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IRI PROFILE PARAMETERS AT EQUATORIAL LATITUDES

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Abstract: The IRI bottom-side electron density profile is specified as a function of three parameters B0, B1, and D1 describing the F2 layer thickness and shape, and the shape of the F1 layer, respectively. Together with the URSI or CCIR coefficients for the F2 layer peak density and height, they completely specify the profiles as function of time, season and solar activity. In support of the international effort of determining the best set of parameters we have analyzed the diurnal variations of B0, B1, and D1 for Jicamarca for high solar activity during 1999 and 2000 for different seasons and magnetic activity (Figures 1 to 5). The B0 values vary from a minimum of ~95 km at 0300 LT to ~250 km at local noon (1700 UT). The diurnal variation (Figure 1) is similar to the IRI2000 prediction (Figure 2). B1 varies from ~1.9 at daytime to ~2.2 at night. The value of D1 is ~0.5. The parameters show little Kp dependence. Standard deviations are shown in Figure 6.

We calculated the ionospheric total electron contents for March and April 1998 from the ionogram profiles at Jicamarca and compared them with IRI predictions using the IRI 2000 parameters (Figure 7). While there is fair agreement, a significant time shift of 1 to 2 hours occurs in the transition from night to daytime values.

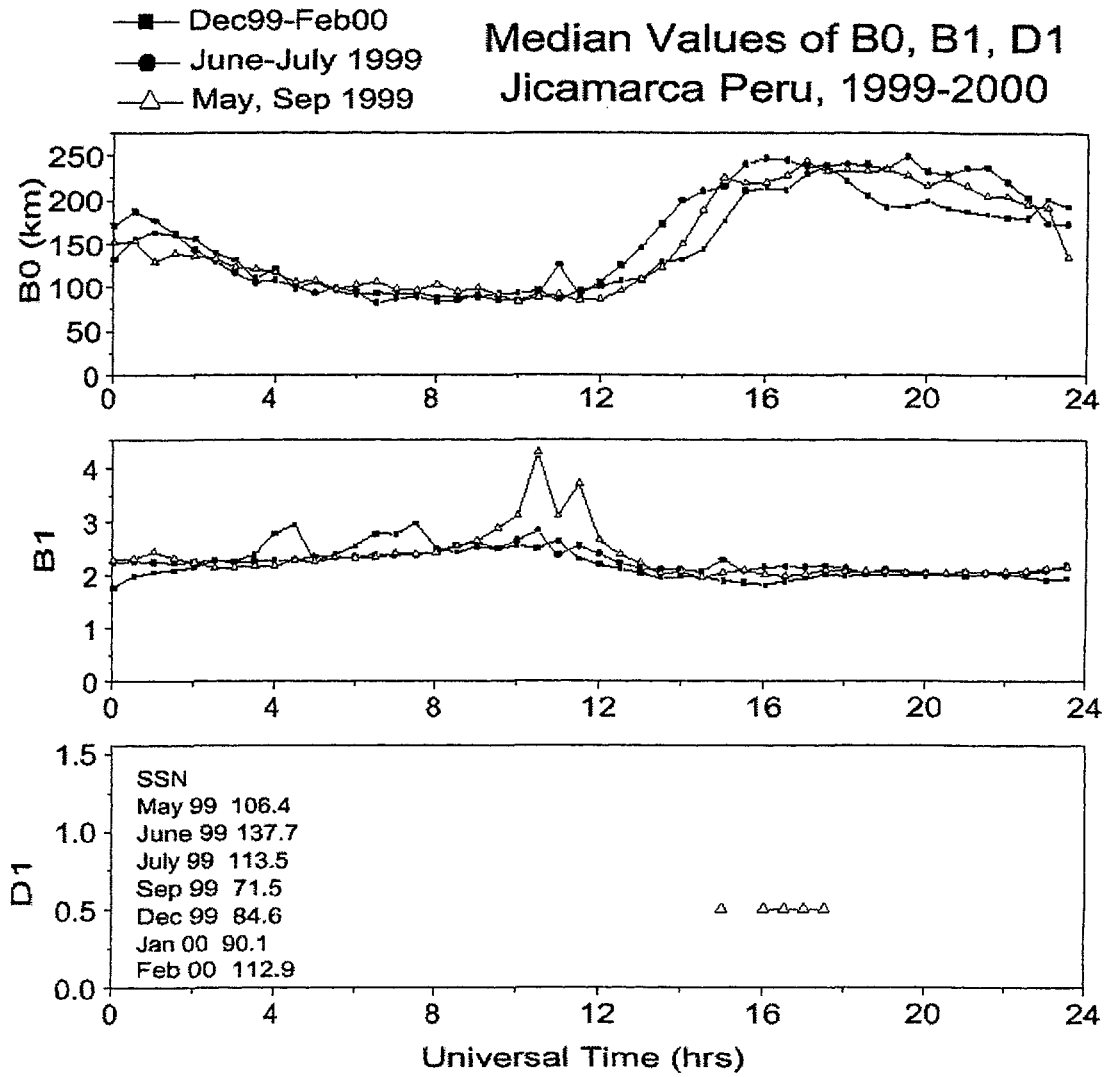


Figure 1

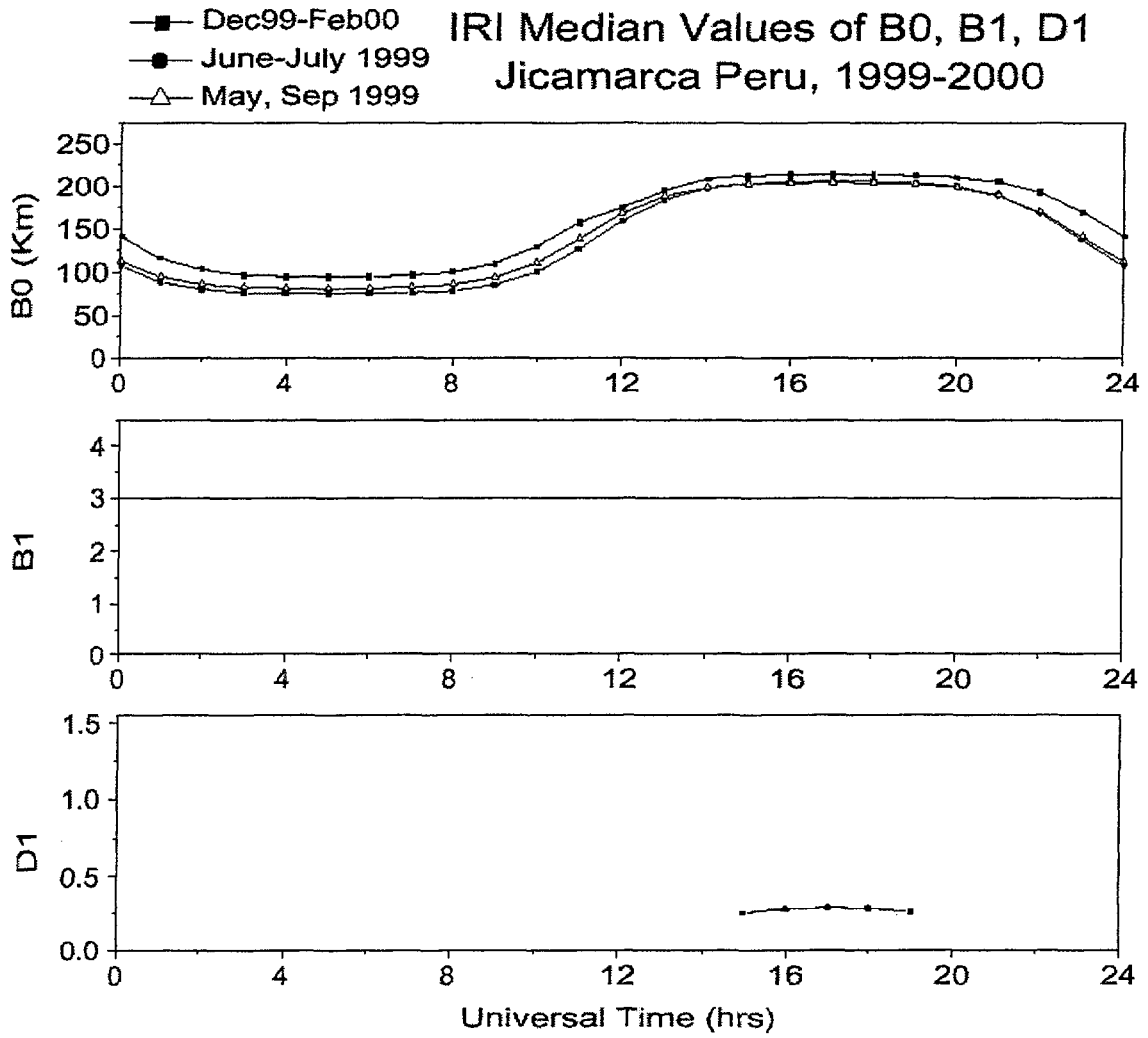


Figure 2

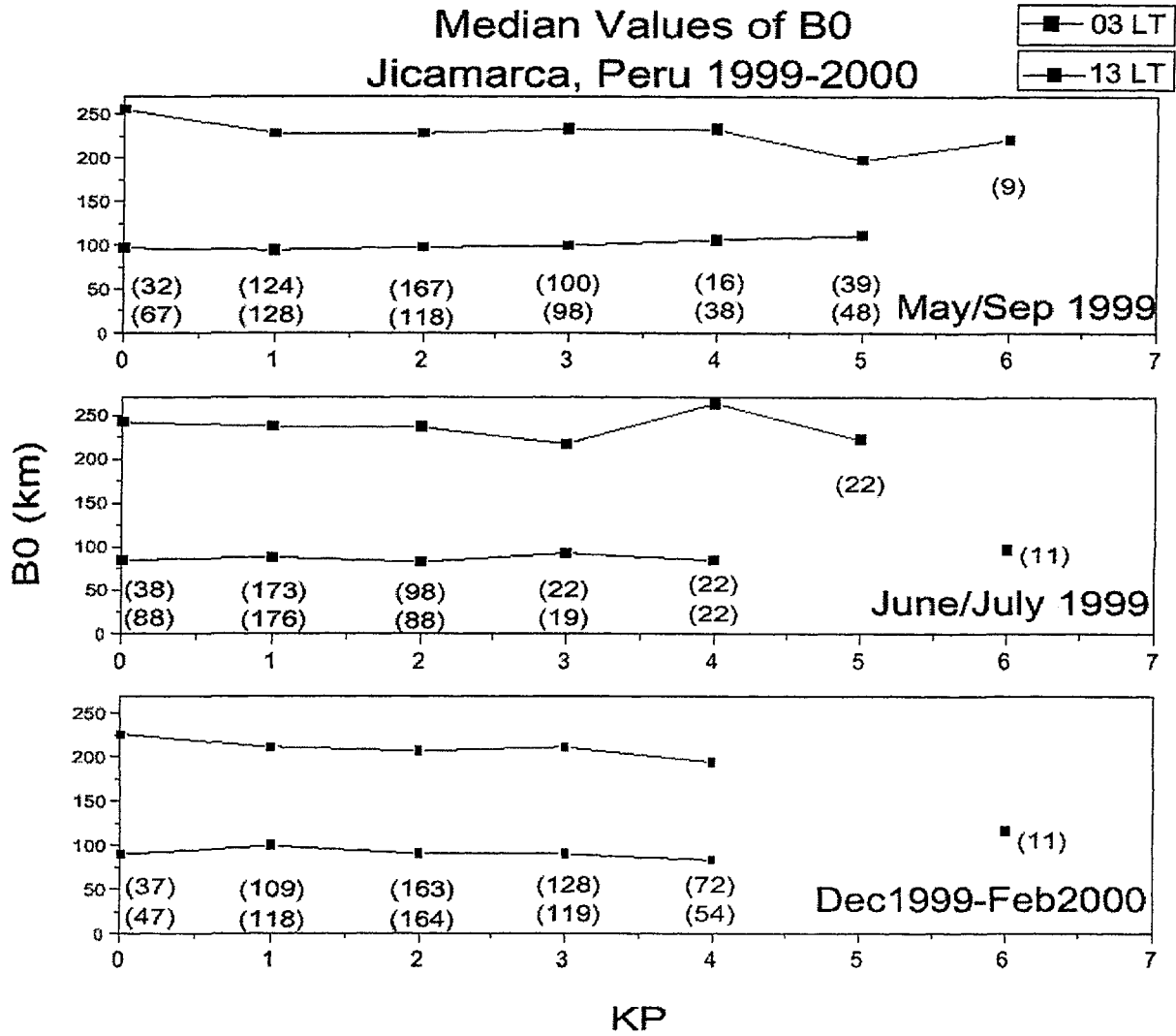


Figure 3

Median Values of B1 Jicamarca, Peru 1999-2000

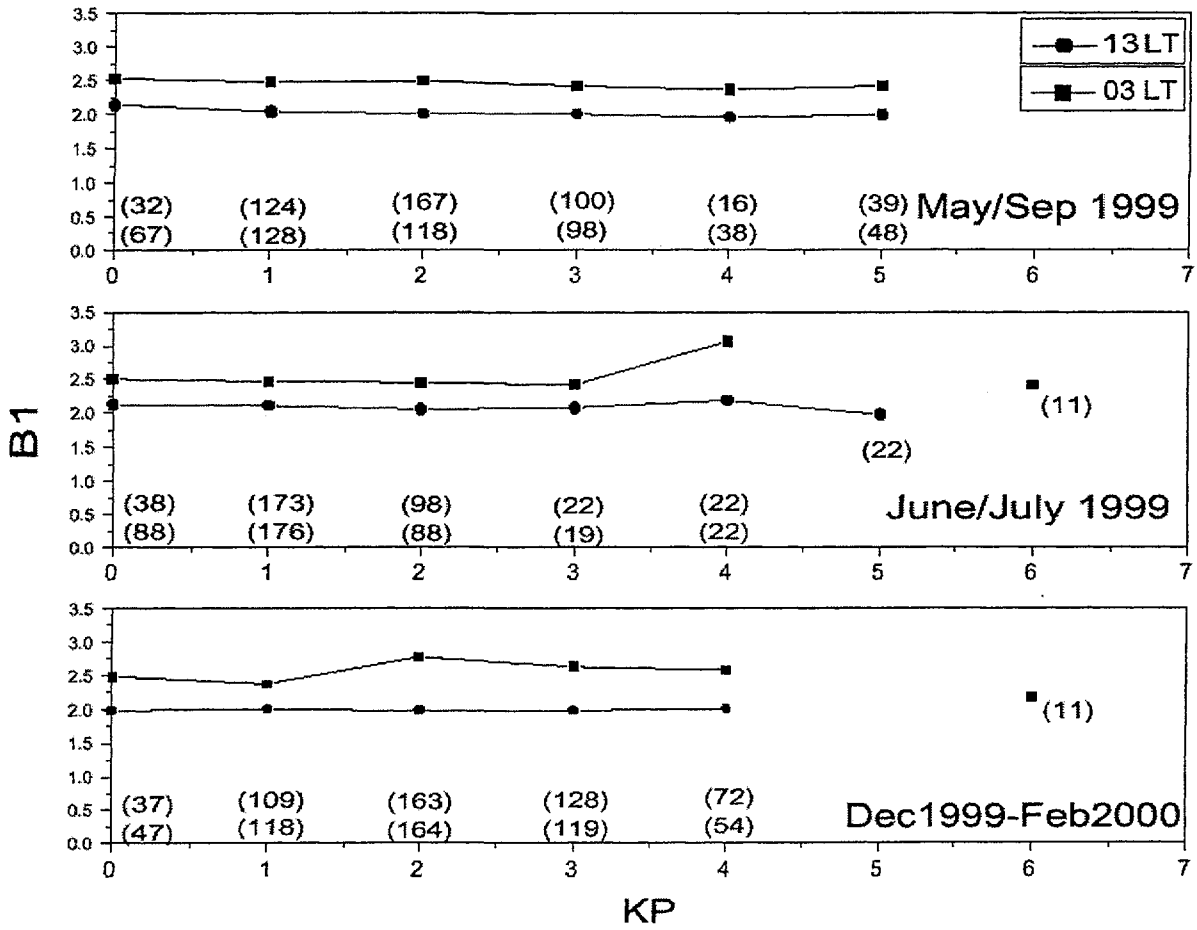


Figure 4

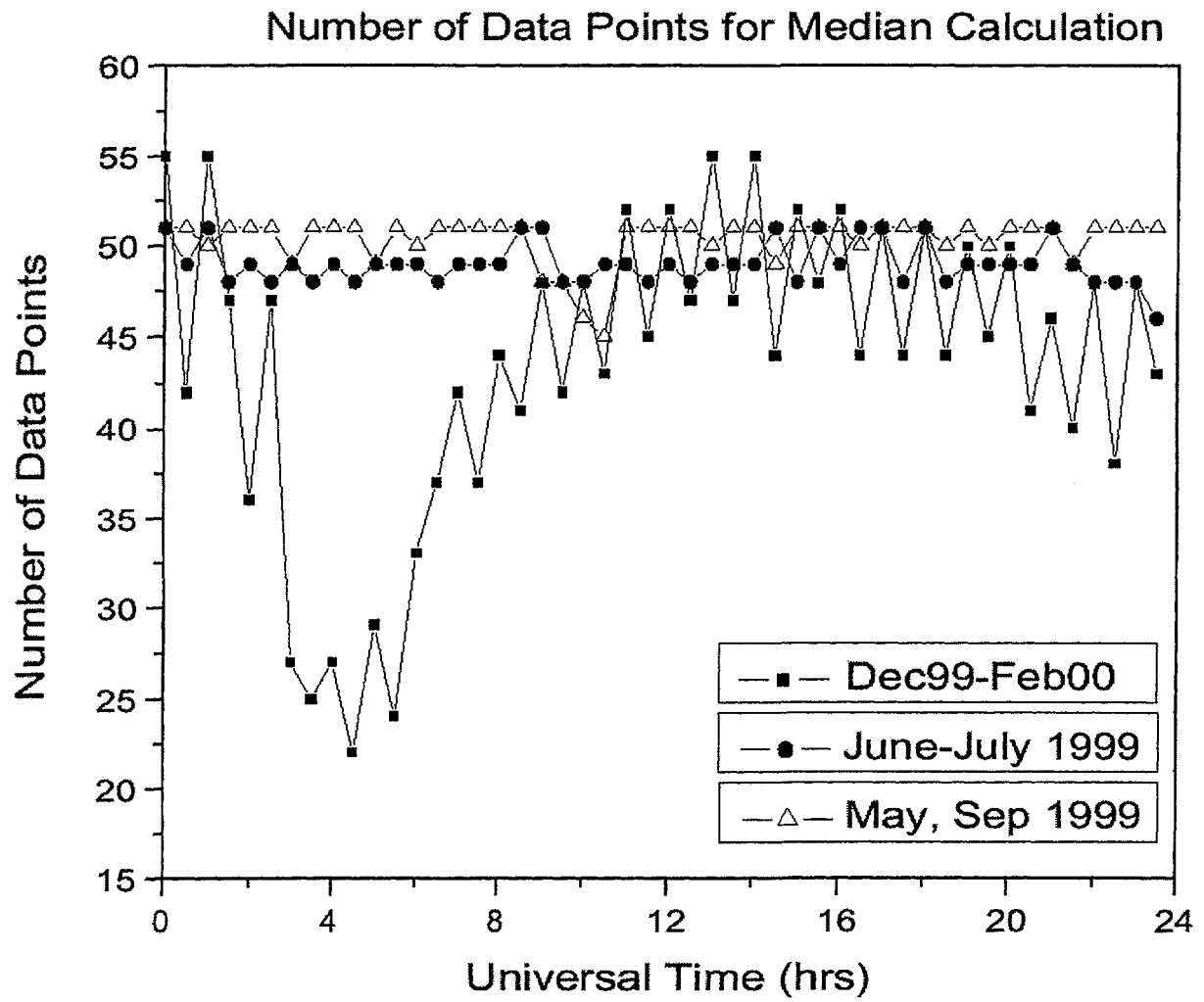


Figure 5

Standard Deviations

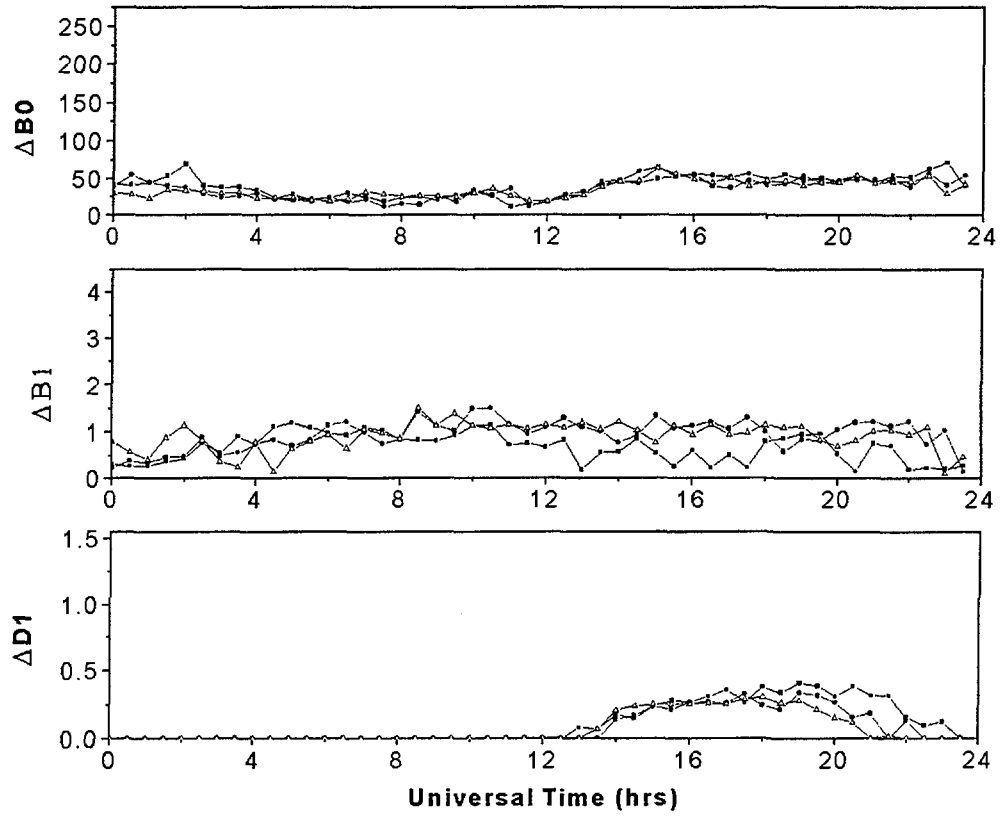


Figure 6

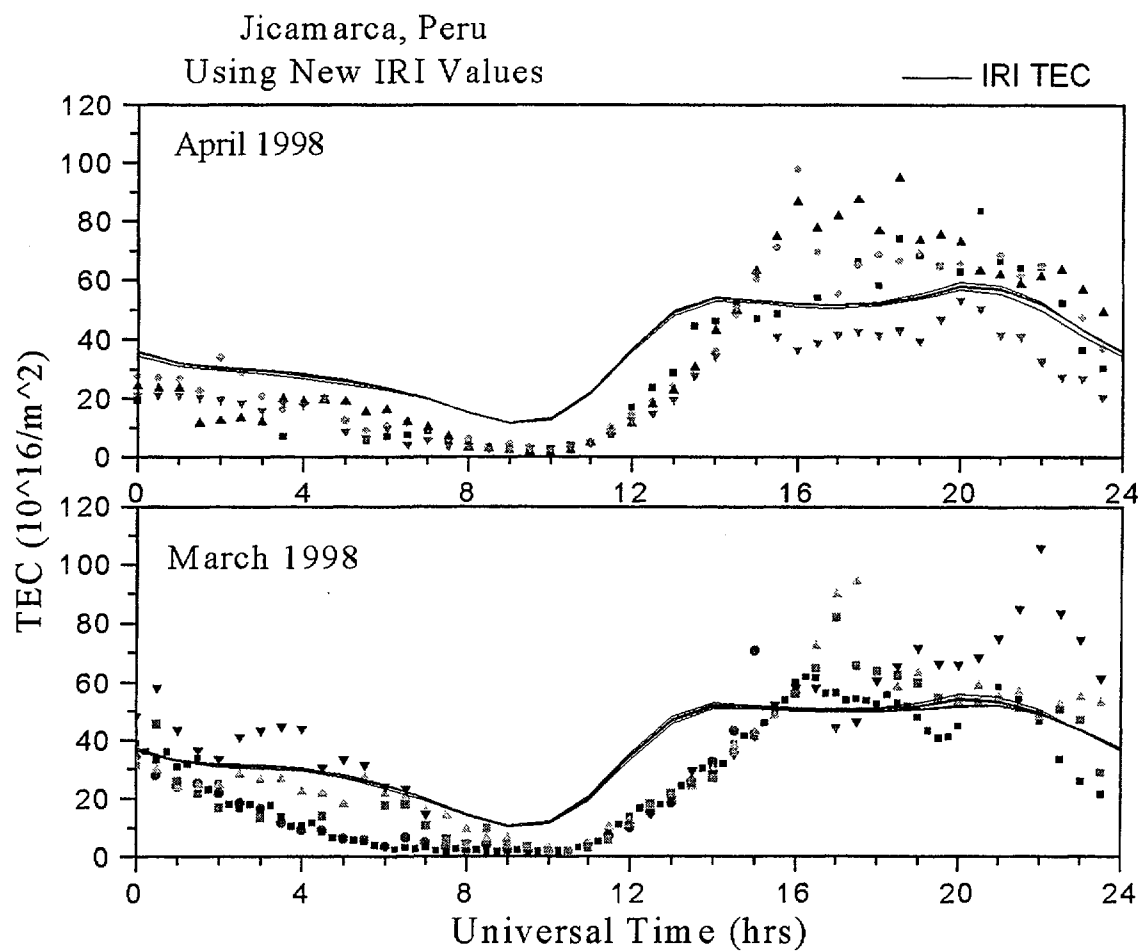


Figure 7