

Spacecraft Atmosphere Monitor (S.A.M.) First Operational Data

Stojan Madzunkov¹, Murray Darrach¹, Steven Schowolter, Dan Fry², Dragan Nikolic¹, Jurij Simcic¹

¹ Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, , CA 91109, ² Space Medicine Division (Code SD2), NASA Johnson Space Center (JSC), Houston, TX

We will present the first results and status from the Spacecraft Atmosphere Monitor (S.A.M.) instrument recently deployed to International Space Station (ISS) and powered on August 8th. S.A.M. is mass spectrometer based on Jet Propulsion Laboratory's Quadrupole Ion Trap Mass Spectrometer (QIT-MS). Its function on ISS is to measure the major constituents of the ISS's atmosphere. This spectrometer is a Technology Development Unit (TDU) #1 with low mass (9kg), minimized power (max. 45W with heater bulb on), and on-board data processing capability houses within 9" cube.

S.A.M is fully automated unit. After powered on at ISS the received telemetry showed nominal operation. S.A.M. takes 100 full mass spectra each second which are processed by automated algorithms to extract the major constituent's abundances (N₂, O₂, CO₂, CH₄) which are then reported on per second basis. We will also report on the interesting correlation between measured ion count (from integrated mass spectra) and the Earth's magnetic field intensity.