The radiative effects of the dust event that hit North America in late April 1998 are studied here as an example of how longrange aerosol transport may temporarily affect the U.S. solar resource. Broadband and spectral radiation data from different sites in the western U.S. are analyzed. At its peak, this event triggered losses of ~30% in beam irradiance and 40% in beam daily irradiation. Considerable effects on the aerosol optical depth at various wavelengths are also reported. Broadband irradiance data were also used to monitor the broadband turbidity during the event. This dust cloud was characterized by a large β turbidity coefficient (up to 0.45) and a very low wavelength exponent, α (0.05–0.2).