

# The Turbulent characteristic in the surface layer over dune at Naiman in Inner mongolia

Liu huizhi Zhang Hongsheng Hong Zhongxiang Hu Fei Chen Hongyan

(LAPC, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing 100029)

(Department of Geophysics, Peking University, Beijing 100871)

## Abstract

In this paper, the turbulent and radiation data obtained over dune in Naiman from July 21 to Aug.10, 2000 have been analyzed. It has been discussed the relation between the non-dimensional turbulent variances and the stability  $z/L$ . The result shows that the changes of the non-dimensional velocity components, temperature and humidity variances with the stability in the surface layer under unstable stratification satisfy the Monin-Obukhov similarity theory. The energy budget in the surface layer over the movable dune has been studied also. The maximum sensible heat flux is  $170 Wm^{-2}$  or so. The maximum soil heat flux in the surface layer is  $100 Wm^{-2}$  or so. The maximum net radiation flux is  $400 Wm^{-2}$  or so. The latent heat flux is always smaller than  $60 Wm^{-2}$ . The average ratio between  $(H + LE)$  and  $(R_n - G)$  is 0.78 or so in the daytime during clear day. The energy imbalance has been found in the surface over the movable dune. The reason why the energy imbalance appears over heterogeneous surface needs to be studied more carefully in the next.

**Keywords:** the moveable dune; the turbulent variance, the energy imbalance

LIU Huizhi email: Huizhil@mail.iap.ac.cn