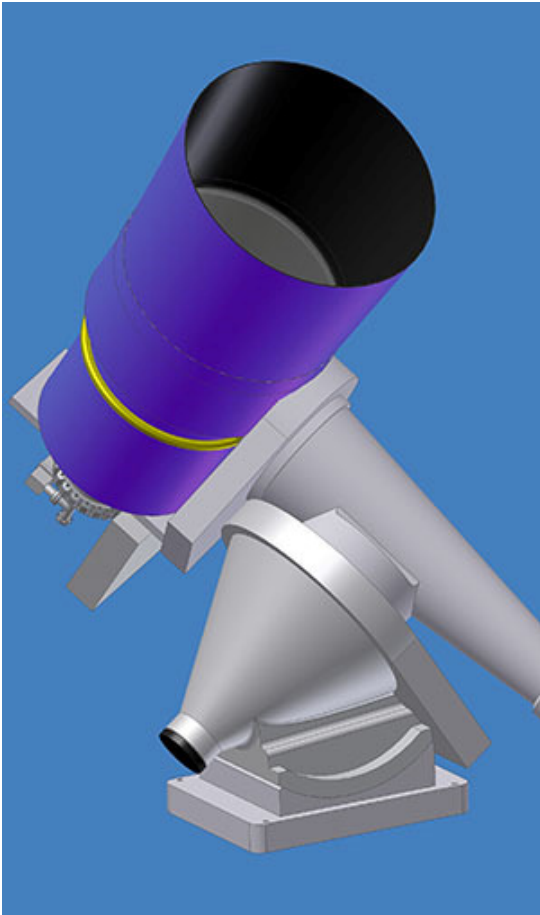


# ATLAS Project Funded by NASA

by Chris Oliver



A conceptual drawing for an ATLAS telescope. The project would use two of these 20-inch telescopes.

As the meteorite that recently hit the Russian city Chelyabinsk showed, asteroids that enter Earth's atmosphere can be dangerous. With the aid of a \$5-million grant from NASA, a team of IfA astronomers is developing ATLAS, a system to identify dangerous asteroids before their final plunge to Earth.

[ATLAS](#) (Asteroid Terrestrial-impact Last Alert System) will complement the IfA's Pan-STARRS project, a system that searches for large "killer asteroids," years, decades, and even centuries before impact with Earth, thus giving us time to formulate a plan to deflect the asteroid. But while Pan-STARRS takes a month to complete one sweep of the sky in a deep but narrow survey, ATLAS will search the sky in a closer and wider path to help identify the smaller asteroids that hit Earth much more frequently. The ATLAS team predicts the system will offer a one-week warning for a 50-yard-diameter asteroid or "city killer" and three weeks for a 150-yard-diameter "county killer." "That's enough time to evacuate the area of people, take measures to protect buildings and other infrastructure, and be alert to a tsunami danger generated by ocean impacts," says John Tonry, head of the ATLAS project.

ATLAS will operate up to eight small telescopes, each fitted with cameras of up to 100 megapixels, on mounts housed at one or two locations in the Hawaiian Islands. The team expects the system to be fully operational by the end of 2015.

The typical asteroid is a rubble pile—a large collection of rocks and dust. Most asteroids reside in the Main Asteroid Belt between Mars and Jupiter, though some, called near-Earth objects, orbit much closer to Earth. Sometimes gravitational tugs from planets in our solar system send one of the asteroids on a collision course with Earth. Had the meteorite that hit Chelyabinsk in February arrived at Earth at a different time of day, it could have hit Moscow, Belfast, Dublin or any number of other cities with a latitude similar to that of Chelyabinsk. Had the much larger asteroid 2012 DA14 that coincidentally came extremely close to Earth on the same day been the one that hit Chelyabinsk, the entire city would have been completely destroyed.

Scientists estimate that such a "city killer" impacts Earth about once every few hundred years. The most recent one—the Tunguska impact—occurred about 103 years ago in Siberia.

Funding from NASA's Near Earth Observation Program will provide ATLAS with \$5 million over five years with \$3.5 million designated for design and construction in the first three years and the remainder for operating the system in the following two years.

In addition to searching for asteroids, ATLAS will also look for dwarf planets, supernova explosions, and flashes of light that occur when a star is gobbled up by a supermassive black hole in a distant galaxy.

## Asteroid—Meteor—Meteorite?

When a chunk of space rock (*asteroid*) enters Earth's atmosphere, it becomes a *meteor*. If it hits the ground, it becomes a *meteorite*.