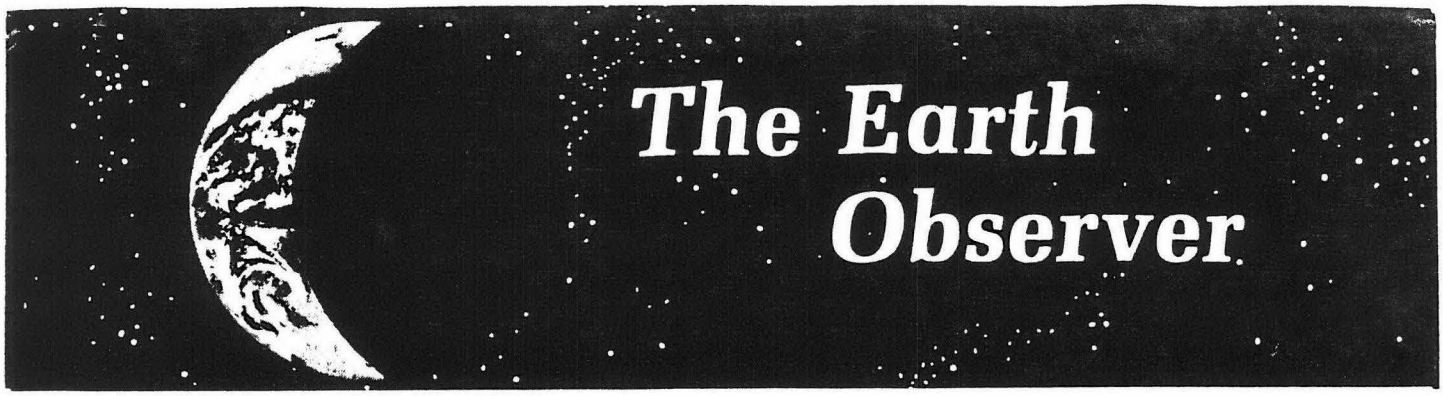

Volume 1, Number 1 March, 1989

NASA Announces Selection of Investigations

The announcement was made February 8, 1989. See our next issue for more details on the selections.

NOAA Chooses Free Flyer; US Platform Altitudes Drop

The National Oceanographic and Atmospheric Administration (NOAA) has decided to continue flying their primary payloads on free flyers instead of on NASA's first Eos polar platform, eliminating the requirement for a high 824 km altitude. For reasons related to the developmental nature of the platform, the uncertainty of servicing technologies, and the need to conserve mass and real estate on the platform for critical research instruments, NOAA is now planning to continue its afternoon service on its own free flyer. NOAA offficials emphasize that this decision was taken to strengthen Eos. NOAA views any of its new free flyers in the space station era as components of the international Eos program.

For the last few years, NOAA had planned to fly the complete set of their spaceborne instrumentation used for weather forecasting on the first polar platform providing an afternoon view of the Earth. This data could then be used in nightly news broadcasts around the world. A duplicate set of hardware would also fly on the European Space Agency's (ESA's) morning platform; this payload provides complimentary information and is a backup to the afternoon payload. NOAA will still fly their hardware on the ESA platforms which will likely consist of a series of light cruising SPOT buses.

The 824-km altitude originated with the requirement to view the entire Earth in one day with critical NOAA instruments, especially the Advanced Very High Resolution Radiometer (AVHRR) or of its proposed successor, the Advanced Medium Resolution Imaging Radiometer (AMRIR). With AVHRR/AMRIR's fixed field of view, any altitude less than 824 km would result in gaps in the orbit-to-orbit coverage. NASA's key instruments, including the Moderate Resolution Imaging Spectrometer (MODIS) which has a field of view somewhat less than the AVHRR/AMRIR, require coverage every two days. This could be best met with a 700 km altitude orbit. NASA, however, agreed to back off on this requirement to accommodate NOAA.

NASA, at the same time, has a requirement for near-simultaneous coverage between the High Resolution Imaging Spectrometer (HIRIS) and the Eos Synthetic Aperture Radar (SAR). SAR and HIRIS were necessarily placed on separate platforms in order to avoid data rate bottlenecks (both are very high data rate instruments). However, HIRIS looks to the nadir and the SAR looks off to the side at look angles (from nadir) of 15° to 55°, so they are still able to acquire data nearly simultaneously. HIRIS and MODIS, along with several other nadir imagers and atmospheric instruments, would therefore fly on the first US platform, and the SAR , a set of atmospheric instruments, and a set of particles and fields experiments would fly on the second US platform. The requirement for near-simultaneous coverage could then only be met if both platforms were at the same altitude in the same orbit plane with offset equators times because Although the SAR performance is better at lower altitudes, NASA decided to fly the second platform at the same altitude as the first platform to optimize the synergism. With NOAA instrumentation on free flyers, both US Eos platforms can lower their altitudes to 700 km. Plans to fly a backup NOAA payload on the second platform as a contingency against first platform launch/deployment failure have also been abandoned.

NASA and NOAA are currently negotiating to have a subset of the platform sensors designated as prototype operational. These platform sensors will be designed for flight at 824 km to facilitate their eventual possible transition to NOAA's free flyer. The first of these sensors will be the Atmospheric Infrared Sounder (AIRS). Other candidate sensors for prototype operational services include an altimeter and a scatterometer, as well as limb scanning, passive microwave, and radiative budget sensors.

Eos Update

Schedule of Meetings

Date: March 19-24, 1989
Location: GSFC, Greenbelt Marriott
Topic: All-hands meeting (IWG)
Attendance: All Eos PIs, Team Members, Eos Project

Date: Fall, 1989
Location: JPL, Pasadena
Topic: Second Meeting of the IWG
Attendance: PI's, Team Leaders, Eos Project Management

Earth Observer Launch Schedule

The following is the latest launch schedule for the five Eos platforms and Earth observing missions to be launched by NASA and other countries in preparation for Eos.

ERS-1	October, 1990
UARS	September, 1991*
SIR-C/X-SAR ,1st flight	February, 1992
JERS-1	February, 1992
TOPEX	June, 1992
GREM	1992
SIR-C/X-SAR, 2nd flight	March, 1993
Radarsat	April, 1994
SIR-C/X-SAR, 3rd flight	1994
NSCAT/ADEOS	February, 1995
NPOP-1	December, 1996
EPOP -1A	1996
NPOP-2	December, 1998
JPOP	1998
NPOP-1'	2001
NPOP-2'	2003

* tight launch window due to desire to cover two northern hemisphere winters in the expected 18 month lifetime of UARS

Publications

Please notify the editors of any new publications that may be of interest to the Eos community.

Graham, Nicholas E. and Warren B. White, "The El Niño Cycle: A Natural Oscillator of the Pacific Ocean-Atmosphere System," in Science, vol. 240, p. 1293, June 3, 1988.

National Geographic: "Can Man Save This Fragile Earth?", vol. 174, no. 6, December, 1988.

Space Science in the Twenty-First Century, Imperatives for the Decades 1995 50 2015: Mission to Planet Earth, National Academy Press, Washington, D.C. 1988.

Schneider, Stephen H. "The Greenhouse Effect: Science and Policy" in Science, vol. 243, p. 771, February 10, 1989.

Butler, D., E. Njoku, G. Soffen and J.B. Cimino, "The Earth Observing System (Eos) Mission: Payload Instruments and Science Program", IGARSS 89, Vancouver, Canada, July 1989.

Acronyms

In every issue, we will try to provide you with a list of acronyms used within the newsletter.

ADEOS = Advanced Earth Observing Satellite (Japan)
AO = Announcement of Opportunity
Eos = Earth Observing System
EPOP = European Polar Orbiting Platform (Eos)
ERS-1 = Earth Remote-sensing Satellite
ESA = European Space Agency
GREM = Geopotential Research Explorer Mission (USA)
GSFC = Goddard Space Flight Center
JERS-1 = Japanese Earth Remote-sensing Satellite
JPL = Jet Propulsion Laboratory
JPOP = Japanese Polar Orbiting Platform (Eos)
NPOP = NASA Polar Orbiting Platform (Eos)
NSCAT = NASA Scatterometer
PI = Principal Investigator
Radarsat = Radar Satellite (Canada)
SIR-C = Spaceborne Imaging Radar-C
TOPEX = Topography Experiment (US/France)
UARS = Upper Atmosphere Research Satellite (US)
XSAR = X-band SAR (DFVLR) (to be flown with SIR-C)

Planet of the Year: Earth

Time Magazine has selected the Earth as Planet of the Year for 1988 replacing the traditional Man of the Year.

Letters to the Editors

The Earth Observer welcomes letters to the Editors on subjects relevant to Eos and the Earth science community. Letters should be kept to 200 words, and we reserve the right to edit letters when necessary in order to permit a greater number of views to be expressed. Questions of general interest may also be answered through this column. Letters should be mailed to the editors or sent via telemail (addresses below) by the tenth of the month in order to appear in the next newsletter. In the interest of fostering communication on the mission, we will give equal time (and space) to opposing opinions.

Note From the Editors:

If you would like to include anything in this newsletter, please send it to Marguerite Schier, the editor, preferably via telemail, by the 15th of the month. The newsletter will be released monthly. All Eos PIs will receive the newsletter via telemail and via hard-copy mail. If you would like to receive a copy of the newsletter, please phone the Eos Support Office at Birch and Davis Associates, Inc. at (301) 589-6760 with your address and telemail address.

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700 or 705 km?

What is the real altitude for Eos? Is it 705 km as seems to roll off everyone's tongue? No, it is really 700 km (sort of). This altitude results in a 16 day repeat orbit (233 orbits in 16 days, or 14 and 9/16 orbits per day). 700 km is found by subtracting the average radius of the Earth from the semi-major axis of the orbit. The orbit, however, is not a circular orbit but slightly elliptical, producing what is known as a "frozen" orbit. More about frozen orbits in the next issue.

Back Issues

To access computer files of the old issues of this newsletter as well as files of information related to Eos, please log onto the JPL VAX as described below. This is a read only user area. If you have input to these files, please send it via telemail to the editor or executive editors of this newsletter.

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To log off: LO or BYE

Personals

This column is reserved for semi-personal messages of various types related to the Earth Observing System. Inputs should be mailed to the editor, preferably via telemail.

In the next issue of the Earth Observer: the new baseline payload.