



## Aerosol properties obtained on cloudless days through direct broadband solar radiation measurements

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Anthropogenic and natural aerosols are important atmospheric constituents that can significantly reduce, by scattering and absorption, the solar radiation reaching the Earth's surface. This impact depends on the aerosols properties, namely the optical thickness ( $\tau$ ), the exponent ( $\alpha$ ) and the coefficient ( $\beta$ ) of Angström. These three parameters are first estimated by fitting the direct solar radiation measurements recorded on clear days with the Iqbal C model. The retrieval of  $\tau$  and  $\beta$  using data collected in Tamanrasset, Southern Algeria, are in good agreement with those of retrieved by AERONET at the same time and location. However,  $\alpha$  exponent comparison is not satisfactory, we have therefore developed an Artificial Neural Network method (ANN) to better estimate it. The ANN created was first learned from  $\beta$  and  $\alpha$  obtained from AERONET. We then used  $\beta$  from the Iqbal C model with the ANN and obtain good estimate of  $\alpha$  with  $R^2$  of 60% compared to the Angstrom exponent from AERONET. We will first give in this presentation an overview of the Iqbal C model, then present the data used and the processing method, and finally discuss the main results of this study.