

论文

大香格里拉地区植被空间分布的环境特征

李亚飞, 刘高焕

中国科学院 地理科学与资源研究所 资源环境与信息系统国家重点实验室,北京 100101

摘要:

以植被种类丰富的大香格里拉地区为研究区,利用气象站点数据、数字高程数据(DEM)以及该地区植被分布图,通过最大熵模型(Maxent)和ArcGIS软件的空间分析功能,研究该地区典型植被空间分布的环境特征,分析了大香格里拉地区植被分布的气候特征和地形特征,量化了植被空间分布的气候范围,并根据二者的关系特征,得到了植被与气候因子关系模型。同时,界定了不同植被分布的海拔、坡度、坡向范围。发现大香格里拉地区影响不同植被空间分布的气候因子不同,影响草甸分布的是多年平均最低气温和多年7月平均气温,影响针叶林分布的是多年平均最低气温和多年平均日照时数,影响灌丛分布的较分散。同时不同植被的海拔分布界限和坡度不同,坡向对植被分布的影响不明显。研究结果可为该地区植被保护和管理,以及植被的气候变化响应提供基础参考。

关键词: 植被空间分布 环境特征 最大熵 大香格里拉

Environmental Characteristics of Vegetation Spatial Distribution in Grand Shangri-la Region

LI Ya-fei, LIU Gao-huan

Institute of Geographic Sciences and Natural Resources Research, CAS, State Key Laboratory of Resource and Environmental Information System, Beijing 100101, China

Abstract:

Environmental characteristics affect spatial distribution of the vegetation profoundly. The researches of regional environmental characteristics of vegetation are very significant to the protection and management of local vegetation diversity. On the basis of these researches, further researches on vegetation response to climate changes can also be completed. In this paper, we chose the Grand Shangri-la as a research area to study the relationships between local typical vegetation distribution and their environmental characteristics through Maxent model and ArcGIS spatial analysis, using the climate stations data, DEM and vegetation distribution map in this area. Then, climate and terrain characteristics of typical vegetation distribution could be acquired in this area, quantifying evaluation of the relationships between the distributions of vegetation and their habitat, relational model between vegetation and climate factors were analyzed on the basis of their statistical relation characteristics. At the same time, elevation, slope and aspect boundaries of different vegetation distributions were quantitatively defined. In the region, different vegetation distributions were affected by different climate factors. Meadows distribution was affected by annual average lowest temperature and annual average July temperature; coniferous forest distribution was affected by annual average lowest temperatures and sunshine duration; shrub distribution was affected by annual average sunshine duration and July temperature; cultural vegetation distribution was affected by annual average May to October precipitation and annual average July temperature. At the same time, these vegetations showed the different elevation and gradient distribution characteristics. 90% of the meadows concentrated within the range of 3740 m to 5000 m in elevation.90% of the coniferous forest concentrated within the range of 1796 m to 4484 m. Cultural vegetation concentrated within the range of 1000 m to 2784 m. 80% of the shrubs concentrated within the range of 3000 m to 5000 m. In different gradient, vegetation distributions were not the same. 95% of the meadows were distributed in the range of less than 40 degrees. 95% of the coniferous forests were distributed in the range of less than 45 degrees. More than 90% of the cultural vegetation were distributed in the range of less than 35 degrees. About 90% of the shrubs were distributed in the range of 6 degrees to 37 degrees. In this area, vegetation distributions didn't show the typical aspect characteristic. In different aspects, the ratio of vegetation distribution was exactly similar. The results from the above analysis provided the reference for vegetation diversity protection, vegetation management and vegetation response to climate change.

Keywords: vegetation distributions environment characteristics Maxent Grand Shangri-la

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通讯作者: 刘高焕

作者简介:

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