

**Soviet sojourn**

A JSC Photographer comes *this* close to being in Moscow during the recent coup and counter-coup. Story on Page 3.



**Hispanic heritage**

The turnout for this week's Hispanic Heritage Program was substantial. Photo on Page 4.

# Space News Roundup

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## Busy mission on tap for *Discovery* crew

By James Hartsfield

Good weather was forecast and the countdown was proceeding smoothly as of Roundup press time Thursday for a 5:57 p.m. CDT launch of *Discovery*.

The STS-48 crew — Commander John Creighton, Pilot Ken Reightler, and Mission Specialists Jim Buchli, Mark Brown and Sam Gemar — left Houston for Kennedy Space Center Monday evening. With an on-time Thursday launch, the crew is scheduled to deploy the Upper Atmosphere Research Satellite using *Discovery's* mechanical arm at 10:33 p.m. CDT Saturday.

Today, the crew is scheduled to depressurize *Discovery's* crew cabin to 10.2 pounds per square inch from its normal 14.7 psi, which allows for a quick-response spacewalk should a problem occur during Saturday's UARS deployment. Gemar and Buchli, the crew members designated to perform such a spacewalk if needed, also will check their spacesuits.

Also today, two engine firings of *Discovery's* reaction control system thrusters are planned to raise the spacecraft's orbit to 305 nautical miles,



the altitude desired for UARS, and work onboard is planned with the fluid test articles of the Middeck 0-Gravity Dynamics Experiment. MODE is designed to study the mechanical and fluid behavior of components for Space Station *Freedom* and other future spacecraft.

Throughout the flight, the crew will be working the night shift, going to sleep in the hours surrounding dawn in Houston and awakening in what locally is mid-afternoon.

With a Thursday launch, Saturday's activities

will concentrate on deployment of the UARS. The crew will begin more than five hours of pre-deploy checkouts and deployment of the solar array and high gain antenna about 5:30 p.m. CDT, culminating in the release at about 10:33 p.m.

Sunday's activities will concentrate on eight hours of work with the MODE payload's structural test articles and fluid test articles. Monday will be reserved for the standard day-before-entry health checks of *Discovery's* equipment needed for landing and stowing the gear onboard for entry.

Please see **HOME COMING**, Page 4

### Frimout fills Lampton's ATLAS role

Dr. Dirk Frimout will replace Michael Lampton, disqualified for medical reasons, as a payload specialist on the Atmospheric Laboratory for Applications and Science mission in early 1992.

Lampton will continue to serve on the Spacelab mission operations control team as an alternate payload specialist.

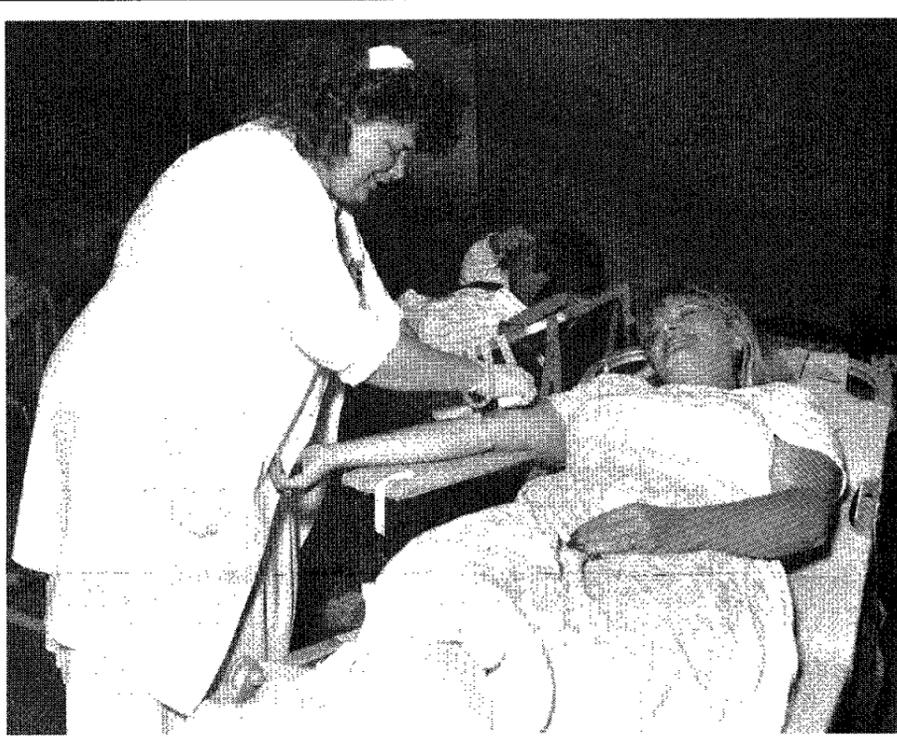
Lennard A. Fisk, NASA associate administrator for space science and applications, announced the crew change Tuesday.

Frimout, previously an alternate payload specialist for ATLAS-1, is the European Space Agency's Spacelab utilization manager in the Microgravity and Columbus Utilization Department of the Space Station and Microgravity Directorate. He received his doctorate in applied physics from the University of Ghent in his native Belgium in 1970. The 50-year-old also is a co-investigator for the Grille Spectrometer, part of the ATLAS-1 payload. While training for the mission, he will be assigned to the Institute Aeronomie Spatiale de Belgique, Belgium.

The crew also includes Commander Charlie Bolden, Pilot Brian Duffy, Mission Specialists Kathy Sullivan, Michael Foale, David Leestma, and Payload Specialist Byron Lichtenburg.

The ATLAS-1 mission is the first in a series of Spacelab missions that are part of NASA's Mission to Planet Earth. ATLAS investigators will study the interaction of the Earth's atmosphere with the Sun over an 11-year solar cycle.

ATLAS-1, scheduled for launch aboard *Atlantis* in May 1992, will carry 14 investigations in atmospheric science, solar physics, space plasma physics and astronomy. Experiments for the mission are provided by the United States, Belgium, France, Germany and Japan.



JSC Phot by Scott Wickes

**DONATING LIFE** — Deena Swerk of the Carlston Travel Network's JSC office shows medical technician Somier Gabriella she's a real trooper as she smiles for a blood donation at the Gilruth Center. In the background, Glen Iwai of JSC's Space Shuttle Production Assessment Office makes his contribution. They were just two of the JSC employees who responded to the call for donors at the third on-site blood drive last Thursday.

### Area students, astronauts go 'live' with Bush

By Kelly Humphries

Two JSC astronauts and 24 area fourth graders will be a part of "Launching the School Year with President Bush" on live national television next week.

STS-45 Commander Charlie Bolden will host the hour-long television show Tuesday afternoon from NASA Headquarters, and Tammy Jernigan, who recently flew on the STS-40 Spacelab Life Sciences mission, will host the remote portion of the show from College Park Elementary School in LaPorte.

NASA Administrator Richard Truly will introduce the President, who will discuss the six educational goals developed during his recent Education Summit of U.S. Governors. Bush also will answer questions posed by students in the LaPorte classroom and third-graders in the NASA Headquarters studio from Baltimore, Alexandria, Va., and Washington, D.C.

"I enjoy all my interaction with kids," Jernigan said. "They ask wonderful questions, so I'm looking forward to hearing their questions."

The show — designed to capture student interest in science, mathematics and technology as part of NASA's continuing education efforts and to promote the use of NASA Select TV as a teaching tool — will air at 1 p.m. CDT Tuesday on both NASA Select and the Public Broadcasting System. Local PBS stations will decide whether they air the show live, or tape it for later broadcast.

Please see **PRESIDENT**, Page 4

## Manned Flight Awareness christens station award

A Space Station *Freedom* Award of Merit has been created to recognize individuals or teams who have contributed in an outstanding manner to the success of the station program.

Administered by Manned Flight Awareness, recognition will be emphasized for efforts that enhance the development and performance of

Space Station *Freedom* such as improvements in design, administrative/technical improvements or services, productivity improvements and error-cause identification, correction or preventive action.

Award criteria requires that the individual or team job performance be oriented to the successful accomplishment of Space

Station *Freedom* goals and objectives. Performance must be of an outstanding nature to distinguish the individual or team in a particular area of responsibility, and it must be meaningful in its contribution to the progress of the station program.

The award consists of a special certificate, a letter of commendation and a Space Station

*Freedom* pin. It will be presented by an astronaut, the associate administrator for the Office of Space Flight or the director of the space station program.

Additional information or nomination forms may be obtained from Lois Walker, JSC's National Manned Flight Awareness Panel representative, at x38425.



### Anti-greenhouse effect on Titan

Scientists' discovery on Saturn's moon could relate to Earth

An anti-greenhouse effect on a solar system body has been described for the first time by scientists from NASA's Ames Research Center and the Paris Observatory.

Drs. Christopher McKay and James Pollack of Ames, with France's Dr. Regis Courtin, also describe the temperature structure and energy balance on Titan, Saturn's largest moon. Using data from the Voyager 1 spacecraft and computational models, the scientists determined the source, or controls, of the temperature profile.

Their results are in the current issue of *Science* magazine. They

say the temperature model of the organically rich, thick atmosphere on Titan may help in basic studies of the greenhouse effect on Earth.

Their study provides the first description of a greenhouse and anti-greenhouse effect existing simultaneously, in tension with each other. Greenhouse effects on Venus and Earth have been discussed extensively.

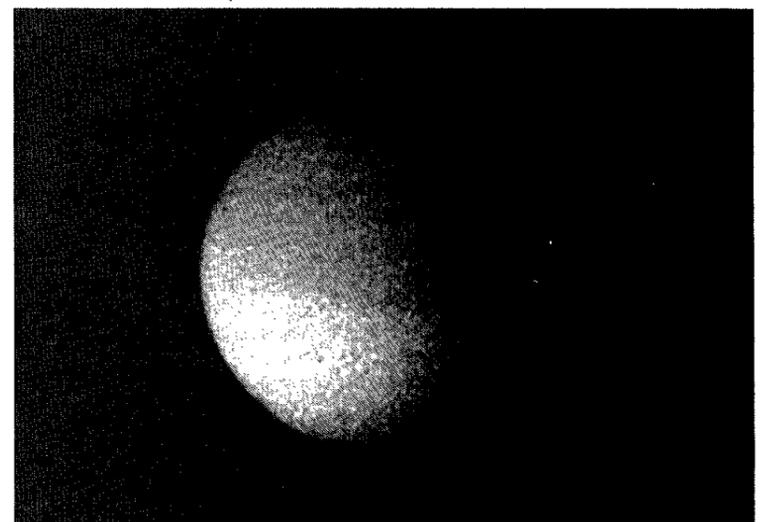
The study results define an anti-greenhouse effect that reduces Titan's surface temperature by 16 degrees Fahrenheit. The effect is produced by a thick, organic haze in Titan's upper atmosphere that absorbs solar light, but transmits

reflected infrared radiation.

Titan's greenhouse effect, they report, increases the surface temperature by 38 degrees Fahrenheit. The effect is caused by atmospheric gases reflecting infrared energy back to Titan's surface. The surface temperature of Titan, minus 290 degrees Fahrenheit, therefore is 22 degrees warmer than it would be without atmospheric effects.

Between the size of Earth's Moon and Mars, Titan is the only satellite in the solar system with a thick atmosphere. Its atmospheric pressure is similar to Earth's — only one and one half times greater

Please see **TITAN**, Page 4



NASA Photo

Clouds cover the surface of Saturn's moon, Titan, in this photo taken by Voyager 1 in November 1980.

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## Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays.

General Cinema (valid for one year): \$4.

AMC Theater (valid until May 1992): \$3.75.

Loews Theater (valid for one year): \$4.

Astroworld (valid 1991 season): season, \$44.94; child less than 4-feet, \$10.12; one day, \$15.85; Waterworld, \$8.15.

Seaworld of Texas (valid 1991 season): child (3-11), \$12.25; adult, \$17.25; (2-day) child \$15.95; adult, \$21.95.

Six Flags (valid until Nov. 17): adult (1 day) \$13.95.

Texas Renaissance Festival (9 a.m.-6 p.m. weekends Oct. 5-Nov. 17, Plantersville, Texas): child (5-12), \$5.55; adult, \$9.25.

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## Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**Defensive driving** — Course is offered from 8 a.m.-5 p.m., Oct. 12 or Nov. 16. Cost is \$15.

**Aerobic dance** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$24.

**Exercise** — Low-impact class meets from 5:15-6:15 p.m. Monday and Wednesday nights. Cost is \$24.

**Weight safety** — Required course for employees wishing to use the Gilruth weight room. The next classes will be from 8-9:30 p.m. Sept. 18, Oct. 3 and Oct. 17. Cost is \$5; preregistration required.

**Ballroom dancing** — Professional instruction in beginning, intermediate and advanced dance. Eight-week session meets Thursdays beginning Oct. 3. Cost is \$60 per couple.

**Tennis** — Beginning tennis class meets 5:15-6:45 p.m. Mondays beginning Sept. 9; advanced beginner class meets 5:15-6:45 p.m. Wednesdays beginning Sept. 11. Cost is \$32 per person.

**Aikido** — Martial arts class meets from 6:30-7:30 p.m. Tuesdays and 5:15-6:15 p.m. Fridays. Next month-long class starts Oct. 1. Cost is \$35.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed education program. Call Larry Wier, x30301.

**Fiction workshop** — Writing workshop meets from 6:30-9 p.m. Wednesday's for five weeks beginning Oct. 22. Cost is \$80.

**Intercenter Run** — Runners may turn in two-mile and 10-kilometer run times for competition among NASA centers throughout October. Participants must register at Gilruth.

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## Dates & Data

### Today

**Astronomical Society meets** — The JSC Astronomical Society will meet at 7:30 p.m. Sept. 13 at the Lunar & Planetary Institute, 3303 NASA Road 1. Paul Peterson will discuss and demonstrate telescope mirror testing. Call Eleta Malewitz, 486-2197, for more information.

**Cafeteria menu** — Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

### Monday

**Cafeteria menu** — Special: wieners with baked beans. Entrees: beef chop suey, breaded cutlet with cream gravy, grilled ham steak. Soup: beef and barley. Vegetables: buttered rice, Brussels sprouts, whipped potatoes.

### Tuesday

**Free enterprise lecture** — A brown-bag luncheon will discuss "The High Efficiency of Free Enterprise" at 11:30 a.m. Sept. 17 in the Lockheed Plaza eighth floor Training Rm. Call Charles Campbell at 333-6107 for more information.

**Cafeteria menu** — Special: pepper steak. Entrees: fried shrimp, pork chop with apple sauce, turkey a la king. Soup: celery. Vegetables: au gratin potatoes, breaded squash, buttered spinach.

### Wednesday

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Sept. 18 in Bldg. 31, Rm.

129. Herb Zook will provide highlights of the Canteberry Workshop on Hypervelocity Impacts in Space. For more information, call Al Jackson, 333-7679.

**Cafeteria menu** — Special: Mexican dinner. Entrees: fried catfish with hush puppies, braised beef ribs. Soup: seafood gumbo. Vegetables: Spanish rice, ranch beans, buttered peas.

### Thursday

**IEEE videoconference** — The Institute for Electrical and Electronics Engineers Galveston Bay Section will present a videoconference on "Quality Management Approaches to the Malcolm Baldrige Award" from 11 a.m.-2 p.m. Sept. 19 at the Gilruth Center. For more information, call Dr. Zafar Taqvi, 333-6544.

**NMA meets** — The Texas Gulf Coast Council of the National Management Association will conduct a joint chapter meeting at 6:30 p.m. Sept. 19 at the Holiday Inn-Hobby. Dr. Donna Lopiano, director of intercollegiate athletics for women at the University of Texas, will speak about "The Future of Management." Call Sandra Watts, 280-2488, or Susan Missiha, 280-2428, for more information.

**Cafeteria menu** — Special: hamburger steak with onion gravy. Entrees: corned beef with cabbage and new potatoes, chicken and dumplings, tamales with chili. Soup: split pea. Vegetables: navy beans, buttered cabbage, green beans.

### Sept. 20

**NMA seminar** — The Texas Gulf Coast Council of the National

Management Association will host "Management for the '90s and Beyond," a professional development seminar, from 8 a.m.-4 p.m. Sept. 20 at the Holiday Inn-Hobby. Call Sandra Watts, 280-2488, or Susan Missiha, 280-2428, for more information.

**Cafeteria menu** — Special: barbecue link. Entrees: deviled crabs, broiled codfish, liver and onions. Soup: seafood gumbo. Vegetables: buttered corn, green beans, new potatoes.

### Sept. 24

**Free enterprise lecture** — A brown-bag luncheon will discuss "The Oil Industry as a Failure of Price Control" at 11:30 a.m. Sept. 24 in the Lockheed Plaza eighth floor Training Rm. Call Charles Campbell at 333-6107 for more information.

**BAPCO meets** — The Bay Area PC Organization will meet at 7:30 p.m. Sept. 24 at the League City Bank and Trust, 303 E. Main, League City. Contact Earl Rubenstein, x34807, or Tom Kelly, 996-5019, for information.

### Sept. 25

**NMA meets** — The NASA JSC Chapter of the National Management Association will meet at 5 p.m. Sept. 25 at the Gilruth Center. JSC Director Aaron Cohen will speak. For more information, call Valerie Burnham, x34210.

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon Sept. 25 in Bldg. 31, Rm. 129. Al Jackson will report on the Flagstaff Asteroids, Comets and Meteor Meeting. For more information, call Jackson, 333-7679.

## Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone of fax ads accepted.

### Property

Sale: NASA subdivision, 90'x135' lot, \$38.5K. Don, x38039 or 333-1751.

Rent: Lake Travis Cabin, priv boat dock, CA/H, fully equip, accomm 8, Fall, wkly/daily, \$325/\$80. 474-4922.

Sale: Lake Livingston lot, Holiday Shores, 140x80, water, elec, trees, pool, ramp, clubhouse, tax value \$3.5K, BO over \$1K. 488-5445 after 5.

Sale: Clear Lake Shores, 3-1, corner lot, lg trees, hurricane drs/windows, vinyl siding. 538-1051.

Rent: Univ Trace condo, 1 plus study, W/D, alarm, avail 10/1. 333-6570.

Lease: Piper's Meadow, 3-2-2, FPL, W/D conn, breakfast nook, fan, \$850 plus dep, avail 11/1. x31826 or 480-9436 after 7 pm.

Sale: Galv Bay waterfront home, 3-3-6 car garage, deck, spa, 334-1909.

Rent: Arkansas lake cabin, wooded, 4 acres, screened porch, furn, wkly/daily, \$250/\$50. 338-2517.

### Cars & Trucks

'78 Datsun King Cab PU parts. 335-2270 or 481-9684.

'88 Ford Escort GT, 5 spd, AM/FM/cass, blk w/gray int, 42K miles, tinted windows, new tires, \$5K. 482-8820.

Camper top for shortbed, sm PU, \$200. Bill, x39029.

'89 Honda Prelude SI, sky blue, 28K mi, ex cond, alum wheels, alarm, loaded, \$12.5K. 480-9125.

'88 Mazda 929, loaded, sun roof, new Michelin tires, 5 spd, ex cond, \$9.4K; '82 Laredo Jeep CJ7, A/C, stereo, 6 cyl, 5 spd, P/S, P/B, \$4295. 244-9843 or 532-2215.

'85 Chevy Cavalier, 4 dr, 4 cyl/2.0L, 70K mi, ex cond, \$2.9K OBO. 488-5522.

'75 Buick LaSabre, 4 dr, A/C, P/S, P/B, \$1695. 332-2265.

'78 Ford LTD, 4 dr, sedan, A/C, radio, 93K mi, \$1.5K. Marie, x30898 or 488-2870.

'91 Dodge Custom Van, metallic gray, loaded, 10K mi, 7 yr/70K warr, \$16.5K OBO. 331-9329.

'89 BMW 525i, 5 spd, wht/blue leather, ex cond, 32K mi. 333-7828 or 286-5743.

'86 Pontiac Grand AM, many new parts, ex cond, \$3.2K. 992-1913.

'77 Buick Skylark, 2 dr, V8, A/C, P/S, P/B, AM/FM/cass, new tires, \$800. Jim, x38321 or 334-4631.

'74 BMW 2002, 4 spd, green w/tan int, new tires, new \$2K paint job, sun roof, AM/FM/cass, ex cond, \$8K OBO. David, x32791 or 488-9768.

'84 Ford F150, XLT, PU, equipped, A/C, tilt, stereo, cass, all pwr and lights, auto trans, 5.8L HO, 351W, V8, approx 70K mi, turtle topper, bed cvr, two tone blue, good cond, \$4.2K OBO. George, x30749 or 486-3968.

'85 Volvo 740 GLE, blue, 4 dr, car phone, new auto trans, new tires, \$5K. Nancy, 338-1489.

'78 Chevy S/W, V8, P/S, P/B, A/C, good tires, \$700. 332-8188.

'84 Corvette, auto, cloth int, P/S, P/W, GM alarm, 2 tone bronze/brown, always garaged, non-smoker, clean, 74K mi, \$8.1K. 485-1839.

'83 Blazer, gold, good cond, 4 WD, A/C, 5 spd, manual, \$4K OBO. 554-4201.

'89 Ford Probe GT, 100K mi warranty, ex cond, \$9850. 280-2780 or 457-2850.

'86 Firebird, red, non-smoker, ex cond, 43K miles, \$5.9K. x38461 or 277-4178.

'77 Chevy PU, has been sitting up, needs some work, \$500. 335-2011 or 479-4040.

'90 Sunbird LE, red, 2 dr coupe, \$7.5K. Brenda, x38183 or 996-9526.

'82 Ford LTD, Crown Victoria, 4 dr, \$1250. 946-7587.

'72 Buick Skylark, 4 dr fastback, 350 V8, rebuilt trans, ex cond, interior 91K mi, \$1.5K. x38869 or 488-1432.

'87 Samuri Suzuki, JX, A/C, cass player, new tires, soft top, 58K miles, \$4K. x36255 or 326-1414.

'78 Chevy Caprice, 2 dr, 305 V8, auto, A/C, tinted, good cond, 147K miles, \$600. 283-7533.

'77 Gran Prix, new eng w/one year warranty, new alternator, starter, battery, radiator, one year old transmission, \$1.6K. David, 282-3827 or 554-5514.

'81 Olds Omega, wht, 4 dr, auto, A/C, good cond, 106K mi, \$1.75K. x3-2845.

### Cycles

'74 Yamaha TX650A, new battery, rear tire, seat, \$400. Bill, x39029.

Women's Raleigh Pursuit, 12 spd, quick release front wheel, ex cond, \$200. Marie, x30898 or 488-2870.

'86 Radian 600, ex cond, 6.5K mi, helmet, \$2K OBO. (409) 935-1120 or (409) 943-1411.

Boys 20 in, Schwinn Thrasher Bicycle, \$50. 283-5465 or 332-1725.

### Boats & Planes

New aluminum prop for 40-140 HP Mercury O/B, \$30. x35178 or 944-2391.

'79 Glastron walk-through w/'85 75hp Mercury O/B motor, seats 8, top, stereo, cover, galvanized trlr, good cond, \$3.4K. 333-7180 or 333-9581.

'89 18' Wellcraft, ctr console, 120hp Johnson O/B, Bimney top, loaded, ex cond. 480-8101 or 947-2950.

### Audiovisual & Computers

Genoa Spectrum Graphics Card for IBM and compatible PC's, provides monochrome, CGA, Hercules and Plantronics on a single card, run color S/W on monochrome monitor, \$50; Samsung monochrome, green monitor, \$39.95. Richard, x31440 or 333-5693.

Laptop computer, IBM Compatible, 80C88, 8MHZ Microprocessor, 640K RAM, two 720K 3.5" floppy DD, rechargeable battery included, 8 lbs. 488-2946.

Turbo GrafX-16 video system w/4 games, extra controller, \$150; children's Video Smarts learning center w/3 VHS cassettes, \$40; HP41-CX calculator, carrying case, rechargeable battery and charger, elec card reader, cards for saving memory, optical wand for reading barcode programs into memory, advantage math solutions package, \$200. x35896 or 488-7982.

New, Turbo C++, \$50; Microsoft Fortran, \$50; Windows, 286, \$10; Ontime Scheduler, \$10; Turbo Pascal, \$50; Quicken ver 4.0, \$25. 339-1337.

'19 Zenith color TV, hotel model, \$75; 600-650 cfm Holley 4bbl carburetor, needs rebuilding, \$40. 283-1886.

### Musical Instruments

Wurlitzer organ, \$200. Kathleen, 996-8410.

Elec guitar, fender strat, red, amp, stand, case incl, ex cond, \$375. 244-9843 or 532-2215.

Bundy trombone w/case, used 2 yrs. Jim, x33787 or 332-5725.

### Pets & Livestock

AKC Chihuahua, blk male, 5 months old, \$100. x36461 or 534-3893.

AKC Scottie puppies, five fem, one male, first shots, blk/tan and blk, parents on premises. 332-0461.

Free, 2 puppies, one female, one male, 7 weeks old. Frances, x31019 or 488-5709.

Free, 2 1/2 yr old blk lab. Kirk, 282-2911 or 332-5876.

### Household

Daybed, gold/wht, w/matt, \$150. x36461 or 534-3893.

Ethen Allen, 3 cushion 8' sofa, flower design on velvet, \$200; Ethen Allen Lawson chair, red corduroy, \$75; Lazy Boy, hid-a-way recliner, tan corduroy, \$50. Jerry, 481-4486.

Girl's BR furniture, matching dresser, mirror, chest/desk combo, chair, good cond, \$200; mattress springs for twin bed, \$25. 333-2322.

Large pine bookcase, 7'Hx6'W, \$45; sm antique sewing cabinet, \$70; antique High Boy dresser, w/mirr, \$125. Sandra, x37637 or (409) 925-7765.

Kenmore refrig, wht, \$600; solofex weight machine, all attach, \$800. Greg, x35063 or 331-3850.

Solid wood BR dressers, 4 drawer, 41" x 40", 6 drawer, 32"x 59"; solid wood framed 34" x 46" mirror; Cargo furniture, \$550 OBO, all ex cond. 480-5060.

Baby bed, w/matt, \$75; changing table, \$25; rowing machine, \$25. x39119 or 538-1189.

Rattan dinette, round table, 4 swivel chairs, \$250. 482-8820.

Queen-size waterbed, \$100; glassed top coffee table, \$40; loveseat, \$50; 8 in b&w TV, \$20. 286-8437.

Early American sofa w/wood trim, \$100. 480-3424.

Want hunters to share Dripping Springs area deer lease, \$225 for season per gun. Dean, 283-5318 or 488-7032.

Want Cornet King 603 w/bach 7C

mouthpiece for beginner student. Shelly 283-1834 or 332-4807.

Want room or apt to rent for naval officer, for Sept and Oct. Skip, 367-8887.

Want non-smoking roommate to share Clear Lake 3-2-2 house w/pool, avail immed, no pets, \$350 plus \$250 deposit. 283-9416 or 286-3806.

### Miscellaneous

Tunturi rowing machine; 3 drawer chest w/hutch, \$100; 2 Eclipse speakers, \$50. 482-8820.

Houston Rockets basketball tickets, will split season tickets, 2 seats for each game, 22 games, \$545. x39095 or 486-9876.

State 10 gallon midget elec water heater, ex cond, \$50; upright hood type hair dryer, ex cond, \$20. 335-2472.

Man's leather jacket, USA/AM flag on back, sz med, \$150. 480-8682 or 333-6456.

16" boy and 20" girl bicycles, \$25; top carrier, \$35; rabbit cage, \$25; dog house, \$20. Peter, 486-5527.

Archery equip, 2 blk widow re-curve bows, arrows, ground quivers, fletching tool, equip, ex cond, BO. 334-1909.

Floor tile, 12" x 12", presealed customer color saltillo, 280 sq ft, \$825; Rimaldi sewing mach, \$800. Tom x36309 or 474-9747.

20 in lawn mower, \$40; baseball card factory sets, \$30/ea; miniature bottled water mach, ex cond, \$150; Everex 80286 machine, \$1000 OBO. Tony, 335-4299 or 482-4156.

Collectors, about 1000 greeting cards, many printed in Germany, most from 1890 to 1920, BO over \$50. John, 326-3459.

Surfboard, 6'2", Mike Myers, ex cond, \$225; Rip Curl Farmer John wetsuit, med, \$25; lg port dog kennel, \$25. x32280 or 488-4527.

Astronomy books, Astronomy and sky and telescope magazines, 15% of cover. Paul, x31883.

R/C Hornet car, assembled, 30 mph, 7.2v batt, AC/DC recharger, transmitter, ex cond, spare parts, assembly manual, \$195 OBO. 488-5522.

7000 wood mldgs, new windows, BO. Don, x38039 or 333-1751.

Tour Model III golf clubs, 1-sw, \$16.95/club, metal woods, \$30/club. David, 554-5514.



# Soviet Sojourn

## JSC photographer misses being there for historic coup by a mere 24 hours

By Kelly Humphries

JSC almost had its own photographer on hand to cover the Soviet coup last month, but as it turned out Sheri Dunnette flew to Paris just 24 hours before the failed takeover.

Dunnette, a photographer and the technical monitor of JSC's Still Photographic Laboratory, spent six days in the Soviet Union with a NASA delegation led by NASA Associate Deputy Administrator Samuel Keller. The group of about 20 was there to witness the launch of the American-made Total Ozone Mapping Spectrometer aboard a Russian Cyclone rocket.

The coup attempt began on Sunday, Aug. 18. Dunnette said she had arrived back in Paris on Saturday. The following Monday she called home to check in with her office. She was greeted with the questions "How are you doing?" and "Are you okay?" and then given the news.

"I was just in shock," Dunnette said. "For the first few seconds, I was really glad I wasn't there. But then, being a photographer, within about two minutes I was thinking what a photo opportunity I'm missing. I knew there would be tanks out in front of my hotel. Red Square was within 500 yards of the entrance to our hotel.

"For a brief moment I was relieved, but then I was upset."

Dunnette said she was unable to follow events very well from Paris, but joined the rest of the country in watching the counter-coup and constitutional crisis unfold.

Some of the photographs she took are of places now easily recognized by those who watched news media coverage of the toppling Soviet power structure. One is a photo of St. Basil's church and the Kremlin, where tanks rumbled a day after her departure. Another was of the briefing room at the Foreign Ministry Press Center.

"The interesting thing about this picture is that this was on a Friday," she explained, pointing to a picture of a panel, including Keller and TOMS Project Manager George Esenwein, seated at a post-launch news briefing. "On Monday, the 'Gang of Eight' was in the same room saying that they had taken over the Soviet Union. On Wednesday, Gorbachev was in the same room, saying that he had control back. So within five days of us being in there, the coup had taken place and then failed."

The trip to the Plesetsk Cosmodrome itself was punctuated with fascinating experiences, such as standing just three feet away from the partially fueled Cyclone launch vehicle, putting on gas masks for protection from the rocket's deadly oxidizer during final

fueling and watching the launch from just a mile away.

"This is the first time an American photographer has ever been to Plesetsk," Dunnette said. "One group went there for the first time last fall and that was the first time an American had set foot in this facility. It used to be a very highly classified facility. From my understanding, these are the first pictures taken by a western photographer, an American photographer."

Witnessing the launch of the Cyclone, which had been misspelled by Soviet painters who inscribed "Ciklon" in 6-foot-tall letters for the benefit of the Americans, was even more intense than witnessing a shuttle launch from the Kennedy Space Center press site, she said.

"For shuttle launches you can't be any closer than three miles," she said. "You don't get the physical feeling in your body of the vibration like you did with this one. Even though this is a much smaller rocket, you were so much closer that you really got a better sense of the power of this rocket than you do at shuttle launches."

Dunnette said her brush with life in the Soviet Union verified the many stories she had heard about long lines and inferior goods, but she was unable to sense any trace of the coming upheaval.

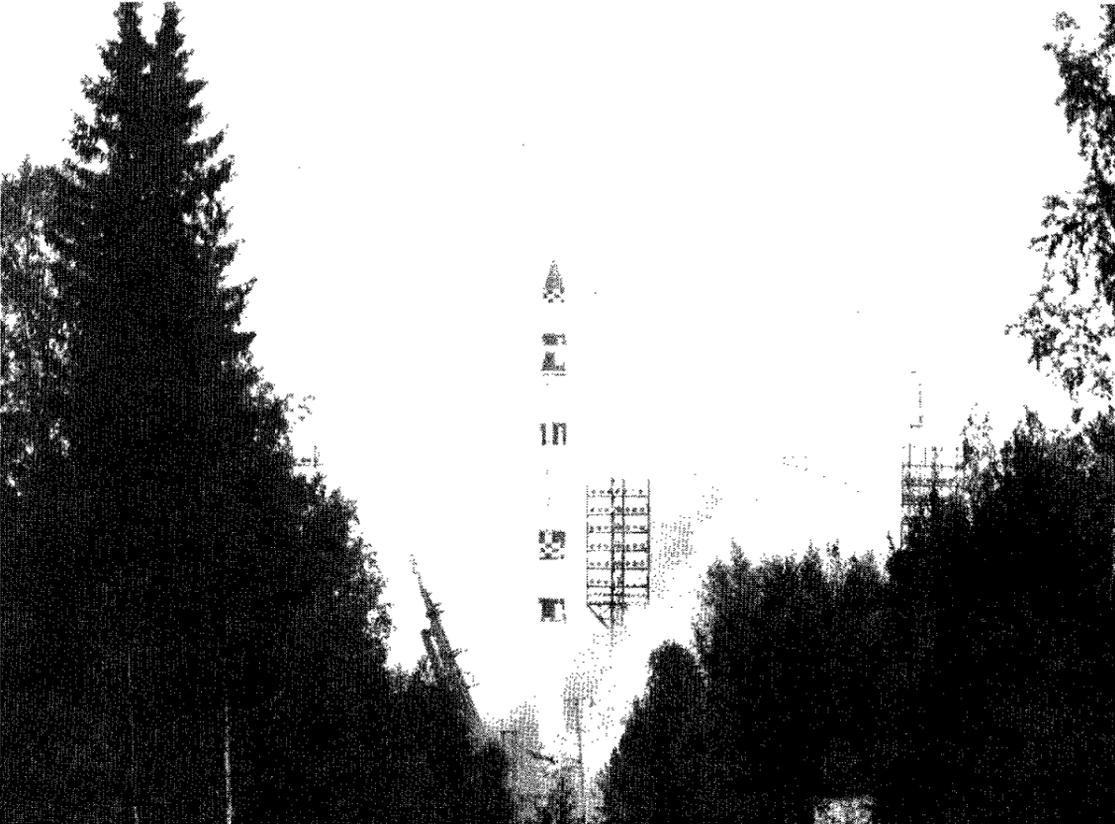
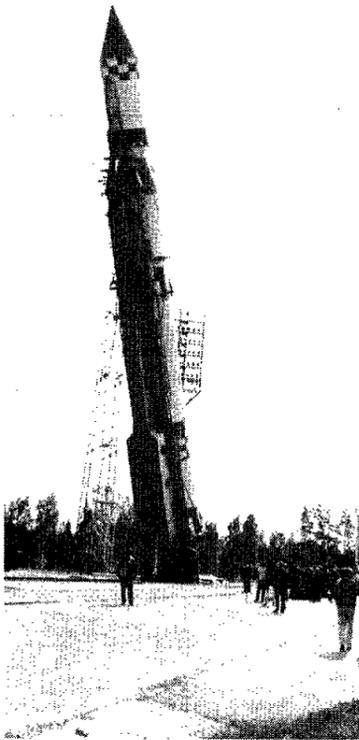
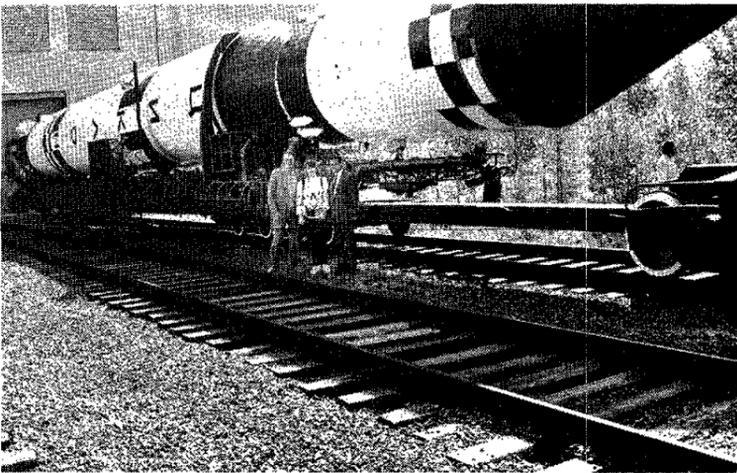
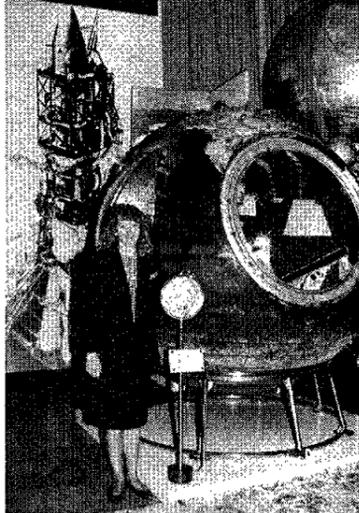
She said the food at her hotel was poor, even though it clearly was the best her hosts had to offer. "I lived on bread and butter for six days."

Dunnette was not the only JSC person who had visited Russia shortly before the coup. A group led by Space and Life Sciences Director Carolyn Huntoon was there the week of Aug. 4 for a meeting of the Joint Working Group on Biology and Medicine. Six teams met in Leningrad, which now has returned to its original name of St. Petersburg, to discuss cardiology, bone loss, immunization, telemedicine, the extraterrestrial search for life and orbital debris.

Joseph Loftus, JSC's assistant director for plans, was part of that delegation. He had been there 18 months before, and said the contrast was marked, most vividly by the deteriorating availability of goods and foodstuffs and rampant inflation.

"The Russians are hurting now," Loftus said. One example he pointed to was that the average housing space in Leningrad was seven square meters per individual, less than the federal standard for office space, Loftus said.

Loftus said there appeared to be a great deal more free speech than when he was there last, but that it was situational and age related.



Clockwise from top: 1) This was the view from Dunnette's Moscow hotel window, with the Kremlin on the left and St. Basil's Church at right. "I saw video about 48 hours after we left that hotel of tanks rolling right along this road." 2) Dunnette stands beside the capsule that carried the first man into space, Yuri Gagarin, at a space museum not open to the Russian public. 3) The Cyclone rocket carrying Soviet and American instruments is raised to the vertical position at the launch pad. "We were standing right next to it when they did it." 4) The Cyclone, its name misspelled in English on the side, blasts off. 5) A post-launch press briefing featuring TOMS Project Manager George Esenwein and NASA Associate Deputy Administrator Samuel Keller, second and third from left, is held in the same room where days later the Soviet coup and counter-coup were announced. 6) Dunnette poses with her two Soviet interpreters after the partially fueled launch vehicle has been rolled out of the vehicle integration building for a photo opportunity. "We could have touched it if we had wanted to." 7) The NASA group arrives at the Plesetsk Cosmodrome in an aging Aeroflot airliner.

## Scientists excited about results

# AXAF's largest mirrors pass calibration tests

The two largest mirrors for NASA's Advanced X-ray Astrophysics Facility have been successfully tested in the new X-ray Calibration Facility at Marshall Space Flight Center.

"We're excited about the results," Dr. Lennard Fisk, associate administrator for the Office of Space Science and Applications, said Wednesday. "We've met our goals, the mirrors were completed by June and tests were successfully completed in

September. The entire government and contractor team should be congratulated on meeting this challenge."

The mirrors, at nearly 48 inches in diameter, are the largest ever made to collect X-rays in space. The angular resolution of the mirrors is approximately 0.23 arcsecond after correcting for effects of the test configuration, particularly gravity, which do not apply to the space environment. Even uncorrected, the results

were consistent with the specification of 0.5 arcsecond resolution. This angular resolution is at least 10 times better than any other X-ray telescope previously flown.

The mirror set is the outermost of six concentric mirror pairs being manufactured for AXAF (12 mirrors total) that will become part of the High Resolution Mirror Assembly of AXAF. Later, the entire assembly will return to Marshall for final calibration testing together with the sci-

entific instruments planned for AXAF.

The mirrors were manufactured at Hughes Danbury Optical Systems, Danbury, Conn., and assembled in the test mount at Eastman Kodak, Rochester, N.Y., both under contract to prime contractor TRW, Redondo Beach, Calif. The optics were delivered to Marshall's X-ray Calibration Facility, which was specifically designed to completely test the AXAF optics and is the largest such facility

in the world. Tests were performed by scientists and engineers from Marshall, TRW, Eastman Kodak, and the Smithsonian Astrophysical Observatory, Cambridge, Mass.

AXAF will be the third of NASA's four proposed orbiting "Great Observatories" and is scheduled to be launched in 1998. It will be used to study stellar structure and evolution, large scale galactic phenomena, active galaxies, clusters of galaxies, quasars and cosmology.



JSC Photo by Benny Benavides

**LUNCH BREAK** — About 250 JSC employees enjoy lunch during the Hispanic heritage program Tuesday at the Gilruth Center. Mariachi musicians from Fiesta Padras entertained as the attendees took a break from the program, which featured Mexican Consul General Ricardo Ampudia, and Dr. Edward Valenzuela, a pioneer in federal Hispanic employment issues.

## CLIPS users prepare for second conference

Users of CLIPS, the first computer language that enabled the use of expert system technology in Mission Control, will meet for their second annual users conference Sept. 23-25 at the Gilruth Center.

CLIPS, created by the Software Technology Branch of the Information Systems Directorate with support from the U.S. Air Force, is a productive development and delivery expert system tool that provides a complete environment for the construction of rule- and/or object-based expert systems.

It currently has more than 3,000 users throughout the public and private sectors.

At the users conference, a variety of papers will be presented focusing on subjects such as engineering applications, network applications, verification and validation, shuttle applications, simulations, intelligent tutoring and training, and biological applications.

The conference begins at 7:30 p.m. Sept. 23. Registration is \$90. To register, contact Marlon Buff, CLIPS Users Group, 2018 Westfield Dr., Augusta, Ga., 30904. Late registration will begin at 8:30 a.m. each day. For registration information, call 805-756-1252 or 2956.

For general information, contact Philip Johnston, 280-2239.

## JSC challenging leaders in fitness competition

JSC is in second place in the Inter-Center Fitness Challenge, with less than a month to pull ahead of Langley Research Center and the Marshall Space Flight Center, which are tied for first.

The agencywide competition, based on the proportion of qualifiers for the President's Council Fitness and Sports Award, started March 1 and continues through Sept. 30.

In the competition, JSC pulled from last place in June to second in July.

Qualifiers must meet the standards for an award in at least one of the 49 events listed in the Presidential Sports Award brochure.

Participants should record their workouts on the log inside the brochure before sending it to Mail Code AW9.

Participants can receive a personal President's Council Award, including certificates signed by President George Bush and Arnold Schwarzenegger) by sending a copy of the log and \$6 to the address in the brochure.

## Rendezvous and capture abstracts sought

NASA's Office of Space Flight is soliciting input and papers for its upcoming U.S. Automated Rendezvous and Capture Capabilities Review.

The Advanced Program Development Division will stage the three-day review Nov. 19-21 at the Ft. Magruder Inn in Williamsburg, Va. Coordinators are seeking the broadest possible attendance by technical personnel in support of definition studies for the Cargo Transfer Vehicle, the unmanned orbital transfer element of the National Launch System.

The organizing committee is

seeking abstracts in five categories: hardware systems, software systems, integrated systems, operations and supporting infrastructure. Each abstract should be no longer than three pages and include author information and phone numbers; technical details; historical information; level of maturity assessment; test experience; sponsorship and funding estimates.

Abstracts should be sent to Barbara Askins, Code MD, NASA Headquarters, Washington, D.C., 20546, by Sept. 30. For more information, call Askins at 202-453-9226 or Robert Bristow at 202-453-1538.

## Bulletin boards carry latest information on Total Quality

Looking for the latest information on JSC's Total Quality efforts?

There's a new, easy way to stay up to date — access the Total Quality Electronic Bulletin Boards.

The two computer bulletin boards provide information on events such as training classes, workshops and colloquiums, and general information such as library resources.

"TQMBOARD" can be accessed through the PROFS system simply by typing "TQMBOARD" on the command line of the PROFS main

menu. Then, choose "Review Selections" and start reading. The PROFS bulletin board also contains meeting minutes and activity summaries of the Q+ Teams.

"TQM-CAL" can be accessed through NASAMAIL. Once you're on NASAMAIL, just type "scan TQM-CAL" and the bulletin board will appear. You may then review its contents through normal NASAMAIL bulletin board procedures.

If you have problems accessing either of the bulletin boards, call the computer Help Desk at 280-4800.

## President, NASA kick off school year

(Continued from Page 1)

"I think NASA plays an important role in stimulating education," Jernigan said.

"This is an opportunity for NASA to demonstrate that benefit. Also, the President is very interested in promoting education, so I see this as a common goal that NASA shares with the President of the United States and I feel it's a real privilege to be part of a program that encompasses both NASA and the White House.

"Kids have an inherent interest and fascination with the space program. If

we can use that interest and fascination to promote learning, then I think we have a responsibility to do that."

The program also will feature a videotaped presentation of Bolden and fellow Astronauts Kathy Sullivan and Bruce McCandless wrestling with a space suit on STS-31 and Jernigan training in JSC's Weightless Environment Training Facility and conducting experiments on STS-40.

Lisa McLeod will present a 15-minute segment of her Spacemobile program in the Headquarters studio after Bolden explains NASA's efforts

to capture student interest, channel more students into science, engineering and technology career paths and enhance the knowledge, skills and experiences of educators.

The LaPorte students are members of Mary Cummings' class at College Park, which is one of five JSC Partnership in Education school district affiliates.

In the Headquarters audience will be 17 Space Science Student Involvement Program senior high school students who were winners in this year's space science project competitions.

## Homecoming ceremony set for Tuesday

(Continued from Page 1)

Landing is planned for 12:55 a.m. CDT Tuesday at Kennedy Space Center, the first night shuttle landing ever at the Florida strip.

The crew should return to Houston and participate in a welcome home ceremony at Ellington Field on Tuesday afternoon. Based on an on-time landing, the crew will arrive outside Hangar 990 about 2 p.m.

Tuesday. Employees are encouraged to attend as their work schedules permit. For the latest on the crew return schedule, call the Employee Information Service at x36765.

After landing, *Discovery* will be the first orbiter to occupy the just-completed third Orbiter Processing Facility in preparation for its next mission.

At KSC this week, main engines are being installed in *Atlantis* as work

remains on schedule for a possible November launch of STS-44, a Department of Defense flight to deploy the Defense Support Program Satellite (DPS).

Checkouts also were performed on *Atlantis*' brakes and radiators. In KSC's Vehicle Assembly Bldg., the right solid rocket booster for STS-44 is almost completed and work is under way on the left booster.

## Titan anti-greenhouse effect discovered

(Continued from Page 1)

— and it has the same primary atmospheric ingredient — nitrogen. Also, the major greenhouse gas on each body (water on Earth and methane on Titan) condenses on its surface.

Titan's greenhouse effect depends on a link between hydrogen and methane, like the Earth's greenhouse effect depends on carbon dioxide and water vapor, says McKay.

As humans increase carbon dioxide on Earth and it gets warmer, more water goes into the atmosphere. Water vapor on Earth is a more potent greenhouse gas than carbon dioxide, McKay said.

Similarly, on Titan, hydrogen acts like carbon dioxide, he said. It does not condense. If you in-

crease it, it will pull the methane out of suspected methane-rich oceans or lakes. On Titan, the condensed surface liquid, methane (like water on Earth) then becomes the most potent greenhouse gas.

McKay, Pollack and Courtin were modeling the greenhouse effect on Titan when they realized that they needed a counterpoint. They then isolated the temperature dynamic of the upper atmospheric haze.

Earth has no comparable mechanism. However, stratospheric ozone acts, in a small way, as a highly selective anti-greenhouse shield. It absorbs only a specific region of solar light, ultraviolet, and lets infrared radiation pass through on its way out.

Debris from volcanic explosions

or extraterrestrial impacts also temporarily scatters solar light and acts as an anti-greenhouse agent. But the gases (mostly sulfur dioxide) eventually produced by these events are greenhouse agents, letting in solar light and reflecting infrared radiation back to space.

As carbon dioxide and water vapor increase in the Earth's atmosphere, more clouds will form. Scientists want to know how they will warm or cool the planet.

Just as Titan's greenhouse/anti-greenhouse effect is a good comparison model for Earth, studying the formation of clouds on Titan and their effect on the greenhouse balance may help answer these questions, McKay suggested.

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