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Title: PIONEER-10 ULTRAVIOLET PHOTOMETER OBSERVATIONS OF JOVIAN UV EMISSION IN 1973

Source: JOURNAL OF GEOPHYSICAL RESEARCH-SPACE PHYSICS, vol. 100, issue A3, (MAR 1, 1995) : pp. 3481-3493.

Abstract: The Pioneer 10 ultraviolet measurements obtained during the Jupiter encounter in 1973 have been further examined by using improved data handling and analysis techniques. The Pioneer 10 observations of Jupiter and its satellites during the encounter have been carefully reviewed in order to improve our understanding of the morphology of the To plasma torus and Jupiter's upper atmosphere and to investigate the possible existence of other emission source such as Europa. In addition, the morphology of Io's bimodal torus observed during the Pioneer 10 encounter has been compared with the Voyager observations obtained approximately 6 years after the Pioneer 10 flyby and significant differences in the torus characteristics are found. The To torus in 1973 was more similar to the 1992 Ulysses observations of a longitudinally asymmetric ring than to the complete ring observed by Voyager. Pioneer 10 observed a significantly dimmer Io torus and Jupiter upper atmosphere in the EUV compared to the Voyager observations. Apart from the torus and Jupiter, Pioneer 10 observed additional emissions which have been attributed to Io itself. Three distinct possibilities have been discussed to explain these additional emissions. The most likely is that Pioneer 10 observed volcanism on Io. There is also evidence of Pioneer 10 observing emissions from Europa. The present analysis clearly shows that the Jovian system in 1973 was significantly different from that observed in 1979.

Authors Abstract: N

English Abstract: Y

Language: eng

Pub. Type: ARTICLE

References: 19

ISSN: 0148-0227

Subject Cat: LE: GEOSCIENCES. BU: ASTRONOMY AND ASTROPHYSICS. QQ: METEOROLOGY AND ATMOSPHERIC SCIENCES.

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