

SMPAG – 13/02/2019 (UN-COPUOS)

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WP 5.9

(Romanian Space Agency)

NEO/PHA density

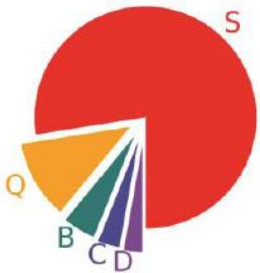
- Density of objects
 - Function of internal structure (monolithic or rubble pile)
 - Function of mineralogy (ices/volatiles rich, silicate rich, metal rich)
 - Function of thermal properties (low albedo NEOs imply large diameters at the same magnitude)

NEO/PHA distribution

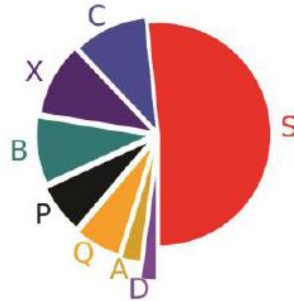
- Basis: MITHNEOS extended
- International effort, US leadership – PI R. Binzel (MIT)
- Spectroscopy of more than 1,100 NEOs
- Most recent/updated/complete survey

NEO/PHA dominated by silicates

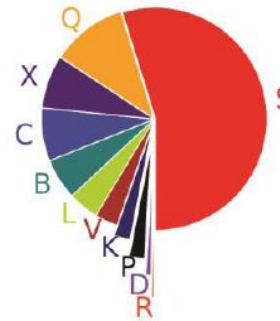
NEOs > 5 km; N=14



NEOs 3-5 km; N=41

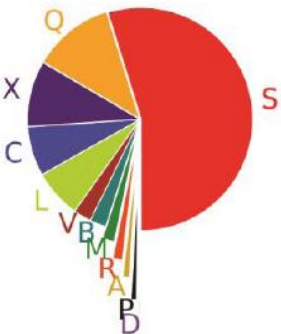


NEOs 1-3 km; N=263

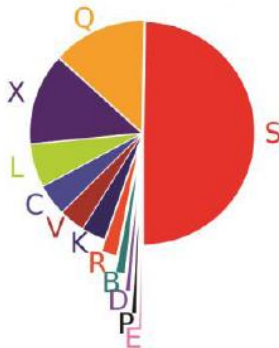


60% S complex
20% C complex
20% other

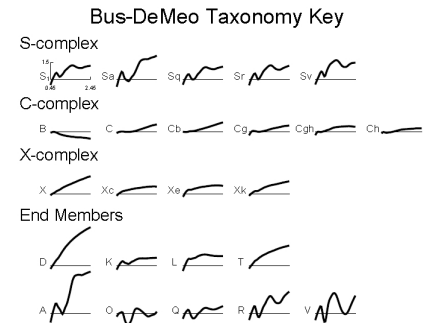
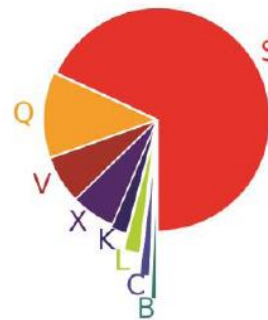
NEOs 0.5-1 km; N=245



NEOs 200-500 m; N=241

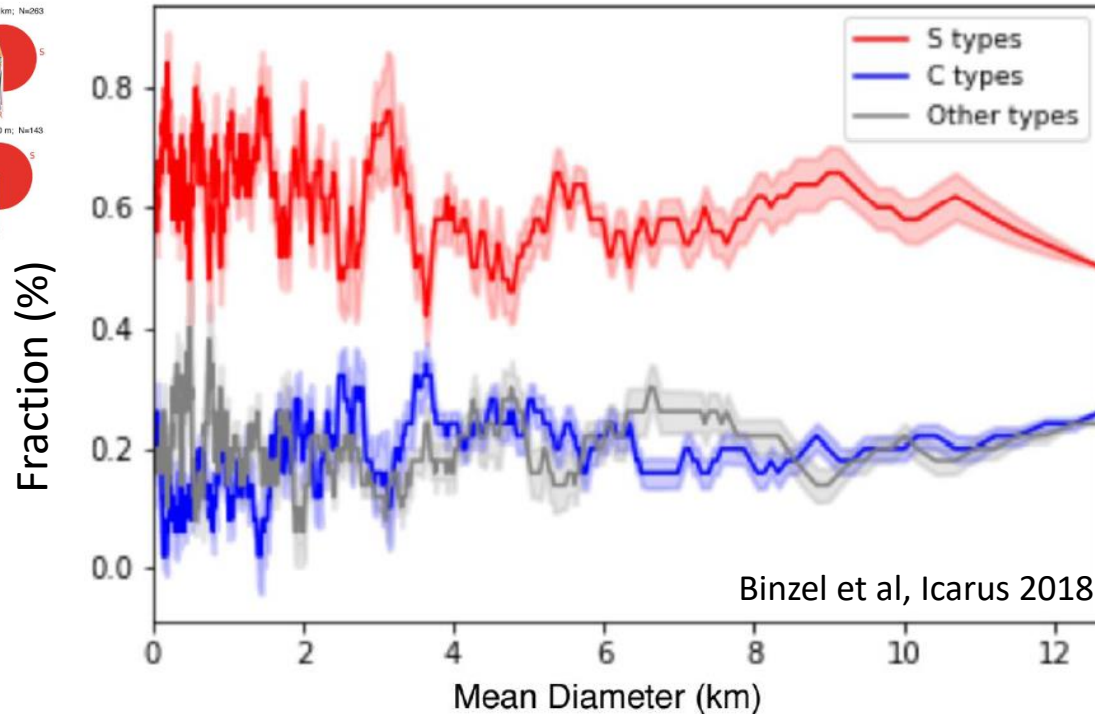
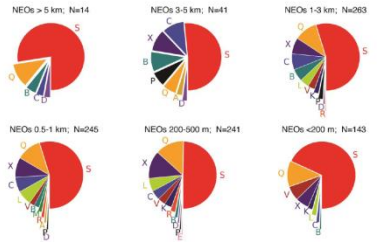


NEOs <200 m; N=143



Binzel et al, Icarus 2018

NEO/PHA dominated by silicates



60% S complex
20% C complex
20% other

- Constant distribution over two orders of magnitude in diameter
- Constant distribution over eight orders of magnitude in volume
- C-type dropping < 10% for $D < 1.5$ km could be an observational bias

Correlation between graze and energy

- Compute the Minimal Orbital Intersection Distance for all NEAs 2019 – 2029
- Estimate the energy interval using a density interval
- Consider the energy of 10 MT (Tunguska like or Meteor Crater like events) as threshold

Energy vs MOID

2019-2029

