Exploration of Near Earth Asteroids (06)
Precursor Missions to NEAs (2)

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THE NEAR EARTH OBJECT SURVEILLANCE SATELLITE (NEOSSAT): A MICROSATELLITE SEARCHING FOR NEAR EARTH ASTEROIDS

Abstract

The Canadian Space Agency (CSA) together with Defense Research and Development Canada (DRDC) are completing a micro-satellite dedicated for near space surveillance. The NEOSSat (Near Earth Object Surveillance) spacecraft, using a 15 cm telescope with sub arc-sec pointing stability, will search for Near Earth Asteroids (NEA).

Although ground-based telescopes are making significant contribution in finding NEA's, several advantages exist in performing the search from space, such as: a) to search the ecliptic plane close to the Sun (to 45 degree solar elongation for NEOSSat) allowing relatively efficient discovery of asteroids orbiting entirely within Earth's orbit (the Atira orbital class), b) use parallax to quickly discriminate NEA's from those of the Main Belt through range determinations, c) to observe continuously. The observation strategy will be optimized to find as many asteroids as possible, based on recent models of asteroid populations produced by the science team.

The microsatellite is based on CSA's successful MOST micro-satellite. Launch is planned for April 2012, to place the satellite in a sun synchronous dawn dusk orbit. Operations will be at the CSA HQ and science operations at the University of Calgary. The science team has developed robust search algorithms based on ground survey programs. Discoveries will be immediately reported to the MPC allowing further confirmation.

NEOSSat will complement the international effort to discover and better characterize the NEA population, and possibly identify either hazardous objects or interesting exploration candidates.