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Global simulations of surface UV-B in a changing climate

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Results of comprehensive long-term simulations of the surface all-sky and clear-sky ultraviolet (UV) radiation through 1960-2100 are presented. A new earth system model, MIROC-ESM-CHEM is used for the simulations, which considers key processes changing the surface UV radiation, that is, atmospheric dynamics and chemistry affecting ozone in the stratosphere and troposphere, aerosols and clouds in the troposphere, and surface albedo changing with sea-ice and snow cover. In contrast to previous assessments considering only an effect of long-term change in the stratospheric ozone, simulated long-term behaviors of UV radiation are strongly affected by other processes. A choice of future socio-economic scenarios dramatically changes the resultant long-term behaviors of UV radiation.

Keywords: UV, ozone, earth system model, climate change