

Exploring the Unknown

Volume VI

EXPLORING THE UNKNOWN

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EXPLORING THE UNKNOWN

Selected Documents in the History of the U.S. Civil Space Program

Volume VI: Space and Earth Science

John M. Logsdon, General Editor
with Stephen J. Garber, Roger D. Launius,
and Ray A. Williamson

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*Dedicated to
William H. Pickering
Space Science Pioneer*

and

*Jonathan L. Friedman
Manager, Editor, and Friend*

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Acknowledgments

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We owe thanks to the individuals and organizations that have searched their files for potentially useful materials, and for the staffs at various archives and collections who have helped us locate documents. James Green of Goddard Space Flight Center, David DeVorkin of the National Air and Space Museum, and Joan Vernikos, formerly of NASA, in addition to authoring introductory essays, helped in the identification and acquisition of key documents. Graduate students Holly Carter Degn, Brian Dewhurst, Jonathan Krezel, Chirag Vyas, and Avery Sen also helped in the preparation of the volume.

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John M. Logsdon, George Washington University

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Steven J. Dick
NASA Chief Historian

Introduction

One of the most important developments of the twentieth century has been the movement of humanity into space with machines and people. The underpinnings of that movement—why it took the shape it did; which individuals and organizations were involved; what factors drove a particular choice of scientific objectives and technologies to be used; and the political, economic, managerial, and international contexts in which the events of the space age unfolded—are all important ingredients of this epoch transition from an Earthbound to a spacefaring people. This desire to understand the development of spaceflight in the United States sparked this documentary history series.

The extension of human activity into outer space has been accompanied by a high degree of self-awareness of its historical significance. Few large-scale activities have been as extensively chronicled so closely to the time they actually occurred. Many of those who were directly involved were quite conscious that they were making history, and they kept full records of their activities. Because most of the activity in outer space was carried out under government sponsorship, it was accompanied by the documentary record required of public institutions, and there has been a spate of official and privately written histories of most major aspects of space achievement to date. When top leaders considered what course of action to pursue in space, their deliberations and decisions often were carefully put on the record. There is, accordingly, no lack of material for those who aspire to understand the origins and evolution of U.S. space policies and programs.

This reality forms the rationale for this series. Precisely because there is so much historical material available on space matters, the National Aeronautics and Space Administration (NASA) decided in 1988 that it would be extremely useful to have easily available to scholars and the interested public a selective collection of many of the seminal documents related to the evolution of the U.S. civilian space program. While recognizing that much space activity has taken place under the sponsorship of the Department of Defense and other national security organizations, the U.S. private sector, and in other countries around the world, NASA felt that there would be lasting value in a collection of documentary material primarily focused on the evolution of the U.S. government's civilian space program, most of which has been carried out since 1958 under the Agency's auspices. As a result, the NASA History Office contracted with the Space Policy Institute of George Washington University's Elliott School of International Affairs to prepare such a collection. This is the sixth volume in the documentary history series; two additional ones containing documents and introductory essays related to human space flight, including microgravity research in Earth orbit, will follow.

The documents collected during this research project were assembled from a diverse number of both public and private sources. A major repository of primary source materials relative to the history of the civil space program is the NASA Historical Reference Collection of the NASA History Office located at the Agency's Headquarters in Washington, DC. Project assistants combed this collection for the "cream" of the wealth of material housed there. Indeed, one purpose of this series from the start was to capture

some of the highlights of the holdings at Headquarters. Historical materials housed at the other NASA installations, institutions of higher learning, and presidential libraries were other sources of documents considered for inclusion, as were papers in the archives of individuals and firms involved in opening up space for exploration.

Copies of the documents included in this volume in their original form will be deposited in the NASA Historical Reference Collection. Another complete set of project materials is located at the Space Policy Institute at George Washington University. These materials in their original forms are available for use by researchers seeking additional information about the evolution of the U.S. civil space program or wishing to consult the documents reprinted herein in their original form.

The documents selected for inclusion in this volume are presented in four major sections, each covering a particular aspect of the origins, evolution, and execution of the U.S. space and Earth science program. Section I deals with the scientific study of the Sun. Section II discusses the study of the physical characteristics of space, including both interactions between the Sun and Earth, and other areas of investigation. Section III deals with NASA's fundamental research in life sciences—space biology. (Issues associated with the study of the reactions of the human body to the space environment and the health of astronauts will be covered in the next two volumes.) Section IV discusses the most recent area of science to which space observations contribute—that intend to advance understanding of the Earth as a planetary system.

Volume I in this series covered the antecedents to the U.S. space program and the origins and evolution of U.S. space policy and of NASA as an institution. Volume II dealt with the relations between the civilian space program of the United States and the space activities of other countries; the relations between the U.S. civilian and national security space and military efforts; and NASA's relations with industry and academic institutions. Volume III provided documents on satellite communications, remote sensing, and the economics of space applications. Volume IV covered various forms of space transportation. Volume V covered the origins of NASA's space science program and its efforts in solar system exploration and astrophysics and astronomy. As noted above, two future volumes will cover human spaceflight (Volumes VII and VIII).

An overview essay introduces each section in the present volume. These essays are intended to introduce and complement the documents in the section, and to place them in a chronological and substantive context. Each essay contains references to the documents in the section it introduces, and may also contain references to documents in other sections of the collection. These introductory essays are the responsibility of their individual authors, and the views and conclusions contained therein do not necessarily represent the opinions of either George Washington University or NASA.

The project team in concert chose the documents included in each section with the essay writer from those assembled by the research staff for the overall project. The contents of this volume emphasize primary documents or long-out-of-print essays or articles and

material from the private recollections of important actors in shaping space affairs. The contents of this volume thus do not comprise in themselves a comprehensive historical account; they must be supplemented by other sources, those both already available and to become available in the future. The documents included in each section are arranged chronologically, with the exception that closely related documents are grouped together. Each document is assigned its own number in terms of the section in which it is placed. Thus, the first document in the third section of this volume is designated "Document III-1." Each document or group of related documents is accompanied by a headnote setting out its context and providing a background narrative. These headnotes also provide specific information about people and events discussed. We have avoided the inclusion of explanatory notes in the documents themselves and have confined such material to the headnotes.

The editorial method we adopted for dealing with these documents seeks to preserve spelling, grammar, paragraphing, and use of language as in the original. We have sometimes changed punctuation where it enhances readability. We have used the designation [not included, or omitted] to note where sections of a document have not been included in this publication, and we have avoided including words and phrases that had been deleted in the original document unless they contribute to an understanding of what was going on in the mind of the writer in making the record. Marginal notations on the original documents are inserted into the text of the documents in brackets, each clearly marked as a marginal comment. Except insofar as illustrations and figures are necessary to understanding the text, those items have been omitted from this printed version. Page numbers in the original document are noted in brackets internal to the document text. Copies of all documents in their original form, however, are available for research by any interested person at the NASA History Office or the Space Policy Institute of George Washington University.

We recognize that there are certain to be quite significant documents left out of this compilation. No two individuals would totally agree on all documents to be included from the many we collected, and surely we have not been totally successful in locating all relevant records. As a result, this documentary history can raise an immediate question from its users: why were some documents included while others of seemingly equal importance were omitted? There never can be a fully satisfactory answer to this question. Our own criteria for choosing particular documents and omitting others rested on three interrelated factors:

- Is the document the best available, most expressive, most representative reflection of a particular event or development important to the evolution of the space program?
- Is the document not easily accessible except in one or a few locations, or is it included (for example, in published compilations of presidential statements) in reference sources that are widely available and thus not a candidate for inclusion in this collection?

- Is the document protected by copyright, security classification, or some other form of proprietary right and thus unavailable for publication?

As general editor of this volume, I was ultimately responsible for the decisions about which documents to include and for the accuracy of the headnotes accompanying them. It has been an occasionally frustrating but consistently exciting experience to be involved with this undertaking; my associates and I hope that those who consult it in the future find our efforts worthwhile.

John M. Logsdon
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Biographies of Volume VI Editors

Stephen J. Garber is a historian with the National Aeronautics and Space Administration. He has worked in the NASA History Office since 1995 and served as the acting head of this office from July 2002 through October 2003. He has edited a book on the past and future of human spaceflight, and written on such aerospace history topics as the congressional cancellation of NASA's Search for Extraterrestrial Intelligence program, President Kennedy's attitudes toward space, the design of the Space Shuttle, and the Soviet Buran Space Shuttle.

Roger D. Launius is chairman of the Space History Department of the Smithsonian Institution's National Air and Space Museum and is the former NASA Chief Historian. He has produced several books and articles on aerospace history, including *Innovation and the Development of Flight* (Texas A&M University Press, 1999); *NASA & the Exploration of Space* (Stewart, Tabori, & Chang, 1998); *Frontiers of Space Exploration* (Greenwood Press, 1998); *Organizing for the Use of Space: Historical Perspectives on a Persistent Issue* (Univelt, Inc., AAS History Series, Volume 18, 1995), editor; *NASA: A History of the U.S. Civil Space Program* (Krieger Publishing Co., 1994); *History of Rocketry and Astronautics: Proceedings of the Fifteenth and Sixteenth History Symposia of the International Academy of Astronautics* (Univelt, Inc., AAS History Series, Volume 11, 1994), editor; *Apollo: A Retrospective Analysis* (Monographs in Aerospace History, Vol. 3, 1994); and *Apollo 11 at Twenty-Five*, electronic picture book issued on computer disk by the Space Telescope Science Institute, Baltimore, MD, 1994.

John M. Logsdon is Director of the Space Policy Institute of George Washington University's Elliott School of International Affairs, where he is also a professor of political science and international affairs. He holds a B.S. in physics from Xavier University and a Ph.D. in political science from New York University. He has been at George Washington University since 1970, and previously taught at The Catholic University of America. He is also a faculty member of the International Space University. He is an elected member of the International Academy of Astronautics and a member of the board of The Planetary Society. He is a former member of the NASA Advisory Council and served during 2003 on the Columbia Accident Investigation Board. Dr. Logsdon has lectured and spoken to a wide variety of audiences at professional meetings, colleges and universities, international conferences, and other settings, and has testified before Congress on numerous occasions. The electronic and print media frequently consult him for his views on various space issues. He has been a Fellow at the Woodrow Wilson International Center for Scholars and was the first holder of the Chair in Space History of the National Air and Space Museum. He is a Fellow of the American Association for the Advancement of Science and the American Institute of Aeronautics and Astronautics.

Ray A. Williamson is a Research Professor of Space Policy and International Affairs at George Washington University's Elliott School of International Affairs, focusing on the history, programs, and policy of Earth observations, space transportation, and space commercialization. He joined the Space Policy Institute in 1995. Previously, he was a Senior Associate and Project Director in the Office of Technology Assessment (OTA) of

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Acronyms

AAOE	Airborne Antarctic Experiment
AAS	American Astronomical Society
ACE	.....	Advanced Composition Explorer
ACRIM	.....	Active Cavity Radiometer Irradiance Monitor
ADCLS	.....	Advanced Data Collection and Location System
ADEOS	.....	Advanced Earth Observation Satellite
AEC	.....	Atomic Energy Commission
AES	.....	Apollo Extension Systems
AGU	.....	American Geophysical Union
AIMP	.....	Anchored, Interplanetary Monitoring Platforms
AIRS	.....	Atmospheric Infrared Sounder
AIT	.....	Asian Institute of Technology
AMOWG	.....	Astrophysics Management Operations Working Group
AMPTE	.....	Active Magnetospheric Particle Tracer Experiment
AMS	.....	American Meteorological Society
AO	.....	Announcement of Opportunity
AOSO	.....	Advanced Orbiting Solar Observatory
APA	.....	Allowance for Program Adjustment
APACM	.....	Atmospheric Physical and Chemical Monitor
ARC	.....	Ames Research Center
ARISTOTELES	..	Applications and Research Involving Space Technologies Observing the Earth's Field from Low Earth Orbiting Satellites
ARPA	.....	Advanced Research Projects Agency
ASI	.....	Agencia Spatiale Italiano
ASTP	.....	Apollo-Soyuz Test Project
ATLAS	.....	Atmospheric Laboratory for Applications and Science
ATM	.....	Apollo Telescope Mount
ATOM	.....	Astronomical Telescope Orientation Mount
AU	.....	Astronomical Unit
AVHRR	.....	Advanced Very High Resolution Radiometer
AXAF	.....	Advanced X-ray Astrophysics Facility
BAC	.....	Bioscience Advisory Committee
BAC	.....	British Aircraft Corporation
BASC	.....	Board on Atmospheric Sciences and Climate
BMFT	.....	Federal Ministry for Research and Technology (Germany)
BMRC	.....	Bureau of Meteorology Research Center (Australia)
CCP	.....	Cost Control Plan
CCRS	.....	Canada Centre for Remote Sensing
CEES	.....	Committee on Earth and Environmental Sciences
CELSS	.....	Controlled Ecological Life Support Systems
CENR	.....	Committee on Environment and Natural Resources

CEOS	Committee on Earth Observing
CERES	Clouds and Earth's Radiant Energy System
CES	Committee on Earth Sciences
CGED	Committee on Geophysical and Environmental Data
CIESIN	Consortium for International Earth Science Information Network
CLOS	Coordination on Land Observation Satellites
CME	Coronal Mass Ejection
CNES	Centre National d'Etudes Spatiales
COBE	Cosmic Background Explorer
COMETS	Communication and Broadcasting Engineering Test Satellite
CORSS	Coordination on Ocean Remote Sensing Satellites
COSPAR	Committee on Space Research
COSEPUP	Committee on Science, Engineering, and Public Policy
COSTR	Collaborative Solar-Terrestrial Research
CRIE	Cosmic Ray Isotope Experiment
CRL	Communications Research Laboratory (Japan)
CRRES	Combined Release and Radiation Effects Satellite
CSA	Canadian Space Agency
CSAA	Committee on Space Astronomy and Astrophysics
CSBM	Committee on Space Biology and Medicine
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
CSSP	Committee on Solar and Space Physics
CZCS	Coastal Zone Color Scanner
DAAC	Distributed Active Archive Centers
DARA	Deutsche Agentur für Raumfahrtangelegenheiten
DE	Dynamics Explorer
DEM	Digital Elevation Model
DEP	Data Exchange Principles
DFRC	Dryden Flight Research Center
DMA	Defense Mapping Agency
DMSP	Defense Meteorological Satellite Program
DMWG	Data Management Working Group
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of Interior
DOT	U.S. Department of Transportation
DSN	Deep Space Network
DTED	Digital Terrain Elevation Data
E-SPAN	European-Space Analysis Network
ECOM	EOS Communications
ELDO	European Launcher Development Organization

ELV	Expendable Launch Vehicle
EOIS	Earth Observation Information System
EOS	Earth Observing System
EOSAT	Earth Observation Satellite
EOSDIS	Earth Observing System Data and Information System
EPA	Environmental Protection Agency
ERBE	Earth Radiation Budget Experiment
ERS	Earth Resources Satellite
ERMAC	Electromagnetic Radiation Management Advisory Council
EROS	Earth Resources Observation System
ESA	European Space Agency
ESIPs	Earth Science Information Partners
ESOC	European Space Operations Center
ESRIN	European Space Research Institute
ESRO	European Space Research Organization
ESSC	Earth System Science Committee
ESTEC	European Space Research and Technology Centre
ETR	Eastern Test Range
EUVE	Extreme Ultraviolet Explorer
EVA	Extravehicular Activity
FAA	Federal Aviation Administration
FAO	Food and Agriculture Organization
FAST	Fast Auroral Snapshot Explorer
FRG	Federal Republic of Germany
FSS	Flight Support System
FUSE	Far Ultraviolet Spectroscopic Explorer
G-7	Group of Seven Industrialized Nations
GAO	General Accounting Office
GARP	Global Atmospheric Research Program
GATE	GARP Atlantic Tropical Experiment
GAW	Global Atmospheric Watch
GCM	General Circulation Models
GCOS	Global Climate Observing System
GEMS	Global Environmental Monitoring Systems
GGM	Gravity Gradiometer Mission
GGS	Global Geospace Science
GLOSS	Global Sea Level Observing System
GLRS	Geodynamics Laser Ranging System
GMS	Geostationary Meteorology Satellite
GODAE	Global Ocean Data Assimilation Experiment
GOES	Geostationary Operational Environmental Satellites
GOME	Global Ozone Monitoring Experiment
GOMOS	Global Ozone Monitoring by Occultation of Stars

GOOS	Global Ocean Observing System
GOS	Global Observing System
GPM	Global Precipitation Mission
GPS	Global Positioning System
GRB	Geophysics Research Board
GRE	Gamma Ray Explorer
GRID	Global Resource Information Database
GRM	Geopotential Research Mission
GRM	Geopotential Radar Mapper
GSFC	Goddard Space Flight Center
GTOS	Global Terrestrial Observing System
GZ	Giacobini-Zinner
HAO	High Altitude Observatory
HCO	Harvard College Observatory
HEAO	High Energy Astronomical Observatory
HEDS	Human Exploration and Development of Space
HESP	High Energy Solar Platform
HEW	U.S. Department of Health, Education, and Welfare
HHS	U.S. Department of Health and Human Services
HIRDLS	High-Resolution Dynamics Limb Sounder
HIRIS	High-Resolution Imaging Spectrometer
HMMR	High-resolution Multifrequency Microwave Radiometer
HPCC	High-Performance Computing Centers
HRMS	High-Resolution Microwave Survey
HRTS	High-Resolution Telescope and Spectrograph
HRSO	High-Resolution Solar Observatory
HSO	Heliosynchronous Orbiter
HST	Hubble Space Telescope
IACG	Inter-Agency Consultative Group
IAF	International Astronautical Federation
ICCA	Interagency Coordinating Committee on Astronomy
ICE	International Cometary Explorer
ICS	Interface Control Specifications
ICSU	International Council of Scientific Unions
IEOS	International Earth Observing System
IFSAR	Interferometric Synthetic Aperture Radar
IGBP	International Geosphere-Biosphere Program
IGFA	International Group of Funding Agencies for Global Change Research
IGOS	International Global Observing Strategy
IGOSS	International Global Ocean Services System
IGY	International Geophysical Year
ILSSWG	International Life Sciences Strategic Working Group
IMAGE	Imager for Magnetopause-to-Aurora Global Exploration

IMP	Interplanetary Monitoring Platforms
IMS	International Magnetospheric Study
INPE	Instituto de Pesquisas Espaciais
IOC	Intergovernmental Oceanographic Commission
IODE	International Ocean Data Exchange
IOSWG	Integrated Observing System Working Group
IPA	Intergovernmental Personnel Act
IPCC	Intergovernmental Panel on Climate Change
IRAS	Infra-Red Astronomy Satellite
IRS	Indian Remote Sensing Satellite
ISAS	Institute of Space and Astronautical Science
ISEE	International Sun-Earth Explorers
ISPM	International Solar Polar Mission
ISRO	Indian Space Research Organization
ISS	International Space Station
ISTPP	International Solar-Terrestrial Physics Program
ITHD	Interferometric Terrain Height Data
IUE	International Ultraviolet Explorer
IUS	Inertial Upper Stage
IV&V	Independent Verification and Validation
IWG	Investigators Working Group
JEA	Japanese Environment Agency
JEOS	Japanese Earth Observing System
JERS	Japan Earth Remote Sensing Satellite
JMA	Japan Meteorological Agency
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center
KSC	Kennedy Space Center
LAGEOS	Laser Geodynamics Satellites
LaRC	Langley Research Center
LASA	Laser Atmospheric Sounder and Altimeter
LASCO	Light Spectrometric Coronagraph
LAWS	Laser Atmospheric Wind Sounder
LDEF	Long-Duration Exposure Facility
LERTS	Laboratoire d'Etudes et de Recherches en Télédétection Spatiale (France)
LFFP	Large Fine-Pointed Platform
LIDAR	Light Detection and Ranging Instrument
LIMS	Limb Infrared Monitor of the Stratosphere
LIS	Light Imaging Sensor
LSAC	Life Sciences Advisory Committee
ISCCP	International Satellite Cloud Climatology

LSLE	Life Sciences Laboratory Equipment
ISLSCP	International Satellite Land Surface Climatology Project
LSO	Large Solar Observatory
LSSPSC	Life Sciences Strategic Planning Study Committee
LWS	Living With a Star
LZP	Level Zero Processed Data
MC	Magnetospheric Constellation LS . . . Microwave Limb Sounder
MCC	Mission Control Center
McIDAS	Man-Computer Interactive Data Access System
MFE	Magnetic Field Explorer
MIMR	Multifrequency Imaging Microwave Radiometer
MIPAS	Michelson Interferometer for Passive Atmospheric Sounding
MIT	Massachusetts Institute of Technology
MITI	Ministry of International Trade and Industry (Japan)
MMS	Magnetospheric Multiscale
MO&DA	Mission Operations and Data Analysis
MODIS	Moderate-resolution Imaging Spectrometer
MORL	Manned Orbital Research Laboratory
MOS	Marine Observation Satellite
MOT	Manned Orbiting Telescope
MRI	Meteorological Research Institute (Japan)
MSC	Manned Spacecraft Center
MSF	Manned Space Flight
MSFC	Marshall Space Flight Center
MTE	Mesosphere-Thermosphere Explorer
MTPE	Mission To Planet Earth
N-ROSS	Navy Remote Ocean Sensing System
NAC	NASA Advisory Council
NACA	National Advisory Committee for Aeronautics
NAS	National Academy of Sciences
NASDA	National Space Development
NASM	National Air and Space Museum
NCAR	National Center for Atmospheric Research
NFLR	NASA Federal Laboratory Review task force
NIH	National Institutes of Health
NIMA	National Imagery and Mapping Agency
NITF	National Image Transfer Format
NOAA	National Oceanic and Atmospheric Administration
NOSS	National Oceanic Satellite System
NOZE	National Ozone Experiment
NPOESS	National Polar-Orbiting Environmental Satellite System
NRA	NASA Research Announcement
NRC	National Research Council

NREN	.....	.NASA Research and Education Network
NRL	.....	.Naval Research Laboratory
NSA	.....	.National Security Agency
NSBRI	.....	.National Space Biomedical Research Institute
NSC	.....	.National Space Council
NSCORT	.....	.National Specialized Centers of Research and Training
NSF	.....	.National Science Foundation
NSSDC	.....	.National Space Science Data Center
NSTC	.....	.National Science and Technology Council
NSTL	.....	.National Space Technology Laboratories
OAQ	.....	.Orbiting Astronomical Observatory
OCI	.....	.Ocean Color Instrument
OMB	.....	.Office of Management and Budget
ONR	.....	.Office of Naval Research
OOE	.....	.Out-Of-the-Ecliptic missions
OPEN	.....	.Origins of Plasmas in the Earth's Neighborhood
OSB	.....	.Ocean Sciences Board
OSHA	.....	.Occupational Health and Safety Act of 1970
OSL	.....	.Orbital Solar Laboratory
OSO	.....	.Orbiting Solar Observatory
OSTDS	.....	.Office of Space Tracking and Data Systems
OSTP	.....	.Office of Science and Technology Policy
PAF	.....	.Payload Attach Fitting
PETA	.....	.People for the Ethical Treatment of Animals
PMC	.....	.Program Management Council
POEM	.....	.Polar Orbiting Earth observation Missions
POES	.....	.Polar-Orbiting Environmental Satellite
PR	.....	.Precipitation Radar
PSC	.....	.Physical Sciences Committee
QL	.....	.Quick Look Data
RA	.....	.Radar Altimeter
RCS	.....	.Reaction Control System
RF	.....	.Radio Frequency end-to-end test
RSA	.....	.Russian Space Agency
RSRP	.....	.Rocket and Satellite Research Panel
SACLS	.....	.Special Advisory Committee for Life Sciences
SAFIRE	.....	.Spectroscopy of the Atmosphere using Far Infrared Emission
SAGE	.....	.Stratospheric Aerosol and Gas Experiment
SAM	.....	.Sensing with Active Microwaves
SAM	.....	.Stratospheric Aerosol Measurement

SAMS	.....	.Stratospheric and Mesospheric Sounder
SAMPEX	.....	.Solar Anomalous and Magnetospheric Particle Explorer
SAR	.....	.Synthetic Aperture Radar
SBRC	.....	.Santa Barbara Research Center
SBUV/TOMS	..	.Solar Backscatter Ultraviolet and Total Ozone Mapping Spectrometer
SCAPE	.....	.Self-Contained Atmosphere Protection Equipment
ScaRaB	.....	.Scanner Radiatsionnogo Balansa
SCIAMACHY	...	.Scanning Imaging Absorption Spectrometer for Atmospheric Chartography
SCOPE	.....	.Scientific Committee on Problems of the Environment
SCOR	.....	.Specialized Center of Research
SDI	.....	.Strategic Defense Initiative
SeaWiFs	.....	.Sea-viewing Wide Field-of-view Sensor
SEMMS	.....	.Solar Electric Multimission Spacecraft
SEP	.....	.Solar Electric Propulsion
SESAC	.....	.Space and Earth Science Advisory Committee
SETI	.....	.Search for Extraterrestrial Intelligence
SFFO	.....	.Solar Free-Flying Observatories
SFPP	.....	.Small Fine-Pointed Platform
SIR	.....	.Shuttle Imaging Radar
SIR-C/X-SAR	...	.Spaceborne Imaging Radar-C/X-Band Synthetic Aperture
SIRTF	.....	.Space Infrared Telescope Facility
SLS	.....	.Space Life Sciences
SMEX	.....	.Small Explorer
SMM	.....	.Solar Maximum Mission
SMMR	.....	.Scanning Multichannel Microwave Radiometer
SMRM	.....	.Solar Maximum Repair Mission
SNIP	.....	.Space Network Interoperability Panel
SOHO	.....	.Solar and Heliospheric Observatory
SOLSTICE	.....	.Solar Stellar Irradiance Comparison Experiment
SOT	.....	.Solar Optical Telescope
SPAC	.....	.Space Program Advisory Council
SPAN	.....	.Space Physics Analysis Network
SPIS	.....	.Surface Imaging and Sounding Packages
SPO	.....	.Solar Polar Orbiter
SPOT	.....	.Systeme Pour l'observation de la Terre
SRTM	.....	.Shuttle Radar Topographic Mission
SSAC	.....	.Space Science Advisory Committee
SSB	.....	.Space Studies
SSC	.....	.Stennis Space Center
SSEC	.....	.Solar System Exploration Committee
SSMI	.....	.Special Sensor Microwave Imager
SSO	.....	.Sortie Solar Observatory
SSS	.....	.Solar Synoptic Satellite
SSWG	.....	.SETI Science Working Group

STA	Science and Technology Agency (Japan)
STC	Solar Telescope Cluster
STDN	Spaceflight Tracking and Data Network
STEREO	Solar-Terrestrial Relations Observatory
STG	Space Task Group
STIP	Study of Traveling Interplanetary Phenomena
STP	Solar-Terrestrial Probe
STS	Space Transportation System
STSP	Solar-Terrestrial Science Programme
SUNY	State University of New York
SUSIM	Solar Ultraviolet Spectral Irradiance Monitor
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System
TFODM	Task Force on Observations and Data Management
THIR	Temperature Humidity Infrared Radiometer
TIMED	Thermosphere, Ionosphere, Mesosphere Energetics and Dynamics
TIROS	Television Infrared Observation Satellite
TMI	TRMM Microwave Imager
TOGA	Tropical Ocean Global Atmosphere Program
TOPEX	Ocean Topography Experiment
TOPS	Toward Other Planetary System
TOVS	TIROS Operational Vertical Sounder
TQM	Total Quality Management
TR&T	Targeted Research and Technology
TRACE	Transition Region And Coronal Explorer
TRMM	Tropical Rainfall Measuring Mission
TU	Technology Utilization
UARS	Upper Atmosphere Research Satellite
UCAR	University Corporation for Atmospheric Research
UCLA	University of California, Los Angeles
UFO	Unidentified Flying Object
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNEX	University class Explorers
UNWG	User Needs Working Group
US-AID	United States Agency for International Development
USDA	U.S. Department of Agriculture
USGCRP	U.S. Global Change Research Program
USGS	United States Geological Survey
USNC	United States National Committee
USPHS	United States Public Health Service

USSR	.....	Union of Soviet Socialist Republics
UV	.....	Ultraviolet Radiation
VIS	.....	Visible Infrared Scanner
VLA	.....	Very Large Array
VLBI	.....	Very Long Baseline Interferometry
WBDCS	.....	Wide Band Data Collection System
WCRP	.....	World Climate Research Program
WHO	.....	World Health Organization
WMO	.....	World Meteorological Organization
WOCE	.....	World Ocean Circulation Experiment
WWW	.....	World Weather Watch
XTE	.....	X-ray Timing Explorer
XUV	.....	Extreme Ultraviolet