

SPACE OPERATIONS SYMPOSIUM (B6)
Human Spaceflight Operations (1)

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FLUID SCIENCE LABORATORY ON BOARD ISS: TWO YEARS OF SUCCESSFUL OPERATIONS

Abstract

The Fluid Science Laboratory is a European (ESA's) science payload designed for use in Columbus. The Science Systems Applications department of Telespazio is one of the European USOC's, is named as MARS USOC, and has the role of FSL Responsible Center. FSL is a multi-user facility for conducting fluid physics research in microgravity conditions. It can be operated in fully- or in semi-automatic mode and can be controlled on board by the ISS astronauts, or from ground. The Laboratory allows scientist to execute fluid dynamic experiments using complex optical diagnostics. This paper reports on operations carried out from ISS increment 24 to 30, to support the GEOFLOW experiment, also with considerations on how the operations are planned and then executed on a 24/5 days basis, on the amount of data generated on FSL hard disks, on the interaction with Spanish USOC, and on how data are downlinked to ground eventually. Microgravity measurements performed with MVS and MMA accelerometers installed inside FSL supported the scientific operations. MVIS being also used as FSL active isolation system. Based on the lessons learned during these two years, the paper provides indications for the future utilization of FSL.