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Dec. 14, 2009

MEDIA ADVISORY : M09-236

From Endangered Fish to Saturn's Rings: NASA Science Highlighted at American Geophysical Union Meeting

SAN FRANCISCO -- NASA researchers are presenting a wide range of science results at the 2009 fall meeting of the American Geophysical Union. The meeting opens Dec. 14 and continues through Friday, Dec. 18, at the Moscone Convention Center in San Francisco. It features more than 15,000 talks and poster presentations about the latest in Earth and planetary sciences and heliophysics.

Below are summaries of presentations by NASA researchers and their colleagues who use NASA research capabilities. For more information about each topic, including the time and location of the presentations, consult the meeting program at:

<http://www.agu.org/meetings/fm09/program>

Monday, Dec.14**WEATHERED ICE DEPOSITS EXPLAIN MARS GEOLOGY**

Paul Niles of NASA's Johnson Space Center in Houston presents research arguing that the origin of the layered, sulfate-rich sediments at Meridiani Planum on Mars can be attributed to acidic weathering of massive ice deposits. This ice-weathering model best explains the geologic and geochemical observations made from orbit and the surface. The model may provide a consistent explanation for the formation of sediments early in Mars' history. (Presentation P12A-05)

SEARCHING FOR EXOTIC LIFE: TOO HOT, TOO COLD, JUST RIGHT?

When looking for places suitable for life, scientists traditionally have targeted a liquid-water habitable zone about 0.1 astronomical units (AU) from M-dwarf stars. The University of Arizona's Jonathan Lunine suggests a different approach. The zone about 1 AU from a late M-dwarf star may be much less severe for potential life and quite abundant in the universe. Saturn's moon Titan is one example of this kind of environment, where hydrocarbon seas may be fostering an exotic type of life. (Presentation B11E-05)

Tuesday, Dec. 15**NEW SATELLITE VIEWS OF EARTH'S VOLCANIC PLUMES**

The instruments on NASA's Earth Observing System satellites provide rich measurements for mapping volcanic plumes and clouds. In this talk, observations from three of these instruments are used to examine recent eruptions of Alaska's Augustine volcano and the Sarychev volcano on Russia's Kuril Island. The combined data reveal the quantity and distribution of sulfur dioxide and silicate ash and sulfate aerosols. (Presentation V21B-1988)

Wednesday, Dec. 16**SATELLITE REVEALS A DECADE OF ATMOSPHERE, LAND AND ENERGY TRENDS**

After 10 years in orbit, NASA's Terra Earth-observing satellite has turned up trends and science results that are helping researchers better understand the complex Earth system. Researchers have updated Earth's energy budget, showing the world is cloudier than we thought, aerosols have an ambiguous yet critical role in climate, and not all urban areas attract and store heat in the same way. Other atmospheric discoveries have helped researchers show how high and far pollution travels. (Sessions U31C, U32A, U33A, U33B)

NASA SCIENTISTS HELP PROTECT ENDANGERED FISH

NASA and the National Oceanic and Atmospheric Administration (NOAA) developed models and software for water resource managers to help prevent the death of threatened and endangered fish species in streams and rivers affected by the Central Valley Project in California's Sacramento River Basin. Scientists at NASA's Ames Research Center in Moffett Field, Calif., and their colleagues improved the accuracy of stream temperature and freshwater fish mortality models. (Presentation IN34A-03)

SATELLITE IMPROVES ALTITUDE ESTIMATES OF VOLCANIC PLUMES

Many volcanic plumes inject ash and sulfur dioxide into the atmosphere, posing hazards for human health and aviation. For the first time, researchers can measure the height of volcanic plumes directly from space. Kai Yang of NASA's Goddard Space Flight Center in Greenbelt, Md., and colleagues will describe two recent volcanic eruptions and show how they used an instrument on the Aqua satellite to estimate the altitude of the sulfur dioxide plume. This method can detect volcanic ash more reliably than the traditional ash detection methods. (Presentation V31A-1954)

ASIAN DUST AND CLIMATE: NASA OBSERVATIONS SHOW CLIMATE LINKS

The 10-year record of aerosol observations from the Multi-angle Imaging SpectroRadiometer on NASA's Terra spacecraft illustrates how climate is linked to Asian dust sources and the transport of that dust around the globe. Scientists will present details of the year-to-year and seasonal variability of Asian dust with an emphasis on three regions: the Taklamakan and East and Central Gobi, South Korea and Japan, and the North Pacific near the U.S. northwest coast. (Presentation U33B-0067)

NEXT STEPS IN THE SEARCH FOR LIFE ON MARS

The possibility of life on Mars has become a scientific issue of profound importance and great public interest. Michael Meyer, NASA senior scientist for Mars exploration, will report on the search for evidence of life on the Red Planet and

how the Mars Science Laboratory, the agency's first dedicated astrobiology mission to Mars since Viking, will set the stage for the coming decade as Mars exploration moves from "follow the water" to "seek the signs of life." (Presentation P33C-02)

Thursday, Dec. 17

NASA FLIGHTS DETECT EFFECTS OF FIRE AND POLLUTION ON ATMOSPHERE

Using instruments aboard three NASA aircraft, scientists sampled wildfire and human-caused pollution plumes over Alaska, California and Western Canada in 2008 to determine their chemical composition and influence on the atmosphere. Scientists found that while fire emissions greatly disrupt the composition of the atmosphere, they do not strongly influence ozone formation. They also found plumes at high altitudes originated from Asia and often contained traces of human-caused pollution. (Presentation A41E-04)

TOWERING SMOKE PLUMES FROM AUSTRALIAN WILDFIRES

Images of Australian wildfires from NASA's CALIPSO satellite surprised scientists when they revealed the staggering height of the fires' smoke plumes. CALIPSO's active-sensing lidar observes the vertical profile of aerosols and clouds. During flights over the fires, CALIPSO observed smoke plumes reaching 12 miles in height. At these altitudes, smoke can influence cloud formation, persistence and brightness, which in turn affects the amount of sunlight reflected or absorbed by the atmosphere. (Presentation A43E-04)

NASA FLOOD AND LANDSLIDE MONITORING GOES GLOBAL

NASA's Global Hazard System is combining real-time, multi-satellite rainfall observations to monitor and forecast floods and landslides around the world. Dalia Kirschbaum of NASA's Goddard Space Flight Center, Bob Adler of the University of Maryland, and their colleagues will discuss the system and present ways that a high-definition version of the system can help officials in East Africa make decisions and enhance their ability to respond to imminent regional disasters. (Presentation NH42A-05)

Friday, Dec. 18

RECEDING SHORELINES AND WAVE ACTION AT LAKE ON TITAN

Radar observations by NASA's Cassini spacecraft have enabled the first measurements for the sloping shoreline of the largest lake in the southern hemisphere of Saturn's moon Titan. The new data about Ontario Lacus, presented by Alexander Hayes of the California Institute of Technology, show an active, dynamic body of liquid with seasonal variations typical of terrestrial lakes. Analysis found the Ontario Lacus shoreline recently receded at a rate that confirms the presence of liquid. (Presentation P54C-02)

BOOM AND BUST CYCLES IN SATURN'S RINGS

In the routine bedlam of Saturn's rings, particles clump together then fall away in patterns similar to economic boom and bust cycles, according to recent observations from NASA'S Cassini spacecraft. The crowding, collisions and dissolution occur on time scales ranging from hours to weeks. Larry Esposito of the University of Colorado presents new research indicating gravitational effects from some of Saturn's moons appear to trigger these kinds of episodes. (Presentation P51B-1130)

For more information about NASA-related news being presented at the meeting, visit:

<http://www.nasa.gov/topics/earth/agu>

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