



INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)

INITIATIVE ON FORENSIC GEOLOGY (IFG)

ANNUAL REPORT 2014

DR LAURANCE DONNELLY, CHAIR IUGS-IFG



DATE ISSUED: 23rd December 2014
REPORT NUMBER: IUGS-IFG\001\2014
REPORT STATUS: Final\Issued

**INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)
INITIATIVE ON FORENSIC GEOLOGY (IFG)**

Annual Report 2014

PREPARED

Laurance Donnelly Chair

CHECKED

Rob Fitzpatrick Vice Chair
Lorna Dawson Treasurer
Marianne Stam Secretary
Alastair Ruffell Training & Publications
Jennifer McKinley Communications

APPROVED (IUGS-IFG COMMITTEE MEMBERS)

Laurance Donnelly Bill Schneck
Rob Fitzpatrick Carlos Molina Gallego
Lorna Dawson Rosa Maria Di Maggio
Marianne Stam Olga Gradusva
Elisa Bergslien Ekaterina Nesterina
Mark Harrison Khudooma Said Al Naimi
Jodi Webb Saleh Al Katheeri
Alastair Ruffell Ahmed Saeed Al Kaabi
Jennifer McKinley Ritsuko Sugita
Skip Palenik James Robertson
Christopher Palenik Grant Wach
Shari Forbes Roger Dixon
Raymond Murray

This report has been prepared by IUGS-IFG with all reasonable skill, care and diligence. The report is confidential to IUGS and IUGS-IFG accepts no responsibility of whatever nature to third parties to whom this report may be made known.

No part of this document may be reproduced without the prior written approval of IUGS and IUGS-IFG.

This report has been prepared for IUGS by IFG and must not be published in its present form as it contains confidential and sensitive information. However, upon request from IUGS, IFG will be willing to produce an edited version for publication.

IUGS-IFG cannot guarantee the accuracy or completeness of facts, interpretations, conclusions or recommendations contained herein and reserves the right to alter these. Any third parties and others should not rely on the content of this report.

CONTENTS

1	TITLE OF CONSTITUENT BODY.....	5
2	AIM	5
2.1	Mission Statement.....	5
2.2	Objectives	5
3	ROLE WITHIN IUGS SCIENCE POLICY.....	5
3.1	Background.....	5
3.2	Main Approach	5
4	ORGANIZATION	6
4.1	IFG Committee Changes	8
5	EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS	8
6	INTERACTION WITH OTHER INTERNATIONAL PROJECTS	9
7	CHIEF ACCOMPLISHMENTS FOR 2014	10
7.1	Main objectives for 2014	10
7.2	Advice on the Search for the grave site of Genghis Khan, Mongolia, January 2014	10
7.3	IUGS 67th Executive Committee Meeting, Goa, India, February 2014	10
7.4	Forensic Geology, AAFS, Atlanta, Georgia, USA, February 2014	10
7.5	Provenance of Beach Sand, United Arab Emirates, February 2014	11
7.6	Location of a War Grave, Ukraine, February 2014	11
7.7	Search for Missing Persons, Europe, February-June 2014	11
7.8	Search for Missing Person, Europe, 2014	11
7.9	Geological Society of London, Careers Day, Manchester, UK, March 2014	11
7.10	Location & Recovery of Murder Victim's Remains, Belfast, Northern Ireland, March 2014.....	11
7.11	IUGS-IFG Newsletter, April 2014	11
7.12	Fiction and Forensic Geology, London, UK, April 2104.....	11
7.13	Geoforensics, School of Criminology, University of Ulster, Northern Ireland, May 2014.....	11
7.14	Counter Terrorism, Search Training, USA, May 2014	12
7.15	Geological Society of Japan, May 2014	12
7.16	Communicating Contested Geoscience, London, UK, June 2014.....	12
7.17	Oxford Geology Group & Thames Valley Police, UK, July 2014.....	12
7.18	The Geological Society of London, Western Regional Group, Bristol, UK, July 2014	12
7.19	Search for a Homicide Grave, UK, August 2014	12
7.20	Forensic Geology in Latvia, August 2014	12
7.21	Radiocarbon and Geoforensics, Queens University Belfast, Northern Ireland, August 2014	13
7.22	Postgraduate Course in Forensic Geology, University of Messina, Sicily, May-August 2014.....	13
7.23	22nd ISFS, ANZFSS, Australia, August-September 2014	13
7.24	Forensic Geology, Discovery Channel, Colombia, September 2014.....	13
7.25	Forensic Geology Postcard, IUGS, September 2014	13
7.26	Training to Locate Buried and Concealed Evidence, Victoria Police, Australia, October 2014 ..	13
7.27	Forensic Geology, IAFS, Korea, October 2014	14
7.28	Search for 'Service Men Missing in Action', Belarus, October 2014	14

7.29	Search for a Homicide Grave, October, Northern England, UK, 2014.....	14
7.30	Institute of Forensic Science, China, October to November 2014	14
7.31	Earth Science Teachers Association (ESTA), London, UK, November 2014.....	14
7.32	Geologists' Association Festival of Geology, London, UK, November 2014.....	14
7.33	Channel Island Group of Professional Engineers (CIGPE), Channel Islands, November 2014....	15
7.34	Kuwait Police Officer Training, UK, November 2014.....	15
7.35	Tribal Grave Location, Mauritania, (WIMM), Stoke-on-Trent, UK, November 2014	15
7.36	Human Taphonomy and Burial Research Consortium, Australia, November 2014	15
7.37	Recent Work in Archaeological Geophysics, UK, December, 2014	15
7.38	Future Horizons, UK, December, 2014	15
7.39	IUGS, IFG Strategy Meeting and Annual General Meeting, UK, December 2014.....	16
7.40	Bath Geological Society, UK, December 2014	16
7.41	Geoinformatics in Forensic Geology with IAMG, December 2014.....	16
7.42	Outreach Events	16
8	MAIN PRODUCTS IN 2014.....	16
8.1	Confidential Documents	17
8.2	Website.....	17
8.3	Logos.....	17
8.4	Flyer	17
8.5	Geoforensic International Network (GIN)	17
8.6	Certificates.....	18
8.7	Publications & Newsletter	18
8.8	Journal of Forensic Geology.....	18
9	MAIN PROBLEMS ENCOUNTERED IN 2014	18
9.1	Funding: A Principal Leadership Challenge.....	18
9.2	Publications	19
9.3	Competence, Accreditation, Regulation and Code of Conduct.....	19
9.4	Communication	19
9.5	Security	19
10	SUMMARY OF EXPENDITURES IN 2014	19
10.1	Bank Account.....	19
10.2	IFG Annual Accounts.....	19
11	WORK PLAN FOR NEXT YEAR (2015)	20
11.1	Principal Objectives	20
12	CRITICAL MILESTONES.....	20
13	ANTICIPATED OUTPUTS TO BE ACHIEVED FOR 2015	21
14	BUDGET FOR 2015	21
14.1	Overview.....	21
APPENDIX I: SELECTED PUBLICATIONS		22
APPENDIX II: SELECTED IMAGES		30

**INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)
INITIATIVE ON FORENSIC GEOLOGY (IFG)
ANNUAL REPORT FOR 2014**

1 TITLE OF CONSTITUENT BODY

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 22 February 2011.

2 AIM

2.1 Mission Statement

IUGS-IFG seeks to; *'to develop forensic geology internationally and promote its applications'*.

2.2 Objectives

The objectives of the IUGS-IFG are to:

1. Collate and disseminate data and information on forensic geology applied to policing and law enforcement, criminal, environmental and civil investigations;
2. Promote international meetings, seminars, conferences and training;
3. Develop a 'Committee' to act as principal advisers, collaborators and active participants;
4. 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;
5. Collate, make available and where appropriate review any existing documentation and publications in forensic geology; and
6. Produce a document endorsed by the Committee to be called; *'A Guide to Forensic Geology'*.

3 ROLE WITHIN IUGS SCIENCE POLICY

3.1 Background

Although the documented history of forensic geology can be traced to the latter half of the 19th Century, in the past ten years or more there have been significant interests and developments in the multidisciplinary fields of forensic geology throughout the world. Since the millennium there have been numerous international meetings, conferences and seminars on different aspects of forensic geology. Furthermore, several significant text books have been published on the subject and numerous technical papers in scientific journals, conference proceedings, magazines and newspapers have been published. IFG represents IUGS interests in forensic geology and provides the mechanism for capacity building, knowledge transfer and outreach events, promoting our mission, *'to develop forensic geology internationally and promote its applications'*. The members of the IFG committee are senior representatives of their respected organisations and include geologists, geoscientists, police officers, forensic scientists and law enforcement agencies.

3.2 Main Approach

IUGS-IFG aims to raise the global awareness of forensic geology by holding meetings and conferences, promoting research, teaching, training and the operational deployment of forensic geologists. This will be consistent with the broad objectives of IUGS, and includes the following:

- **Capacity building:** By raising levels of awareness, knowledge and providing information about forensic geology;

- **Technology transfer:** Through improvement in skill sets; and
- **Outreach:** Educating and informing police, law enforcement organisations, geologists, geoscientists and the ‘general public’ about forensic geology.

4 ORGANIZATION

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, as shown in Figure 4.1 and Table 4.1.

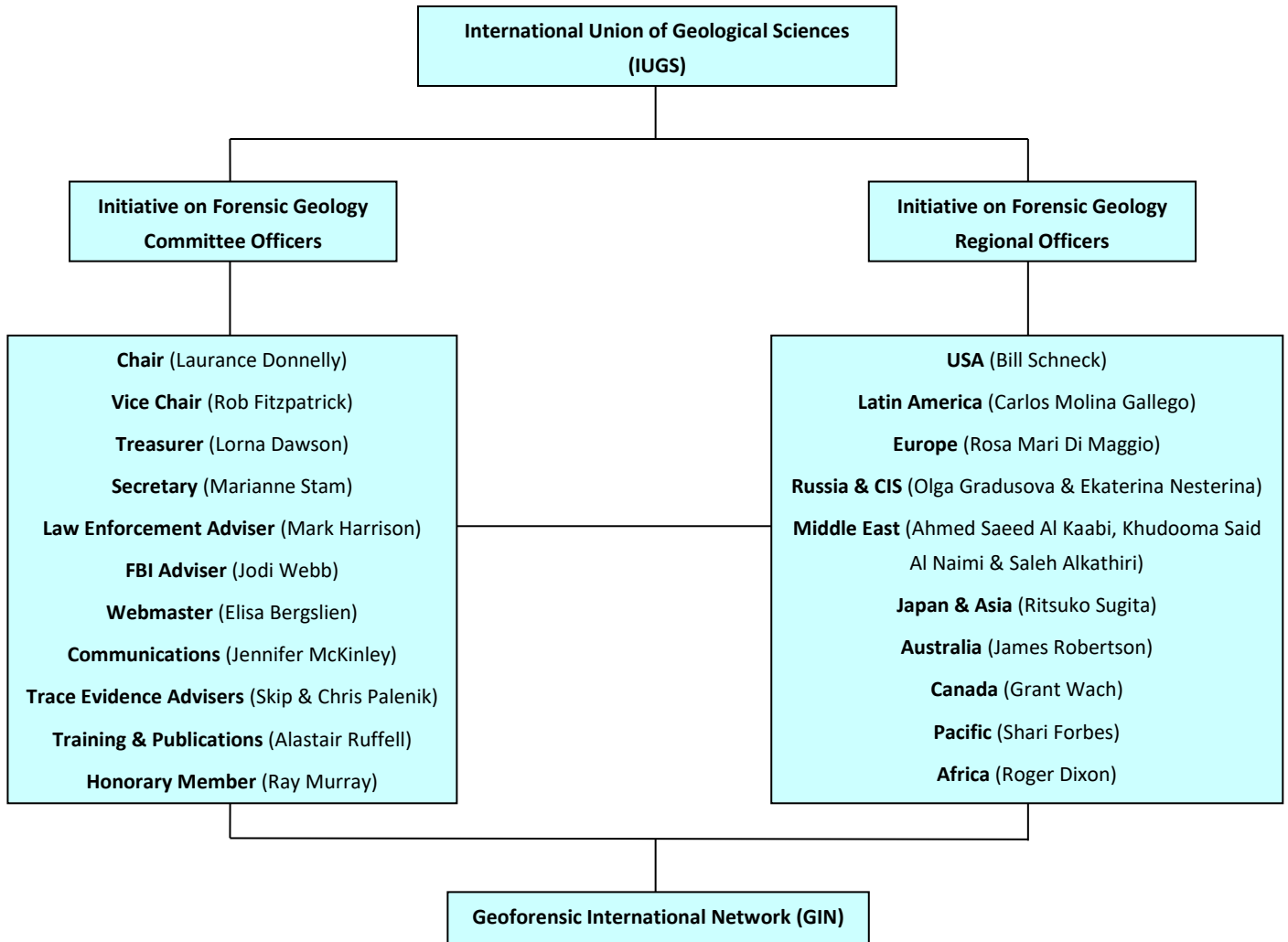


Figure 4.1. The structure of the IUGS-IFG Committee in 2014

POSITION	NAME	COUNTRY	AFFILIATION	EMAIL
Chair	Dr Laurance Donnelly	England (UK)	WorleyParsons	Laurance.donnelly@worleyparsons.com
Vice Chair	Prof Rob Fitzpatrick	Australia	CSIRO	Rob.Fitzpatrick@csiro.au
Treasurer	Prof Lorna Dawson	Scotland (UK)	The James Hutton Institute	lorna.dawson@hutton.ac.uk
Secretary	Ms Marianne Stam	USA	California Department of Justice	marianne.stam@doj.ca.gov
Webmaster/Information Officer	Dr Elisa Bergslien	USA	Buffalo State University	BERGSLET@buffalostate.edu
Geoforensic Law Enforcement Adviser	Commander Mark Harrison, MBE	Australia	Australia Federal Police	Mark.Harrison@afp.gov.au
FBI Adviser	Dr Jodi Webb	USA	Federal Bureau of Investigation (FBI)	Jodi.Webb@ic.fbi.gov
Training and Publications	Dr Alastair Ruffell	UK (Ireland)	Queens University Belfast	a.ruffell@qub.ac.uk
Communications	Dr Jennifer McKinley	UK (Ireland)	Queens University, Belfast	j.mckinley@qub.ac.uk
Geological (Trace) Evidence Advisers	Dr Skip Palenik Dr Chris Palenik	USA	Microtrace	SPalenik@microtracescientific.com CPalenik@microtracescientific.com
Honorary Committee Member	Dr Raymond Murray	USA	Forensic Geologist, Montana	rmurray@bresnan.net
Officer, USA	Dr Bill Schneck	USA	Washington State Patrol Crime Lab	Bill.Schneck@wsp.wa.gov
Officer, Latin America	Mr Carlos Molina Gallego	Colombia	Instituto Nacional de Medicina Legal y Ciencias Forense	marmolgal@gmail.com
Officer, Europe	Ms Rosa Maria Di Maggio	Italy	Geoscienze Forensi Italia (Formerly Servizio Polizia Scientifica)	rosamaria.dimaggio@gmail.com
Officer, Russia & CIS	Dr Olga Gradusova Dr Ekaterina Nesterina	Russia	Russian Federal Centre of Forensic Science and Soil Trace Evidence Experts	APOSTOL137@yandex.ru bio_soil@rambler.ru
Officer, Middle East	Captain Ahmed Saeed Al Kaabi Captain Khudooma Said Al Naimi Lt.Saleh Ali Al Katheeri	UAE	Abu Dhabi Police, Forensic Evidence, United Arab Emirates Abu Dhabi Police, Forensic Evidence, United Arab Emirates Abu Dhabi Police, Forensic Evidence, United Arab Emirates	asm5995@gmail.com khudooma@gmail.com saleh.alkatheeri@adpolice.gov.ae alkhzn@gmail.com
Officer, Japan and Asia	Ritsuko Sugita	Japan	National Research Institute of Police Science, Japan	sugita@nrrips.go.jp f_geology@yahoo.co.jp
Officer, Australia	Prof James Robertson	Australia	University of Canberra	James.Robertson@canberra.edu.au
Officer, Pacific	Prof Shari Forbes	Australia	University of Technology, Sydney	shari.forbes@uts.edu.au
Officer, Canada	Prof Grant Wach	Canada	Dalhousie University, Nova Scotia, Canada	Grant.Wach@Dal.Ca
Officer, Africa	Dr Roger Dixon	South Africa	University of Pretoria (Formerly, Forensic Science Laboratory, South African Police Service)	roger.dixon@up.ac.za

Table 4.1. IUGS-IFG committee members in 2014 and their professional affiliations

4.1 IFG Committee Changes

There were no changes to the IUGS-IFG Committee in 2014.

5 EXTENT OF NATIONAL/REGIONAL/GLOBAL SUPPORT FROM SOURCES OTHER THAN IUGS

During 2014 support for IUGS-IFG was provided by individual committee members and their respective employers/organisations. The in-kind value of this support is considerable. IFG has estimated that the Committee Officers have provided at least **155 person days** in the last year attending IFG conferences and training courses, the provision of outreach events and the management of the Initiative.

The value of this in-kind support is difficult to quantify, however a commercial value to the time spent on the IFG in 2014 would be in excess of **approximately USD(\$87,500)**

In addition, participation in the various IFG events during the year has also been supported directly by Committee employers and via research funding. We estimate the value of this direct funding support to be in excess of **approximately USD (\$27,600)**

5.1 Acknowledgements

Throughout 2014, IUGS-IFG received support from numerous organisations, which include the following:

- **IUGS Executive Committee**
- IFG would also like to express gratitude to **Peter Bobrowsky**, for his support and encouragement for the global development and advancement of forensic geology, and assisting and representing IFG at the IUGS Committee meeting in India.
- **Commercial companies:** Wardell Armstrong International (UK), WorleyParsons, Helford Geoscience LLP (UK), Microtrace LLC (USA), James Hutton Limited and Geoscienze Forensi Italia (Italy).
- **Police, law enforcement and government agencies:** California Department of Justice, Federal Bureau of Investigation (USA), Australian Federal Police (Australia), Washington State Patrol Crime Lab (USA), Abu Dhabi Police (UAE), Russian Federal Centre of Forensic Science (RFCFS) of the Ministry of Justice of Russia (Russia), National Research Institute of Police Science of Japan (Japan), Servizio Polizia Scientifica (Italy), Brazilian Federal Police (Brazil), National Crime Agency (NCA) (UK), Interpol (Europe), Home Office Centre for Applied and Scientific Research (CAST) (UK), Greater Manchester Police (GMP) (UK), Leicestershire Police (UK), West Yorkshire Police (UK), Cambridgeshire Police (UK), Police Scotland, Inspector Graham Peffers (GMP), Inspector Colin Hope (NCA) and Mike Ferguson (CAST).
- **Universities and research institutes:** University of Pretoria (South Africa), Dalhousie University (Canada), National Research Institute of Police Science (Japan), CSIRO (Australia), Centre for Australian Forensic Soil Science (CAFSS) (Australia), University of Adelaide (Australia), Flinders University (Australia), Buffalo State College (USA), Queens University Belfast (Northern Ireland), the James Hutton Institute (Scotland, UK), University of Canberra (Australia), University of Technology, Sydney (Australia), University of Keele Department of Earth Sciences (UK), University College London (UK), University of Pretoria (South Africa), Nacional Institute of Criminalistics (INC) (Brazil), Instituto Nacional de Medicina Legal y Ciencias Forense (Colombia), Australian and New Zealand Forensic Science Society (ANZFSS), Department of Biological and Chemical Investigations State Forensic Science Bureau, The

Geological Society of London (Forensic Geosciences Group, Near Surface Geophysics Group, Western Regional Group, North West Regional Group), English Heritage.

6 INTERACTION WITH OTHER INTERNATIONAL PROJECTS

Throughout 2014, IUGS-IFG interacted and collaborated with the organisations and projects listed in Table 6.1.

ORGANISATION	PROJECT
Geological Society of London, Forensic Geoscience Group (FGG)	Future Horizons
Geological Society of London, Western Regional Group	Forensic Geology
Geological Society of London	Communication in Geology
Geologists Association	Festival of Geology
University of Technology Sydney and Victoria Police	Training in Forensic Geology
Victorian Institute of Forensic Medicine	Training in Forensic Geology
CSIRO/CAFSS, Australia	Crime scene protocols
UK National Crime Agency (NCA)	Victim Recovery Dog & PoISA workshop
Bath Geological Society	Forensic Geology
Abu Dhabi Police	Geological advice
Channel Islands Group of Professional Engineers	Forensic Geology
Earth Science Teachers Association	Forensic Geology
The International Network of Environmental Forensics	Environmental Forensics
INTERPOL, France	Forensic Geology
International Association of Forensic Science, Korea	Forensic Geology
Kuwait Police	Search
University of Messina, Sicily	New Course in Forensic Geology
Archaeological searches, Mongolia	Search
Military and war grave searches, Ukraine	Search
Oxford Geology Group	Forensic Geology
Institute of Forensic Science, China	Forensic Geology
Second World War, Military Geology, Belarus	Search
The Disappeared, Northern Ireland	Search
Search for shallow graves, UK	Search
Australian and New Zealand Forensic Science Society (ANZFSS)	Geological (trace) evidence and search
International Association of Mathematical Geoscientists (IAMG)	Forensic Geology
Assistance to 4 UK Police Forces (Confidential)	Search for unmarked homicide graves
School of Criminology (University of Ulster, Northern Ireland)	Geological (trace) evidence and search

Table 6.1. Selected examples of IUGS-IFG collaboration in 2014

7 CHIEF ACCOMPLISHMENTS FOR 2014

7.1 Main objectives for 2014

The main objectives for 2014, as determined by the IFG Committee in 2013, were to:

- Hold the IUGS-IFG Committee meeting, possibly to be held in the USA, to discuss and further develop, 'A Guide to Forensic Geology';
- Host Knowledge Transfer and training events, which may include a training event with the UK Police and UK National Crime Agency (NCA);
- Collaboration with the Geological Society of London, Forensic Geoscience Group (FGG) and Near Surface Geophysics Group, possibly for a joint meeting in London;
- Deliver several outreach presentations;
- Collaborate with the Scientific Working Group on Geological Materials (SWGCEO);
- Collaborate with CSIRO and the Centre for Australian Soil Forensics (CAFSS), Australia;
- Collaborate with the European, ENFSI APST WG (Animal Plant and Soil Traces European Working Group) April 2nd-4th 2014, Rome, Italy;
- Participate in the IFG International Association of Forensic Sciences (IAFS) meeting, Soul, Korea;
- Encourage the publication of related papers and articles;
- Produce of a regular IUGS-IFG newsletter; and
- Further develop the IUGS-IFG web site.

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

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

IUGS-IFG was invited to review a research paper and he provided UK based advice on ground search strategies to potentially locate the grave/burial site of Genghis Khan (Confidential).

7.3 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.

7.4 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 provide 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.

7.5 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).

7.6 Location of a War Grave, Ukraine, February 2014

In 2010 Laurance Donnelly provided 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 did was postponed take place due to operational constraints.

7.7 Search for Missing Persons, Europe, February-June 2014

IUGS-IFG provided advice and associated analyses to develop a ground search strategy for missing persons in Europe (confidential and ongoing). We contributed to the training in methods of sample collection and analyses to the European labs that assisted in the search.

7.8 Search for Missing Person, Europe, 2014

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).

7.9 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.

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

On 26th March 2014, organised by members of the IUGS-IFG 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 other members of the University.

7.11 IUGS-IFG Newsletter, April 2014

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

7.12 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 was projected estimated to be in 2015-2016. Lorna Dawson has contributed material to several crime authors and these communications have resulted in the integration of realistic soil forensic story lines (Stuart MacBride, Ann Cleeves and Mark Billingham).

7.13 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.

7.14 Counter Terrorism, Search Training, USA, May 2014

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

7.15 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.

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

7.17 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, of Thames Valley Police.

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

On 15th July 2014, IUGS-IFG 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.

7.19 Search for a Homicide Grave, UK, August 2014

IUGS-IFG provided the Police with guidance, advice, and a search strategy for a cold case to help locate a homicide grave. This case also provided the group 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.

7.20 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.

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

On 18th August 2014, 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'* (see <http://www.qub.ac.uk/sites/14C/ConferenceProgramme>).

7.22 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 the 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 Police/Carabinieri. 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.

In August 2014, the Academic Senate, at the University of Messina, formally established the Masters course in Forensic Geology, which is expected to begin in early 2015.

7.23 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.

7.24 Forensic Geology, Discovery Channel, Colombia, September 2014

On 12th September 2014, 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 IFG and Carlos applying forensic geology to locate victims of crime.

7.25 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.

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

On 15th-17th October 2014 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.

7.27 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 Laurance Donnelly, 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.

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

In October 2014, IUGS-IFG (Laurance Donnelly) provided UK based advice and guidance 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.

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

In October 2014, IUGS-IFG 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 ground water 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).

7.30 Institute of Forensic Science, China, October to November 2014

From 31st October to 4th November 2014, 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 in China to our members and the geology and police professions.

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

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.

7.32 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.

7.33 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 12-18, CIGPE members and interviews were provided.

7.34 Kuwait Police Officer Training, UK, November 2014

Following on from the 2nd International Conference on Engineering Geophysics, Al Ain, UAE in 2013 and the associated knowledge transfer and training provided by IUGS-IFG to the Abu Dhabi Police, in November 2014, a serving police officer from Kuwait visited the UK to complete formal training course in search.

7.35 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.

7.36 Human Taphonomy and Burial Research Consortium, Australia, November 2014

On 28th November, 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.

7.37 Recent Work in Archaeological Geophysics, UK, December, 2014

On 3rd/2nd December 2014, IUGS-IFG and The Geological Society of London, Forensic Geosciences Group, held a one-day conference entitled, *'Forensic Geoscience: 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. The conference was attended by delegates from more than 10 nations and by police and forensic practitioners. A special publication has been produced from this event and a pdf of the book will be placed on the IUGS IFG web site (edited by Ruth Morgan (FGG) and Lorna Dawson (IFG)).

7.38 Future Horizons, UK, December, 2014

On 2nd 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. A special publication has been produced from this event and a pdf of the conference proceedings will be placed on the IUGS-IFG web site.

7.39 IUGS, IFG Strategy Meeting and Annual General Meeting, UK, December 2014

IUGS-IFG, held its 3rd Strategy Meeting and AGM in London, at the Geological Society headquarters, on 4th-5th December 2014. The items discussed at this meeting included the following:

- Plans for the publication of, 'A Guide to Forensic Geology';
- Geoforensic International Network (GIN);
- Regulation & accreditation;
- Report from Treasurer and IFG finances;
- Collaboration with the other IUGS working groups;
- Training & publications;
- Web site;
- IFG planning for 2015;
- Forensic Geology, University of Messina
- Forensic Geology, Latvia 2015; and
- IGS2016 in Cape Town;

7.40 Bath Geological Society, UK, December 2014

A forensic geology event and presentation was scheduled to take place with the Bath Geological Society on 4th December 2015, but this has now been rescheduled to take place in 2015.

7.41 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.

7.42 Outreach Events

Forensic geology outreach events were held in 2014 are presented in Appendix I.

8 MAIN PRODUCTS IN 2014

IUGS-IFG's main output products in 2014 include the following:

- Training and knowledge transfer courses in UK, Australia and USA;
- Development of material for the first Italian course on Forensic Geology in Messina, Sicily;
- Publication and distribution of the first Forensic Geology newsletter;
- Update and distribution of the IUGS-IFG flier, in both paper and electronic format;
- Expansion of the Geoforensic International Network (GIN) globally;
- Completion of a working draft of the document, 'A Guide to Forensic Geology' and Preparation of draft chapters and plans for a working draft of the document, 'A Guide to Forensic Geology';
- Publication of several scientific papers in peer reviewed journals, conference proceedings, popular press articles; and

- Selected interviews with the media;
- Contributions to various case work investigations, as intelligence and evidence.

8.1 Confidential Documents

Consistent with 2013, some IUGS-IFG committee members continued to become regularly engaged in the provision of advice and operational support to the police, security and law enforcement agencies, throughout 2014. This resulted in confidential information and the production of documents on, or that included, forensic geology to assist with criminal investigations. Although this extends beyond the objectives and scope of IUGS-IFG, our committee members were able to offer professional support and advice, and call upon the wider network developed within the IUGS IFG, where appropriate. Due to the restricted and protected nature of this information, these confidential reports and statements cannot be supplied as part of the annual report or placed on the IUGS-IFG web site.

8.2 Website

Elisa Bergslien, Buffalo State University, USA continues to manage and update the IUGS-IFG website. The web site addresses are:

- forensicgeologyinternational.org;
- forensicgeologyinternational.com.

8.3 Logos

The IUGS-IFG logos have been endorsed by the committee and continue to be used on official IUGS-IFG documentation (eg. flyers, posters, presentations and training certificates) (Figure 8.1).



Figure 8.1 IUGS-IFG Logos

8.4 Flyer

IUGS-IFG flyer was updated at several stages throughout 2014 and issued in both electronic and paper formation at conferences, exhibitions and training events around the world. It is also available on the IUGS-IFG web site.

8.5 Geoforensic International Network (GIN)

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.

In 2014, there was significant interest from the public, academics and students to become affiliated to GIN. Although this exceeded the original idea of GIN, membership was halted pending the IUGS-IFG Annual Meeting (held in London, December 2014) so that the future organisation and management of GIN, and its possible expansion, can be discussed and determine.

In 2013-2014, IUGS-IFG was contacted with potential new members from Belarus, China, Kazakhstan, Kyrgyzstan, Kuwait, Mongolia, Oman, Qatar, Poland and Venezuela. It is expected these members may become affiliated to GIN in 2015/2016.

Countries now represented in GIN include; Australia, Argentina, Belgium, Brasil, Canada, Colombia, England, France, Germany, Hungary, India, Iran, Ireland, Italy, Japan, 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 8.2).

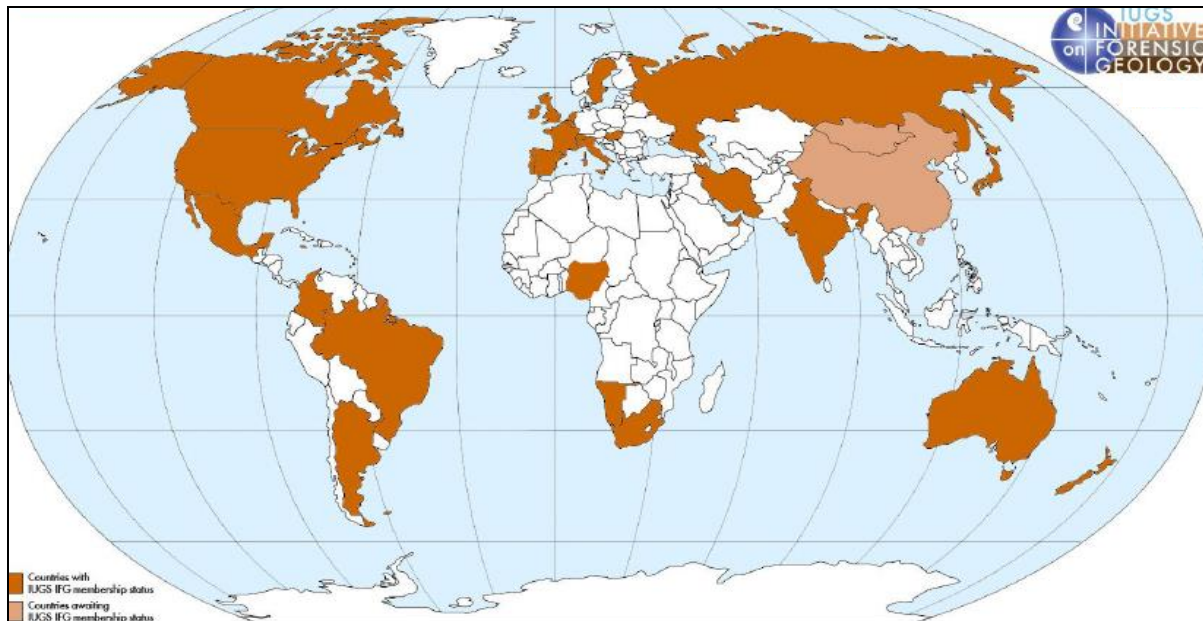


Figure 8.2 IUGS-IFG, Geoforensic International Network (GIN)

8.6 Certificates

IUGS-IFG certificates were issued to delegates, police officers, law enforcement agents and forensic scientists who attended IUGS-IFG organised events.

8.7 Publications & Newsletter

A Selection of publications for 2014 is provided in Appendix I.

IUGS-IFG published the first newsletter in Forensic Geology, which was issued and circulated globally in April 2014. IUGS-IFG expects to produce a second newsletter in the early part of 2015.

8.8 Journal of Forensic Geology

IUGS-IFG was approached by a publisher to consider the production of a '*Journal of Forensic Geology*'. This opportunity will be discussed and considered at the IUGS-IFG Annual General Meeting and Strategy Meeting, in December 2014.

9 MAIN PROBLEMS ENCOUNTERED IN 2014

9.1 Funding: A Principal Leadership Challenge

The availability of funding is one of the most significant challenges which face IUGS-IFG. The funding received from IUGS is crucial to enable and sustain the development and promotion of Forensic

Global Geology. This funding can act as a catalyst to attract additional funding or services in kind, from committee members, their respective organisations and stake-holders.

9.2 Publications

IUGS-IFG received multiple approaches from international publishers for the publication of books, papers and articles in forensic geology, some with unrealistic and unachievable timeframes. The priority of the IUGS-IFGs priority is to first publish, 'A Guide to Forensic Geology' and some of the approaches from publishers may then be subsequently considered.

9.3 Competence, Accreditation, Regulation and Code of Conduct

IUGS-IFG is considering competence and ethics in Forensic Geology and has recognised the need for the global regulation and accreditation in Forensic Geology, above and beyond which already exists in related professional organisations. This will remain one of the key areas to be further considered by IUGS-IFG in the years ahead.

9.4 Communication

Effective communications between Forensic Geologists and non-geological specialists, the police/law enforcement officers, public and media remains challenging. IUGS-IFG are to focus on the provision of advice and guidance to assist Forensic Geologists to communicate more clearly. This includes written and oral forms of communication, the provision of interviews to the media, police, lawyers, engaging with the public and family liaison teams, and giving evidence in court. Selected images are provided in Appendix 2.

9.5 Security

Increased security risks in some countries have precluded the in-country involvement of IUGS-IFG and some associated visits. The IUGS-IFG remains vigilant and does not promote or attend any events or activities in those parts of the world that are considered to be high risk.

10 SUMMARY OF EXPENDITURES IN 2014

10.1 Bank Account

The IUGS-IFG bank account is based in Aberdeen, Scotland, and is managed by Prof Lorna Dawson (IUGS-IFG Treasurer, The James Hutton Institute).

10.2 IFG Annual Accounts

The income and expenditure on the account for 2014 is summarised in Table 10.1.

As the bank account is held in the UK, the income and expenditure is shown in £ sterling and \$USD equivalent. In 2014, IFG was successful in attracting additional funding for international events.

CREDIT/DEBIT	ITEM	\$ (US DOLLARS) (ESTIMATED)
Credit		
Balance	Balance carried forward from 2013	7,919
IUGS Funding	Transfer of funds from IUGS (USD 15,000)	15,000
TOTAL		22,919
Debits		
	IFG Events and Costs 2014	14,795
	Canada (Halifax) (2015)	1,000
	Italy (2015) (allocated)	1,500

Balance remaining 31st December 2014	5,264
Note: The above is an estimate only. Final accounts will be submitted following the AGM in December 2014	

Table 10.1. Summary of income and expenditure for 2014

11 WORK PLAN FOR NEXT YEAR (2015)

11.1 Principal Objectives

The principal objectives for 2015 (subject to confirmation and funding) are currently as follows:

- 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, 14th to 25th 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 NI 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;
- Training in forensic geology, in Halifax (GW, AR, SF), April 2015:
- ENSFI meeting, April 2015:
- EAFS meeting, Prague, 6th-11th September 2015:
- Advancement 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;
- Potentially organise training in geological (trace) evidence in the USA;
- Provide training and support in ground searches for burials and evidence, for UK Police;
- Potentially organise a Forensic Geology knowledge transfer and capacity building event in Japan, 11th-13th September 2015
- Potentially organise a Forensic Geology outreach and knowledge transfer event in Latvia and/or Belarus;
- Planned event with International Association of Mathematical Geoscientist (IAMG), for the Northern Ireland Science Week, on 19th February 2015;
- Encouragement of the publication of related papers and articles;
- Produce the 2015 IUGS-IFG newsletter;
- Contribute to the MiSAFE project final meeting at Interpol, France
- Prof Arpad Vass to possibly visit the UK
- British Science Festival, Bradford UK, September 2015
- Develop and expand the Geoforensic International Network (GIN) and,
- Further develop the IUGS-IFG web site.

12 CRITICAL MILESTONES

IUGS-IFG critical milestones for 2014 included the following:

- Development of a first draft of, '*A Guide to Forensic Geology*;

- Establishment of a new course in Forensic Geology in Italy;
- Development of forensic geology as a discipline in China;
- Provide outreach to the public, school children, students and media;
- Provision of operational support to serious criminal investigations; and,
- Development of marketing materials including web sites, newsletter, flyers, publications and media/TV opportunities.

13 ANTICIPATED OUTPUTS TO BE ACHIEVED FOR 2015

The main outputs expected for 2015 include the following:

- Completion of the first draft of, '*A Guide to Forensic Geology*';
- Plan the Forensic Geology session at the 35th International Geological Congress, in Cape Town, South Africa, in 2016;
- Initiation of the first MSc in Forensic Geology, in Messina, Italy;
- Deliver of training, knowledge transfer and outreach events in; Japan, USA, UAE, UK and possible Latvia and Belarus; and,
- Publications and marketing of IUGS-IFG.

14 BUDGET FOR 2015

14.1 Overview

Throughout 2015, IUGS-IFG expects to continue a programme of promoting and developing forensic geology around the world. This is anticipated that this programme will include a series of events that will require funding assistance. IUGS-IFG also proposes to continue to develop the first draft of '*A Guide to Forensic Geology*' and a steering group committee meeting will be required in 2015 to discuss this 'Guide'. Consistent with the period 2011 to 2013, IUGS-IFG plans to break even or generate a small surplus funding, which can be carried forward to be reinvested in the development of forensic geology. IUGS-IFG will also continue to request and obtain contributory funding and funding services in-kind in addition to the core funding that is provided by IUGS.

In 2011-2014 IUGS-IFG has been successful in attracting additional financial support to assist with international events. IUGS-IFG would request that we can 'roll forward' the current balance of USD\$5,624 to assist with the proposed meetings and events in 2014.

IUGS-IFG kindly requests the maximum available budget of \$USD 15,000 funding from the IUGS Executive Committee for 2015 to help the group continue to pursue the global development of forensic geology throughout 2015 and beyond.

APPENDIX I: SELECTED PUBLICATIONS

Books, Book Chapters and Monographs

1. Dawson, L.A., Mayes, R.W., (2015) Criminal and environmental soil forensics: soil as physical evidence in forensic investigations. In: Murphy, B.L. & Morrison, R.D. (eds.). Introduction to Environmental Forensics. 3rd edition, Academic Press, Oxford, Chapter 12, pp457-486.
2. French, J. and Morgan, R. M. (2014). An experimental investigation of the indirect transfer and deposition of gunshot residue: Further studies carried out with SEM-EDX analysis. Forensic Science International [in press].
3. Khan, M.A., Qureshi, M.Z., Dawson, L.A., Rehman, M., Hayat, A., Maqbool, F., Andleeb, F., Haleem, K. (2014) Efficient desizing of fabric using partially purified thermophilic amylase produced by *T.sacchari* by the utilization of agro-industrial wastes., In: Cong, H., Yu, B. & Lu, X. (eds.). Frontiers in Micro-Nano Science and Technology. Advanced Materials Research, Trans Tech Publications, Switzerland, 924, 349-353. [Http://www.e-clicproject.eu/en/learning-resources/%E2%80%B4-library-of-ict-resources/](http://www.e-clicproject.eu/en/learning-resources/%E2%80%B4-library-of-ict-resources/)
4. Bull, P.A., Morgan, R. The Scanning Electron Microscope in Geomorphology. In Switzer, A. D., Kennedy, D. (Eds.) (2013) Methods Volume of Treatise of Geomorphology. Academic Press
5. Fitzpatrick, R. (2014). Making soil talk, new forensic discipline helps solve major crime. Adelaidean, Earth and Environmental Science, 1-4.
6. Fitzpatrick, R. (2014). Making soil talk: the value of soil in solving criminal investigations. 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. pp. 39-41 To download, visit www.soilscienceaustralia.org

Refereed Journal Articles

7. Abdul-Karim, N., Morgan, R., Binions, R., Harrison, K., Temple, T. (2013) Forensic Implications of the spatial distribution of post-blast RDX residue. Journal of Forensic Sciences 58(2): 365-371.
8. Aitkenhead, M., Coull, M.C., Dawson, L.A. (2014) Predicting sample source location from soil analysis using neural networks., Environmental Forensics, 15, 281-292.
9. Eley, Y., Dawson, L.A., Black, S.; Andrews, J., Pedentchouk, N. (2014) Understanding H-2/H-1 systematics of leaf wax n-alkanes in coastal plants at Stiffkey saltmarsh, Norfolk, UK., Geochimica et Cosmochimica Acta, 128, 13-28.
10. French, J. C., Morgan, R. M. and Davy, J. (2014) The secondary transfer of gunshot residue: An experimental investigation carried out with SEM-EDX analysis. X-Ray Spectrometry 43: 56-61.
11. Hansen, J.D., Pringle, J.K. & Goodwin, J. (2014). GPR and bulk ground resistivity surveys in graveyards: locating unmarked burials in contrasting soil types. Forensic Science International, 237, e14-e29.
12. Jervis, J.R. & Pringle, J.K. (2014). A study of the affect of seasonal climatic factors on the electrical resistivity response of three experimental graves. Journal of Applied Geophysics, 108, 53-60.
13. Morgan, R.M., Allen, E., King, T., Bull, P.A. (2014) The spatial and temporal distribution of pollen in a room: Forensic implications. Science and Justice 54(1):49-56

14. Morgan, R.M., Bull, P.A. (2014). Forensic Geoscience Evidence. Springer Encyclopedia of Criminology and Criminal Justice 2014.
15. Morgan, R. M., Flynn, J., Sena, V., Bull. P. A. (2014). Experimental forensic studies of the preservation of pollen in vehicle fires Science and Justice 54(2):141-145.
16. Morgan, R.M., Davies, G., Balestri, F. and Bull, P.A. (2013) The forensic implications for pollen on documents. Science and Justice 53(4): 375-384
17. Miles, H.F., Morgan, R.M., Millington, J. (2014) The influence of fabric surface characteristics on satellite bloodstain morphology. Science and Justice 54(4): 262-266
18. Nakhaeizadeh, S., Dror, I. and Morgan, R M. (2014) Cognitive Bias in Forensic Anthropology: Visual Assessments of Skeletal Remains is Susceptible to Confirmation Bias. Science and Justice 54(3): 208–214.
19. Nakhaeizadeh, S., Morgan, R.M. and Dror, I. (2014). The emergence of cognitive bias in forensic science and criminal investigation. British Journal of American Legal Studies [in press].
20. Perrault, K.A., Stuart B.H., and Forbes, S.L. (2014). A longitudinal study of decomposition odour in soil using sorbent tubes and solid phase microextraction. Chromatography. 1:120-140, 2014.
21. Pringle, J.K. (2014). Educational egaming: the future for geoscience virtual learners? Geology Today, 30(4), 145-148.
22. Ruffell, A. (2014). Lacustrine flow (divers, side-scan sonar, hydrogeology, water penetrating radar) used to understand the location of a submerged human body. Journal of Hydrology, 513, 164-168.
23. Ruffell, A., Pringle, J.K. & Forbes, S. (2014). Search protocols for hidden forensic objects beneath floors and within walls. Forensic Science International, 237, 137-145.
24. Scott, K., Morgan, R.M., Jones, V., Cameron, N. (2014) Diatoms as a forensic indicator on clothing. Forensic Science International 241: 127-137.
25. Southern, S., Mountney, N.P. & Pringle, J.K. (2014). The Carboniferous Southern Pennine Basin, UK. Geology Today, 30(2), 74-81

Conference Proceedings and Papers

26. Blom, G., Davidson, A., Cassella, J.P. & Pringle, J.K. (2014). Chemical marks for the detection of clandestine graves. Poster presentation at the 10th Annual FORREST Conference, Northumbria University, Cambridge, 2-4 July.
27. Blom, G., Davidson, A., Pringle, J., Williams, A., Lamont, A. & Cassella, J.P. (2014). Chemical markers for the detection of clandestine graves – development of a complimentary technique for forensic geophysics? Poster presentation at the Recent Work in Archaeological Geophysics & Forensic Geoscience: Future Horizons Conference, Geological Society of London, Burlington House, Piccadilly, London, 2-3 December.
28. Cook, G. (2014). 'Radiocarbon Analysis of Modern Skeletal Remains. Scottish Universities Reactor Centre. <http://www.qub.ac.uk/sites/14C/ConferenceProgramme/>).
29. Carvalho, A. Dawson, L.A., Ribeiro, H., Mayes, R., Guedes, A., Abreu, I., Noronha, F. (2014) Multidisciplinary characterization of sediments from two northern Portuguese river beaches for forensic application., IX Congresso Nacional de Geologia (IX CNG), Portugal, 18-24 July 2014.

30. Dick, H.C., Pringle, J.K., Sloane, B., Carver, J., Roberts, D., Aldridge, S., Giubertoni, M. & Porter, S. (2014). Geophysical detection and characterisation of a 1349AD 'Black Death' mass burial pit in Central London, UK. Oral presentation at the Recent Work in Archaeological Geophysics & Forensic Geoscience: Future Horizons Conference, Geological Society of London, Burlington House, Piccadilly, London, 2-3 December.
31. Fitzpatrick, R., Mark R., Self, P. (2014). Clay mineralogy as significant evidence in 4 murder investigations involving a wide range of earth materials from Perth, Adelaide, Melbourne and Sydney. Proceedings 23rd Australian Clay Minerals Society Conference: Perth (Ed R.J. Gilkes) 3-5 February, 2014; pp 23-26

http://www.smectech.com.au/ACMS/ACMS_Conferences/ACMS23/Program/Abstracts/S2-02%20Fitzpatrick%20et%20al.pdf
32. Fitzpatrick, R., Raven M., Self P. (2014) Mineralogical and pedological comparisons of secondary and primary transfer soil samples as significant evidence in a criminal investigation. 22nd International Symposium on the Forensic Sciences, Adelaide, Australia, 31 August to 4 September 2014.

http://www.aomevents.com/ANZFSS2014/Speakers/Call_for_Abstracts
33. Jervis, J.R. & Pringle, J.K. (2014). Seasonal variation in the resistivity response of three experimental graves. Oral presentation at the Recent Work in Archaeological Geophysics & Forensic Geoscience: Future Horizons Conference, Geological Society of London, Burlington House, Piccadilly, London, 2-3 December.
34. Morgan, R., Dawson, L. A. (Eds). (2014). Future Horizons. The Geological Society of London, Forensic Geosciences Group (FGG) Conference, 3 December 2014 The Geological Society, Burlington House, London.
35. Mayes, R., Ross, J., Dawson, L.A. (2014) Developments in the analysis of organic compounds as forensic markers in soil and related materials., International Network of Environmental Forensics, INEF, St John's College, Cambridge, 4-6 August 2014.
36. McCulloch, G., Morgan, R.M., Gibbons, S., Dawson, L.A., Woods, B. (2014) Exploring the potential of using HPLC to characterise forensic soil samples., 22nd International Symposium of the Forensic Sciences of the Australian and New Zealand Forensic Society (ANZFSS 2014), Adelaide, Australia, 31 August - 4 September 2014.
37. Pringle, J.K. Jervis, J.R., Wisniewski, K., Dick, H.C., Cassidy, N.J. & Cassella, J.P. (2014). Geophysical monitoring of simulated clandestine graves using electrical and Ground Penetrating Radar methods: 4-6 years after burial. Poster presentation at the Recent Work in Archaeological Geophysics & Forensic Geoscience: Future Horizons Conference, Geological Society of London, Burlington House, Piccadilly, London, 2-3 December.
38. Pringle, J.K., Bracegirdle, L., Potter, J.A. (2014). Educational e-gaming to provide an innovative, effective and flexible 24/7 learning environment. Higher Educational Academy STEM Annual Conference, Edinburgh University, 30 April - 1 May.
39. Reynolds, M., Fitzpatrick, R., Raven, M., Self, P. (2014) Mineralogical Profiling: A Synchrotron Case Study. 22nd International Symposium on the Forensic Sciences, Adelaide, Australia, 31 August to 4 September 2014.

http://www.aomevents.com/ANZFSS2014/Speakers/Call_for_Abstracts

40. Von der Luhe, B., Mayes, R., Dawson, L.A. (2014) The decomposition of adipocere under contrasting environmental conditions., International Network of Environmental Forensics, INEF, St John's College, Cambridge, 4-6 August 2014.

Conference Posters

41. Eley, Y., Pedentchouk, N, Dawson, L.A. (2014). Different response of bulk and n-alkane 13C signatures to seasonal shifts in environmental conditions in a temperate coastal ecosystem., Geophysical Research Abstracts, Volume 16, 11th EGU General Assembly, EGU2014-9399.
42. McDonagh, A., Blom, G., Davidson, A., Pringle, J.K. & Cassella, J.P. (2014). The detection of acetate as a decomposition product from a clandestine burial model. Poster presentation at the 10th Annual FORREST Conference, Northumbria University, Cambridge, 2-4 July.
43. Pringle, J.K. (2014). How to Find a Dead Body: Advances in forensic geophysics for the search of criminal materials. Invited oral presentation at Geology Dept., UCD, Dublin, 16th September.
44. Sugita, R., Donnelly, L.J. (2014). International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). International Association of Forensic Science (IAFG) conference in Seoul, Korea.

Popular Press & Media Articles

45. Carne, N. (2014) Digging deep to find the culprit. The Lead (News leads from South Australia) website:<http://www.theleadsouthaustralia.com.au/industries/education/robert-fitzpatrick-spreads-his-soil-forensic-knowledge-around-the-world-to-catch-the-bad-guys/>
46. Dawson, L.A. (2014). Dirty secrets of soil: unravelling the complexity of clues contained in the soil. AWE International, No 36, June 2014, pp48-51.
47. Dawson, L.A., (2014). Soil: Its use in the Criminal Justice System., BSSS web site. Article on soil forensic case work.
48. Earth and Environmental Sciences (2014). Making soil talk: New forensics discipline helps solve major crime. Adelaidean Autumn edition. Page 8-9.
http://issuu.com/adelaidean/docs/adelaidean_-_autumn_2014
49. Hoflinger, L.; Dawson, L.A., (2014). K R I M I N A L I S T I K, Bilder aus der Unterwelt = Forensics, Images from the Underworld. Der Spiegel, No.10.
50. International Crime Busters (2014). In Adelaide Advancing – 30 clever achievements from a progressive city. Adelaide Research & Innovation Pty Ltd. Page 67-68.
<http://www.adelaideresearch.com.au/about/book/>
51. Pringle, J.K. (2014). Geology in WW1 – mining on the Western Front. Oral presentation at the British Science Festival, Birmingham University, 8th September.
52. Pringle, J.K., Cassidy, N.J. (2014). Student-led original research projects. Oral presentation at Keele University's Annual Teaching Symposium, 14th May.

Presentations

53. Dawson L.A. (2014) Dirt, Death & DNA. Talk to the Lord Advocates Conference, 8th November 2014, Perth, Scotland.
54. Dawson, L.A. (2014) Soil in UK Case work. Keynote presentation at the British Association in Forensic Medicine. Inverness, 28 June 2014, Scotland.
55. Carvalho, A., Ribeiro, H., Dawson, L.A., Sant'Ovaia, H., Guedes, A., Abreu, I., Noronha, F. (2014) Physical-chemical characterization of two river beaches from Douro estuary (Portugal) for environmental and forensic investigations., Forensic Science Research in Scotland at the Scottish Student Forensic Research Symposium, University of Strathclyde, Glasgow, 14 March 2014..
56. Dawson, L.A. (2014). Soil in relation to archaeology and anthropology. Invited lecture to Edinburgh Unit for Forensic Anthropology, SHCA, Archaeology, University of Edinburgh, 25 February 2014.
57. Dawson, L.A. (2014). Forensic research in Scotland, panel debate. Forensic Science Research in Scotland, Scottish Student Forensic Research Symposium, University of Strathclyde, Glasgow, 14 March 2014.
58. Dawson, L.A. (2014). Soil and related material; use in forensic case work. Invited presentation to the Scottish Police Service, 24 April 2014.
59. March 2014.
60. Dawson, L.A., (2014) Soil approaches for intelligence and evidence in forensic case work., 20th World Congress of Soils Science, Soils Embrace Life and Iniverse, Jeju, Korea, 8-13 June 2014. Abstract.
61. Dawson, L.A. (2014). GEOFORENSICS; IUGS IFG. The 20th World Congress of Soil Science, Soils Embrace Life and Universe, Jeju, Korea, 8-13 June 2014.
62. Dawson, L.A. (2014). ENFSI APST. Invited member. Forensic Geoscience, IUFG IFG. Presentation, ENFSI Animal, Plant and Soil Traces 3rd Working Group Meeting April 2-4 - Rome.
63. Donnelly, L. J. (2014). International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG).Overview of Potential Geochemical Soil Sampling. Presentation to a UK Police Force Friday 14 February, 10:00-12:00 ([Confidential]).
64. Donnelly, L.J. (2014). Forensic Geology: The Applications of Geology to Policing & Law Enforcement. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG).The Geological Society of London, South East Regional Group (SERG), Mott MacDonald House, Croydon, London, Tuesday 18th February 2014, 17:30-18:30.
65. Donnelly, L.J. (2014). International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). Search to Locate a Homicide Grave. Presentation to a UK Police Force & National Crime Agency. Friday 28th February, 08:00-09:30 ([Confidential]).
66. Donnelly, L.J. (2014). The Geological Society Careers Day (Forensic Geology). International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG) and The Geological Society of London, Northwest Regional Group. Held at University of Manchester, Schuster Building situated, Manchester, Wednesday 5th March 2014, 13:30-15:15.
67. Donnelly, L.J., Vass, A., Harrison, M., Grime, M., Peffers, G. (2014). Geological Controls on Victim Recovery Dog (VRD) Responses During the Search for Homicide Graves. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG).Cambridgeshire Police

Headquarters Hinchingsbrooke Park, Huntingdon, Cambridgeshire, Monday 12 May 2014, 13:25-12:20.

68. Donnelly, L.J. (2014). Forensic Geology: The Applications of Geology to Policing & Law Enforcement. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). Oxford Geology Group. University of Oxford, Department of Earth Sciences, Oxford, Thursday 3rd July 2014, 19:30-20:30.
69. Donnelly, L.J. (2014). Forensic Geology: The Applications of Geology to Policing & Law Enforcement. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). The Geological Society of London, Western Regional Group (SERG), Atkins, The Hub, Almondsbury Bristol, Tuesday 15th July 2014, 18:30-20:00.
70. Donnelly, L. J. Bobrowsky, P. (2014). International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). Summary of Events and Activities during 2013. 67th Executive Committee Meeting, Goa, India, 18th-10th February 2014.
71. Donnelly, L.J. (2014). Forensic Geology: The Applications of Geology to Policing & Law Enforcement. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). Presentation to WorleyParsons, Leeds, Thursday 2nd October 2014, 13:40-14:15
72. Donnelly, L.J. Forbes, S. (2014). Ground search for burials. Series of presentations for Vitoria Police, Australia, 15th-17th October 2014.
73. Donnelly, L.J. (2014). Forensic Geology: The Applications of Geology to Policing & Law Enforcement. International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG). The Geologists Association, Festival of Geology, University College London, Saturday 1st November 2014, 15:00-15:45
74. Cheshire, K., Morgan, R.M., Holmes, J. (201). The discrimination of mixed source soil samples using geochemical techniques for forensic interpretation. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia.
75. Cleeves, A., Dawson, L.A., (2014) The secrets of soil - Murder mystery event set in Uist., RSPB Members Weekend, York, England, 11-13 April, 2014.
76. Dawson, L.A. (2014) Dark Side of Soil. Talk to the Aberdeen Gardening Club. 4th November, 2014.
77. French, J. C. Morgan. R. M., Lagnado, D. A. (2014). The Transfer and Deposition of Gunshot Residue (GSR): Implications for Forensic Investigations Studied Using Test-Firing Data and Bayesian Networks. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia. Keynote Lecture.
78. Gamble S.C., Morgan, R.M., Campos, LC. (2014). Detection of explosives throughout the wastewater system: applications for forensic intelligence. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September, 2014, Adelaide, Australia.
79. Heinrich, D., Morgan, R.M., Tilley, N. (2014). The 'Chain of Evidence' - a critical appraisal of the applicability and validity of forensic research and the usability of forensic evidence. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia.
80. McCulloch, G., Morgan, R.M. and Gibbons, S. (2014). Is High Performance Liquid Chromatography (HPLC) a useful addition to current Geo-forensic analytical techniques? American Academy of Forensic Sciences 66th Annual Scientific Meeting 17th-22nd February 2014 Seattle, WA, USA.

81. McCulloch, G., Morgan, R. M., Gibbons, S., Dawson, L., Woods, B. (2014). HPLC as a geoforensic technique. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia.
82. Nakhaeizadeh, S., Morgan, R.M., Dror, I., Rando, C. (2014). The effect of cognitive bias in Forensic Anthropology. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia. Keynote Lecture.
83. Pringle, J.K. & Cassidy, N.J. 2014. VRD current academic research and proposals. Invited oral presentation at the Special Interest Seminar: Victim Recovery Dogs, National Crime Agency, Cambridgeshire Police HQ, 12th May.
84. Pringle, J.K. (2014). Technique validation & research in forensic geophysics. Invited oral presentation at the Annual Institute for Archaeologists Conference, Glasgow, 9-11th April.
85. Scott, K., Morgan, R.M., Jones, V.J., Cameraon, N. G. (2014). The application of diatom analysis in forensic geoscience: developing a new technique for the comparative assessment of trace geological evidence. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia. Keynote Lecture
86. Smit, N.M., Morgan. R.M., Lagnado, D.A., Fenton, N. (2014). An investigation of the application of Bayesian Networks to case assessment in appeal cases. American Society of Criminology, 19th -22nd November 2014 San Francisco, USA.
87. Smit, N.M., Morgan. R.M., Lagnado, D.A. (2014). How Bayesian Networks can aid forensic practitioners. ANZFSS 22nd International Symposium on the Forensic Sciences, 31st August – 4th September 2014, Adelaide, Australia.
88. Smit, N.M., Morgan. R.M., Lagnado, D.A. Fenton, N. (2014). Evaluating New and Missing Evidence in Criminal Cases Using Bayesian Networks. 9th International Conference on Forensic Inference and Statistics. 19-22nd August 2014 Leiden, The Netherlands. Keynote Lecture.

APPENDIX II: SELECTED IMAGES

International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG)

SUGITA Ritsuko¹

1. National Research Institute of Police Science (NRIPS), Japan.

Laurance DONNELLY²

2. IUGS-IFG Chair, WorleyParsons, UK

E-mails: 1. sugita@nrps.go.jp, 2. laurance.donnelly@worleyparsons.com
IUGS-IFG Web Site: <http://www.forensicgeologyinternational.com>

International Union of Geological Sciences (IUGS), Initiative on Forensic Geology (IFG)

The International Union of Geological Sciences (IUGS) Initiative on Forensic Geology (IFG) was established in 2011 to develop forensic geology internationally and promote its applications.

Forensic Geology

Forensic Geology (known also as Geoforensics or Forensic Geoscience) is the application of geology to criminal investigations. Forensic geologists may assist the police in some types of crimes to help determine what happened, where and when it occurred, or to help search for homicide graves or other objects buried in the ground. In a law enforcement context, forensic geology specialists may support the police in two broad fields: (a) geological (trace) evidence and (b) search for burials.

Objectives of IUGS-IFG

- 1 Collate and disseminate data and information on forensic geology applied to policing and law enforcement, criminal, environmental and civil investigations;
- 2 Promote international meetings, seminars, conferences and training;
- 3 Develop a 'Committee' to act as principal advisers, collaborators and active participants;
- 4 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;
- 5 Collate, make available and where appropriate review any existing documentation and publications in forensic geology; and
- 6 Produce a document endorsed by the Committee to be called: 'A Guide to Forensic Geology'.

IUGS-IFG committee and GIN

Activities of IUGS-IFG

Academic Meetings and Sessions in Conferences

- 2011: Geologia e Biotecnologia Forenses Workshop, Portugal
- British Festival of Science, Shrewsbury Festival to CS: How Geologists Help Solve Crimes
- American Clay Minerals Society (CMS) Conference, Nevada, September
- International Annual Meetings of the Soil Science Society of America, Texas, October
- American Academy of Forensic Sciences (AAFS), Atlanta, Georgia, USA, February
- 2012: Geological Association of Canada (GAC), St. John's, Newfoundland, Canada
- Environmental Forensic Field Investigation, Lethbridge College, Canada, May-June
- The Scientific Working Group on Geological Sciences (SWGSC), SWGSC meeting, Atlanta, Georgia, USA, June
- SWGSC meeting, Atlanta, Georgia, USA, June
- European Academy of Forensic Science Conference (EAFS), Netherlands, August
- Geological Society of America USA Annual Conference & Exposition, Charlotte, North Carolina, USA
- 2013: 8th London Bullion Market Association Assaying and Refining Seminar, UK, March
- Search Training, Serious Organized Crime Agency, SOCA, Leicestershire, UK, March
- Forensic Geoscience, China, Japan, May
- Police Commission, Missouri, Missouri, USA, May
- 3rd International Legal Forum which was held in St Petersburg, Russia, May
- INTERPOL International Forensic Science Managers Symposium, France, October
- Geological Society of America (GSA) Denver, Colorado, USA, October
- Lupworth Lecture on Forensic Geology, Birmingham, UK, November
- 2nd International Conference on Engineering Geophysics, St. John, UAE
- International Association of Metallurgical Geoscientists (IAMG), December
- 2014: Geological Society of Japan: 'Geology of Japan: Recent Progress in Geological Science in Japan', Tokyo, Japan, May

Knowledge Transfer and Training

- 2012: National Policing Improvement Agency (NPIA), UK, Training Day April
- Servicio de Criminalística de Guardia Civil, Madrid, Spain, April
- Australian Federal Police (AFP) Brisbane, August
- 2013: Search Training, Serious Organized Crime Agency, SOCA, Leicestershire, UK, March
- Forensic Geology at the International School Science-Pol, Cornwall, UK, July 2013
- 2nd Dominican Workshop & Training, Brazilian Federal Police, Brazil, October
- Russian Federal Centre of Forensic Science (RFPS), of the Ministry of Justice of Russia
- Geophysics Special Interest Group, Institute for Archaeologists (IfA), UK, October
- Servicio de Criminalística de Guardia Civil, Madrid, Spain, November
- Forensic Archaeology, Rome, Italy
- Alle Great Police, Forensic Science Department, Abu Dhabi, UAE, November

Geoforensic International Network (GIN)

As part of IUGS-GEM Working Group on Geoforensics, a former body of IFG, the Geoforensic International Network (GIN) has been launched. This is primarily aimed at developing geoforensics at an international level and to promote best practice in its application. This will also provide an appropriate forum for the exchange of ideas, international linkage and to promote discussions and debate in forensic geology. Now, GIN collaborates with IUGS-IFG to organize meetings, outreach programs, and trainings.

Selected Recent Publications

- Murray, R. 2014. Evidence from the Earth (2014). Houston Press Publishing, USA. This book has been translated and published in China by the Key Laboratory of Evidence Science (China University of Political Science and Law).
- Di Maggio, R. M., Netho Barone, R., Pettwell, E., Meeke, M., Luzzo, S., Barncell, A. 2014. Geologia Forense. Introduzione alle geoscienze applicate alle indagini giudiziarie. Italia
- Gradacinski, G., Nedelko, E., Palenik, M. 2014. Atlas of exotic, anthropogenic and extraterrestrial particles in soil. Russian Federal Centre of Forensic Science, Ministry of Justice, Moscow (in Russian) pending.
- Prins, D., Ruffin, A., Dawson, L. 2014. Environmental Geoforensics. Geological Society of London Special Publication, 384, pp.72.
- Donnelly, L. J. 2013. Use of Geology in Forensic Science. Search in Law Enforcement. In: Elias S.A. (ed) The Encyclopedia of Forensic Science, Vol. 4 pp. 621-634. Amsterdam: Elsevier.
- Donnelly, L. J. 2013. The Design and Implementation of a High Resolution Forensic Geology and Pollen Search to Verify Total Grid Recovery Following the Discovery of the Baffinburg-Arctic Survey Grid. In: Prins, D., Ruffin, A., & Dawson, L. (Eds) (2013). Geological Society of London Special Publication, 384, Critical & Environmental Forensics (on-line version).
- Sugita, R., Wakawa, S. H., Donnelly, L. J. 2013. Contribution of natural substances as evidence to forensic science and international networking of forensic geology. Abstract of 8th meeting of Discussion Group of Labeling Origin, the Japan Society for Analytical Chemistry, 2013.
- Przpeticka, R. W. 2013. Soil Forensic Analysis. In: Wiley, Encyclopedia of Forensic Science. Jarman, A. & Monson, A. A. John Wiley, Chichester, UK.
- Przpeticka, R. W. 2013. Chapter 2: Demands on Soil Classification and Soil Survey Strategies: Special Purpose Soil Classification System for Land Practical Use. In: Saito, S. A. et al. (Eds). Developments in Soil Classification, Land Use Planning and Policy Initiatives. Innovative Training of Soil Inventory for Land Use Planning and Management of Land Resources. Springer Science & Business Media, Dordrecht.
- Murray, R. 2013. Soils and Sediments. In: Elias S.A. (Ed). The Encyclopedia of Forensic Science, Vol. 4 pp. 635-641. Amsterdam: Elsevier.
- Frings, J.K., Ruffin, A., Janis, J.R., Donnelly, L. J., McIlroy, J., Hancock, J., Wigger, R., Florin, G. & Hartman, M. 2012. The use of geoscience methods for terrestrial forensic searches. Earth Science Reviews, 114(1-2), 139-153.
- Przpeticka, R. W. 2013. Modern Trace Evidence Analysis and its Application to the Forensic Study of Soil, Sand and Dust. Second International Conference on Engineering Geophysics, United Arab Emirates University, Abu-Dhabi Municipality, 24-27 November 2013, 152-158.
- Bergelson, E. 2012. An Introduction to Forensic Geoscience. Wiley-Blackwell.
- Przpeticka, R. W. & Holmberg, J. 2005. Geoforensics. Wiley-Blackwell, Chichester, UK.
- Przpeticka, R. W. & Rawls, M. D. 2011. Guidelines for conducting criminal and environmental soil forensic investigations. Centre for Australian Forensic Soil Science (CAFFS) and CSIRO Land and Water, Version 3.0, 14th September 2011.

Copy of the IUGS-IFG Poster Displayed at The International Association of Forensic Science (IAFS), Korea, October 2014



Ekaterina Nesterina (left) Lorna Dawson (middle) and Olga Gradusva (right) at the ENFSI trace evidence meeting, Carabinieri Headquarters, Rome (Photo: Lorna Dawson)



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



(Upper and Lower) Collection of soil samples in glass vial for VOC analysis and leachate detection from a shallow, unmarked, homicide grave in Europe (photo: Laurance Donnelly)



Training in search to locate drugs (photo: Lorna Dawson)



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



Training in trace evidence sample collection (photo: Lorna Dawson)

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, stonecraft, 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....

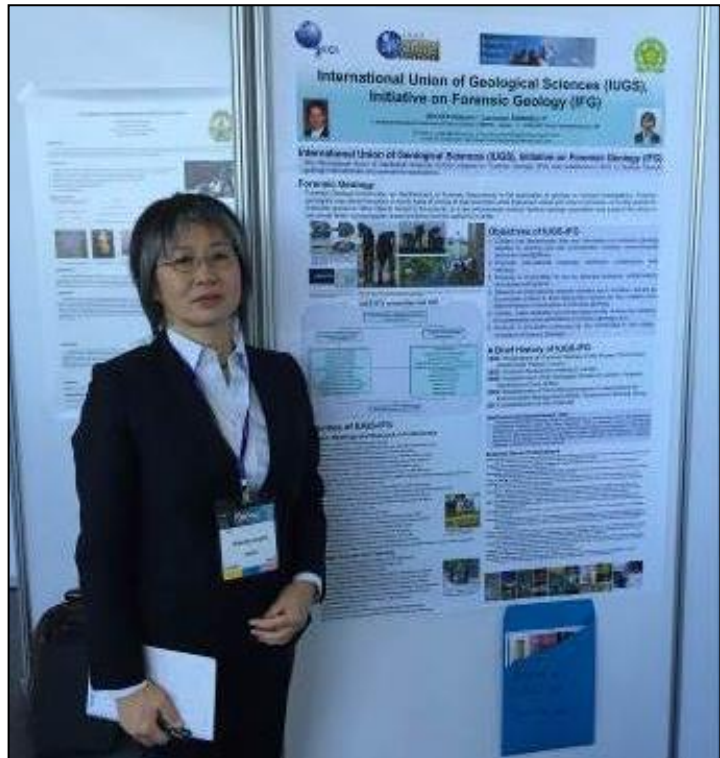
Geological Talks
Laurance Donnelly
 Forensic Geology: The Applications of Geology to Policing Enforcement
Richard Edmonds
 Fossils and fossil collecting along the Jurassic Coast
Iain Stewart
 Planet Oil
Peter Styles
 Shale Gas: What the frack is that all about!?

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

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

Further Festival details:



(Left) Forensic Geology, at the Geologists Association Festival of Geology, London, UK, November 2014 (Source: Geologists Association). (Right) Ritsuko Sugita and the IAFS, Korea (Photo Christopher Palenik)



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)

IUGS INITIATIVE ON FORENSIC GEOLOGY, ELECTRONIC NEWSLETTER, VOLUME 1, No. 1, APRIL 2014



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

CONTENTS

WELCOME FROM THE CHAIR	1
GEOFORENSIC INTERNATIONAL NETWORK (GIN)	3
2012 EVENTS & ACTIVITIES	3
2013 EVENTS & ACTIVITIES	5
FUTURE EVENTS	10
AWARDS & NEWS FEATURES	10
FUER	11
PUBLICATIONS	11
CONTRIBUTIONS	16
CONTACT DETAILS	16

WELCOME FROM THE CHAIR

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. On 18th September 2011, the IUGS-IFG and its newly formed committee members became formally established and launched at an inaugural meeting in Rome, Italy



IFG Committee Inaugural meeting in Rome

IUGS-IFG's mission is; 'to develop forensic geology internationally and promote its applications'. This will be achieved by capacity building (raising levels of awareness, knowledge and providing information about forensic geology), technology transfer and training (improvement of skill sets) and outreach (educating and informing the police and law enforcement organisations and the 'general public' about forensic geology).

IUGS-IFG has established a Committee to manage and develop the working group. This comprises representatives from major geographical regions of the world to give global coverage. It includes specialists

Announcement of the First MSC master Course in Forensic Geology, Messina, Sicily, August 2014



University of Messina

Department of Environment, Security, Territory, Food and Health Sciences (S.A.S.T.A.S.) "Carmelo Abbate"

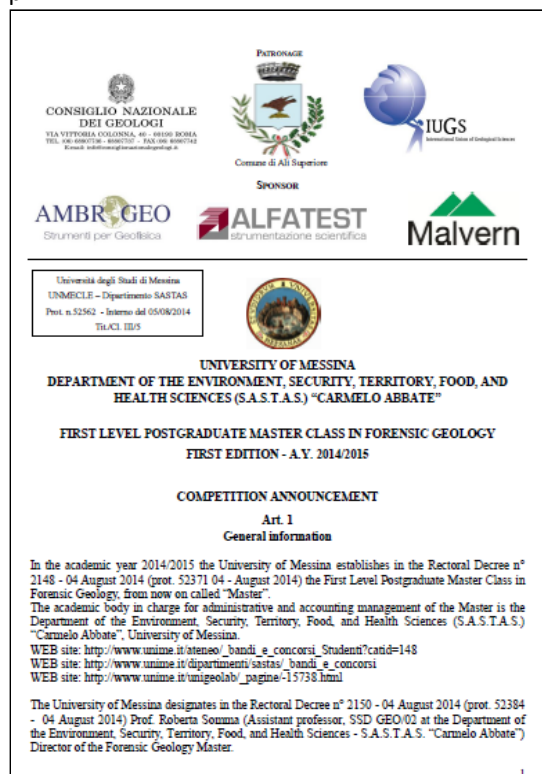
First Level Postgraduate Master Class in Forensic Geology.
Academic Year 2014/2015 Competition Announcement.

The University of Messina has established a Masters Degree (Rectoral Decree) program starting in the 2014-2015 school year. The course is being sponsored by the Italian National Council of Geologists (CNG), The International Union of Geological Sciences (IUGS) Initiative on Forensic Geology (IFG), and the Municipality of Ali Superiore (Messina) and the program is sponsored by Ambrogeo, Alfatest, and Malvern. Based on above-mentioned (and possible further) sponsors, some scholarships will be provided. The scholarships will be based both on financial incomes (ISEE) and merits.

The Master is a specialization, higher educational, cyclical, and long-term course with a final First Level Postgraduate Master degree, after a final exam (Ministry Decree 22/10/2004 n° 270 "Modifiche al regolamento recante norme concernenti l'autonomia didattica degli Atenei" approved by the Decree of the Ministry of University and Scientific and Technological Research 3/11/1999 n° 509). The Master is realized due to the art. 20 of the University Didactic Rules.

More information along with the application forms - both in Italian and English - can be found at http://www.unime.it/dipartimenti/sastas/ bandi_e_concorsi_studenti/master_di_livello_in_geologia_forense_edizione_a_a_2014_2015-16378.html

The deadline is 6th October 2014 by 12pm



The poster contains the following information:

- CONSIGLIO NAZIONALE DEI GEOLOGI**
VIA VITTORIA COLONNA, 40 - 00185 ROMA
TEL. 06 4980741 - 06 4980742 FAX 06 4980742
Email: consiglio@cngeo.it
- PATRONAGE**
Cortina di Ali Superiore
- IUGS**
International Union of Geological Sciences
- SPONSOR**
AMBRGEO (Strumenti per Geofisica)
ALFATEST (strumentazione scientifica)
Malvern
- Università degli Studi di Messina**
UNMECL - Dipartimento SASTAS
Post. n. 52562 - Interno del 05/08/2014
TRACI IUS
- UNIVERSITY OF MESSINA**
DEPARTMENT OF THE ENVIRONMENT, SECURITY, TERRITORY, FOOD, AND HEALTH SCIENCES (S.A.S.T.A.S.) "CARMELO ABBATE"
- FIRST LEVEL POSTGRADUATE MASTER CLASS IN FORENSIC GEOLOGY**
FIRST EDITION - A.Y. 2014/2015
- COMPETITION ANNOUNCEMENT**
Art. 1
General information
- In the academic year 2014/2015 the University of Messina establishes in the Rectoral Decree n° 2148 - 04 August 2014 (prot. 52371/04 - August 2014) the First Level Postgraduate Master Class in Forensic Geology, from now on called "Master".
The academic body in charge for administrative and accounting management of the Master is the Department of the Environment, Security, Territory, Food, and Health Sciences (S.A.S.T.A.S.) "Carmelo Abbate", University of Messina.
WEB site: http://www.unime.it/ateneo/ bandi_e_concorsi_studenti?catid=148
WEB site: http://www.unime.it/dipartimenti/sastas/ bandi_e_concorsi
WEB site: <http://www.unime.it/unigeolab/ pagine-15738.html>
- The University of Messina designates in the Rectoral Decree n° 2150 - 04 August 2014 (prot. 52384 - 04 August 2014) Prof. Roberta Somma (Assistant professor, SSD GEO/02 at the Department of the Environment, Security, Territory, Food, and Health Sciences - S.A.S.T.A.S. "Carmelo Abbate") Director of the Forensic Geology Master.

Search for Missing Service Men, Belarus, October 2014



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

Selected Presentations to IUGS Executive Committee (India, February 2014)
and The Geologists' Association (London, November 2014)

International Union of Geological Sciences (IUGS)
Initiative on Forensic Geology (IFG)
Summary of Events and Activities during 2013

Initiative on
Forensic
Geology

Presentation produced by:
Dr Laurance Donnelly
BSc (Hons) PhD CGeol CSci EurGeol FGS FGSA
Chair, IUGS-IFG
Forensic Geologist & Police Search Adviser

Presentation delivered by:
Dr Peter Bobrowsky
BA BSc MA PhD
Advisor to the IUGS EC
Geological Survey of Canada

Event & Venue:
International Union of Geological Sciences
67th Executive Committee Meeting
Goa, India
8th-10th February 2014

Forensic Geology:
The Applications of Geology to Policing and Law Enforcement

Initiative on
Forensic
Geology

WARNING
This presentation shows human remains
This presentation must not be copied
Some case details have been changed
No video, recording or photographs

Geologists' Association, Festival of Geology
University College London
Gower Street, London, WC1E 6BT
Saturday 1st November 2014, 15:00-15:45

For further information

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



Chair

Dr Laurance Donnelly

WorleyParsons
Moorfield Court, 11a Alma Road,
Headingley, Leeds
LS6 2AH, UK
Tel: +44823 521 239
E: laurance.donnelly@worleyparsons.com

Vice Chair

Dr Rob Fitzpatrick

CSIRO Land and Water
Private Bag No. 2
Glen Osmond
South Australia, 5064
T: +61-8-8303 8511
E: rob.fitzpatrick@csiro.au

Treasurer

Prof Lorna Dawson

The James Hutton Institute
Craigiebuckler
Aberdeen AB15 8QH
Scotland, UK
T: +44 (0) 1224 395 328
E: Lorna.Dawson@hutton.ac.uk

Secretary

Ms Marianne Stam
California Department of Justice
Riverside
California
USA
E: marianne.stam@doj.ca.gov

Training & Publications

Dr Alastair Ruffell

Department of Geography
Queens University Belfast
University Road
Belfast BT7 1NN
T: +44 (0) 28 9024 5133
E: a.ruffell@qub.ac.uk

Communications

Dr Jennifer McKinley

Department of Geography
Queens University Belfast
University Road
Belfast BT7 1NN
T: +44 (0) 28 9024 5133
E: j.mckinley@qub.ac.uk

