Large Outdoor Fires and the Built Environment (LOF&BE)
Workshop Program

The International Association for Fire Safety Science (IAFSS) established the permanent working group known as LOF&BE (Large Outdoor Fires and the Built Environment), as an outgrowth of the 2017 Lund Workshops held in conjunction with the 12th IAFSS Symposium. LOF&BE aims to bring the community together to tackle large outdoor fire problems such as wildland fires, wildland-urban interface (WUI) fires, urban fires, and informal settlement fires. LOF&BE currently consists of two subgroups - Ignition Resistant Communities (IRC), and Emergency Management and Evacuation (EME) – and fire service panel. The IRC subgroup is focused on developing the scientific understanding that will lead to new standards, testing methodologies, and mitigation strategies indicative of large outdoor fire exposures, including the ones from wildland to communities and within communities. The EME subgroup is focused on developing the scientific basis for effective emergency management strategies for communities exposed to large outdoor fires. Two workshops will be held by the LOF&BE working group and each workshop will focus on the work of the EME/IRC subgroup.

LOF&BE: EME workshop (Sunday Oct 22nd 13:00-15:30)

Time	Contents	Speakers
20 min	Introduction to LOF&BE	Manzello & McAllister & Suzuki (co-Leaders)
30 min	Progress on EME	Wadhwani & Wang (EME subGLs)
30 min	Discussion	All participants
30 min	Short presentations	Flores-Quiroz & Walls, Wu
30 min	Discussion	All participants
10 min	Wrap up	

LOF&BE: IRC workshop (Sunday Oct 22nd 16:00-18:30)

Time	Contents	Speakers
20 min	Introduction to LOF&BE	Manzello & McAllister & Suzuki (co-Leaders)
30 min	Progress report on IRC	Filkov & Rush (IRC subGLs)
30 min	Discussion	All participants
30 min	Short presentations	Penman, Rush, Yoshioka & Himoto & Kagiya, Vacca
30 min	Discussion	All participants
10 min	Wrap up	

Co-leaders (in an alphabetical order)

- Samuel L. Manzello (Reax Engineering and Tohoku University)
- Sara McAllister (US Forest Service)
- Sayaka Suzuki (Tokyo Institute of Technology)

SubGLs (in an alphabetical order)

- Alexander Filkov (University of Melbourne)
- David Rush (University of Edinburgh)
- Rahul Wadhwani (The Hong Kong Polytechnic University)
- Yu Wang (University of Science and Technology of China)

Invited Speakers (in an alphabetical order)

- Trent Penman (University of Melbourne)
- Pascale Vacca (Universitat Politècnica de Catalunya)
- Chia Lung Wu (Chang Jung Christian University)
- Natalia Flores-Quiroz/Richard Walls (Stellenbosch University)
- Hideki Yoshioka (The University of Tokyo)/Keisuke Himoto (National Institute for Land and Infrastructure Management)/Koji Kagiya (Tohoku Institute of Technology)

Abstracts of the invited talks (EME) (in an alphabetical order)

Large-scale urban fires in low-income areas: Where to next?

By Natalia Flores-Quiroz/Richard Walls (Stellenbosch University)

In recent years there has been a focus on understanding fires in low-income settlements (LIS) (i.e., informal settlements, refugee camps, tented shelters). Studies have analysed topics such as fire dynamics, construction materials, separation distances, and risk perception. However, most of the research has focused on experimental work in informal settlements and on a limited number of countries. The reasons behind this are associated to the difficulty to document real LIS fires, accessing and interacting with LIS residents, and the lack of fire engineers in Low- and Middle-Income Countries. As the LOF&BE group moves forward we need to find out how to assist those on the frontline in making LISs safer. They are the people that have the greatest impact, and empowering them to make informed decisions could have far-reaching consequences. In order to achieve this, efforts should be placed on understanding (1) different settlements characteristics and culture, (2) community response, (3) real fires in LIS. This will also provide critical information to obtaining data for modelling spread, understanding human behaviour, identifying challenges and finding solutions. In this presentation we will focus on identifying areas where effort should be placed in order to improve fire safety in LIS.

Emerging emergency management issues in Taiwan- existing building fire safety

By Chia Lung (Farian) Wu (Chang Jung Christian University)

A typical emergency/disaster management comprises four phases: mitigation, preparedness, response, and recovery. The better the mitigation and preparedness will be easier to reduce the possible casualties in fire. However, as the buildings tend to be older, some lack maintenance, and most of the time, the AHJs may be unable to ensure that fire safety is at the same levels as before, even if the regulation empowers regular inspections. The problems in Taiwan were mainly focused on 'who will be taking the responsibilities' rather than digging into the fundamental issues we are facing. In this presentation, we will provide fire cases to discuss the current issues to identify what we can do more if there is not possible to rebuild new buildings and what the strategies maybe focus on.

Abstracts of the invited talks (IRC) (in an alphabetical order)

Landscapes to loss – combining knowledge over scales

By Trent Penman (University of Melbourne)

Risk from wildfires to communities has become increasingly important, with many government policies and decision-making process based on these estimates of fire risk. Risk to individual houses and communities is a function of the landscape fire which is predominantly affected by the weather, topography and vegetation as well as the vulnerability of the house/community which is more based on the building design, access and egress options and community knowledge of fire. To develop and improve risk model standards we need to merge the two fields of research. We propose a working group to facilitate this approach. The new sub-group within LOFBE will bring together landscape fire scientists, engineers and social scientists to develop, test and implement the next generation of fire house loss models.

Informal settlement fires – what are their next fire science imperatives

By David Rush (University of Edinburgh)

Over the past 5-10 years, there has been a lot of fire science research on the South African Typology of informal settlements and their dwellings. This short talk will briefly describe what we do and don't know from that research and therefore what the next research questions should be that will aid in protecting these vulnerable communities. Parallels with WUI fires and other urban fire scenarios will be highlighted.

Large urban fires in Japan: History and management

By Hideki Yoshioka, (The University of Tokyo) Keisuke Himoto, (National Institute for Land and Infrastructure Management) and Koji Kagiya, (Tohoku Institute of Technology)

In Japan, ''Taika'' (large urban fire) is a fire when the total burnout floor area is 33,000 m^2 or more. This presentation first discusses the history of large urban fires in Japan, then examines the national standard regulations for fire safety in Japan aimed at mitigating the damage caused by those fires. Finally, an overview of current scientific research in methods of controlling urban fires in Japan is provided. Some parts of this presentation have been briefly introduced in *Fire Technology* paper in 2020 and ISO/TR 24188: 2022.

Tackling the improvement of standards and guidelines to account for real fire exposure

By Pascale Vacca (Universitat Politècnica de Catalunya)

As the different fire exposure mechanisms in WUI and settlement environments have been identified, there is a need to review whether current standards and guidelines for the quantification of fire exposure and for the testing of construction elements and materials reflect real fire exposure mechanisms. This review would highlight what type of fire exposures are accounted for and what are not, what parameters should be re-defined when considering the different exposure mechanisms, and whether fire exposure scenario selection should be reevaluated. In this regard, the collection of quantitative data form real fires is key in the parametrization of real fire exposure.