



UCL Institute for Risk
and Disaster Reduction

Annual Report 2019

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www.ucl.ac.uk/rdr/



From the Director

The UCL Institute for Risk and Disaster Reduction (IRDR) is a young and growing institute with a mission from the Provost to lead transdisciplinary research, advanced teaching and knowledge exchange in London, the UK and internationally. Through our leadership of the UCL Humanitarian Institute, we aim to mobilise UCL's research, expertise, teaching and the student body to impact global humanitarian challenges and to promote education for global citizenship and the research-connected curriculum at UCL, and aspire to the vision of UCL in 2034, as a global university champion in humanitarian response and disaster risk reduction.

This year has seen four important developments: 1) We launched the IRDR Centre for Digital Public Health in Emergencies led by Patty Kostkova. This initiative will link our

existing work and collaborations in global health with our expertise in emergency and crisis planning and management in the new digital age of big data. 2) We appointed Gianluca Pescaroli as Lecturer in Business Continuity and Organisational Resilience, as we expand our teaching in our masters Disaster Management pathway. Gianluca is developing exciting new research addressing systemic risks. He convened the 2019 IRDR Annual Conference themed around cascading and interconnected risk. 3) We appointed Bayes Ahmed as Lecturer in Risk and Disaster Science. He is currently coordinating three projects on the forced Rohingya Exodus from Myanmar funded by the British Academy and Royal Society, addressing journeys of violence and resilience, conditions of the migrants and host community, and disaster risks. He is convenor of the 2019 international Rohingya conference organised jointly with the UCL Centre for Collective Violence, Holocaust and Genocide Studies and addressed by the Bangladesh Foreign Secretary and High Commissioner. 4) Our growing collaboration with the UCL Institute for Global Health and contribution to the UCL-Lancet Commission on Migration and Health around climate change and disaster risks.

The IRDR is outward facing and we welcome engagement with the public, practitioners and researchers. We hold frequent public events such as the Annual Conference and our seminar series, and masterclasses for practitioners, such as our Masterclass on Safer Schools. Our student body is strongly international. We are investing in building partnerships with universities and other stakeholders across south and east Asia. If our vision appeals to you, we invite you to join with us. You may join the IRDR through our webpage: www.ucl.ac.uk/risk-disaster-reduction

Peter Sammonds
Director, UCL Institute for Risk and Disaster Reduction

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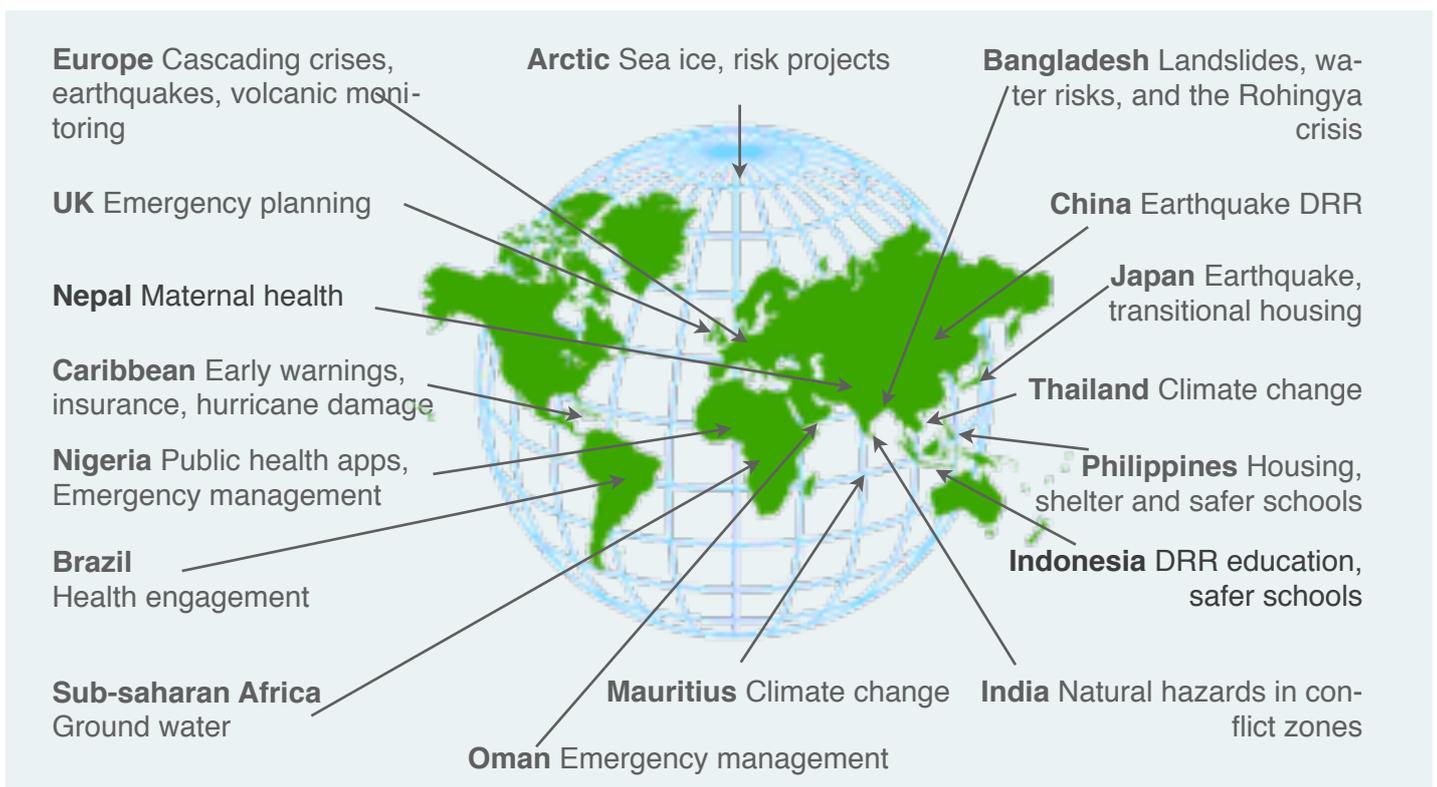
Cover image: Kutapulung Rohingya camp, Bangladesh, where the IRDR is developing landslide early warning

IRDR at a Glance in 2019

Below we highlight some of the developments and achievements within the IRDR during 2018-19:

- ❑ Launched the IRDR Centre for Digital Public Health in Emergencies.
- ❑ Welcomed the appointments of Dr Gianluca Pescaroli as Lecturer in Business Continuity and Organisational Resilience and Dr Bayes Ahmed as Lecturer in Risk and Disaster Science.
- ❑ Welcomed Amira Osman, Nurmala Nurdin, Jessica Field, Roberto Gentile, Anwar Musah and Akhtar Alam as research staff; and Anjali Saran, Kathinka Evertsen and Xiaojun Zhang as visiting researchers.
- ❑ Congratulated Nurmala Nurdin, Gianluca Pescaroli, Alexandra Tsioulou and Sally Scourfield on graduating with PhDs, while welcoming Mohamed Alwahedi and Mater Almeahmadi as new IRDR research students.
- ❑ Proposed new cross-UCL undergraduate humanitarian degree for launch in 2021.
- ❑ Won Commonwealth Scholarships and set up IRDR scholarships for masters students from partner universities in China.
- ❑ Ran first masters residential field course to Southwest England including UK Met Office, Hinkley nuclear plant and flood risk.
- ❑ 700 participants attended IRDR events.
- ❑ Launched monthly Gender and Disaster seminar series.
- ❑ Undertook fieldwork in the UK, Italy, Svalbard, India, Indonesia, Nepal, Bangladesh, Oman, Nigeria, New Zealand, Brazil and the Philippines.
- ❑ Won funding from the Royal Society to set up landslide early warning system for Rohingya refugees and host communities.
- ❑ UCL-Lancet Commission on Migration and Health published with IRDR contributing on climate change and disaster risks.
- ❑ Published over 70 academic papers and book chapters in 2018-19.

IRDR Global Reach



Public Engagement

A key aim of the IRDR is to engage in public debate on issues in risk and disaster reduction, creating a space for academic discourse in the public policy and political arenas, and raising the profile of UCL. To achieve this, we organise discussion meetings, lectures, symposia and an annual conference open to the UCL community and the general public, as well as organising workshops with local communities as part of our research projects and participating in external public engagement events.

Our 2018/19 monthly seminar series, which is open to the public, has covered a broad range of topics including 'downward counterfactuals' in risk and disaster reduction, volcanoes in border conflict zones and their use in science diplomacy, resilience for smart city technology, UK local and national recovery management, and critical disaster studies. We began the series with a special seminar on *Reinventing insurance – how insurance can help protect the vulnerable poor and eco-systems*, where David Simmons, a pioneer of

the catastrophe insurance industry, took us through a journey from 30 years ago when underwriters were essentially betting on risks they knew little about, to today, where knowledge and understanding from the insurance industry can be used to help protect the world's most vulnerable, increase resilience, and protect at risk eco-systems.

Our public engagement programme has been strengthened through the development of the IRDR Centre for Gender and Disaster, the IRDR Centre for Digital Public Health in Emergencies, and the Humanitarian Institute.



Panel at IRDR Centre for Gender and Disaster 1st anniversary

Public Events in 2018-19

June 2018: IRDR Eighth Annual Conference, attended by over 150 people, on *New Directions in Disaster Risk Reduction and Humanitarian Response*, with a Keynote address by the Rt Hon Baroness Frances D'Souza posing the question, *What is Aid For?*

October 2018: IRDR Special Seminar on *Reinventing insurance* by David Simmons, Willis Towers Watson.

November 2018: Launch of the UCL IRDR Centre for Digital Public Health in Emergencies (dPHE) was marked with a public evening event, including a Keynote address from Prof Virginia Murray, Public Health England, and a cross disciplinary panel.

February 2019: IRDR Careers and Opportunities Fair with exhibitors from the public and private sector and attended by over 100 graduates and students.

March 2019: UCL IRDR Centre for Gender and Disaster first Anniversary was marked by a panel discussion questioning the engendering of the disaster risk reduction agenda.

IRDR Monthly seminar series

IRDR Centre for Gender and Disaster Monthly seminar series

We also had a programme of public events for the Humanitarian Institute, see page 7.



Panel at the Launch of the UCL IRDR Centre for Digital Public Health in Emergencies

Making Impact

In the IRDR, we aim not only for our research to advance understanding and knowledge in the area of risk and disaster reduction, but also for those findings to have an impact on reducing those disaster risks in the real world.

Professor Peter Sammonds and Dr Bayes Ahmed are leading a project, funded by the Royal Society, to develop a landslide early warning system for the Forcibly Displaced Myanmar Nationals (FDMN)/ Rohingya refugees in Cox's Bazar, Bangladesh. This project aims to build resilience for the 1.3 million Rohingya refugees and the local host communities of around 0.5 million population, which would contribute directly to the sustainable economic development and welfare of Bangladesh.



Rohingya refugee Camp

The UCL IRDR Centre for Digital Public Health in Emergencies (dPHE)'s ZIKA virus surveillance and forecasting app, developed through a co-design process with researchers at two universities in Brazil, is currently being prepared for use by community health workers and public health management teams. The app provides timely information for public health experts and policymakers in three municipalities of Recife, Olinda, and Jaboatão dos Guararapes, as well as at the national level and WHO. To date, it has been warmly welcomed by local teams and has effectively streamlined existing methods for surveillance protocols.

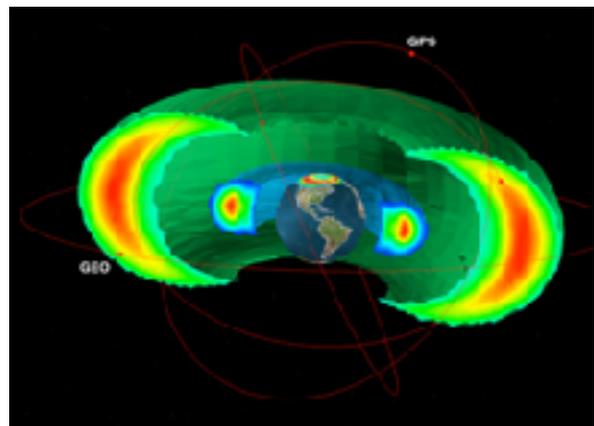


Professor Maureen Fordham and Dr Punam Yadav, the director and the co-director of the IRDR Centre for Gender and Disaster, provided advice to various governments, inter-governmental organisations and NGOs such as UN Women, UNICEF Nepal, WFP, and UK DFID.

Media Engagement

The IRDR maintains a high-profile media strategy, providing both immediate comment during disasters, and features for documentaries and magazines.

Should we be concerned about the changing magnetic field? The risk it might pose to satellites, in particular Global Navigation Satellite Systems (GNSS), such as GPS and Galileo? Dr Robert Wicks from UCL IRDR was a guest on Radio 4 Inside Science talking about the risks associated with the reversal of the Earth's magnetic field on Thursday 14th February 2019.



The Earth's Magnetic Field

Enterprise and Innovation

At IRDR Enterprise and Innovation we are motivated by our passion for bridging the gap between academia and practice.

Dr Patty Kostkova and Dr Caroline Wood lead the development of the GADSA app, which offers gamified decision support to increase compliance with antibiotic prescribing guidelines in Nigeria. The app is currently being piloted by 80+ surgeons across three hospital sites. Surgeons are using the app to record prescription decisions for each elective surgery they carry out (approx. 60 prescriptions per surgeon over an eight-week period). Preliminary pilot data shows the app has had a positive impact on inappropriate use of antibiotics.

Next steps for this work involve adapting the GADSA technology for use in other countries and settings, including in UK hospital settings.

Enterprise for UCL IRDR students

In November 2018, UCL IRDR launched the Entrepreneurship for Global Humanitarian Impact workshop supported by the UCL

incubator BaseKX. Participants were coached on how to develop an idea into a product/service. At the end of the one-day workshop, each group presented its business plan of a mobile application that could help to reduce flooding risks in Bangladesh.

"I went to it not thinking that I have what it takes to be an entrepreneur, and I came out of that believing I can do it"

Alicia Matthews, UCL IRDR MSc student



UCL IRDR Students Participated in the Entrepreneurship for Global Humanitarian Impact Workshop

Careers and Students

At UCL IRDR, we provide our students with not only academic excellence but also practical knowledge and training to support their career development.

This year, Elodie Huet (MSc Risk Disaster and Resilience 2013-14), a Consultant at Arup Group Limited, led a workshop on Business Continuity Management at UCL IRDR for UCL students. Our Consultancies R Us workshop, led by Dr. Ilan Kelman, encouraged the students to brainstorm the key features of being an independent consultant and how to win consultancy bids.

To support students and alumni in developing their careers, we hold an annual Careers and Opportunities Fair, specifically targeted at opportunities in Risk and Disaster Reduction. Recruiters, students and alumni alike find this event useful for finding the employers/employees they are looking for.

We are proud to see so many of our masters

students prospering in careers relating to risk and disaster reduction. Recent graduates have found jobs in companies such as KPMG and RMS, and NGOs such as Rescue Global and World Bicycle Relief, while others have gone on to further study including for a PhD in Territory, Risk and Public Policies at the University of Lisbon, and in Glaciology at the University of Edinburgh. We are delighted that one of our IRDR Masters Prize winners has had an academic paper based on their independent project published in the prestigious International Journal of Disaster Risk Reduction.



UCL IRDR Careers and Opportunities Fair 2019

The Humanitarian Institute is a UCL Provost's Strategic Initiative, launched at the 2017 UCL Humanitarian Summit. Its mission is to mobilise UCL's research, expertise and teaching to impact global humanitarian challenges and to promote education for global citizenship. It is led by Professor Peter Sammonds and Dr Rosanna Smith.

Research

The Rohingya Exodus is one of the biggest global humanitarian crises of today. With research funding from the British Academy, the Royal Society, and UCL's Global Challenges Research Fund allocation, Prof Peter Sammonds and Dr Bayes Ahmed are building a growing research team investigating the historical and contemporary perspectives of Rohingya journeys, their experiences of gendered violence, and ensuring resilient futures for the Rohingya stateless people. We are also organising an International Conference on "the Rohingya Crisis in Comparative Perspective" to be held at UCL from 4–5 July 2019.



Multi-hazard prone Rohingya Camp in Cox's Bazaar, Bangladesh

Teaching

Following an exercise in summer 2018 to map existing teaching at UCL in humanitarian issues, we found that UCL has a strong suite of thematic Masters programmes that cover a range of aspects of humanitarian studies, and that there were many undergraduate modules that address or could be applied to humanitarian issues and contexts. However, there was no existing undergraduate programme to bring this together, yet there was an identified need from employers for undergraduates trained in this area. It is also an area that we believe many aspiring UCL students would like to pursue. So we are

proposing a new UCL undergraduate degree in Humanitarian Studies, which we plan to launch in 2021. We invite students, teachers, educational professionals, practitioners, and employers who are interested to be involved to get in touch.

Ahead of launching new undergraduate teaching, we already run a Masterclass series to deliver 1-day practical programmes for staff, students and practitioners, delivered by UCL researchers and our partners in developing countries. In 2018-19 we delivered masterclasses on:

- *Public Health and Digital Disaster Response*, led by IRDR Centre dPHE, in June 2018.
- *Safer, More Resilient Communities Through Safe and Resilient Schools*, in conjunction with UCL CEGE, and their project partners from the Philippines and Indonesia, in October 2018.



We are now planning further Masterclasses:

- *Outbreak! Infectious Diseases*, led by IRDR Centre dPHE, in June 2019 as part of the UCL Global Citizenship programme and the 2019 Humanitarian Summit
- *Earth Observation and Natural Hazards* in October 2019

Humanitarian public events

We run public events with the aim of providing a platform to develop humanitarian themes and networks:

- UCL Humanitarian Summit, June 2018
 - Evening Conference on *Safer, More Resilient Schools Through Safer Communities: International Case Studies*, October 2018
 - UCL Humanitarian Summit, June 2019
- Find out more at ucl.ac.uk/humanitarian

Centre for Gender and Disaster

The Centre for Gender and Disaster marked its first anniversary on the 7th March 2019. It is led by Centre Director Prof Maureen Fordham and Centre Co-director Dr Punam Yadav.

At the first anniversary event, held in March 2019, three excellent panellists, Prof Sarah Bradshaw, Dr Terry Cannon and Mr Kevin Blanchard, made critical analyses of gender and disaster scholarship and processes.

The Centre for Gender and Disaster also launched a monthly seminar series in January 2019. These seminars engaged a diverse group of invited scholars and experts on gender, disaster and conflict. The first two events (Studying Gender in Disaster: How far have we Got? by JC Gaillard, University of Auckland; Withdrawing from Politics? Gender, agency and women ex-fighters in Nepal by Dr Hanna Ketola, King's College London) were broadcasted live on twitter and reached a large audience.

Centre for Digital Public Health in Emergencies dPHE

The UCL IRDR Centre for Digital Public Health in Emergencies (dPHE) was launched in November 2018.

The Centre provides a connection space for academics, researchers, innovators, decision-makers, NGOs and policymakers working in fields related to digital public health wishing to work collaboratively to tackle difficult global questions. It is led by Dr Patty Kostkova with coordination of Centre activities and events led by Dr Caroline Wood. It aims to:

- ❑ Strengthen response to global public health challenges and emergencies
- ❑ Lead cutting edge research into mobile technologies, data science and policy
- ❑ Harness expertise across sectors to strengthen national and international collaboration
- ❑ Cultivate the next generation of experts

The Centre is about to launch the first edition of its annotated bibliography on gender and disaster. Phase 1 already comprises 29 themes and yet this is not an exhaustive list. A more comprehensive list and information will be regularly updated on our website. Intern researcher, Anjali Saran, developed this bibliography under the supervision of Punam Yadav and Maureen Fordham.

The Centre for Gender and Disaster aims to mainstream gender into DRR teaching, research and practice and will offer a new MSc module on Gender, Disaster and Conflict, in the new academic year (to be led by Punam Yadav and Maureen Fordham). Throughout the year the Centre has been an invited contributor to UKRI GCRF consultation meetings in Delhi and London; it has provided advice and information to media outlets (Reuters and BBC).



Launch of IRDR Centre dPHE

through evidence-based teaching.

We lead on interdisciplinary research, to break down the limits of current health systems' capacity and communities' resilience to improve health and wellbeing; and respond to emergencies at local, national and international levels.

We currently offer a taught module: 'Digital Health: Epidemics and Emergencies in the Era of Big Data' to students enrolled on the IRDR Masters programmes. We are developing a Digital Public Health pathway as part of the IRDR Risk and Disaster Science MSc.

We host events throughout the year. These include our annual conference: The International Digital Public Health conference: www.acm-digitalhealth.org and events in conjunction with the IRDR and Humanitarian Institute (in their listings).

Education and Training

Education and training are part of the core mission of the IRDR. We have established teaching in hazards, risk, resilience and disaster risk reduction as an integrated discipline at UCL.

We run four masters programmes and over 40 masters students will graduate from the IRDR in 2019. Our Doctoral Research Centre in Risk and Disaster Reduction now has more than 20 current students. We run bespoke training for students, graduates and practitioners through the masterclass series. We are preparing to launch an undergraduate programme in humanitarian studies for 2021.

This academic year we welcomed students onto the new management pathway of our MSc Risk and Disaster Science. This programme incorporates modules from the UCL School of Management. Our MSc Risk Disaster and Resilience and MSc Risk and Disaster Science programmes saw the addition of a module in Catastrophe Risk Modelling.

For students arriving in the 2019-2020 academic year, we are now offering:

- New modules on Gender, Disaster and Conflict, and on Business Continuity Management and Organisational Resilience.
- Flexible learning on the MSc and PGDip Risk, Disaster and Resilience, so that those who cannot commit to full or part-time study can take single modules.

We are delighted that a number of our current masters students won scholarships. In addition to the IRDR scholarships, we have students on full scholarships from the Commonwealth Shared Scholarship Scheme, and government scholarship schemes from their home countries. We are pleased to be offering IRDR and Commonwealth Scholarships for the upcoming academic year.

In this year's UCL Students' Union Student Choice awards, Dr Joanna Faure Walker was nominated for Active Student Partnership and Dr Ilan Kelman was shortlisted for Exceptional Feedback.

Doctoral Training

The IRDR has a well-established and respected Doctoral Research Centre, with over 20 PhD research students who conduct interdisciplinary, wide-ranging, and international research.

From arctic risks to flood vulnerability, and from emergency management to seismic hazard, this work has had extensive and positive societal impact. Our PhD programme in Risk and Disaster Reduction is in its third year and is generating extensive interest, especially from international students. All of our doctoral candidates contribute to the vibrancy of IRDR life and support IRDR's mission. Many of our PhD students have supervisors from different disciplines and from different London universities, extending their knowledge, networks, and contributions. Some work part-time for government, NGOs, or the private sector.

Our PhD training programme - including participation in the IRDR Student Forum, Spring Academy, and Annual Conference -

fosters a new type of graduate student who is comfortable working across sectors, around the world, and through public engagement as well as publishing in top scientific journals.

If you are interested in pursuing a PhD in the IRDR, the first step is to identify a supervisor who shares your research interest and get in touch. Our students are funded from diverse sources, including UK research councils, governments internationally, business etc.



Spring Academy 2019

Our graduates can benefit from the core themes taught across all our programmes as well as the programme-specific topics across our taught postgraduate courses.

All of the IRDR Masters Programmes cover four central themes:

Understanding Vulnerability

Covering topics from fragility curves describing damage of buildings to social vulnerability of individuals and society.

Quantifying Risk

- What is risk and how do we measure it?
- Components of risk: exposure, hazard, vulnerability.

Multidisciplinary Holistic Approaches: Theory to Practice

- Integrating scientific knowledge into disaster risk reduction research, policy and practice.
- Communicating with stakeholders.

Managing Disasters

- How to apply plans to manage real emergencies.



Our programme-specific themes cover a range of additional topics:

MRes Risk and Disaster Reduction:

- Evidence-based research.
- Identify current questions in the field of risk and disaster reduction.
- Learn how to conduct research.
- Develop detailed studies to propose solutions.

MSc Risk, Disaster and Resilience:

Physical and Social Science of Natural and Anthropogenic Hazards

- What is known and unknown.
- Current research and uncertainties.

Building Resilience

- What are the barriers to risk and disaster reduction and how do we overcome them?
- Developing a common language to communicate complex concepts in an accessible way.

MSc Risk and Disaster Science:

Science of Earth and Space Hazards

- Analysing different hazard risks: seismic and triggered events, space weather, epidemics, conflict and climate.
- Scenarios and case studies drawn globally providing breadth of experience.

Statistical and Modelling Tools

- Statistical treatment of risk.
- Bringing together data and theory.
- School of Management optional topics.

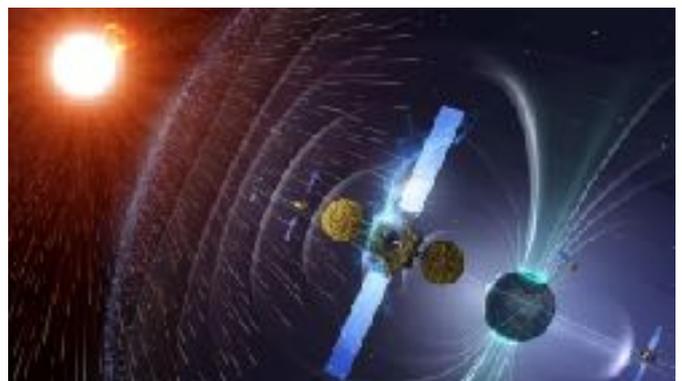
MSc Space Risk and Disaster Reduction:

Hazards of Outer Space

- Space weather, radiation, debris.
- Emerging risks and the future of disaster monitoring.

Satellite Design and Operations in Space

- Learn how to design and operate a satellite from the largest university space science department in the UK.



Research Achievements

Our public engagement, research impact and graduate teaching are underpinned by excellent academic research. In the last year, IRDR researchers have produced over 70 peer reviewed publications, presented at leading international conferences, been invited to speak at prestigious academic institutions, organised international meetings and conferences and have won distinguished awards and substantial research funding.

Research Funding

During the year until May 2019, UCL IRDR academic and research staff have won many new research funding awards, including:

- ❑ “Resilient Futures for the Rohingya Refugees”; £500k; Royal Society; Peter Sammonds and Bayes Ahmed.
- ❑ “Rohingya Journeys of Violence and Resilience in Bangladesh and its Neighbours: Historical and Contemporary Perspectives”; £300k; British Academy; Peter Sammonds and Bayes Ahmed.
- ❑ EPSRC IAA grant for deployment of the zika app in real world settings in Brazil; £100k; Patty Kostkova.
- ❑ Marie Curie Fellowship; Roberto Gentile
- ❑ Further awards from Wellcome Trust, EPSRC IAA, ESA, Research Council of Norway, UCL GCRF allocation and more.

International Partnership

UCL and Tohoku University signed a Memorandum of Understanding in October 2018, with disaster science central to the partnership. Dr Joanna Faure Walker led a disaster science workshop as part of the joint activities to mark the MoU.

Awards and Posts

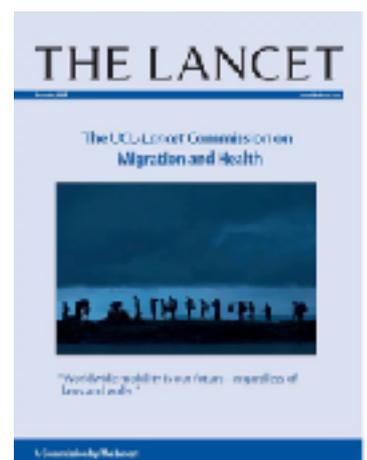
During 2018-19, IRDR staff have achieved the below nominations, awards, and posts:

- ❑ Maureen Fordham was invited to be member of a UKRI Gender Equality Act External Advisory Board
- ❑ Gianluca Pescaroli; editorial board of the new cross-disciplinary Journal of Infrastructure Preservation and Resilience
- ❑ Punam Yadav is General Secretary of the Britain-Nepal Academic Council.
- ❑ Katerina Stavrianaki is a member of the EPSRC Associate College.
- ❑ Ilan Kelman’s paper *Linking disaster risk reduction, climate change, and the sustainable development goals* in Disaster Prevention and Management was selected as Highly Commended in the 2018 Emerald Literati Awards.
- ❑ Patty Kostkova was shortlisted for Team Leader of the Year in the Computing Women in IT excellence Awards 2018.

Research Profile

Professor Peter Sammonds is professor of Geophysics and is currently working on increasing resilience to environmental hazards in conflict zones. This year he is working on joint projects between the natural and social sciences on the forced Rohingya Exodus from Myanmar. He is also active in natural hazards research including on earthquake, volcano and arctic hazard risks, where he takes a combined laboratory, field and modelling approach. He was a commissioner on the UCL-Lancet Commission on Migration and Health, working

closely with the UCL Institute for Global Health, and was Strategic Advisor to UK research councils on increasing resilience to environmental hazards for projects in China, Central Asia and South-Central America and the Caribbean.



Professor David Alexander is Professor of Risk and Disaster Reduction. His latest research involves building a systematic model of the relationships between cascading crises, and compound, interconnected, interacting and concurrent impacts. A magnitude scale was devised for cascading disasters. It is designed to enable comparison between different events in order to build predictive scenarios for emergency planning purposes. The research involves 'black sky thinking', which deals with the varied impacts of electricity failure and their cascading effects upon the other seven categories of critical infrastructure. In 2018 a special issue of the International Journal of Disaster Risk Reduction was compiled, devoted to cascading disasters. Meetings with stakeholders have taken place at London City Hall and the Royal Society.



Professor Maureen Fordham is a Professorial Research Fellow and Centre Director at the IRDR Centre for Gender and Disaster. Her current work explores disaster reconstruction from an intersectional perspective but with a primary focus on gender. She will spend two weeks in New Zealand in June 2019 organising and facilitating workshops in Christchurch and Wellington. These will reflect on the reconstruction and recovery process in Christchurch and re-imagine how such processes could be developed elsewhere in the future. The plan is to view reconstruction through a gender lens but to develop an intersectional approach (age, race/ethnicity, dis/ability, as participants choose) to imagine reconstruction with a broadly inclusive and

intersectional vision. The imaginings will cross disciplinary, cultural and practice boundaries.



Dr Bayes Ahmed is a Lecturer in Risk and Disaster Science. His principal research aim is to help build resilient futures for the Rohingya refugee and local host populations in Cox's Bazar district, Bangladesh, through research and practical solutions to reduce hydro-meteorological disaster risks, particularly landslides. Specific objectives of the proposed research are: 1) to develop effective DRR tools of landslide susceptibility maps and a dynamic landslide early-warning system (LEWS) at a local scale. 2) to improve awareness in vulnerable communities and strengthen capacity of Cox's Bazar authorities in order to inform policy makers and practitioners on long-term strategic planning with short-term preparedness. Two further partner countries in India and Malaysia have been added to understand the complexity of the crisis, and plans to extend the work in other countries hosting the Rohingya diaspora, such as Myanmar, Pakistan, Saudi Arabia, Indonesia, and Thailand, exist.

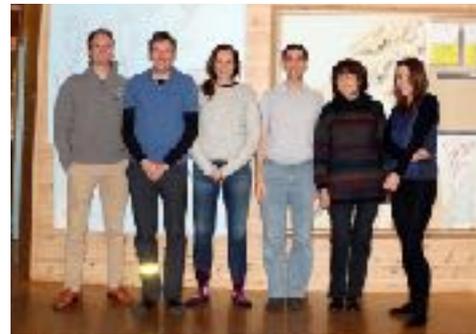


Dr Gianluca Pescaroli is a Lecturer in Business Continuity and Organisational Resilience. His research investigates how to build and improve the ability to maintain operations during disruptive events, how to minimise their impacts, and how to increase the resilience of the public and private sectors. This includes learning to understand complex challenges such as cascading risks, critical infrastructure failures, cross-sectoral interdependencies, and compound dynamics. In 2018 -19 he achieved his PhD, and edited a special issue on the International Journal of Disaster Risk Reduction. He contributed to a project on resilience to extreme space weather events and coordinated a sub chapter for the upcoming European Flagship Report Science for DRM 2020.



Dr Ilan Kelman is a Reader appointed 50:50 between IRDR and UCL Institute for Global Health. Dr Kelman's research combines disaster and health research, including the integration of climate change challenges and opportunities. Two main case studies are priorities: island and archipelago communities, and the poles, so the Arctic and the Antarctic. Specific research questions relate to three main areas. First, disaster diplomacy and health diplomacy including the role of science diplomacy. Second, how climate change will impact physical, mental, and environmental health. Third, how to better connect sustainability and development topics, including health, disasters, and climate change. His 2018-2019 highlights include project grants awarded from the Research Council of Norway for "Norway-Russia Disaster Diplomacy in the High North and Arctic" and from the Wellcome Trust for "Lancet

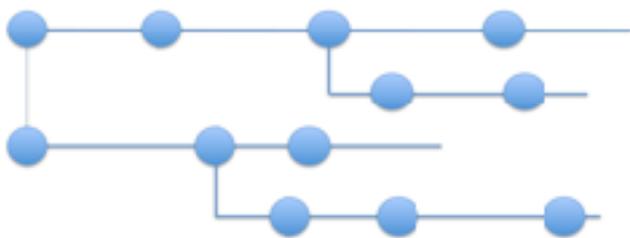
Countdown: Tracking progress on health and climate change". Both projects link to future work focusing on bringing together different fields and disciplines while better connecting research, policy, and practice.



Dr Joanna Faure Walker is an Associate Professor in Earthquake Geology and Risk and Disaster Reduction. Joanna leads the central Apennines laboratory of the Fault2SHA ESC Working Group, working to increase the use of faults in earthquake hazard assessments. She investigates relationships between variability in fault geometry, earthquake slip and fault interaction both during individual earthquakes and over long time periods covering multiple earthquake cycles and how this affects seismic hazard calculations. In the last year she has published work quantifying how incorporating detailed fault geometry changes calculations of earthquake recurrence intervals and expected ground shaking intensities and explaining the change in slip along the fault that ruptured during the August and October 2016 Italian earthquakes. She is also co-investigator on the PRISMH project (Philippines Resilience of Schools to Multi-Hazard), investigating the relative suitability of schools as evacuation shelters.



Dr Katerina Stavrianaki is a Lecturer in Risk Analysis. Her research includes the statistical analysis of earthquakes using the Epidemic Type Aftershock Sequence (ETAS) model and more specifically, she proposes a new methodology to study the clustering in earthquake magnitudes which demonstrated their existence. She also studies acoustic emissions generated during laboratory deformation of sandstone and ice samples, which can be used as a proxy for natural processes. Her motivation is to improve current forecasting and seismic hazard approaches, with a special interest in the modelling of spatiotemporal point processes, hazard and risk analysis, short term magnitude incompleteness and forecasting.

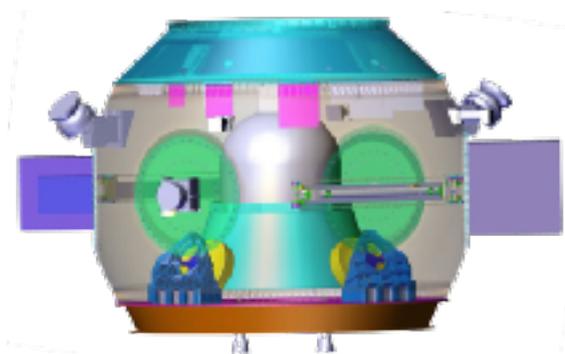


Dr Patty Kostkova is an Associate Professor in Global Health and Emergencies. Her research investigates mobile digital health interventions, serious games for health and Big Data surveillance, early-warning and predictions of outbreaks and emergencies. In November 2018, she launched the UCL IRDR Centre for Digital Public Health in Emergencies (dPHE) bringing together experts from UCL and external stakeholders to lead on interdisciplinary research, training and policy advice to improve global public health through use of digital technologies and data systems. Her research on the ZIKA project led to a novel approach for early warning of mosquito populations in high risk areas calibrated by unique real-time mobile surveillance data. The GADSA project - the first game-based training app using data analytics to understand the impact of persuasive game technology on behaviour change to strengthen antibiotic stewardship in surgeons in Nigeria - is now being

evaluated at the point of care in three hospital sites.

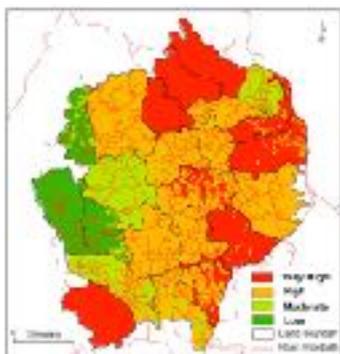


Dr Robert Wicks is Lecturer in Space Weather and Risk, appointed 50:50 to UCL IRDR and UCL Department of Space and Climate Physics. His work focuses on dynamic processes in outer space that impact the Earth. The Sun is the source of the solar wind, a supersonic flow of plasma that buffets the Earth. The changing pressure and magnetic field in the solar wind cause space weather, which includes increased radiation doses for satellites, astronauts and airline passengers, the brightening and enlarging of the aurora, surges in electrical current in the power grid, and interruption to radio communications and GNSS signals. Dr Wicks also works on satellite hardware projects. In 2018 he led a team of more than 100 scientists and engineers across the EU as PI of a €150M mission proposal to the European Space Agency (ESA), called Debye. He is also a Co-I in the ESA study of a space weather monitor mission called Lagrange.



Spacecraft design concept for Debye. Image courtesy of Airbus

Dr Akhtar Alam is a Research Fellow in the IRDR, whose work focusses on assessing the risk of Rohingya refugees to different natural hazards through a monitoring and spatial modelling approach, in addition to the broader social, economic, and political implications of the Rohingya crises in South Asia. The forced exodus of Rohingya from Myanmar is one of the largest humanitarian crisis of today. Not only has the conflict driven mass displacement of the people been a matter of concern, the migration also exposed the whole population to range of natural hazards such as cyclones, floods, and landslides. The demographic construction of the community with large families, elderly, and female populations combined with the deprived socioeconomic condition produces heightened vulnerability. He aims to understand what the likelihood is of the community being affected by the probable hazards and what could be done to minimise the impact of likely extreme events. Further, he aims to develop a Multi-Hazard Early Warning System (MHEWS) for the Cox's Bazar with special emphasis on the Rohingya Refugee Camps.

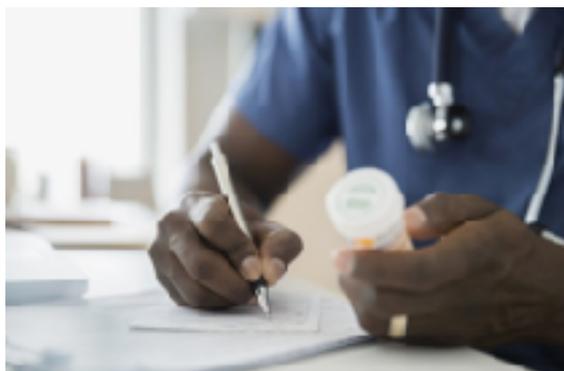


Dr Amira Osman is a Research Fellow in the IRDR whose work addresses the impact of violence on the Rohingya refugees who fled to Bangladesh, India and Malaysia and its effect on gender arrangements. It also examines how the Rohingya refugees' own understandings of violence and risk have transformed as their locations have changed, and what coping mechanisms and aspirations are emerging from within the community as they look towards the future. She is also conducting research on promoting peoples' capacity to respond to flood related health implications: the case of Kassala State in

Sudan. This research aims to investigate the local population's response to floods and explore how people could promote their individual and collective capacities to mitigate against the health consequences of floods.

Dr Anwar Musah joined UCL IRDR as a research fellow in June 2019. He is a trained statistician and epidemiologist - his work connects statistical modelling, GIS and data sciences to scientific problems in health and social sciences. Anwar will be working alongside Dr Patty Kostkova who is the PI of the ZIKA project, and will be developing models for the real-time spatial prediction of mosquito populations responsible for the transmission of the Zika virus in Brazil.

Dr Caroline Wood is a Senior Research Fellow and Project Coordinator. Her current research includes using theory to understand non-compliance with surgical antimicrobial prescribing guidance including development of a gamified decision support smartphone application to improve prescribing behaviour amongst surgeons in Nigeria. Informed by field work and access to existing local prescribing guidance, the developed app, currently being piloted across three hospital sites in Nigeria, integrates evidence-based recommendations published by WHO to encourage appropriate use of antibiotics in the global fight against Antimicrobial Resistance. Since May 2019, she has been involved in work to localise the developed decision support app technology for use in UK hospital settings and across other countries in Africa. Other upcoming projects include development of an online capacity building and resource platform for infection prevention and control professionals (iNRIC).



Georgiana Birjovanu is MEng student in Computer Science at UCL and a research assistant in IRDR's Centre dPHE. She has been working on the GADSA project, creating a gamified antimicrobial decision support app, and on developing an app that health agents can use to find areas affected by the Zika virus.

Dr Mohammad Shamsudduha ("Shams"), a Research Fellow in the IRDR, is leading research on water risks to human health and food security. He is currently working as the Project Manager of a UK-government funded 4-year (2015–2019) consortium research project called GroFutures (Groundwater Futures in Sub-Saharan Africa) that include a number of African countries – Ethiopia, Tanzania, Niger and Nigeria. UCL researchers in collaboration with other UK research and academic institutes and several African countries are developing the scientific basis and participatory management processes by which groundwater resources can be used sustainably to alleviate poverty in rural areas in Sub-Saharan Africa. He is working on another research project concerning water, climate and policy for food production in a drought-prone region of Bangladesh, funded by the UCL Grand Challenges programme. Working with the government of Bangladesh, they are exploring food security.



Dr Punam Yadav is a Research Fellow and Co-Director of the IRDR Centre for Gender and Disaster. Her current work centres around an examination of the impacts of the political quota in Nepal, both at the national and the local level, which saw women's presence in politics significantly increase. It asks whether a political quota has brought any changes to the lives of the women and in society more generally. Her research also investigates the

new Disaster Risk Reduction and Management Act in Nepal through a gender lens, asking if it has made any difference to the lives of people, if it has brought about any level of transformative change. Her work aims to explore the extent to which the DRRM Act in 2017 addresses gender needs.



Dr Roberto Gentile is a Research Fellow working on innovative frameworks to assess earthquake risk of existing Reinforced Concrete (RC) buildings designing resilience-enhancing solutions. Seismic resilience can be increased, for instance, by implementing structural retrofit strategies that reduce seismic vulnerability/expected damage to buildings ('hard' solutions) or, for instance, by transferring the risk to the (re)insurance market ('soft' solutions). This requires assessing the site-specific earthquake-induced ground shaking (seismic hazard), quantifying building response, estimating earthquake consequences (loss), designing and comparing different resilience-enhancing strategies. The optimal solution can be selected based on measurable goals, e.g. cost-effectiveness, targeted reduction of risk and/or consequences. The main focus of his research is the development of a multi-level, harmonised, innovative, seismic risk assessment framework for existing RC buildings (individual or portfolio) and the design, selection and implementation of practice-oriented, cost-effective, resilience-enhancing solutions.



Research Profile

Dr Simon Day is a Senior Research Fellow in the IRDR. He is currently working on a NERC and NSF funded project on caldera-forming eruption-generated tsunamis with the British Geological Survey and the University of Rhode Island. This multi-disciplinary study is leading to a new and better understanding of the mechanisms by which caldera-forming eruptions generate tsunamis. He is also continuing research on the experiences and

evolving disasters arising from events such as Hurricane Maria in Dominica.



IRDR PhD Students

Amy Chadderton: “The Influence of Temperature on Permeability Evolution in Volcán Chaitén Rhyolite” (Start: April 2013)

Funding: UCL-IRDR-Earth Science Studentship

The permeability of fracture networks that act as fluid flow pathways is key in understanding eruptive behaviour at silicic volcanoes. Experimental results from this project indicate a complex permeability evolution that includes a reduction in permeability with increasing temperature.



Claudia Sgambato: “Variations in Fault Parameters and Seismic Hazard in the Central and Southern Italian Apennines” (Start: September 2017)

Funding: London NERC DTP Studentship

This project aims to investigate the relationship between fault geometry and slip-rates, through detailed measurements across faults in the Central and Southern Apennines. Understanding how variability in fault geometry affects seismic hazard will provide an opportunity to improve calculations used to inform society about earthquake risk.



Emmanuel Agbo C: “Enhancing Community Participation for Emergency Management: The Case of Nigerian Flood Vulnerability” (Start: June 2015)

Funding: Government of Nigeria

This research aims to develop a framework that underlines local capacity and resource needed to attain flood resilience. It substitutes hierarchical control associated with disaster operational structures with locally-oriented models for disaster information communication, coordination, and collaboration.



Janto S. Hess: “Financing Climate Change Adaptation in Small Islands: Assessing Accommodation Suppliers’ Perceptions in Thailand” (Start: September 2015)

Funding: UCL IRDR partial studentship

This study links the topics of island studies, climate change and tourism in respect to financing climate change adaptation. The research seeks to explore the potential recognition of climate change as an important factor in strategic investment decisions by accommodation suppliers in a small island context.



Justine Uyimleshi Usile: “Effectiveness of the Nigerian Emergency Management System: Building Collapses, Human Stampedes and Electrical Power Failures” (Start April 2015)

Funding: Petroleum technology development fund, Nigeria

Despite the need to have adequate resources, effective communication and a functional eoc in Nigeria, a lack of resources, sharing and accountability between federal, state and local government still hinders effective response and implementation of emergency response activities.



Kathinka Fossum Evertsen: “When to stay and when to go: Perceptions of migration as an adaptation strategy among Bangladeshi women ” (Visiting PhD student)

Global environmental changes may cause human movement. Based on qualitative fieldwork, this project aims to gain a better understanding of the dynamics of environment, migration and gender relations in Bangladesh, with a particular focus on female migration.



Khuloud Al Mufarraji: “What Enables Disaster Voluntarism to be a Significant Force in a Civil Protection System?” (Start: October 2016)

Funding: Ministry of Higher Education, Oman

Using a case study from Oman, the main focus is on how organised integrated voluntarism can be a significant force within the emergency management system, linking the official efforts in managing disaster with community-based initiatives.



Kimon Pantelides: “Developing a Consistent Approach to Ensuring Community Resilience to Risk during times of Financial Crisis” (Start: Sept 2017)

Funding: Self-funded

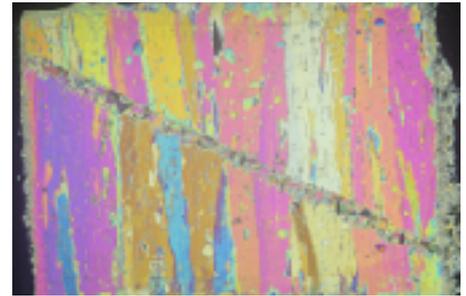
While the financial crisis is an obvious causal factor influencing the ability of fire services to provide adequate services to the public, it is one that notionally has a simple resolution, however it is the more complex factors linked to culture, politics and corruption that are much harder to change.



Mark Shortt: “A Multiscale Study of Mechanical Properties of Freeze-Bonds in Saline Ice” (Start: August 2016)

Funding: UCL/SAMCoT Impact Studentship

Consolidated sea ice features pose a considerable hazard to offshore structures in the Arctic. I aim to determine the strength of consolidated saline ice on different scales, supplemented by a micromechanical model of freeze-bond failure.



Mater Almeahmedi: “Risk Assessment and risk management of national disasters in Saudi Arabia” (Start: September 2018)

Funding: Royal Embassy of Saudi Arabia Cultural Bureau

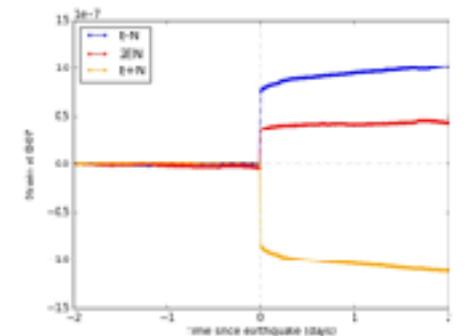
Investigating risk assessment and risk management processes for natural disasters in the kingdom of Saudi Arabia, more specifically to assess the role played by anthropogenic factors such as urbanisation in determining the degree of risk exposure to disasters.



Mohamed Alwahedi: “Are earthquakes self-similar? What do observations of aseismic and seismic slip tell us about how the physical processes driving earthquakes scale with size?” (Start: October 2018)

Funding: Government of the United Arab Emirates

It has been proposed that the properties of earthquakes or the regions that surround earthquakes vary systematically with earthquake size. However, my results showed a magnitude variation in postseismic slip with coseismic moment which suggests that earthquakes may not be self-similar.



Nathanael Harwood: “Using Bayesian Networks to investigate the role of Arctic change in the rise of extreme weather at mid-latitudes” (Start: March 2016)

Funding: London NERC DTP Studentship

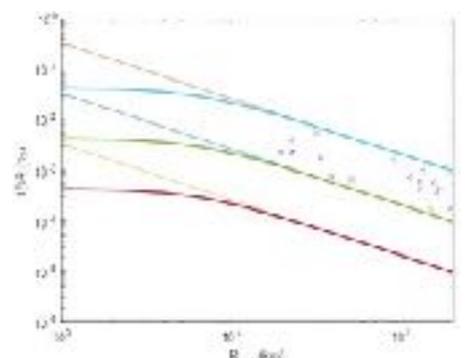
Bayesian Networks are used to investigate changing weather patterns, asking the following questions: is a less stable jet stream related to changing conditions in the Arctic? How do we prove this link, and will weather extremes become more frequent because of it?



Omar Velazquez: “Engineering Applications of Earthquake Early Warning Systems” (Start: April 2015)

Funding: CONACYT-Mexico, IRDR

This research focuses on the design of Engineering Applications of Earthquake Early Warning Systems for real-time seismic risk mitigation. It looks to integrate the estimations provided by the systems in real-time engineering applications and to understand the integration of engineering and the social-behavioural components related to earthquake early warnings.



Patrizia Duda: “Informal Disaster Governance in Svalbard and Dominica ” (Start: July 2016)

Funding: Research Council of Norway, UCL Doctorate School, Industry, & IRDR

With Svalbard (Arctic) and Dominica (Caribbean) as case studies, this research investigates the role of informality in disaster risk reduction and response with special interest in remote, border and neglected communities.



Rebekah Yore: “Housing, Early Warning, Microinsurance and the Transitional Phase to Recovery” (Start: July 2015) Part time

Funding: UCL-IRDR Impact Studentship with Rescue Global

Investigating the potential for microinsurance to support longer-term resilience building in the transitional phase to disaster recovery. A longitudinal focus on temporary housing and early warning systems in the Philippines and Dominica, Caribbean.



Rhea Leung: “Mitigation and disaster preparedness measures in remote mountainous areas affected by earthquake-triggered geohazards” (Start: October 2014) Part Time

Funding: Self-funded

The 2008 Wenchuan earthquake triggered numerous geohazard risks in Sichuan Province, China. This research investigates post-earthquake geohazard risks and evaluates the effectiveness of mitigation and disaster preparedness measures.



Rory Walshe: “Helices of hazard: tropical cyclones in Mauritius as ‘extreme’ weather events and the importance of a *longue durée* approach ” (Start: March 2016)

Funding: NERC Studentship

This research explores the impact, response and experience of tropical cyclones in Mauritius both across history in the *longue durée* and more recently, contrasting collective and social memory with archive and instrumental records, with implications for community vulnerability and resilience.



Sally Scourfield: “The Effect of Physical Processes in Sea Ice Rubble on Ice-Ice Friction” (Start: April 2014)

Funding: Total and UCL Impact Studentship

This research aims to understand the effects of ice rubble, particularly its angularity, on friction and sliding behaviour, using experiments in the lab, ice tank, and field, and modelling the observed behaviour using rate-and-state theory. Sally passed her viva for the award of PhD in March 2019.



Saqar Alzaabi: “The evolution of an emergency management system after experiencing a series of extreme events: a case study from the Sultanate of Oman” (Start: October 2016)

Funding: Government of Oman

Following a disaster triggered by a natural hazard such as a cyclone, organizational changes are usually introduced into the national emergency management system. This research concentrates on analyzing those changes, identifying their sources, processes and implications on creating a participatory, flexible and locally-oriented management style.



Sarah Alawadhi: “Disaster Diplomacy: Comparing Emergency and Diplomatic Responses to Cyber Attacks on an International Level” (Start: September 2017)

Funding: Ministry of Presidential Affairs, the United Arab Emirates

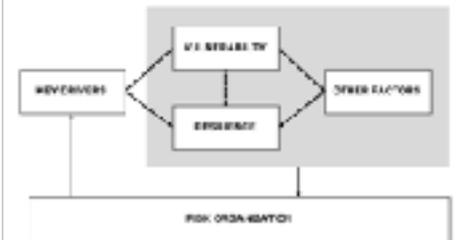
This study shows how both emergency and diplomatic responses play out on an international level in terms of cyber attacks. Following that, one can see if those responses need to be improved or updated.



Shinta Michiko Puteri: “Measuring Vulnerability and Resilience to Disaster Impacts in the urban System: A Case Study of Three Medium-sized Cities in Indonesia” (Start: April 2017)

Funding: Indonesia Endowment Fund for Education (LPDP)

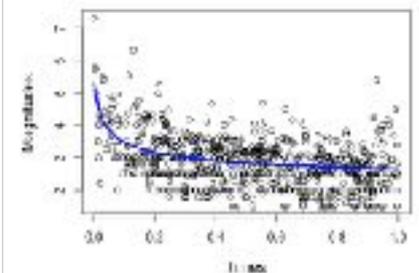
The relationship between vulnerability and resilience in urban systems is complex. It is necessary to evaluate and measure both concepts to allow local stakeholders to define suitable programmes derived from integrative approach assessments.



Tasnuva Tabassum: “Earthquake Forecasting under Short Term Aftershock Incompleteness” (Start: September 2015)

Funding: Commonwealth Scholarship Commission and IRDR

This research focuses on building efficient forecasting methods just after the occurrence of a large earthquake. Because during that crucial time, a lot of earthquakes get missed and therefore the dataset contains missing information.



Xiaojun Zhang: “The Role of Government in Wenchuan Earthquake Reconstruction: A Mixed Methods Study” (Visiting PhD student)

Funding: China Scholarship Council

The interaction between different levels of government and social forces dominates the process of social governance change. The characteristic appears as “Progressive Empowerment-Hierarchical Embedding.”



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8 October 2019

Special Seminar: tbc

Convenor: Prof Peter Sammonds
p.sammonds@ucl.ac.uk

17 October 2019

Evening Conference on SDGs: Natural Hazard Disaster Management

Convenor: Dr Akhtar Alam
akhtar.alam@ucl.ac.uk

18 October 2019

Humanitarian Masterclass on Earth Observation and Natural Hazards

Convenor: Dr Akhtar Alam

13 November 2019

IRDR Centre for Digital Public Health in Emergencies Public Event

Convenor: Dr Patty Kostkova
p.kostkova@ucl.ac.uk

20-23 November 2019

9th International Digital Public Health Conference 'DPH2019'

Coordinated by UCL IRDR dPHE
<https://www.acm-digitalhealth.org>

26 November 2019

IRDR Alumni & Network Roundtable Dinner

For our graduates, members and students.
Roundtable discussion and student awards
irdr-enquiries@ucl.ac.uk

15 January 2020

IRDR PhD Student Forum

Convenor: Dr Ilan Kelman
i.kelman@ucl.ac.uk

26 February 2020

IRDR Careers and Opportunities Fair

To register as exhibitor/ delegate, email:
irdr-enquiries@ucl.ac.uk

4 March 2020

IRDR Centre for Gender and Disaster Public Discussion Meeting

Convenor: Dr Punam Yadav
p.yadav@ucl.ac.uk

26 March 2020

IRDR Alumni Mixer Reception

irdr-enquiries@ucl.ac.uk

27-28 April 2020

IRDR Spring Academy

For IRDR research staff and students.
Convenor: Dr Ilan Kelman

16 June 2020

Humanitarian Masterclass

humanitarian-info@ucl.ac.uk

17 June 2020

UCL Humanitarian Summit

Convenor: Dr Rosanna Smith
humanitarian-info@ucl.ac.uk

18 June 2020

IRDR Tenth Annual Conference (UCL)

Convenor: Dr Bayes Ahmed
bayes.ahmed@ucl.ac.uk

Monthly IRDR Invited Seminar Series

Convenor: Prof Peter Sammonds
p.sammonds@ucl.ac.uk

Monthly Gender & Disaster Seminar Series

Convenor: Dr Punam Yadav
p.yadav@ucl.ac.uk

IRDR Discussion Forum Series

If you wish to get involved in an IRDR event

We have the following opportunities:

IRDR Forums with partners and funders to foster cross-disciplinary collaboration. The format is 3 lead presentations, brief talks by researchers, then open discussion followed by a reception.

Humanitarian Institute Evening Conference series on the UN Sustainable Development Goals which are open to the UCL community, general public and media, are organised around a UN SDG theme, with engagement from developing countries. Contact humanitarian-info@ucl.ac.uk if you would like to lead one of these events and propose a theme.

Humanitarian Institute Masterclass series with expertise shared by researchers and practitioners from developing countries and UCL. For students, researchers and practitioners. Contact humanitarian-info@ucl.ac.uk if you would like to lead a masterclass.

IRDR Annual Conference sessions on a research theme. The format may be presentations, panel discussion, keynote lecture or “*in conversation*” interview.

IRDR Sponsorship of launch events, conferences, seminars or workshops at UCL.

For further information, please contact the IRDR Deputy Director.

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Masters students field trip to Southwest England with working visit to the UK Met Office, 2018.

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