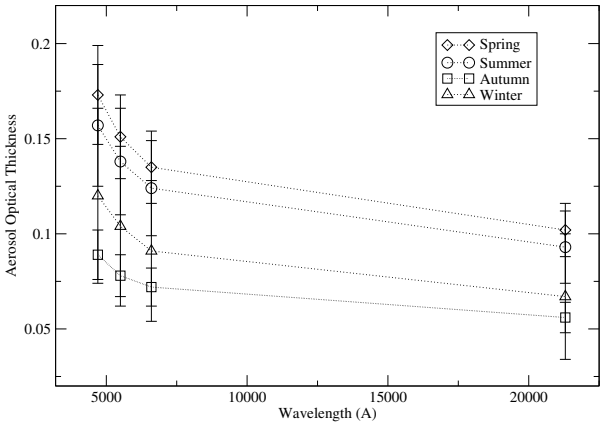

Fig. 2. The average seasonal aerosol optical depth spectral. Error bars show the estimated errors of the mean. The lowest aerosol optical thickness values occur during the autumn months.

4700, 5500, 6600 and 21300 Å. All the plots show that AOT values decrease with wavelength, as expected, and that the same variations are observed at each wavelength. In all the curves we note that the AOT is quite small, less than 0.25 for all wavelengths. In some years AOT values even less than 0.10 were obtained, specially during autumn.

In Table 3 we present the characteristics of the AOT seasonal measurements for each year during the period covered, 2000–2008, together with the resulting AOT mean values for each season and the standard deviation obtained at the four wavelengths.

By comparing the AOT values presented in Table 3 for the four seasons, we note that the lowest values are obtained in the autumn and winter months, being highest during the spring months. This is clearly seen in Figure 2 which shows the average seasonal AOT behavior with wavelength (cf. Table 3). The lowest aerosol optical thickness values occur during the autumn months with average values of 0.089 ± 0.013 at 4700 Å, 0.078 ± 0.011 at 5500 Å, 0.072 ± 0.010 at 6600 Å, and 0.056 ± 0.008 at 21300 Å. This allows us to conclude that in autumn the atmospheric transparency due to aerosols is best at SPM.

6.2. *Monthly AOT at SPM*

In Figure 3 we show the monthly behavior of the AOT at four wavelengths 470, 550, 660 and 2130 nm for the 2000 to 2008 period. For best comparison the AOT scale in all the graphs is the same. We note that in some years the months of January, February and December show scarce or no available data, while in March 2006 we found no data. The months of April to November were well covered throughout the 2000–2008 period and so the average values are more robust.

By comparing the AOT values in the twelve months we note that the lowest values are obtained in October and November, with mean values of less than 0.12 for all wavelengths. At 550 nm, which is close to the Johnson V-band, the average values in October and November are 0.074 ± 0.013 and 0.068 ± 0.021, respectively. We conclude that at all wavelengths October and November are the months with higher atmospheric transparency.

In Table 4 we present the characteristics of the AOT monthly measurements during the period 2000–2008, together with the resulting AOT average values and standard deviation.

Atmospheric extinction measurements at San Pedro Mártir have been reported by Schuster, Parrao, & Guichard (2002), and Schuster & Parrao (2001) for the years 1973–1999, and are summarized in Parrao & Schuster (2003). Individual nightly determinations of the atmospheric extinction above SPM are presented for 82 nights of 13-color photometric observations over the years 1980–1983 and from 287 nights of *ubvy* observations over the years 1984–1999. Monthly and yearly averages are given and compared for the years 1973–1999 in Schuster et al. (2002). Monthly data of atmospheric extinction above SPM covering the full period 2000–2008 are not available and so we can only compare our monthly AOT with the 1973–1999 of Schuster and collaborators. Their Tables 4, 5, and 6 show monthly averages that can be compared with our AOT mean values for the years 2000–2008.

Schuster et al. (2002) conclude that the best months for photometric observations at SPM are October and November when the atmospheric extinction is quite low, $<\kappa_y> \sim 0.1223 \pm 0.0022$ for October and 0.1195 ± 0.0022 for November, and that also during these months the observing runs are mostly stable. From their 13-color photometry they conclude that during the September, October and November months the mean observed atmospheric extinction at 5827 Å reaches the lowest values 0.1042 ± 0.0021, 0.1155 ± 0.0022 and 0.1128 ± 0.0028, respectively. These results for atmospheric extinction agree with our results for the aerosol optical depth over SPM: indeed October and November are the months with higher atmospheric transparency.