

Jicamarca
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What is special about Jicamarca?

- 1- Large Power-Aperture $360,000 \text{ MW}\cdot\text{m}^2$
- 2- Location - Magnetic Equator (Eq. phenomena)
 - Point \perp to \vec{B} - IS
 - \ FAI.
- 3- Wavelength - 3 meter $\Rightarrow r_D$
 $\Rightarrow l_0$

Common to other radars.

- a - IS facility
- b - Coherent radar (ionospheric)
- c - MST radar

Outline

	1	2	3	4
a	✓	✓	✓	
b		✓	✓	
c	✓		✓	

Incoherent Scatter radar

(3)(1) - High Altitude N_e profiles

(2) - Ion-gyro effects

- Plasma theory
- Mass spectrometer
- Drifts. (0.1 mV/m)
- B_z

(2)(3) - Faraday rotation exp.

(2) - Equatorial Anomaly studies.

Coherent radar - Ionospheric

- Spread-F
- Electrojet
- 150 km "junk"

MST radar

- Only real MST
- Examples: Stratospheric
mesospheric -

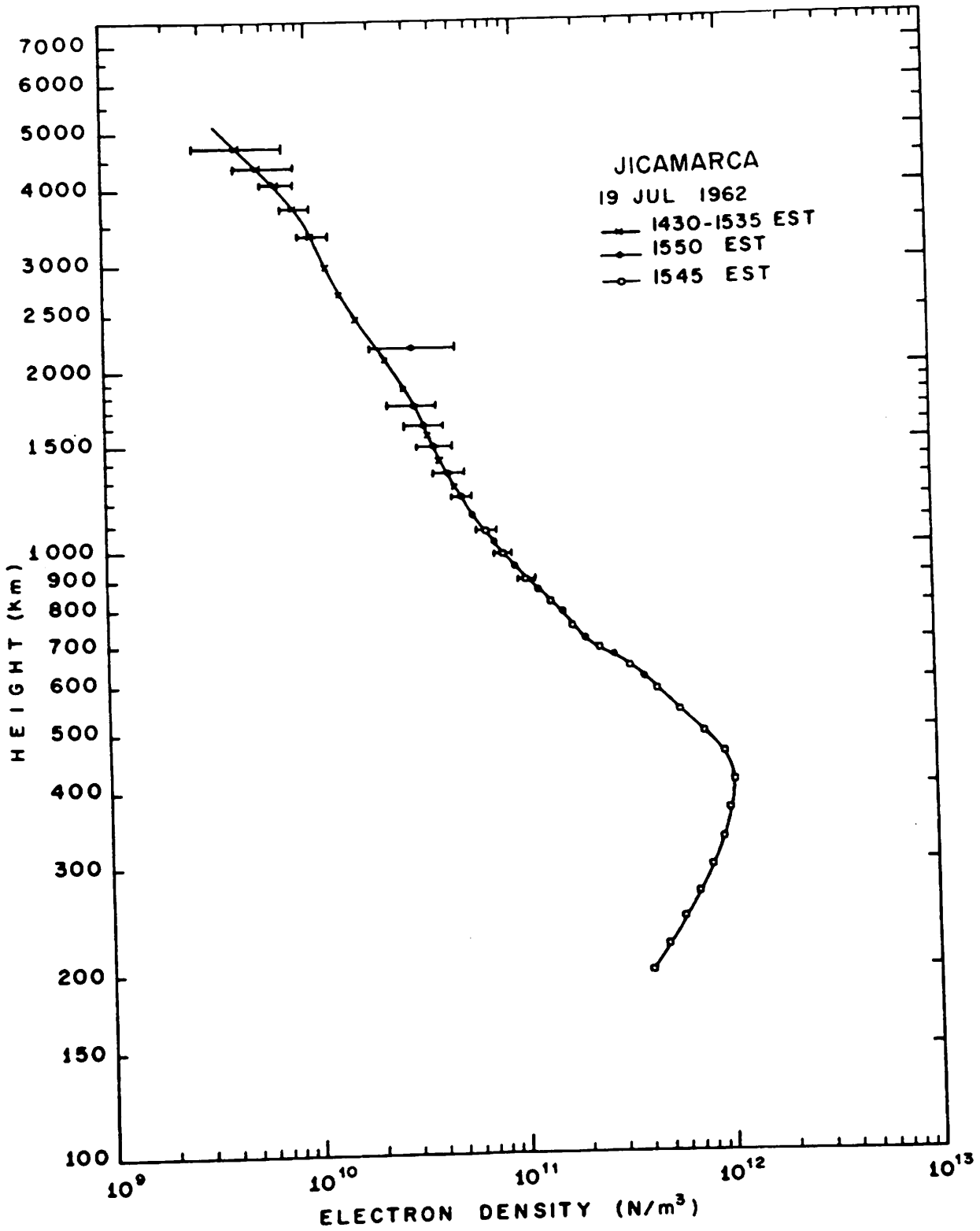


Figure 12

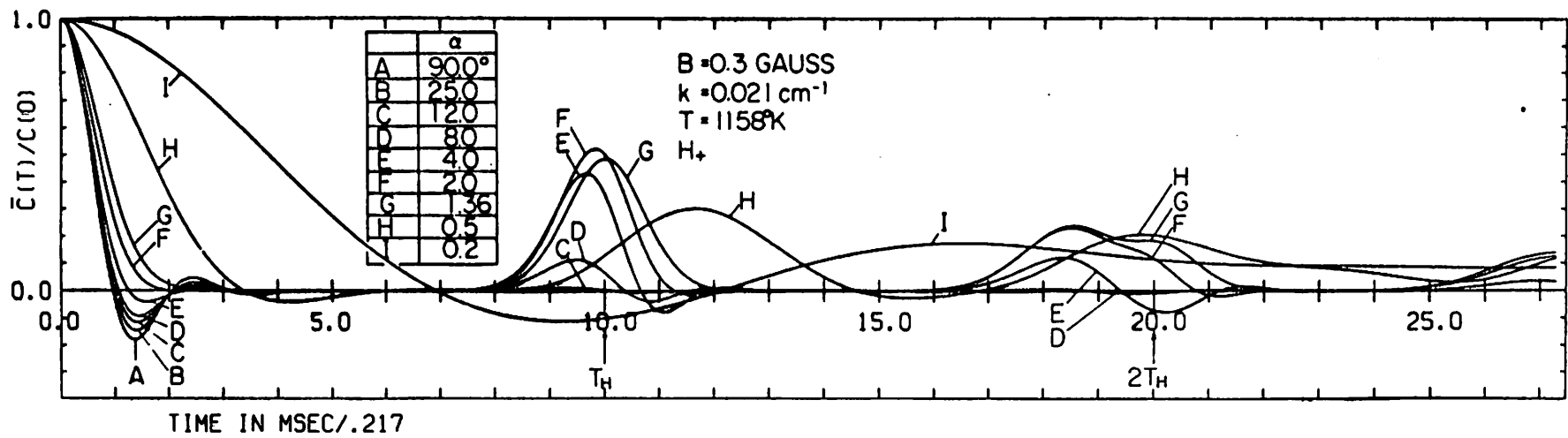


FIG. 7a. Autocorrelation function envelope $\bar{C}(\tau)$ for a $[H]^+$ plasma showing the effect of variations in the direction of the wave vector \tilde{k} as it approaches the perpendicular to magnetic field ($\alpha = 0$). Collisionless model, other parameters as shown in the figure.

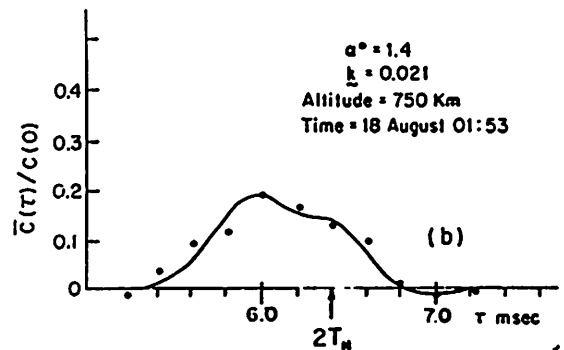
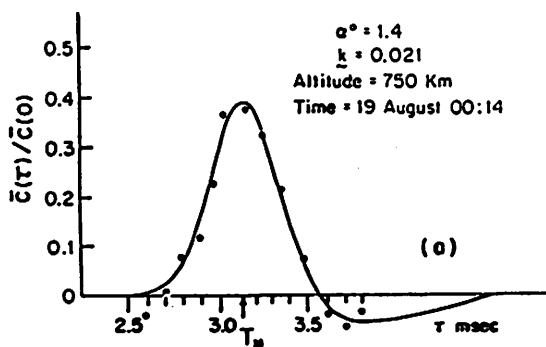
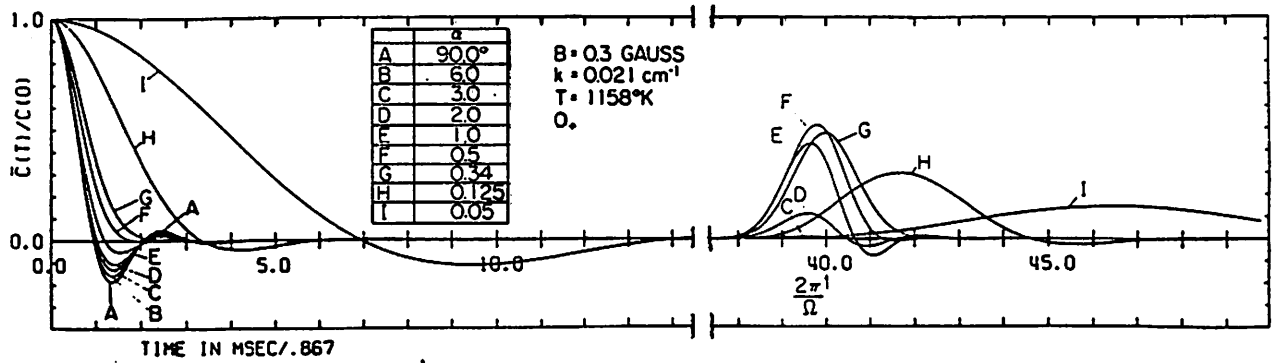


Figure 2. Comparison between measured and experimentally determined values of the correlation function close to the first and second hydrogen gyro-peak. Temperature and composition was adjusted for best fit. (After Woodman, 1967, with experimental points from Farley, 1967).

GEOMAGNETIC FIELD BY INCOHERENT SCATTER

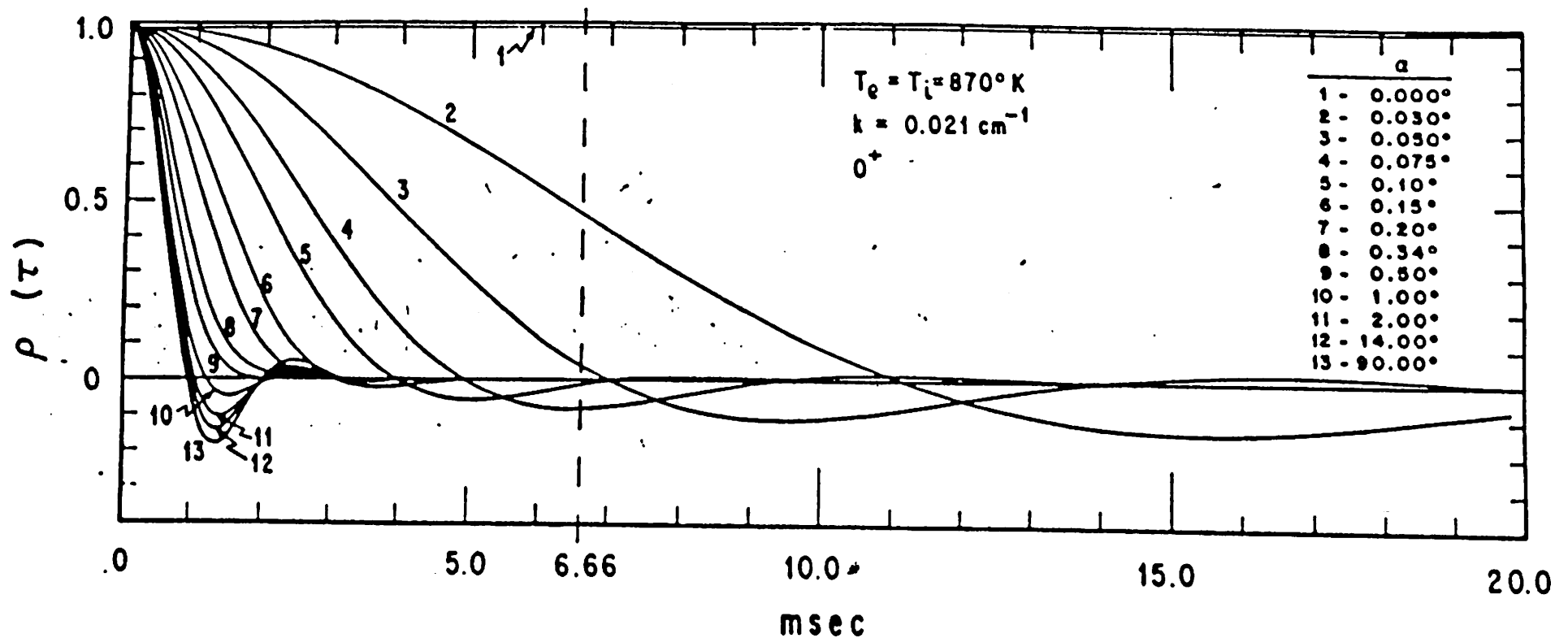
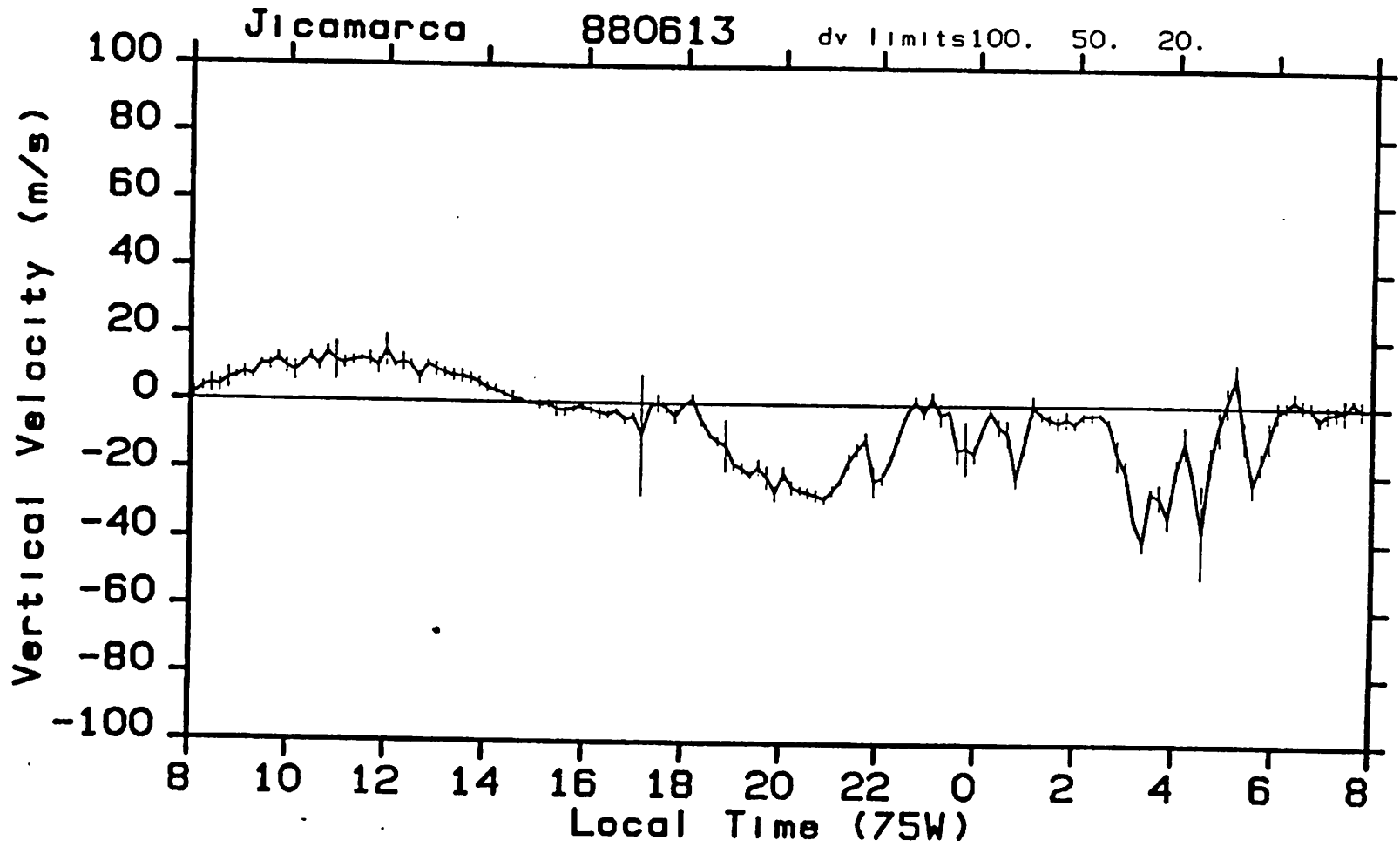


Fig. 1. Theoretical autocorrelation functions $\rho(\alpha, \tau)$ for different angles α , where α is the complement of the angle between k and B .



1983

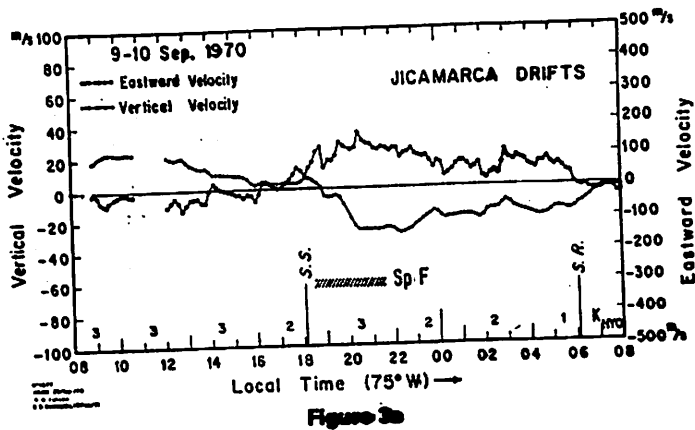


Figure 3a

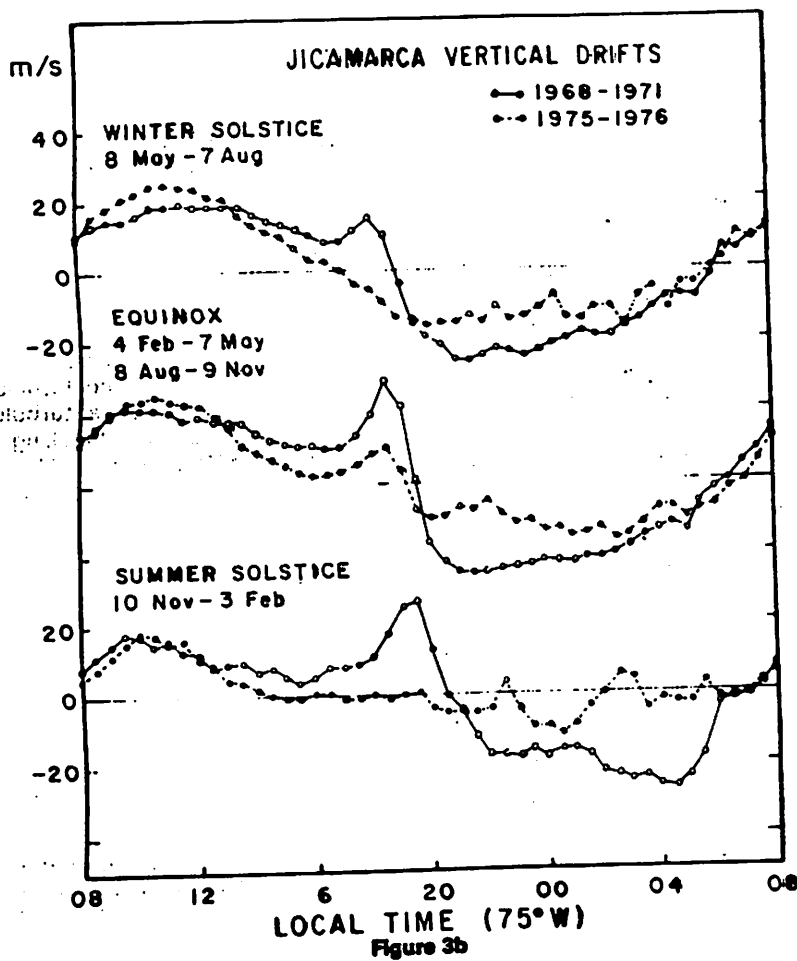


Figure 3b

Figure 3. Example of the diurnal variations of the vertical and E-W drift velocities. 3b) Vertical drift velocities for different seasons and solar activity.

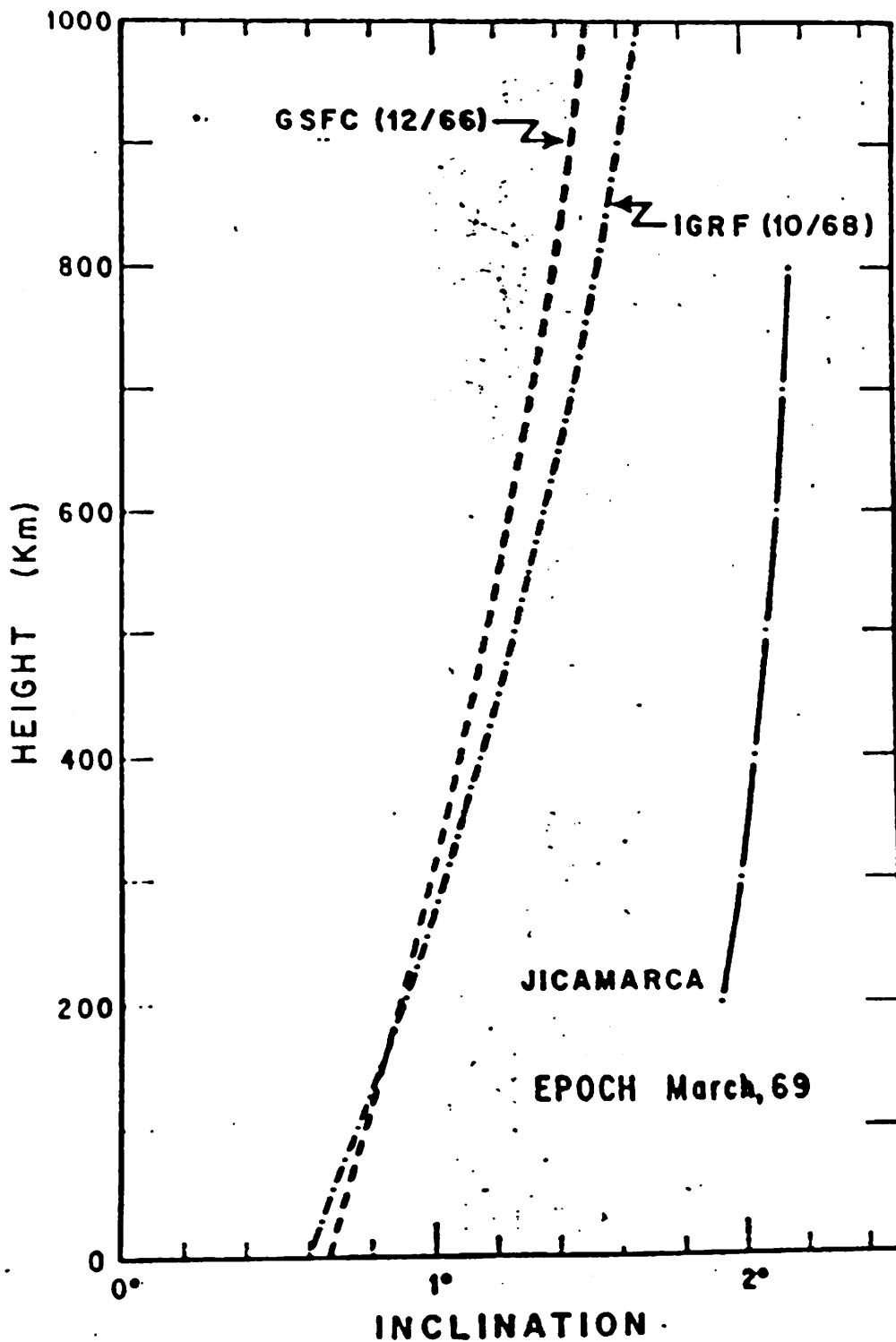
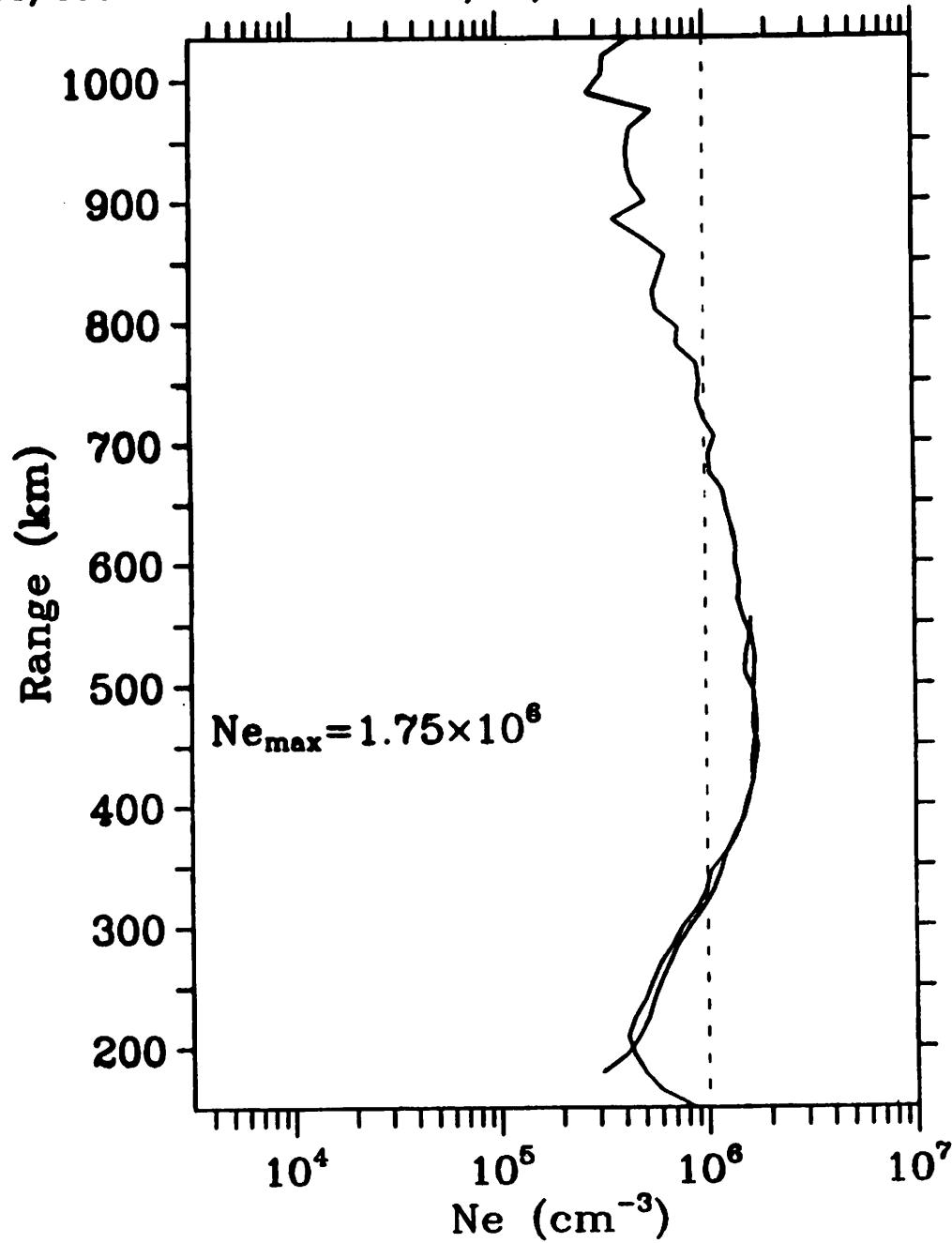
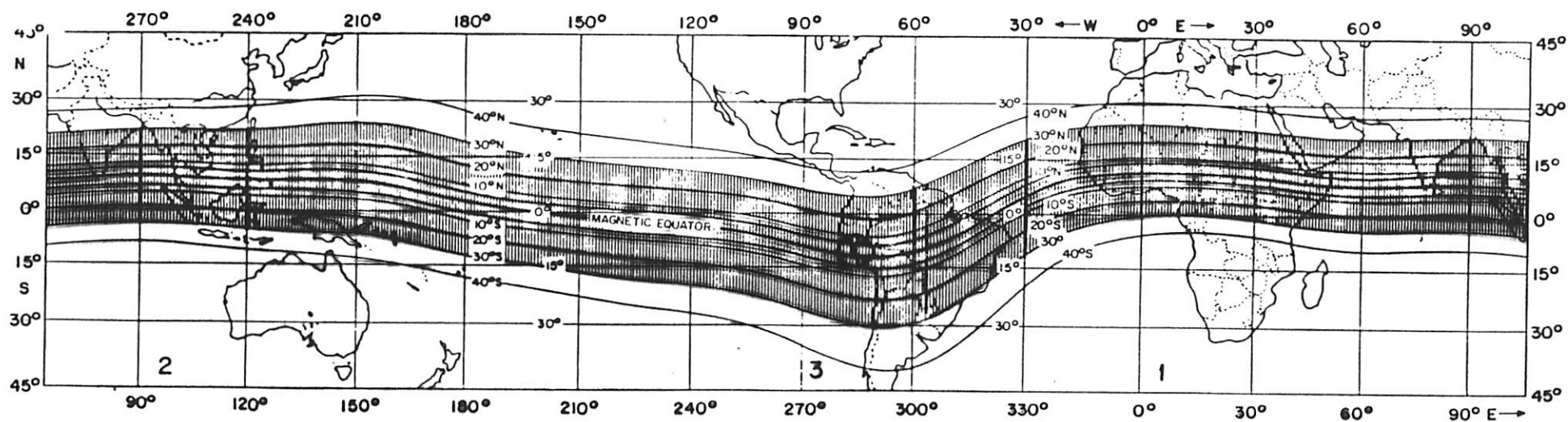
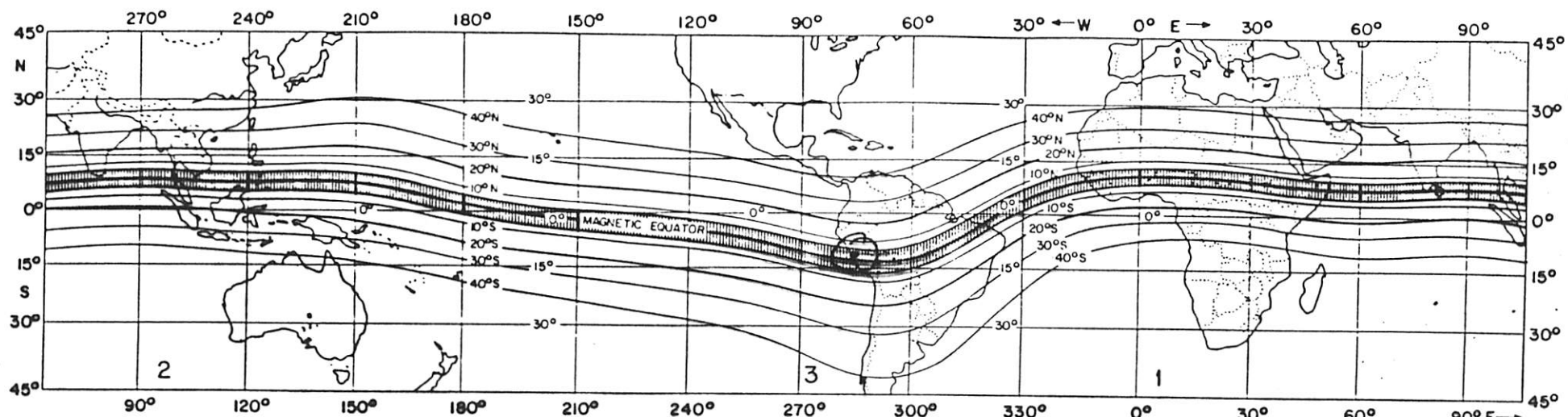


Fig. 6. Inclination of the magnetic field along Jicamarca vertical (-11.95° latitude $76^\circ 52' 20''$ longitude). The interrupted solid line corresponds to values determined experimentally at Jicamarca; the other two correspond to two of the latest earth magnetic field models, GSFC 12/66 and IGRF 10/68.

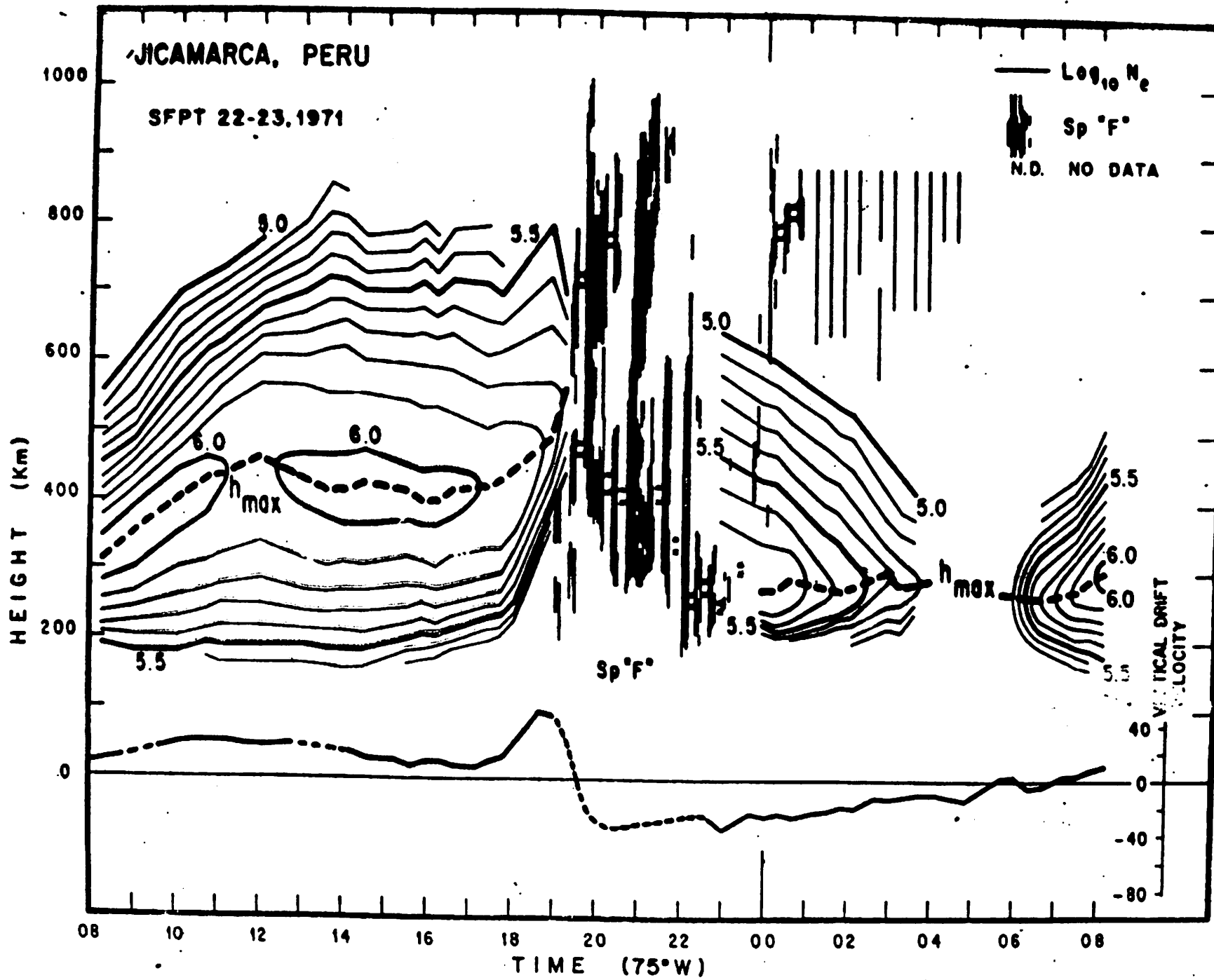
2/03/1989 15:25:08.4 To 2/03/1989 15:29:36.5 Nint= 1280 Tx= 15





JICAMARCA, 6 OCTOBER 1984

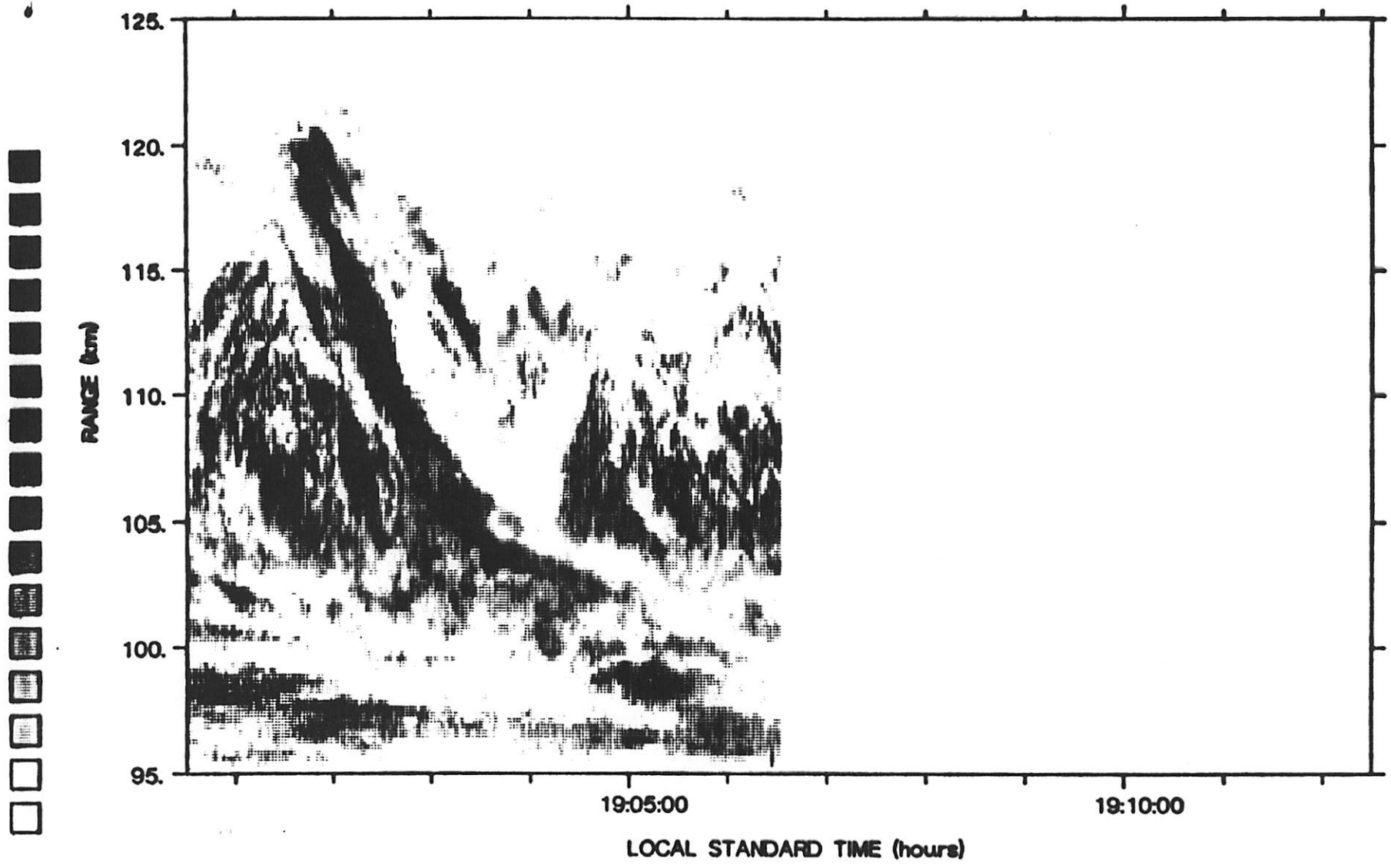


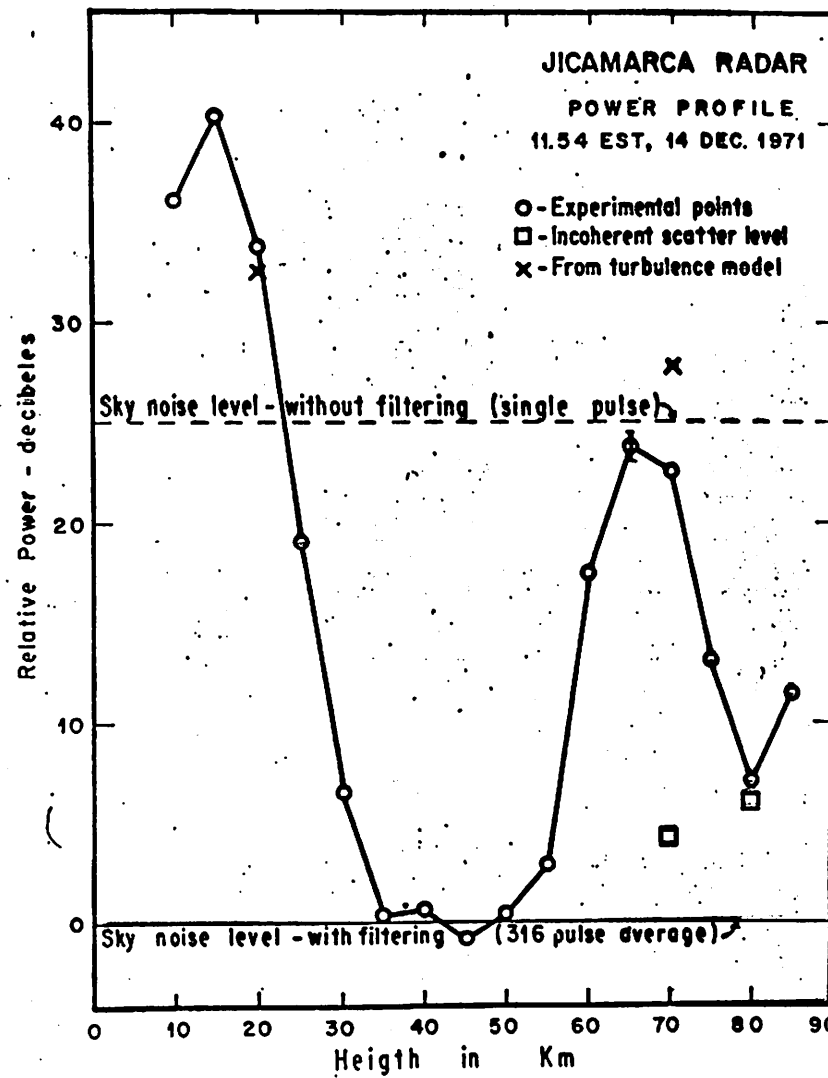
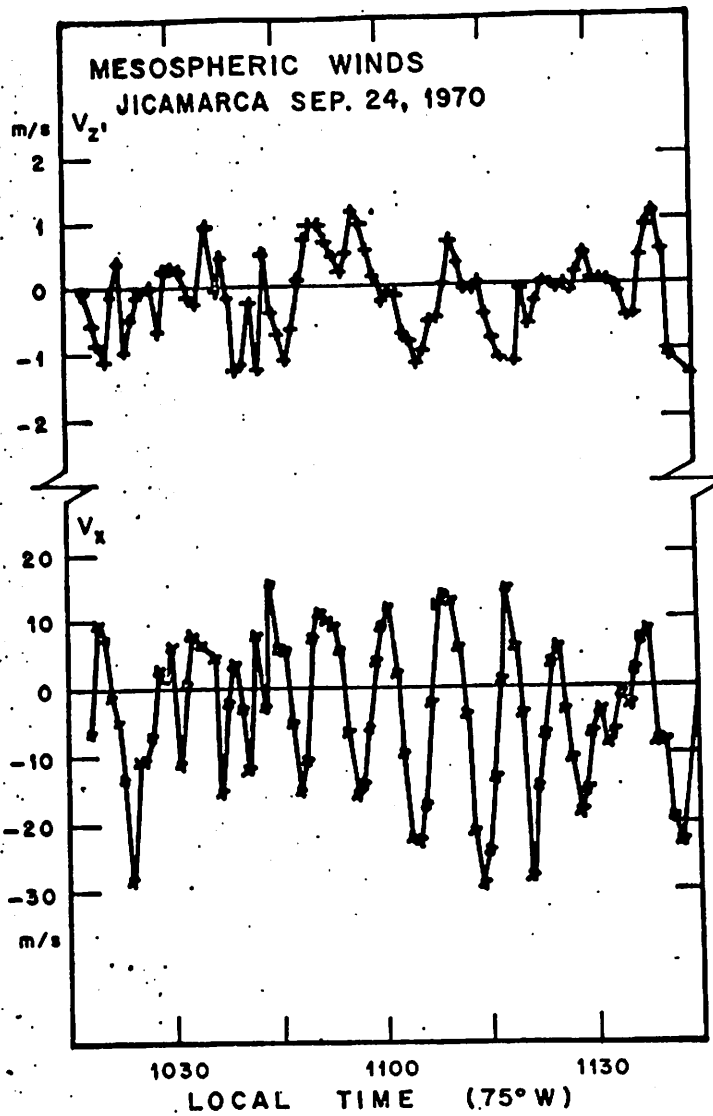


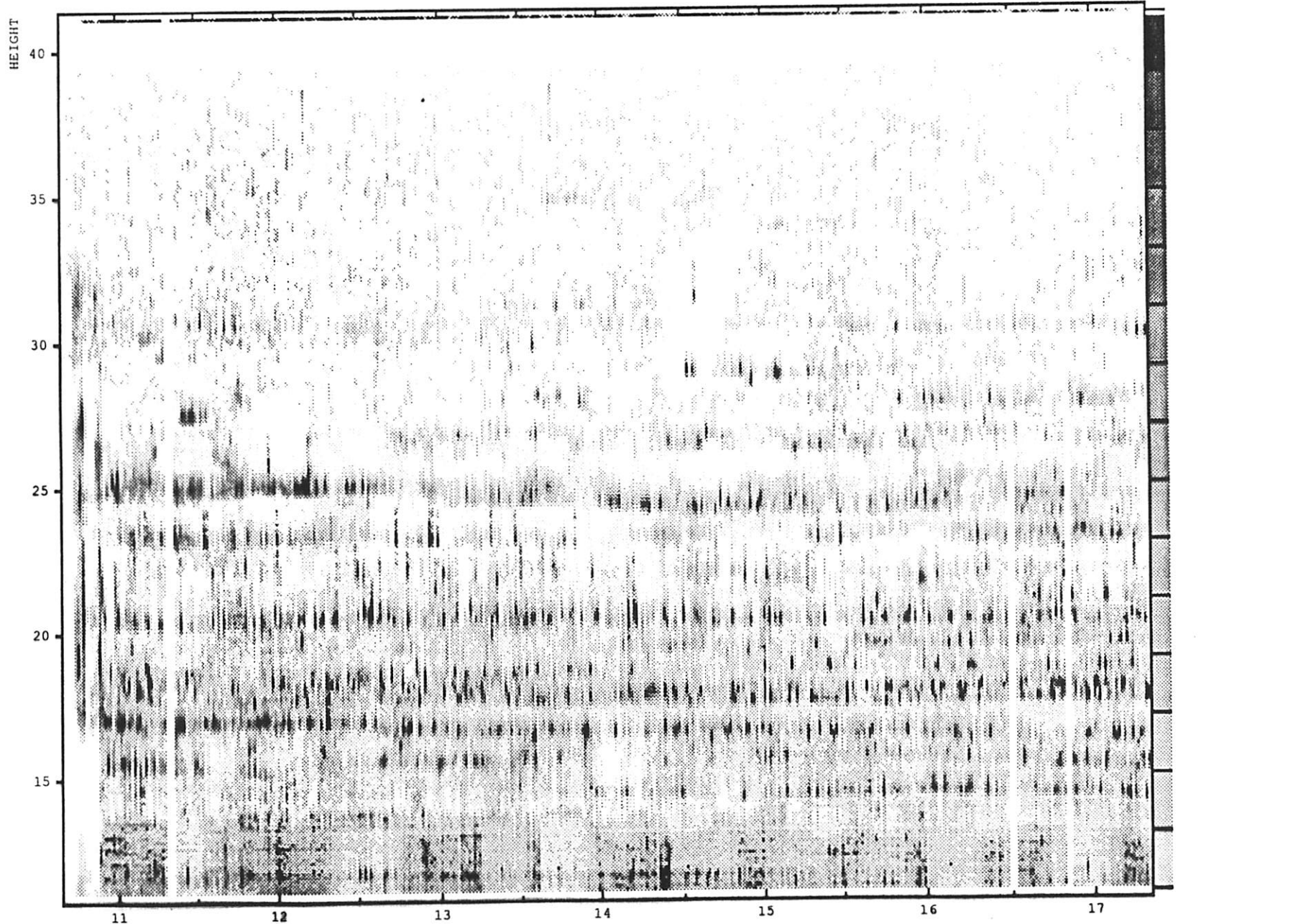
Compare with (7)
with a linear's
break?
(can't see the X-axis for now)

8

JICAMARCA, PERU 90/01/15 S/N







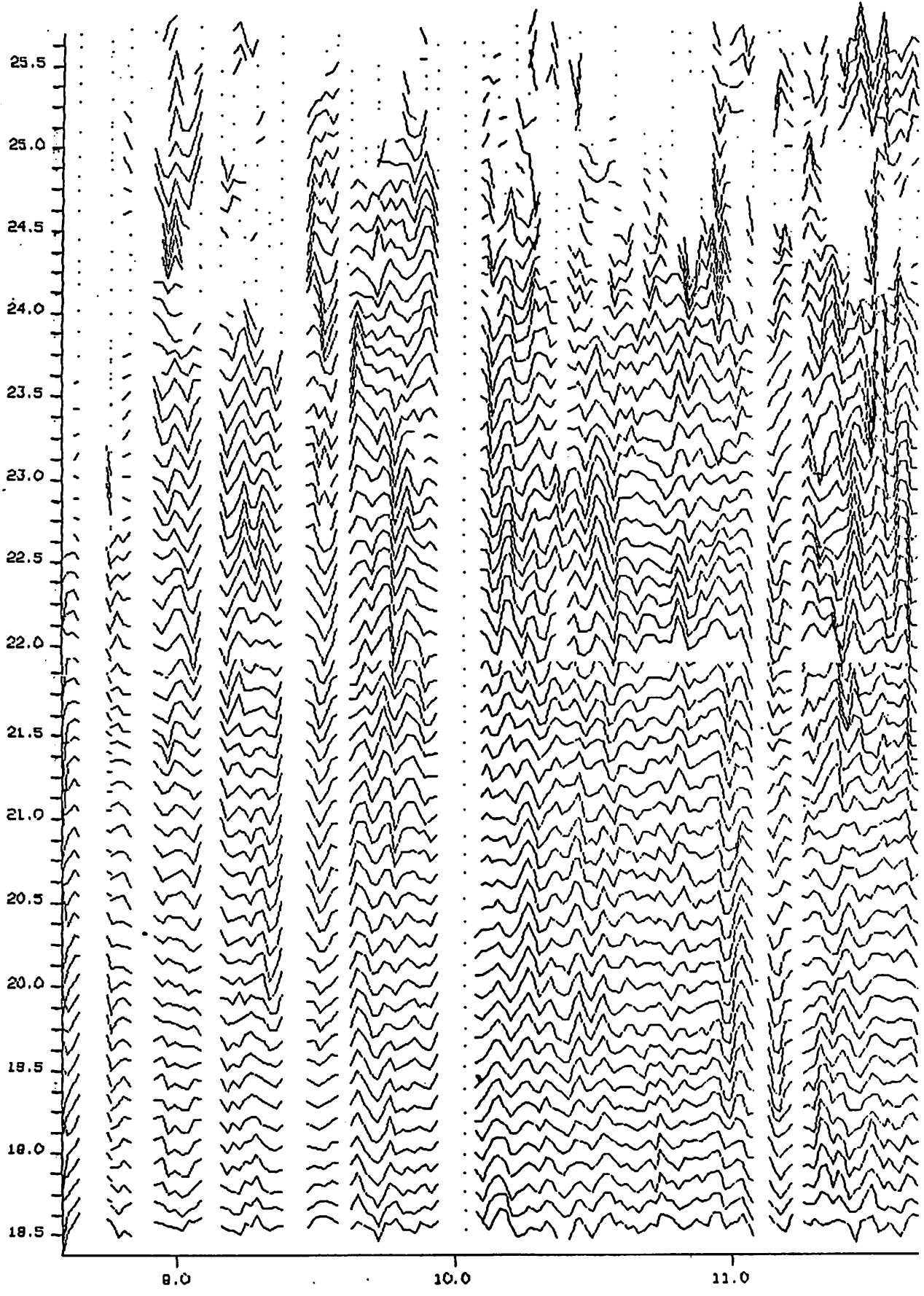
DATE: 7 AUG 89

JICAMARCA - POWER MAP

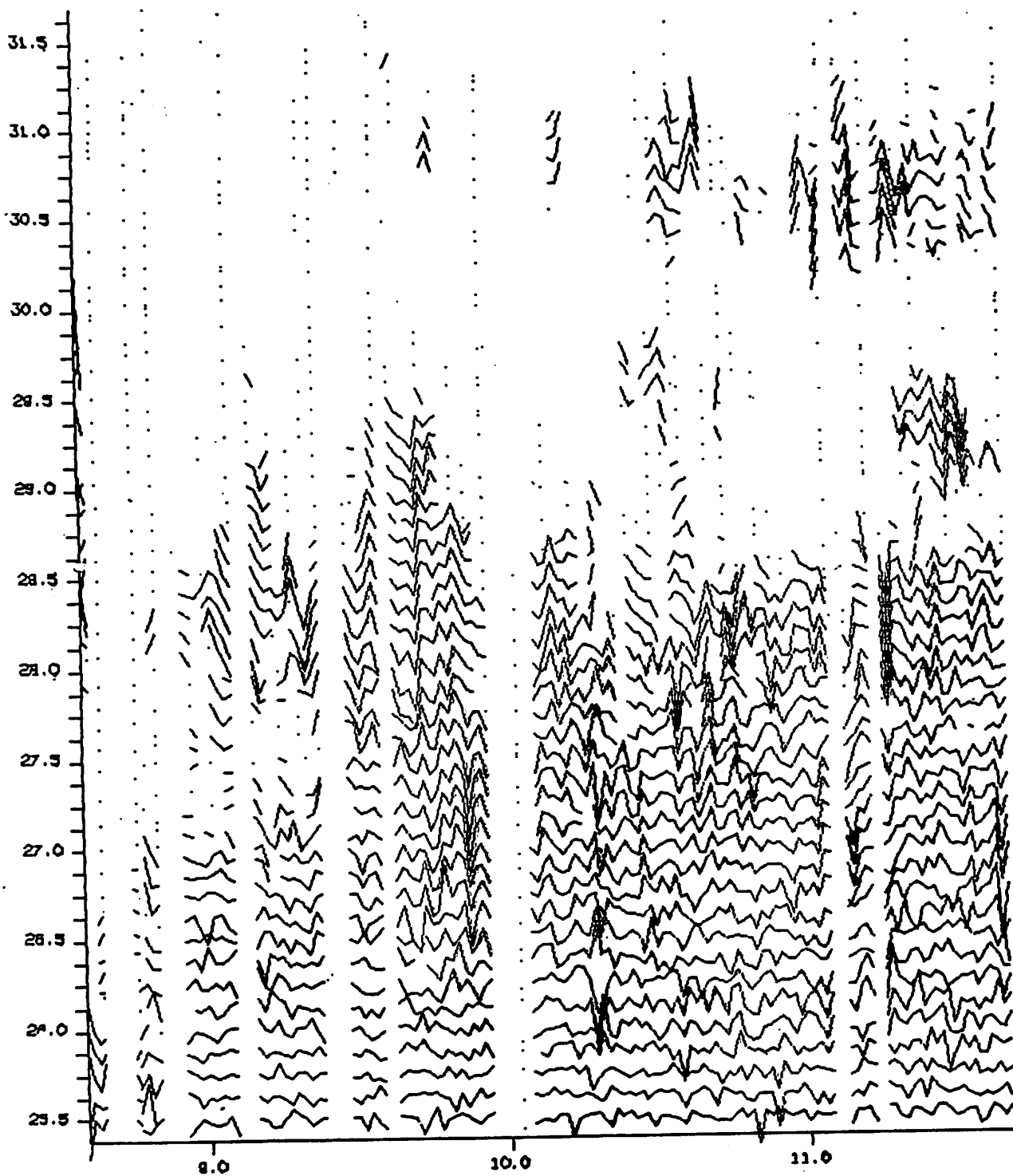
LOCAL TIME (HORAS)

ANTENA: -11.95 DEG., 0m 0s

NORMALIZACION: C



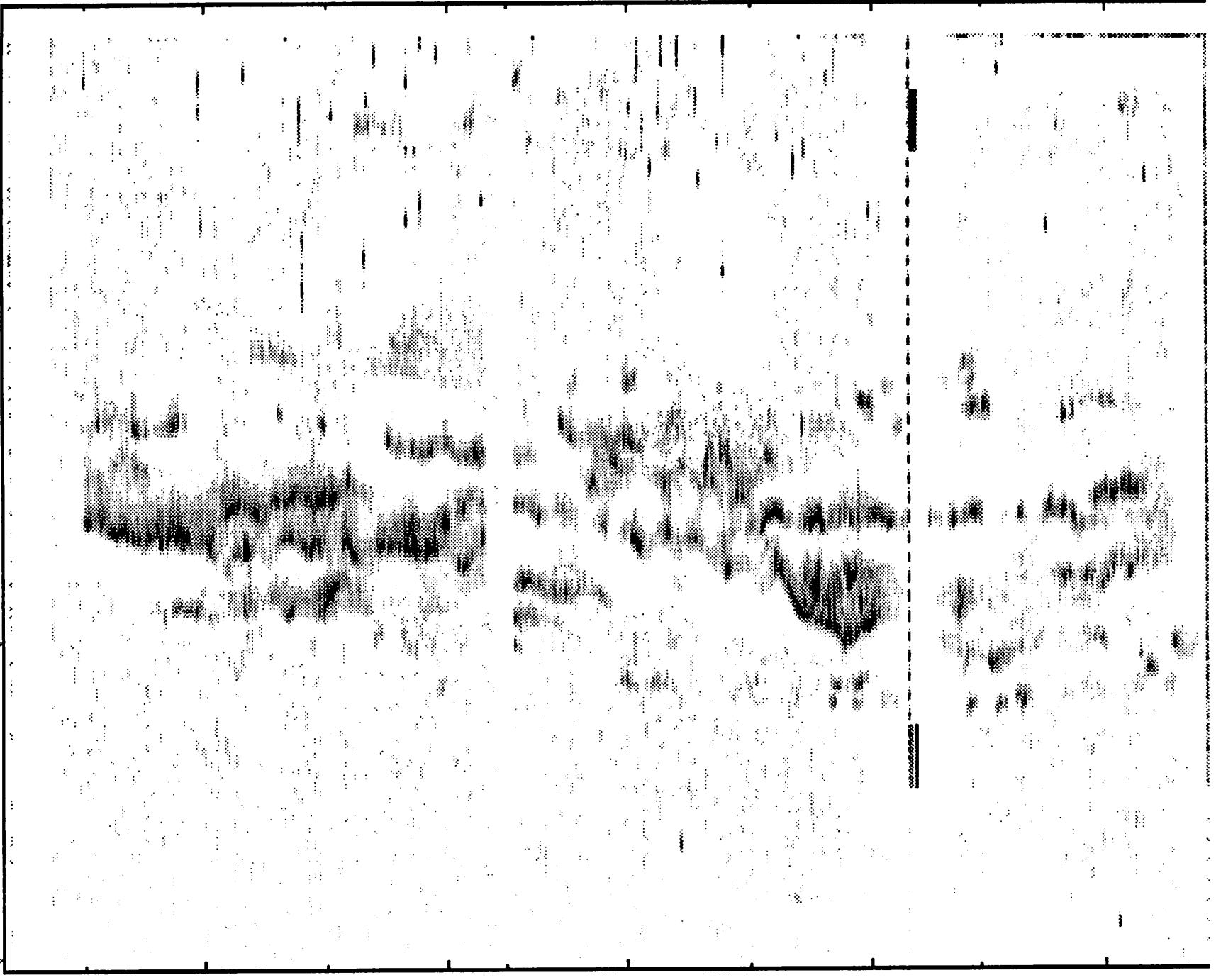
29 SEP 88 - Rx "B"



29 SEP 88 - Rx "A"

11 SEP 89 ANT: - 12.56 WEST HAMB.

80
70
60



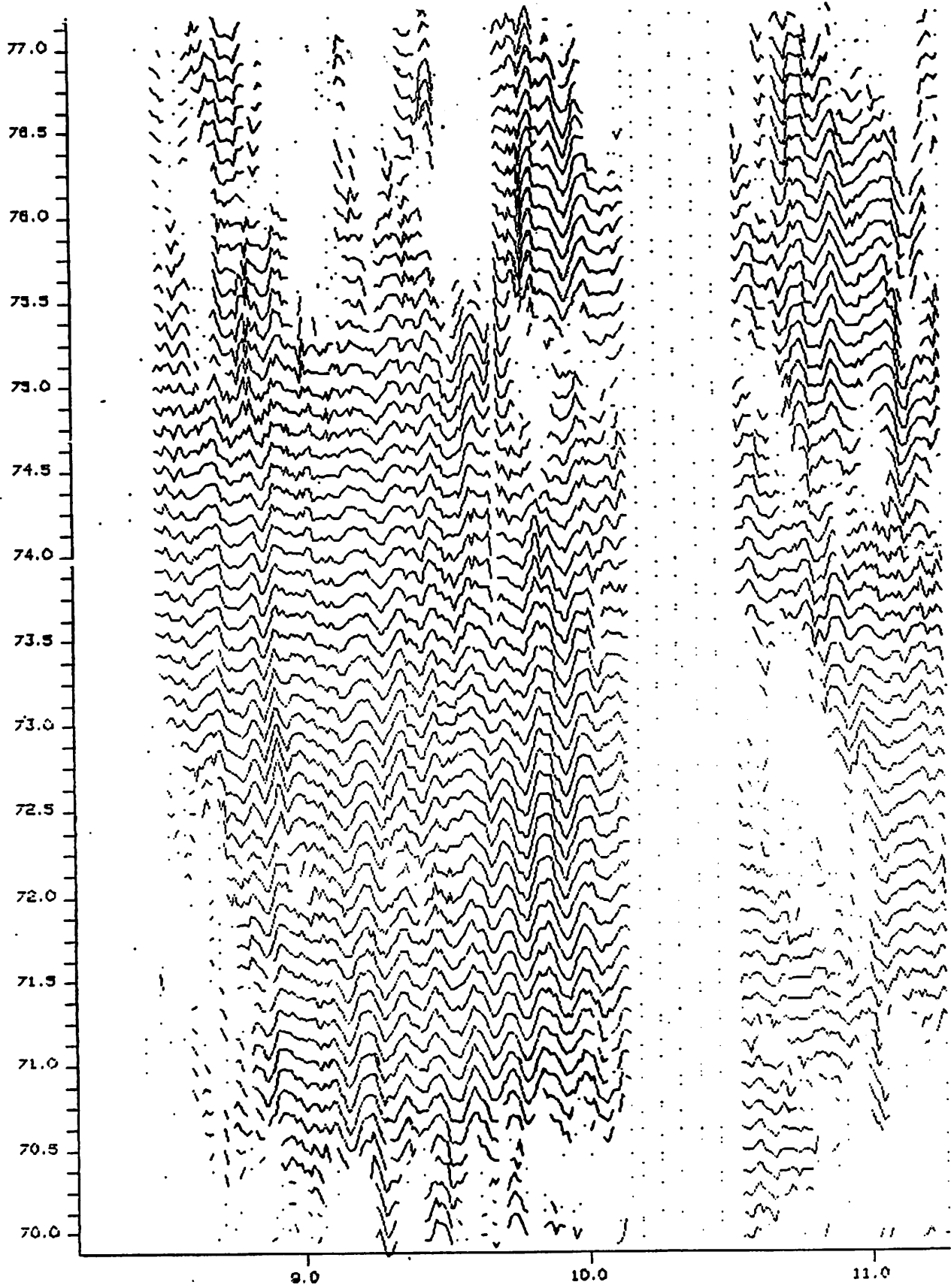
9

10

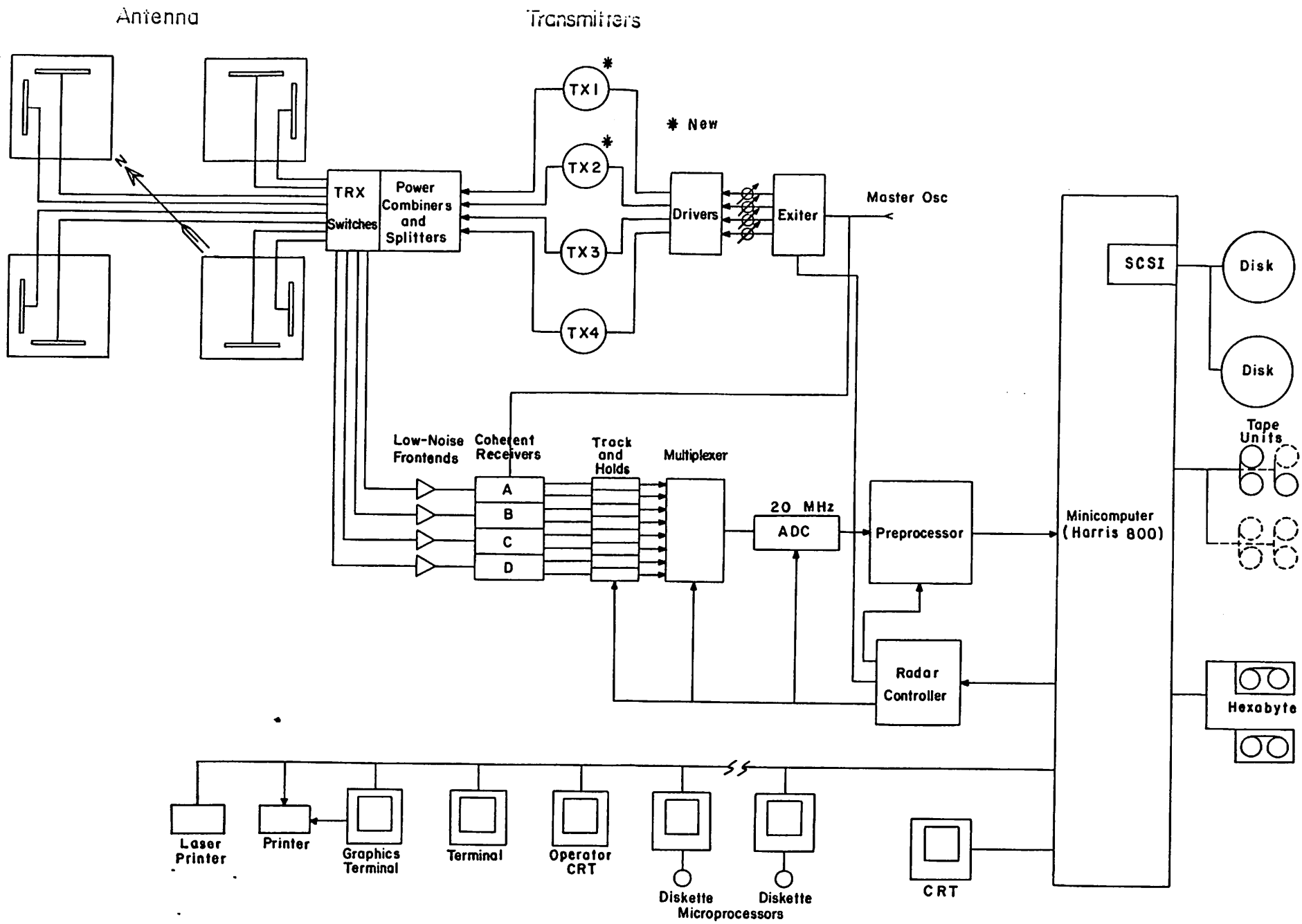
11

12

13



11 SEP 89 - Rx "A"



Schematic Diagram of the Jicamarca Radar