



Equinoctial asymmetry in solar activity variations of NmF2 and TEC

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The ionosonde NmF2 data and the JPL TEC maps were collected to investigate the equinoctial asymmetries in ionospheric electron density and its variation with solar activity. With solar activity increasing, the equinoctial asymmetry of noontime NmF2 increases at middle latitudes but decreases or changes little at low latitudes, while the equinoctial asymmetry of TEC increases at all latitudes. The latitudinal feature of the equinoctial asymmetry at high solar activity is different from that at low solar activity. The increases of NmF2 and TEC with the solar proxy $P=(F10.7+F10.7A)/2$ also show equinoctial asymmetries that depends on latitudes. The linear increase rate of NmF2 with P at March equinox (ME) is higher than that at September equinox (SE) at middle latitudes, but the latter is higher than the former at the EIA crest latitudes, and the difference between them is small at the EIA trough latitudes. The phenomenon of higher linear increase rate at SE than at ME does not appear in TEC. The linear increase rate of noontime TEC with P at ME is higher than that at SE at all latitudes, and the difference between them peaks at both sides of the dip equator.