

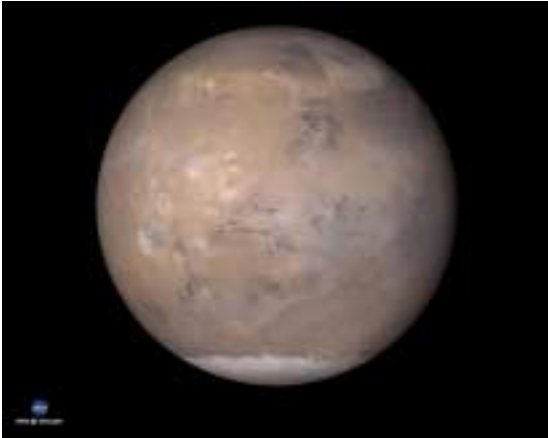
# AIAA SAN FRANCISCO SECTION



## IN4M-LETTER

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AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS SAN FRANCISCO SECTION  
P.O. BOX 1548, MOUNTAIN VIEW, CA 94042 <http://www.aiaa-sf.org>



Thursday, May 26, 2005; 6:30-9:00pm  
NASA Ames, Moffett Field, CA

### The Mars Exploration Rovers: Following the Water

**Dr. David Des Marais**  
NASA Ames Research Center  
Moffett Field, CA

(Editor.s note: This talk by Dr. DesMarais is being presented during the AIAA SF Honors and Awards Banquet. See accompanying article on page 2 for event information.)

The rovers *Spirit* and *Opportunity* are "robotic field geologists" that are investigating the crustal composition, environmental history, and potential habitability of Mars. They represent a logical sequel to earlier orbital reconnaissance missions and they are key precursors for future searches for evidence of life on Mars.

The landing sites at Gusev Crater and Meridiani Planum were selected because they had offered hints that liquid water had shaped their landscapes and mineralogy. At Gusev crater, Spirit has observed evidence of water within rock fractures and cavities near the landing site, in salty horizons within soils, and in extensively altered rocks in the Columbia Hills. At Meridiani Planum, Opportunity discovered sulfate-rich bedrock, sedimentary laminations, hematite concretions, and bedrock dissolution features that indicated the former presence of standing water both at the surface

*The Mars Exploration Rovers: Following the Water,*  
continued on page 2

Tuesday, May 24, 2005; 12:00pm  
NASA Ames, Moffett Field, CA

### AIAA and Aeronautics: Present, Future and Issues

**Dr. Donald W. Richardson**  
President, AIAA

Wondering what AIAA is doing for you? Do you want an opportunity to take your questions and ideas straight to the top? Dr. Don Richardson, President of AIAA, is coming here to the Bay Area just to talk to you.

Dr. Richardson has scheduled a series of these "Town Hall" meetings nationally, with the dual purpose of explaining the AIAA's Strategic Plan and eliciting the concerns and ideas of our members. The plan, which had been commissioned by President, Alan Mulally, in August 2003, was led by Dr. Richardson, who was then President-Elect, with input and consensus from an Executive Committee comprised of the AIAA Vice Presidents (and VP-Elects) from the areas of Public Policy, Education, International

*AIAA and Aeronautics: Present, Future and Issues, continued on page 1*

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and within sediments. Both sites had the potential to sustain life sometime in the past.

Continuing exploration by the rovers seeks to establish the variety and attributes of those habitable environments, as well as how long they might have persisted. Spirit and Opportunity have demonstrated that robotic "field geologists" can effectively mimic human field geologists as these rovers strive to decipher the mysteries of Mars.



### **About the speaker**

**Dr. David Des Marais** received a Ph.D. in Geochemistry from Indiana University in 1974 and then was a postdoctoral research fellow at the Institute of Geophysics at UCLA. Since 1976, he has been a research scientist in astrobiology and space science at Ames Research Center, NASA, Moffett Field, CA. His long-term research interests have been the biogeochemical carbon cycle and the early evolution of Earth and its biosphere. His

areas of specialization have included the stable isotope geochemistry of carbon in lunar samples, meteorites and oceanic basalts, the biogeochemistry of microbial communities in hypersaline environments, and the biogeochemistry of ancient (Precambrian) carbonates and organic matter. He has authored or co-authored more than 140 peer-reviewed articles and book chapters. He has conducted geologic fieldwork in the U.S., Australia, Canada, and South Africa; and biological field studies in the U.S. and Mexico.

Dr. Des Marais is the principal investigator of the Ames Research Center team of the NASA Astrobiology Institute. He is a lead for Long Term Planning with the Science Operations Working Group

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Dr. David Des Marais discusses the rovers, the mission, the findings.

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Dr. John F. McGowan at April dinner meeting.

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**NOTE:** This newsletter and many back issues are available in PDF form at: <http://www.aiaa-sf.org/newsletter>.

of the Mars Exploration Rover 2003 mission. He is also a member of the CRISM instrument team of the 2005 Mars Reconnaissance Rover mission and the CHEMIN team of the 2009 Mars Science Laboratory mission. He currently serves on the editorial boards of the journals *Astrobiology* and *Geobiology*. He has been a member of several NASA and NSF peer review panels, as well as NASA advisory groups, science definition teams and science working groups. He chaired the committee that revised the NASA Astrobiology Roadmap in 2002. He is a Fellow of the Geochemical Society, the European Association of Geochemistry, the International Society for the Study of the Origins of Life, and the California Academy of Sciences.

*(Editor's note: See accompanying article on Honors and Awards Banquet for event information.)*

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**Thursday, May 26, 2005; 6:30-9:00pm**  
**NASA Ames, Moffett Field, CA**

## **Honors and Awards Banquet**

The AIAA San Francisco Section will host Dr. David DesMarais, speaking on the Mars Exploration Rovers, during its Honors and Awards Banquet, May 26, at NASA Ames. In addition, the section will recognize:

- members celebrating 25, 40, 50, and 60 years of membership in AIAA or its predecessor societies,
- winners of the Galileo Memorial Scholarship,
- new officers for the 2005-06 council year.

### **Event Information**

- May 26, 2005; 12:00 to approximately 1:30pm.
- Location: NASA Ames Research Center, Building 943, Eagle Room, next to NASA Ames Exploration Center (former Space Camp site).
- Cost: members and their guests: \$35; non-members: \$50; students: \$20.
- On-line reservations at”  
<http://www.aiaa-sf.org/dmtg/05-05.html>

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## **AIAA SF at AeroExpo V**

Busloads of students in grades 4 to 8 visited AeroExpo V, April 27-30, 2005, at Moffett Field. AeroExpo is a fun and educational look at aeronautics organized by the NASA Ames Education Office. Students could participate in flight planning (Moffett Field to Disneyland), paper airplane obstacle course, rocket launchers (rockets of straw, paper fins, and clay nosecones), and future flight design (computer-based aircraft design software).

AIAA members assisted with the paper airplane activity. After students had built their creations, the paper airplanes were lifted by a tethered balloon high above their heads, and then released onto the field below. Students then scampered to retrieve them.

Our thanks go to all the volunteers who came out to help and inspire the students.

Activities, Finance, Member Activities, Publications, Standards and Technical Activities, as well as the Executive Director and select staff. The plan along with quarterly updates, have been published on the AIAA website (<http://www.aiaa.org>), and are available for review by members.

As our San Francisco Section continues to adapt to the changing local aerospace industry, Dr. Richardson can count on a lively discussion from our membership. Do not miss this unique opportunity!

### About the speaker

**Dr. Donald W. Richardson** is a Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and has been a member of AIAA continuously for 56 years. He is currently the President of AIAA for 2004-2005. He has been named as a Fellow of the Royal Aeronautical Society (FRAeS), and has recently been co-

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### April 2004 Retrospective

## Talking To a Computer On Mars

(Editor's note: Due to some last minute issues, Dr. Paul Scowen was unable to present his talk on *Snatching Victory from the Jaws of Defeat: Fixing the Hubble Space Telescope*. We were fortunate, however, to find Dr. John F. McGowan, of the Mars Society.)

Astronauts exploring Mars will want to use computers in the field for many purposes including communication such as e-mail, information retrieval, and command and control of both their spacesuit and off-suit equipment. Traditional computer systems present many difficulties in the field including the difficulty of operating a keyboard wearing a spacesuit and the effect of pervasive dust and extreme conditions on equipment. Speech-recognition and speech synthesis have been proposed as partial solutions for these problem.

**Dr. John F. McGowan**, is head of the R&D Division of GFT Group, in Mountain View, and also current President of the Mars Society Northern California Chapter. At the dinner meeting on Thursday, April 28, 2004, he discussed the potential use of speech recognition software by astronauts on Mars. Dr. McGowan summarized design studies and experiments using an analog spacesuit simulating the use of speech recognition for communication, command and control by astronauts on Mars. He also gave a live demonstration using the helmet assembly of the analog suit.

The studies and experiments used state-of-the-art commercial speech-recognition products: ScanSoft Corporation's *Dragon NaturallySpeaking Professional* and GFT Group's artificial personal assistant *Petrana*. Many of the results are applicable to astronauts on the Moon, other planetary bodies, and in orbit.

In general, mission-critical and life-support functions will use physical inputs such as switches, button, and pointing devices. Lower priority and support functions such as e-mail, database query, and non-essential equipment control will use speech. Current speech recognition software for large vocabulary is considered to be about 95 percent accurate. However, this can be increased by employing syntactic and semantic rules.

opted by the Royal Aeronautical Society to serve on their Engineering Council for 2003-2004. He has been awarded the NASA Public Service Medal in 2002 for his work in reinvigorating U.S. Federal funding for R&D in aeronautics. He holds bachelor's, master's and Ph.D. degrees in aeronautical and mechanical engineering.

A commercial instrument pilot with multi-engine land and sea-plane ratings, he has been an active pilot for 57 years. His engineering career has included assignments as an aerodynamics and flight test engineer, research pilot, and engineering manager. He is presently employed as a Vice President of Science Application International Corporation (SAIC) responsible for all FAA and civil aviation corporate activities.



### Event Information

- May 24, 2005; 12:00 to approximately 1:30pm.
- Location: NASA Ames Research Center, Building 943, World Room, next to NASA Ames Exploration Center (former Space Camp site).
- Box lunch is being provided at no charge to attendees.
- Please reserve on-line at:  
<http://www.aiaa-sf.org/dmtg/05-05lunch.html>

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The **AIAA SAN FRANCISCO SECTION IN4M-LETTER** is a publication of the San Francisco Section of the American Institute of Aeronautics and Astronautics, a non-profit society whose primary purpose is to advance the arts, sciences, and technology of aeronautics and astronautics and to foster and promote the professionalism of those engaged in these pursuits.

**Section Officers and Council:** A complete directory of the section council can be found at <http://www.aiaa-sf.org>.

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**AIAA SF Communications Committee staff:** Rick Kwan, Corky Lakin, Bruno Geoffrion, Stephanie Gregg.

## Calendar

### AIAA SF Section Events

#### Special Programs

- Tuesday, May 24, 2005, 12noon-2pm (approx.): Dr. Donald Richardson on *AIAA and Aeronautics: Present, Future and Issues*. World Room, Bldg 943, Moffett Field, CA. This is a town hall meeting with Dr. Richardson, president of AIAA. (See article on page 1.)
- Thursday, May 26, 2005, 6:30-9:00pm: Dr. David Des Marais on *Mars Exploration Rovers* in *AIAA SF Section Honors and Awards Banquet*. Eagle Room, Bldg 943, Moffett Field, CA. (See article on page 1.)

### AIAA National Programs

Below are selected conferences, workshops, and other programs sponsored or organized by AIAA, including upcoming Region VI meetings.

- 11th AIAA/CEAS Aeroacoustics Conference (26th AIAA Aeroacoustics Conference), Monterey, CA - May 23-25, 2005
- AIAA/AAAF Aircraft Noise and Emissions Reduction Symposium, Monterey, CA - May 24-26, 2005
- 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Tucson, AZ - July 10-13, 2005
- Passport to the Future Teacher Workshop, Tucson, AZ - July 10-13, 2005
- AIAA Modeling and Simulation Technologies Conference and Exhibit, San Francisco, CA - Aug. 15-18, 2005

- *International Energy Conversion Engineering Conference*, San Francisco, CA - Aug. 15-18, 2005
- *AIAA Atmospheric Flight Mechanics Conference and Exhibit*, San Francisco, CA - Aug. 15-18, 2005
- *AIAA Guidance, Navigation, and Control Conference and Exhibit*, San Francisco, CA - Aug. 15-18, 2005
- *Space 2005*, Long Beach, CA - Aug. 30-Sep. 1, 2005
- *AIAA 5th Aviation, Technology, Integration, and Operations Conference (ATIO)*, Arlington, VA - Sep. 26-29, 2005
- *Infotech@Aerospace*, Arlington, VA - Sep. 26-29, 2005

Additional details at: <http://www.aiaa.org/calendar>.



Map courtesy of NASA Ames. See original and directions at: <http://www.nasa.gov/centers/ames/home/Directions.html>

**American Institute of  
Aeronautics & Astronautics  
San Francisco Section**

**Post Office Box 1548  
Mountain View, CA 94042-1548**

Tuesday, May 24, 2005

Dr. Donald Richardson, *AIAA and Aeronautics: Present, Future and Issues*

Thursday, May 26, 2005

Dr. David Des Marais, *The Mars Exploration Rovers: Following the Water*

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