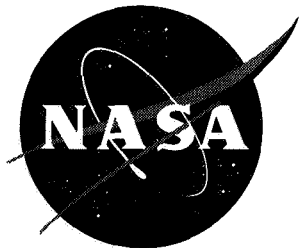


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The Spacelab Scientific Missions: A Comprehensive Bibliography of Scientific Publications

*Compiled by
Dr. Marsha Torr*

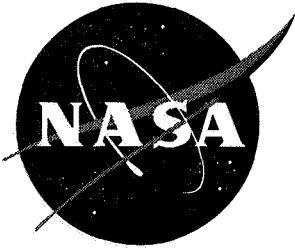
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The Spacelab Scientific Missions: A Comprehensive Bibliography of Scientific Publications

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FOREWORD

November 1993 represented the 10-year anniversary of the flight of the Spacelab 1 mission, with the first precursor mission (OSTA-1) being launched 2 years earlier. Since that time, a total of 27 Shuttle missions has been flown, using the Spacelab system as a facility for conducting scientific research in space. The 27 missions flown to date have allowed a total of approximately 500 Principal Investigator class investigations to be conducted in orbit. These investigations have constituted major scientific efforts in astronomy/astrophysics, atmospheric science, Earth observations, life sciences, microgravity science (biotechnology, materials science, combustion science, and fluid dynamics), and space plasma physics.

The Spacelab program represents one of the longest in duration, the most multi-disciplinary, and the most international of the space science programs conducted to date. Furthermore, eight more missions will be flown over the next few years. We have conducted an initial survey of the scientific products of the Spacelab missions already flown. In that survey, information was gathered from Principal Investigators on the scientific highlights of their investigations and on statistical measures of the overall success--such as papers published, students obtaining graduate degrees, technology spin-offs, etc.

This document is a compilation of the papers that have been published to date in refereed literature. As of November 1994, the number of papers by broad scientific discipline is as follows:

Astronomy/Astrophysics	145
Atmospheric Science	119
Earth Observations	67
Life Sciences	521
Microgravity Science	227
Space Plasma Physics	117
<hr/>	
TOTAL	1196

We expect these numbers to grow significantly as several major missions have flown recently, and the scientists have not yet had time to analyze and publish their results. This document will be updated as appropriate to incorporate additional publications.

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March 1995

Organizational Note

The bibliographic entries in this publication are first sorted according to date of publication, then alphabetically by first author's last name and title of work. The entry template order is as follows: author name(s), title of work, journal source, date of publication, and associated mission(s).

The Spacelab Scientific Missions: A Comprehensive Bibliography of Scientific Publications

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APPENDIX A: JOURNALS REFERENCED

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Acta Otolaryngol.	Am. J. Physiol.	Biol. Sci. Space
Acta Physiol. Scand.	Am. J. Psychol.	Bioscience
Adv. Appl. Mech.	Am. Soc. Graviational Space Biol.	Biotech. & Bioeng.
Adv. Biochem. Eng.	Ann. Bot.	Blood
Adv. Ceramics	Ann. Chim. Fr.	Br. J. Pharmacol.
Adv. Colloid Interface Sci.	Ann. Geophysicae	Brain Res.
Adv. Cryog. Eng.	Ann. NY Acad. Sci.	Bull. Mater. Sci.
Adv. in Space Biol. and Med.	Ann. Otol. Rhinol. Laryngol.	Can. Aeron. and Space J.
Adv. Otolaryngol.	Antiquity	Cell Tissue Res.
Adv. Physiol. Sci.	Appl. Environ. Microbiol.	Chest
Adv. Space Res.	Appl. Microgravity Tech.	Chimica Oggi
Aerosp. Med. Assoc.	Appl. Optics	Ciel et Terre
AGU Monograph	Arch. Otorhinolaryngol.	Circulation
AIAA J.	ASGSB Bulletin	Clin. Invest.
AIAA J. Aero. and Astro.	Astro. Lett. and Comm.	Clin. Physiol.
Akad. NAUK SSSR	Astron. and Astrophys.	Comp. Biochem. Physiol.
Alta Frequenza	Astron. J.	Comput. Cardiol.
Aluminium	Astrophys. and Space Sci.	Computers in Biol. Med.
Alumni Leuven	Astrophysical J.	Corriere della Scienze
Am. Assoc. Petrol. Geol. Bull.	Astrophysical J. Lett.	Crystal Res. and Technol.
Am. Heart J.	Astrophysical J. Lett. and Comm.	Defect and Diffusion Forum
Am. J. Anat.	Austral. J. Phys.	Defense Sci. J.
Am. J. Bot.	Aviat. Space Environ. Med.	Dev. Brain Res.
Am. J. Cardiac Imaging	Bild der Wissenschaft	Drugs Exp. Clin. Res.
Am. J. Cardiol.	Biochem.	Earth-Orient. Appl. Space Technol.
Am. J. Clin. Nutr.	Biol. Cell.	Endocrinology

Endocrinol. Japan	IEEE Trans. Geosci. Remote Sens.	J. Bone Miner. Res.
Environ. Med.	IEEE Trans. Nuc. Sci.	J. Br. Interplanetary Soc.
Environ. Res.	Il Nuovo Cimento	J. Clin. Pharmacol.
EOS Trans. Am. Geophys. Union	Immunology Today	J. Colloid and Interface Sci.
ESA J.	Indian J. Phys.	J. Crystal Growth
Eur. J. Pharmacol.	Infrared Solar Physics	J. Field Arch.
Eur. J. Physiol.	Innovation Technol. Biol. Med.	J. Fluid Mech.
Exp. Brain Res.	Int. Arch. Photogrammetry and Remote Sensing	J. Geomag. Geoelectr.
Exp. Hematology	Int. J. Heat and Mass Transfer	J. Geophys. Res.
Exp. Mycology	Int. J. Thermophysics	J. Geophys. Res. Letters
Experientia	Int. J. Radiat. Appl. Instrum.	J. Grav. Physiol.
FASEB J.	Int. J. Radiat. Biol.	J. Heat Transfer
FEBS Letters	Int. J. Remote Sens.	J. Histochem. Cytochem.
Ferroelectrics	J. Acoust. Soc. Am.	J. Japan. Soc. Microgravity Appl.
Fluid Phase Equilibria	J. Aero. Soc. Ind.	J. Leukocyte Biol.
GAMM-Mitteilungen	J. Am. Ceram. Soc.	J. Mater. Sci.
Geoarcheology	J. Am. Coll. Cardiol.	J. Mater. Sci. Lett.
Geocarta Intl.	J. Am. Soc. Nephrol.	J. Med. Syst.
Geol. Soc. America Bulletin	J. Am. Vac. Soc.	J. Mol. Spectrosc.
Geophys. Res. Lett.	J. Appl. Phys.	J. Neurobiol.
Glastechn. Ber.	J. Appl. Physiol.	J. Non-Cryst. Solids
Heat and Mass Trans. Mater. Process.	J. Astrophys. Astron.	J. Nutr.
Heat Trans. in High Technol. and Power Eng.	J. Atm. Chem.	J. Photochem. Photobiol.
Hydrobiologia	J. Autonom. Nerv. Syst.	J. Phys.
Hypertension	J. Biomechan.	J. Physics Condens. Matter
IEEE ElectroTech. Rev.	J. Biotechnol.	J. Physiol. Lond.
		J. Quant. Spectrosc. and Rad. Trans.

J. Res. Natl. Inst. Stand. Technol.	Mon. Weather Rev.	Planet. Space Sci.
J. Spacecr.	Muscle Nerve	Plant and Cell Physiol.
J. Spacecraft and Rockets	NATO ASI Series	Plant Cell and Environ.
J. Thermophys. Heat Transfer	Nature	Plant Physiol.
J. Trauma	Naturwissenschaften	Planta
J. Vac. Sci. Technol.	Neurochem. Int.	PNAS
J. Vestibular Res.	Neuroreport	Pramana - J. Phys.
Japan J. Physiol.	New Engl. J. Med.	Proc. Ind. National Sci. Acad.
Japan. J. Appl. Phys.	New Scientist	Proc. Soc. Exp. Biol. Med.
Kagakukougaku	News Physiol. Sci.	Prog. Aeronautics Astronautics
Kerntechnik	Nucl. Inst. and Meth. in Phys. Res.	QST
L'Areotecnica Missili e Spazio	Nucl. Tracks and Radiat. Meas.	Quarterly J. Exp. Psychol.
Lab. Anim. Sci.	Optical Eng.	Radiat. Res.
Life Sci. and Space Res.	Origins of Life	Radio Sci.
Low G	Perception and Psychophysics	Radiology
Mar. J.	Phil. Trans. R. Soc. Lond.	Remote Sens. Environ. Remote Sensing
Mater. Sci. Forum	Photogram. Eng. Remote Sensing	Respir. Physiol.
Med. Sci. Sports Exerc.	Photogrammetria	Rev. Geophys.
Medical Instrumentation	Phys. Chem. Glasses	Scan. Electron Microsc.
Met. Trans.	Phys. Blätter	Science
Metall	Phys. Fluids	Science News
Microcomputing	Phys. Rev.	Scientific American
Microgravity Q.	Phys. Rev. Lett.	Scienza & Tecnica
Microgravity Sci. and Technol.	Phys. Stat. Sol.	Seikagaku
Mikrochim. Acta	Physicalia	Soc. Adv. Mater. and Proc. Eng. J.
Min. Aerosp.	Physiol. Plantarum	Soc. Math. Fr.
Mon. Not. R. Astr. Soc.	The Physiologist	

Solar Physics
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Trends Pharmacol. Sci.
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Yale J. Biol. Med.
Z. Metallkde.
Zeit. Anal. Anwend.

APPENDIX B: MISSION INFORMATION

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<u>Acronym</u>	<u>Payload</u>	<u>Flight</u>	<u>Launch Date</u>
OSTA-1	Office of Space & Terrestrial Applications-1	STS-2	November 12, 1981
OSS-1	Office of Space Science-1	STS-3	March 22, 1982
OSTA-2	Office of Space & Terrestrial Applications-2	STS-7	June 18, 1983
Spacelab 1	Spacelab 1	STS-9	November 28, 1983
OAST-1	Office of Aeronautics & Space Technology-1	41-D	August 30, 1984
OSTA-3	Office of Space & Terrestrial Applications-3	41-G	October 5, 1984
Spacelab 3	Spacelab 3	51-B	April 29, 1985
Spacelab 2	Spacelab 2	51-F	July 29, 1985
D1	First German Spacelab Mission	61-A	October 30, 1985
Astro-1	UV and X-ray Astronomy Mission	STS-38	December 2, 1990
SLS-1	Spacelab Life Sciences-1	STS-40	June 5, 1991
IML-1	First International Microgravity Laboratory	STS-44	January 22, 1992
ATLAS 1	First Atmospheric Laboratory for Applications and Science	STS-45	March 24, 1992
USML-1	First United States Microgravity Laboratory	STS-50	June 25, 1992
TSS-1	First Tethered Satellite System	STS-46	July 31, 1992
Spacelab J	Spacelab Japan	STS-47	September 12, 1992
ATLAS 2	Second Atmospheric Laboratory for Applications and Science	STS-56	April 8, 1993
D2	Second German Spacelab Mission	STS-55	April 26, 1993

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13. ABSTRACT (Maximum 200 words) November 1993 represented the 10-year anniversary of the flight of Spacelab 1 mission, with the first precursor mission (OSTA-1) being launched 2 years earlier. Since that time, a total of 27 Shuttle missions has been flown, using the Spacelab system as a facility for conducting scientific research in space. The missions flown to date have allowed a total of approximately 500 Principle Investigator class investigations to be conducted in orbit. These investigations have constituted major scientific efforts in astronomy/astrophysics, atmospheric science, Earth observation, life sciences, microgravity science, and space plasma physics. An initial survey of the scientific products gleaned from Spacelab missions already flown was sent to the Principle Investigators. In that survey, information was gathered from the investigators on the scientific highlights of their investigations and statistical measurements of overall success--such as papers published. This document is a compilation of the papers that have been published to date in refereed literature.				
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