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INTERNATIONAL EARTH-BASED RESEARCH AND TECHNOLOGY PROGRAM AS STEPPING  
STONE FOR GLOBAL SPACE EXPLORATION

**Abstract**

Several nations are currently engaging in, or planning for, space exploration programs that target the Moon, Mars and near-Earth asteroids. Building new space infrastructures, transport systems, and space probes and creating a sustainable long-term space exploration program will require international cooperation. The Committee on Space Research COSPAR represents national science institutions from 44 member countries, 13 international scientific unions and 5 associated companies and strives to promote the use of space science for the benefit of mankind and for its adoption by developing countries and new space-faring nations. Recently the COSPAR Panel on Exploration (PEX) has proposed a stepwise approach to creating effective and efficient partnerships for future space exploration. An international Earth based research and technology program in preparation for space exploration has been identified as one of the stepping stones that will support this approach. Robotic and human operations in space can be well-practiced in terrestrial analogue environments. Extreme environments on Earth often provide similar terrain conditions to landing/operation sites on Moon and Mars. Although there are many terrestrial analogue field test sites currently in operation around the world, no truly international program exists to bring together their common efforts. Furthermore, there are no databases that would provide for the synergies among these programs. COSPAR PEX has organized a Workshop in March 2011 to provide a basic framework for a strategic roadmap to guide Earth-based field research in support of future robotic and human space exploration. The exploitation of synergies between Earth science and space exploration provides an important element in securing sustainability for such a program. We report on the recommendations of this workshop that can be used to guide policy choices of national science foundations and support national space agencies and national/international space exploration working groups.