

---

CONTRIBUTIONS TO THE 5TH INTERNATIONAL SYMPOSIUM  
ON EQUATORIAL AERONOMY

J. Röttger and R.F. Woodman

**MP**  
MAX-PLANCK-INSTITUT FÜR AERONOMIE

**AE**

Simultaneous Measurements of the Electric Field  
in the Auroral Zone and at the Equator  
during Intense Magnetic Activity

M.C. Kelley<sup>◊</sup>, C. Gonzales<sup>◊</sup>,

F.S. Mozer<sup>†</sup> and R.F. Woodman\*

<sup>◊</sup>School of Electrical Engineering, Cornell University,  
Ithaca, New York 14853

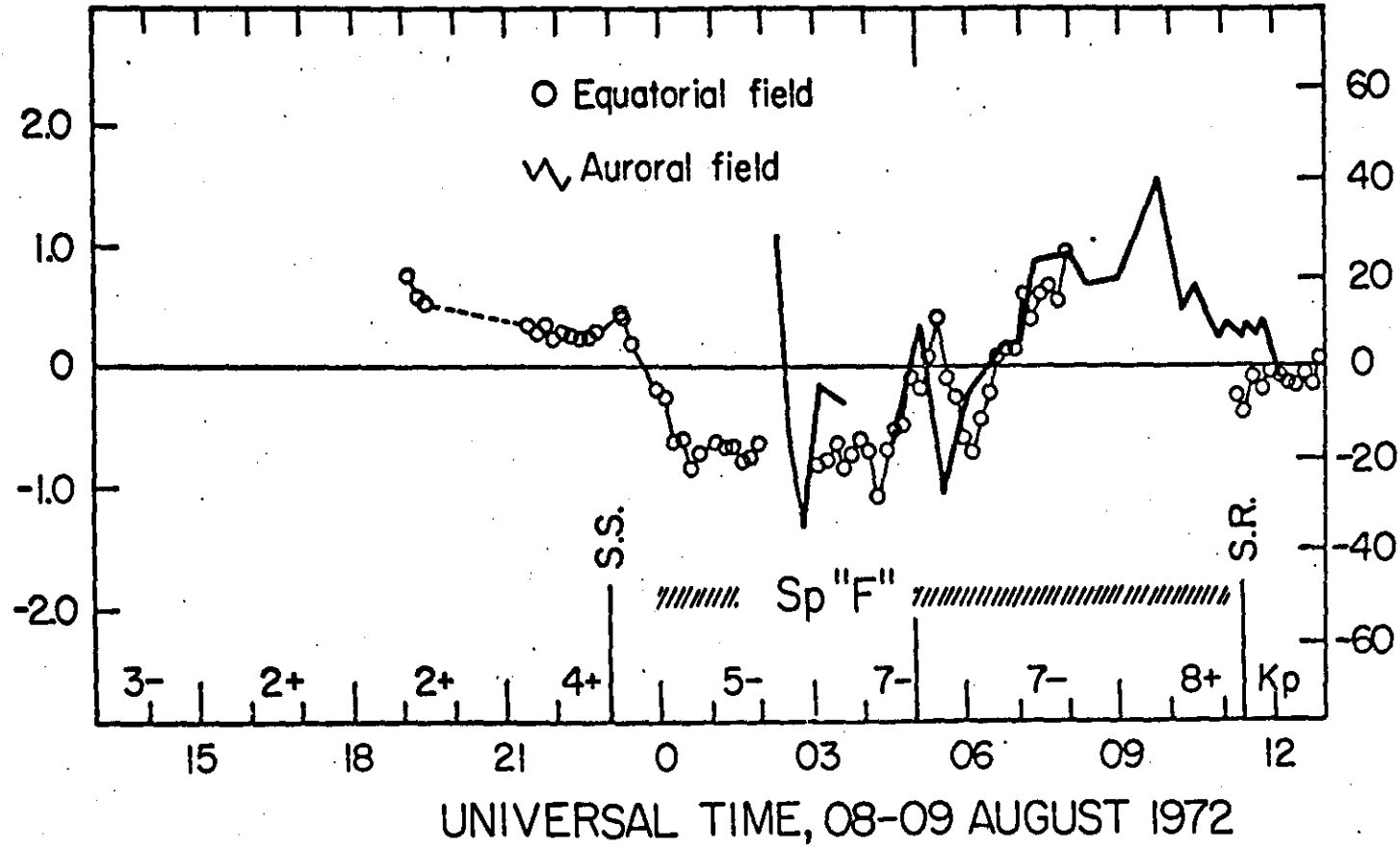
<sup>†</sup>Physics Department and Space Science Lab., University of California,  
Berkeley, California 94720

\*Max-Planck-Institut für Aeronomie, D-3411 Katlenburg-Lindau 3, F.R.G.

Abstract

Simultaneous balloon measurements of the auroral zone electric field in Alaska and of the vertical drift velocity of the region at Jicamarca, Peru during the great flow of August 1972 are presented. The eastward electric field component at the equator was correlated, with a 20 minute time delay, to the westward component of the auroral zone field at College, Alaska. The equatorial horizontal component actually reversed in sign from the normal westward value and, simultaneously, the electrojet then flowing over the dayside hemisphere (at Trivandrum, India, for example) was greatly depressed. These results show that intense auroral current systems can grossly affect both the normal dynamo current patterns at low latitudes on the dayside and the polarization fields responsible for the worldwide low latitude zonal electric field component.

Eastward Component of Electric Field at Jicamarca Peru, mv/m



Westward Component of Electric Field at College Alaska, mv/m