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Nuclear Verification from Space? Satellite Imagery in Support of Non-Proliferation and Arms Control
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In the last decades, the international community has negotiated a number of multilateral agreements on nuclear non-proliferation and arms control, including also provisions for the verification of compliance. Among the different verification measures, earth observation (EO) by scientific or commercial satellite imaging sensors has been considered as an important source of information. If the area of interest is not accessible, remote sensing sensors offer one of the few opportunities to gather almost real-time data over the area. The study reviews the technical progress in the field of satellite imaging sensors and explores the recent advances in satellite imagery processing and geoinformation technologies as to the extraction of significant observables and signatures of possible non-compliance to non-proliferation and arms control. Moreover, it discusses how satellite data and geoinformation technologies could be used complementary for confirming information gathered from other systems or sources. The study also aims at addressing legal and political aspects and the cost benefits of using satellite imagery in the nuclear verification procedure. The study concludes that satellite imagery and geoinformation technologies are expected to support the efficient management of nuclear non-proliferation and arms control issues and to improve the effective performance of the Treaty.