

King Tidal Effects on the ionosphere during the period of 2000 to 2017

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This study examines the spring tide signature of the 14.7-day period in concurrent/co-located measurements of the ionosphere total electron content (TEC) and sea level in an 18-year period of 2000-2017. A discrete Fourier transform is applied to find amplitude and phase of the spring tide in the TEC and sea level. Results show that the spring tide amplitude in the sea level is clear and steady, while that in the ionospheric TEC is rather fluctuated and proportional to the ambient TEC value. The relative amplitude of TEC in the 18-year is a function of the solar local time and become prominent in the daytime of 08:00-19:00. and however that in the nighttime 00:00-06:00 LT becomes prominent in 2002, 2005, 2009, and 2015, when the perihelion and perigee simultaneously occur. On the other hand, the phase of the spring tide signature in the sea level and TEC yield a 3-year period, which is close to the time interval of the above prominent spring tide signature in the nighttime. More detailed discussions and results will be presented.