



Reconstruction of UV-radiation in Norway

I. Medhaug, J. A. Olseth and J. Reuder.

Geophysical Institute, University of Bergen, Norway (iselin@gf.i.uib.no)

A distinct increase in incidences of skin cancer is observed since the registration of cancer started in Norway in the 1950s. As UV-radiation is assumed to be the main risk factor for skin cancer, hourly UV values of UVA, UVB and erythemal UV are reconstructed for the time period 1957-2005 for the counties in Norway (58-70°N). For reconstruction, the neural network radiation transfer model STAR is run with total ozone amount and cloud information as meteorological input.

The reconstructed hourly values are compared to measured values for four locations in Norway, representing the north-south and east-west extension of the country. As an average for about 5 years, the agreement between reconstructed and measured UV varies between 0% for the northernmost site to 10-15% overestimation for the other locations. By selecting only clear sky cases, a reasonable agreement between reconstructed and measured data was found for all stations. For overcast cases, an overestimation of 10-20% was found for all but the northernmost station.

When comparing the reconstructed time series for the different stations, both north-south and east-west gradients are found. The north-south gradient is the largest, mostly is due to the latitudinal solar elevation decrease towards north, while the smaller east-west variation is due to differences in both the cloud optical thickness and the total cloud amount.