Reprint 753

Forecasting of Ultraviolet Index in Hong Kong
- its Development and Performance

(Abstract Only)

C.P. Wong, S.Y. Lau, L.S. Lee & M.Y. Leung

Guangdong-Hong Kong-Macau Seminar on
Meteorological Science and Technology,
Zhongshan, China, 21-23 January 2008
Forecasting of Ultraviolet Index in Hong Kong
- its development and performance

C.P. Wong  S.Y. Lau  L.S. Lee  M.Y. Leung
Hong Kong Observatory

Abstract

The Hong Kong Observatory (HKO) started to measure and release the Ultraviolet Index (UVI) in 1999. In 2006, the Observatory developed a UVI forecasting system to automatically forecast the maximum UVI on the following day. The methodology is to first compute the UVI in clear sky conditions using an empirical equation relating surface UV radiation to elevation of the sun, ozone concentration and the time of year. The forecast UVI is then adjusted by a modification factor based on the forecast cloud amount and weather, including rain, fog and haze, for the following day.

The Observatory has recently conducted further studies to enhance the performance of the UVI forecasting system. These include improving the regression equation for UVI in clear sky conditions and improving the modification factors due to the presence of clouds. To improve the UVI forecast in clear sky conditions, the screening for days to be included for derivation of regression equation was revised. Its performance was also compared against the clear sky UVI formula derived by the Royal Netherlands Meteorological Institute (KNMI). As regards cloud modification factor, under some circumstances the reflection from the sides of the cloud would cause the UVI to rise instead of fall. To better understand this, some analysis were conducted to improve the cloud modification factors with a view to improving the capability of forecasting extreme UVI. The new system is being verified and would hopefully be launched in the summer of 2008.