

Searching for clandestine graves with geophysical tools

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Workers examine remains at a mass grave in eastern Bosnia in 2004. This week at a scientific conference in Cancún, Mexico, scientists will discuss their research into using of geophysical techniques to seek hidden mass graves of atrocity victims. Credit: Polargeo

It's very hard to convict a murderer if the victim's body can't be found. And the best way to hide a body is to bury it. Developing new tools to find those clandestine graves is the goal of a small community of researchers spread across several countries, some of whom are presenting their work on Tuesday, May 14, at the Meeting of the

Americas in Cancún, Mexico, a scientific conference organized and co-sponsored by the American Geophysical Union.

"Nowadays, there are thousands of missing people around the world that could have been tortured and killed and buried in clandestine graves," said Jamie Pringle, lecturer in [geoscience](#) at the School of Physical Sciences and Geography at Keele University in the U.K. "This is a huge problem for their families and governments that are responsible for the human rights for everybody. These people need to be found and the related crime cases need to be resolved."

Mostly, people throw resources at the search for clandestine graves and try to see what works best, said Pringle. But he and his colleagues Carlos Molina and Orlando Hernandez of the National University of Colombia in Bogota are among those trying to refine the techniques for finding [mass graves](#), so that eventually there might be a reliable toolkit for not only finding bodies, but discovering details like the time of deaths and [burials](#)—all critical evidence for convicting murderers.

Previous studies on which Pringle has worked have involved simulated clandestine graves in the U.K. in which they buried pigs and then monitored soil gases, fluids and other physical changes over time. That research made it clear how much the detection of graves depends on understanding how corpses change in different soils and climates. This is being applied to active forensic cases throughout Europe.

International collaborations among forensic [geophysicists](#) have already proved helpful in cases such as the so-called IRA 'Disappeared' victims found on beaches in Northern Ireland and current work underway to detect Civil War mass graves in Spain.

In the latest project, being presented in a poster at the Cancún meeting, the researchers propose to bury pigs in eight different simulated

clandestine mass grave scenarios in different soils and climates in Colombia. Then they will study the mass graves with geophysical methods like ground penetrating radar, electrical resistivity, conductivity and magnetometry among others. Their plan is to survey the graves every eight days during the first month, 15 days in the second and third months, and monthly until 18 months have passed.

The data they collect will be used to map the mass graves and compare them, adjusting for site variables like soil type and rainfall. They also expect to compare their results with other studies and forensic cases.

"The project's integrated geophysical survey results will support the search for mass graves and thus help find missing people, bring perpetrators to justice and provide closure for families," said Molina.

More information: The research team on this clandestine graves project will present a poster about their work on Tuesday morning, 14 May 2013, at the Meeting of the Americas.

Experiments to detect clandestine graves from interpreted high resolution geophysical anomalies

ABSTRACT

This project refers to the search for clandestine sites where possibly missing people have been buried based on interpreted near surface high resolution geophysical anomalies. Nowadays, there are thousands of missing people around the world that could have been tortured and killed and buried in clandestine graves. This is a huge problem for their families and governments that are responsible to warranty the human rights for everybody. These people need to be found and the related crime cases need to be resolved. This work proposes to construct a series of graves where all the conditions of the grave, human remains and related objects are known. It is expected to detect contrasting physical

properties of soil to identify the known human remains and objects. The proposed geophysical methods will include electrical tomography, magnetic and ground penetrating radar, among others. Two geographical sites will be selected to located and build standard graves with contrasting weather, soil, vegetation, geographic and geologic conditions. Forward and inverse modeling will be applied to locate and enhance the geophysical response of the known graves and to validate the methodology. As a result, an integrated geophysical program will be provided to support the search for clandestine graves helping to find missing people that have been illegally buried. Optionally, the methodology will be tested to search for real clandestine graves.

Provided by American Geophysical Union

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