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Long-term trend of foE in European higher middle latitudes

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Long-term changes and trends have been observed in the whole ionosphere below its maximum. As concerns the E region, historical global data (Bremer, 2008) provide predominantly slightly positive trend, even though some stations provide a negative trend. Here we use data of two European stations with the best long data series of parameters of the ionospheric E layer, Slough/Chilton and Juliusruh over 1975-2014 (40 years). Noon-time medians (10-14 LT) are analyzed. The trend pattern after removing solar influence is complex. For yearly average values for Chilton first foE is decreasing in 1975-1990 by about 0.1 MHz, then the trend levels off or a little increase occurs in 1990-2004, and finally in 2004-2014 again a decrease is observed (again by about 0.1 MHz but over shorter period). Juliusruh yields a similar pattern. Similar analysis is also done for some months to check seasonal dependence of trends. The stability of relation between solar activity and foE is tested to clarify potential role of this factor in apparent trend of foE.