

# Dr BILLY TUSKER HAWORTH

PhD, MAppSc, BSc

Geographer, Critical GIScientist, and Lecturer in International Disaster Management

## Curriculum vitae

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### EDUCATION:

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2017: PhD, School of Geosciences, University of Sydney

Thesis title: "Assessing the potential, application, and implications of volunteered geographic information in disaster risk reduction".

Supervisor: A/Prof Eleanor Bruce (University of Sydney)

Associate supervisors: Dr Joshua Whittaker (University of Wollongong)

A/Prof Kurt Iveson (University of Sydney)

Prof Matt Duckham (RMIT)

Thesis available here: <https://billyhaworth.com/publications/>

2014: Vespucci Institute participation, "VGI and Citizen Science: engaging, creating and understanding". International summer training school, Vespucci Initiative, Fiesole, Italy.

2010: Master of Applied Science (Spatial Information Science), School of Geosciences, University of Sydney

2009: Bachelor of Science (Geography, Geology & Geophysics), Faculty of Science, University of Sydney

### EMPLOYMENT:

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2017 – Present: Humanitarian and Conflict Response Institute, University of Manchester

Lecturer in Disaster Management; Programme Director, MSc International Disaster Management

2017: School of Agriculture and Environment, University of Western Australia

Postdoctoral Research Fellow and GIS Lecturer

2013 – 2016: School of Geosciences, University of Sydney

Casual academic (Tutor/Demonstrator and Research Assistant)

2012 – 2015: Private GIS Tutor

2013 – 2014: FRANS Inc.

Disability Support Worker

2011: Sensis Pty Ltd | Location Navigation

GIS Researcher

2011: School of Geosciences, University of Sydney

Research Assistant to A/Prof. Kurt Iveson

### PUBLICATIONS

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#### Refereed Articles

Fast, V. & Haworth, B. (forthcoming). Citizen Science. *International Encyclopaedia of Human Geography*, 2e.

Haworth, B., Biggs, E., Duncan, J.M., Wales, N., Boruff, B. & Bruce, E. (2018). Geographic information and communication technologies for supporting smallholder agriculture. *Climate*, 6(4): 97.

Haworth, B., Bruce, E., Whittaker, J. & Read, R. (2018). The good, the bad, and the uncertain: contributions of volunteered geographic information to community disaster resilience. *Frontiers in Earth Science*, 6: 183. *Special issue on "Citizen Science: Reducing Risk and Building Resilience to Natural Hazards" (invited)*.

Haworth, B. (2018). Implications of volunteered geographic information for disaster management and GIScience: A more complex world of volunteered geography. *Annals of the American Association of Geographers*, 108(1): 226-240.

- Haworth, B.**, Whittaker, J. & Bruce, E. (2016). Assessing the application and value of participatory mapping for community bushfire preparation. *Applied Geography*, 76: 115-127.
- Haworth, B.** (2016). Emergency management perspectives on volunteered geographic information: Opportunities, challenges and change. *Computers, Environment and Urban Systems*, 57: 189-198.
- Biggs, EM., Bruce, E., Boruff, B., Duncan, JMA., Horsley, J., Pauli, N., McNeill, K., Neef, A., Van Ogtrop, F., Curnow, J., **Haworth, B.**, Duce, S. & Imanari, Y. (2015). Sustainable development and the water-energy-food nexus: a perspective on livelihoods. *Environmental Science & Policy*, 54: 389-397.
- Haworth, B.**, Bruce, E. & Middleton, P. (2015). Emerging technologies for risk reduction: assessing the potential use of social media and VGI for increasing community engagement in bushfire preparation. *Australian Journal of Emergency Management*, 30(3): 36-41.
- Haworth, B.** & Bruce, E. (2015). A review of volunteered geographic information for disaster management. *Geography Compass*, 9(5): 237-250.
- Biggs, EM., Boruff, B., Bruce, E., Duncan, JMA., **Haworth, B.**, Duce, S., Horsley, J., Curnow, J., Neef, A., McNeill, K., Pauli, N., Van Ogtrop, F. & Imanari, Y. (2014). Environmental Livelihood Security in South-East Asia and Oceania: a nexus-livelihoods approach for spatially assessing change. IWMI White Paper, *International Water Management Institute*, Colombo.
- Haworth, B.**, Bruce, E., & Iveson, K. (2013). Spatio-temporal analysis of graffiti occurrence in an inner-city urban environment. *Applied Geography*, 38: 53-63.

### Manuscripts in Preparation/Review

- Duncan, J.M.A., **Haworth, B.**, Boruff, B., Wales, N., Biggs, E., Bruce, E. (*in review*). Explanatory factors for operationalising landscape approaches to enhance response to climate change. *Journal of Environmental Management*.
- Smith, A., MacLachlan, A., **Haworth, B.**, Biggs, E. & Maginn, P. (*revisions*). Demonstrating the global potential of a high-resolution spatiotemporal population modelling framework. *International Journal of Geographic Information Science*.
- Walking, B. & **Haworth, B.** (*in preparation*). Flood Risk Perceptions and Coping Capacities in the Retired Population: Implications for Risk Communication. (2019).
- Marconi, M., Bartolucci, A., Magni, M., Chung, H.T., Marincionia, D. & **Haworth, B.** (*in preparation*). A spatial exploration of fire occurrence in a Vietnamese mountain region (Van Chan district, Yen Bai province) using participatory mapping and regression analysis. (2019).

### Theses

- Haworth, B.** (2016). Assessing the potential, application, and implications of volunteered geographic information in disaster risk reduction. PhD thesis. School of Geosciences, Faculty of Science, University of Sydney.
- Haworth, B.** (2010). Graffiti and urban space: A GIS approach. Master of Applied Science (Spatial Information Science) thesis. School of Geosciences, Faculty of Science, University of Sydney.

### Reports

- Haworth, B.** (2014). Volunteered Geographic Information, Community Engagement and Bushfire Preparation in Tasmania: Field study preliminary results. Report compiled for the Tasmania Fire Service, June 2014.

## PRESENTATIONS AND CONFERENCE PAPERS

### Invited Talks

- Haworth, B.** (2019). Queer experiences of disasters, intersectionality and the spatial dimension: a working proposal. *ACCESS seminar series*, University of Wollongong, Wollongong, April.
- Haworth, B.** (2019). Invited contribution (fully funded) to pre-ISA workshop on Participatory Numbers, Everyday Peace Indicators project – Toronto, CA, March.
- Haworth, B.** (2017). Invited panellist for session “The PhD Journey and Beyond” at Student Development Workshop for the Research Advisory Forum, Bushfire and Natural Hazards CRC. Perth, WA. April.
- Haworth, B.** (2016). Assessing the potential, application, and implications of volunteered geographic information in disaster risk reduction. Seminar presentation for SSSI event at the University of Western Australia, Perth, WA. June.

- Haworth, B.** (2015). Volunteered Geographic Information (VGI) for community engagement in bushfire preparedness. *BNHCRC Sustainable Volunteering annual workshop*, RMIT, Melbourne, November.
- Haworth, B.** (2015). Three minute thesis. *AFAC/BNHCRC annual conference*, 'New Directions in Emergency Management,' Adelaide, September.
- Haworth, B.** (2015). "Flooding Facebook" and "Tweeting up a storm": a review of volunteered geographic information for disaster management. Seminar given at the Museum of Natural Sciences, Raleigh, NC. April.
- Haworth, B.** (2015). Three minute thesis. *BNHCRC Research Advisory Forum*, NSW Rural Fire Service headquarters, Sydney, April.
- Haworth, B.** (2014). Volunteered geographic information, community engagement and bushfire preparation in Tasmania. RMIT Non-traditional volunteering Annual Project Workshop, Melbourne, October.
- Duce, S., **Haworth, B.**, Duncan, J.M., Horsely, J. (2014). Environmental livelihood security in the Asia-Pacific region: A nexus approach. Presentation given at Worldwide Universities Network project workshop, Perth, June.
- Haworth, B.** (2014). Invited panellist for discussion session on 'Social Media Issues'. *Emergency Management and Public Affairs (EMPA) annual conference*, 'Collaboration in Communication', Canberra, June.

### Presented Papers

- Haworth, B.**, Whittaker, J. & Bruce, E. (2016). Using participatory mapping to harness local knowledge and increase community connectedness in bushfire preparation. *AFAC/BNHCRC annual conference*, 'Mitigation, Response, Recovery: Getting the Balance Right,' Brisbane, August.
- Haworth, B.**, Whittaker, J. & Bruce, E. (2016). Volunteered geographic information (VGI) and disaster risk reduction: The application of participatory mapping in community bushfire preparation. *Geospatial information for monitoring socio-environmental risk, Institute of Australian Geographers Conference*, Adelaide, June.
- Bruce, E., Sheehan, S., **Haworth, B.** & Blewitt, M. (2015). Geographic citizen science in marine management: opportunities and research challenges for integrating Earth Observation data and in-situ volunteer observations. *Earth Observation Science 2.0 conference*, Frascati, Italy, October.
- Haworth, B.** (2015). Engaging Communities in Disaster Risk Reduction through Volunteered Geographic Information (VGI): a case study of bushfires (wildfires) in Tasmania, Australia. *Association of American Geographers annual meeting*, Chicago, IL. April.
- Haworth, B.** & Bruce, E. (2014). Volunteered Geographic Information, community engagement and bushfire preparation in Tasmania: a preliminary study. *Geographies of natural hazards and disasters in the Australia – Pacific region, Institute of Australian Geographers Conference*, Melbourne, July.
- Biggs, E., Boruff, B., Bruce, E., Duncan, J., Horsley, J., Duce, S., **Haworth, B.**, Pauli, N., Clifton, J., McNeill, K., Neef, A., Van Ogtrop, F., Murphy, R. & Tompkins, E. (2014). *Environmental livelihood security: sustainable livelihoods and the environment nexus. Sustainable Livelihoods and the Environment Nexus, Institute of Australian Geographers Conference*, Melbourne, July.
- Haworth, B.** (2014). Social media and information communication during natural disaster events. *GeoNext Location Matters Conference*, Sydney, February.
- Haworth, B.**, Bruce, E. & Iveson, K. (2011). Graffiti and urban space: a GIS approach. *Encountering spatial technologies: geographic information technologies for cultural research, Institute of Australian Geographers conference*, Wollongong, Australia, July.

### Conference Posters

- Haworth, B.**, Biggs, E., Duncan, J., Wales, N., Boruff, B. & Bruce, E. (2018). Geographic information and communication technologies for supporting smallholder agriculture (conference poster). *AGILE 2018, 21st conference on geo-information science*, Lund, Sweden, June.
- Haworth, B.**, Bruce, E. & Whittaker, J. (2018). Contributions of volunteered geographic information (VGI) to community disaster resilience: The good, the bad, and the uncertain (conference poster). *26th GIScience Research UK Conference*, University of Leicester, April.
- Haworth, B.**, Bruce, E. & Whittaker, J. (2017). Contributions of digital volunteering to community disaster resilience (conference poster). *BNHCRC Showcase 2017, 'Research driving change.'* Adelaide, July 2017. And *AFAC/BNHCRC annual conference*, Sydney, September.
- Haworth, B.**, Whittaker, J. & Bruce, E. (2016). Using participatory mapping to increase community engagement in bushfire preparation. *AFAC/BNHCRC annual conference*, 'Mitigation, Response, Recovery: Getting the Balance Right,' Brisbane, August.

- Haworth, B.** (2015). Power to the people: The implications of volunteered geographic information for official emergency management (conference poster). *AFAC/BNHCRC annual conference*, 'New Directions in Emergency Management,' Adelaide, September.
- Haworth, B.** (2015). Spatio-temporal analysis of graffiti in an inner-city urban environment (Esri Young Scholar conference poster). *Esri User Conference*, San Diego, CA, July.
- Haworth, B., Bruce, E. & Whittaker, J.** (2014). Non-traditional Volunteering: Volunteered Geographic Information (VGI) and bushfire preparation (conference poster), *AFAC/BNHCRC annual conference*, 'After Disaster Strikes: Learning from Adversity,' Wellington, New Zealand, September.

### Departmental Presentations

- Haworth, B.** (2019). Pecha Kucha presentation on my research. *HCRI*, University of Manchester, UK, February.
- Haworth, B.** (2018). Volunteered geographic information (VGI) and community disaster resilience: The good, the bad, and the uncertain. *HCRI Research Seminar Series*, University of Manchester, UK. April.
- Haworth, B.** (2016). Assessing the potential, application, and implications of volunteered geographic information in disaster risk reduction. '*Thinking Space*' seminar series, School of Geosciences, University of Sydney, June.
- Haworth, B.** (2014). Crowdsourcing geographic information: VGI, citizen science, and community engagement in bushfire preparation. '*Thinking Space*' seminar series, School of Geosciences, University of Sydney, October.
- Haworth, B.** (2013). Three minute thesis. '*Thinking Space*' seminar series, School of Geosciences, University of Sydney, November.

### AWARDS AND COMPETITIVE RESEARCH GRANTS

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#### Successful

- 2019: HCRI Research support fund (competitive) (£3,230) for project titled 'The writing on the wall: reading social realities through graffiti and street art in conflict-affected societies'. Role – **Chief-investigator** (with Lepp, Arthur, Vogel and O'Driscoll).
- 2018: Social Responsibility and Cultural Engagement Fund, School of Arts, Languages and Cultures (£1,655), University of Manchester, for project supporting humanitarian mapathons with university students, local community charities, and primary schools. Role – **Chief-investigator** (with Huck)
- 2018: Early Career Visiting Fellowship, Australian Centre for Culture, Environment, Society and Space (ACCESS), (AU\$4,000), University of Wollongong (visit April 2019).
- 2016: Special Recognition Award, Bushfire & Natural Hazards Cooperative Research Centre
- 2016: Postgraduate Research Support Scheme (AU\$1,030), University of Sydney.
- 2016: Institute of Australian Geographers Travel Grant for presentation at the IAG conference, Adelaide (\$350), IAG.
- 2015: Special Recognition Award for contributions to the School of Geosciences, University of Sydney.
- 2015: International Association of Wildland Fire (IAWF) PhD Student Scholarship (US\$3,000), IAWF
- 2015: Esri Young Scholars Award, ESRI Australia.
- 2015: Faculty of Science Postgraduate Research Prize for Outstanding Academic Achievement (AU\$500), University of Sydney
- 2015: Postgraduate Research Support Scheme (AU\$1,067), University of Sydney
- 2014: Vespucci Summer Institute, "VGI and Citizen Science: engaging, creating and understanding," Fiesole (Firenze), Italy 7-12 July 2014, tuition and travel grant (€800), ESRI.
- 2014: Postgraduate Research Support Scheme (AU\$900), University of Sydney
- 2014: PhD scholarship commencing January 2014 for research titled 'Volunteered Geographic Information, Community Engagement and Bushfire Preparation in Tasmania' (AU\$98,000), Bushfire & Natural Hazards Cooperative Research Centre.
- 2013: Field research support funding to undertake study on the role of VGI in bushfire preparation (AU\$5,000), Tasmania Fire Service. Role – **Chief-investigator**
- 2013: Postgraduate Research Support Scheme award (AU\$945), University of Sydney.

#### Unsuccessful/pending

- 2019 (*pending*): Royal Geographic Society Innovative Geography Teaching Grant (£1,000) for project developing disaster simulation toolkit for schools. Role – Co **Chief-investigator** (with Ficklin)
- 2018/19 (*pending*): Royal Geographic Society Small Research Grant (£3,000) for project titled 'Lessons from the graveyard: investigating the motivations, challenges, and failures of past digital humanitarian efforts'. Role – **Chief-investigator**

2018/19 (*unsuccessful*): European Commission H2020 – SU-DRS02-2018: Technologies for First Responders (€7m) for collaborative project (16 partner organisations across Europe) titled ‘ALFRED: Artificial Intelligence for First Responders in Disaster Scenarios’. University of Manchester lead: Prof. Duncan Shaw. Role – **researcher**.  
2018 (*nominated*): Samuel H. Prince Award (Social sciences dissertation prize).  
2015 (*unsuccessful*): Global Resilience Partnership Research Grant . Project concerning environmental livelihood security and climate resilience. Role – **researcher** (with Bruce, Biggs, Boruff, Neef, Duncan et al.).

## **TEACHING EXPERIENCE**

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### **Humanitarian and Conflict Response Institute, University of Manchester**

2017 – 2019: Lecturer and course coordinator:

Masters level - *Disaster Management : Theory and Application; Introduction to Critical GIS* (designed module);

*Research and Evaluation Methods* (lecturer only); *Disaster Preparedness* (online – designed module)

Undergraduate level – *GIS and Disasters* (designed module); *Introduction to Disaster Management* (lecturer only);

*Disasters and Development* (lecturer only)

Supervision: 1 PhD candidate (ongoing); 14 MSc Dissertations (7 completed September 2018; 7 due 2019)

### **School of Agriculture and Environment, University of Western Australia**

2017: Lecturer and unit coordinator:

Masters level - *Geographic Information Systems Applications Systems; Intermediate GIS*.

### **The Bartlett Development Planning Unit, University College London**

2016: Delivered guest lecture and practical class with Patrick Rickles on introductory GIS for *Urban Environmental Planning and Management in Development*.

### **School of Geosciences, University of Sydney**

2016: Delivered guest lecture on *Crowdsourcing Geographic Information: VGI, Citizen Science and changing social and scientific practices in GIS in Coastal Management*.

2013-2016: Practical/lab demonstrating and tutoring for the following undergraduate units of study:

*Junior - Introduction to Geography* (2013)

*Intermediate - Natural Hazards: A GIS Approach* (2014, 2015); *The Geography of Cities and Regions* (2014, 2016)

*Senior - GIS in Coastal Management* (2013, 2014, 2015, 2016); *Coastal Environments and Processes* (2014, 2015)

## **SERVICE TO PROFESSION**

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Reviewed journal manuscripts for:

Annals of the American Association of Geographers

Applied Geography

Computers, Environment and Urban Systems

GeoJournal

International Journal of GIS

Journal of Spatial Science

The Geographical Journal

Reviewed book proposal for:

Routledge handbooks

## **SERVICE TO SCHOOL AND UNIVERSITY**

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2019: Hosted Humanitarian Mapathon – 40 volunteers from HCRI and across the University of Manchester mapped ~20,000 features (huts, roads etc) in poorly-mapped regions of Uganda to improve healthcare delivery

2018 – 2019: HCRI Equality and Diversity representative (for the School of Arts, Languages and Cultures)

2017 – 2019: Programme Director, MSc International Disaster Management (recruitment and admissions work, pastoral care, administration)

2017 - 2019: Various HCRI, University of Manchester, outreach activities including Open Days and Insight Day workshops; Mentor for two talented but disadvantaged high school students in the Manchester Access Programme

- 2015 - 2016: Listed as University of Sydney expert for media commentary on bushfire disasters, community engagement, and geographic information and communication technologies.
- 2016: Delivered GIScience workshops for the Wingara Mura – Bunga Barrabugu Summer Camp (a University of Sydney program for Aboriginal and Torres Strait Islander high school students).
- 2015 - 2016: Co-established and coordinated weekly school morning tea “GeoBites”.
- 2015: Representative for School of Geosciences at University of Sydney Open Day.
- 2015: Delivered workshop on GIScience, VGI and disaster management at the “Meet & Greet a BIG Geek” International Science School (ISS) event, University of Sydney.
- 2015: Coordinator and session chair for University of Sydney Geography seminar series, “Thinking Space: Geographers and the Environment” (13 seminars).
- 2014: Assisted supervise and facilitate study programs for visiting students from European schools and universities.

## **PROFESSIONAL MEMBERSHIPS/AFFILIATIONS**

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- 2017 - Present: Fellow of the Royal Geographic Society (RGS with IBG), UK
- 2016 - Present: Institute of Australian Geographers (IAG), Australia
- 2015 - 2017: Public Laboratory for Open Technology and Science (Public Lab), USA
- 2014 - 2017: Bushfire & Natural Hazards Cooperative Research Centre, Australia
- 2015 - 2016: International Association of Wildland Fire (IAWF), USA
- 2014 - 2016: Association of American Geographers (AAG), USA
- 2012 - 2014: Royal Geographical Society (RGS with IBG), UK

## **CITIZEN SCIENCE PARTICIPATION**

Current projects:

*World Community Grid*

Past participation:

*iNaturalist*

*iCoast*

*eBird*

*Snapshot Serengeti (Zooniverse)*

## **ADDITIONAL INFORMATION AND ACHIEVEMENTS**

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- 2012 – Present: Blogging. Author of personal/geography blog, <http://billyhaworth.com/blog>, contributor to HCRI blog, and past contributor to urban culture blog, *Trending City*.
- 2016: Guest weekly host of Twitter account for citizen science discussions, @IAmCitSci, November 2016.
- 2015: Visiting academic to the North Carolina Museum of Natural Sciences, hosted by Dr Caren Cooper, Assistant Director of the Biodiversity Research Lab, to discuss and present my work, network, and learn in the field of citizen science. Raleigh, NC, 26 April to 3 May 2015.
- 2014: Invited to participate as *Early Career Researcher* in World Universities Network (WUN) funded project with researchers from University of Sydney, University of Western Australia, University of Southampton, and University of Auckland to assist in preparing a white paper on the theme ‘A Spatial Framework for Assessing Environmental Livelihood Security’.
- 2011: Contributed map to submission for inquiry into the regulation of billboard and outdoor advertising to the Australian Parliament, House of Representatives.
- 2009: Participated in research trip to SE Asia investigating rural development and economic geographies along the Mekong River, working with local university students, NGOs, and village communities in China, Laos, Thailand, Cambodia, and Vietnam. The final dissertation addressed impacts of infrastructure development on rural communities and livelihoods

## **MEDIA COVERAGE**

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### **Articles**

- 16 August 2018, “An interview with Billy Tusker Haworth”, LGBT-STEM (<https://lgbtstem.wordpress.com>)
- 6 March 2017, “The Young Scholars university initiative solidifying geospatial science as a smart career choice”, by Ben Doyle, ESRI Australia.
- 7 November 2016, “5 experts reveal their top tips for summer”, The University of Sydney News
- 15 August 2016, “Focus on Research. Enriching Learning Experiences”, International Association of Wildland Fire E-News

- 9 August 2016, "Enriching learning experiences", Fire Australia magazine, Winter 2016 edition (posted online at [bnhrcr.com.au](http://bnhrcr.com.au))
- July 2016, "Billy Haworth at the IAG Conference", School of Geosciences News and Events, University of Sydney
- July 2015 - "New data raises questions around anti-graffiti methods", GIS in Action – Enabling Government, ESRI Australia.
- 13 July 2015 - "Recently two PhD researchers from the University of Tasmania and the University of Sydney were recognised for their innovative work with the TFS Bushfire Ready Neighbourhoods program", by Peter Middleton, News, Bushfire Ready Neighbourhoods.
- 24 June 2015 - "Student recognised with international scholarship", by Nathan Maddock, News from the CRC, Bushfire & Natural Hazards Cooperative Research Centre.
- 23 June 2015 - "Maps to challenge Sydney's graffiti problem", by Anthony Wallace, Spatial Source.
- 18 June 2015 - "New research to help scrub out graffiti", School of Geosciences News and Events, University of Sydney.
- 17 June 2015 - "New research to help scrub out graffiti", by Danielle Mulligan, News, ESRI Australia.

## Radio

January 2016

SBS Radio –discussing the role of volunteered geographic information (VGI) in bushfire preparation

November 2015

2SM (Sydney) – invited to comment on South Australia bushfires, community preparedness and social media use for disaster communication

June 2015 - invited to discuss GIS and graffiti management research and Esri Young Scholar award:

ABC 666 (Canberra), Breakfast with Philip Clark

Radio 2HC (Coffs Harbour), Afternoons with Mike Welsh

Radio 6PR (Perth), Mornings with Gary Adshead

December 2014 – invited to discuss social media use during Sydney siege hostage crisis:

891 ABC (Adelaide), Breakfast

February 2014 – invited to discuss PhD research into VGI and bushfire preparation in Tasmania:

936 ABC, Breakfast (Hobart)

ABC Northern Tasmania, Breakfast with Belinda King

Star FM 93.7 (St Helens)

Edge Radio 99.3 (Hobart), The Brink with Ben Waterworth

## REFEREES:

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### Dr Eleanor Bruce

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### Dr Eloise Biggs

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University of Western Australia

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Crawley WA 6009, Australia