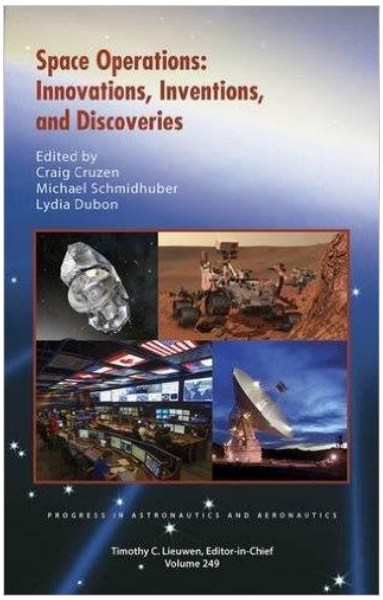

Progress in Astronautics and Aeronautics

Space Operations: Innovations, Inventions, and Discoveries

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(Members get a discount on ebook and print versions)

This very thoroughly edited book contains the most interesting educational 25 peer reviewed papers, a selection of the 303 papers presented during SpaceOps 2014 conference, held at the Pasadena Convention Center in Pasadena, California, from May 5, 2014, to May 9, 2014. The conference was sponsored by NASA, organized and managed by the American Institute of Aeronautics and Astronautics on behalf of the SpaceOps Organization, and was hosted by Caltech's Jet Propulsion Laboratory.

The demographics for SpaceOps 2014 conference reflect both the success of SpaceOps and its international scope: 731 participants from 28 countries, 303 oral presentations, 35 posters, 28 exhibitors. This is particularly notable because this conference was held at a time when many governments and agencies significantly restricted travel, particularly for attending conferences.
The multidisciplinary nature of the space operations profession is reflected in the structure of the conferences, which are organized according to the various operations sub-disciplines (topics).
The book tries to reflect the important relationships among these sub-disciplines and indicates that operations specialists benefit from understanding how their areas of expertise fit within the whole.
Therefore the conference book is **not** organized according those sub-disciplines but according to the four following categories (parts), each containing the selected papers from the conference sub-disciplines:

Part 1 Breakthrough Technologies for Space Operations

Part 2 Mission Design and Concepts

8	EFAL: EDRS Feeder Link from Antarctic Latitudes - System Architecture and Operations Concept
9	Could a Subsonic Air-Launched RLV Enable a paradigm Shift in Space Operations?

Part 3 Ground System Advances for Efficient and Secure Operations

10	Highlights of the European Ground Systems - Common Core Initiative
11	File Based Operations - Architectures and the EUCLID Example
12	Mission Planning Framework - Building the Rosetta and Bepi-Colombo Planning Systems
13	The Incremental Planning System GSOC's Next Generation Mission Planning Framework
14	A Predictive Approach to Failure Estimation and Identification for Space Systems Operations
15	Ready for Secure Software: Secure Software Engineering for Space Missions
16	Scheduling as an Interoperability Service and its Security Aspects
17	Security Standards for Space-Terrestrial Internetworks: A Multi-Dimensional Approach to Securing Shared Circuits

Part 4 Mission Operations

18	Two Years of Operations of the ChemCam Instrument Onboard the Curiosity Rover at FIMOC, the French Operations Center for Mars Instruments
19	Human Health/Human Factors Considerations in Trans-Lunar Space
20	Drag-Free Attitude and Orbit Control System Performance of ESA's GOCE Mission during Low Orbit Operations and De-orbiting
21	Open Source Software for Mission Operations - Technology, Licensing and Community
22	Extending the Lifetime of ESA's X-ray Observatory XMM-Newton
23	The Cluster Mission after 13 Years - Operations Beyond its Design Limits
24	Venus Express: Lessons from 8 Years of Science Operations
25	The End Of Life Operations Of The Herschel Space Telescope

To give a flavor of the contents one paper of each part is discussed below.

One of my favorite paper is the "Development of a Two-Stage Mars Ascent Vehicle Using in Situ Propellant Production" (see Part1) because it not only addresses a "breakthrough" technology (greetings from Mark Watney) – but also deals with programmatic issues pointing far into the future.

Another interesting paper in Part 2 is "Could a Subsonic Air-Launched RLV Enable a paradigm Shift in Space Operations?" an investigation about future concepts, technical implementation and cost saving aspects.

Part 3 deals with the future "bread and butter" of international space cooperation: interoperability, standardization, security and the associated cost aspects using advanced technologies. A very current example is the paper about a cost efficient "Internet" in space: "Security Standards for Space-Terrestrial Internetworks: A Multi-Dimensional Approach to Securing Shared Circuits"

Part 4 kind of ties it all together, presenting important mission experiences but also suggesting how to consider those lessons learned for future projects like the paper "Human Health/Human Factors Considerations in Trans-Lunar Space" – and you will be surprised about the overwhelming number of details which have to be considered.

The print book is organized in clear chapters and sub-chapters allowing easy and quick look-up navigation, completed with an exhaustive index, reference material, high-resolution color prints of all images carrying color information referenced to the appropriate papers.

Altogether the 2014 SpaceOps Conference book is highly recommended, although it is a "high end" priced book, but very worth its money (AIAA members and all SpaceOps participants get a 35% discount, code: SPACEOPS2016, limited time only!) because it is not only addressing current issues but can serve as an "encyclopedia" for past successful missions introducing new technologies and also summarizes important programmatic issues which eventually have to be solved in the future without re-inventing the wheel.

The previous SpaceOps conference books (SpaceOps2006, SpaceOps2010 and SpaceOps2012 can be viewed and ordered through the SpaceOps Organization publications page (the above mentioned discount is also available for the previous conference books).

It should also be pointed out that all SpaceOps2016 papers can be accessed and downloaded (starting on 4th January 2017) as presented at the conference (including presentation material) from the AIAA-SpaceOps Archive data base. The provided search tool lets you pinpoint any subject easily.

Another method of finding relevant SpaceOps papers would be to use the "SpaceOps-Wiki" system provided by the "Journal" (see home page): All "cutting-edge" papers are sorted according to alphabetical "keywords", ranging from "Architecture (Ground segment) through "Mission Operations", "Standard Activities to "Vision for Space Exploration (VSE)" – to name just a few keywords. The SpaceOps-Wiki" contains references for papers from SpaceOps1996 up to and including SpaceOps2014. It will be updated as appropriate.

References:
(1) SpaceOps Organization publications page: http://www.spaceops.org/menu4/menu4_sub2.html
(2) SpaceOps-Wiki: http://spaceops-wiki.wikispaces.com/

May 2016, Joachim J. Kehr, Editor SpaceOps News for the "Journal of SpaceOperations & Communicator"