

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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ASSESSING USER NEEDS TO INFORM FUTURE LAND IMAGING SYSTEMS

Abstract

The Department of the Interior (DOI) and the National Aeronautics and Space Administration (NASA) are actively collaborating on a Sustainable Land Imaging (SLI) program to develop the next generation of moderate resolution land imaging satellites, with measurements that are both compatible with the existing 45-year Landsat record, and evolve mission architecture capabilities and technologies to meet pressing societal needs. Under SLI, the Secretary of the Interior, through the Director of the USGS, is charged with determining the operational requirements for collection, processing, archiving, and distribution of land surface data to the United States Government and other users. To inform the SLI Landsat 10 mission definition, the USGS has collected and examined land imaging user needs from across the U.S. Federal civil government and other user communities, in a wide range of application areas. In total, 1,196 moderate-resolution land imaging user needs were collected from interviews with 235 subject matter experts across a diverse set of 176 applications. The interviews covered application areas such as mapping and monitoring national and global agriculture and forests, natural hazards, water quality, geology and minerals, coastal change and glacier and ice sheet extent, as well as a wide array of ecological and land cover applications. The elicited user responses were used as a basis to assess current and future priorities among spatial, temporal, spectral, and other sensor attributes. Among other factors, the analysis considers user needs that fall within 5 to 120m spatial resolution and with a cloud-free collection frequency of 3 days or longer – considered comparable to the existing Landsat data record as augmented by Sentinel-2, while providing reasonable space for improvement in future SLI missions. This paper describes some of the key findings from this process, discusses the method and scope of the data collection, and describes plans to compare the relative performance of individual satellite sensors or suites of satellite capabilities in satisfying these user needs.