# Total vegetation cover soil protection Region:LGA Serpentine-Jarrahdale\_(S) 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:

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 Oct 2021**

#### Land use and forest cover

#### Proportion of each land class in area

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

pixel is from

is, red pixels

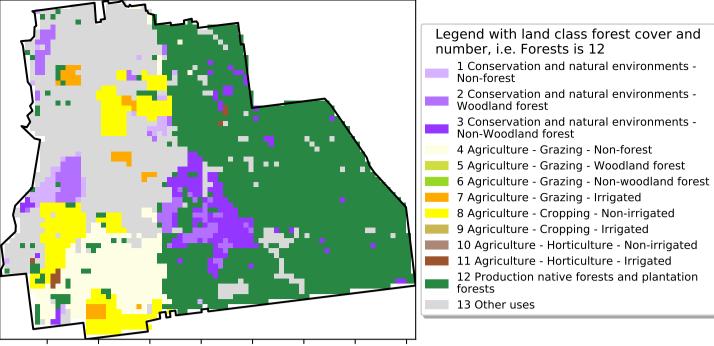
the mean. That

are about 20%

lower than the

mean of that

using baseline from 2001 to 2019.



**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



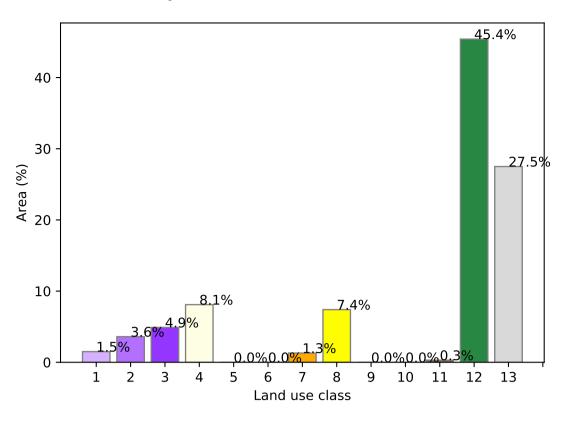
Area not protected (1,799 ha)

12%100%

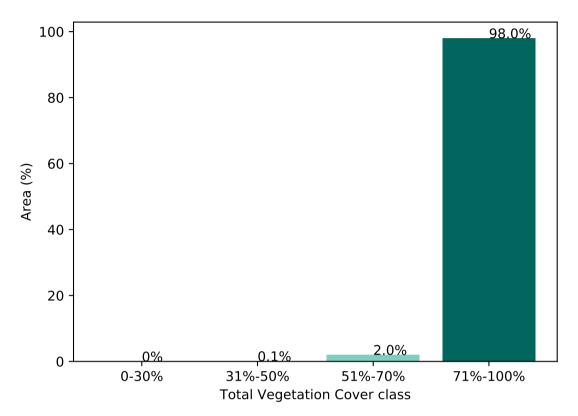
52% 70%

320050010

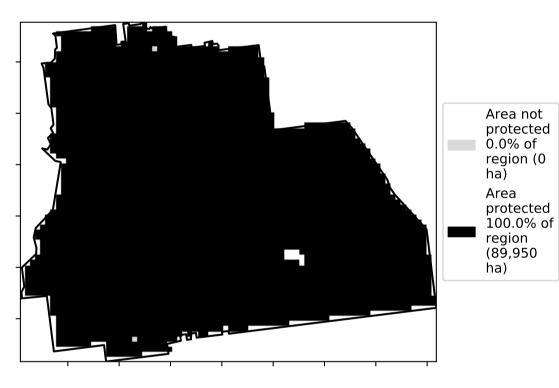
0.30%



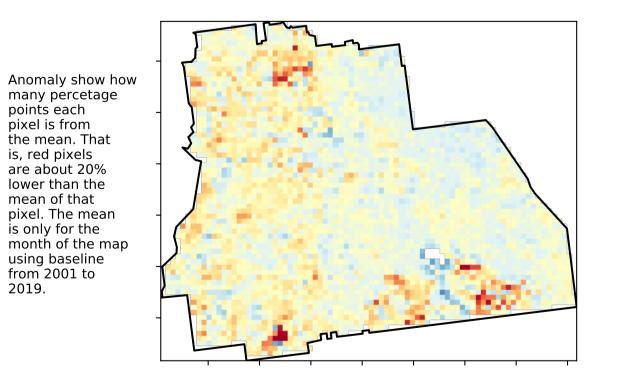
#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)



**Total Vegetation Cover Anomaly [%]** 

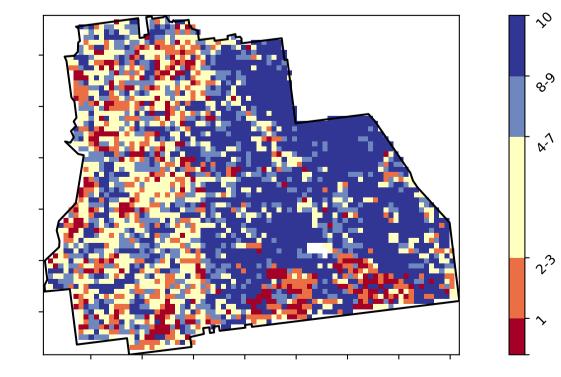


10 0 -10

-20

- 20

**Total Vegetation Cover Decile [%]** 





Deciles show where the

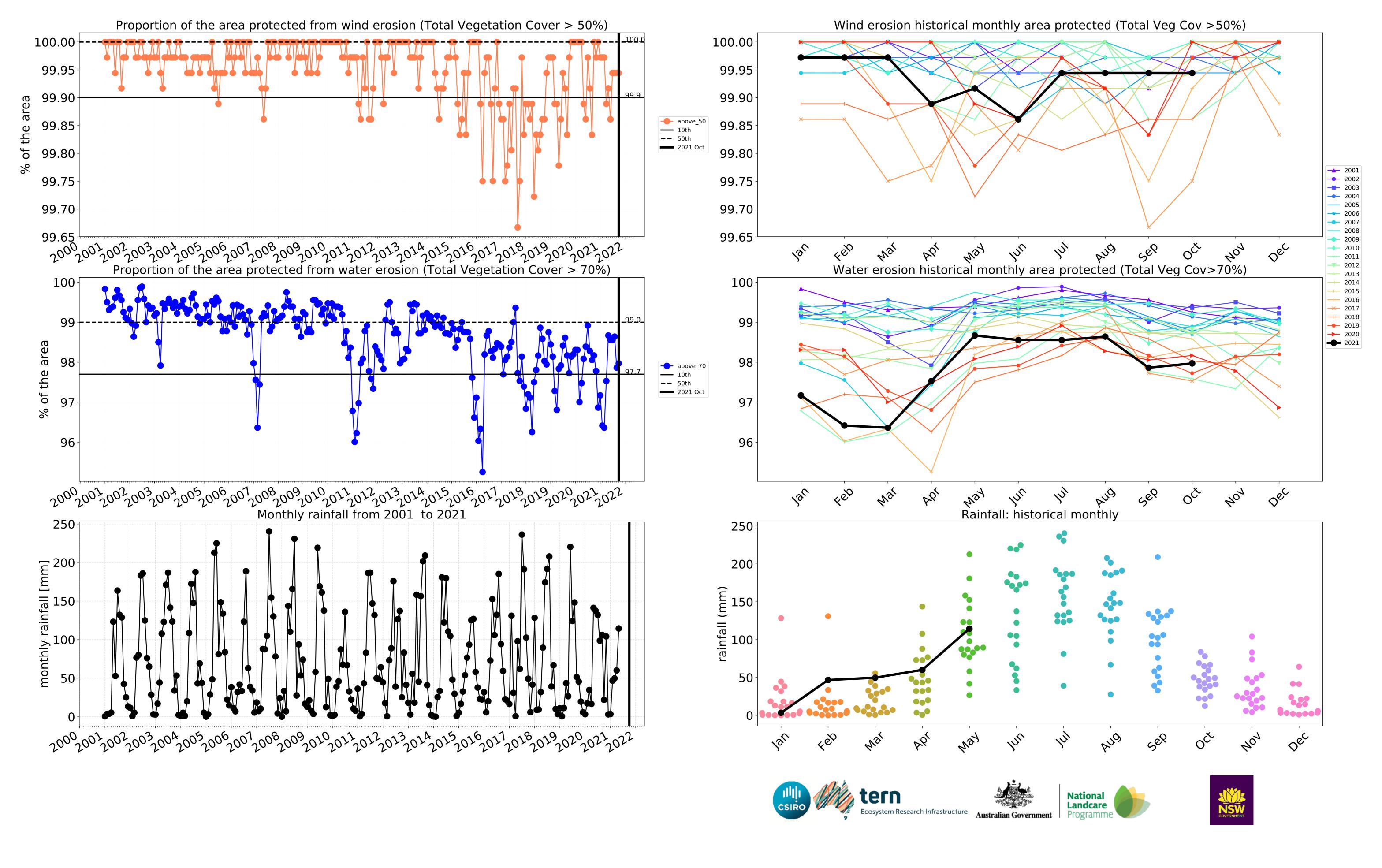
pixel value lies in the

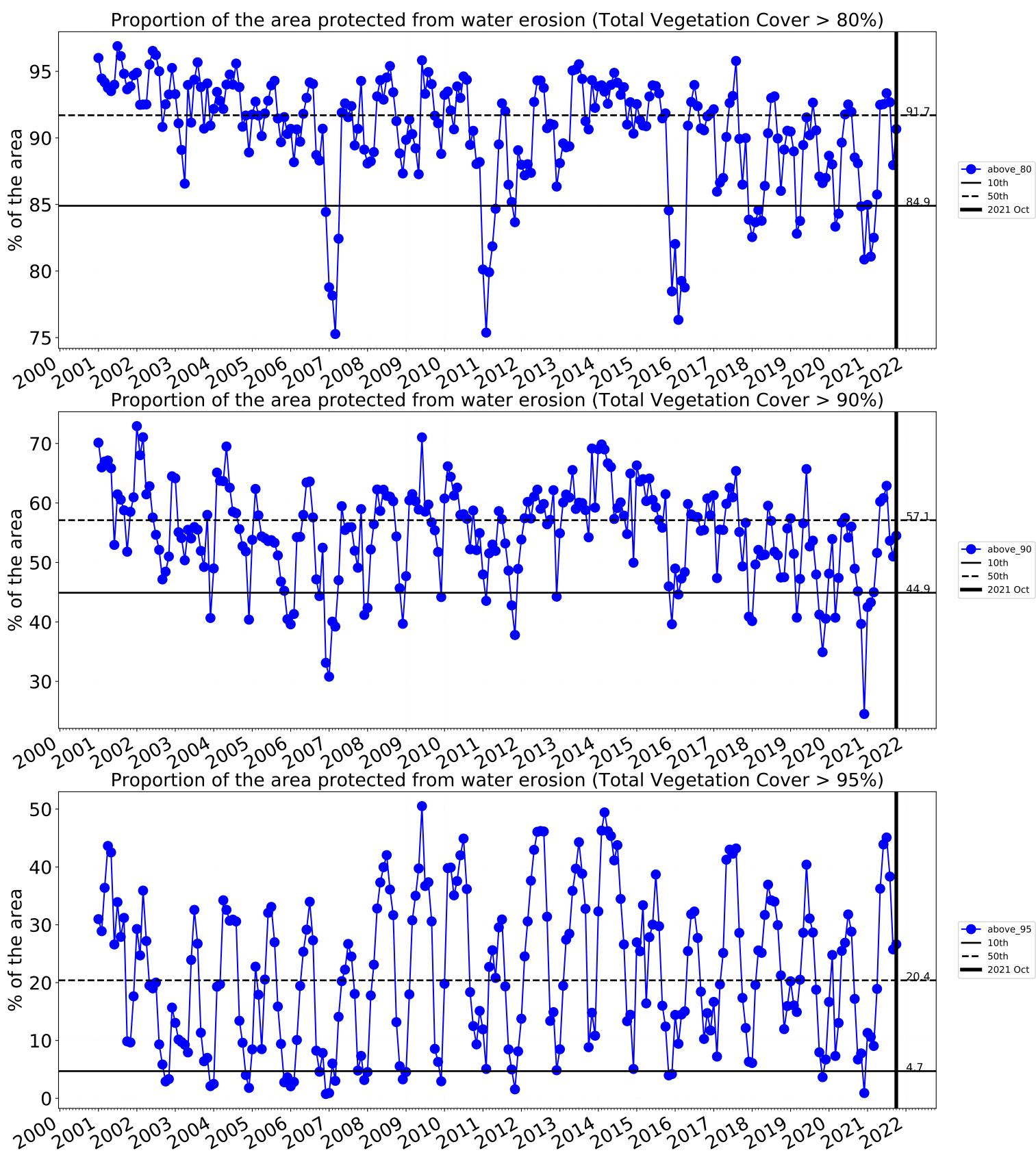
record, from highest to

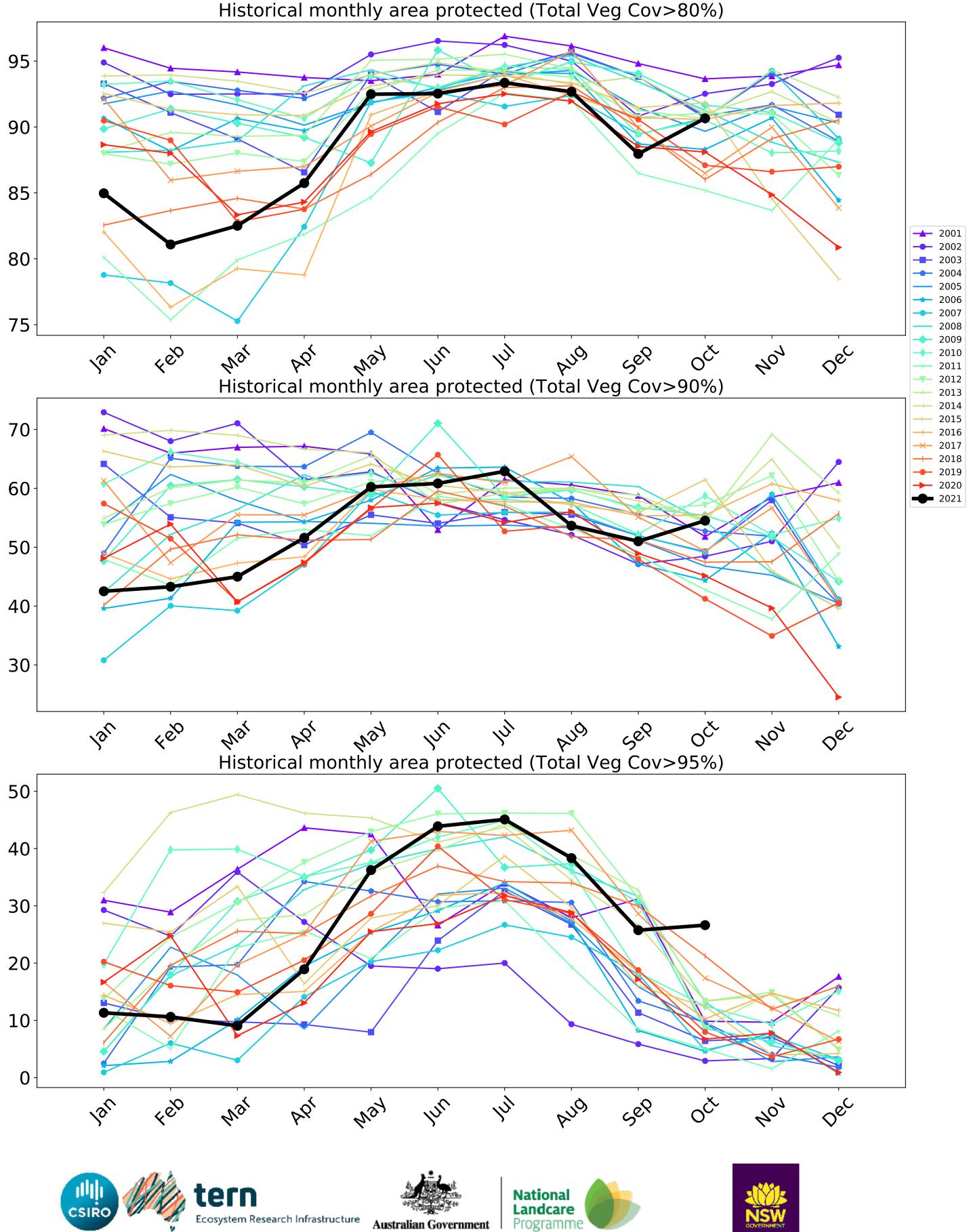
lowest, for that month.

That is, red pixels are

in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





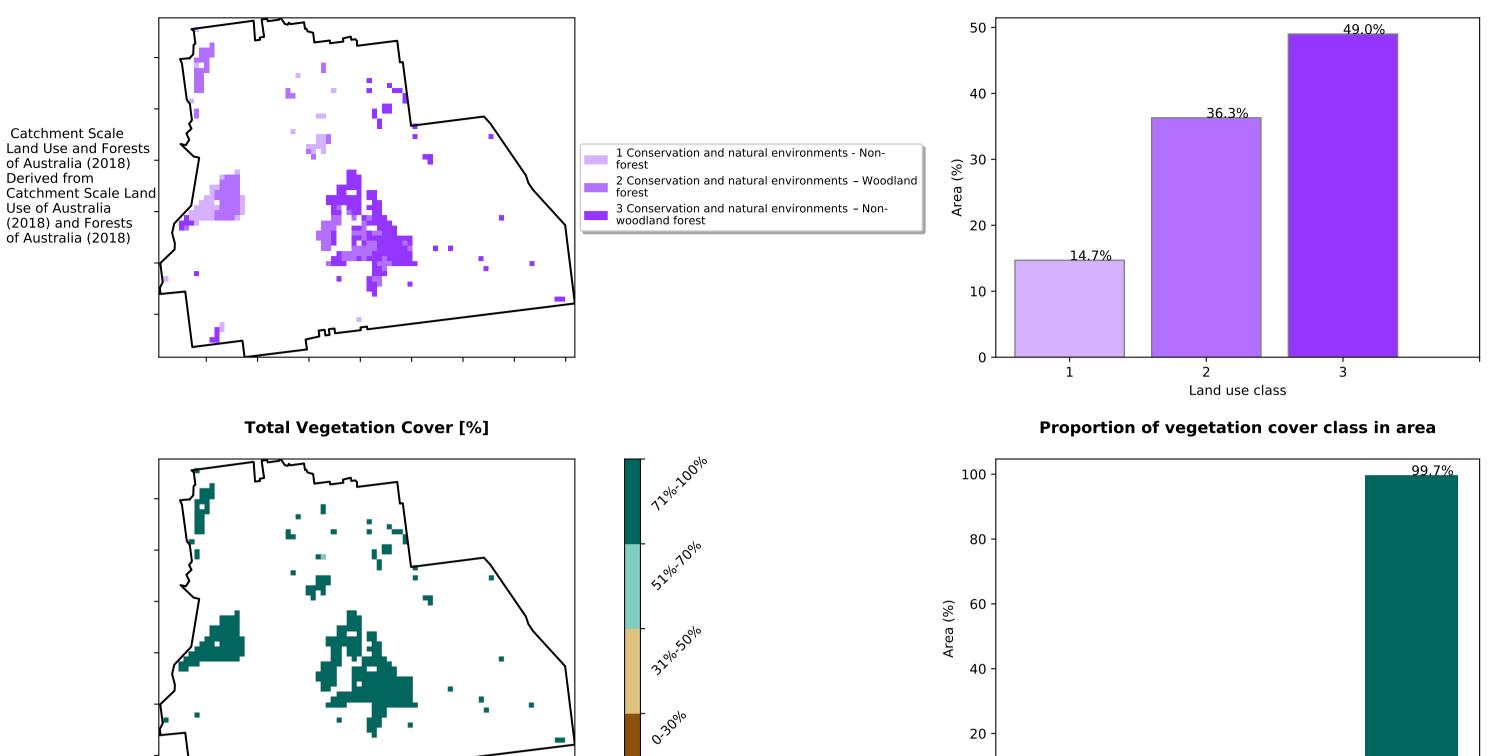




#### **Conservation and natural environments**

Land use and forest cover

Proportion of each land class in area



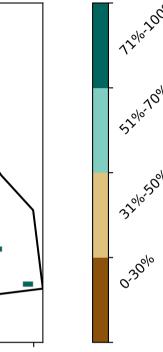
0.0% 0.3% 0.0% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class

0

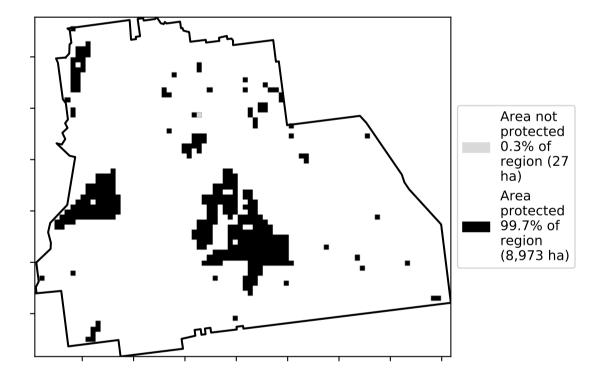
% Area protected from wind erosion (>50%)



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

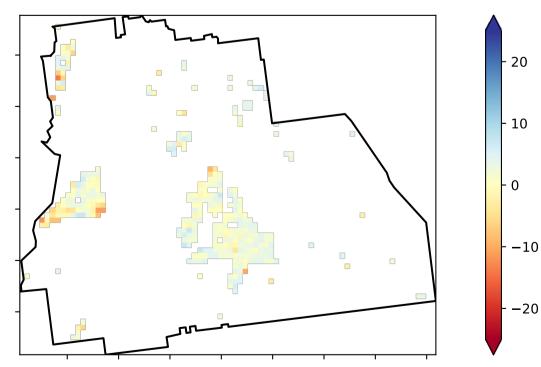


% Area protected from water erosion (>70%)

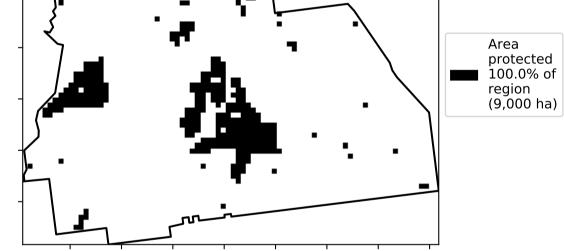


**Total Vegetation Cover Anomaly [%]** 

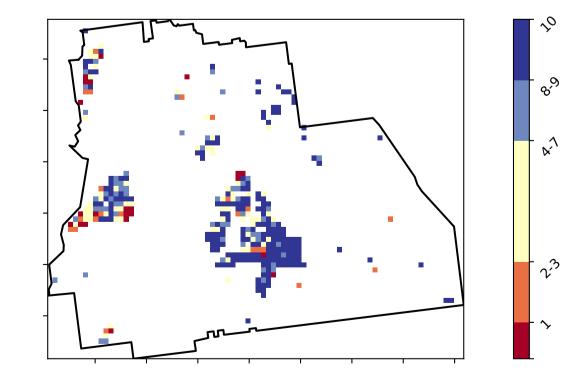
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



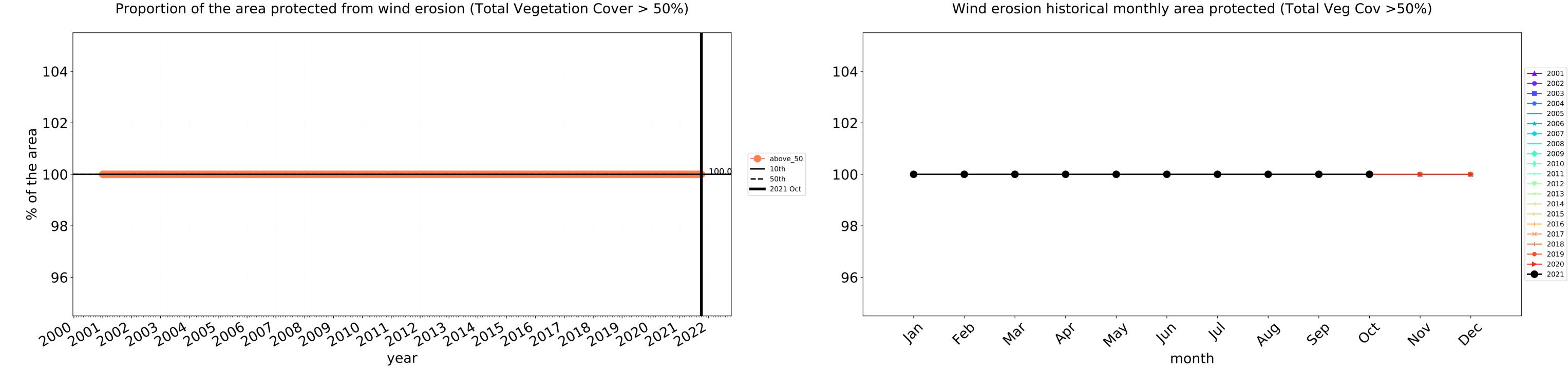
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



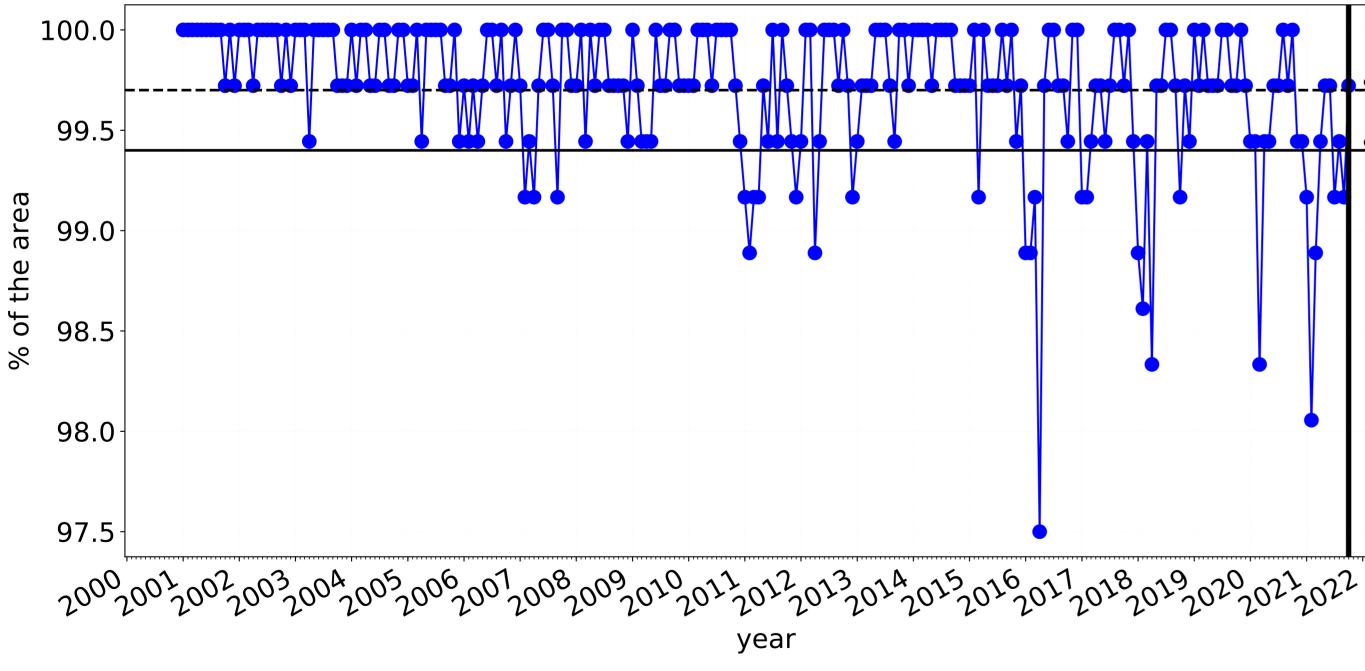
**Total Vegetation Cover Decile [%]** 







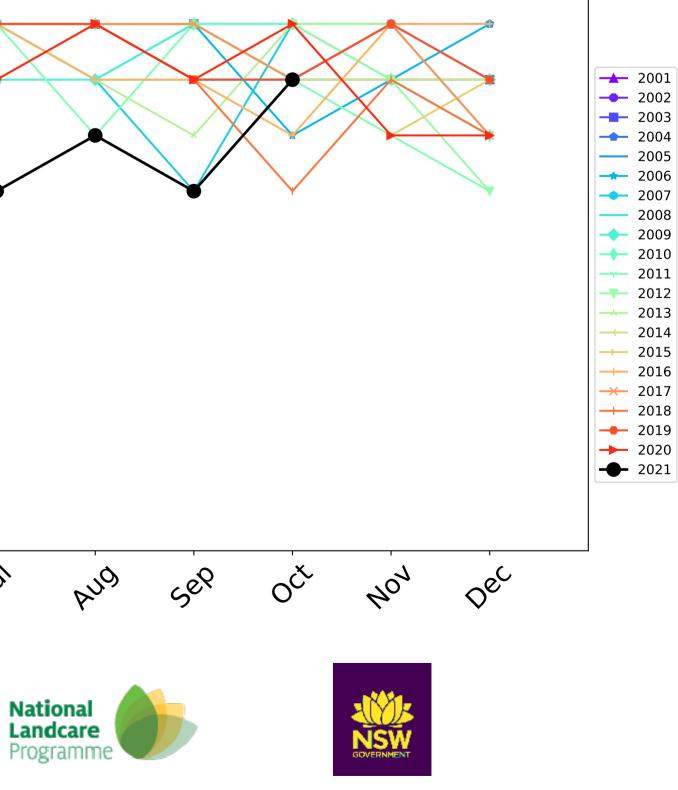
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

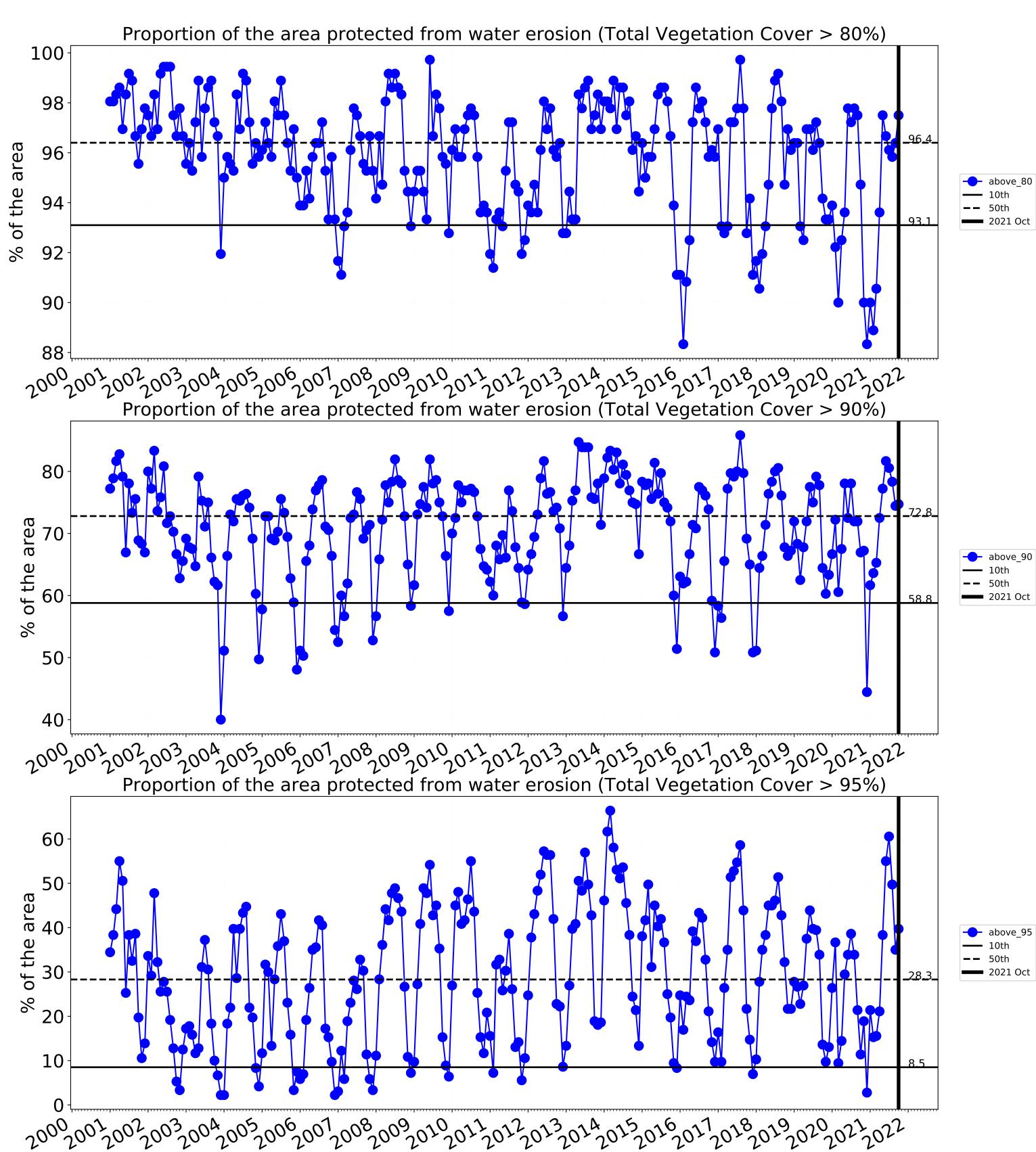


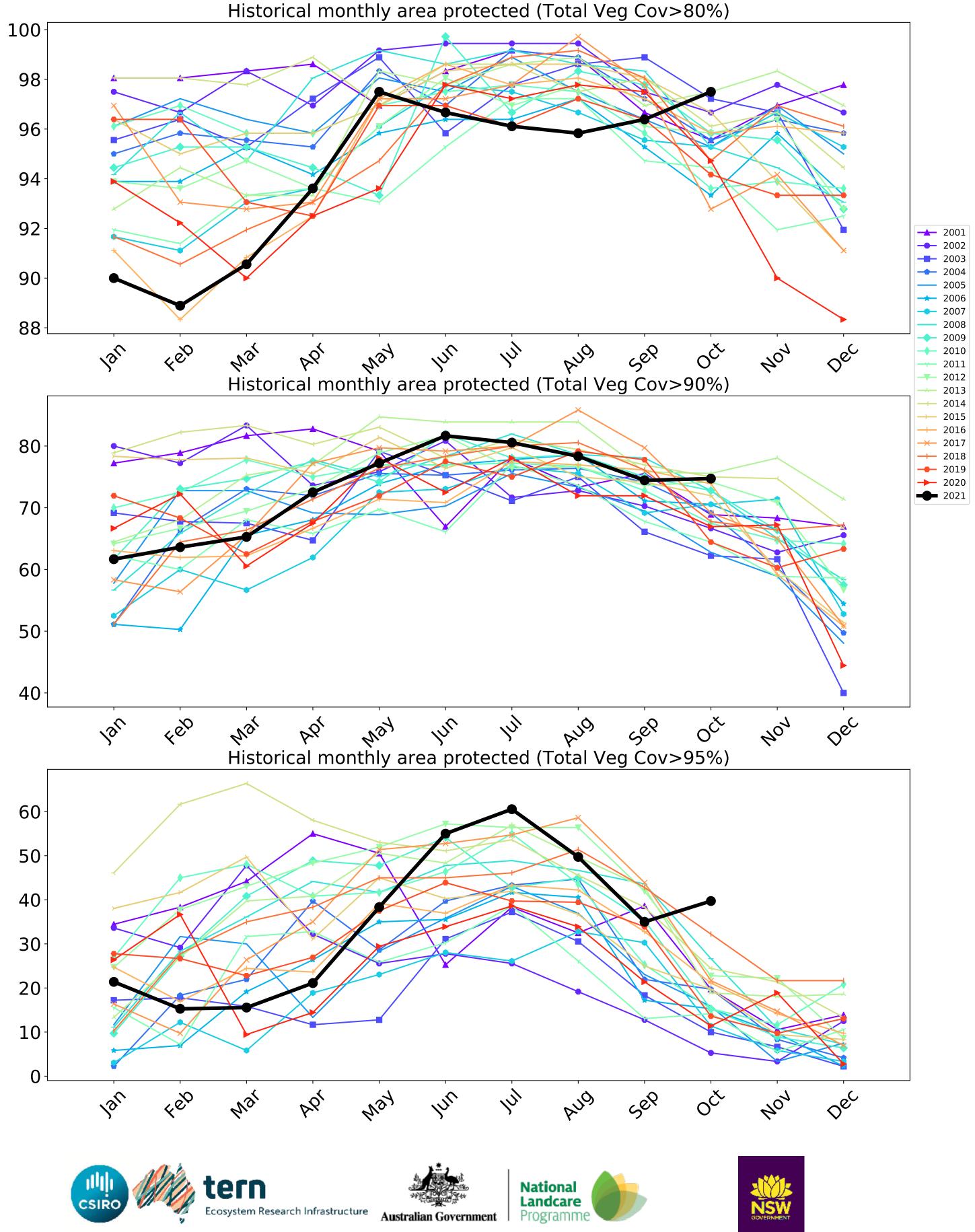
# **Conservation and natural environments timeseries**

100.0-99.5----- above\_70 **——** 10th 99.0-**——** 50th **—** 2021 Oct 98.5 98.0-97.5 4eb Jan way hill Mar P.Q 1st month tern Ecosystem Research Infrastructure Australian Government

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









#### **Conservation and natural environments non forest**

Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Non-Catchment Scale Land forest Use of Australia (2018) and Forests of Australia (2018)

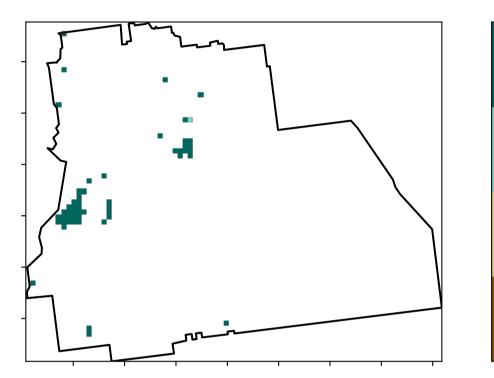
12% 100%

· 52% 70%

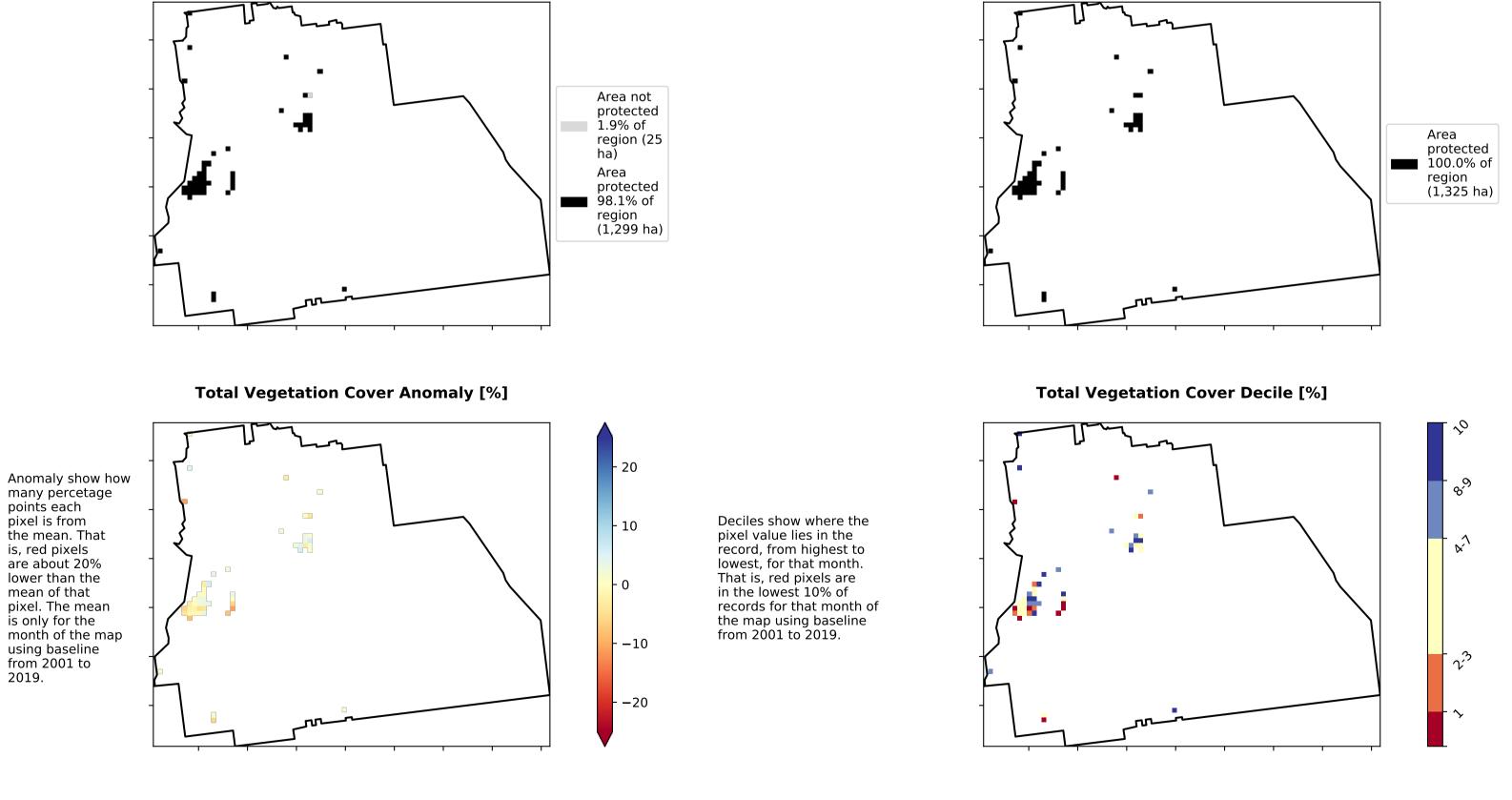
1 32°10'50010

0.30%

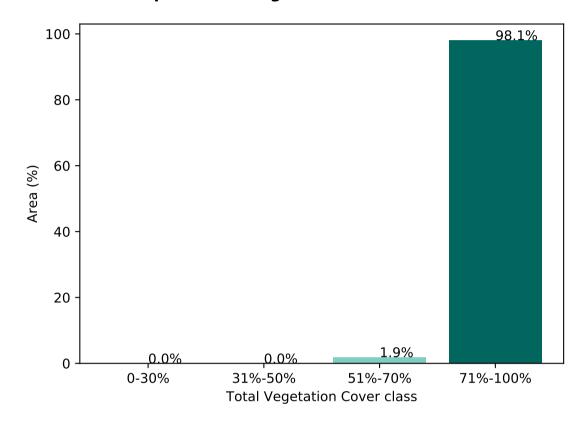
**Total Vegetation Cover [%]** 



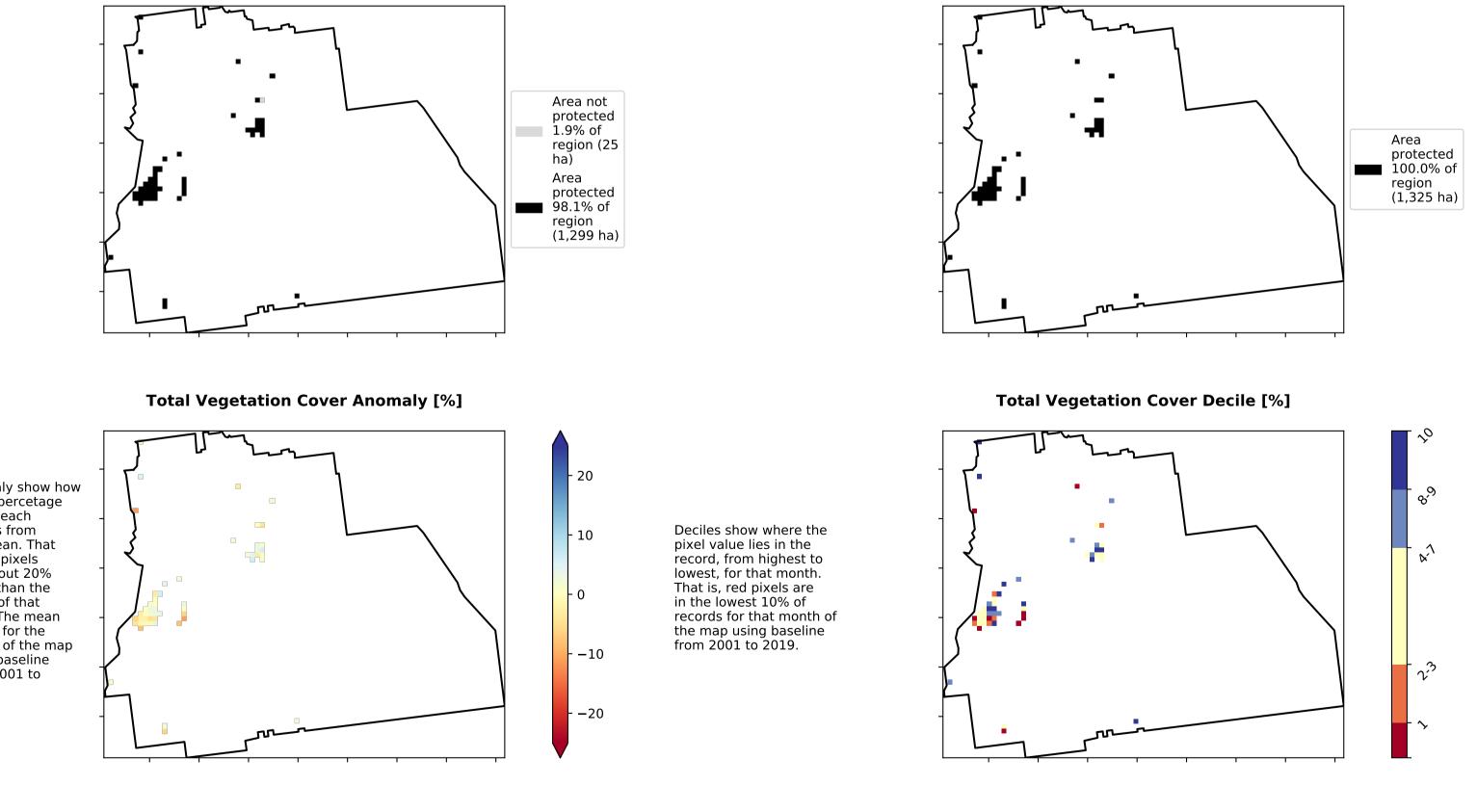
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

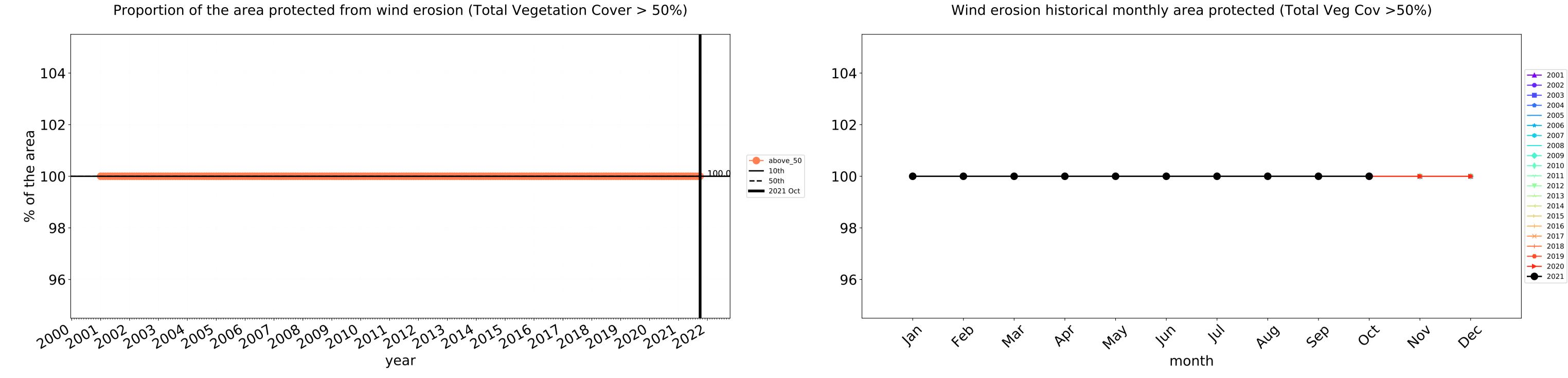


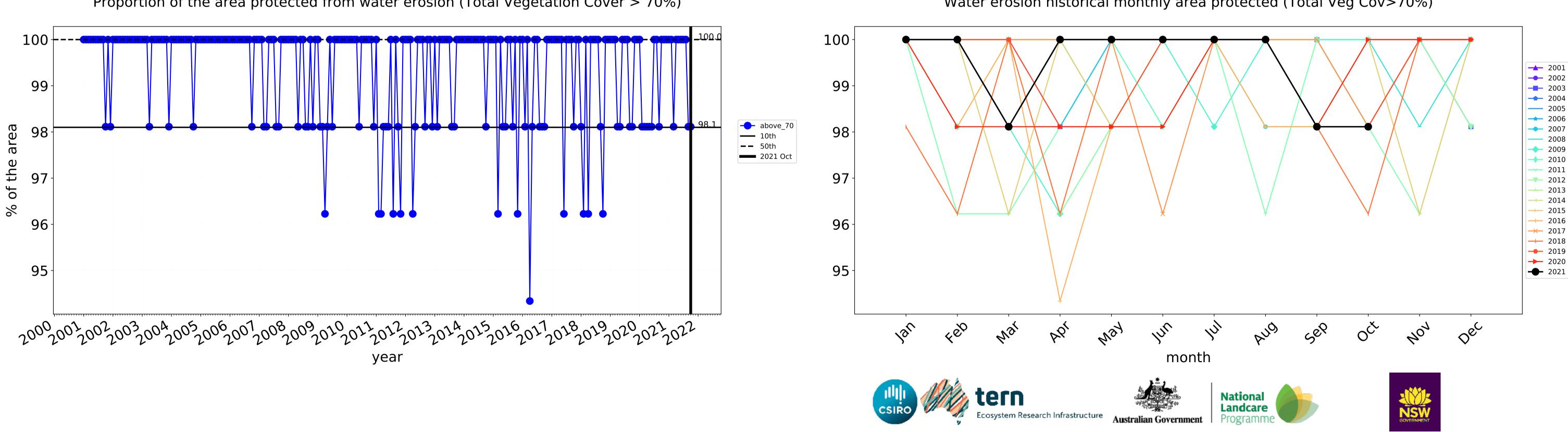
% Area protected from wind erosion (>50%)



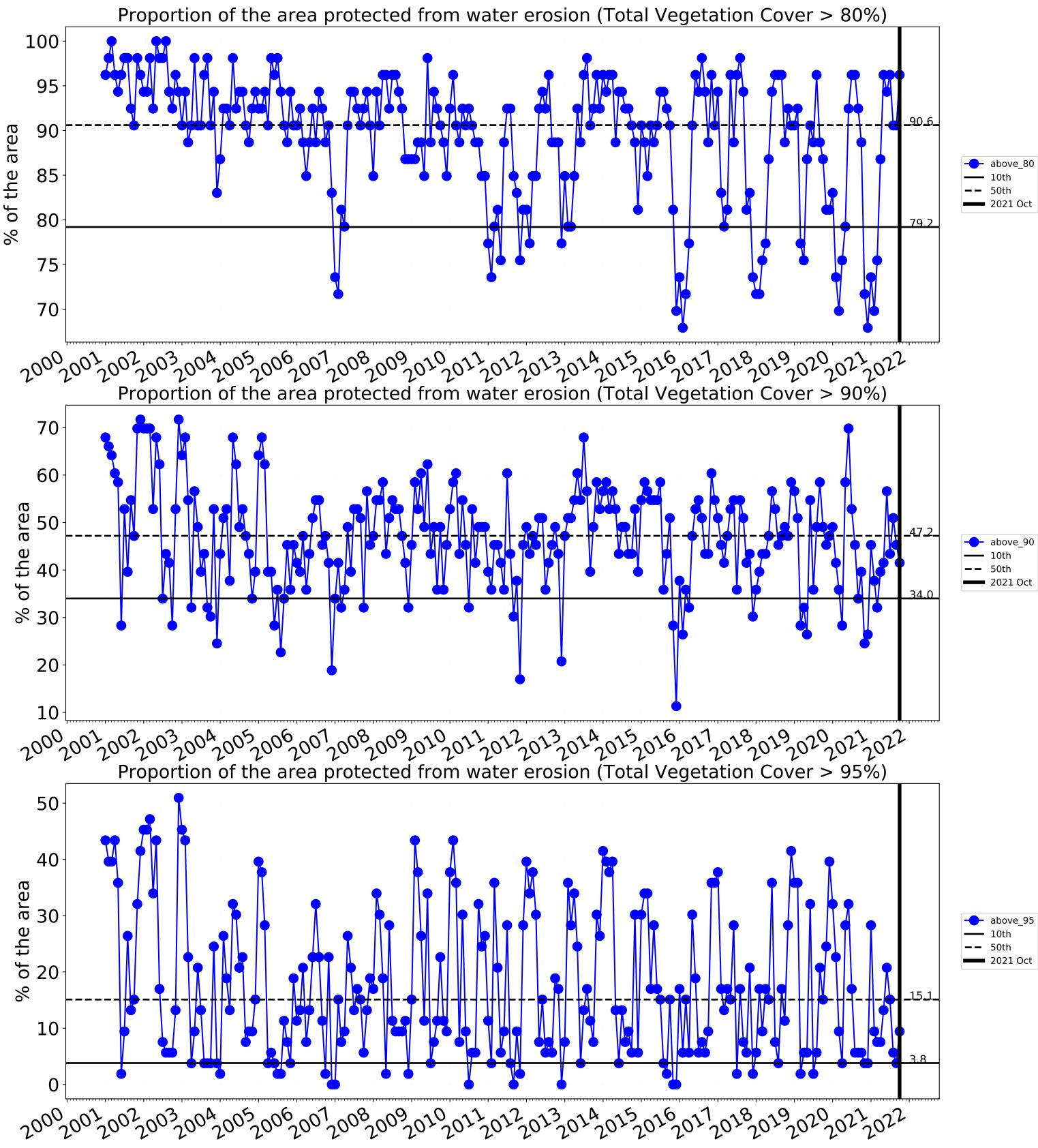


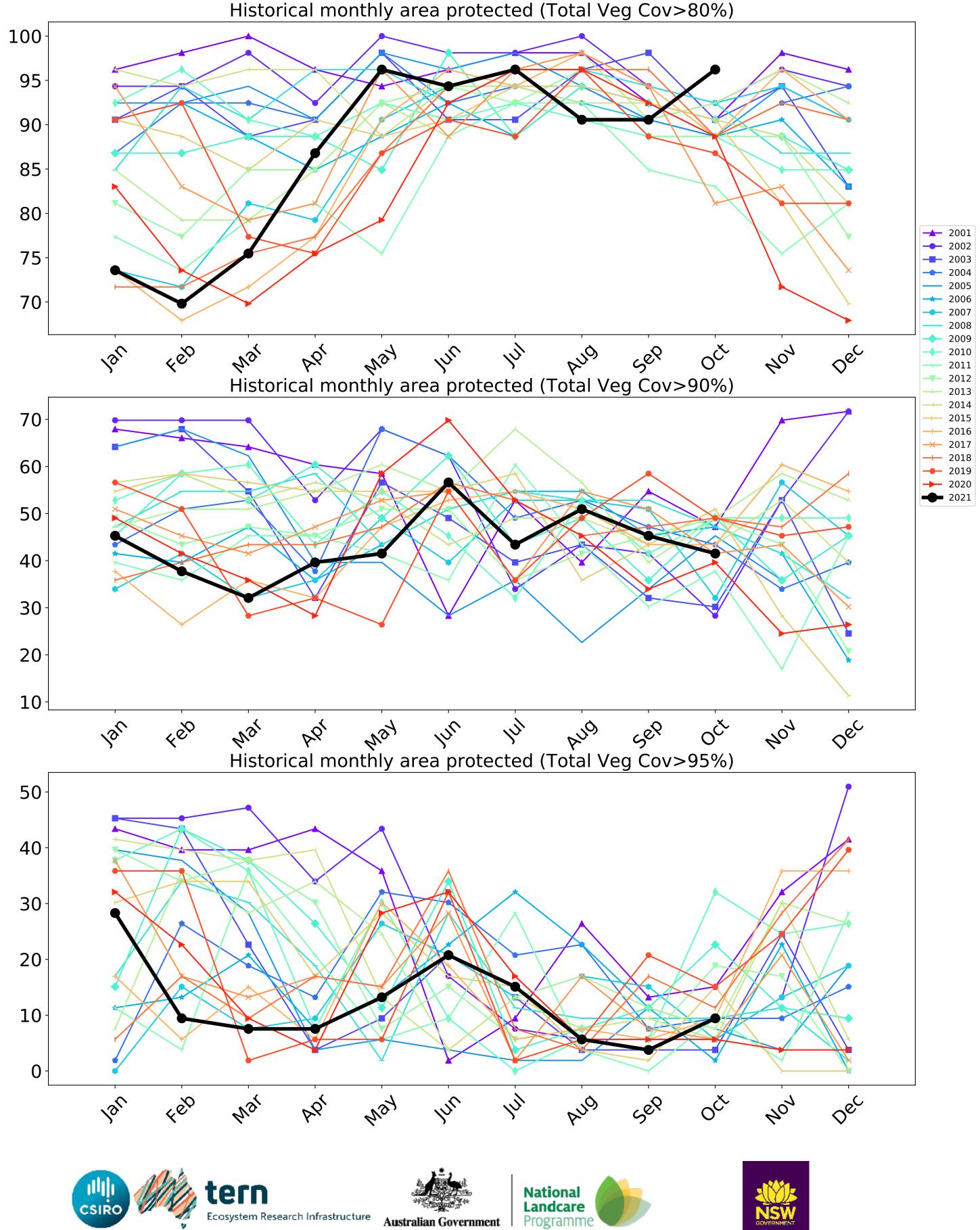
# **Conservation and natural environments non forest timeseries**





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





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#### **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)

12%200%

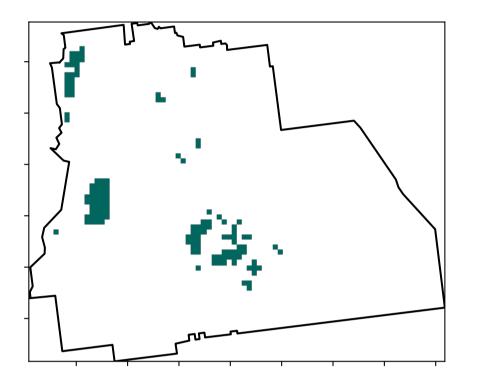
· 52% 70%

320050010

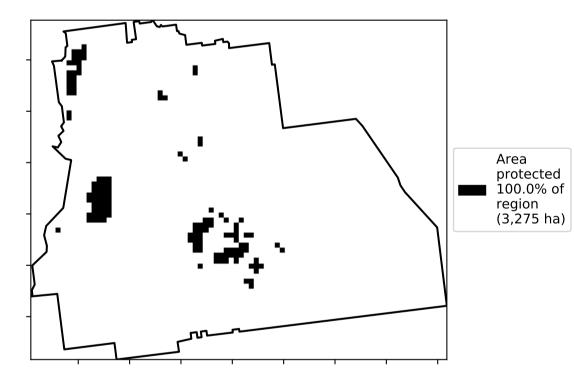
0.30%

Total Vegetation Cover [%]

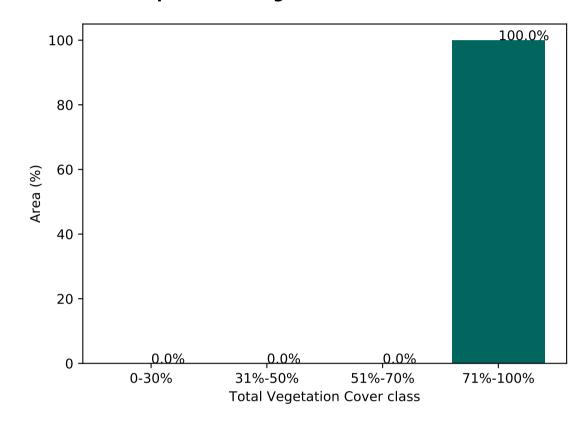
Land use and forest cover



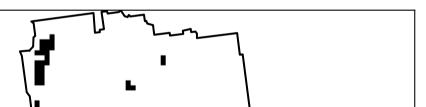
% Area protected from water erosion (>70%)

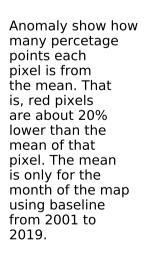


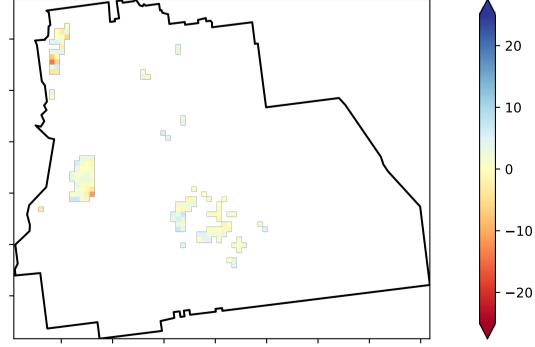
Proportion of vegetation cover class in area



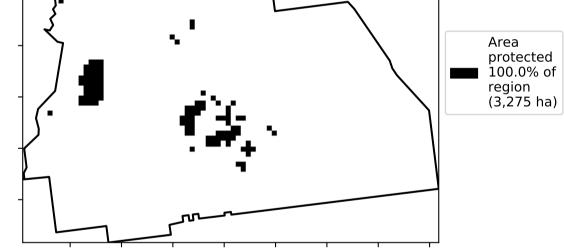
% Area protected from wind erosion (>50%)



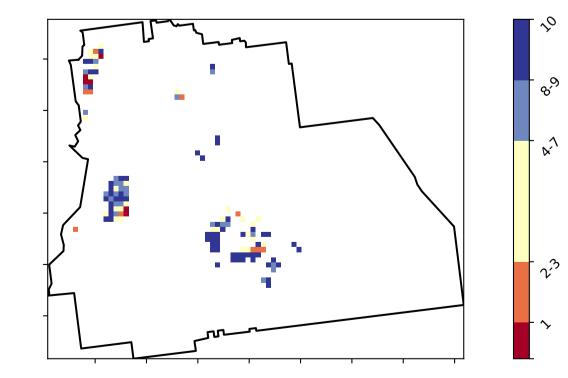




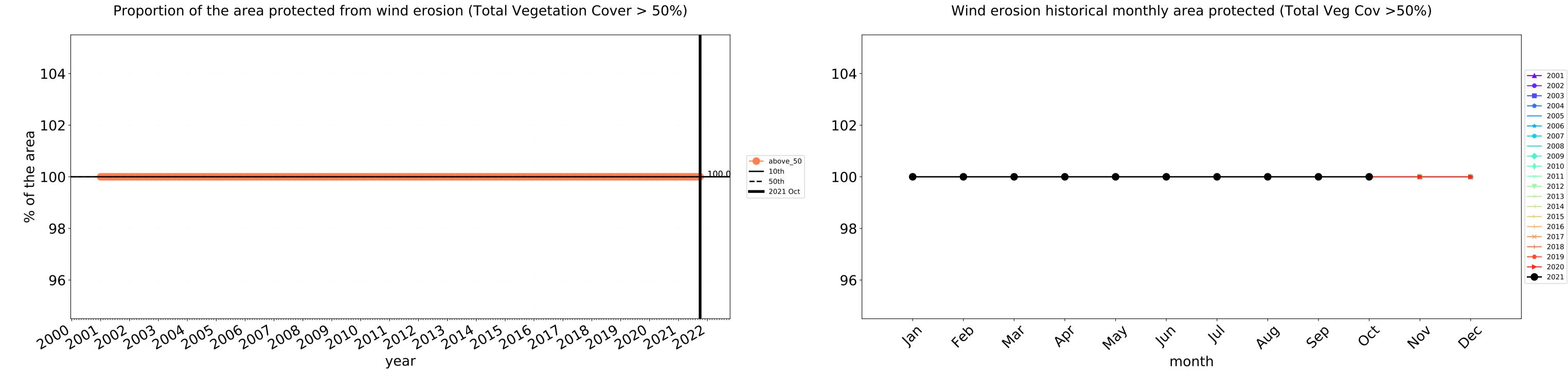
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



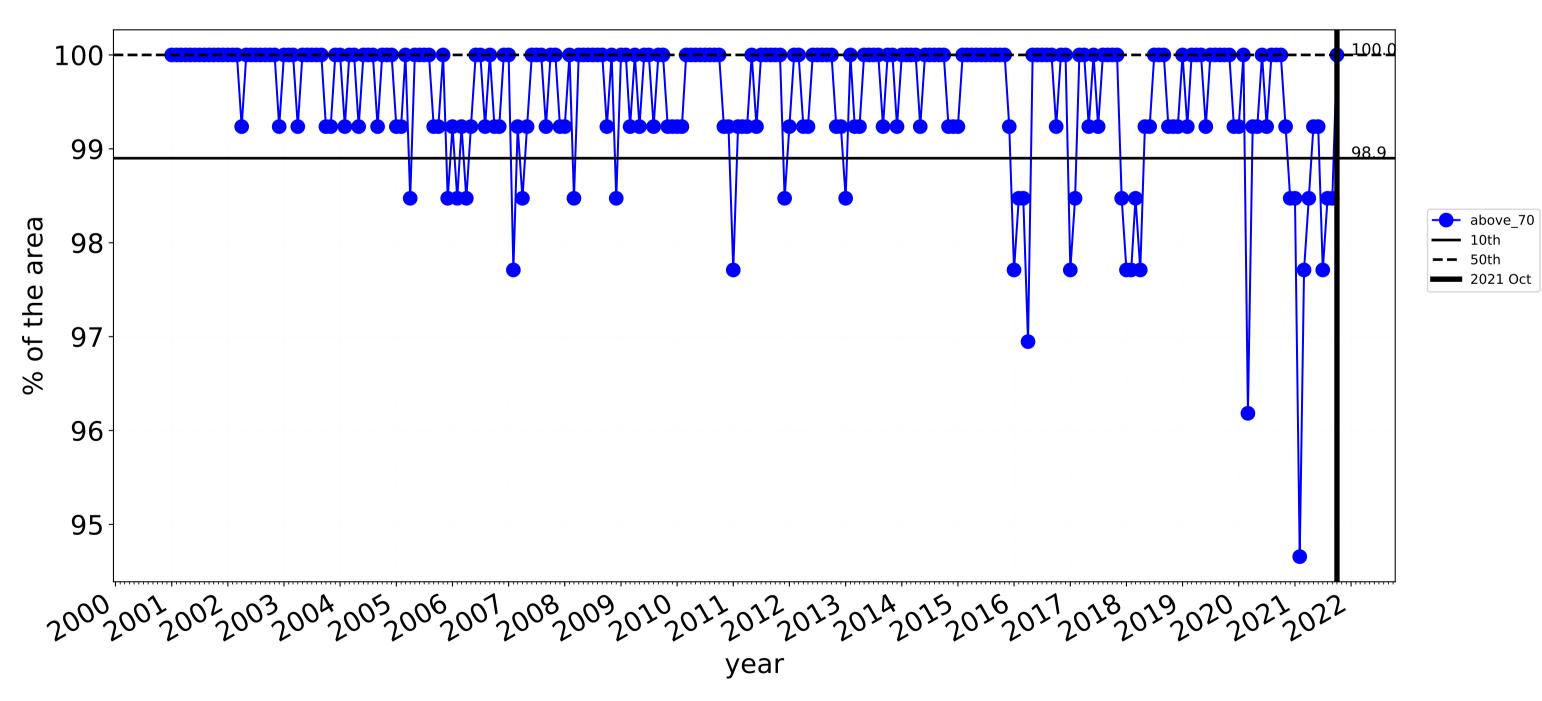
**Total Vegetation Cover Decile [%]** 

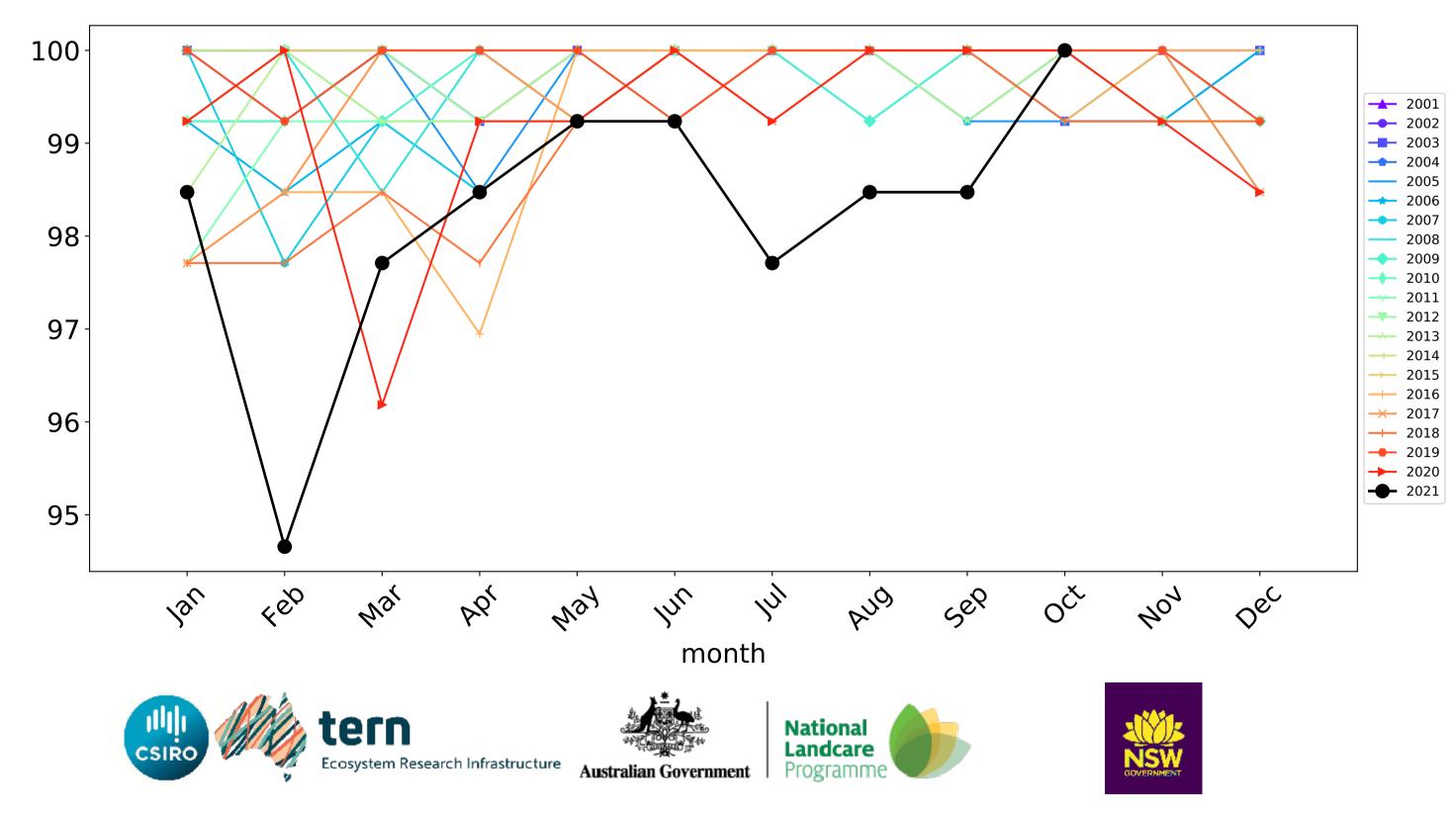


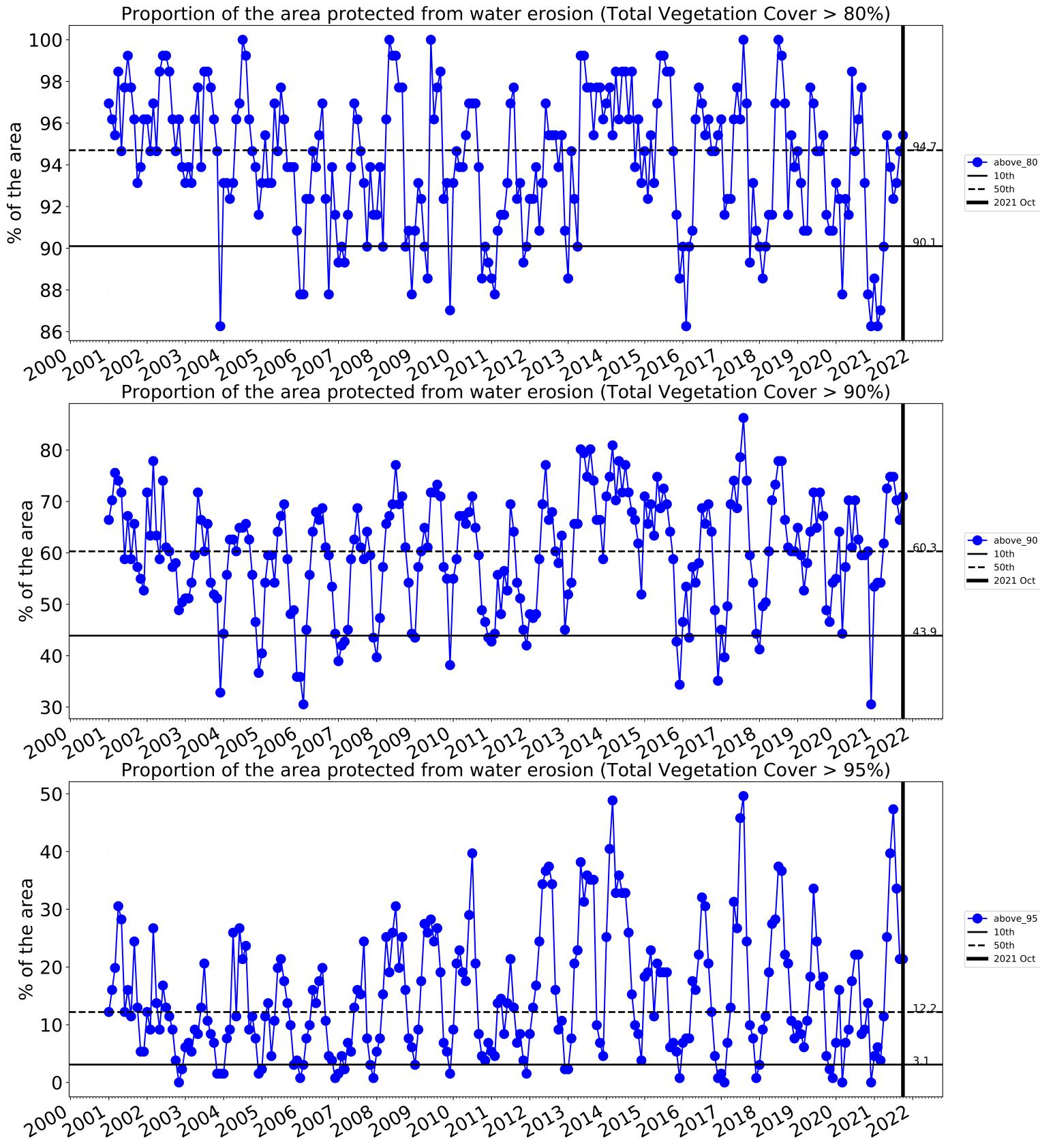


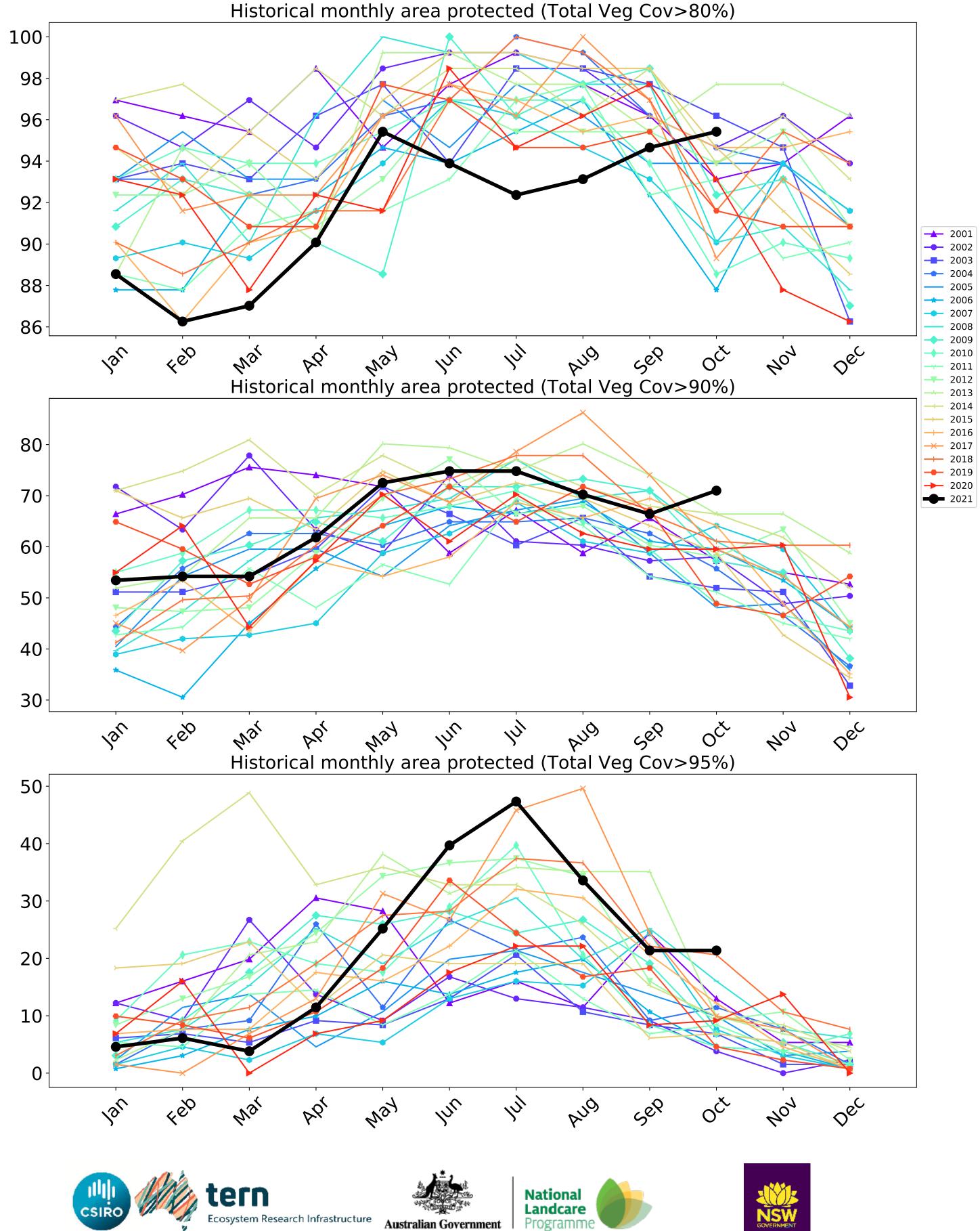


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



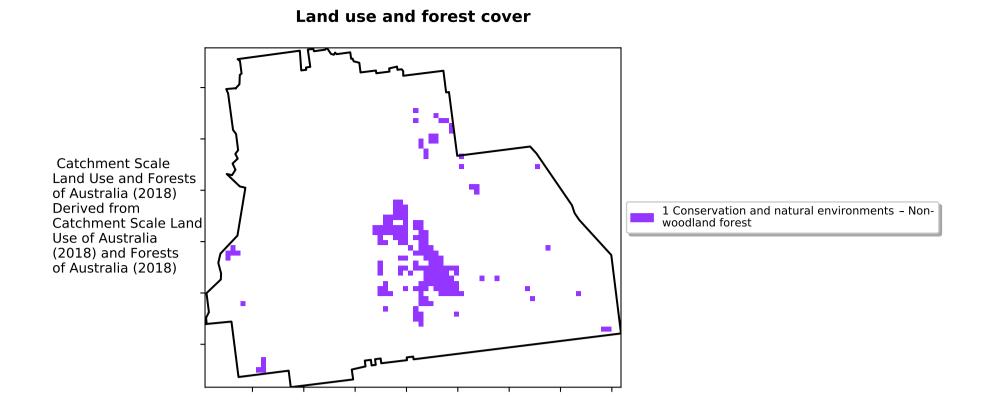






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### **Conservation and natural environments Forest (non woodland)**



12010-200010

· 52% 70%

32%50%

0.30%

- 20

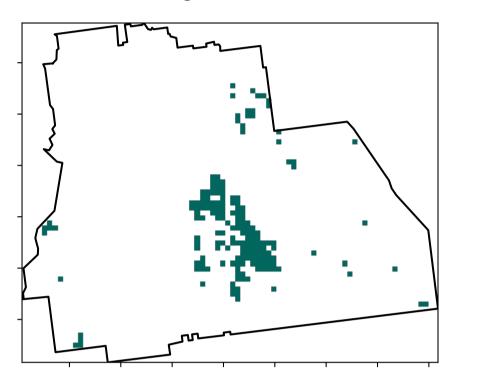
- 10

0

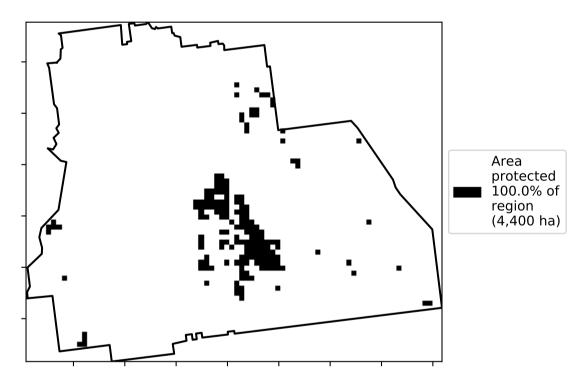
-10

-20

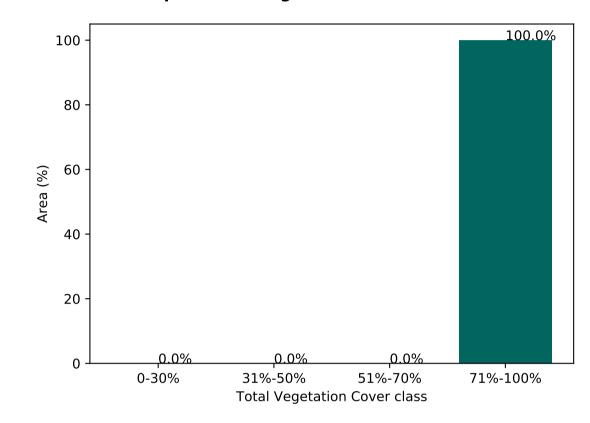
**Total Vegetation Cover [%]** 



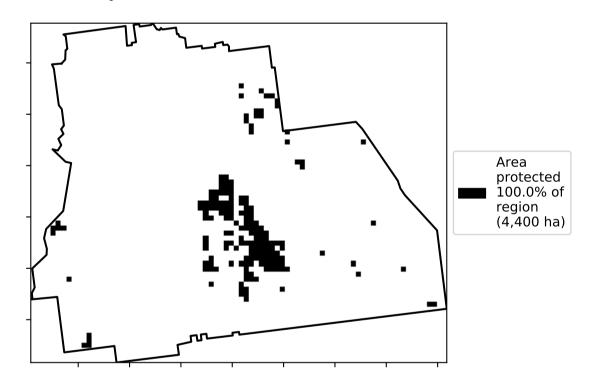
% Area protected from water erosion (>70%)

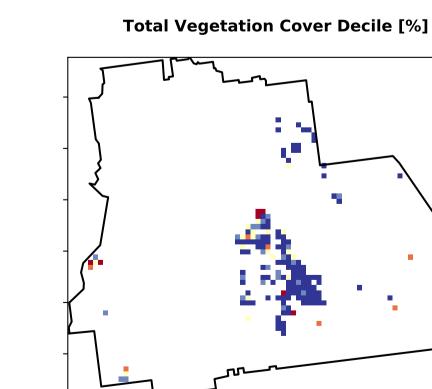


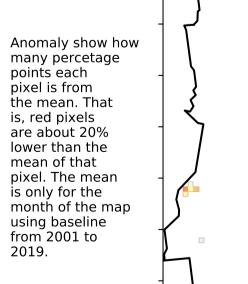
Proportion of vegetation cover class in area

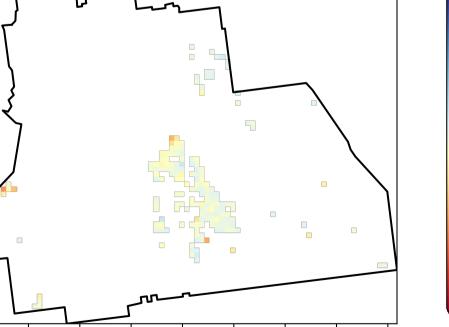


% Area protected from wind erosion (>50%)

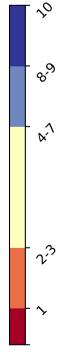






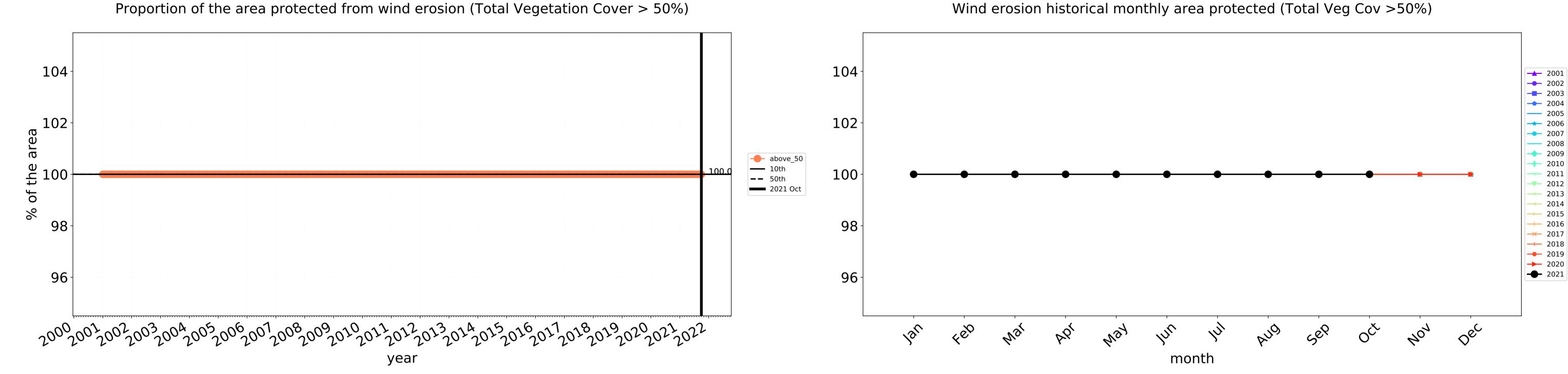


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.

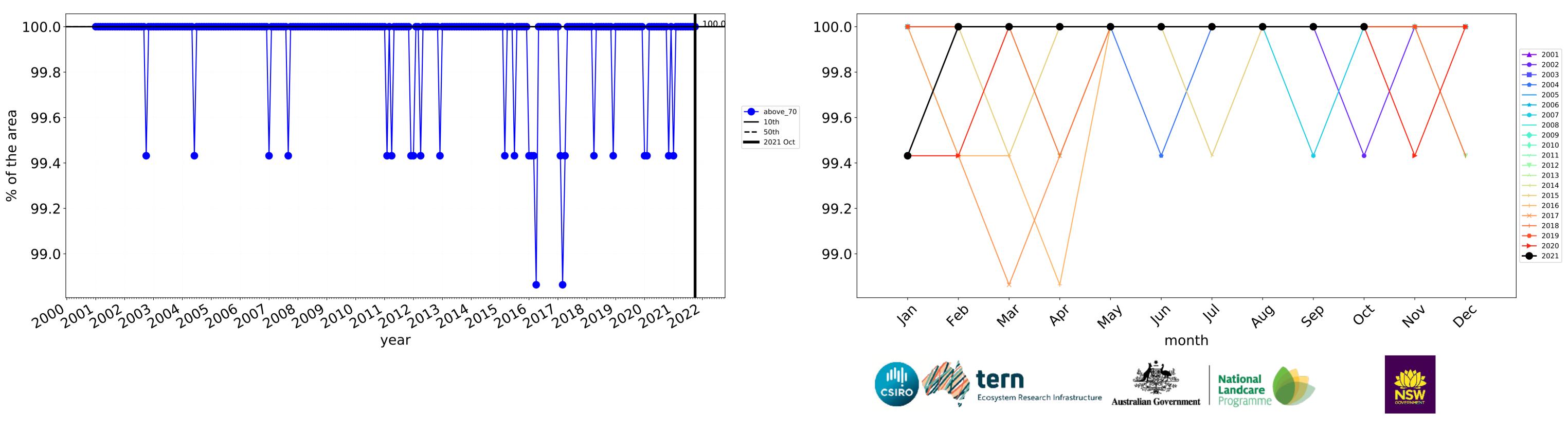


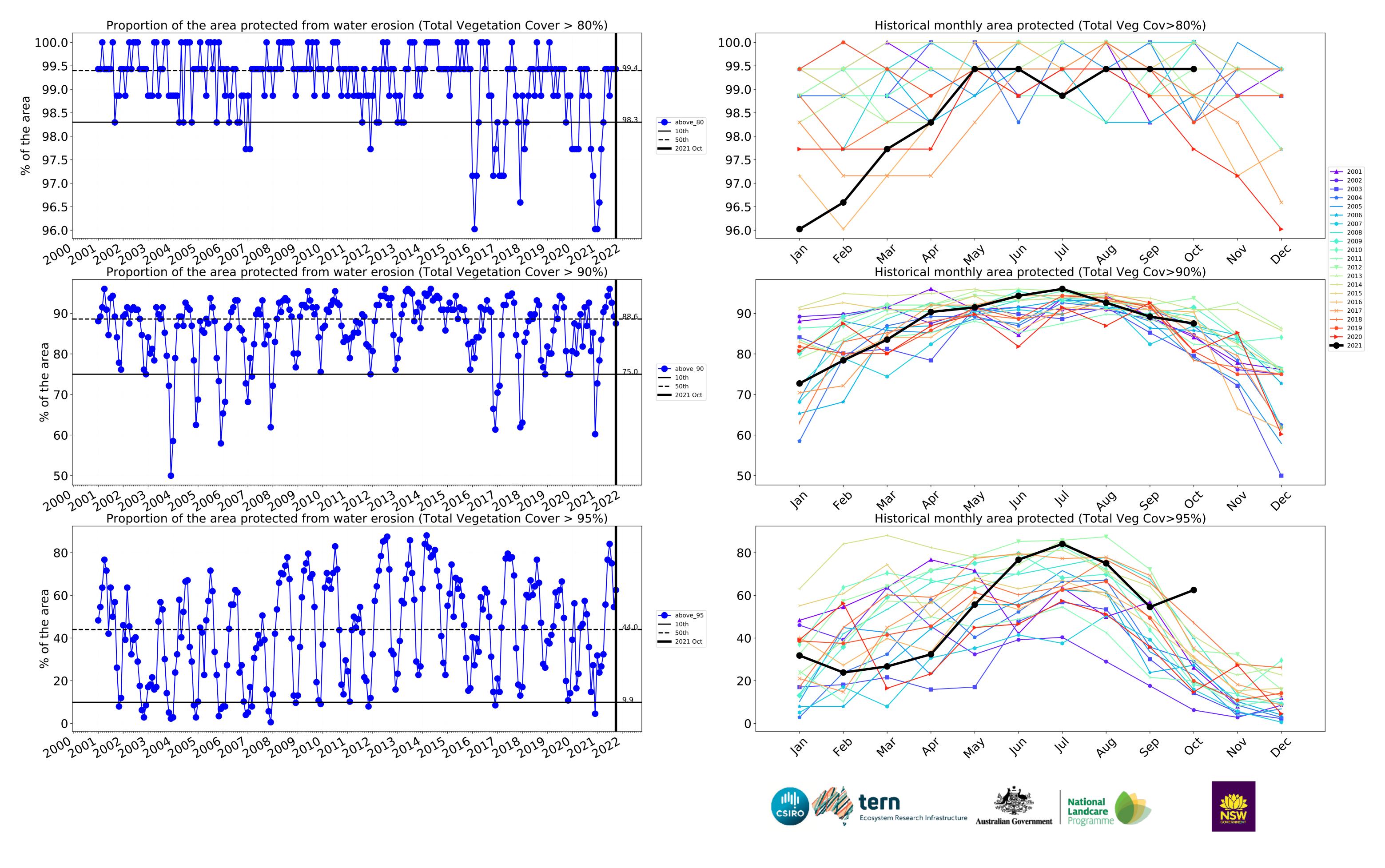


# **Conservation and natural environments Forest (non woodland) timeseries**



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





### Agriculture

12%100%

52°10'70°10

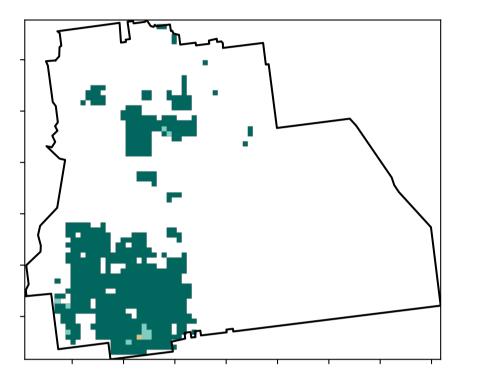
3201050010

· 0.30%

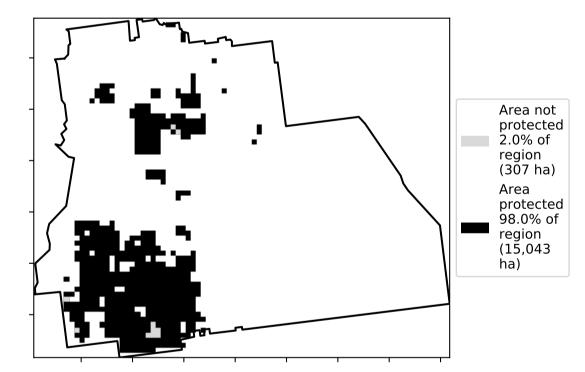
Catchment Scale Land Use and Forests of Australia (2018) 1 Agriculture - Grazing - Non forest Derived from 2 Agriculture - Grazing - Irrigated Catchment Scale Land 3 Agriculture - Cropping - Non-irrigated Use of Australia 4 Agriculture - Horticulture - Irrigated (2018) and Forests of Australia (2018)

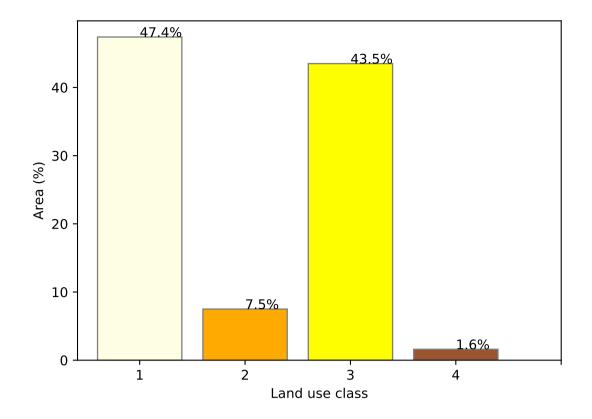
Land use and forest cover

**Total Vegetation Cover [%]** 



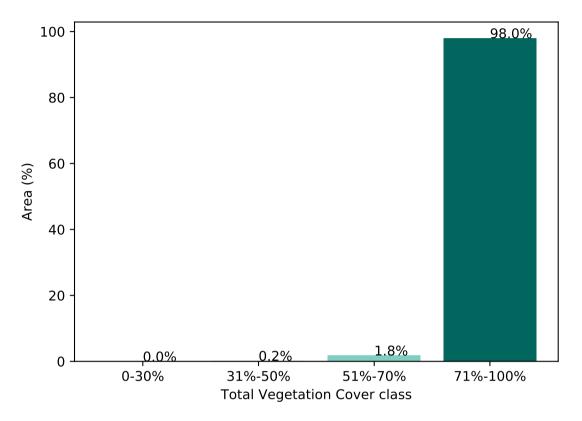
% Area protected from water erosion (>70%)



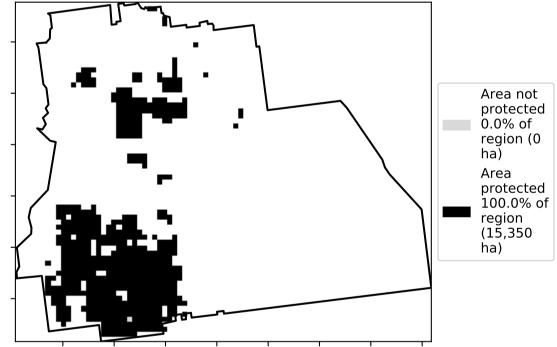


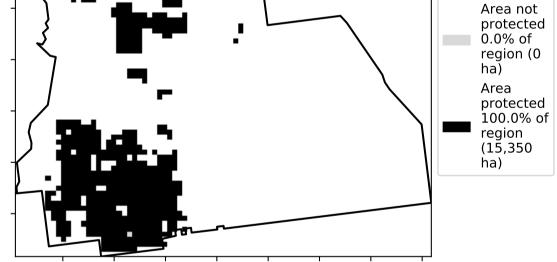
Proportion of each land class in area

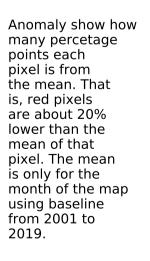
Proportion of vegetation cover class in area

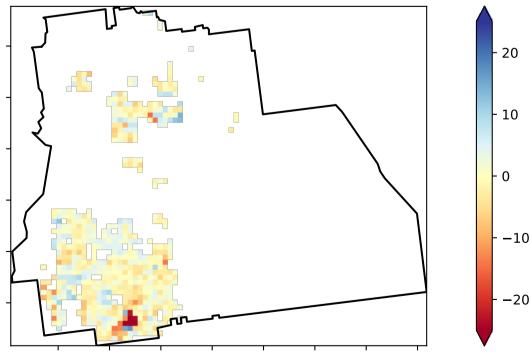


% Area protected from wind erosion (>50%)



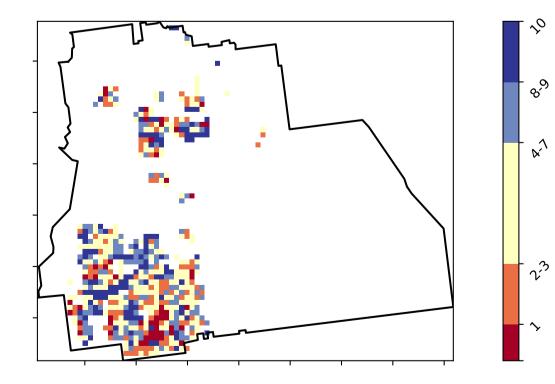




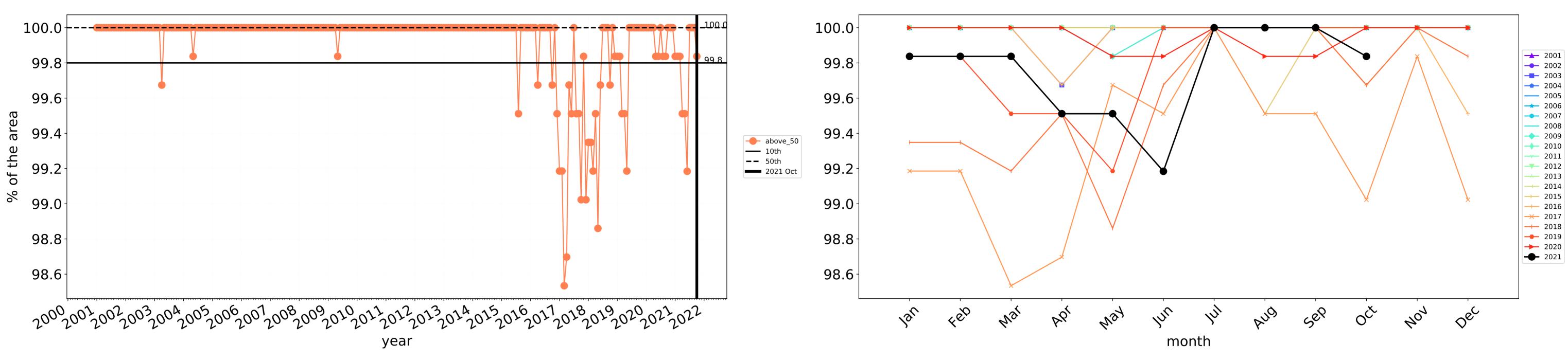


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

**Total Vegetation Cover Decile [%]** 

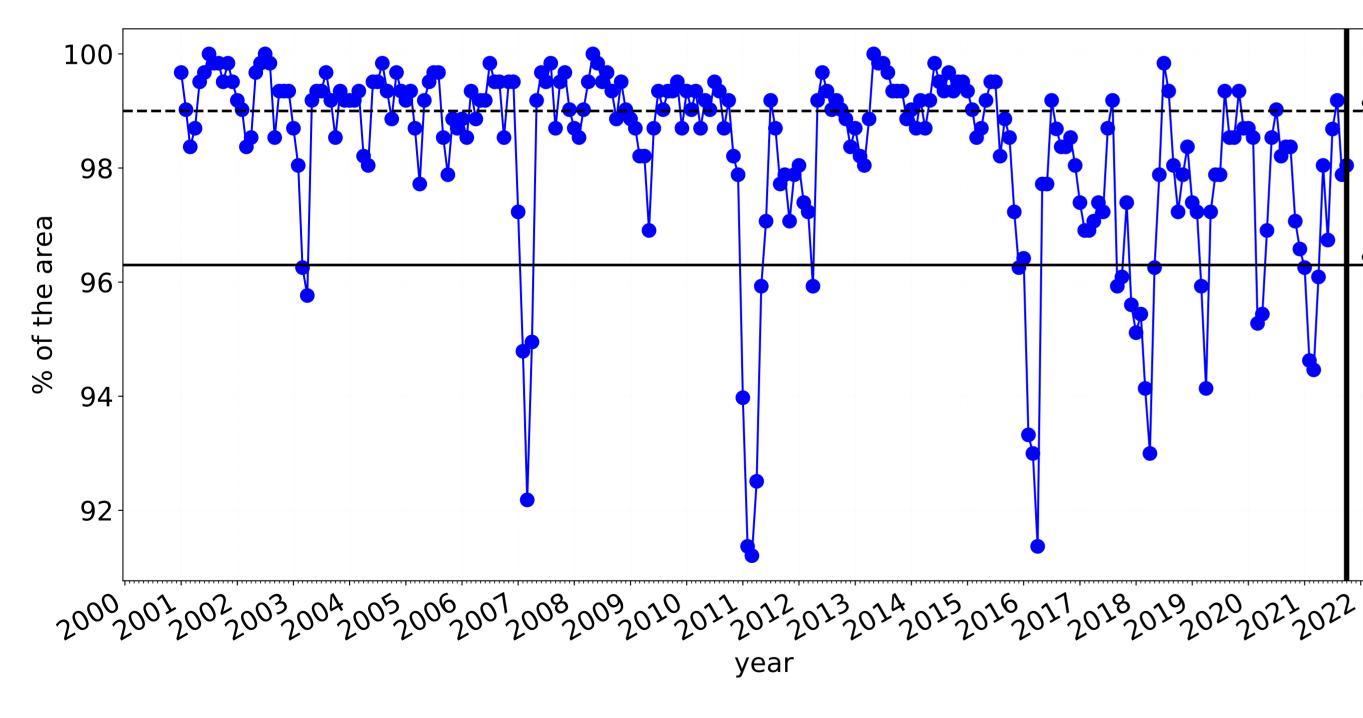






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

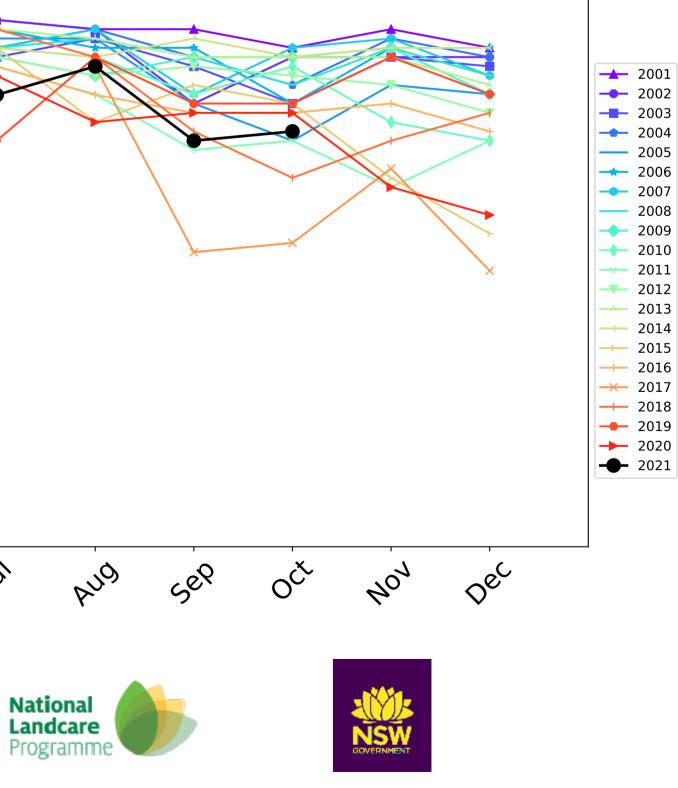
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



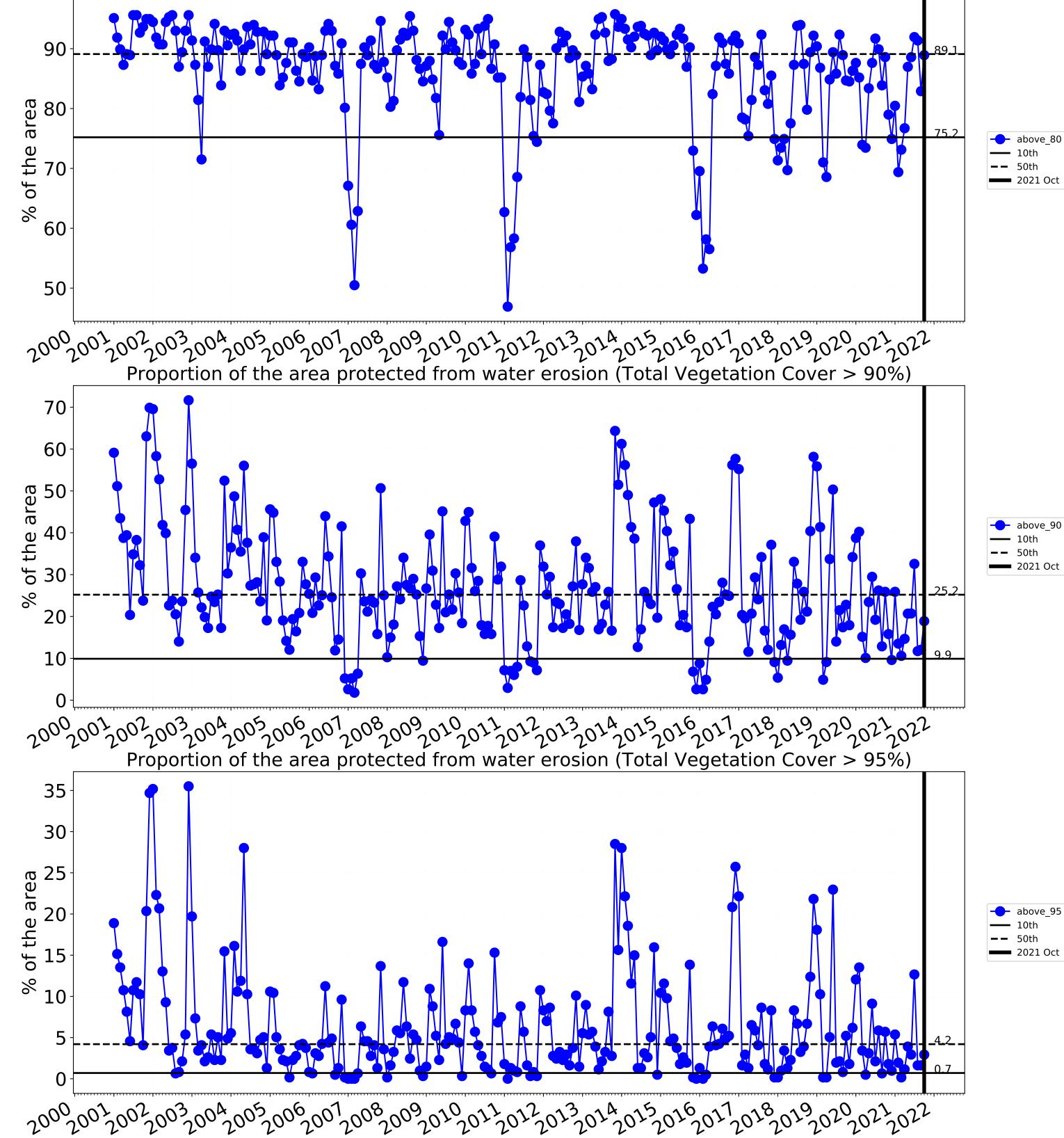
# Agriculture timeseries

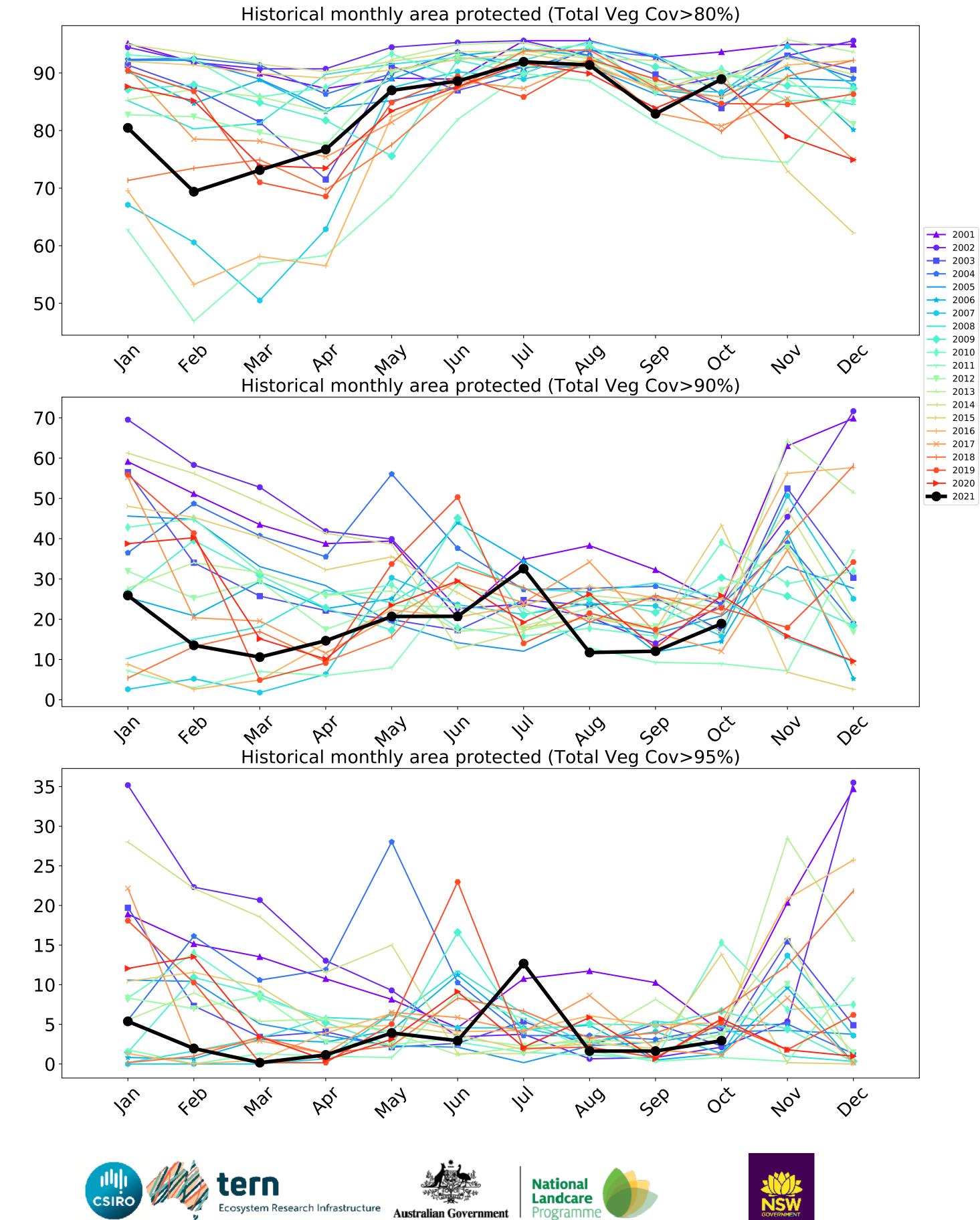
100 98 ---- above\_70 **—** 10th **——** 50th **—** 2021 Oct 96 94 92 feb Jan In way 1's Mai PG, month tern Ecosystem Research Infrastructure Australian Government

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









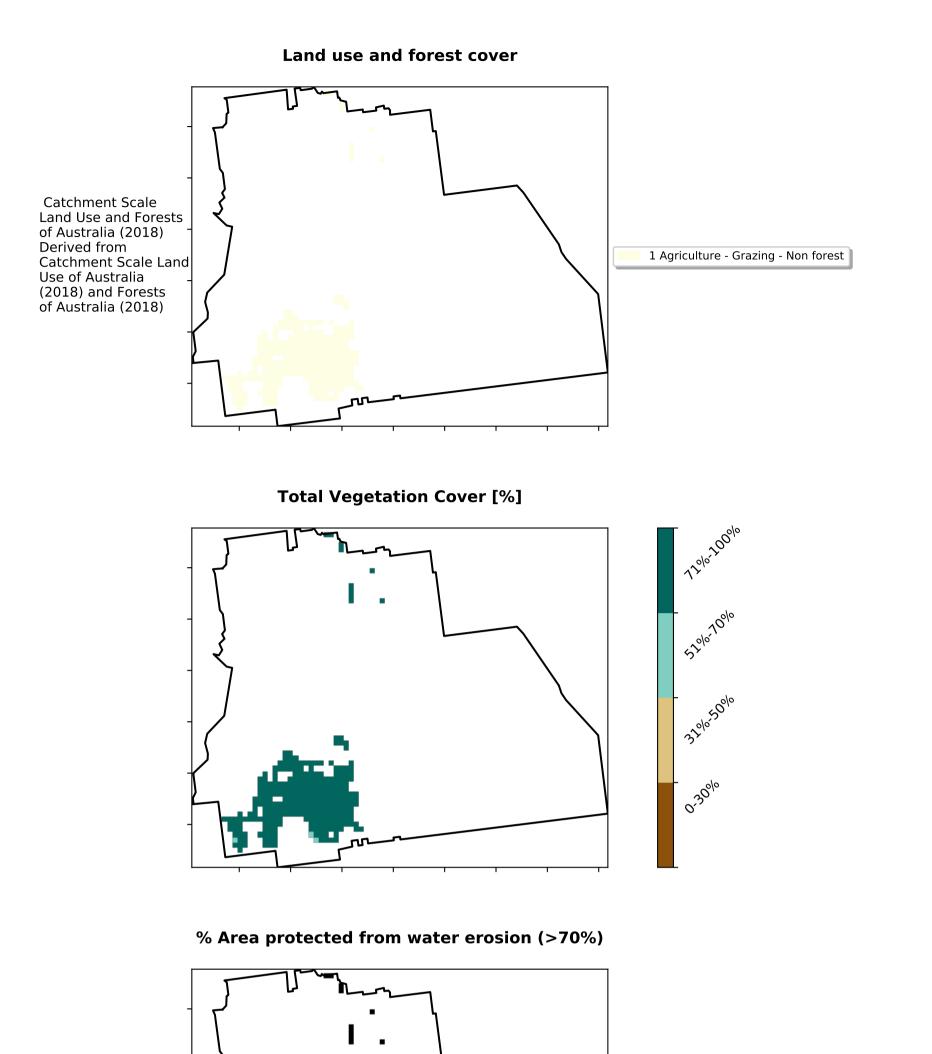


#### Grazing

 $100 \cdot$ 

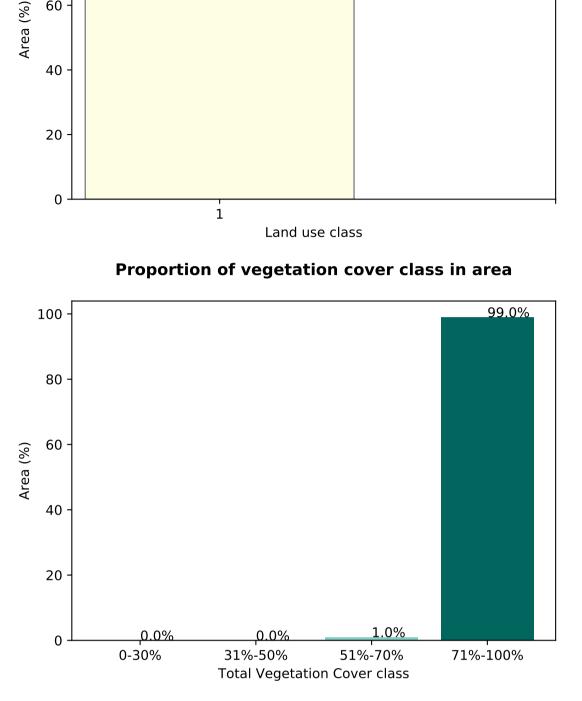
80

60

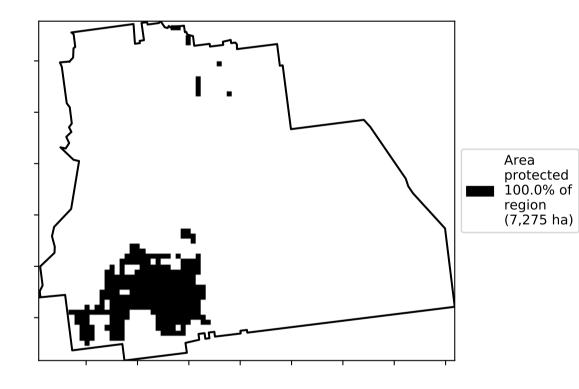


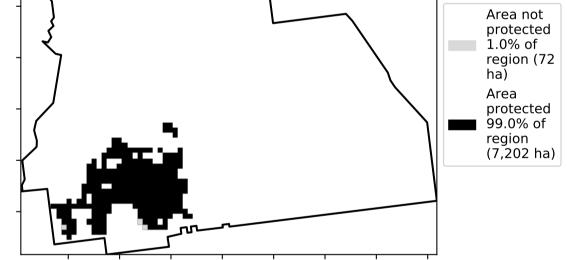
Proportion of each land class in area

100.0%

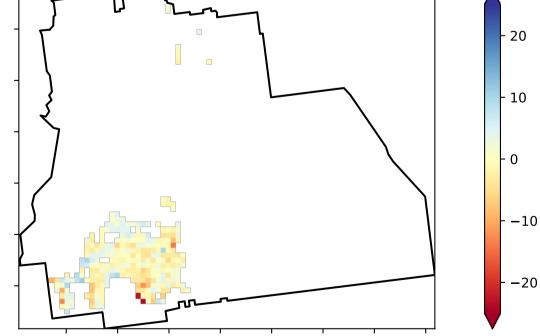


% Area protected from wind erosion (>50%)



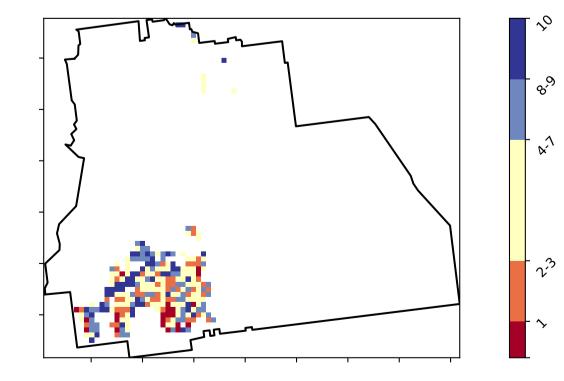


Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

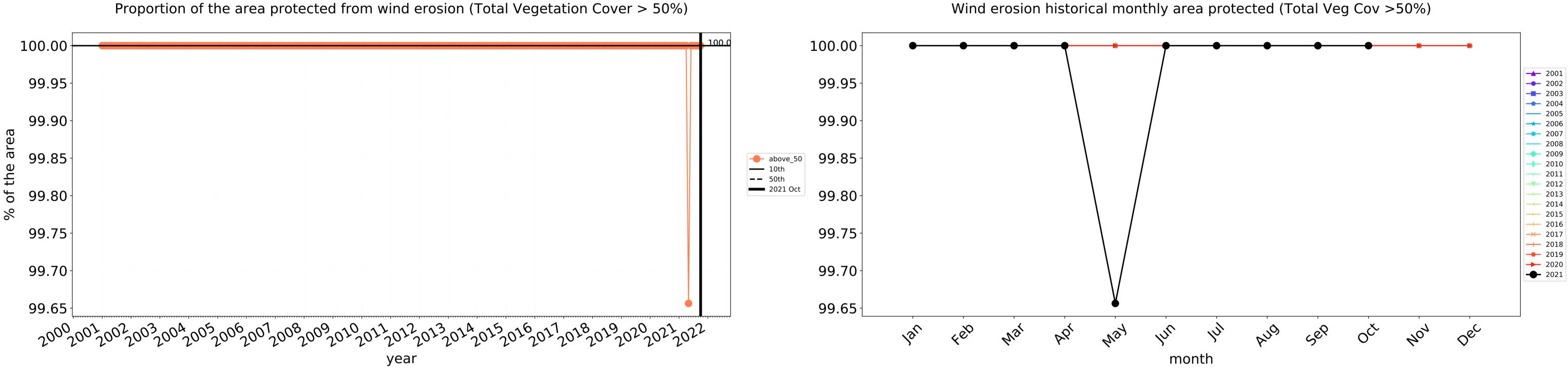


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

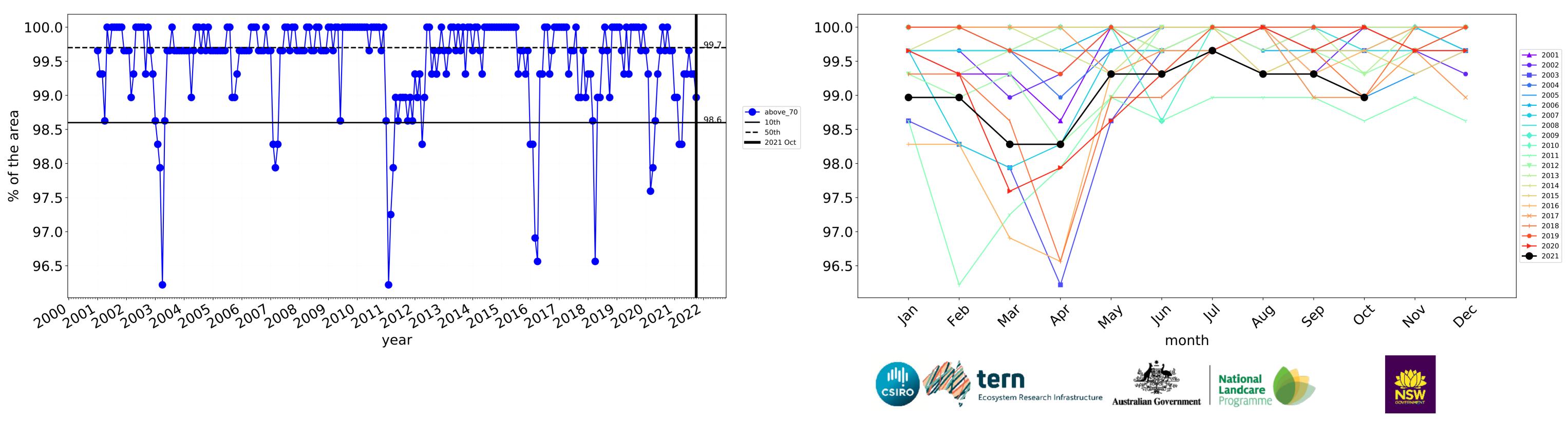
**Total Vegetation Cover Decile [%]** 

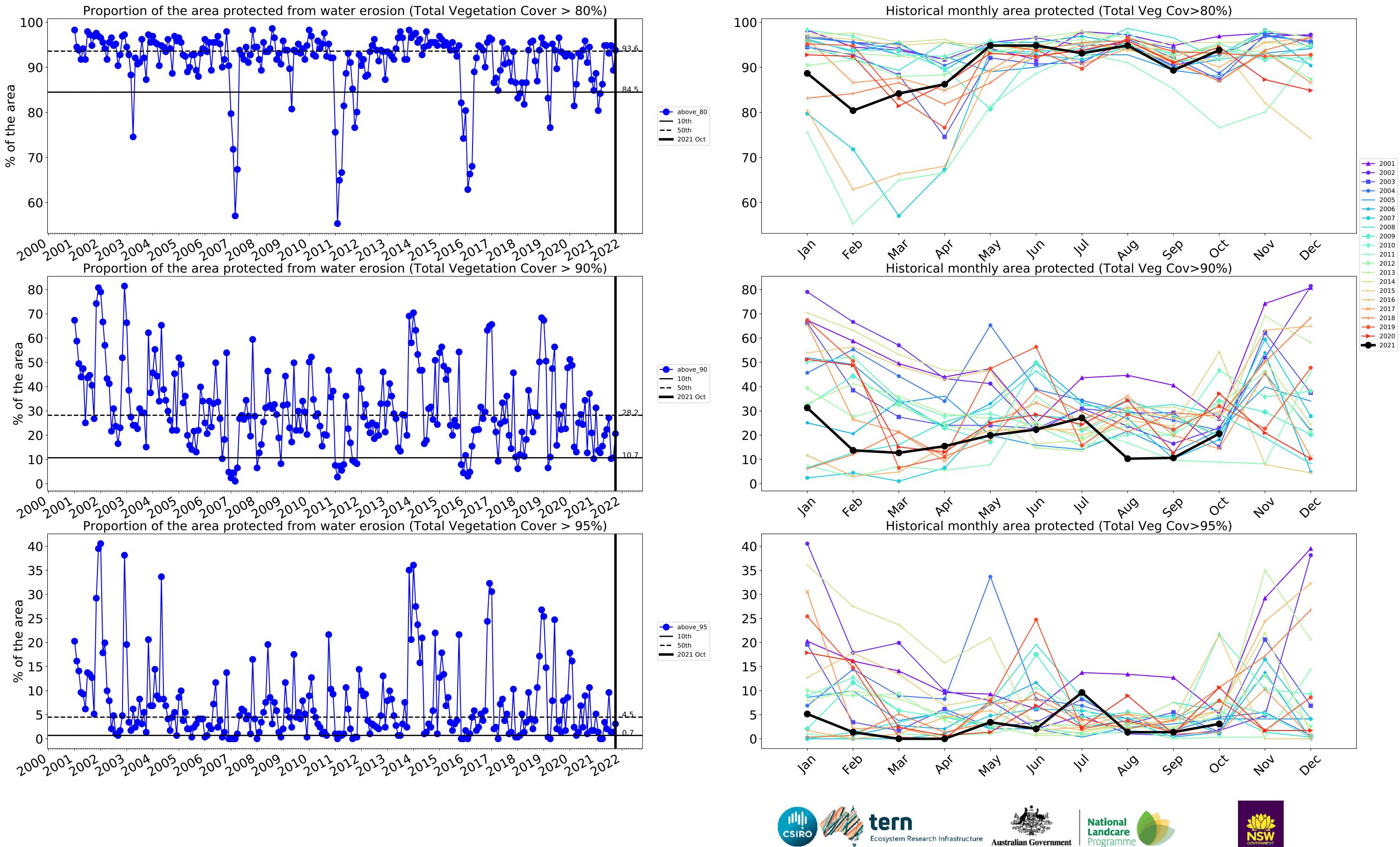












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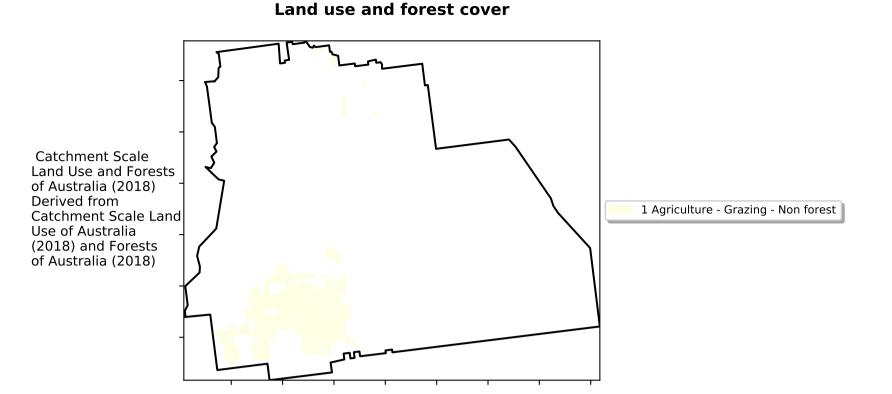
### **Grazing non forest**

1 12% 100%

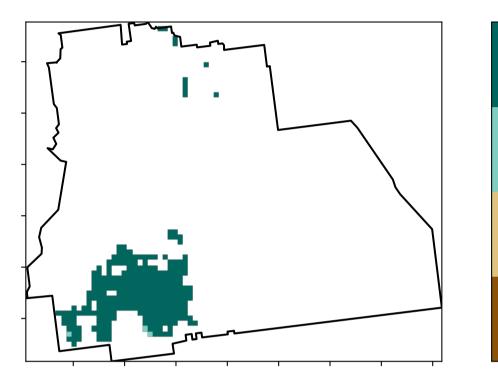
52°10°10°10

32°1050010

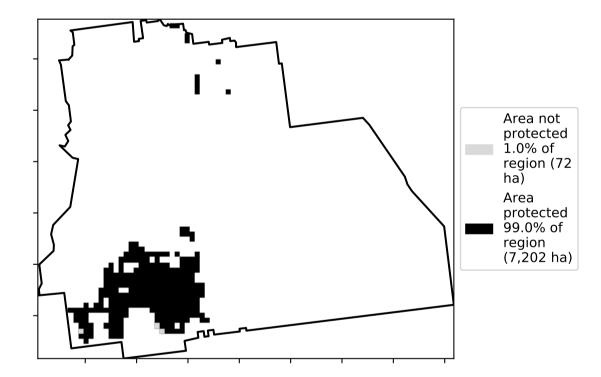
0-30%



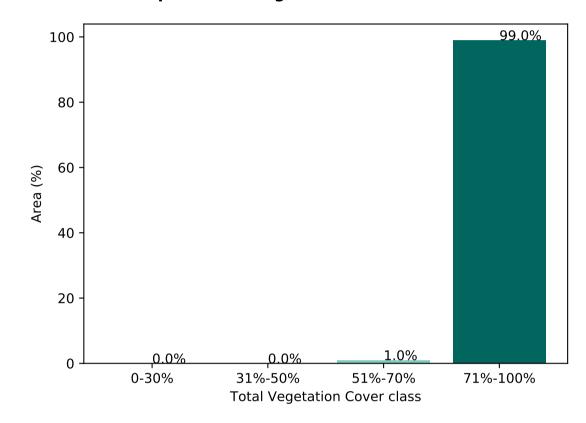
**Total Vegetation Cover [%]** 



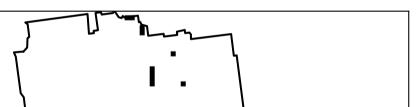
% Area protected from water erosion (>70%)



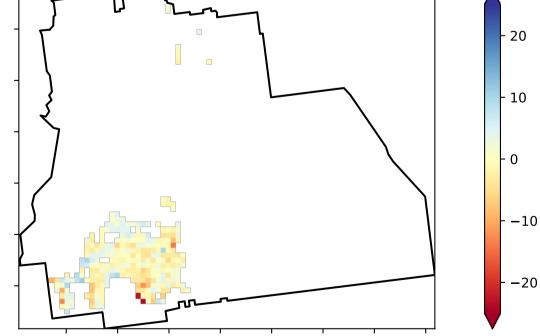
Proportion of vegetation cover class in area



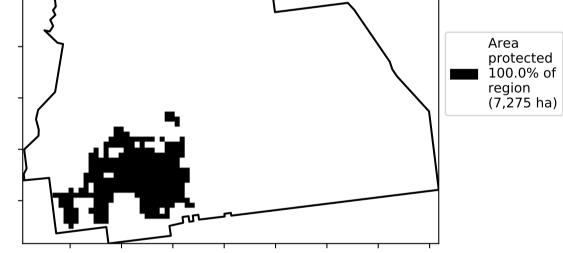
% Area protected from wind erosion (>50%)



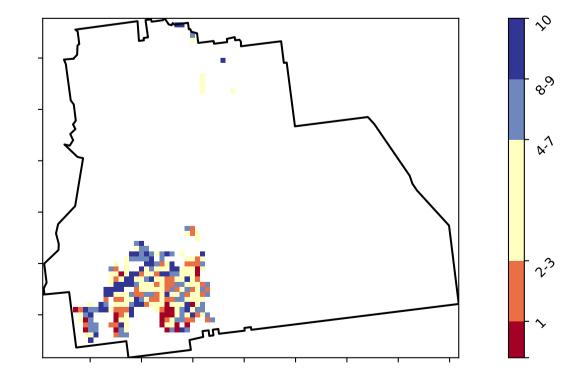
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



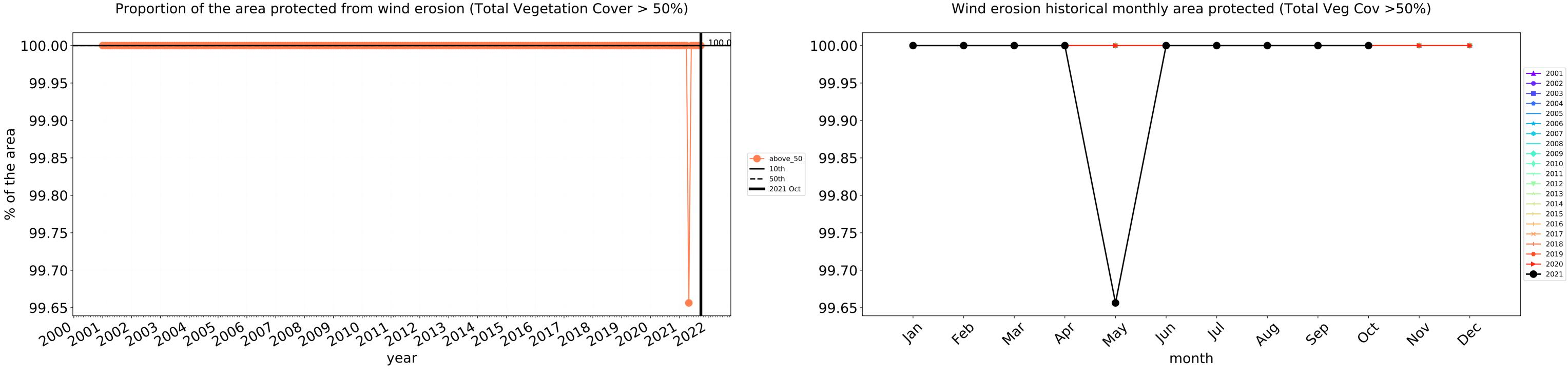
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



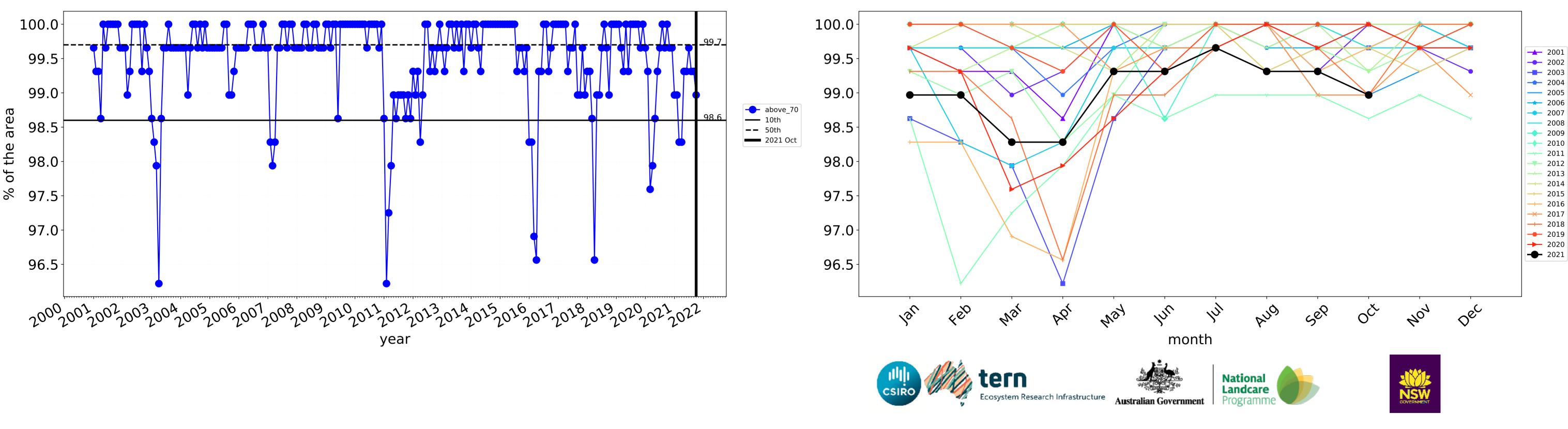
Total Vegetation Cover Decile [%]

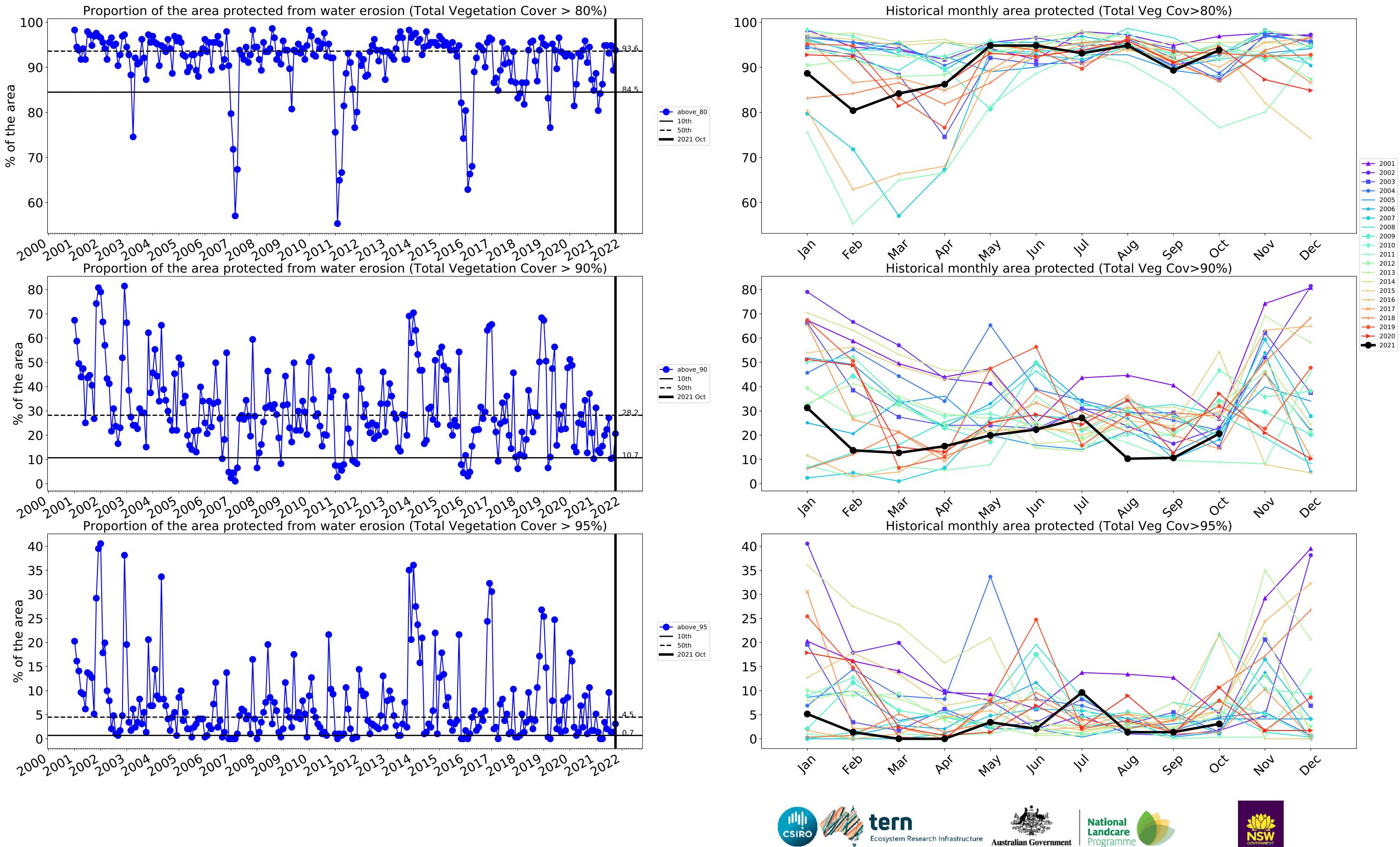












Australian Government

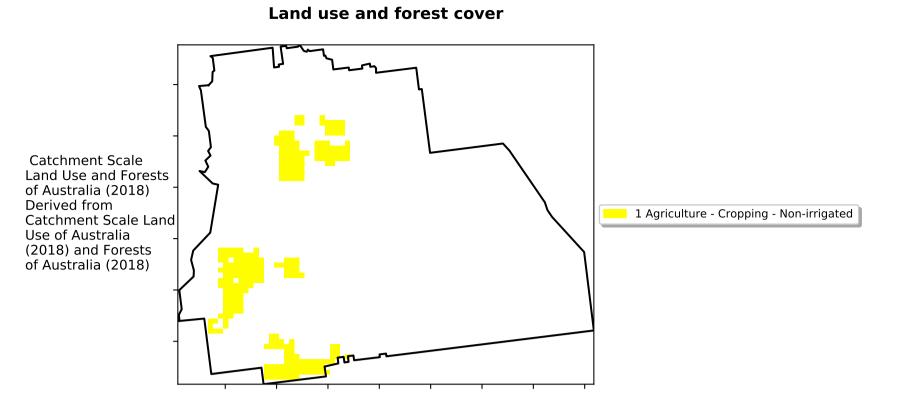
### Cropping

1 12% 100%

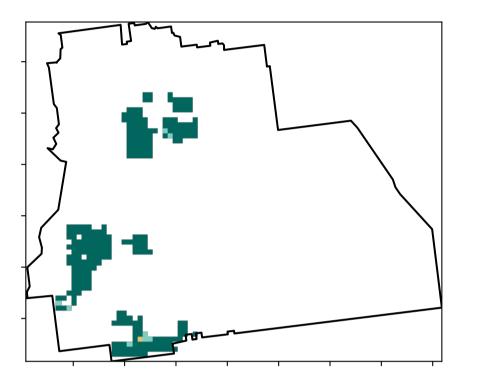
52°10°10°10

32005000

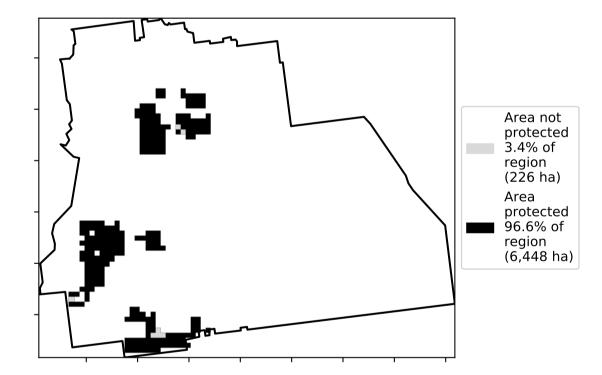
0.30%



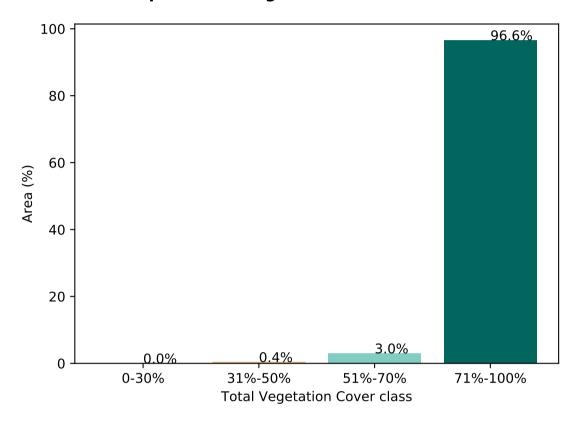
**Total Vegetation Cover [%]** 



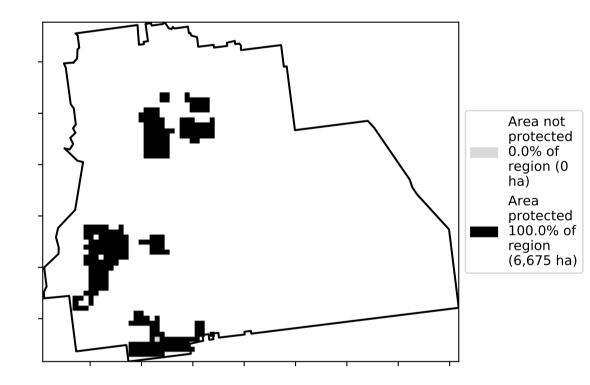
% Area protected from water erosion (>70%)

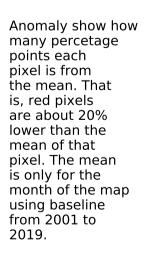


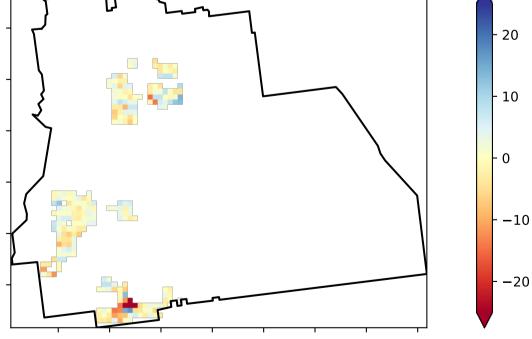
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

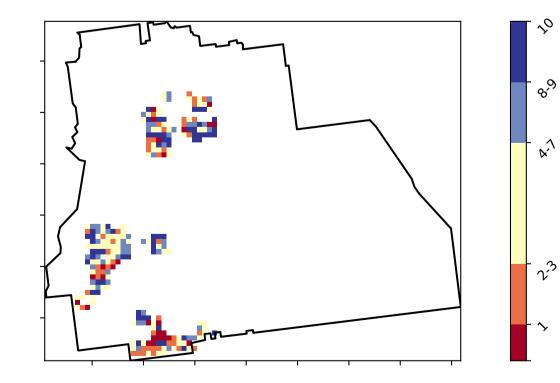




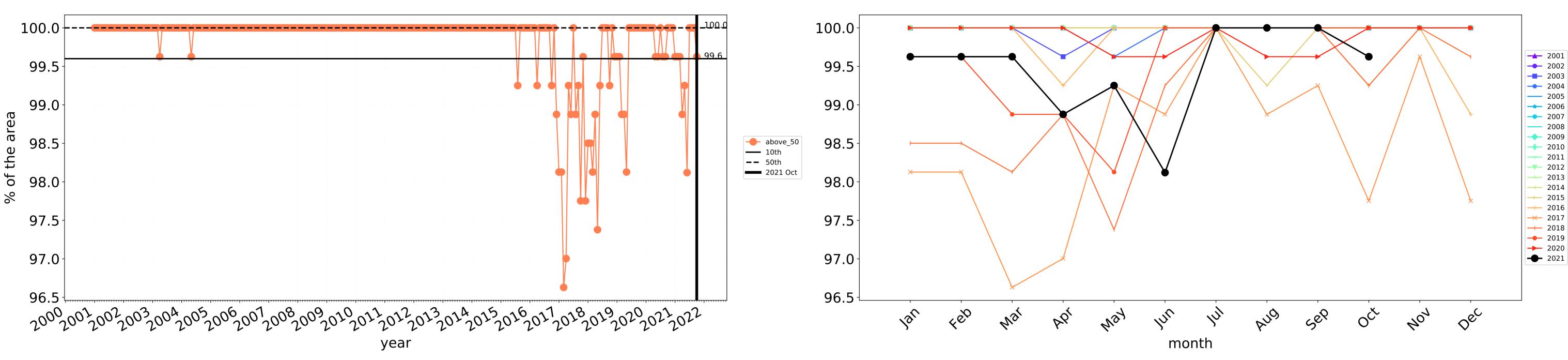


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

**Total Vegetation Cover Decile [%]** 

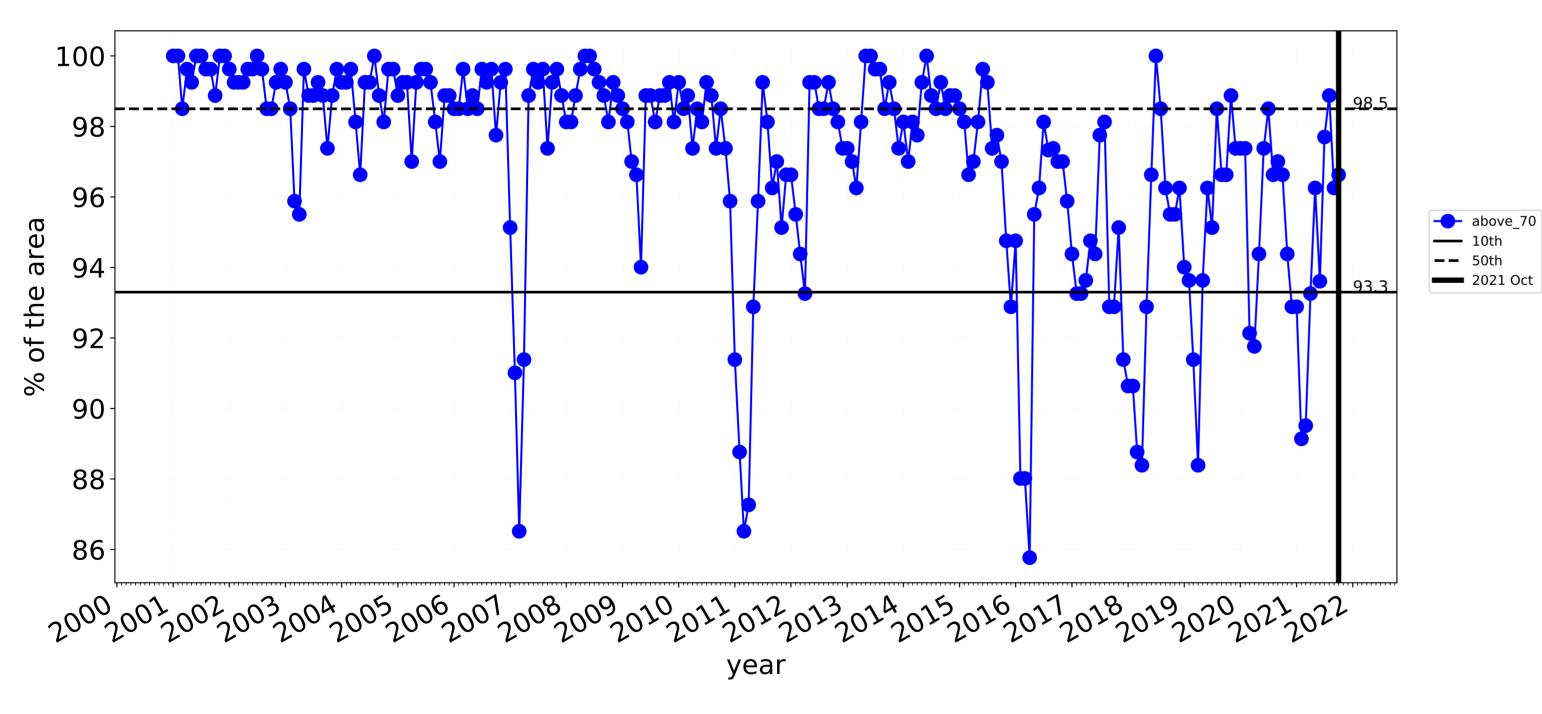






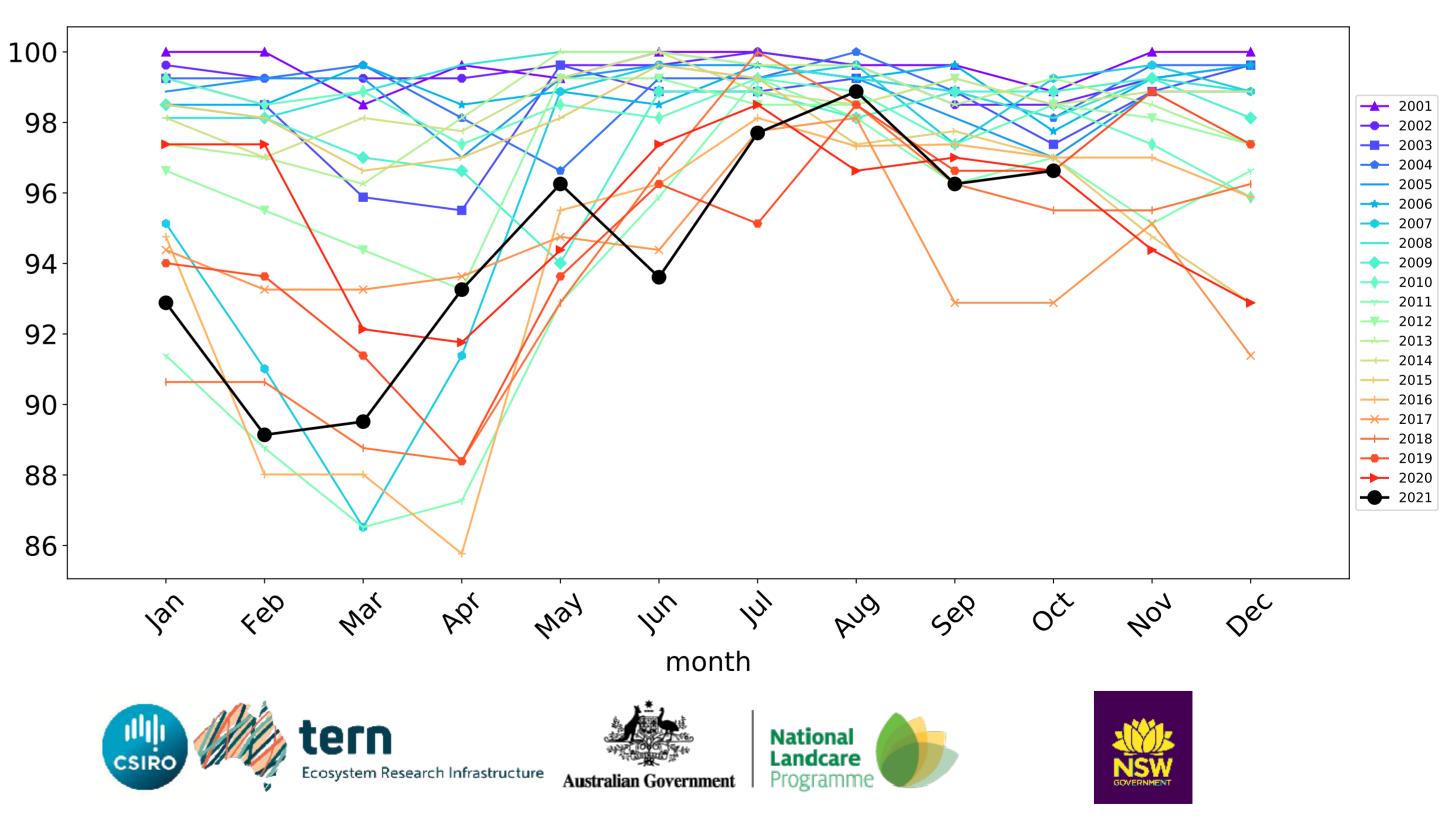
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

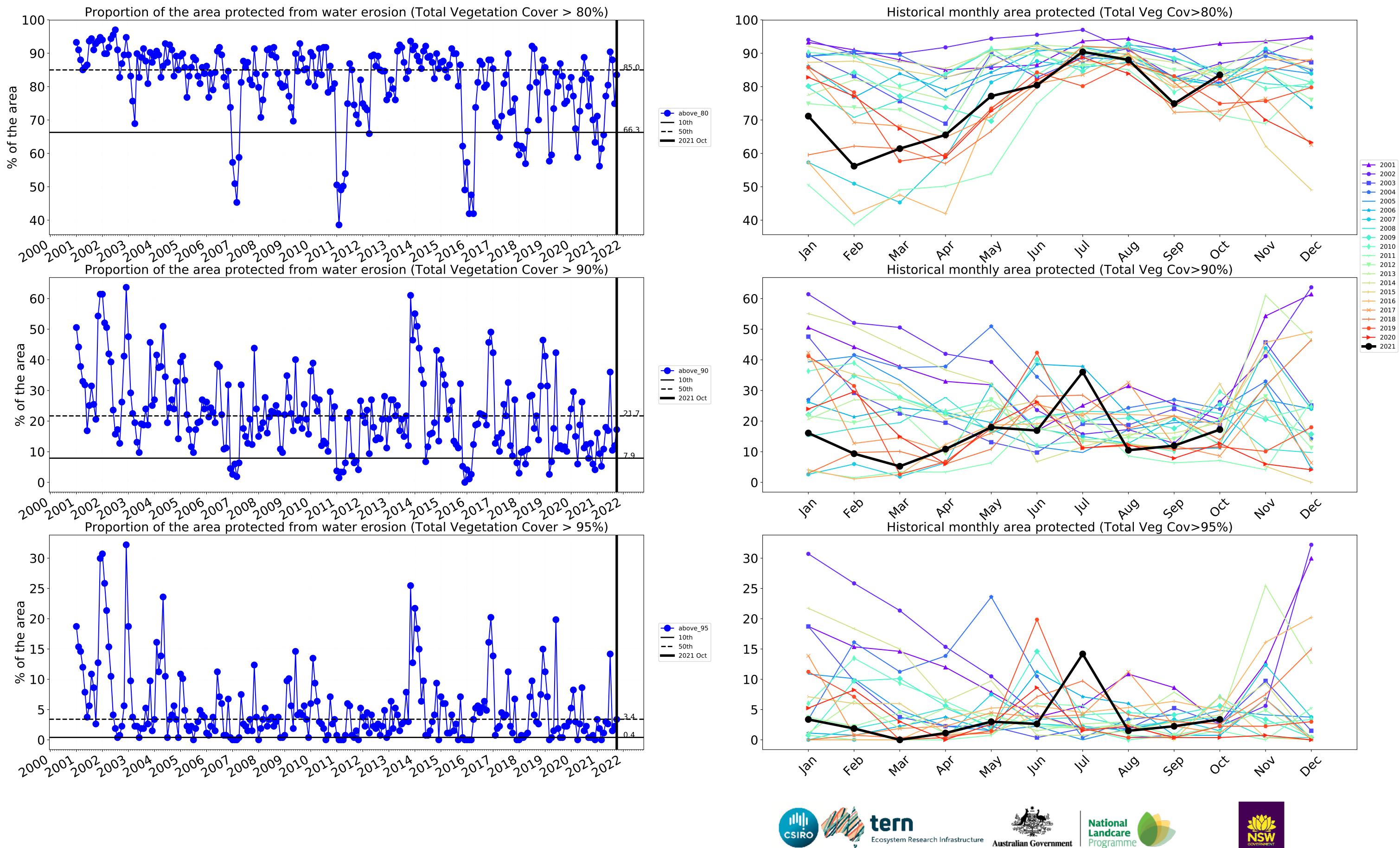
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



## **Cropping timeseries**

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



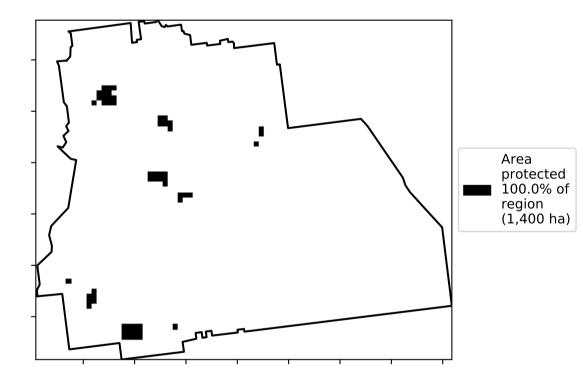


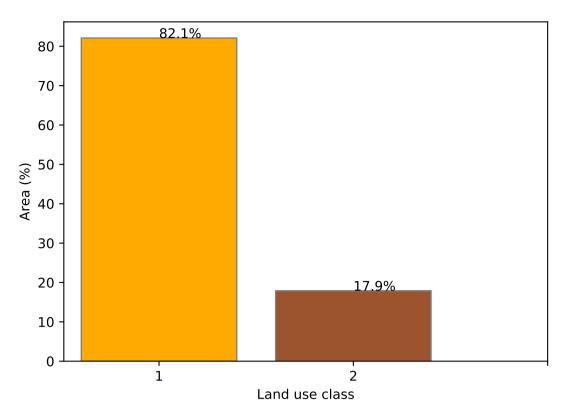
Ecosystem Research Infrastructure Australian Government

### Irrigation

Land use and forest cover

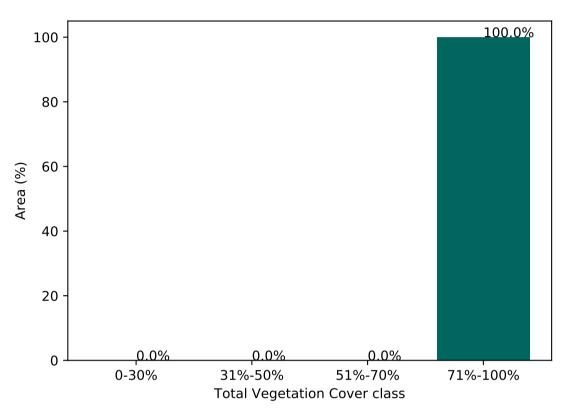
% Area protected from water erosion (>70%)



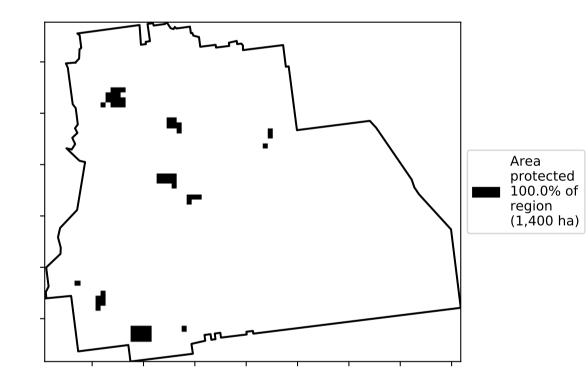


Proportion of each land class in area

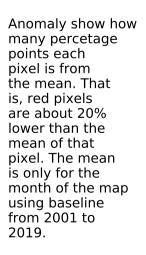
#### Proportion of vegetation cover class in area

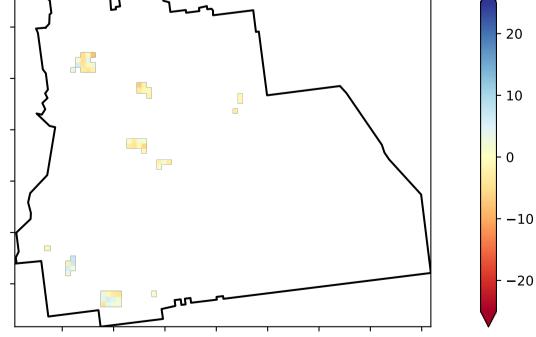


% Area protected from wind erosion (>50%)



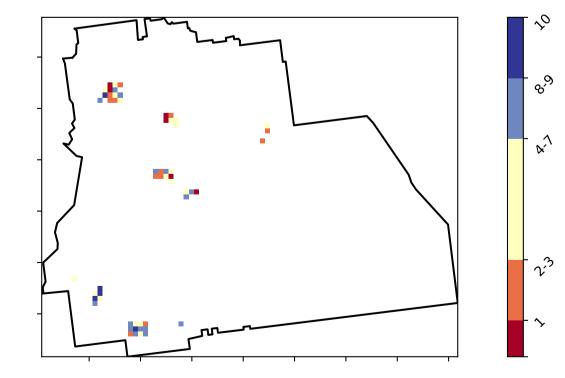
**Total Vegetation Cover Anomaly [%]** 



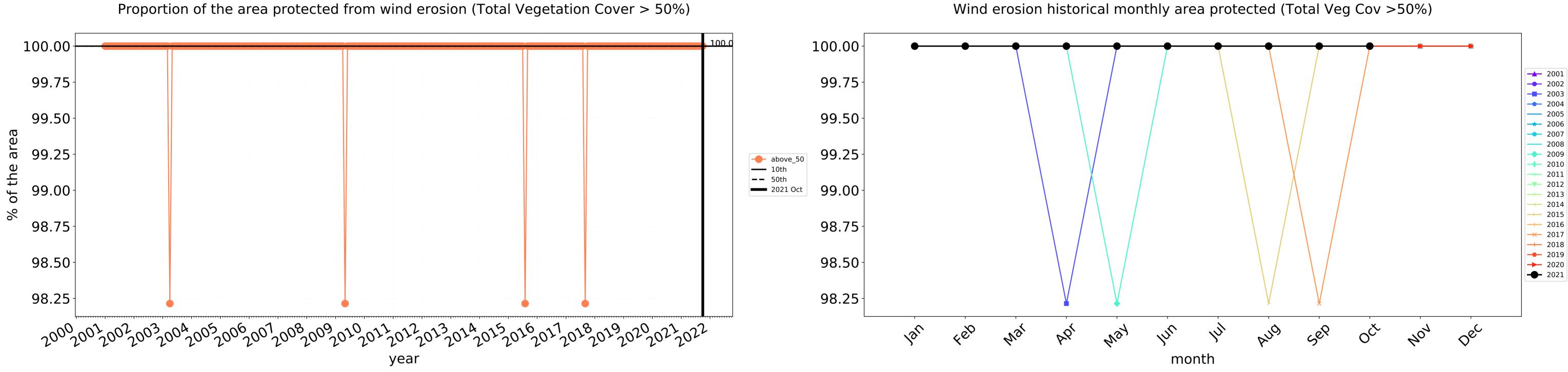


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

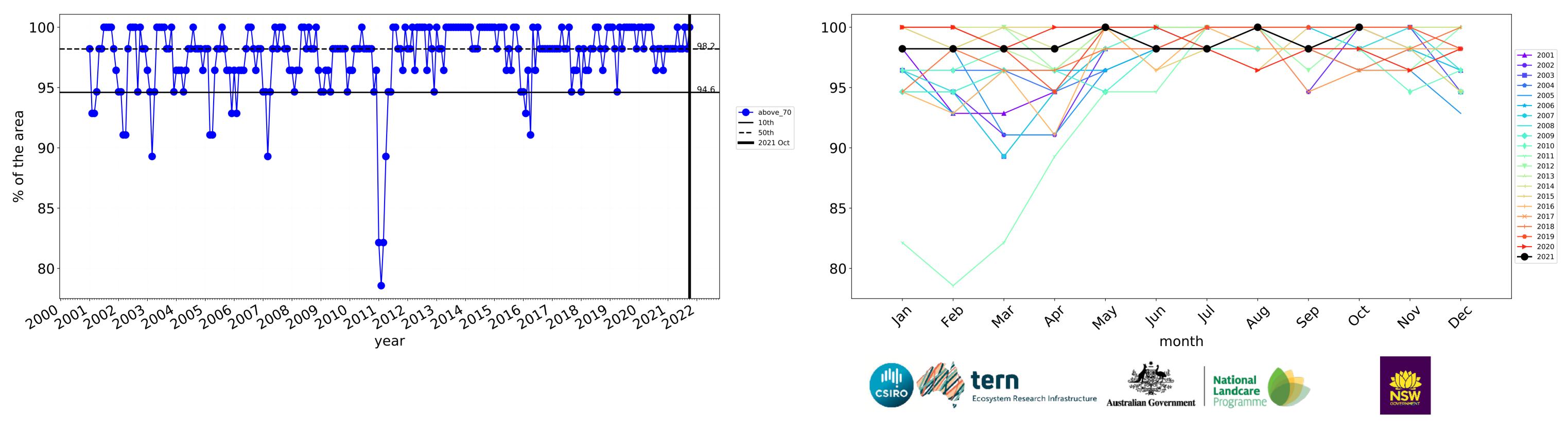
**Total Vegetation Cover Decile [%]** 

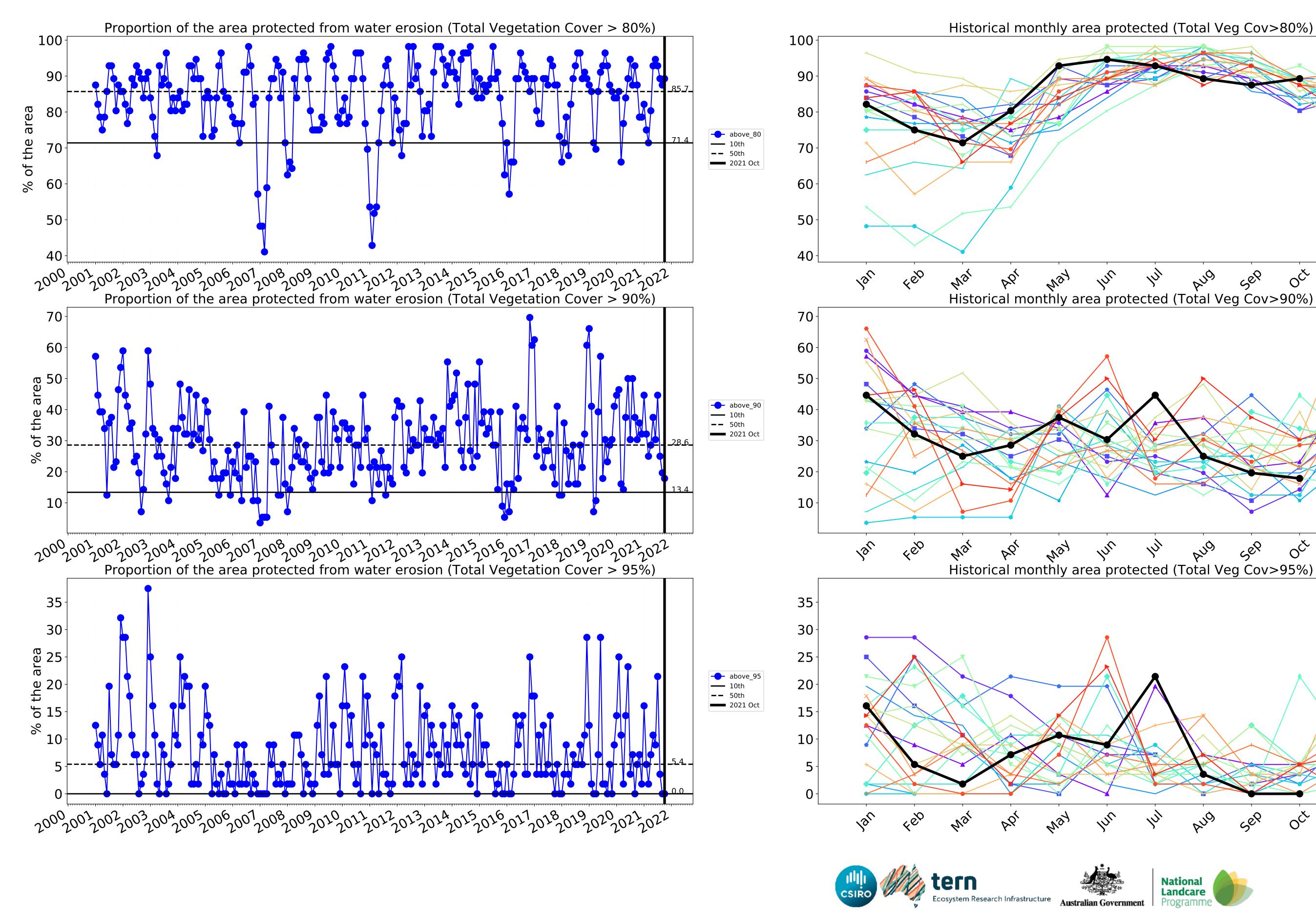




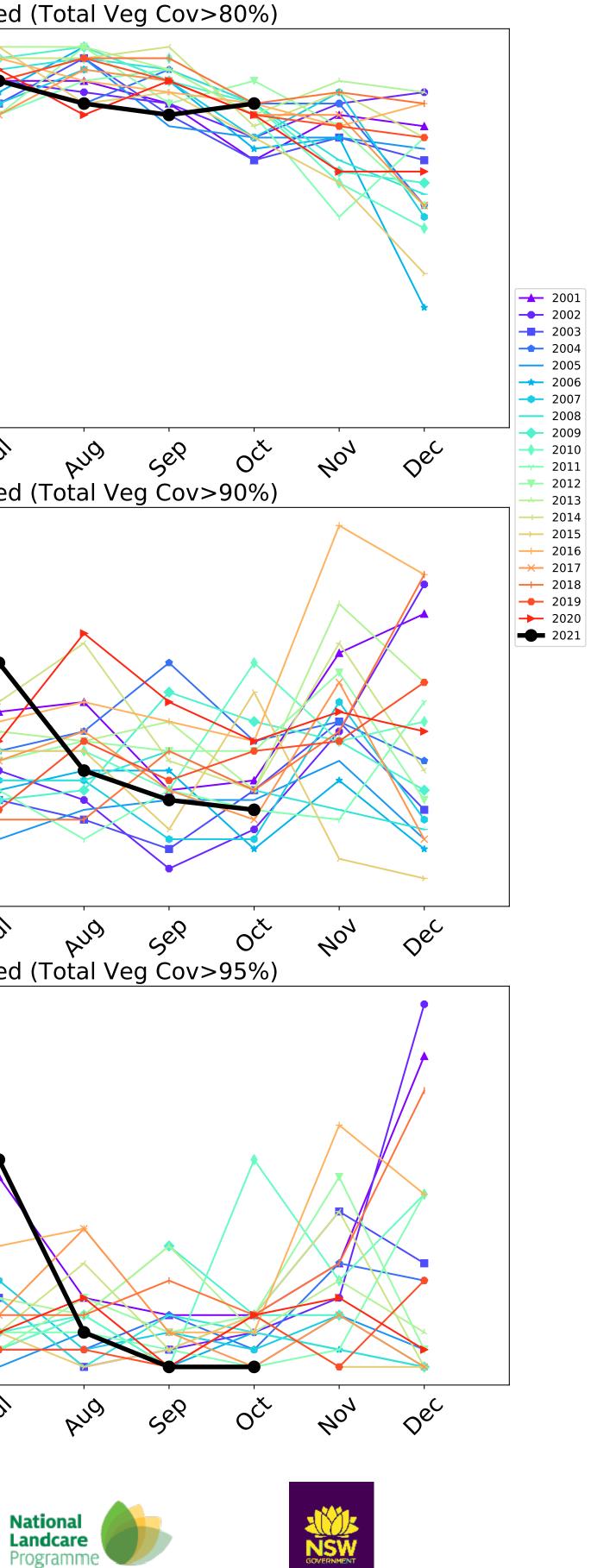






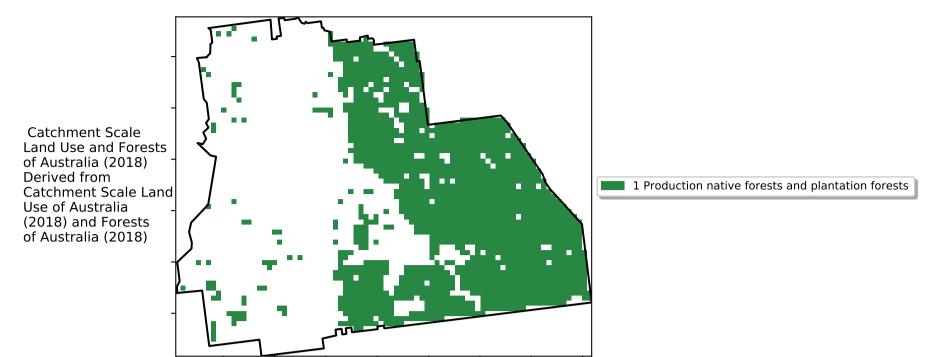


**4** 

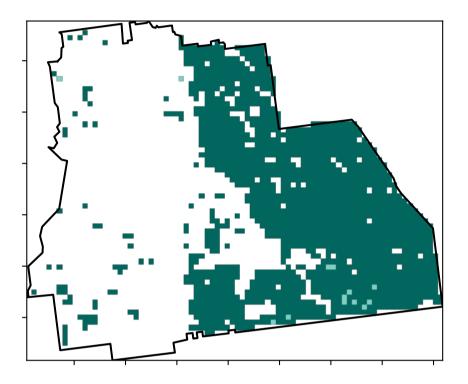


### **Production native forests and plantation forests**

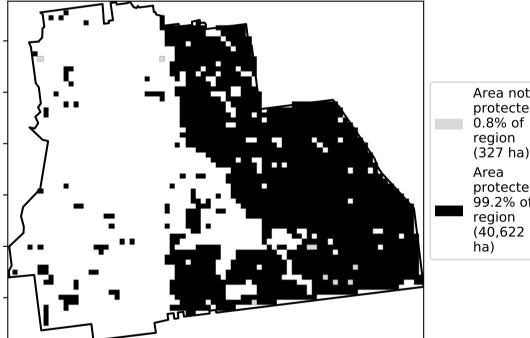
Land use and forest cover

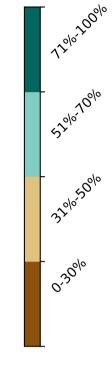


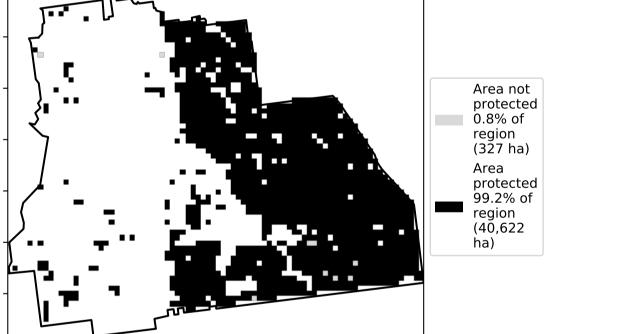
**Total Vegetation Cover [%]** 



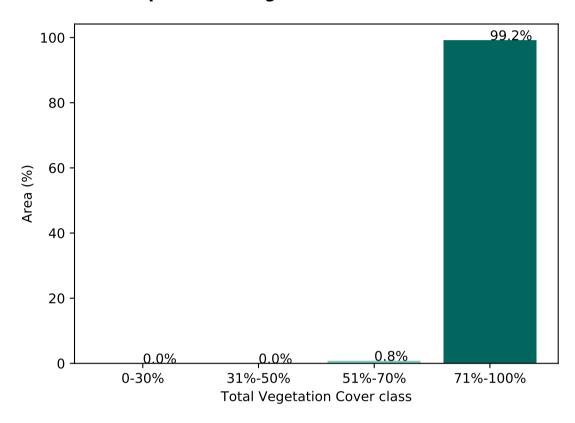
% Area protected from water erosion (>70%)



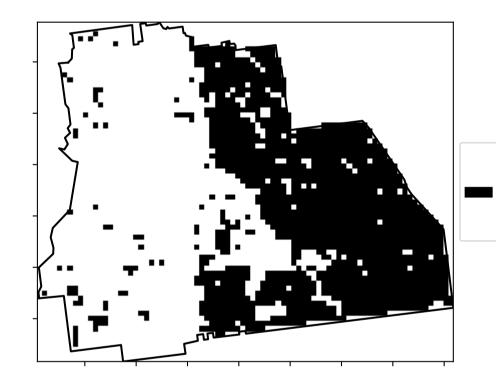




Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)



Area

ha)

protected 100.0% of

\$

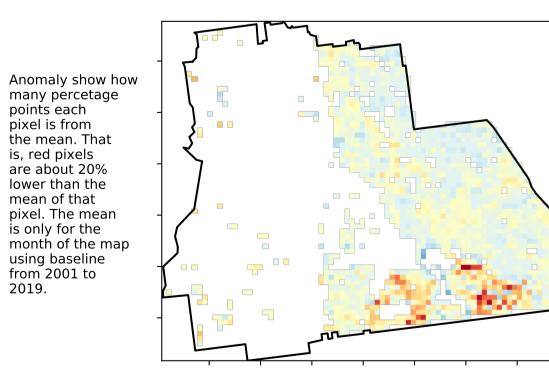
°,

A-1

2?3

region (40,950

**Total Vegetation Cover Anomaly [%]** 

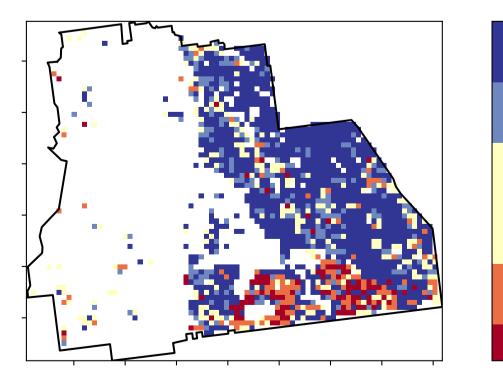


- 10 0 -10

-20

- 20

Total Vegetation Cover Decile [%]



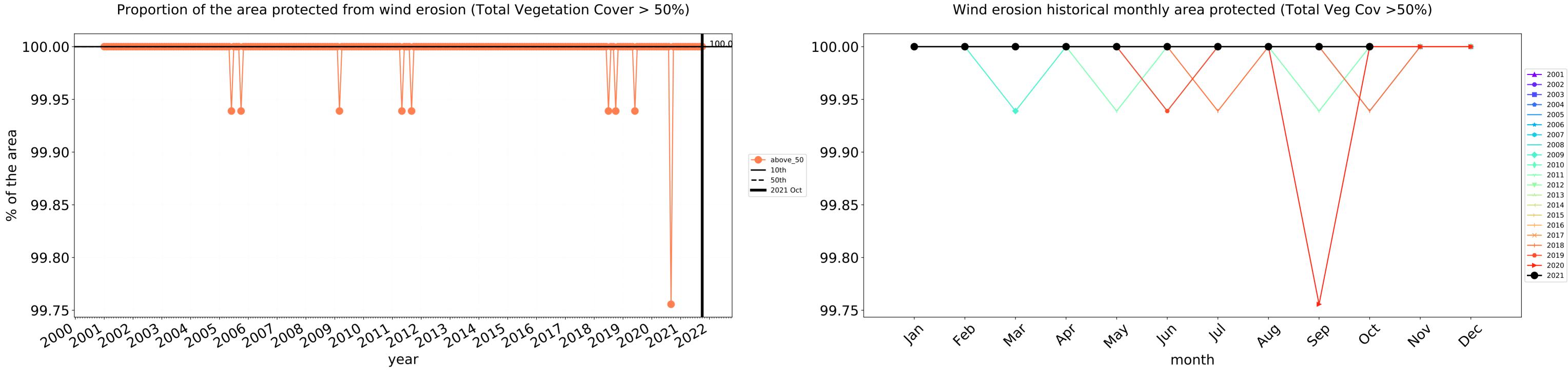




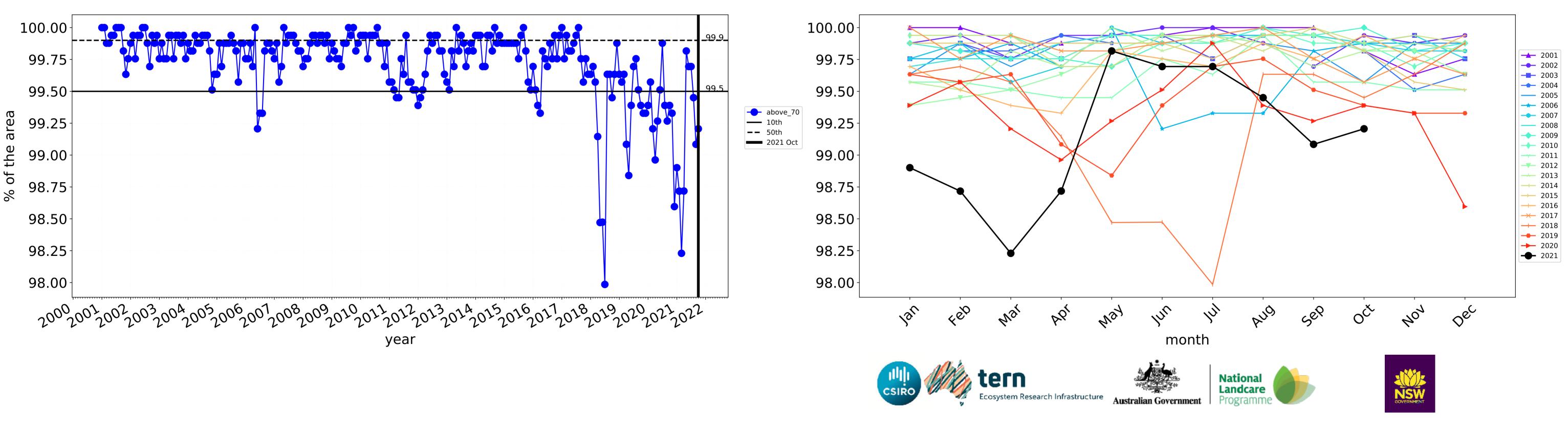
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are

in the lowest 10% of records for that month of

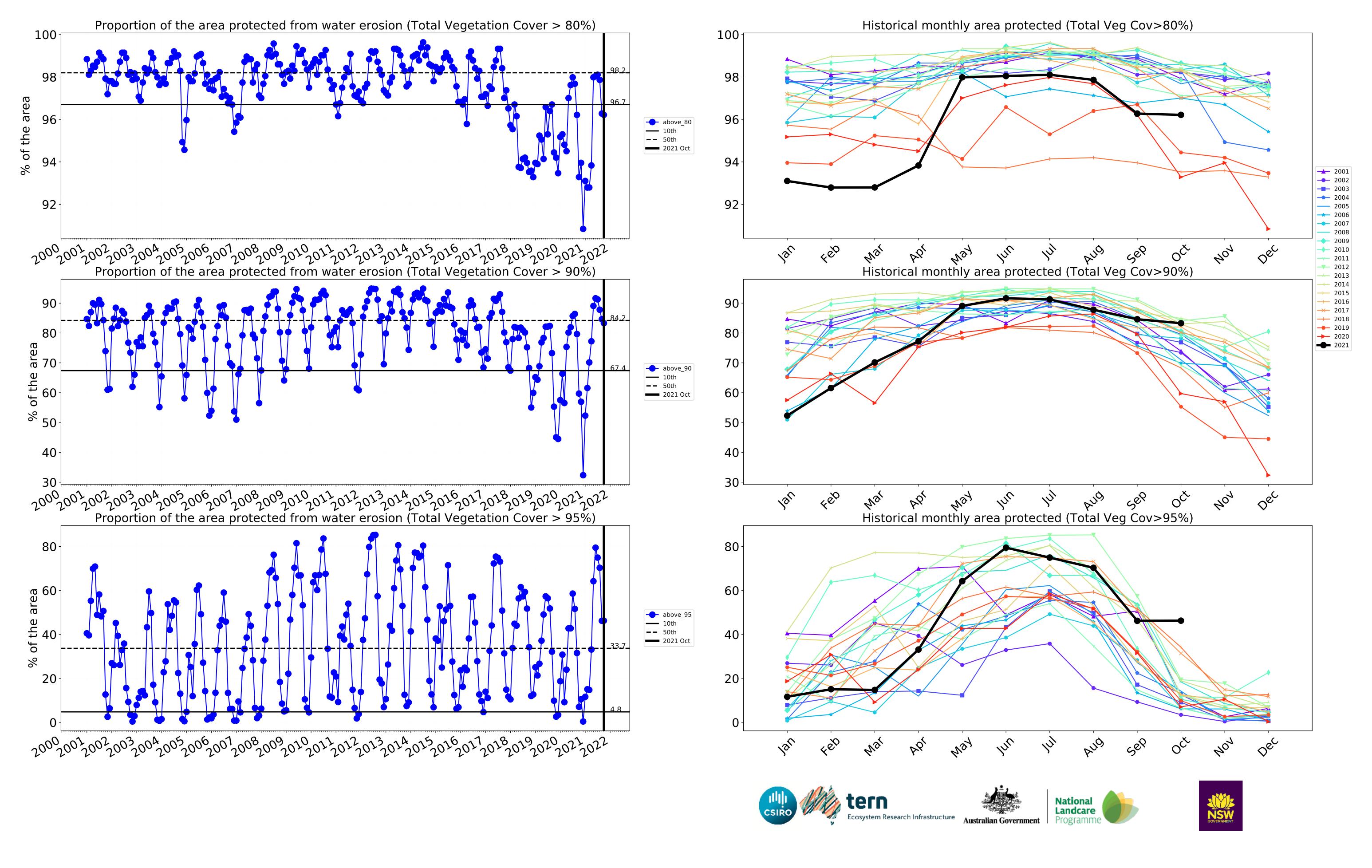
the map using baseline from 2001 to 2019.



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



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



# Serpentine-Jarrahdale\_(S) (89,950 ha and no data 184 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	89,950	100.0% 89,950	99.9% 89,900	98.0% 88,125	90.7% 81,550	54.5% 49,025	26.6% 23,950
Conservation and natural environments	9,000	100.0% 9,000	100.0% 9,000	99.7% 8,975	97.5% 8,775	74.7% 6,725	39.7% 3,575
Conservation and natural environments non forest	1,325	100.0% 1,325	100.0% 1,325	98.1% 1,300	96.2% 1,275	41.5% 550	9.4% 125
Conservation and natural environments Woodland forest	3,275	100.0% 3,275	100.0% 3,275	100.0% 3,275	95.4% 3,125	71.0% 2,325	21.4% 700
Conservation and natural environments Forest (non woodland)	4,400	100.0% 4,400	100.0% 4,400	100.0% 4,400	99.4% 4,375	87.5% 3,850	62.5% 2,750
Agriculture	15,350	100.0% 15,350	99.8% 15,325	98.0% 15,050	88.9% 13,650	18.9% 2,900	2.9% 450
Grazing	7,275	100.0% 7,275	100.0% 7,275	99.0% 7,200	93.8% 6,825	20.6% 1,500	3.1% 225
Grazing non forest	7,275	100.0% 7,275	100.0% 7,275	99.0% 7,200	93.8% 6,825	20.6% 1,500	3.1% 225
Cropping	6,675	100.0% 6,675	99.6% 6,650	96.6% 6,450	83.5% 5,575	17.2% 1,150	3.4% 225
Irrigation	1,400	100.0% 1,400	100.0% 1,400	100.0% 1,400	89.3% 1,250	17.9% 250	0.0% 0
Production native forests and plantation forests	40,950	100.0% 40,950	100.0% 40,950	99.2% 40,625	96.2% 39,400	83.3% 34,100	46.3% 18,950

