PREFACE

The Revolutionary Aerospace Systems Concepts–Academic Linkage (RASC–AL) is a program of the Lunar and Planetary Institute (LPI) in collaboration with the Universities Space Research Association's (USRA) ICASE institute through the NASA Langley Research Center.

The RASC–AL key objectives are to develop relationships between universities and NASA that lead to opportunities for future NASA research and programs, and to develop aerospace systems concepts and technology requirements to enable future NASA missions. The program seeks to look decades into the future to explore new mission capabilities and discover what's possible. NASA seeks concepts and technologies that can make it possible to go anywhere, at anytime, safely, reliably, and affordably to accomplish strategic goals for science, exploration, and commercialization. University teams were invited to submit research topics from the following themes: Human and Robotic Space Exploration, Orbital Aggregation & Space Infrastructure Systems (OASIS), Zero-Emissions Aircraft, and Remote Sensing.

RASC–AL is an outgrowth of the HEDS–UP (University Partners) Program sponsored by the LPI. HEDS-UP was a program of the Lunar and Planetary Institute designed to link universities with NASA's Human Exploration and Development of Space (HEDS) enterprise.

The first RASC–AL Forum was held November 5–8, 2002, at the Hilton Cocoa Beach Oceanfront Hotel in Cocoa Beach, Florida. Representatives from 10 university teams presented student research design projects at this year's Forum. Each team contributed a written report and these reports are included here. The agenda for the Forum included oral presentations by the university teams and representatives from NASA and industry, a poster session, and a field trip to the NASA Kennedy Space Center.

The Forum was organized by the Education and Public Outreach Department at the LPI. This publication was made possible through the collective work of a varied group of individuals. We are grateful to Lewis Peach, Chief Engineer of USRA, for bringing together NASA Langley Research Center and the RASC Team to make RASC–AL a reality. We are also grateful to the students, the university faculty, and teaching assistants for their outstanding student research design projects. We are especially thankful to the RASC–AL Steering Committee for providing their valuable experience and direction to the management of the program. We also thank the LPI's Publications and Program Services Department and Computer Center for additional logistical support. Finally, we thank Jeff Cardenas of USRA, Ben Hauser of LPI, Pat Troutman of the RASC Team, the Kennedy Space Center's University Affairs office, and ICASE for special assistance and direction in planning and organizing the Forum.