Paranal Seeing Special Report (M. Sarazin, May 20, 1996)

Paranal has recently experienced the worst seeing of our monitoring records (since 1989). The situation deteriorated in March and was back to normal around April 20. While good seeing periods still occurred, the average or bad periods showed wavelike features unusual on this site, as illustrated on Fig. 1. During that time, La Silla seeing conditions have not been affected.

In absence of physical model relating seeing to large scale climatic patterns, one is left with no better solution than a blind research of cunjunctive events in the area. Worlwide major events and anomalies are reported in the NOAA CLIMATE PREDICTION CENTER global highlight bulletins. During this period, two main anomalies were detected for South-America: one [WET] and one [WARM], respectively Zone 3 and 4 of Fig. 2. According to the following bulletin summaries, the [WARM] period looks better synchronized with our Paranal Seeing Anomaly.

March 16, 1996

ABUNDANT RAINFALL RETURNS. Heavy Rains (80 to 200mm) soaked central Paraguay while moderate to locally heavy amounts (50 to 150 mm) fell on Northern Argentina where six-week moisture excesses ranged from 70 to 130 mm.

March 30, 1996

ABUNDANT RAINFALL PERSISTS.

Heavy showers dumped 50 to 150 mm of rain on most areas, including parts of Rio Grande do Sul, Santa Catarina, eastern Parana, and Sao Paulo states of southern Brazil, across much of Paraguay, and through southern and eastern Bolivia. The remaining areas measured only 10 to 30 mm. Since mid-February, moisture surpluses ranged from 150 to 250 mm in Sao Paulo and Parana states of southern Brazil, and reached 150 mm at scattered locations across the rest of the region [WET - 17 weeks].

NORTHERN ARGENTINA REGION REMAINS UNUSUALLY WARM.

Temperatures averaged 1C to 3C above normal, with highs soaring to 36C in southeastern Catamarca province of northwestern Argentina [WARM - 4 weeks].

April 6, 1996

SOAKING RAINFALL CONTINUE IN SOME AREAS

Torrential rains (80 to 250 mm) drenched most of northeastern Argentina, Uruguay, and Rio Grande do Sul state of southern Brazil, with the heaviest totals (over 200 mm) reported in northern Uruguay and adjacent Argentina. Elsewhere, 40 to 100 mm of rain soaked the southeastern half of Paraguay, but only moderate amounts (20 to 50 mm) were reported in the southern Brazilian states of Parana and Santa Catarina, and just 10 to 30 mm dampened Mato Grosso do Sul. The largest six-week moisture surpluses were found in eastern Santa Catarina (up to 205 mm) and eastern Parana (up to 275 mm) states of southern Brazil, in northern Uruguay (up to 158 mm), and across southern Corrientes province of northeastern Argentina (up to 285 mm) [WET - 18 weeks].

COOLER WEATHER IN NORTHWESTERN ARGENTINA, BUT STILL WARM ELSEWHERE.

Temperatures averaged 3C to 5C above normal from Uruguay and Formosa province of northern Argentina northeastward to Bahia state of eastern Brazil, with the largest departures reported in the southern Brazilian states of Rio Grande do Sul, Santa Catarina, Parana, and Sao Paulo. Highs of 35C to 38C spread across northern Paraguay and the Brazilian states of Mato Grosso and Mato Grosso do Sul, where apparent temperatures reached up to 41C. In contrast, subnormal temperatures ended the brief warm spell in northwestern Argentina

[WARM - 5 weeks].

April 13, 1996 (see Figure 2)

WARM CONDITIONS SPREAD NORTHEASTWARD.

Temperatures averaged 4C to 6C above normal across southern Brazil from central Rio Grande do Sul northeastward to southwestern Minas Gerais, and from 2C to 4C above normal over the rest of central and eastern Brazil, most of Paraguay, Uruguay, and adjacent northeastern Argentina. Highs climbed up to 38C in eastern Minas Gerais, and to 35C or greater over northern and eastern Minas Gerais, central and southern Bahia, and eastern Mato Grosso do Sul states in Brazil, and parts of northern and eastern Paraguay [WARM - 6 weeks].

SOAKING RAINS CONTINUE IN SOME AREAS.

Scattered heavy rains (50 to 150 mm) fell on the southern Brazilian states of Santa Catarina, Parana, eastern Mato Grosso do Sul, southern Goias, Sao Paulo, and Minas Gerais. Elsewhere, rainfall generally totaled 20 to 60 mm. Six-week moisture surpluses of 60 to 150 mm covered much of southern Brazil, with a few locations along the coasts of Santa Catarina, Parana, Sao Paulo, and extreme southeastern Rio Grande do Sul reporting excesses of 145 to 335 mm. Farther south and west, large six-week surpluses (65 to 150 mm) were also reported over portions of northern and eastern Uruguay [WET - 19 weeks].

April 20, 1996

MORE SOAKING RAINS IN SOME AREAS.

Between 100 and 200 mm of rain drenched parts of Buenos Aires province of east-central Argentina while lesser amounts (30 to 70 mm) dampened Uruguay. Six-week moisture excesses generally ranged from 50 to 250 mm across the aforementioned areas, with the largest surpluses (over 150 mm) reported in northern Buenos Aires province, northern and eastern Uruguay, and southwestern Rio Grande do Sul state in extreme southern Brazil. Farther north [WET - 20 weeks].

April 27, 1996

NEAR NORMAL TEMPERATURES PREVAIL.

Central and Eastern South America: Temperatures averaged only about 1C above normal throughout the region, bringing an end to the recent warm spell [WARM - Ended at 8 weeks].

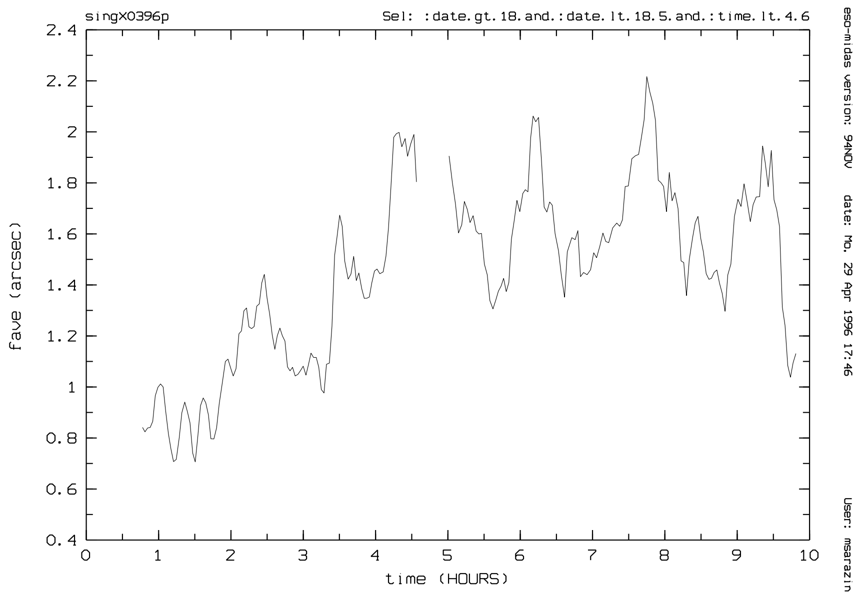

Figure 1: Wavelike structure of seeing at Paranal on March 17 to 18, 1996

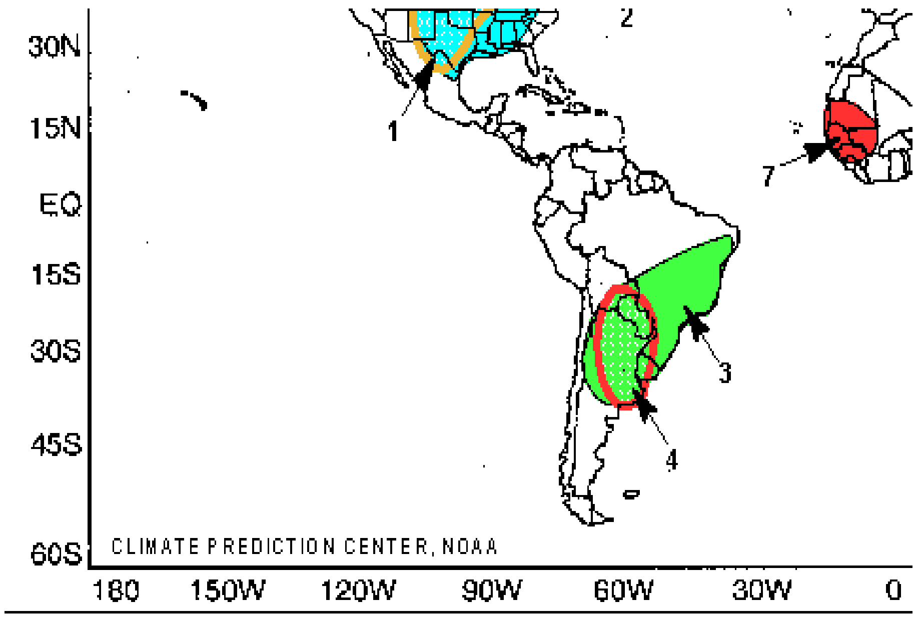

Figure 2: Anomaly position as of April 6 Global Climate Highlight