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| Landsat Next: Temporal, Spatial and Spectral Improvements Leading to Scientific Discovery and Decision-Making During the Next Half-Century |
| During 2022, the Earth observing community celebrated both the 50th anniversary of Landsat 1 and the initiation of “Landsat Next”, the follow-on mission to Landsat 9. The Landsat Program has established itself as the cornerstone of a growing constellation of Earth observing imagers due to its broad applicability; global coverage and management-scale resolution; rigorous geometric and radiometric calibration; long-term continuity of measurements; and free access to more than 10 million Earth images. Furthermore, powerful synergies exist when Landsat data are combined with similar 2D surface reflectance data (e.g., Harmonized Landsat Sentinel-2, HLS) and 3D lidar sensing products (e.g., ICESAT-2, GEDI), especially for forestry-related applications. Landsat Next will continue the Landsat legacy using a constellation of three identical observatories and new imaging technology to deliver two to three times the temporal, spatial and spectral resolution of any previous Landsat mission (6d revisit for 26 bands; 10 to 20m VSWIR and 60m atmospheric/TIR). Landsat Next’s measurements will enhance and improve forest management, inventory and analysis, and health monitoring, which is an integral part of NASA’s Earth to Science Action strategy. In addition, new capabilities will unlock applications that support water quality and aquatic health assessments (e.g., cyanobacteria blooms), crop production and soil conservation (e.g., crop residues and non-photosynthetic vegetation), climate and snow dynamics research (e.g., snow grain size and albedo), and mineral mapping based on thermal emissivity. This talk will focus on the technical evolution and unique features of Landsat Next’s architecture, and prepare users for forest applications and breakthrough science opportunities using Landsat Analysis Ready Data; cloud computing tools for efficient management and processing; novel artificial intelligence and machine learning algorithms; harmonized data from virtual constellations; scaling from field to airborne and satellite observations; and novel web-based tools and user-friendly interfaces to facilitate the efficiency and effectiveness of researcher-stakeholder engagement. |

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