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Investigation of the aerosol effect on the variability of the shortwave radiation over Europe with the use of ground based and satellite measurements

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In this work, we study the variability of shortwave (SW) downwelling flux over Europe attributed to the variability of aerosols. For this purpose, two approaches are applied. First, atmospheric optical depth (AOD) data from MODIS satellite instruments (period 2000-2009) and satellite observation of SW radiation under clear skies (cloud fraction <0.3) from International Cloud Climatology Project (ISCCP) are used. Regrid methods were applied on both data sets in order to achieve same grid resolution (2.5°x2.5°). The second approach utilizes high resolution MODIS AOD data (0.1°x0.1°) and ground based SW radiation observations at selected European stations from World Radiation Data Centre (WRDC). The results of the two approaches are investigated and compared.