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A Testing Environment for Airborne Optical Sensors

Underground nuclear explosions can have detectable impacts on surface conditions. The nature of the impact can vary based on several factors including geology. Continuous or fragmented vegetation cover as well as exposed soil may reveal detectable changes related to this impact in the optical and thermal infrared region of the electromagnetic spectrum. With an appropriate sensor assembly, these changes may be detected as OSI-relevant anomalies. The use of multispectral imaging equipment at the surface and from the air is permitted during an On-Site Inspection to search for anomalies. In order to develop an optimal sensor array for over-flights different hardware configurations have been tested. Airborne tests typically require a lead-in time and are costly while ground-based tests in a laboratory environment provides effective means of testing airborne cameras and sensors. In this paper, a testing environment is presented which comprises a modular sensor platform, adjustable illumination and height as well as a programmable sample tray. The system can be used to vary spatial and spectral resolution and sampling frequencies of different airborne sensors. This testing environment offers an opportunity for precise system calibration, fundamental research, system integration tests and hands-on training of airborne imaging in a time and cost-effective manner.

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