

DHS Science and Technology Directorate

Buried Border Tripwires

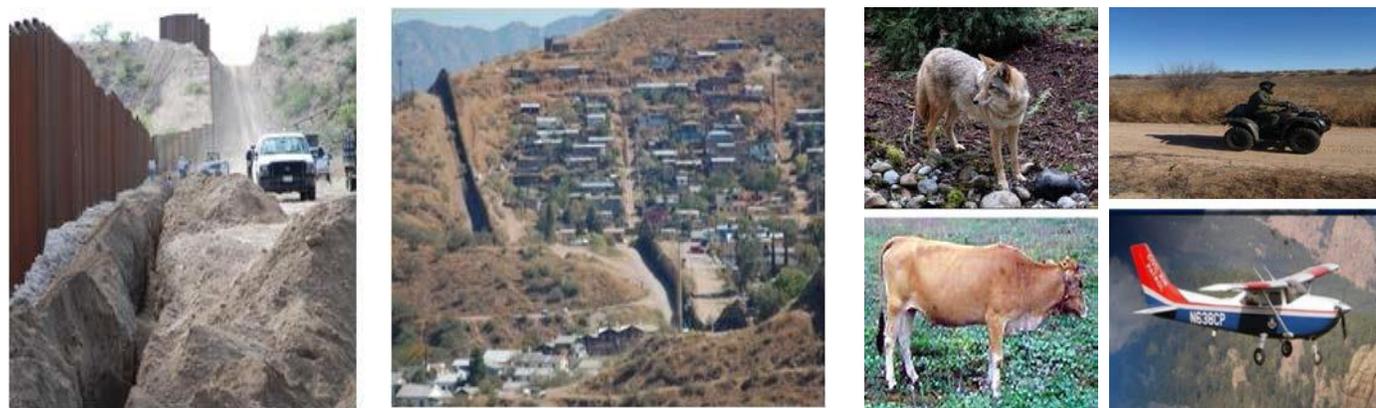
Land Border Challenges

Sensors typically used to detect illegal entry and smuggling activity for vast expanses of border areas are vulnerable to attack and can be eyesores. Surveillance coverage must include varying terrain and foliated areas that are difficult to monitor with 'line-of-sight' radars and cameras.



Advantages of Tripwires

Buried border tripwires are desirable because they pinpoint the intrusion right at the entry point. They can also be used as a protective measure for fence attacks. They follow land contours hence have few 'blind spots'. The drawback is the need for Environmental Assessments (for trenching) and, in some areas, land-owner permission.



Optical (above ground) tripwires are vulnerable to discovery but are useful where tripwire burial is not possible.



Developing, Testing and Analyzing Algorithms

The S&T program goal is to develop reliable algorithms to classify targets crossing the buried tripwire without the use of imagers. The buried tripwire can detect low flying aircraft, vehicles and animal activity as well as personnel. All these targets must be discriminated to be able to alert Agents to the type of activity. Because many of the remote areas contain an abundance of wildlife, it is critical that the technology be able to distinguish false alarms such as deer and cattle. It is necessary to test and characterize the buried tripwire technology in-situ because soil geology greatly affects the system performance.