

Correlation between the solar wind dynamic and static pressures

Hideaki Kawano[1], Christopher T. Russell[2]

[1] Earth and Planetary Sci., Kyushu Univ., [2] IGPP/UCLA

In this paper we examine the correlation between the solar wind dynamic and static pressures, as a function of solar cycle phase, by using the hourly data of solar wind parameters at the NSSDC OMNIweb. The correlation is important in terms of the solar wind control of the shape of the (distant) magnetotail. We find that the correlation coefficient between the two pressures is constantly high (almost always larger than 0.7) and shows little dependence on the solar cycle. Thus, even though the distant tail shape may be controlled by the static pressure of the solar wind, the shape should still be well correlated with the solar wind dynamic pressure, through the correlation between the solar wind dynamic and static pressures.

In this paper we examine the correlation between the solar wind dynamic and static pressures, as a function of solar cycle phase, by using the hourly data of solar wind parameters at the NSSDC OMNIweb. The correlation is important in terms of the solar wind control of the shape of the (distant) magnetotail. We find that the correlation coefficient between the two pressures is constantly high (almost always larger than 0.7) and shows little dependence on the solar cycle. Thus, even though the distant tail shape may be controlled by the static pressure of the solar wind, the shape should still be well correlated with the solar wind dynamic pressure, through the correlation between the solar wind dynamic and static pressures.