

Opinion We're on notice to plan for the next meteor

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and

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A [meteor broke apart over rural Russia](#) on Friday morning, injuring at least 1,200 people. Hours later, an asteroid known as [2012 DA14](#) passed about 17,000 miles above Earth's surface — a close shave in astronomical terms, passing nearer than many of our communications satellites. One was predicted; the other was not.

These [events were unrelated](#), but they underscore how crucial it is that nations know, quickly, what is falling from the sky and what, if any, dangers are posed.

Every day [about 40 tons](#) of space debris hit the atmosphere, burn and settle to Earth, NASA has found. The vast majority of the detritus consists of meteoroids no larger than a grain of sand, but even tiny specks pack a wallop: A typical meteor hits Earth traveling at least seven miles per second, at least 30 times faster than a bullet shot from a handgun. That is why a tiny meteoroid can make such a spectacular shooting star.

According to the Russian Academy of Sciences, the meteor that disintegrated over Siberia on Friday weighed in the neighborhood of 10 tons. It was thought to be traveling at 10 to 12 miles per second when it broke apart.

Every year or so, such a meteor blazes through the sky somewhere over Earth. But every 100 years or so, Earth is hit by a meteor large enough to cause much more significant devastation. Such an impact occurred in [1908 in Tunguska, Russia](#), when a meteor 100 feet or so in diameter exploded in the Siberian wilderness, releasing about 1,000 times the amount of energy as the nuclear bomb dropped on Hiroshima.

And every 100 million years or so, Earth is hit by a meteor large enough to cause mass extinctions, like the one at the end of the age of dinosaurs. These threats are minuscule on a day-to-day basis, but surely any existential threat to the human race must be taken seriously.

To help get a handle on this danger, NASA coordinates the Near-Earth Object Program, which searches for and tracks asteroids and comets that could approach the earth. As of this week, about 10,000 near-Earth objects have been discovered, including nearly 900 with a diameter of roughly a kilometer or larger. None is expected to hit Earth anytime soon, but many large objects are believed to remain undetected.

In 2005 Congress set a 15-year deadline for scientists to find 90 percent of the near-Earth objects greater than about 500 feet in diameter — those large enough to cause regional or global devastation. But the mandate has been chronically underfunded. The project would require several more dedicated telescopes. Last year the project received about \$20 million, far less than the \$50 million that the National Research Council estimated in 2010 was needed to reach the congressional goal by 2030, a decade late. Even when this goal is met, most small asteroids and comets — too small to cause global devastation but still large enough to cause damage far worse than just occurred in Russia — will remain undetected unless funding is significantly increased.

Another danger is that even if a meteor does not itself cause major damage, any resulting chaos or confusion could lead nations to overreact. In 2002, for example, a meteor exploded over the Mediterranean at a time when India and Pakistan were facing off over the disputed Kashmir region. The U.S. Space Command's deputy director for operations warned a congressionally mandated commission that the meteor might have been misidentified as a nuclear attack, had it come apart over South Asia.

Many countries lack the United States' sophisticated sensors that can help determine whether a large explosion is nuclear in nature. The damage that could occur if a nation were to misidentify a meteor explosion and launch a counterattack is chilling. Washington should do more to establish an international warning system that can provide credible, near-instant information to countries across the globe whenever a major explosion is detected.

More broadly, Congress should continue to invest in day-to-day disaster planning, including improving coordination among first-responders. Such investments would help us respond to relatively frequent events such as hurricanes or earthquakes, as well as infrequent events, such as meteor strikes and terrorist attacks.

When something explodes or falls from the atmosphere, the world needs to know what it is. Impacts like what occurred in Russia on Friday are certain to occur. We should make the investments necessary to track near-Earth objects and prepare for disasters of all kinds.