

# **Study of the turbulence in the central plasma sheet using the Interball-Tail satellite data.**

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Study of the plasma turbulence in the central plasma sheet were made using the Interball-Tail satellite data. Fluctuations of the plasma bulk velocity across the plasma sheet were studied using the measurements from the Corall instrument for different levels of geomagnetic activity and different locations inside the plasma sheet. It was found that the plasma sheet flow always appears to be strongly turbulent, i. e. is dominated by fluctuations that are unpredictable. Corresponding eddy-diffusion coefficients were obtained as a function of the autocorrelation time and rms velocity. However, it was found that the values of eddy-diffusion coefficients increase significantly during substorm growth and expansion phases and decreases slowly to the initial level during the recovery phase. We also studied a relationship between the eddy-diffusion coefficients and the absolute value of the geomagnetic field, also measured by the Interball/Tail satellite. It was found that this relationship varies depending on the phase of substorm, indicating possible change in the turbulence regimen with substorm phase. Statistical studies of variation of the eddy-diffusion coefficients depending on the location inside the plasma sheet made it possible to create a three-dimensional distribution of the eddy-diffusion coefficients and compare the results obtained using the Antonova and Ovchinnikov (1998) model of the plasma sheet.