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AEROSPACE

A M E R I C A

Cancer

and deep spaceflight

Cosmic radiation threatens to smash DNA and human exploration plans. Meet the researchers who aim to point NASA toward solutions. page 30

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Apache upgrades bring firepower, page 36

High stakes launch

Once control of the military's new DMSP-19 satellite is handed over to NOAA operators this month, it will spruce up space-based weather coverage and prevent a once-possible near-term gap in such coverage. But the Lockheed Martin-built satellite will do little to lessen the threat of a coming gap in coverage for the civilian sector. At issue is the accuracy of the National Weather Service's all-important long-range weather forecasts.

The National Oceanic and Atmospheric Administration, which runs the National Weather Service and operates the Defense Meteorological Satellite Program constellation for the Pentagon, will continue to use DMSP data in its weather models for the civilian sector. Even so, NOAA still needs to replenish its own distinctive system of polar-orbiting weather satellites. Inaction would have "catastrophic national consequences" for the U.S. economy and quality of life, a NOAA-commissioned review team has warned.

NOAA's polar-orbiting environmental satellites supply weather and climate data for the civilian sector. But data requirements are different for military and civilian weather forecasting, and the DMSP satellites do not specialize in particular kinds of data, including temperature and humidity, that are essential to long-range forecasting.

The DMSP-19 satellite was built by Lockheed Martin in 1988 and put into storage for subsequent deployment as needed. Its navigation and operating systems have been upgraded through the years. DMSP-19 supplants a forerunner satellite that far exceeded its life expectancy on orbit. The newcomer in space is scheduled to be joined there in 2016 by the DMSP-20 satellite still in storage. The Air Force once had plans for a new constellation of defense meteorological satellites that would have complemented the NOAA satellites more closely in terms of orbiting timetables and atmospheric data collection. That pro-



Lockheed Martin

Gap-filler: Lockheed Martin workers perform final integration of the DMSP-19 satellite. The craft will stave off a looming gap in weather coverage, but operator NOAA has needs unmet by the military satellite.

gram was canceled in January 2012.

NOAA spokesman John Leslie says the agency "will use some of the DMSP-19 data," such as "imagery of environmental features, including clouds, bodies of water, snow, fire and pollution, in the visual and infrared spectra." Even so, he says, "NOAA, NASA and the [Obama] administration will continue to consider options" for shoring up weather observation of Earth for civilian forecasting and warding off the weather coverage gap that looms ahead.

NOAA may be running out of

time. A new NOAA weather satellite called JPSS-1, the first of four planned Joint Polar Satellite System spacecraft, will not be ready for deployment until 2017. NOAA's pair of currently operational polar satellites will have exceeded their design lives well before then, causing a coverage gap of a year and a half to four years. NOAA is considering but has yet to follow through on its review panel's recommendation to build and launch a stripped-down but sufficiently capable "gapfiller" satellite.

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