Total vegetation cover soil protection Region:LGA Gingin_(S) WA

Date: March 2021

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:

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 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

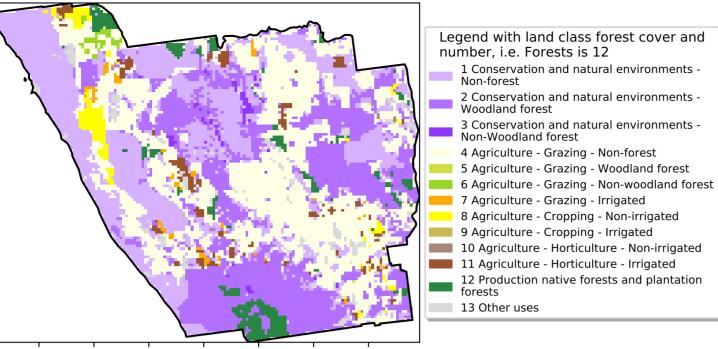


Vegetation Cover Mar 2021

Land use and forest cover

Proportion of each land class in area





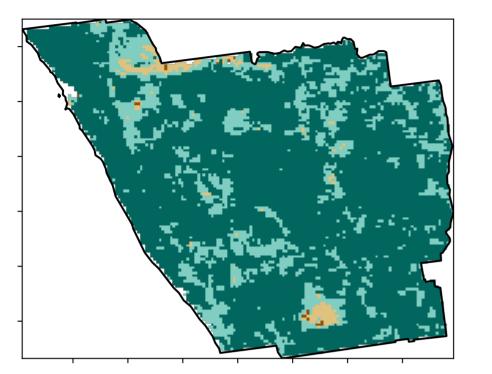
120010000

5201070010

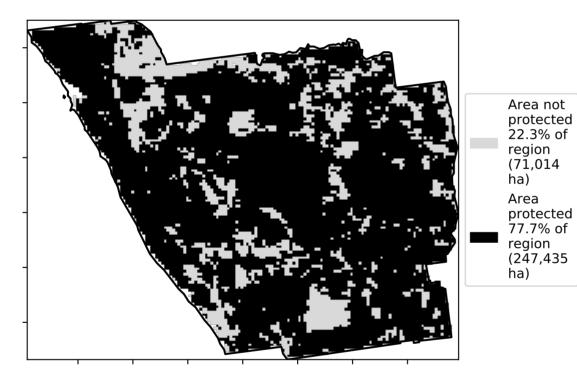
3201050010

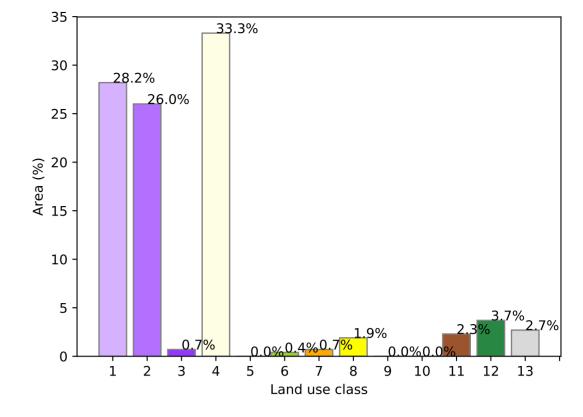
0.30%

Total Vegetation Cover [%]

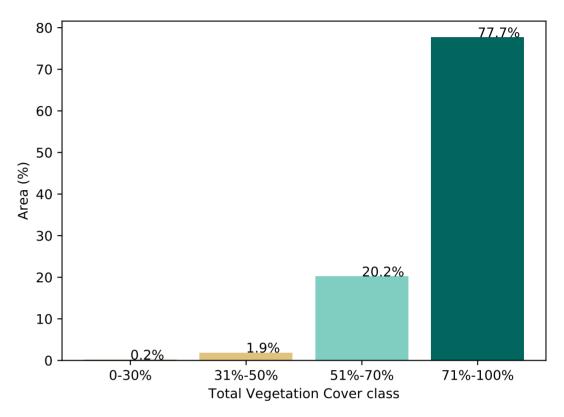


% Area protected from water erosion (>70%)





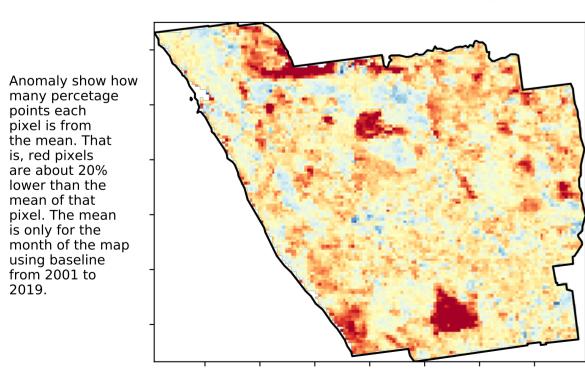
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

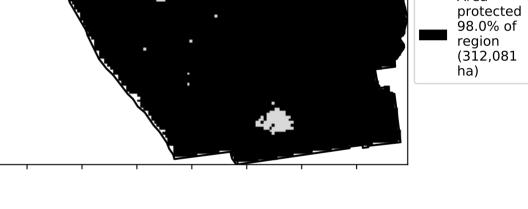


Total Vegetation Cover Anomaly [%]

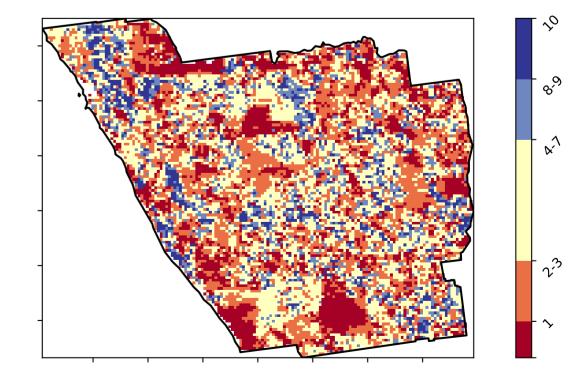


- 20 - 10 - 0 - -10

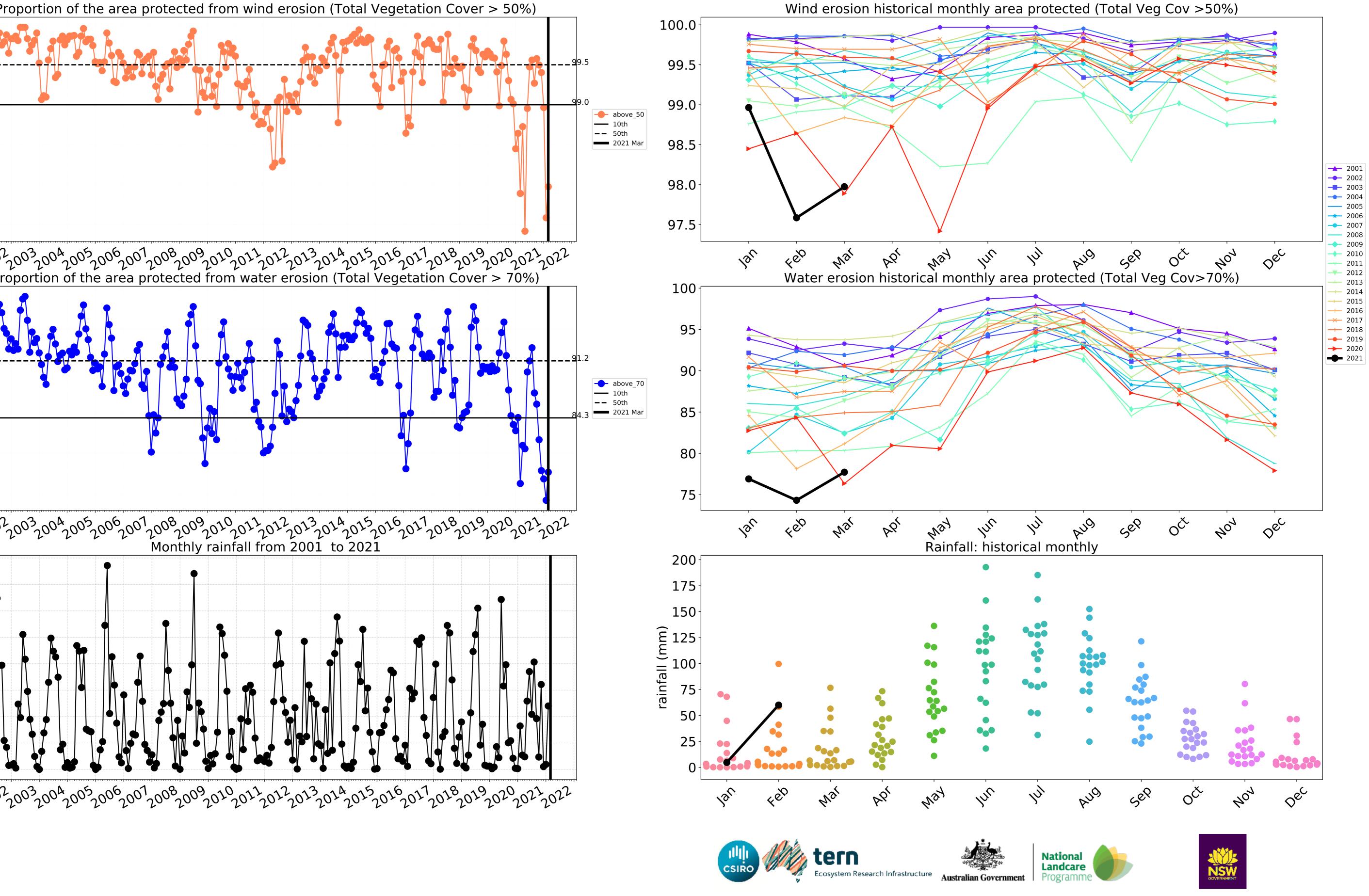
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

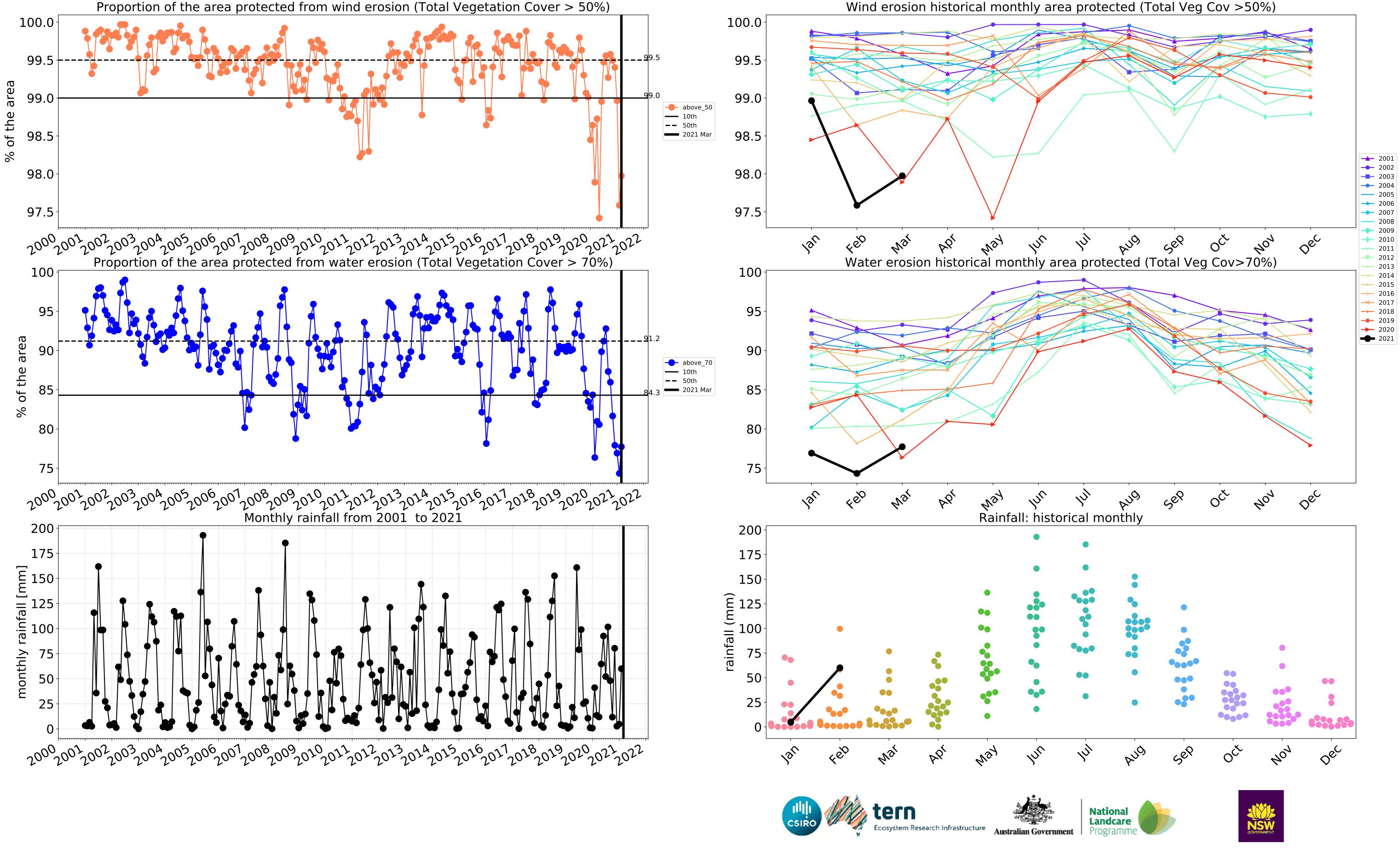


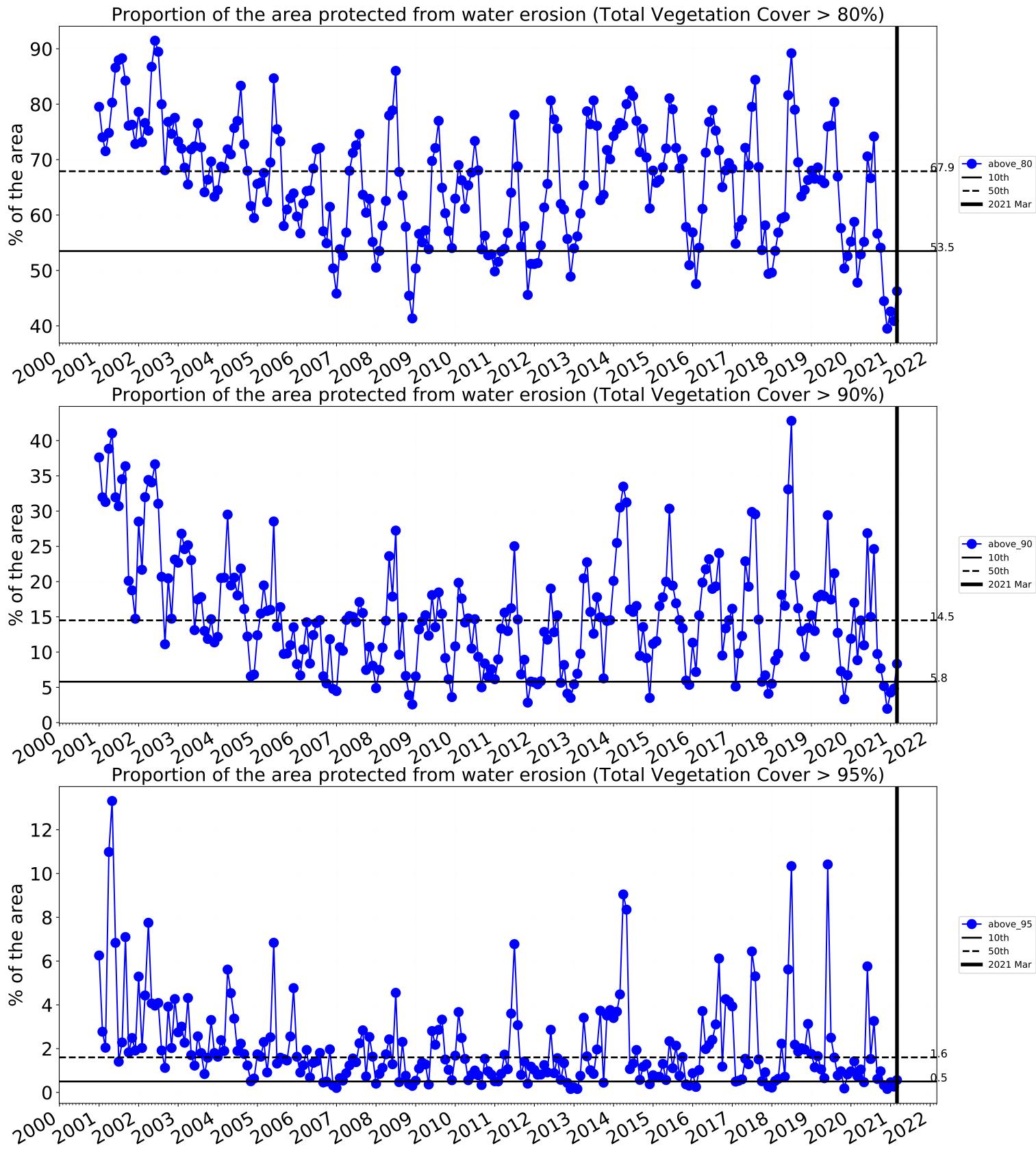
Total Vegetation Cover Decile [%]

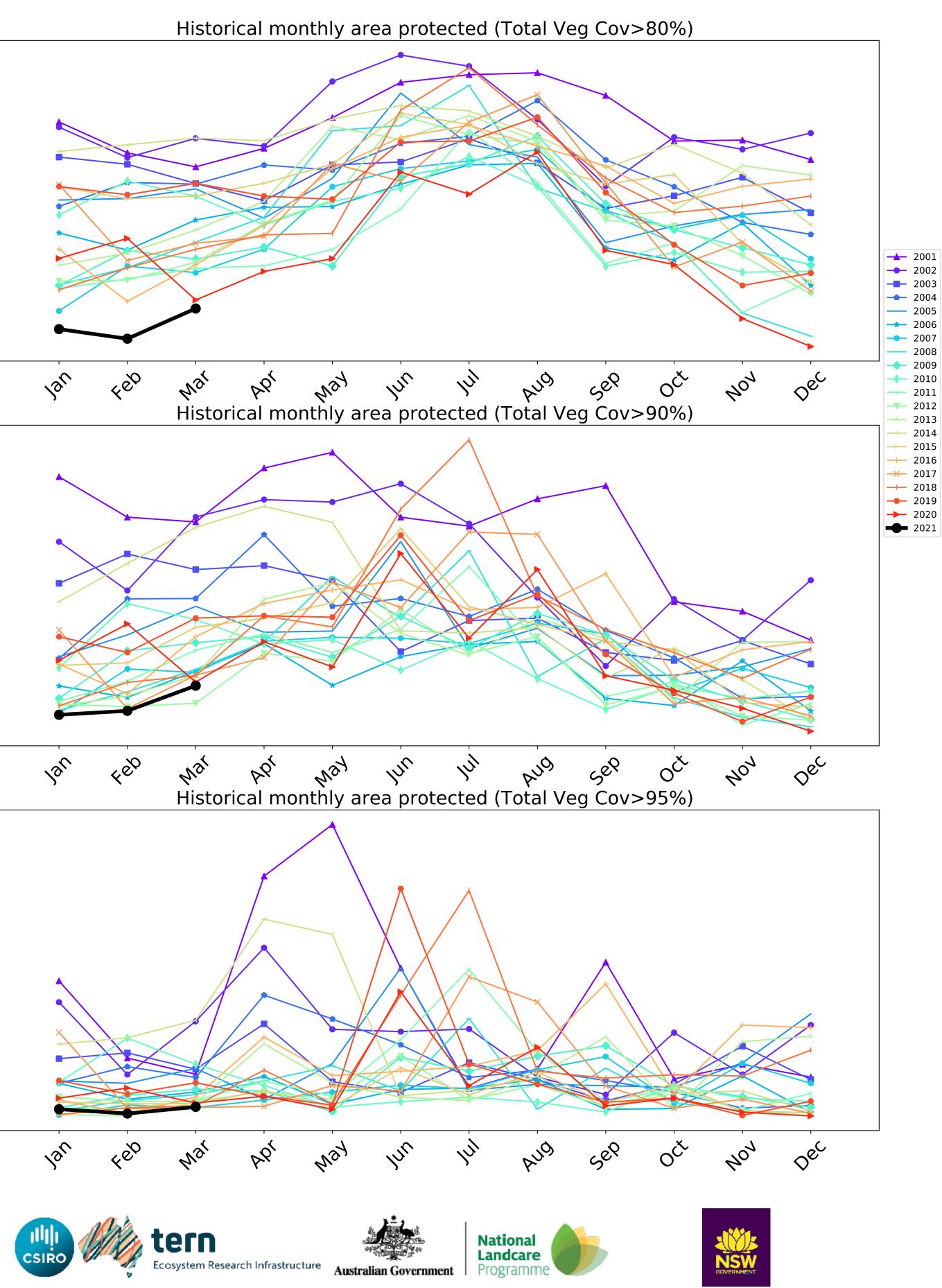














Conservation and natural environments

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

Proportion of each land class in area

47.3%

51.4%

50

40

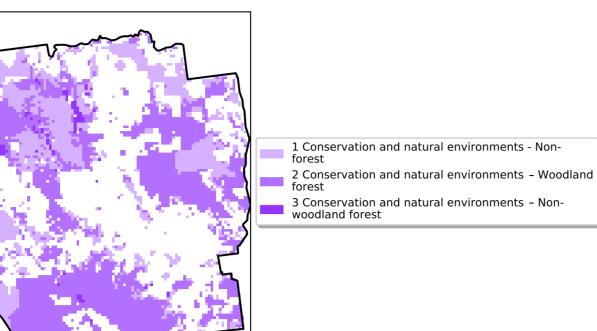
Area (%) . 00

20

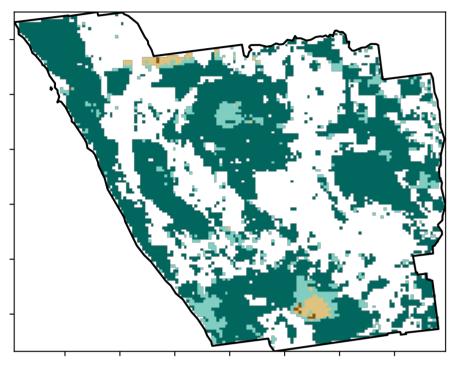
10

0 -

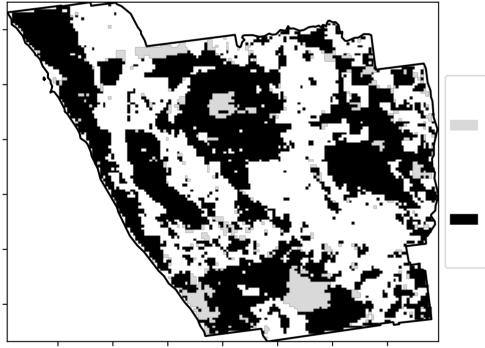
1

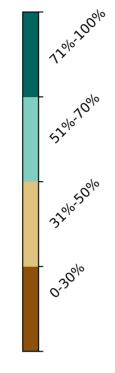


Total Vegetation Cover [%]



% Area protected from water erosion (>70%)







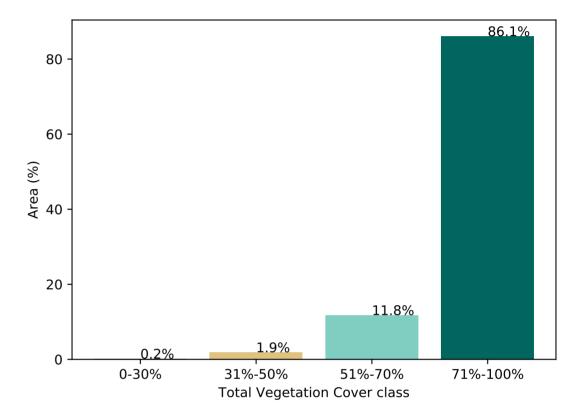
Proportion of vegetation cover class in area

Land use class

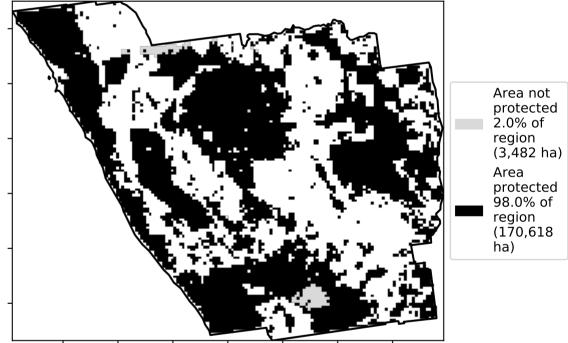
2

1.3%

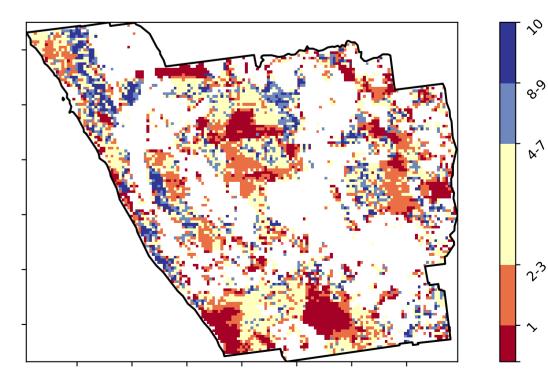
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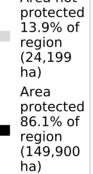


% Area protected from wind erosion (>50%)

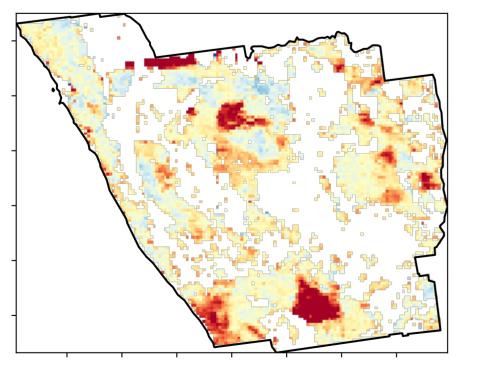


Total Vegetation Cover Decile [%]





Total Vegetation Cover Anomaly [%]



10 0 -10

- -20

20

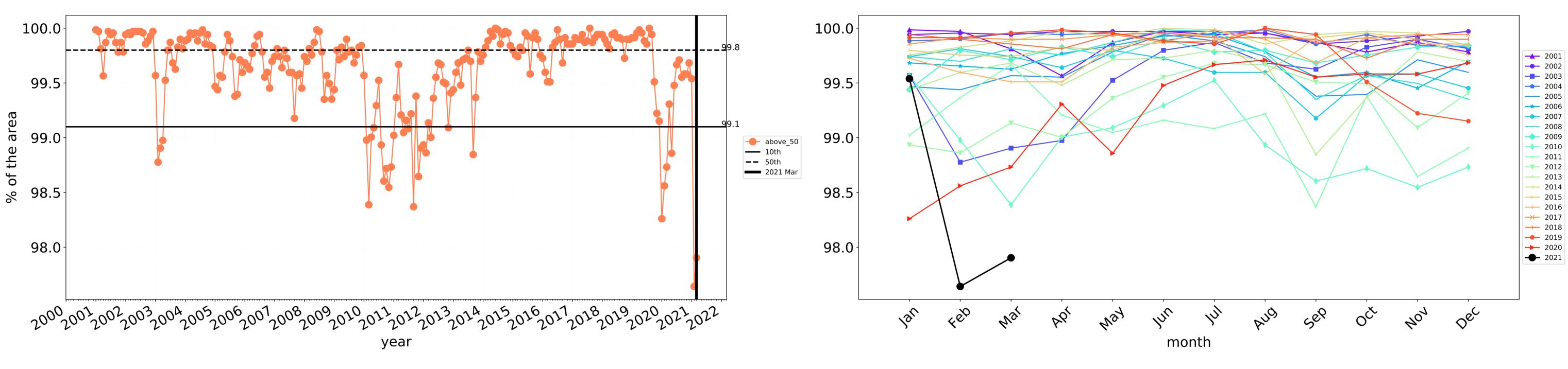
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





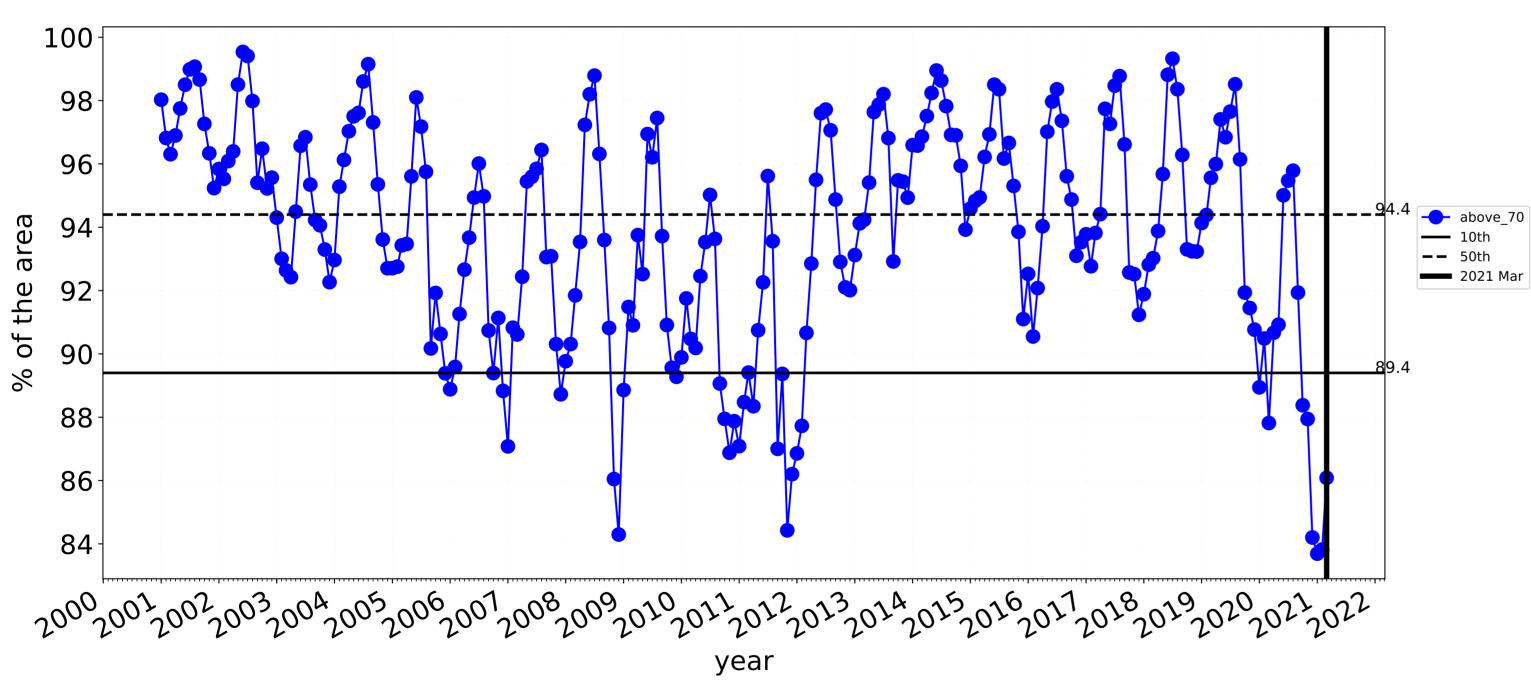
3

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.



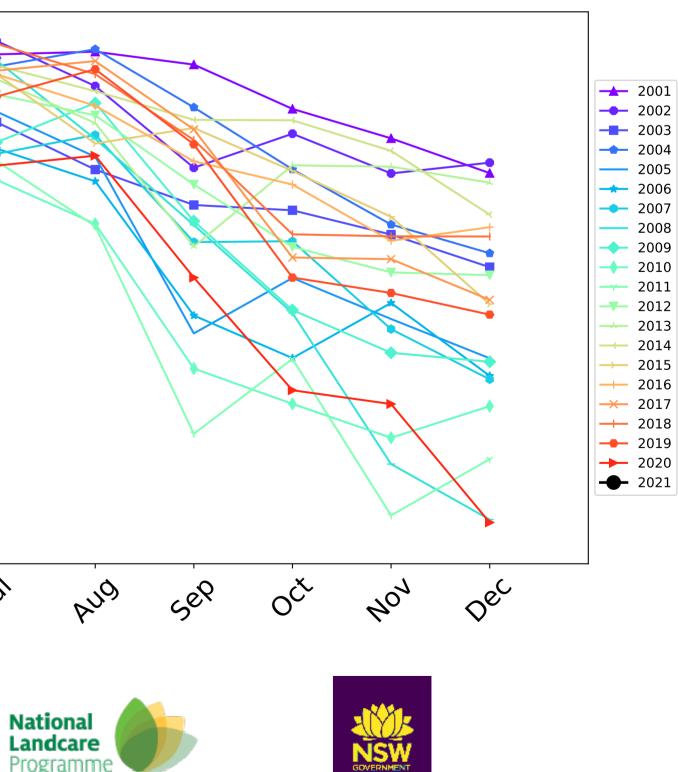
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

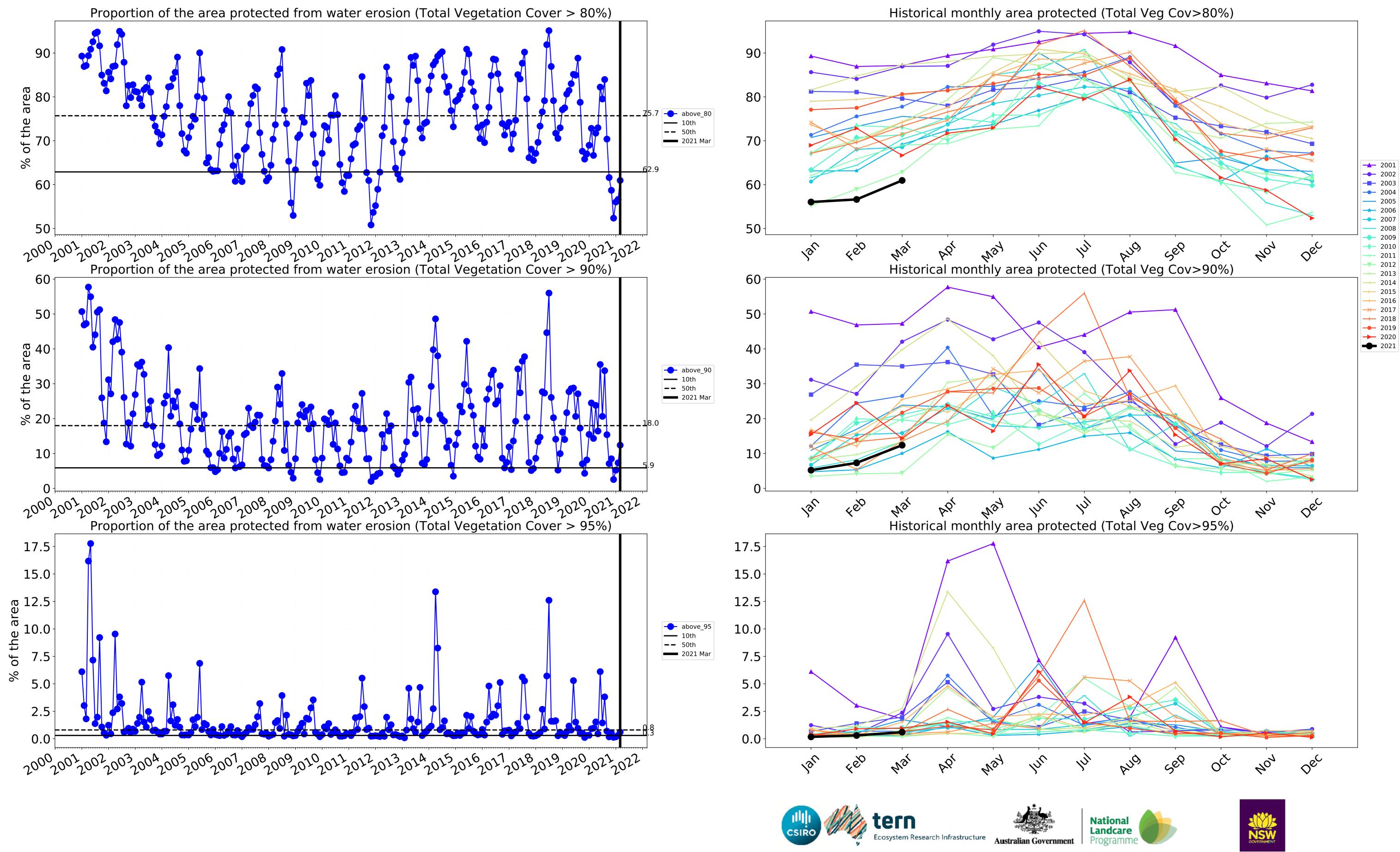




100 -98 96 94 92 90 88 86 84 feb In way 12r Mai PQ1 1/2/ month tern Ecosystem Research Infrastructure Programme Australian Government

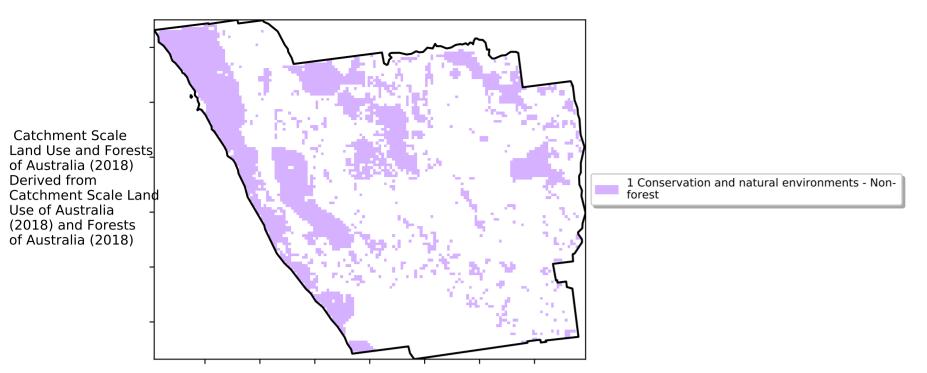
Water erosion historical monthly area protected (Total Veg Cov>70%)



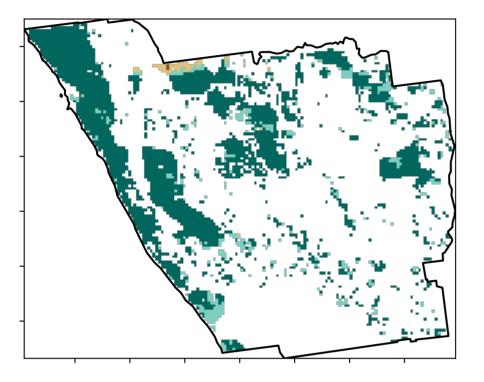


Conservation and natural environments non forest

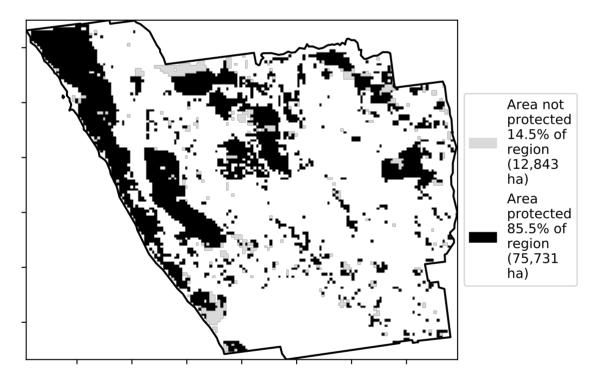
Land use and forest cover



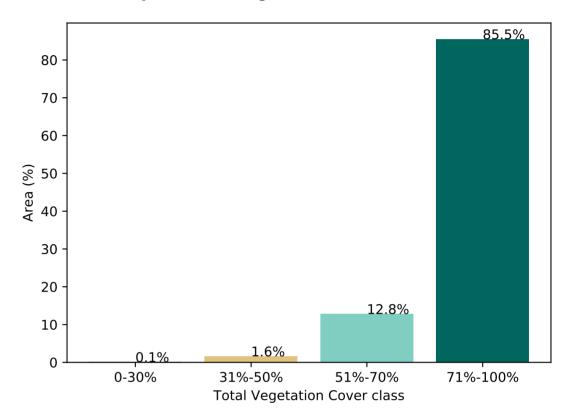
Total Vegetation Cover [%]



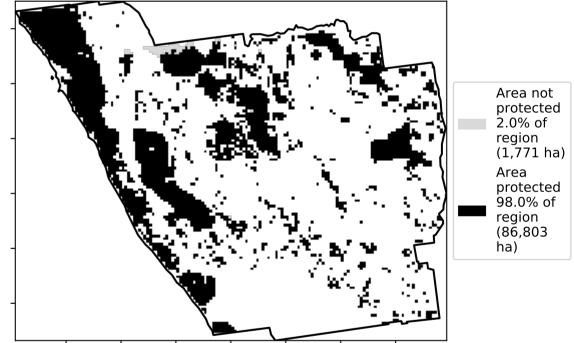
% Area protected from water erosion (>70%)



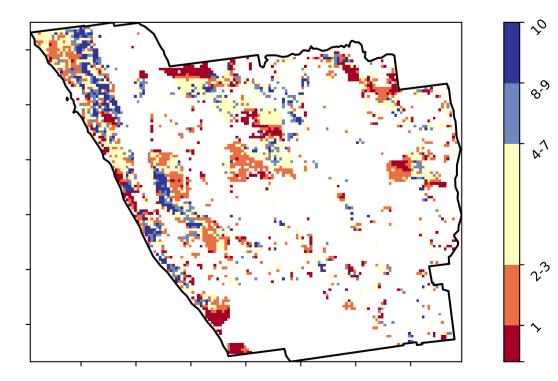




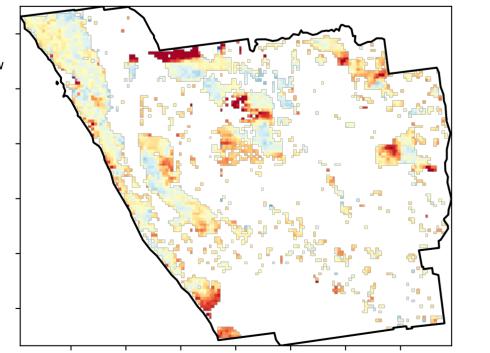
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]





- -20

- 20

12%100%

· 52°10'70°10

32005000

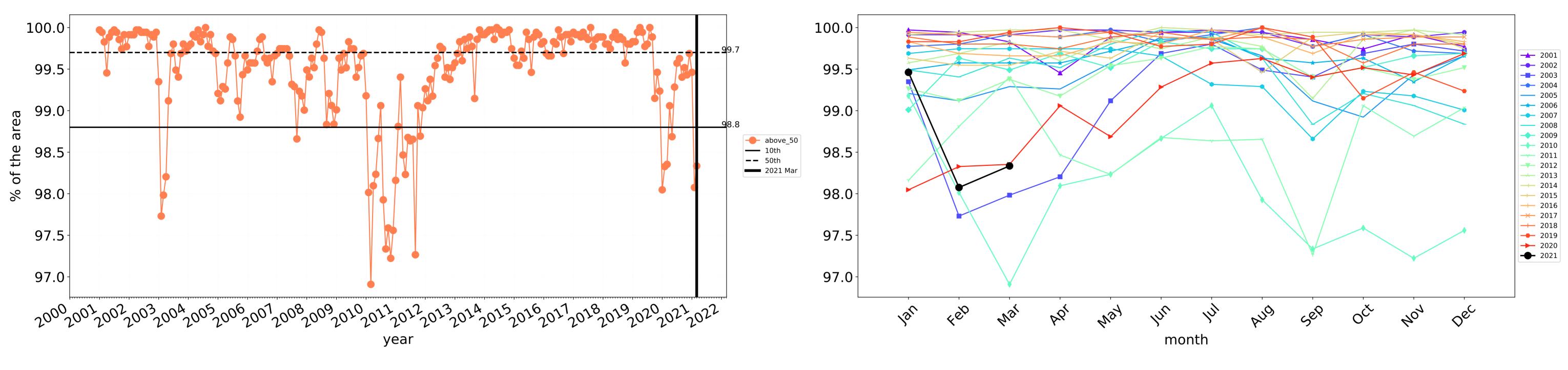
0.30%

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.

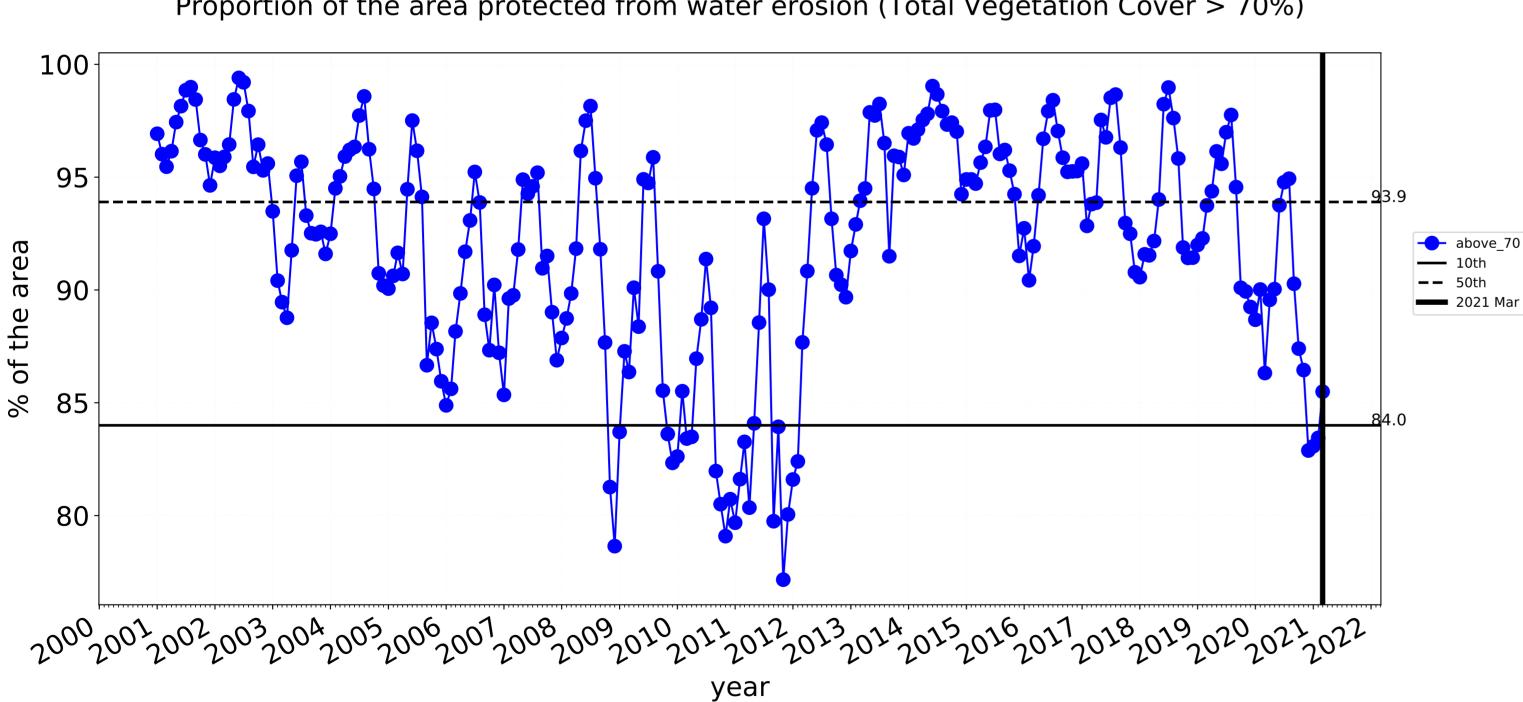


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

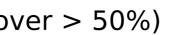
Conservation and natural environments non forest timeseries



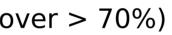
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

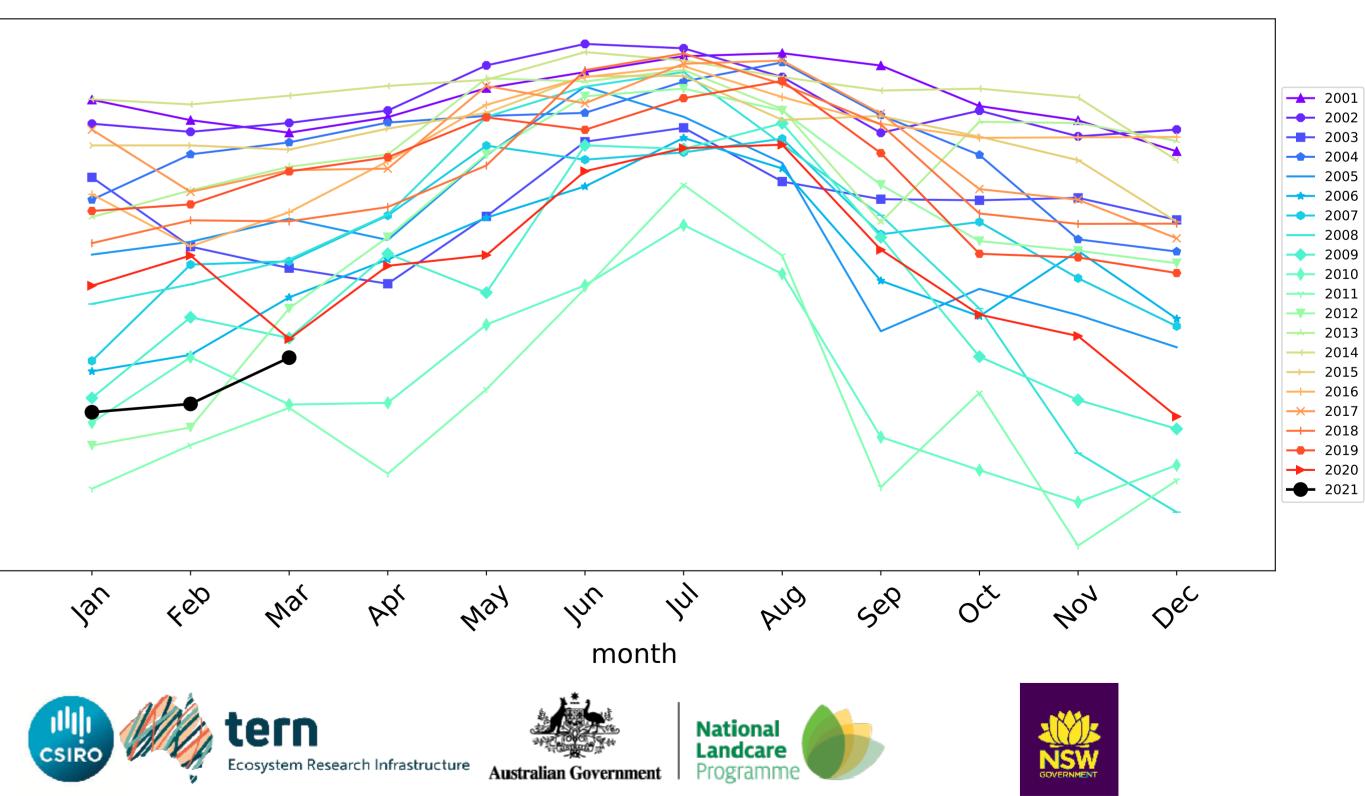


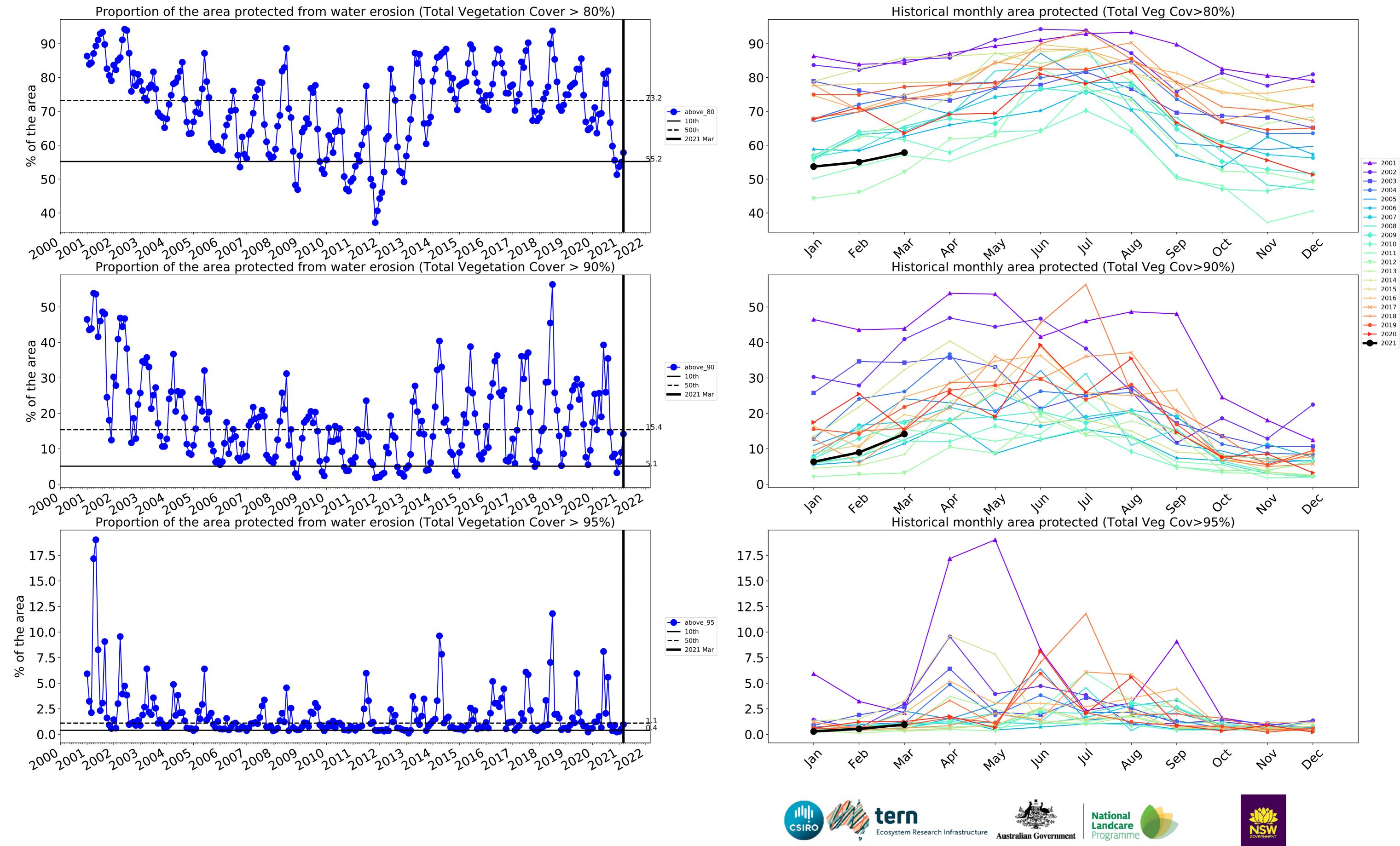
Wind erosion historical monthly area protected (Total Veg Cov >50%)



100-95 90 85 80 lar

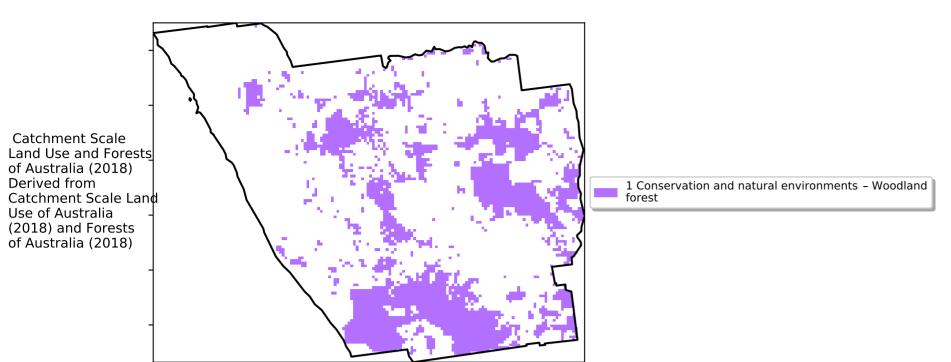
Water erosion historical monthly area protected (Total Veg Cov>70%)



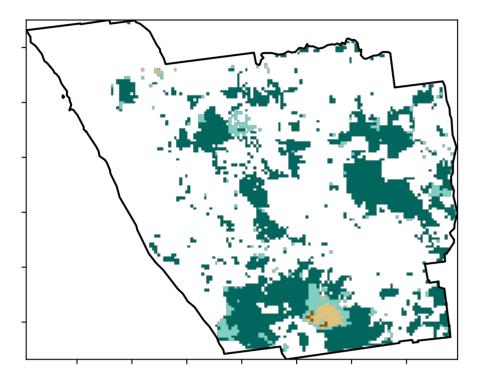


Conservation and natural environments Woodland forest

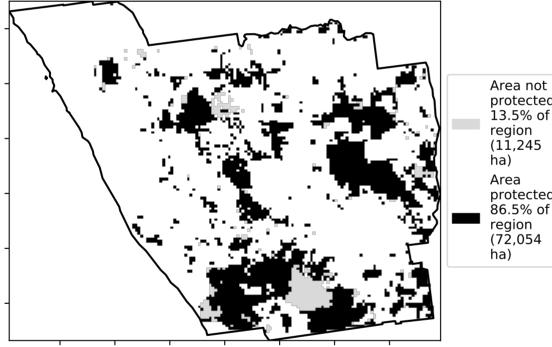
Land use and forest cover



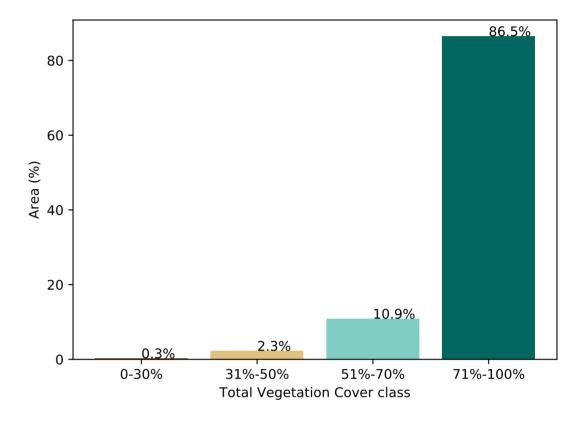
Total Vegetation Cover [%]



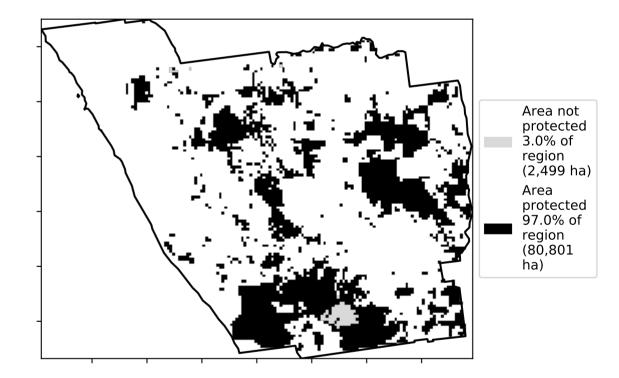
% Area protected from water erosion (>70%)



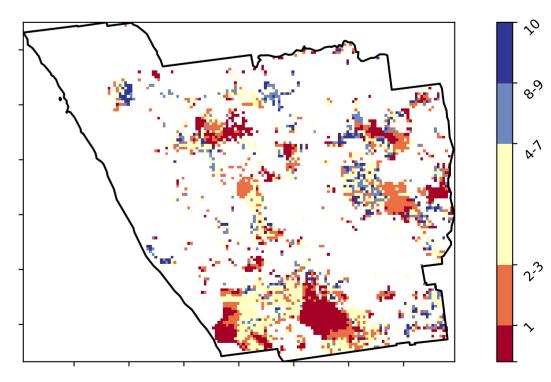
Proportion of vegetation cover class in area

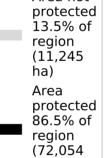


% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





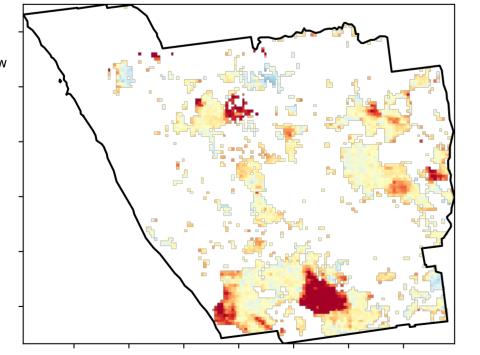
12% 10°10

· 52°10'70°10

32°1050010

0.30%

Total Vegetation Cover Anomaly [%]



10 0 -10

- -20

20

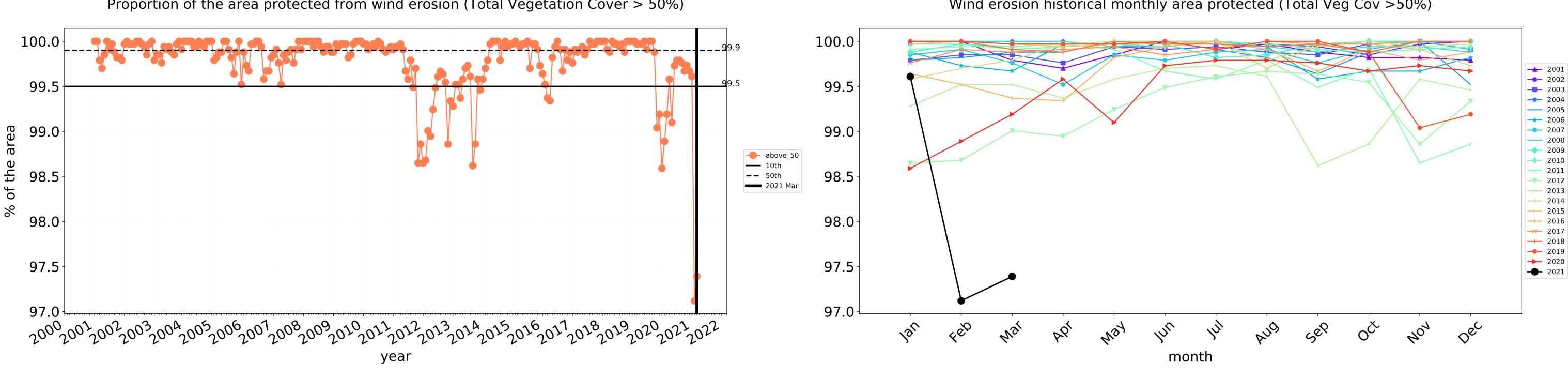
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.





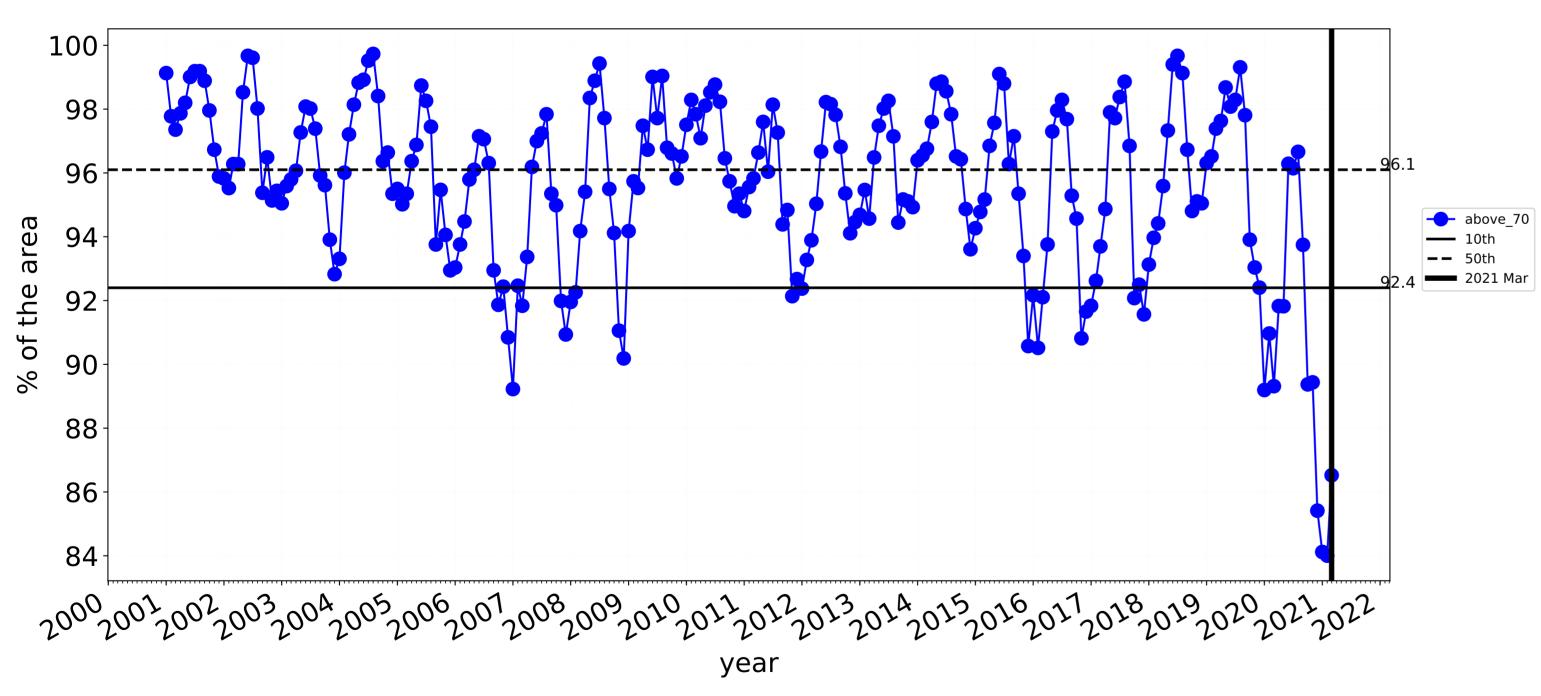


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

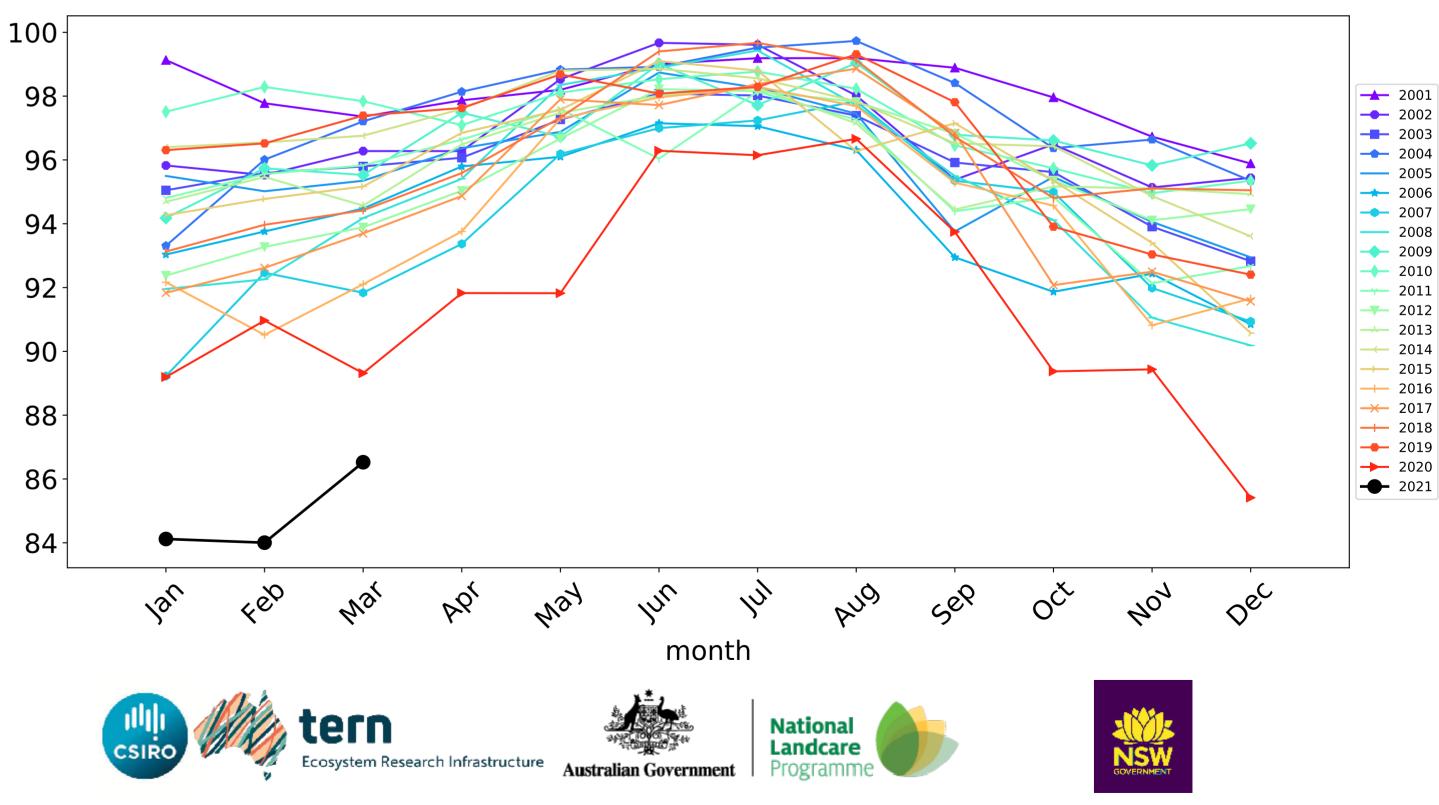


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

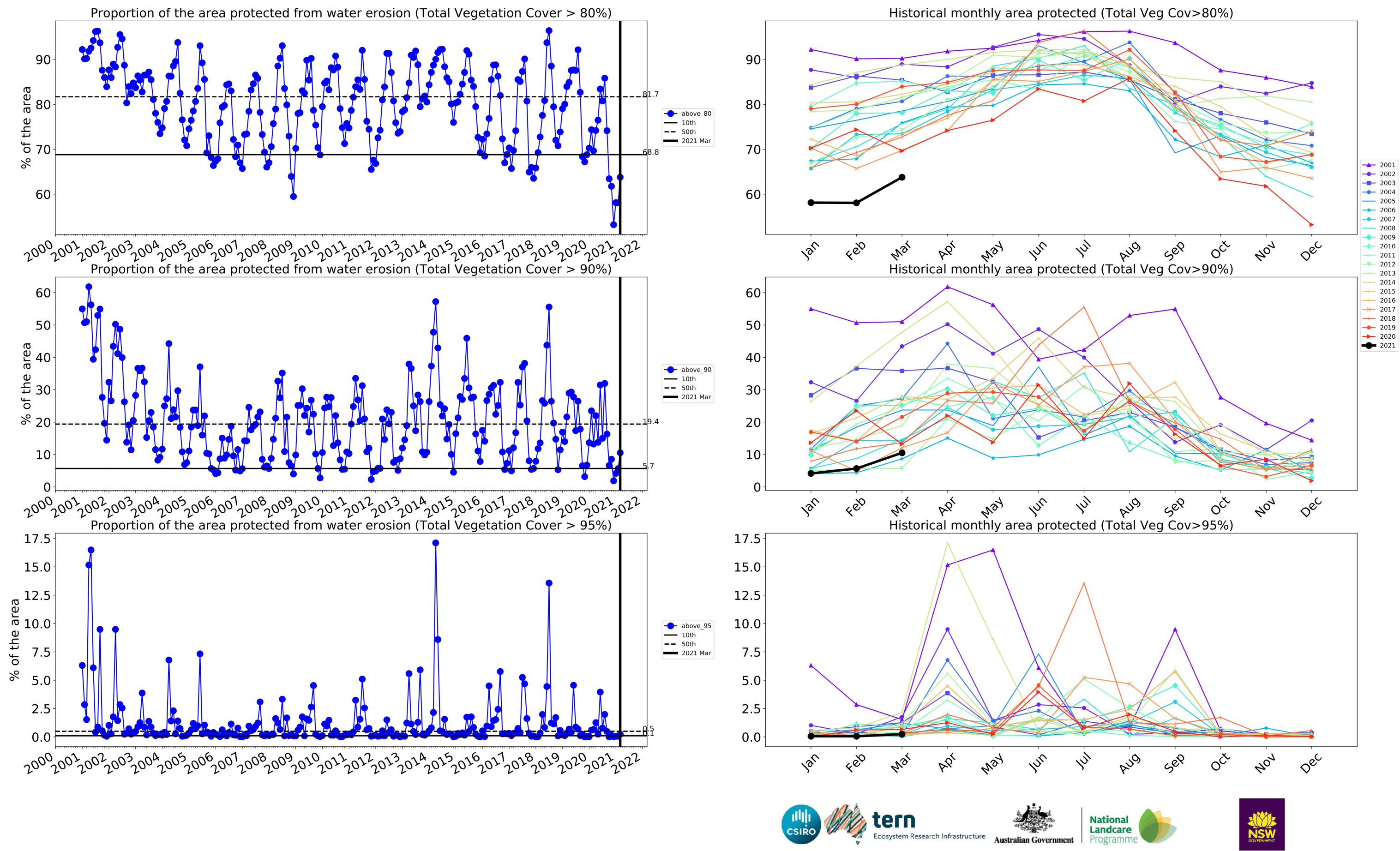




Wind erosion historical monthly area protected (Total Veg Cov >50%)



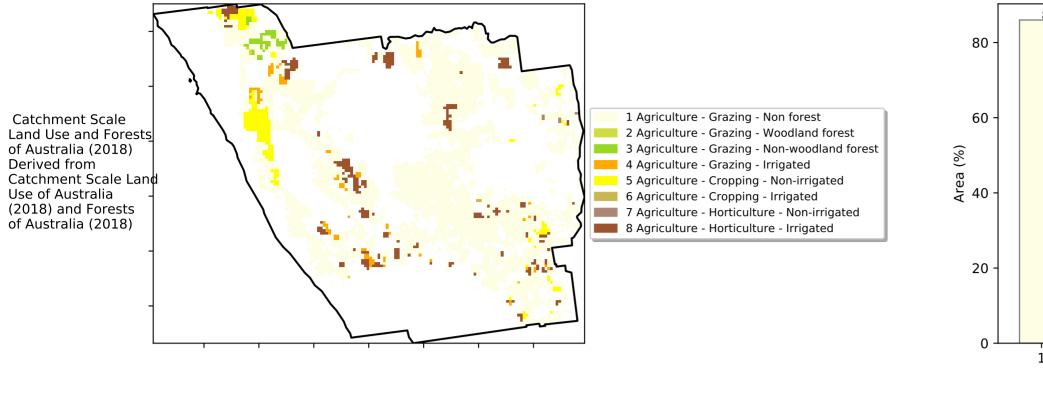
Water erosion historical monthly area protected (Total Veg Cov>70%)



Agriculture

Land use and forest cover

Proportion of each land class in area



12%100%

5200000

32°1050°10

0.30%

region (40,613

protected 67.3% of

region (83,586

20

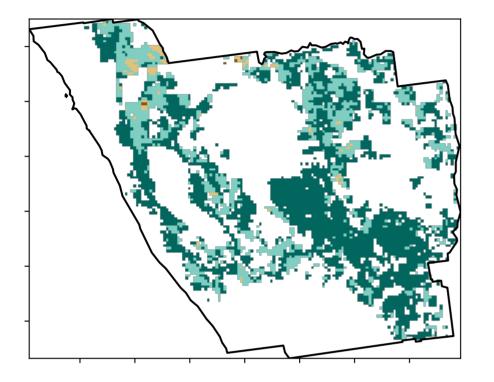
10

ha)

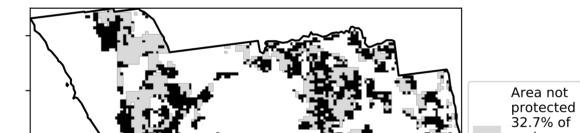
ha)

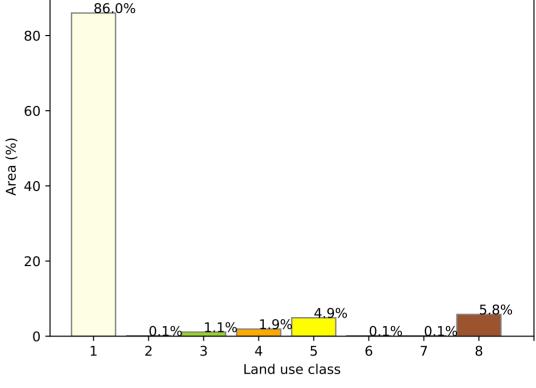
Area

Total Vegetation Cover [%]

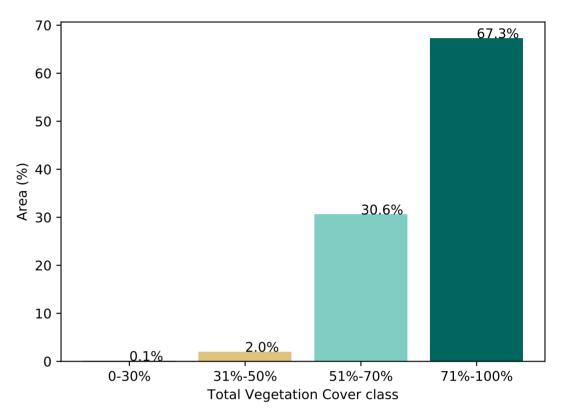


% Area protected from water erosion (>70%)

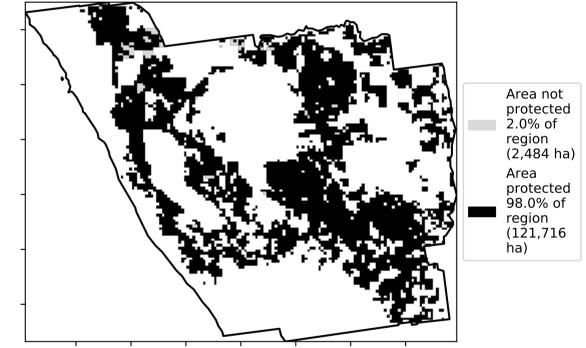




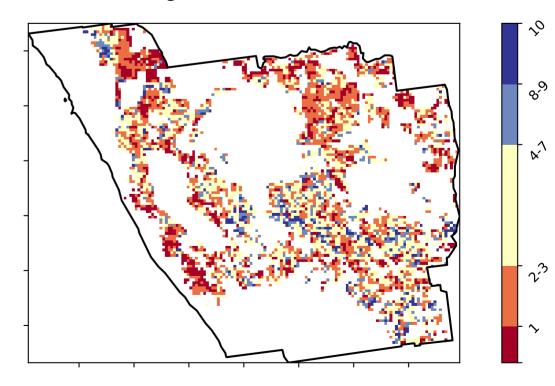
Proportion of vegetation cover class in area

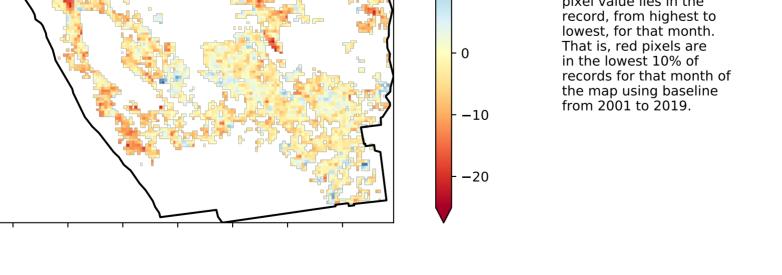


% Area protected from wind erosion (>50%)

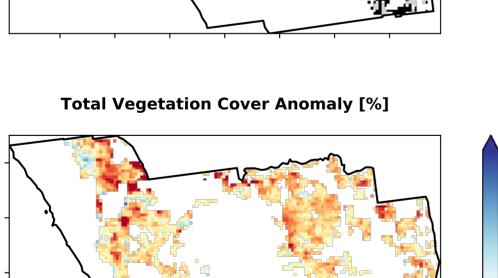


Total Vegetation Cover Decile [%]







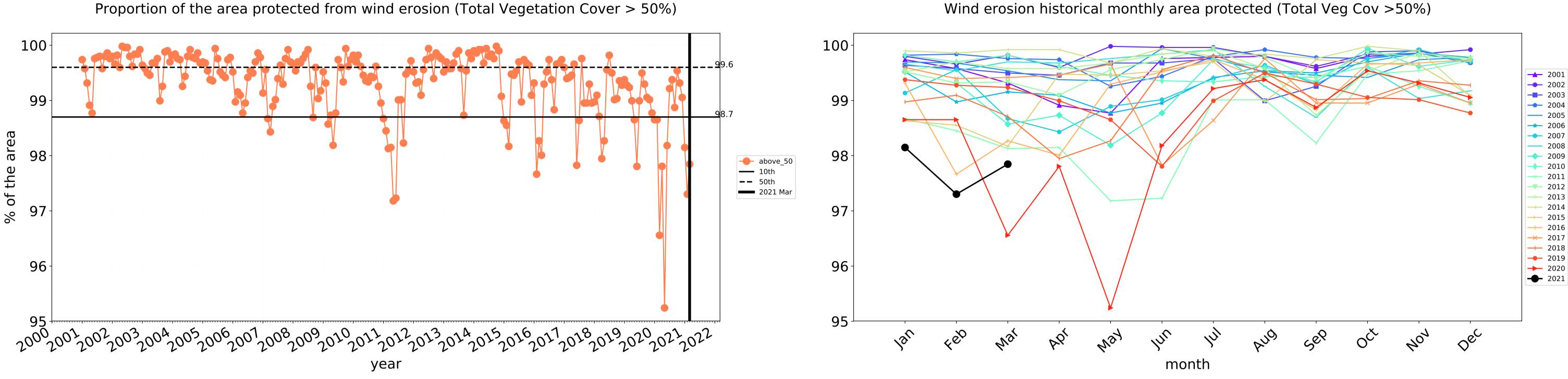


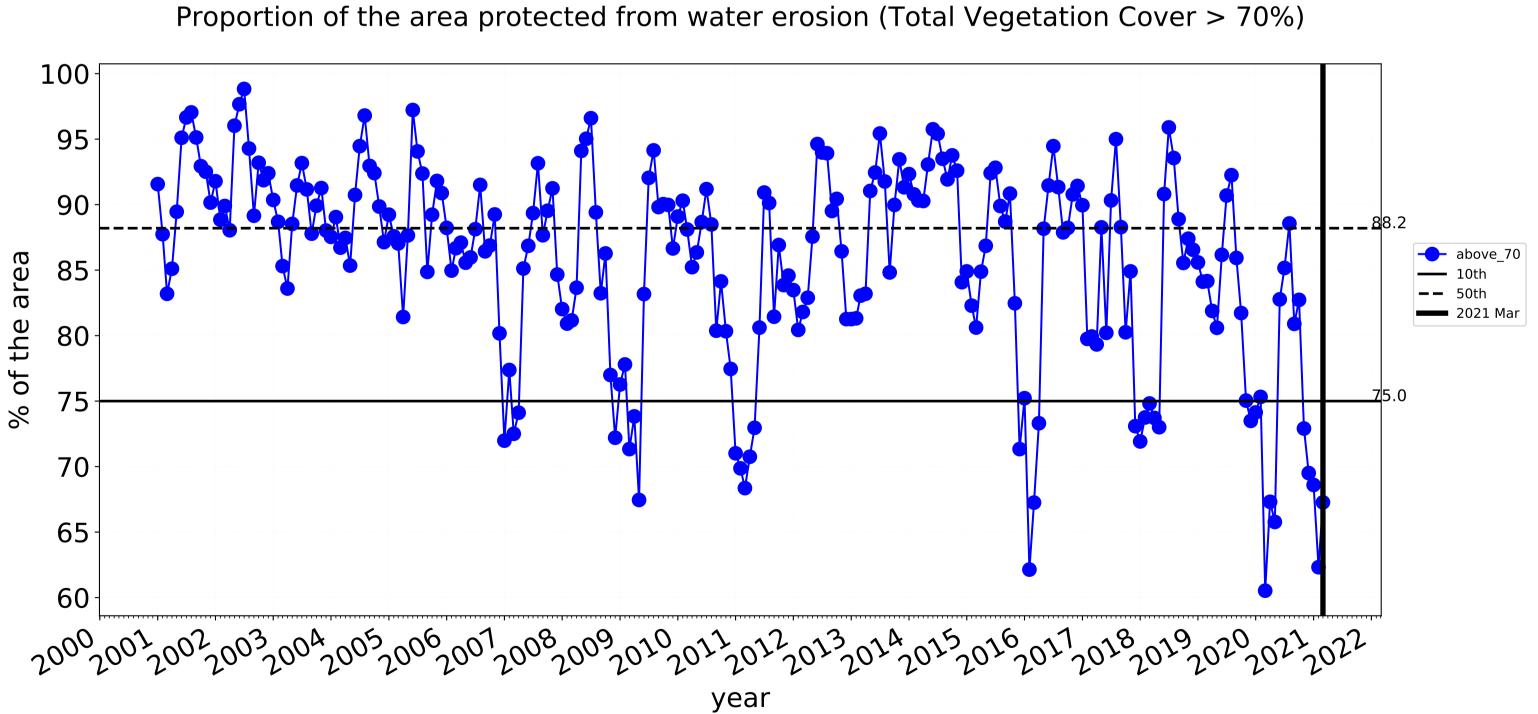
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Deciles show where the

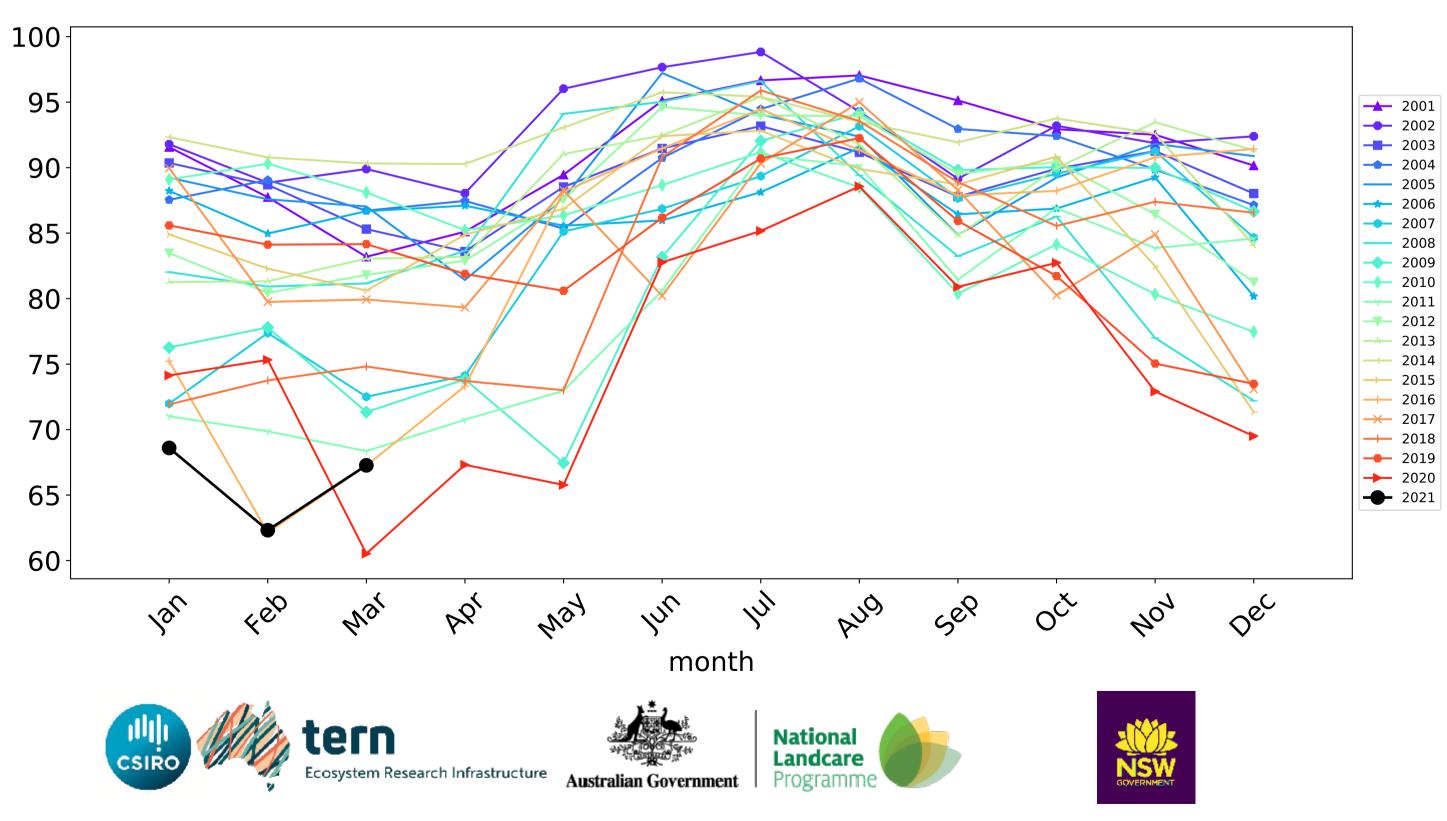
pixel value lies in the

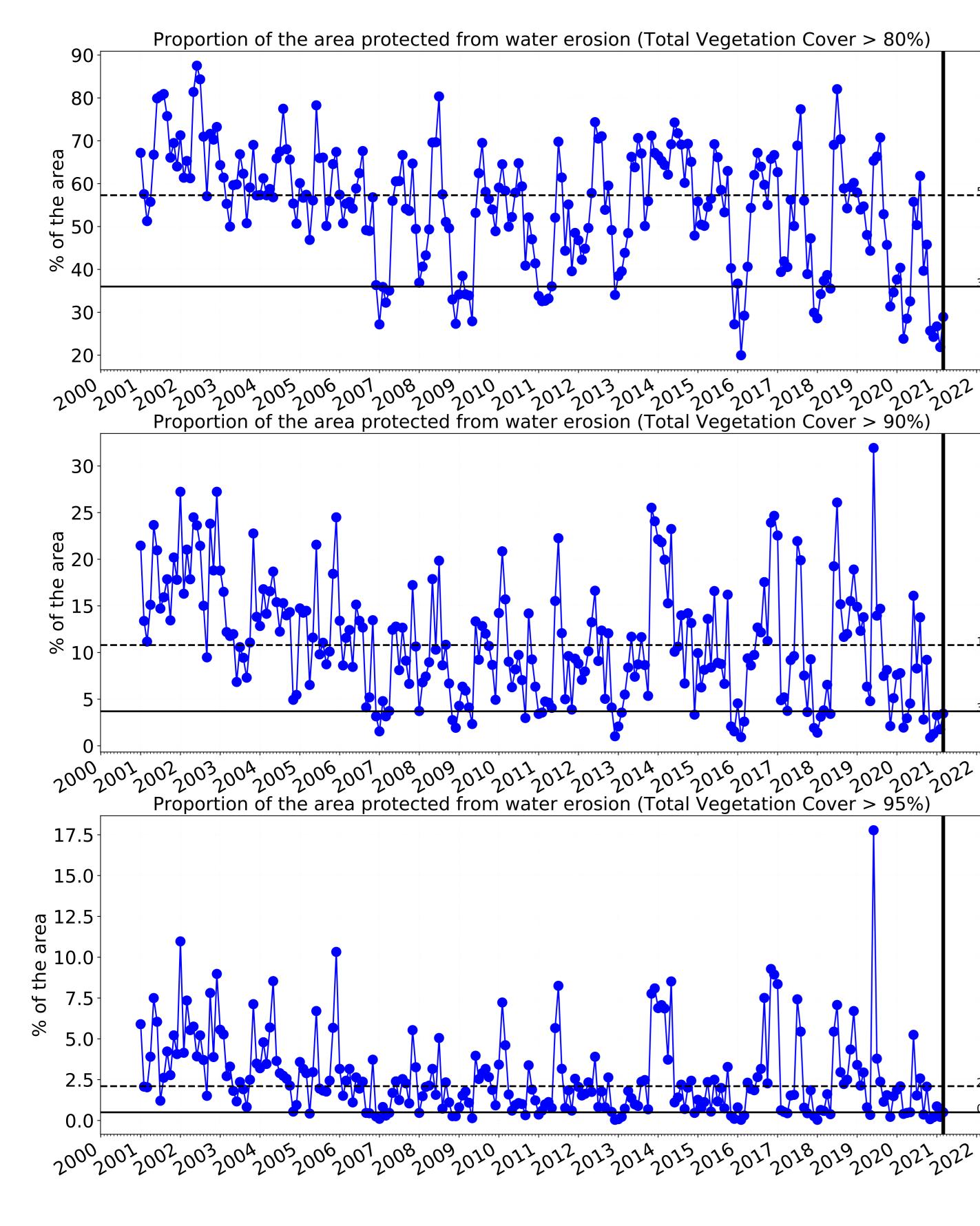


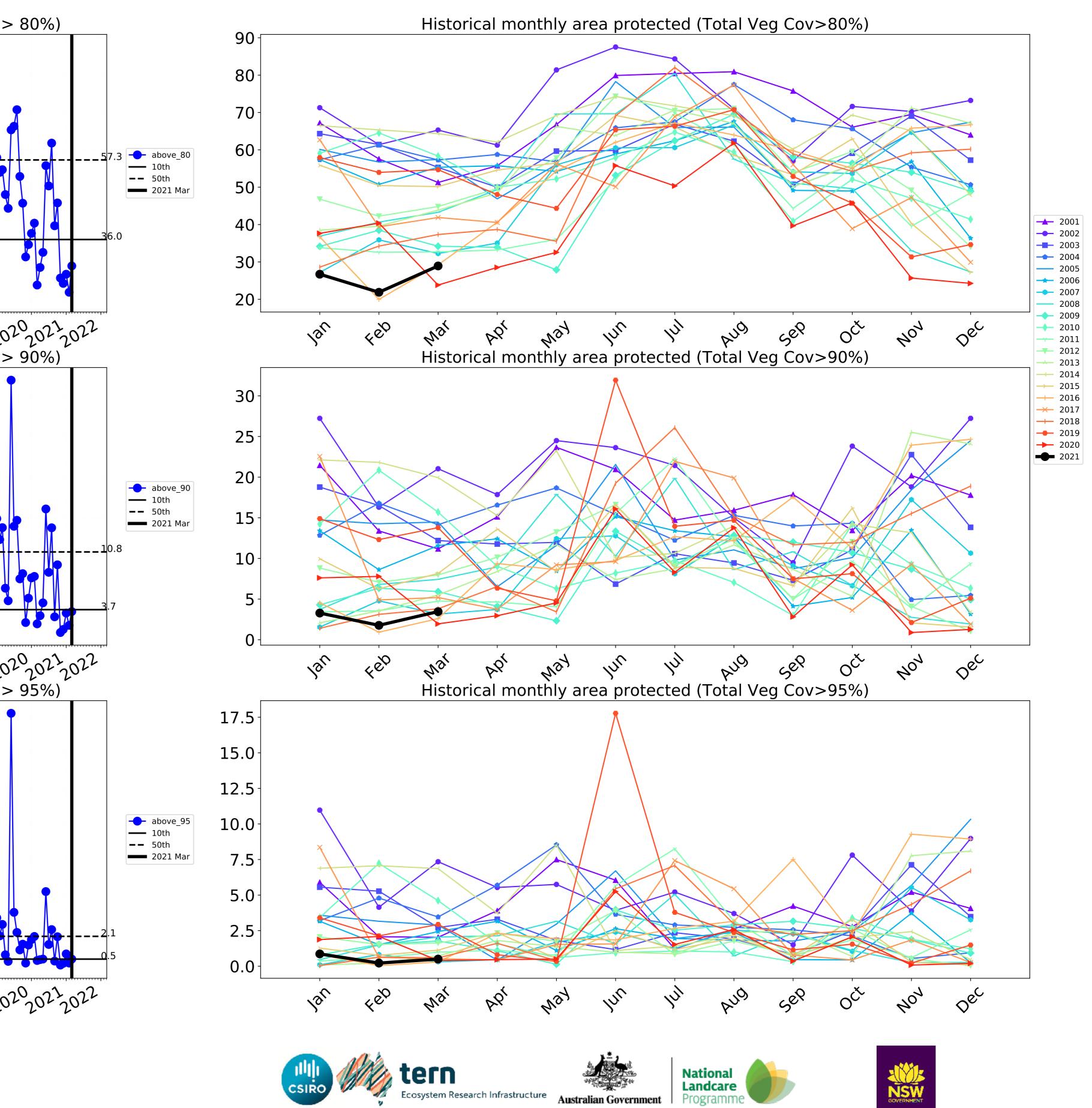




Agriculture timeseries



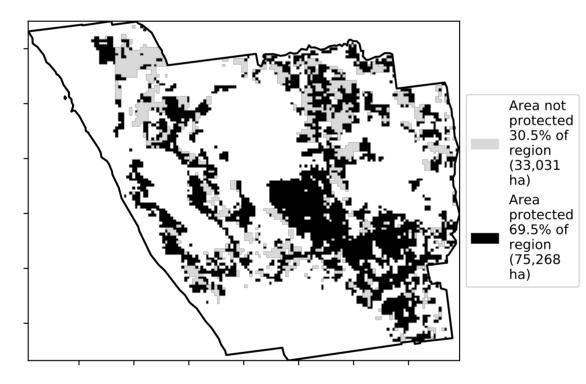




Grazing

Land use and forest cover 98.6% 100 80 -Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 60 Area (%) 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest 40 20 0.1% 0 -1 2 Land use class **Total Vegetation Cover [%]** Proportion of vegetation cover class in area 12%-200% 70 60 · 52°1070010 50 · 04 (%) - 05 (%) 320050010 28.3% 20 · 0.30% 10 -2.0% 0.2% 0 · 51%-70% 0-30% 31%-50%

% Area protected from water erosion (>70%)



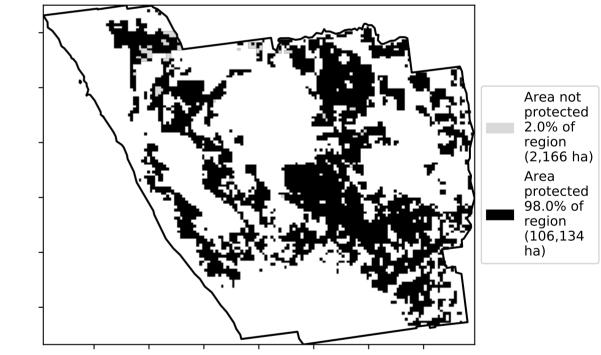
Proportion of each land class in area

1.3%

69.5%

71%-100%

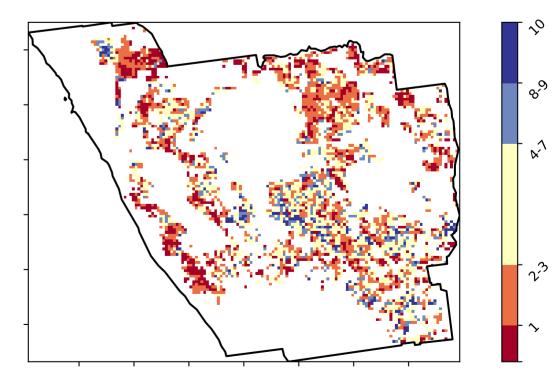
3



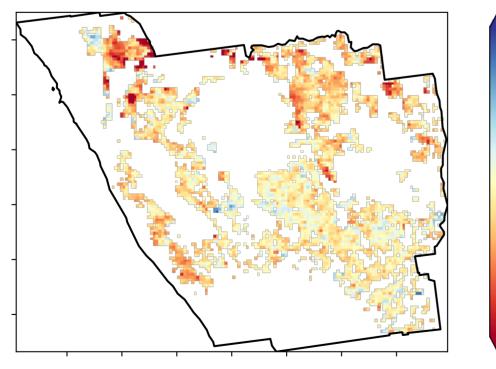
Total Vegetation Cover class

% Area protected from wind erosion (>50%)

Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]



10 0 -10- -20

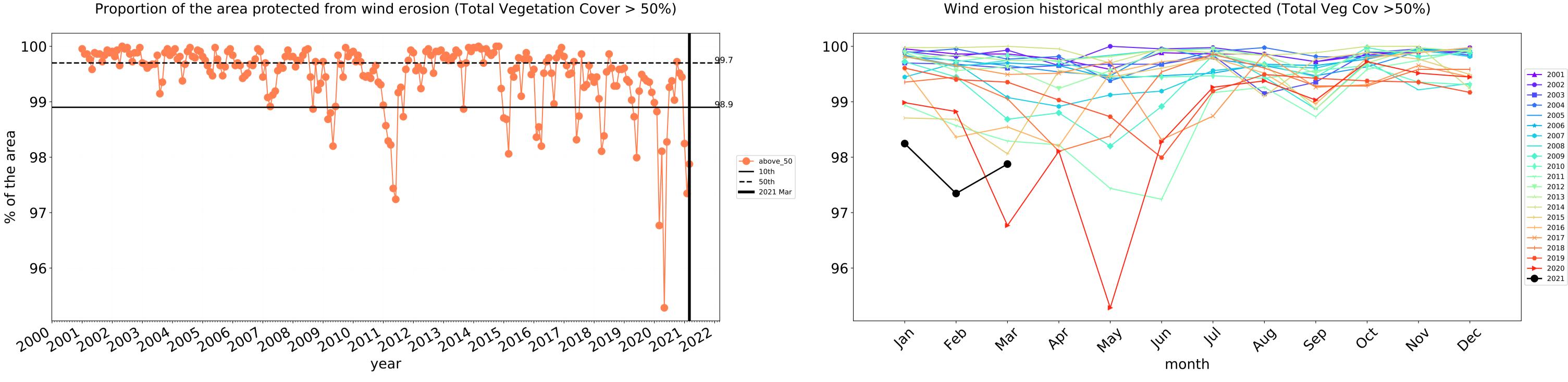
- 20

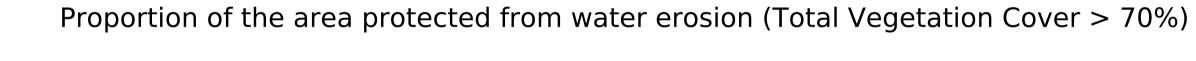
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.

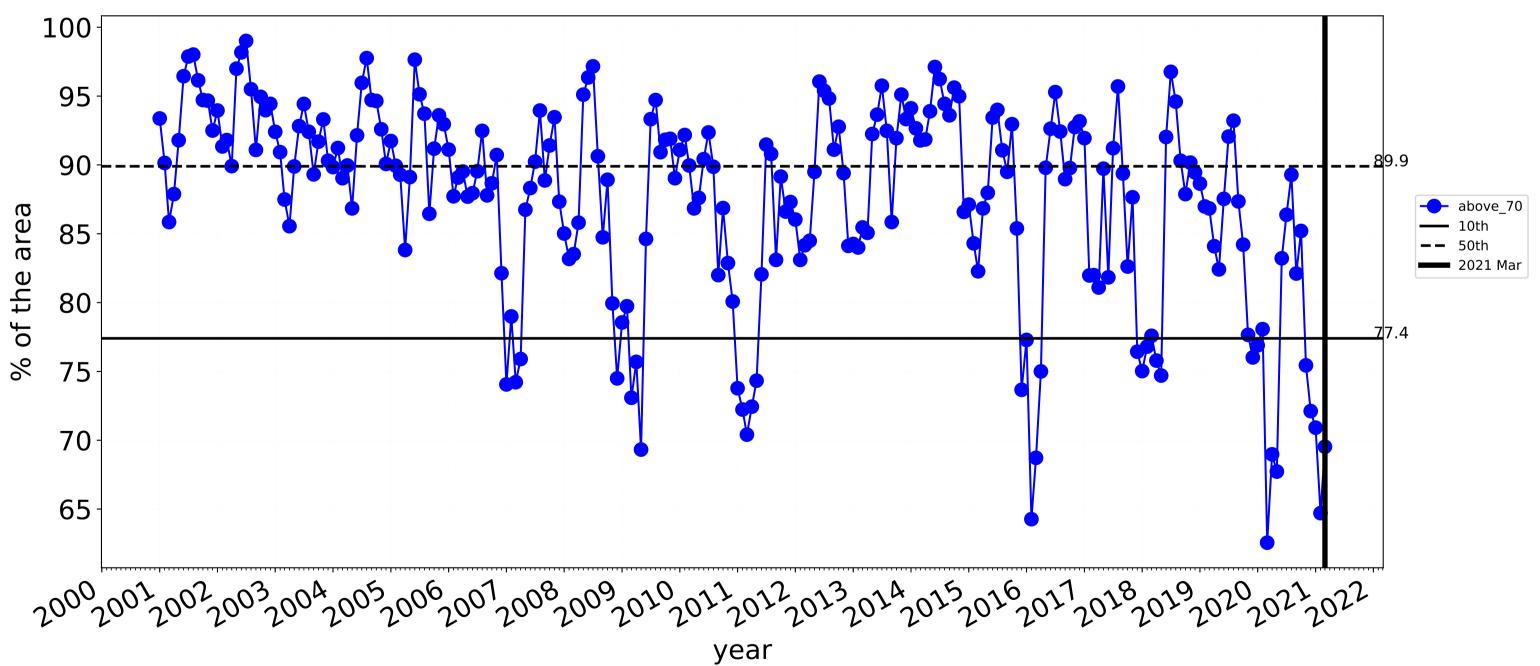


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

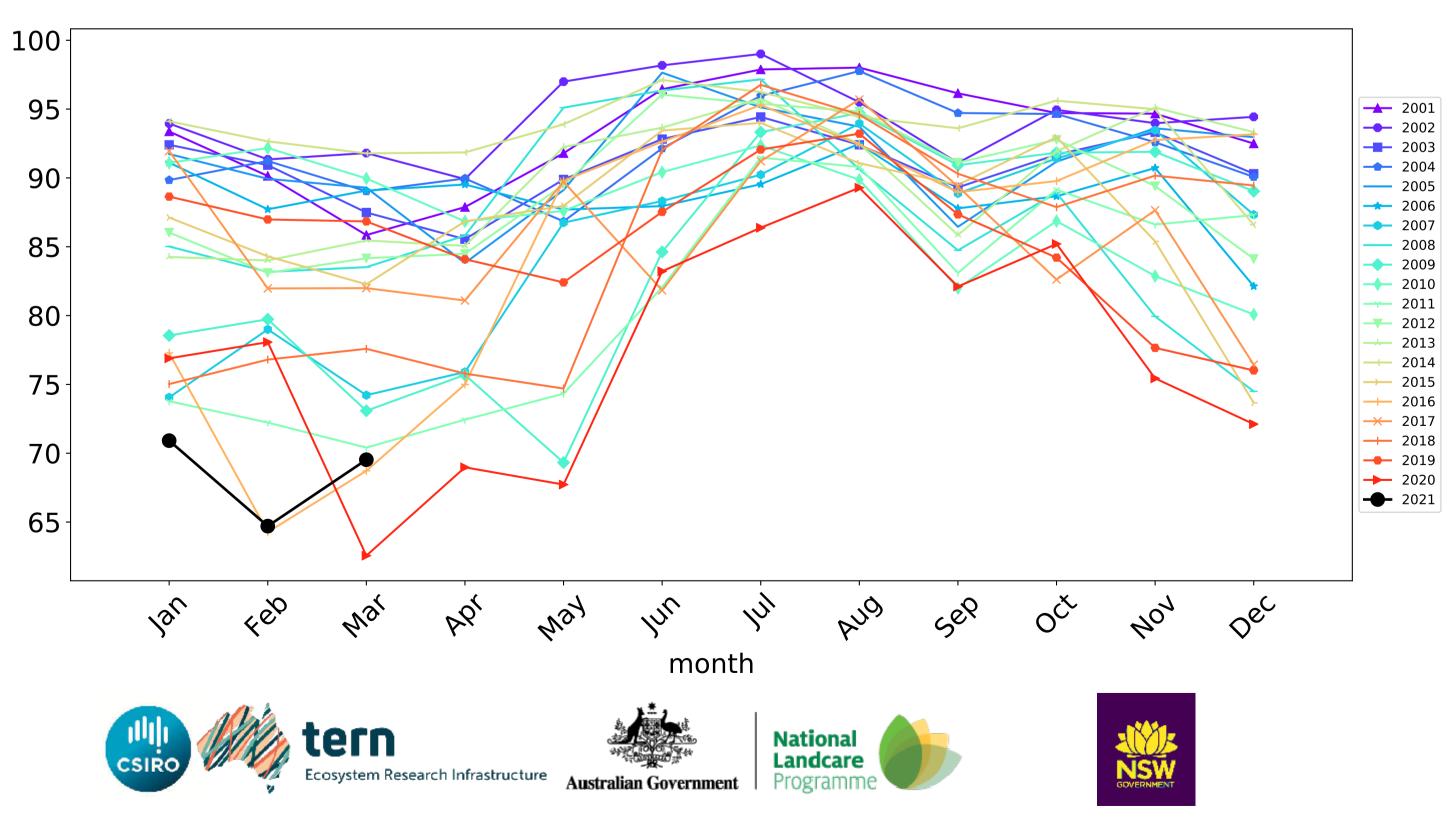


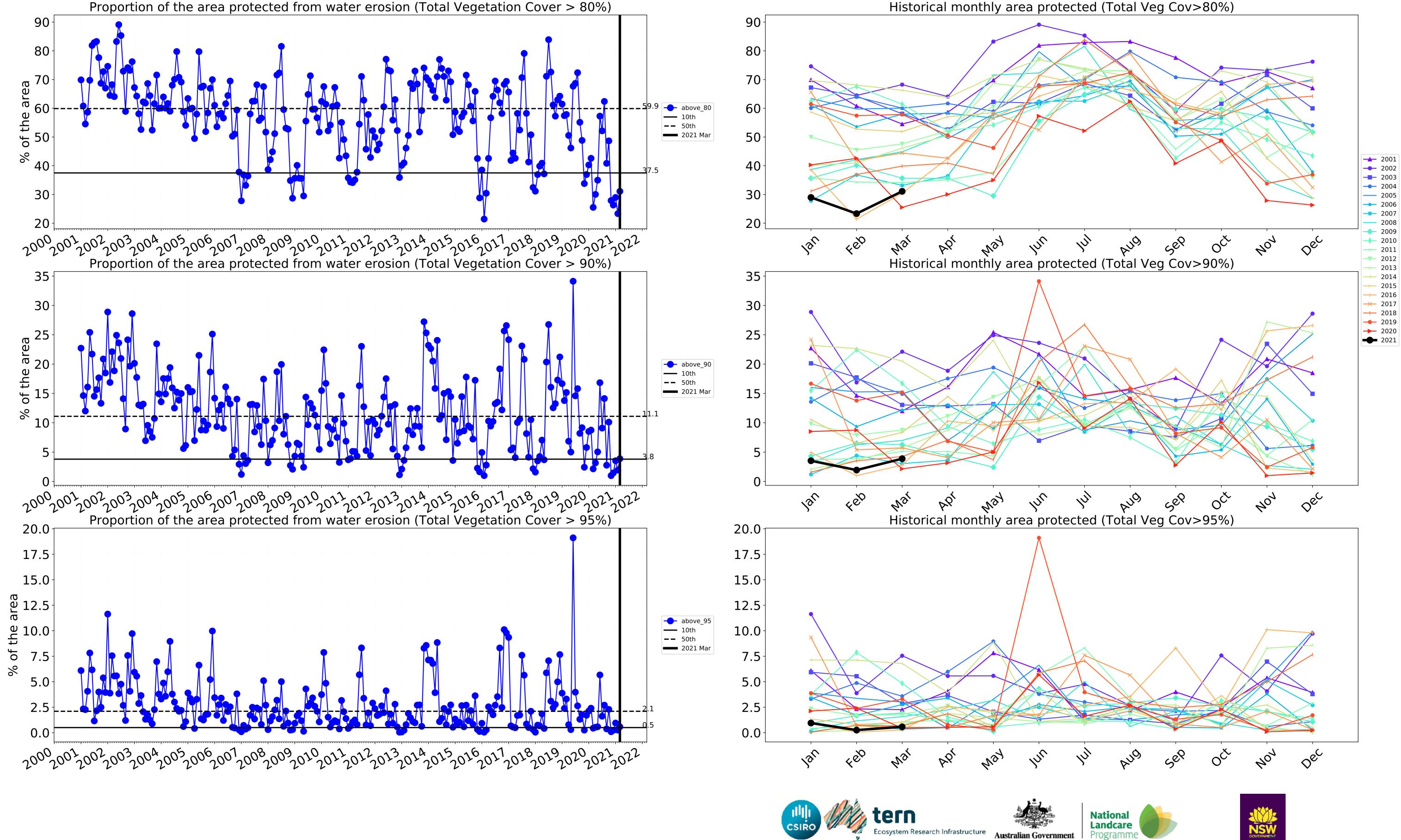






Grazing timeseries





Grazing non forest

12%-200%

52°10010

3201050010

0.30%

region (31,612

protected 70.4% of

region (75,187 ha)

- 20

10

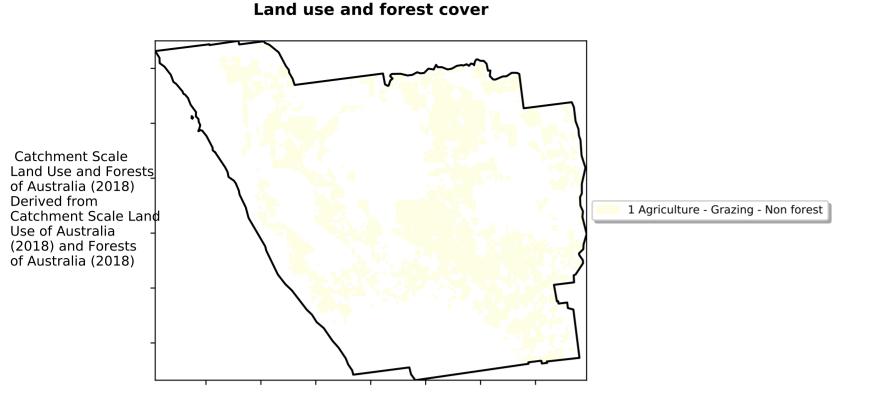
0

-10

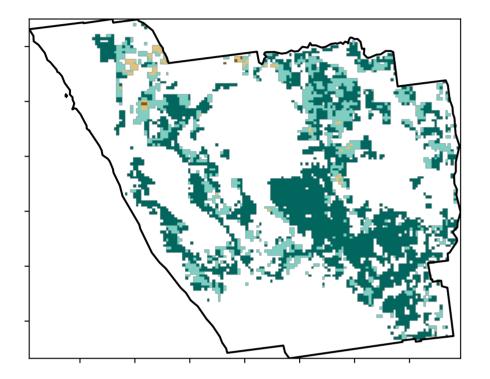
- -20

ha)

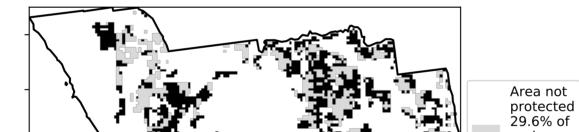
Area



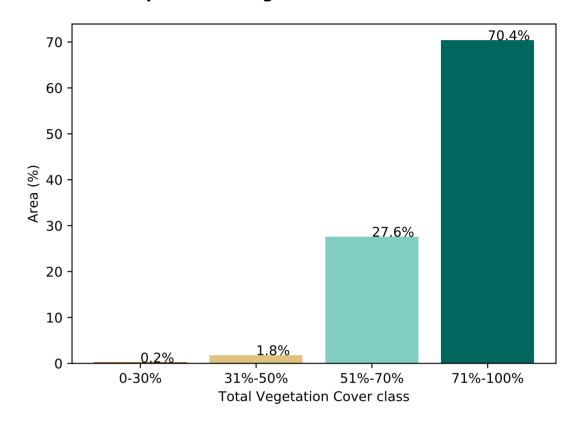
Total Vegetation Cover [%]



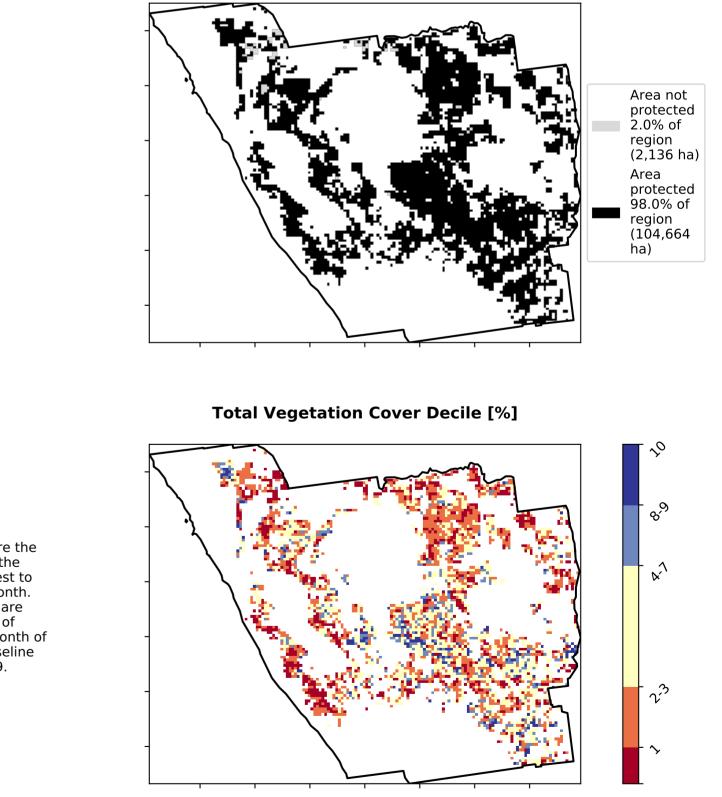
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

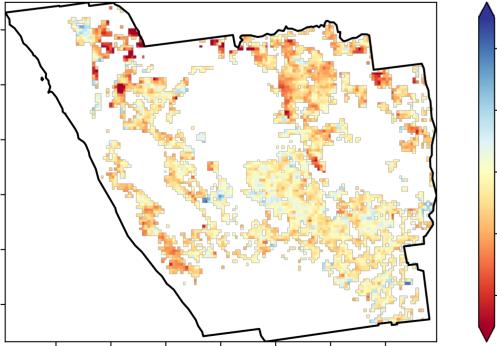


% Area protected from wind erosion (>50%)





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.

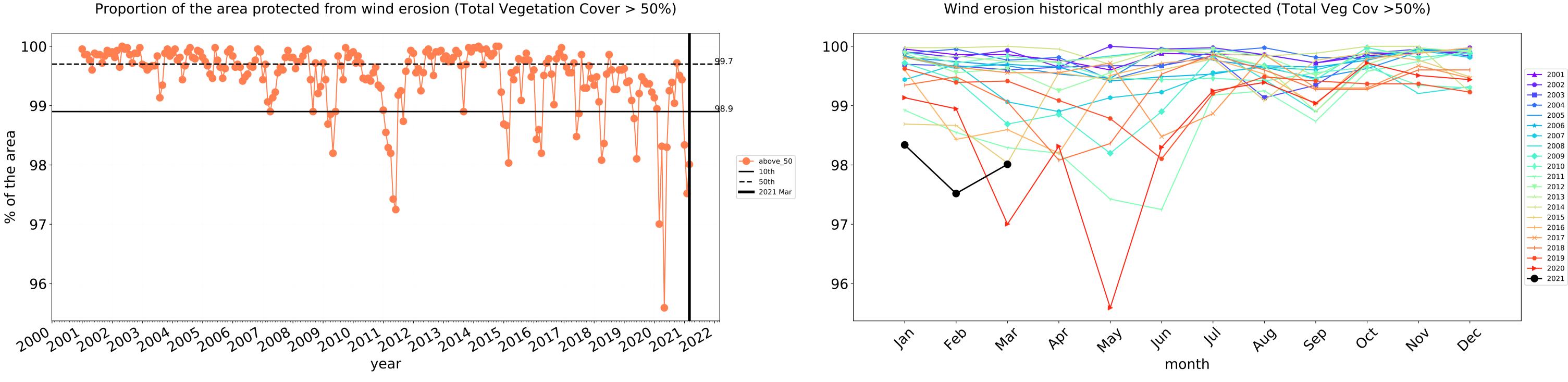


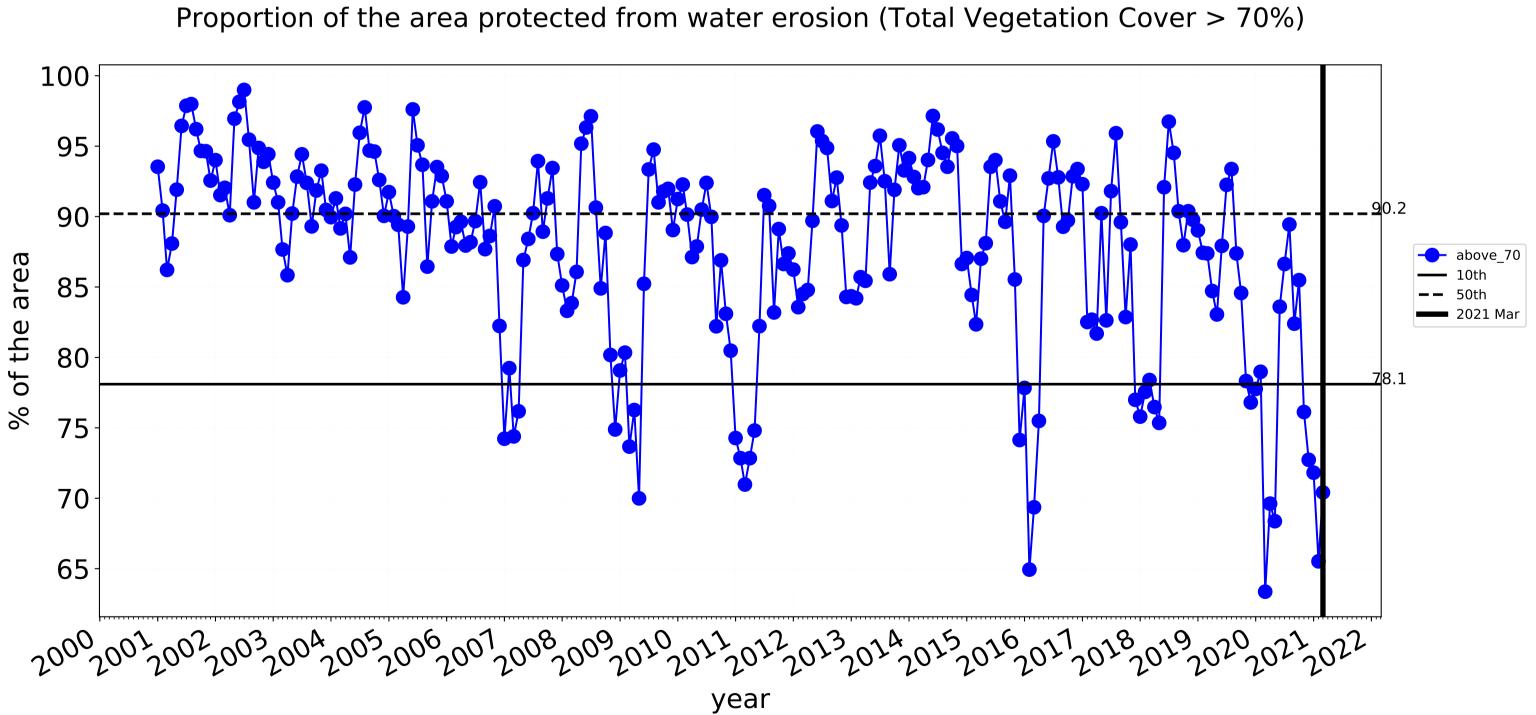
Total Vegetation Cover Anomaly [%]

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.

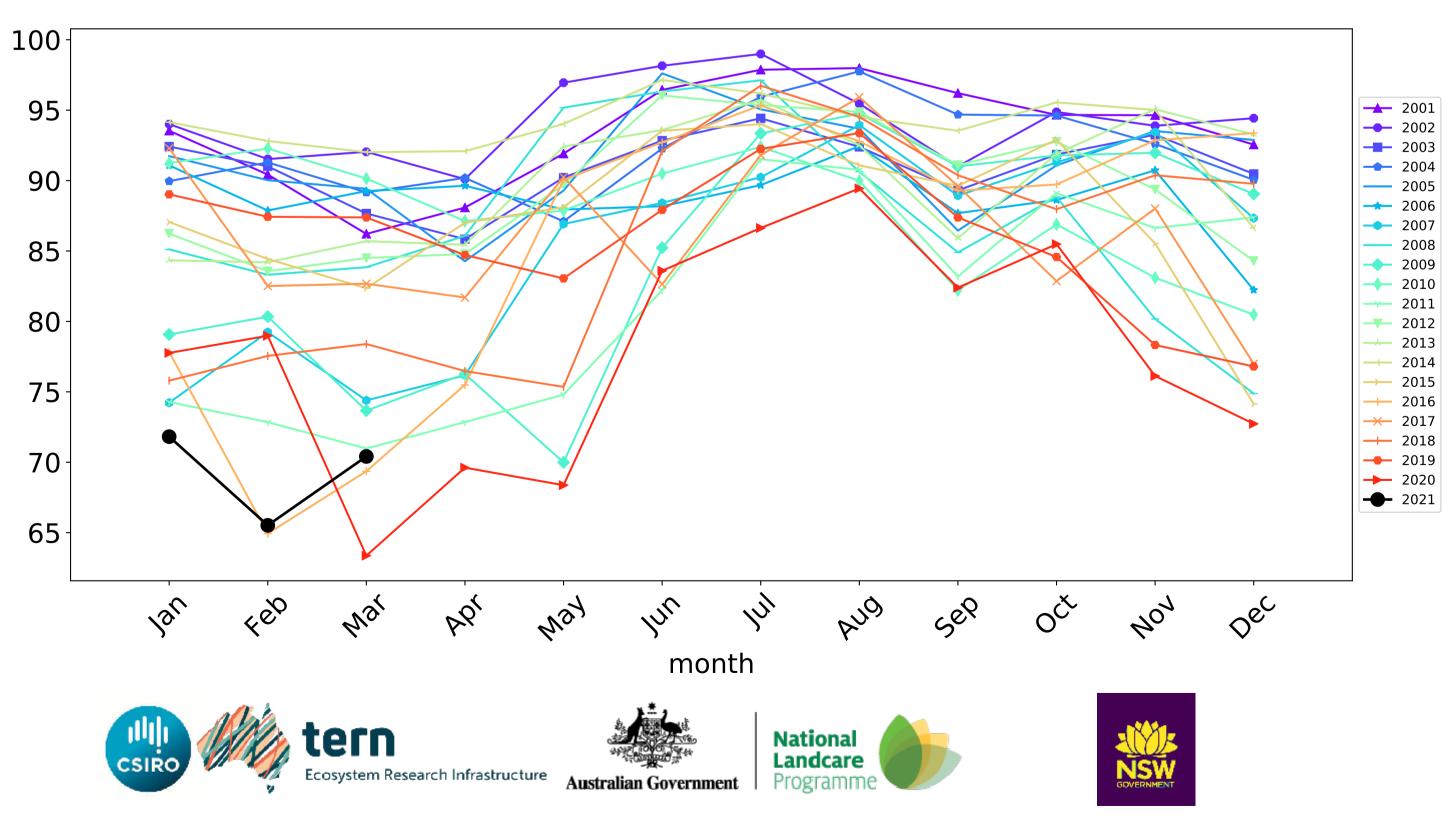


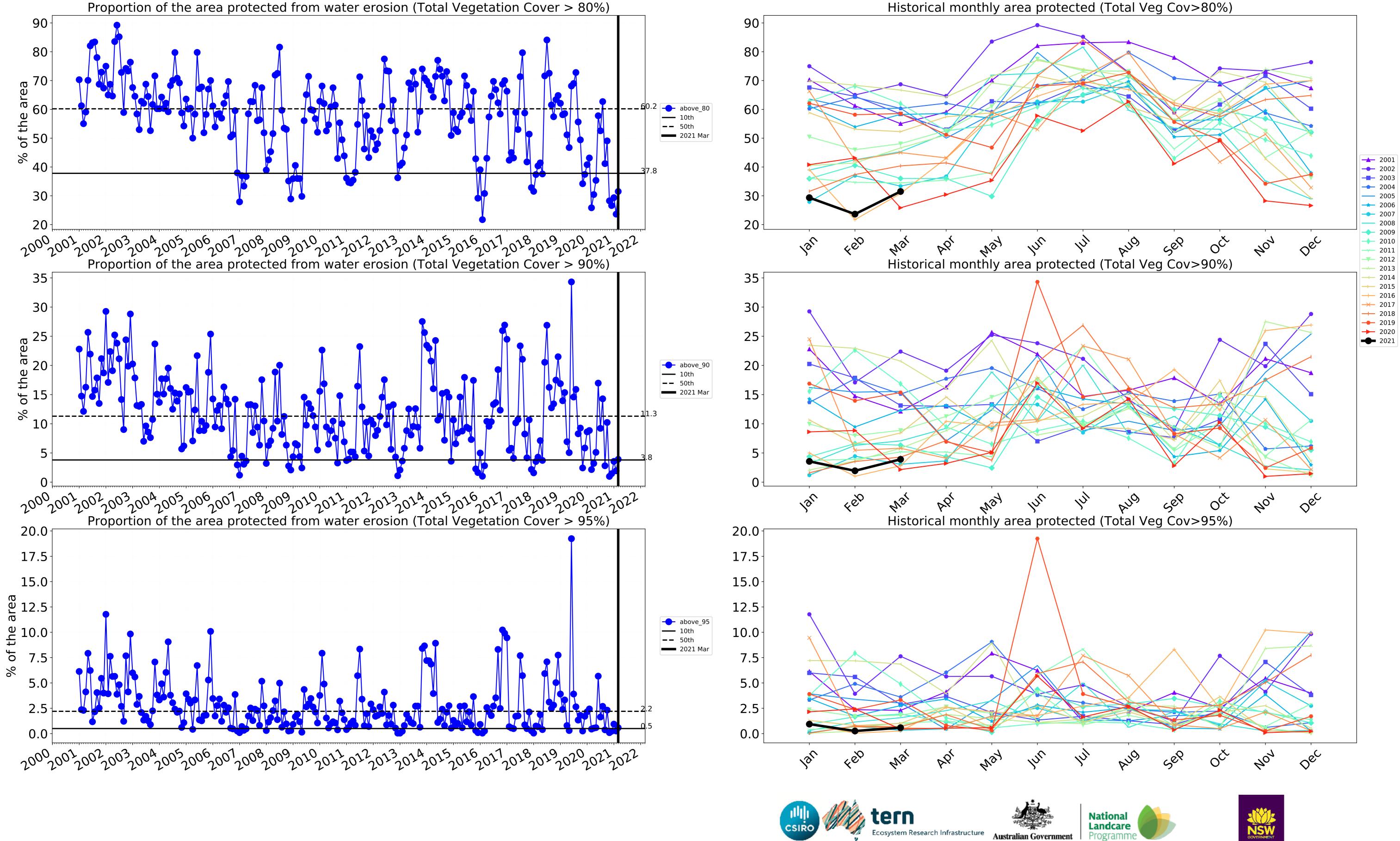






Grazing non forest timeseries





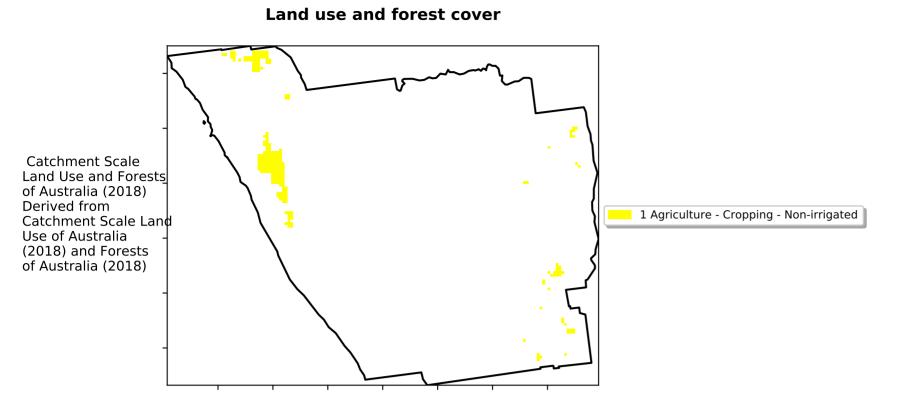
Cropping

12% 200%

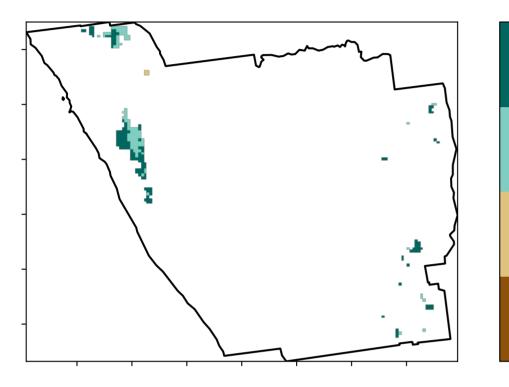
· 52°10°10°10

3201050010

0.30%



Total Vegetation Cover [%]

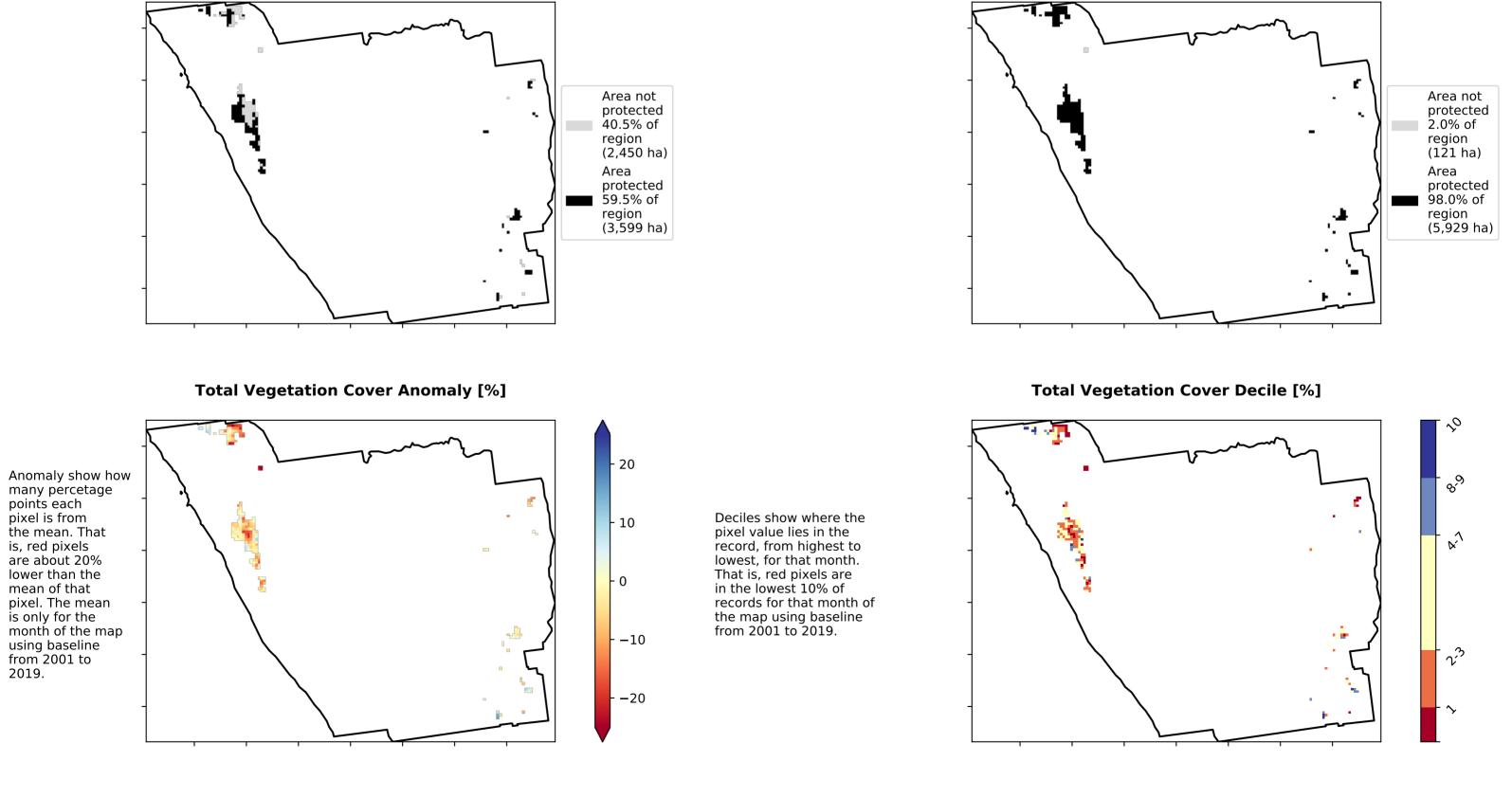


% Area protected from water erosion (>70%)

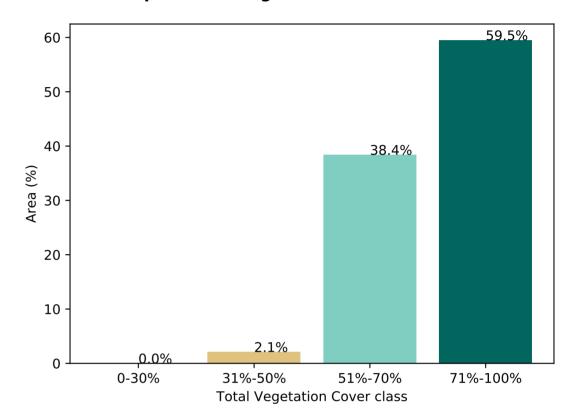
is, red pixels

are about 20% lower than the mean of that

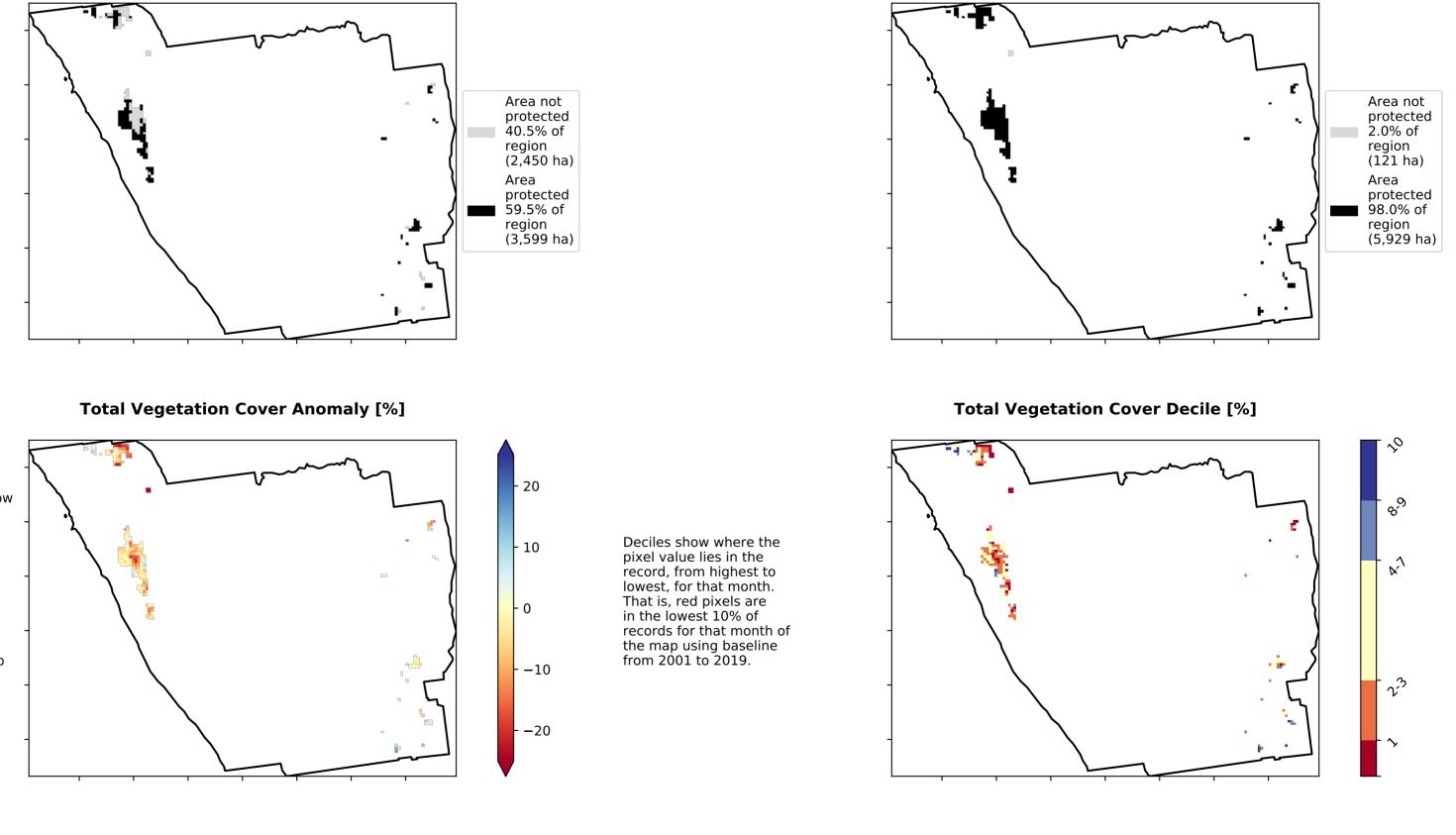
pixel. The mean



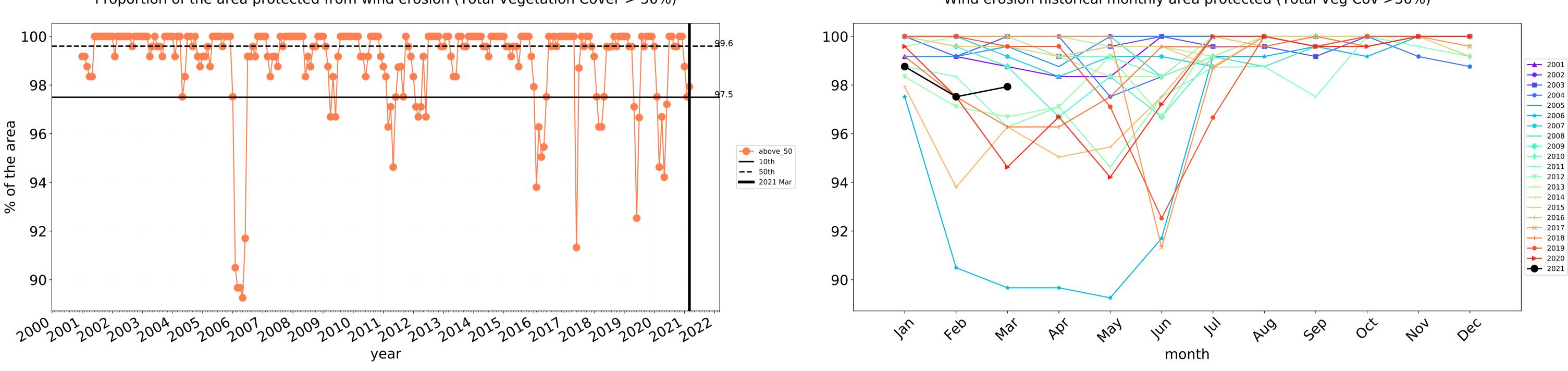
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

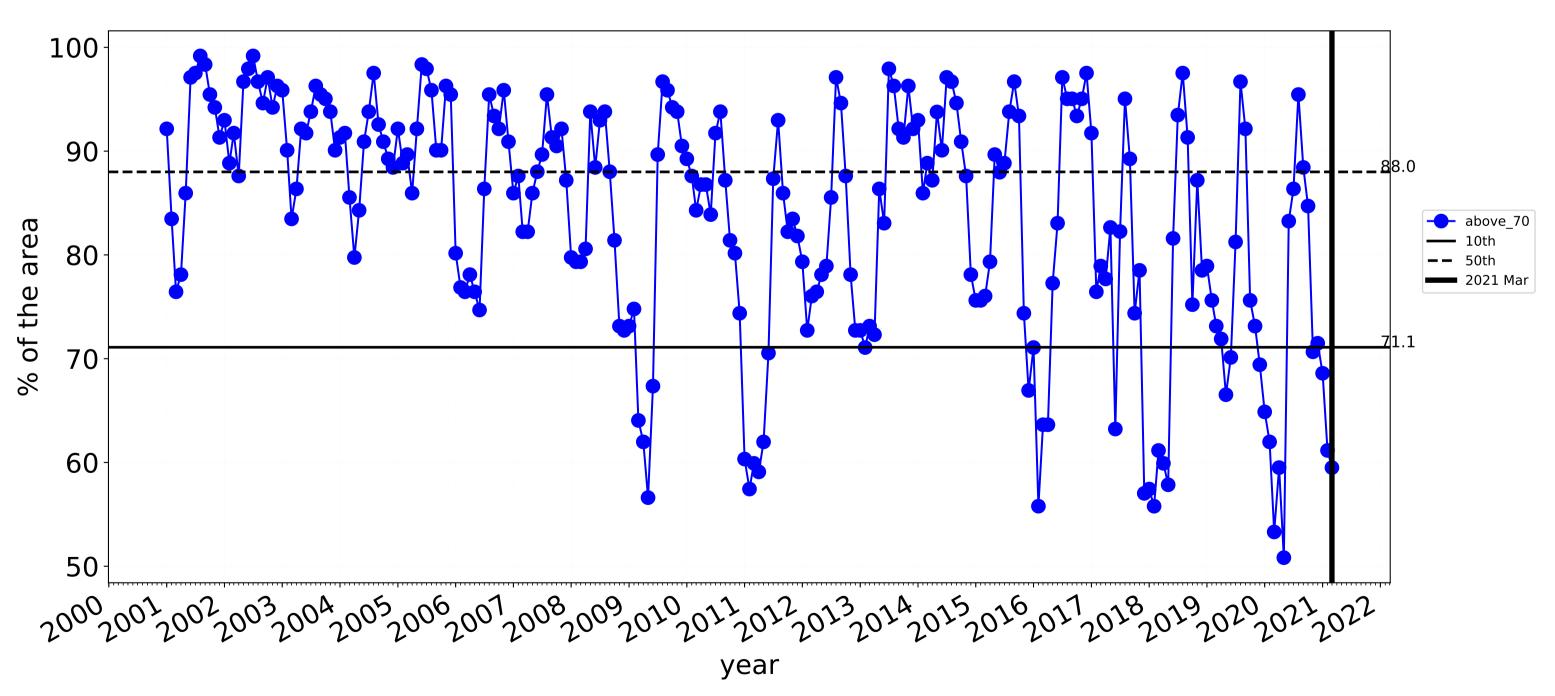






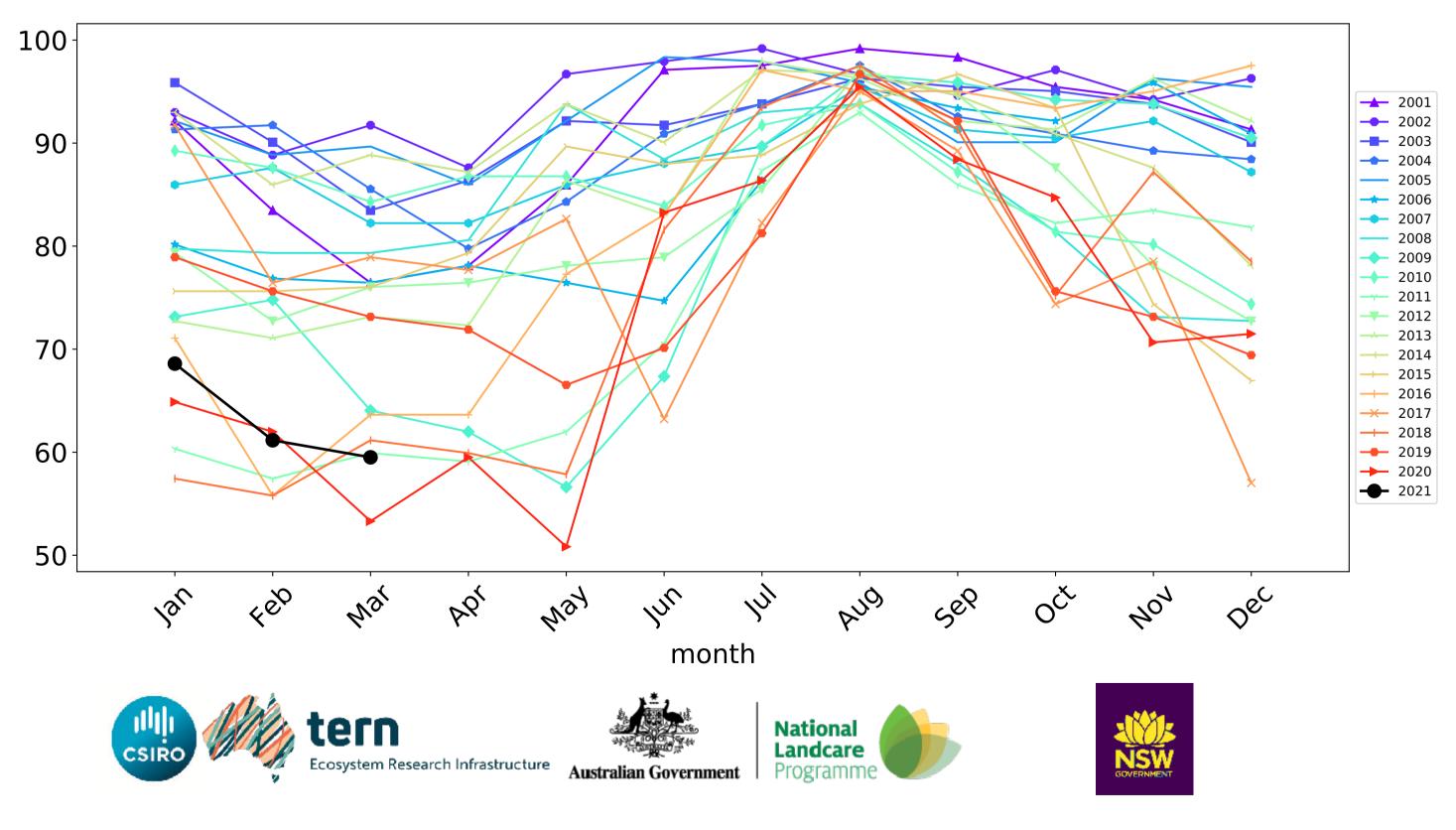
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

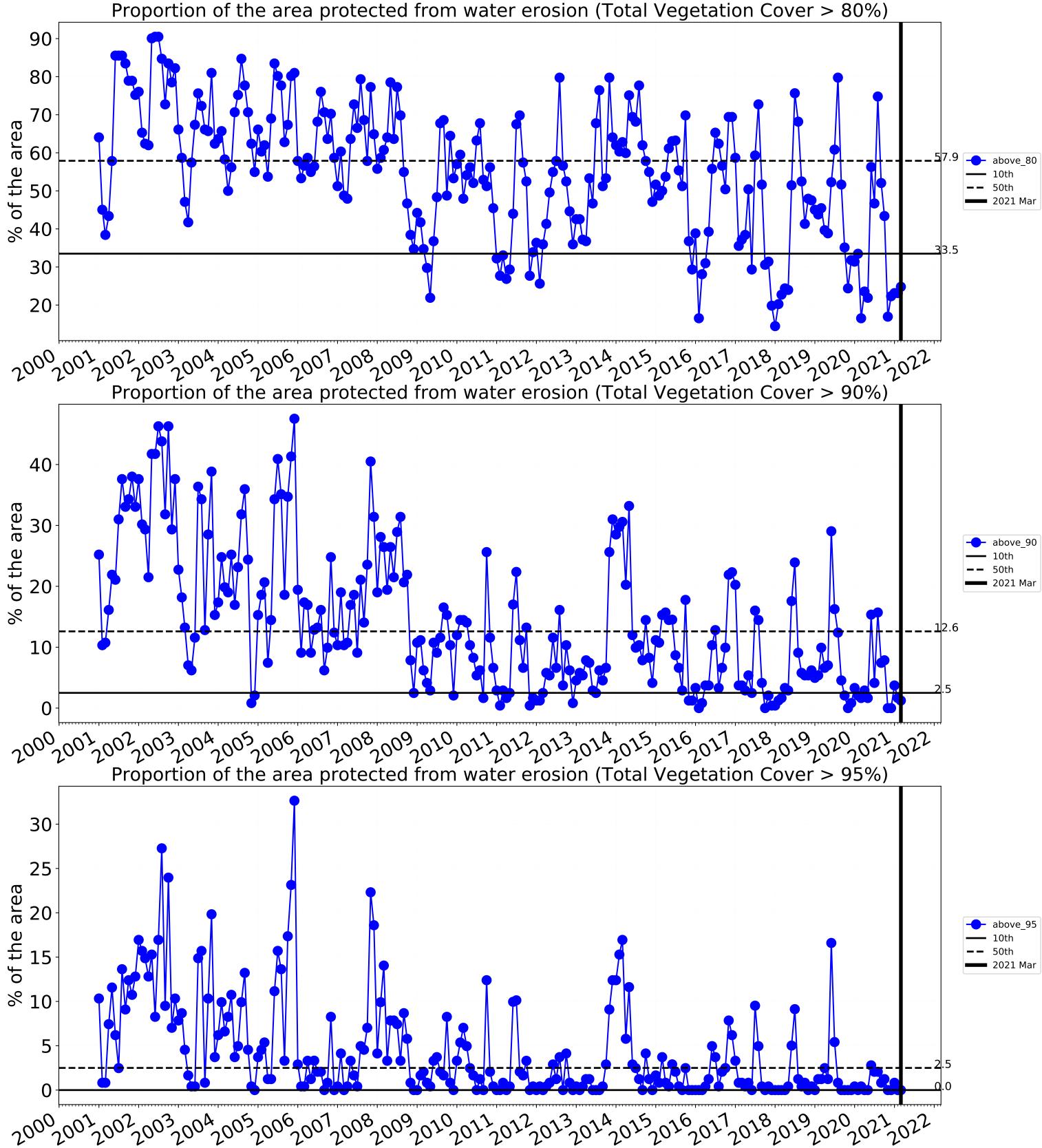


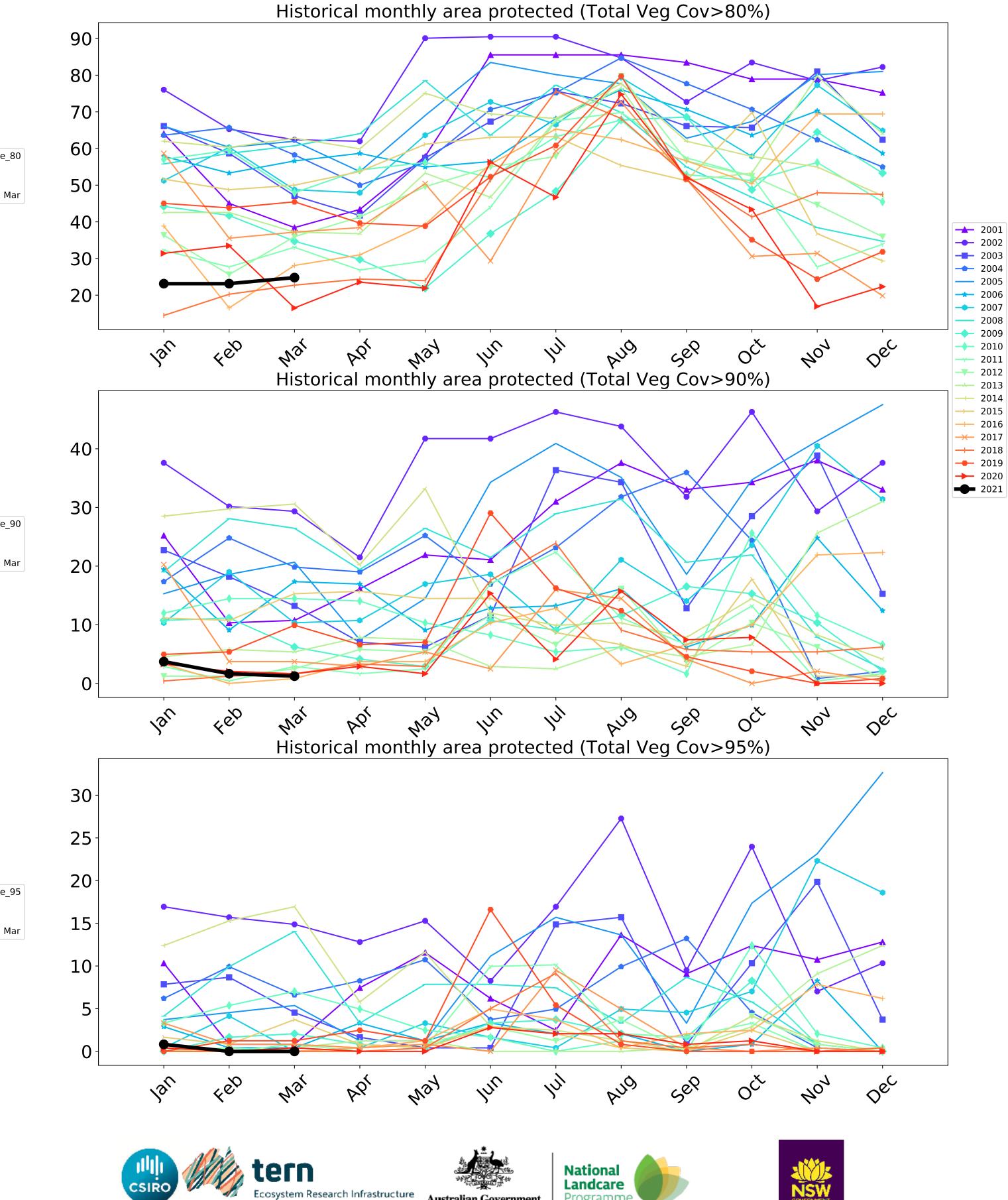


Cropping timeseries

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







Australian Government

Programm

Ecosystem Research Infrastructure

Irrigation

12º10-20010

· 52% 70%

3201050010

0.30%

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

the mean. That

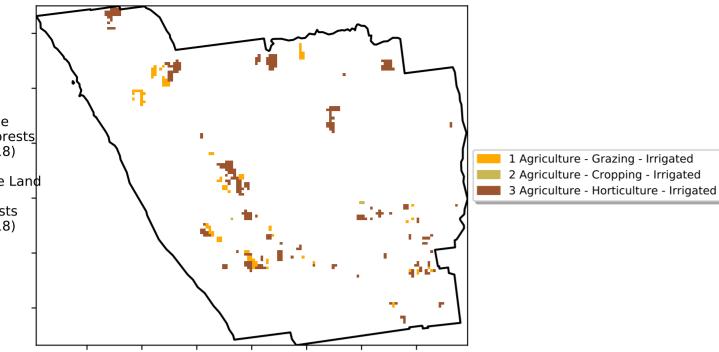
is, red pixels

mean of that pixel. The mean

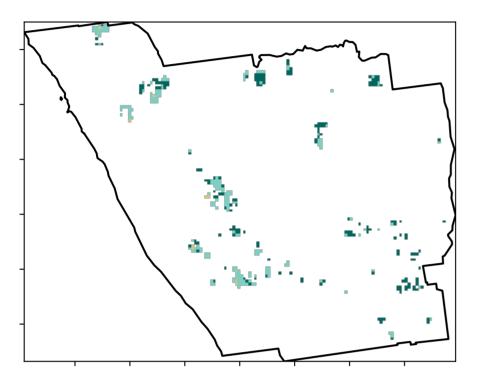
is only for the month of the map

using baseline from 2001 to 2019.

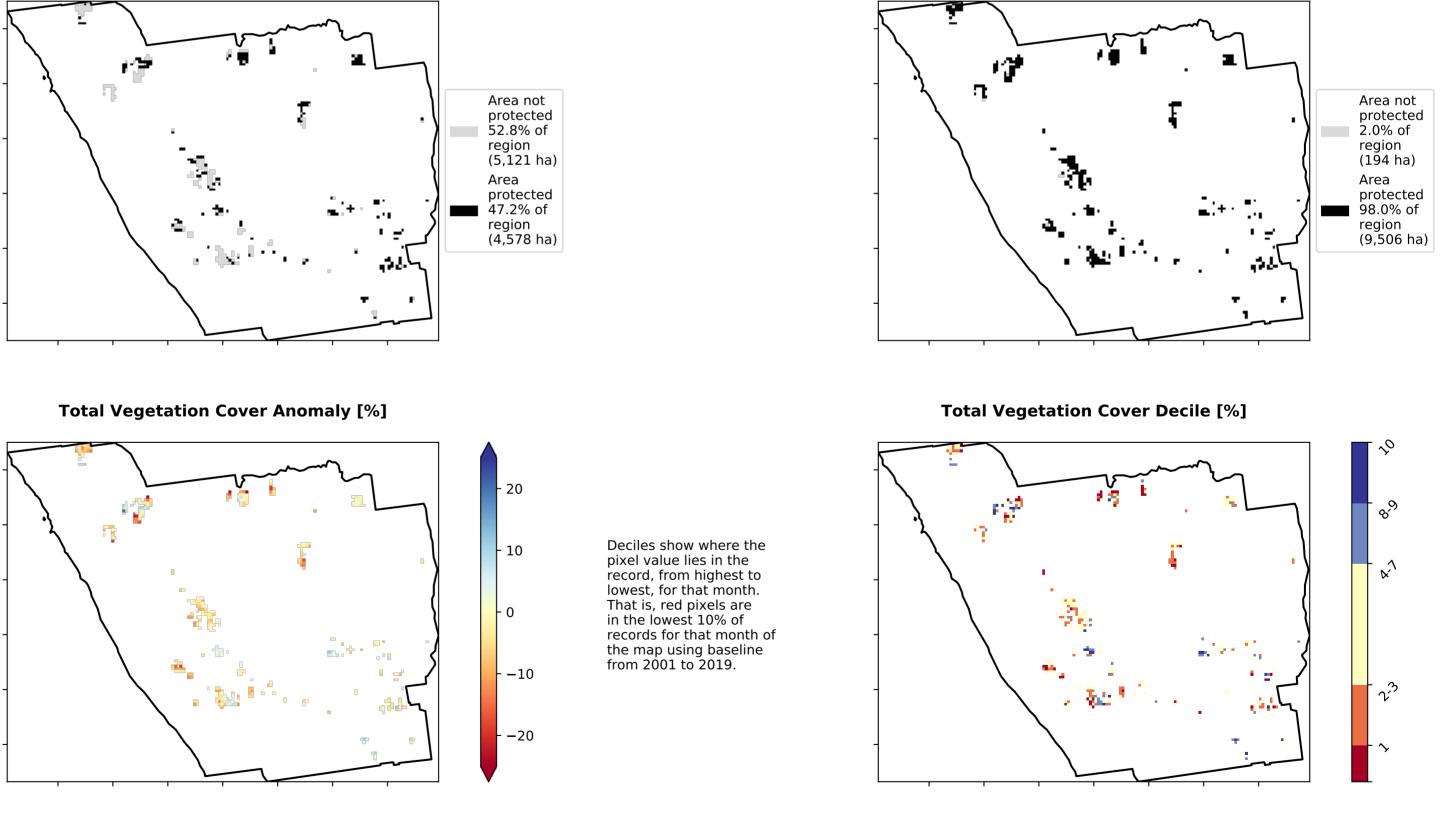
are about 20% lower than the

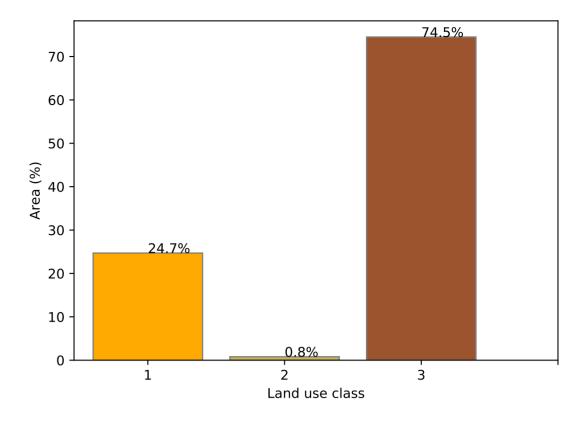


Total Vegetation Cover [%]



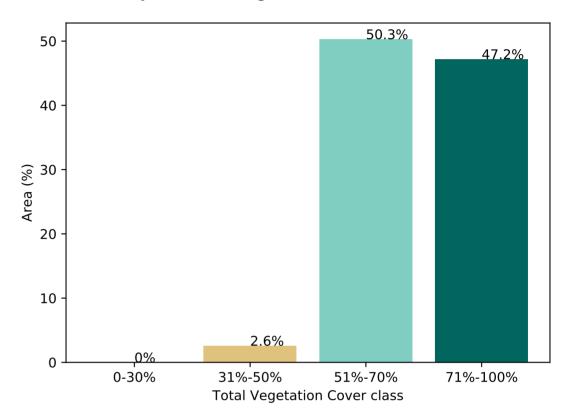
% Area protected from water erosion (>70%)



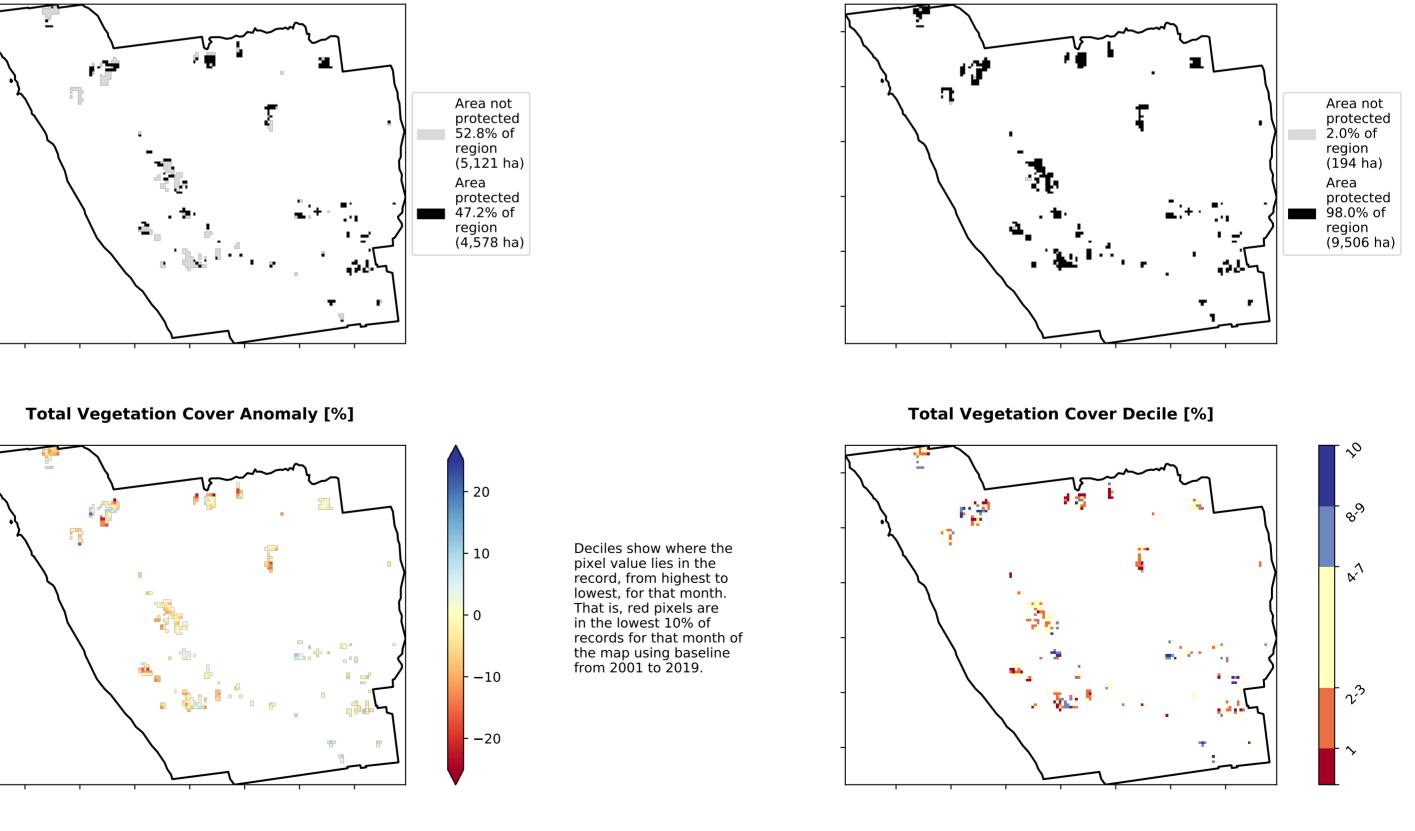


Proportion of each land class in area

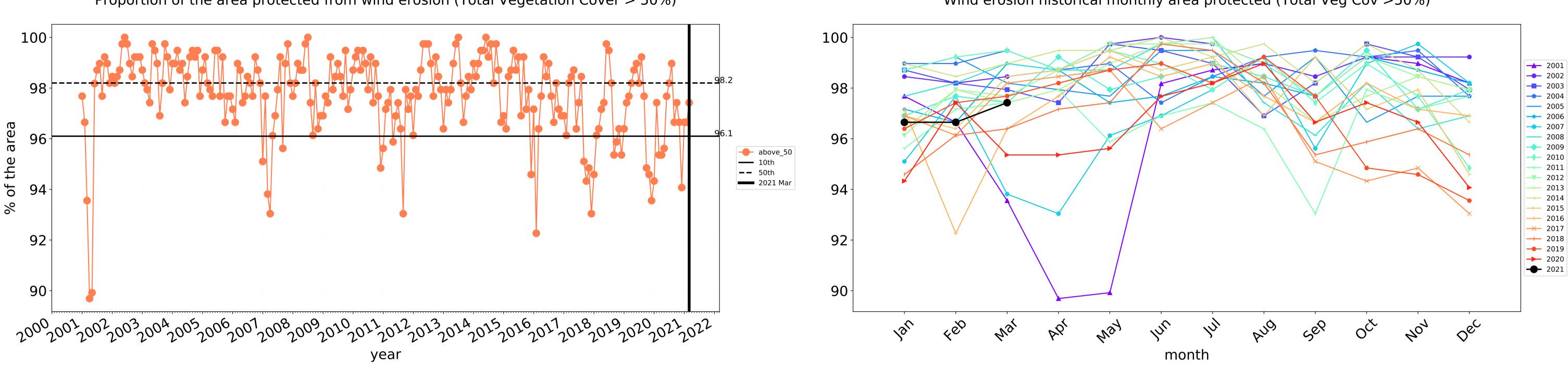
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

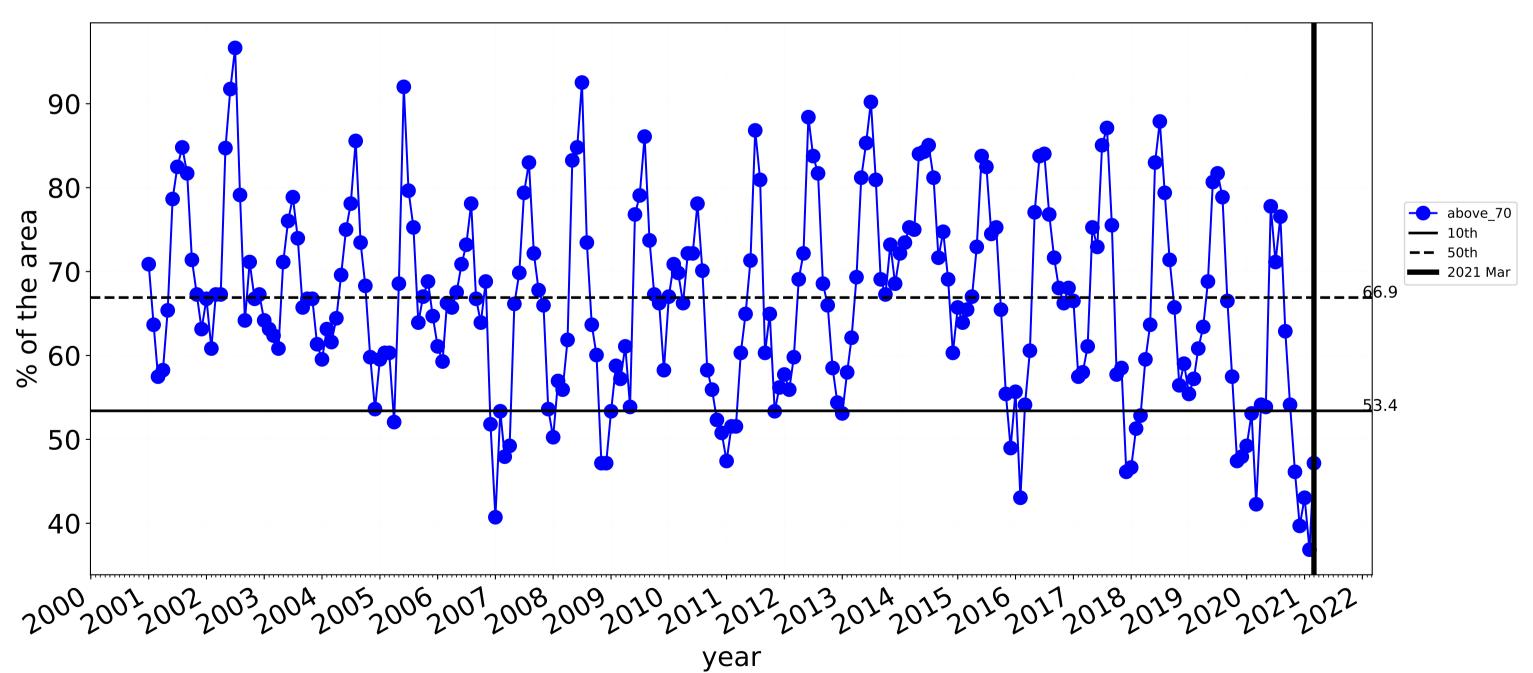






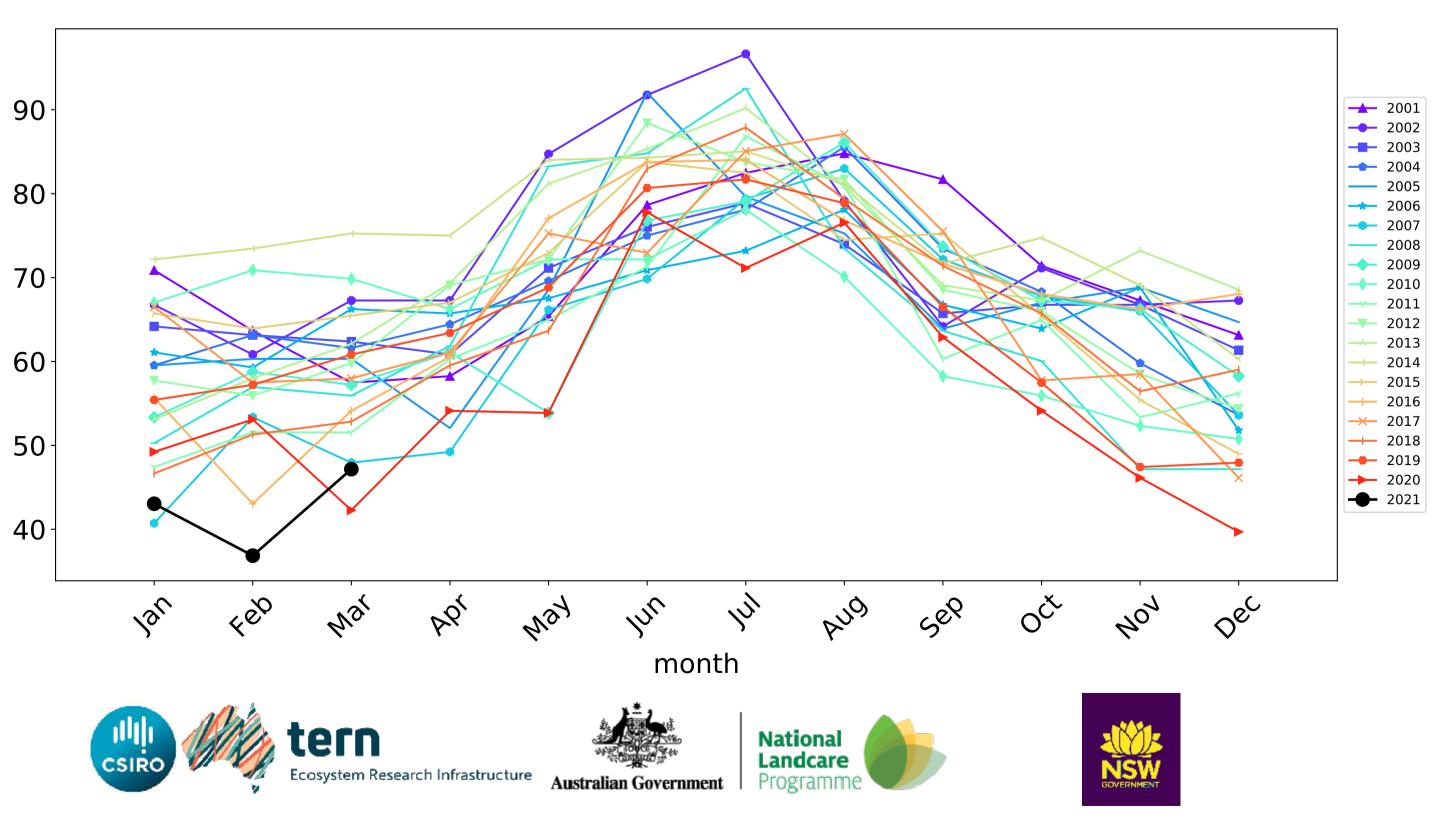
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

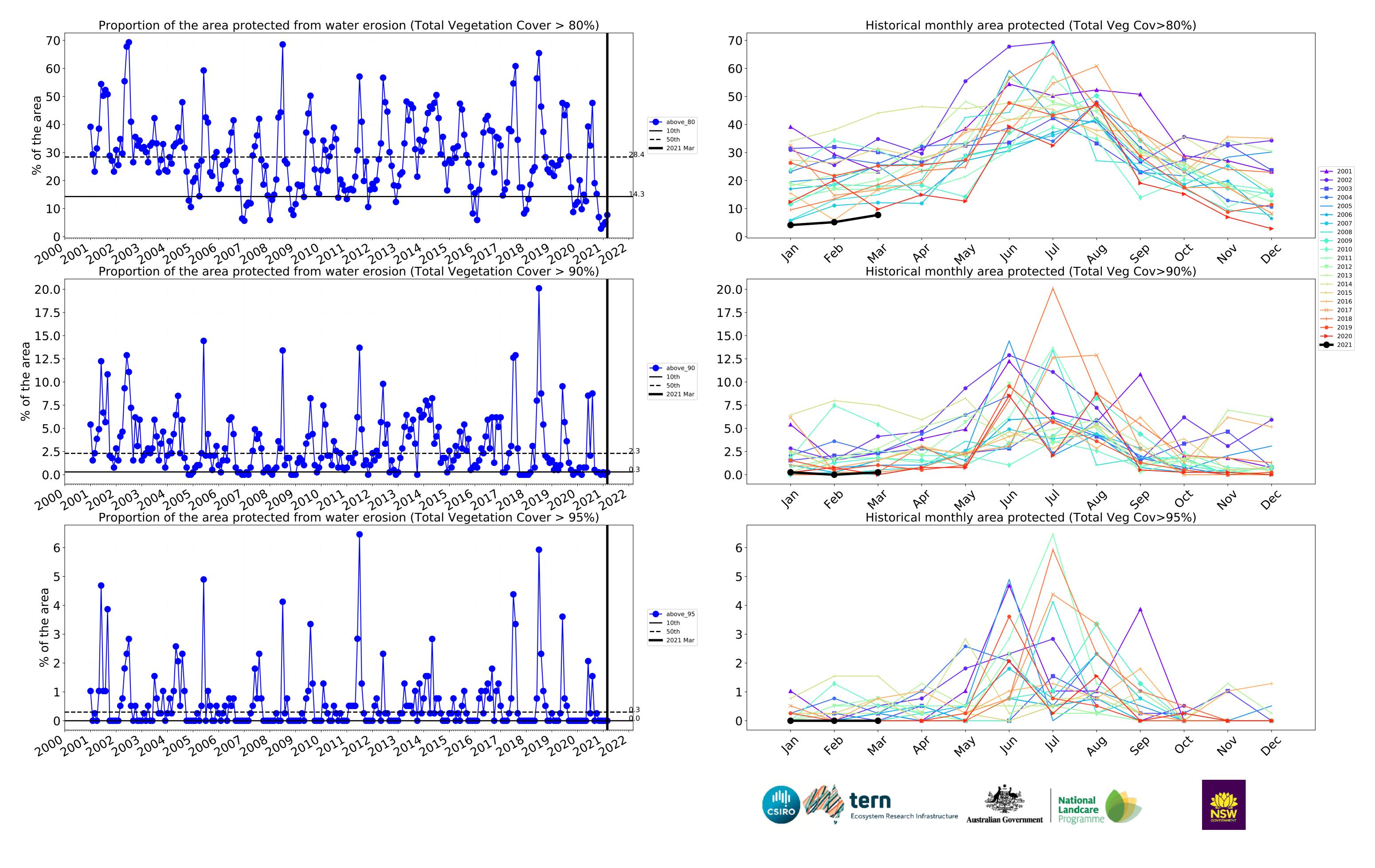




Irrigation timeseries

Water erosion historical monthly area protected (Total Veg Cov>70%)





Production native forests and plantation forests

Catchment Scale Land Use and Forests of Australia (2018) .г Derived from 1 Production native forests and plantation forests Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

12%-100%

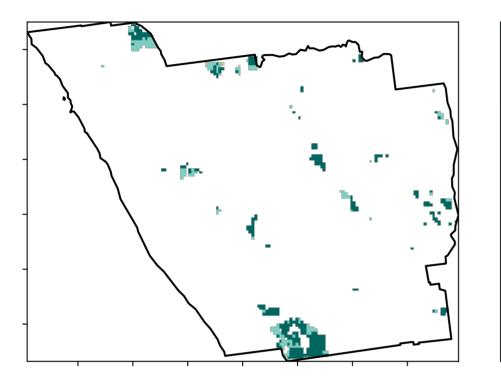
52°10°10°10

1 32°10'50°10

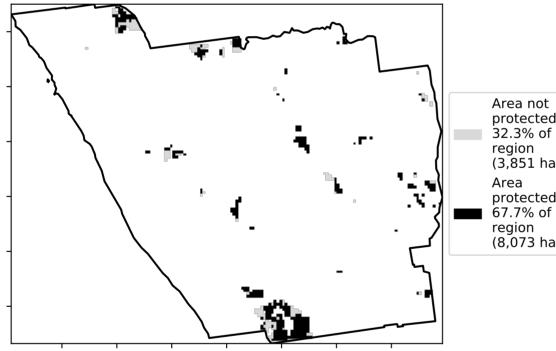
0.30%

Total Vegetation Cover [%]

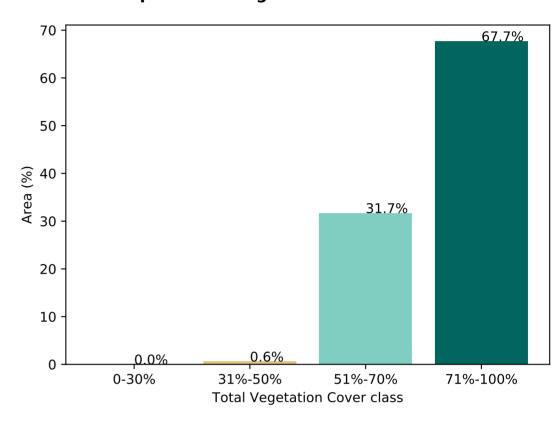
Land use and forest cover



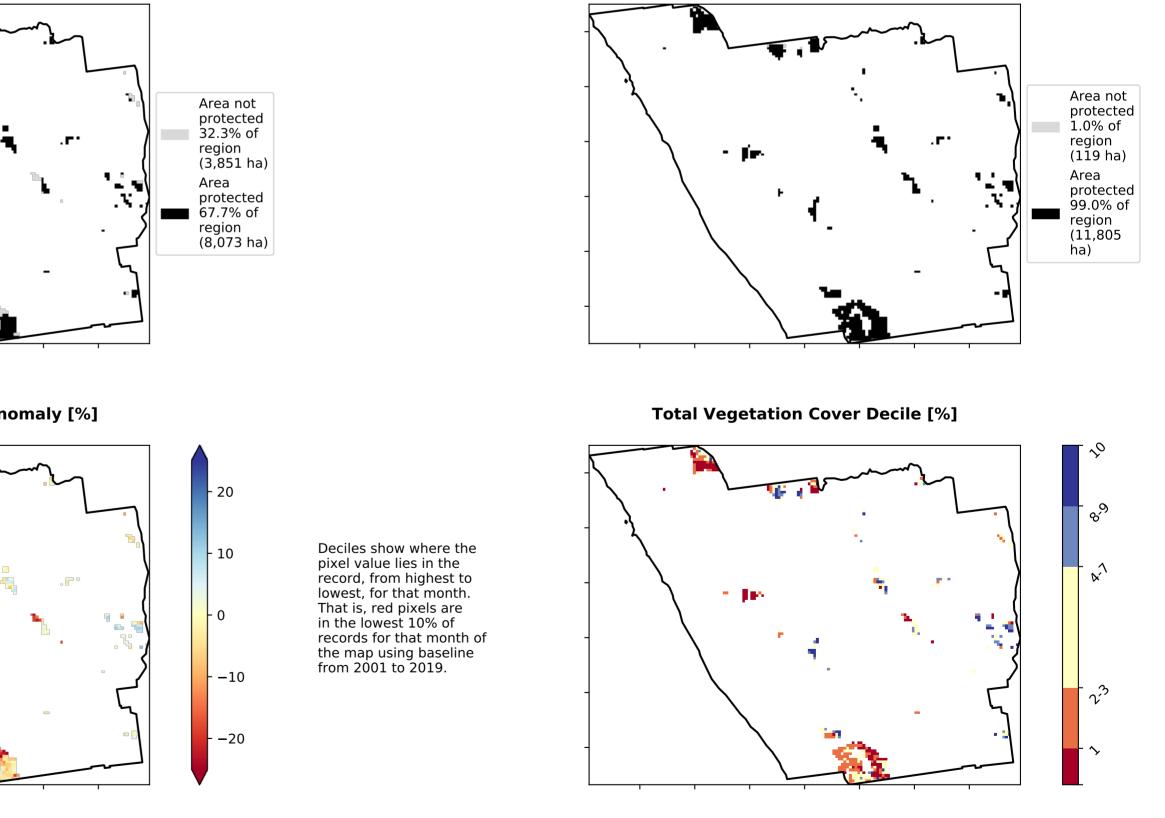
% Area protected from water erosion (>70%)



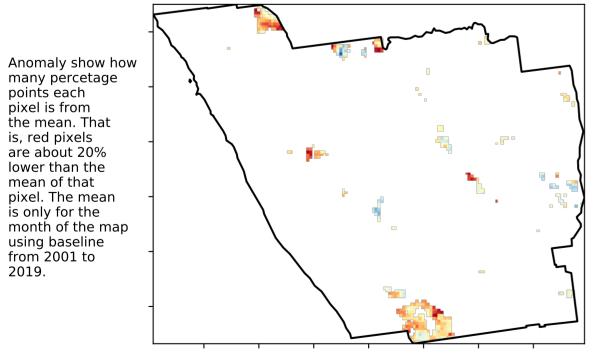
Proportion of vegetation cover class in area



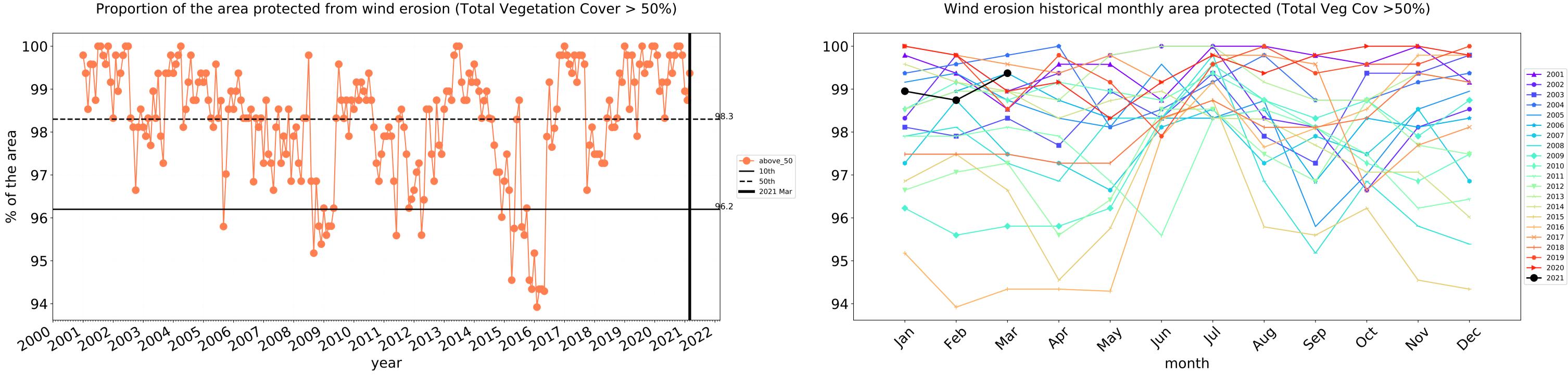
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

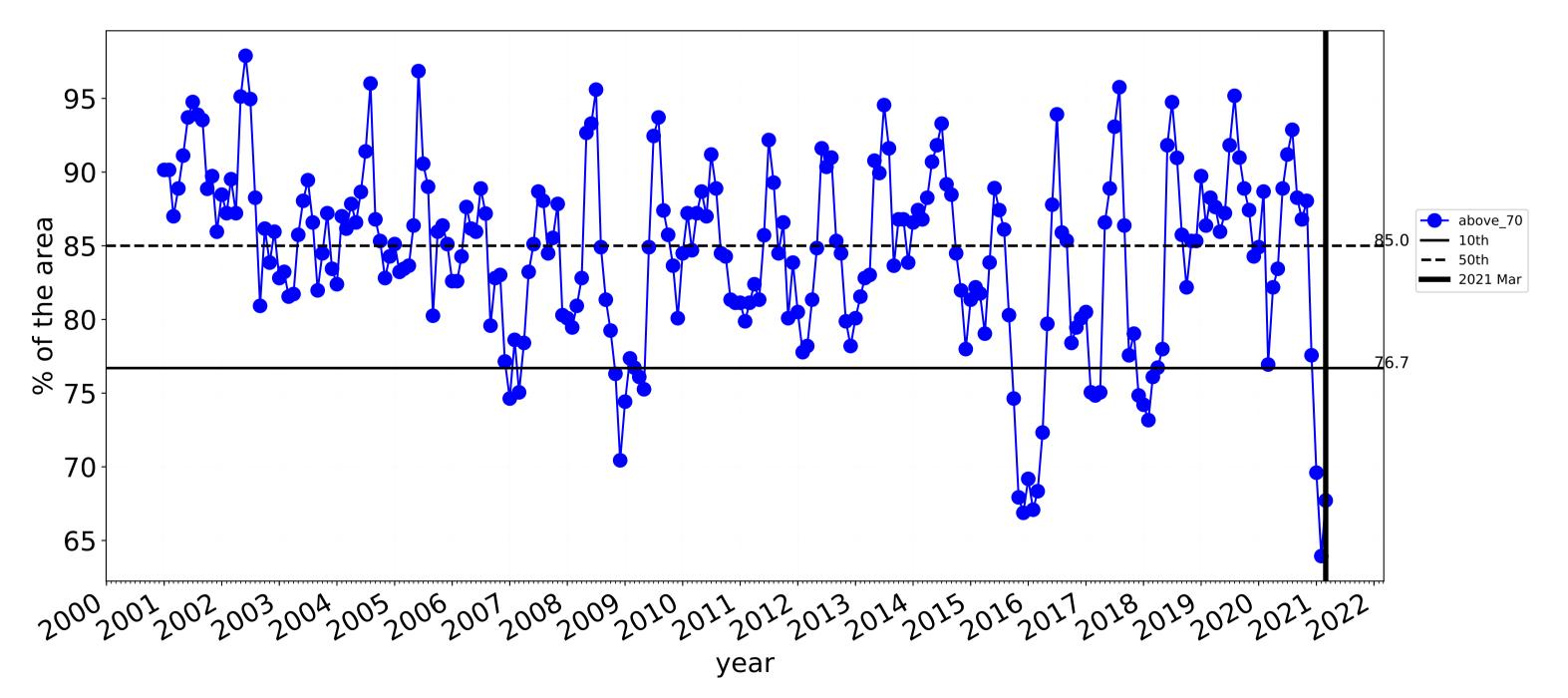


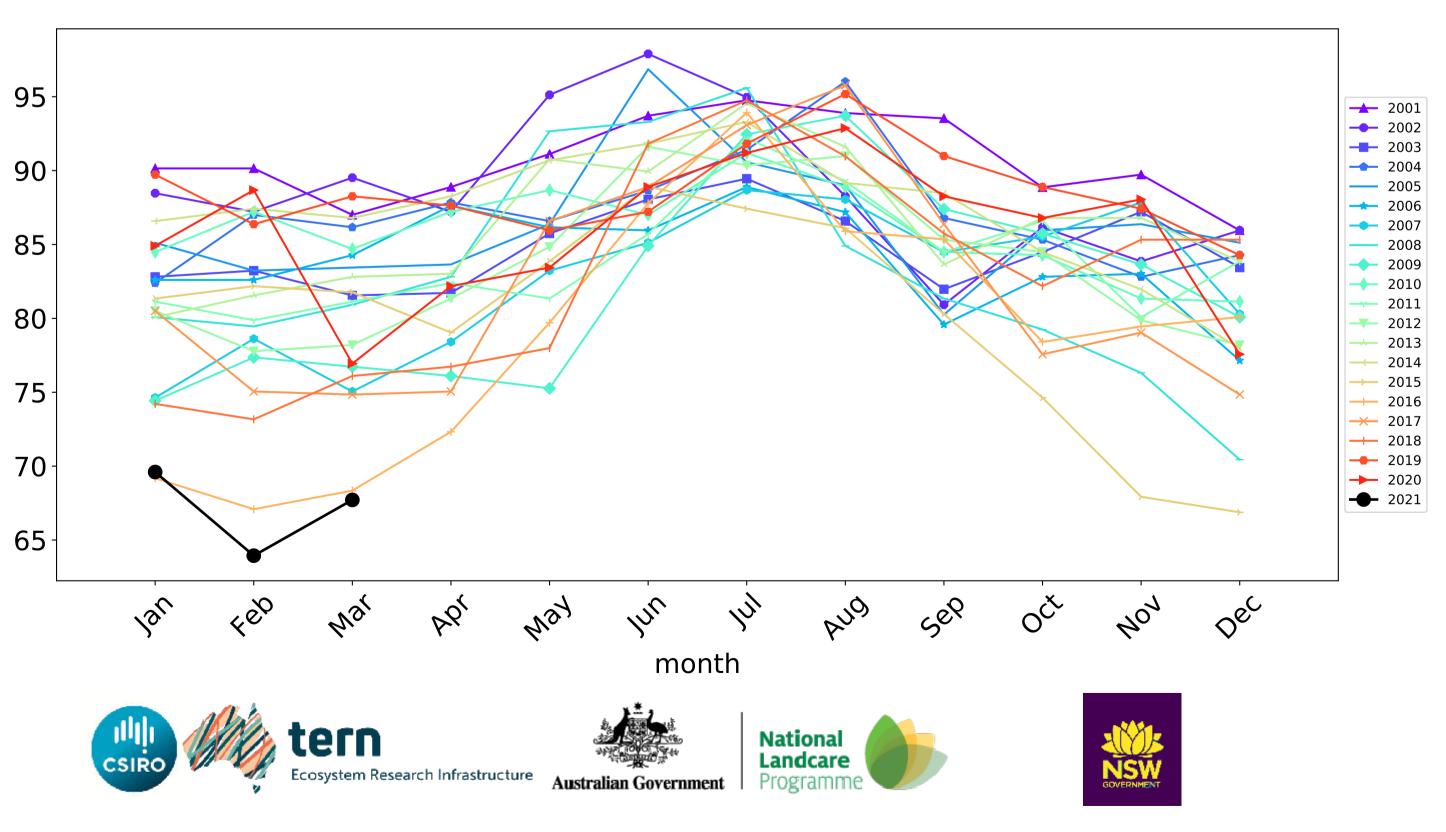


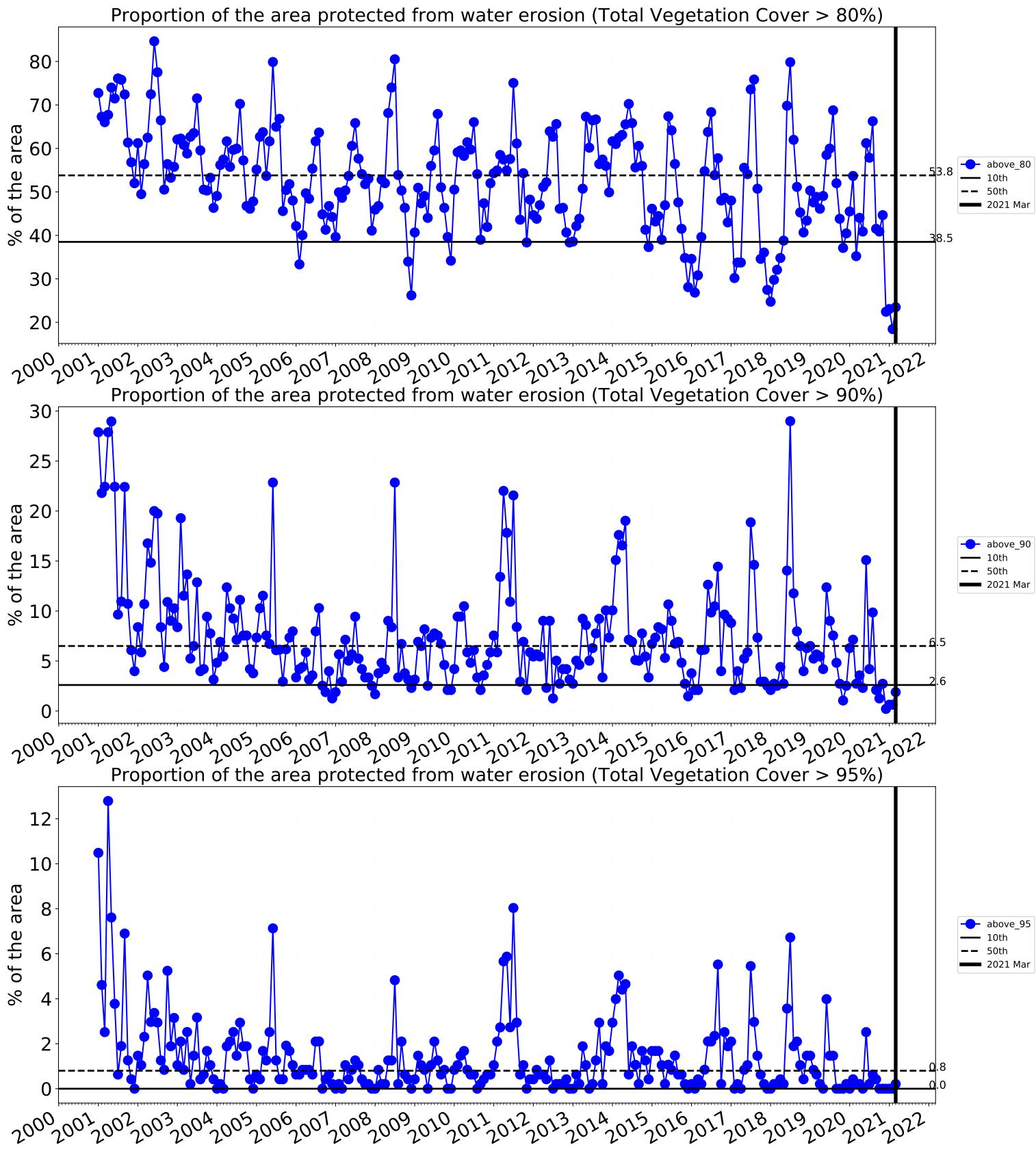


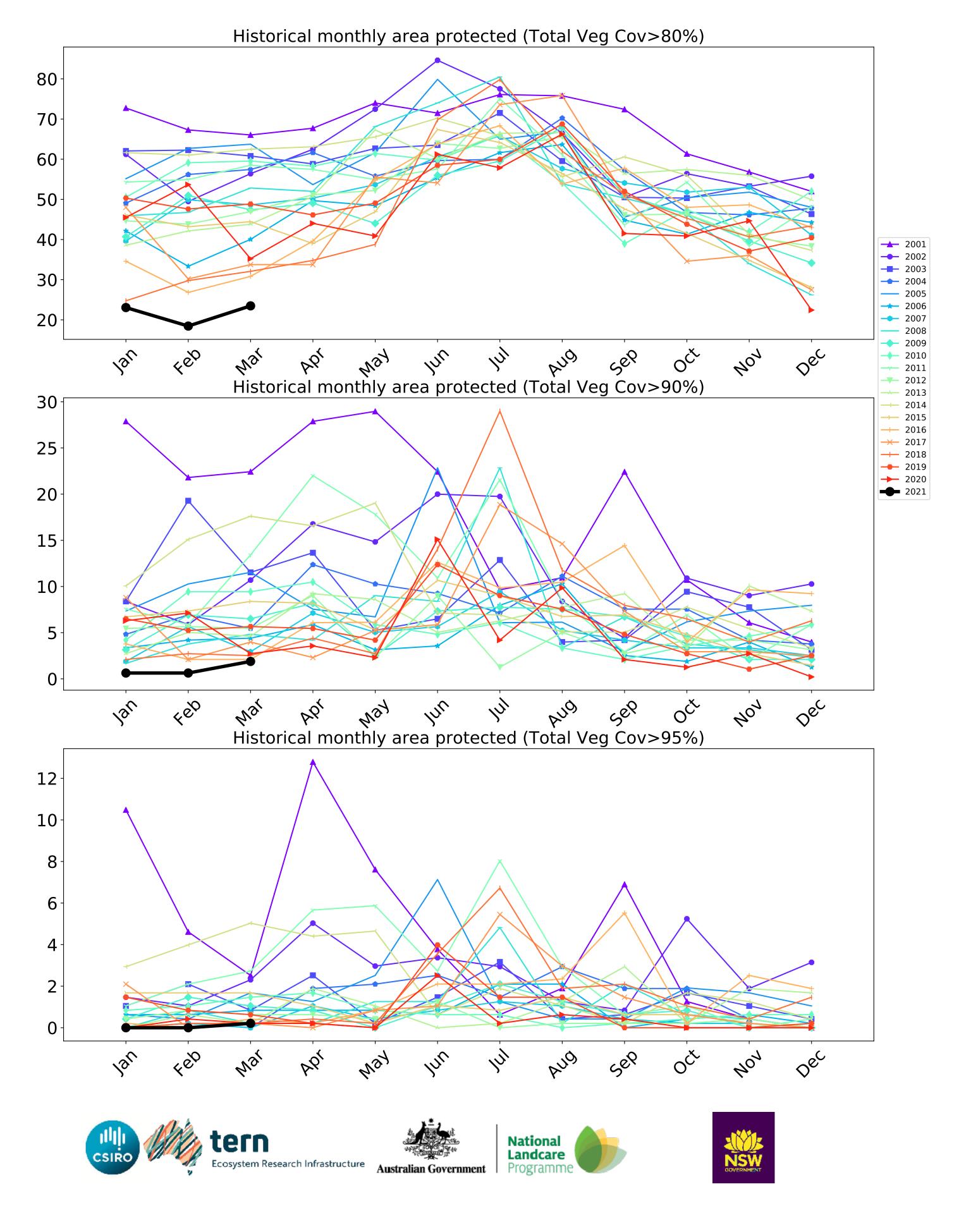
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)









Gingin_(S) (318,450 ha and no data 2,362 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	318,450	99.9% 318,000	98.0% 312,000	77.7% 247,525	46.3% 147,325	8.3% 26,550	0.6% 1,800
Conservation and natural environments	174,100	99.8% 173,800	97.9% 170,450	86.1% 149,875	61.0% 106,125	12.4% 21,575	0.6% 1,050
Conservation and natural environments non forest	88,575	99.9% 88,500	98.3% 87,100	85.5% 75,725	57.8% 51,225	14.2% 12,550	1.0% 850
Conservation and natural environments Woodland forest	83,300	99.7% 83,075	97.4% 81,125	86.5% 72,075	63.8% 53,125	10.5% 8,775	0.2% 200
Agriculture	124,200	99.9% 124,050	97.8% 121,525	67.3% 83,550	28.9% 35,925	3.5% 4,300	0.5% 625
Grazing	108,300	99.9% 108,150	97.9% 106,000	69.5% 75,300	31.1% 33,675	3.9% 4,200	0.6% 625
Grazing non forest	106,800	99.9% 106,650	98.0% 104,675	70.4% 75,200	31.5% 33,650	3.9% 4,175	0.6% 625
Cropping	6,050	100.0% 6,050	97.9% 5,925	59.5% 3,600	24.8% 1,500	1.2% 75	0.0% 0
Irrigation	9,700	100.0% 9,700	97.4% 9,450	47.2% 4,575	7.7% 750	0.3% 25	0.0% 0
Production native forests and plantation forests	11,925	100.0% 11,925	99.4% 11,850	67.7% 8,075	23.5% 2,800	1.9% 225	0.2% 25

