Total vegetation cover soil protection Region:NRM Swan Region WA

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps.

Land use forest cover:

Date: May 2020

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest cover class that covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

- 71-100% High cover protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
 - 51-70% Moderate cover protected from wind erosion
 - 31-50% Low cover not protected
 - 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares.

Comparison with previous years:

- Map: anomaly comparing this month to the average cover from the same month in previous years.
- Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

https://doi.org/10.4225/08/5848a3f19a7b3









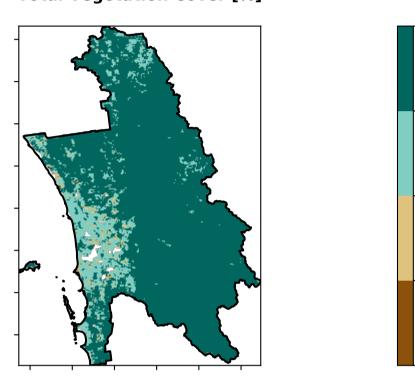
Vegetation Cover May 2020

Land use and forest cover

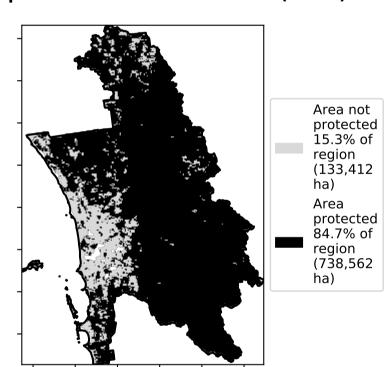
Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation 13 Other uses

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]

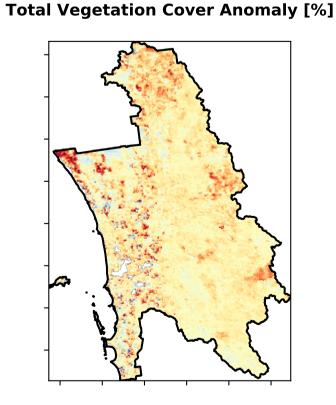


% Area protected from water erosion (>70%)



Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to

2019.



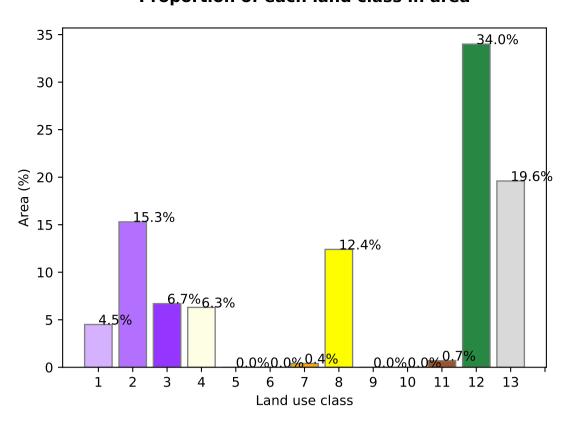
- 20 10 -10-20

Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

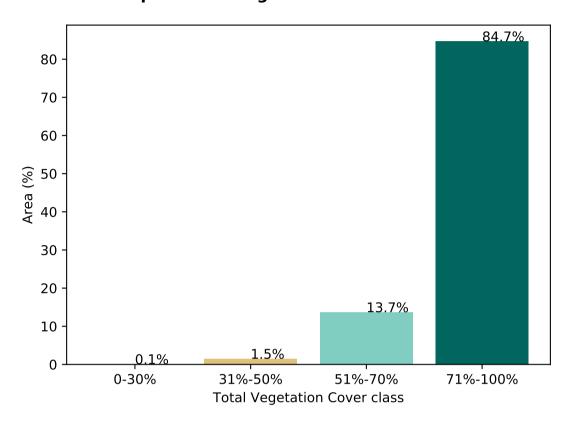
Australian Government



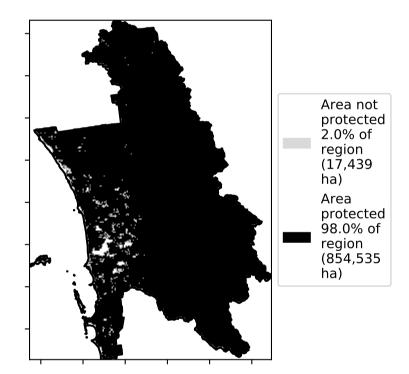
Proportion of each land class in area

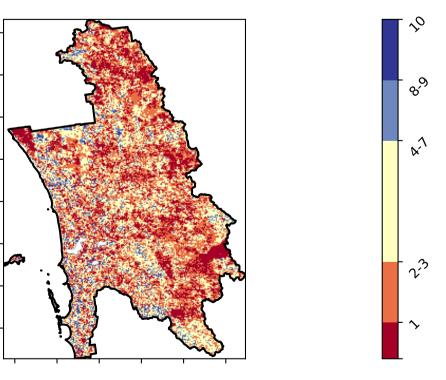


Proportion of vegetation cover class in area



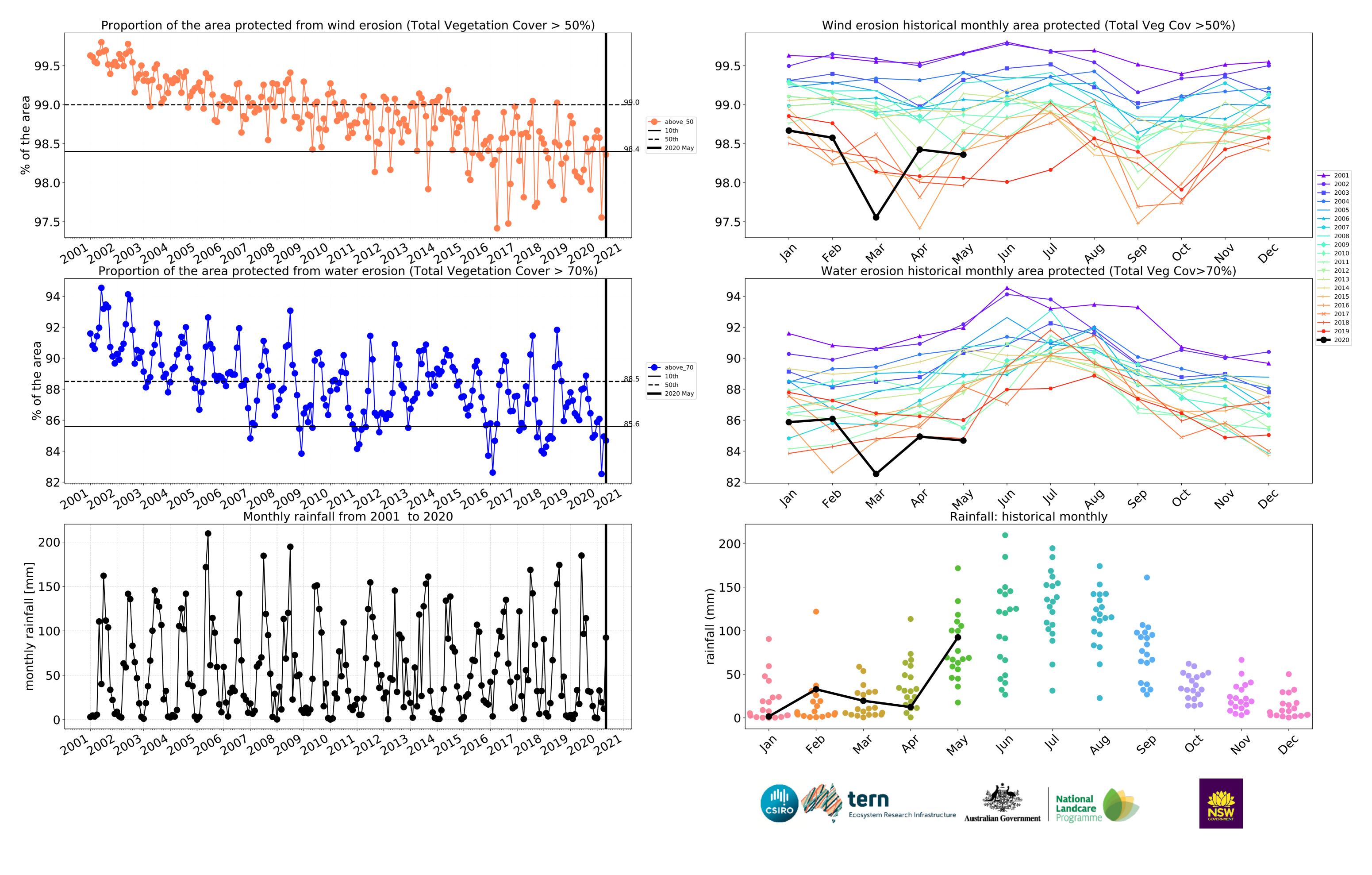
% Area protected from wind erosion (>50%)

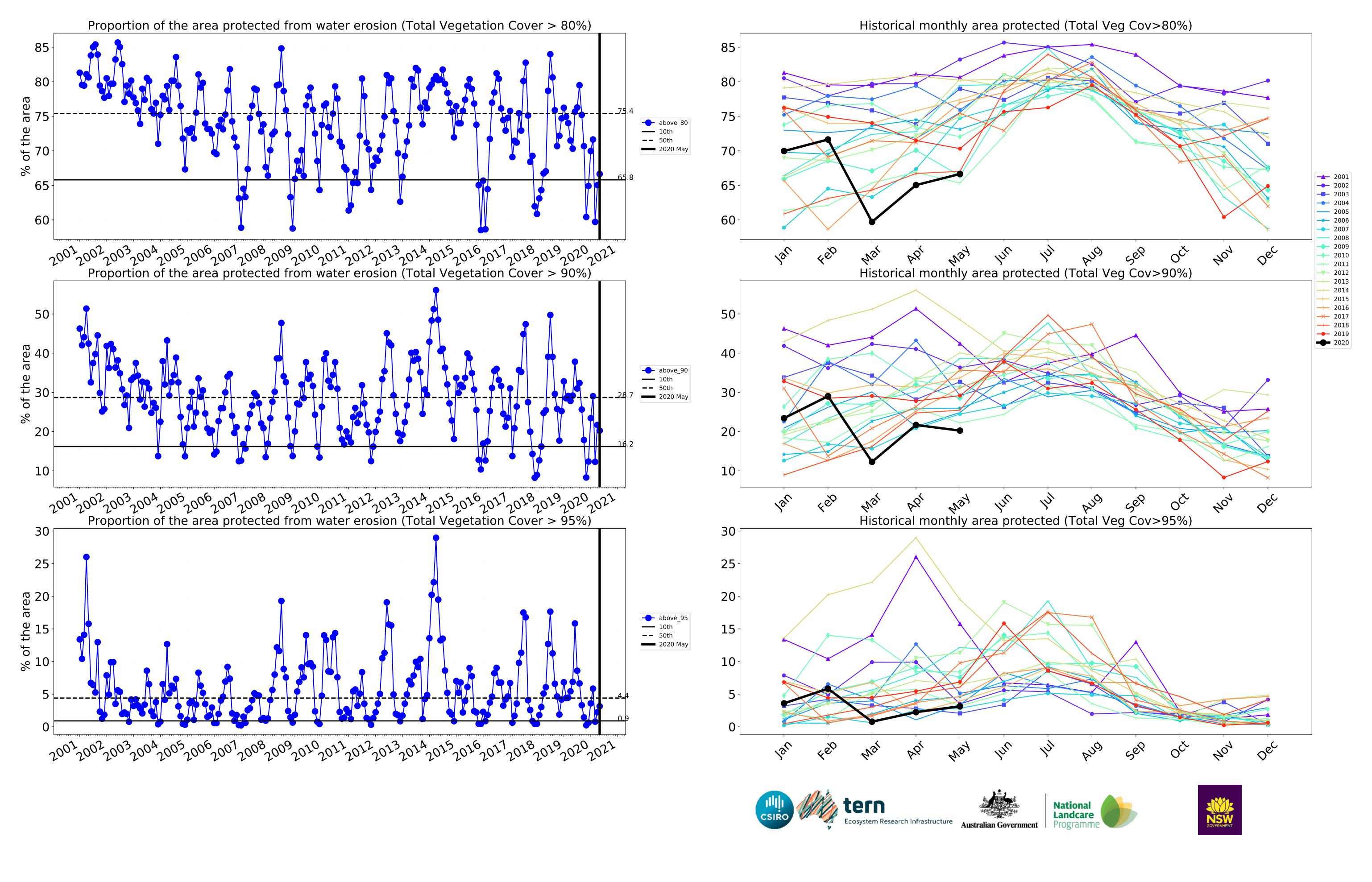












Conservation and natural environments

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from

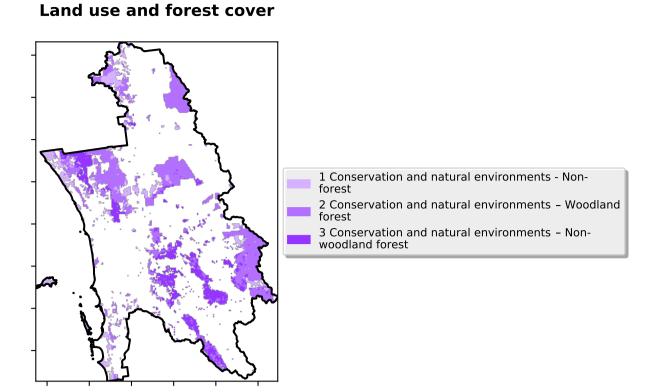
is, red pixels are about 20% lower than the mean of that

the mean. That

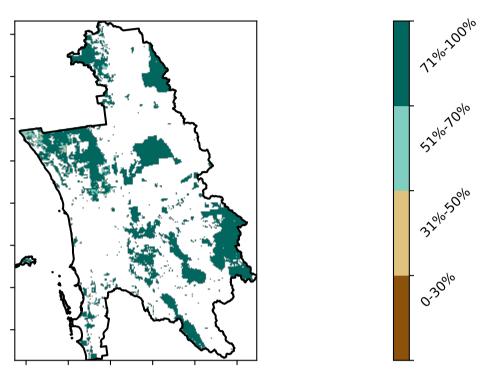
pixel. The mean

using baseline from 2001 to 2019.

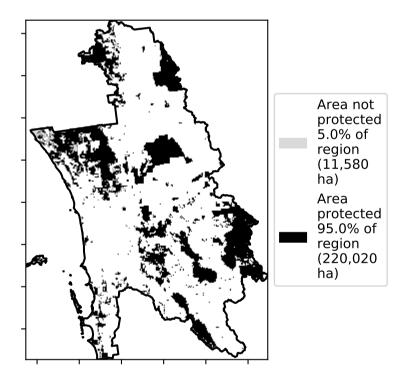
is only for the month of the map



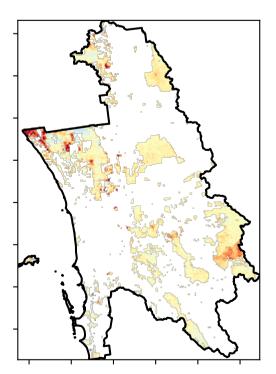
Total Vegetation Cover [%]

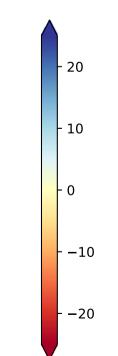


% Area protected from water erosion (>70%)



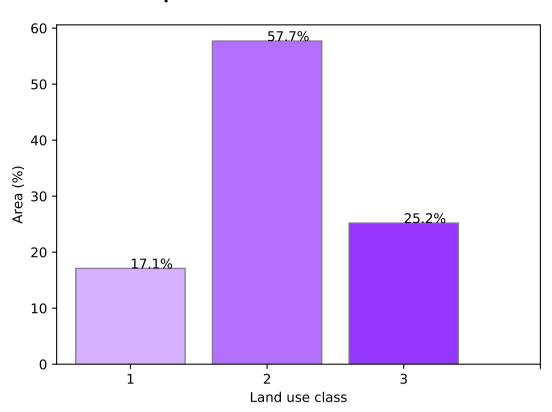
Total Vegetation Cover Anomaly [%]



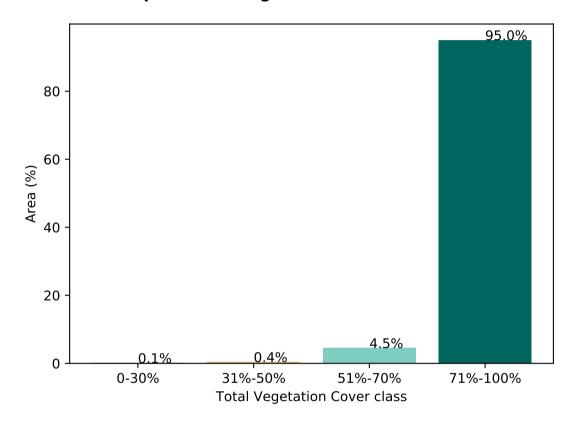


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

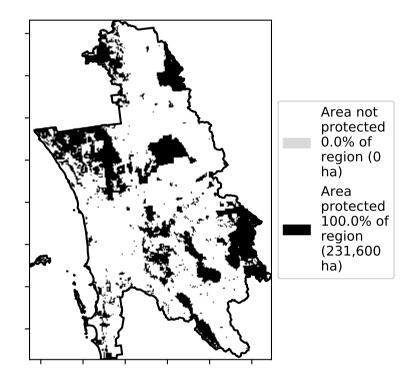
Proportion of each land class in area

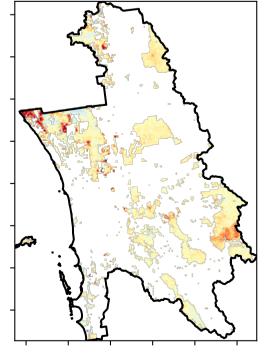


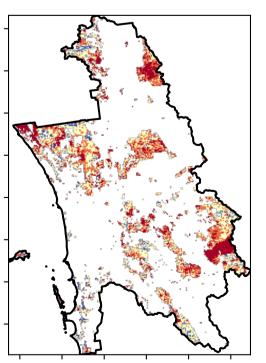
Proportion of vegetation cover class in area

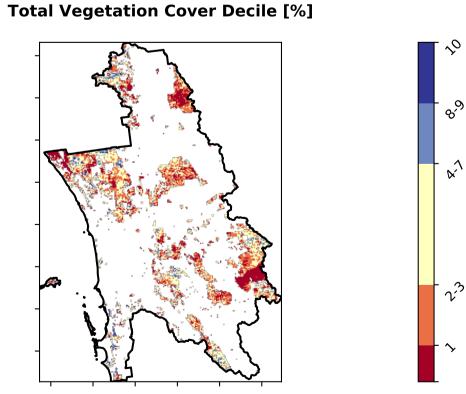


% Area protected from wind erosion (>50%)













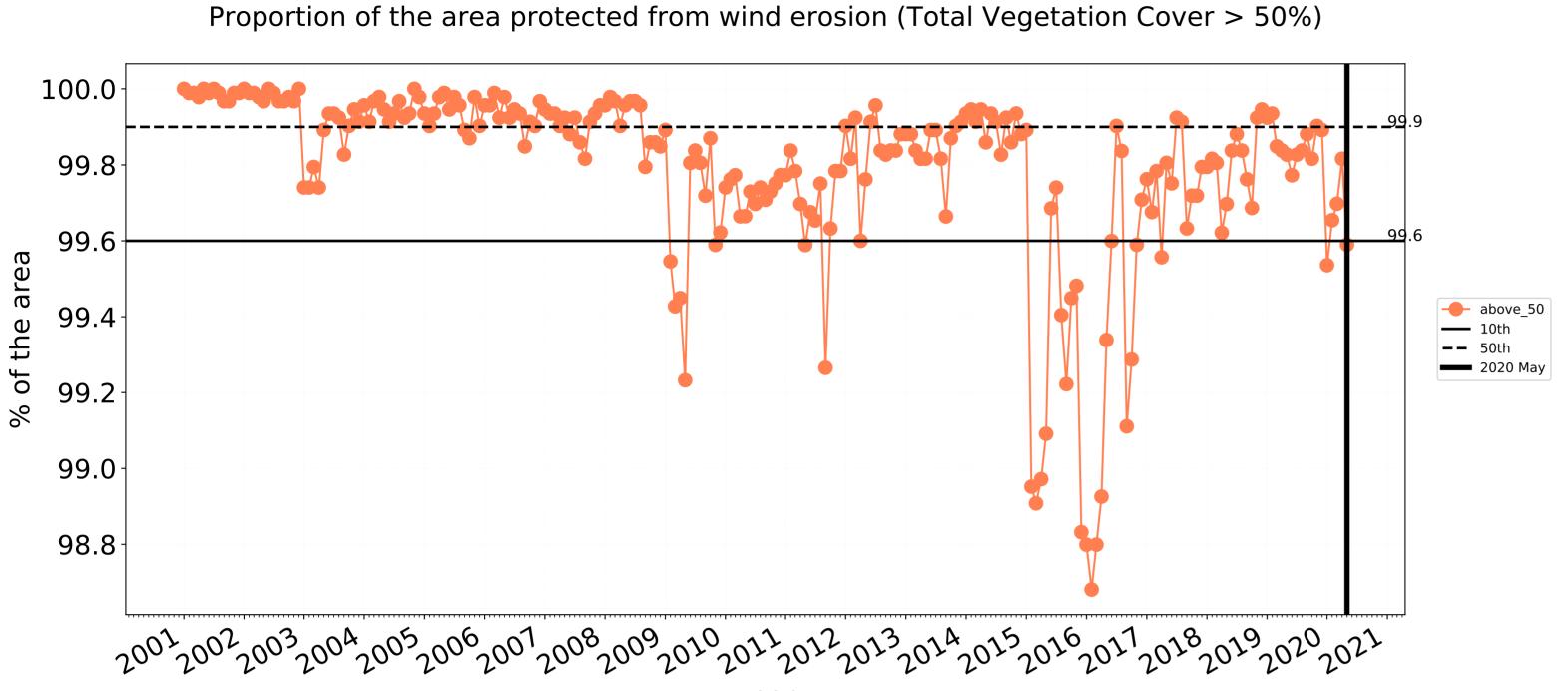




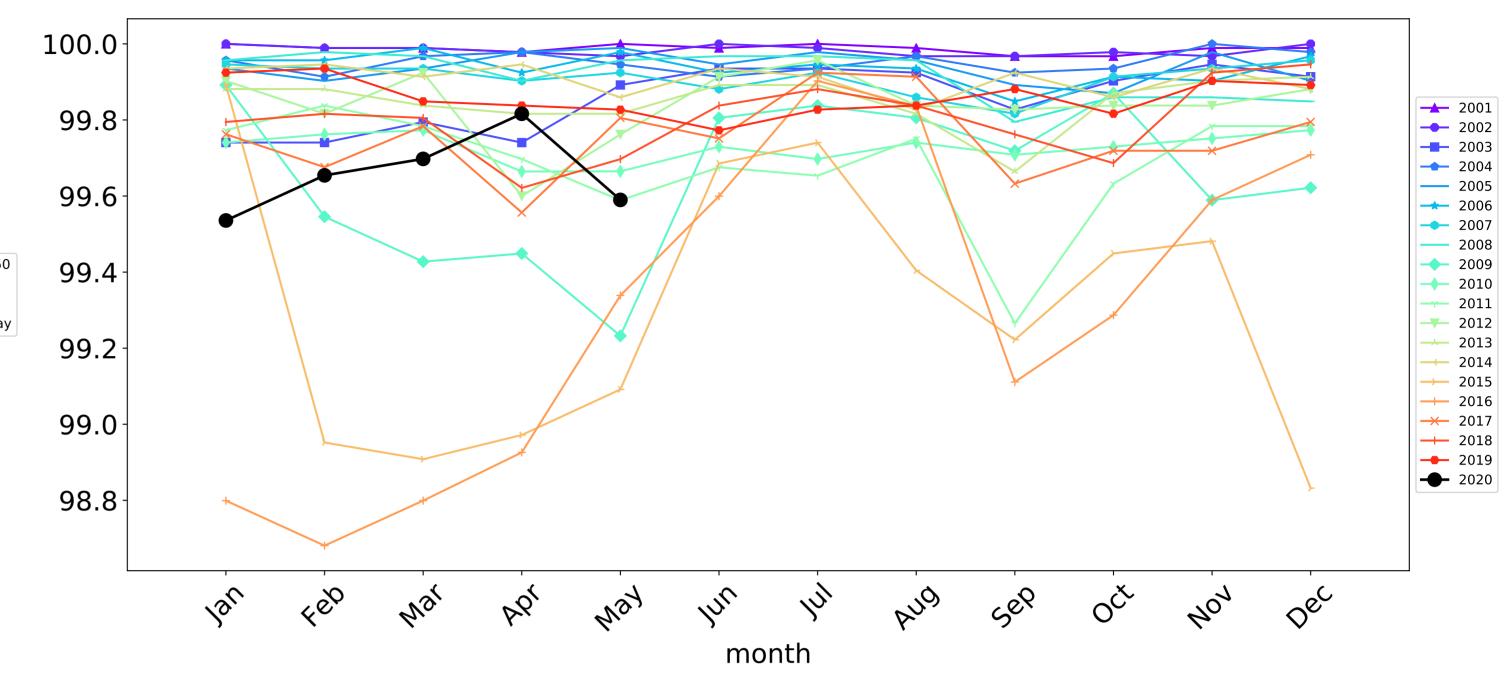


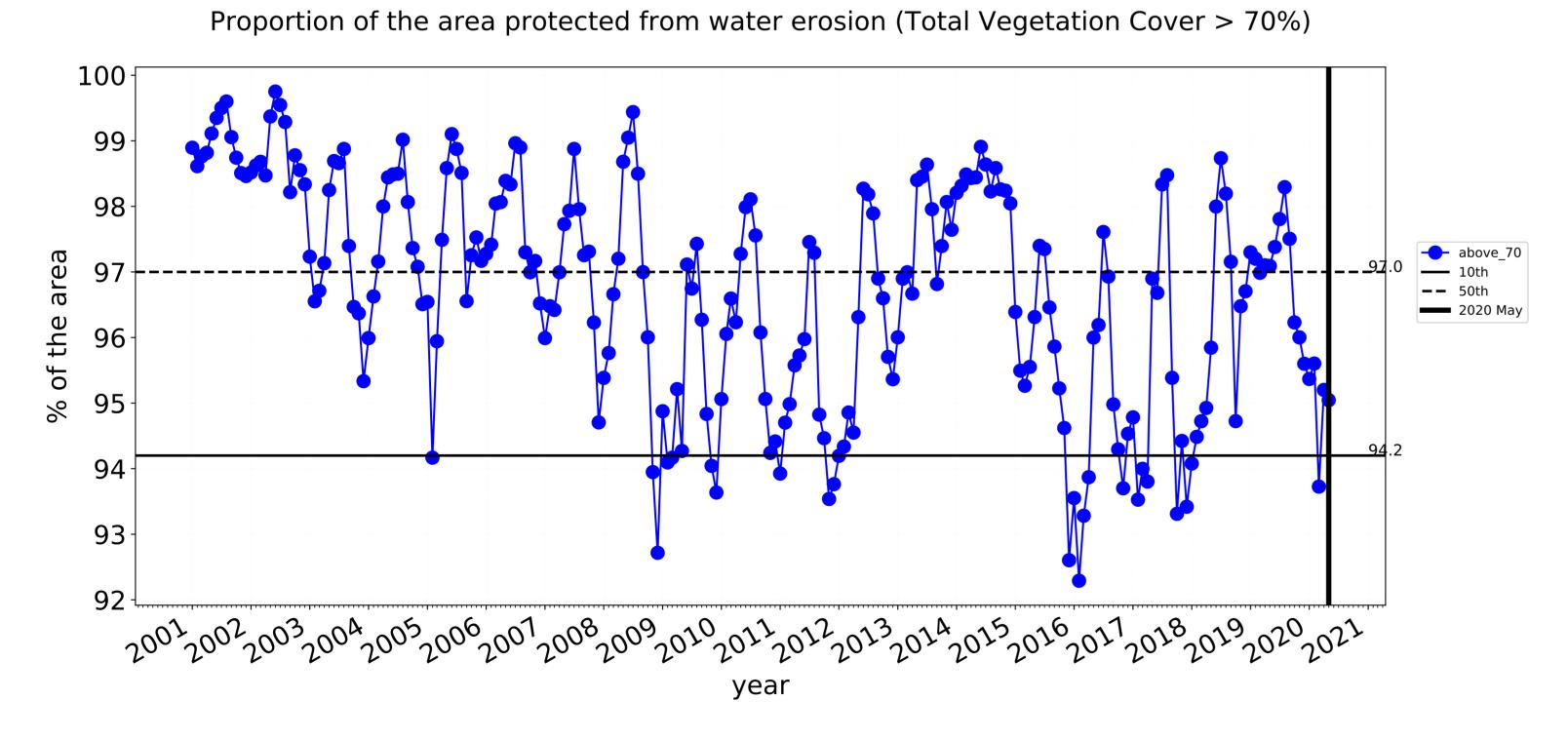


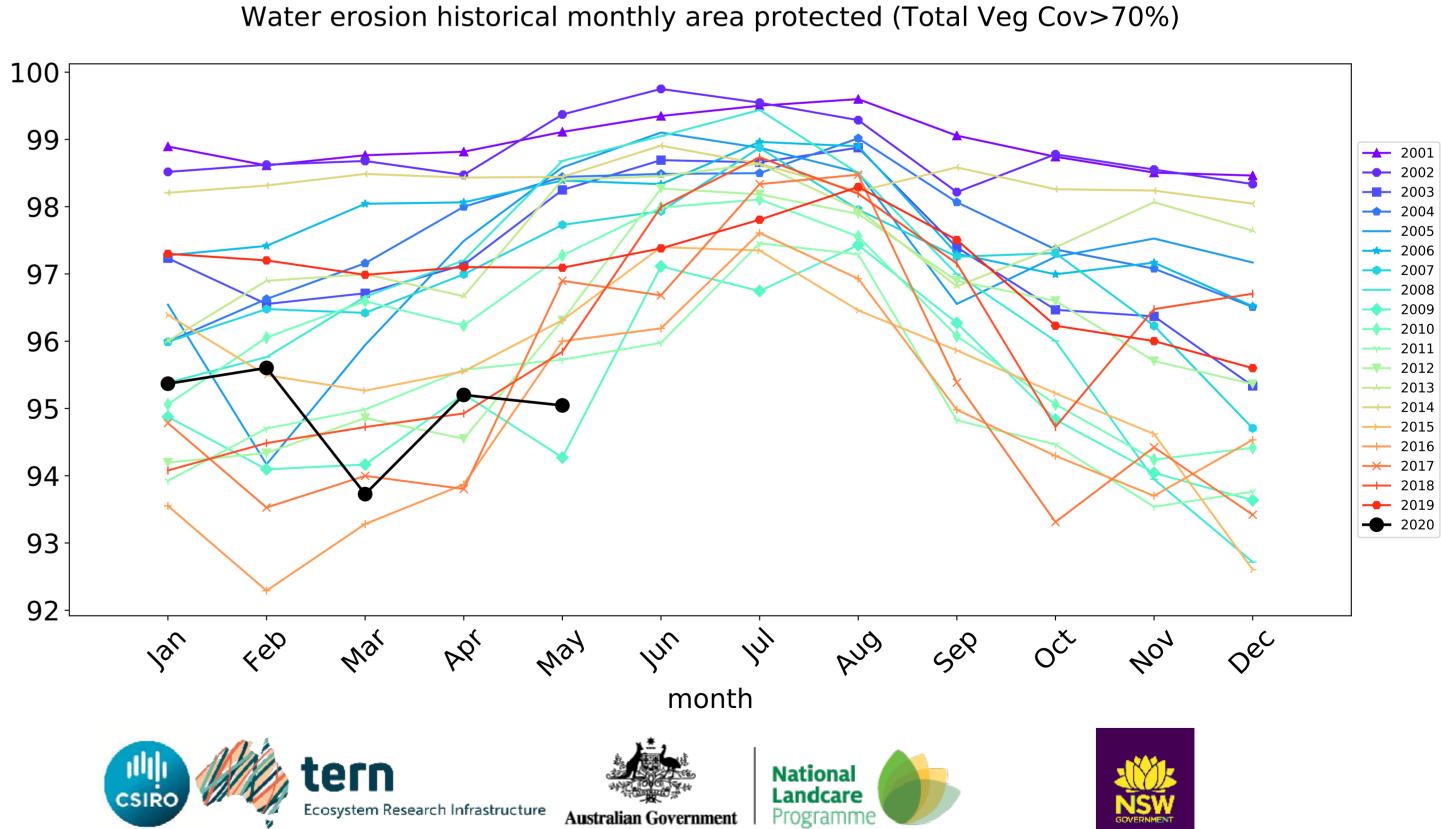
Conservation and natural environments timeseries

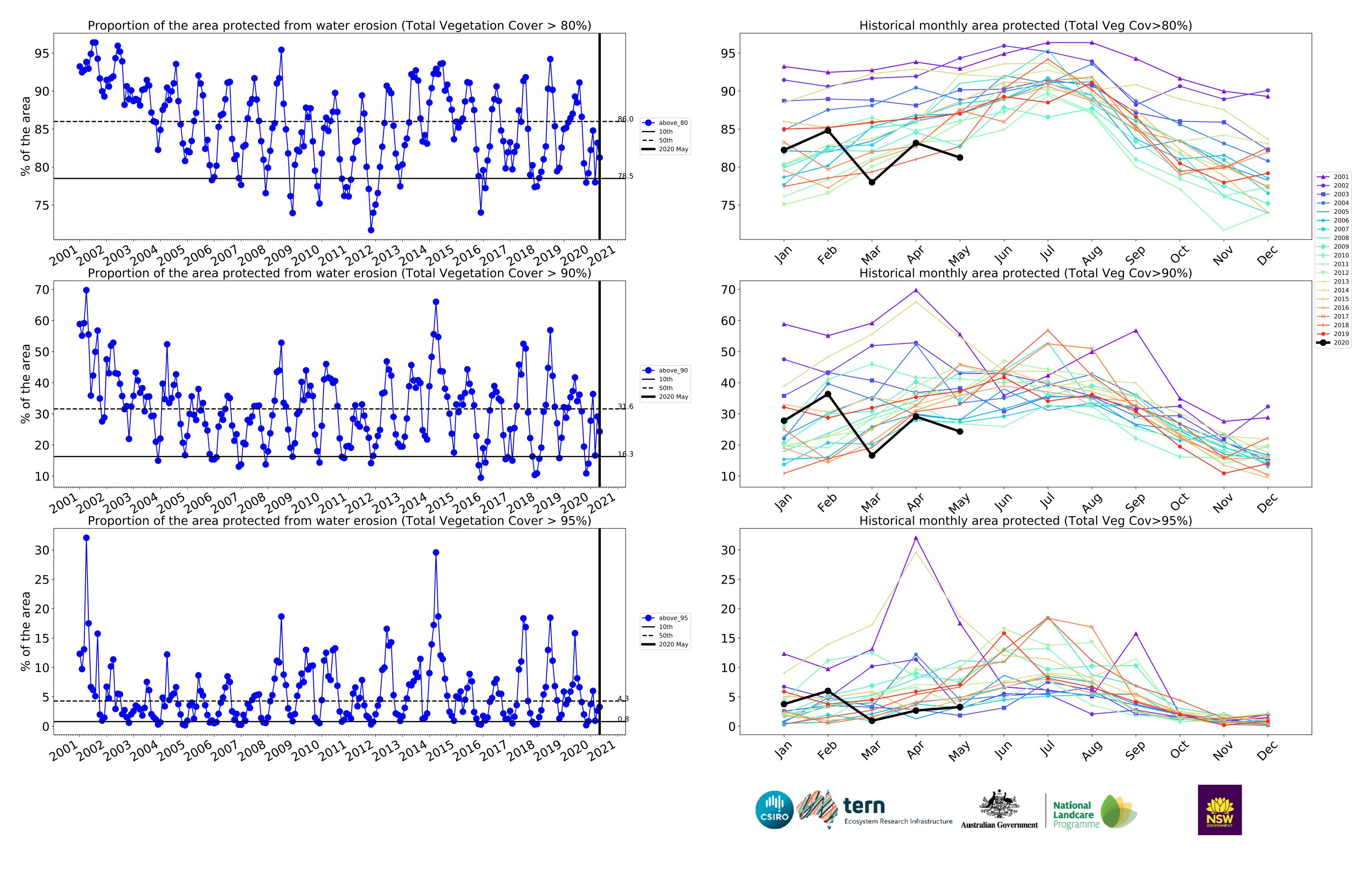


Wind erosion historical monthly area protected (Total Veg Cov >50%)









Conservation and natural environments non forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from

is, red pixels are about 20% lower than the mean of that pixel. The mean

the mean. That

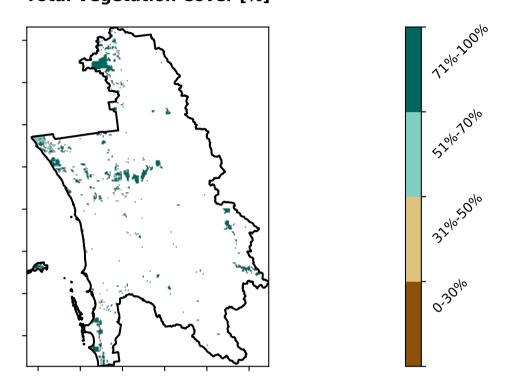
is only for the month of the map

using baseline from 2001 to 2019.

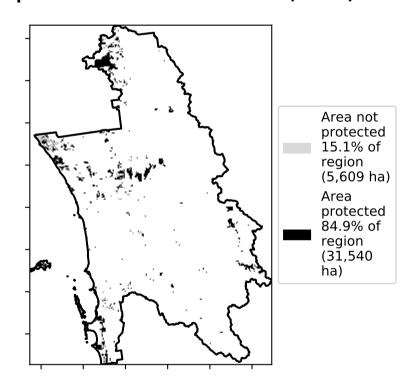
1 Conservation and natural environments - Nonforest

Total Vegetation Cover [%]

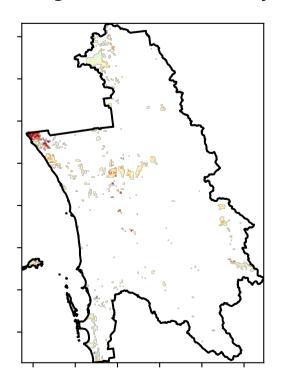
Land use and forest cover

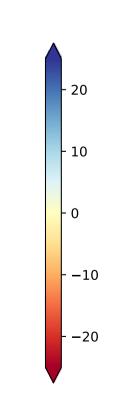


% Area protected from water erosion (>70%)



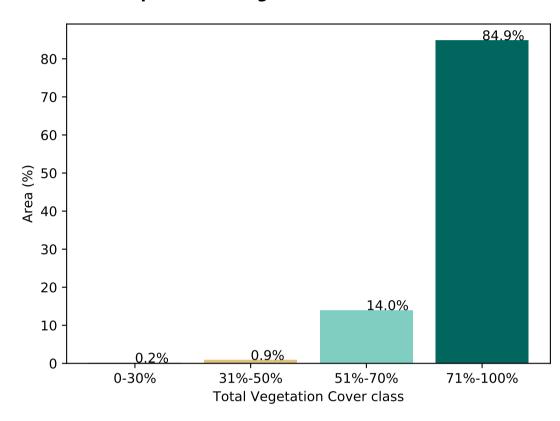
Total Vegetation Cover Anomaly [%]



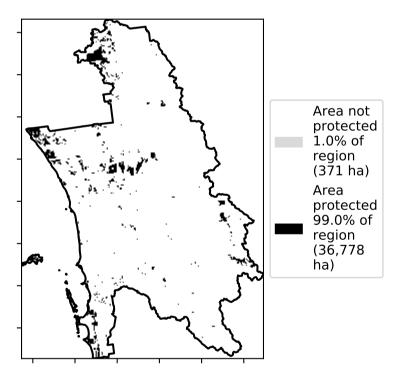


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









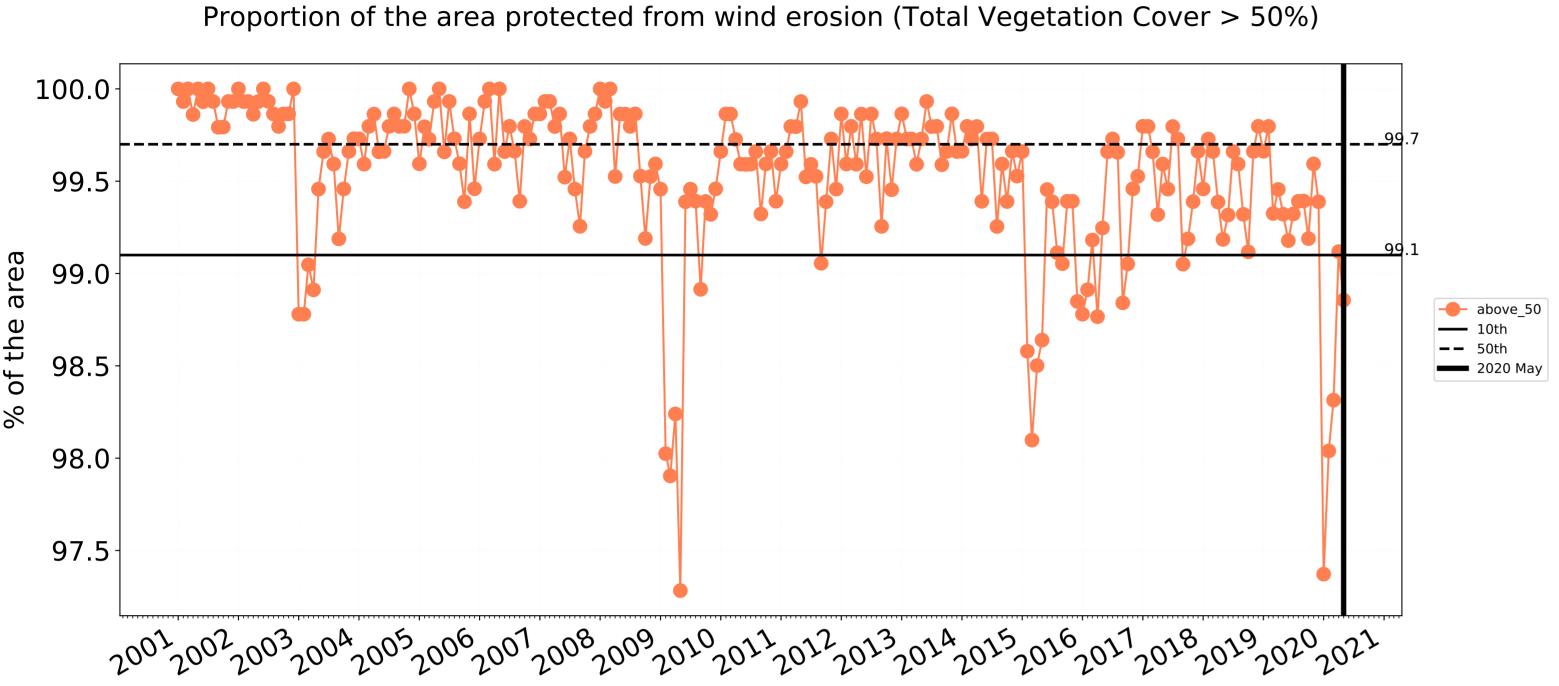


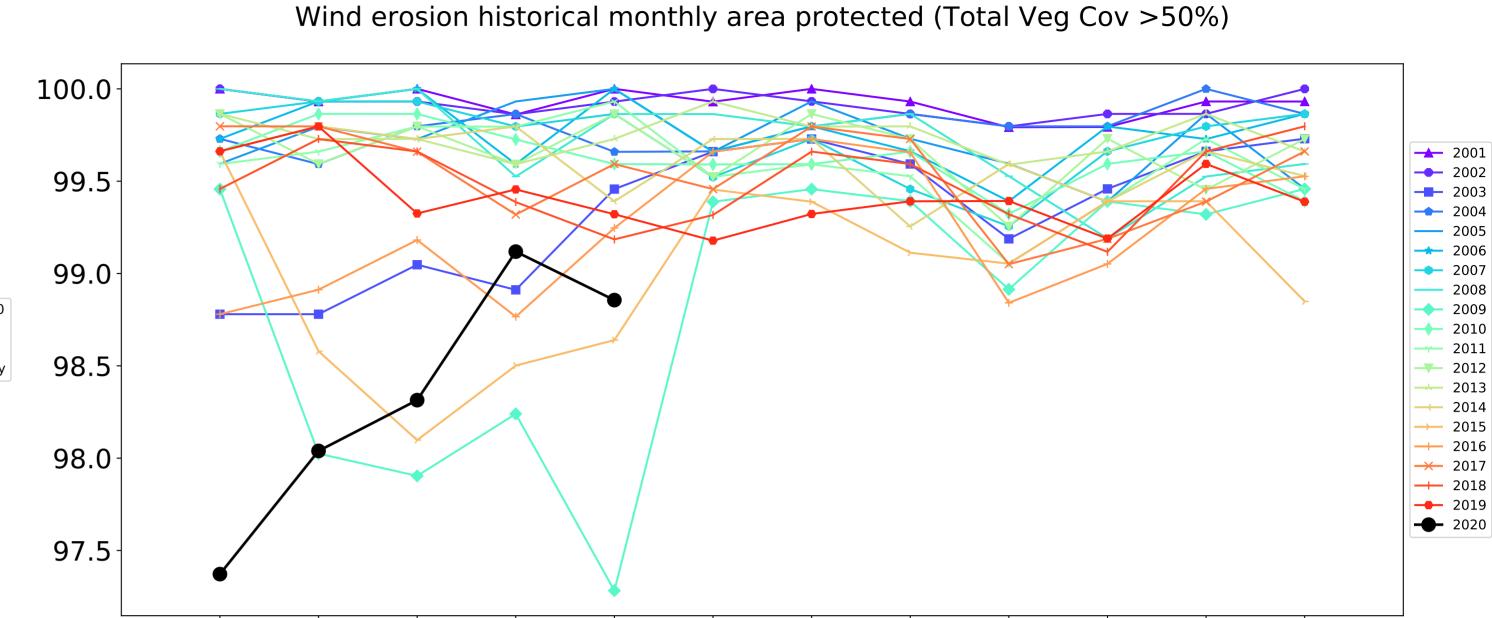




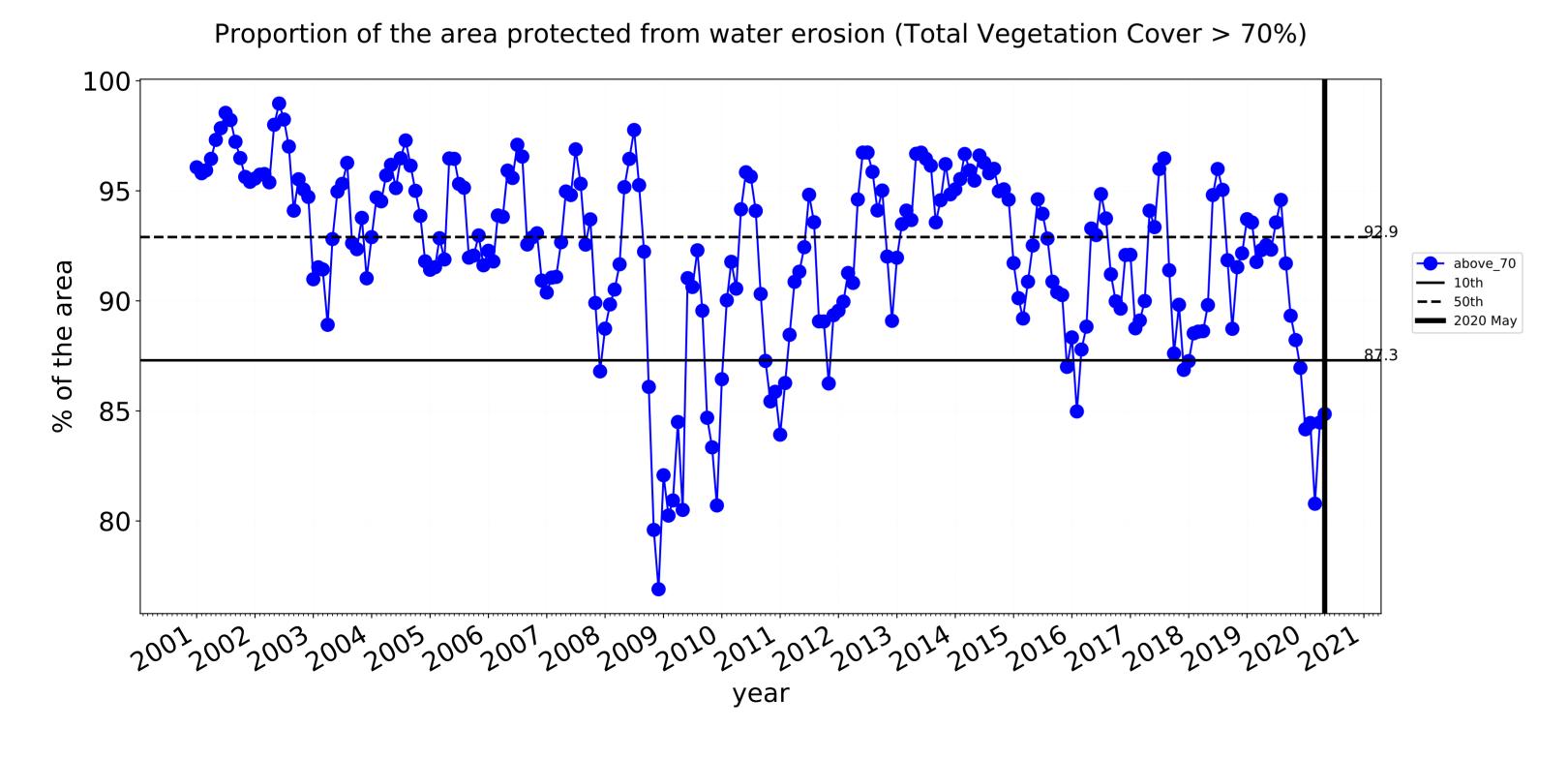


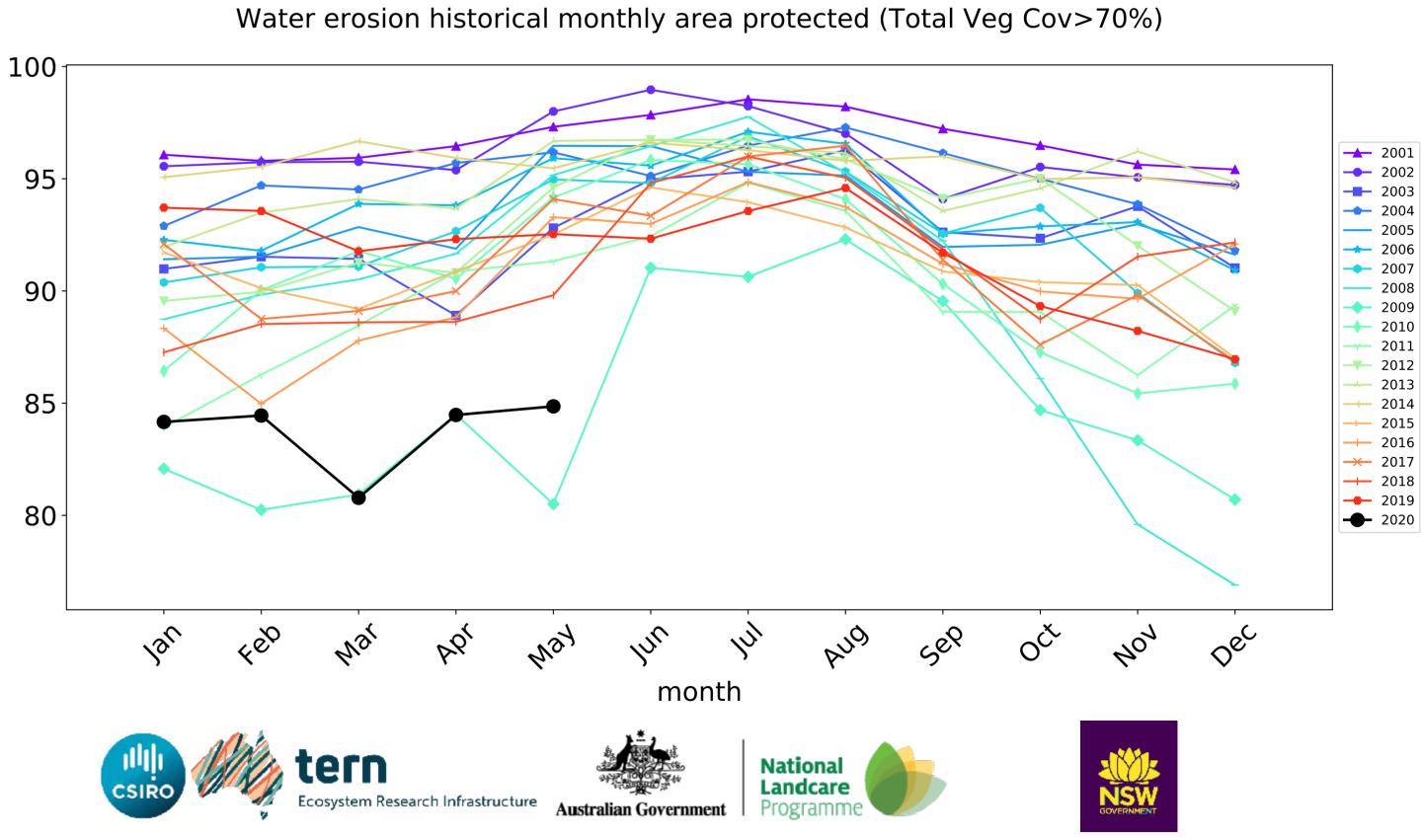
Conservation and natural environments non forest timeseries

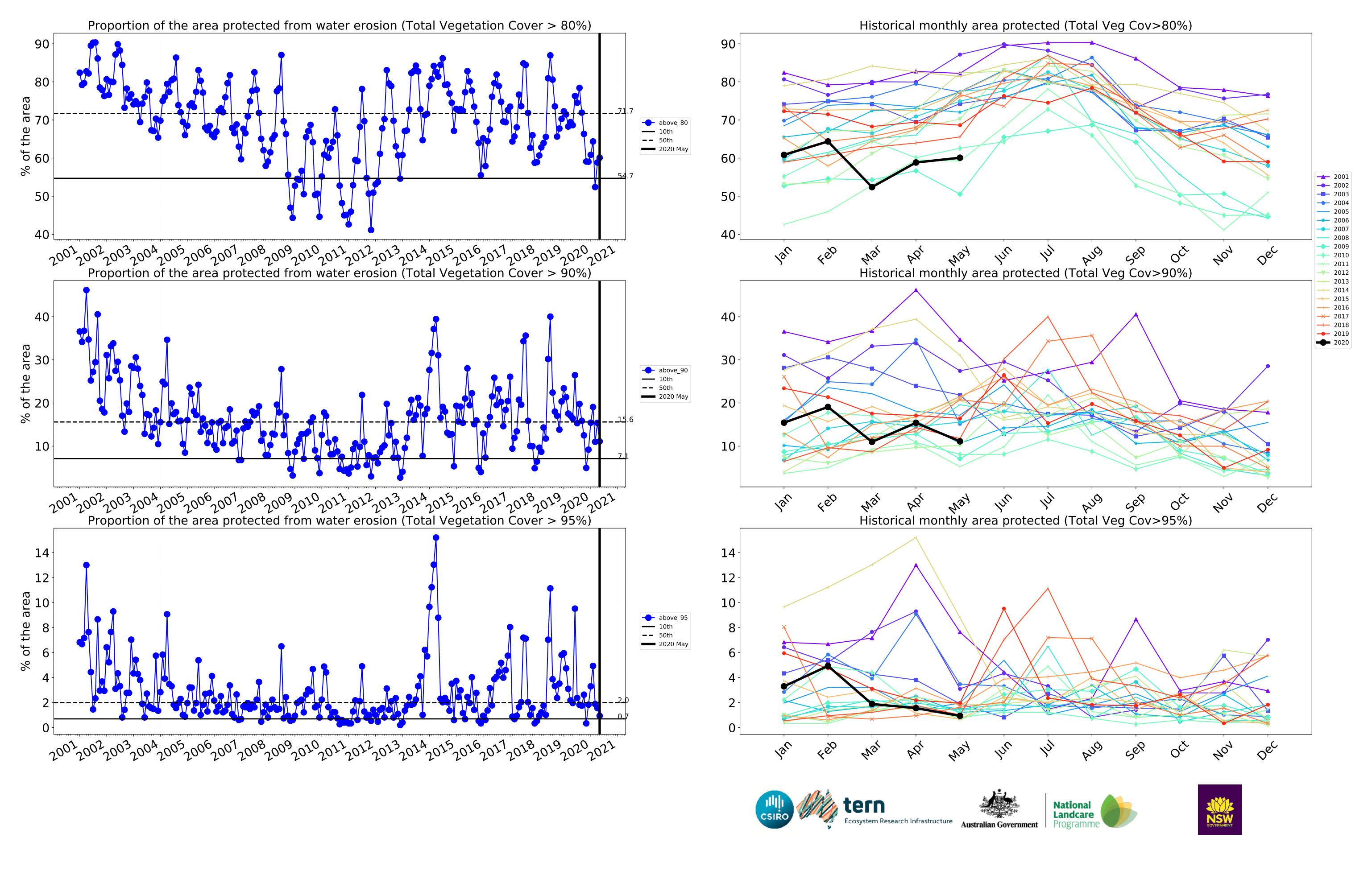




month







Conservation and natural environments Woodland forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

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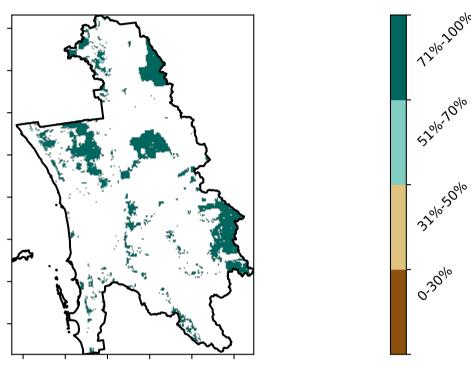
is only for the month of the map

using baseline from 2001 to 2019.

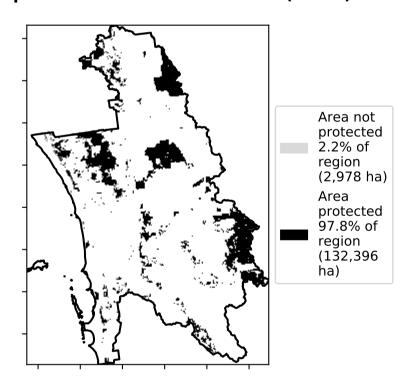
1 Conservation and natural environments – Woodland

Total Vegetation Cover [%]

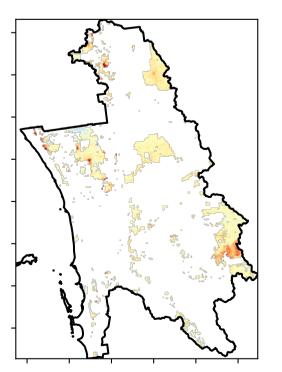
Land use and forest cover

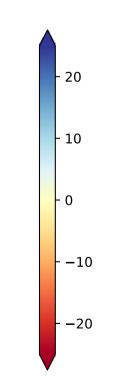


% Area protected from water erosion (>70%)



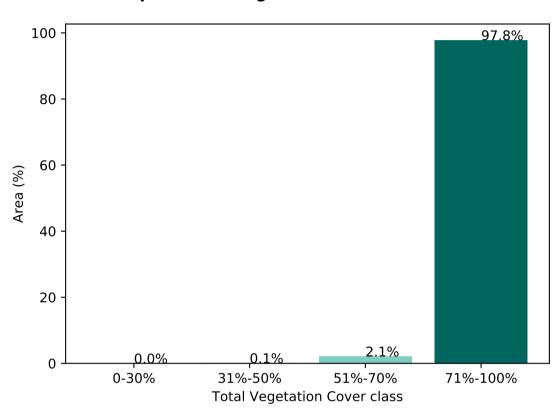
Total Vegetation Cover Anomaly [%]



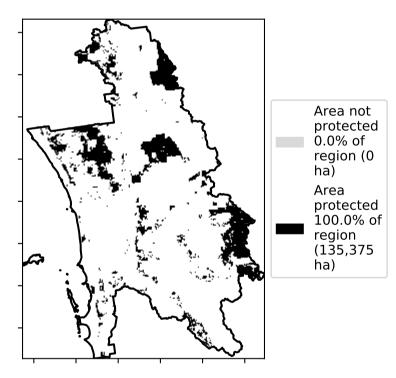


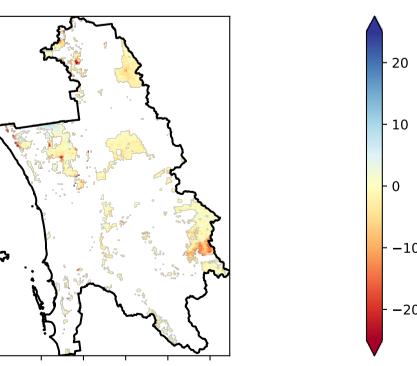
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline

Proportion of vegetation cover class in area

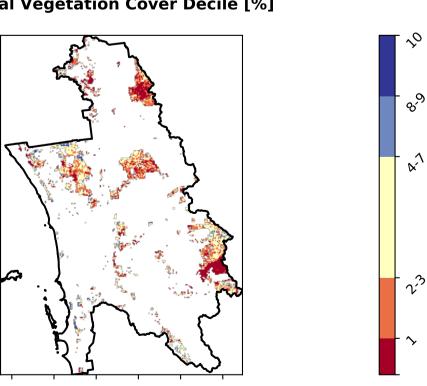


% Area protected from wind erosion (>50%)





from 2001 to 2019.







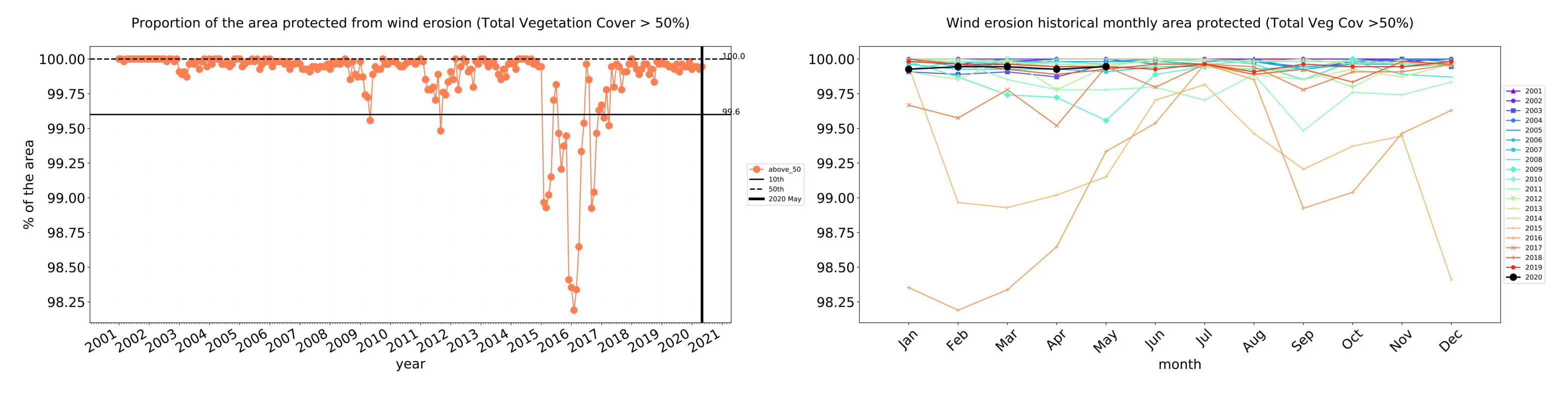


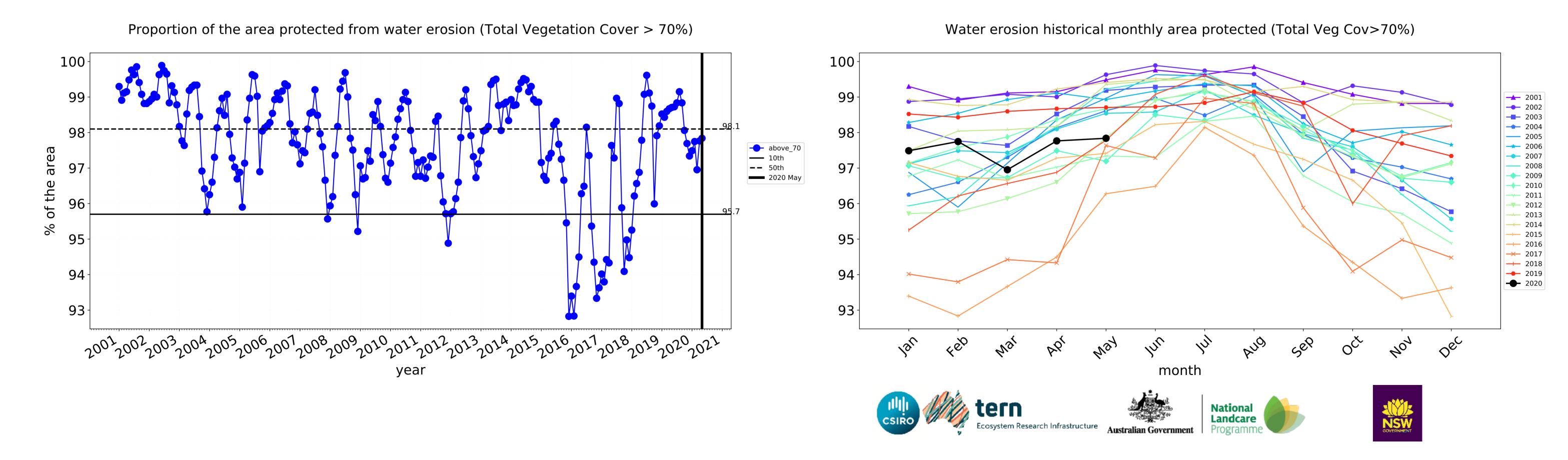


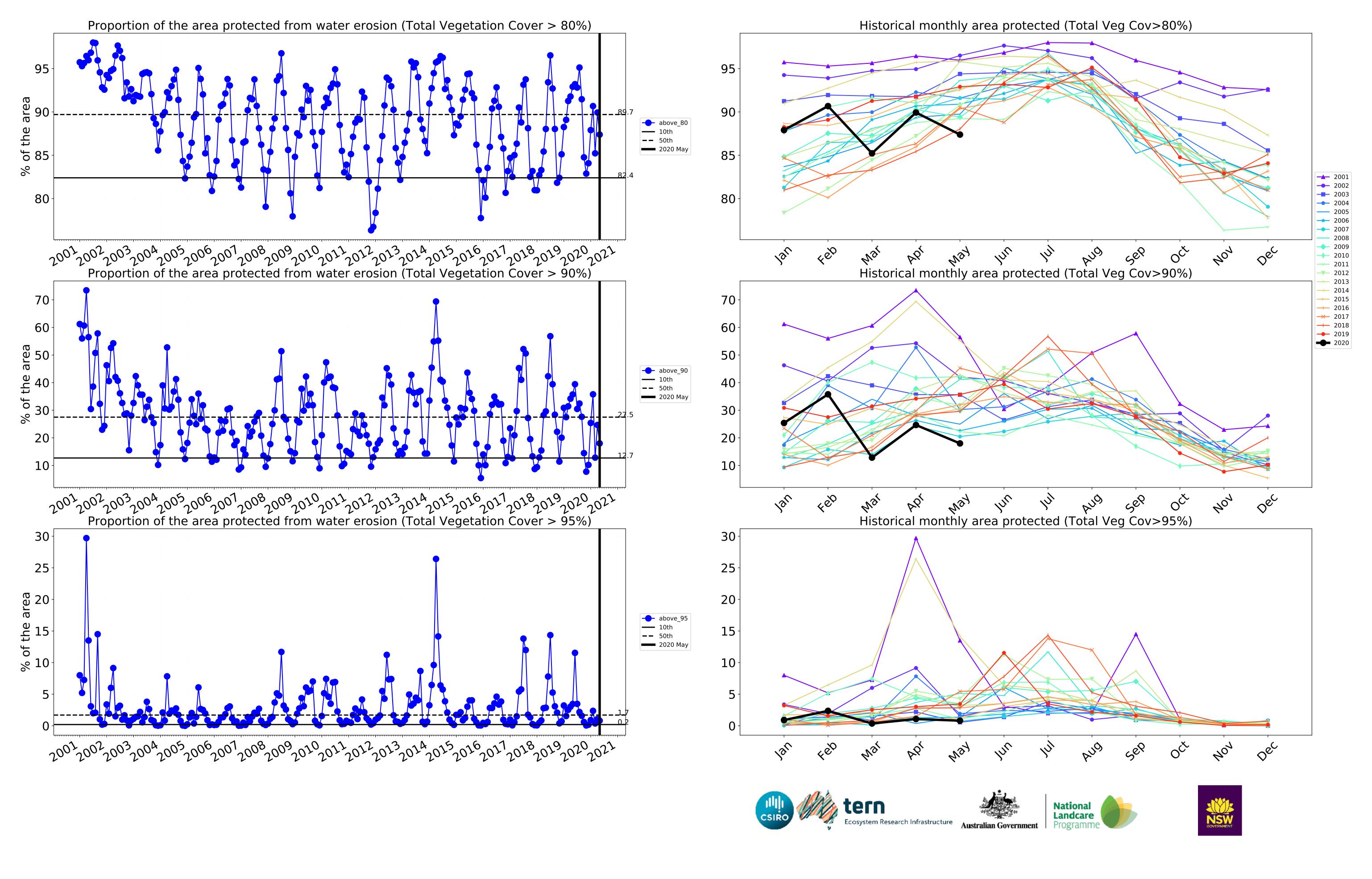




Conservation and natural environments Woodland forest timeseries

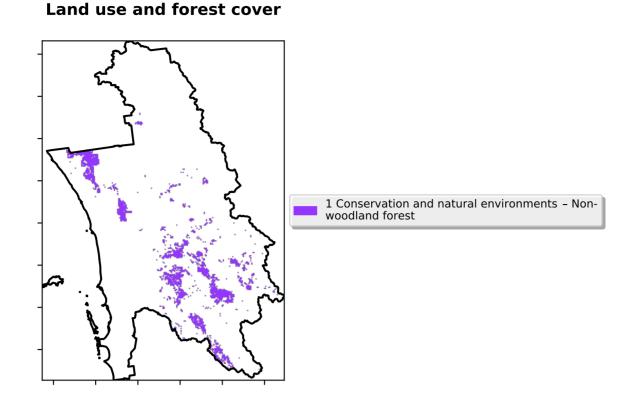




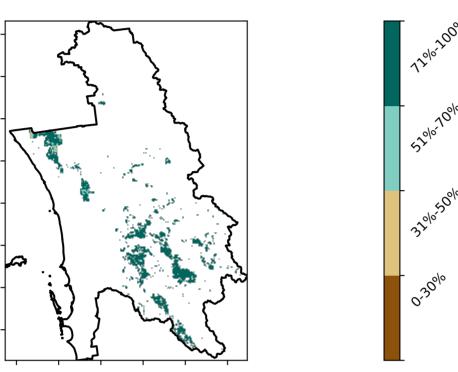


Conservation and natural environments Forest (non woodland)

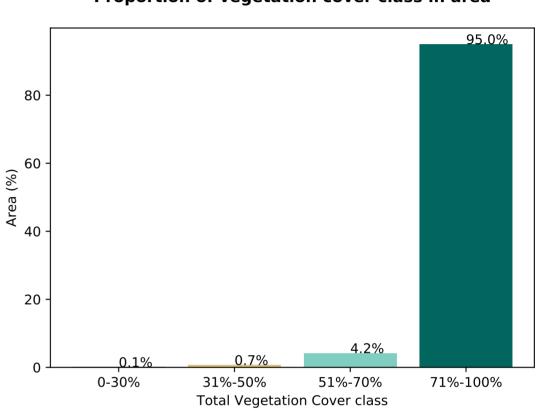
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



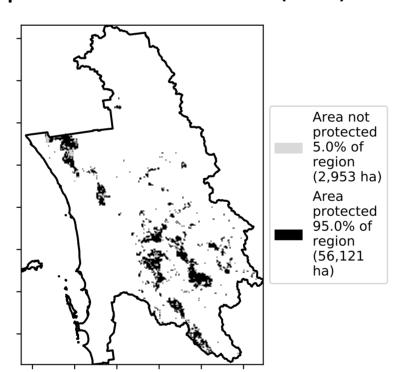
Total Vegetation Cover [%]



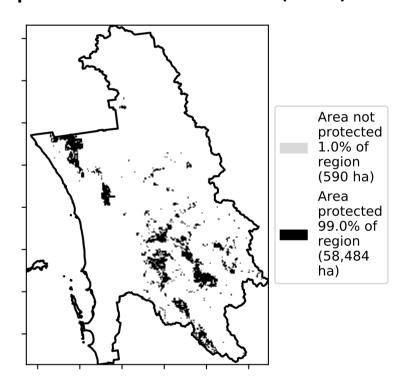
Proportion of vegetation cover class in area



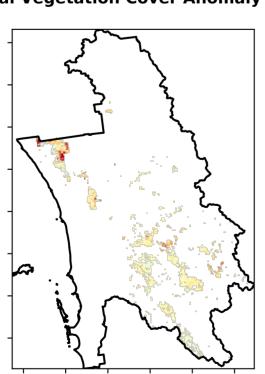
% Area protected from water erosion (>70%)

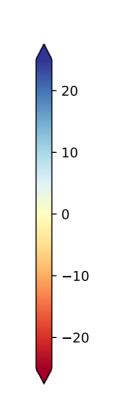


% Area protected from wind erosion (>50%)



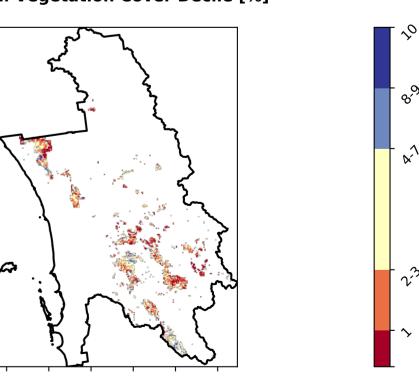
Total Vegetation Cover Anomaly [%]





Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

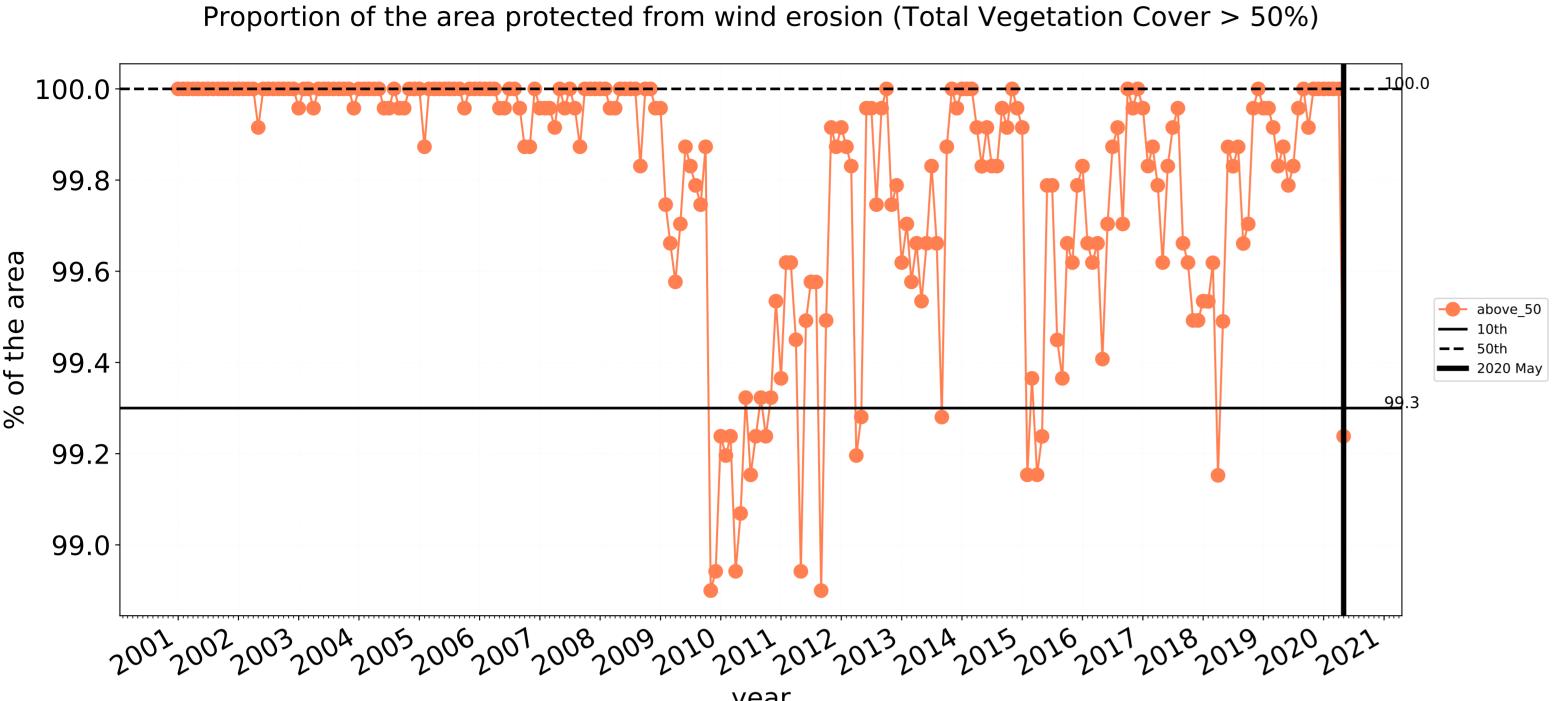


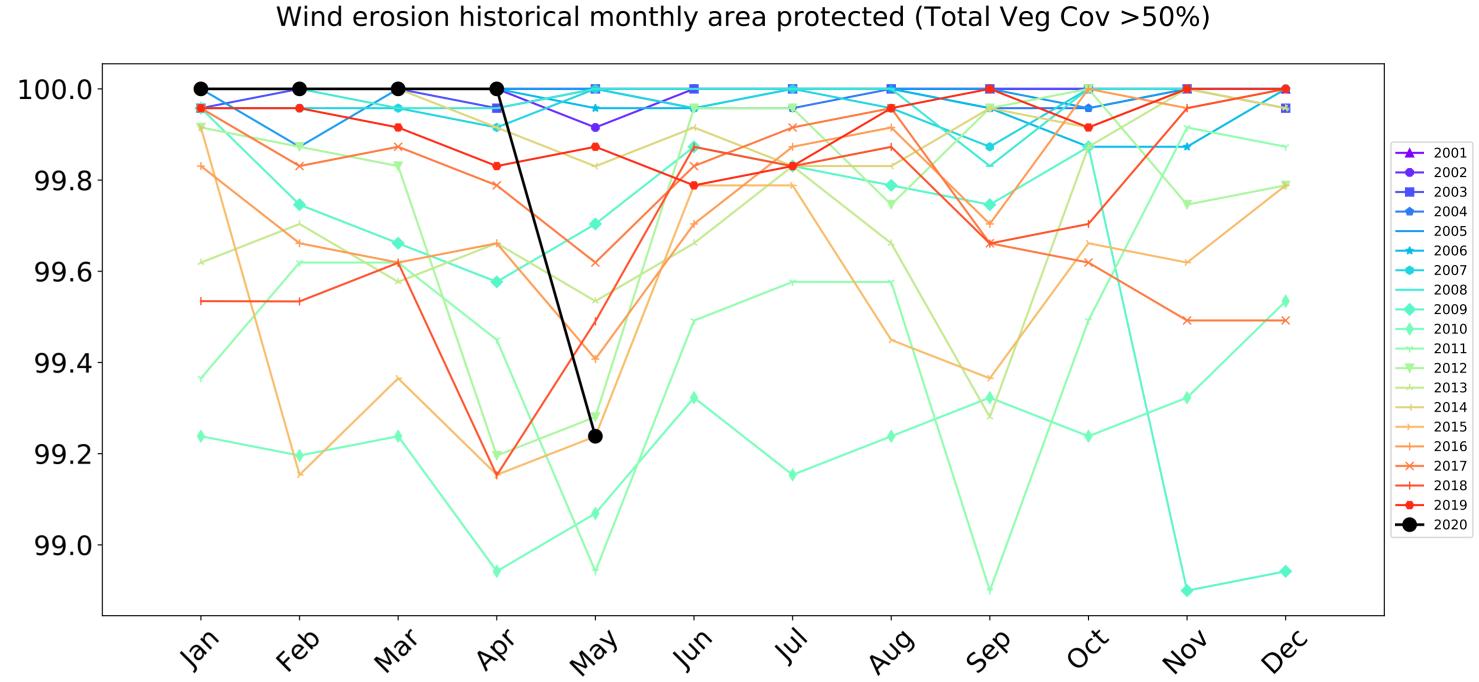




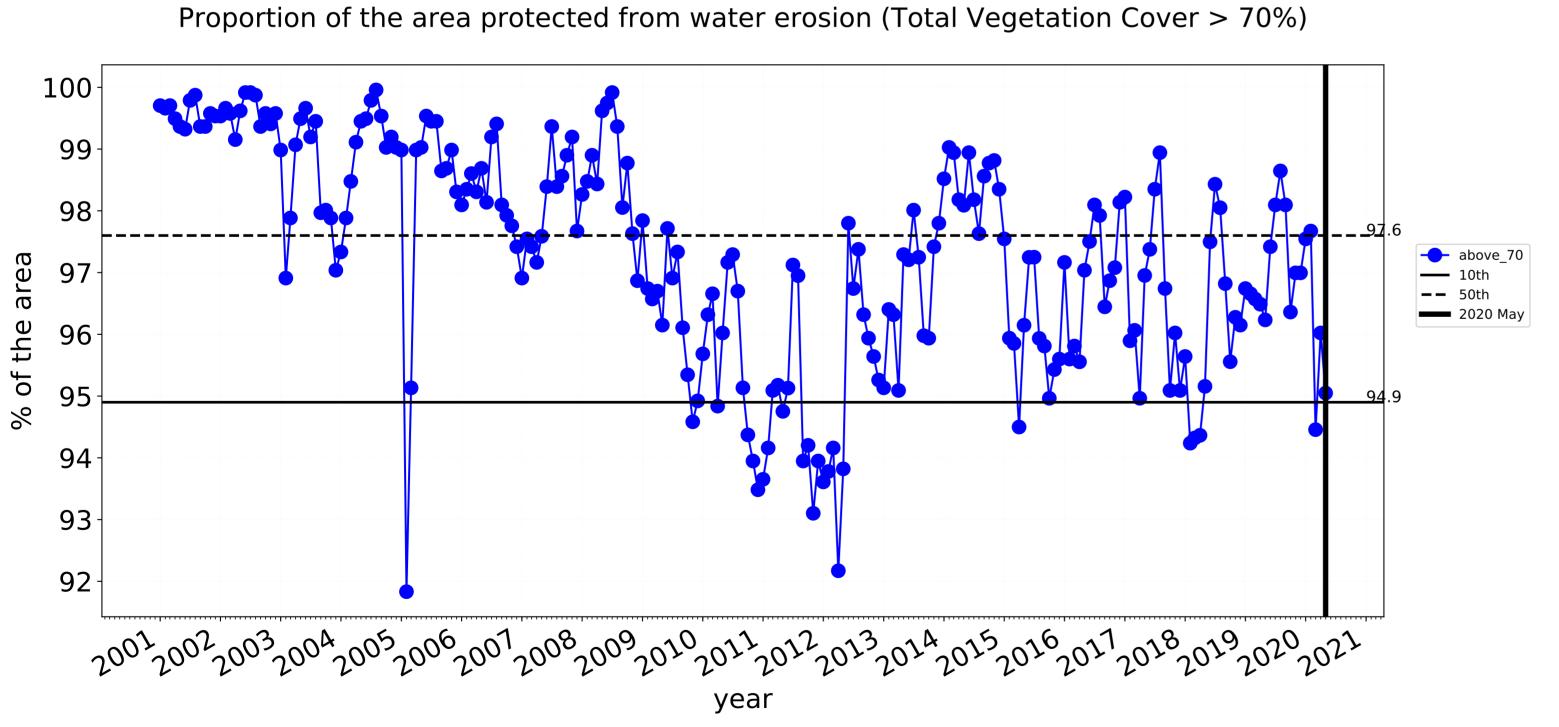


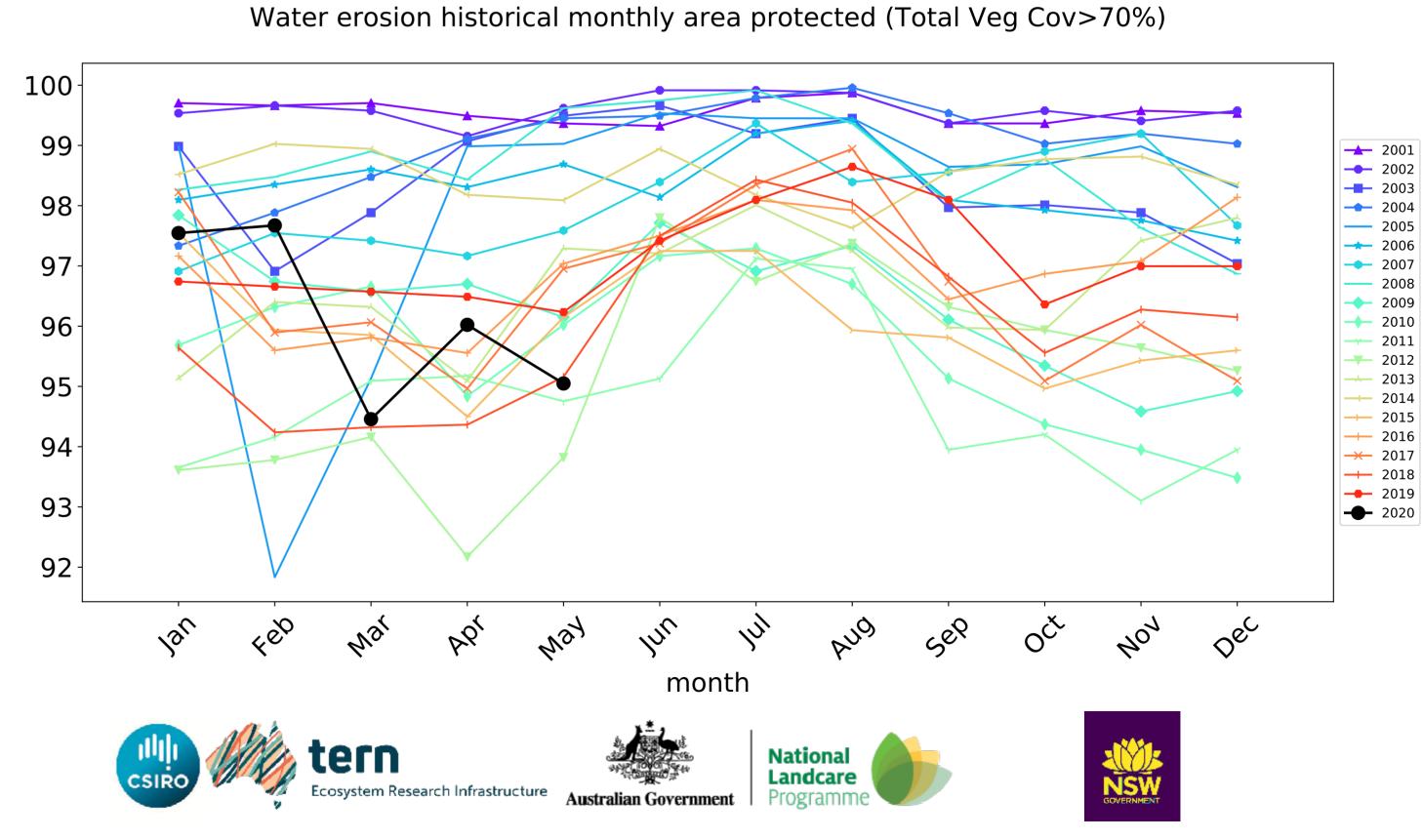
Conservation and natural environments Forest (non woodland) timeseries

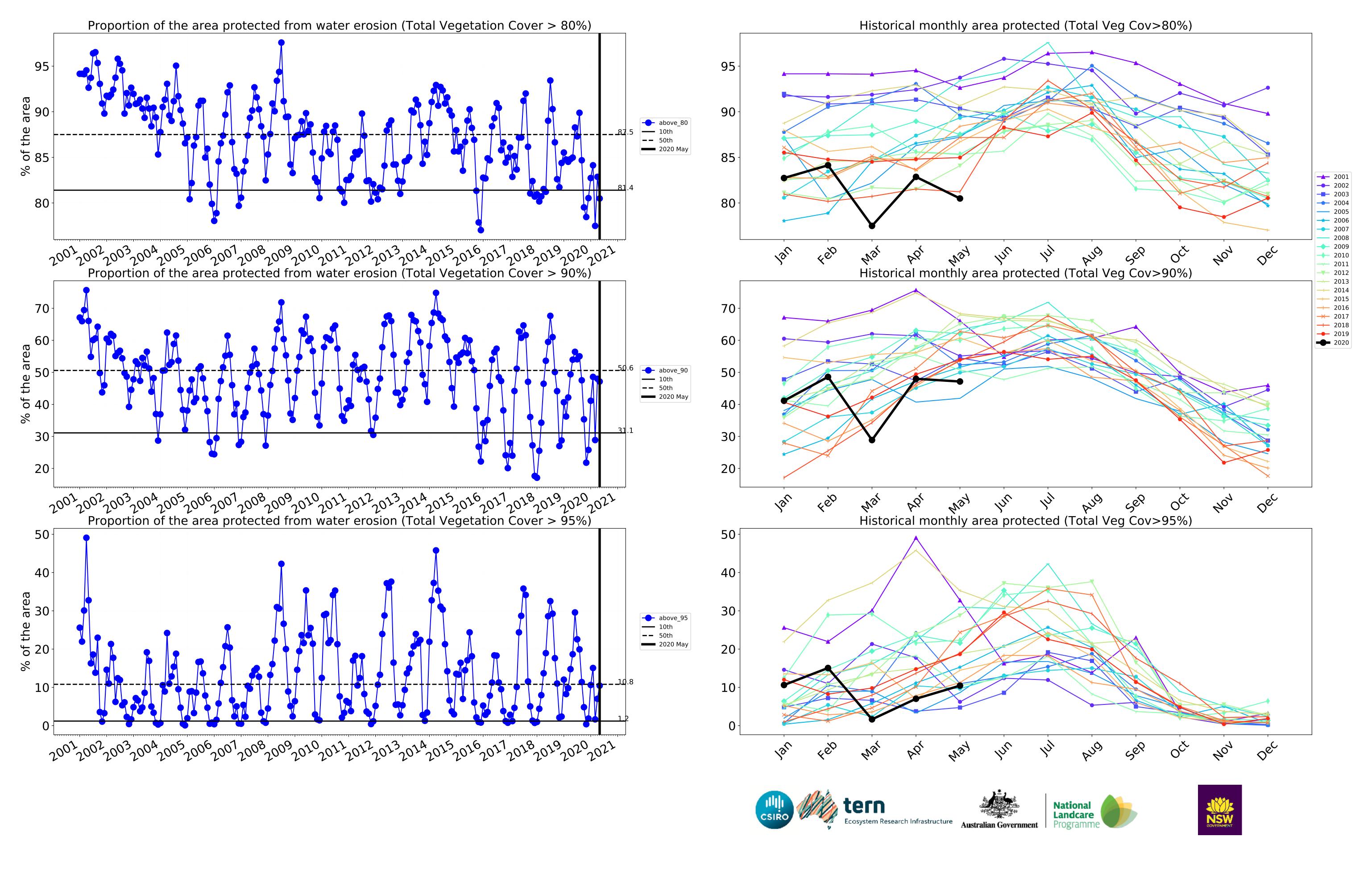




month

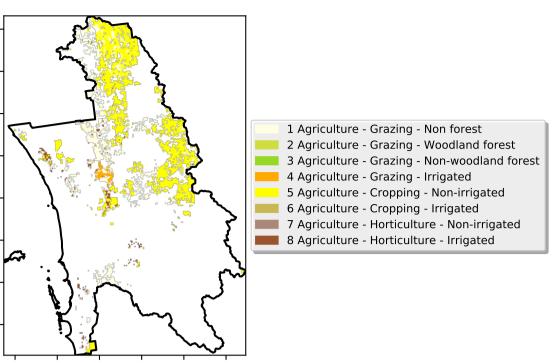






Agriculture

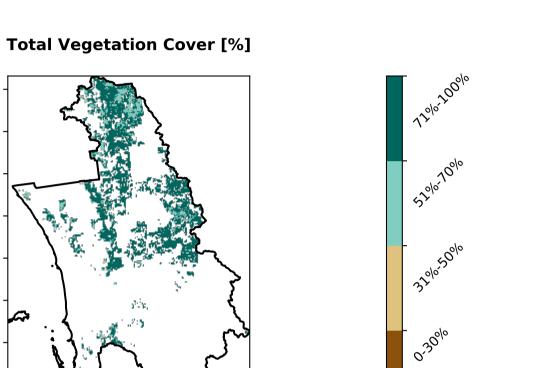
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

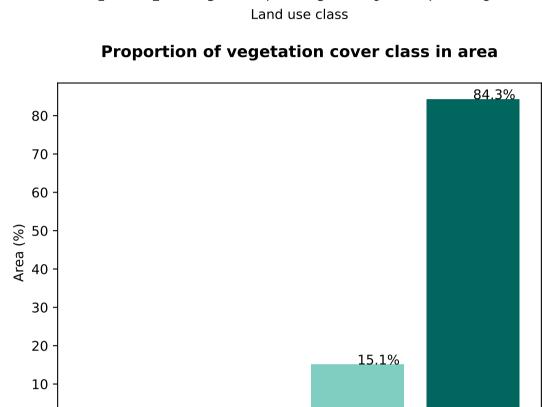


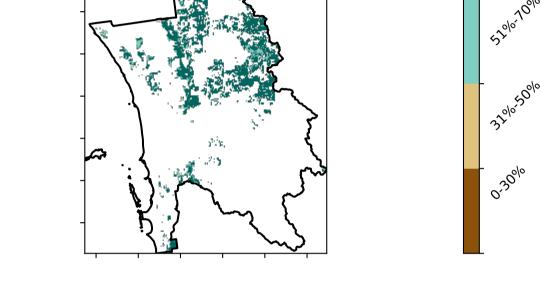
Land use and forest cover

62.2% 60 50 40 Area (%) 31.6% 20 10

Proportion of each land class in area





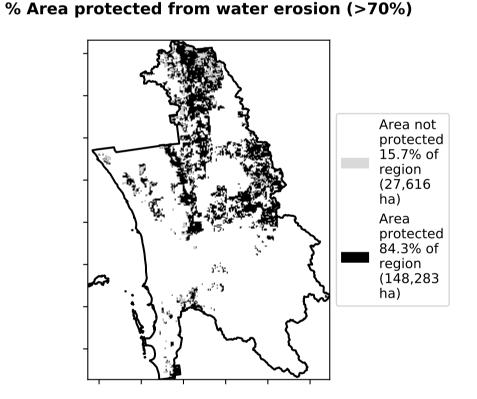


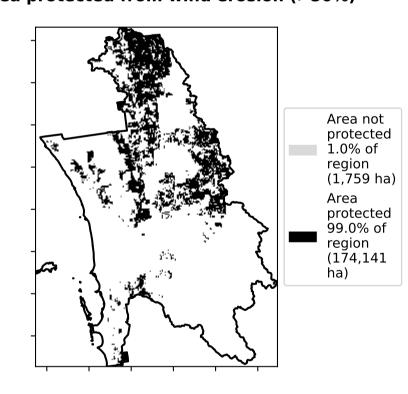
% Area protected from wind erosion (>50%)

Total Vegetation Cover class

31%-50%

0.0% 0-30%



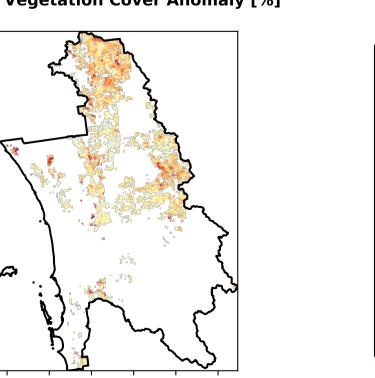


51%-70%

71%-100%

Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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Total Vegetation Cover Decile [%]









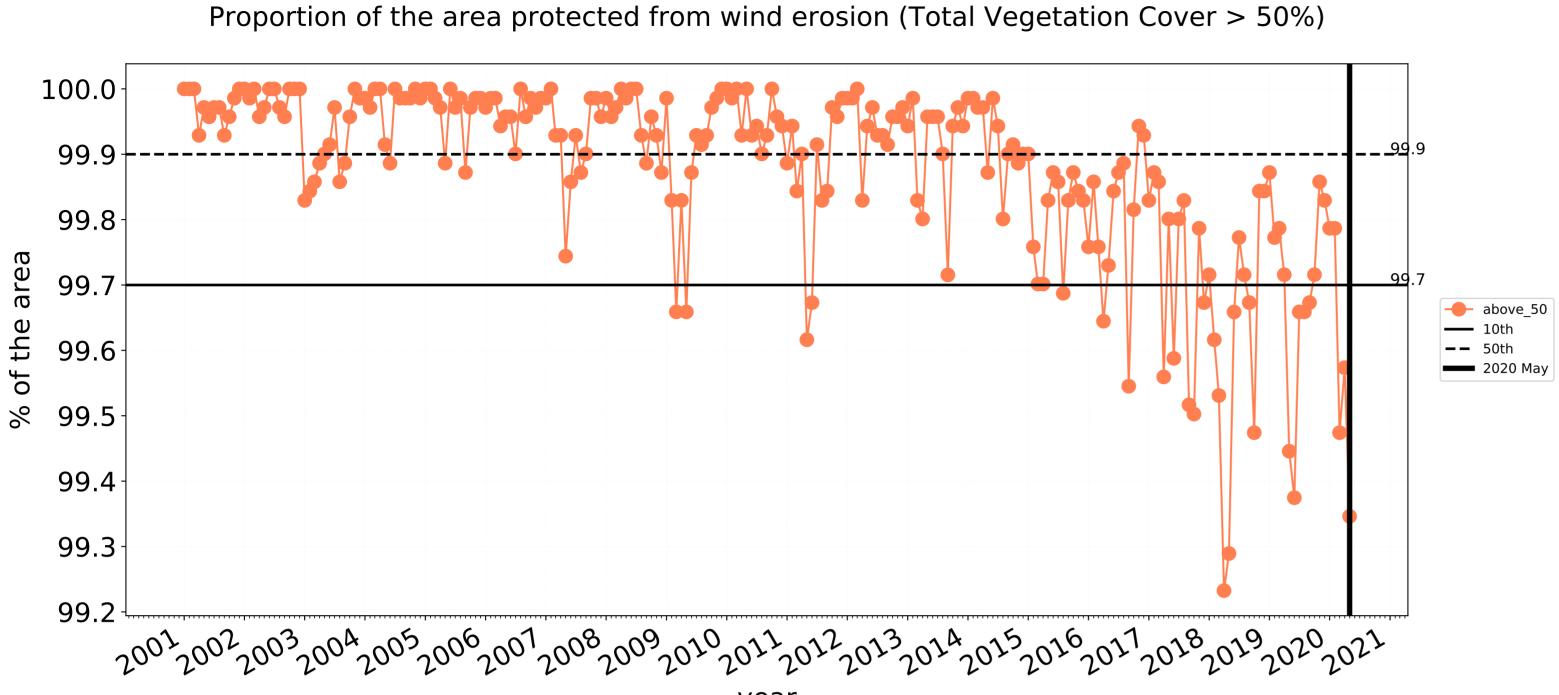
- 20

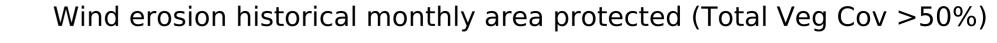
- 10

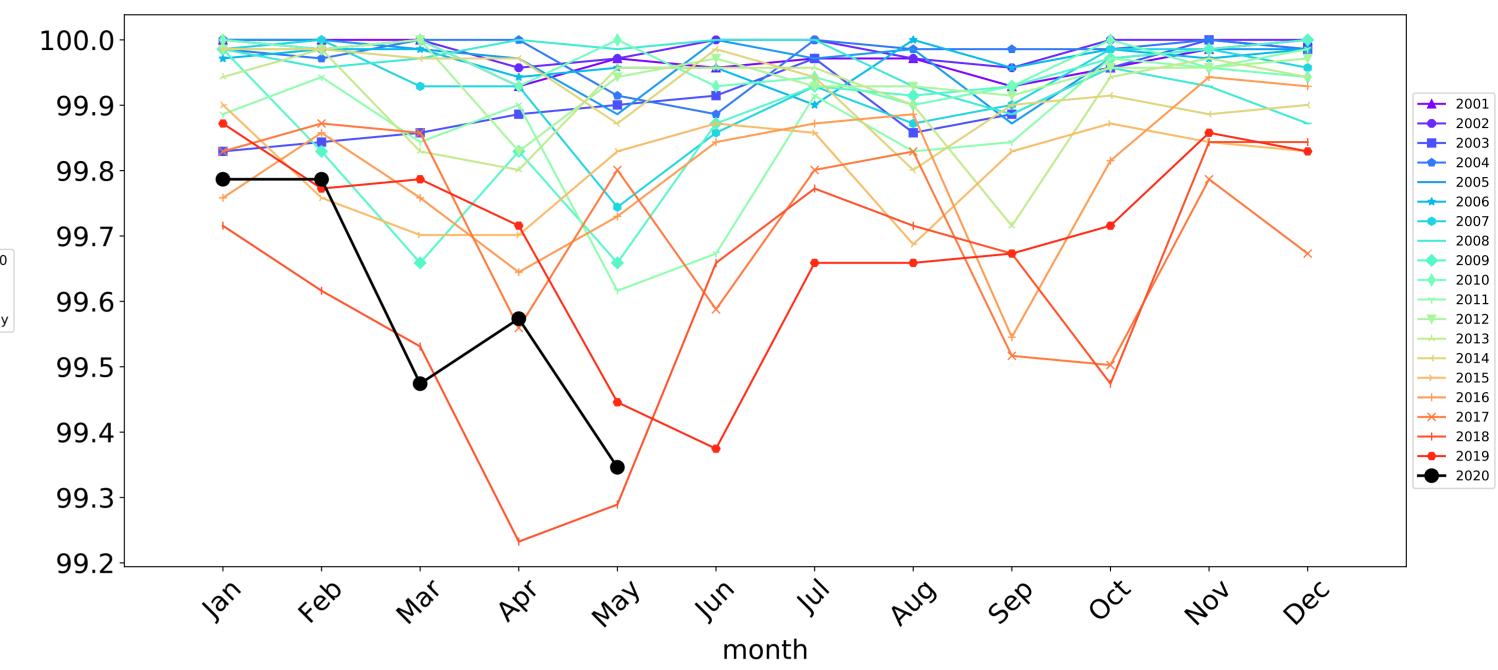
-10

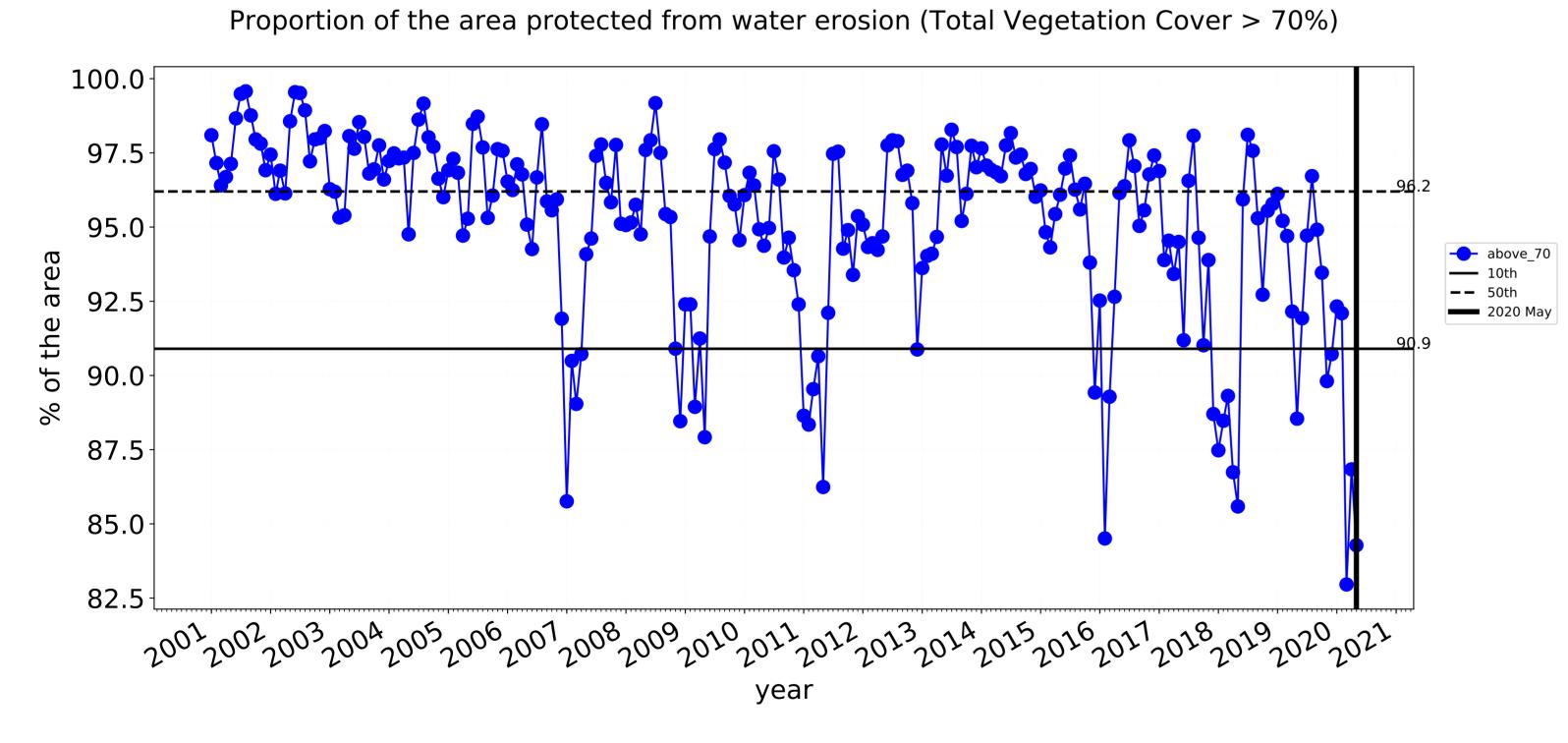
-20

Agriculture timeseries

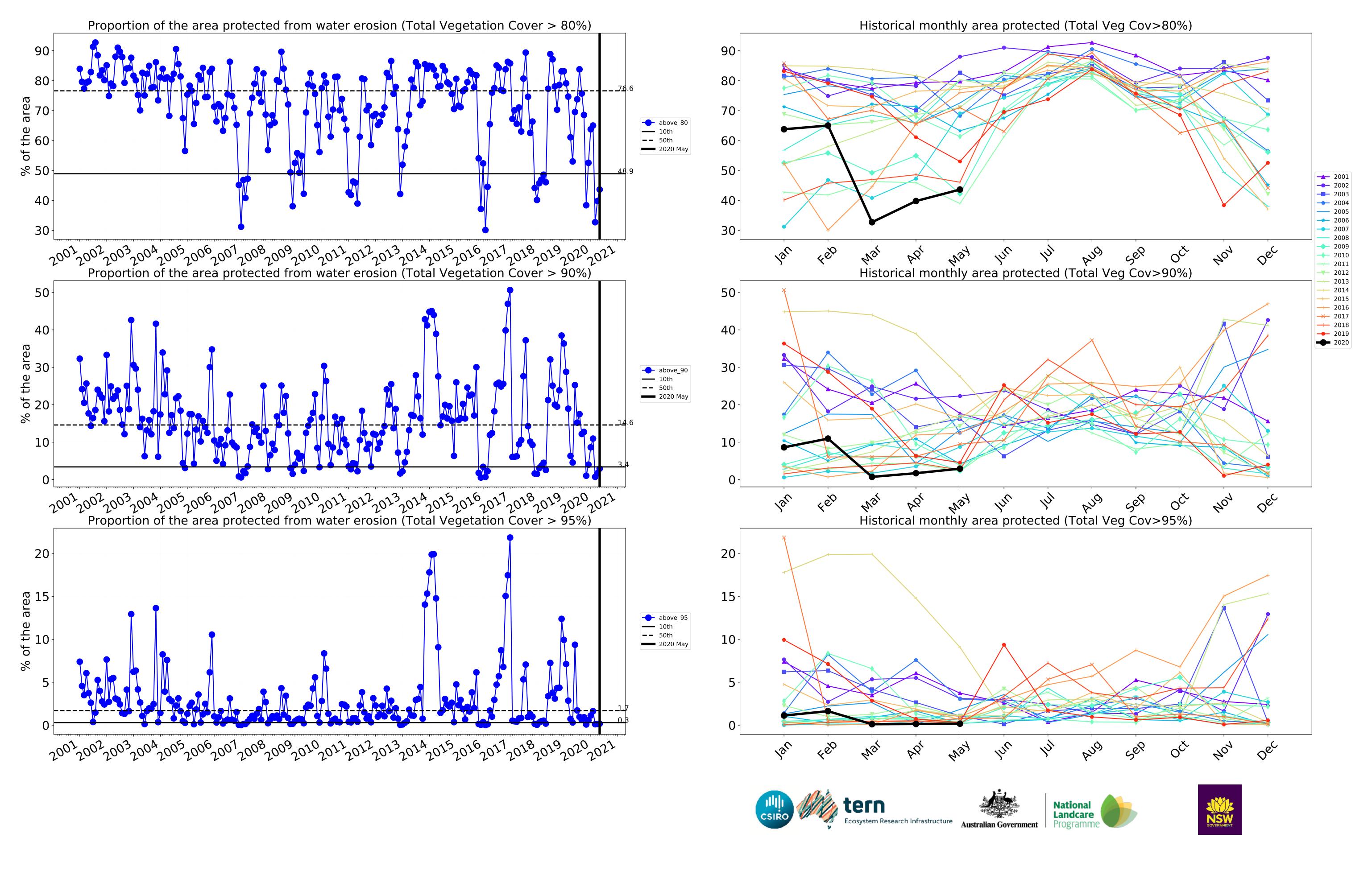








Water erosion historical monthly area protected (Total Veg Cov>70%) 100.0 97.5 2001 2002 2003 2004 95.0 → 2006 2007 92.5 → 2010 2011 90.0 → 2014 **→** 2015 → 2016 → 2017 → 2018 87.5 2019 **---** 2020 85.0 82.5 4eb Jan month National Landcare Ecosystem Research Infrastructure



Grazing

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

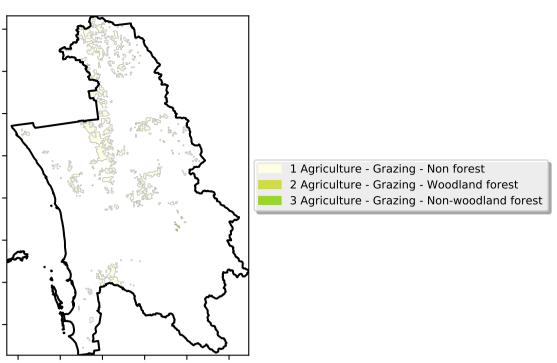
pixel is from

is, red pixels are about 20% lower than the mean of that

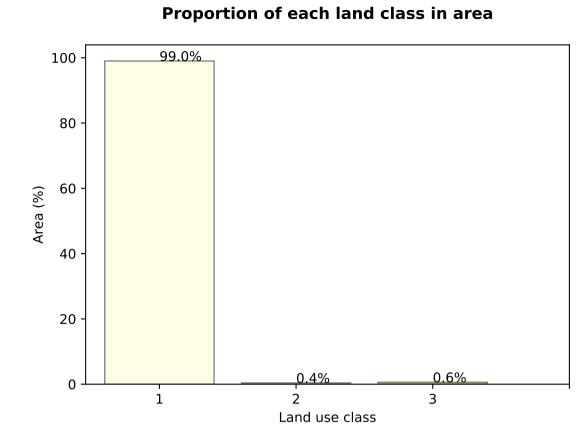
the mean. That

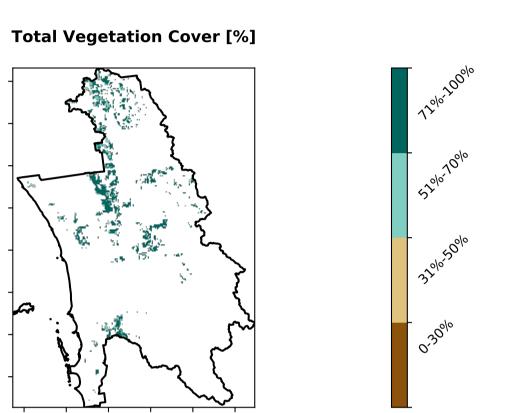
pixel. The mean is only for the month of the map

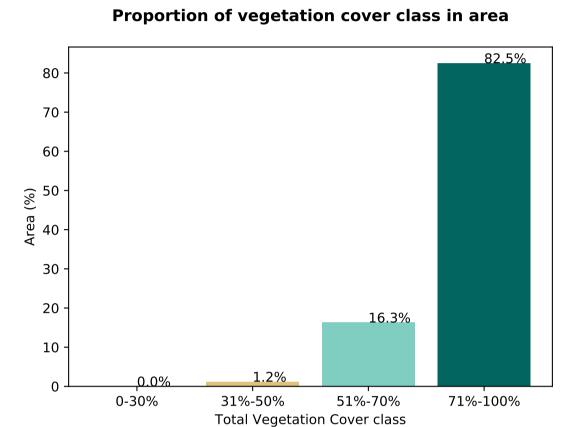
using baseline from 2001 to 2019.

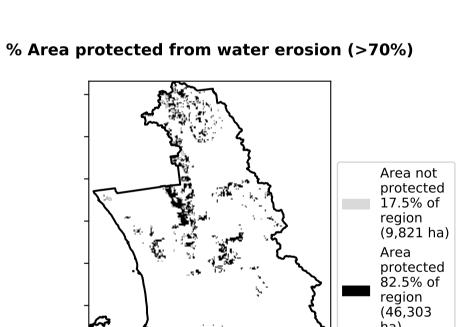


Land use and forest cover

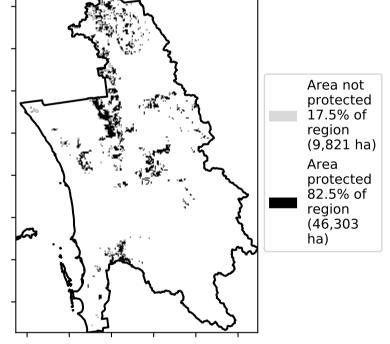


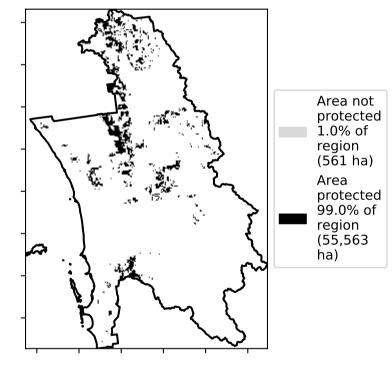




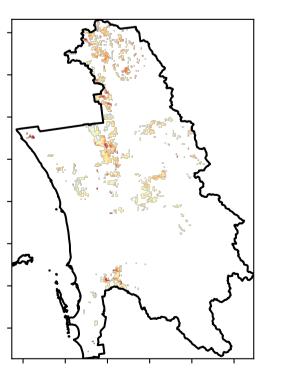


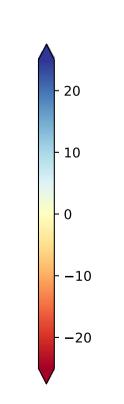
% Area protected from wind erosion (>50%)





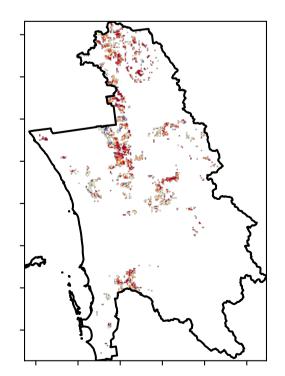
Total Vegetation Cover Anomaly [%]

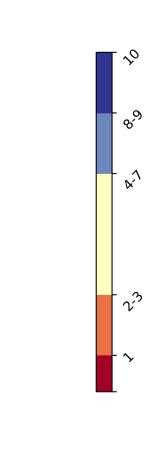




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]









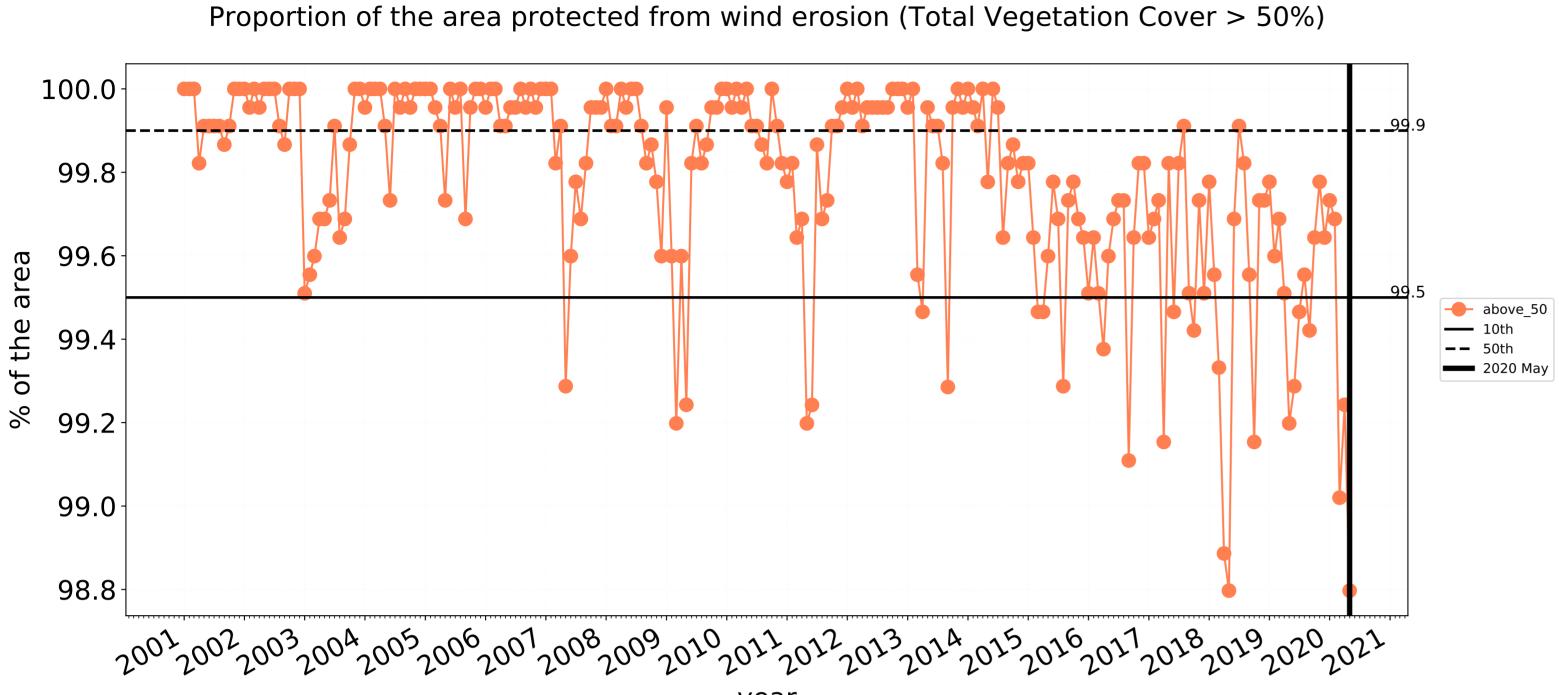


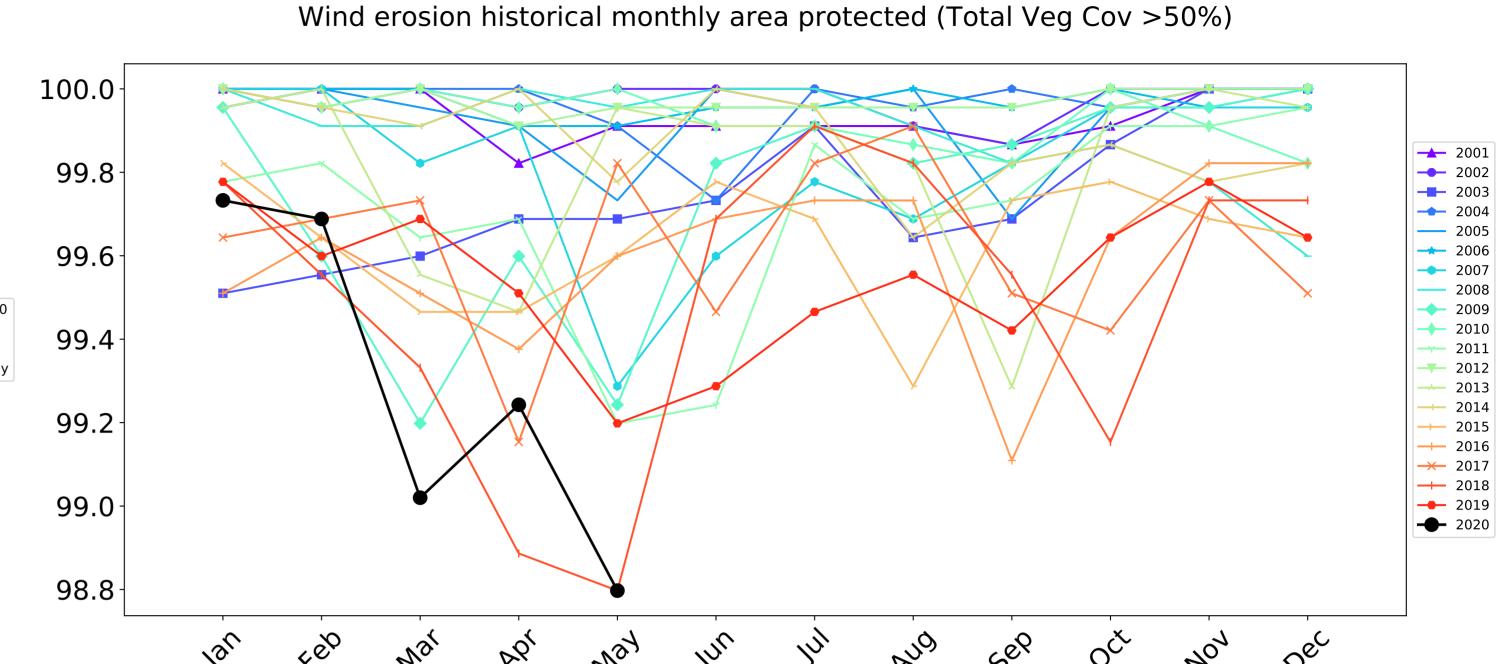




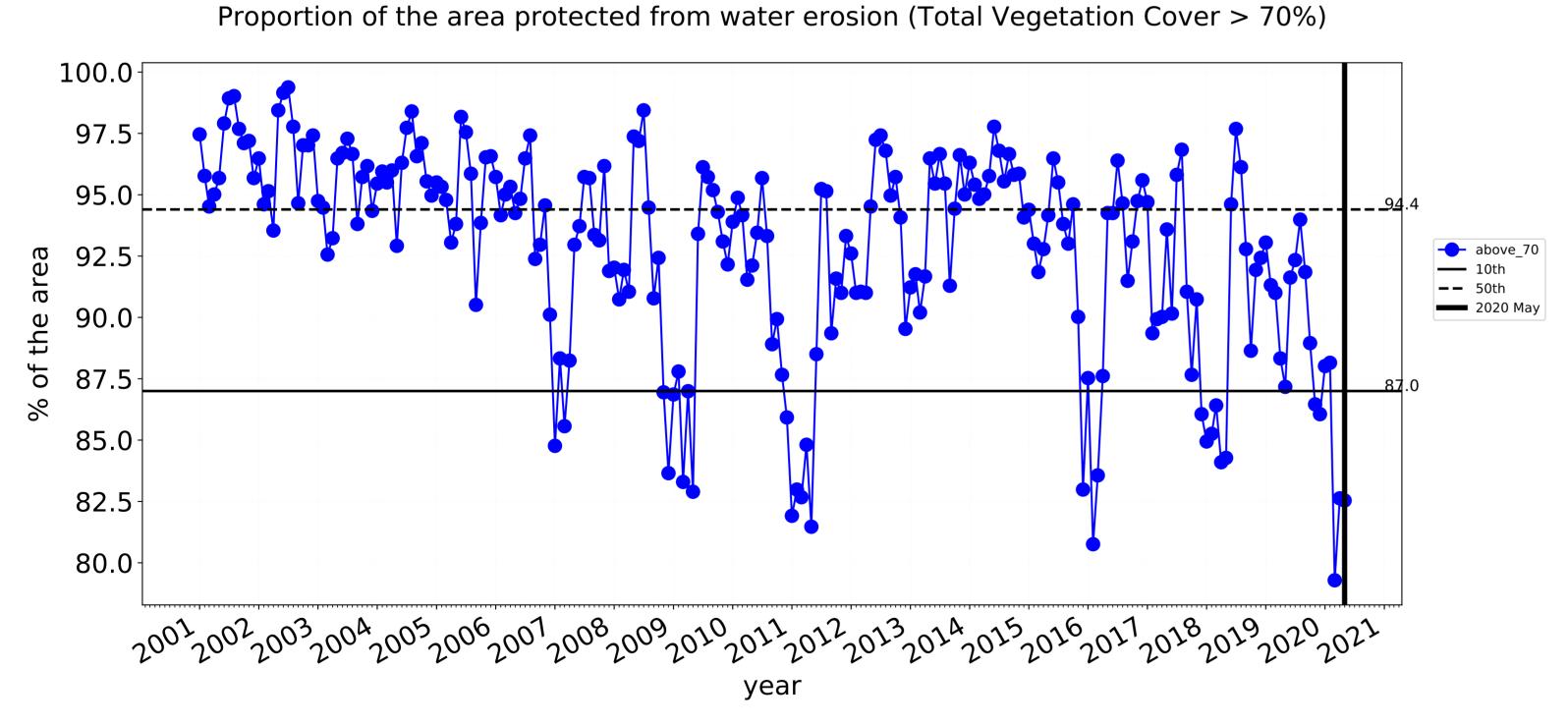


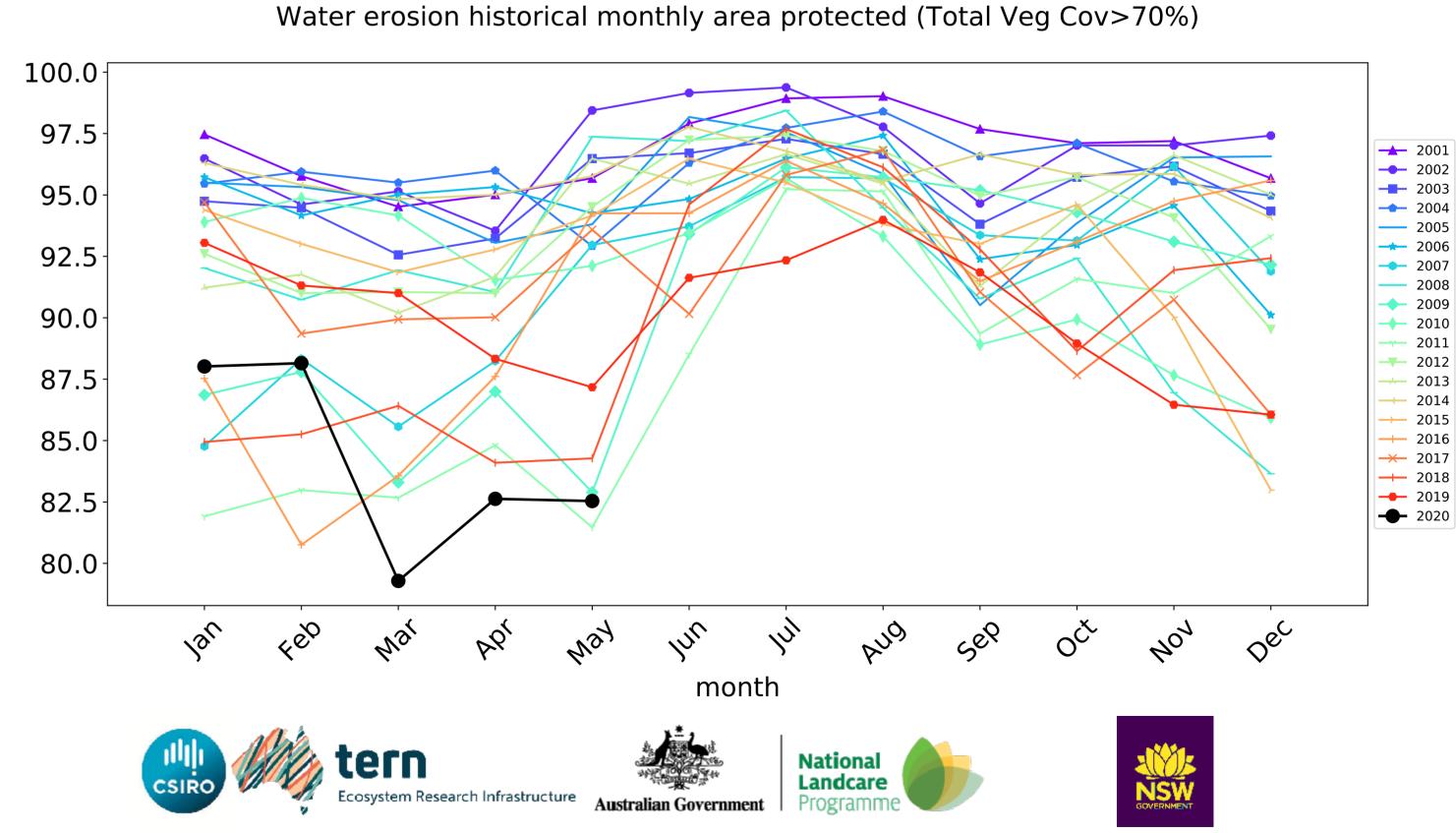
Grazing timeseries

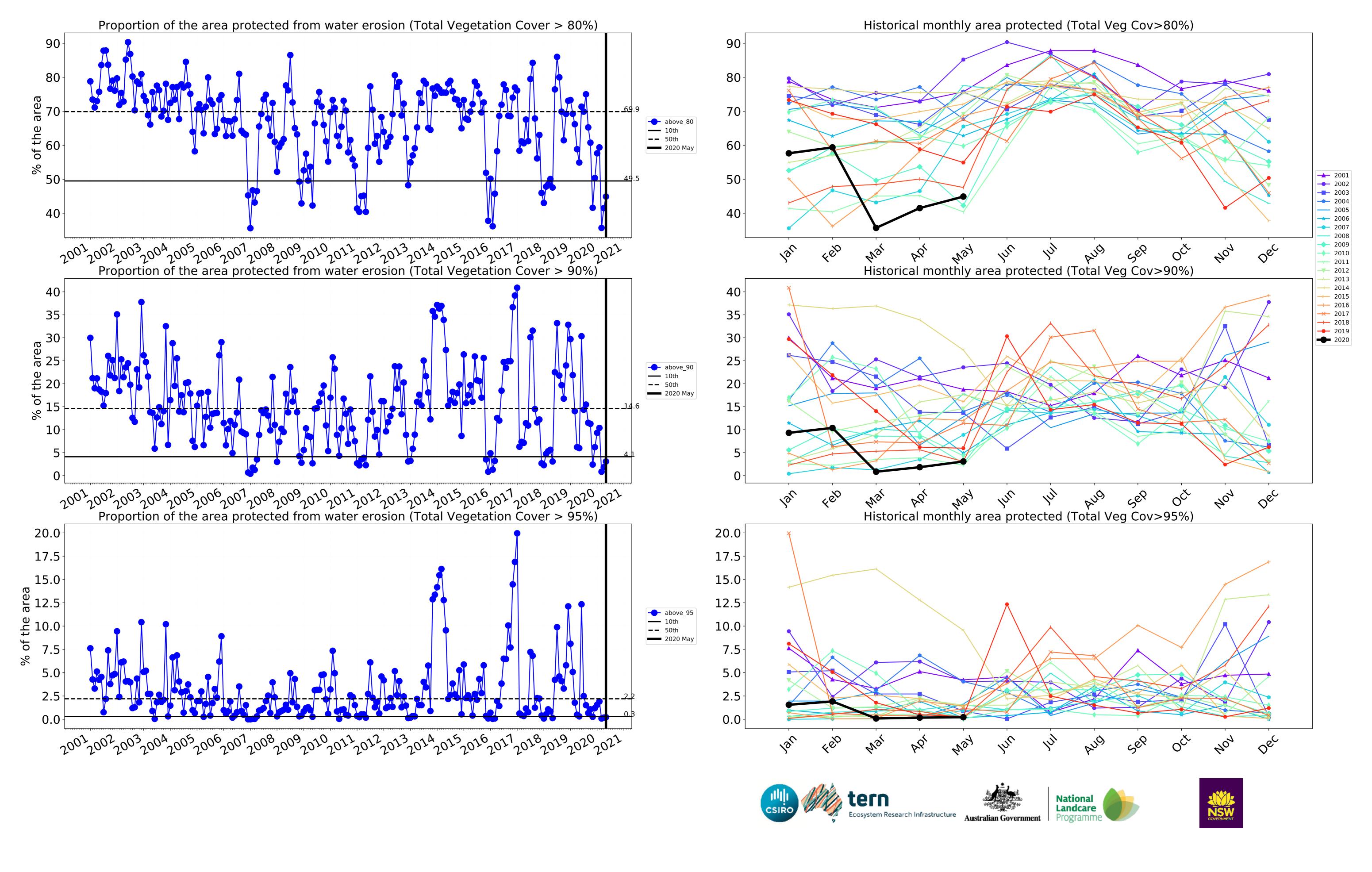




month



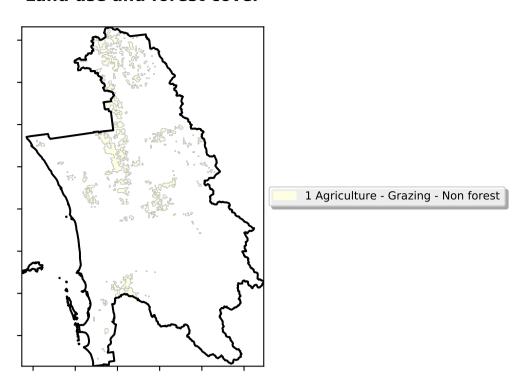




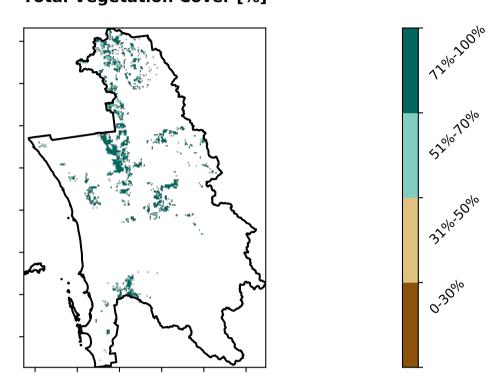
Grazing non forest

Land use and forest cover

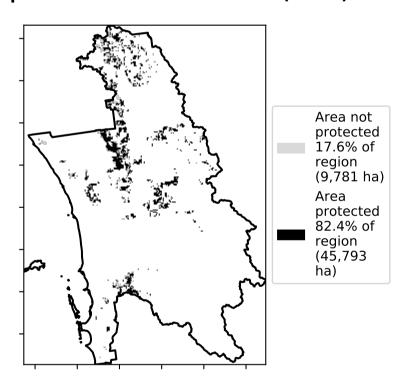
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



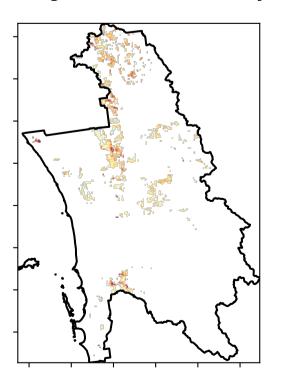
Total Vegetation Cover [%]

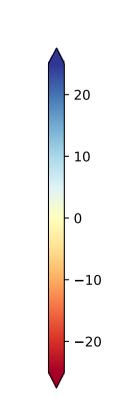


% Area protected from water erosion (>70%)



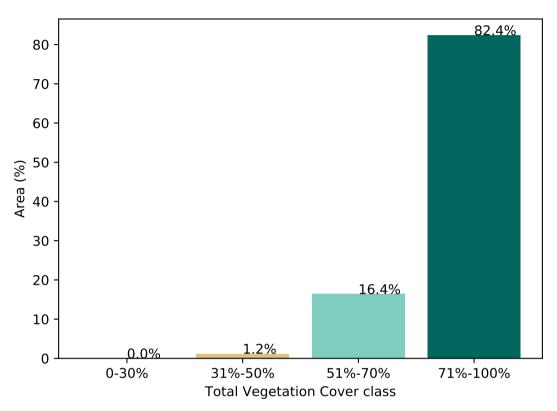
Total Vegetation Cover Anomaly [%]



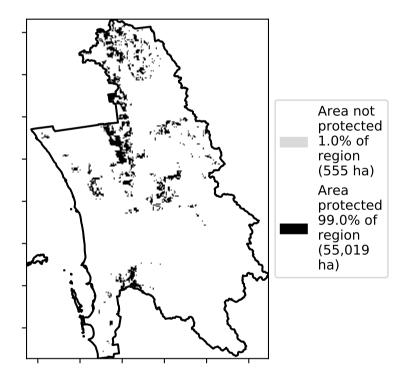


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

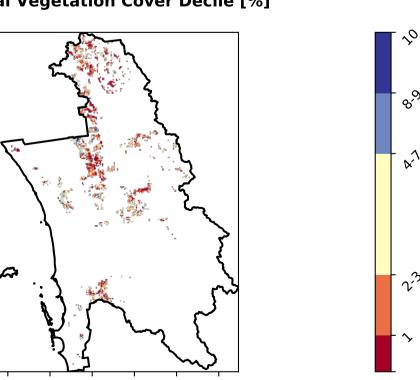
Proportion of vegetation cover class in area

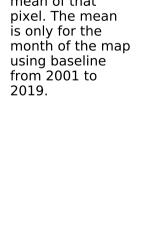


% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





Anomaly show how many percetage points each

pixel is from the mean. That

is, red pixels are about 20%

lower than the mean of that



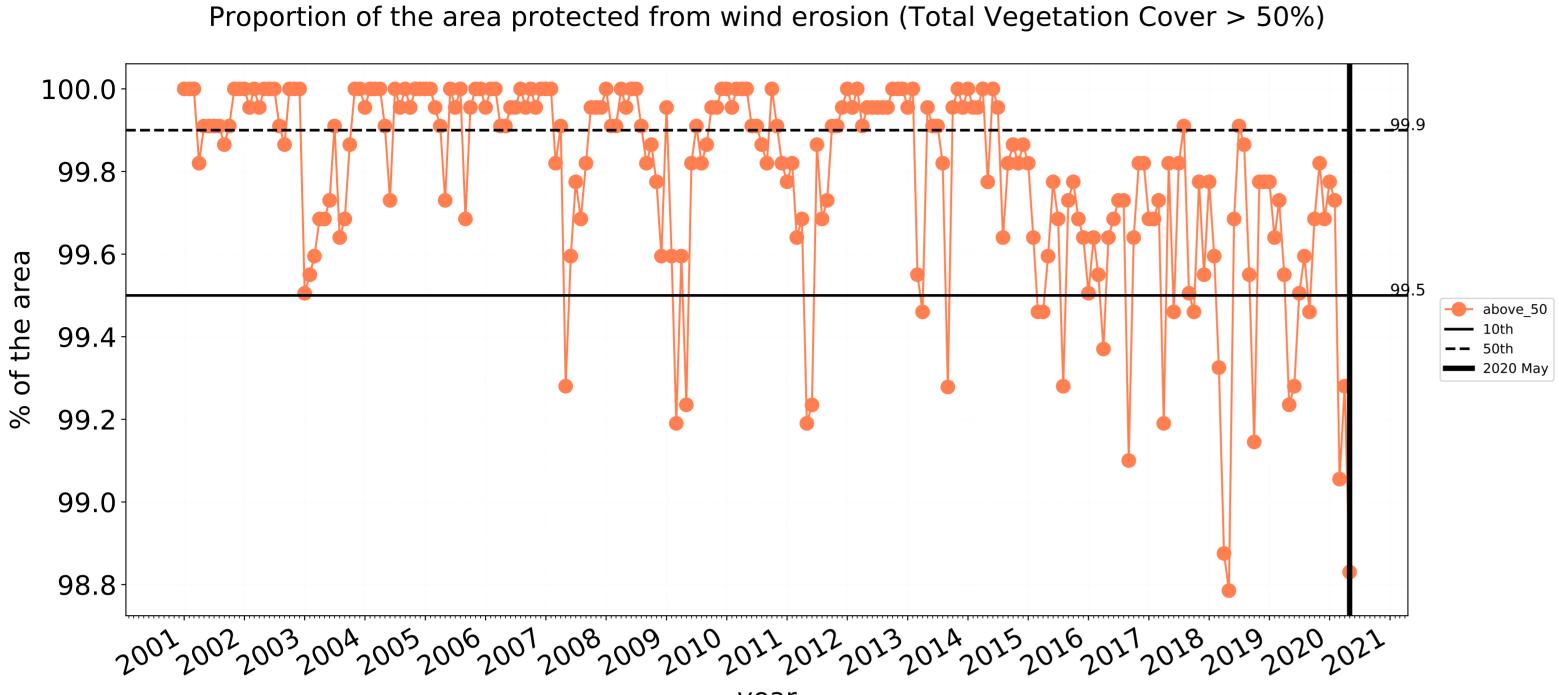


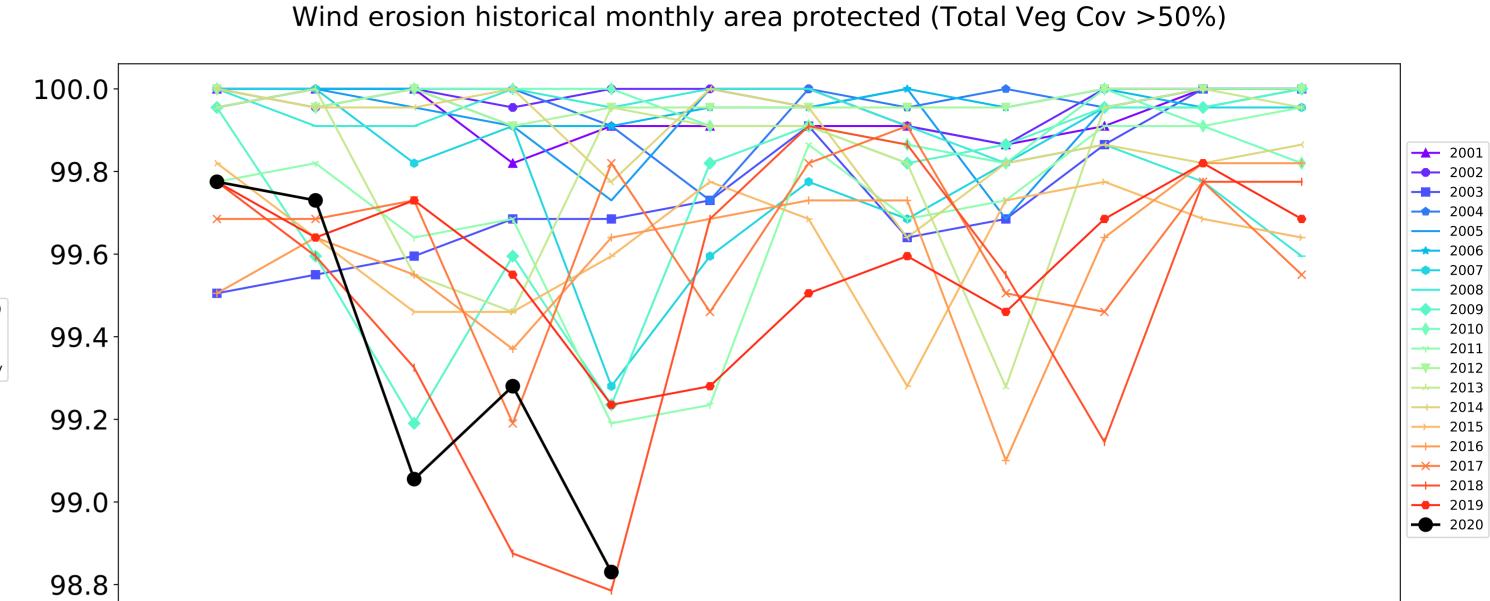




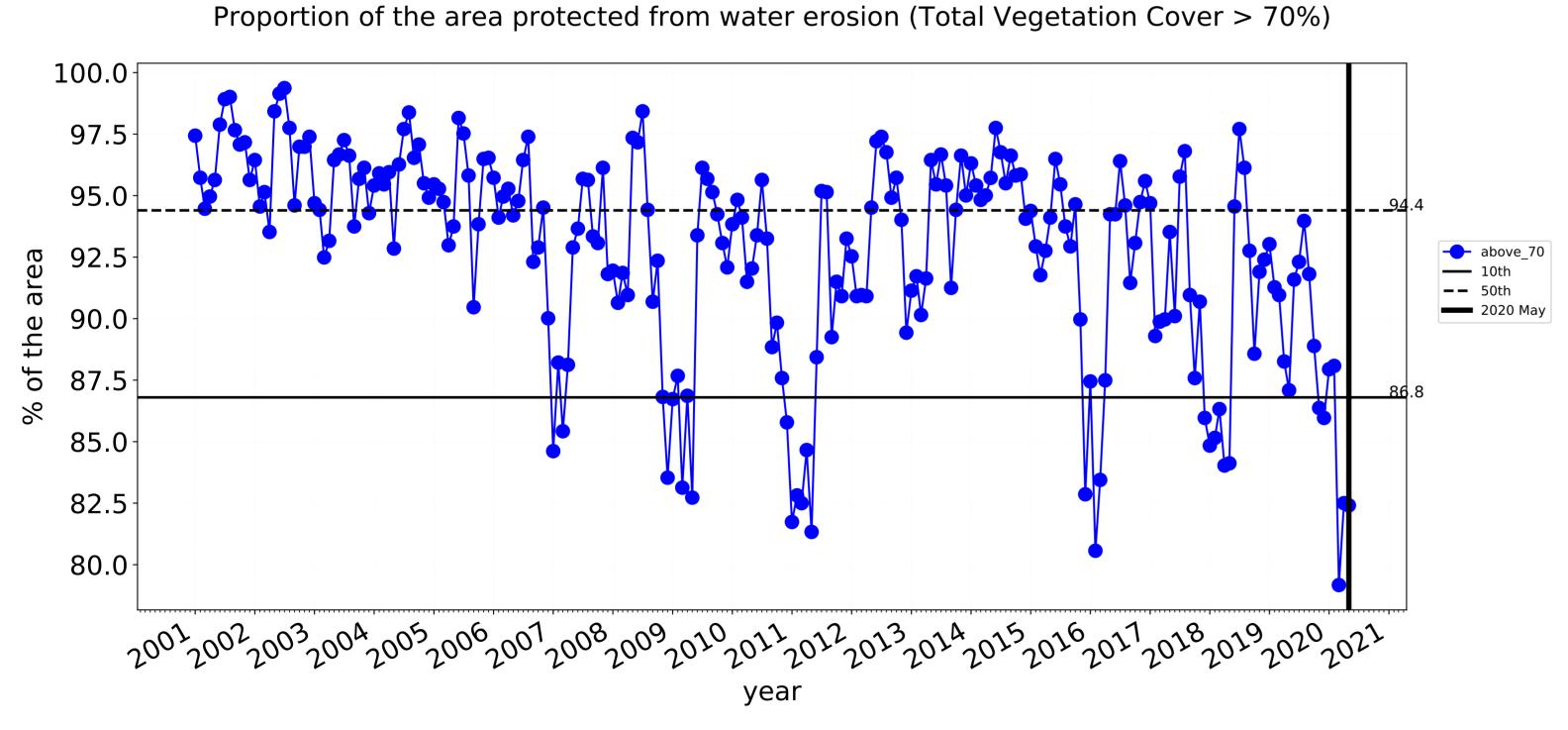


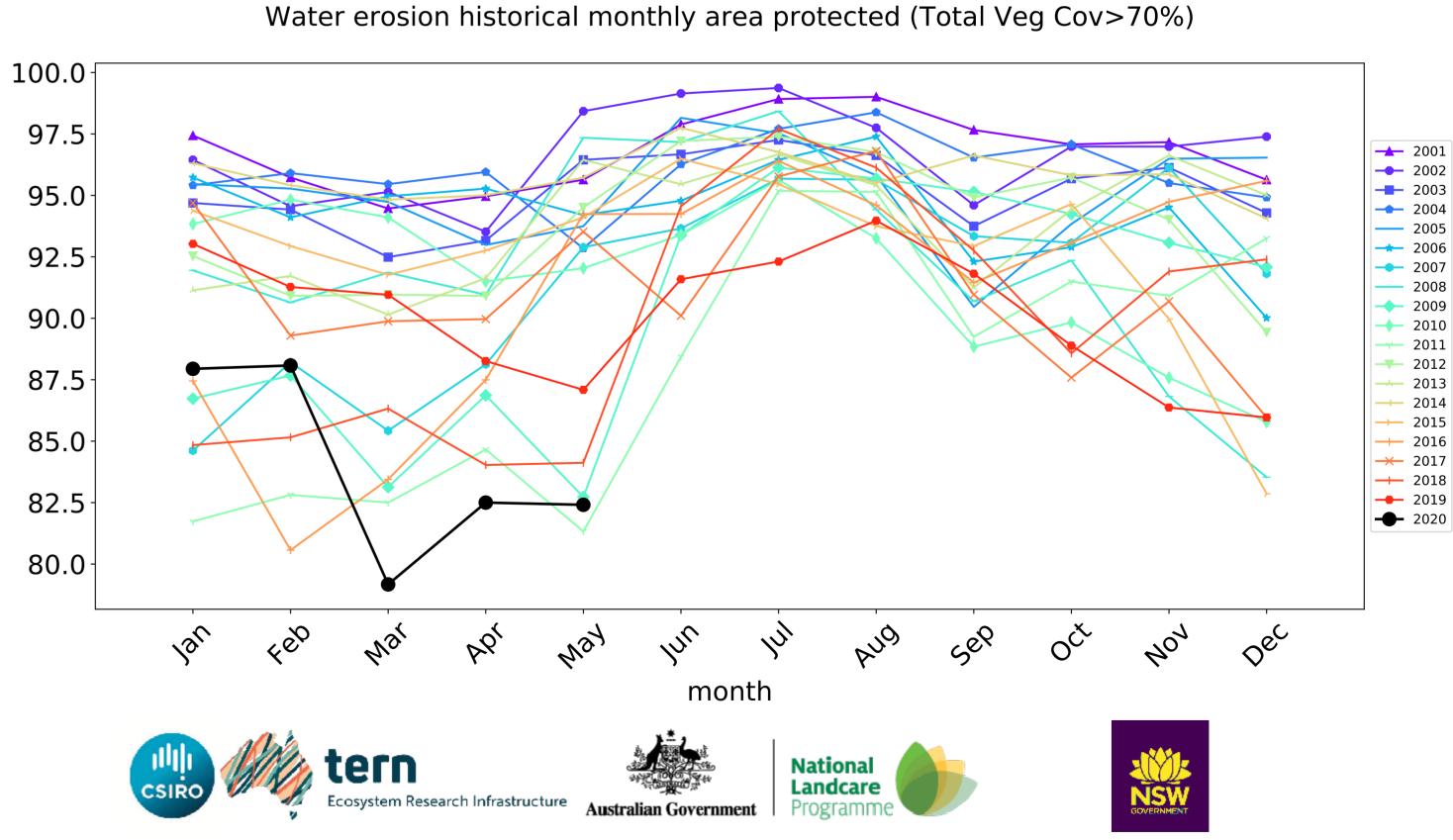
Grazing non forest timeseries

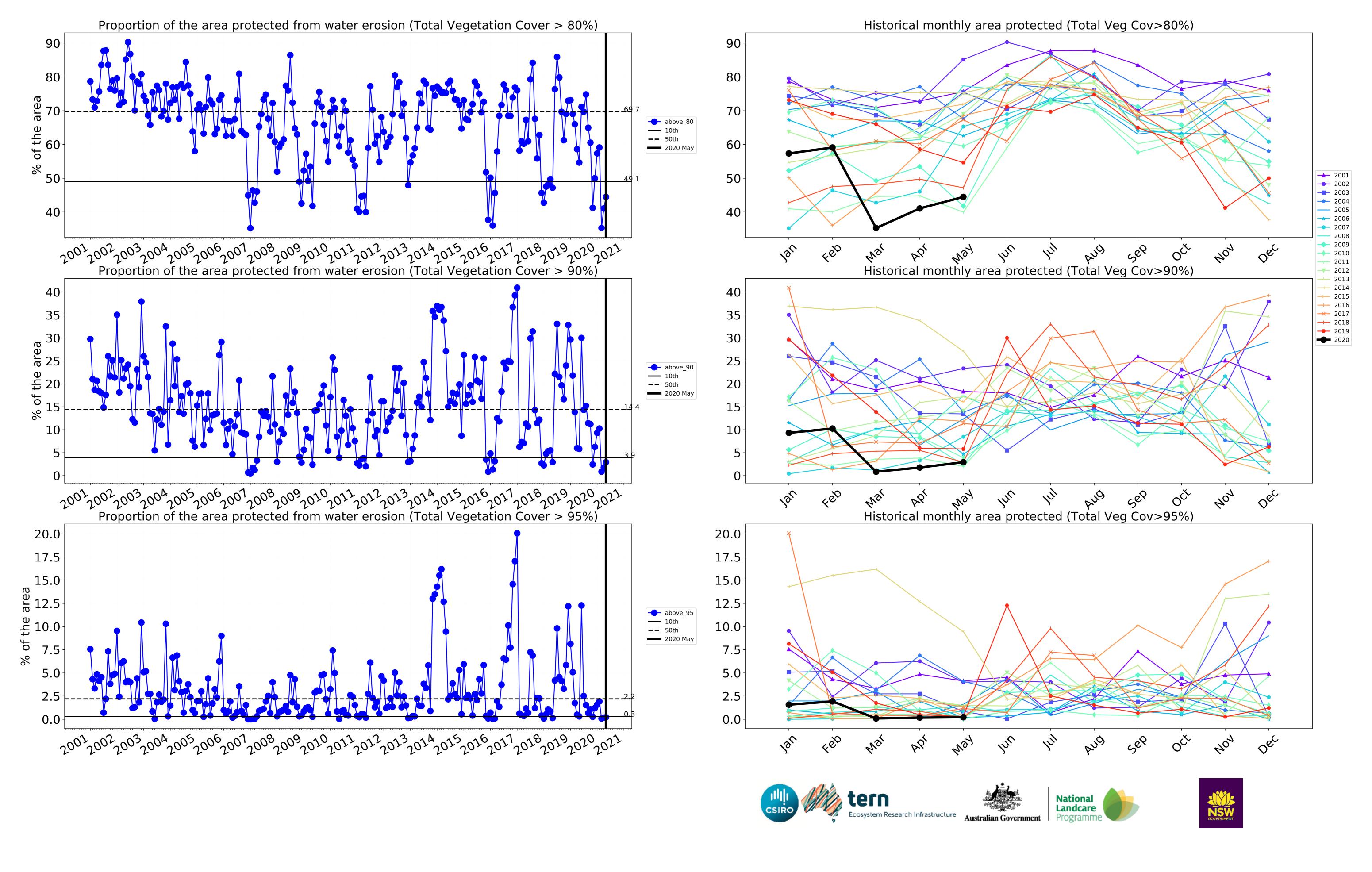




month







Cropping

Land use and forest cover

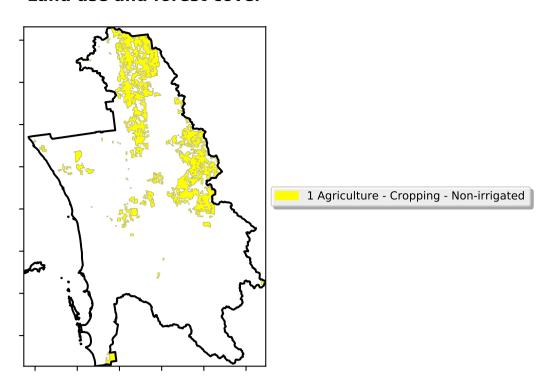
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

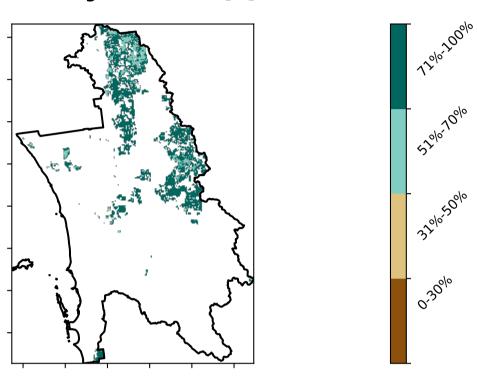
pixel is from the mean. That

pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

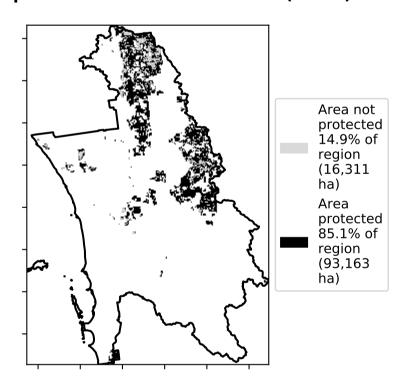
is, red pixels are about 20% lower than the mean of that



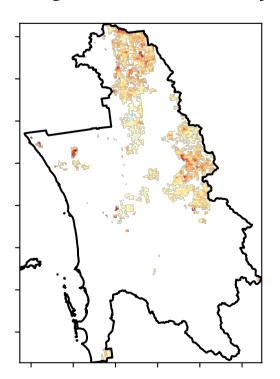
Total Vegetation Cover [%]

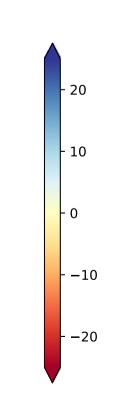


% Area protected from water erosion (>70%)



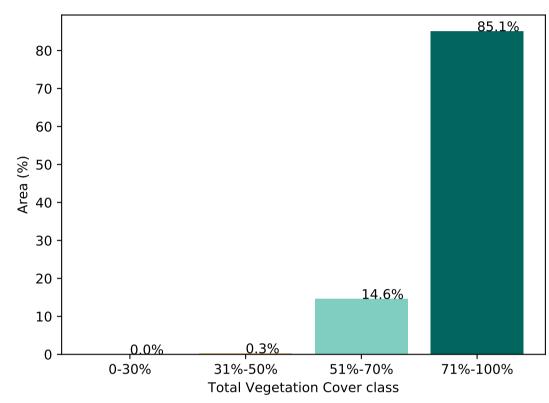
Total Vegetation Cover Anomaly [%]



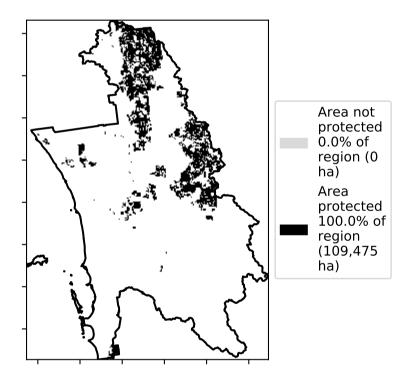


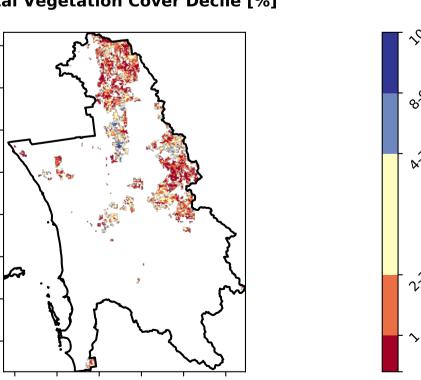
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)











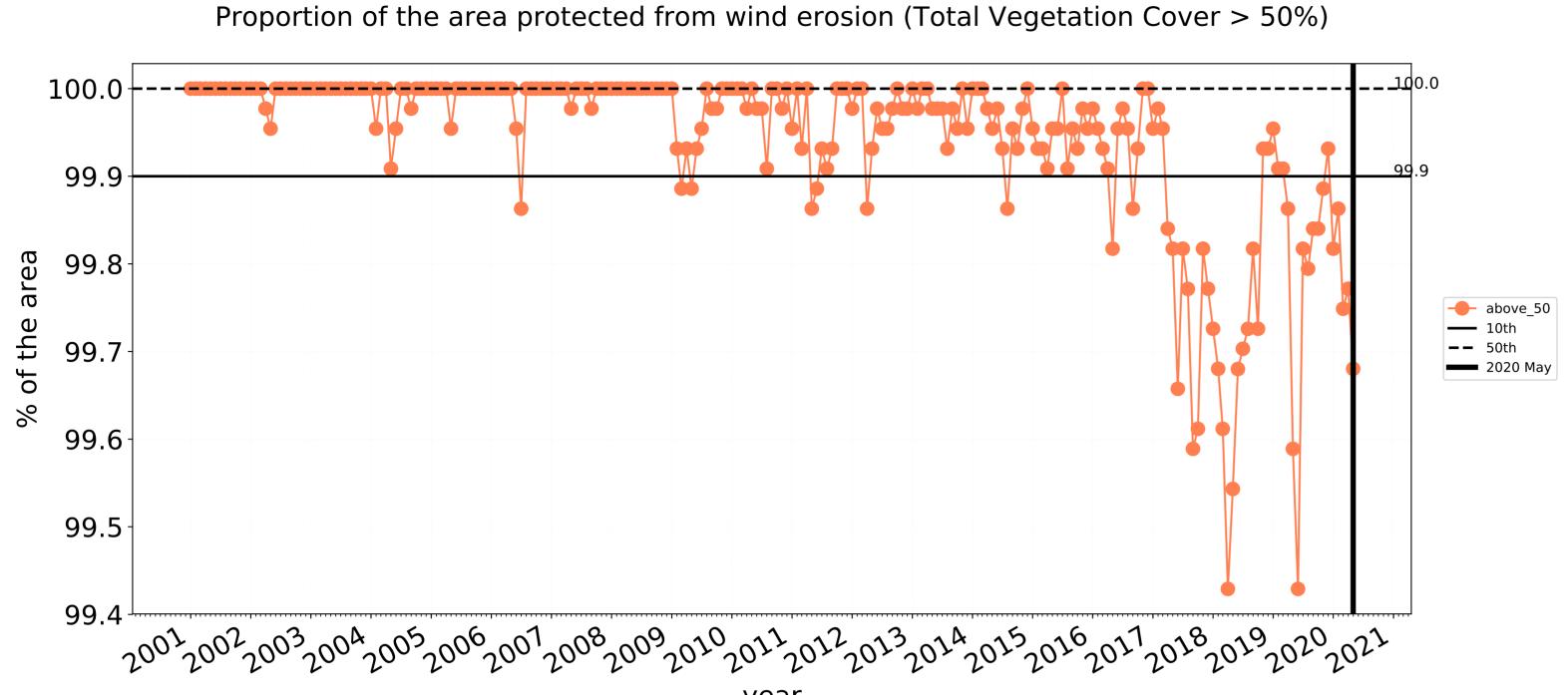


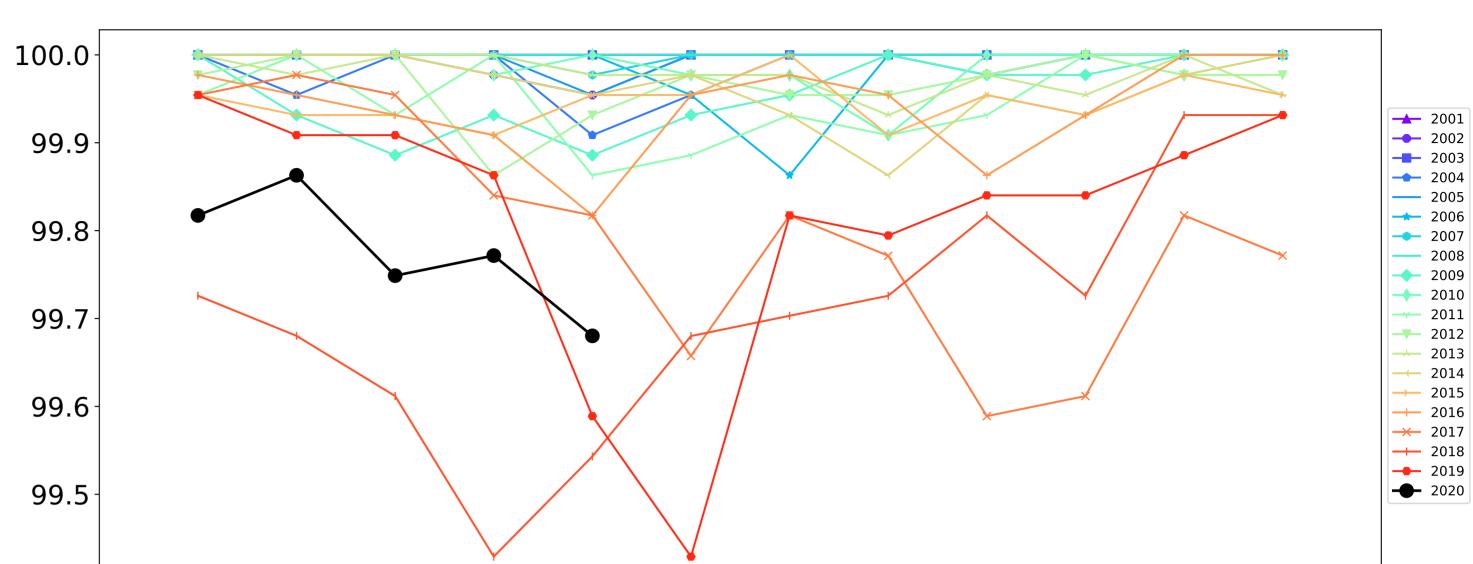




Cropping timeseries

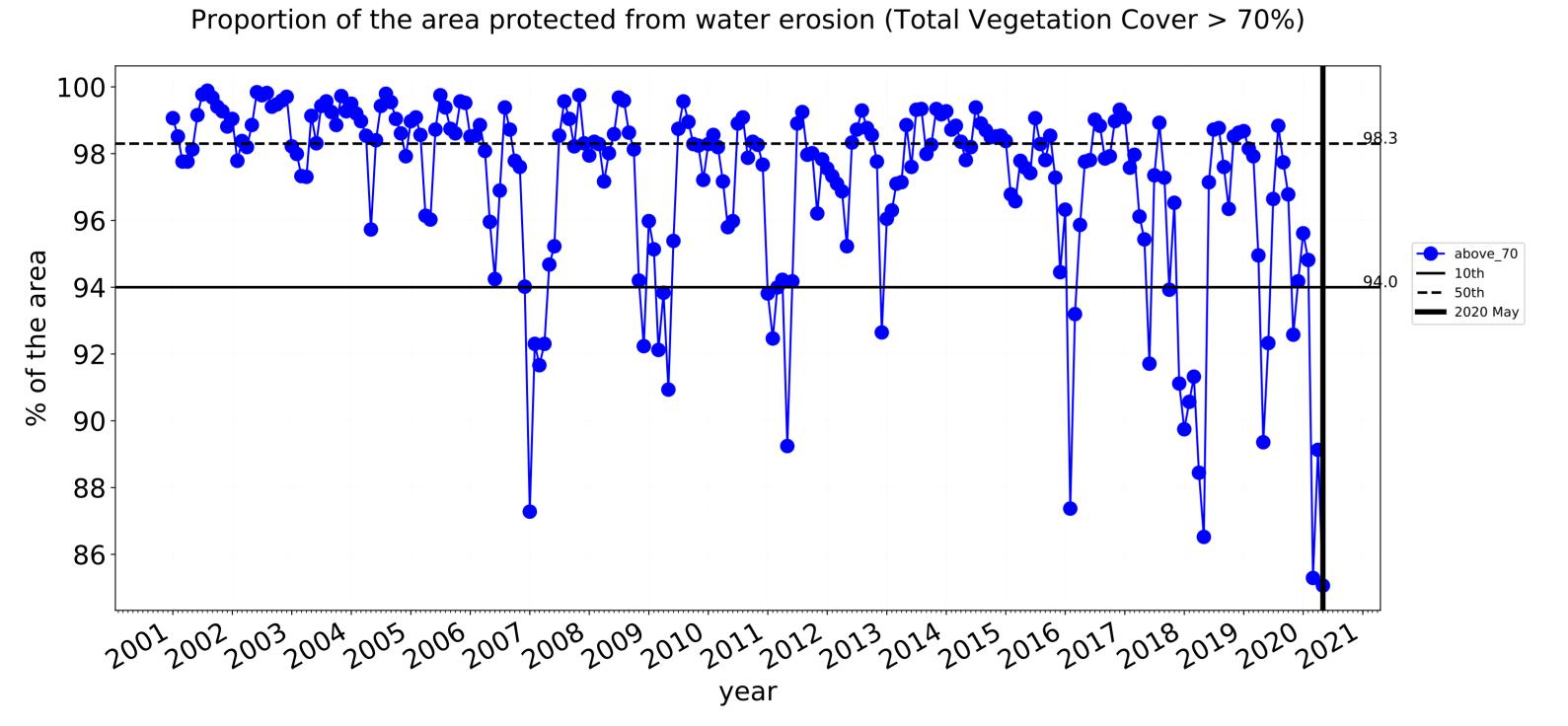
99.4

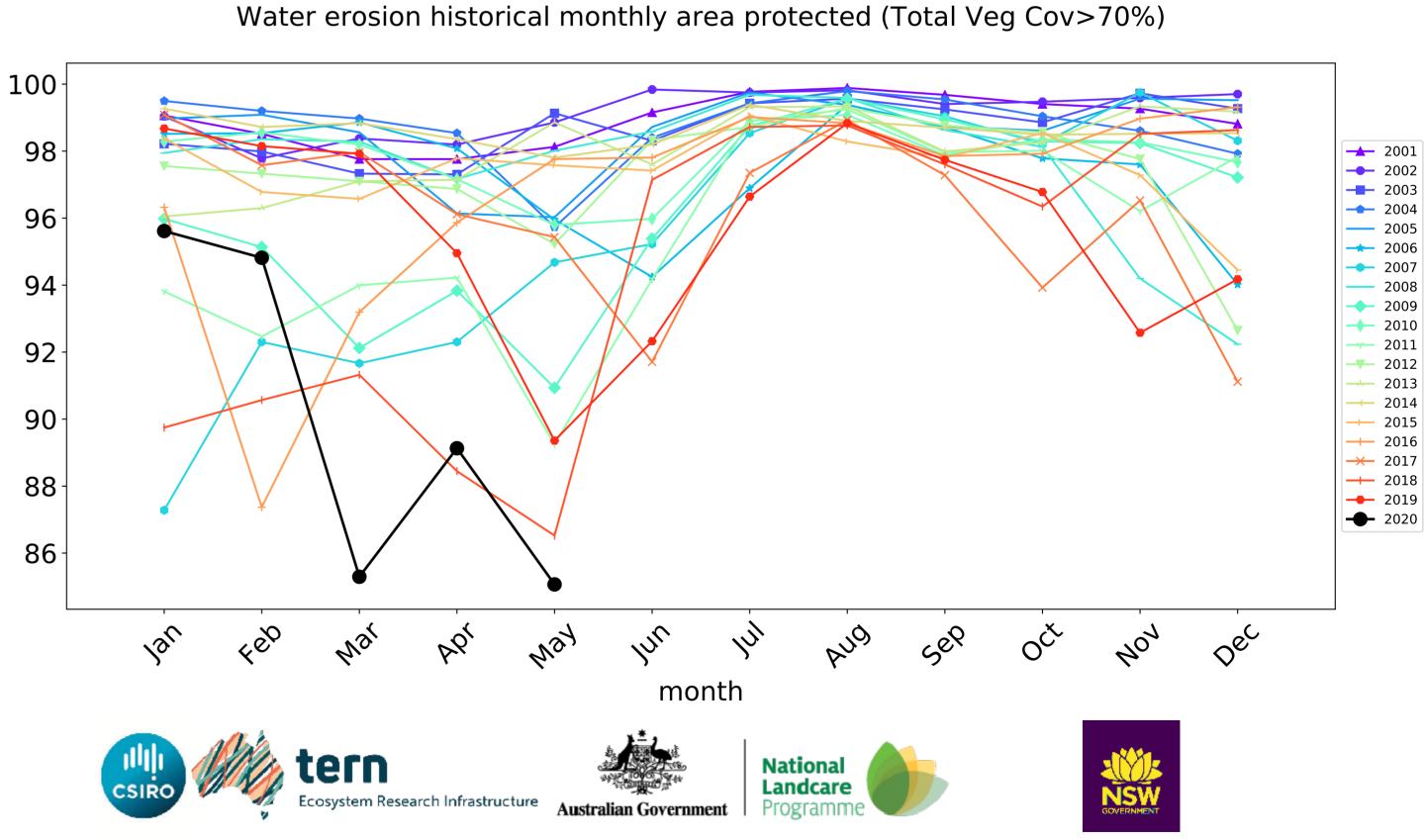


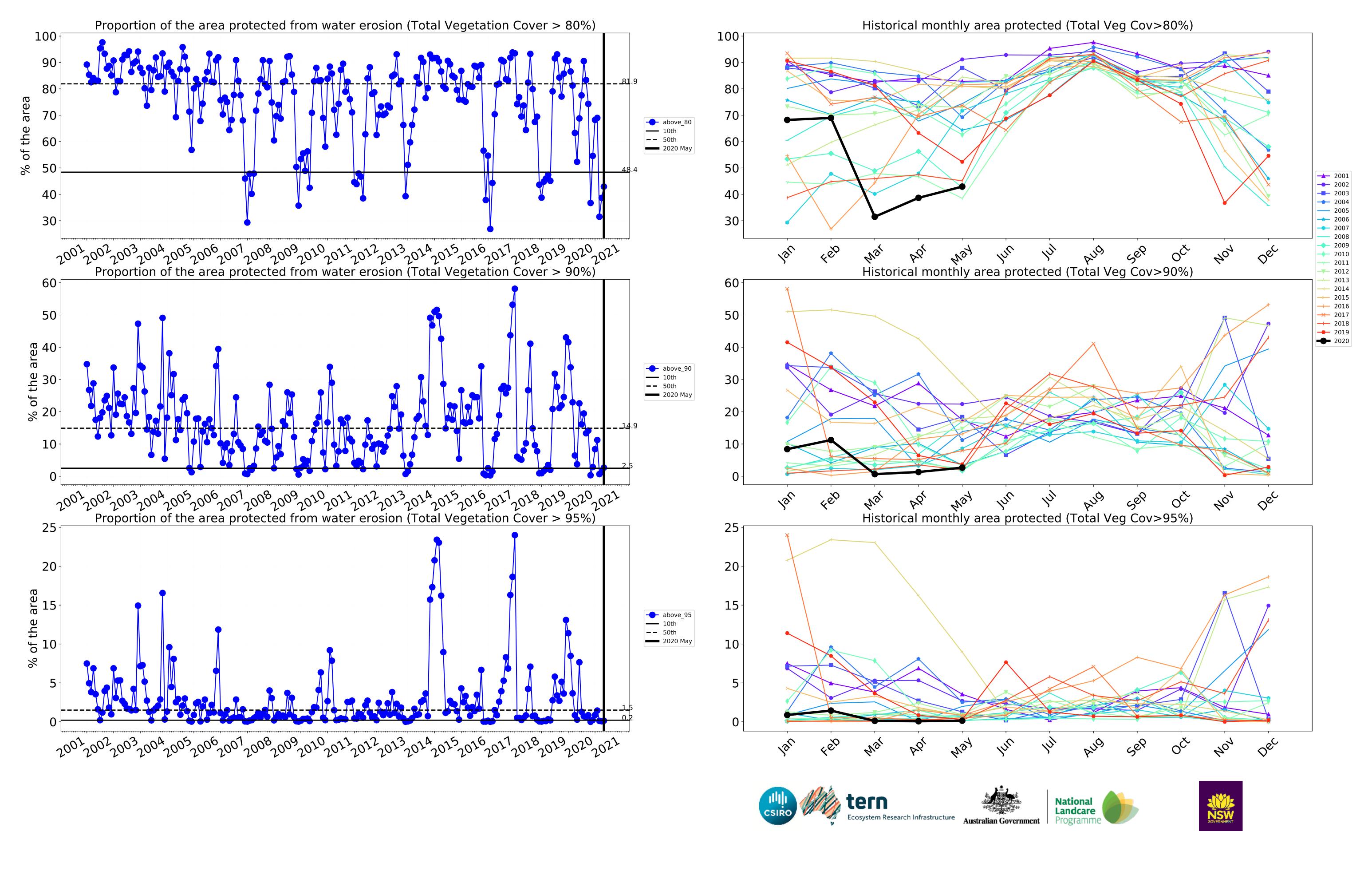


month

Wind erosion historical monthly area protected (Total Veg Cov >50%)







Irrigation

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from

is, red pixels are about 20% lower than the mean of that

the mean. That

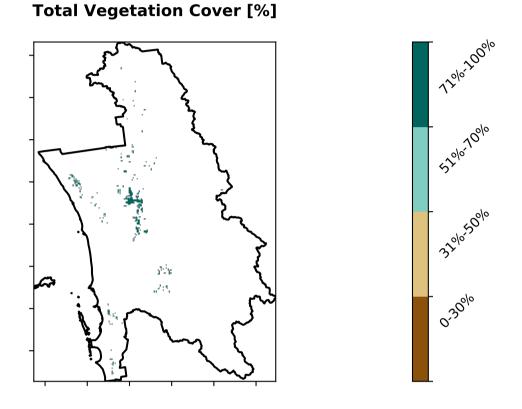
pixel. The mean

using baseline from 2001 to 2019.

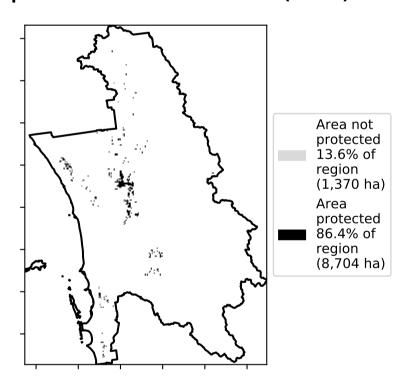
is only for the month of the map

1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

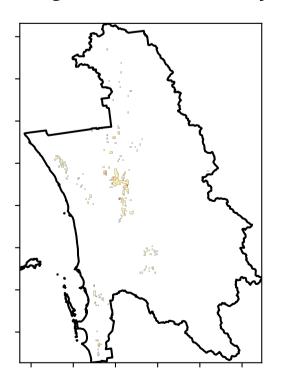
Land use and forest cover

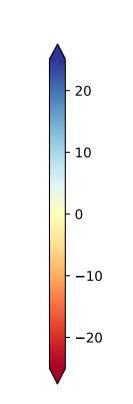


% Area protected from water erosion (>70%)



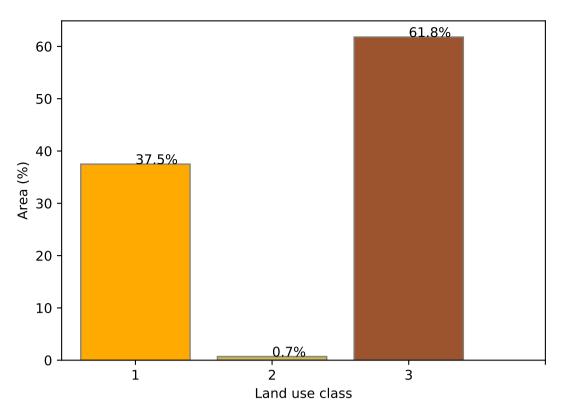
Total Vegetation Cover Anomaly [%]



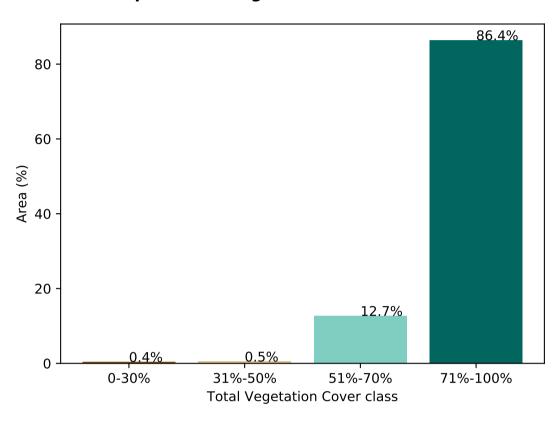


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

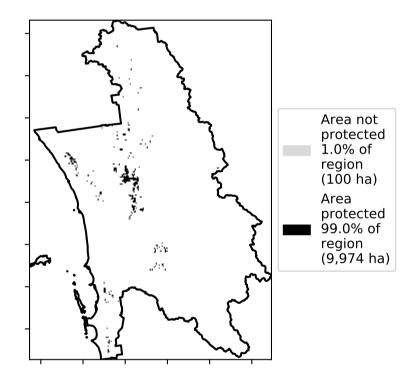
Proportion of each land class in area



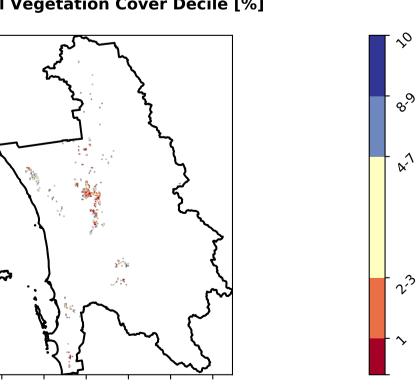
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







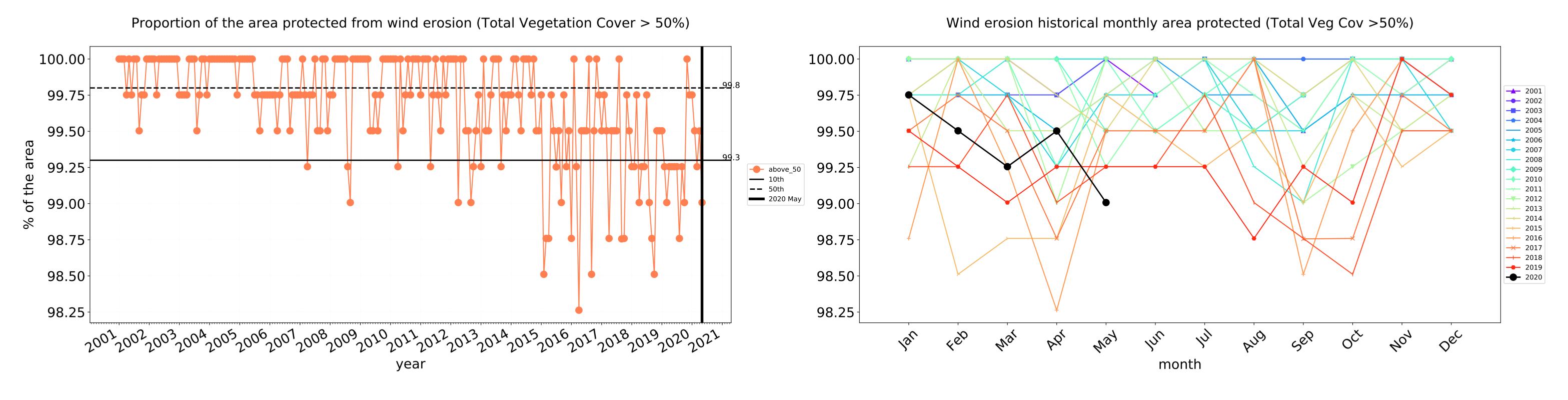


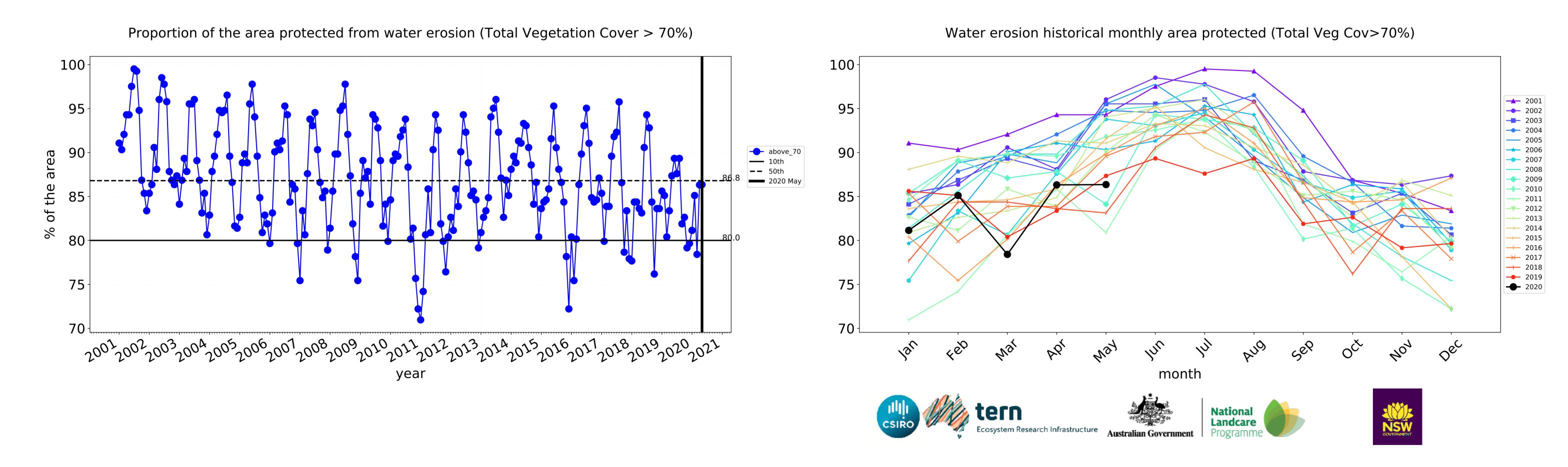


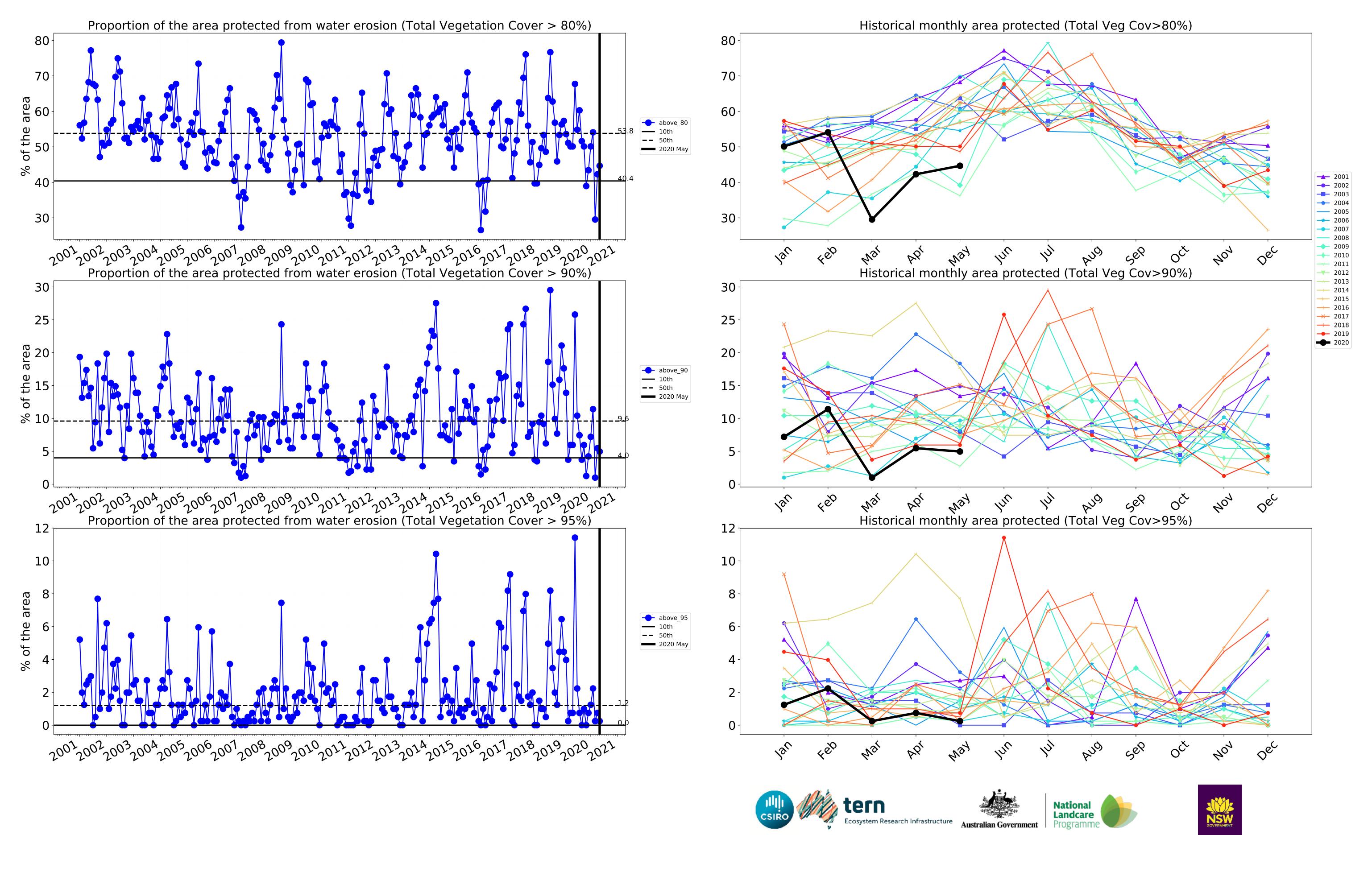




Irrigation timeseries







Production native forests and plantation forests

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

is, red pixels are about 20% lower than the mean of that

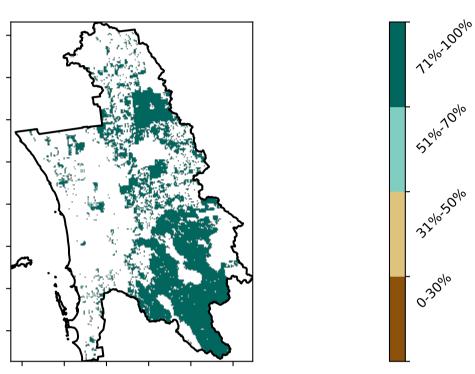
the mean. That

pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

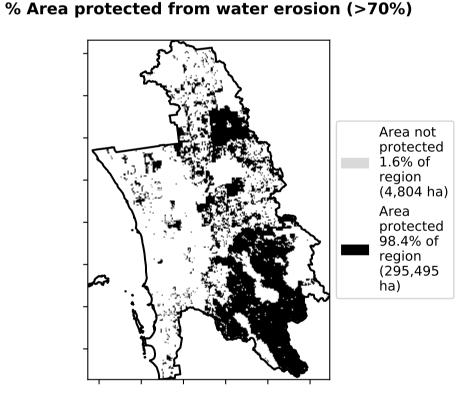
1 Production native forests and plantation forests

Total Vegetation Cover [%]

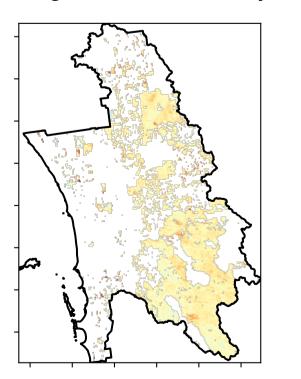
Land use and forest cover

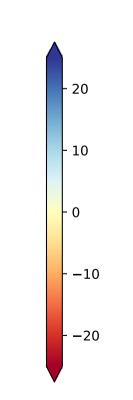


0/ Aver weeks stad from weeks averies (> 700/)



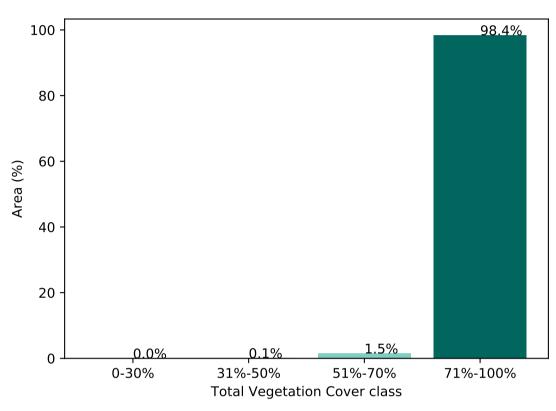
Total Vegetation Cover Anomaly [%]



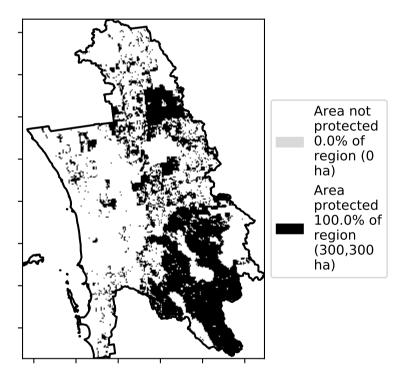


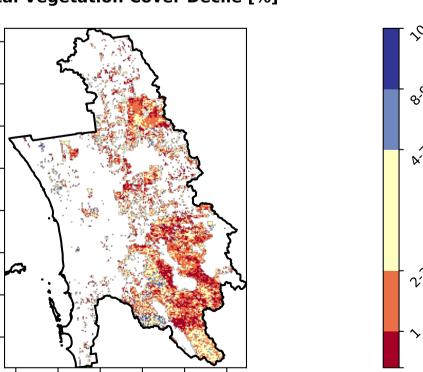
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









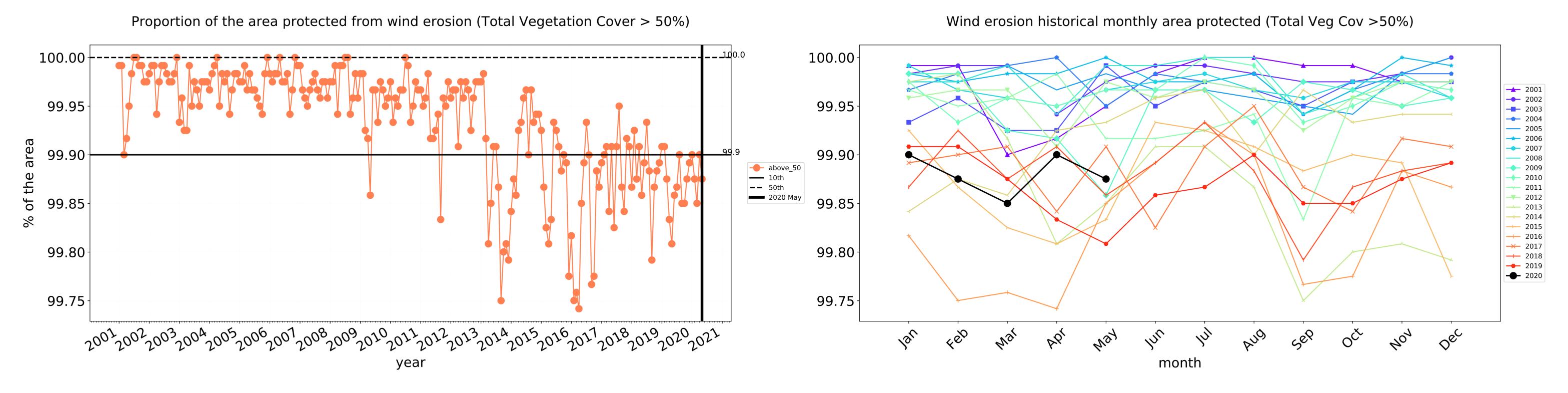


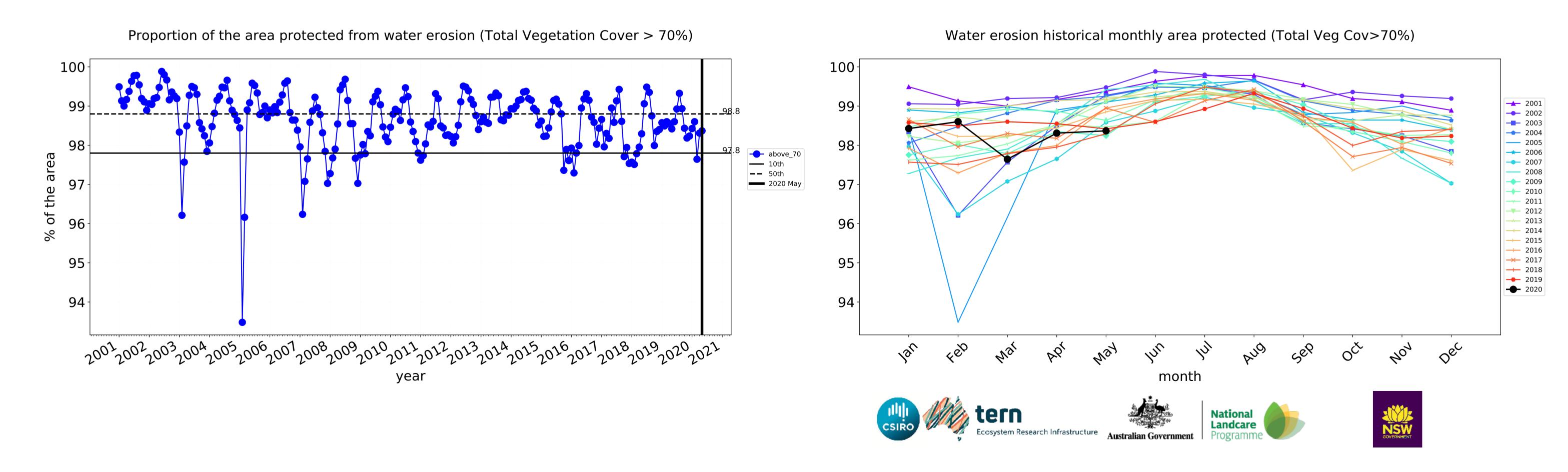


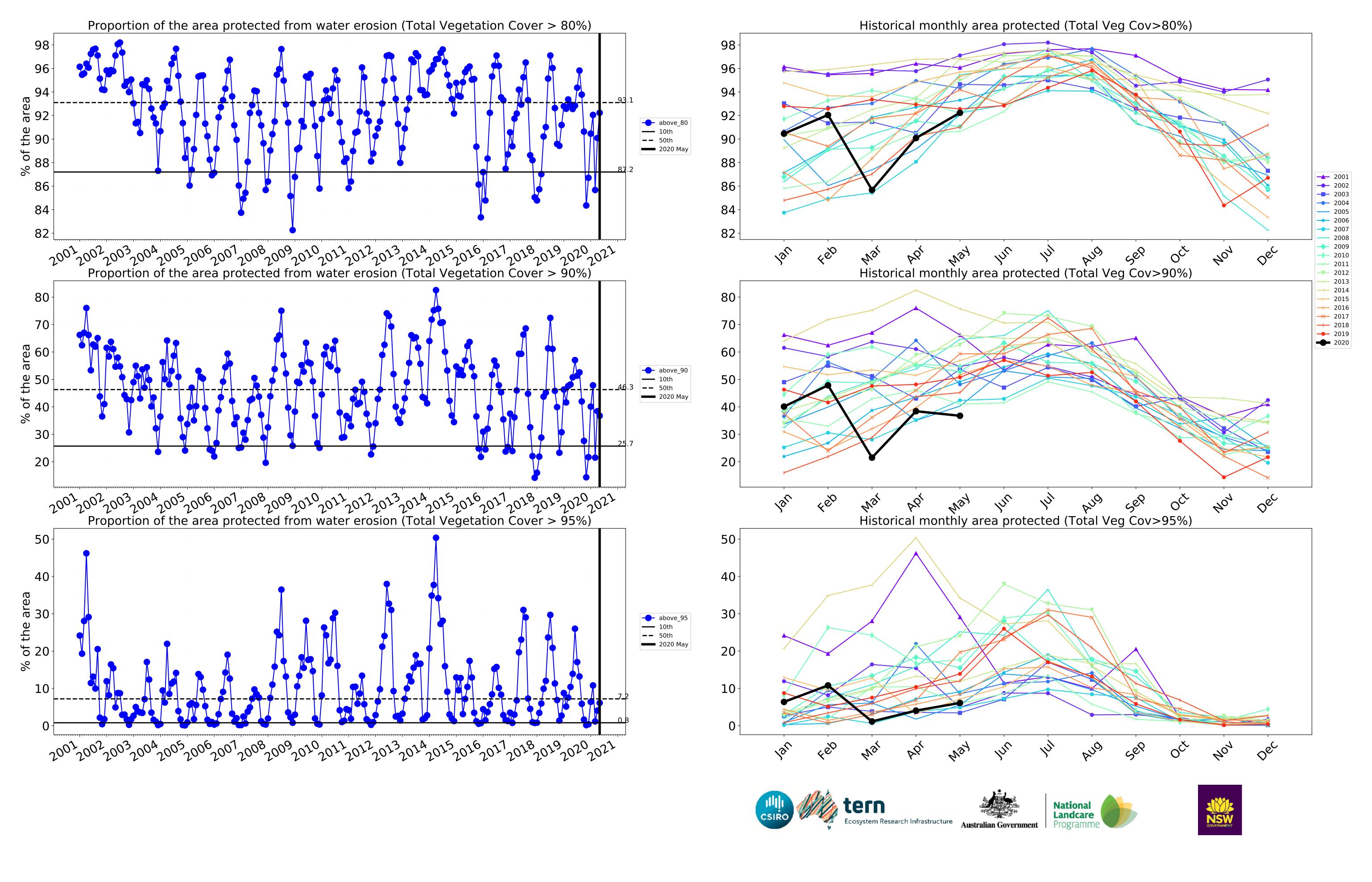




Production native forests and plantation forests timeseries







Swan Region (871,975 ha and no data 12,190 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	871,975	99.9% 870,700	98.4% 857,675	84.7% 738,425	66.6% 581,150	20.3% 176,625	3.1% 27,375
Conservation and natural environments	231,600	99.9% 231,475	99.6% 230,650	95.0% 220,125	81.2% 188,175	24.3% 56,325	3.3% 7,625
Conservation and natural environments non forest	37,150	99.8% 37,075	98.9% 36,725	84.9% 31,525	60.1% 22,325	11.1% 4,125	0.9% 350
Conservation and natural environments Woodland forest	135,375	100.0% 135,375	99.9% 135,300	97.8% 132,450	87.4% 118,300	18.0% 24,350	0.8% 1,100
Conservation and natural environments Forest (non woodland)	59,075	99.9% 59,025	99.2% 58,625	95.0% 56,150	80.5% 47,550	47.1% 27,850	10.5% 6,175
Agriculture	175,900	99.9% 175,800	99.3% 174,750	84.3% 148,250	43.6% 76,725	2.9% 5,150	0.2% 300
Grazing	56,125	100.0% 56,100	98.8% 55,450	82.5% 46,325	44.9% 25,200	3.1% 1,725	0.2% 125
Grazing non forest	55,575	100.0% 55,575	98.8% 54,925	82.4% 45,800	44.5% 24,725	2.9% 1,625	0.2% 125
Cropping	109,475	100.0% 109,450	99.7% 109,125	85.1% 93,125	42.9% 47,000	2.7% 2,925	0.1% 150
Irrigation	10,075	99.5% 10,025	99.0% 9,975	86.4% 8,700	44.7% 4,500	5.0% 500	0.2% 25
Production native forests and plantation forests	300,300	100.0% 300,300	99.9% 299,925	98.4% 295,400	92.2% 276,975	36.7% 110,350	6.1% 18,350







