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Abstract number: S2-486

The active Sun and its implication for the heliosphere  
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### **The role of the IP environment on the SEP events**

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We study the role of the interplanetary (IP) transport conditions, as inferred from a variety of remote and in situ observations, on the solar energetic particle (SEP) fluxes as detected by the GOES and ACE satellites near Earth. We consider only solar flares of X-class strength in the western solar hemisphere, associated with an increase in the particle fluxes (the SEP events) in the period from 1997 to 2006. The aim is to identify to which extent transient IP structures, i.e. interplanetary coronal mass ejections (ICMEs) and shock waves, affect the SEP fluxes near Earth. In the list of 42 SEP events that we analyzed: 13 were detected when the satellites and Earth were affected by an ICME, 12 propagated through a relatively quiet IP environment (i.e. no ICME was reported in the previous two days) and 9(8) SEP events were detected before(after) the ICME. Depending on the location of the particle source with respect to the roots of the ICME, the ICMEs can either guide the particle propagation towards or screen the Earth. We present a detailed study on the conditions for these scenarios to occur and study the effects of the IP structure on the correlation between the SEP parameters and those of the associated IP (and coronal) activity. The details of the IP structure are an important element for understanding SEP measurements with multiple spacecraft such as the STEREO mission.