The Prairie Astronomer

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What Causes Martian Dust Storms?

Years of observations are showing that two oasis-like areas on Mars--where jets of salty vapor appear to come boiling out of the soil--may be where the planet's massive dust storms are born.

In a paper delivered at the Third International Colloquium on Mars, held at the California Institute of Technology, Robert L. Huegenin and Stephen M. Clifford suggested their findings may help explain a lot of what is seen on Mars.

Huegenin and Clifford, both from the University of Massachusetts at Amherst, said that two areas near Mars' equator apparently get warm enough at the end of each spring season to cause subsoil water to vaporize and come rushing to the surface. Huegenin, in an interview, explained:

"At zero degrees centigrade (32 degrees Fahrenheit), a temperature that is surpassed for half the year, the vapor pressure (in the soil) exceeds Martian atmospheric pressure.

"And when it gets up to 70 degrees F., the water generates four to five times atmospheric pressure. It really wants to boil out of there."

As the warmed groundwater gradually pushes toward the surface, Huegenin said, "The soil is very confining, so the water tries to find a pathway, such as a crack."

If it does find an escape route, he said, the water vapor pushes quickly to the surface "like a jet of steam, like a geyser, except that it's all vapor."

In addition, Huegenin said, the surface materials in these two oasis areas apparently consist of particles that are as fine as talcum powder. As a result, such soils would easily be lifted--as dust--into Mars' very thin atmosphere.

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September Meeting

The Prairie Astronomy Club will hold its regular monthly meeting, Tuesday, September 29, 7:30 p.m., at Hyde Observatory.

The program this month will be presented by a guest speaker, Ms. Katherine Becker, Planetarium Director at Omaha Burke High School. Ms. Becker was present at the Jet Propulsion Laboratory during the Voyager 2 flyby, and will give us some of her candid observations of what went on behind the scenes... including what Carl Sagan really looks like up close! She will also have some of the latest Voyager 2 slides of Saturn...up close. So, whether you're interested in Sagan or Saturn, there will be something for you at the September meeting.

The main order of business will be open nominations for club offices

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PRESIDENT'S REPORT:

Every year at our September meeting we have nominations for club offices. I have been President of our club for three years now, and I think that's long enough. Don't get me wrong--I have thoroughly enjoyed being President and working with all of you. My interest in Astronomy is stronger than ever. I plan to remain very active in the club and to participate in any way that I can.

However, I do feel that three years is long enough for any one individual to direct the activities of an organization like our club. We have a number of members who have the potential to be excellent club leaders. They are active, have organizational skills and innovative ideas, and are willing to share their abilities to make this club a fun and dynamic one. I think they should be given the chance.

And that's why I'm not running for re-election as President. I don't want our club to stagnate under the direction of one person. I will certainly help the new officers in any way I can, and I would be willing to serve, now and in the future, in any capacity in which I would be useful to the club.

I would ask you to please give this matter a little thought and come to the meeting prepared to participate in the nominations. We can make this club whatever we want it to be, but it is up to you to pick dedicated leaders.

I'd also like to thank you for all your support and friendship during the last three years. I've had a lot of fun, and made a lot of good friends. I'm looking forward to sitting in the audience with you at future meetings.

-- RON VEYS

THE PRAIRIE ASTRONOMER is published monthly by the Prairie Astronomy Club, and is free to club members. Yearly subscription without club membership is $5.00 (after November 1, 1981, $6.00.) Regular membership (includes 1-year subscription to SKY & TELESCOPE, club newsletter, and 4 quarterly issues of THE REFLECTOR, journal of the Astronomical League) is $14.00 ($16.00 after November 1.) Family membership (which includes all regular privileges, plus one additional vote in club elections) is $16.00--$18.00 after November 1. Newsletter Editor, Lee Thomas, 489-3855. Address all correspondence and membership renewals to: PRAIRIE ASTRONOMY CLUB, INC., P.O. Box 80553, Lincoln, Nebraska 68501. Renewals should include your notice card from Sky & Telescope for prompt processing.

Martian Dust Storms

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Dust appears to be one of the most common materials on Mars. Indeed, when America's Mariner 9 spacecraft arrived in orbit around Mars in 1971, all that could be seen by its cameras was a gray-brown veil. All surface features had been obscured by the huge dust storm.

Astronomers have observed such storms through Earth-based telescopes for years, and they seem to originate in late spring or early summer, when Mars is closest to the sun. In some years the storms are limited, but in others they reach global proportions, covering the entire planet.

The two oases in question are located just south of Mars' equator, where during early summer the soil is probably heated to about 70 degrees F. Thus, they would probably be the warmest spots on a rather cold, frozen planet.

The storms' global magnitude, Huegenin said, apparently is the result of atmospheric disturbances called thermals.

Thermals are columns of rapidly rising hot air which are usually associated with sloping ground that gets heated by the sun. As a mountainside gets heated, for instance, the air next to it gets warmed and starts to flow upward. It is such upward flows, which glider pilots use to lift their sleek craft to high altitudes above the Earth.

"One of these strong thermals occurs within 1,000 kilometers (625 miles) of this site", the oasis known as Solis Lacus, or Lake of the Sun, Huegenin said. Another large thermal occurs near the second oasis, which is called Noachis Hellespontus.

"If an eruption of vapor and dust occurs when these thermals are active, then the dust can get pumped up to high altitude and be swept around the globe", he explained.

Similar injections of dust can occur in Earth's atmosphere. When a huge volcano--such as Mt. St. Helens in Washington state--erupts, for example, tons and tons of very light

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"Look at the picture, Henderson . . . ten full moons around Saturn . . . isn't that amazing? . . . ten full moons . . ."

--Mike Peters, THE DAYTON DAILY NEWS

September Meeting Notice

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in the upcoming election. Voting will take place at the October meeting,so please circle your calendar October 27 and plan to be present. This promises to be a fascinating election (as, aren't they all?) because the incumbent President has chosen not to run for re-election and the Treasurer/Newsletter Editor is desirous of shedding one of his two titles after having retained both for the mind-withering span of 6 years.

Come, and nominate new blood, or--an even more mind-boggling thought-- volunteer yourself for office!

MARTIAN DUST STORMS

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ash can be jetted into the fast-flowing jet stream. Thus a load of dust can go all the way around the Earth in just a day or so. Dust particles from such an event are known to stay aloft for weeks or months.

WHERE ARE THE TIRION ATLASES?

"Fear not,they are on their way!" Those were the words of Judith Sutherland of the Astronomical League Book Service,in response to your editor's telephone inquiry on September 22 regarding our long-awaited order of THE SKY ATLAS 2000.0 by Wil Tirion. According to Judith, they are in the mail from Sky Publishing, and may arrive in time for the meeting.

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