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Asteroid observations in support of space missions

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Space exploration missions to small-bodies such as asteroids and comets typically require observational support from extensive campaigns by ground-based and Earth-orbiting facilities. These observing campaigns are necessary both for optimizing mission and instrument design and for maximizing the scientific return of a mission. In some extreme cases the mission goals cannot be met without ground-based observation support. I will describe the observational support NOT provides to ESA's Hera and Gaia missions, NASA's DART mission, and JAXA's DESTINY⁺ mission. The rather unique capabilities and flexibility of NOT in its size class – to be further improved with the installation of NTE – also support mission planning in that they allow for rapid characterization of potential mission targets immediately after their discovery with large-scale surveys such as those to be carried out by NASA's NEO Surveyor and the Vera C. Rubin Observatory. I will provide examples of future missions such as ESA's Comet Interceptor that will benefit from the flexibility and capabilities of NOT.

Primary author: GRANVIK, Mikael

Presenter: GRANVIK, Mikael