The 2019/20 Australian Bushfires

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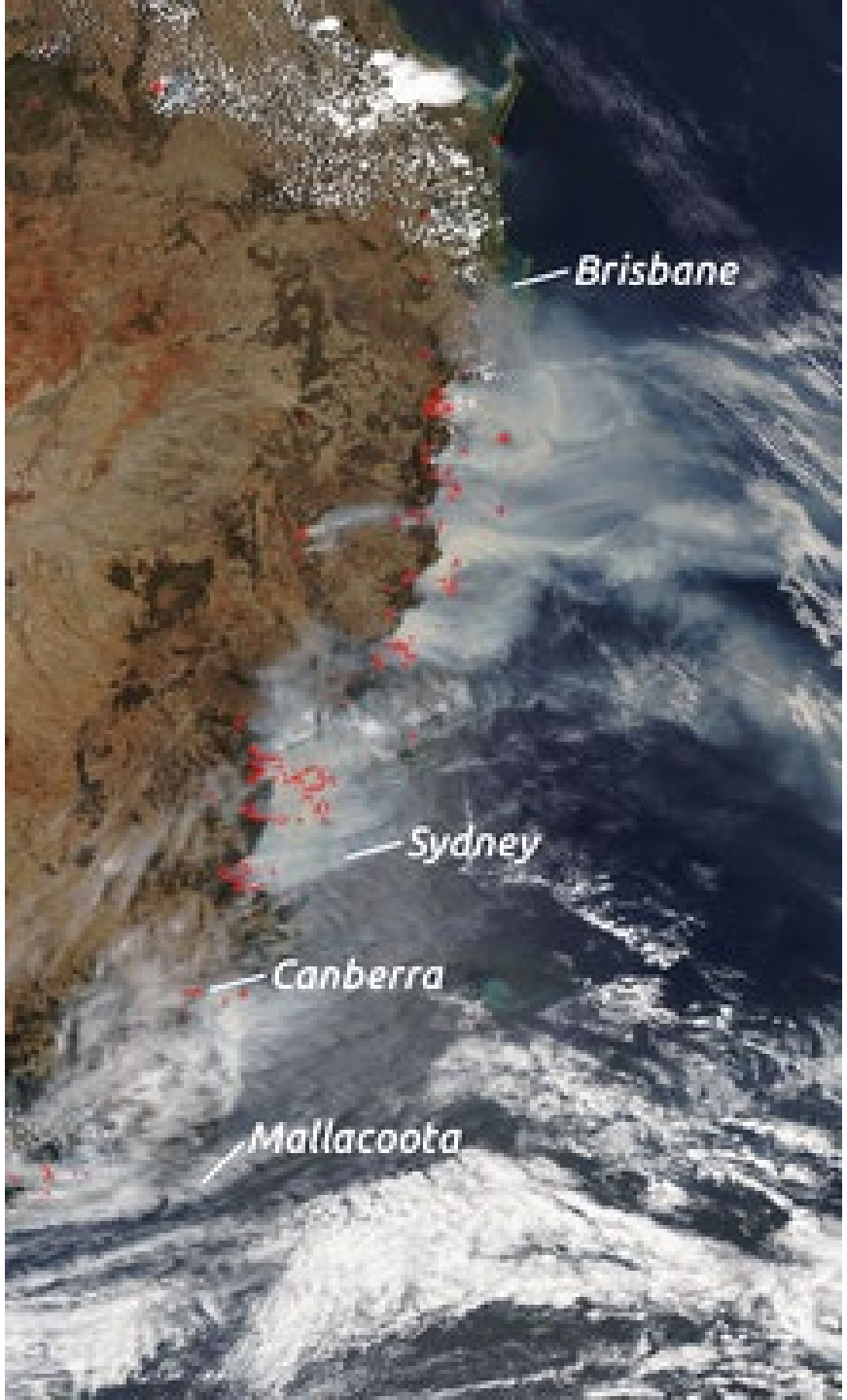
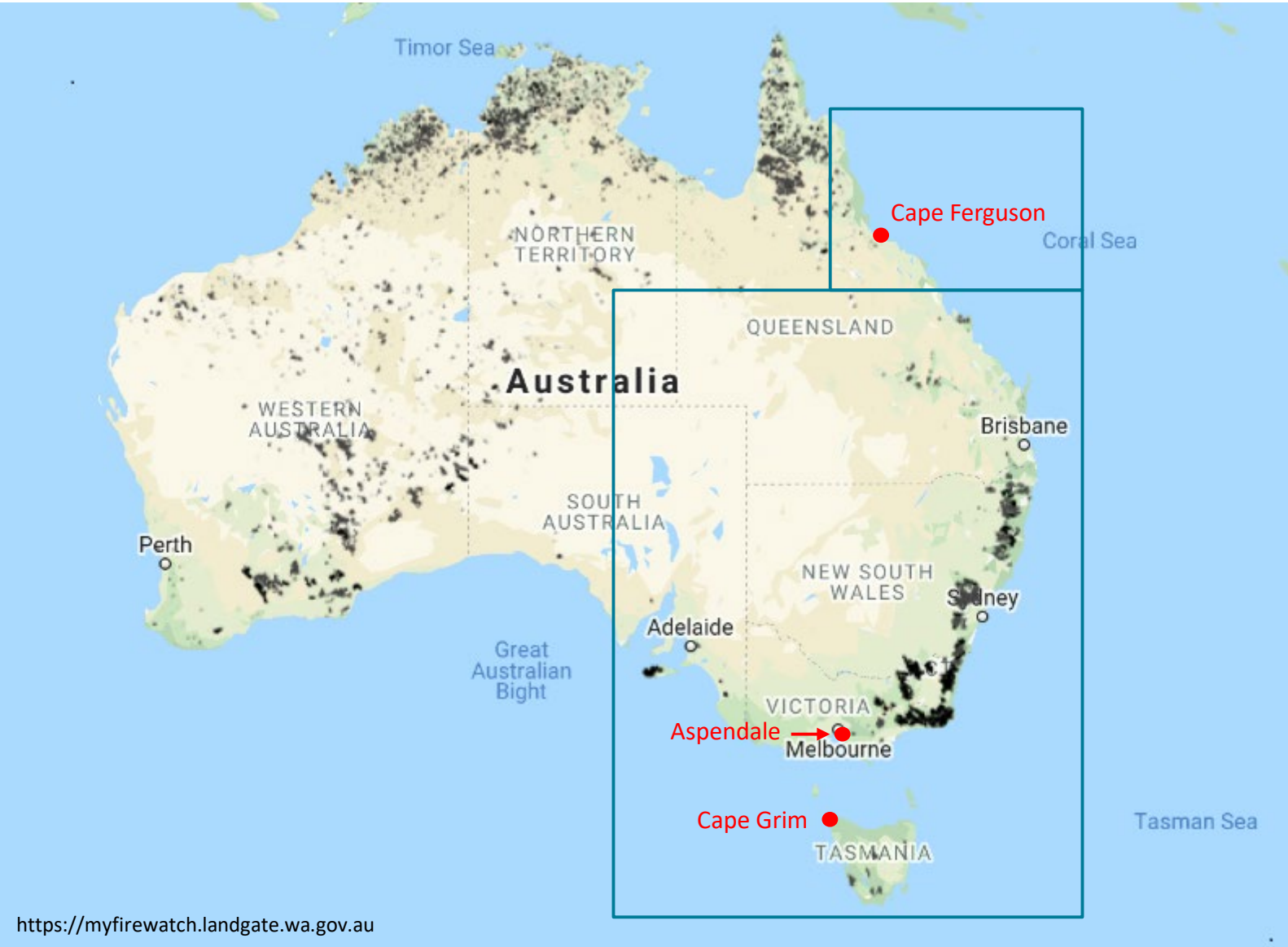


NASA satellite image
7-Dec-2019

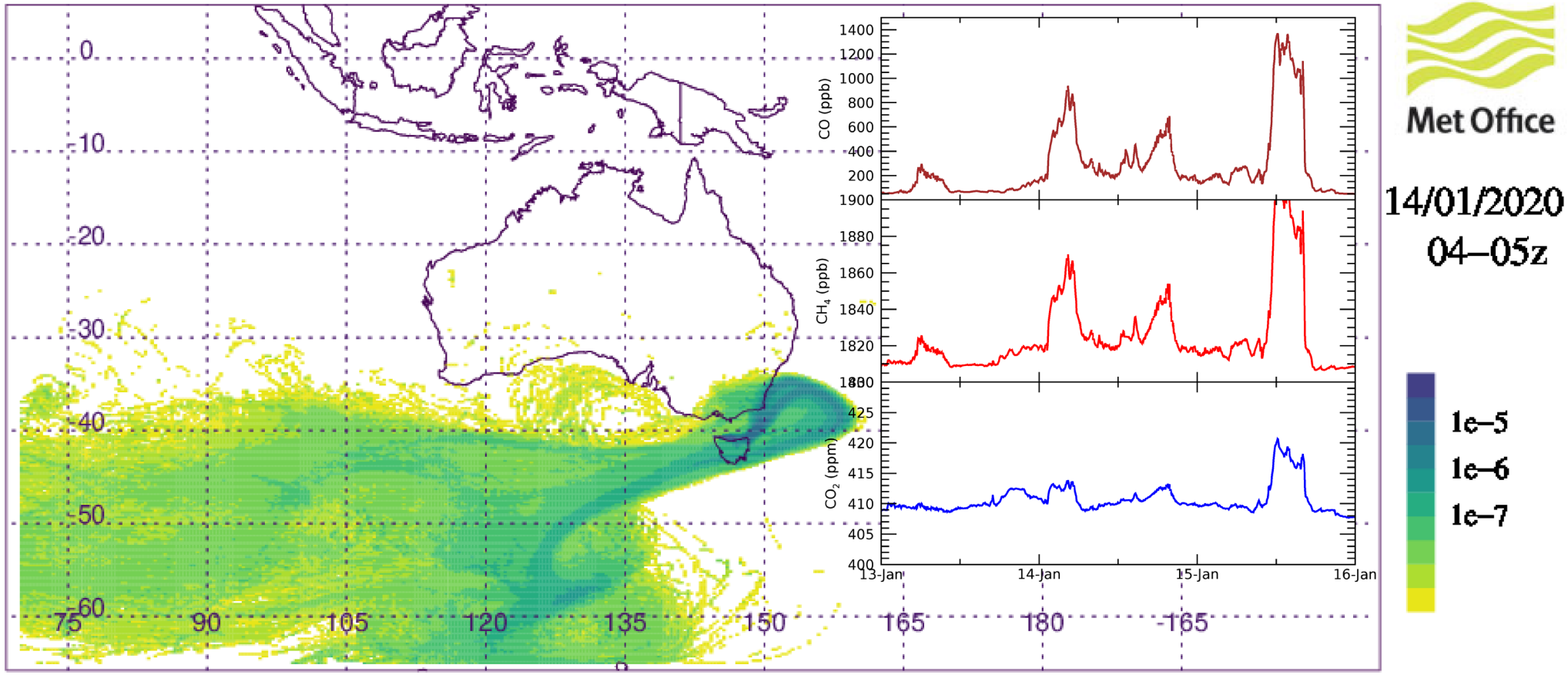
Burned area in 2019/20

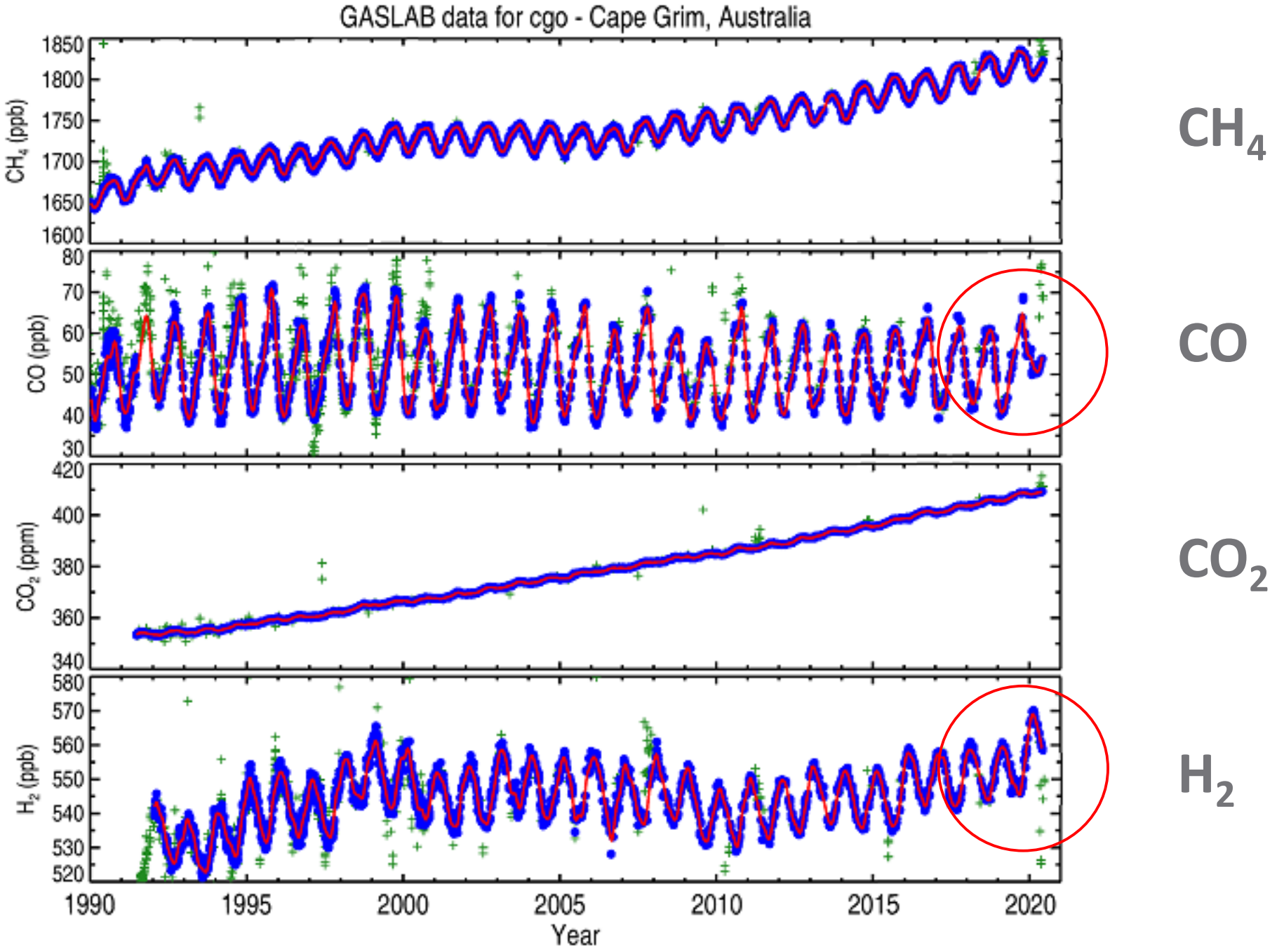


East Australia fires:

* June 2019 – February 2020
* > 10 million hectares burned, mainly in NSW and VIC, but also QLD, TAS and SA
* temperate forest and farmland

Smoke plumes from NSW/VIC fires transported over Cape Grim in January 2020



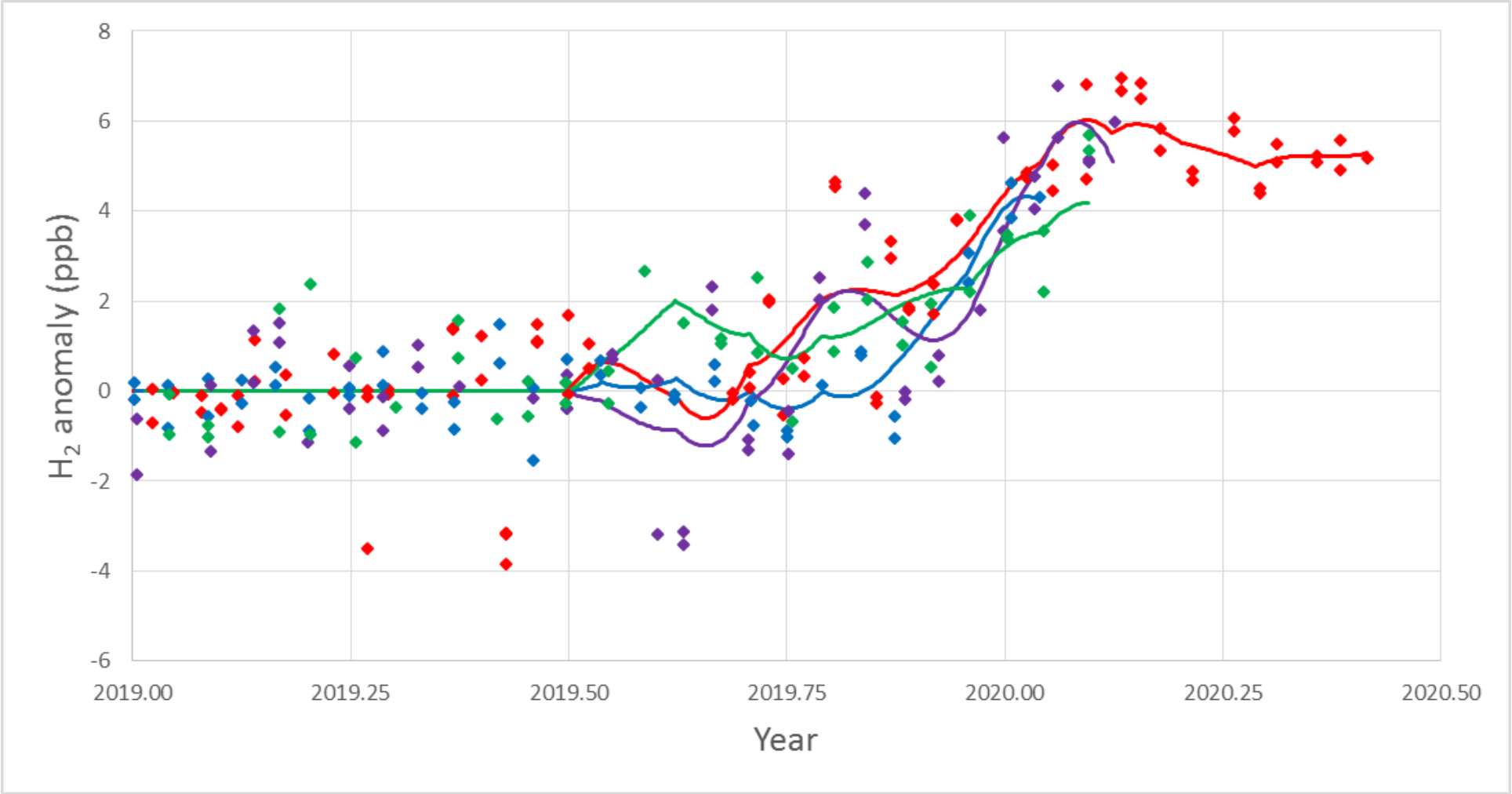

GASLAB data for cgo - Cape Grim, Australia
CH4 (ppb)
1850
1800
1750
1700
1650
1600
CO (ppb)
80
70
60
50
40
30
CO2 (ppm)
420
400
380
360
340
H2 (ppb)
580
570
560
550
540
530
520
1990
1995
2000
2005
2010
2015
2020
Year
CH4
CO
CO2
H2

SH emission anomalies for 2019/2020 (GFED)

Region	Type	Pg C	Total Pg C
Australia	temperate forest	0.14	0.18
	savanna/grasslands	0.04	
Equatorial Asia	tropical forest	0.04	0.12
	peat	0.07	
South America	savanna/grasslands	0.02	0.02
	tropical forest	0.00	
Africa	savanna/grasslands	-0.02	-0.02
	tropical forest	0.00	

Global Fire Emissions Database (https://www.globalfiredata.org/)

H_2 anomaly in CSIRO flask data



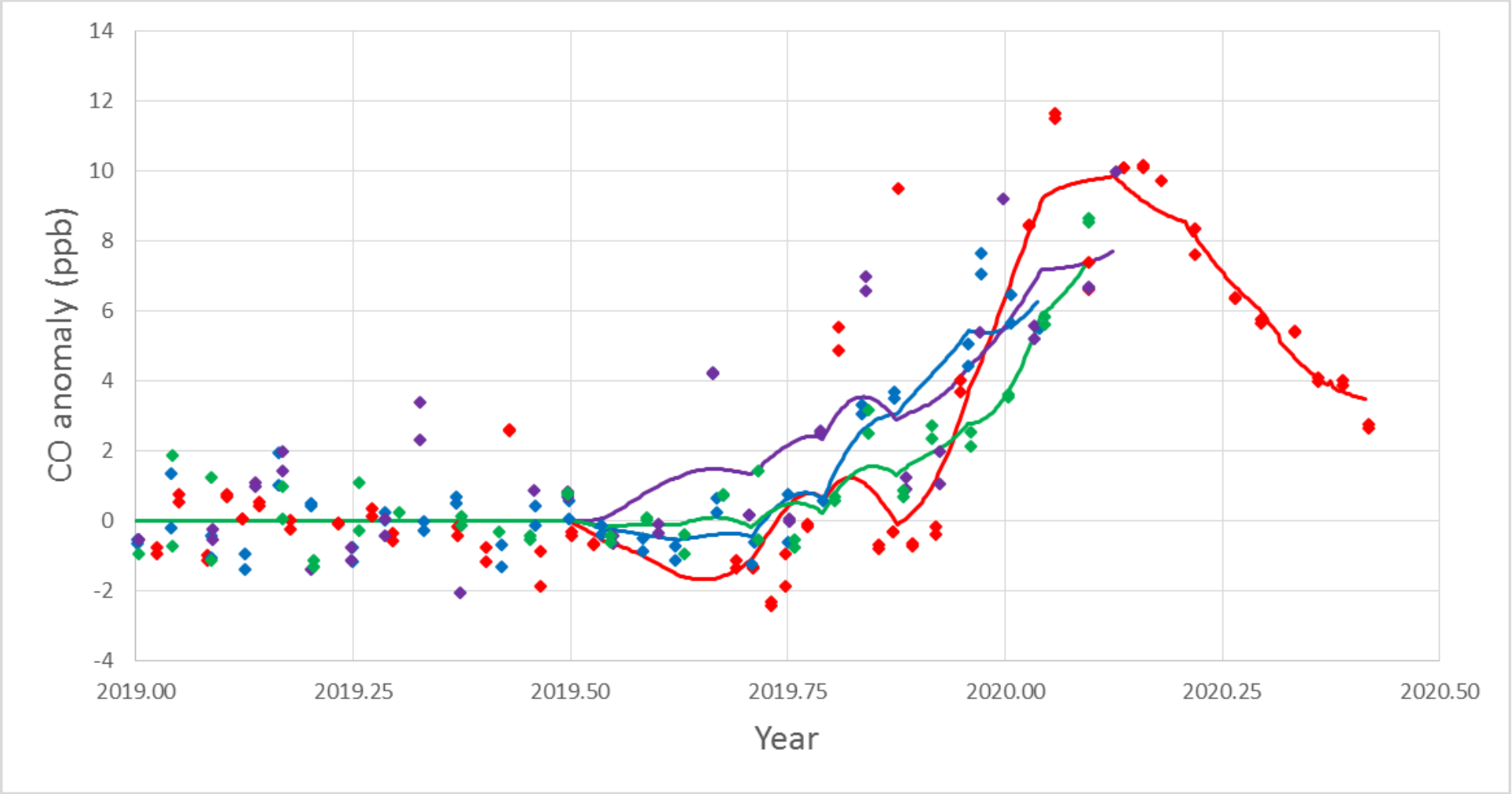
Cape Grim

Macquarie Is.

Mawson

South Pole

CO anomaly in CSIRO flask data



Cape Grim

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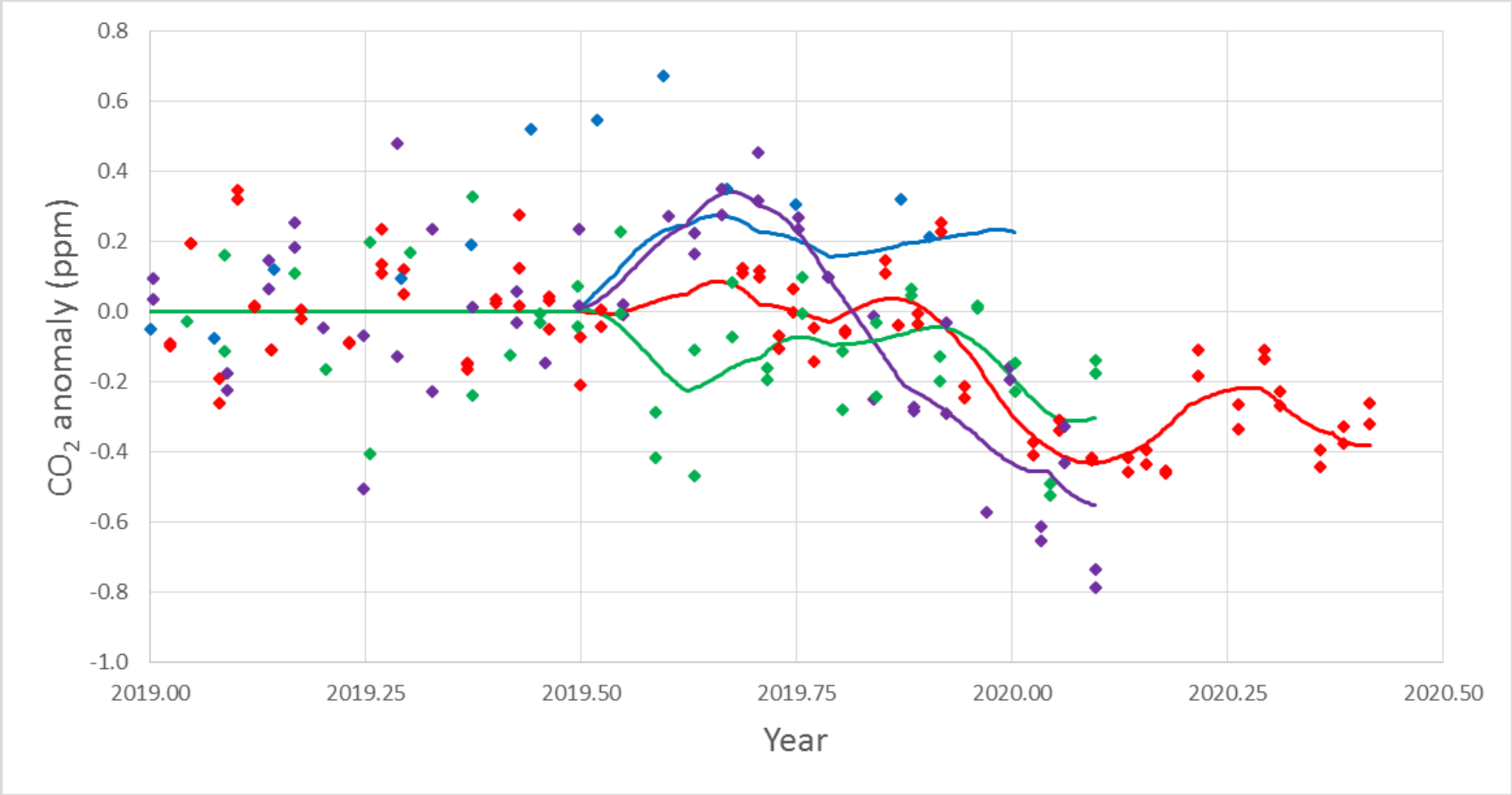
CO_2 anomaly in CSIRO flask data



Cape Grim

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Signal resolution in background air

	Anomaly at Cape Grim (ppb)	Uncertainty	Signal to noise
CO	10	2.0	5.0
H_2	6	2.2	2.7
CO_2	220 (inferred)	300	0.7
CH_4	1.2 (inferred)	2.4	0.5

Top-down flux estimates

* H_2 emitted to SH: 0.9 Tg H_2
* Australian H_2 emissions: 0.6 Tg H_2 (cf. GFED 0.7 Tg H_2)
* Australian carbon emissions: 0.15 Pg C (cf. GFED 0.18 Pg C)

Carbon emissions (in Pg C)

East Australian 2019/20 fires:	0.15
Other annual emissions:	
Australia temperate forest fires:	0.01
Australia all fires:	0.12
Global biomass burning:	2.1
Australian greenhouse gas emissions:	0.15 (CO_2 –e)

Thank you

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