

# Dalle origini del sistema solare alle origini della vita: i corpi minori primitivi



Astr  Flt 2  
Astronomy Fellowships in Italy



Davide Perna

 OAR

INAF 

LXI Congresso SAlt, Padova, 12-15 settembre 2017

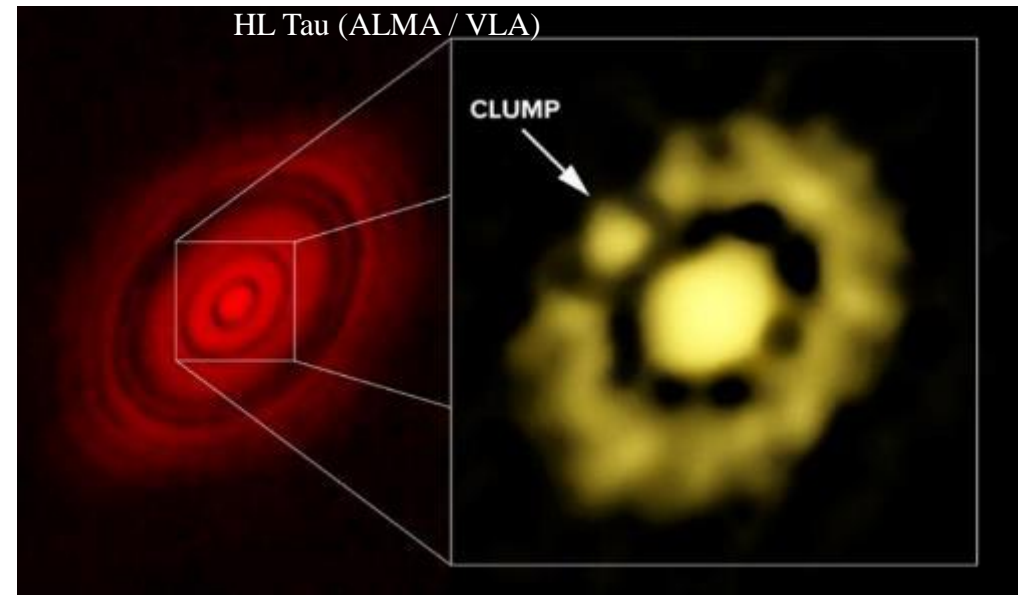
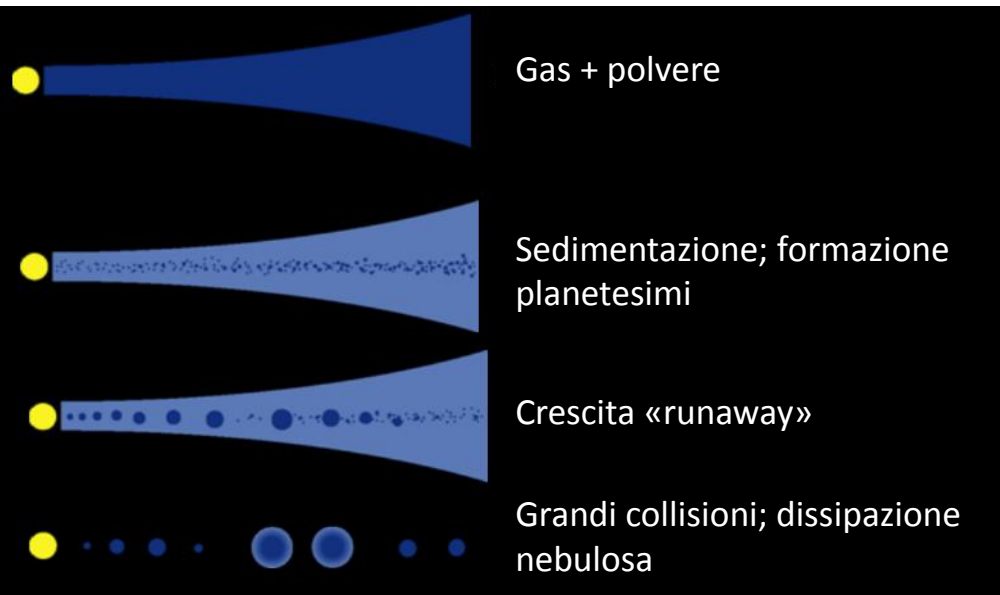
# I corpi minori: testimoni del sistema solare primordiale

Quali processi hanno governato la formazione e l'evoluzione del sistema solare primordiale?

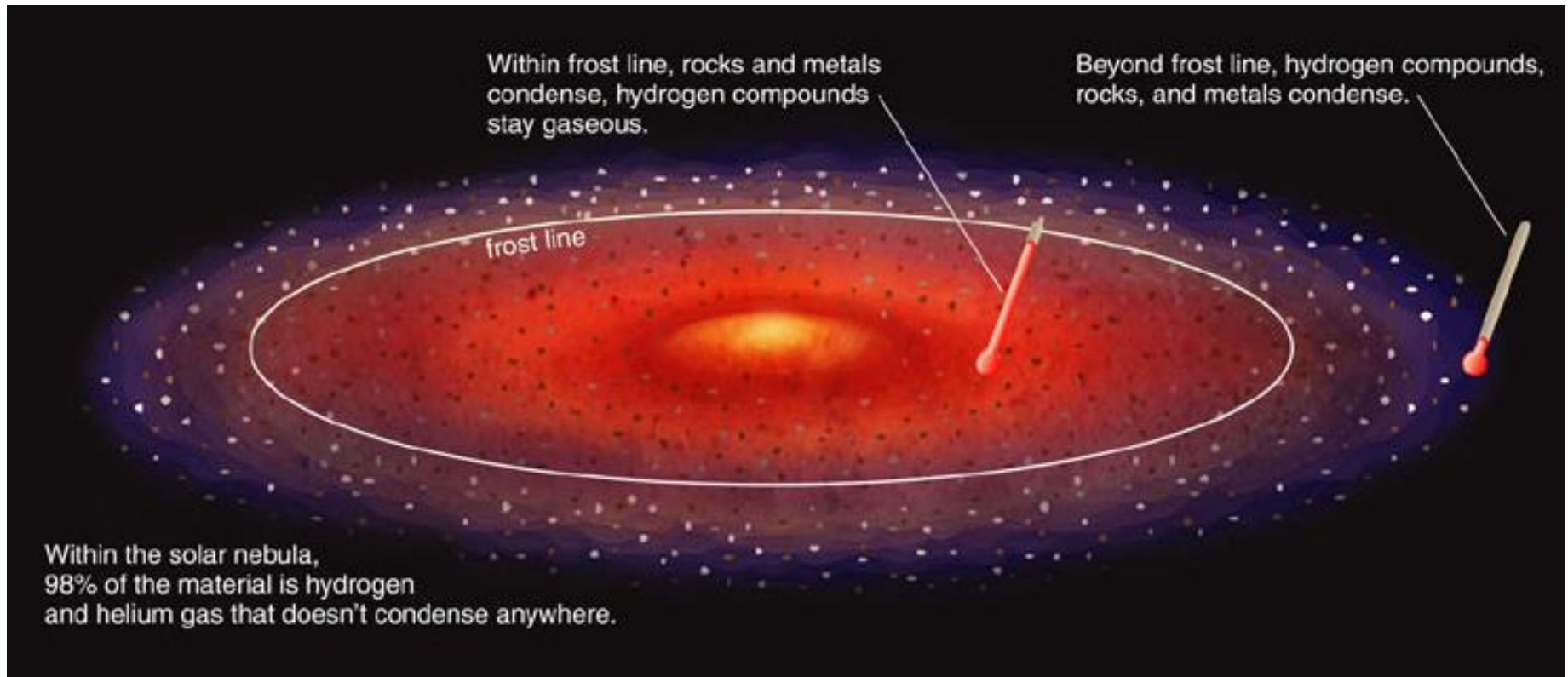
Quali informazioni ne ricaviamo per lo studio dei dischi esoplanetari?

I corpi minori del sistema solare rappresentano le ultime vestigia dei planetesimi e dei protopianeti

Il sistema solare come un sistema «modello» che possiamo studiare in dettaglio, e anche «in situ»



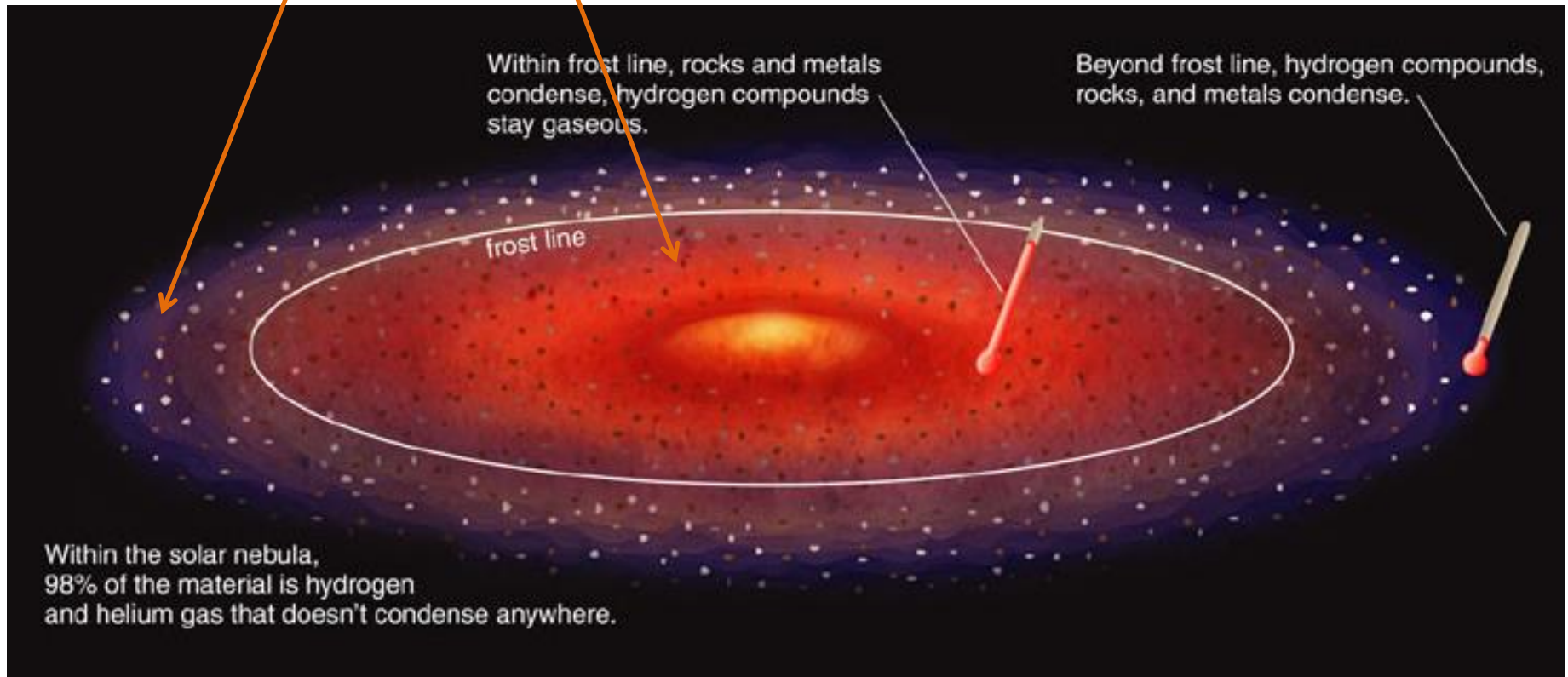
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Corpi minori «evoluti»

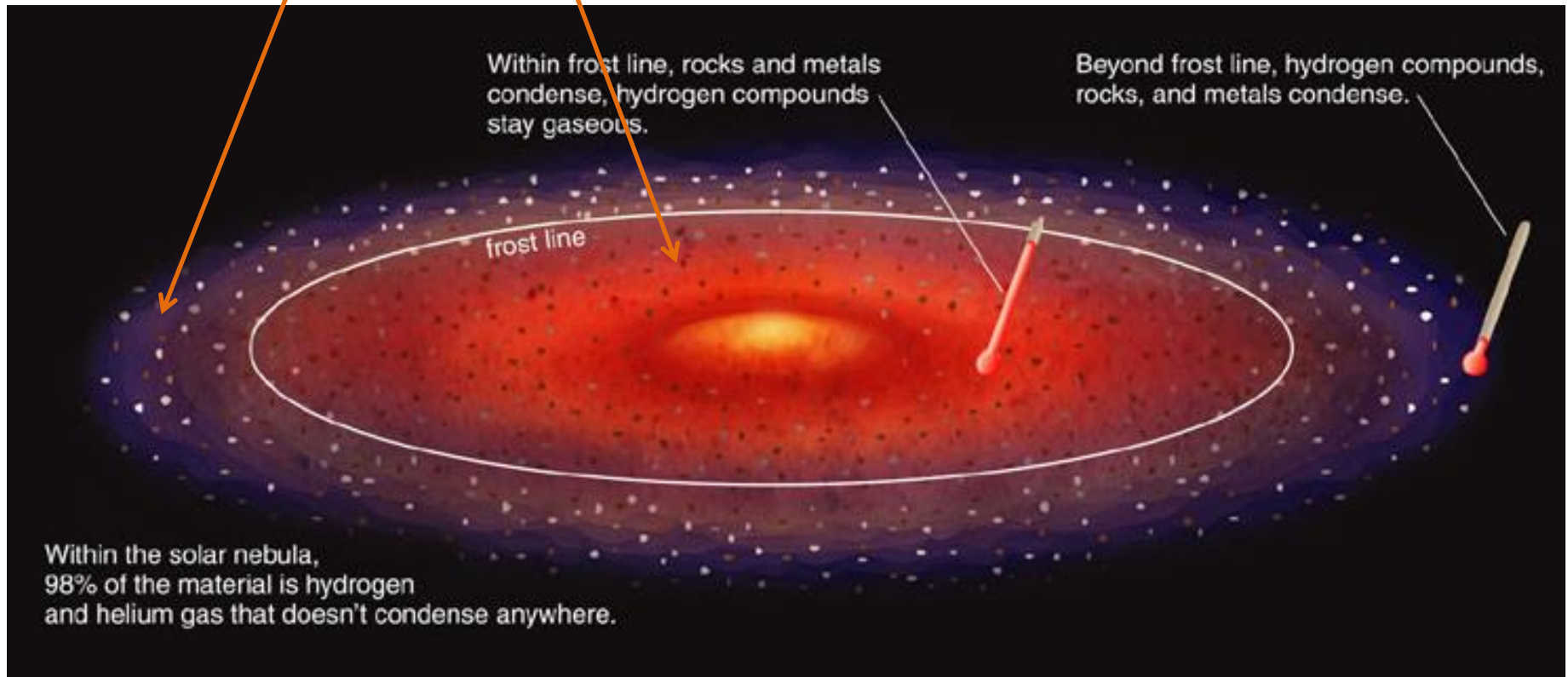
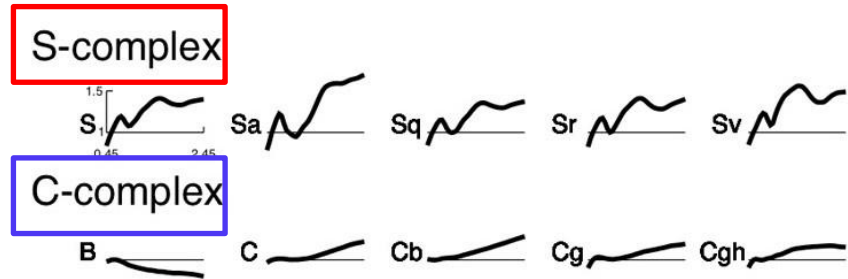
Corpi minori «primitivi»



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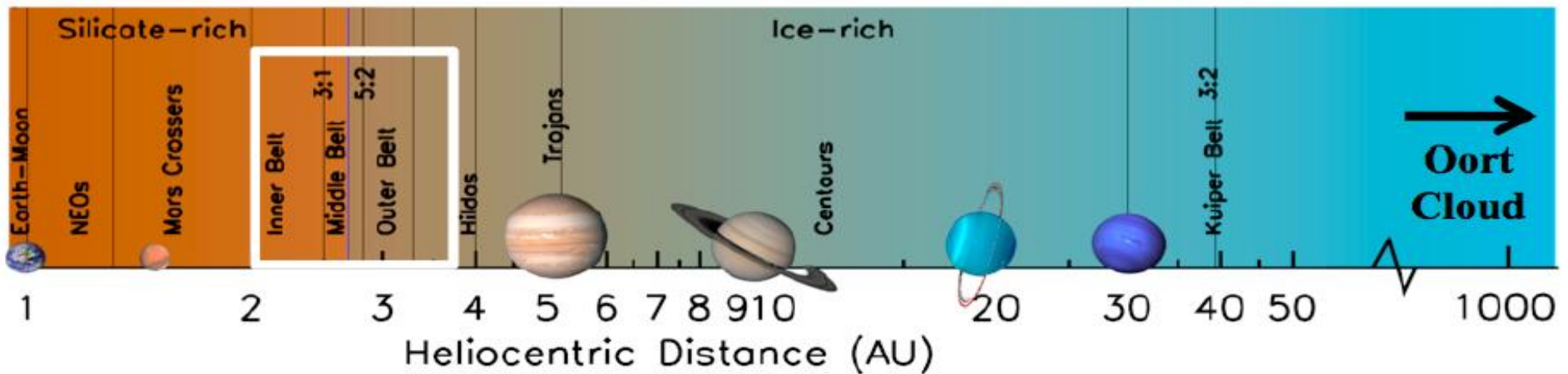
**Corpi minori «evoluti»**

**Corpi minori «primitivi»**



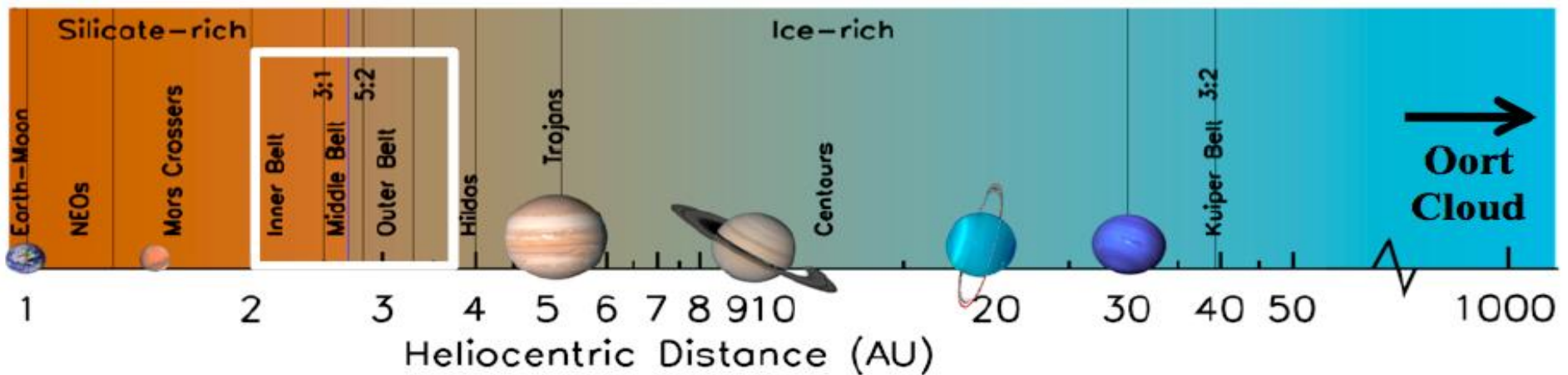
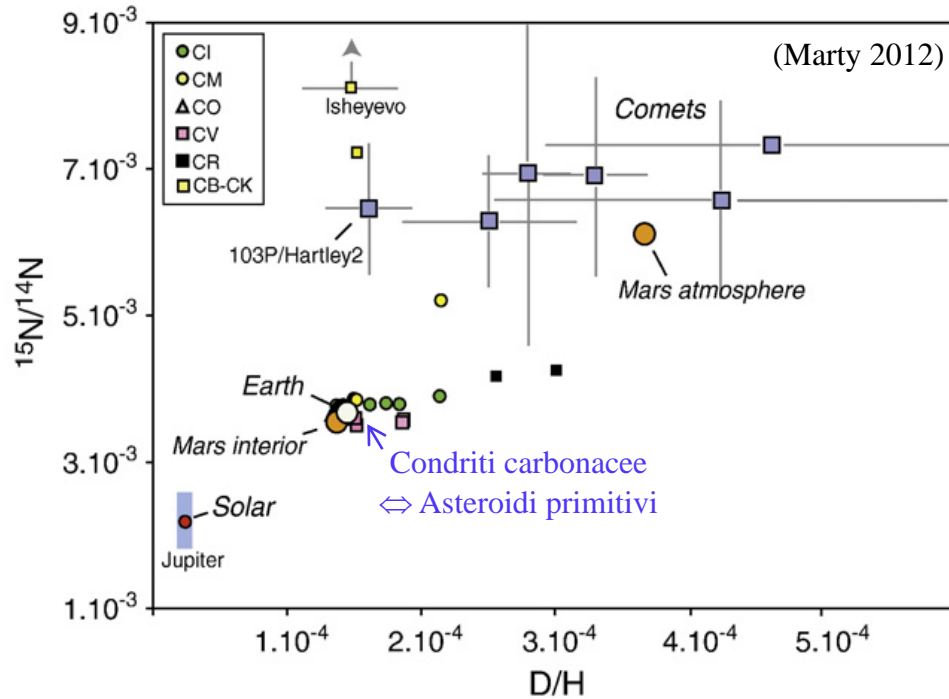
# I corpi minori: testimoni del sistema solare primordiale

Qual è l'origine dell'acqua e degli altri volatili terrestri?



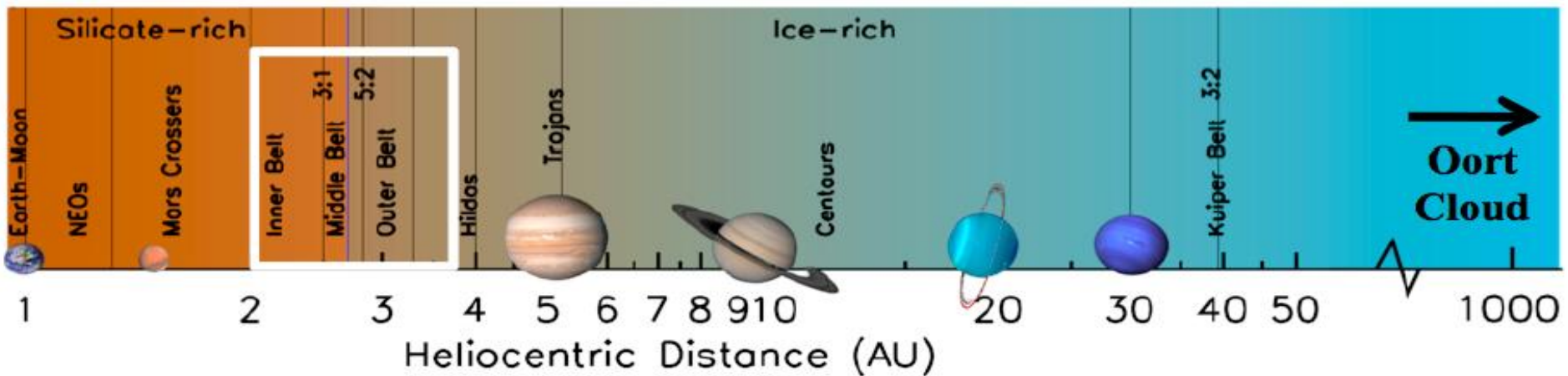
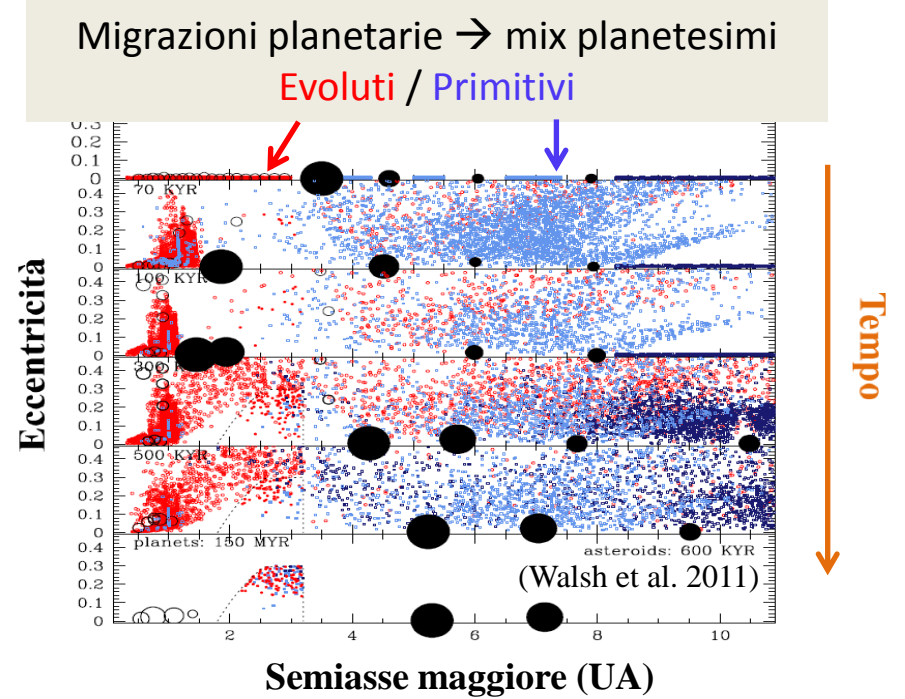
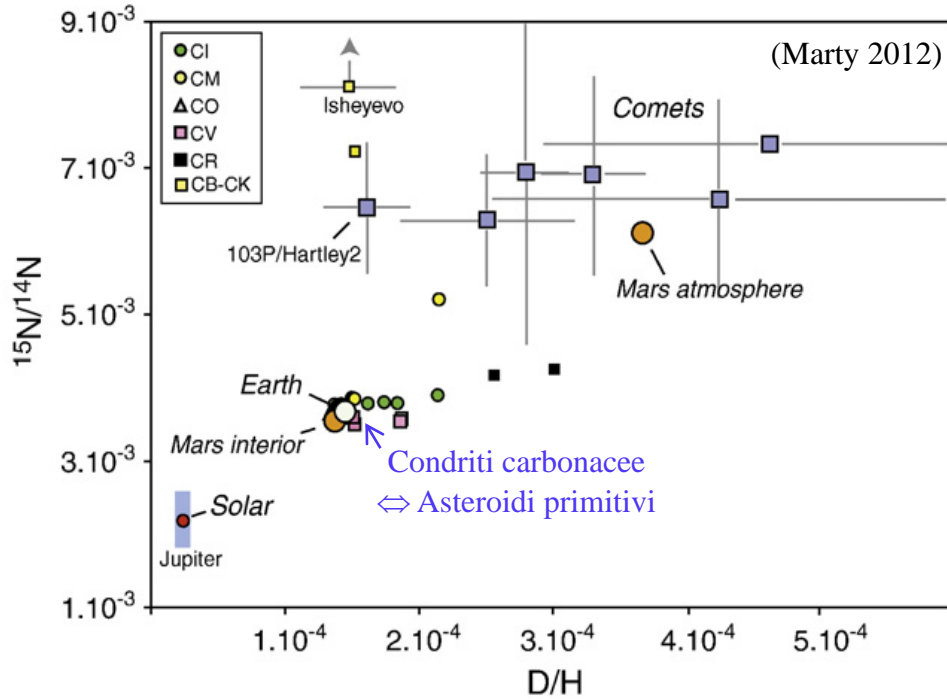
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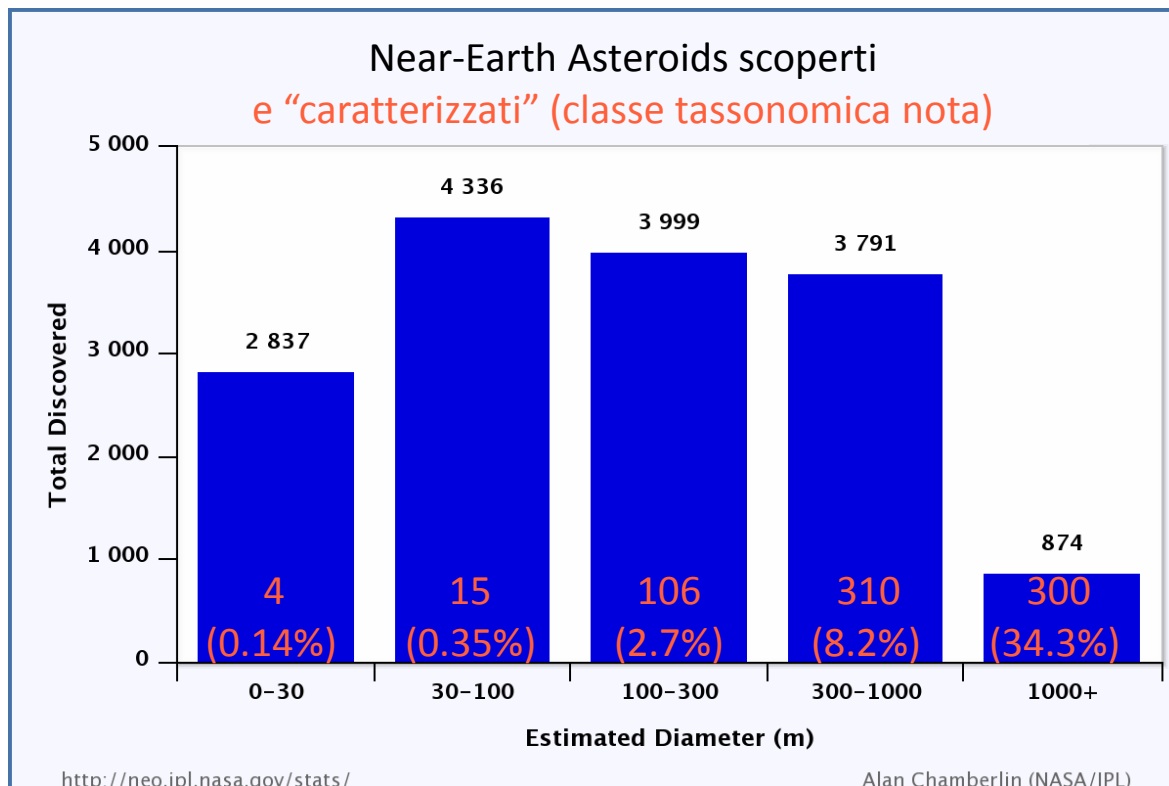
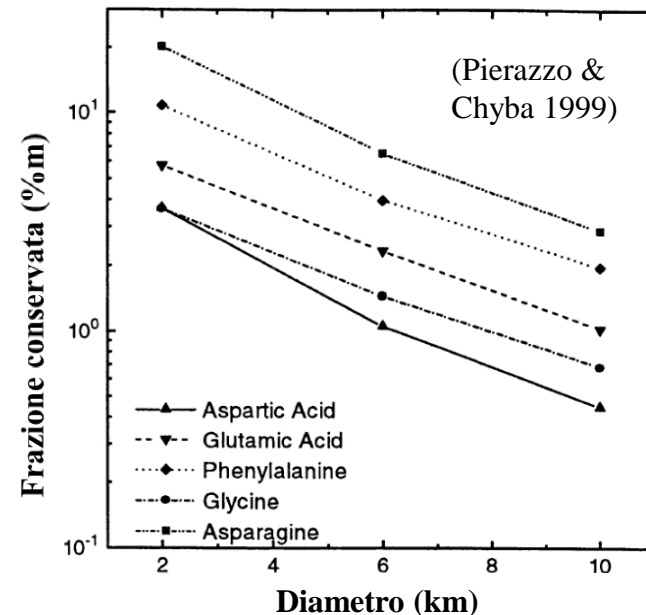
Qual è l'origine dell'acqua e degli altri volatili terrestri?





# I "piccoli" near-Earth asteroids

Acqua e organici meglio preservati nei "piccoli" impatti



Per gli oggetti più piccoli:

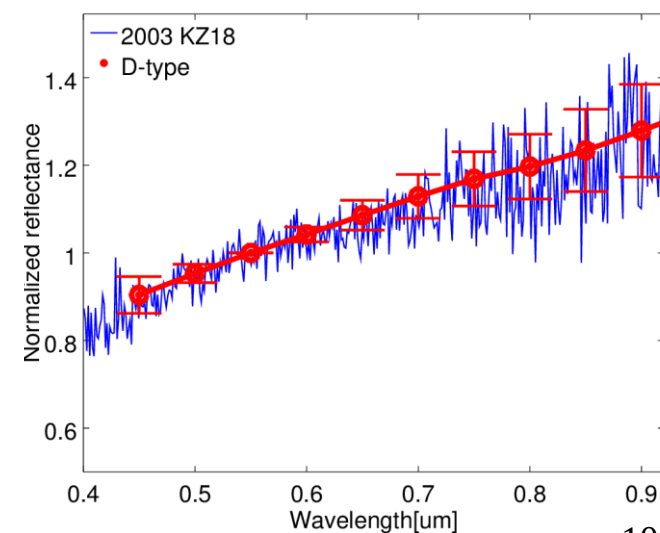
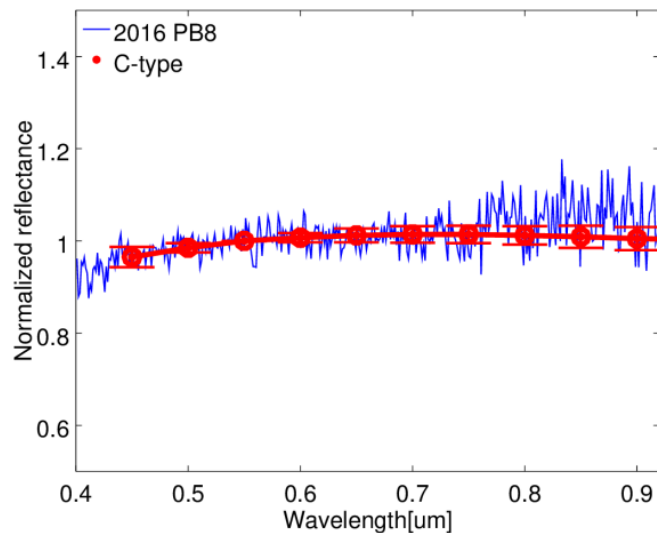
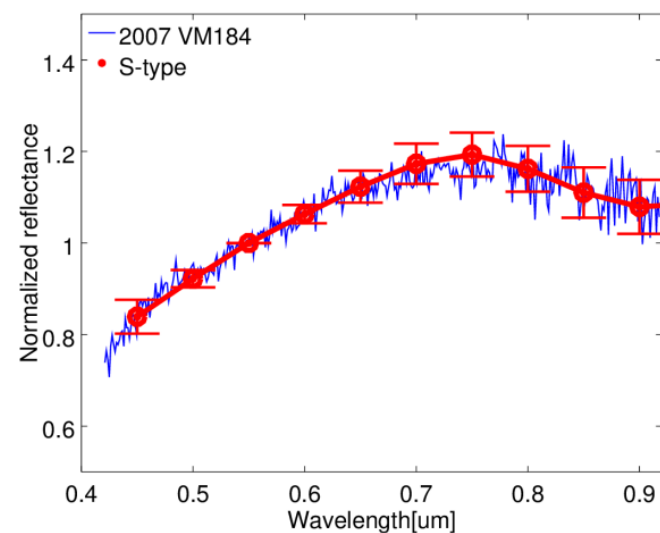
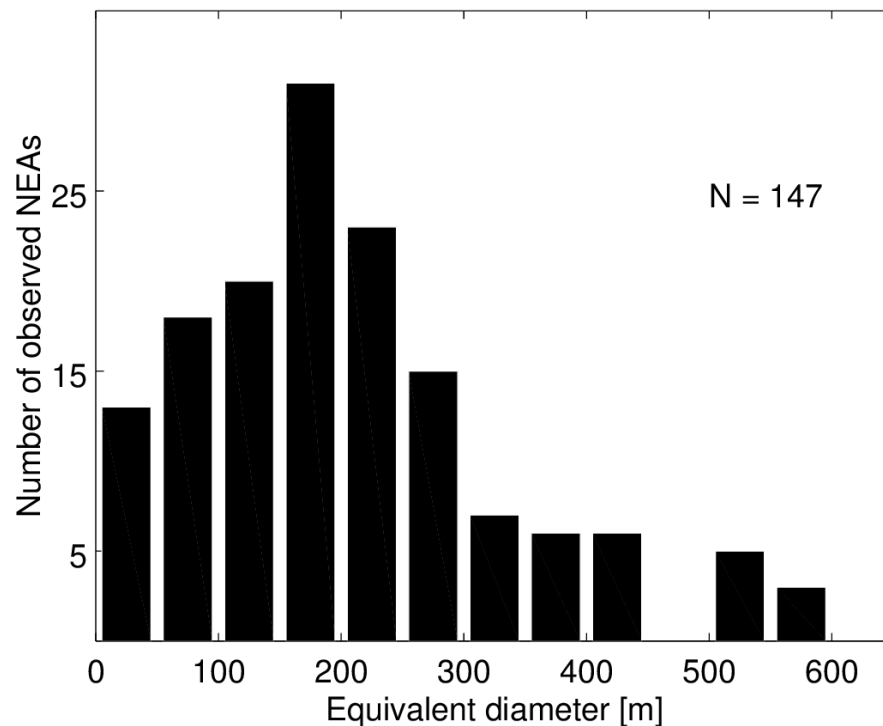
Caratterizzati << Scoperti  
<< Popolazione stimata

# I “piccoli” near-Earth asteroids

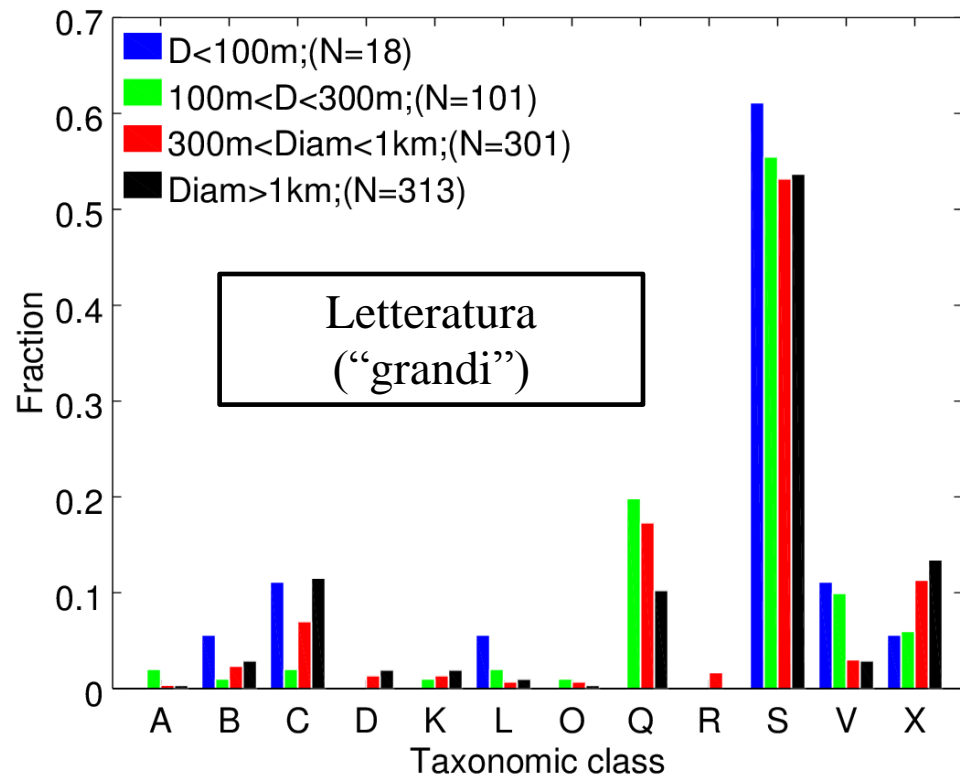
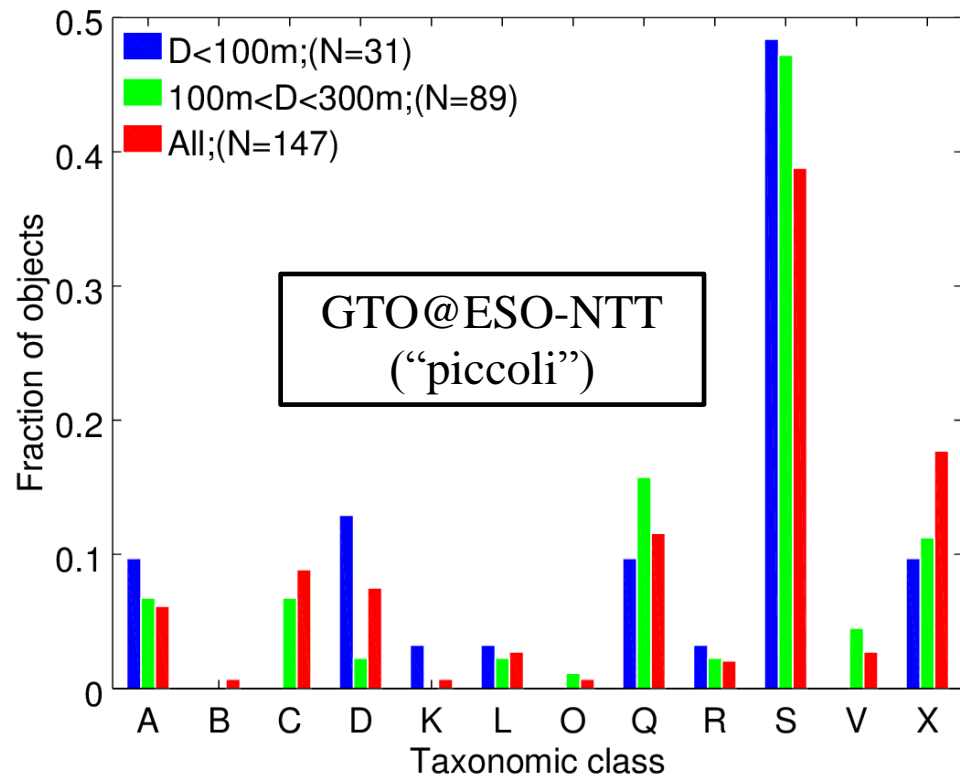
**Guaranteed Time Observations @ ESO-NTT:**

**30 notti osservative (4/2015 – 3/2017)**

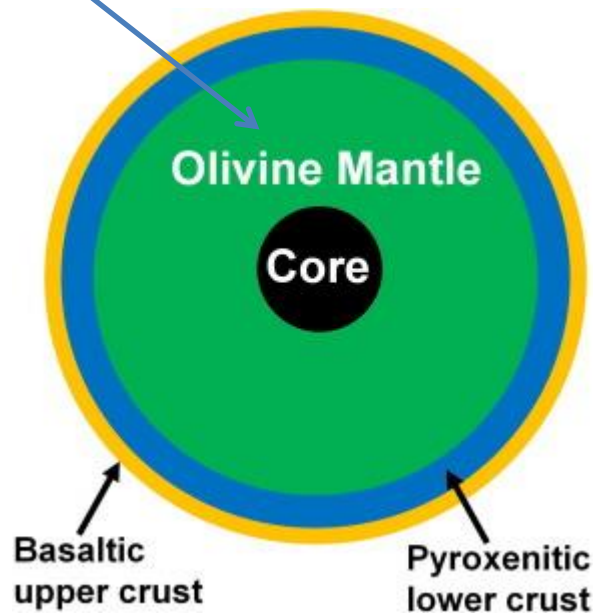
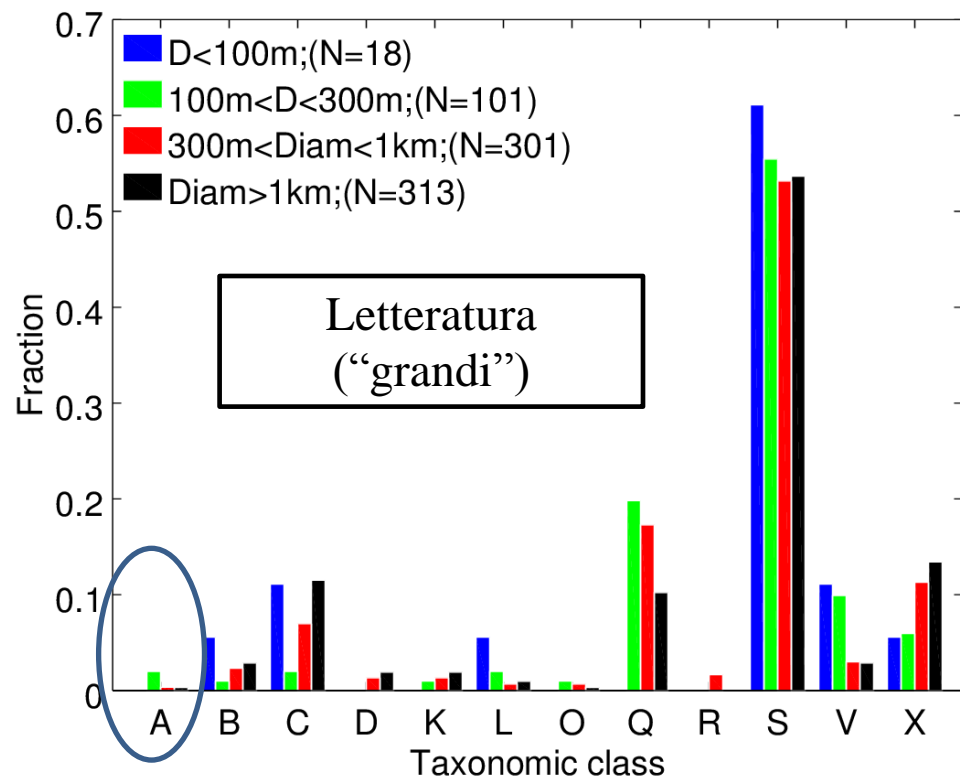
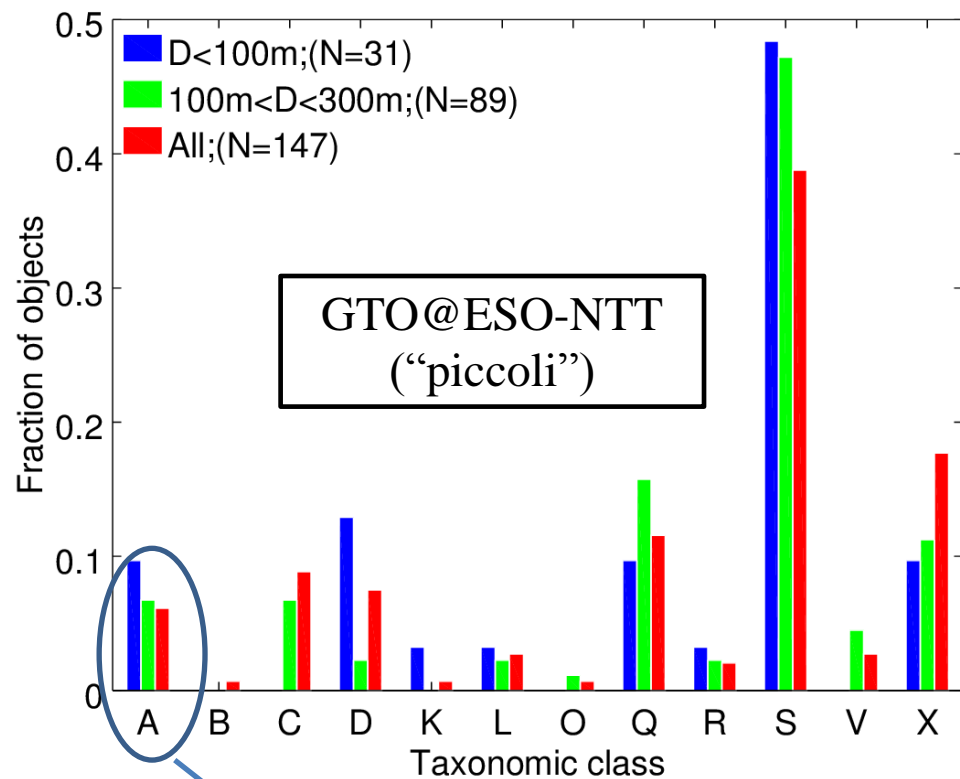
**Prima survey mai dedicata ai piccoli asteroidi:  
spettroscopia visibile di 147 oggetti  
(campione uniforme!)**



# I “piccoli” near-Earth asteroids



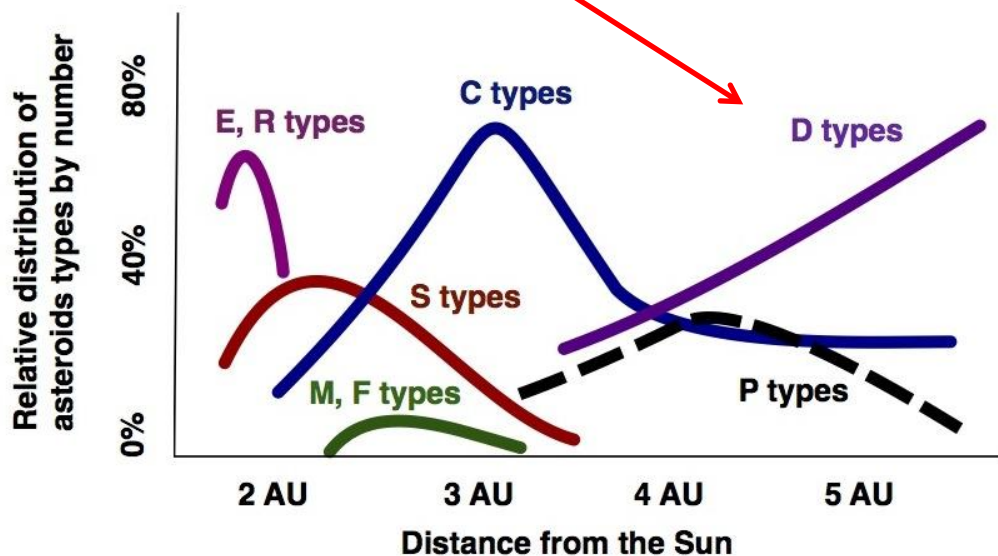
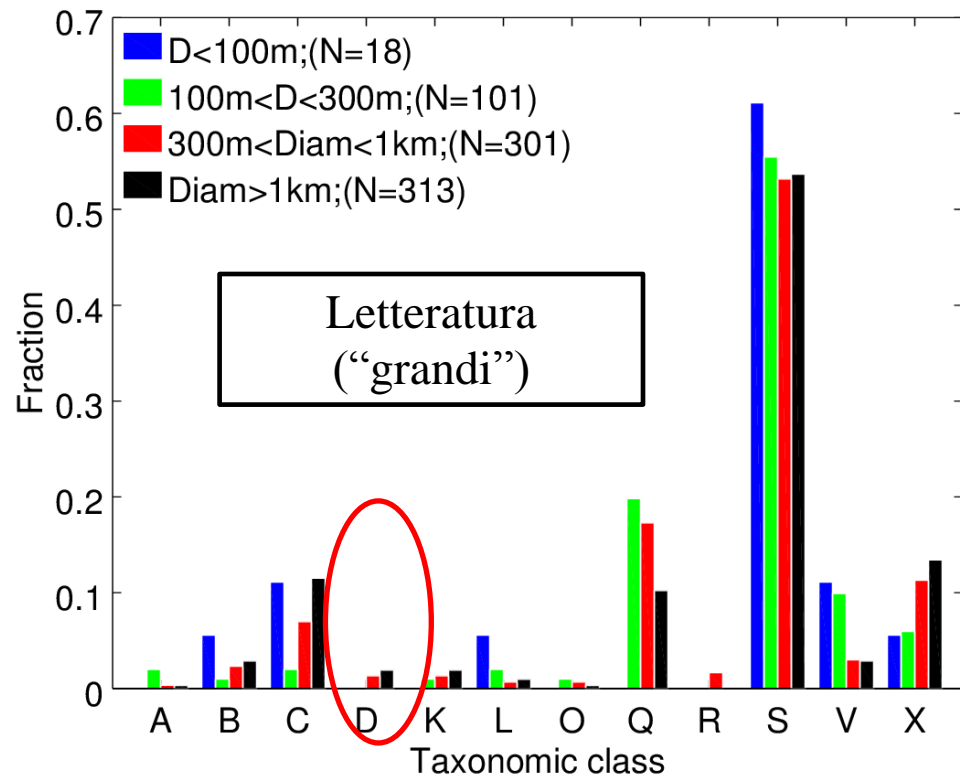
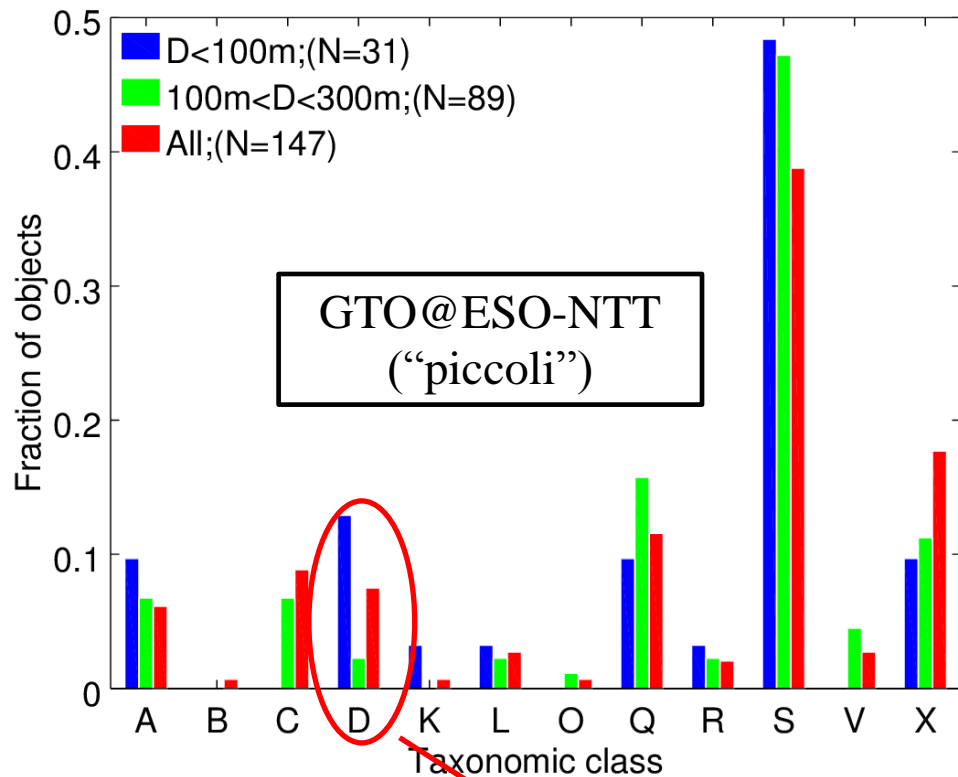
# I "piccoli" near-Earth asteroids



**Abbondanza di tipi «A»:**

**Frammenti del mantello di olivina dei grandi planetesimi differenziati!**

# I "piccoli" near-Earth asteroids



**Abbondanza di tipi «D»:**

**I più ricchi in volatili e composti organici, importante contributo asteroidale al materiale prebiotico terrestre!**

# Le missioni di ritorno di campioni da asteroidi primitivi



**JAXA Hayabusa 2**  
**orbita Ryugu: 2018-2019**  
**ritorno campioni: 2020**



**NASA OSIRIS-REx**  
**orbita Bennu: 2018-2020**  
**ritorno campioni: 2023**

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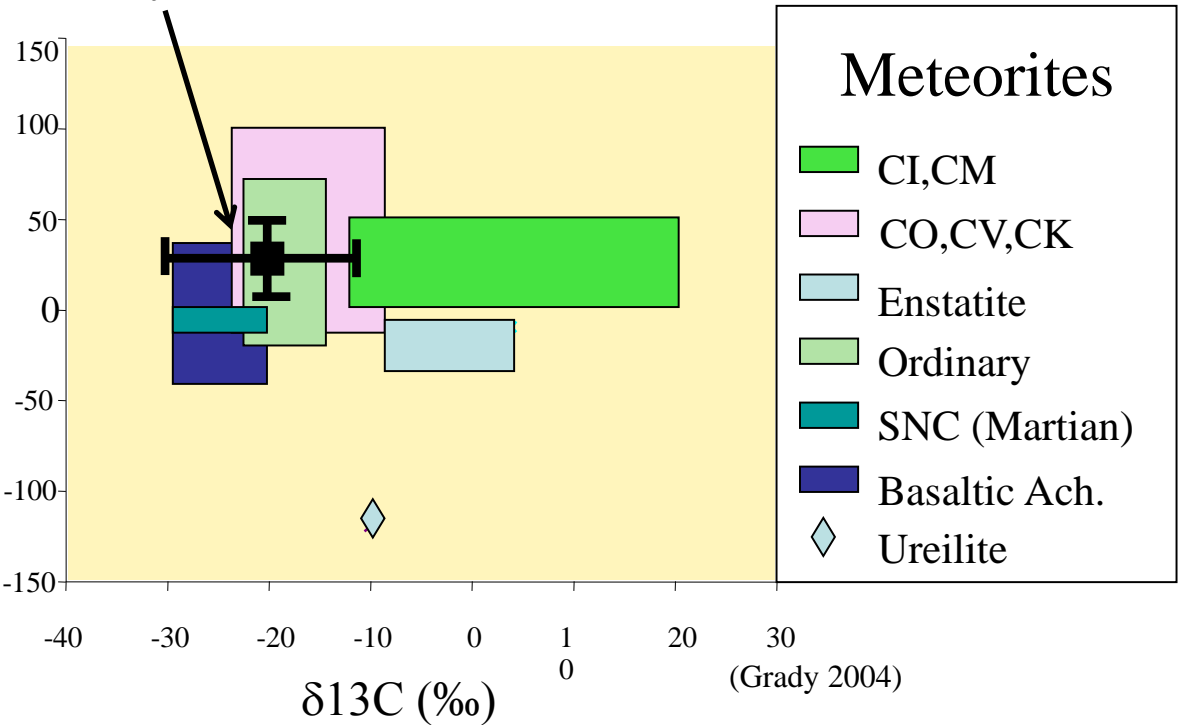


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**orbita Bennu: 2018-2020**  
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Accuratezza  
 Ptolemy/Philae/Rosetta



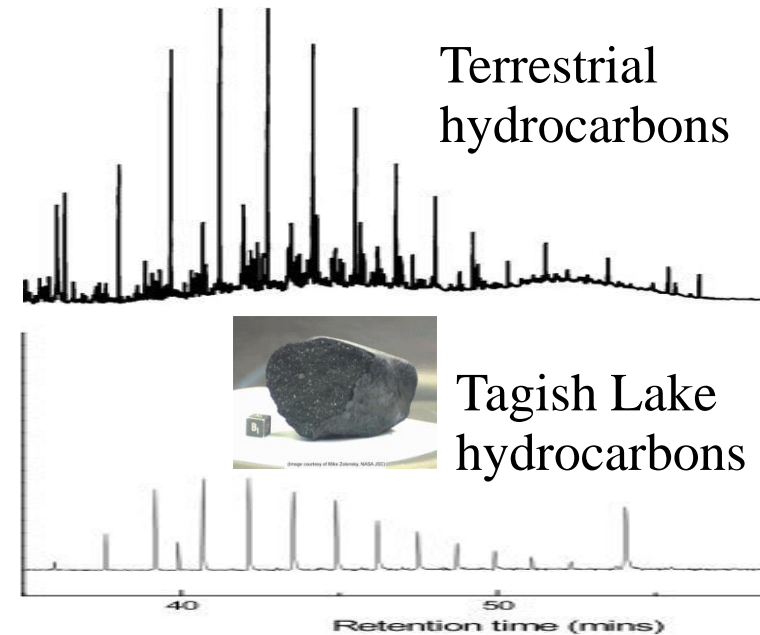
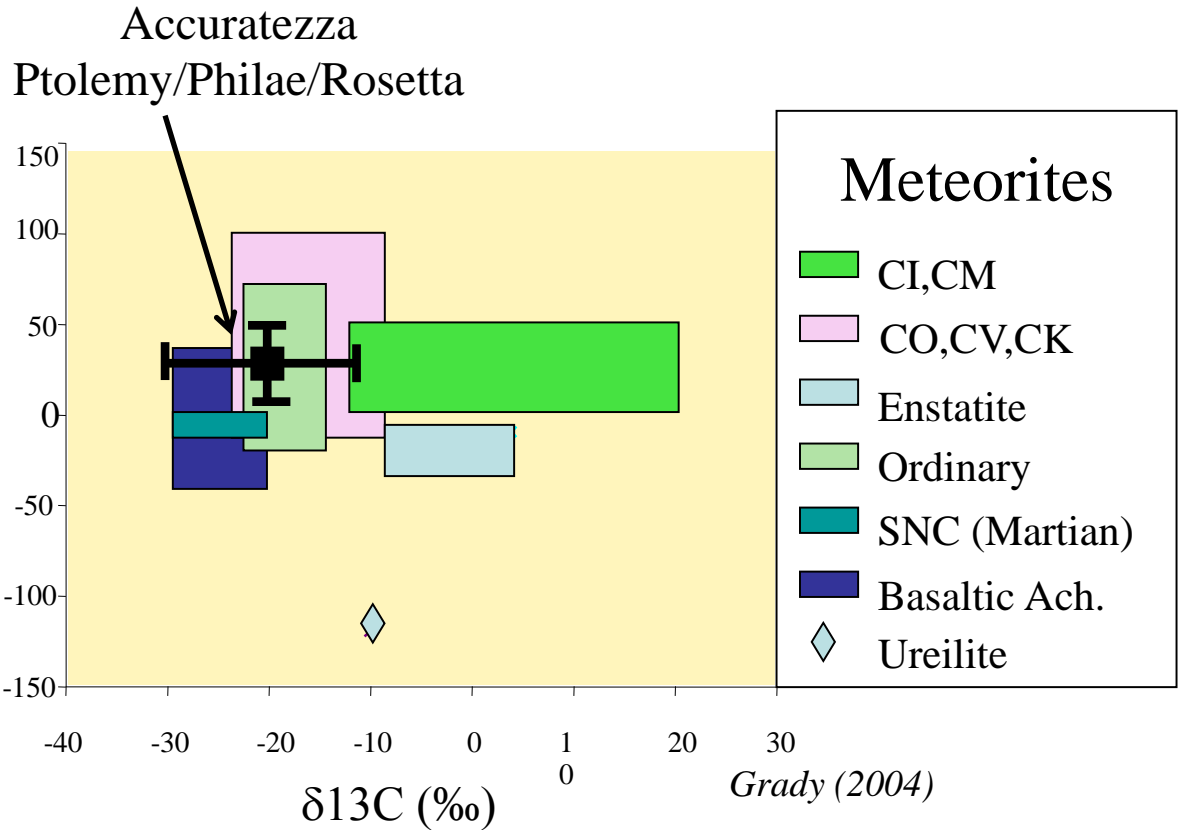
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**JAXA Hayabusa 2**  
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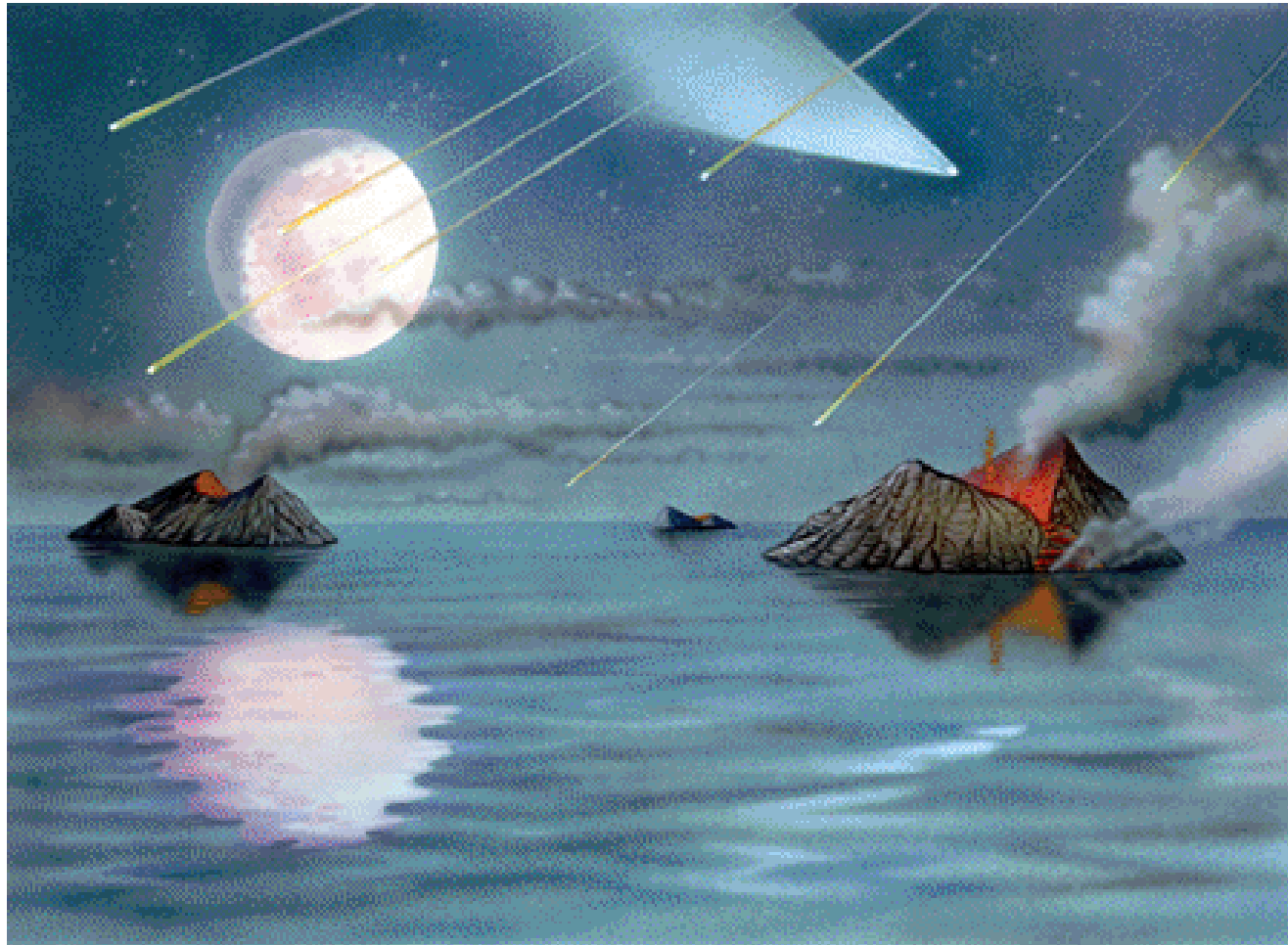


**NASA OSIRIS-Rex**  
**orbita Bennu: 2018-2020**  
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**Grazie dell'attenzione!**



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