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台风影响下福州地区的风廓线特征(PDF)

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Title: Study on characteristics of wind profiles affected by landed typhoons in Fuzhou area

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摘要: 对台风影响下福州地区的风廓线特征进行了研究。资料来源于福州气象站的无线电探空数据,涉及2005-2009年期间严重影响福州地区的15个台风、共91条风廓线。首先求出梯度风速及其对应的高度,在此基础上采用指数律对梯度风高度以下的风廓线进行拟合,并对幂指数以及10 m高度的地表风速和梯度风速的风速比进行了计算。结果表明:幂指数的平均值为0.43,风速比的平均值为0.12;随着梯度风高度的增大,幂指数减小,风速比增大;风速比按指数律随幂指数的增大而衰减。以台风中心到福州气象站的距离为参数,还对风廓线各特征参数在台风登陆过程中的变化趋势进行了分析。

Abstract: With the radiosonde data from Fuzhou Weather Station, the characteristics of the wind profiles affected by landed typhoons in Fuzhou area were studied. Totally 91 wind profiles were obtained, which involved 15 typhoons that severely affected Fuzhou area during the year of 2005-2009. The gradient wind speed and the corresponding levels were first obtained, which were then used by the power law to fit the wind profiles below the gradient wind level. Exponential index and wind speed ratio between the surface wind speed at 10m height and the gradient wind speed were calculated. Results show that the mean value of the exponential index is 0.43, and the mean value of the wind speed ratio is 0.12. The exponential index decreases and the wind speed ratio increases with the

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[本期目录/Table of Contents](#)

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increasing of the gradient wind level. The wind speed ratio decays in an exponential way with the increasing of the exponential index. Then, the characteristics of the wind profiles were analyzed by considering the variation of the distance between Fuzhou Weather Station and the typhoon center during the landfall process.

参考文献/REFERENCES

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