Supplementary Materials.

Map

Description automatically generatedChart

Description automatically generated

(a) (b)

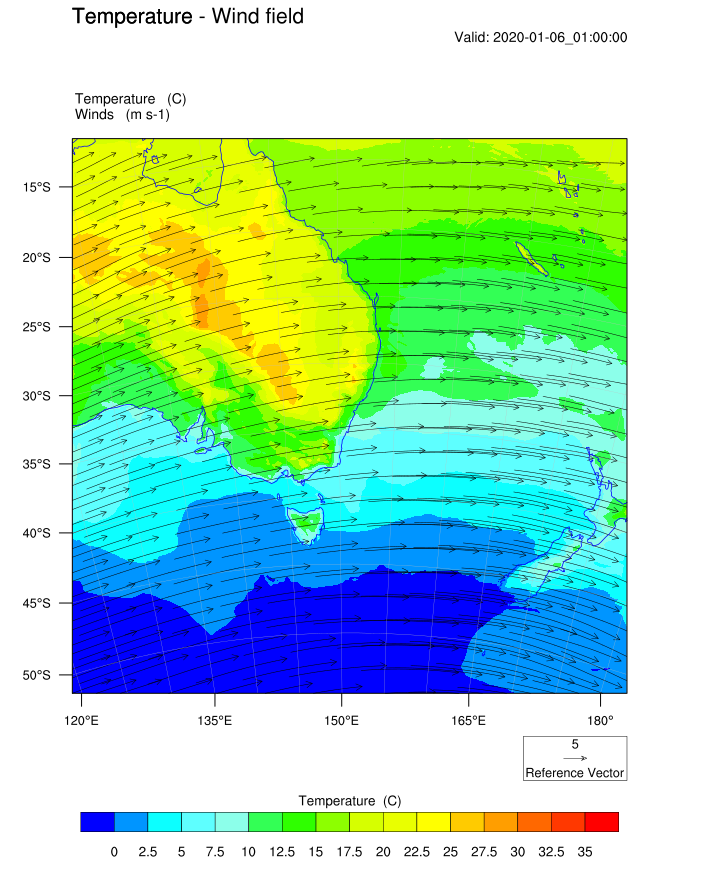
Chart

Description automatically generatedChart, surface chart

Description automatically generated

(c) (d)

Chart, surface chart

Description automatically generated

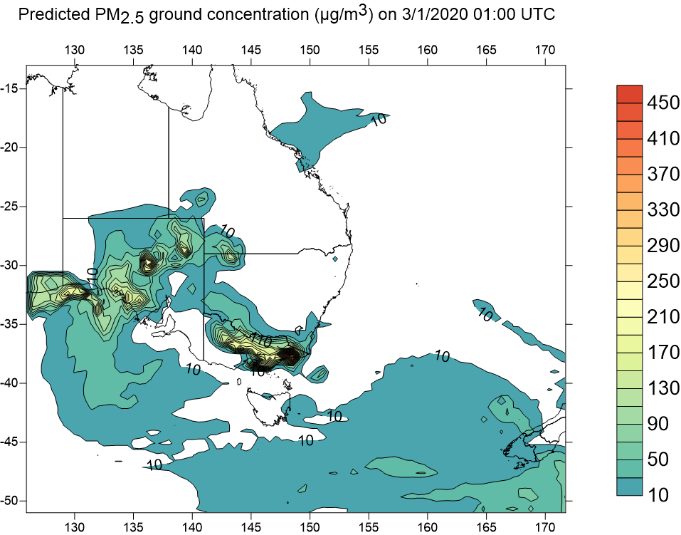
(e) (f)

Figure S.1 - Predicted surface wind and temperature on (a) 1 January 2020 10:00 UTC and (b) 2 January 2020 16:00 (c) 3 January 2020 10:00 UTC (d) 4 January 0:00 UTC (e) 5 January 2020 11:00 UTC and (f) 6 January 2020 1:00 UTC

|  |  |
| --- | --- |
| A picture containing text, map  Description automatically generated  (a) | (b) |
| (c) | A screenshot of a cell phone  Description automatically generated  (d) |

Figure S.2 – Predicted AOD on 3/1/2020 01:00 UTC (a) as compared with AOD prediction from NCAR ACOM (Atmospheric Chemistry Observations & Modeling) model called WACCM (Whole Atmosphere Community Climate Model), at the same time (source: <https://worldview.acom.ucar.edu/>) (b) AOD as measured and value-added by MODIS combined Aqua/Terra satellite product (c). Wind field at 850mb height (d).

A close up of a map

Description automatically generated

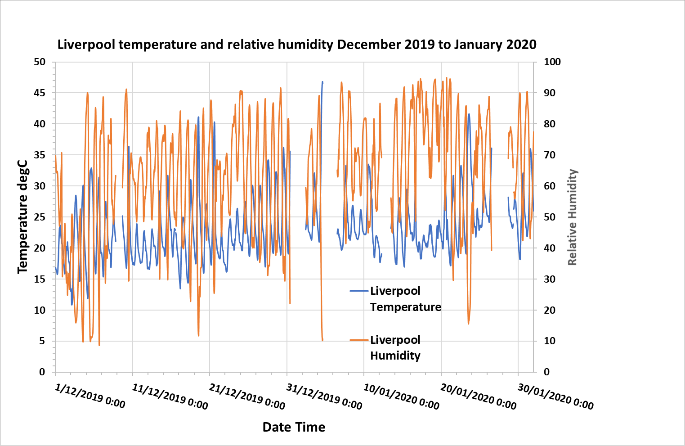
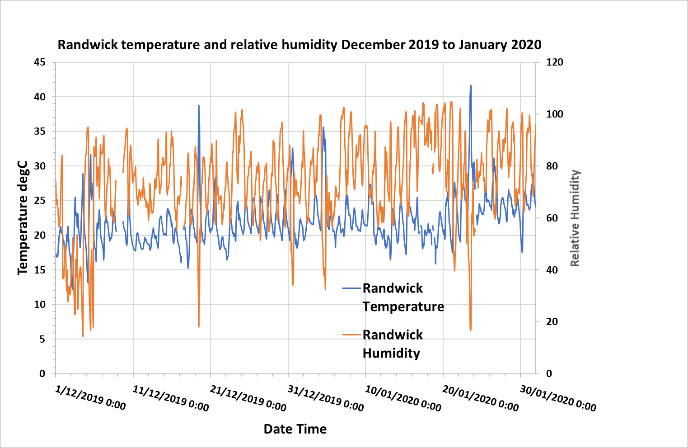
(a) (b)

A close up of a map

Description automatically generated

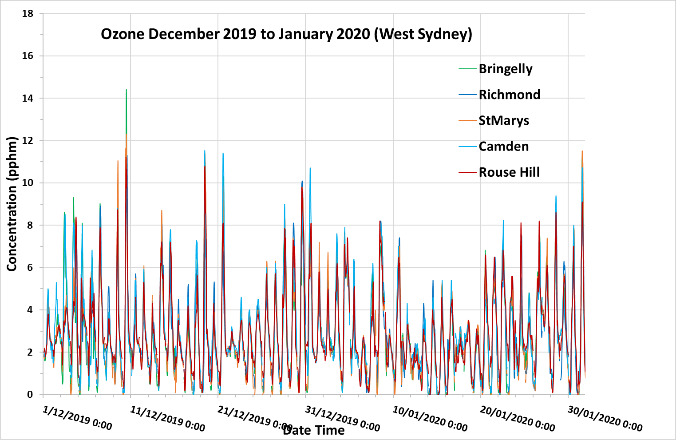
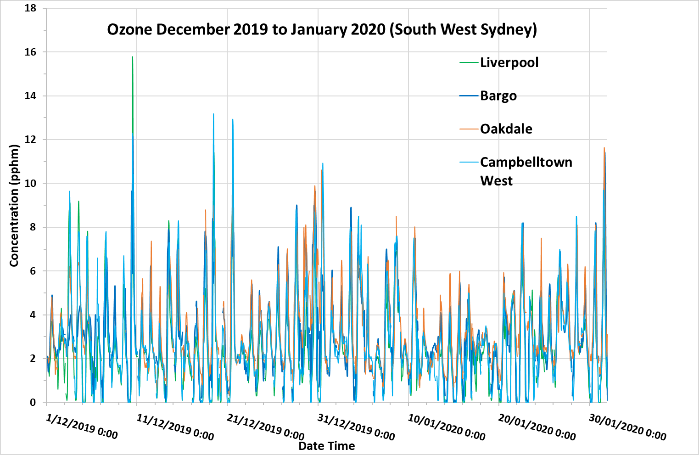
(c)

Figure S.3 – Predicted concentration of CO, PM2.5, BC (hydrophilic and hydrophobic BC) on 3/1/2020 01:00 UTC. Dust storm also happened in Central Australia as evidence of high PM2.5 concentration occurred in South Australia near dust source in Lake Eyre Basin.

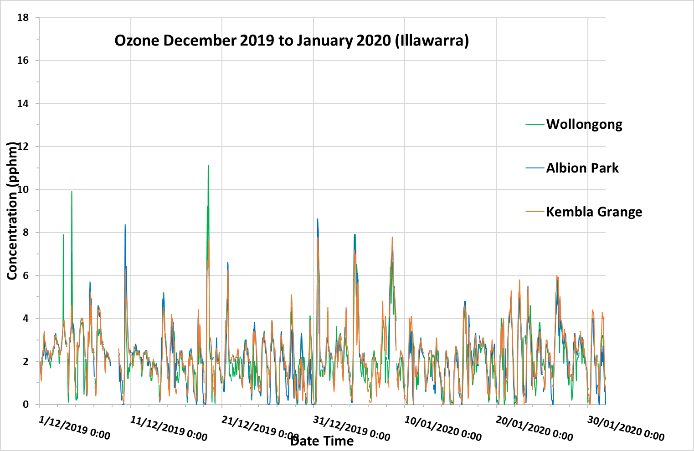
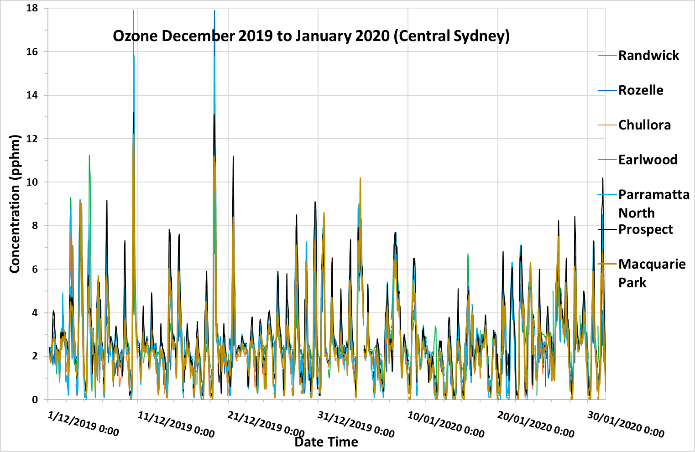


(a) (b)

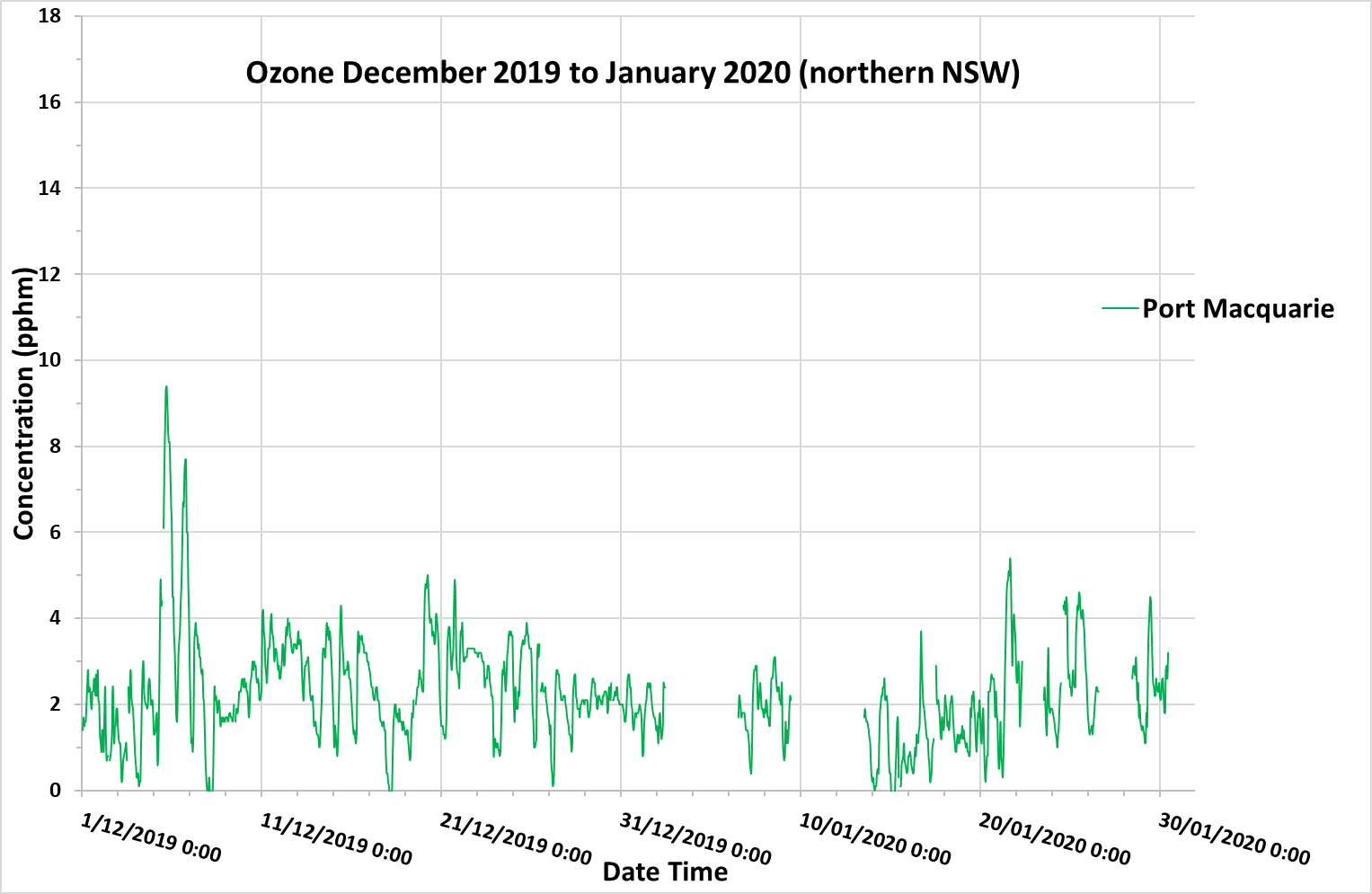
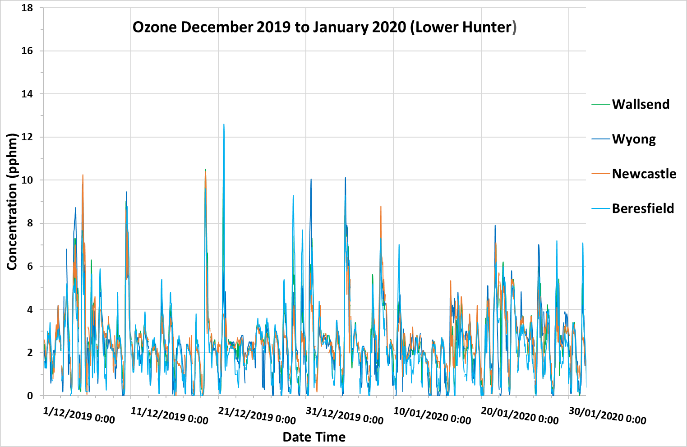
Figure S.4 – Temperature and relative humidity at Randwick and Liverpool.



1. (b)



(c) (d)



(e) (f)

Figure S.5 - Ozone concentration at sites in south west Sydney (a), west Sydney (b), central Sydney (c), Illawarra (d), Hunter (e) and northern NSW (f) from 1 December 2019 to 31 January 2020

Map

Description automatically generatedMap

Description automatically generated

Map

Description automatically generatedMap

Description automatically generated

Figure S.6 – Predicted daily average PM2.5 across south eastern Australia due to wildfires for some selected days in January 2019