



**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*

This newsletter provides an overview of the International Union of Geological Sciences (IUGS), Initiative on Forensic Geology for 2016-2017. The aim of IUGS-IFG is to develop forensic geology internationally and promote its applications. Further details can be found at <http://www.forensicgeologyinternational.org> or <http://www.forensicgeologyinternational.org>

Dr Laurance Donnelly  
Chair, IUGS-IFG



### COMMITTEE CHANGES

Dr Guo Hongling, Institute of Forensic Science, Ministry of Public Security, Division of Trace Evidence Analysis, in China, was assigned to the IUGS-IFG Committee as the Officer for China. Dr Ritsuko Sugita, who was the Officer for Asia will now focus on developing and promoting forensic geology in Japan.

### MAIN EVENTS & ACTIVITIES IN 2016

#### JANUARY

#### 69<sup>th</sup> IUGS Executive Committee Meeting, Kunming, China<sup>1</sup>

The 69<sup>th</sup> IUGS Executive Committee meeting was held in Kunming, China and included a presentation the advancement of forensic geology.

#### Establishment of the Australian Facility for Taphonomic Experimental Research

The University of Technology, in Sydney (UTS) opened the, 'Australian Facility for Taphonomic Experimental Research (AFTER).'

#### FEBRUARY

#### Yorkshire Regional Group of the Geological Society of London, Leeds, UK

A presentation entitled, 'Forensic Geology: The Application of Geology to Police and Law Enforcement Investigations', was provided to the Yorkshire Regional Group of the Geological Society of London, at The Adelphi Hotel, in Leeds, UK.



*Prof Shari Forbes at the Australian Facility for Taphonomic Experimental Research (AFTER) (Photo: Prof Shari Forbes).*

#### **Meeting with the Home Office (CAST) & UCL, UK**

A presentation on forensic geology was given at University College London (UCL) by a geophysicist from the Centre for Applied Science and Technology (CAST)

#### **Use of X-ray diffraction in a cold case investigation**

Clothing was analysed from a 9 years old victim using laboratory and synchrotron XRD to identify clay minerals and pyrite. This information was used to help in forensic investigations in the South Australian Supreme Court to convict a person of the cold murder.

#### **MARCH**

#### **Seminario, Geologia Forense, Università degli Studi di Catania, Sicilia, Italia**

Support was provided for the Università degli Studi di Messina, for a seminar held in Catanai (in March) and Palermo and Calabria (in April 2016) and agrigento (May 2016).

#### **Experimental Forensic Geology, Colombia**

An experimental study of forensic geophysics was carried out in two regions of Colombian to evaluate the use of geophysical methods in the search for missing person's graves.



*Dr Carlos Molina Gallego conducting research in decomposition and search, in Colombia (Photo: Dr Carlos Molina Gallego).*



*Geology students and police undergo endorsed and supported by IUGS-IFG, Italy (Photo: Dr Alastair Ruffell and University of Messina, Sicily).*



*University of Messina, MSc in Forensic Geology with the Polizia (Photo: Dr Alastair Ruffell and Prof Roberta Somma)*

#### **APRIL**

#### **Review of IFG by IUGS, Manchester, UK**

The IUGS Ad Hoc Review Committee (ARC) was convened to review the progress of IFG and favourable findings were reported (see Calvo, 2016).

#### **European Geosciences Union, Vienna, Austria**

IUGS-IFG was represented at the EGU in Vienna. There was 4,863 presentations, 10,320 posters, 619 scientific sessions, 321 associated events and 13,650 scientists from 109 countries.

#### **MAY**

#### **Environmental Crimes**

An IUGS-IFG Officer spoke at Stormont, in Northern Ireland, about this to help inform Government on Policy.

## JUNE

**EMRG, BGS, Nottingham, UK<sup>1</sup>**

An outreach presentation was given to the Geological Society of London, East Midlands Regional Group (EMRG), at the British Geological Survey, in Keyworth, Nottingham, on; 'Forensic Geology: The Applications of Geology to Crime, Police and Law Enforcement'.

**An Garda Síochána, Ireland**

Five members of IUGS-IFG attended a meeting at An Garda Síochána (the Irish Police) Headquarters, in Dublin, Ireland, to discuss ground searches for burials with the Independent Commission for the Location of Victims' Remains (ICLVR).

**Meeting of IGI and GSI, Dublin, Ireland**

IUGS-IFG delivered a series of multi-disciplinary presentations on forensic geology to the Institute of Geologist of Northern Ireland (IGI) and Geological Survey of Northern Ireland (GSI).



*IUGS-IFG at the Geological Survey of Ireland (Photo: Dr Laurance Donnelly).*

**Forensic Geology and BAHID, Dundee, Scotland<sup>8</sup>**

IUGS-IFG was represented at the British Association for the Identification of Human Remains (BAHID) Conference

**Forensic Geology in Japan**

IUGS-IFG was represented at the, '26<sup>th</sup> Symposium on Geo-environments and Geotechnics'. This was, organized by the Japanese Society of Geo-pollution Science, Medical Geology and Urban Geology, and co-organized by several other organizations including IUGS-IFG.

## JULY

**OSAC, Phoenix, Arizona, USA**

IUGS-IFG committee members continued to support the "Forensic Geological subcommittee" of the Organization of Scientific Area Committee for Forensic Science (OSAC) in the USA Scientific Working Group for Geological Materials (SWGGeo) and attended a board meeting in Arizona, USA.

DRAFT

**University of Leicester, UK**

IUGS-IFG endorsed a module on, 'Geoforensics' at the University of Leicester, Department of Geology.

**11<sup>th</sup> GeoENV, Lisbon, Portugal<sup>3</sup>**

IUGS-IFG was represented at GeoENV 2016, in Lisbon, Portugal, to bring together research from hydrogeology, biology, soil sciences, air pollution or ecology and other fields, including forensic geology (soil forensics).

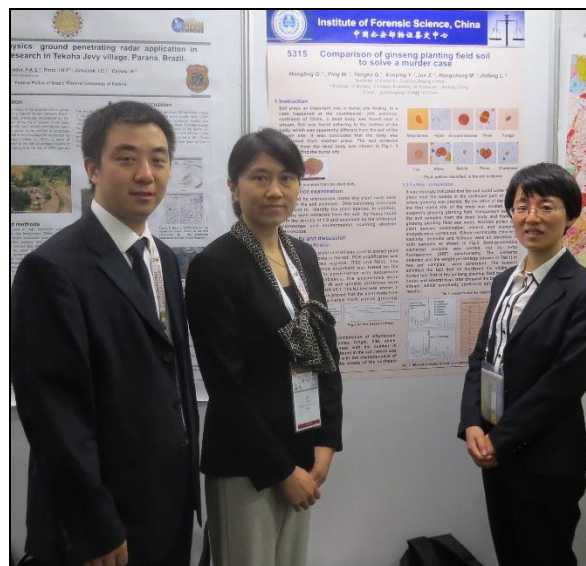
## AUGUST

**Forensic Archaeology (EMFA), Dublin, Ireland**

IUGS-IFG took part in the, '5th European Meeting on Forensic Archaeology'. A presentation was given on, 'Geological Changes at Homicide Graves and the Influence on Search Strategies'.

**Medicolegal Death Investigation, Montana, USA**

An IUGS-IFG committee member took part in the Medicolegal Death Investigation Conference. The target audience for this conference was Coroners, Medical Examiners, Death Investigators and other Public Safety Officers, Forensic Scientists, Physicians, Nurses, Emergency Medical Technicians, Police Officers, and others involved with the investigation of violent, suspicious, or unexpected deaths. Presentations were delivered by Medical Examiners, Coroners, University of Montana Law Professors, Crime Scene Investigators, Bloodstain Pattern Analysts, Forensic Scientists, Attorneys and other co-professionals.



*Prof Hongling colleagues (Institute of Forensic Science, Ministry of Public Security, Division of Trace Evidence Analysis, China) at the 35<sup>th</sup> IGC in Cape Town (Photo: Prof Guo Hongling).*

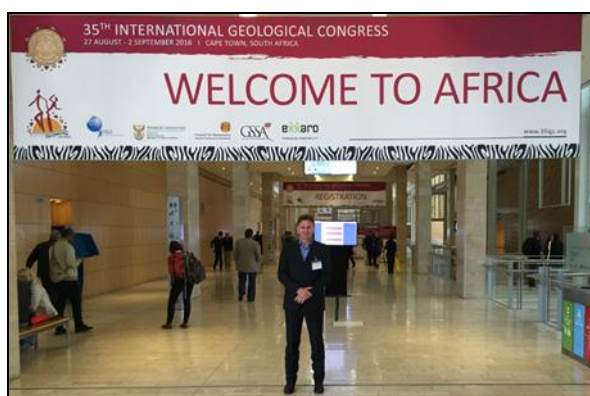
**Hillsborough Castle Skeleton, Northern Ireland**

Hillsborough Castle is an official government residence in Northern Ireland. An IUGS-IFG

committee member attended a skeleton recovery inside Hillsborough Castle. This was a medieval burial located by a geophysical survey, using ground penetrating radar, which detected the coffin.

### 35th IGC, Cape Town, South Africa

A seminar on, 'Forensic Soil Science and Geology' was held in collaboration with the, '5th International Conference on Criminal & Environmental Soil Forensics Soil Forensic International (SFI-2016)', at the 35th International Geological Congress, Cape Town, South Africa on 29<sup>th</sup> August 2016. Over 100 attendees were present and this included students, research scientists, serving police officers and forensic geologists. There were 3 keynote speakers, 17 presentations and 6 posters.



*IUGS-IFG Chair, at the opening of the Forensic Geology Session, 35th IGC, Cape Town, South Africa (Photo. Dr Laurance Donnelly).*

### SEPTEMBER

#### The Disappeared, Pinochet's Dictatorship, Chile

A delegation from Chile visited the UK and Northern Ireland to discuss, 'Disappeared but not forgotten: the Chilean experience regarding the search, recovery and identification of victims of human rights violations occurred during Pinochet's Dictatorship (1973-1990)'. A series of meetings took place in Belfast followed by a workshop held at the University of Bradford, Department of Forensic Archaeology, UK.

#### Geological Fakes and Fraud, Bristol, UK

This presentation was given for the South West Regional Group (SWRG) of the Geological Society of London, at the University of Bristol. This focussed on substitution cases, mining scams, fake fossils, hydrocarbon, archaeology, art fraud and historic fraud.

#### ANZFSS, Auckland, New Zealand

IUGS-IFG was represented at the, 'ANZFSS 23<sup>rd</sup> International Symposium on the Forensic Science', Auckland, New Zealand. A keynote and numerous oral and poster presentations by IUGS-IFG committee members. These presentations focused on soil

evidence, decomposition and post-mortem interval estimation and diatom analysis.

### OCTOBER

#### Forensic Geology ClfA

This event was organized by the Forensic Archaeology Special Interest Group and the Chartered Institute for Archaeologists (ClfA). The workshop was held on the main city campus of the University of Bradford, Department of Forensic Archaeology, UK. IUGS-IFG were invited to take part in this joint event. A forensic case study was delivered by a professor and defense lawyer involved to the Pickton Farm multiple murder case in Canada. This was followed by a workshop delivered by IUGS-IFG on the use of RAG (Red-Amber-Green) prioritization maps to assist with open area ground searches for burials.

#### Institute of Forensic Science, China

Three members of the China Institute of Forensic Science were identified to become affiliated to IUGS-IFG, via the Geoforensic International Network (GIN). In Cape Town, in August 2016, IUGS-IFG held a meeting with Prof Guo Hongling and two of her colleagues from the Institute of Forensic Science, Ministry of Public Security, Division of Trace Evidence Analysis, China. Prof Hongling works closely with the Police and she has been granted permission to formally engage with IUGS-IFG.

#### Interpol, Lyon, France

An IUGS-IFG member was invited by Interpol to attend a meeting of over 200 lab managers, police officers, Interpol agents, forensic scientists and university researchers from all over the world which was held in Interpol, Lyon, France



*Prof Lorna Dawson representing IUGS-IFG at Interpol, in Lyon, France, October, 2016 (Photo: Prof Lorna Dawson).*

#### Field Portable X-ray Fluorescence,

FPXRF field testing was carried out at a remote location where homicide graves were previously found. The instrument used was the Genius 9000 XRF (SkyRay instrument), which was designed to look for heavy metal contamination in soils. This included a

control test to establish a baseline, a seeded test to check the instrumentation was operational detecting the material and a blind test area with known leachate plumes.



*Experimental deployment of field portable XRF in the vicinity of a former homicide grave (Photo: Dr Laurance Donnelly. Equipment, Ms Carole Davenport, John Moores University, Liverpool, UK).*

### Experimental GPR, UK

In collaboration with Mala UK, sophisticated GPR was tested over a control site, in a remote moorland setting in the north of England, as part of an ongoing search for a homicide grave. The GPR was able to detect and image the buried targets, which were previously not detectable using other GPR equipment.



*Experimental GPR for a grave search (Photo: Dr Laurance Donnelly. Mala geophysical supplied courtesy of Mr Mike Langton. Geophysics support from Dr Alastair Ruffell).*

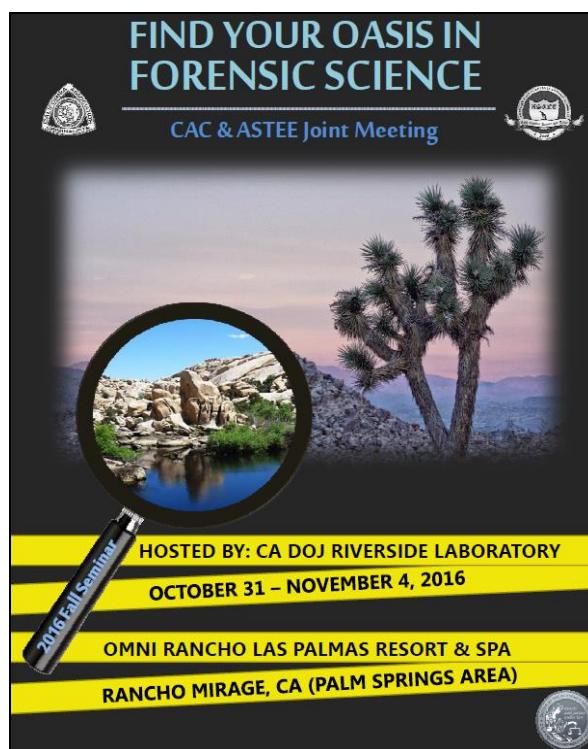
### NOVEMBER

#### CAC & ASTEE joint Seminar, California, USA

A Forensic Soil workshop for field investigators was hosted in California by two IUGS-IFG committee members to assist with the program for, 'The California Association of Criminalists (CAC)/American Association of Trace Evidence Examiners (ASTEE) joint Seminar.



*CAC & ASTEE, California, USA (Source: The CACNews).*



*The California Association of Criminalists (CAC)/American Association of Trace Evidence Examiners (ASTEE) joint Seminar (Source: Ms Marianne Stam).*

#### Medellin, Colombia

IUGS-IFG was represented at the, 'International Seminar: Lowlands and Floodplains: Taphonomy Archaeological and Geophysics'. This was held at the Universidad de Antioquia y Tecnológico de Antioquia, Medellin, Colombia. IUGS-IFG was particularly interested in the influence of human decomposition and preservation for the use of geophysics during the search for homicide graves.



*Training with the Brazilian Federal Police, the LAMIR, Isotope laboratory for analyses of minerals and rocks and 2nd Coloquio Sul Brasileiro em Ciencias Forenses, Brazil, December 2016 (Photo: Dr Fabio Augusto Da Silva Salvador, Dr Carlos Molina Gallego and Dr Rosa Maria Di Maggio).*



*IUGS-IFG deliver training in Forensic Geology with the Brazilian Federal Police (BFP) (Photo: Dr Fabio Augusto Da Silva Salvador)*

## DECEMBER

### National Crime Agency, National Search Adviser

A meeting was held with the new UK Police National Search adviser to discuss future collaboration with respect to the search to locate graves and other items related to homicide serious organised and counter terrorism searches for burials.

### Forensic Geology in Argentina

IUGS-IFG proposed to support the 3<sup>rd</sup> Iberoamerican Seminar on Forensic Geology, in Argentina, to be held in 2018.

### Brazilian Federal Police, Curitiba, Brazil

The Brazilian Federal Police, along with the Federal University of Paraná, the Policia Cientifica of Paraná, the National Association of Federal Criminal Consultants, and the Brazilian Association of Criminalistic organised the, '2<sup>nd</sup> Colòquio sul Brasileiro de Pesquisas em Ciencias Forenses', held at Curitiba, Paraná, Brazil. This date was chosen to coincide with the conference, 'VI Seminário Nacional de dna e ILboratórios Forenses, and Colóquio Sul-Brasileiro de Pesquisa em Ciências Forenses.' IUGS-IFG supported and endorsed these events.

### Forensic Geoscience Group

December 2016 marks the 10<sup>th</sup> anniversary of the establishment of, 'The Forensic Geoscience Group (FGG) of The Geological Society of London (GSL)'. To celebrate the first decade of FGG an article was published in 'Geoscientist' (The journal of The Geological Society of London).

### Forensic Geology and The Media

Throughout 2016, IUGS-IFG collaborated with the media and as a result numerous TV, radio, popular press and web sites articles were produced. An interview was provided for the Italian TV Channel, Tele Roma Uno, along with a geophysicists from the American University of Rome. This was for the TV program 'Missing', where the efforts of IUGS-IFG was explained including the developing forensic geology and its best practice.

### Forensic Geology and Crime Fiction

Forensic science and geology continue to attract attention from writers of Crime Fiction. IUGS-IFG has provided advice to crime novel authors. This year it involved a contribution to Lin Andersons recent novel, 'None but the Dead' (as a forensic geoscientist) and to advise on BBCs TV programme, 'Silent Witness'.

### European Network of Forensic Science Institutes

IUGS-IFG was in attendance at the annual meeting and the development of common laboratory practices in forensic geoscience and soil science.

## SELECTED IUGS-IFG EVENTS IN 2017

- Forensic Geology Publication on the 10<sup>th</sup> Anniversary of FGG, in 'Geoscientist' (January 2017).
- Collaborate with the Geological Society of London, Corporate Affairs Committee (January 2017).
- Initiation of research with Australian Federal Police and Australian Taphonomy Experimental Research (March 2017).
- Forensic geology outreach presentation, Queens University Belfast (March 2017).
- Forensic geology outreach presentation, Liverpool John Moores University (April 2017).
- Signing of MoU with International Association for Promoting Geoethics (IAPG) (April 2017).
- Representation of IUGS-IFG & IAPG at EGU, Vienna, Austria (April 2017).
- IUGS-IFG has representation at ENFSI APST meeting in Budapest (April 2017).
- Agreement for Geological Society Special Publication, '5th International Conference on Criminal & Environmental Soil Forensics Soil Forensic International (SFI-2016)', 35th International Geological Congress, Cape Town, South Africa (April 2017).
- Forensic geology outreach presentation, Geological Society of London, East Anglia Regional Group (May 2017).
- Agreement for forensic geology session at Planning for forensic geology session at

‘Resourcing Future Generations (RFG2018)’, Vancouver, Canada in June 2018 (June 2017).

- Establishment of the UK Home Office Search Technologies Academic Research Team (START), (June 2017)
- Participate in, ‘Sharing an Uncertain World: Lessons in Managing Risk: Managing Risk in Forensic Geology’ at the Geological Society of London (July 2017).
- Publication of a themed issue on Forensic Geology in ‘Episodes’ (July 2017).
- Publication of ‘Geoscientist at Crime Scenes’, (Springer) by Rosa Maria Di Maggio and Matteo Barone (July 2017).
- IUGS-IFG organised a session for The Geological Society year of Risk, Sharing an Uncertain World, in London (July 2017).
- IUGS-IFG supported the 6th European Meeting on Forensic Archaeology, in Rome (August 2017).
- Forensic geology workshop in China (September 2017).
- Training in Forensic Geology with the Brazilian Federal Police (October 2017).
- Forensic geology presentation at the Geological Society of America Congress & Exposition, Seattle, USA (October 2017).
- Knowledge exchange on ground search for burials with the UK Police (October 2017).
- Forensic geology outreach presentation, Royal Institution (November 2017).
- Support the 3rd Iberoamerican Course on Forensic Geology, Argentina (November-December 2017).
- Proposed finalisation of draft, ‘A Guide to Forensic Geology’, Geological Society of London Publication (December 2017).
- Workshop discussion with Home Office on use of GIS and Geotechnology, Centre for GIS and Geomatics, QUB (August 2017).

## PEOPLE

- Ruth Morgan has been conferred with the title of Professor of Crime and Forensic Science at UCL, the first chair in Forensic Science at UCL. It is recognition of internationally leading research, excellence and innovation in teaching, developing channels for knowledge transfer and for service to the academic and stakeholder communities.
- Laurance Donnelly has been invited by the Geological Society of America to deliver a presentation on forensic geology at GSA’s annual meeting and Exposition, in Seattle, October 2017.
- Lorna Dawson was featured in the BBC News for her case work.

## SELECTED PUBLICATIONS IN 2017

- Donnelly, L.J. 2017. Special Guest Editor. Forensic Geology Themed Issue. Episodes. Journal of the International Union of Geological Sciences, June 2017.
- Donnelly, L.J. and Ruffell, A. 2017. The Geological Society of London (GSL), Forensic Geoscience Group (FGG): The First Decade, 2006-2016. Geoscientist. Volume 26, Number 11, December 2016/January 2017, 10-15.
- DiMaggio, R.M. and Barone, P.M. 2017. (Editors) Geoscientists at Crime Scenes. Springer.

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



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