

1. Record Nr.	UNINA9910254638403321
Titolo	Plasma Sources of Solar System Magnetospheres // edited by Andrew F. Nagy, Michel Blanc, Charles Chappell, Norbert Krupp
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 2016
ISBN	1-4939-3544-5
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (296 p.)
Collana	Space Sciences Series of ISSI, , 1385-7525 ; ; 52
Disciplina	538.766
Soggetti	Space sciences Planetology Plasma (Ionized gases) Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics) Plasma Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Previously published in Space Science Reviews Volume 192, Issues 1-4, 2015."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Foreword -- The role of the ionosphere in providing plasma to the terrestrial magnetosphere: a historical perspective -- A review of general processes related to plasma sources and losses for solar system magnetospheres -- Plasma sources in planetary magnetospheres -- The Earth: plasma sources, losses and transport processes -- Jupiter's magnetosphere: plasma sources and transport -- Saturn plasma sources and associated transport processes -- Comparison of plasma sources in solar system magnetospheres.
Sommario/riassunto	This volume reviews what we know of the corresponding plasma source for each intrinsically magnetized planet. Plasma sources fall essentially in three categories: the solar wind, the ionosphere (both prevalent on Earth), and the satellite-related sources. Throughout the text, the case of each planet is described, including the characteristics, chemical composition and intensity of each source. The authors also describe how the plasma generated at the source regions is transported to populate the magnetosphere, and how it is later lost. To summarize, the dominant sources are found to be the solar wind and sputtered surface ions at Mercury, the solar wind and ionosphere at Earth (the

relative importance of the two being discussed in a specific introductory chapter), Io at Jupiter and – a big surprise of the Cassini findings – Enceladus at Saturn. The situation for Uranus and Neptune, which were investigated by only one fly-by each, is still open and requires further studies and exploration. In the final chapter, the book offers a summary of the little we know of Uranus and Neptune, then summarizes in a comparative way what we know of plasma sources throughout the solar system, and proposes directions for future research. Originally published in Space Science Reviews, Vol. 192, Issues 1-4, 2015.
