The meteorology surrounding bushfires in Australia.

Bushfires are an intrinsic part of the Australian environment. However, major fire events in recent years have had an unprecedented impact on the Australian community. These include: Black Saturday 2009, when 173 lives and over 2000 homes were lost; the 2003 Canberra Fires, where a fire-tornado contributed to the destruction of 500 homes; the Pinery and Wangary fires, when frontal wind changes caused rapid fire spread in grass fuels; and the Waroona fire, which produced four separate episodes of extreme fire behaviour.

In these events, and at numerous other documented major fires in Australia in recent years, fire-atmosphere interactions have created dangerous and changeable fire conditions. Often, the extreme fire behaviour does not coincide with the hottest, windiest time of day; the period traditionally associated with highest fire risk.

Some of these fire-atmosphere interactions can be explored using coupled fire-atmosphere models. ACCESS-Fire is a recently developed coupled model linked to the Australian operational numerical weather prediction capability. Results of simulations show how a fire changes the surrounding atmosphere, with features including fire-modified winds in the environmental flow, dynamic plume effects near steep topography and some pyrocumulonimbus processes.

Dr. Mika Peace
Bureau of Meteorology, Australia

Monday, May 14, 2018, at 1:00pm
110 INSCC