藏北高原地表覆盖时空动态及其对气候变化的响应

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Spatiotemporal dynamics of land cover in northern Tibetan Plateau with responses to climate change.

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摘要 利用2001—2008年逐年的MODIS地表覆盖类型产品，根据藏北高原地表覆被特征对原始数据进行合并处理，得到每年藏北高原地表覆盖类型图；运用分类统计、动态转移矩阵、景观格局指数方法分析藏北高原地表覆盖类型的变化，并结合研究区内气象台站观测数据分析地表覆盖类型转化对气候变化的响应特征.结果表明：研究期间，由于气候变暖速率的加快，研究区冰川雪被消融加速，冰川面积迅速萎缩，融化的雪水汇集到高原湖盆，使湖面水位上升，湖泊面积增加，部分被淹没的草地形成湿地；植被覆盖状况没有表现出明显的变好或退化趋势，2001—2004年为气候暖湿化阶段，荒漠裸地减少、稀疏草地和草地覆盖面积增加，2006—2007年为气候暖干化阶段，荒漠面积增加、稀疏草地面积减小；2001—2008年，藏北高原景观破碎度减小，地表覆盖异质性降低，且各类型所占比例的差异有所加大.

关键词： 地表覆盖 藏北高原 气候变化 MODIS

Abstract： By using the 2001-2008 MODIS land cover products (MCD12Q1) and based on the modified classification scheme embodied the characteristics of land cover in northern Tibetan Plateau, the annual land cover type maps of the Plateau were drawn, with the dynamic changes of each land cover type analyzed by classification statistics, dynamic transfer matrix, and landscape pattern indices. In 2001-2008, due to the acceleration of global climate warming, the areas of glacier and snow-covered land in the Plateau decreased rapidly, and the melted snow water gathered into low-lying valley or basin, making the lake level raised and the lake area enlarged. Some permanent wetlands were formed because of partially submersed grassland. The vegetation cover did not show any evident meliorated or degraded trend. From 2001 to 2004, as the climate became warmer and wetter, the spatial distribution of desert began to shrink, and the proportions of sparse grassland and grassland increased. From 2006 to 2007, due to the warmer and drier climate, the desert bare land increased, and the sparse grassland decreased. From 2001 to 2008, both the landscape fragmentation degree and the land cover heterogeneity decreased, and the differences in the proportions of all land cover types somewhat enlarged.

Key words： land cover northern Tibet Plateau climate change MODIS

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