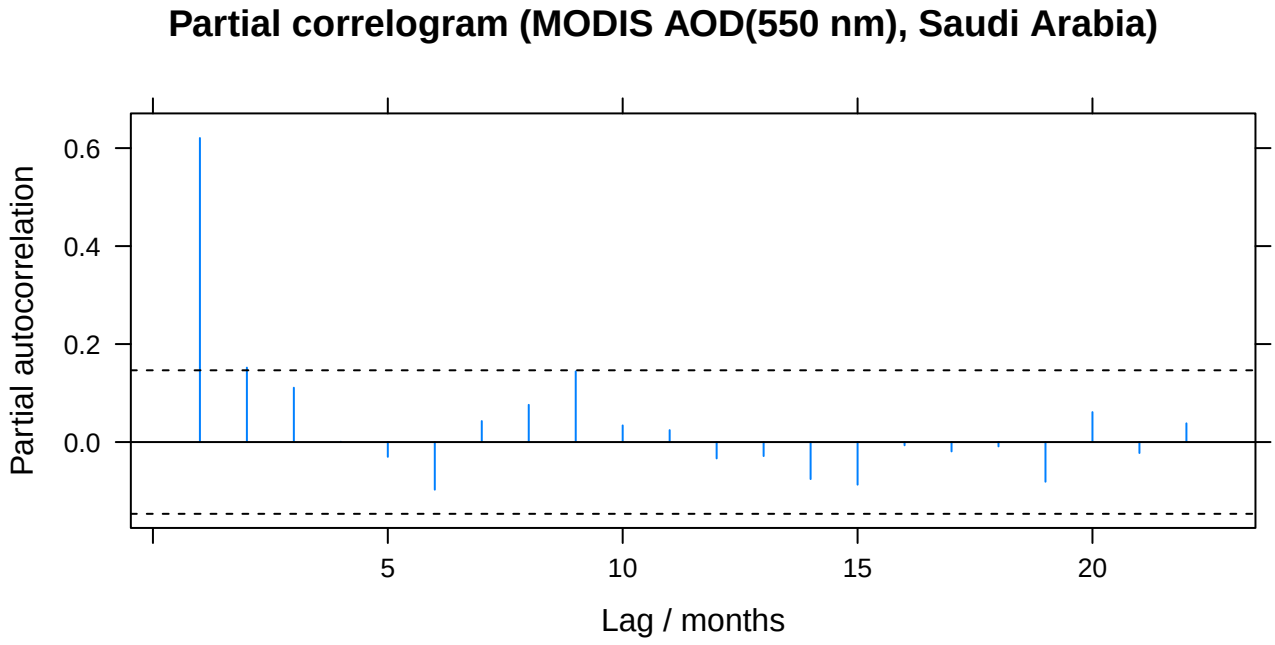


**Figure S31.** Partial correlogram of the deseasonalised MODIS AOD time series over Saudi Arabia in Fig. 3. The dashed lines represent the confidence limits for a significance level of 5%. Only the 1 month lag partial autocorrelation is unambiguosly significant, suggesting that the time series follows an AR(1) process. The absence of a significant partial autocorrelation for a 12 month lag demonstrates the good performance of the deseasonalisation procedure.

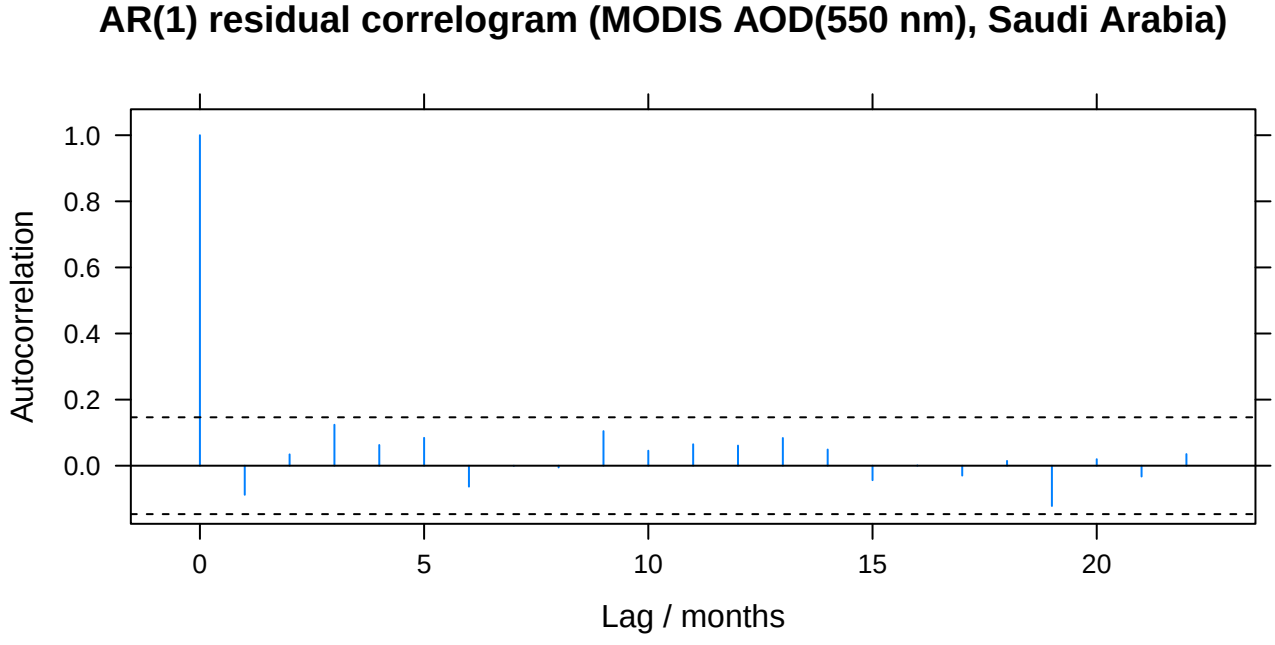


**Figure S32.** Correlogram for the residuals of the AR(1) model fitted to the deseasonalised MODIS AOD time series over Saudi Arabia in Fig. 3. The dashed lines represent the confidence limits for a significance level of 5%. No significant autocorrelations are found, providing evidence that the residuals are well approximated by white noise and that the AR(1) model yields a good approximation of the deseasonalised time series.

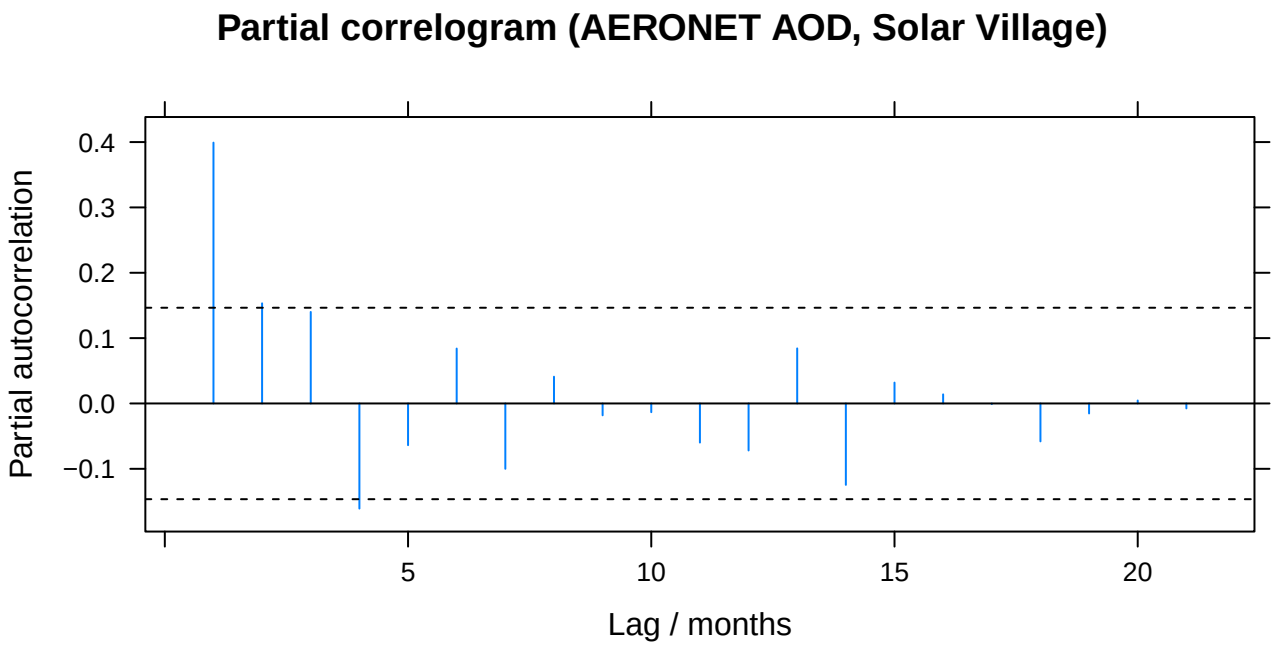


**Figure S33.** As Fig. S31, but for the AERONET AOD over Solar Village shown in Fig. 4.

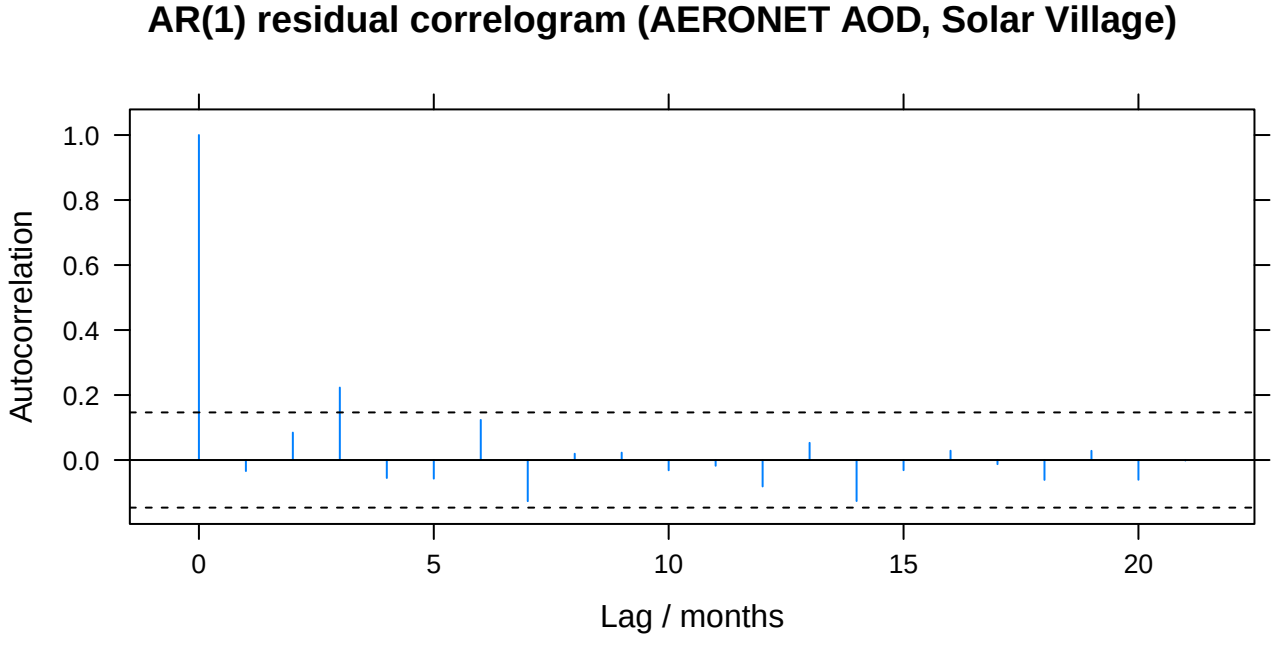


**Figure S34.** As Fig. S32, but for the AERONET AOD over Solar Village shown in Fig. 4.

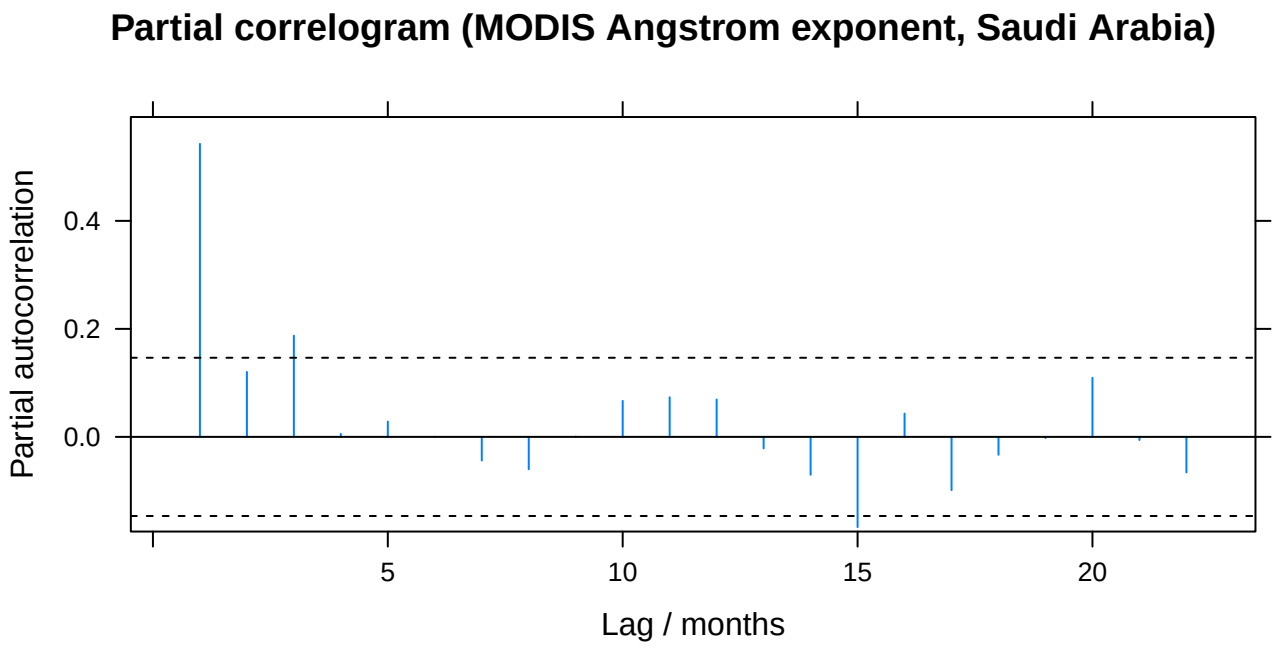


**Figure S35.** As Fig. S31, but for the MODIS Ångström exponent shown in Fig. 5.

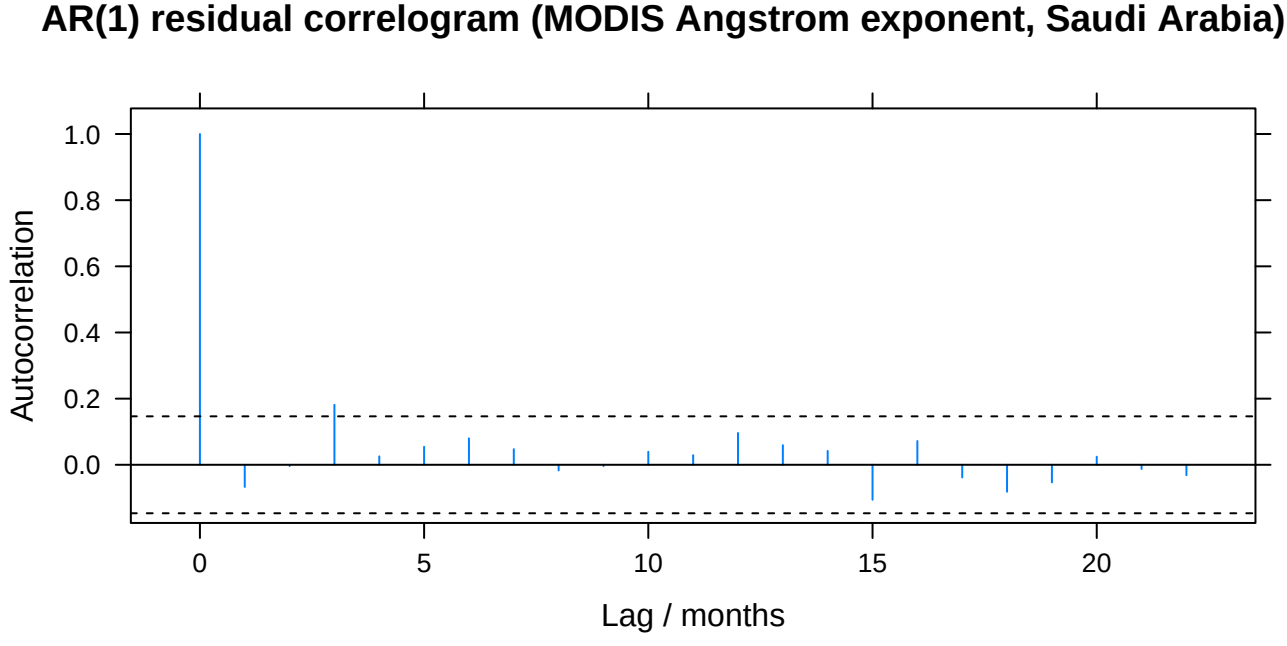


**Figure S36.** As Fig. S32, but for the MODIS Ångström exponent shown in Fig. 5.

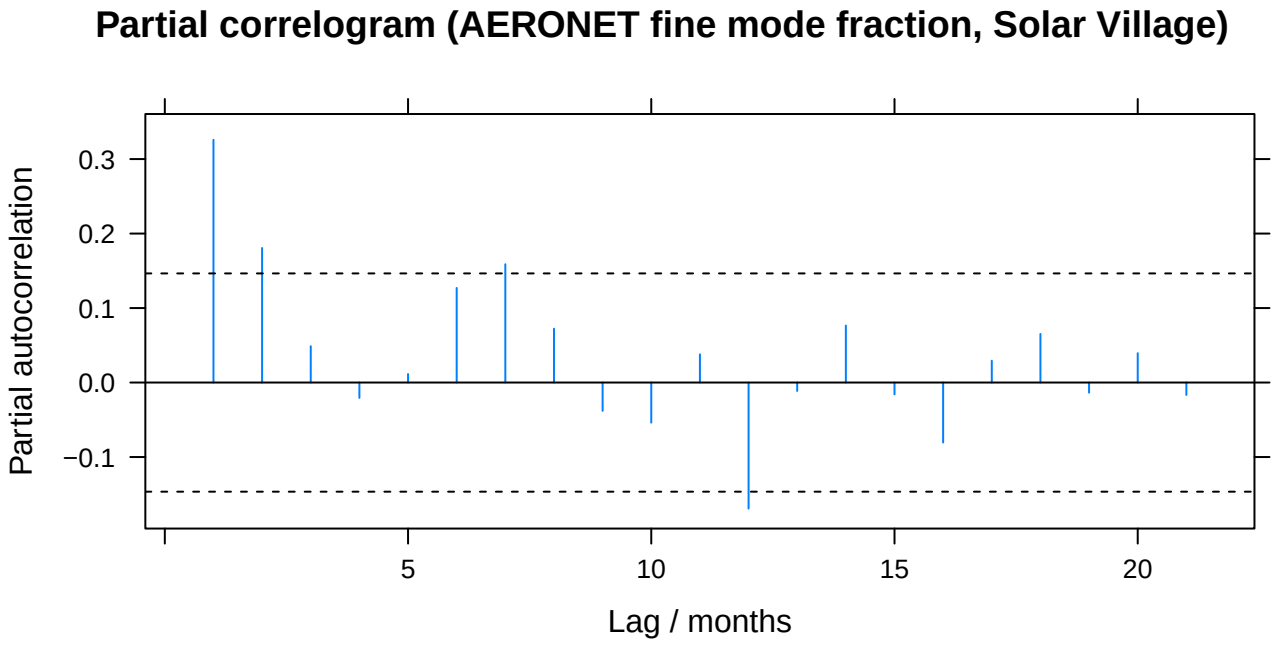


**Figure S37.** As Fig. S31, but for the AERONET fine mode fraction over Solar Village shown in Fig. 6.

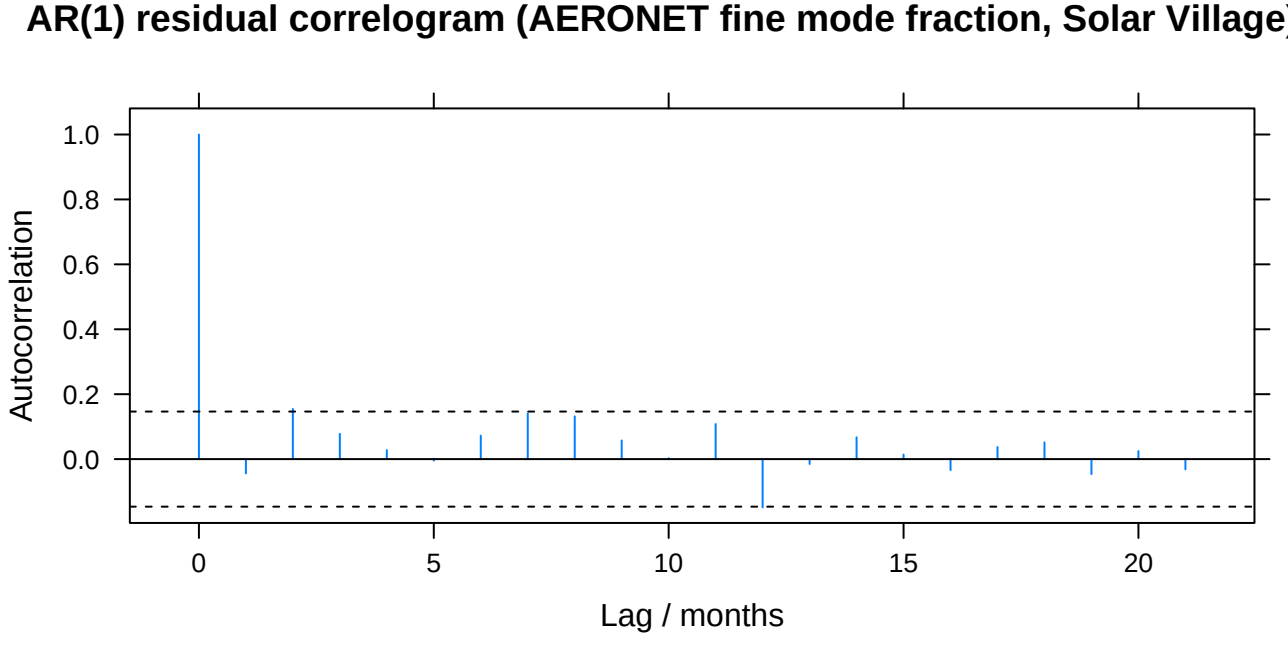


**Figure S38.** As Fig. S32, but for the AERONET fine mode fraction over Solar Village shown in Fig. 6.