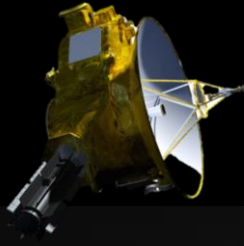




Nuevos Horizontes: Descubriendo Nuevos Mundos

Dr. Adriana Ocampo Uria
aco@nasa.gov



Héroes de esta Historia

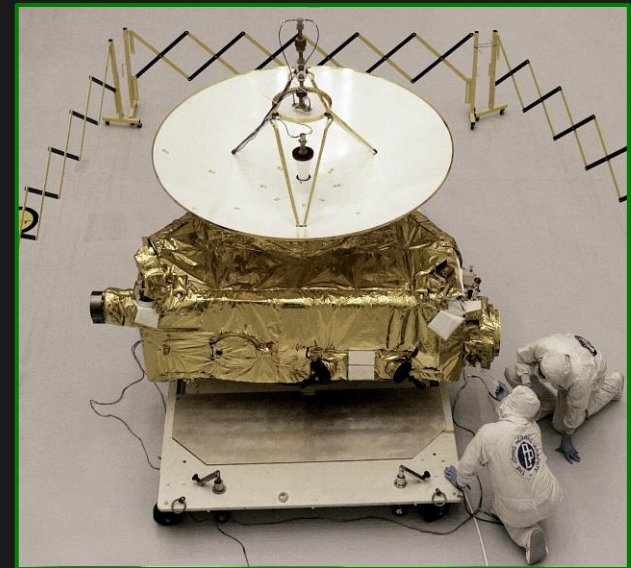
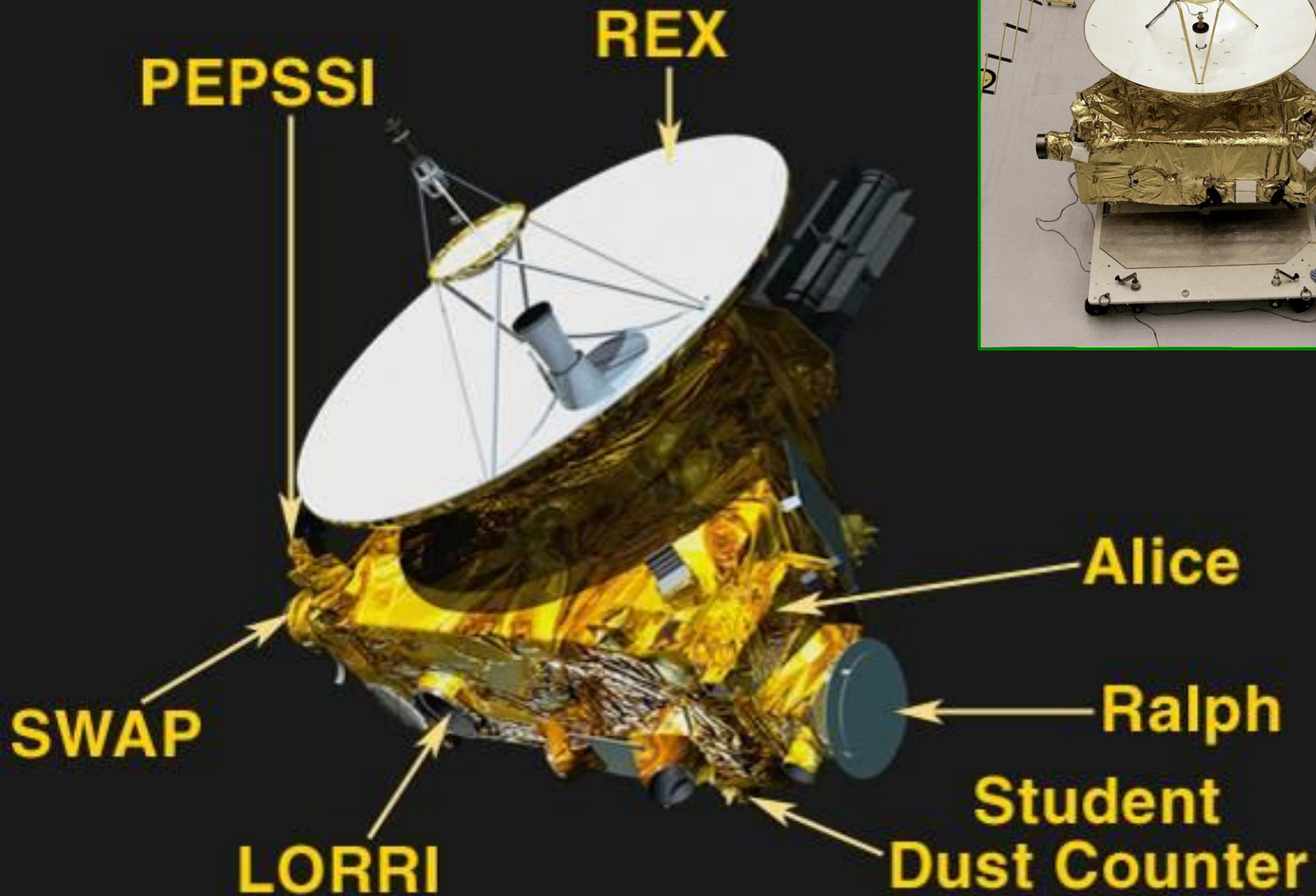


Venetta Burney dio el nombre a Plutón. Clyde Tombaugh descubrió a Plutón 1930

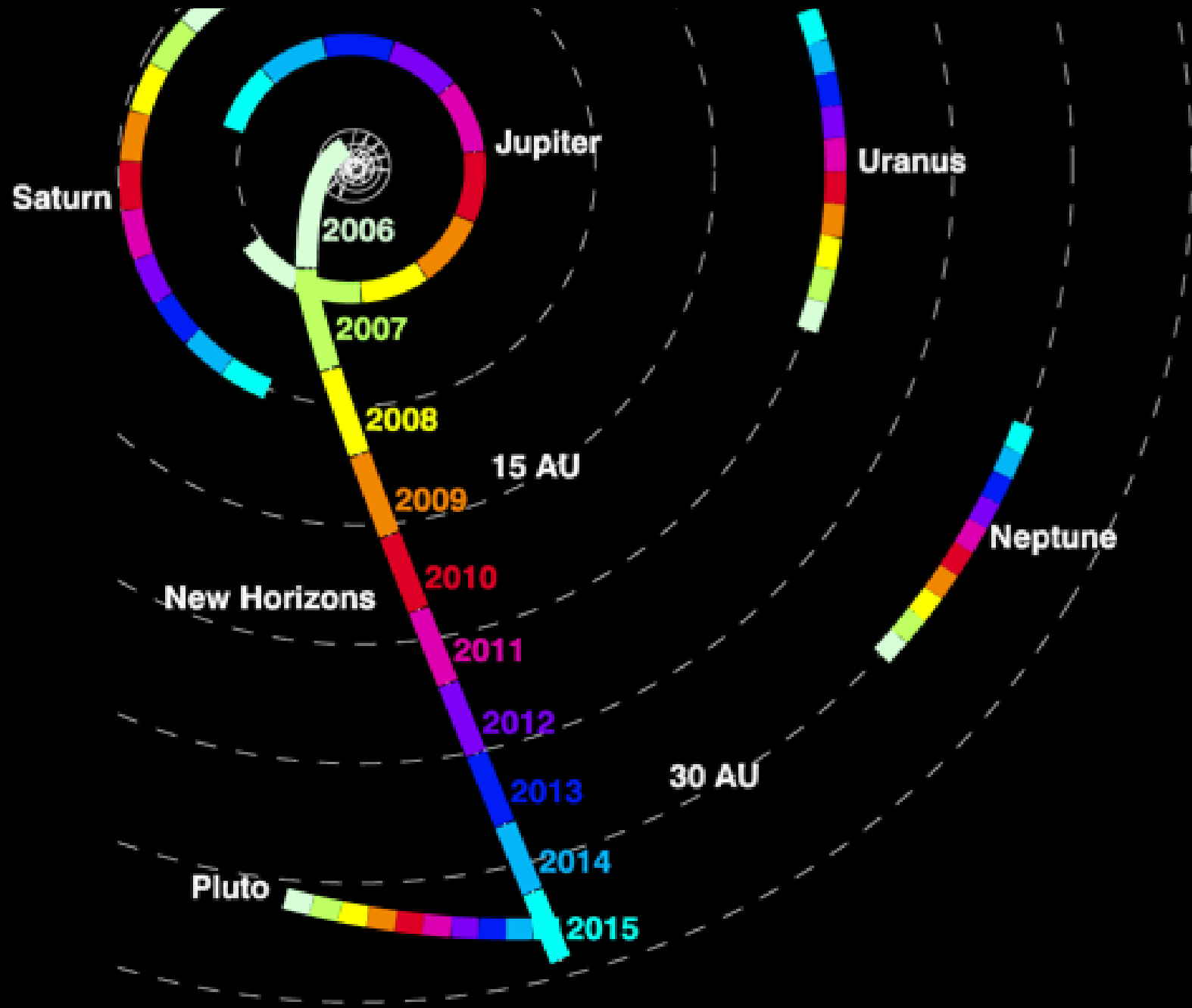
Lanzamiento , Enero 19, 2006



Velocidad 16.7km/s
Primavera empezó en Plutón 1989



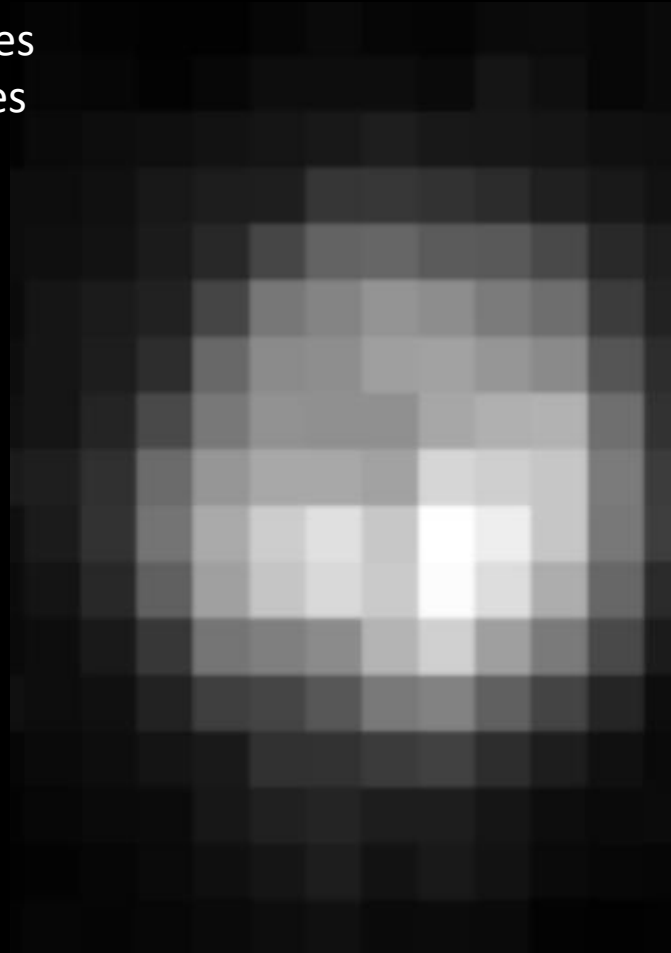
Un viaje de 9.5 años cubriendo 5mil millones Km



Nuevos Horizontes transformo el conocimiento de Plutón y ...

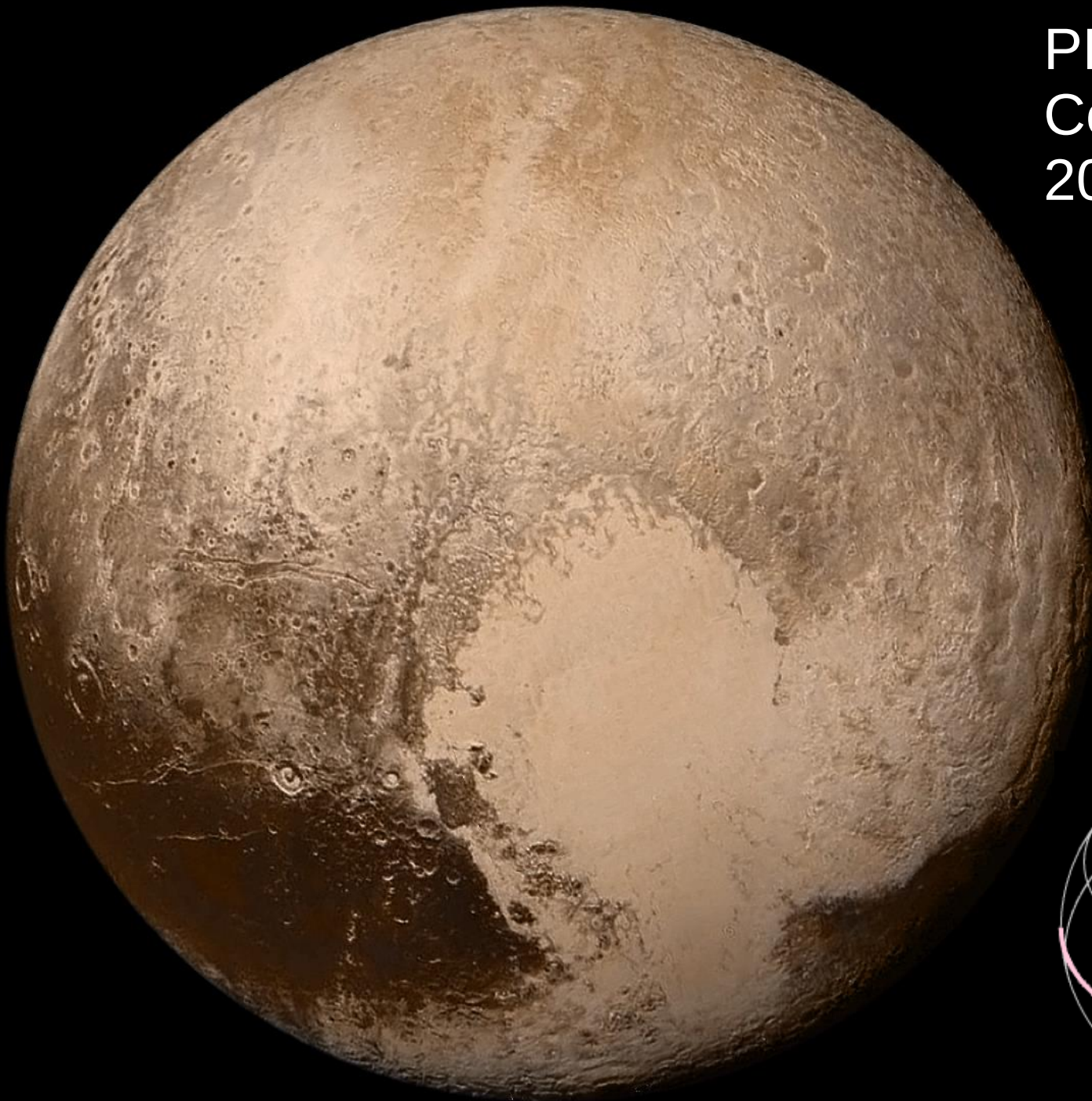
1 año = 248 años terrestres

1 día = 6.7 días terrestres

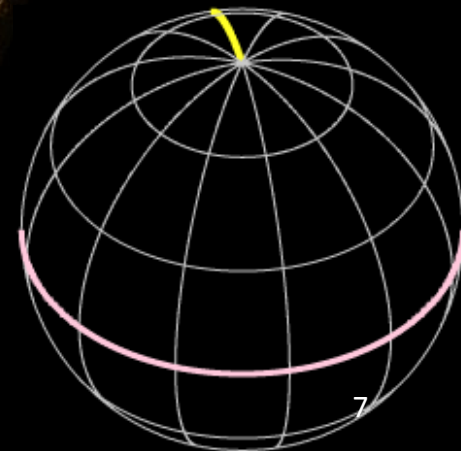


Hubble Space Telescope (1994)

PLUTÓN:
Color Natural
2015
400 km



Diametro=2400km



Plutón y sus lunas

The Pluto System through the Eyes of New Horizons Plutón y Caronte: Sistema Planetario Binario



Pluto

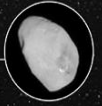
sized to approximate scale



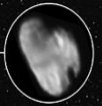
Charon



Styx



Nix



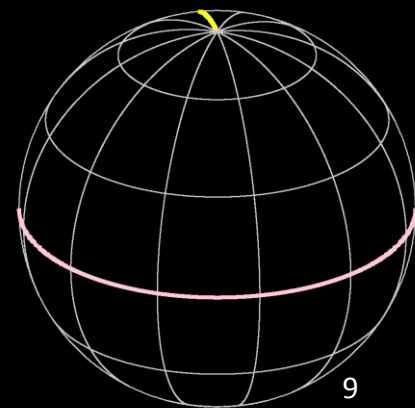
Hydra



Kerberos

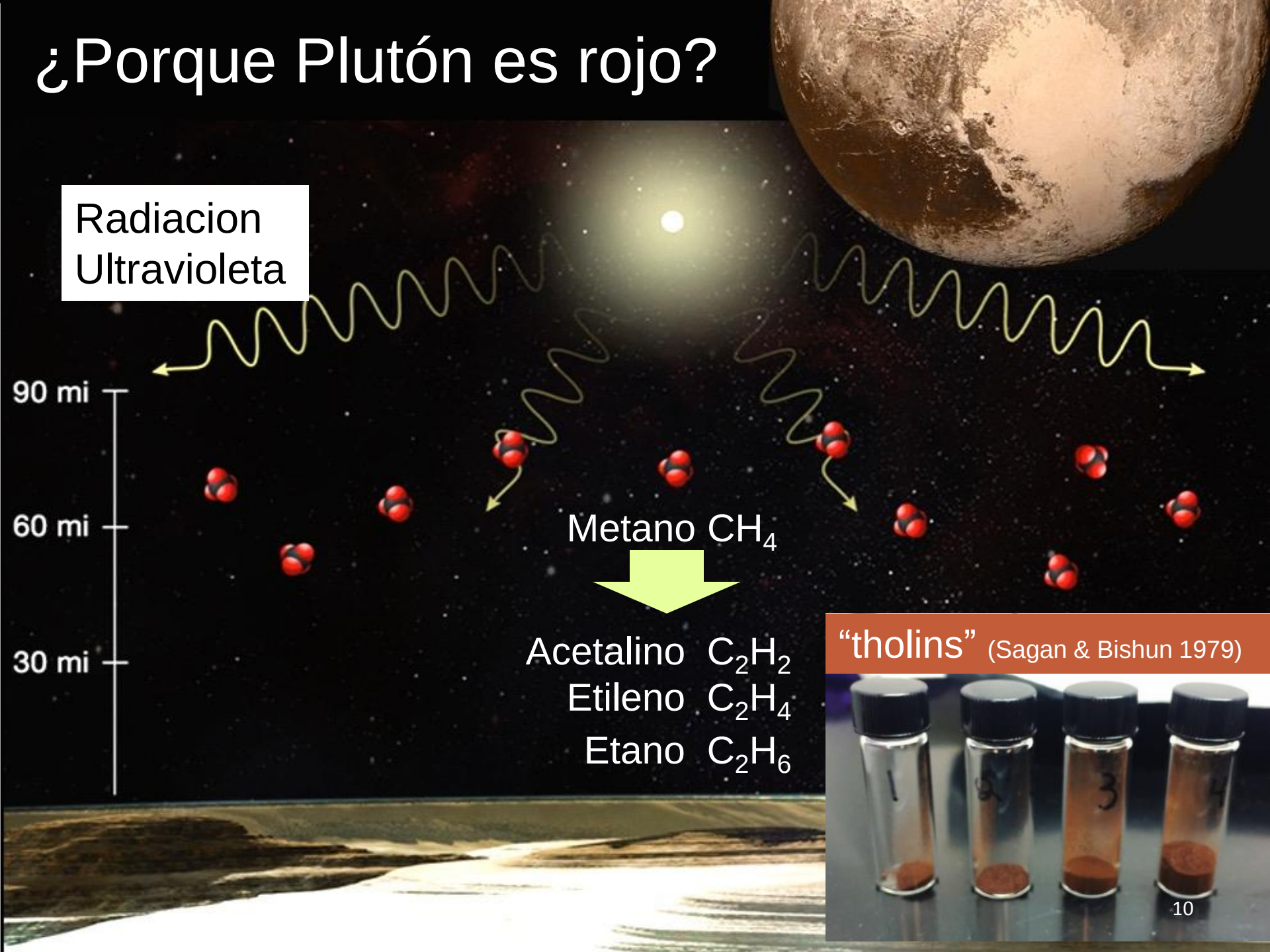
Color procesado

400 km



¿Porque Plutón es rojo?

Radiacion
Ultravioleta



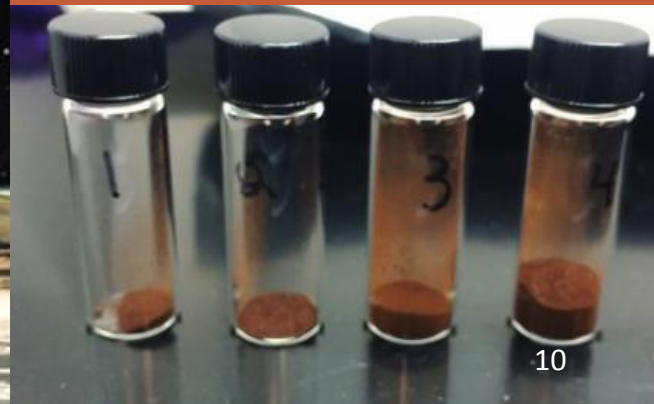
Metano CH_4

Acetalino C_2H_2

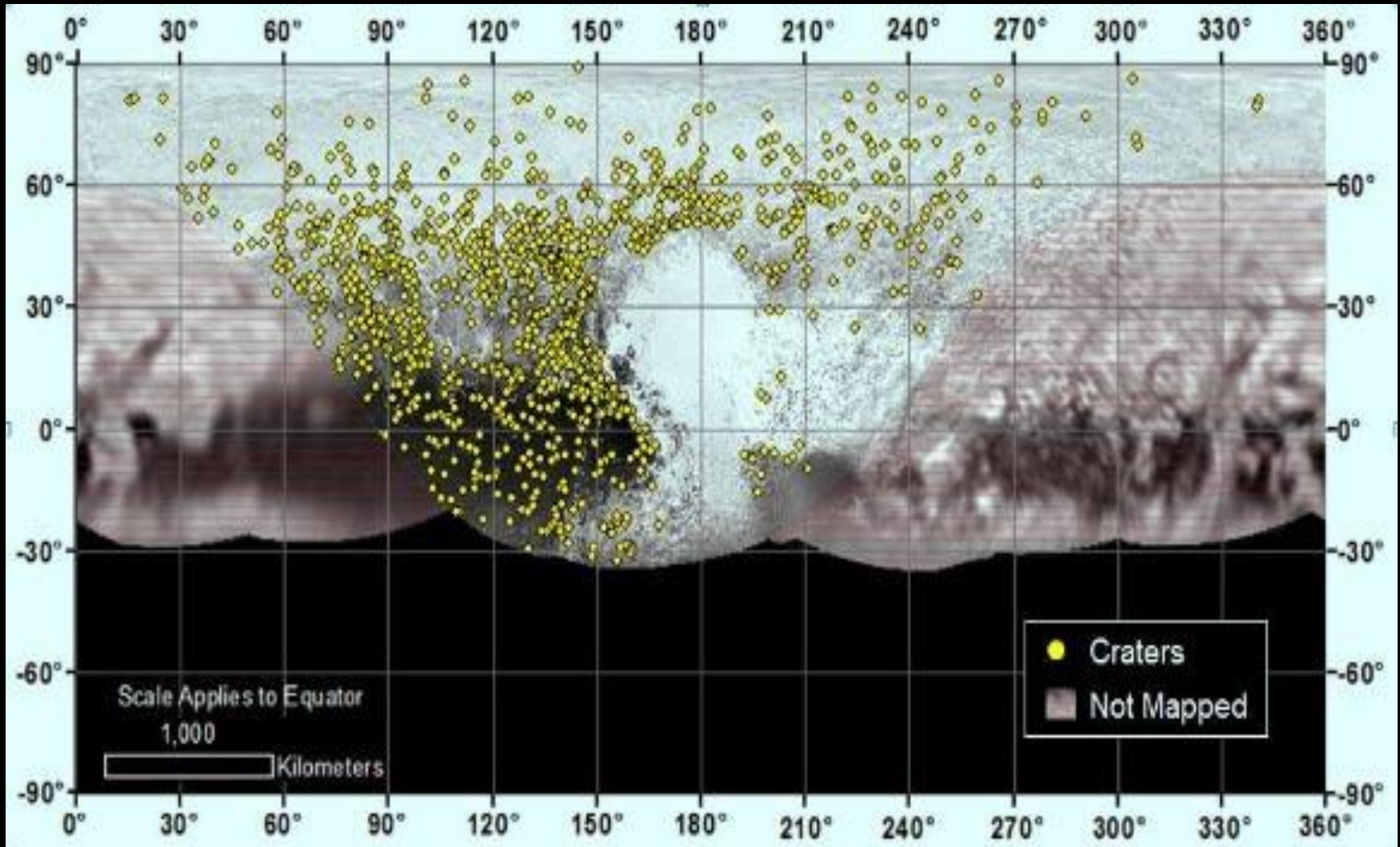
Etileno C_2H_4

Etano C_2H_6

“tholins” (Sagan & Bishun 1979)



Edad relativa de la superficie de Plutón

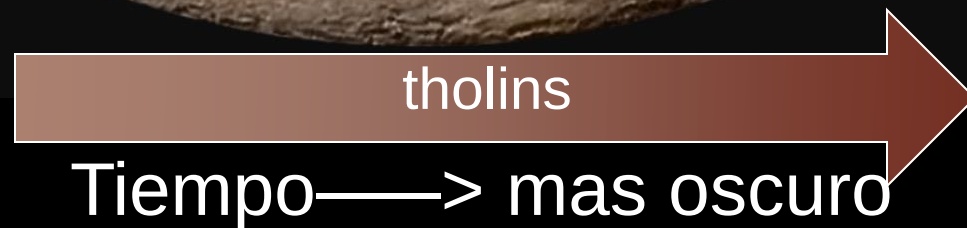


Distribucion de Tolinós vs edad relativa

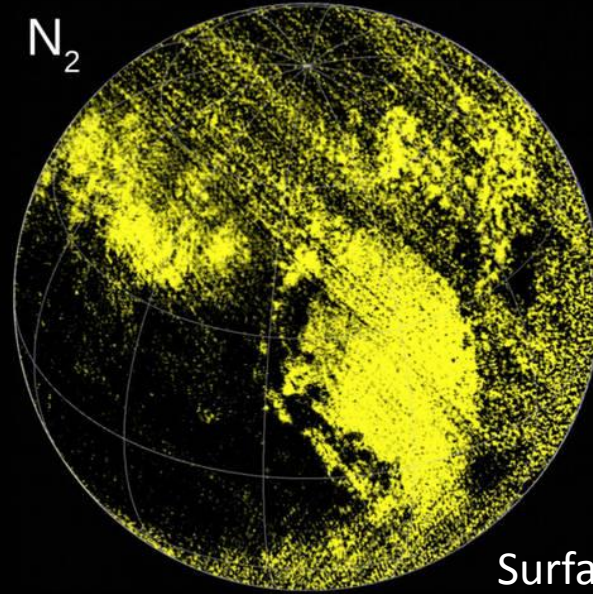
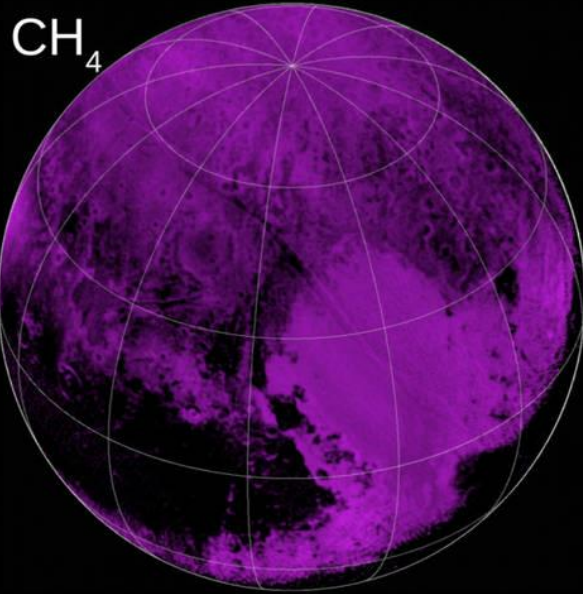


“Tombaugh Regio”
Mas joven, claro
(sin crateres)

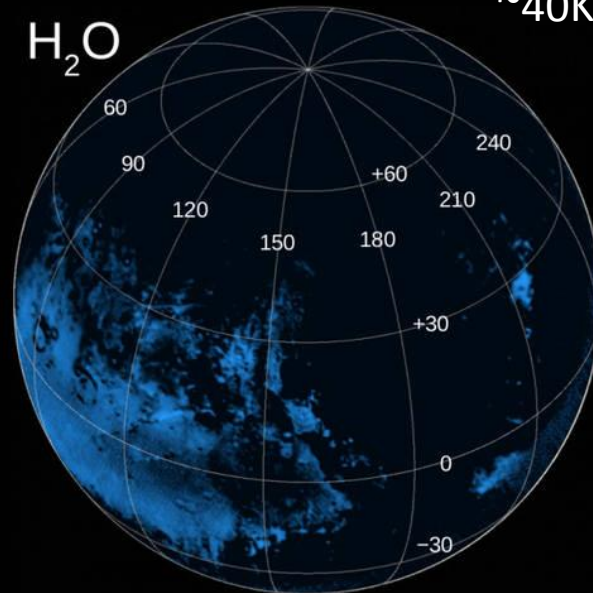
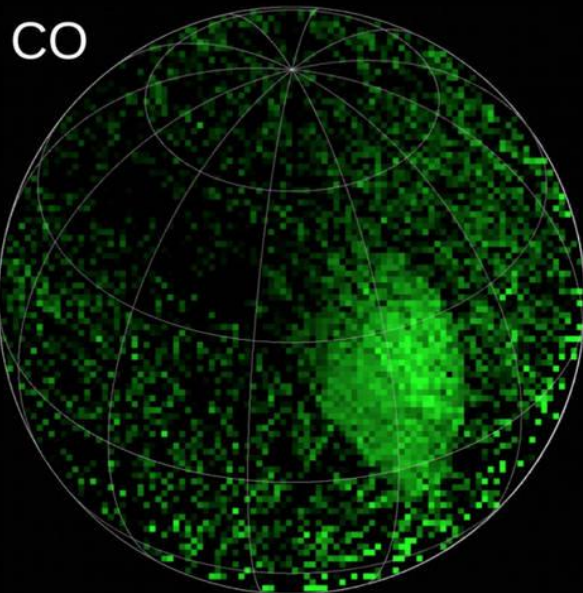
“Cthulhu”
Mas antiguo,
oscuro
(mas crateres)



Sputnik Planitia: N_2 , CH_4 , CO

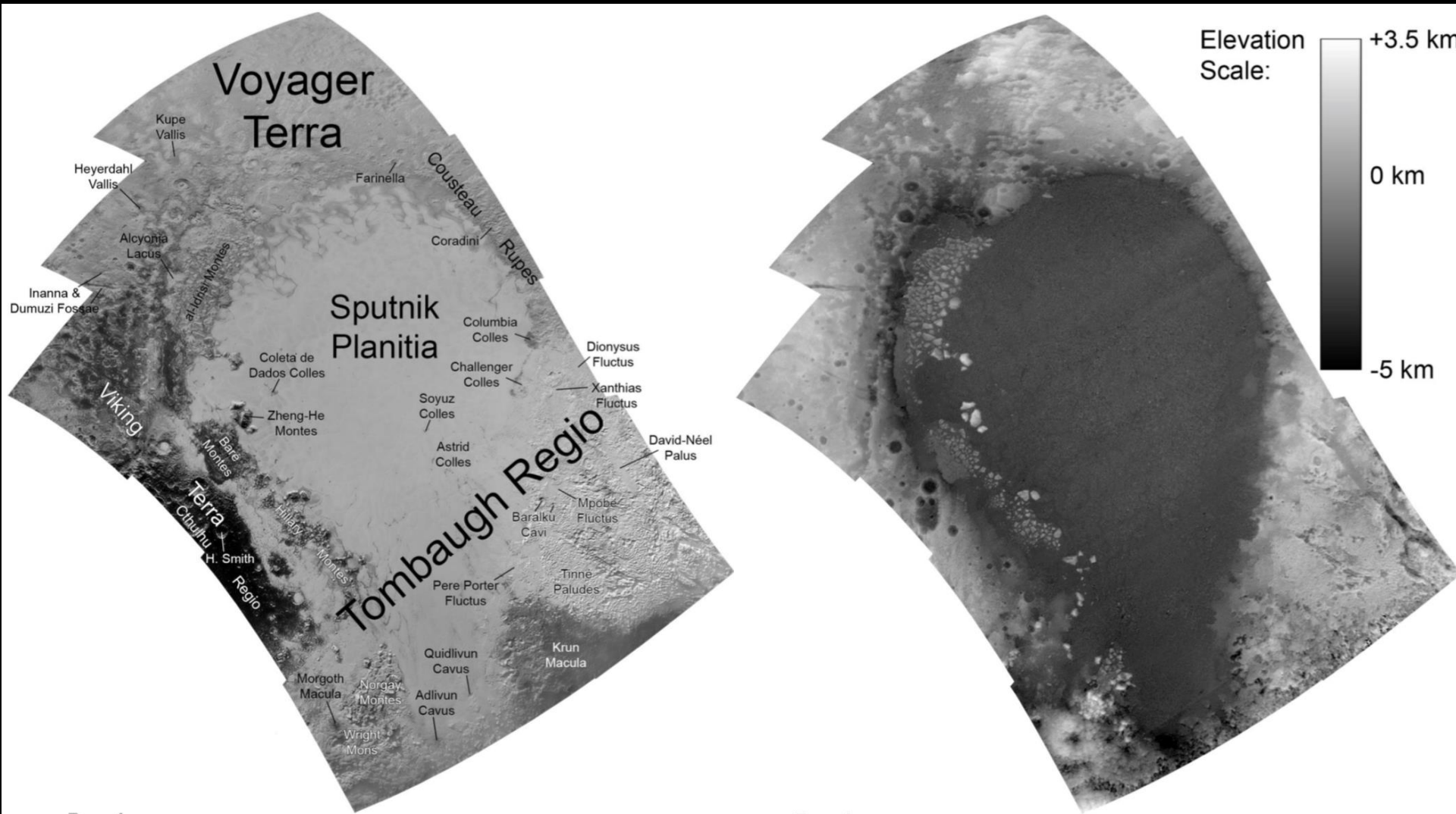


Surface Temperature:
 $\sim 40\text{K} = -387^\circ\text{F} = -200^\circ\text{C}$



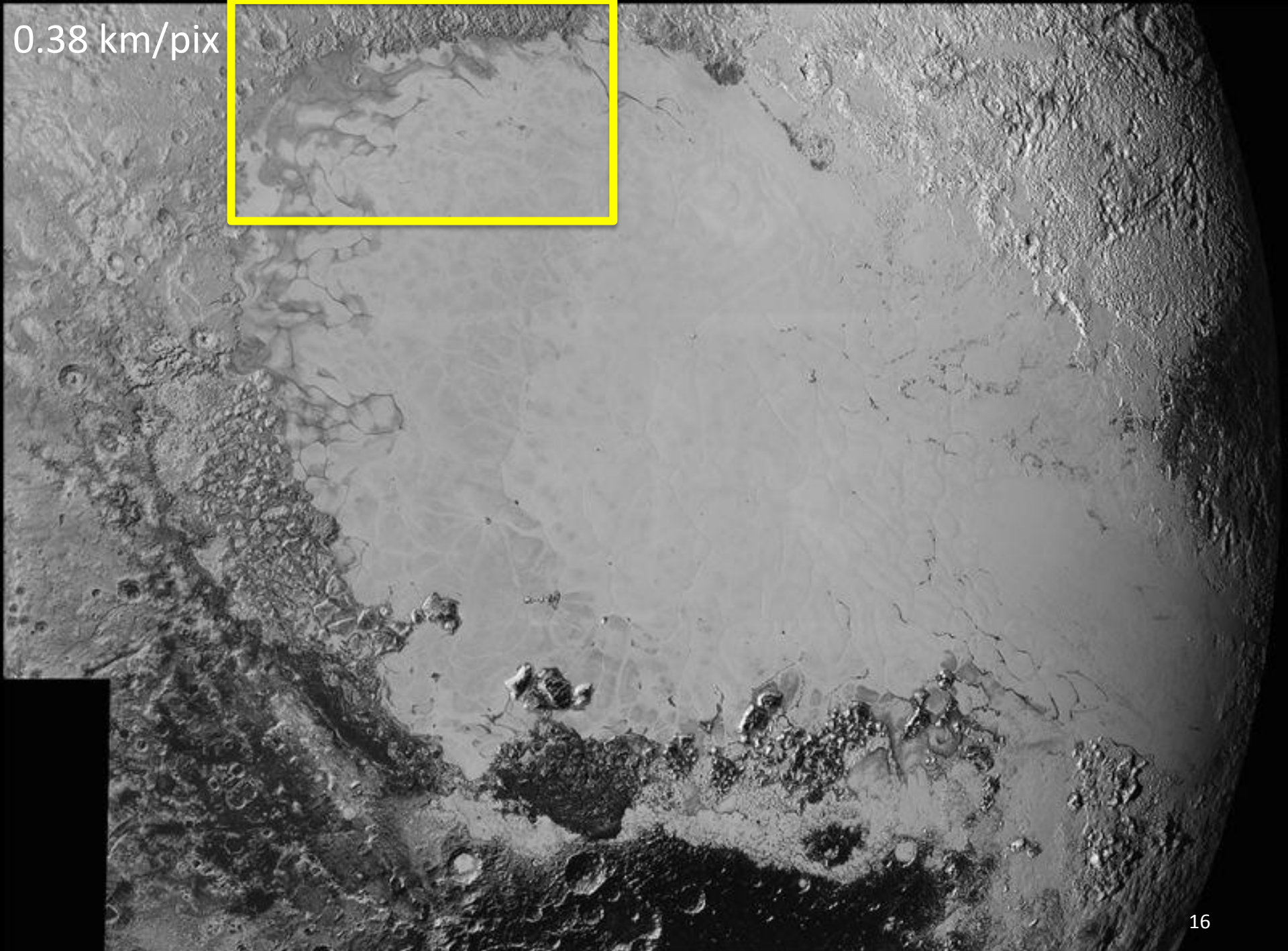
GLACIARES EN PLUTÓN

Sputnik Planitia: Gran Cuenca de Glaciales



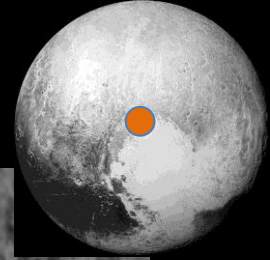
~900,000 km²

All feature names are informal¹⁵



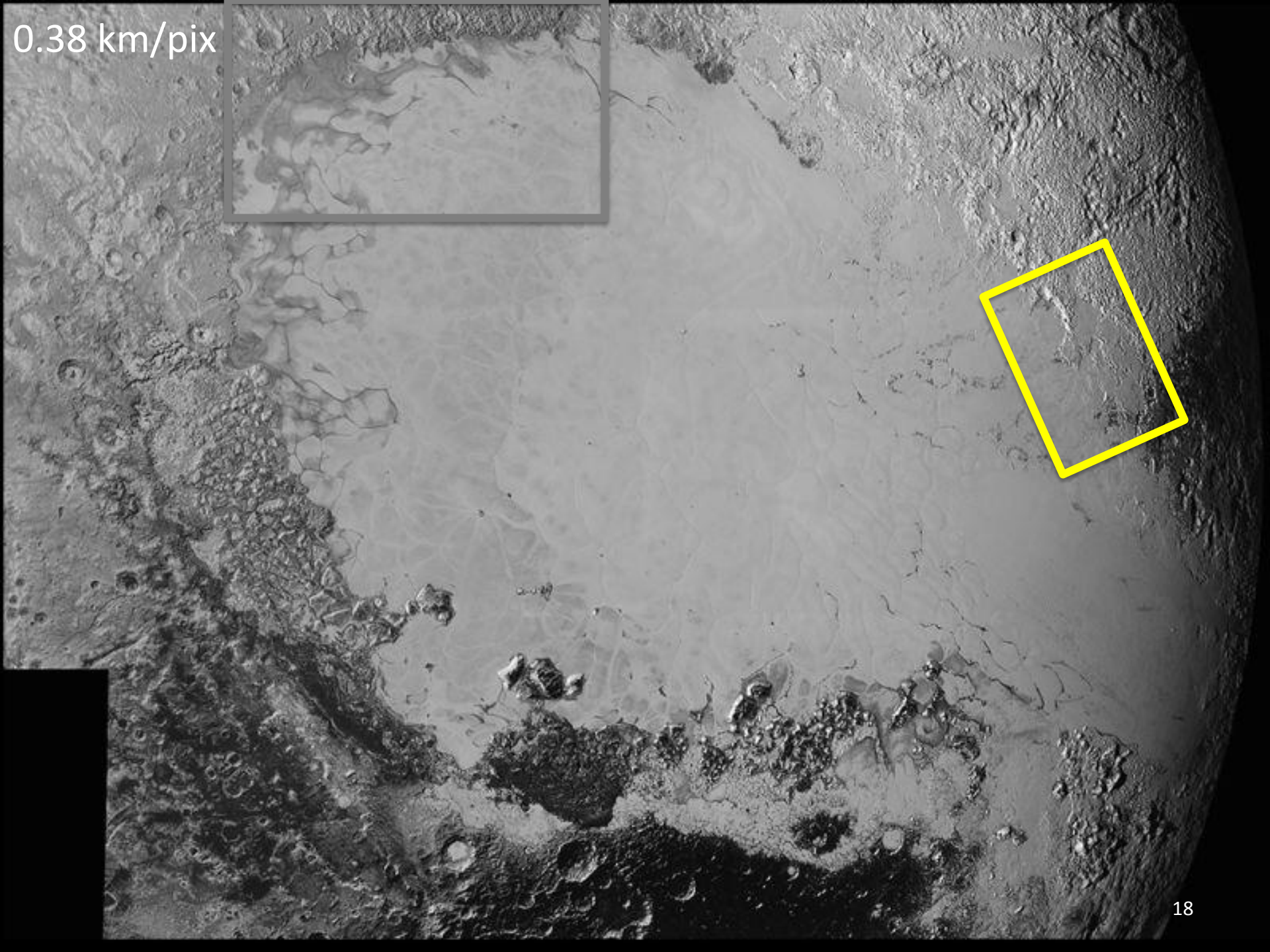
0.38 km/pix

Flujo Glacial en Sputnik Planitia



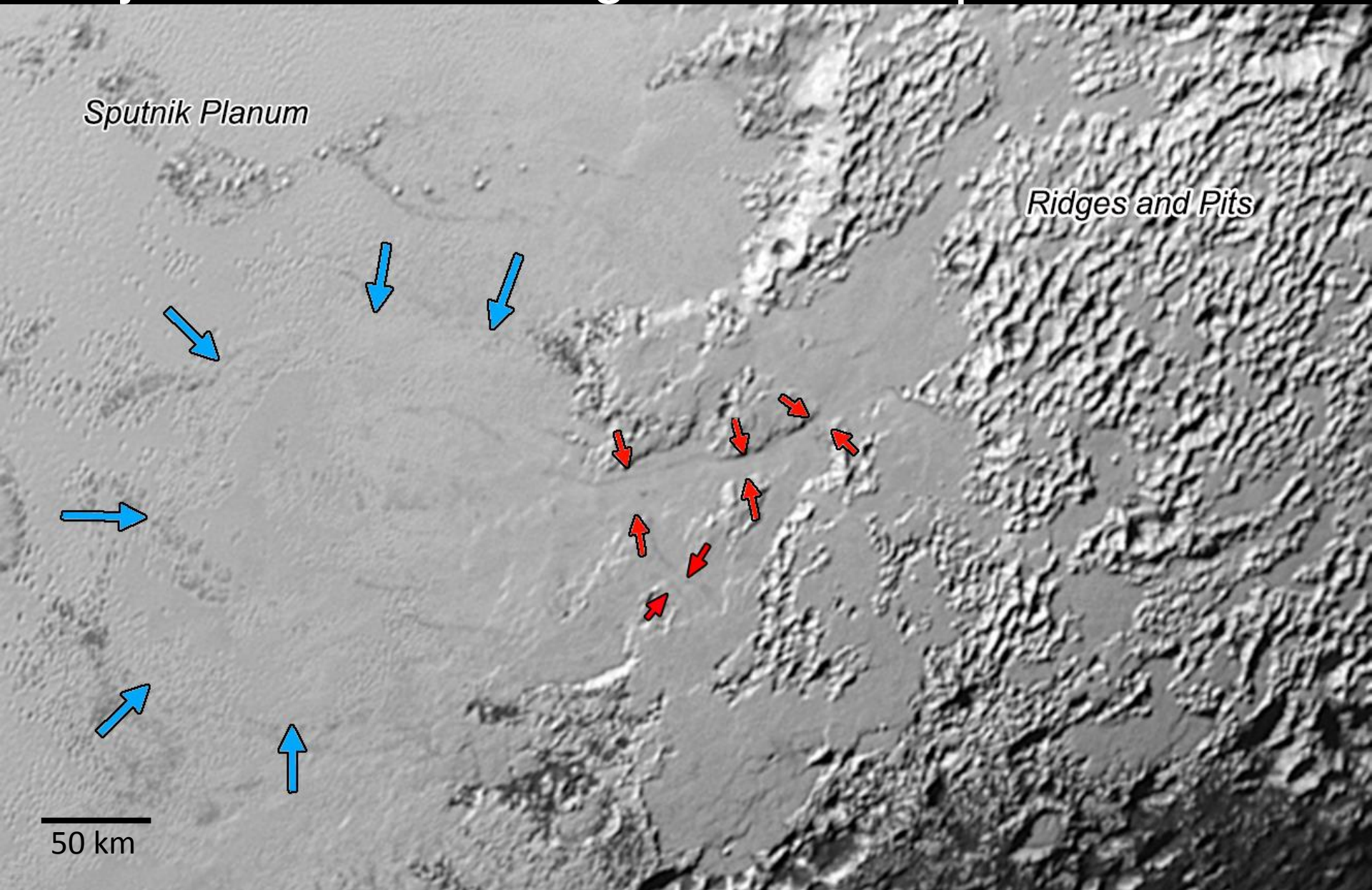
0.38 km/pix

20 mi
32 km



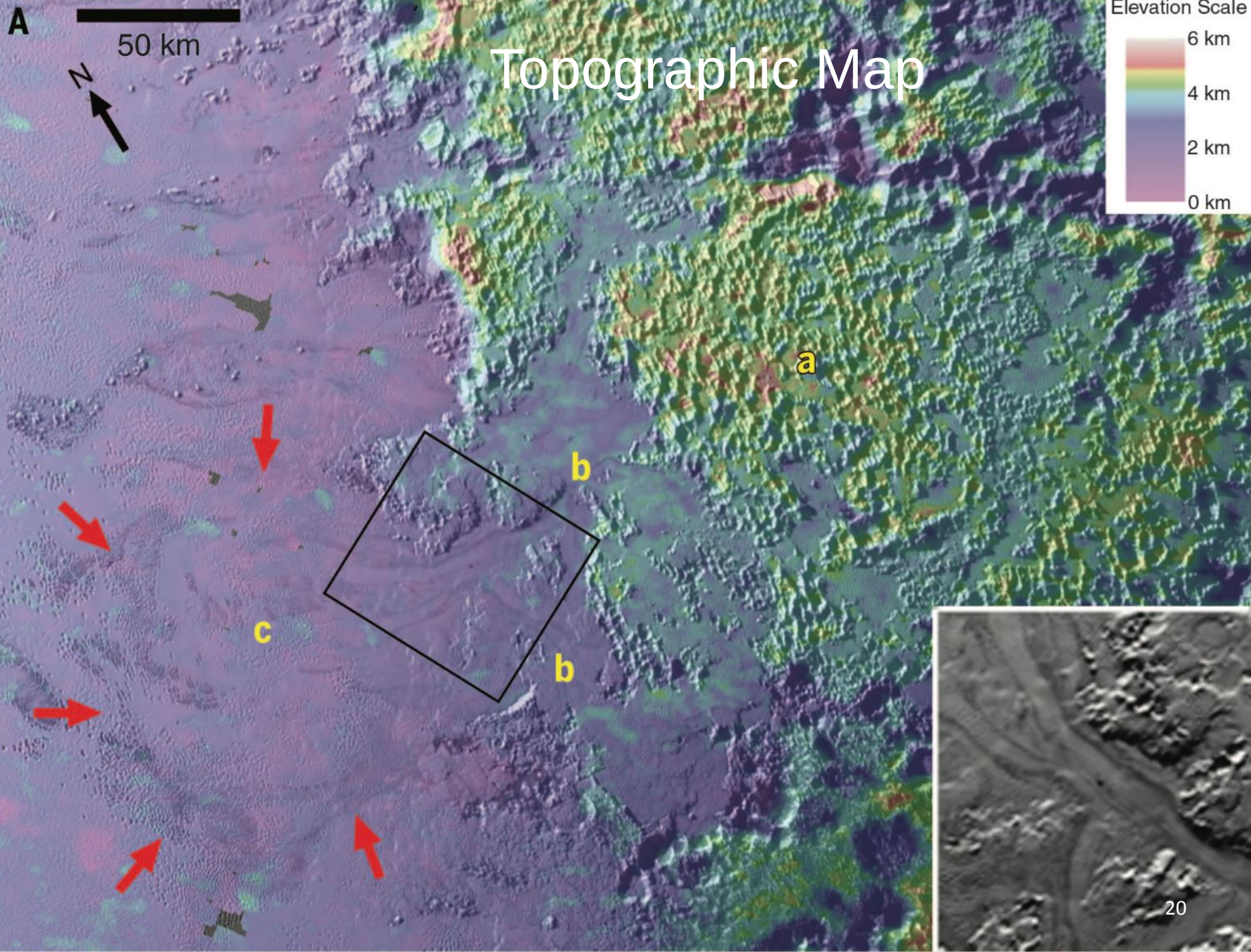
0.38 km/pix

Flujo Glacial del Margin Este de Sputnik Planitia

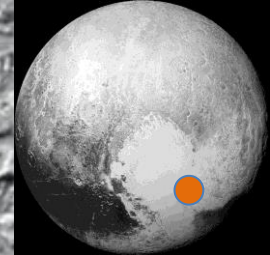


Low phase angle (Sun-Pluto-spacecraft)

All feature names are informal



a



Hill clusters

Hill chain

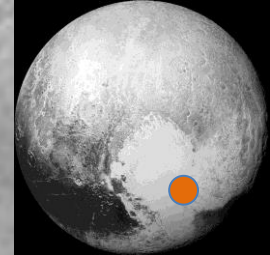
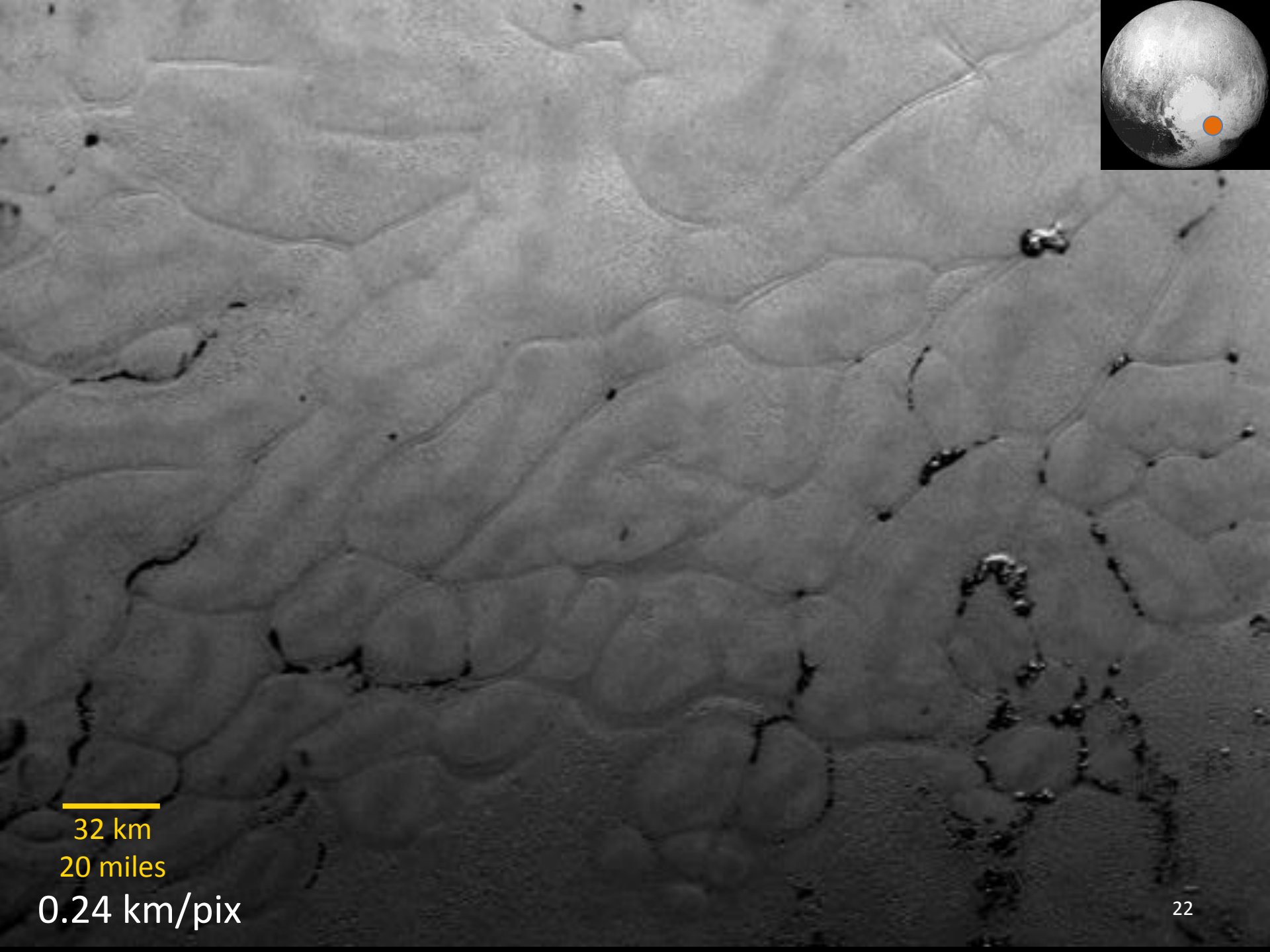
Glacier

Hill chains

Glaciers

31 miles

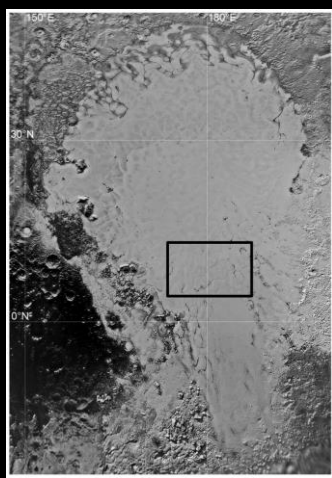
50 km



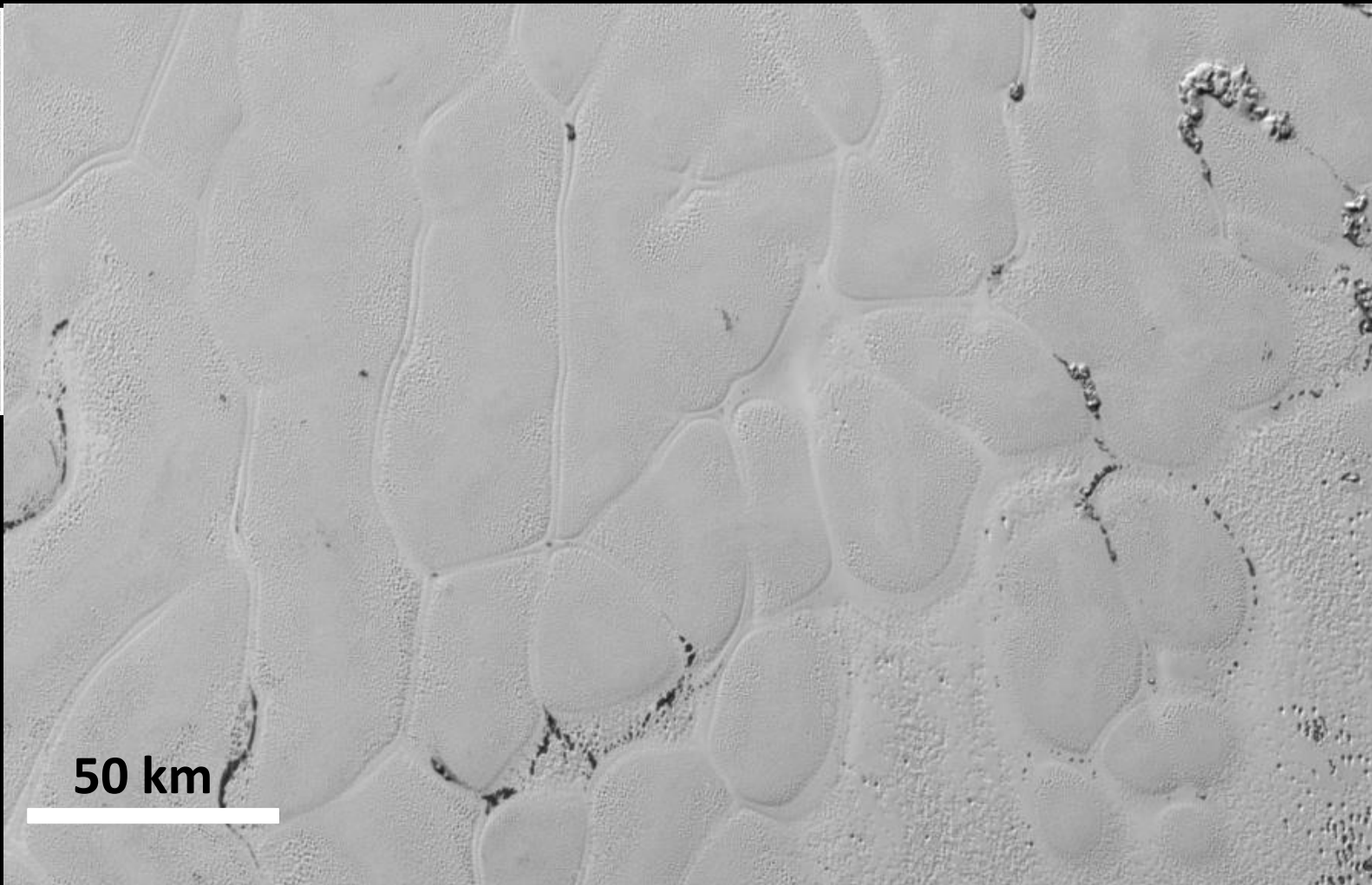
32 km
20 miles

0.24 km/pix

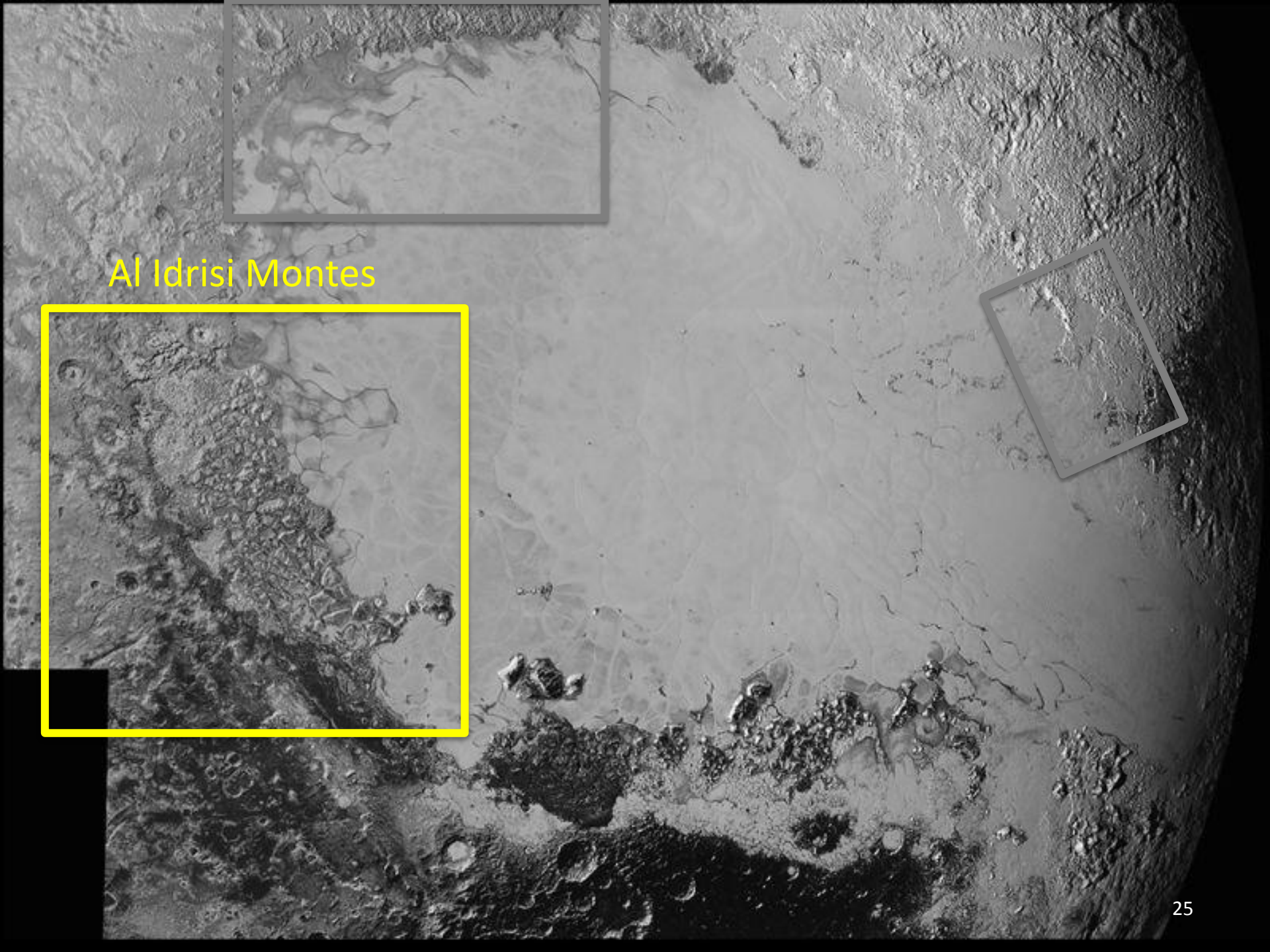
Modelo de convection de celdas hielosas



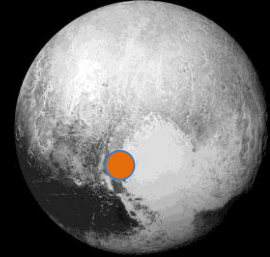
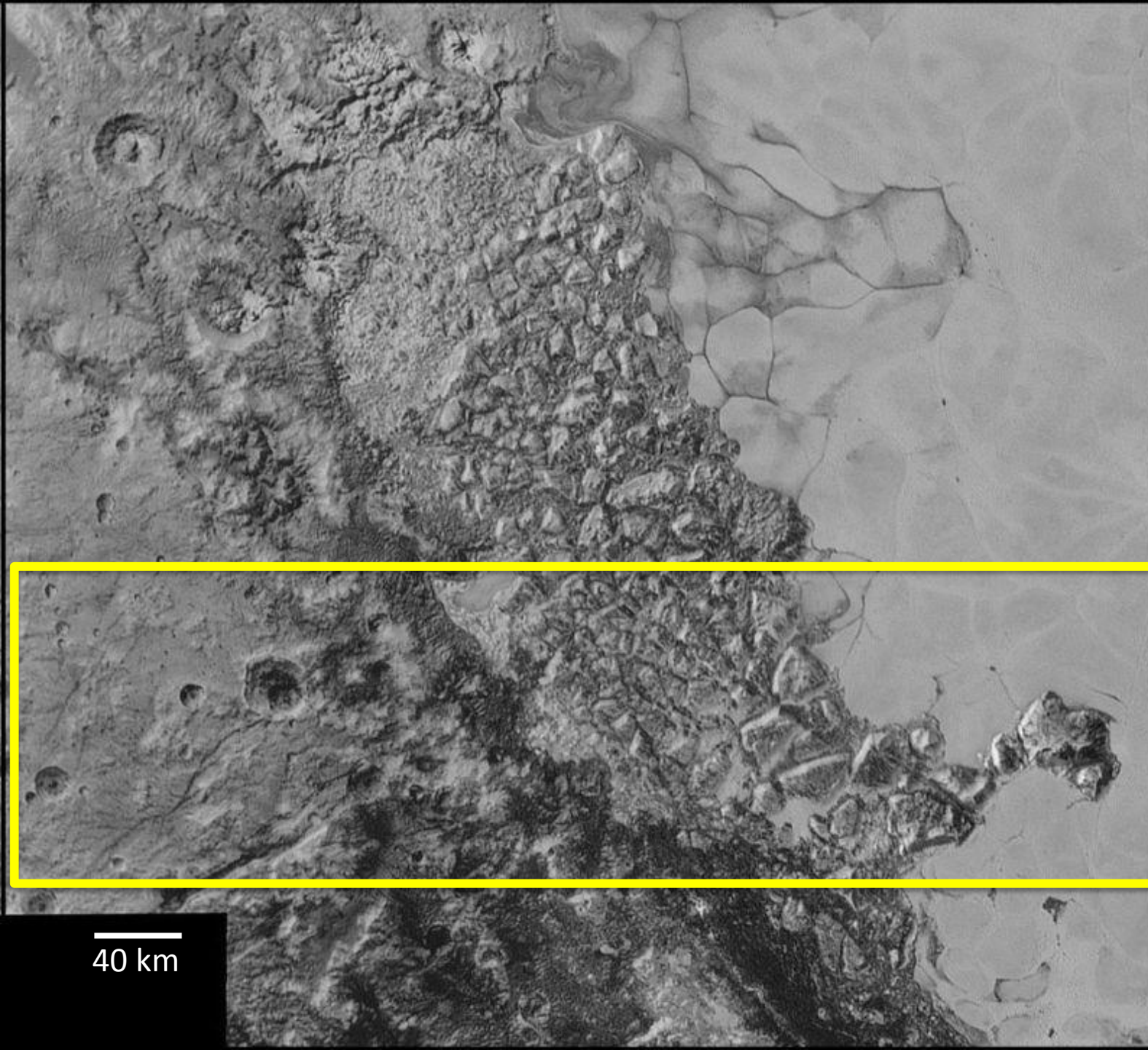
Solid N_2 ice with a thickness $> \sim 1$ km should undergo convection for estimated present day heat-flow conditions on Pluto



MONTAÑAS DE PLUTÓN

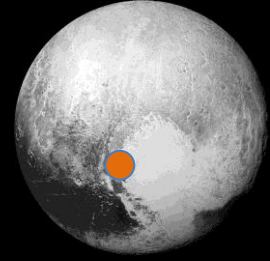


Al Idrisi Montes



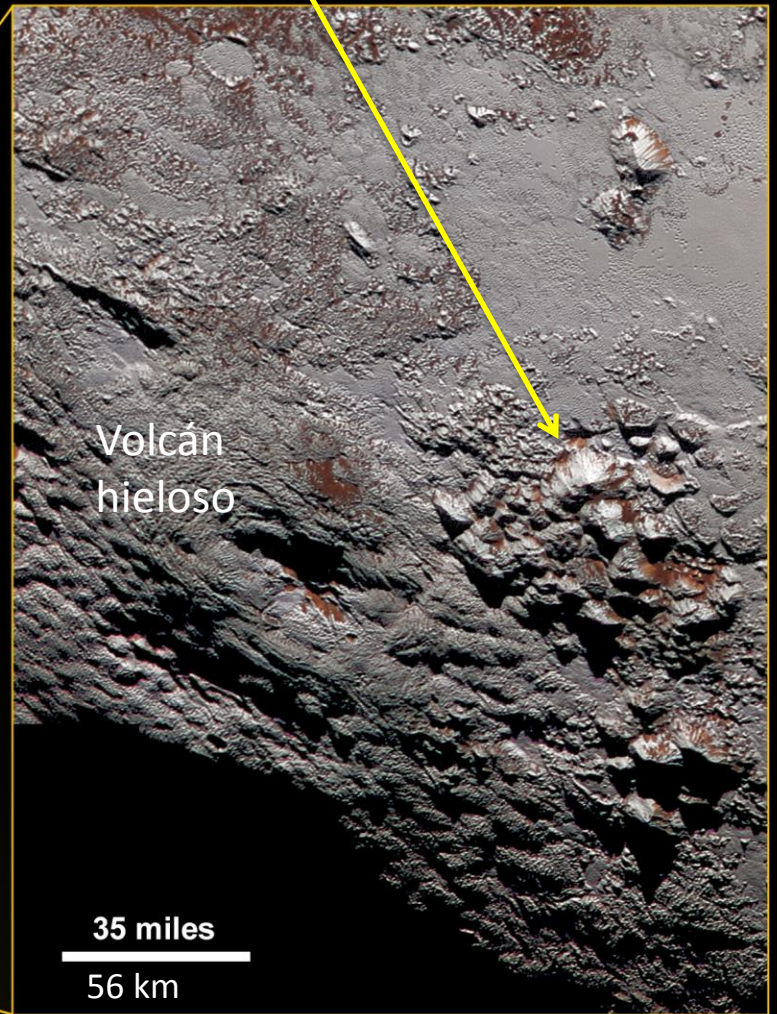
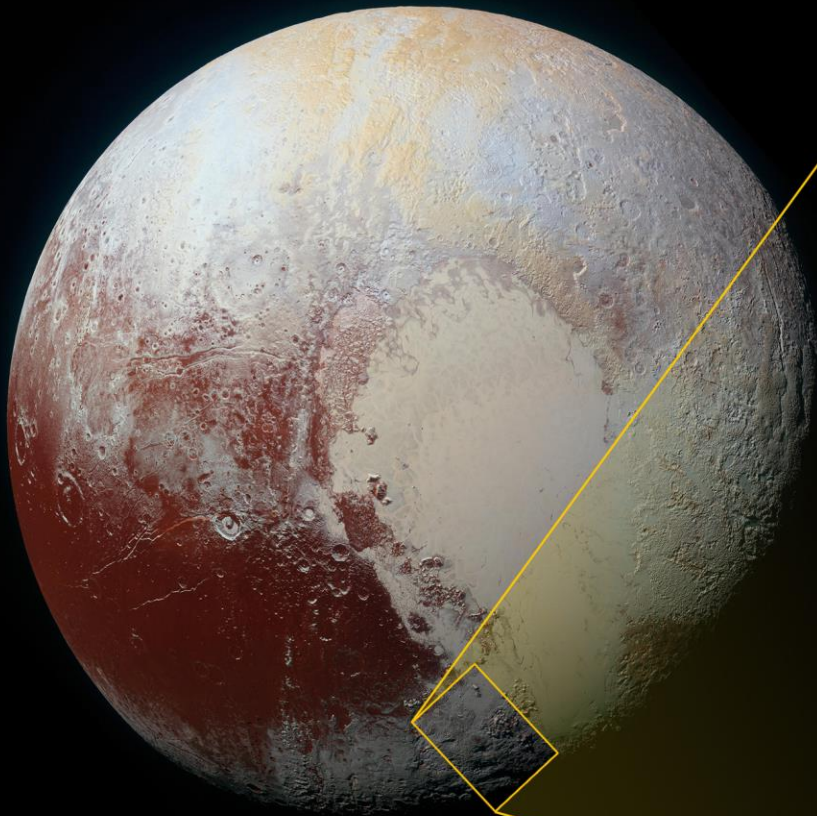
40 km

Plutón: resolución = 124m



Plutón

Montañas Norgay ~4,3 km de altura



CARONTE

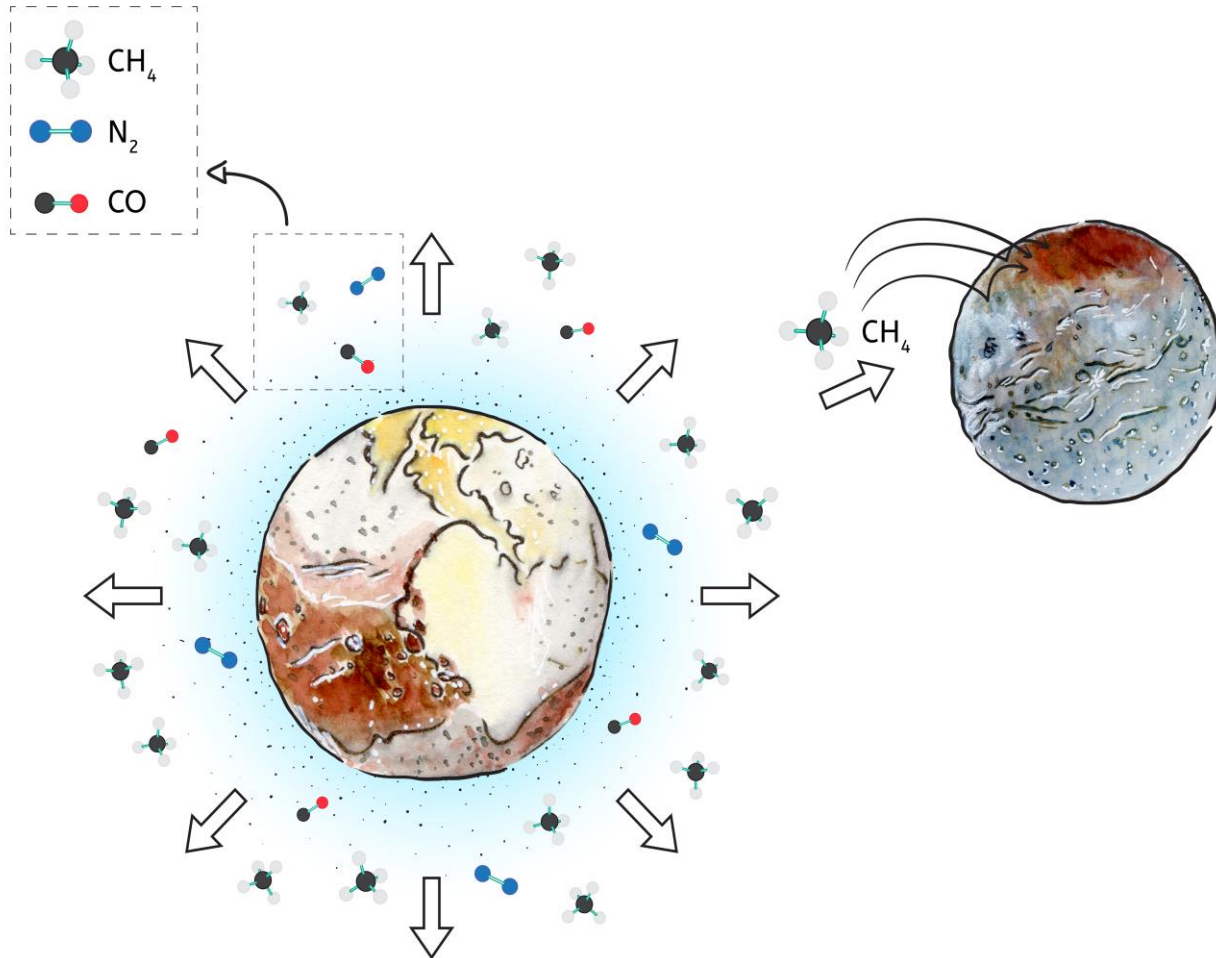
Plutón y Caronte: Sistema Planetario Binario



Polo Norte de Caronte



Mecanismo de transferencia de Plutón a Caronte resulta en un Polo Norte rojo



Rango de escape de
moléculas

Escape Rate from Pluto:
CH₄ 5×10^{25} molecules/s
(Bagenal et al. Science 2016)

Charonte recibe 2.5% de las
Moléculas de Plutón.

Charon would intercept 2.5%
of the escaping material
(2×10^{11} molecules/m²/s at
Charon)

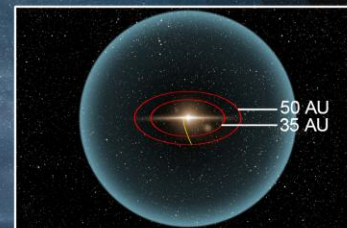
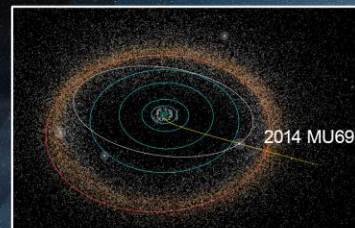
NEW HORIZONS

KUIPER BELT EXTENDED MISSION

First Mission to Explore Primitive KBOs and the Kuiper Belt



Close Flyby of a KBO: 2019



Surveying KBOs and the Kuiper Belt Environment to 50 AU

Measuring the Surface Properties, Satellite/Ring Systems, and Shapes of Many More KBOs

Measuring Kuiper Belt/Heliospheric Dust, Gas, Solar Wind, and Energetic Particles

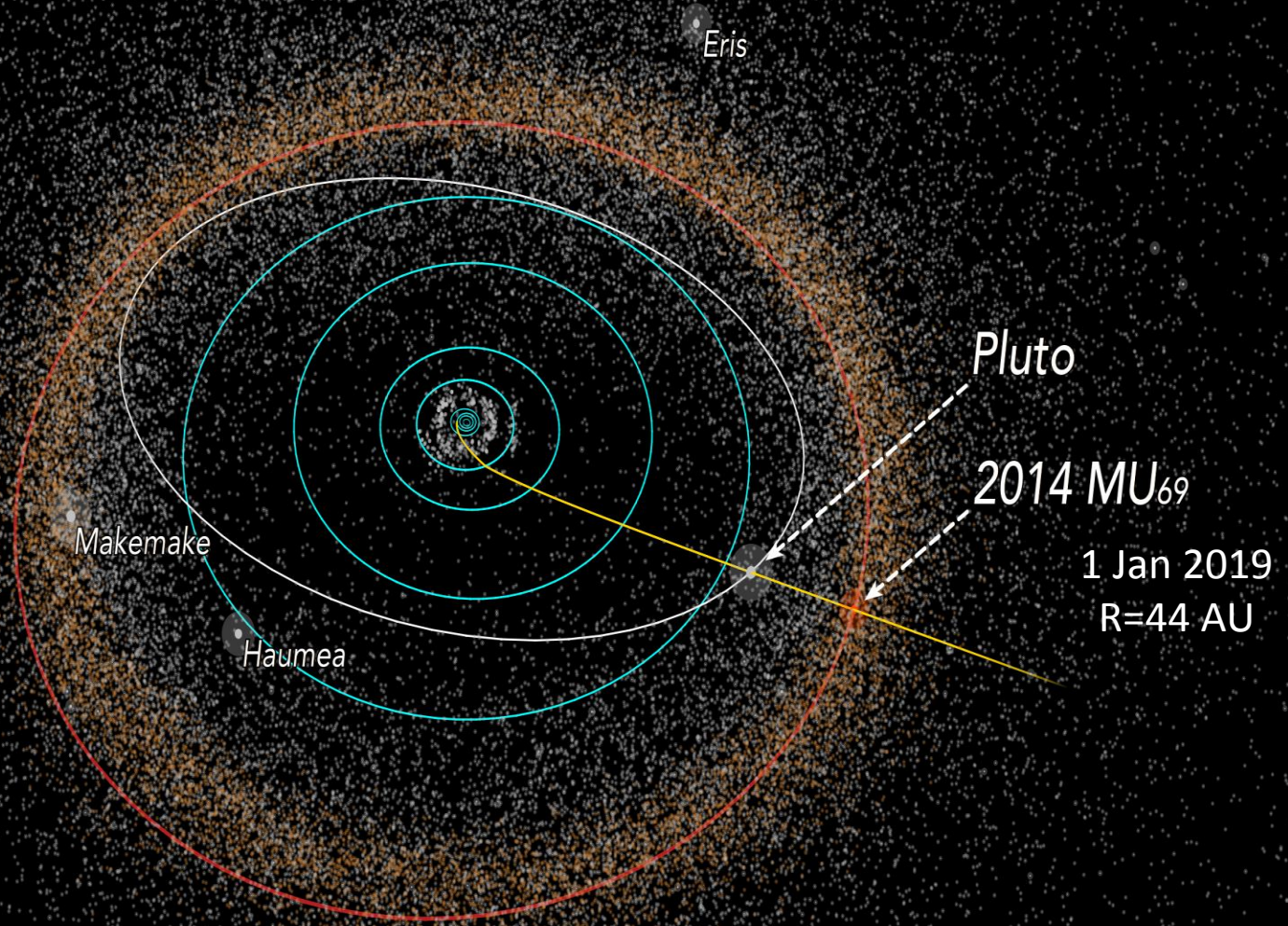
Proposed by:
**Southwest Research
Institute**

Dr. S. Alan Stern
Principal Investigator

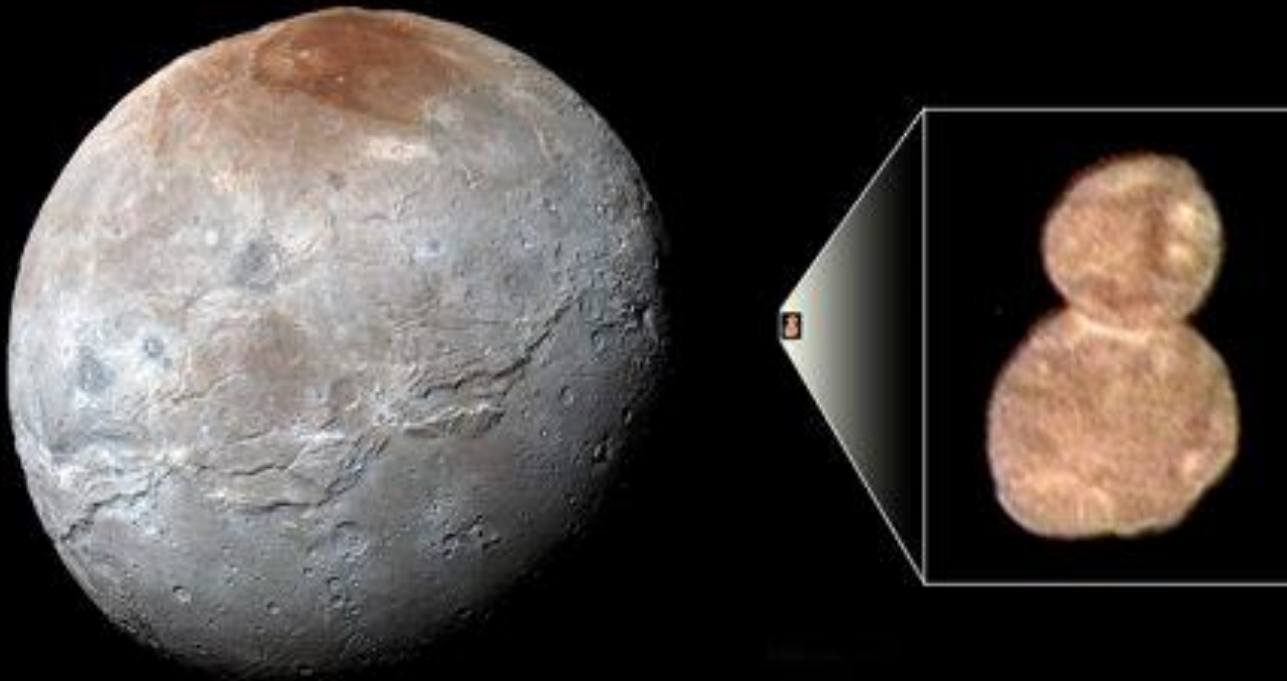
15 April 2016



Continua la Exploracion del Cinturon de Kuiper (2016-2021)



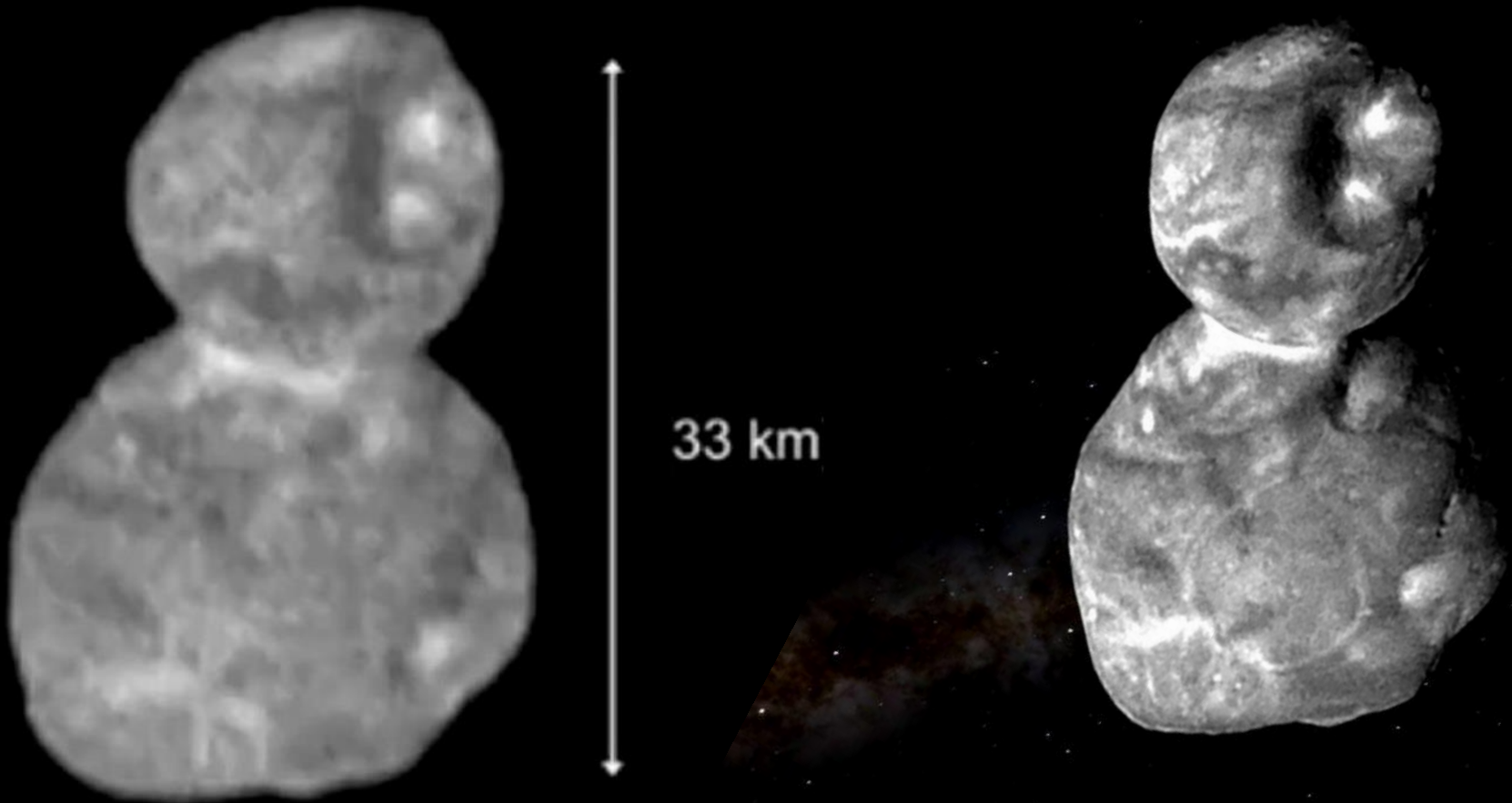
2014MU69 y PLUTÓN



2014MU69 ULTIMA THULE (nombre informal)



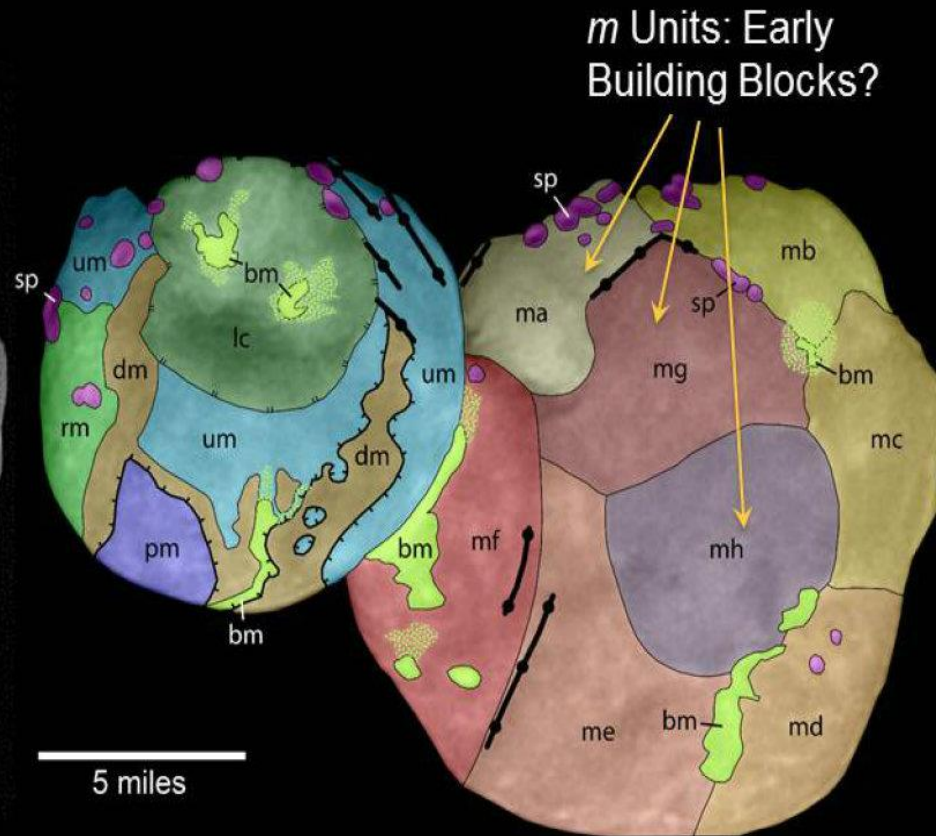
NH: 2014MU69 Ultima Thule



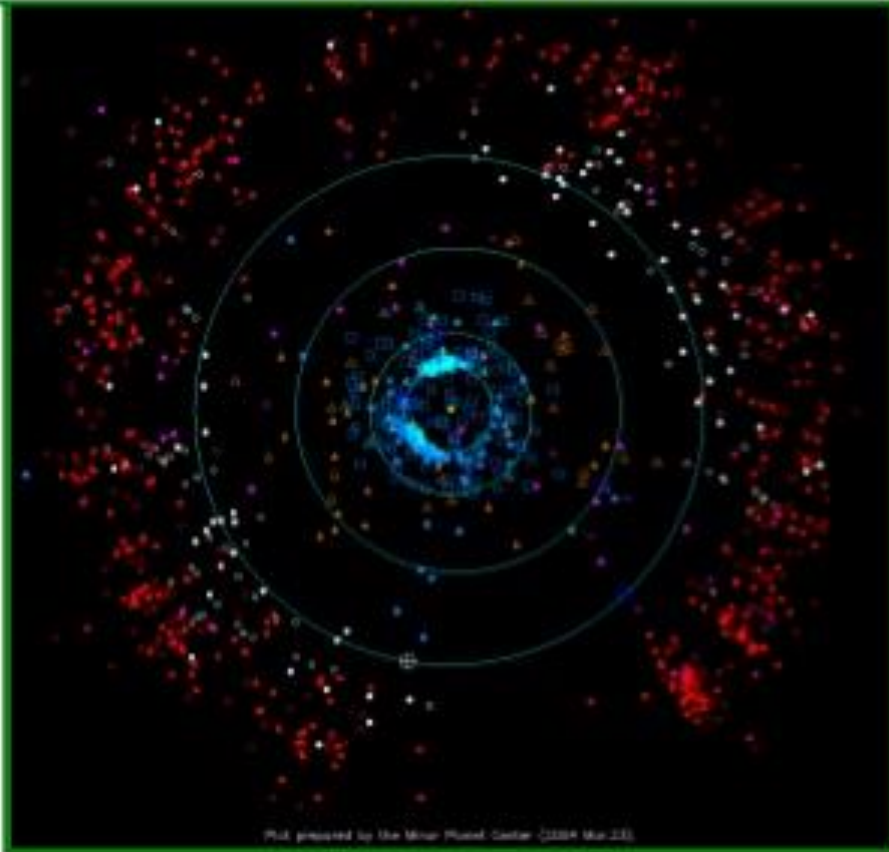
NH: 2014MU69 Unidades Geológicas



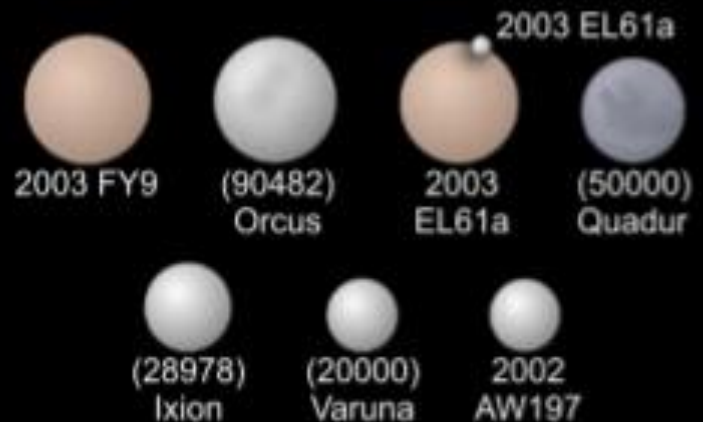
Comet 67P (Rosetta)



The New View:
4 Terrestrial Planets
4 Giant Planets
Perhaps 1000 Dwarf Planets



*Some of the Largest Known Objects
in the Kuiper Belt and Oort Cloud
Discovered in the Kuiper Belt*



*The largest objects Discovered
in the Astroid Belt*

Scale
1000 km





CONTINUA EXPLORANDO



NEW HORIZONS

2019

¿Preguntas?

