新疆典型自然景观遥感监测

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摘 要:【目的】2021 年，国家启动了第三次新疆科学考察，面向建立以国家公园为主体的自然保护地体系、世界自然遗产申报与保护为目标，对新疆地区的典型自然景观进行调查。【方法】基于天-空-地一体化监测技术，分析多源遥感影像图像的纹理结构与光谱差异，通过野外科学考察采集景观位置、大小、色彩和结构等信息，高效地进行景观的识别与调查。【结果】（1）调查包括新疆地区 460 处典型自然景观，包含地质地貌景观、陆地生物景观和湿地景观 3 个一级类，以及地质剖面景观、生物化石景观、风蚀地貌景观、风积地貌景观、岩石地貌景观、岩溶地貌景观、构造地貌景观、火山地貌景观、寒温性针叶林景观、山地草原草甸景观、荒漠乔木林景观、湖泊景观、沼泽景观、泉水与瀑布景观和永久冰川积雪景观 15 个二级类（2）新疆地质地貌景观有 8 个亚类，共 105 处，其中，风蚀地貌景观占比最大，为 24.7%，主要分布在塔里木盆地北侧、吐哈盆地周边和准噶尔盆地的西北部及东南部等西北盛行风较强的干旱地区；陆地生物景观有 3 个亚类，共 175 处，其中，寒温性针叶林景观资源丰富，占比 56.6%，主要分布在水分充足、海拔高、气温低的天山和阿尔泰山；湿地景观有 4 个亚类，共 180 处，其中，永久冰川积雪景观数量较多，占比 61.2%，主要分布在海拔较高的昆仑山、天山东部和阿尔泰山北部。【结论】新疆地区自然景观资源丰富，种类多，分布范围广阔，天-空-地一体化技术可以快速高效地获取大范围、多对象、多维度的景观信息，在新疆典型自然景观监测工作中展现出了较强的适用性和优越性。

Remote Sensing Monitoring of Typical Natural Landscape in Xinjiang

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Abstract:【Objective】 In 2021, the state launched the third Xinjiang scientific expedition, aiming at establishing a natural protected area system with national parks as the main body and the declaration and protection of world natural heritage, and investigating the typical natural landscapes in Xinjiang. 【Method】 Based on the space-air-ground integrated monitoring technology, the texture structure and spectral difference of multi-source remote sensing image are analyzed. The information of landscape location, size, color and structure is collected through field scientific investigation, and the landscape is identified and investigated efficiently.【Result】(1) The survey includes 460 typical natural landscapes in Xinjiang, including three first-level categories of geological landscape, terrestrial biological landscape and wetland landscape, as well as 15 second-level categories of geological profile landscape, biological fossil landscape, wind erosion landscape, aeolian landscape, rock landscape, karst landscape, tectonic landscape, volcanic landscape, cold temperate coniferous forest landscape, mountain grassland meadow landscape, desert arbor forest landscape, lake landscape, swamp landscape, spring and waterfall landscape and permanent glacier snow landscape. (2) There are 8 subcategories of geological landscapes in Xinjiang, a total of 105, of which wind erosion landscape accounts for the largest proportion. 24.7 %, mainly distributed in the north of the Tarim Basin, the periphery of the Turpan-Hami Basin and the northwestern and southeastern parts of the

Junggar Basin and other arid areas with strong northwest prevailing winds . There are three sub-categories of terrestrial biological landscapes, with a total of 175 sites. Among them, the cold-temperate coniferous forest landscape resources are rich, accounting for 56.6 %, mainly distributed in the Tianshan Mountains and Altai Mountains with sufficient water, high altitude and low temperature . There are 4 sub-categories of wetland landscapes, with a total of 180 sites. Among them, the number of permanent glacier snow landscapes is larger, accounting for 61.2 %, mainly distributed in the higher elevations of Kunlun Mountains, eastern Tianshan Mountains and northern Altai Mountains.【Conclusion】The natural landscape resources in Xinjiang are rich in variety and wide in distribution. The space-air-ground integration technology can quickly and efficiently obtain large-scale, multi-object and multi-dimensional landscape information, which shows strong applicability and superiority in the monitoring of typical natural landscapes in Xinjiang.