

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. With the launch of the new Global Humanitarian Studies BSc, we invited a new audience of Year 12 students, their parents and teachers, and welcomed applicants to a series of special events. We have held a number of taster days for prospective students to give them a taste of the degree programme, the sector and the IRDR. Our 2020/21 monthly seminar series, which is open to the public, has covered a broad range of topics including a five-year perspective on the Sendai Framework by Prof Virginia Murray, natech risks by Dr Elizabeth Kraumann, and

understanding human behaviour in a disaster by Dr Sarita Robinson. Our public engagement programme has been enhanced through events hosted by the IRDR Centre for

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.

The UCL IRDR Centre for Digital Public Health in Emergencies (dPHE)'s Zika project (real world deployment of mobile surveillance app for early warning with local PH authorities) and award-winning Gadsa (real world prescription app with impact on behaviour change evaluated in surgeons in 3 hospitals in Nigeria) are excellent examples of research impact of changing health outcomes through innovative technology. The award winning My Lockdown Journal has also helped citizens to improve their wellbeing through journaling in lockdown periods and throughout the pandemic.

Contemporary Forms of Racism was included as evidence in her report to the 75th United Nations General Assembly in November. The report was entitled: 'Racial and xenophobic discrimination, emerging digital technologies in border and immigration enforcement'. This year, Jessica Field and Ali Johar submitted a legal brief to the Institute on Statelessness and Inclusion to support in an ongoing case challenging the detention and deportation of Rohingyas in India.

Anubhav Dutt Tiwari and Jessica Field's 2020 submission to the UN Special Rapporteur on

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



Centre for Gender and Disaster

The Centre for Gender and Disaster (CGD) is a trans-disciplinary research centre aiming to develop awareness of and responsiveness to gender in humanitarian contexts, through excellence in research and teaching. It is led by Centre Director Prof Maureen Fordham and Centre Co-director Dr Punam Yadav.

The CGD team together with their UK and international partners secured a £5 million UKRI Collective Fund award for the Gender Responsive Resilience and Intersectionality



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 and run three masters programmes with over 70 masters students in 2020-21. We are excited to launch the BSc Global Humanitarian Studies undergraduate programme in September 2021.

We are delighted how both staff and students have risen to the challenge of teaching and learning in the 2020-2021 academic year and we have several successes through awards, award nominations and Higher Education Authority (HEA) Fellowship recognition. With the masters programmes in 2020-2021 being taught both through a blended face-to-face and online learning experience and entirely online, additional academic support was introduced. This year was unique for IRDR in having students studying across multiple time-

zones and physically in multiple continents. We are committed to teaching excellence; fundamental to our masters teaching and learning environment are multidisciplinary and holistic viewpoints, research and evidence-based approaches, and interactive and inclusive teaching and learning. As in previous years, our teaching methods and diverse student body brought a richness to in-class discussion and debate, challenging us all to think, analyse, question and progress. Dr Ilan Kelman and Dr Joanna Faure Walker were recognised through nomination for the UCL Student Choice Award in 'Excellent Research-Based Teaching' and Dr Punam Yadav for 'Diverse and Inclusive Education'. In addition, we congratulate Dr Jessica Field and Dr Punam Yadav for achieving the status of HEA Fellow. We now look forward to the 'Blended by Design' approach to teaching in 2021 combining the best of the in-person and online environments.

Doctoral Training

The IRDR has a well-established and respected Doctoral Research Centre, with over 30 PhD research students who conduct interdisciplinary, wide-ranging, and international research.

From arctic risks to flood vulnerability, and emergency management to seismic hazard, our PhD programme in Risk and Disaster Reduction is generating extensive interest, especially from international students. All of our doctoral candidates contribute to the vibrancy of IRDR life

Masters Programmes

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

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Professor Patty Kostkova is professor in Global Health and Emergencies. Her research centres on digital health interventions, Big Data surveillance, early-warning and predictions of outbreaks, pandemics and emergencies. She leads the UCL IRDR Centre for Digital Public Health in Emergencies (dPHE) bringing together experts from UCL and external stakeholders to improve global public health through the use of digital technologies and data systems. dPHE received the prestigious Team of the Year 2020 Award from Computing Rising Starts Awards for the innovative My Lockdown/Activity Journal app. Patty's research on the ZIKA project investigates a novel approach for early warning of mosquito populations in high risk areas in Northeast Brazil calibrated by unique real-time mobile surveillance data, and she was twice awarded the Innovator of the Year 2019 and 2020 Women in IT Excellent Awards for GADSA and the COVID My Activity Journal app.

Professor Peter Sammonds is professor of Geophysics. His work focuses on increasing resilience to environmental hazards in conflict zones. In the last year, Peter has been working on joint projects between the natural and social sciences on the forced Rohingya Exodus from Myanmar. This year, he has also been working on the confluence of natural hazard risks and the Covid-19 pandemic. He in particular is working on a new project on multi-hazard hurricane and epidemic risk assessment for Dominica and

Dr Bayes Ahmed is a Lecturer in Risk and Disaster Science. His principal research aim is to help build resilient futures for the Rohingya refugees and local host populations in Cox's Bazar district, Bangladesh, through research and practical solutions to reduce hydro-meteorological disaster risks, particularly landslide risks, through a co-produced approach between natural and social scientists. His specific objectives are to develop effective DRR tools of landslide susceptibility maps and a dynamic landslide early-warning system (LEWS) at a local scale, and 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.

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, and compound dynamics. His current research involves stress-testing scenarios for operational resilience, including further waves of COVID 19, concurrent and cascading risk, and hybrid threats. Gianluca has been appointed to the editorial panel of the Crisis Response Journal, one of the most well-established resources for crisis management, and joins the technical panel of Resilience Shift's

"Infrastructure Pathways: Navigating towards climate resilient infrastructure systems". He has also been a reviewer for EU H2020 "Preventing and fighting extreme wildfires with the integration and demonstration of innovative means.

Dr Katerina Stavrianaki is a Lecturer in Risk Analysis. Her current work focuses on a multi-hazard risk assessment in the island of Dominica in the Caribbean looking at both the risk from natural hazards and infectious diseases. This is achieved by applying an Analytical Hierarchy Process (AHP) methodology and in collaboration with local stakeholders and community through interviews and workshops. She is also interested in flood and earthquake hazard using both a statistical and a geophysical approach, with the aim to improve current forecasting and seismic hazard approaches and flood hazard assessments. Her work includes the modelling of 6spatiote.2 (mp) -0.2

Research Profile

Dr Anwar Musah is a Research Fellow, whose research interests focus on the application of statistical modelling, geospatial analysis and data science to public health and social sciences (with a regional focus on the Global South). Since joining IRDR in June 2019 he worked with Professor Patty Kostkova (PI) on the UKRI EPSRC IAA funded project 'A deployment of ZIKA: A mobile mosquito surveillance app to combat arboviruses in Brazil' which aimed to develop models for the spatial prediction of mosquito populations that transmit arboviruses in Brazil. As of June 2020, the work has broadened into a vast piece of research funded by Belmont Forum CRA (Climate, Environment & Health) aiming to bring together digital health, urban sanitation and meteorology in order to evaluate the impacts of broader climate and environmental changes on breeding habitats for mosquito-borne arboviruses in Brazil.

Dr Eija Meriläinen is a Research Fellow at IRDR. Her work explores the roles and power of various actors involved in politics of disasters, climate change and urbanization. Eija is working in a research project on 'Community collective action to respond to climate change influencing the environment-health nexus' led by Ilan Kelman. The project has been exploring the role of community-based organisations in facilitating and

Aisha Aldosery: "Internet of Things (IoT) based Surveillance System for Predicting Areas that are High-risk of Mosquito Infestation " (Start: January 2020)

Funding: Government of Saudi Arabia

Synopsis: Exploring the use of Internet of Things(IoT) sensor devices to collect real-time data for developing and implementing a cloud-based early warning surveillance system to predict areas with high-risk of mosquito prevalence by integrating the IoT, Machine learning, and mobile application.

Alexander Thompson: "Climate change and disaster science through the lens of healthcare" (Start: October 2020)

Funding: Self funded

Synopsis: This research aims to offer critical analysis of the development of, and relationship between, climate change and disasters through the lens of healthcare. It aims to identify how healthcare systems come together to prepare for and respond to such risks.

Bernice Mufor Nkekeh: "Community Emergency Preparedness and Response. A comparative analysis of the cases of Mount Cameroon and Mount Etna." (Start: January 2020)

Funding: Self-funded

Synopsis: This project seeks to make a contribution to the scholarship on vulnerability reduction. The findings from this comparative study of the volcanic eruptions in Mount Cameroon in Cameroon and Mount Etna in Italy will add to the existing

Jeremy Reynolds: “Investigating learning between organisational adaptive capacity and urban resilience in London” (Start: October 2019)

Funding: London Fire Brigade

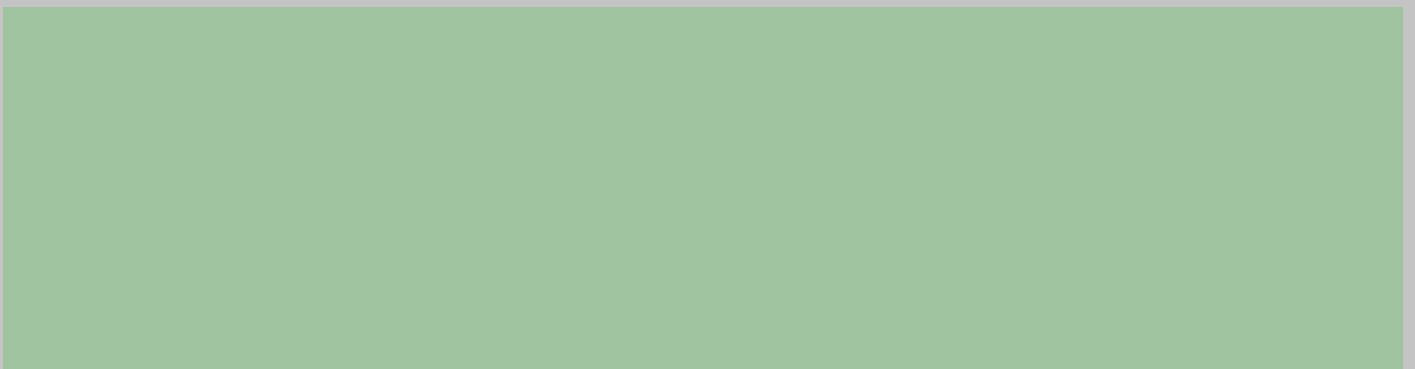
Synopsis: Aim to investigate if organisational practices in adaptive capacity are relevant for London’s urban resilience planning. Interviews with leaders and managers in public and private sector organisations will identify aspects to scrutinise the current methodology and priorities of urban resilience planning in London.



Lan Li: "Addressing Vaccine Hesitancy: The Potential of Behaviour Change Theory-Based Social Media Interventions" (Start: September 2020)

Funding: China Scholarship Council-UCL Joint Research

Synopsis: This research seeks to explore the possibility and



Mohamed Alwahedi: “Are earthquakes self-similar? How 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

Synopsis: It has been proposed in a previous theory that the properties of earthquakes or the regions that surround earthquakes vary systematically with earthquake size. This research shows a magnitude variation in postseismic slip with coseismic moment, suggesting earthquakes may not be self-similar.

Myles Harris: “Prolonged field care theory: prehospital health for disaster risk reduction in remote environments and outer space” (Start: September 2019)

Funding: Self-funded and London South Bank University

Synopsis: The aim of this research is to establish prolonged field care theory to inform clinical practice in remote environments and outer space, pre-deployment training (for example, in preparation for response to a humanitarian crisis) and disaster risk reduction policy.

Olafiyin Taiwo: “Multisectoral Approach to Planning for Resilience and Disaster Risk Reduction” (Start: January 2021)

Funding: Self-funded

Synopsis: This research aims to examine the integration of disaster risk reduction into urban planning through a multi-sectoral approach for better decision making and informing future urban planning in the Commonwealth with a focus on climate hazards.

Omar Velazquez: “Investigating the Cross-Disciplinary Components of Earthquake Early Warning Systems” (Start: April 2015)

Funding: CONACYT-Mexico and IRDR

Synopsis: This research focuses on the design of two engin-

Peter Dodd: "Lessons learnt from CBRNe Events to support future Civil Contingency Planning" (Start: February 2020)

Part-Time

Funding: Self-funded

Synopsis: This research is to support Contingency Planning for CBRN Disasters. Through a critique of historical responses, and current national mechanisms in place including the UK's CCA 2004, United Nations Office for Disarmament Affairs guidelines.

Rebekah Yore: "Transitional phase(s) to disaster recovery." (Start: July 2015) Part-time

Funding: IRDR Impact Studentship with Rescue Global

Synopsis: A comparative case study approach to investigating the transitional phase(s) to disaster recovery through examining how preparedness, response and recovery are linked and interrelated, with a focus on warnings systems, temporary housing and microinsurance.

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

Funding: Self-funded

Synopsis: 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.

Salma Al Zadjali: "Decadal Variability of Precipitation in Oman and the Assessment of Cloud Seeding in the Al-Hajar Mountains." (Start: October 2019)

Funding: Government of Oman

Synopsis: The recent rainfall enhancement project in Oman has been dogged by scepticism. This research aimed to analyse precipitation variability to evaluate the feasibility of seeding operations. Based on the outcome, the strategic plan to mitigate its risks will be created.

Sangita Thebe Limbu: "Gender, climate change and disaster" (Start: January 2021)

Funding: UCL IRDR

Synopsis: Mountains and melting glaciers have become iconic imaginaries in discussions around climate change. Based

Selected Journals and Books

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da Silva, C.C., de Lima, C.L., da Silva, A.C.G., Silva, E.L., Marques, G.S., Brito de Araújo, L.J., Albuquerque Júnior, L.A., Jatobá de Souza, S.Ba., de Santana, M.A., Gomes, J.C., Barbosa, V.A., Musah, A., **Kostkova, P.**, Dos Santos, W.P., da Silva Filho, A.G. Covid-19 dynamic monitoring and real-time spatio-temporal forecasting *Frontiers in Public Health* 9.

Faridatul, M.I. **Ahmed, B.** (2020) Assessing Agricultural Vulnerability to Drought in a Heterogeneous Environment: A Remote Sensing-Based Approach. *Remote Sensing*, 12, 3363.

Faure Walker

IRDR People

IRDR Director

Prof Peter Sammonds

IRDR Deputy Director

Dr Rosanna Smith

IRDR Academic Staff

Prof David Alexander

