

Forensic investigation: Legislative principles and investigative practice. Second Edition

Geoforensics and forensic geography

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Geoforensics (or forensic geosciences) refers to the application of the geosciences (or the earth sciences) for forensic purposes: for investigations, for preparing cases and reports for criminal and civil court hearings, for use in court and other proceedings, for research, and for improving the law. Geoforensics encompasses geology, mineralogy, geochemistry, geophysics, soil science, hydrology, meteorology, atmospheric chemistry, biogeography and geomorphology. Geoforensics is introduced in sections 11.2 to 11.4. Similarly, forensic geography is the application of geography for forensic purposes.³ There is a clear overlap between geosciences and natural or physical geography, such as geomorphology, biogeography and meteorology. Still, geography also covers other fields relevant to forensics, such as health geography, social geography, space-time geography, spatial analysis, remote sensing, geoinformatics and geographical information systems (GIS). Forensic geography is introduced in sections 11.5 and 11.6. Archaeology can also be used for forensic purposes: finding, excavating and identifying buried evidence, including human remains. An example of forensic archaeology is given in section 11.9.6. Geoforensics and forensic geography involve discipline experts conducting research, consulting with investigators, prosecutors, lawyers and other interested parties, and acting as expert witnesses in criminal and civil cases, legal disputes, commissions of inquiry, parliamentary committees, or other hearings, investigations or reviews. Typically, geoforensics and forensic geography are used where the spatial nature of the crime, incident, misconduct, dispute or allegation plays a pivotal role. Further, the investigator needs to look widely for evidence, such as exploiting open-source intelligence (see section 11.7). It is not appropriate for us to speculate on the current geoforensics or forensic geography capabilities of the police, other law enforcement agencies or private investigators, as these should be improving all the time. Researchers at universities, science councils and other organisations can also provide supplementary expertise and develop new techniques. This chapter focuses mostly on natural and human geography, remote sensing, location data, drones, LIDAR and GIS, with examples provided from section 11.8. onwards. It has two parts, namely 'terrestrial applications' or forensics on land (section 11.9) and 'aqueous applications' or forensics in the sea and inland waters (section 11.11). The latter includes techniques used in the terrestrial environment that can be adapted for use in the aqueous environment in association with the unique characteristics of the aqueous environment, such as river flows, tides and sea currents.⁵ Section 11.10 provides examples of errors that can affect evidence and hence investigations.