



# International Association *of* Wildland Fire

## Early Career Award in Fire Science

### 2016 Recipient

**Dr. Guillermo Rein, Senior Lecturer, Imperial College London, UK**

Dr. Rein is a prominent fire behavior scientist, studying ignition, combustion emission, smoldering and interactions of fires and ecosystems. At this early stage of his career, his greatest contributions have been in the area of smoldering wildfires, where he has revolutionized the experimental and numerical description of these fires, translating science from engineering to applications such as fire history, emissions and climate change. This work has been published in over 67 journal papers, receiving more than 1700 citations throughout his short career. Among these, 17 journal papers and 6 keynote lectures have focused specifically on wildland fires.

Dr. Rein was first introduced to the subject of wildland fires by Professor Scott Stephens in his course Fire Ecology at University of California, Berkeley. Immediately following his PhD on computational smoldering combustion (graduated in Dec. 2005), he began his early research career on wildland fires as a member of the large international consortium, Fire Paradox (EU FP7) in 2006. Since then, he became a leader in the emerging field of smoldering wildfires, relating their effects to carbon emissions, fire ecology, and climate change. The impact of his work in both the combustion and geoscience communities has been equally impressive and measurable. The results of his wildfire work have been published in 2 book chapters, the International Journal of Wildland Fire, the Proceedings of the National Academy of Sciences (PNAS), Nature Geoscience and awarded twice the Distinguished Paper Awards (2009 and 2013) in the Proceedings of the Combustion Institute.



His research contributions have also impacted wildland fire safety through: (1) pioneering understanding peat fires whose emissions greatly impact global carbon emission and health, (2) developing techniques and improving understanding of the flammability of live and dead fuels, and (3) model development on improved forecasting for wind-driven wildland fires. Besides specific research contributions, his multidisciplinary research approach has brought together many dissimilar fields such as ecology, geoscience, fire protection engineering, and combustion to study wildland fires. This approach has spread throughout the communities he has worked with, including 5 PhD students and 2 MSc students, continuing his legacy of multidisciplinary wildland fire research. Through these ongoing research activities, he is determined to grow powerful modelling capabilities that can meet the needs of an increasingly sophisticated field of fire management and also to provide better estimations of global greenhouse gas emissions from wildfires in various ecosystems. Most recently, he was invited by the Editors of PNAS to write a commentary on recent scientific discoveries in wildland fire spread (doi: 10.1073/pnas.1512432112).

In addition to these scientific contributions, he has been an important proponent of enhancing collaboration between the wildland fire community and traditional urban fire research. As Editor-in-Chief of Fire Technology, he has been actively promoting the number of papers in wildland fires, both increasing visibility within the field and soliciting multidisciplinary contributions. Four special issues on wildland fires, especially at the intersection of the Wildland Urban Interface (WUI) have been published during his tenure. He is also a member of the board of directors of the IAWF and a member of the management committee of the International Association of Fire Safety Science (IAFSS). He has also been active in wildfire international conferences such as Int. Conference on Forest Fire Research (ICFFR), Fire Effects on Soil Properties (FESP), and General Assembly of European Geosciences Union (EGU) to bridge the gap between geoscience and wildland fire safety. He has shared the results of his research and thoughts on international media, including the New York Times, BBC, and DotEarth.

There is no doubt that through his multidisciplinary contributions, Dr. Rein has begun to deepen our understanding of wildland fire and improve worldwide wildland fire safety. Most importantly, Dr. Rein has been an emerging force for change that is paying dividends through a plethora of multidisciplinary collaborations across Europe, America and Asia.

Short Biography: Dr. Guillermo Rein first studied fire at ICAI Universidad Pontificia Comillas, Spain (MEng, 1999). After completing his MSc (2003) and PhD (2005) on smoldering fires at the University of California, Berkeley, he worked at the BRE Centre for Fire Safety Engineering at the University of Edinburgh as a Lecturer (2006-2011) and Senior Lecturer (2011-2012). Recently, he joined Imperial College, London as a Senior Lecturer (2012-2015) and Reader (previous step to full Professor) in Thermal Energy (2015). Since 2013, he has been the Editor-in-Chief of Fire Technology, not only multiplying the journal impact factor by 10, but also boosting the prevalence of wildland fire topics.

Guillermo will receive the award at the 2nd International Smoke Symposium in Long Beach, California November 14-17, 2016

## 2017 Recipient

### Travis Paveglio, Assistant Professor, Department of Natural Resources and Society, University of Idaho

Dr. Paveglio's remarkable research trajectory and innovative ideas are reshaping how we think about resilient and adaptive communities in the wildland urban interface. His work is truly path breaking both theoretically and practically for how we can create more fire adapted communities. Dr. Paveglio is currently an Assistant Professor in the Department of Natural Resources and Society at the University of Idaho. He has been a remarkably productive scholar for one so junior in his career. He has currently published as first author or co-author 33 peer reviewed publications. In his short career, he has proven to be a world class collaborator working across disciplinary boundaries beyond his home field in social science. He routinely works with and understands linkages among agencies, academia, local administrative units, and landowners affected by wildfire. He has secured \$7,301,508 in grants as Co-Principle Investigator, with \$232,416 as Principle Investigator.



Dr. Paveglio, along with his co-authors, is using the concept of community archetypes to understand differential community adaptations to wildfire risk. This is pioneering work related to differentiating communities in the wildland-urban interface, including how fire mitigation programs for rural, resource-based communities differ from more amenity based communities among others. The key publication in this work is Paveglio et al. 2015 in which he and his co-authors conducted a meta-analysis of 20-years of case study research and identified key archetypes to characterize the social complexity of wildland urban interface communities as it relates to adaption to wildfire risk. This work begins to identify key pathways most likely to promote effective fire adaption tailored to specific community traits, including the types of policy preferences and mitigation strategies most likely to contribute to co-management of wildfire risk across jurisdictions. This work is also summarized in the prestigious journal *Philosophical Transactions B* (Carroll and Paveglio 2016).

Dr. Paveglio's work in this field has direct implications for managers who seek to work more effectively with communities prior to wildfires, and for managers who need to work actively with communities during and after wildfires. The archetype approach helps us understand the local capacity to plan for, respond to, and recover from wildfire. For a professor so junior in his career, his work has been unusually directed and use-oriented. In this way, he is working toward articulated needs for future research related to wildfire management. Because of his unusual theoretical and practical skill set, I believe he is worthy of serious consideration for the IAWF Early Career Award for Fire Science.

In addition to his research success, he is also a valued mentor to his students thereby influencing the next generation of wildfire scientists. As offered by one of his students, Dr. Paveglio has been noted to be "an outstanding source of knowledge and support for his students, making himself available to answer questions around the clock and going above and beyond to provide excellent feedback to foster improvement. His outstanding

mentorship is founded on treating his students as equals and encouraging them to get involved in diverse research, publishing, and to engage in opportunities to disseminate findings to professionals and the public. Above all, it is the personal connection that Travis builds with each of his students which creates a remarkable environment for graduate student success.” This testimony, in addition to his excellent scholarship, qualify him for this important award.

Travis received the award at the IAWF Awards Dinner in Boise in October 2017.

## 2018 Recipient

### **Dr. Nicholas Skowronski, Northern Research Station, US Forest Service**

The 2018 recipient of the IAWF Early Career Award in Fire Science is Dr. Nicholas Skowronski. Nick is a research forester with the Northern Research Station, US Forest Service. His award was presented by Alen Slijepcevic, IAWF President, at the Fire Continuum Conference in Missoula.

The Early Career in Fire Science award is to recognize a promising early-career professional who has demonstrated outstanding ability in the field of wildland fire science. "Early career" is nominally taken to include professionals who are within ten years of having earned their highest degree or are under 40 years of age when nominated.

Nick's current research focuses on the quantification and analysis of the structural characteristics of forest canopies and how this relates to carbon and water cycles. He has recently been using a newly emerging remote sensing technology called LiDAR which actively characterizes the canopy with a laser beam. His work is split between developing methods for using LiDAR and other remotes sensing techniques for wildfire mitigation and studying how forest functionality changes after disturbance.



A few comments from the folks who nominated Nick:

“Dr. Skowronski has a proven capacity to involve people beyond the realm of wildfire research and encompasses the spirit of true inclusivity and collaboration. He has great experience in the field conducting prescribed fire research and is also the successful founder and lead scientist of the North Atlantic Fire Science Exchange.”

“Dr. Skowronski has a solid record of published and impactful research. He continues to make important contributions concerning the application of remote sensing and LiDAR to wildfire management. Dr. Skowronski appears to interact with a variety of managers, academics, and practitioners--he serves as a bridge between knowledge development and practice. He also serves as the PI for the North Atlantic Fire Science Consortium, which demonstrates a commitment to outreach.”



“Nicholas Skowronski has a strong authorship to merit his nomination of this award. The versatility of his work indicate that he has strong cross-disciplinary skills that are greatly underrepresented and greatly needed in the world of wildfire research. Additionally, his experience “walking the walk” elevates his qualifications to receive this award, as all wildfire science should seek to answer questions and improve our on-the-ground understanding of wildfire.

## 2019 Recipient Dr. Sara McAllister, US Forest Service

IAWF is proud to announce that the 2019 recipient of the IAWF Early Career in Fire Science Award is Dr. Sara McAllister. Sara has been a Research Scientist for the US Forest Service at the Missoula Fire Sciences Laboratory since 2009. She graduated from the University of California, Berkeley with a Ph.D. in Mechanical Engineering where she focused on spacecraft flammability for NASA. Her background in combustion and engineering has enabled her to bring unique insight into the physical processes controlling ignition, fire spread, and burning.



Since her arrival at the Missoula Fire Sciences Laboratory, she has performed ground-breaking experimental research on ignition criteria for live and dead wildland fuel materials, explored poorly understood convective heating of live and dead forest fuels, and extended knowledge and theory of burning rates of porous wildland fuel beds. It is rare that in such a short time, one researcher could have made so much progress in this direction.

Sara is the author of 28 refereed publications and 35 conference presentations and proceedings, as well as a popular university textbook, “Fundamentals of Combustion Processes” which is based on a course she co-taught while at UC Berkeley. She is a leader in the field, promoting wildland fire science in both traditional wildland fire organizations and the engineering community. Some of her recent leadership activities have included co-organizing the workshop “Large Outdoor Fires and the Built Environment”, co-organizer of a special session for Forest Fire at the 8th International Symposium on Scale Modeling, section editor for the Encyclopedia of Wildland and WUI Fire for Springer-Nature, and leader of a special session at the AFE Fire Congress on “Physical Mechanisms of Wildland Fire Spread”.

Recently, she was appointed as the scientific program co-chair for the 12th International Symposium on Fire Safety Science and also leads a new working group on Large Outdoor Fires and the Built Environment, helping to link the fire science and structural fire communities. She is active in the Combustion Institute, International Association for Wildland Fire (IAWF), Association for Fire Ecology, and the International Association for Fire Safety Science (IAFSS). In total, she’s chaired or co-chaired 11 symposia and special sessions and serves as an active member of the Editorial Board for Fire Technology and Fire Safety Journal. All these activities demonstrate her continued commitment to linking the traditional building and wildland fire science communities together.

Sara is one of the most promising and impactful young researchers in the wildland fire community today. She has made outstanding scientific contributions and demonstrated leadership in the wildland fire community and is incredibly deserving of recognition by IAWF with the Early Career Award in Fire Science.