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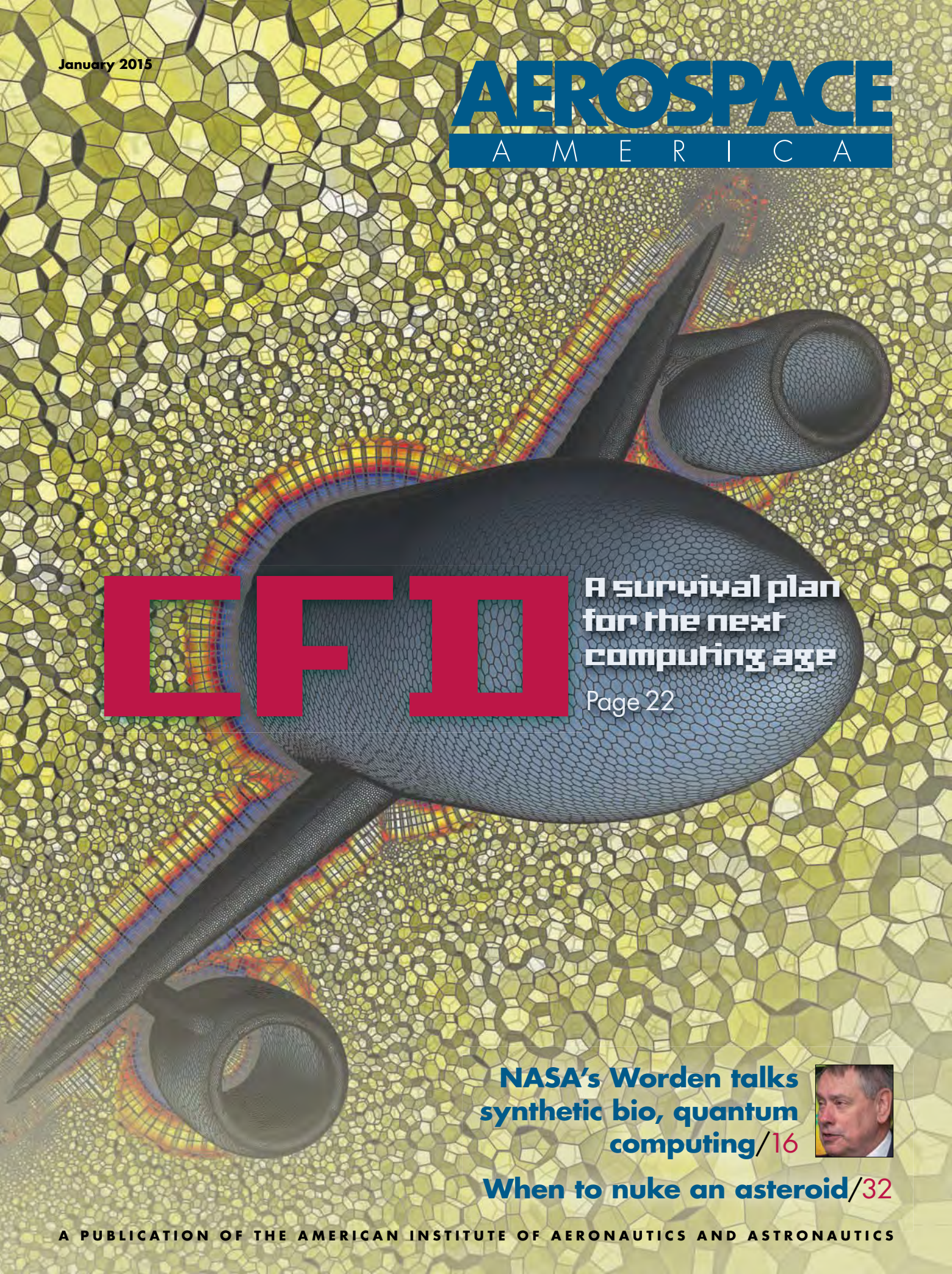

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Satellite pushed by former VP Gore ready for launch

The Deep Space Climate Observatory in a clean room at NASA's Goddard Space Flight Center in Greenbelt, Maryland.

NASA

The U.S. government's Advanced Composition Explorer, or ACE, satellite is on borrowed time. It's been watching for potentially destructive solar storms for the past 13 years, a decade longer than it was designed to last.

If all goes as planned, help will be on the way in January when the Deep Space Climate Observatory, or DSCOVR, spacecraft lifts off from Florida aboard a Falcon 9 rocket. The refrigerator-sized space weather tracker will travel to a point a million miles from Earth, where the gravitational forces of the sun and Earth are in balance. At this point, called L-1, DSCOVR will serve as a sentry for dangerous fluxes in the solar wind, the constant stream of charged particles and magnetic fields from the sun that can knock out communications and damage satellites.

Solar weather wasn't always the main mission for the 570-kilogram spacecraft. The original concept, championed in the 1990s by then-Vice President Al Gore, called for sending a climate-monitoring spacecraft called Triana to the L-1 point. NASA's Goddard Space Flight Center in Greenbelt, Maryland, built Triana, complete with a camera to snap spectral images of Earth and a radiometer to measure Earth's radiation, so fluctuations could be factored into climate models. When President George W. Bush took office in 2001, his administration canceled Triana and placed it in storage.

Fast forward about a decade. NOAA urgently needed to replace ACE, and it just so happened that Triana's secondary sensors could monitor the solar wind. Triana was pulled from storage, refurbished and given a new name and primary purpose. DSCOVR kept its climate sensors, but NOAA elevated its solar-wind observations to its main mission.

Just as with ACE, when data indicate a solar storm, NOAA will issue alerts to potentially affected parties so they can take precautions. Airplane pilots might change routes to avoid losing contact with air traffic control. Satellite operators could place the spacecraft in safe mode to protect electronics. Electric utilities could turn on more generators or shut down parts of their grids.

If DSCOVR lifts off as scheduled on Jan. 23, by May it should be a million miles from Earth and 92 million miles from the sun. NOAA expects to begin receiving data in July. DSCOVR was developed in the same technological era as ACE, so it does not represent a leap over its predecessor. But it will have some advantages, such as being able to operate during severe space weather storms. NOAA says it has developed computer models that will use DSCOVR data to create better storm forecasts.

NOAA expects DSCOVR to last five years in orbit, so efforts are underway to determine what might come after it. A lot is riding on the January launch, because there are no comparable spacecraft operated by other nations.

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