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# Trans-Pacific dust events observed at Whistler, British Columbia during INTEX-B

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Abstract. The meteorology and physico-chemical characteristics of aerosol associated with two new cases of long range dust transport affecting western Canada during spring 2006 are described. Each event showed enhancements of both sulfate aerosol and crustal material of Asian origin. However, the events were of quite different character and demonstrate the highly variable nature of such events. The April event was a significant dust event with considerable enhancement of fine particle sulfate while the May event was a weaker dust event, also with significant fine particle sulfate enhancement. The latter event was notable in the sense that it was of short duration and was quickly followed by a large increase of organic material likely of regional origin. Comparison of these two events with other documented cases extending back to 1993, suggests that all dust events show coincident enhancements of sulfate and crustal aerosol. However, events vary across a wide continuum based on the magnitude of aerosol enhancements and their sulfate to calcium ratios. At one extreme, events are dominated by highly significant crustal enhancements (e.g. the well-documented 1998 and 2001 "dust" events) while at the other are events with some dust transport, but where sulfate enhancements are of very high magnitude (e.g. the 1993 event at Crater Lake and the 15 May 2006 event at Whistler). Other events represent a "mix". It is likely that this variability is a function of the comparative strengths of the dust and