

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



Astr  Flt 2
Astronomy Fellowships in Italy

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 OAR



INAF 

LXI Congresso SAlt, Padova, 12-15 settembre 2017

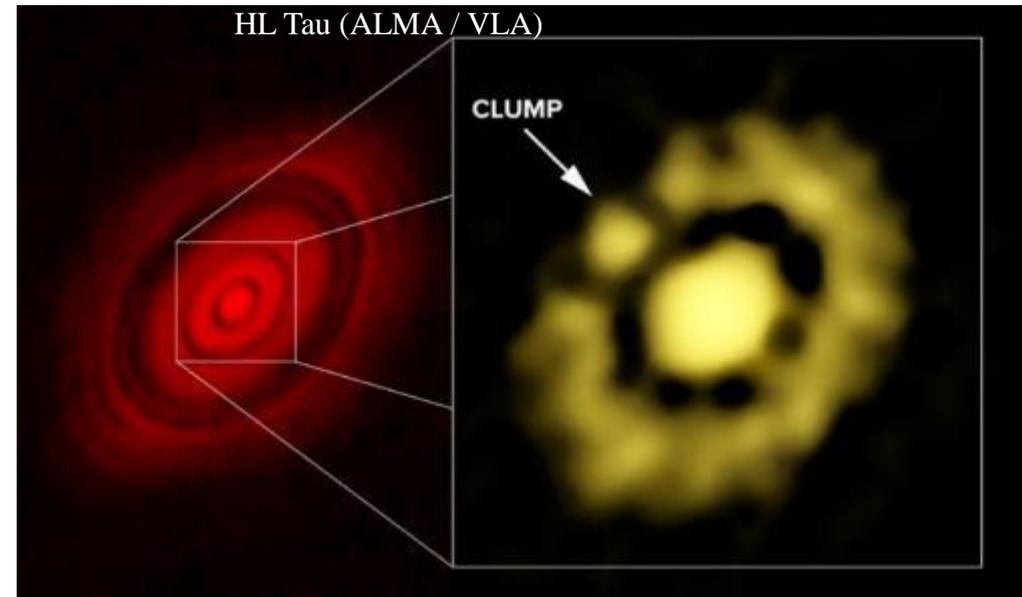
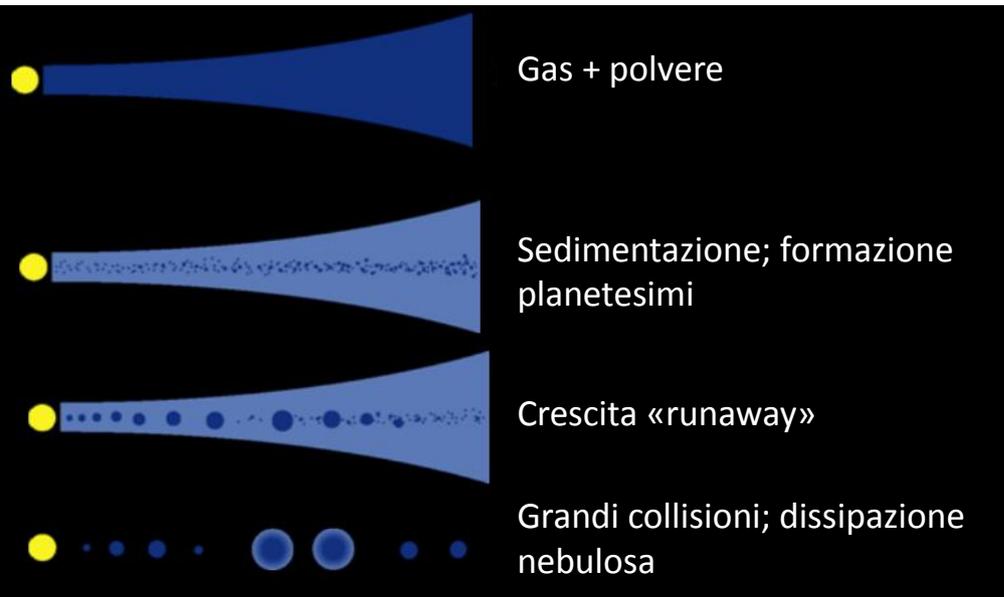
I corpi minori: testimoni del sistema solare primordiale

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

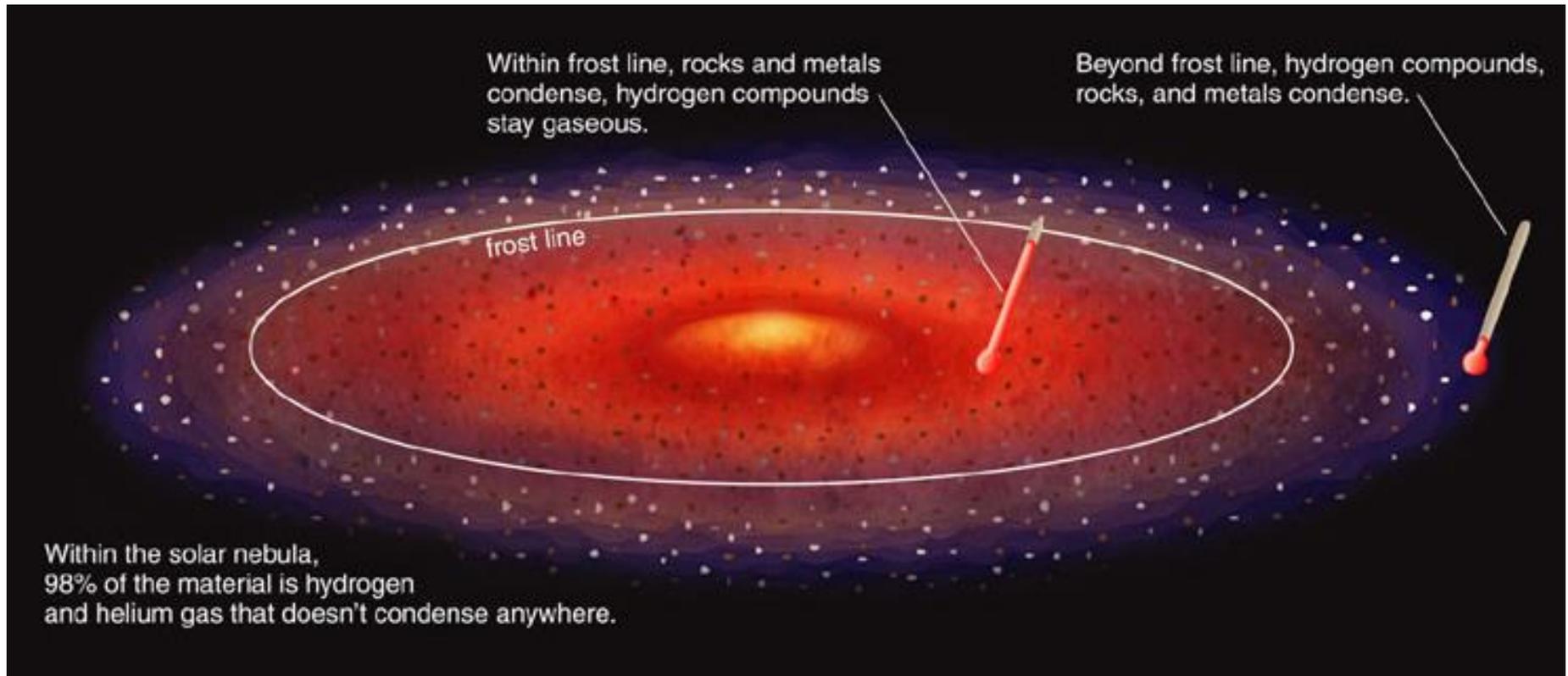
Quali informazioni ne ricaviamo per lo studio dei dischi esoplanetari?

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»



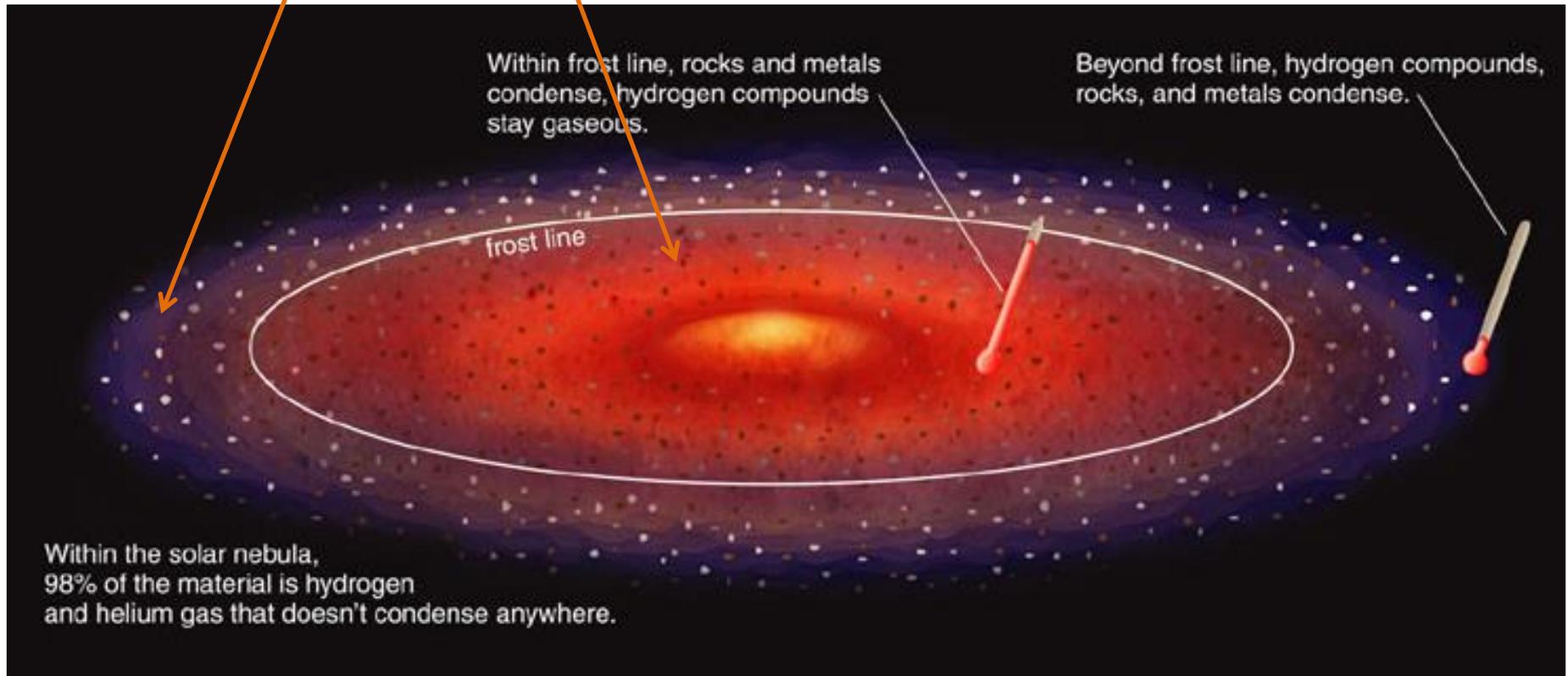
I corpi minori: testimoni del sistema solare primordiale



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Corpi minori «evoluti»

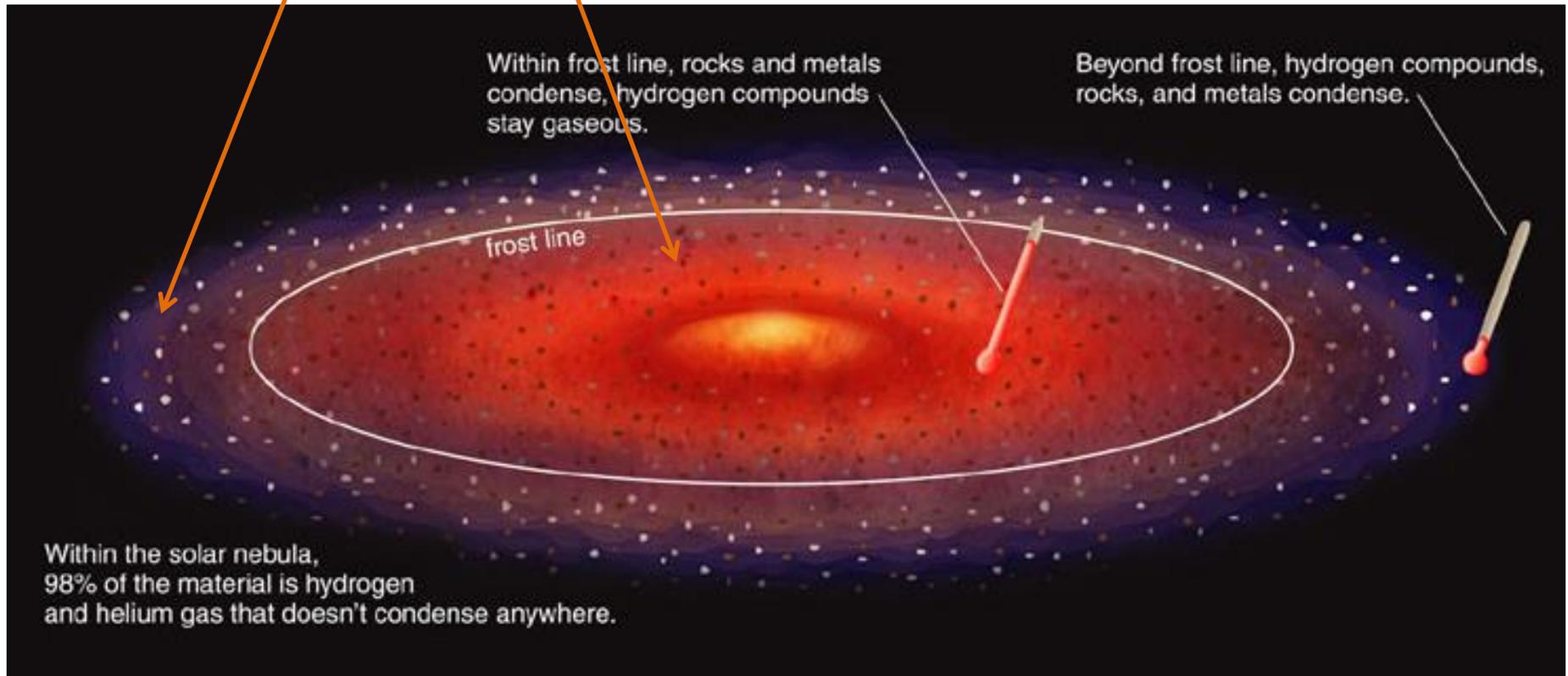
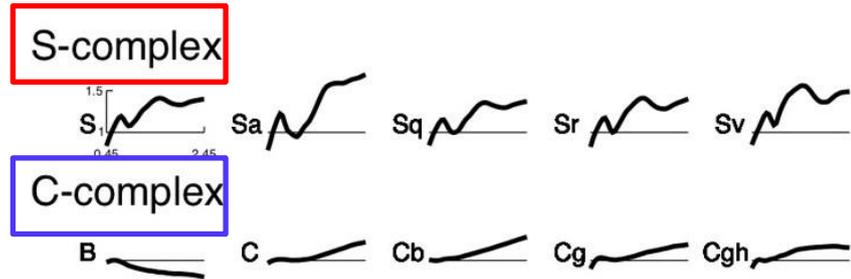
Corpi minori «primitivi»



I corpi minori: testimoni del sistema solare primordiale

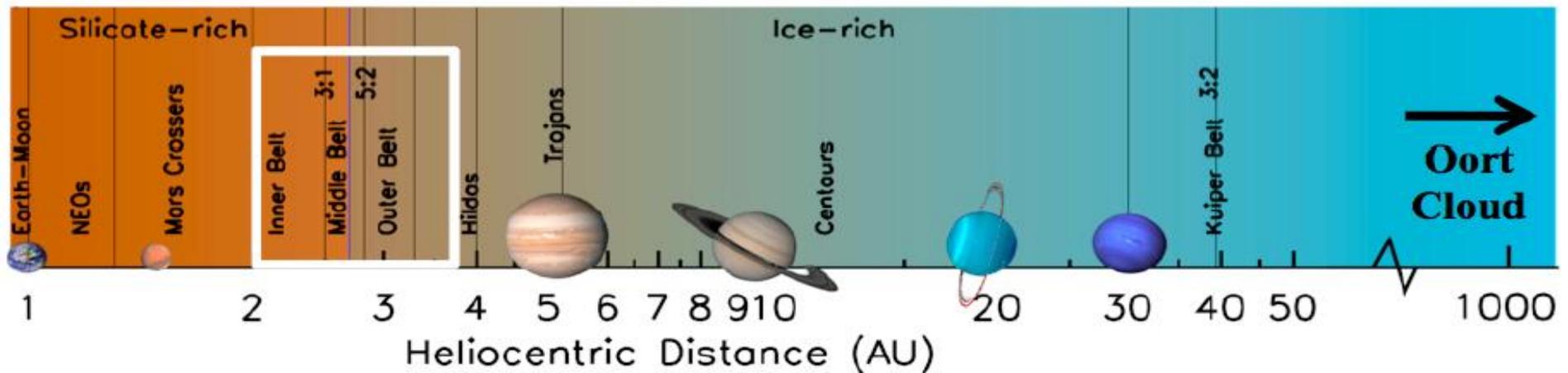
Corpi minori «evoluti»

Corpi minori «primitivi»



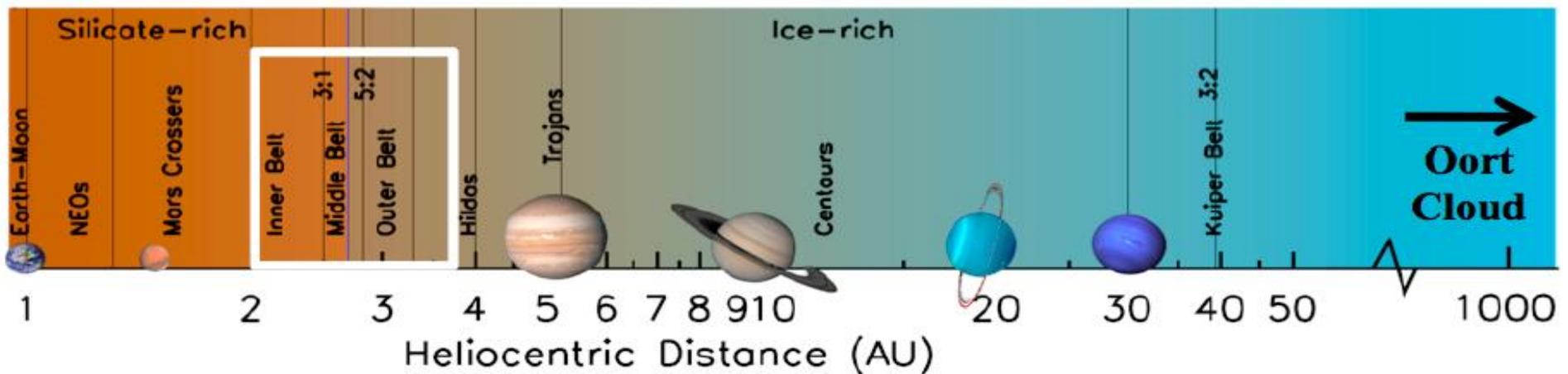
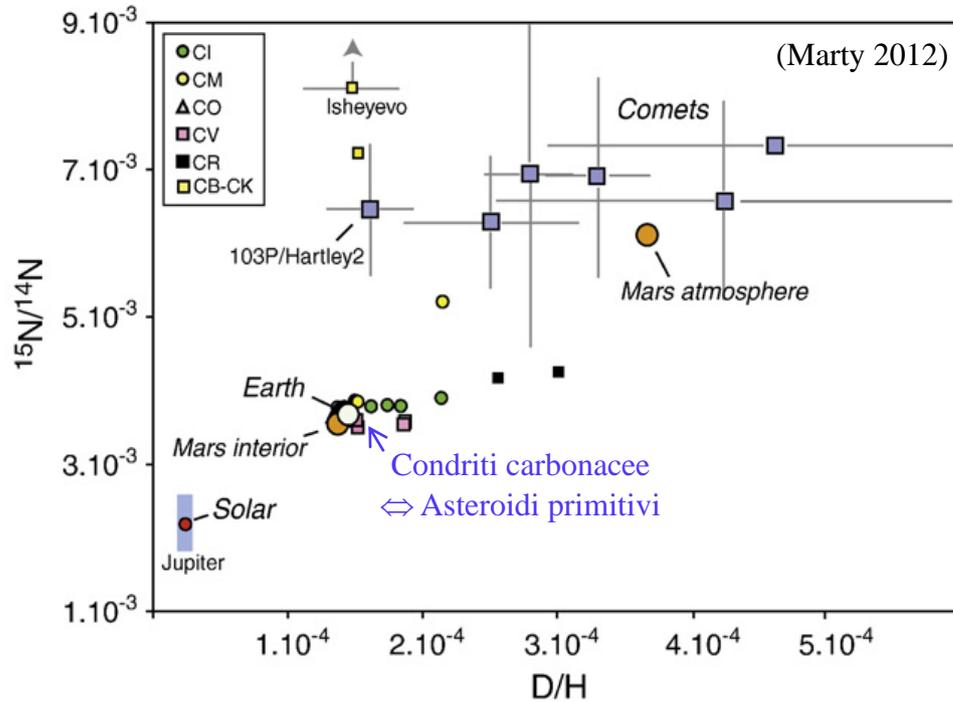
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Qual è l'origine dell'acqua e degli altri volatili terrestri?



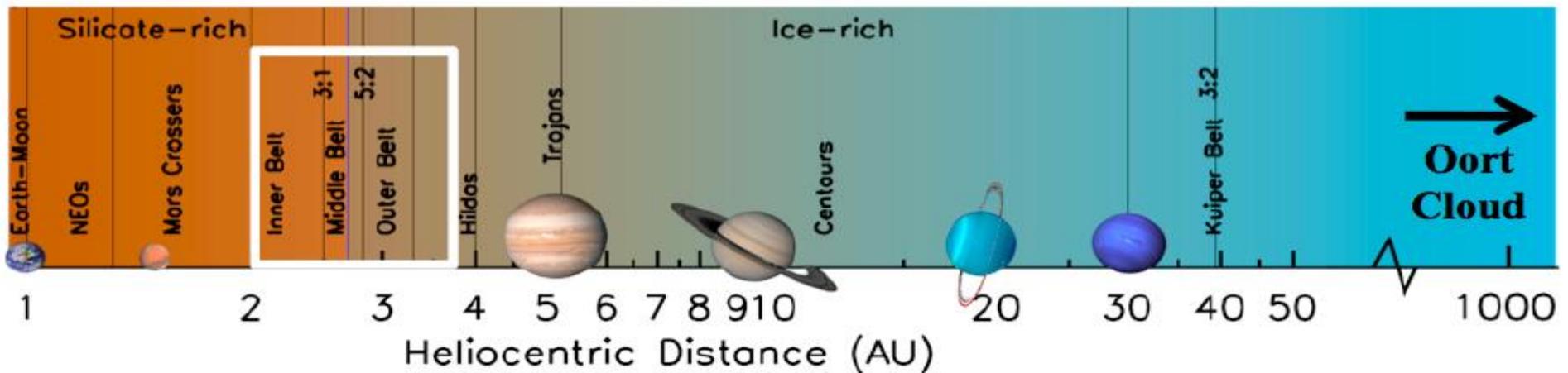
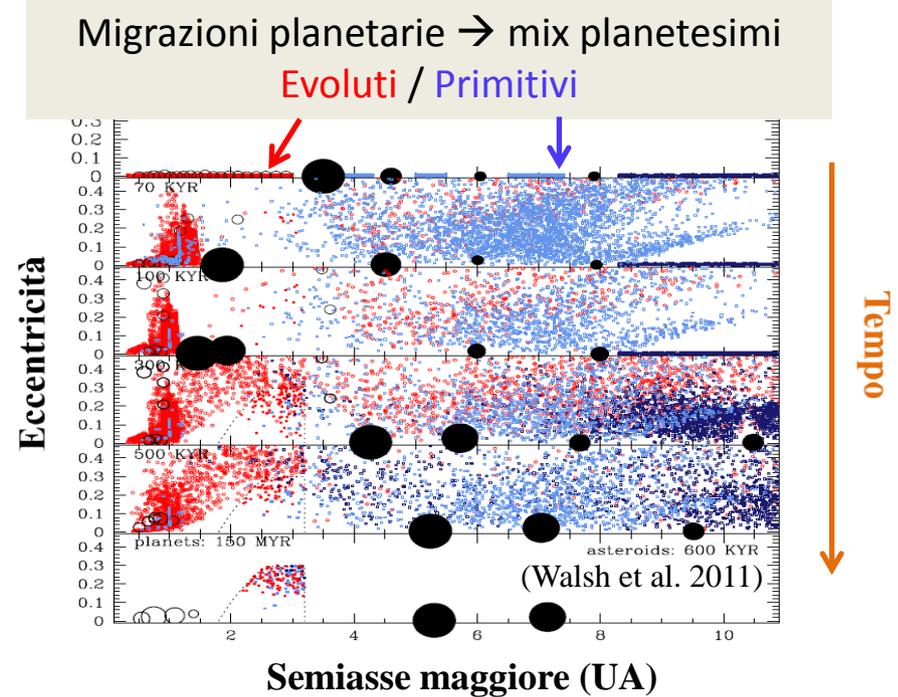
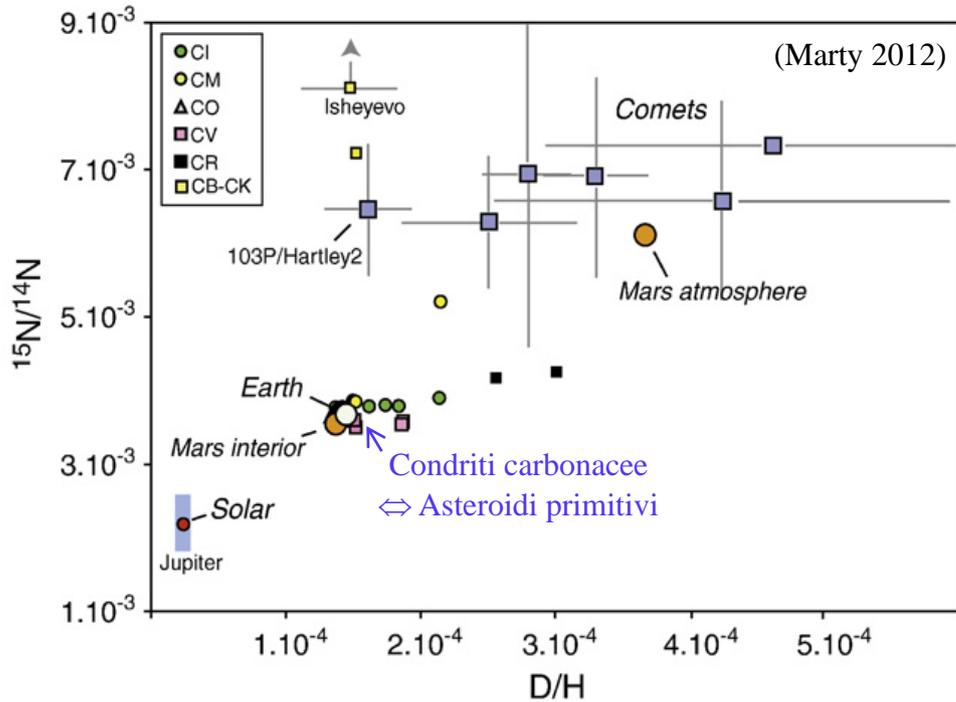
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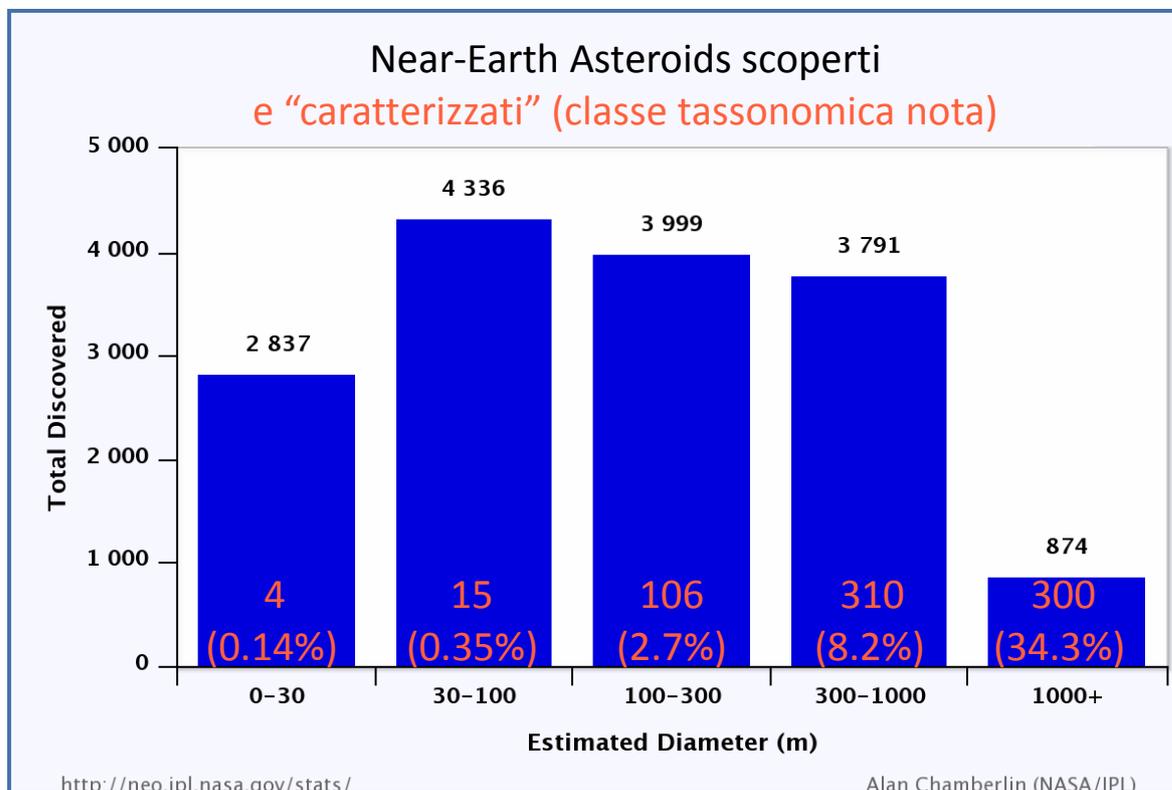
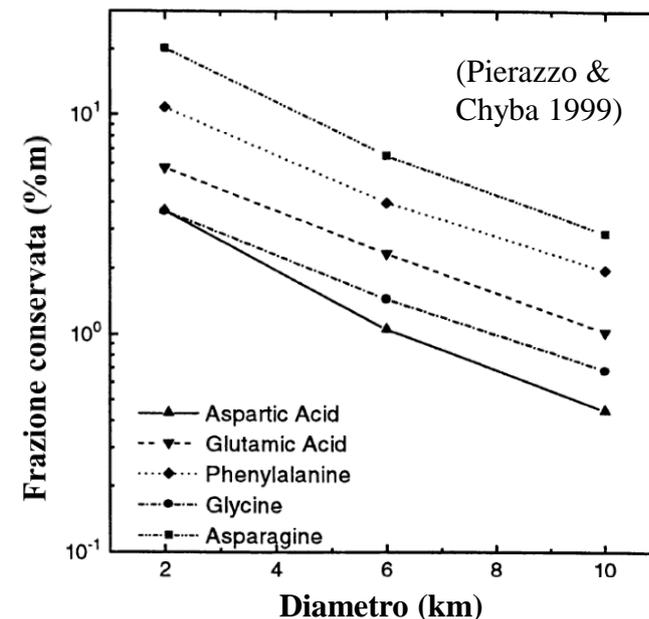
I corpi minori: testimoni del sistema solare primordiale

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:

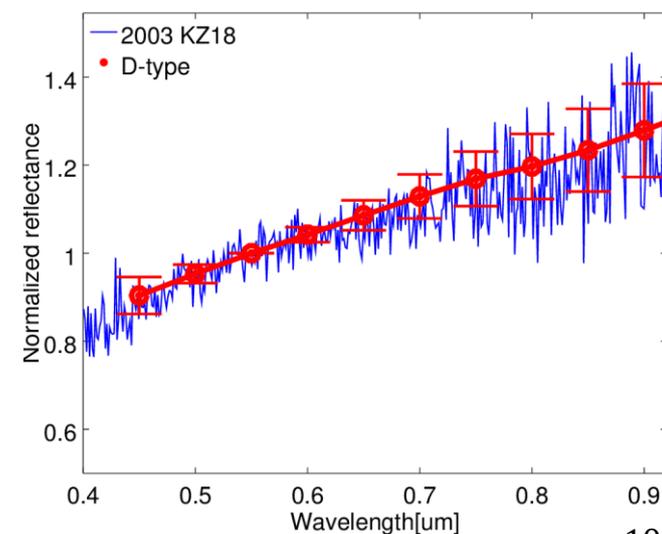
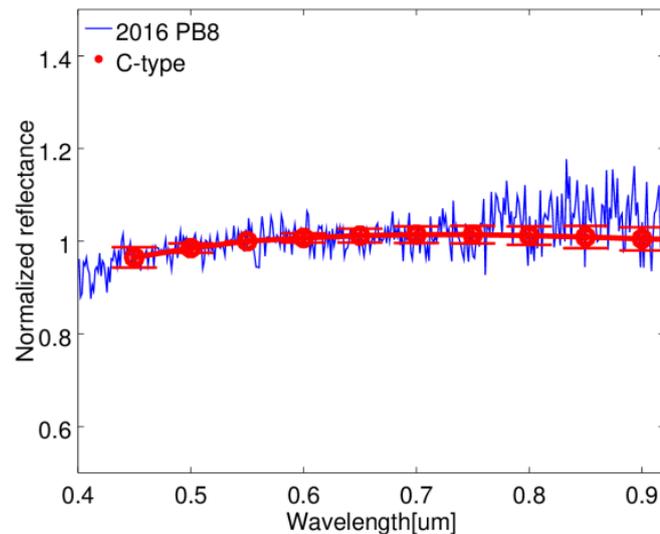
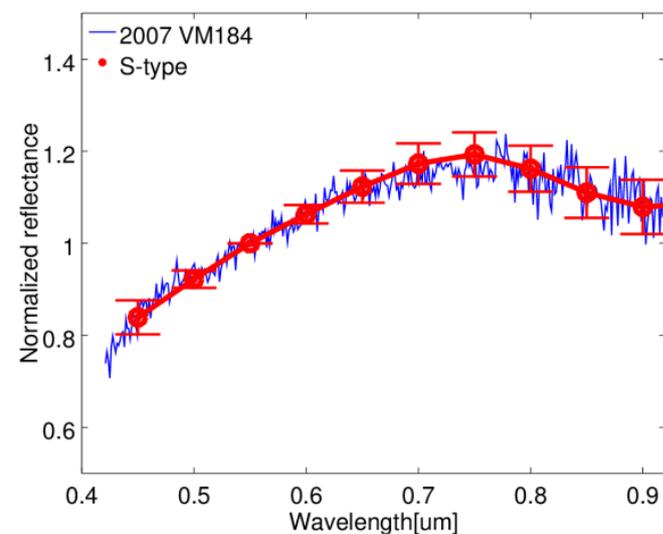
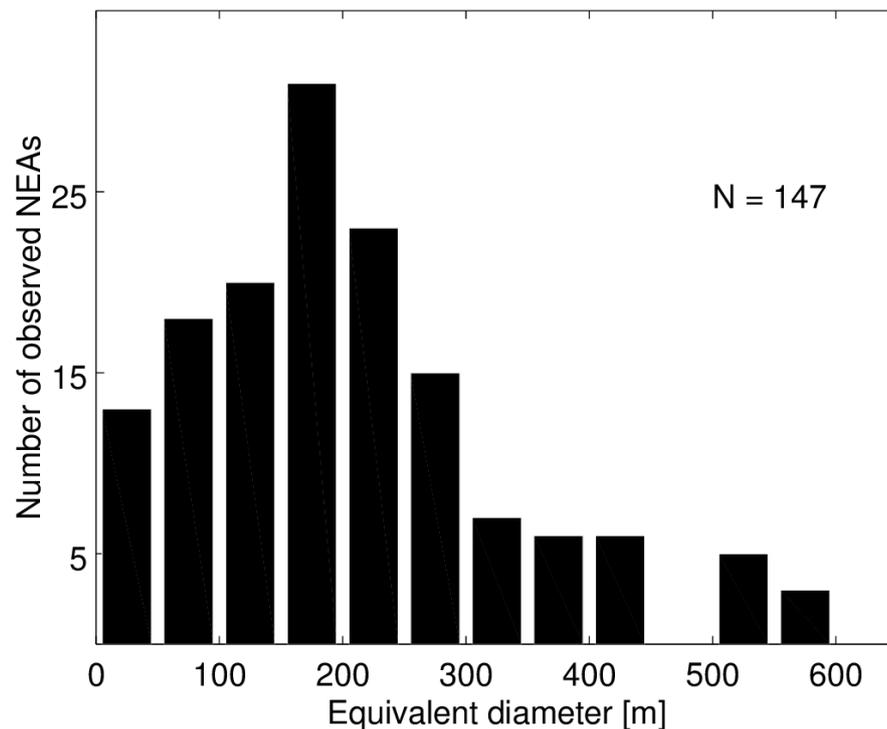
Caratterizzati << Scoperti
<< Popolazione stimata

I “piccoli” near-Earth asteroids

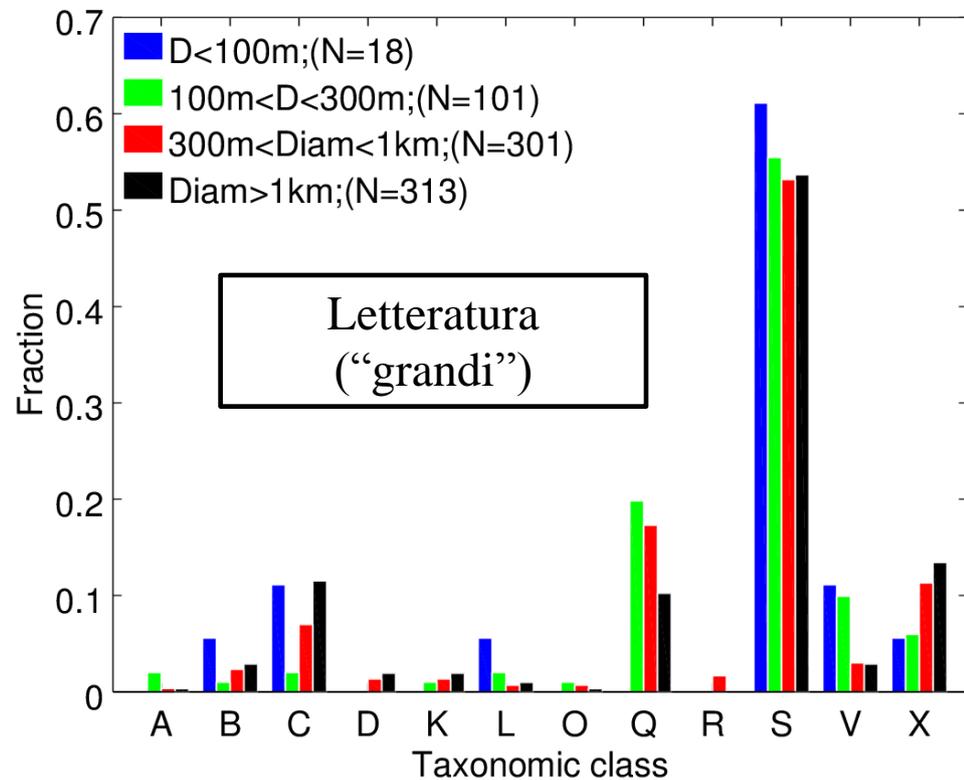
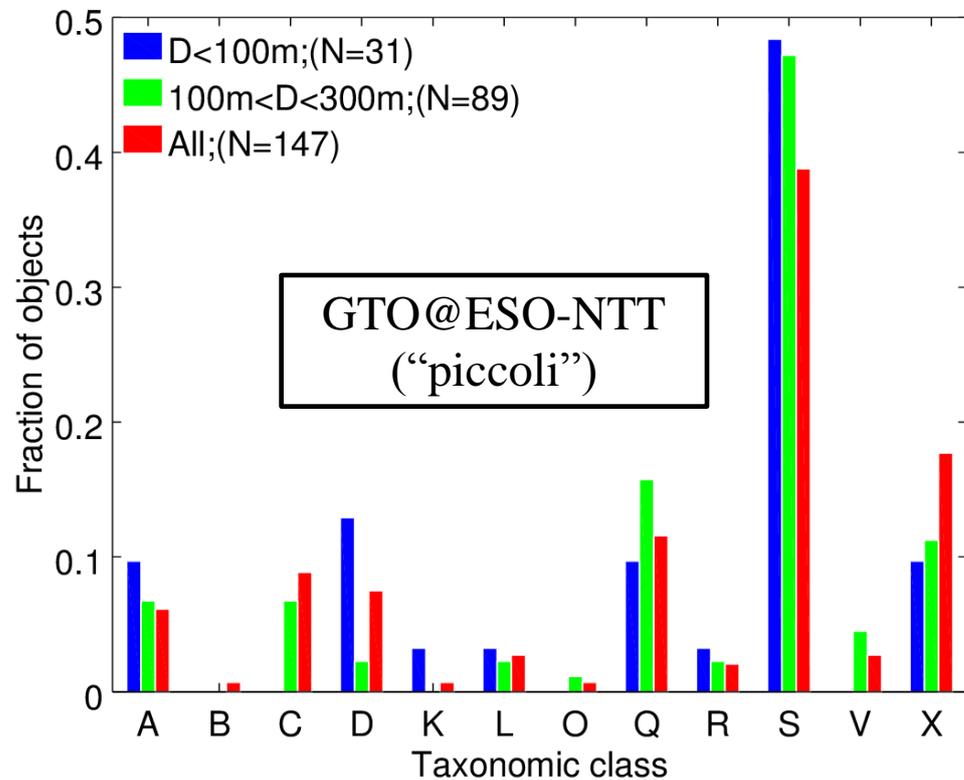
Guaranteed Time Observations @ ESO-NTT:

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

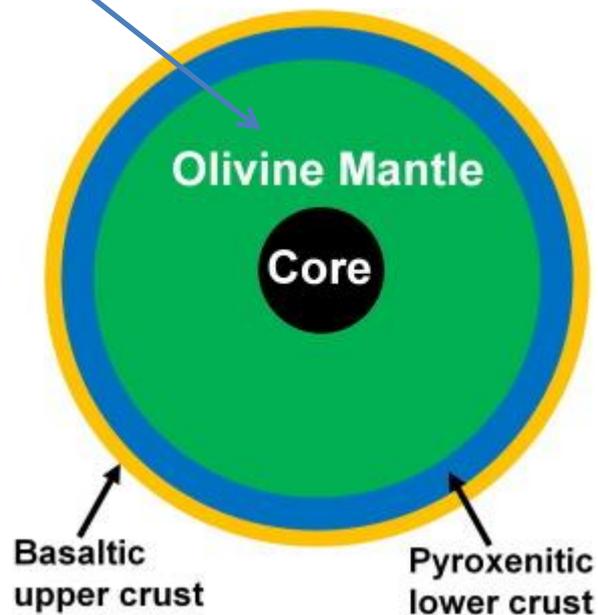
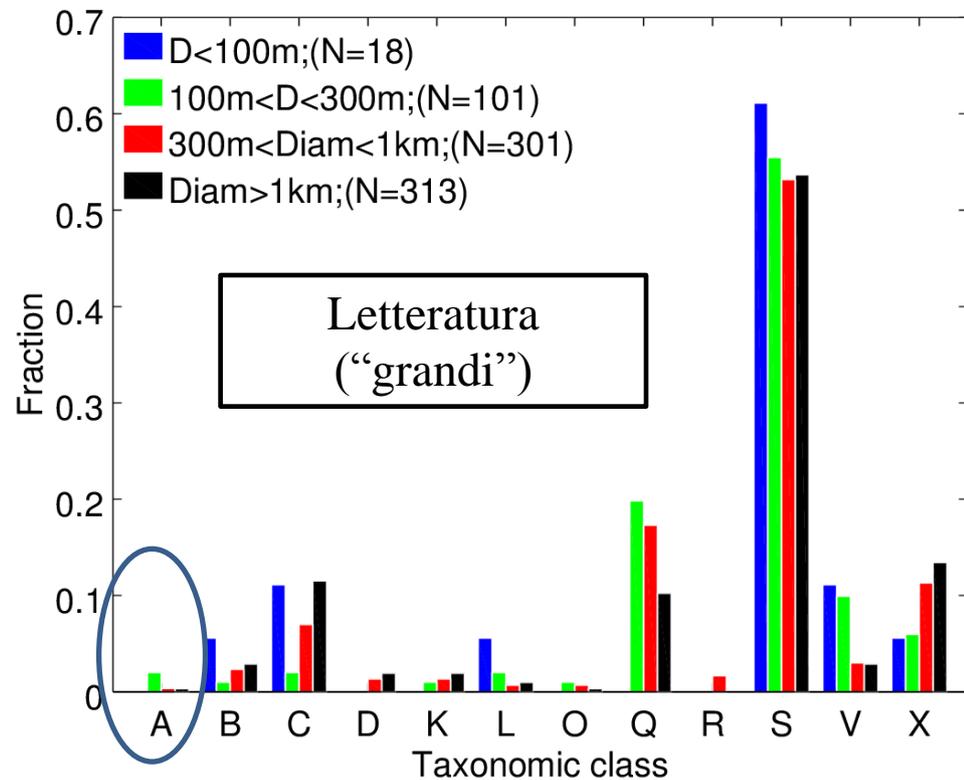
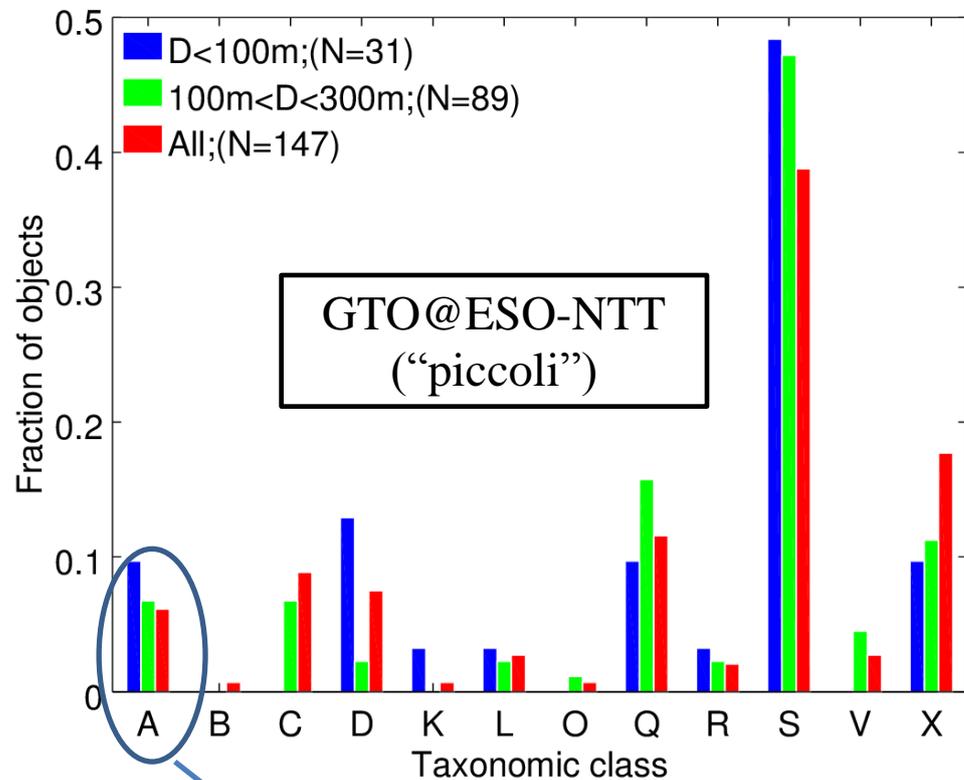
**Prima survey mai dedicata ai piccoli asteroidi:
spettroscopia visibile di 147 oggetti
(campione uniforme!)**



I “piccoli” near-Earth asteroids



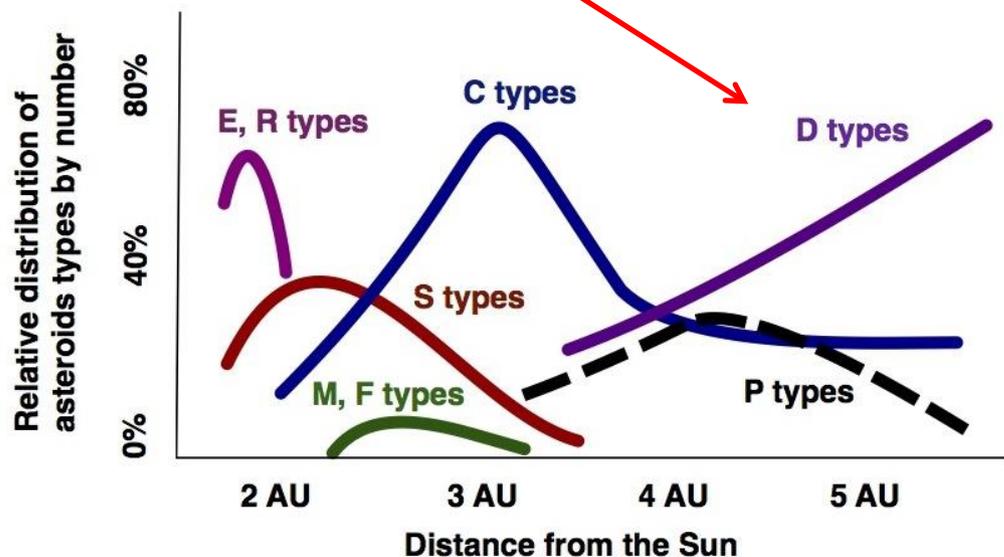
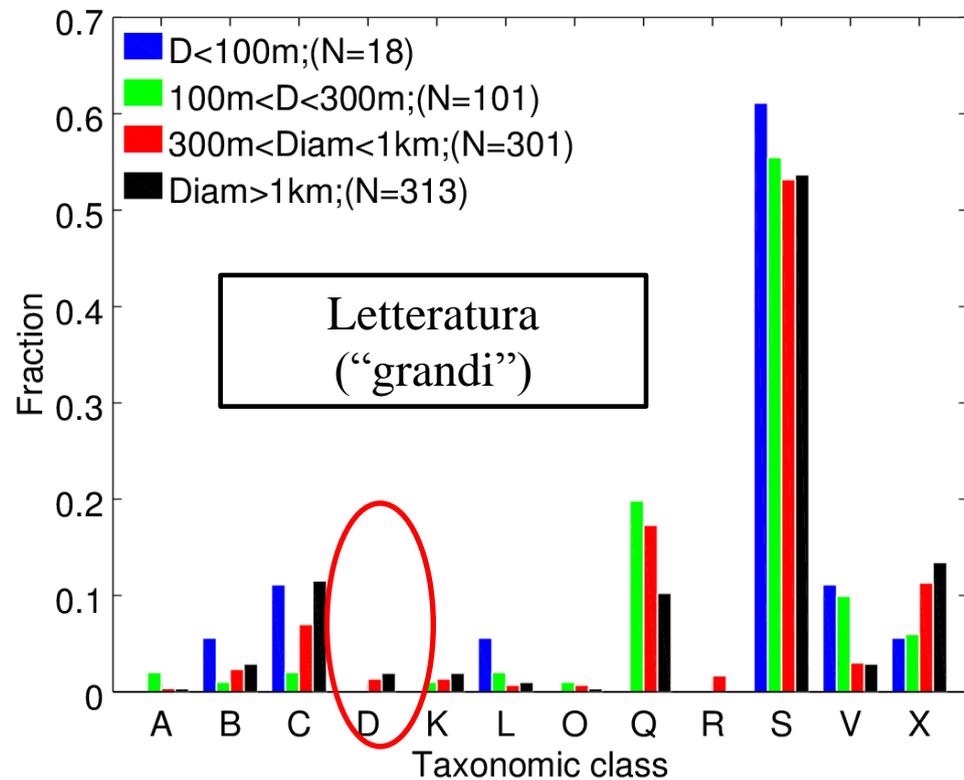
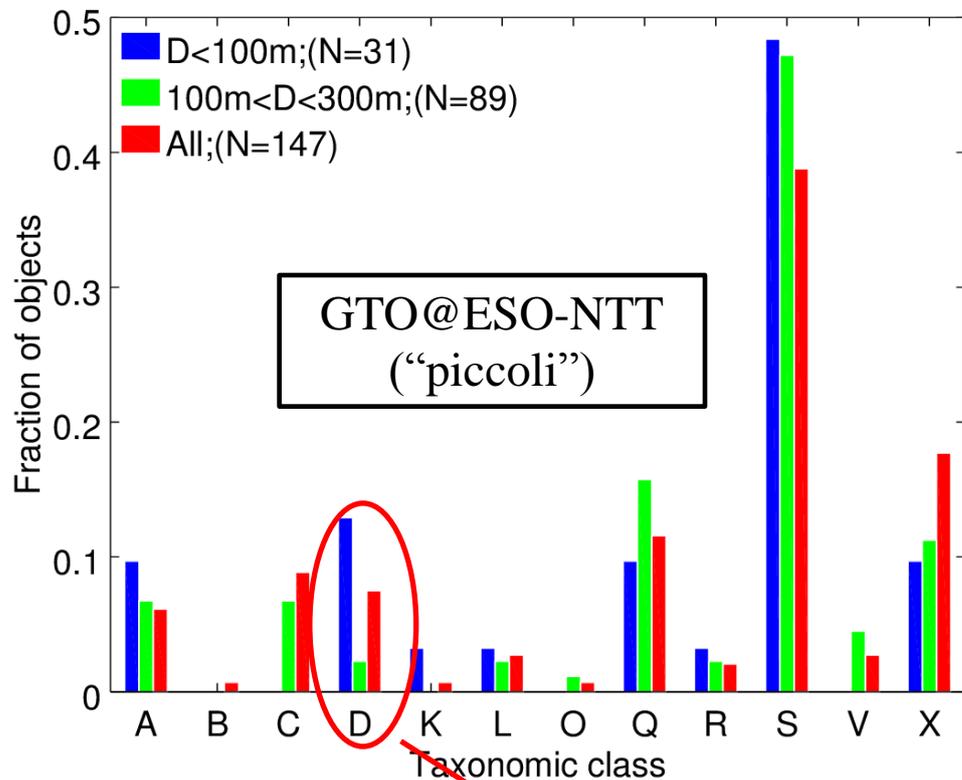
I "piccoli" near-Earth asteroids



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

Le missioni di ritorno di campioni da asteroidi primitivi

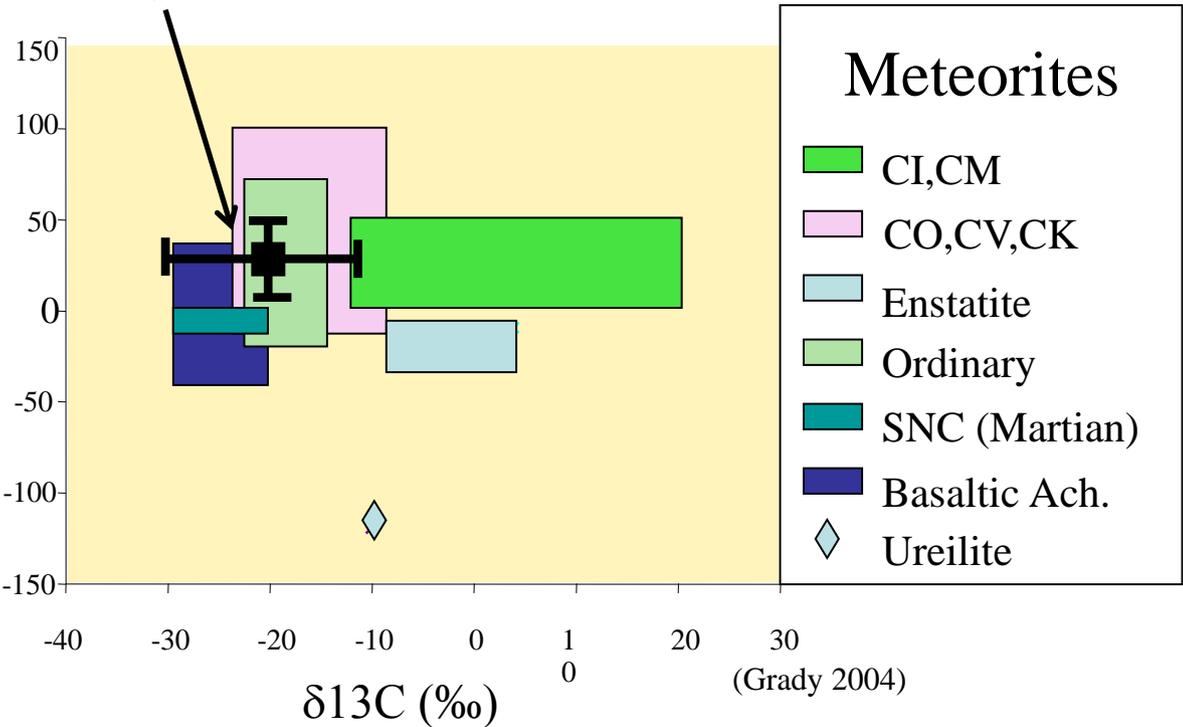


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Accuratezza
 Ptolemy/Philae/Rosetta



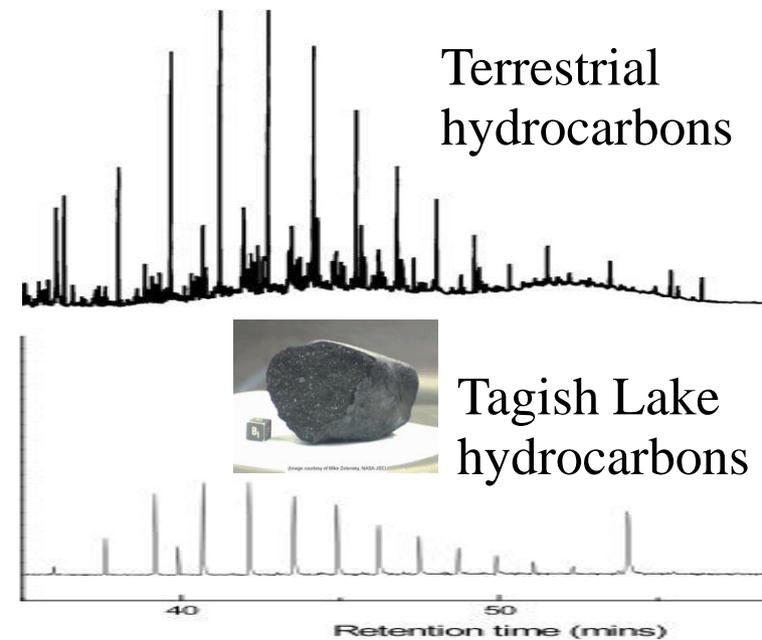
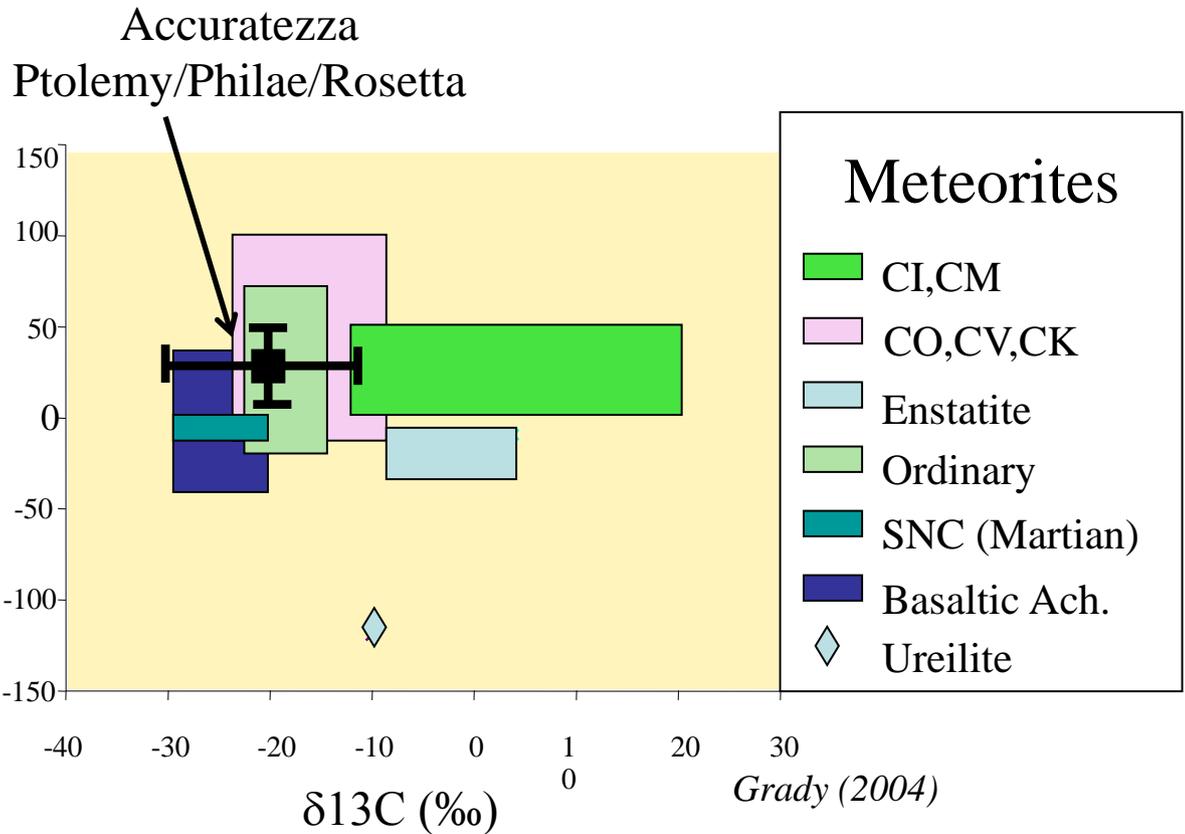
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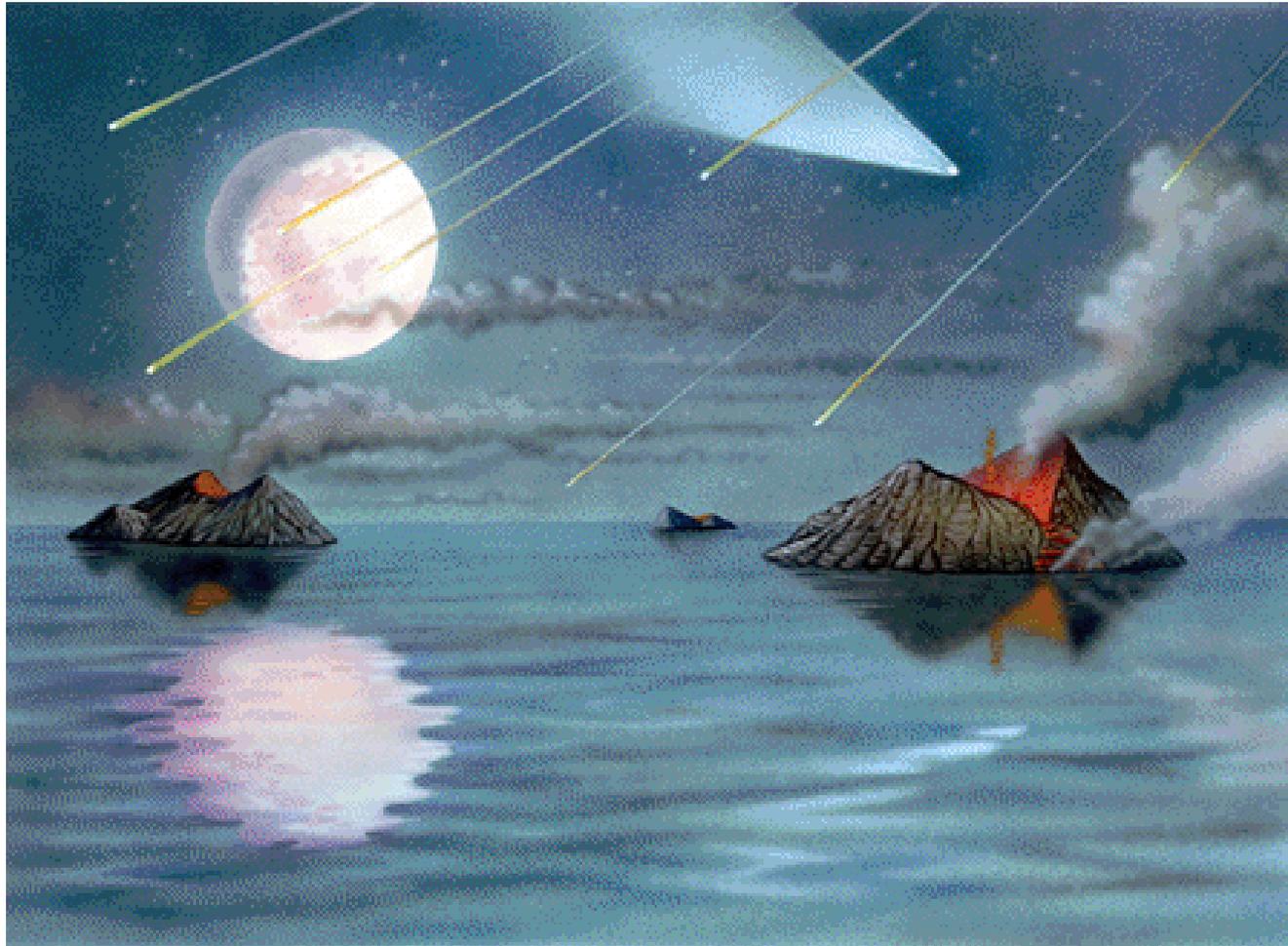
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Grazie dell'attenzione!



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