ACCESS-Fire modelled weather case studies

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Abstract

Fires are a damaging and wide ranging seasonal occurrence for much of Australia, mitigated in part by national and state based fire fighting agencies and volunteers. A major factor in the effectiveness of their efforts is the fire danger index that attempts to predict where the worst fires may occur. One issue with the current system is that it does not take into account atmospheric processes that are affected by local topography (such as down-slope wind flows) or wind and weather feedback (such as cumulonimbus driven wind gusts) [Peace 2016].

This project has two intents: first that these processes can be adequately modelled by ACCESS when coupled to a fire model, and second to provide information on fire-weather feedbacks. Simulating how a fire changes local meteorological flows also enables enhanced forecasting of fire impacts and coverage [Toivanen 2019].

My poster will detail progress so far in the analysis of ACCESS-Fire coupled outputs over two case studies, highlighting both meteorological features seen in the model and some model sensitivities.

(Image Source: R. Rampling, 9 News Perth)

References

Peace, M. et. al., Meteorological drivers of extreme fire behaviour during the Waroona bushfire , Western Australia, 79–101. https://doi.org/10.22499/3.6702.002, 2016.

Toivanen, et al. Coupled Atmosphere-Fire Simulations of the Black Saturday Kilmore East Wildfires With the Unified Model. Journal of Advances in Modeling Earth Systems, 11(1), https://doi.org/10.1029/2017MS001245, 2019.