

6.128 Towards developing a climatology for assessing the radiative impact of smoke aerosols on the UV radiation.

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Abstract:

We have been working on the development of a new climatology of the UV radiation through a combination of measurements and modeling. The UV actinic flux spectrally resolved data have been collected during a number of field aircraft missions by the NCAR group. The actinic flux data are provided by the SAFS instruments, which were deployed in several airborne missions (including several AVE campaigns, TC4, INTEX-B, ARCTAS, ARCTAS, and SEAC4RS). The data are being used in conjunction with the modeling to identify the radiative signal of UV-active aerosol, especially smoke. Several different field campaigns are being analyzed. The modeling component includes the WRF-SMOKE model that has been developed by the Dr. Sokolik's group. This model uses the satellite products to simulate the fire emission for a specific event at the high spatial and temporal resolution. Smoke is treated via the representative size distribution and refractive indexes to compute its optical characteristic. An approach to characterize the radiative impact of smoke aerosol has been developed and applied to estimate quantitatively the magnitudes of this impact. The effects of the smoke on the photolysis rates will be also presented.