



**INTERNATIONAL UNION OF GEOLOGICAL SCIENCES
INITIATIVE ON FORENSIC GEOLOGY
ELECTRONIC NEWSLETTER**



Official Electronic Newsletter of the International Union of Geological Sciences, Initiative on Forensic Geology

The International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG), was officially launched during the 62nd Executive Committee Meeting of the IUGS, which was held at UNESCO headquarters, in Paris, France, on 22nd February 2011. The objectives of the IUGS-IFG are to:

- Collate and disseminate data and information on forensic geology applied to policing and law enforcement, criminal, environmental and civil investigations;
- Promote international meetings, seminars, conferences and training;
- Develop a 'Committee' to act as principal advisers, collaborators and active participants;
- Develop an international network whereby each 'member' will act as a principal contact in their respective country for the collation and dissemination of information on forensic geology;
- Collate, make available and where appropriate review any existing documentation and publications in forensic geology; and
- Produce a document endorsed by the Committee to be called; 'A Guide to Forensic Geology'.



IUGS-IFG Committee at the Annual General Meeting and Strategy Meeting, Geological Society of London, Burlington House, London, 4th-5th December 2014 (photo Skip Palenik)

The IUGS-IFG Committee comprises representatives from major geographical regions of the world and includes specialists from; academia, industry, consultancy, operationally based forensic geologists, the police, law enforcement agencies and forensic organisations.

Both IUGS-IFG and the Geoforensic International Network (GIN) brings together forensic geologists, geoscientists and invited police/law enforcement officers from around the world, who have a desire and interest in the development of forensic geology. Countries now represented in include; Australia, Argentina, Belgium, Brasil, Canada, Colombia, China, England, France, Germany, Hungary, India, Iran, Ireland, Italy, Japan, Latvia, Malta, Mexico, Namibia, New Zealand, Nigeria, Northern Ireland, Portugal, Russia, Scotland, South Africa, Spain, Sweden, Switzerland, Netherlands, United Arab Emirates, United States of America, Wales and the West Indies (Caribbean)



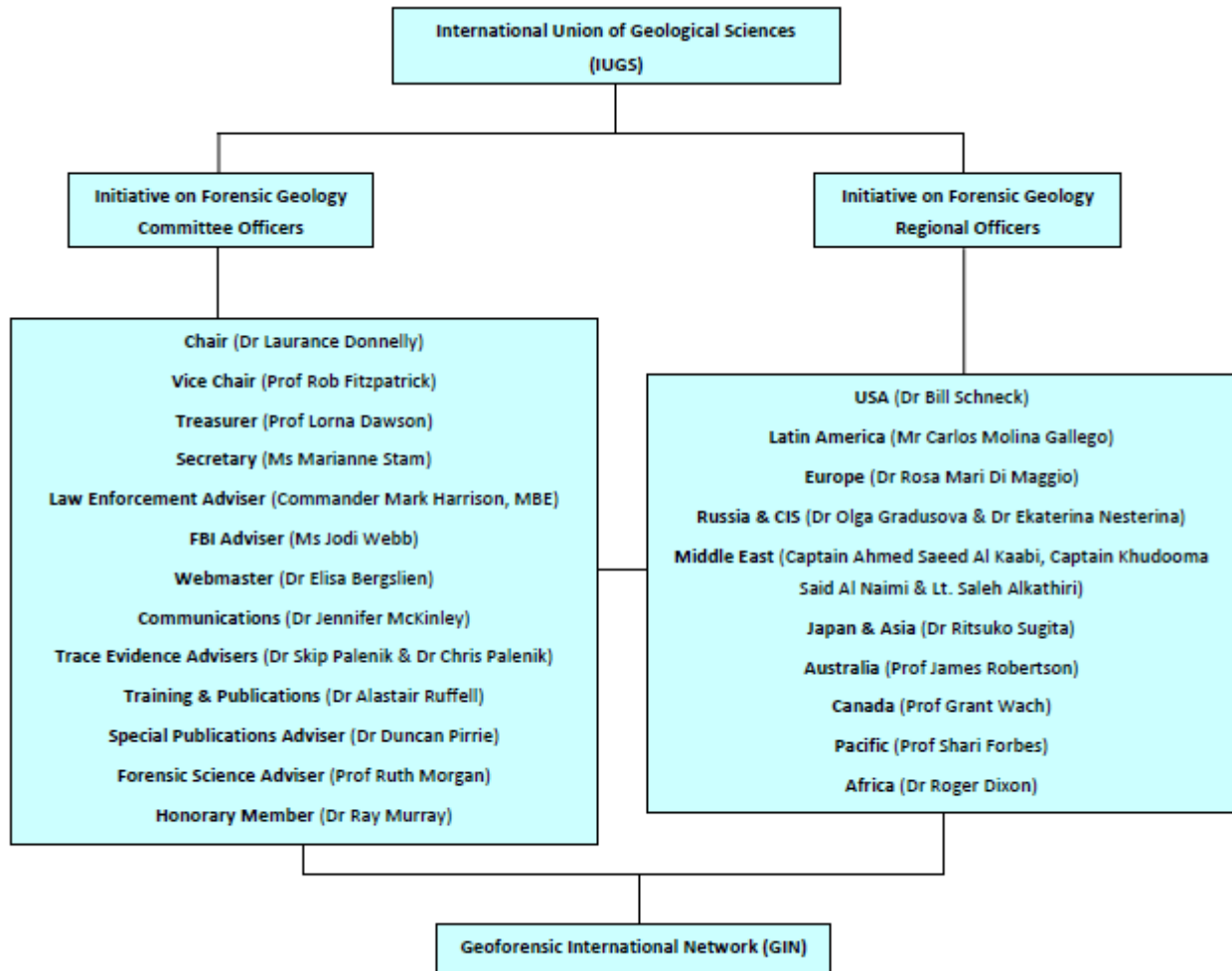


Figure 1 IUGS-IFG Committee

2014 EVENTS & ACTIVITIES

During 2014, IUGS-IFG contributed to and completed the following capacity building, technology transfer and outreach events, which are summarised below in chronological order:

Advice on the Search for the grave site of Genghis Khan, Mongolia, January 2014

Laurance Donnelly was invited to review a research paper and provided UK based advice on ground search strategies to potentially locate the suspected grave/burial site of Genghis Khan (confidential).

IUGS 67th Executive Committee Meeting, Goa, India, February 2014

On 8th-10th February 2014, IFG provided a presentation on forensic geology and an overview of the work of IFG, which was delivered by Peter Bobrowsky to the IUGS Executive Committee in India. IFG was

encouraged by the feedback to continue the good work in developing and promoting forensic geology around the world.

Australian Clay Minerals Conference, Perth, Australia, February, 2014

From 3rd-5th February 2014, approximately 75 delegates attended the 23rd Australian Clay Minerals Society Conference, which included a paper entitled: 'Clay mineralogy as significant evidence in 4 murder investigations involving a wide range of earth materials from Perth, Adelaide, Melbourne and Sydney', by Rob Fitzpatrick, Mark Raven and Peter Self. Paper is published in the conference Proceedings at: http://www.smectech.com.au/ACMS/ACMS_Conferences/ACMS23/Program/Abstracts/S2-02%20Fitzpatrick%20et%20al.pdf



Forensic Geology, AAFS, Atlanta, Georgia, USA, February 2014

In February 2014, ten instructors, including three members of the IUGS-IFG Committee (Marianne Stam, Christopher Palenik and Ray Murray) gave a workshop on forensic geology/soils at the American Academy of Forensic Sciences (AAFS) meeting in Atlanta, Georgia, USA. The attendees were very complimentary about the workshop, and some provided feedback and stated that it was, *'the best workshop they had ever attended'*. The workshop was organized to be a practical approach to the collection and analysis of soil/geological evidence in a crime laboratory. The first day was largely filled with lectures/presentations and the second day included practical work using microscopy. Attendees were also given a crime scenario, instrumental data (such as provided through XRD analysis), and geological/soil evidence samples and they had to determine what was in the soil samples and where the samples might have come from. In addition to Americans, there were attendees from Italy as well as Paraguay. Attendees were from various professions including forensic scientists, university professors, physical anthropologists, and a botanist specializing in the DNA analysis of plant material.

Provenance of Beach Sand, United Arab Emirates, February 2014

IUGS-IFG (Laurance Donnelly) provided geological advice to help determine the type and origin of beach sand in association with an ongoing investigation (confidential).

Location of a War Grave, Ukraine, February 2014

In 2010 Laurance Donnelly provided general UK based advice to assist a search to locate the presence of a mass grave relating to World War II, which was believed to be located in the Ukraine. In February 2014, Laurance was further contacted and invited to become a team member to assist with the search for this mass grave, and to support the Ukrainian geophysicists. This included the assessment of aerial photography, accounts and provision of intelligence and the design of the geophysical

surveys. A site visit was not conducted due to operational constraints.

Search for Missing Persons, Europe, February-June 2014

IUGS-IFG (Laurance Donnelly & Lorna Dawson) provided advice and associated analyses to develop a ground search strategy for missing persons in Europe. We contributed to the training in methods of sample collection and analyses to the European labs that assisted in the search. IUGS-IFG conducted a desk study, produced a conceptual geological model and assisted in the design of a ground search strategy for a potential grave in Europe (confidential).

Geological Society of London, Careers Day, Manchester, UK, March 2014

On 5th March 2014, Laurance Donnelly supported the Geological Society of London, Northwest Region Group, Careers Day, which was held at the University of Manchester. The event was attended by several hundred delegates and representative from academia, industry and consultancy. Laurance was invited to deliver a presentation on 'careers in geology' and how geologists can support forensic, police and law enforcement investigations.

Location & Recovery of Murder Victim's Remains, Belfast, Northern Ireland, March 2014

On 26th March 2014, organised by members of the IUGS-IFG (Alastair Ruffell and Jennifer McKinley), the Head of the 'Independent Commission for the Location & Recovery of Victim's Remains' gave a seminar at Queen's University, Belfast, on the work of the 'Commission'. This was delivered to students studying a Level 3 module 'Geoforensics' and to other members of the University.

IUGS-IFG Newsletter, April 2014

In April 2014, the first IUGS-IFG newsletter was finalised, approved, published and issued globally.

Fiction and Forensic Geology, London, UK, April 2104

In April 2014, IUGS-IFG IFG was approached by The Geological Society of London, to assist with the writing and publication of a fiction novel on



forensic geology. Laurance Donnelly provided the authors with an overview of the role of a forensic geologist. The publication of this book is expected to be in 2015-2016. In addition, Lorna Dawson has contributed material to several crime authors and these communications have resulted in the integration of realistic soil forensic story lines (with crime authors Stuart MacBride, Ann Cleeves, Val MacDermid and Mark Billingham).



Figure 2 Training students and staff in search to locate drugs. Trace evidence sample collection (photos: Lorna Dawson)

Geoforensics, School of Criminology, University of Ulster, Northern Ireland, May 2014

On 2nd May 2014, Alastair Ruffell delivered a seminar to the School of Criminology (University of Ulster, Northern Ireland) on Geoforensics, coordinated by Rachel Monaghan, Senior Lecturer in Criminology.

Geological Society of Japan, May 2014

On 24th May 2014, approximately 86 delegates attended a Geological Society of Japan (GSJ) event, which included approximately 20% that

were non GSJ affiliated. Ritsuko Sugita attended and promoted the interests of IUGS-IFG.

Counter Terrorism, Search Training, USA, May 2014

Following on from the ground search and counter terrorism knowledge transfer and training held in UEA, in 2014, a member of the IUGS-IFG Geoforensic International Network, who is also a serving UK Police Officer, visited the USA to provide training in counter terrorism search techniques and strategies.



Figure 3 Collection of geological (trace) evidence (soils) on a shoe (for the Northern Ireland Science Festival Event) (photo: Jennifer McKinley).

Communicating Contested Geoscience, London, UK, June 2014

IUGS-IFG participated in a one day conference that focussed on 'communication', entitled 'Communicating Contested Geoscience, New Strategies for Public Engagement', which was held at the Geological Society of London. Geological issues are increasingly intruding on the everyday lives of people across the UK and in other parts of the world. Communicating geology to fellow geologists, non-geological professionals, forensic scientists, police officers, law enforcement agents, the public and the media, can be challenging. This event highlighted the need for developing better communication in geosciences and focused on strategies to assist geoscientists. This conference was a forum that brought together geoscientists from universities, industry and government together with specialists in communication and public engagement to explore the challenges of communicating contested geological issues to the wider public. IUGS-IFG members attended and contributed to



this event by providing examples of how clear and effective communication took place between forensic geologists and the police.

Oxford Geology Group & Thames Valley Police, UK, July 2014

On 3rd July 2014, IUGS-IFG (Laurance Donnelly) delivered a presentation to the Oxford Geology Group to outline the applications of geology to policing and law enforcement. The event was attended by approximately 50 delegates, including undergraduate students, professional geologists and Thames Valley Police. As a result of this presentation more specific information on forensic geology was requested, and supplied, to officers working in the Forensic Laboratory, Thames Valley Police.

The Geological Society of London, Western Regional Group, Bristol, UK, July 2014

On 15th July 2014, IUGS-IFG (Laurance Donnelly) delivered a knowledge transfer presentation on forensic geology to the Geological Society of London, Western Regional Group, at the offices of Atkins, in Bath, Gloucestershire. The event was attended by approximately 30 geologists and engineers interested in the applications of forensic geology to criminal, environmental and geotechnical investigations.

Search for a Homicide Grave, UK, August 2014

IUGS-IFG (Laurance Donnelly) provided the UK Police with guidance, advice, and a search strategy for a cold case to help locate a homicide grave. This case also provided IUGS-IFG with the opportunity to collaborate and take soil samples from the grave to better understand the generation of leachate and volatile organic compounds (VOCs) for potential future application in open area ground searches.

Forensic Geology in Latvia, August 2014

Following on from discussions held at the European, APST WG (Animal Plant and Soil Traces European Working Group) on April 2nd-4th 2014, Rome, Italy (Lorna Dawson) and in August, IUGS-IFG held preliminary discussions with Māra Rēpele regarding the possibility to hold a forensic geology event in Latvia, during 2015 or 2016, with the Latvia Department of Biological and Chemical Investigations, State Forensic Science Bureau.

Radiocarbon and Geoforensics, Queens University Belfast, Northern Ireland, August 2014

On 18th August 2014, IUGS-IFG (Alastair Ruffell) delivered a paper entitled, '*Radiocarbon and Geoforensics*' (with Neil Ogle) at an international conference on, '*Radiocarbon in the Environment*' held at Queen's University, Belfast. Gordon Cook (Scottish Universities Reactor Centre) spoke on '*Radiocarbon Analysis of Modern Skeletal Remains*' (<http://www.qub.ac.uk/sites/14C/ConferenceProgramme>).

Postgraduate Course in Forensic Geology, University of Messina, Sicily, May-August 2014

In May 2014, Roberta Somma, Rosa Maria Di Maggio, Laurance Donnelly and Lorna Dawson began planning for the, '*First Level Postgraduate Master Specialisation Course in Forensic Geology*'. This was the first course of its kind in Italy and has the support of the Italian Polizia and Carabinieri. In August 2014, the Academic Senate, at the University of Messina, formally established the Masters course in Forensic Geology. This course was endorsed and supported by IUGS-IFG, by the provision of the following:

- Guidance and advice on course content;
- Inclusion of the IUGS-IFG Chair on the scientific committee of the postgraduate course;
- Inclusion of IUGS-IFG in official course documentation;
- Provision of seminars and training in forensic geology, including ground searches and geological trace evidence (soils);
- IUGS-IFG support with promotion of the course and inclusion on the IUGS-IFG web site and contributions to media interviews.

22nd ISFS, ANZFSS, Australia, August-September 2014

The 22nd International Symposium on the Forensic Sciences (ISFS) conference, of the Australian and New Zealand Forensic Science Society (ANZFSS), was held from 31st August to 4th September 2014, in Adelaide, Australia. Rob Fitzpatrick presented a keynote entitled, '*Mineralogical and Pedological Comparisons of Secondary and Primary Transfer Soil Samples as Significant Evidence in a Criminal Investigation*'



and Ruth Morgan presented on, 'The 'Chain of Evidence; A Critical Appraisal of the Applicability and Validity of Forensic Research and the Usability of Forensic Evidence'. This event included an inspection of the CAFSS laboratory in Adelaide. Shari Forbes and her research team presented six talks relating to the use of cadaver-detection and blood-detection canines as search tools and methods for enhancing their training and accuracy.



Figure 4 Rob Fitzpatrick featured in *The Adelaidean* 2014 (Photo: Paul Shand, CSIRO Land and Water)

Forensic Geology, Discovery Channel, Colombia, September 2014

On 12th September 2014, IUGS-IFG (Carlos Molina Gallego) was interviewed by the Discovery Channel's, 'Daily Planet' programme, entitled 'Finding the Disappeared', which was based on the work and research undertaken by IUGS-IFG and Carlos applying forensic geology to locate victims of crime.

Forensic Geology Postcard, IUGS, September 2014

IFG provided IUGS with a series of images portraying typical forensic geology scenes for usage in the development of marketing materials and a forensic geology postcard.

Training to Locate Buried and Concealed Evidence, Victoria Police, Australia, October 2014

On 15th-17th October 2014, IUGS-IFG (Shari Forbes) provided training to the Victoria Police Crime Scene Unit and Homicide Detectives Unit. Information on search, including a power point presentation, was provided by Laurance Donnelly, which included; the history and development of ground searches, development of a conceptual geological model, diggability,

choice of search assets (such as geophysics and victim detector dogs) and search strategies and methodologies. Shari delivered the training in conjunction with Dr Soren Blau (Victorian Institute of Forensic Medicine) and Jon Sterenberg (Consultant Archaeologist). The training involved one day of lectures and two days of practical exercises including search techniques, use of geophysical equipment and archaeological recovery techniques. The workshop received overwhelmingly positive feedback with the request to repeat the training in coming years for additional crime scene and homicide detective personnel. This opportunity followed on from the training in ground search organised by Laurance Donnelly and Mark Harrison, to the Australian Federal Police, in Brisbane, in August 2012.

Forensic Geology, IAFS, Korea, October 2014

On 12th-18th October 2014, IUGS-IFG participated in the International Association of Forensic Science (IAFG) conference in Seoul, Korea, to promote and develop forensic geology throughout Asia. A poster was compiled by Laurance Donnelly and Ritsuko Sugita and the event was attended by Ritsuko and Christopher Palenik. This attracted considerable interest in forensic geology. As a result, IUGS-IFG proposes to consider a forensic geology knowledge exchange and capacity building event in Japan, in 2015/2016.

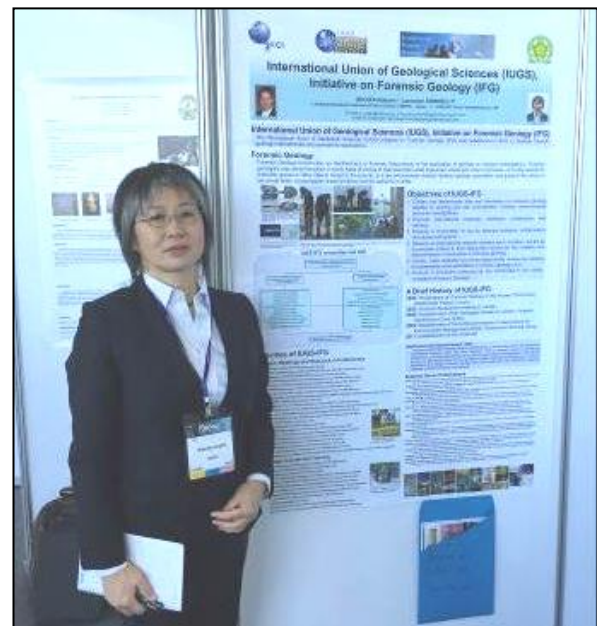


Figure 5 Ritsuko Sugita and the IAFS, Korea (Photo Christopher Palenik)



Institute of Forensic Science, China, October to November 2014

From 31st October to 4th November 2014, IUGS-IFG (Ray Murray) was invited to visit the Institute of Forensic Science, in China, to speak at an international symposium on Forensic Science, in Guangzhou and Beijing. This provided a unique opportunity to acquaint forensic scientists in China with IUGS-IFG and provide information about forensic geology to members and the geology and police professions.



Search for 'Service Men Missing in Action', Belarus, October 2014

In October 2014, IUGS-IFG (Laurance Donnelly) provided UK based advice and guidance, to Dmitry Brishten, on techniques and strategies potentially deployable to assist with the search to locate sites of servicemen in Belarus, who are believed to be 'missing in action', from World War II, including partisans, and prisoners-of-war.



Search for a Homicide Grave, October, Northern England, UK, 2014

In October 2014, IUGS-IFG (Laurance Donnelly) conducted reconnaissance geological inspections for a search area in a remote, upland part of northern England to consider the potential for the generation of leachate from a suspected homicide grave. This resulted in the preliminary and conceptual development of a groundwater model and soil sampling strategy to detect leachate and volatile organic compounds (VOCs). This was aimed at reducing the search area for the deployment of a ground based search, using geophysical surveys and victim detector dogs, this research and search is ongoing (confidential).

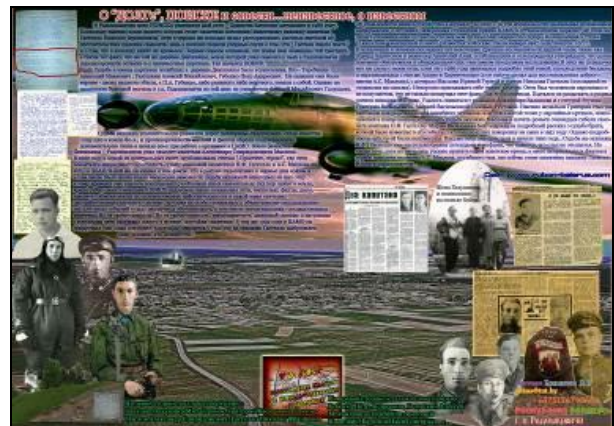


Figure 6 Search for service men 'missing in action' in Belarus (source: Dmitry Brishten)

Channel Island Group of Professional Engineers (CIGPE), Channel Islands, November 2014

IUGS-IFG (Laurance Donnelly) established an opportunity to deliver a series of presentations to CIGPE on, 'The Applications of Geology to Police, Forensic and Criminal Investigations'. The presentations were delivered by Alastair Ruffell from 19th to 21st November 2014, on the islands of Guernsey and Jersey. These presentations were given to school students aged 12 to 18, CIGPE members and interviews were provided.

Earth Science Teachers Association (ESTA), London, UK, November 2014

IUGS-IFG (Laurance Donnelly) was invited to present to the ESTA on; 'The Applications of Forensic Geology to Police Investigations'. However, this event was rearranged and will take place in 2015 at a date to be determined.



Geologists' Association Festival of Geology, London, UK, November 2014

On 1st November 2014 a 'Festival of Geology' was held at University College London (UCL), in association with IUGS-IFG and the Geological Society of London, Forensic Geosciences Group (FGG). This included exhibitors from the world of geology and specially invited guest speakers. The event attracted over 1,500 professional and amateur geologists, and school children. The guest speakers included Laurance Donnelly who presented to over 250 delegates. There was considerable interest in forensic geology from members of the public, retired professionals, younger geologists and school children.

Kuwait Police Officer Training, UK, November 2014

In November 2014, a police officer from Kuwait visited the UK to complete formal training course in search. This following on from the 2nd International Conference on Engineering Geophysics, held in Al Ain, UAE in 2013, and co-organised by IUGS-IFG.

Tribal Grave Location, Mauritania, (WIMM), Stoke-on-Trent, UK, November 2014

In November 2014, a presentation was delivered to the Western Institute of Mining and Minerals (WIMM), at the University of Keele, Department of Geology, on work conducted to locate and verify the presence of tribal graves in Mauritania. These graves were found during works to develop and expand a gold mine. The original engineering work was conducted by Christine Blackmore (Wardell Armstrong International) and the forensic geology by Laurance Donnelly. The presentation was designed by Laurance and Christine, and delivered by Christine.

Human Taphonomy and Burial Research Consortium, Australia, November 2014

On 28th November, IUGS-IFG (Shari Forbes) presented an invited lecture to members of the Burial Research Consortium and invited police guests on how to establish a human taphonomy facility in the UK. This request followed the recent announcement of the development of such a facility in Australia. The facility will be used for forensic geology research including soil (trace) evidence and search techniques.

Australia's facility is scheduled to open in 2015 and is the first facility of its kind outside of the USA.

FESTIVAL OF GEOLOGY
SATURDAY 1st NOVEMBER 2014
ENTRANCE FREE!
10.30 am — 4.30 pm
University College London, Gower Street, London WC1E 6BT

Exhibitors from the World of Geology
Fossil and mineral displays, stoneware, books, maps and geological equipment, jewellery, beads, Geology Poetry Readings, Art and Geology on Flamborough Head, Yorkshire and much more....

Discovery Room
Rockwatch with activities for children of all ages with fossils, racing trilobites, Jurassic dioramas and more....

Geological Talks
Laurance Donnelly
Forensic Geology: The Applications of Geology to Policing Enforcement
Richard Edmonds
Fossils and fossil collecting along the Jurassic Coast
Iain Stewart
Planet Oil
Peter Styles
Shale Gas: What the frack is that all about!?

Walks and Field Trips
Diana Smith - Building Stone Walk in the City
Diana Clements - The lost waters of Islington
Rod Legear - Chislehurst Caves
Ruth Siddall - Geological walk around UCL campus

Amateur Photographic Competition
Any geological topic: 1st Prize £100, 2nd Prize £50, 3rd Prize £25

Further Festival details: www.geologistsassociation.org.uk | www.rockwatch.org.uk
Tel: 020 7434 9298
Email: festival@geologistsassociation.org.uk

Figure 7 Forensic Geology, at the Geologists Association Festival of Geology, London, UK, November 2014 (Source: Geologists Association)

Recent Work in Archaeological Geophysics, UK, December, 2014

On 2nd December 2014, IUGS-FGG supported the Geological Society of London, Near Surface Geophysics Group (NSGG) meeting on 'Recent Work in Archaeological Geophysics'. This focussed on the applications of geophysics in archaeological investigations. The meeting provided a forum for researchers and practitioners from the UK and overseas to discuss and debate the results of recent research and case studies. Commercial suppliers of equipment and software also attended.

Future Horizons, UK, December, 2014

On 3rd December 2014, IUGS-IFG and The Geological Society of London, Forensic Geosciences Group, held a one-day conference entitled, 'Future Horizons'. This multidisciplinary meeting captured shared interests between; the geological, environmental science, forensic science, geophysics, engineering, geotechnical,



mining and archaeological communities for the assessment of the potential increased application of forensic geoscience in the future. The sessions included: quality assurance in forensic geoscience, geoforensic applications in serious crime and terrorism investigations, techniques at crime scenes, environmental crime, and the issues of the interpretation of geological trace evidence.

IUGS-IFG, Annual General Meeting (AGM), December 2014

On 4th-5th December 2014, IUGS-IFG held its Annual General Meeting and Strategy Meeting at The Geological Society of London. It was attended by 15 committee members and 1 guest member from the Australian Federal Police. Minutes of the meeting have been compiled and actions agreed for 2015-2016. The meeting began with a welcome from Edmund Nickless (Geological Society of London, Executive Secretary) and the two days event was chaired by Laurance Donnelly.

Geoinformatics in Forensic Geology with IAMG, December 2014

A strong link with the IAMG (Jennifer McKinley is Executive Vice President of the IAMG), has provided opportunities to develop the appropriate and robust use of spatial statistics, geoinformatics and Geographical Information Science (GIS) in Forensic Geology.

SELECTED EVENTS IN 2015-2016

- Complete writing and issue to the IUGS-IFG Committee a preliminary draft of, 'A Guide to Forensic Geology';
- Provide support, advice and guidance for the first Italian MSc in Forensic Geology, University of Messina, Sicily, Italy, in June and September 2015;
- Plan for the Forensic Geology session, of the 36th International Geological Congress (IGC), in Cape Town, South Africa in 2016;
- IUGS-IFG Involvement in Northern Ireland Science Week (Thursday 19th February to Sunday 1st March 2015);
- Thursday 19th February 2015, public outreach event (Jennifer McKinley and Alastair Ruffell) 'How Volcanoes can solve crime' in association with the Geological Society London Forensic Geoscience Specialist Group, and Geological Society 'Year of Mud' supported by the NI Regional Geological Society group;
- Participate in the ENSFI meeting, April 2015;
- Participate in the EAFS meeting, Prague, 6th-11th September 2015;
- Advancement of the investigation of the potential for the detection of VOC and leachate from homicide graves;
- Join and support the technical committee of the 3rd edition of the International Conference on Engineering Geophysics (ICEG), to be held from 15th-18th November 2015 in Al Ain, UAE;
- Provide training and support in ground searches for burials and evidence, for UK Police;
- Soil Science in Australia: 2015 International Year of Soils (IYS 2015). A special publication of the Australian Society of Soil Science Inc. to celebrate and promote wise management of Australian soil resource. Rob Fitzpatrick published an article entitled: "Making soil talk: the value of soil in solving criminal investigations. pp. 39-41. To download: www.soilscienceaustralia.org
- Potentially organise a Forensic Geology knowledge transfer and capacity building event in Japan, 11th-13th September 2015;
- Planned event with International Association of Mathematical Geoscientist (IAMG), for the Northern Ireland Science Week, on February 2015.



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<http://www.forensicgeologyinternational.org> or <http://www.forensicgeologyinternational.org>

