

3.2-P21. Use of satellite remote sensing imagery for the CTBT verification

Remote sensing imagery is a powerful tool for the international organizations, states and interested individuals to monitor compliance of states parties with nuclear security related treaties. The Comprehensive Nuclear-Test-Ban Treaty (CTBT) that has not yet entered into force, recognizes the use of remote sensing technology for the CTBT verification as part of the National Technical Means and during On-Site Inspection activities. Very high spatial resolution satellite imagery is usually used to investigate an area of an alleged nuclear test explosion. However, because the precise location of this area may not be known, the use of medium spatial resolution imagery could initially be helpful for a wider “view”. This study investigates by using Landsat images the sites of several underground nuclear tests carried out by USA, ex-USSR, China, India, Pakistan, and North Korea. Change detection based on satellite imagery animation and visualization techniques was used. The use of medium spatial resolution imagery gave good results for the detection of the surface disturbance produced by the underground nuclear tests. However, low yield tests may not have surface expression to be detected by the satellite imagery. In these cases, high spatial resolution satellite imagery may indicate activities related to nuclear testing.

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