



## **Comparative Study of the Global Ionospheric Behavior During Solar Cycle 22-23 and 23-24 Minima**

Eduardo Araujo-Pradere (1), Robert Redmon (2), and Tim Fuller-Rowell (1)

(1) CIRES, University of Colorado, Boulder, CO, USA (eduardo.araujo@colorado.edu), (2) NGDC, NOAA, Boulder, CO, USA

The ionosphere is a direct product of the input of solar energy into the atmosphere. It is primarily produced by the ionization of the neutral atmosphere by solar radiation and, therefore, usually expected to follow the Sun's behavior in one way or another. Solar Cycle 23-24 minimum partially covered the years 2008 - 2009, and was in many ways unusual. It was, in general, an unusually long, deep, flat, and complex minimum, quite different from previous minima. Initial studies of the ionospheric behavior for this period showed that the solar dependence of the ionospheric behavior is not linear, and the effects of the prolonged and complicated Solar Cycle 23-24 minimum, although visible, are modest, and only marginally exceed the geophysical variability of the system. The vertical Total Electron Content (vTEC) showed a consistently modest decrease of the average value for the mean day, while the behavior of the peak concentration (NmF2) is not as consistent, showing cases in which the average value was even higher for the 23-24 minimum, when compared against the 22-23 minimum (Araujo-Pradere, et al., 2011). This mixed behavior of the ionospheric parameters could suggest that less plasma was created during the 23-24 minimum, but that the global plasma dynamics played a larger role in peak density RESPONSE. In the present article we have extended the previous study to a global coverage, using regional averages. Two main ionospheric parameters have been studied, the peak concentration (NmF2) and the maximum height (hmF2) of the F2 layer.