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NEO Discovery

Asteroid Terrestrial-impact Last Alert System - ATLAS

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ABSTRACT

The Asteroid Terrestrial-impact Last Alert System (ATLAS) now under construction is designed to survey the entire visible night sky to $V \sim 20$ four times each night to detect asteroids on an Earth-impacting trajectory. We plan to use existing image analysis and moving object detection software, multiple small ($< 0.5\text{m}$) telescopes, mounts and observatories, and readily available computation and data storage nodes. The system complements the next-generation, deep, all-sky surveys such as Pan-STARRS and LSST by providing a much faster cadence for all-sky coverage at the cost of shallower depth. ATLAS will pay particular attention to closing the cone around the Sun, mining the “sweet spots” for NEOs inside of the Earth's orbit. Our simulations indicate that ATLAS should provide about a month's advance notice of impact for $\sim 300\text{m}$ diameter objects and about a week's notice for Tunguska scale impactors of $\sim 50\text{m}$ diameter. We expect the survey to be commissioned by early 2015 and fully operational later that year.