* Arica's AERONET data

The AERONET data (REF: Holben et al.,1998: AERONET - A federated instrument network and data archive for aerosol characterization, *Rem. Sens. Environ.*, **66**, 1-16.) reviewed hereto consist of aerosol optical thickness (AOT) at 440 and 675 nm and Ångström coefficient (in the range 440-675 nm) for the period between May 1998 and March 2004 (Table I) at Arica (18 28'19"S, 70 18'46",Alt 25m). Fig.1 shows daily averages of these variables. The series are too short to ascertain interannual variability, but there is an annual cycle with maximum values in summer and minimum values of AOT in winter.

Since Arica is overcast almost all morning, data is obtained after 16 GMT and the number of data diminishes considerably in winter (Table I).
Is there a systematyic undersampling in winter compared with summer? More cloudinness? Or cloudiness lasting longer over Arica?

Table I: data available from AERONET site.

	month available											
Year	**jan**	**feb**	**mar**	**apr**	**may**	**jun**	**jul**	**aug**	**sep**	**oct**	**nov**	**dec**
1998												
1999												
2000												
2001												
2002												
2003												
2004												

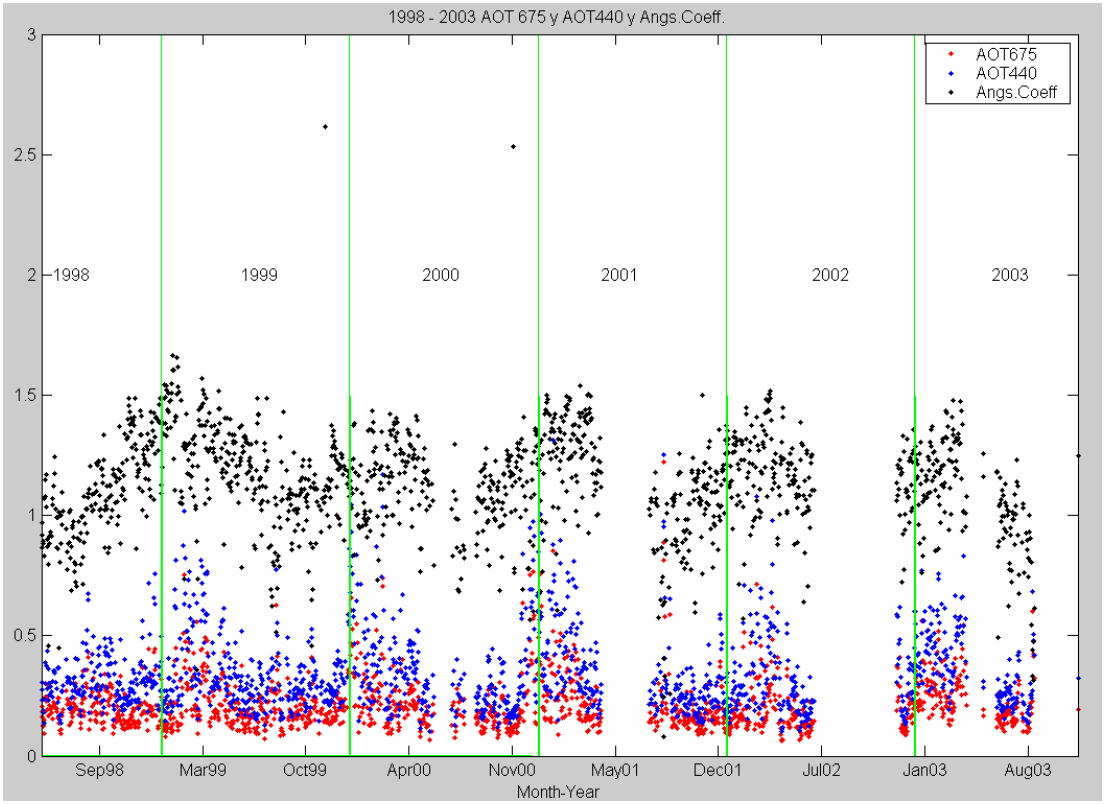

Figure 1: daily average for all data period for AOT675 (red), AOT440 (blue) and Angstrom coefficient (black) from 1998 to 2003

Other stations in the area are La Paz (16 32'20"S, 68 03'57"W, 3439m) y Santa Cruz (17 48'07"S, 63 10'40"W, 442m). La Paz shows data available from November 2005 to February 2007 in Level 1.5, and Santa Cruz, from May 1996 to April 2006 in Level 1.0 with various months in blank in both stations.

The sampling of data, which occurs mainly during afternoon hours (local time), precludes a clear distinction of a diurnal cycle. Nevertheless, the local circulation does show a diurnal variation.

For the purposes of this study, we look in detail at the winter period June 15-July 14 1999 and January 16-February 14 2000. Fig.2 shows the timeline for daily AOT675, AOT440 and Ångström coefficient measurements for two one-*month long* periods.

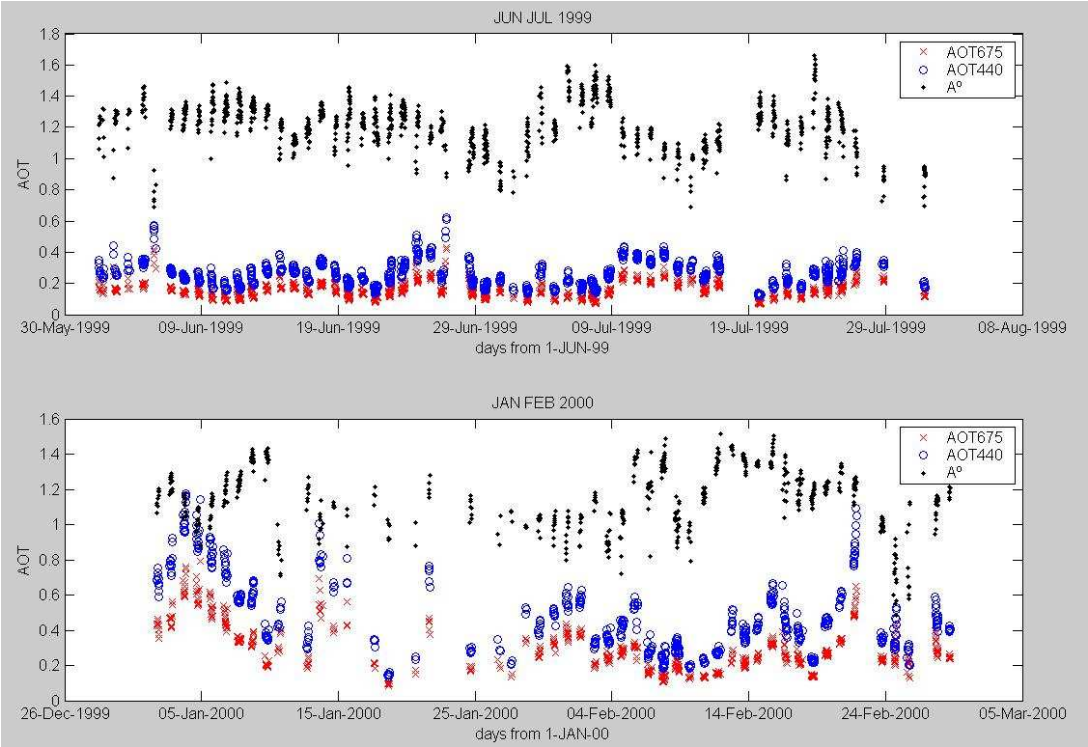

Figure 2: June-July 1999 and January-February 2000 timelines, for AOT675 (red), AOT440 (blue) and Angstrom coefficient (black)

The average AOT for all data is about 0.3, showing peaks in austral summer and late winter (August), this is consistent with the highest peaks (AOT>0.7) during the period studied.
Some high peaks in events were chosen due to high AOT or low studied are (yyyy-mm-dd):
1999-02-14
1999-03-09
1999-08-11
2000-01-03
2000-03-04

- Angstrom Parameter

Angstrom Parameter plot for all data shows sinusoidal behavior during the year, having maximum in summer, and minimum in late winter.
A correlation between AOT and Ansgtrom Parameter shows several data between 0.2 -0.4 AOT and 0.8- 1.6 Angstrom Parameter

* AOT data versus precipitable water colum (PWC) shows dispertion but several data between 0.2 -0.4 AOT, and 1.3 – 2.5 PWC