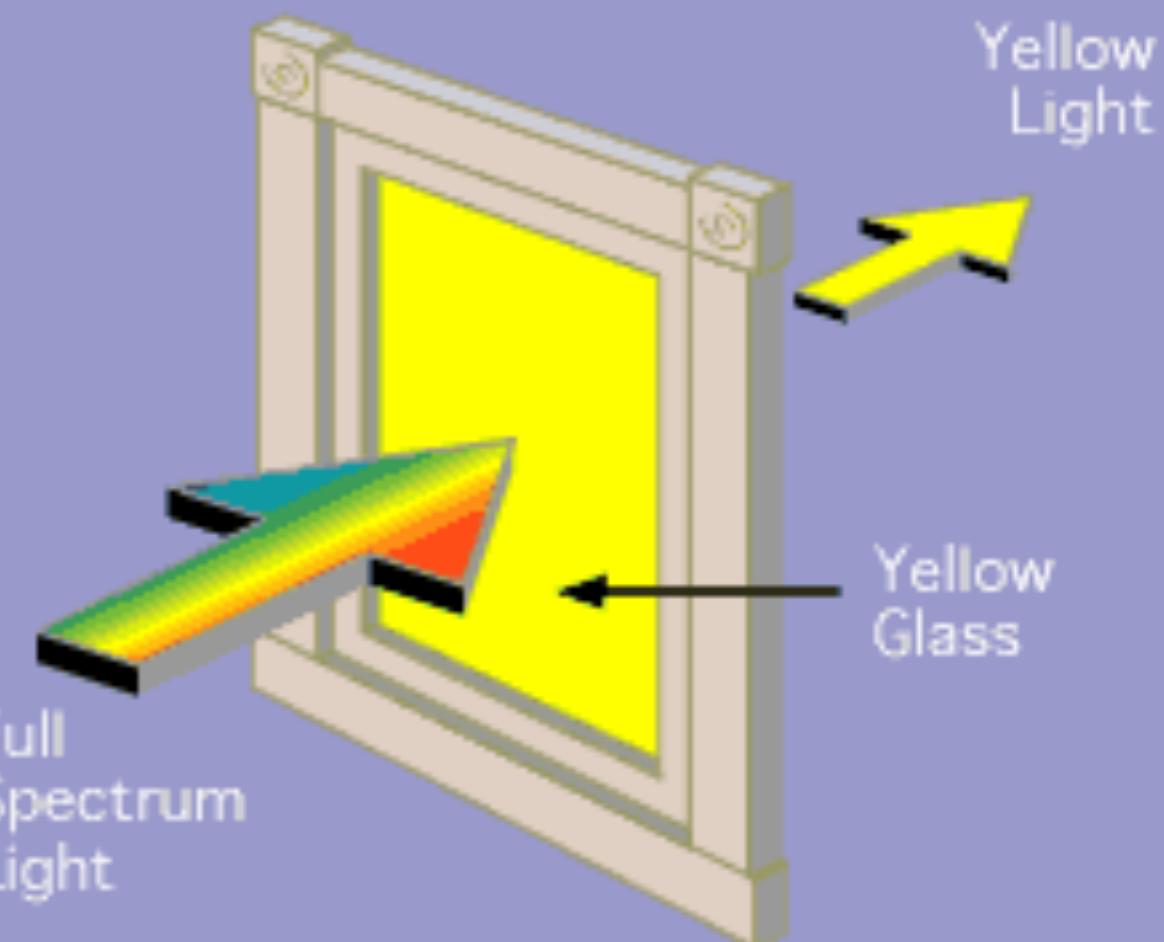
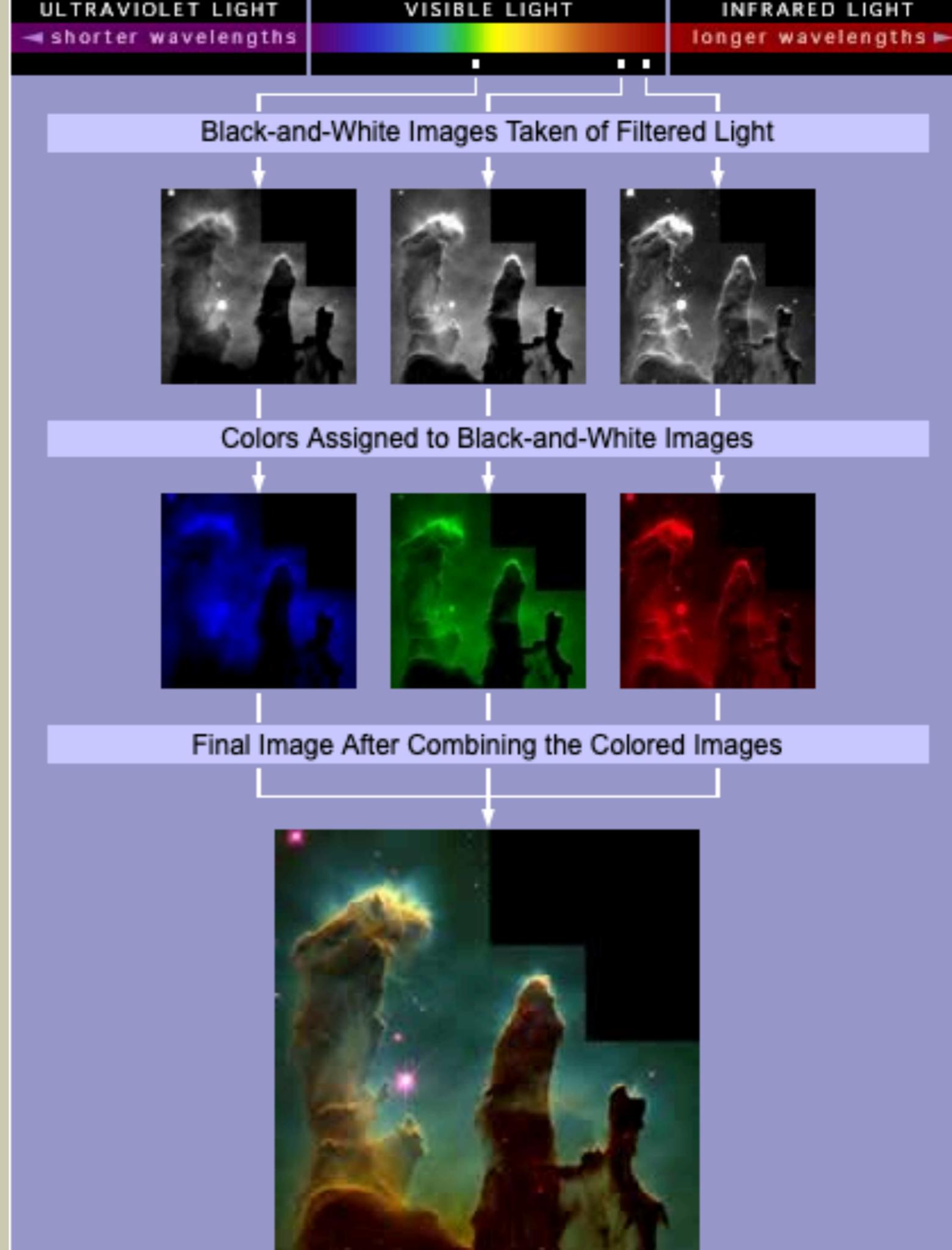


Imagen compuesta.



[http://hubble.stsci.edu/gallery/behind_the_pictures/
meaning_of_color/hubble.php](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



[Galaxy NGC
1512](#)

Full-
Spectrum
Light

Ultraviolet
Light



Filter range within the spectrum



◀ shorter wavelengths
ULTRAVIOLET LIGHT

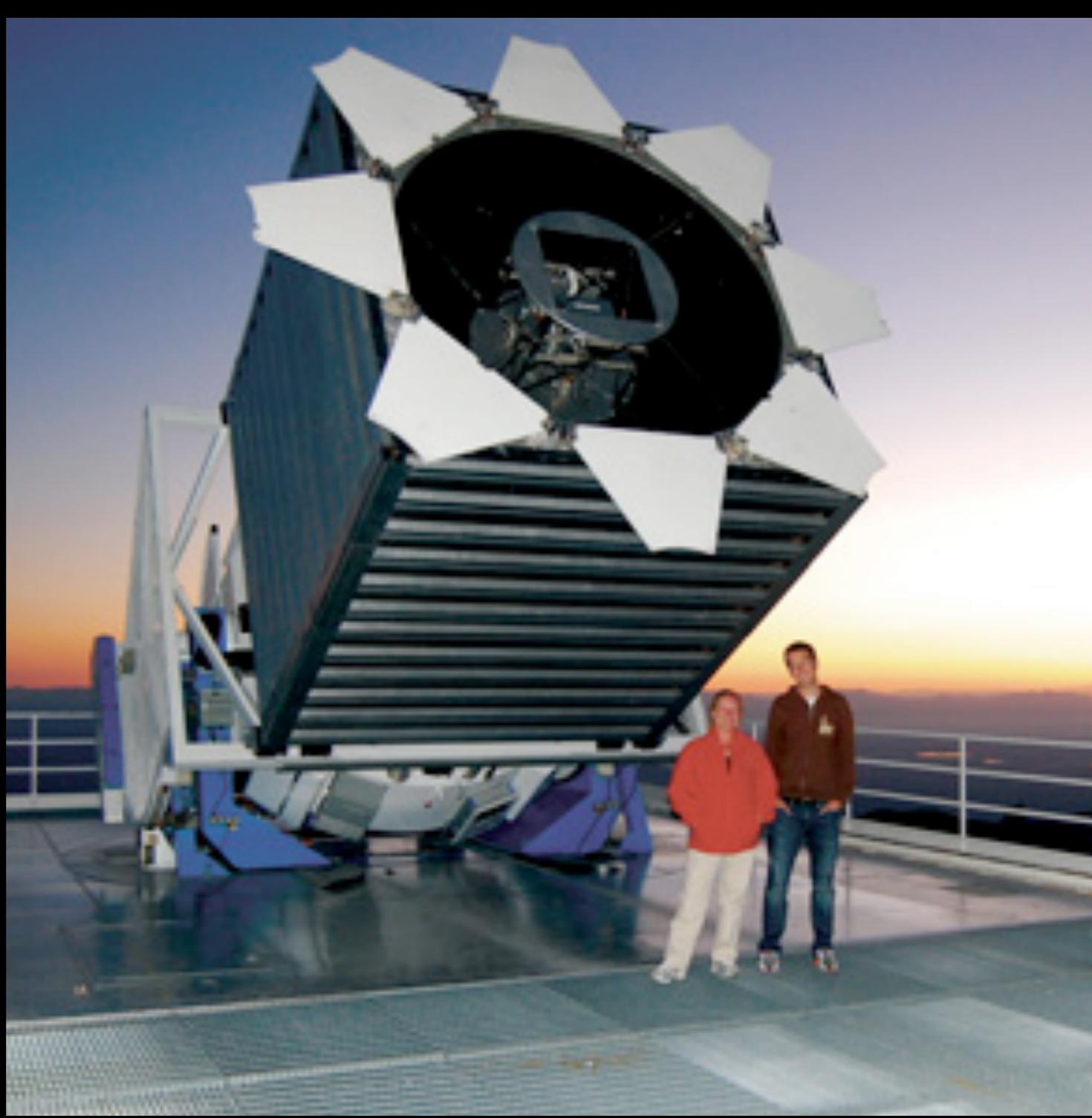
VISIBLE LIGHT

longer wavelengths ▶
INFRARED LIGHT

Los telescopios e instrumentos empleados para obtener los datos.

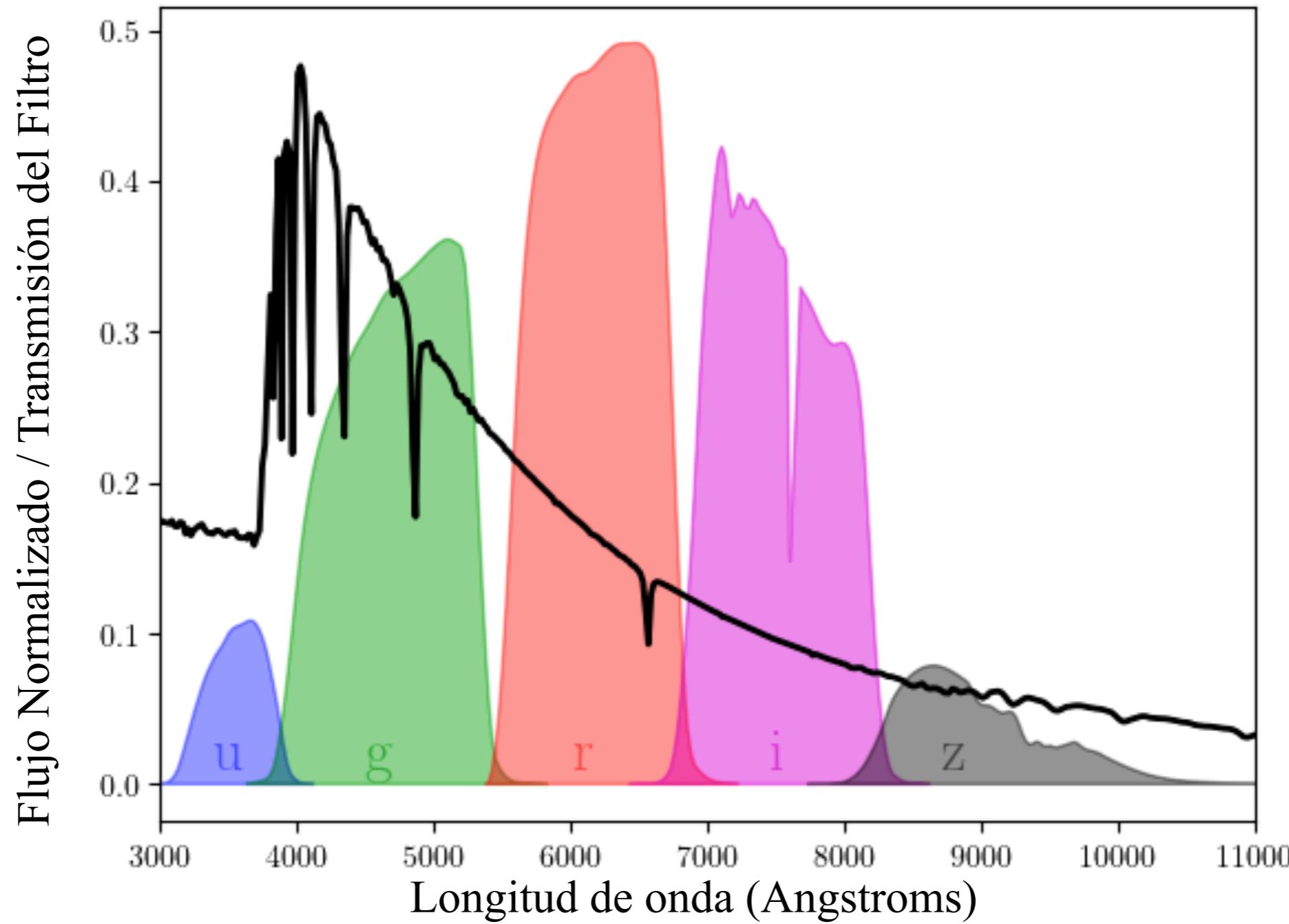
**Se obtuvieron imágenes con el telescopio espacial Hubble y
espectros con el telescopio terrestre del Sloan Digital Sky Survey.**

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



Tiene instrumentos para tomar imágenes y espectros.

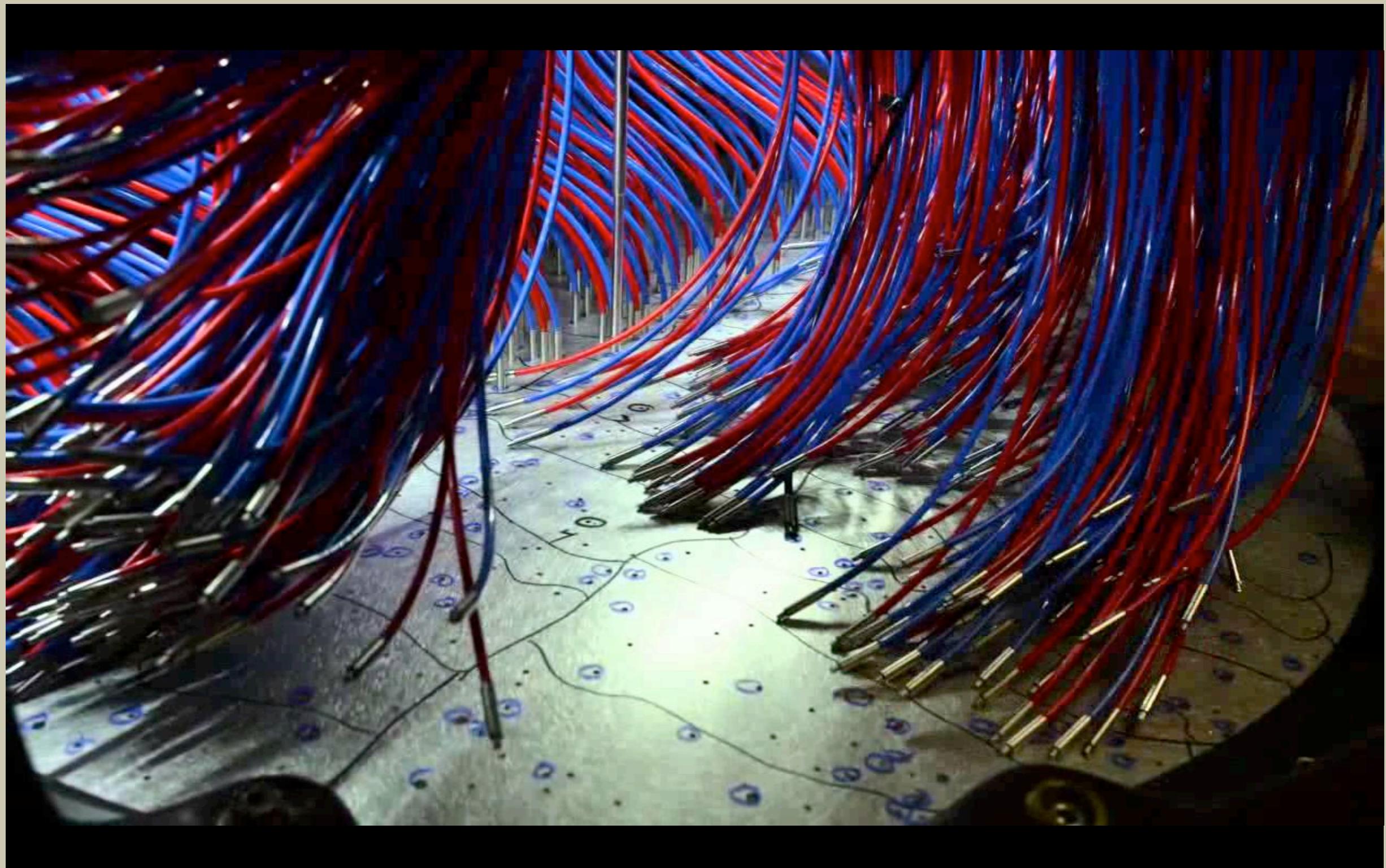
Filtros de SDSS y Espectro de Referencia



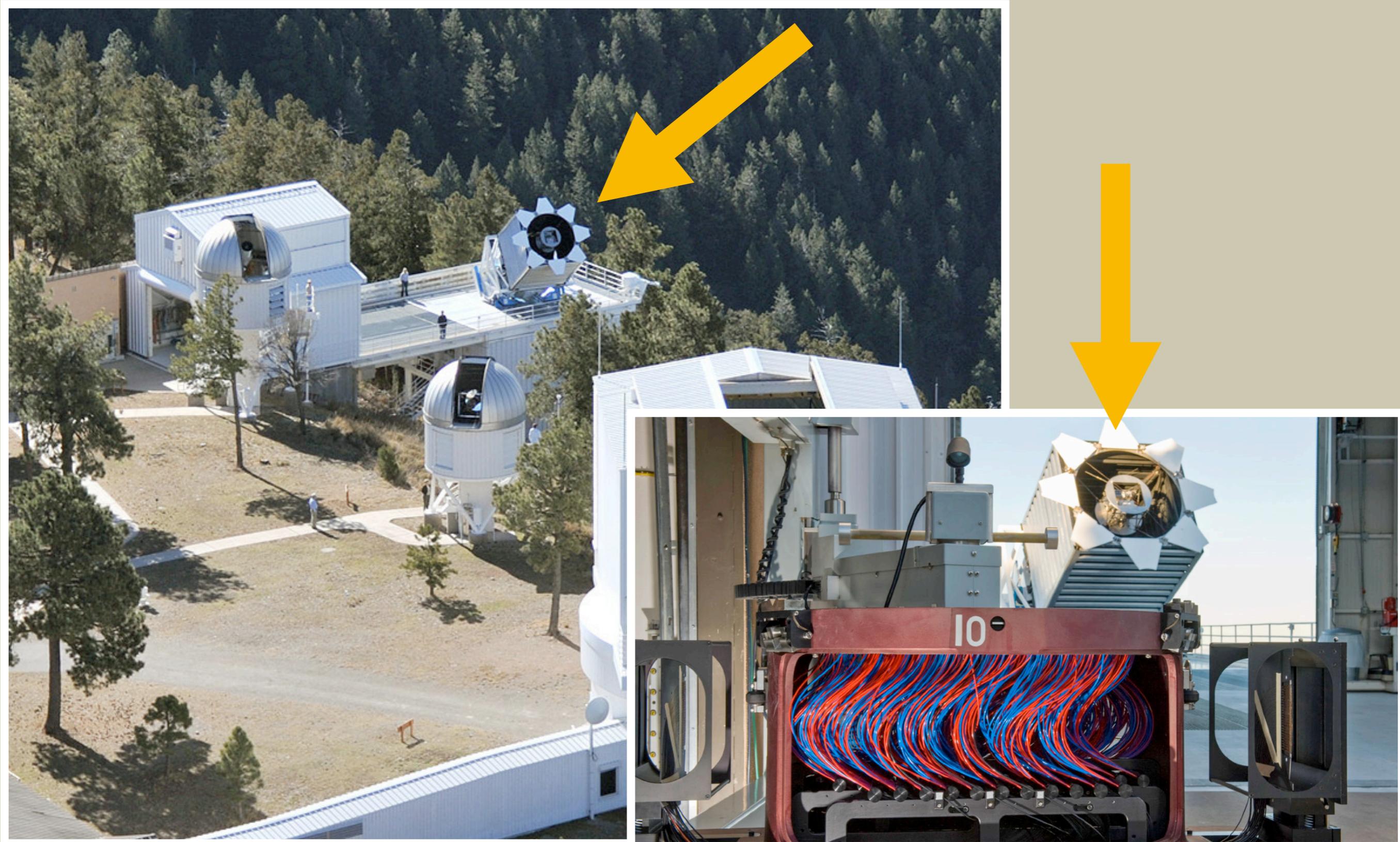
Puede tomar espectros de múltiples objetos simultáneamente. Para esto usa placas con agujeros en donde van los objetos proyectados en el cielo.



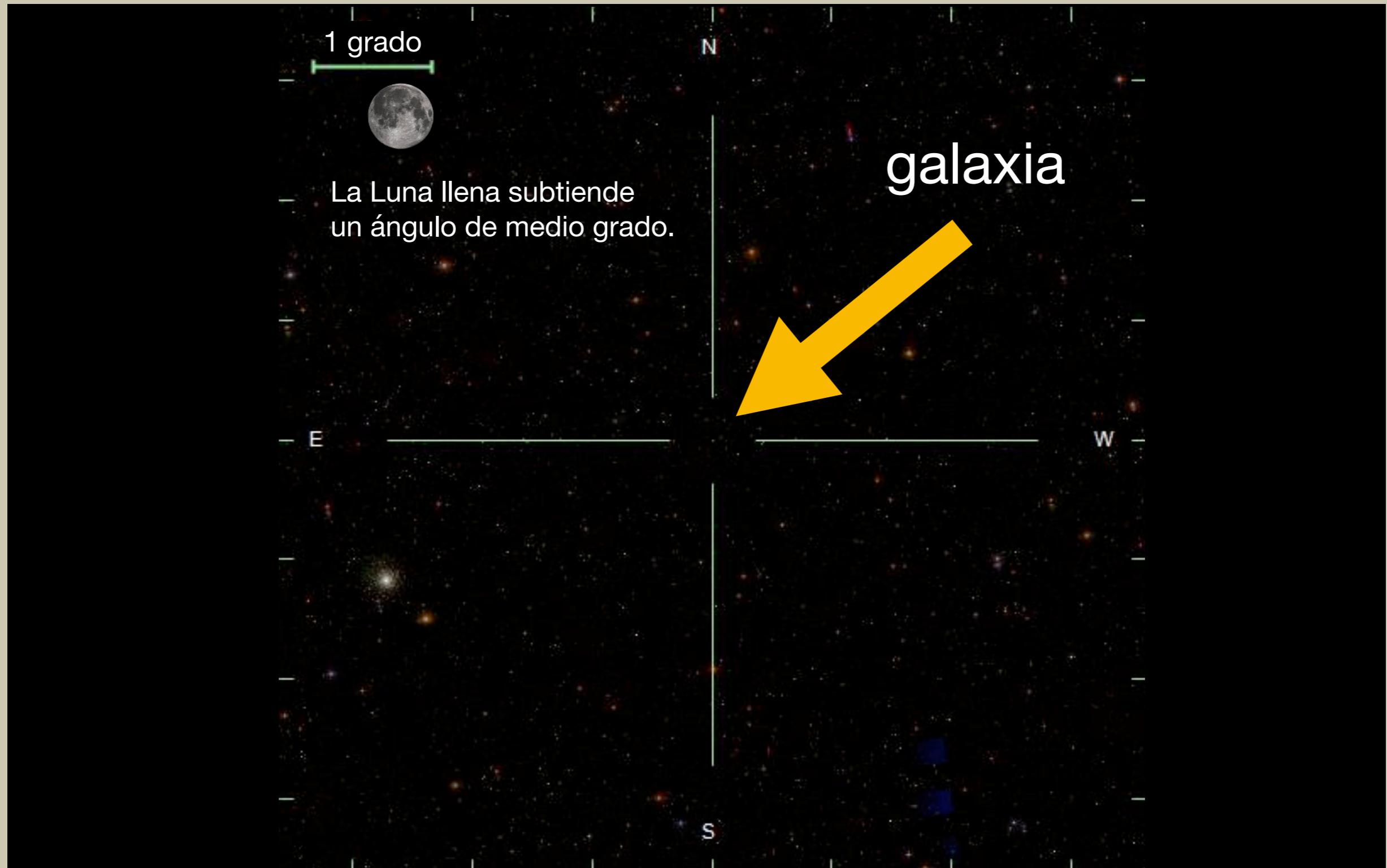
Una fibra óptica va conectada a acada agujero para llevar la luz del objeto al espectrógrafo.



Tiene un diámetro de 2.5 m



Tiene un campo de visión de 3º sin distorsión.



Magnificando una imagen del SDSS.

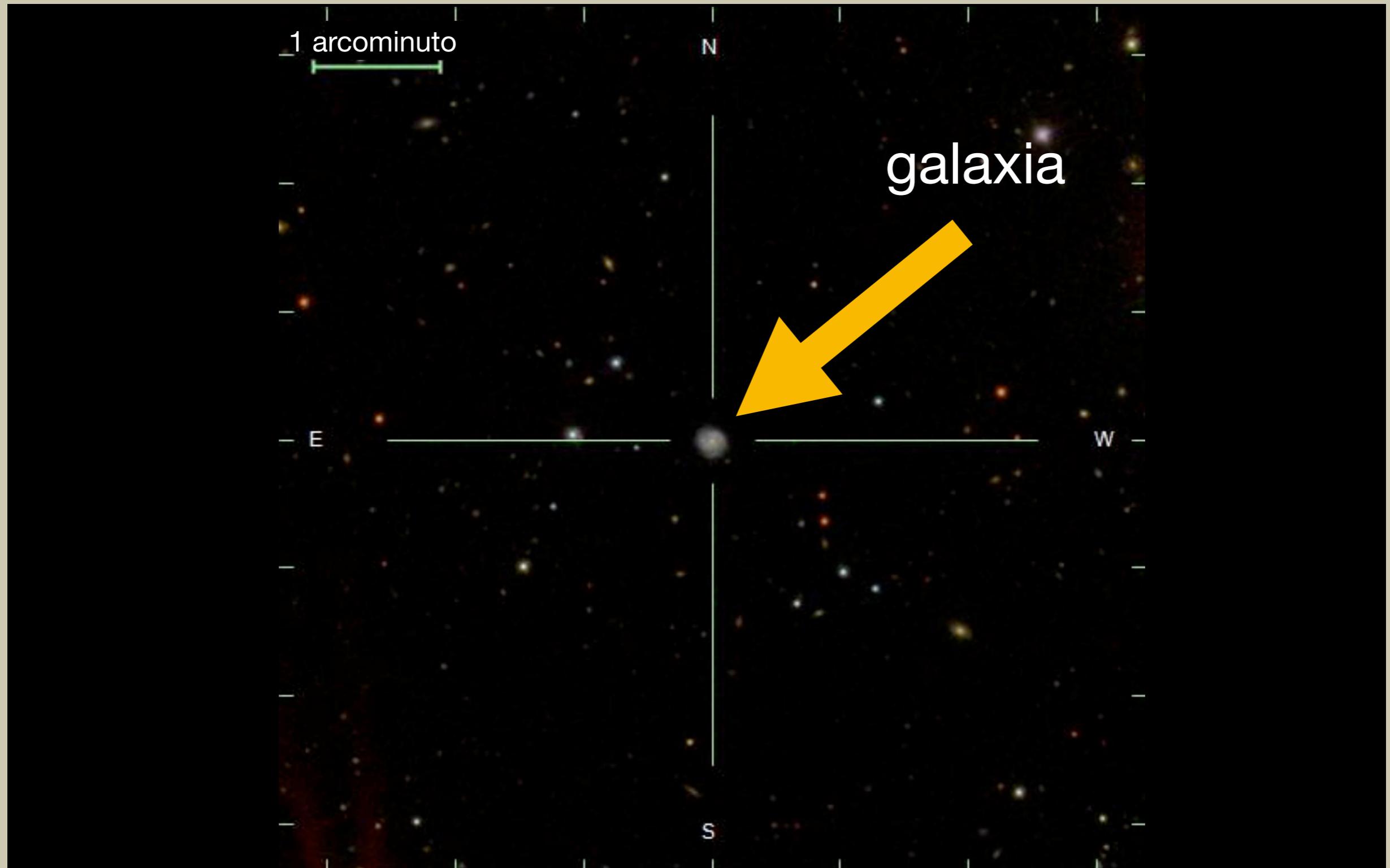
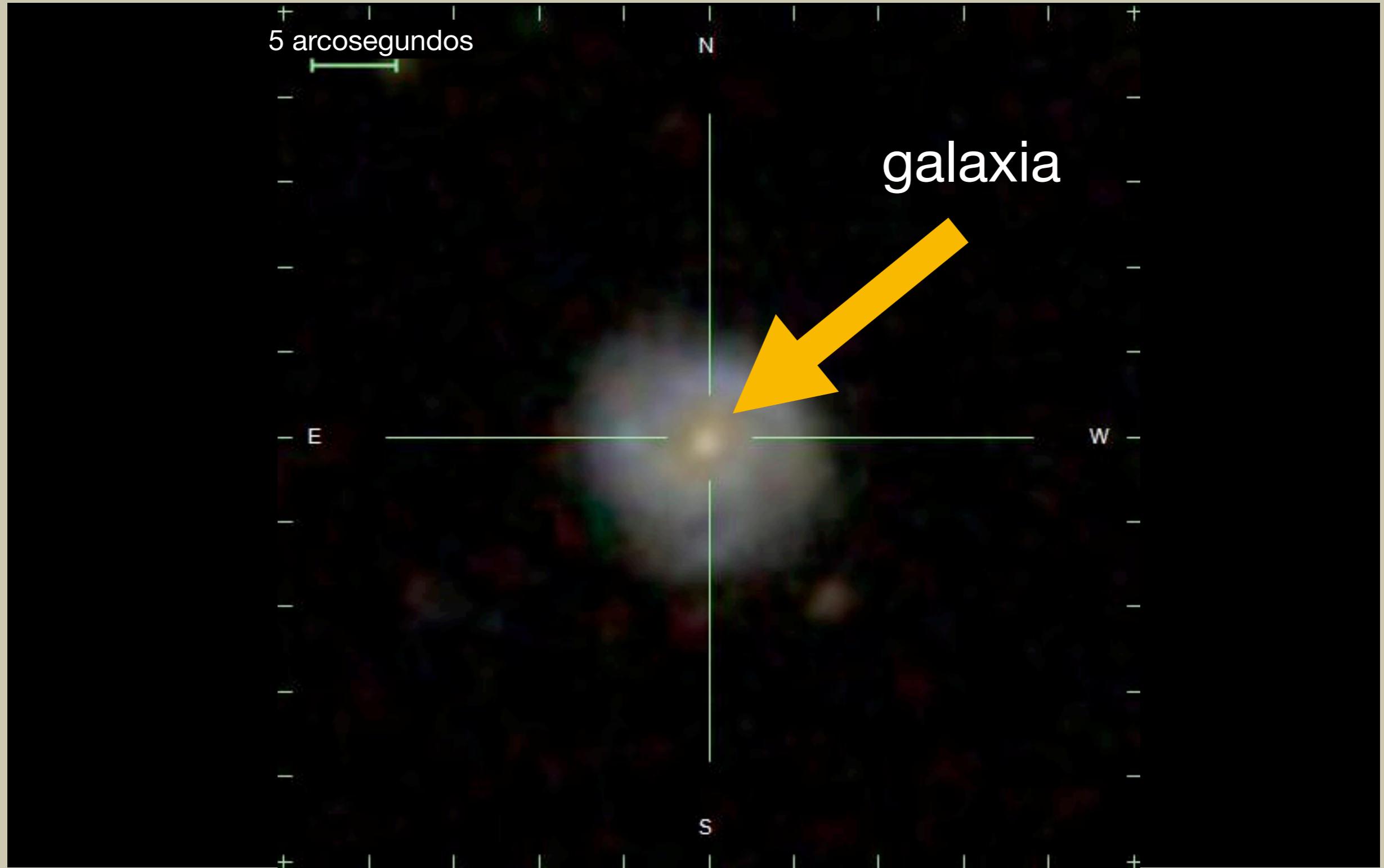


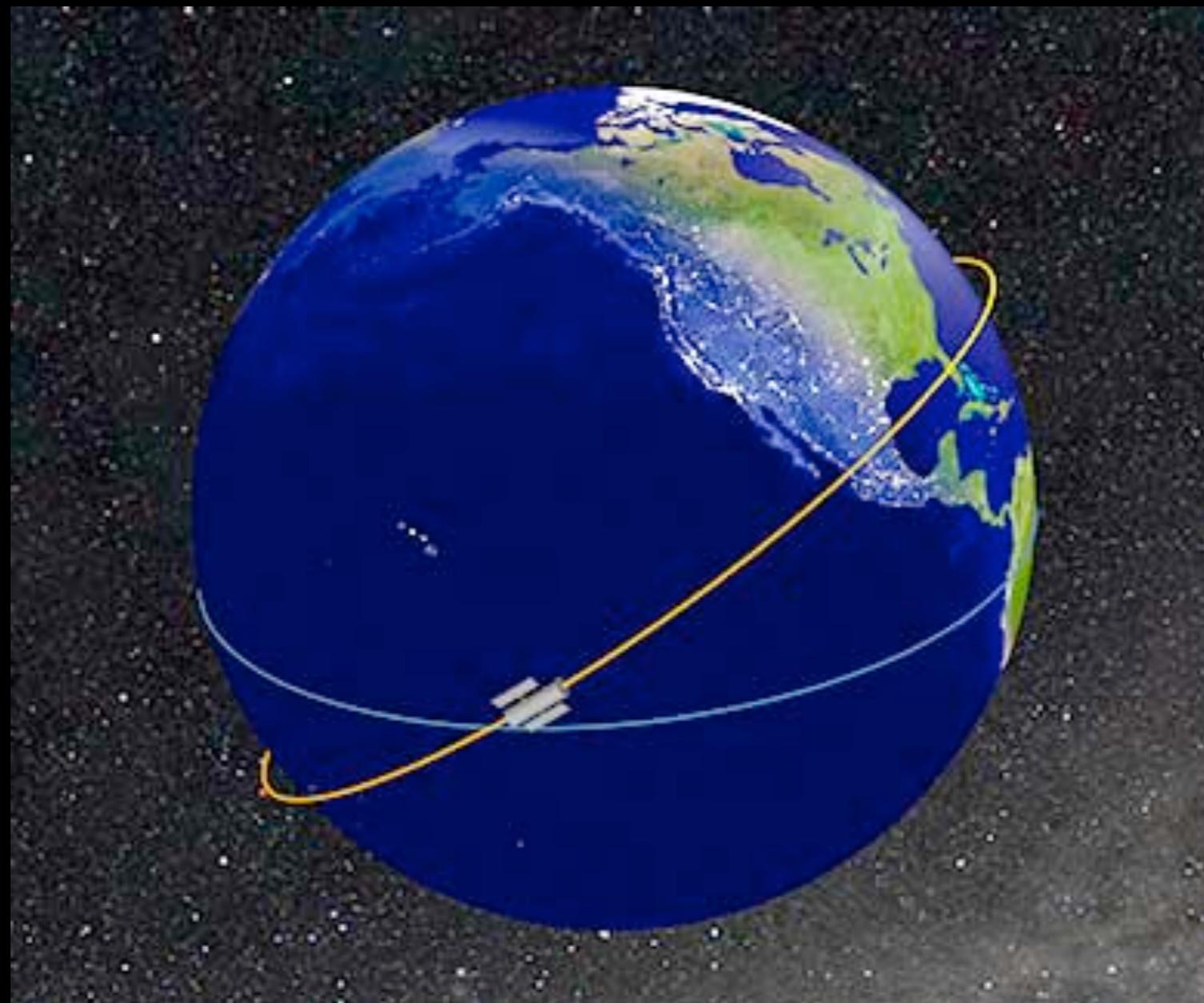
Imagen del SDSS de KISSR 298.



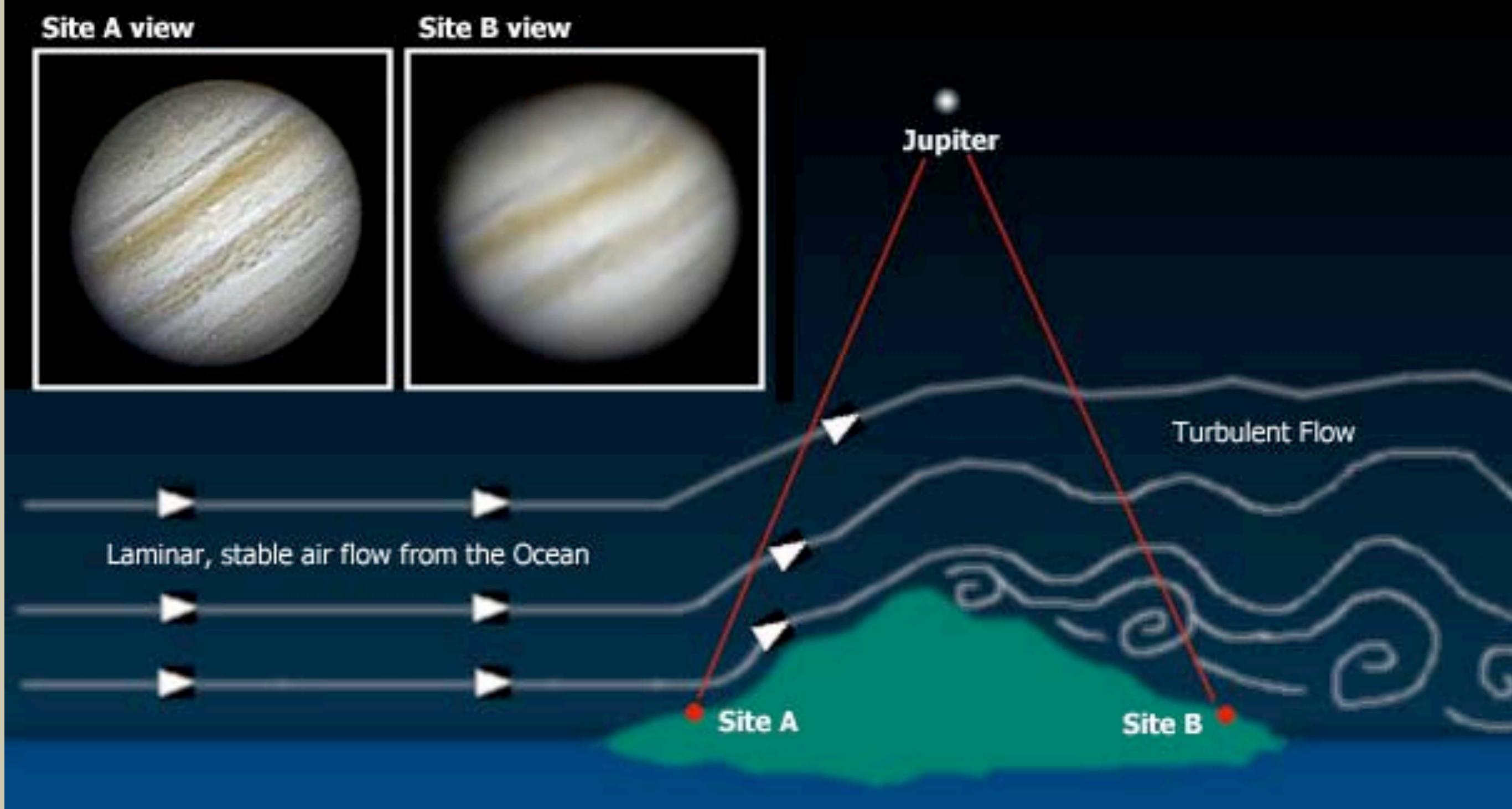
El Telescopio espacial Hubble.



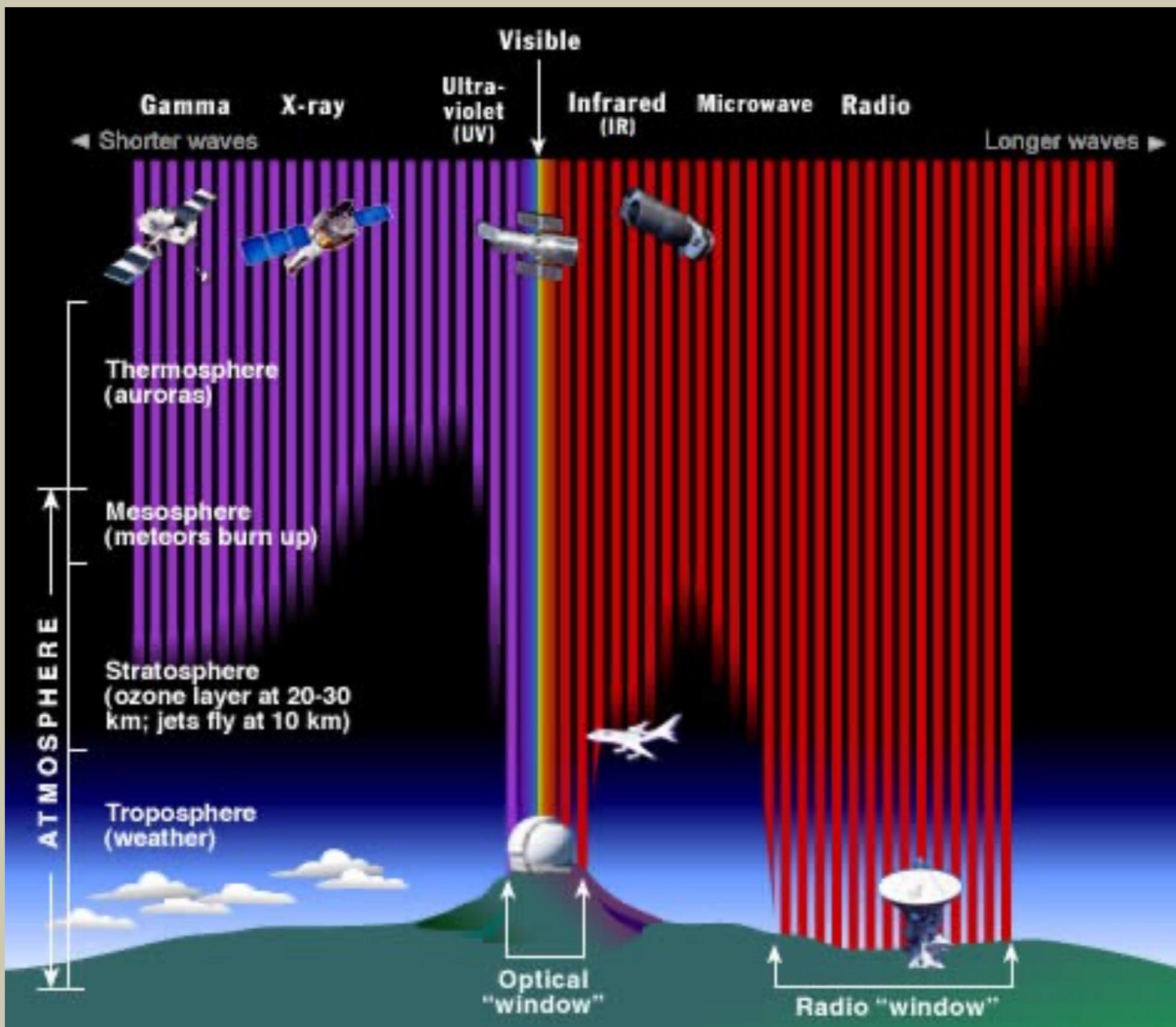
Le da una vuelta a la Tierra en 97 min.



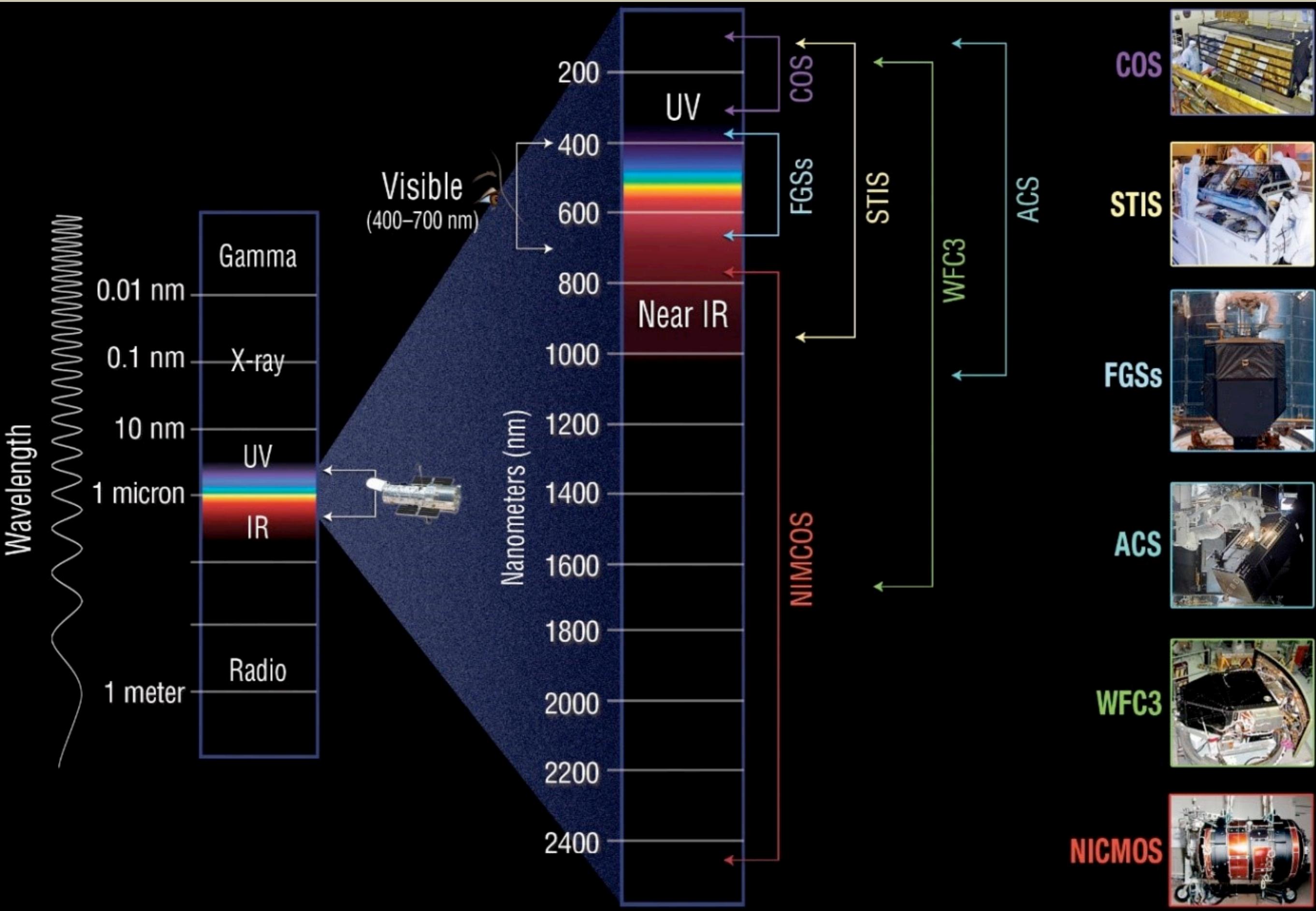
Estar por encima de la atmósfera permite evitar la turbulencia de la atmósfera, que afecta la nitidez de las imágenes.



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



Los instrumentos abordo del Hubble.



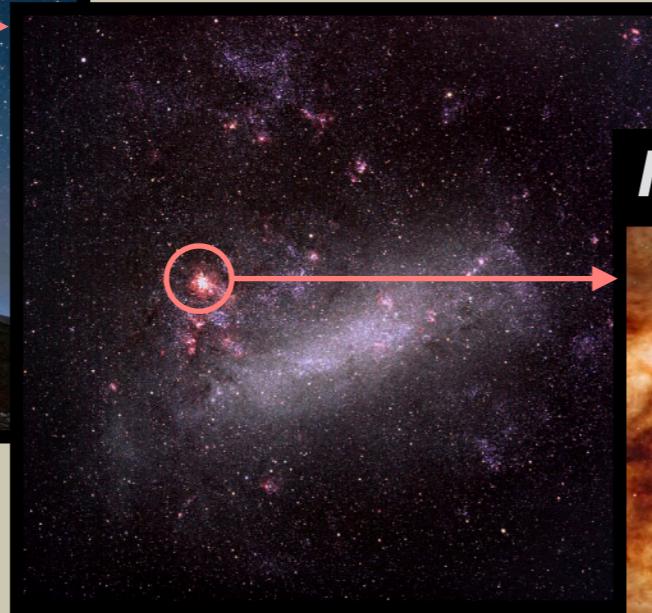
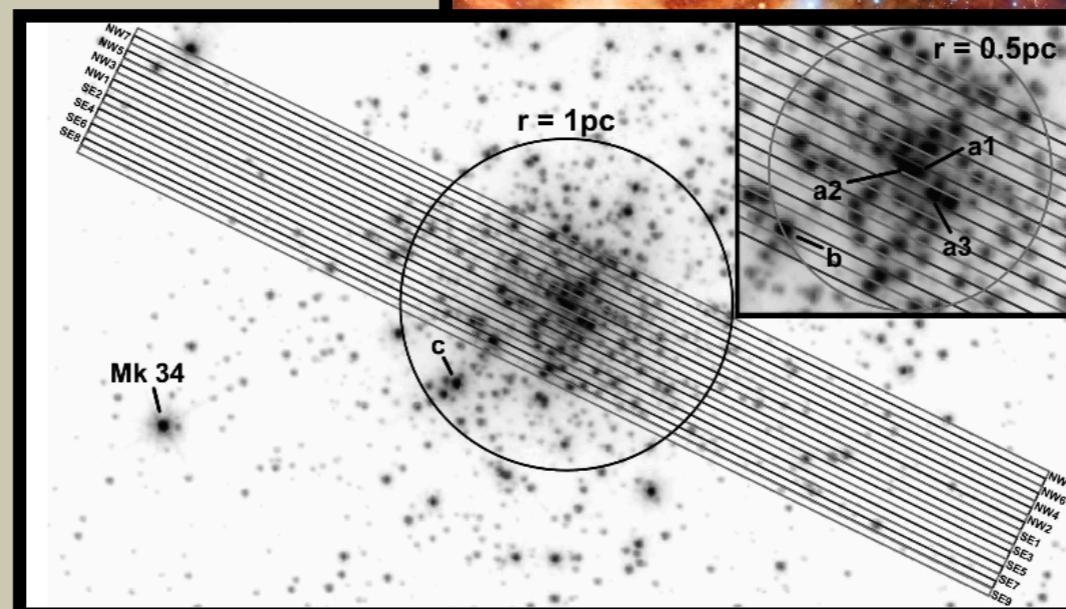


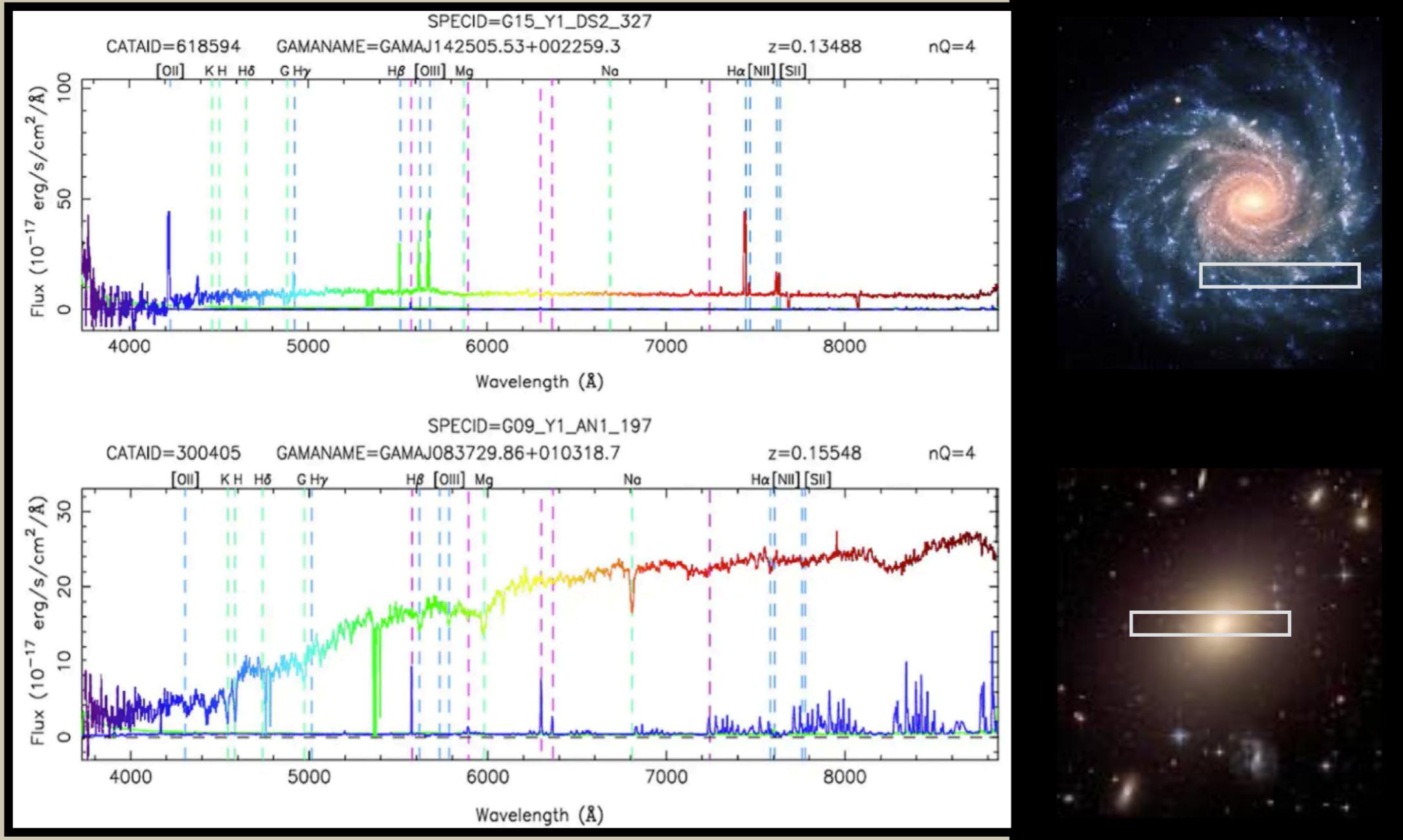
Imagen = mil palabras



Espectro = mil imágenes



Espectros de galaxias.

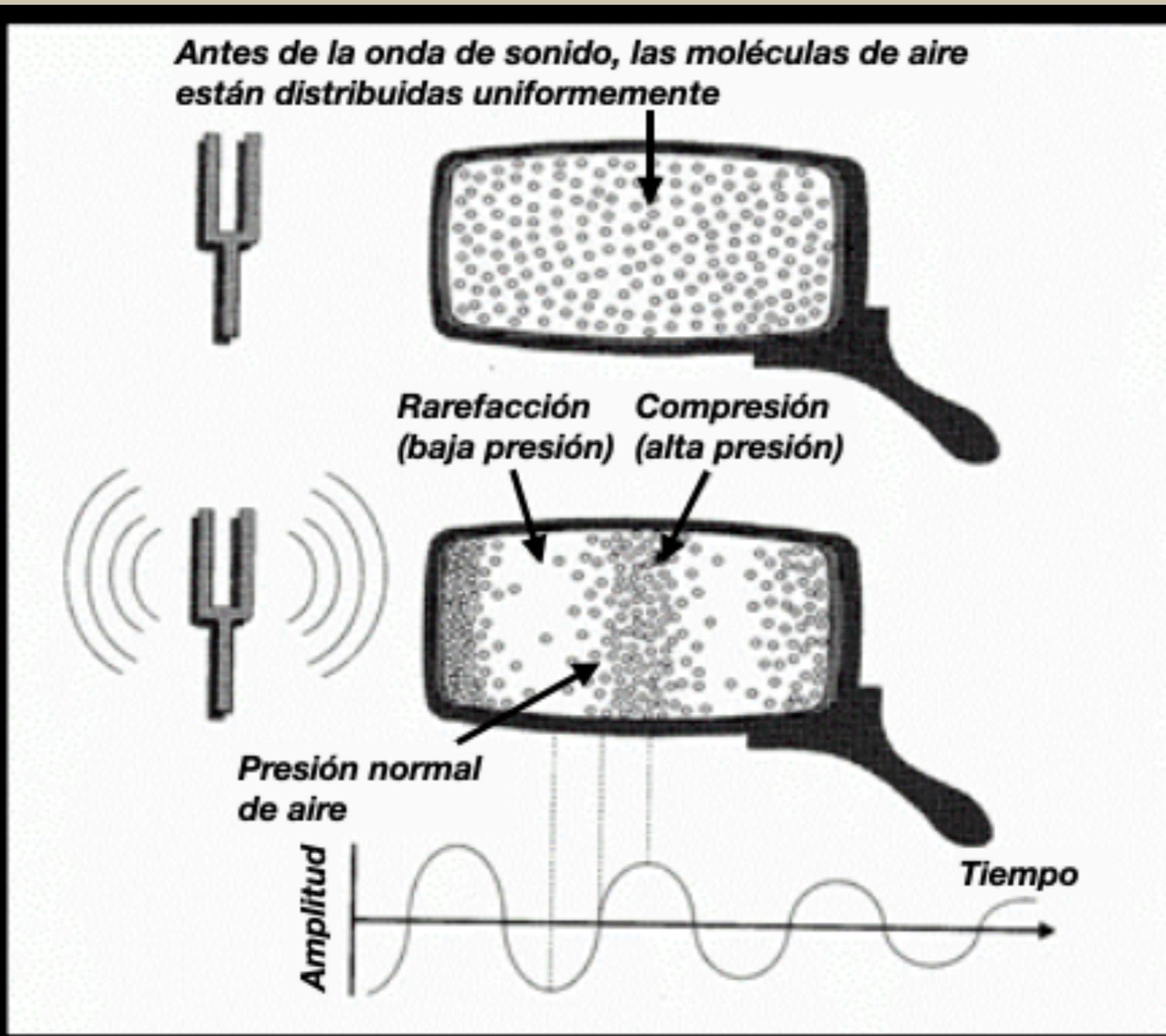


Gracias

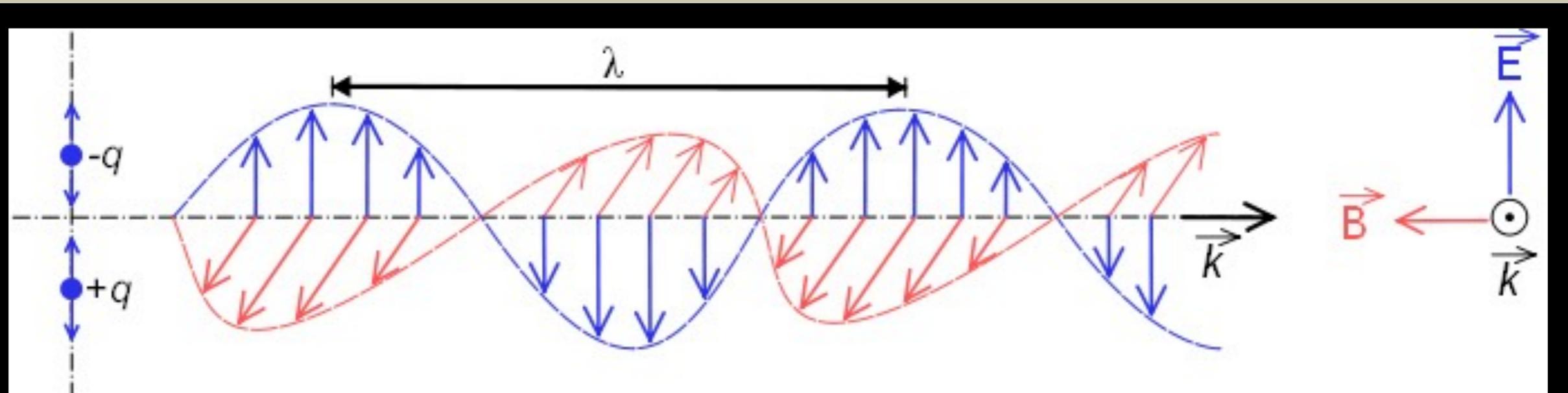


Extra

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.

