

校園空氣負離子濃度時空分布之研究

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摘要

Studies prove that the negative air ions can purify air and enhance the immune system. A professor in Harvard University calls it the vitamin of the air. The generation and disappearance of negative air ions are closely related to the surrounding environmental conditions. This study aims to explore the spatial and temporal distribution of the concentration of negative air ions, and its correlation with environmental factors. The study started from Oct. 2009 to Jan. 2010 with 8 kind of environmental spaces and monthly and daily cycle investigation in Chung Hua University that noted for its green campus.

Results showed that (1) spatial distribution: the highest negative air ions concentration is in the swimming pool while lowest in the lawn among the eight campus spaces. Similar spatial paired comparison showed that the concentration of the negative ions in the woods is higher than in the lawn; swimming pool higher than the pond; activity center higher than the stadium. The cement square is similar with the asphalt parking lot. The concentration of negative ions in the distance of 1 m from the artificial water fall is significantly higher than in the distance of 3 m or 5 m. The concentration of negative air ions indoor is significantly higher than that of outdoor. (2) temporal distribution: the concentration of negative ions is the highest in the morning than the noon time and the evening time. Thus the concentration of negative ions about 10 and a half is the highest of the daily cycle. The concentration of positive ions is higher than that of negative ions when the temperature gets higher. (3) the correlation analysis showed that the concentration of negative ions is significantly correlated with the temperature, indoor or outdoor condition from the monthly cycle data. There is significant correlation between the concentration of negative ions with space pattern, indoor or outdoor, water resource, temperature, and illumination.

Over all, the concentration of negative ion in the woods is higher than in the lawn, dynamic water source is higher than the static water source. Therefore, planting trees is better than planting grasses. Water falls will be better than the still ponds.

關鍵字：Negative air ion、Campus Environment、Green Living Space Planning