

前植物生产层

疏勒河上游冻土区高寒草地NDVI分布特征及制约因素分析

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摘要:

全球变暖对多年冻土最直接的影响就是地温升高和活动层厚度增大, 导致表层土壤含水量减少, 从而对多年冻土区植被产生影响。以祁连山西段干旱一半干旱区的疏勒河上游地区为研究对象, 分析不同冻土类型区高寒草地归一化植被指数 (NDVI) 的分布特征及变化趋势, 建立不同冻土类型区NDVI和地表温度 (LST) 的关系。结果表明, 从极稳定型冻土区到季节性冻土区, NDVI呈倒“U”形分布特征; 1995年以来, 极稳定型和稳定型冻土区NDVI略有增加, 亚稳定型和过渡型冻土区NDVI增加相对明显, 植被覆盖有所增加; 不稳定型和季节性冻土区NDVI减少。从极稳定型冻土区到季节性冻土区, 植被生长的限制因素从热量过渡到水分。

关键词: 疏勒河上游; 高寒草地; NDVI LST; 制约因素

Analysis of NDVI distribution and limiting factors of alpine grassland in permafrost area of the upper Shule River

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Abstract:

The most direct impacts of global warming on permafrost are ground temperature rising and active layer thickening, which will reduce moisture content of surface soil, and then, influence vegetation of permafrost zone. In this study, we studied distribution and changes of NDVI of the alpine grassland and built relationships between NDVI and land surface temperature (LST) to infer the limiting factors (water and energy) of vegetation growth on the source region of Shule River basin, a semi arid zone, which locates in the western of Qilian Mountain. The result showed that the distribution of NDVI was in the shape of reversed “U” from extreme stable permafrost zone to seasonal frost zone. Second, Since 1995, NDVI has increased slightly in extreme stable and stable permafrost zones and the increase were more significant in sub stable and transition permafrost zones. However, NDVI has decreased in unstable permafrost zone and seasonal frost zone. Moreover, limiting factor of vegetation growth was transfered from energy in extreme stable permafrost zone to water in seasonal frost zone.

Keywords: permafrost degradation alpine grassland NDVI LST limiting factor

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