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0418号台风“艾利”对电离层电子浓度总含量的扰动

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Title: Research on disturbance of No.0418 typhoon "AiLi" to TEC

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摘要: 使用差值和滑动均值法并结合小波滤噪分析,讨论了典型台风期间电离层TEC的扰动响应,并对台风登陆点以及参考点的电离层TEC变化情况进行了分析。结果表明:(1)TEC所表现出来的经度效应相对较小,纬度效应较大;台风对电离层的扰动在台风形成为热带风暴开始就形成,扰动在数值上是较小的;(2)用小波去噪的方法结合差值法和滑动均值方法表明,台风对电离层TEC的影响在台风登陆并达到台风量级以及台风风速达到最大这两个阶段最明显;台风在登陆期间TEC增大,在风速到达最大阶段,TEC降到最小;(3)另外从参考点分析中发现,正是由于TEC经度效应相对较小,从而使得用差值法分析TEC微小扰动有一定的合理性,可为寻找TEC具体扰动时段作参考。

Abstract: Using difference method, moving average method and combining with wavelet analysis method, this paper analyzes ionosphere TEC disturbance response during typhoon "AiLi", discusses the change of ionospheric TEC at typhoon landed point and reference points. The results are as follows: (1) longitudinal effect TEC reflected is relatively small, while latitudinal effect is large; the disturbance of typhoon to TEC forms from the beginning of typhoon, but is smaller in value. (2) moving average method and wavelet denoising analysis show that, the impact of typhoon on the ionospheric TEC is most obvious while it is landing and reaching the maximum speed; The TEC increases to maximum before typhoon landing, and decreases to minimum when the speed of typhoon reaches maximum; (3) Reference points analysis shows that difference method is reasonable to analyze the small disturbance of TEC.

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