

前植物生产层

NDVI和EVI在高寒草地牧草鲜质量估算和植被动态监测中的比较

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摘要:

对2007-2009年126景MODIS影像的归一化植被指数(NDVI)和增强型植被指数(EVI)数据进行了比较研究,并结合11个高寒草地监测点的地上生物量鲜质量(AGB)数据,通过相关分析、回归分析等方法,分析了MODIS共4种植被指数(NDVI250, NDVI500, EVI250, EVI500)在估算高寒草地牧草鲜质量中的优劣,并确定了通过EVI250估算地上生物量鲜质量的回归方程。结果表明, EVI在高寒草地上均比NDVI小,但EVI比NDVI更稳定准确。应用植被指数产品EVI估算高寒草地牧草鲜质量优于NDVI,其中在EVI250、EVI500、NDVI250和NDVI500 4种植被指数中, EVI250与地上生物量鲜质量的相关性最好,相关系数为0.904(P<0.01),回归方程为yAGB=-244+1 316xEVI250(R2=0.817, P<0.01)。

关键词: MODIS植被指数; 牧草; 地上生物量; 鲜质量; 高寒草地; 植被动态

Comparison NDVI with EVI in the herbage fresh weight estimation and vegetation dynamics for alpine grassland

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Abstract:

NDVI (Normalized Difference Vegetation Index) and EVI (Enhanced Vegetation Index) were extracted from 126 MODIS images of 2007, 2008 and 2009, which were analyzed and compared with each other. This study indicated that the EVI values were lower than the NDVI values in the alpine meadow, and they all showed a similar trend in reflecting the growth status and characteristics of the vegetation, indicating that the EVI was more stable and accurate than the NDVI in alpine meadow by analyzing their corresponding standard deviation. Combined the alpine meadow AGB (Aboveground Green Biomass) data from 11 monitoring points, correlation analysis and regression analysis were applied to compare the two MODIS vegetation index products (NDVI, EVI) and four vegetation indices(NDVI250, NDVI500, EVI250, EVI500) in the alpine meadow AGB estimation. The results of this study showed that EVI estimated AGB more accurately than NDVI did, and had a better correlation relationship with AGB. EVI250 had the best dependent relation with alpine herbage fresh weight among four vegetation indices (NDVI250, NDVI500, EVI250, EVI500), and the correlation coefficient was 0.904 (P<0.01). This study suggested that EVI250 was a better index in the alpine AGB estimation, and the regression equation between EVI250 and alpine herbage fresh weight was as following: yAGB=-244+1 316xEVI250.

Keywords: MODIS vegetation index herbage aboveground biomass fresh weight alpine grassland vegetation dynamic

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