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Introduction: New Perspectives on the Satellite Drag Environments of Earth, Mars, and Venus

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AT THE AIAA/AAS Astrodynamics Specialist Conference and Exhibit, 21–24 August 2006, Keystone, Colorado, the special session "New Perspectives on the Satellite Drag Environments of Earth, Mars, and Venus" was convened. This special session recognized growing community interest in satellite drag variability in the terrestrial planetary environments; for example, past, present, and future missions to Mars, imminent Mars Reconnaissance Orbiter aerobraking operations at Mars, new interest in missions to Venus, and new insights provided by precise tracking and orbit determination methods and sensitive accelerometers [e.g., on the challenging minisatellite payload (CHAMP) and gravity recovery and climate experiment (GRACE)]. The objective of the special session was to provide a forum for presentation and discussion of the latest advances in methodologies to derive densities and winds, analyses of data that provide new perspectives on density variability, and new developments in empirical or numerical modeling relevant to the specification and prediction of satellite drag in the atmospheric environments of Earth, Mars, and Venus.

The special session was extremely successful, attracting 13 contributions spanning the full gamut of topics enumerated in the session solicitation. This special issue of the *Journal of Spacecraft and Rockets* contains papers representing 11 of the oral presentations at the Keystone meeting. Many of the papers emphasize analyses of accelerometer data on the CHAMP, GRACE, Mars Global Surveyor, and Odyssey satellites, including new methodologies for deducing cross-track winds in addition to in-track density determinations. Others studies involving densities derived from precise orbit determination include Pioneer Venus Orbiter, Magellan, TIMED, and numerous other Earth-orbiting satellites.

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