International Cooperation for Space Exploration (1)
International Cooperation for Space Exploration (4) (4)

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UNIVERSITY COLLABORATION MECHANISMS FOR COOPERATIVE INTERNATIONAL SPACE MISSIONS

Abstract

Over the past decade, the author at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado – Boulder (UCB) began to explore international opportunities related to the space enterprise. One motivation for engaging the international audience was observation of the significant growth of technical capabilities taking place at the international level, creating potential for new partnerships. A second motivation was expanding the educational/training model that underpinned much of LASP's space mission success out to a global audience. In 2014 LASP a cooperative relationship began with the United Arab Emirates (UAE) Emirates Institution for Advanced Science and Technology (EIAST) in Dubai, later named the Mohammed Bin Rashid Space Center (MBRSC), on the Emirates Mars Mission (EMM). EMM is the first full planetary mission development for both organizations that put a 1500Kg spacecraft observatory and three science instruments into orbit around the planet. In 2015 LASP formulated the International Satellite Program in Research and Education – INSPIRE – program that proposed to involve multi-university collaborations with global universities. INSPIRE has grown, and with collaborations on smaller satellites that currently focus on Earth observations. Despite the 100x difference in funding levels and 200x difference in spacecraft mass, both programs share a common approach to mission development, and both offer education and training in space science and technology in the academic environment. This paper first discusses the motivation for expanding LASP's already strong domestic space program in the USA into the international arena. Next the paper compares and contrasts the formulation and implementation of both collaborations to show similarities and differences in the implementations, and as an academic exercise, the implementation methodologies of both of these programs are compared to mechanisms previously proposed in published studies that considered the challenges within international space collaborations. From this the features and influences of each program's relationship to the national policies, export compliances and restrictions, cultural considerations, and the resulting programmatic considerations are described from the collaboration partner perspectives. The paper concludes with thoughts on possible future international cooperative opportunities through expansion of lessons learned from these experiences.