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# The Norwegian UV-monitoring network: QC and results for the period 1996-2011

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The Norwegian UV-monitoring network, implemented in 1995, has provided up to 16 years measurement data from currently 9 stations located from 59º N to 79ºN. The intention is to provide measurements of high scientific quality for the spatial and temporal variability of UV and for information to the public about solar exposure. The stations are equipped with GUV multiband filter radiometers from Biospherical Instruments Inc., providing 1 minute averaging intervals over 5 spectral bands. A number of data products are available: UV Index, erythemally weighted daily UV doses, spectral irradiance at 5 wavelengths in the UV, cloud modification factors and total ozone. UVI and UV doses are displayed on internet, http://www.nrpa.no/uvnett/default_en.aspx

The instruments were calibrated during solar intercomparison campaigns in 1994 (San Diego), 1995 (Oslo) and 2005 (Oslo). A travelling standard GUV, visiting every network location every summer since 1996, is used to maintain a stable, harmonized irradiance scale for the network instruments. A method for the assessment of long term drift in spectral response of detector channels is presented. The calibration scale is traceable to the UV Calibration Centre at PMOD/WRC in Davos through site audits with the QASUME portable reference spectroradiometer. The site audit in Ny-Ålesund in 2009, where the network GUV was operating in its normal mode in the Arctic environment, showed close agreement in UVI with the QASUME unit. A new QASUME site audit in Oslo in 2010 showed excellent agreement with the irradiance scales of the UV network travelling standard GUV and the UV network spectroradiometer.

Time series of UV doses, where gaps in measurements have been estimated with clear sky UV models and cloud modification factors from ancillary observations, show an upward trend in yearly UV doses for the period 1999-2009. The increase is 3 to 5 % for inland stations, and 8 to 10 % for coastal regions. The reduction in total ozone from satellite observations corresponds to 2 to 3.5 % increase in yearly UV doses.

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