# Total vegetation cover soil protection Region:LGA Byron\_(A) NSW

# Date: June 2023

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

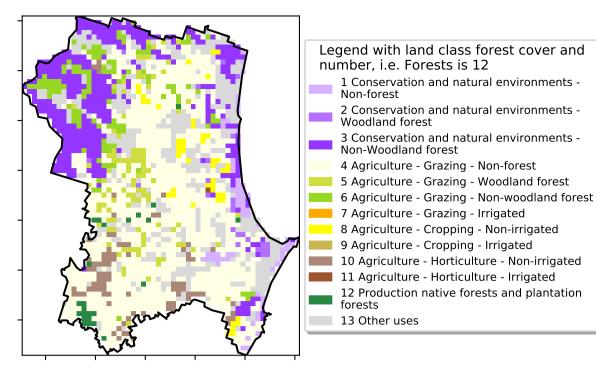


# **Vegetation Cover Jun 2023**

#### Land use and forest cover

#### Proportion of each land class in area





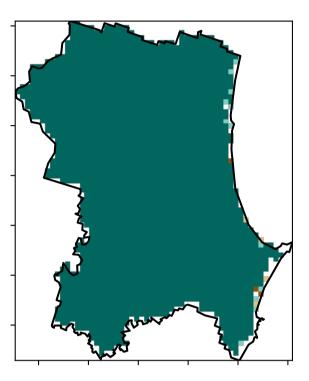
7200-2001

52% 70%

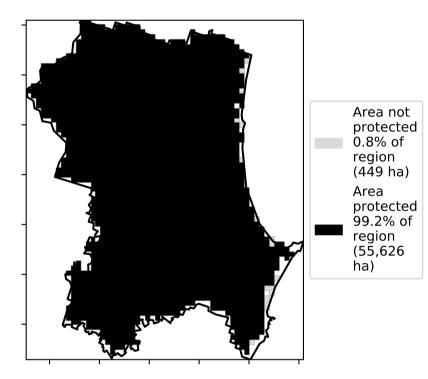
320050010

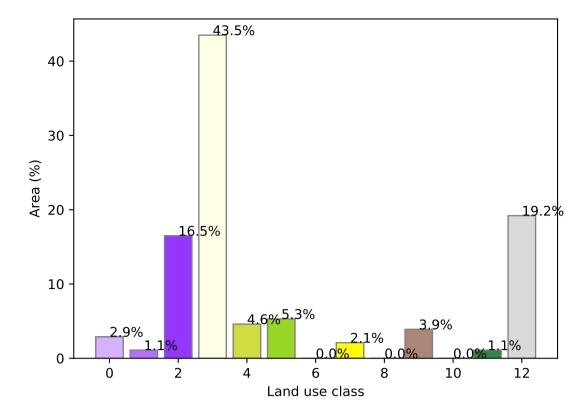
0.30%

#### **Total Vegetation Cover [%]**

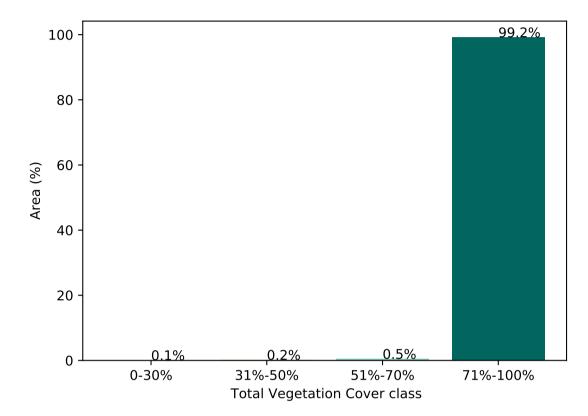


#### % Area protected from water erosion (>70%)

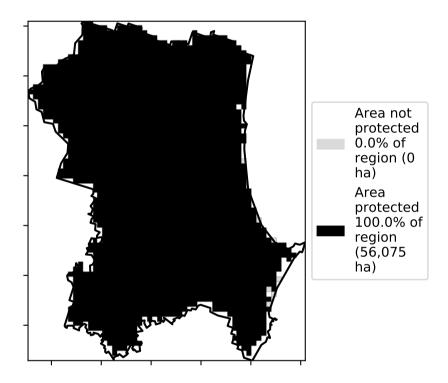




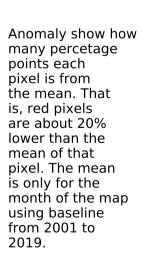
#### Proportion of vegetation cover class in area

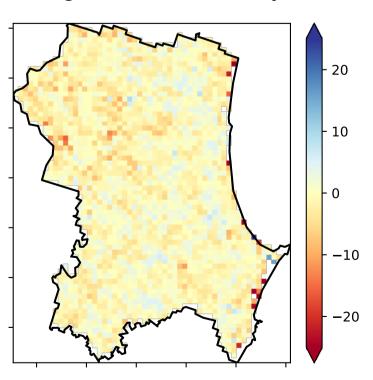


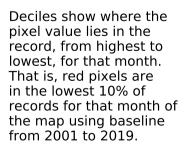
#### % Area protected from wind erosion (>50%)

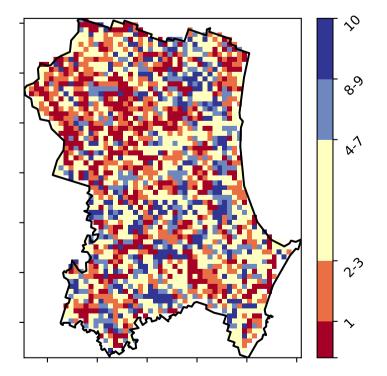


**Total Vegetation Cover Anomaly [%]** 



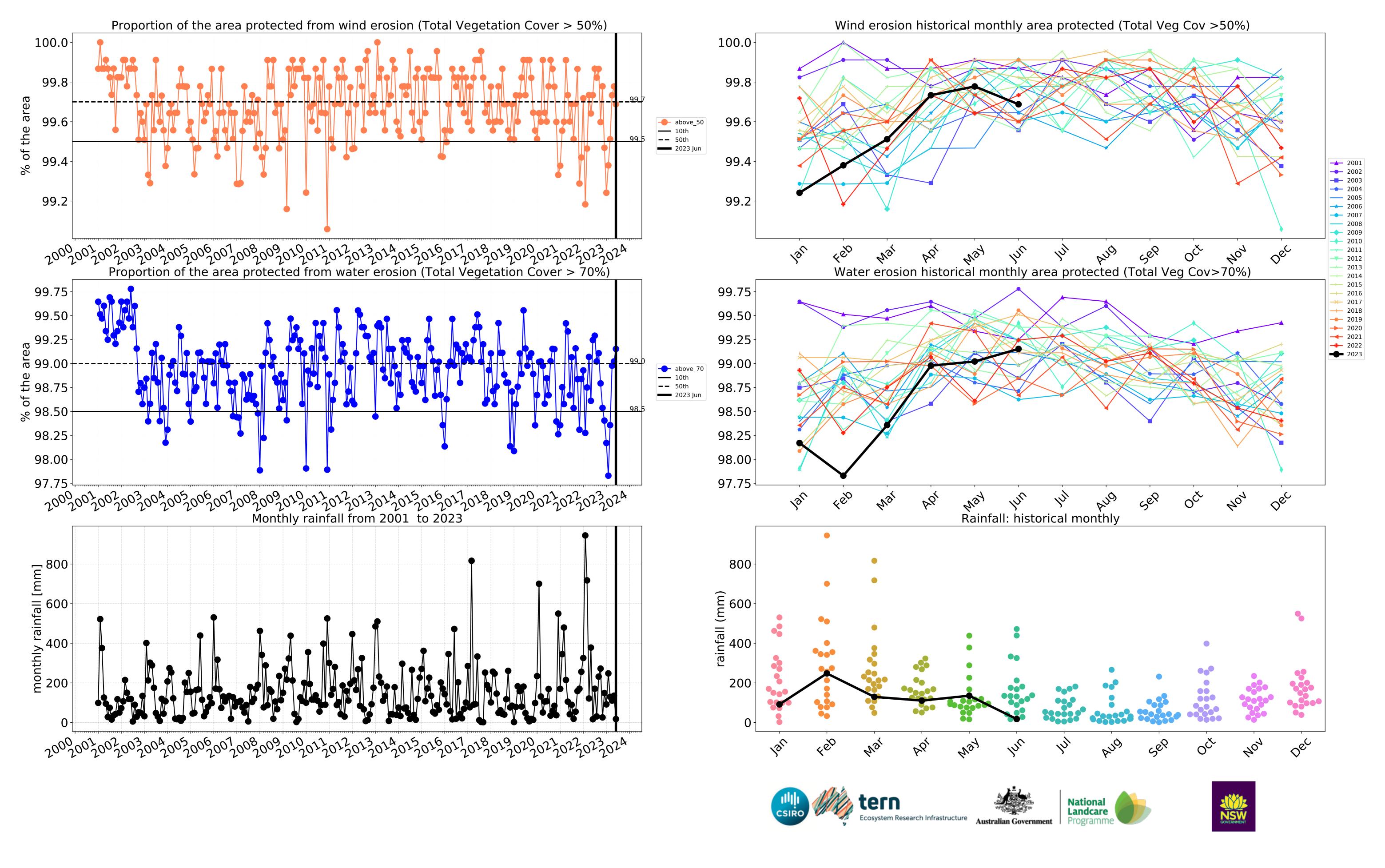




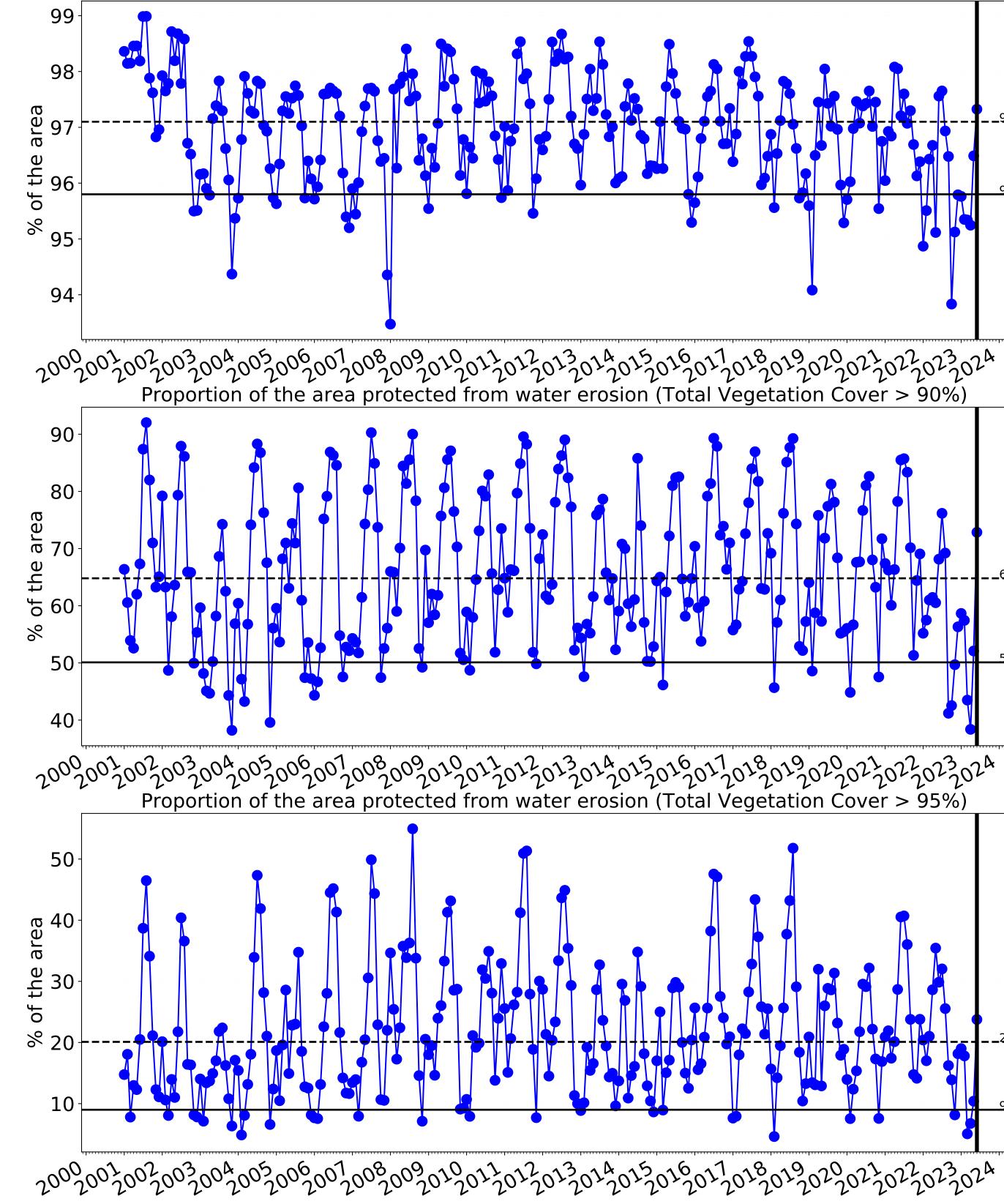


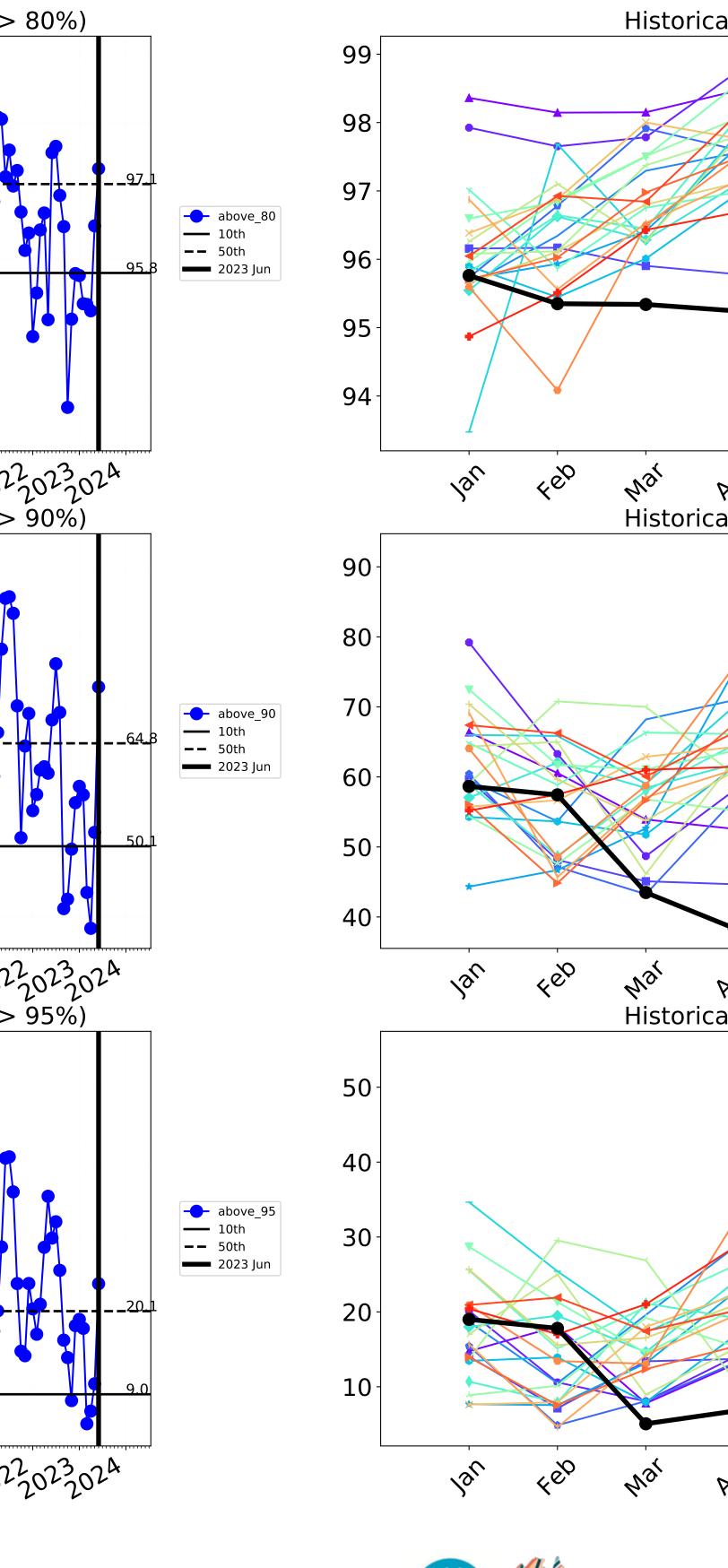


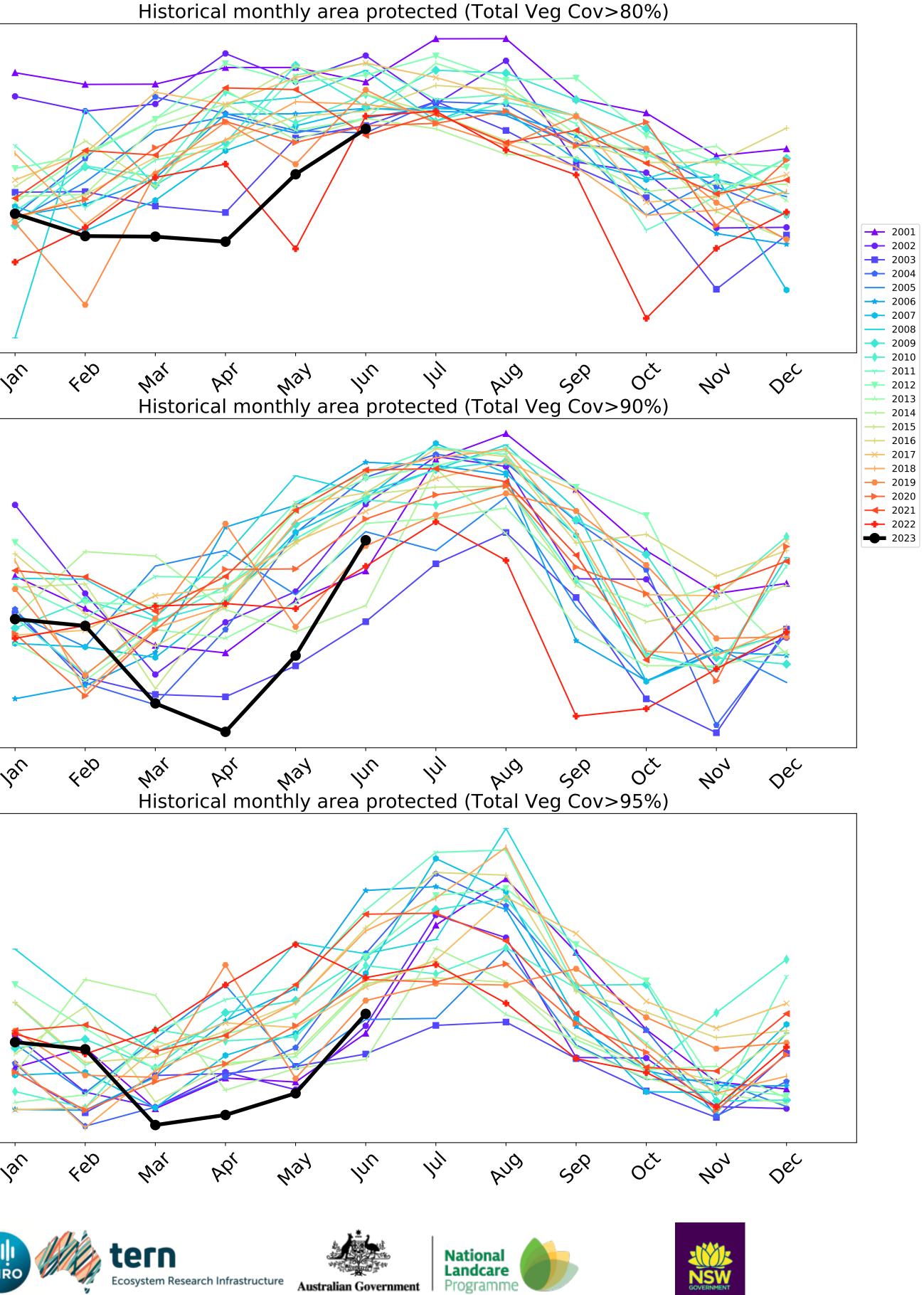




Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)



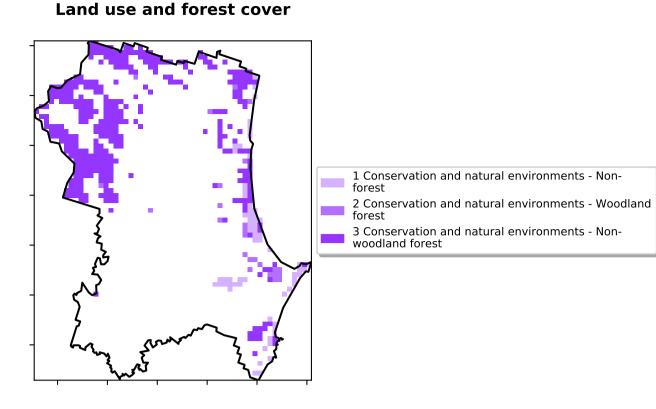




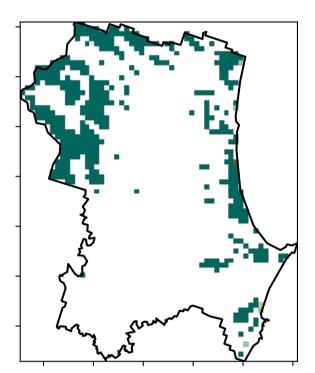


#### **Conservation and natural environments**

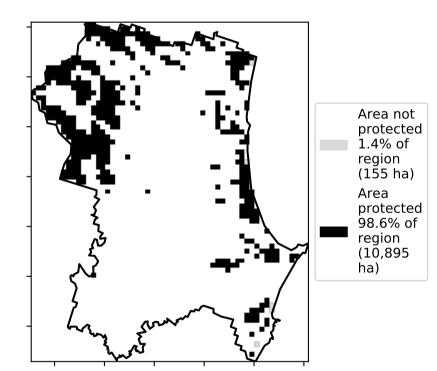
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

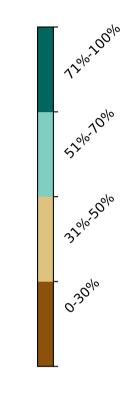


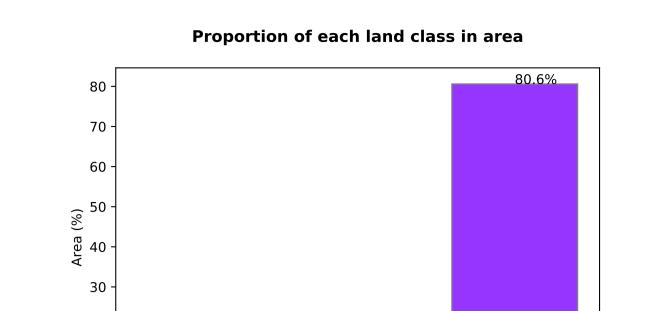
**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)







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10 - 10

0 -0.5 14.0%

0.5

0.0

Proportion of vegetation cover class in area

1.0

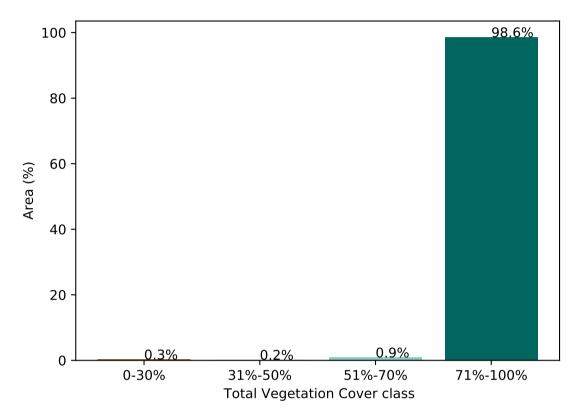
Land use class

5.4%

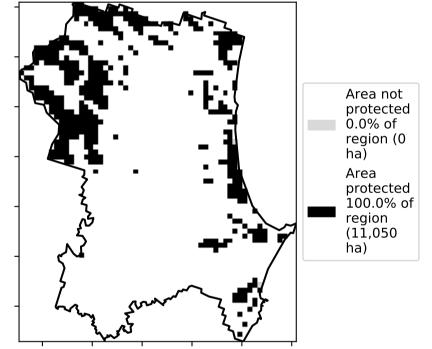
1.5

2.0

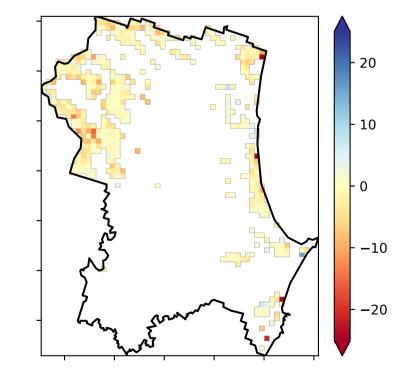
2.5



% Area protected from wind erosion (>50%)

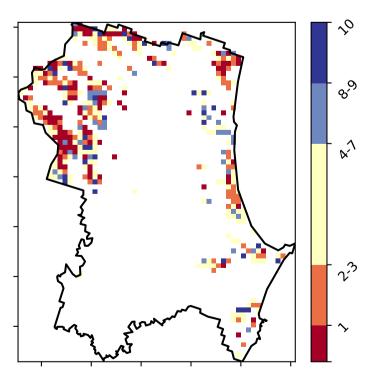


**Total Vegetation Cover Anomaly [%]** 



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.

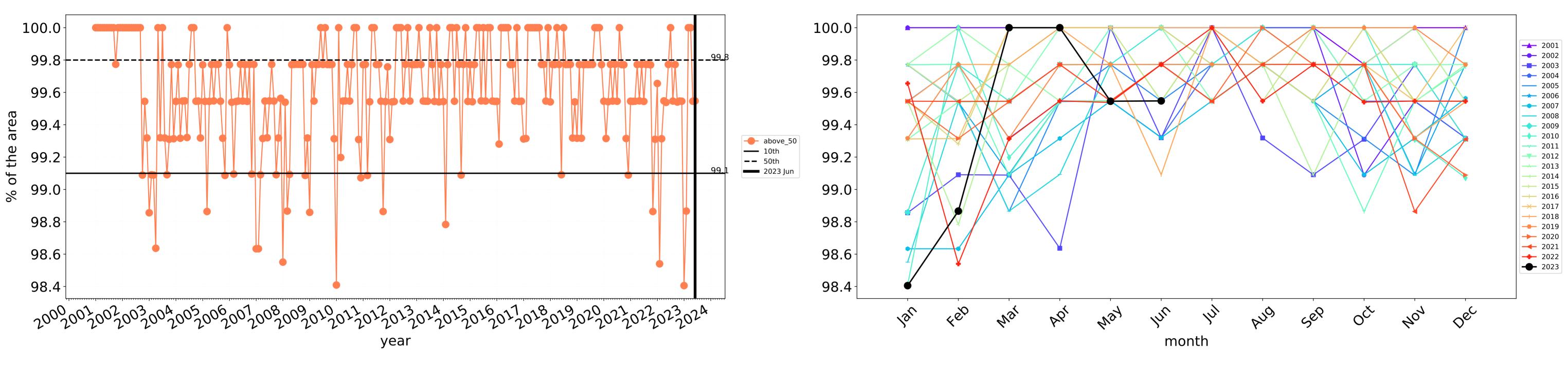
**Total Vegetation Cover Decile [%]** 



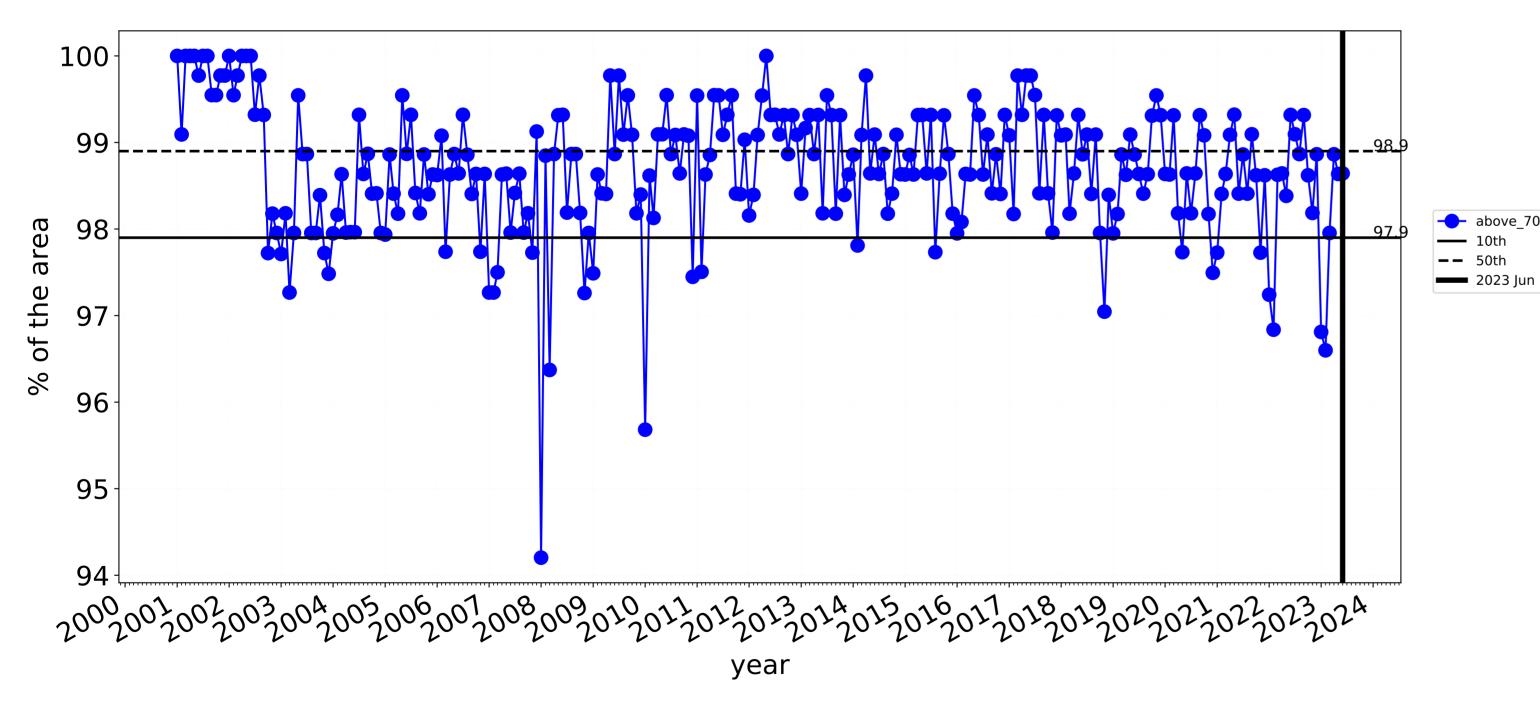


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

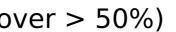




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



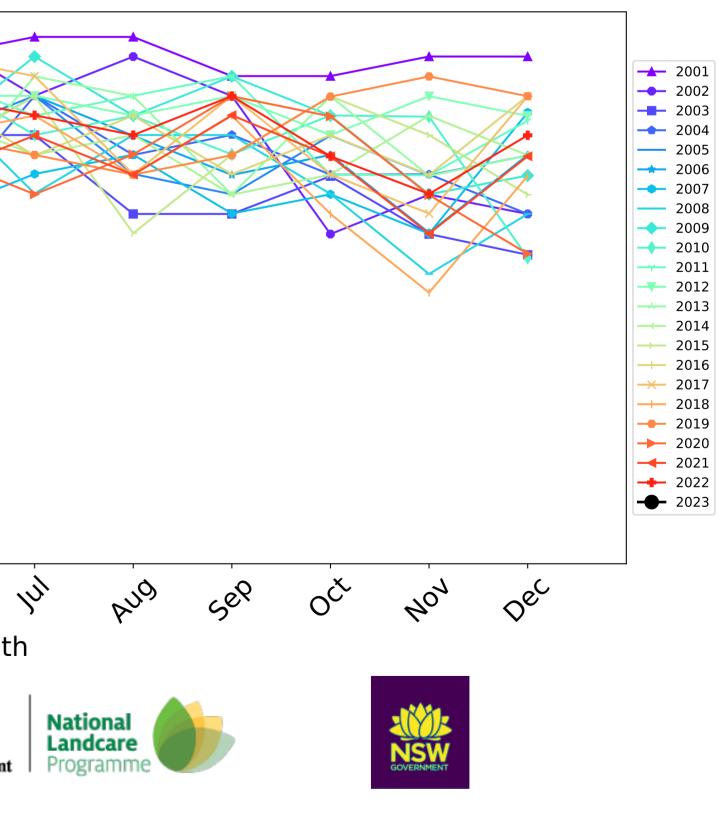
### **Conservation and natural environments timeseries**

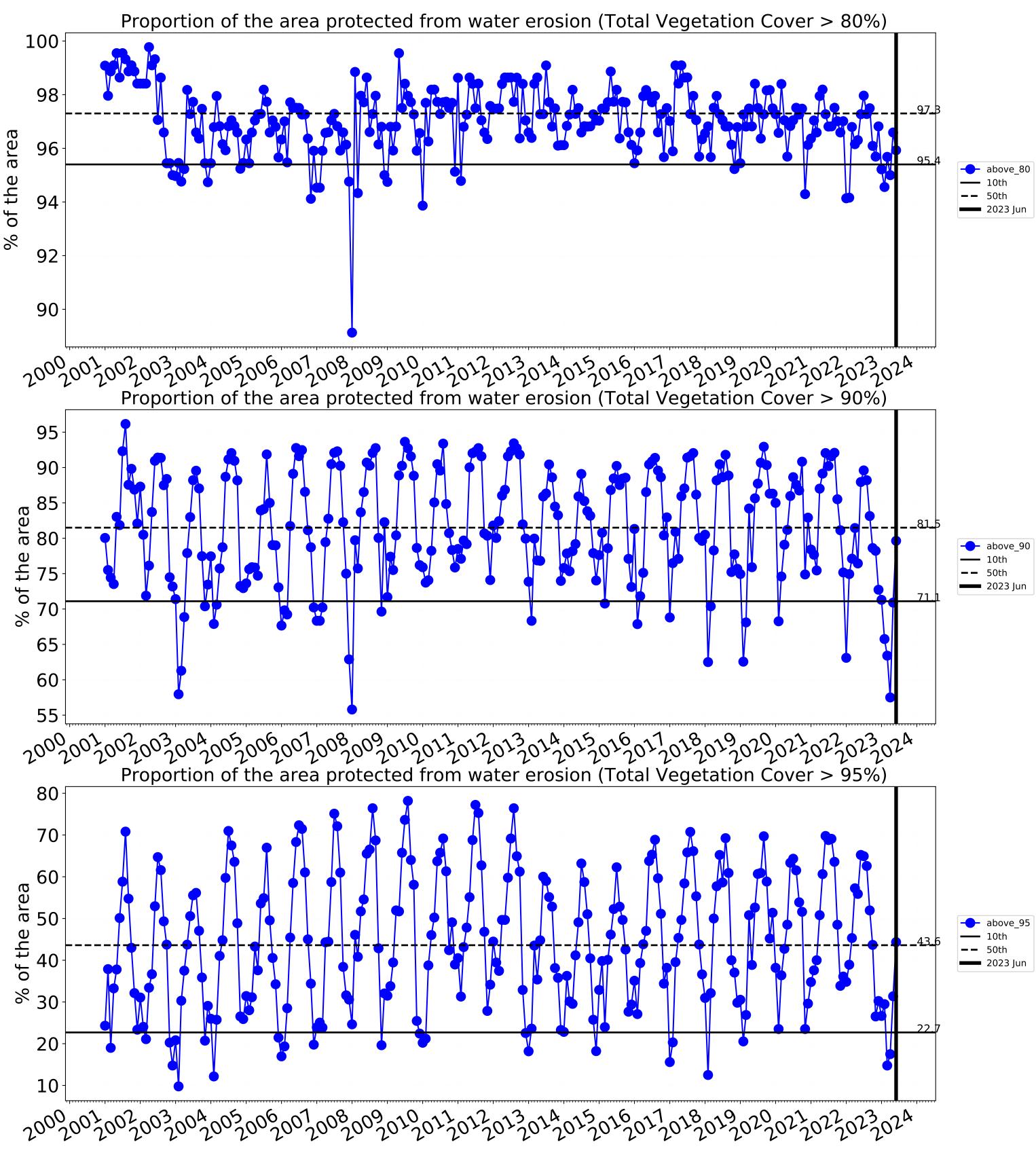


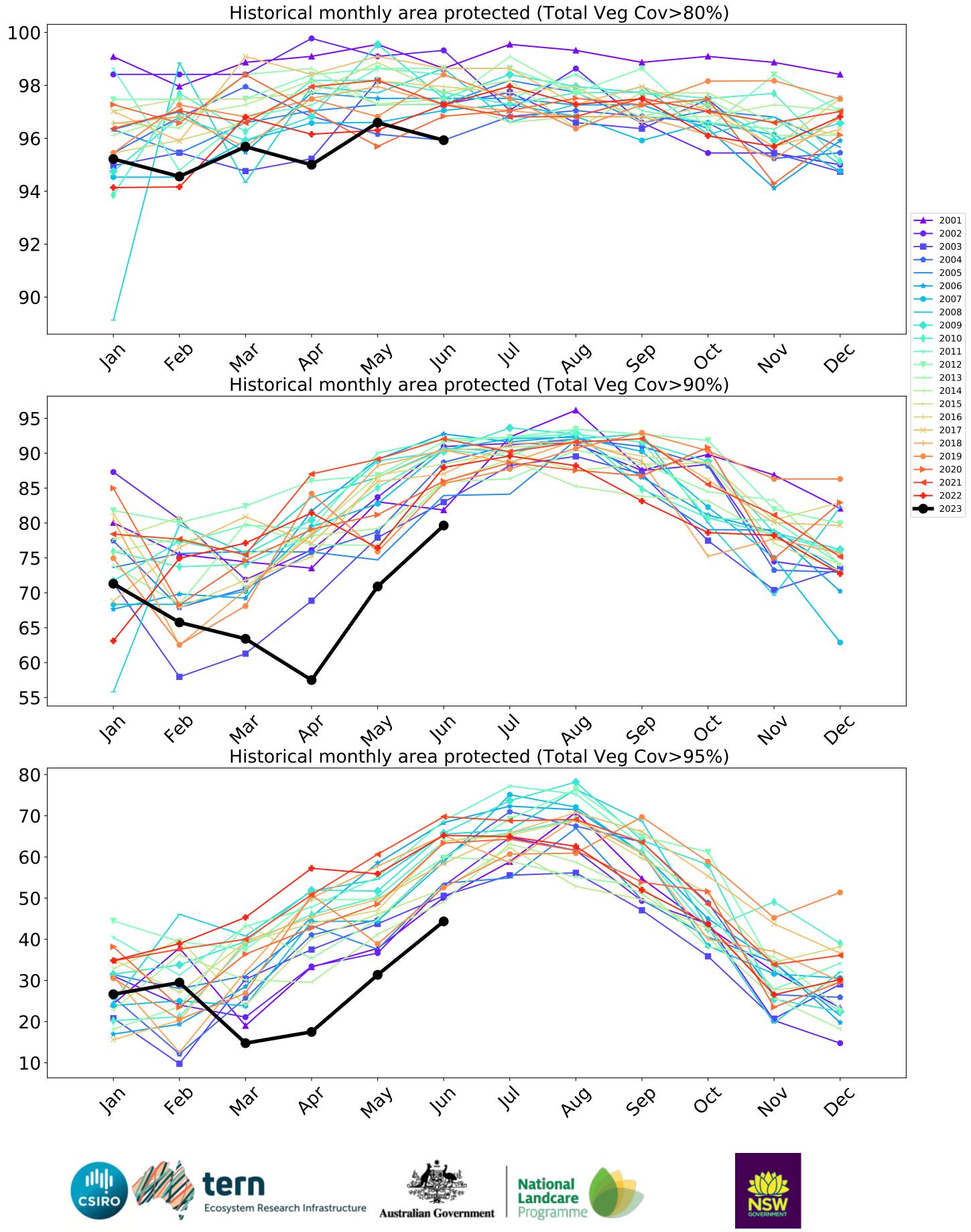
Wind erosion historical monthly area protected (Total Veg Cov >50%)

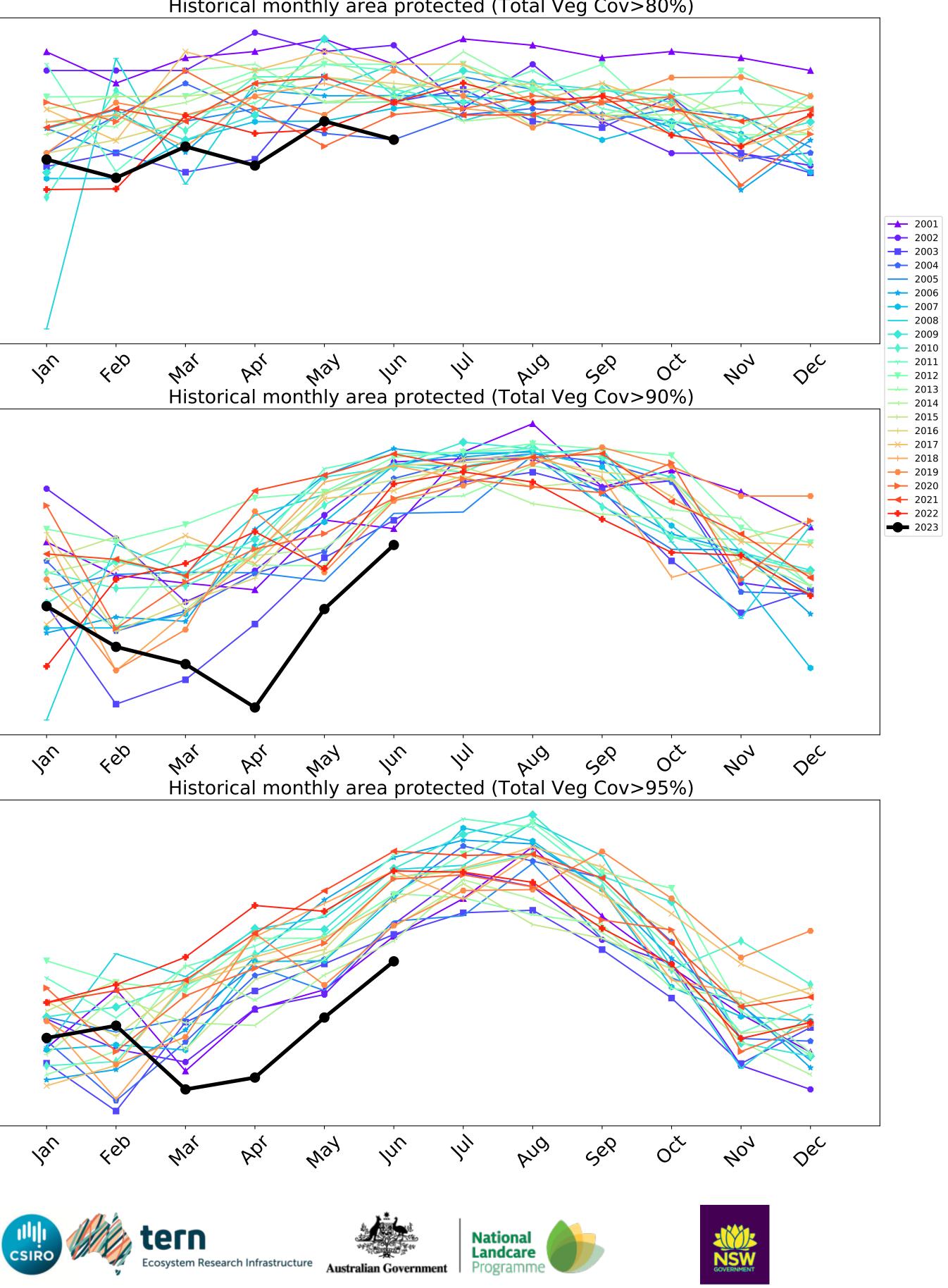
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Water erosion historical monthly area protected (Total Veg Cov>70%)



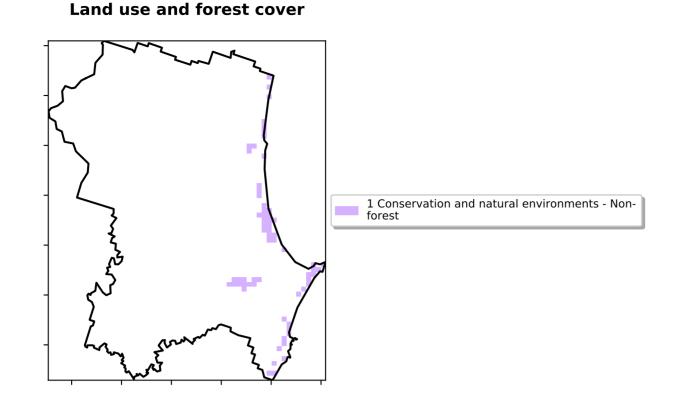




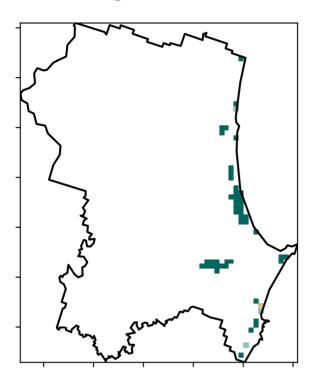


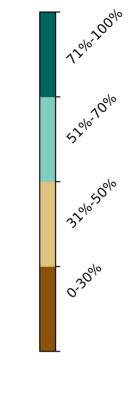
#### **Conservation and natural environments non forest**

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

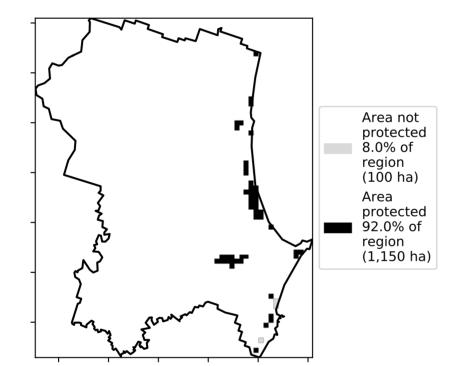


**Total Vegetation Cover [%]** 

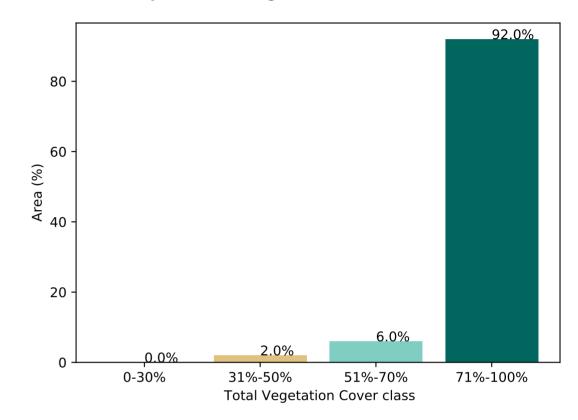




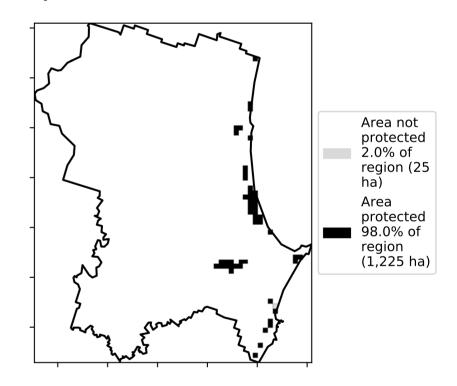
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

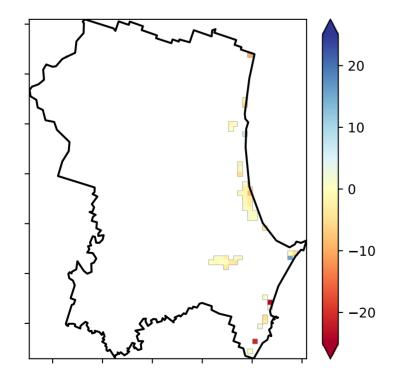


% Area protected from wind erosion (>50%)

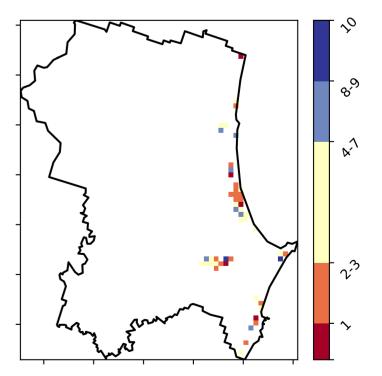


**Total Vegetation Cover Anomaly [%]** 

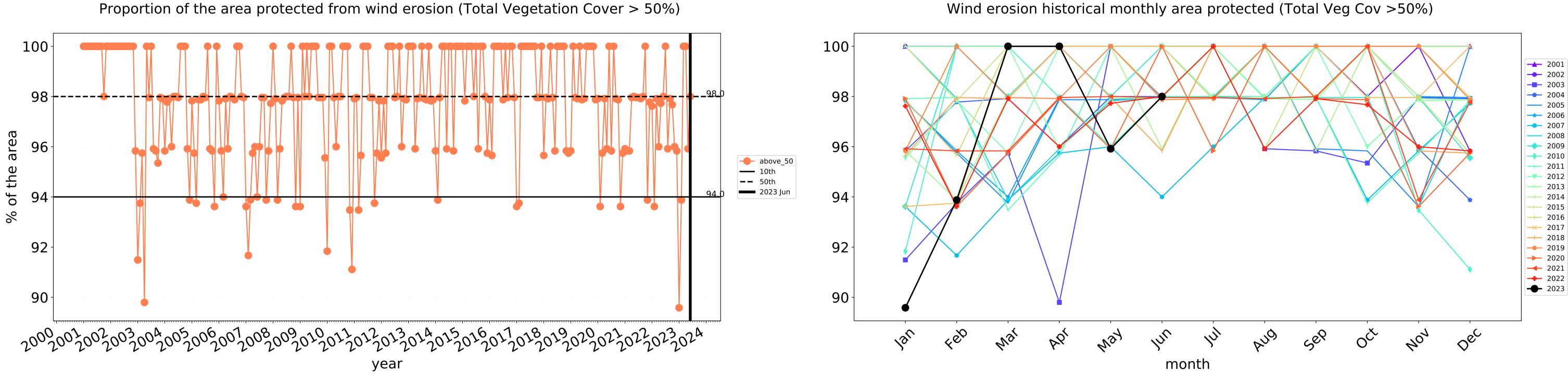
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

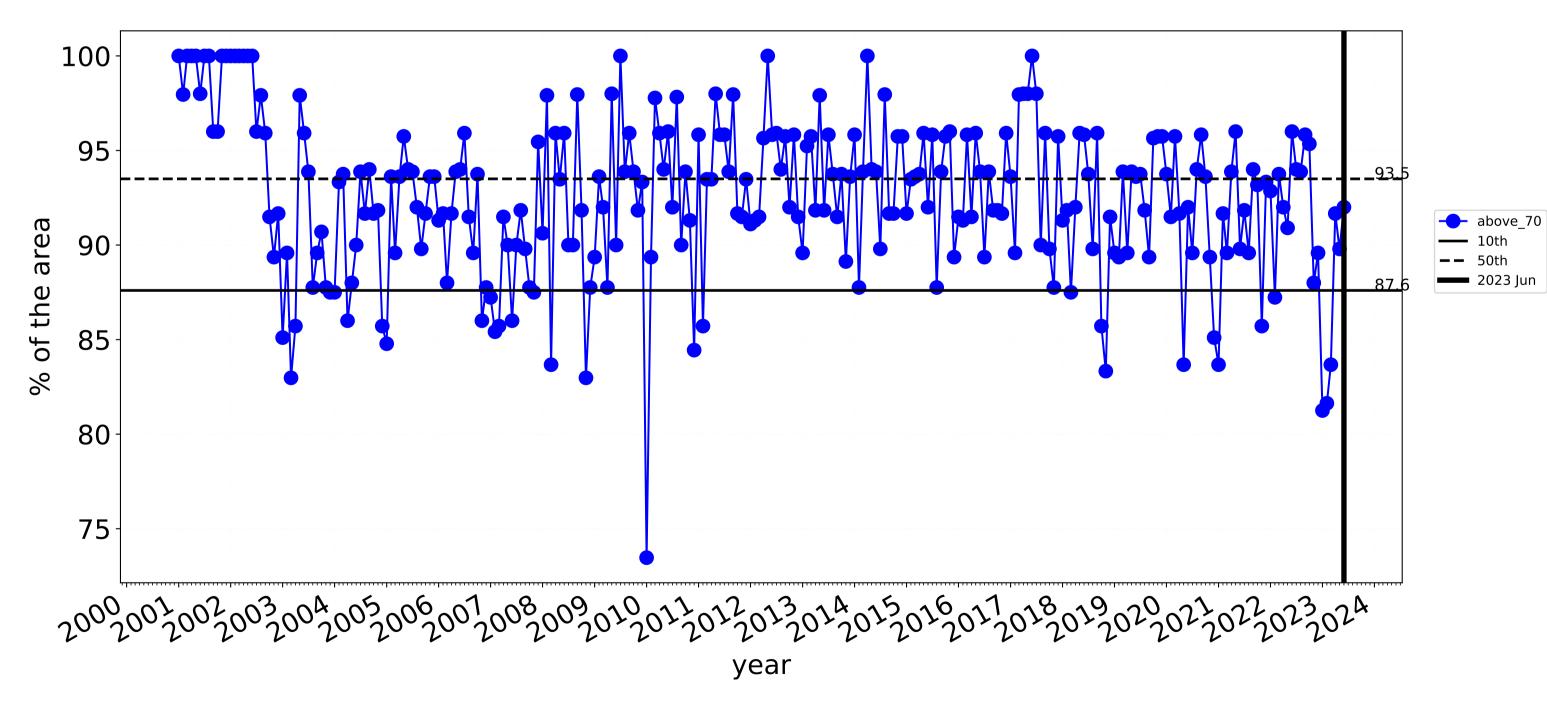


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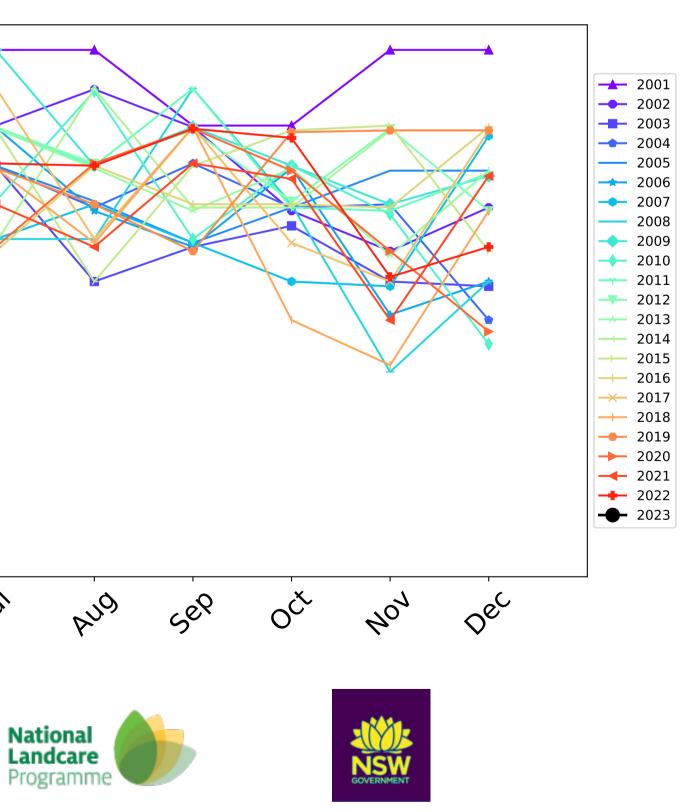


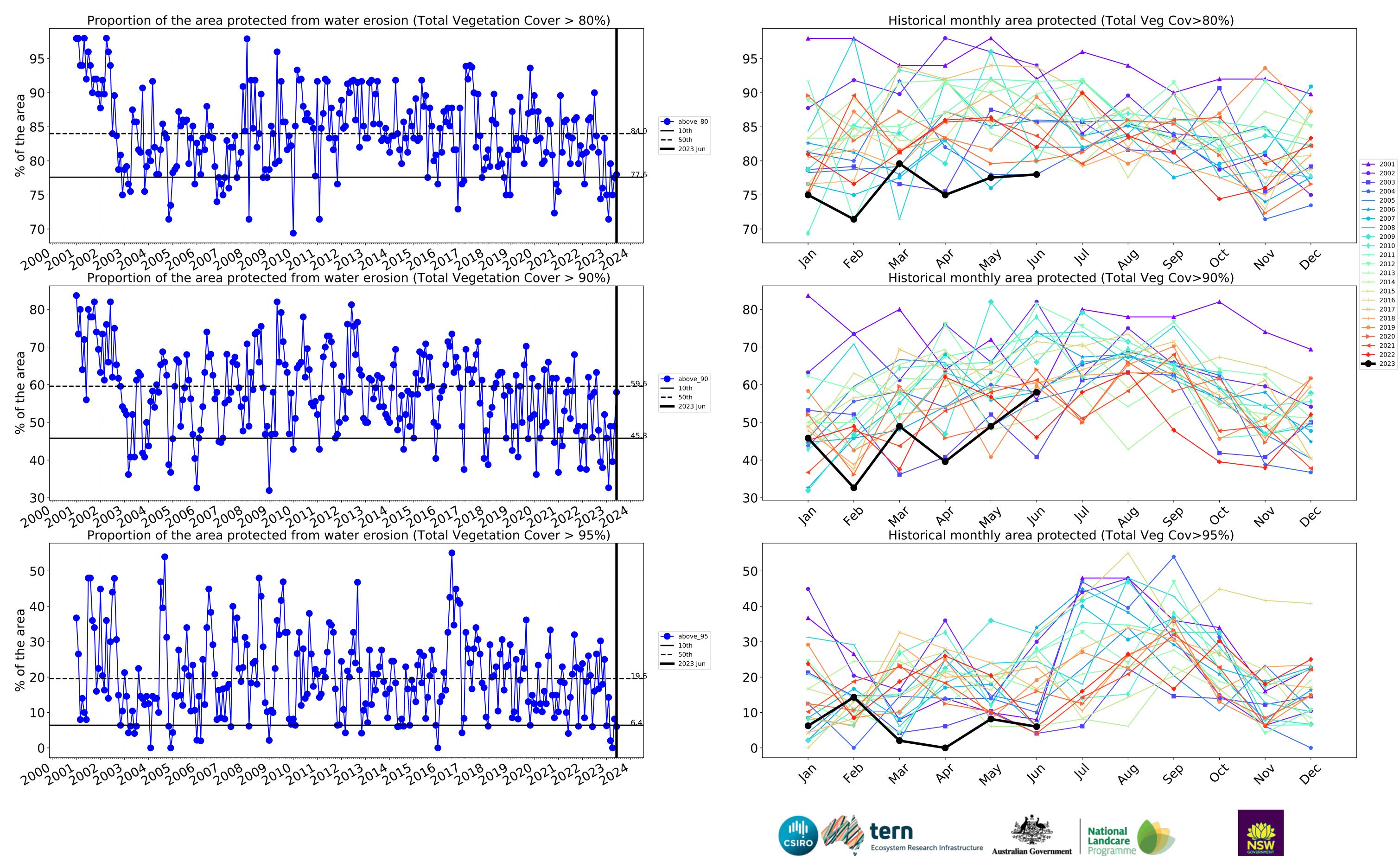




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Water erosion historical monthly area protected (Total Veg Cov>70%)

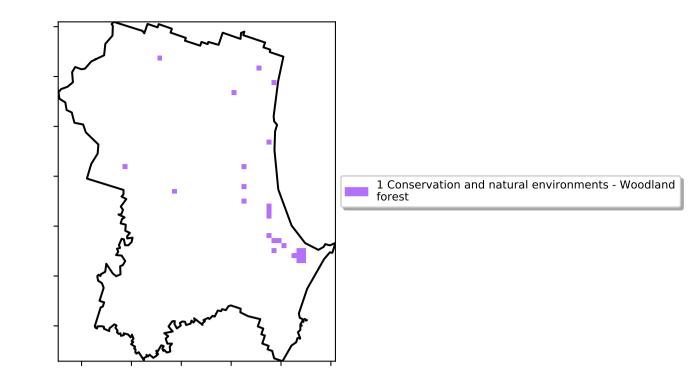




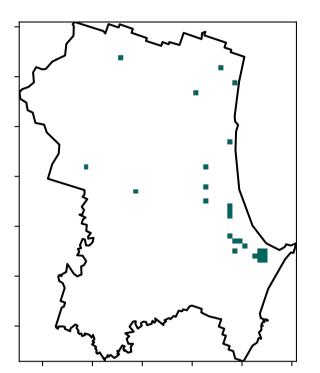


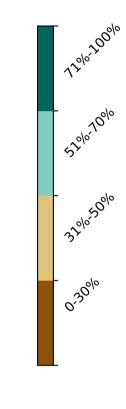
### **Conservation and natural environments Woodland forest**

Land use and forest cover

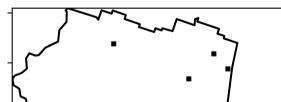


**Total Vegetation Cover [%]** 

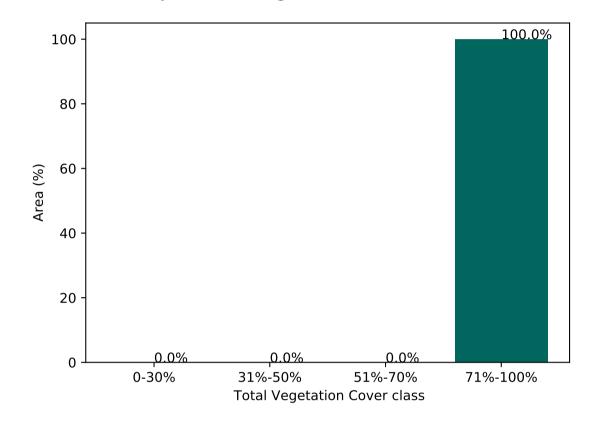




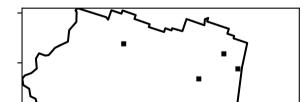
% Area protected from water erosion (>70%)



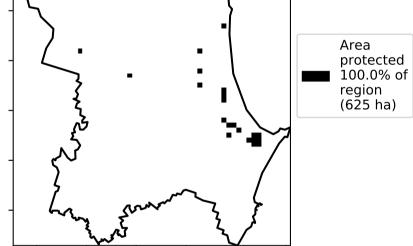
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

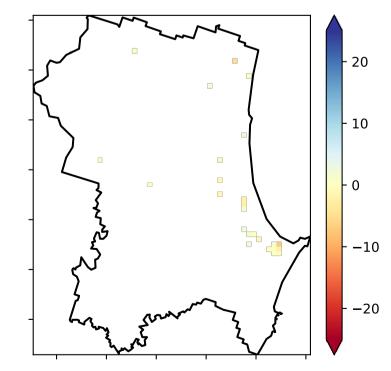




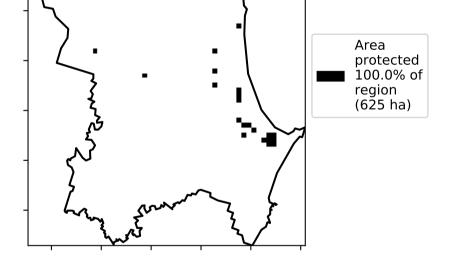


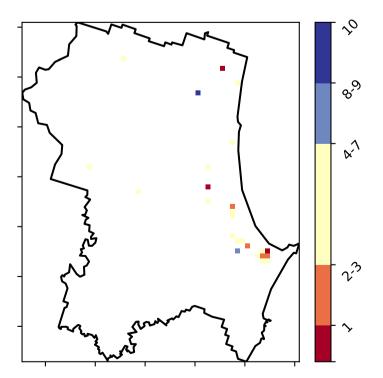
**Total Vegetation Cover Anomaly [%]** 

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.

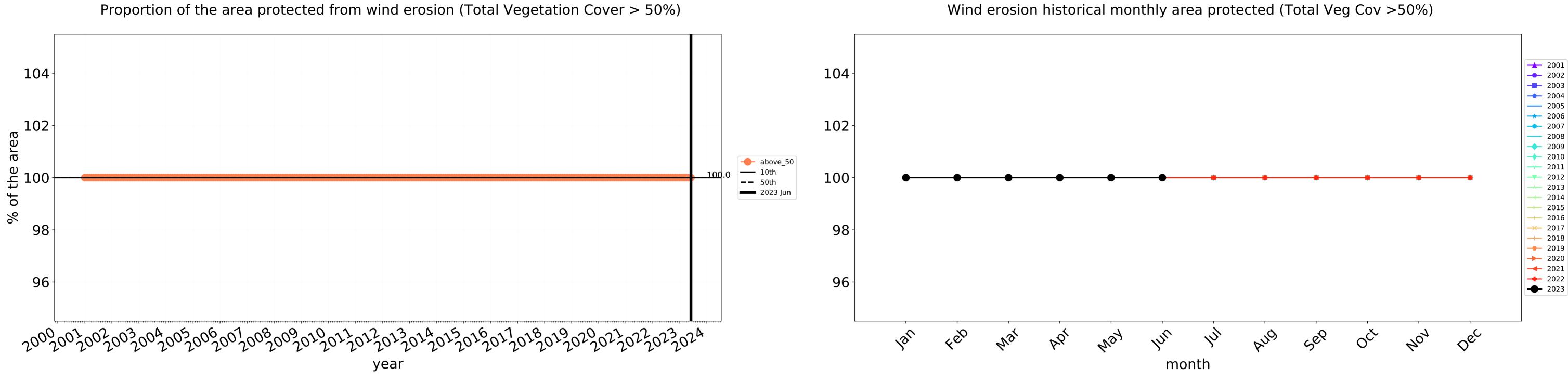


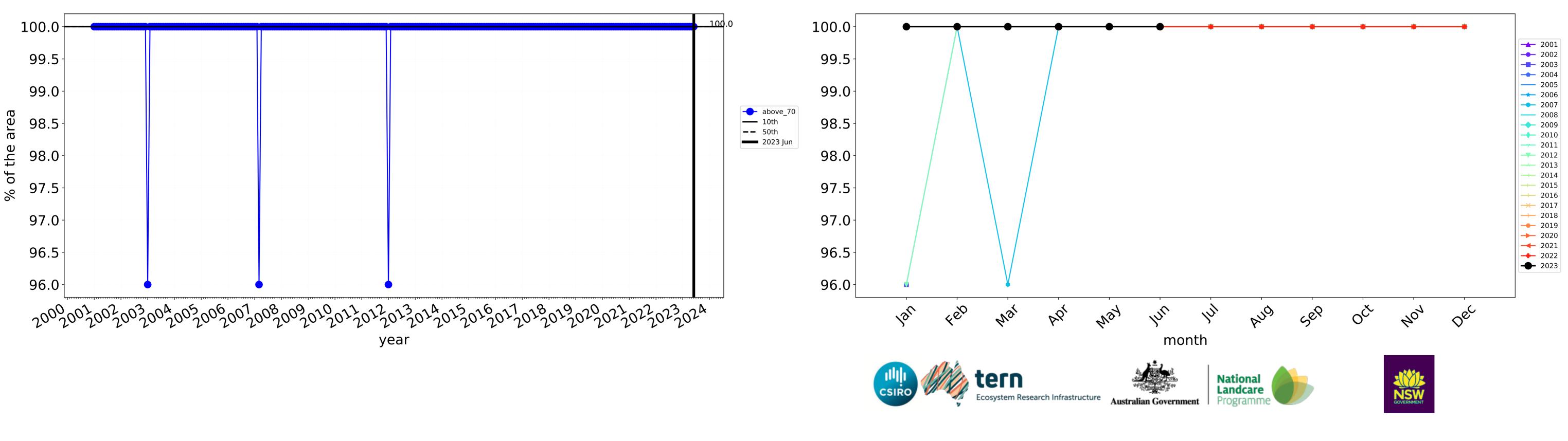
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

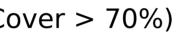




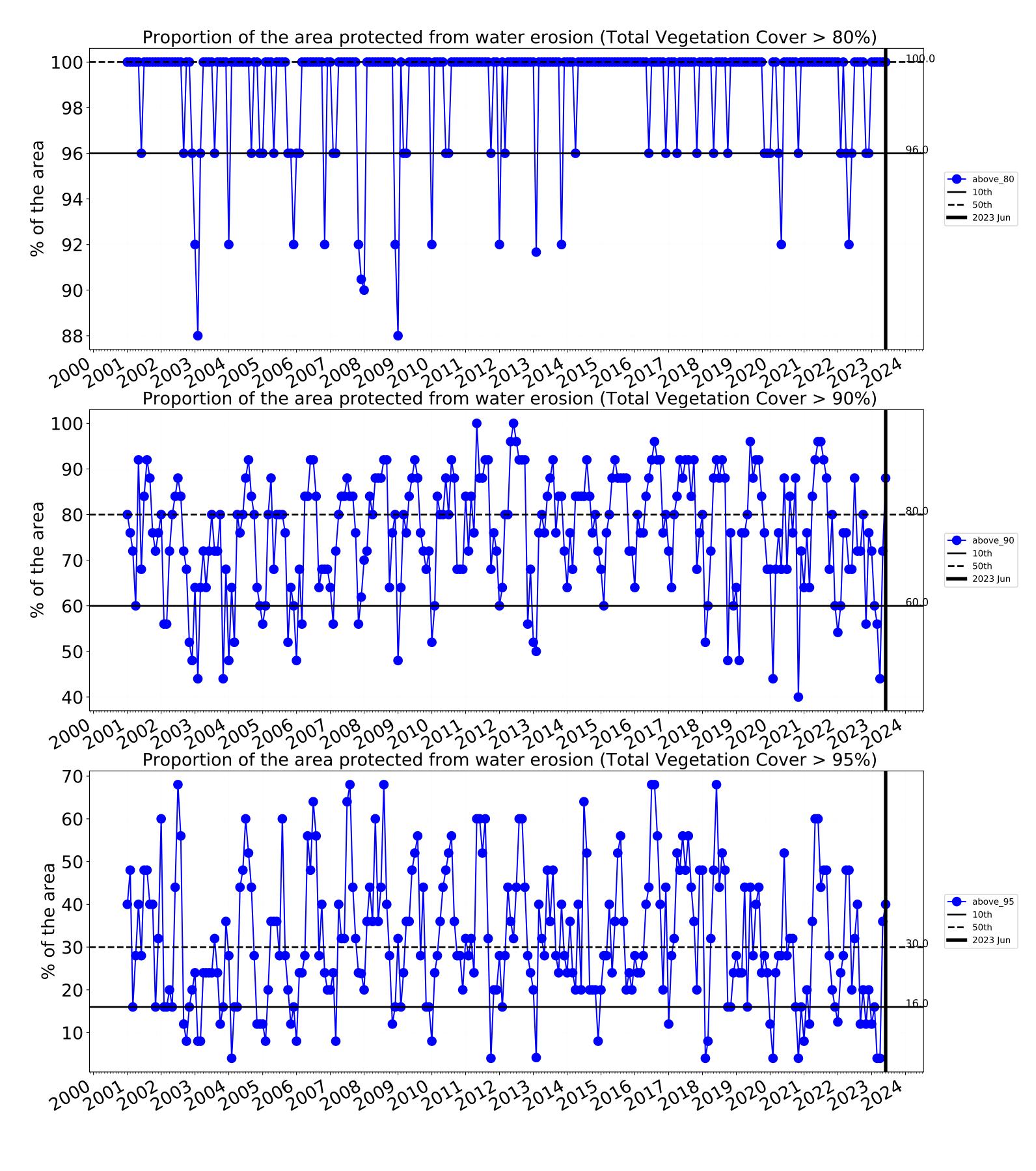


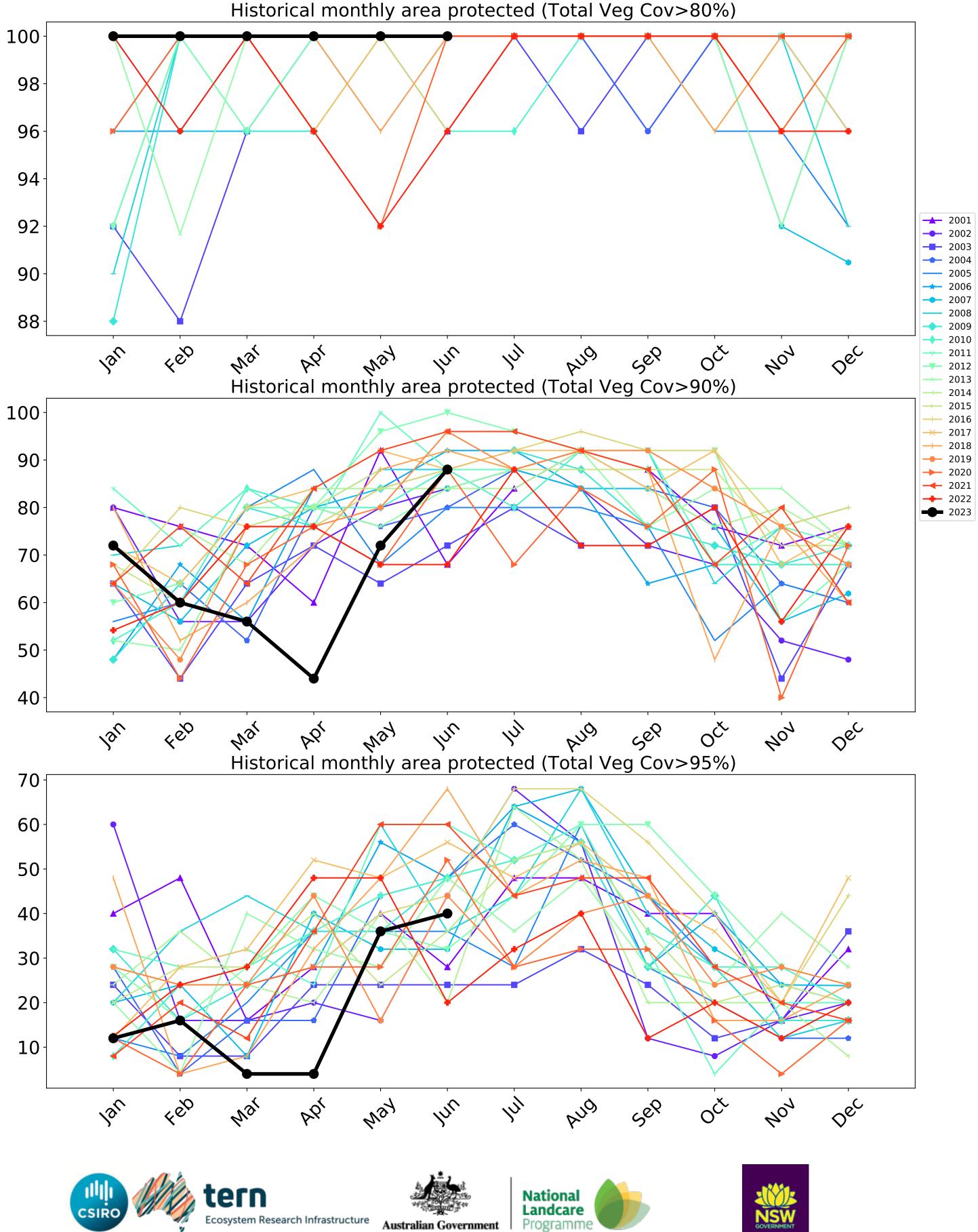






Water erosion historical monthly area protected (Total Veg Cov>70%)

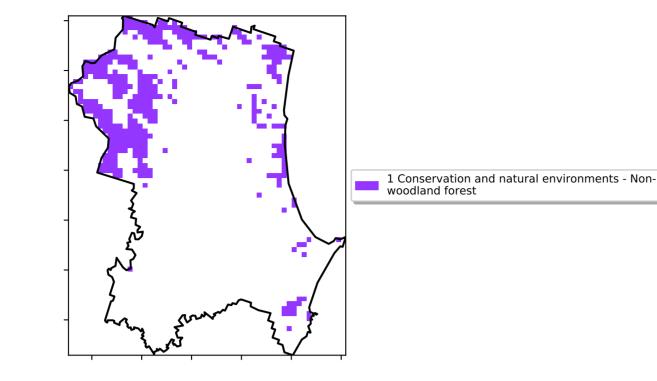






### **Conservation and natural environments Forest (non woodland)**

Land use and forest cover



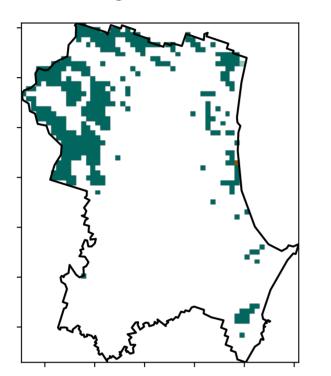
1200-2001

52% 70%

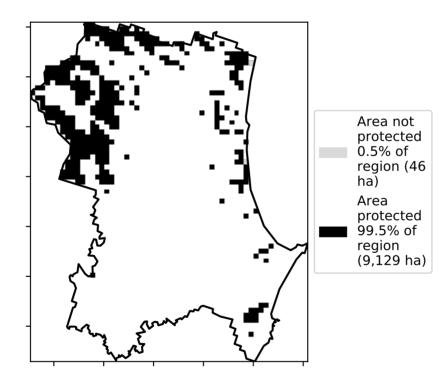
32%50%

0.30%

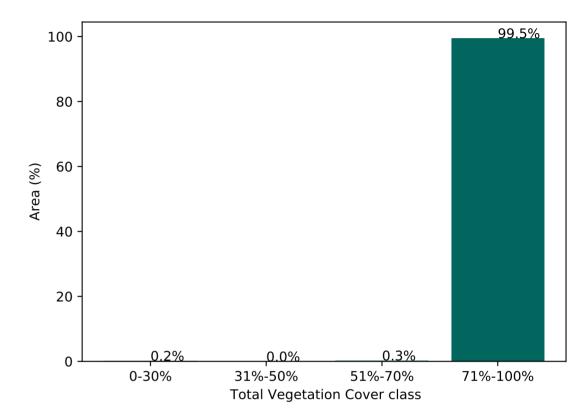
**Total Vegetation Cover [%]** 



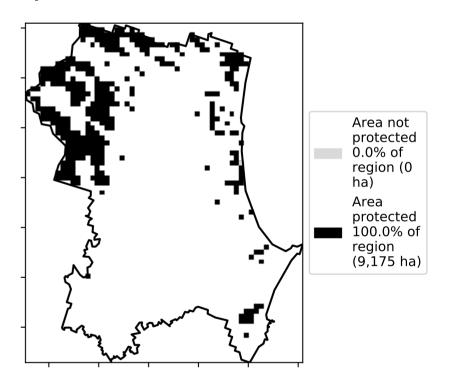
% Area protected from water erosion (>70%)







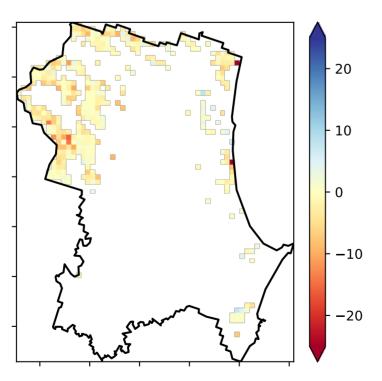
% Area protected from wind erosion (>50%)



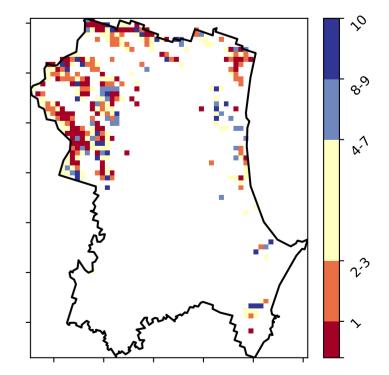
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover 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.



**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

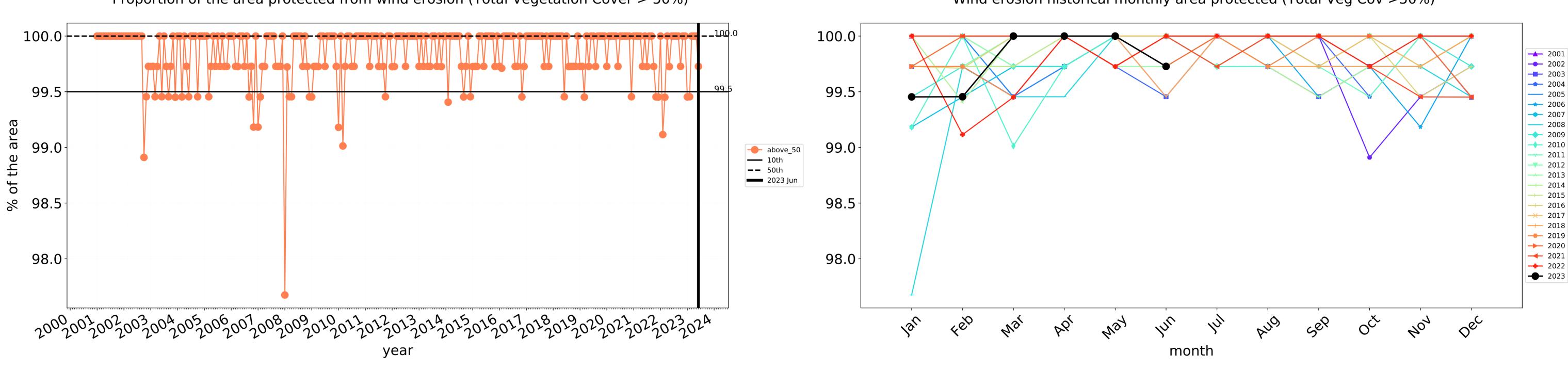
records for that month of the map using baseline from 2001 to 2019.

in the lowest 10% of



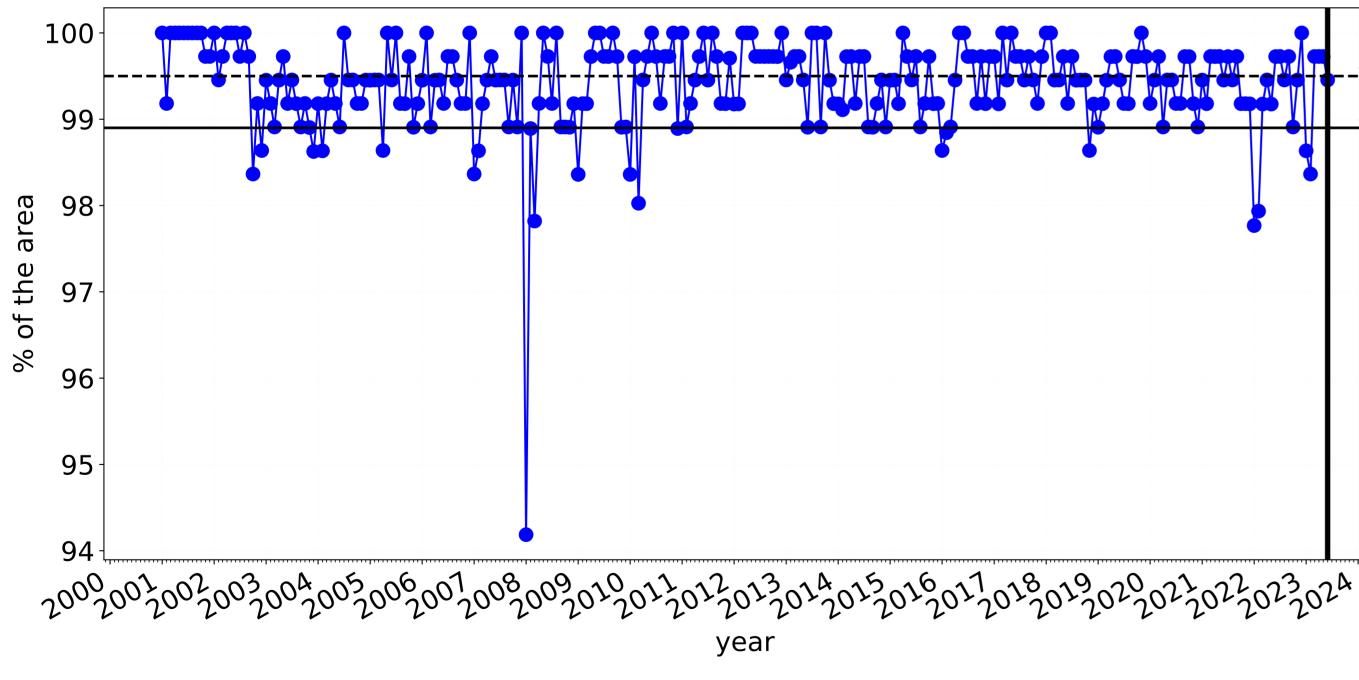


### **Conservation and natural environments Forest (non woodland) timeseries**



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

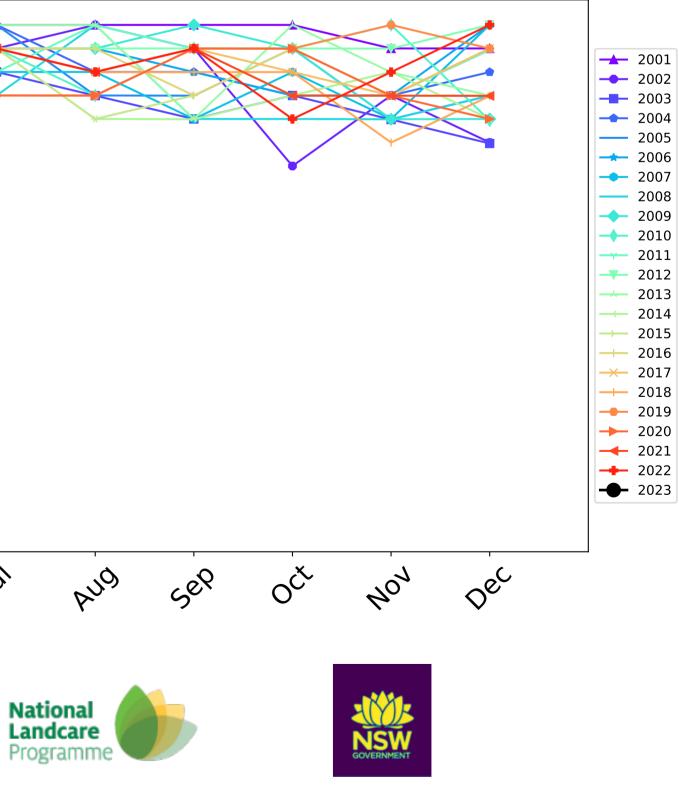
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

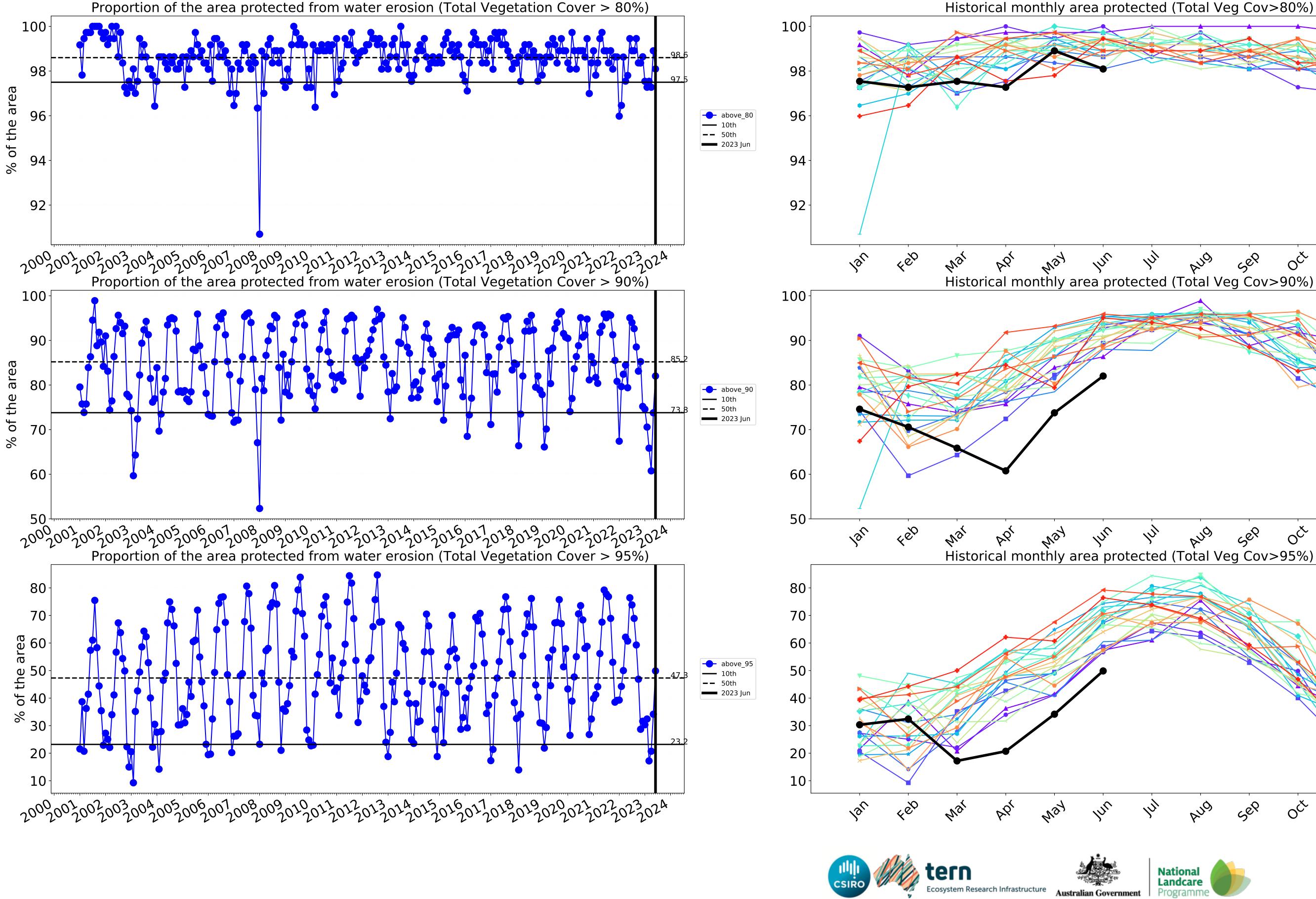


100 99 --- above\_70 98 **——** 10th **——** 50th **——** 2023 Jun 97 96 95 94 4e0 Jan way In Mai 1st PQ' month tern Ecosystem Research Infrastructure Australian Government

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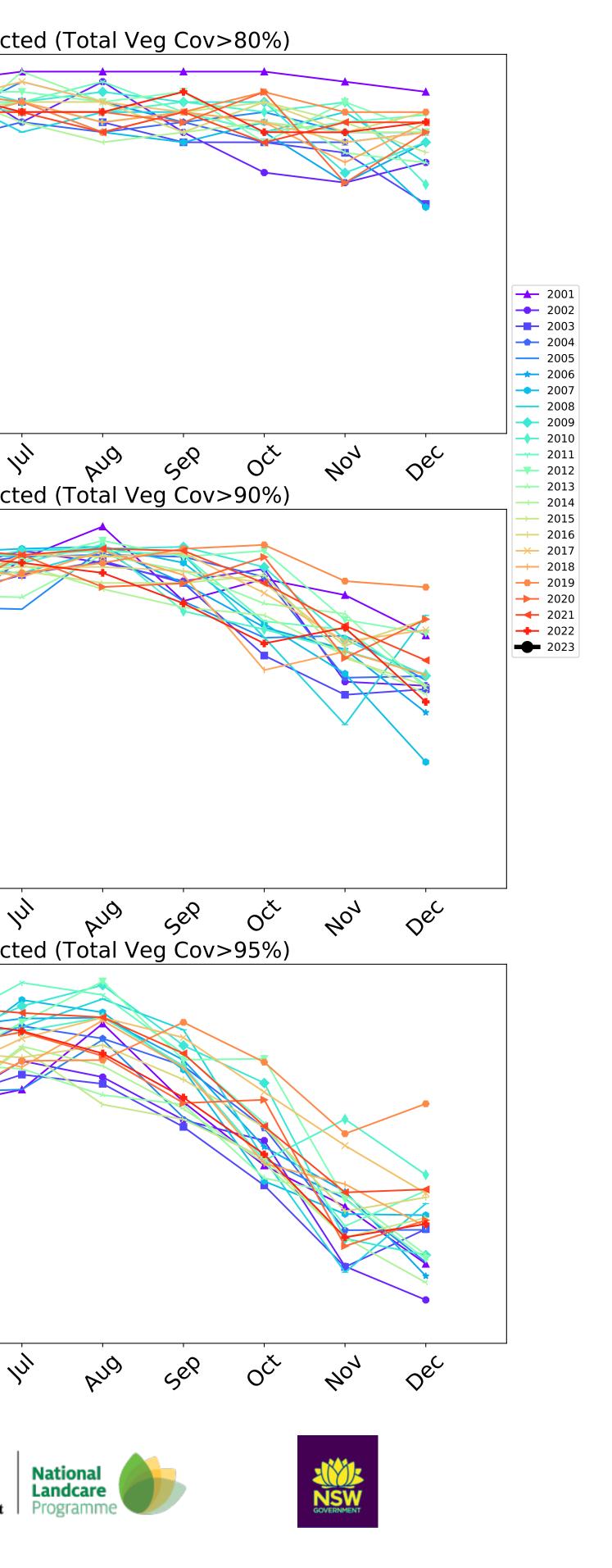
Water erosion historical monthly area protected (Total Veg Cov>70%)





1**6** 

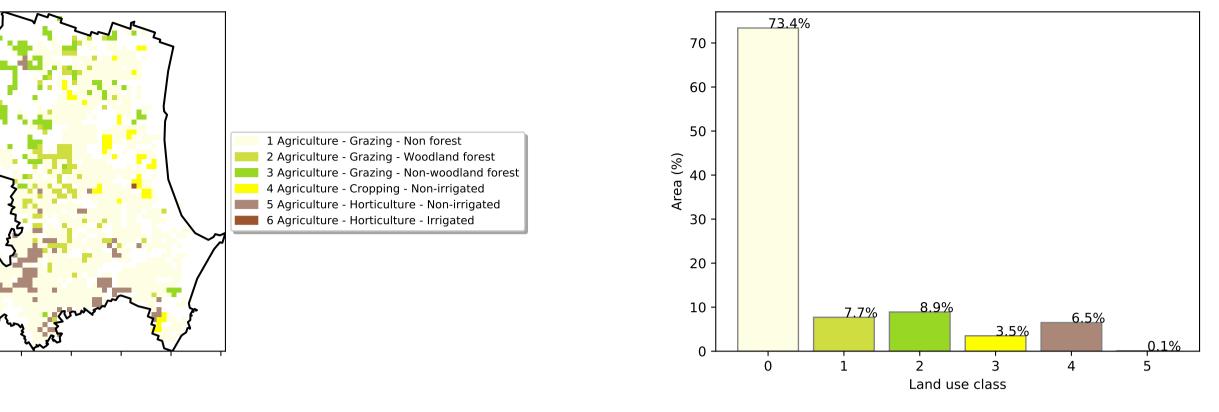
Australian Government



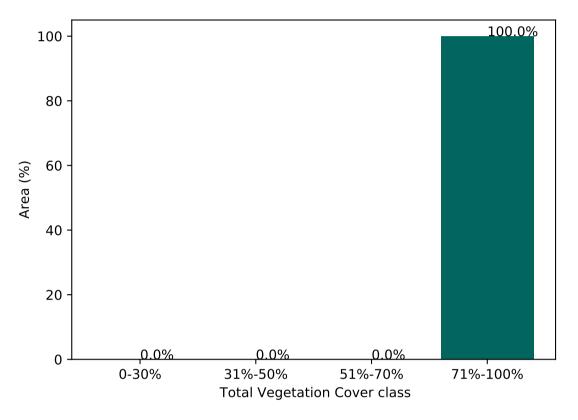
### Agriculture

Land use and forest cover

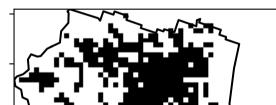
Proportion of each land class in area



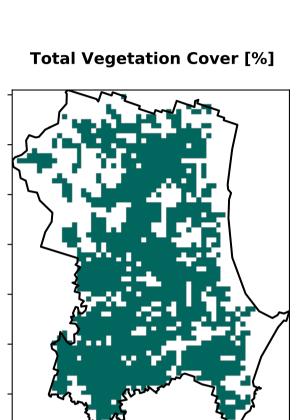
Proportion of vegetation cover class in area



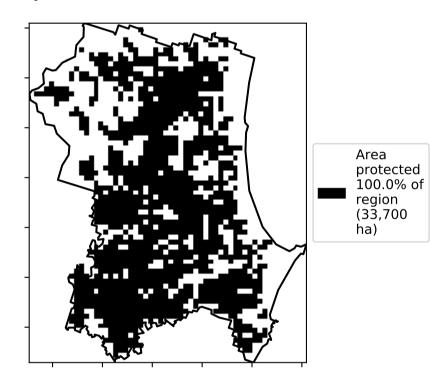
% Area protected from wind erosion (>50%)

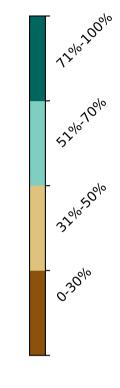


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

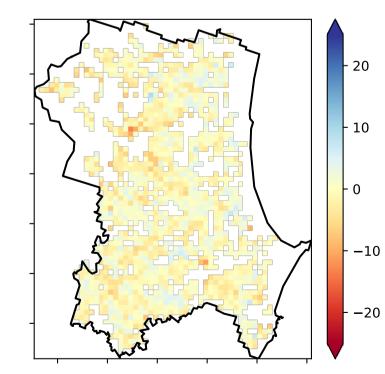


% Area protected from water erosion (>70%)

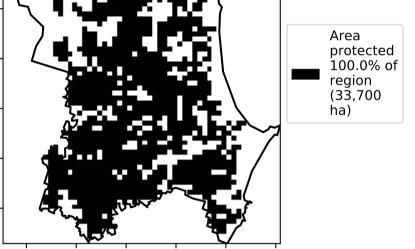




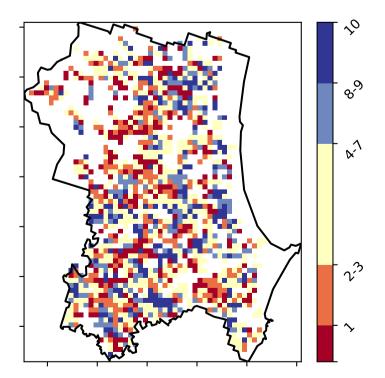
**Total Vegetation Cover Anomaly [%]** 



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.

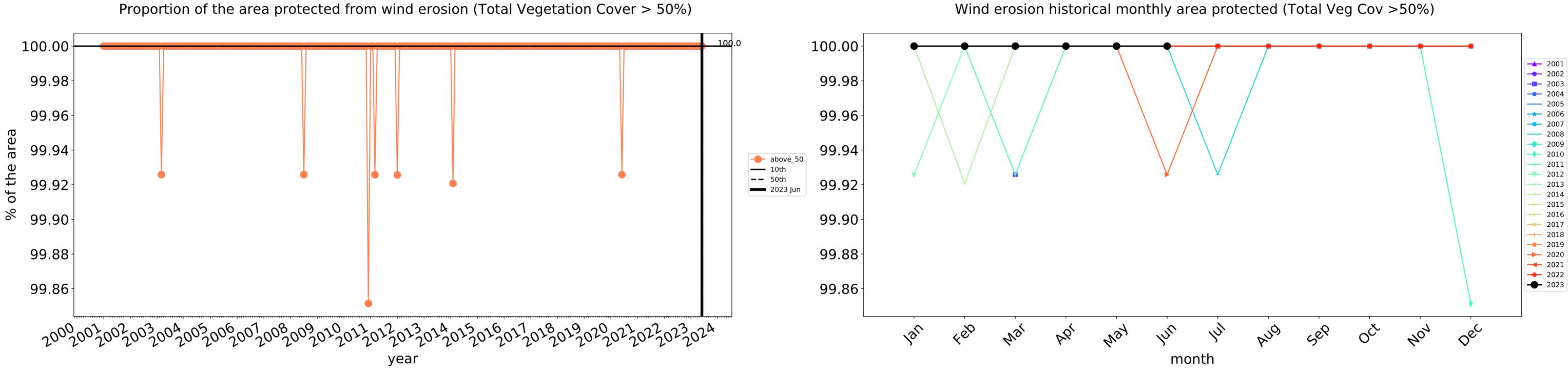


**Total Vegetation Cover Decile [%]** 



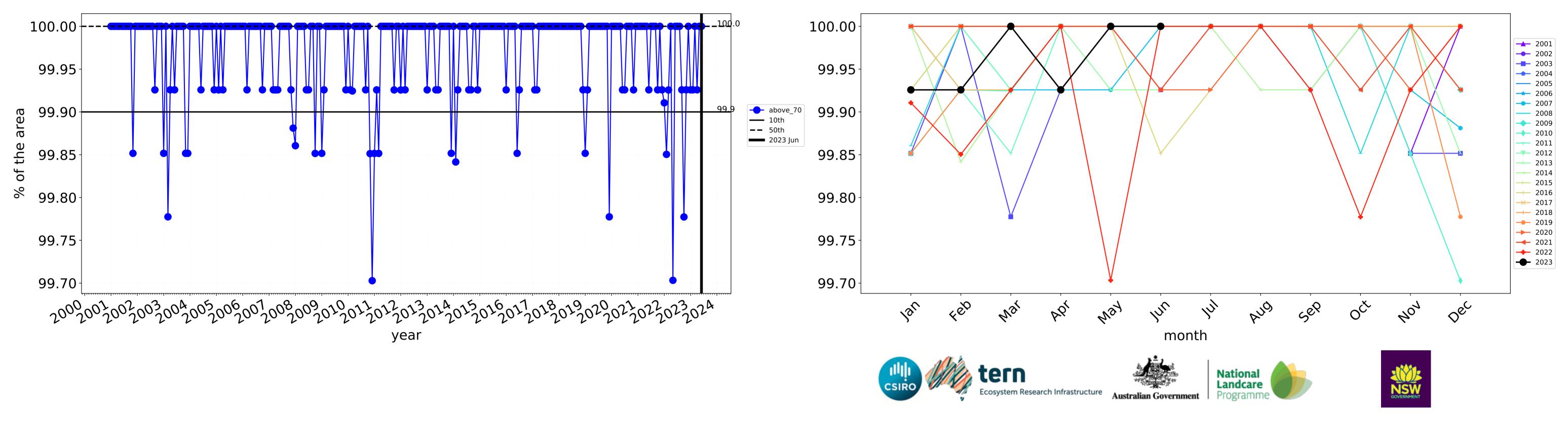


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

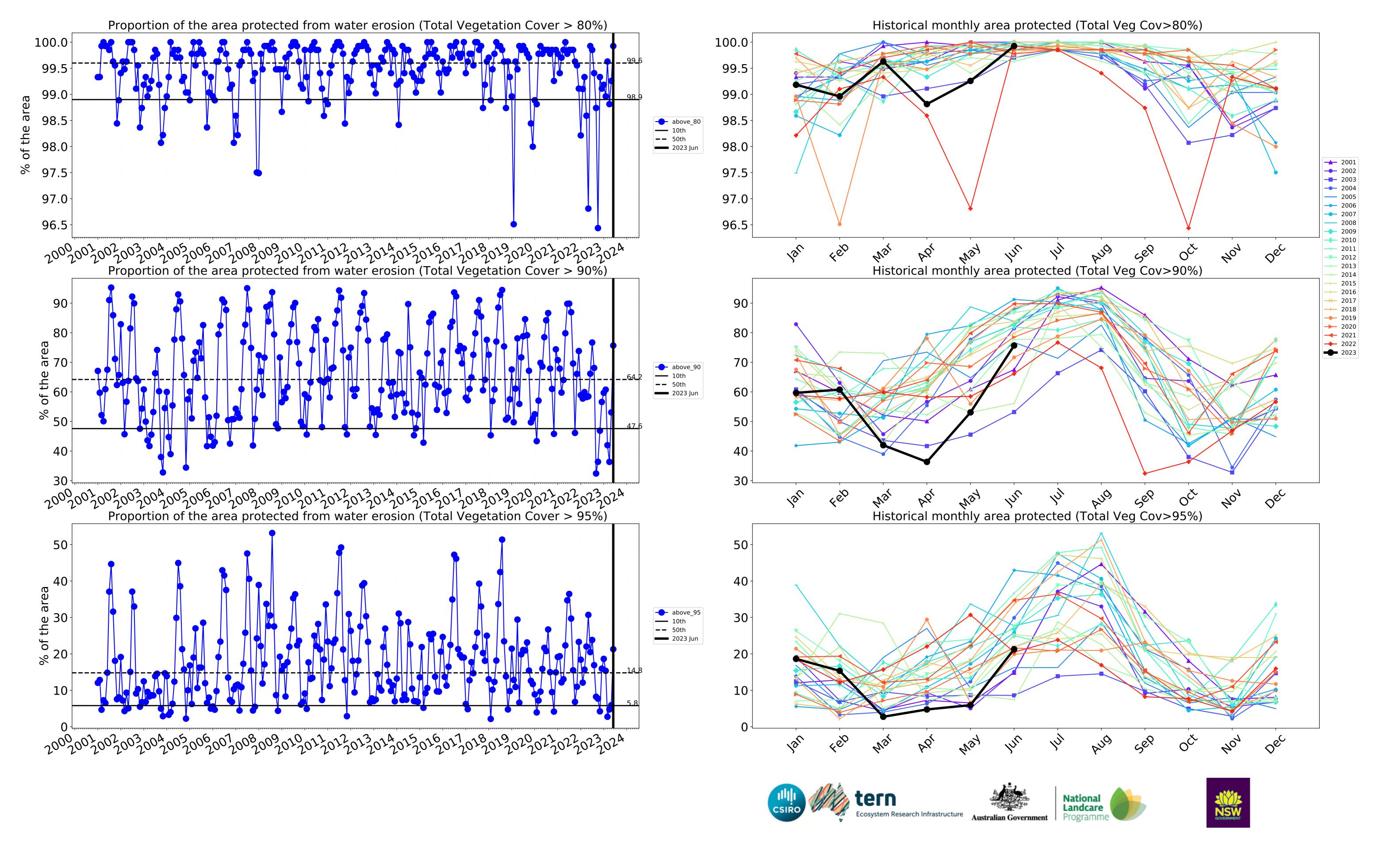


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

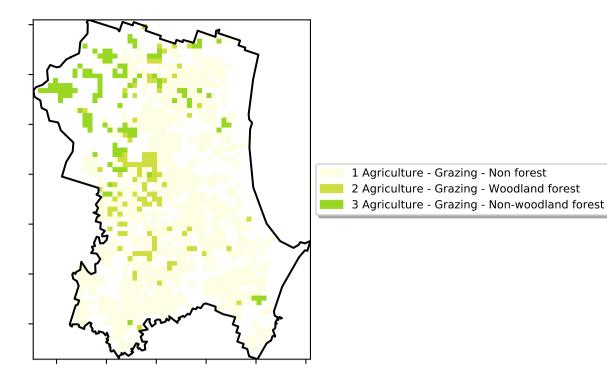


Water erosion historical monthly area protected (Total Veg Cov>70%)

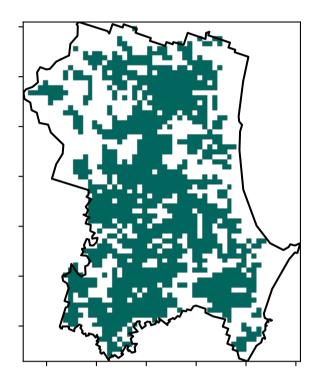


#### Grazing

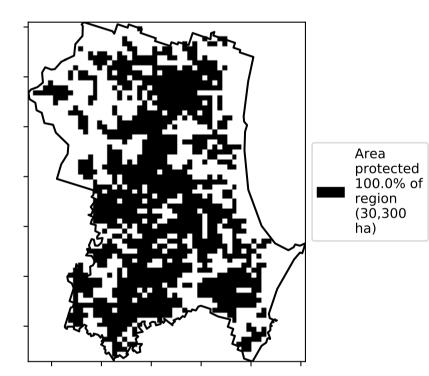
Land use and forest cover

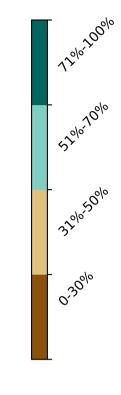


**Total Vegetation Cover [%]** 

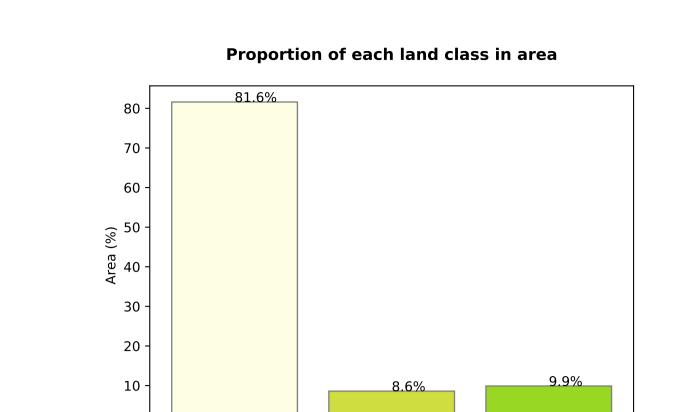


% Area protected from water erosion (>70%)





1 Agriculture - Grazing - Non forest



0.5

0.0

0

-0.5

Proportion of vegetation cover class in area

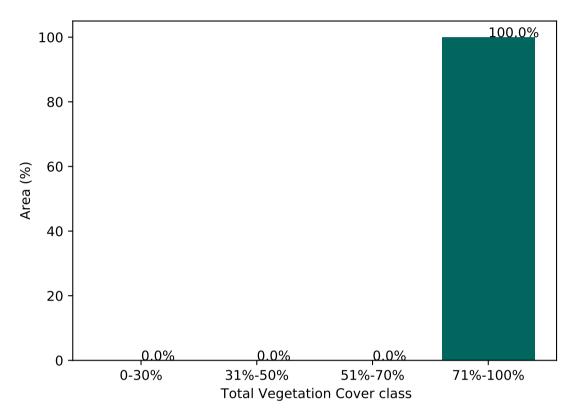
1.0

Land use class

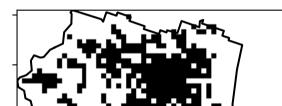
1.5

2.0

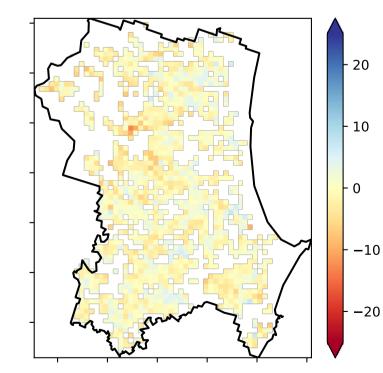
2.5



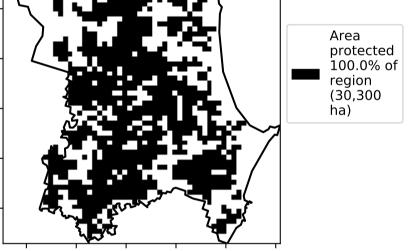
% Area protected from wind erosion (>50%)



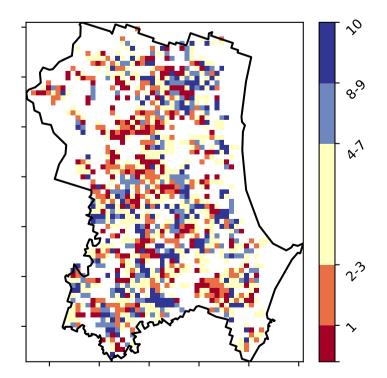
**Total Vegetation Cover Anomaly [%]** 



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 [%]** 





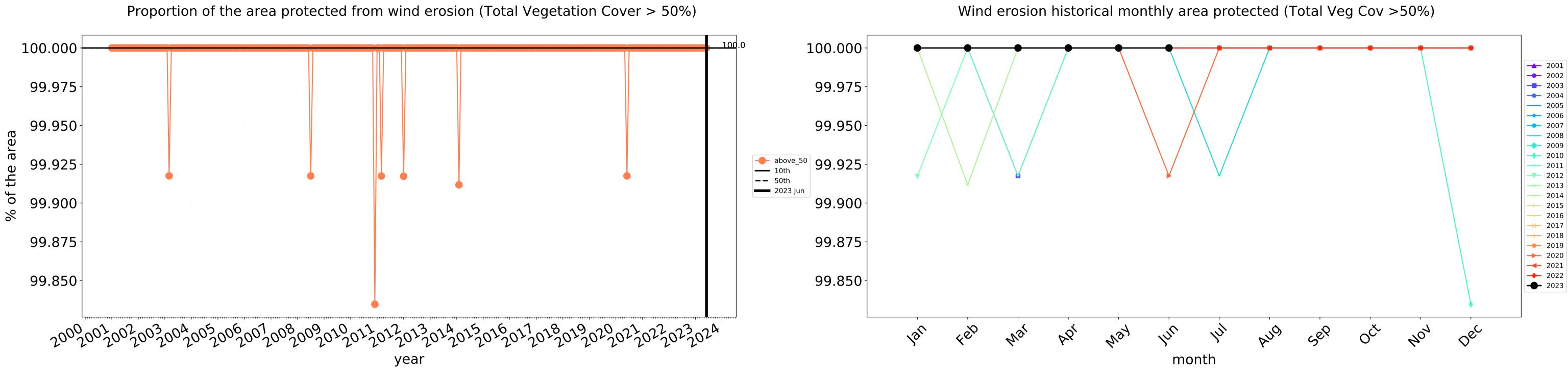
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

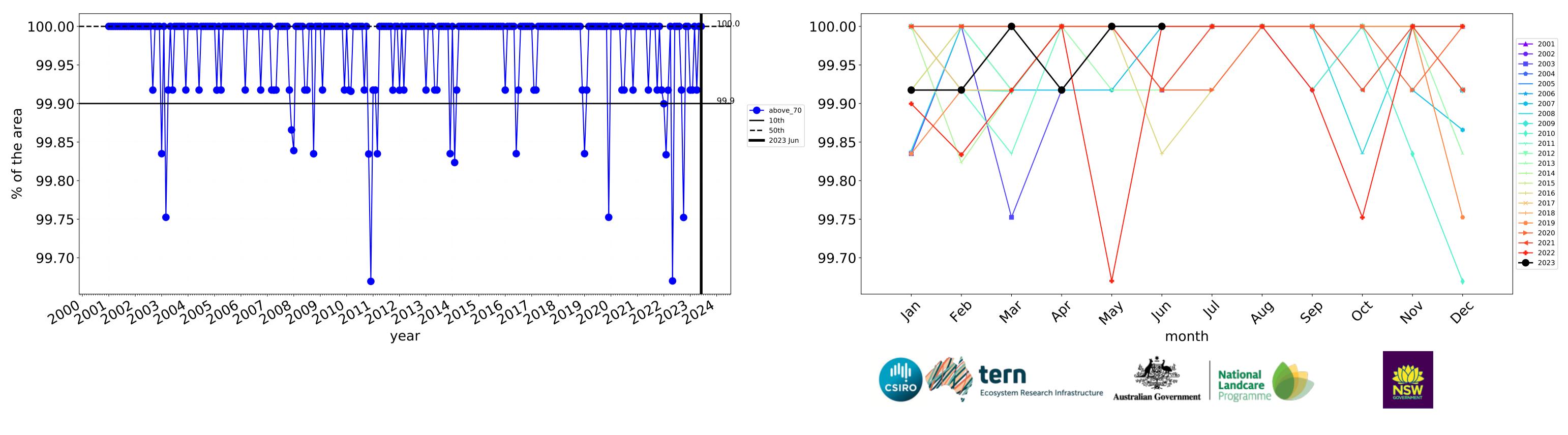
Catchment Scale Land

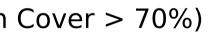
Derived from

Use of Australia (2018) and Forests of Australia (2018)

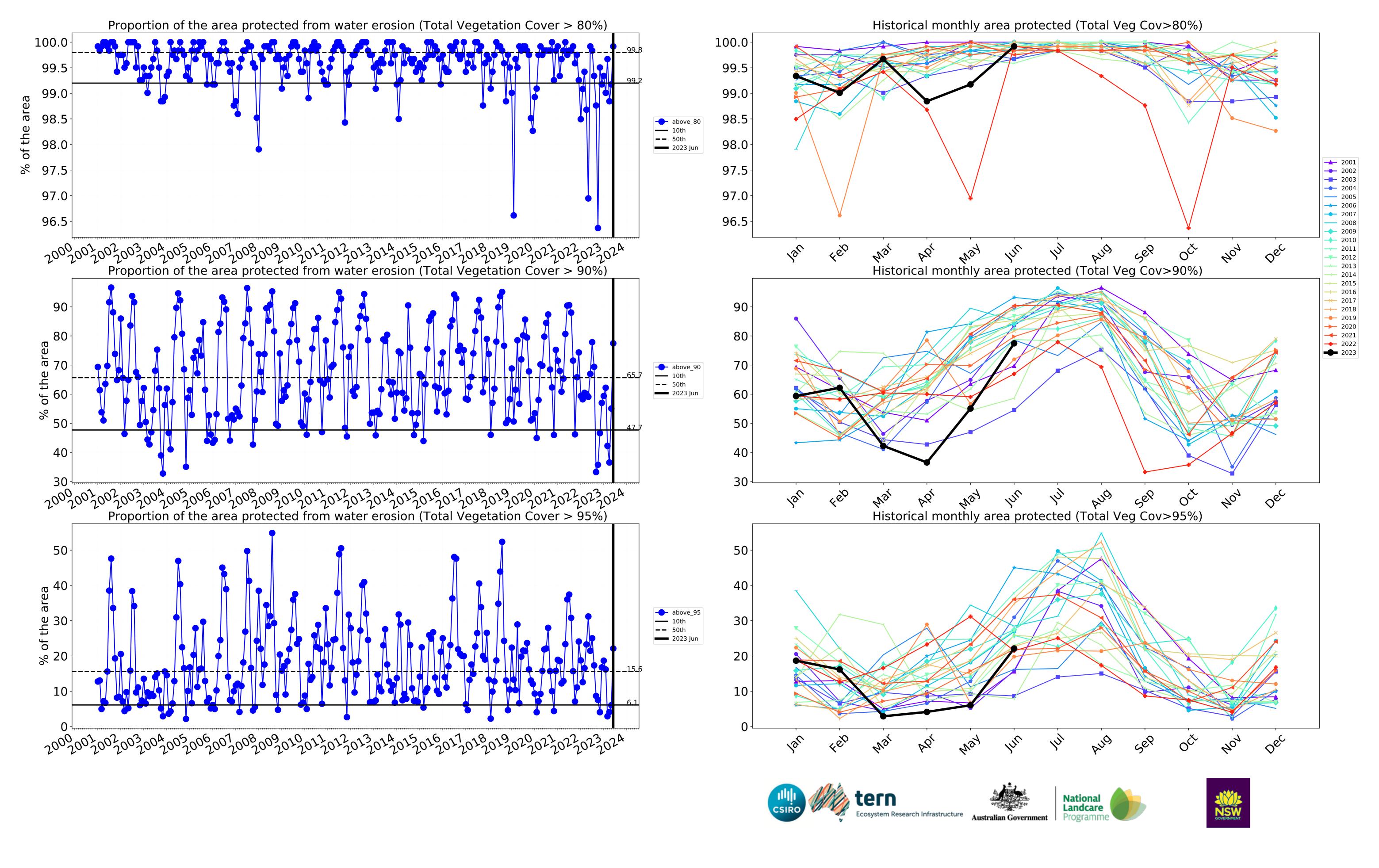


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





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



### **Grazing non forest**

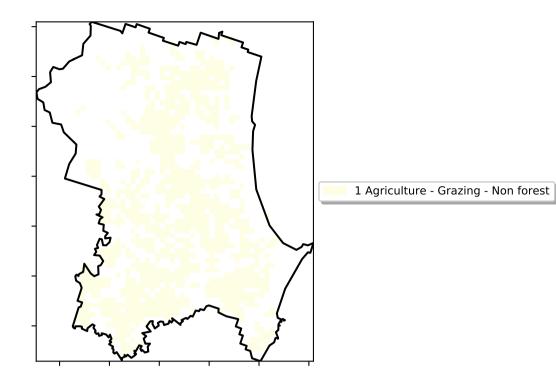
12/02/00/0

1 57°10'TO'

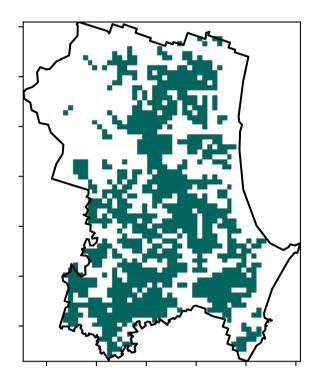
32%50%

· 0.30%

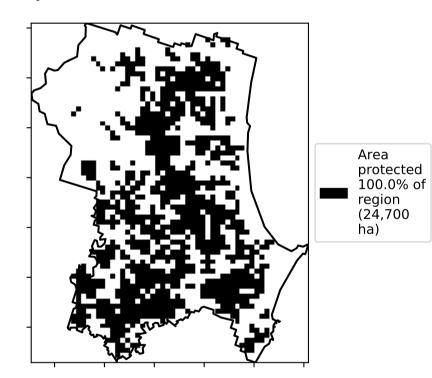
Land use and forest cover



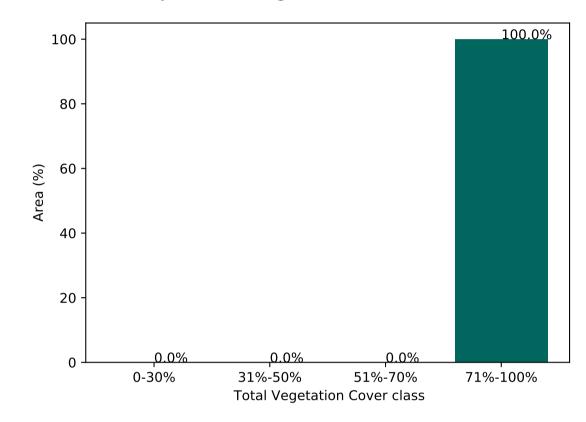
**Total Vegetation Cover [%]** 



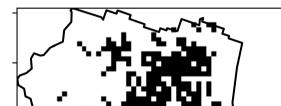
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

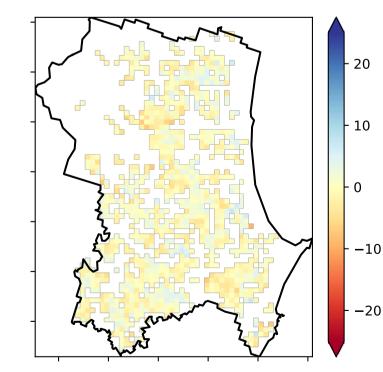


% Area protected from wind erosion (>50%)

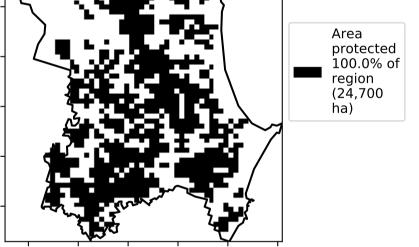


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

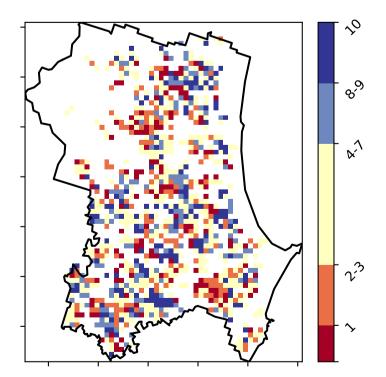
**Total Vegetation Cover Anomaly [%]** 



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.

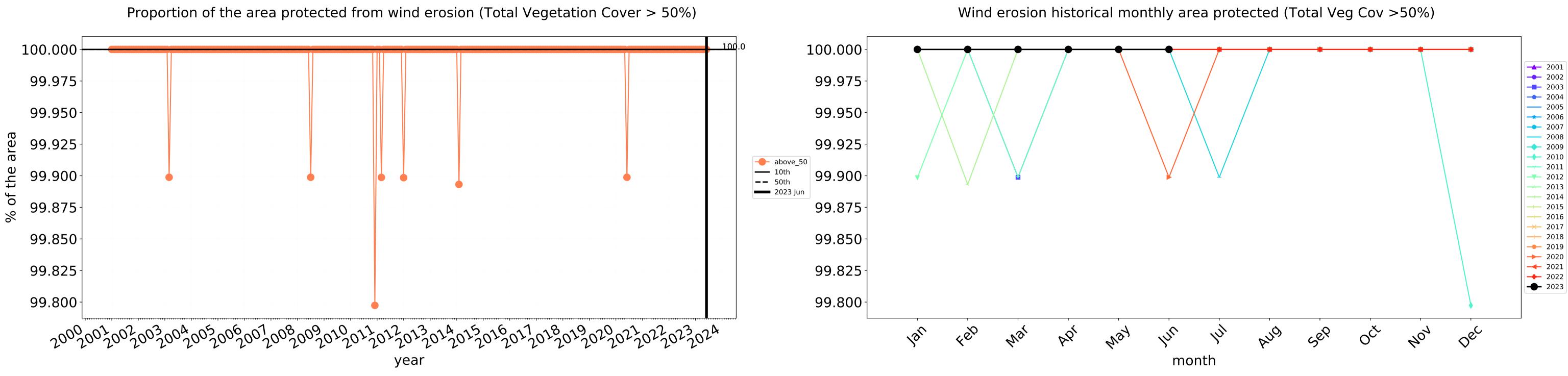


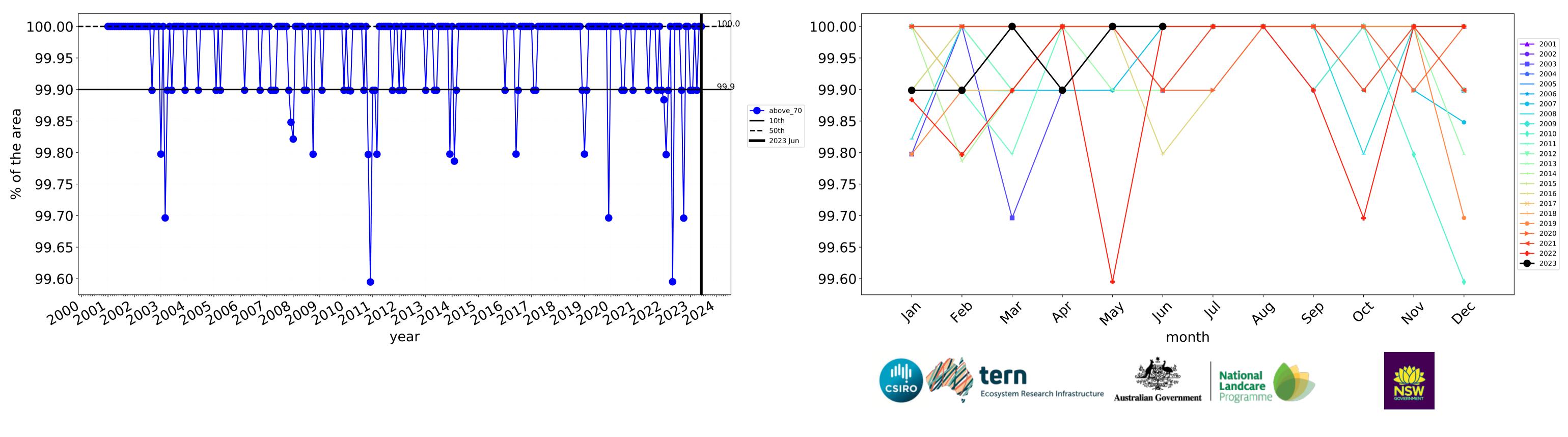
**Total Vegetation Cover Decile [%]** 

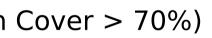




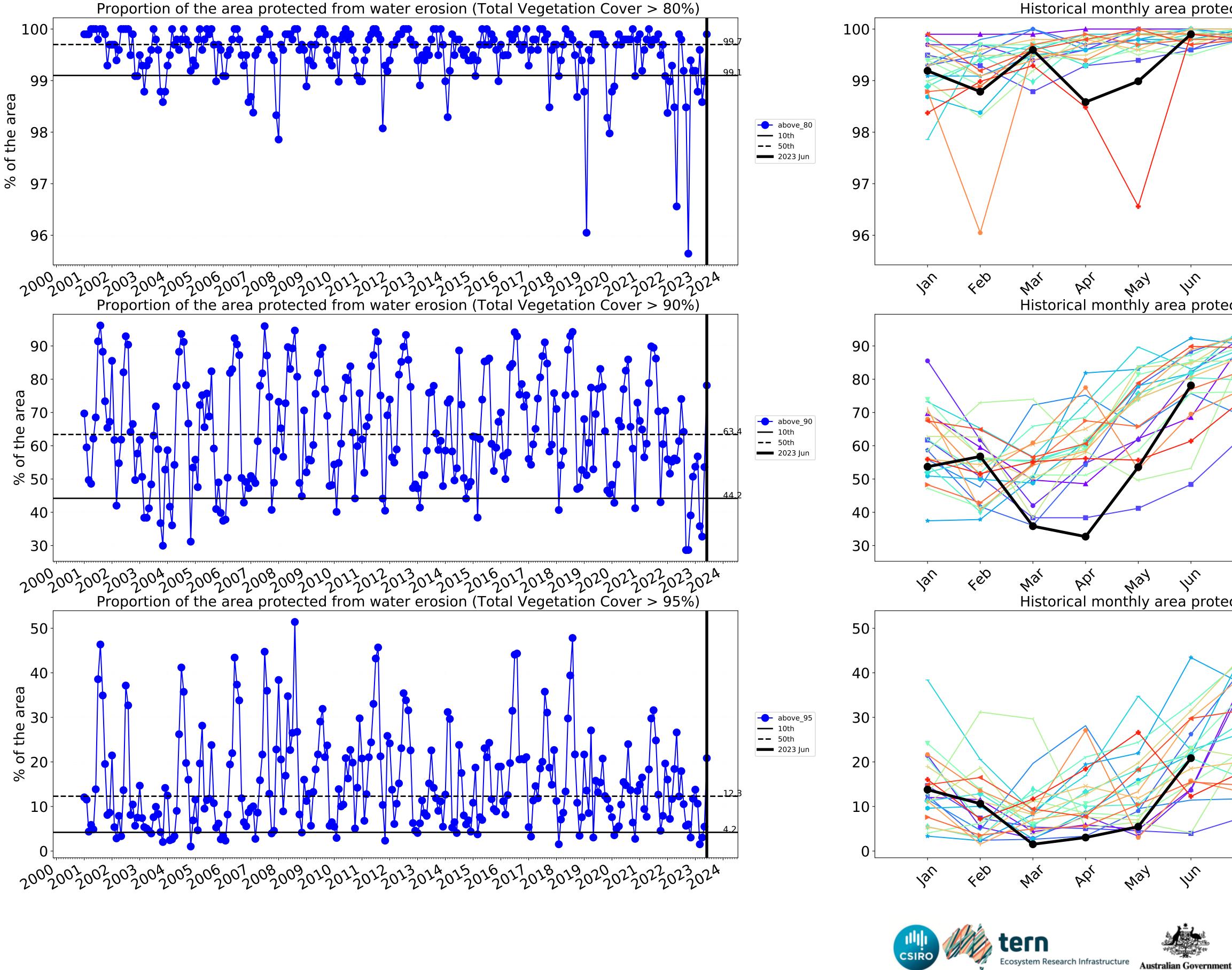
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

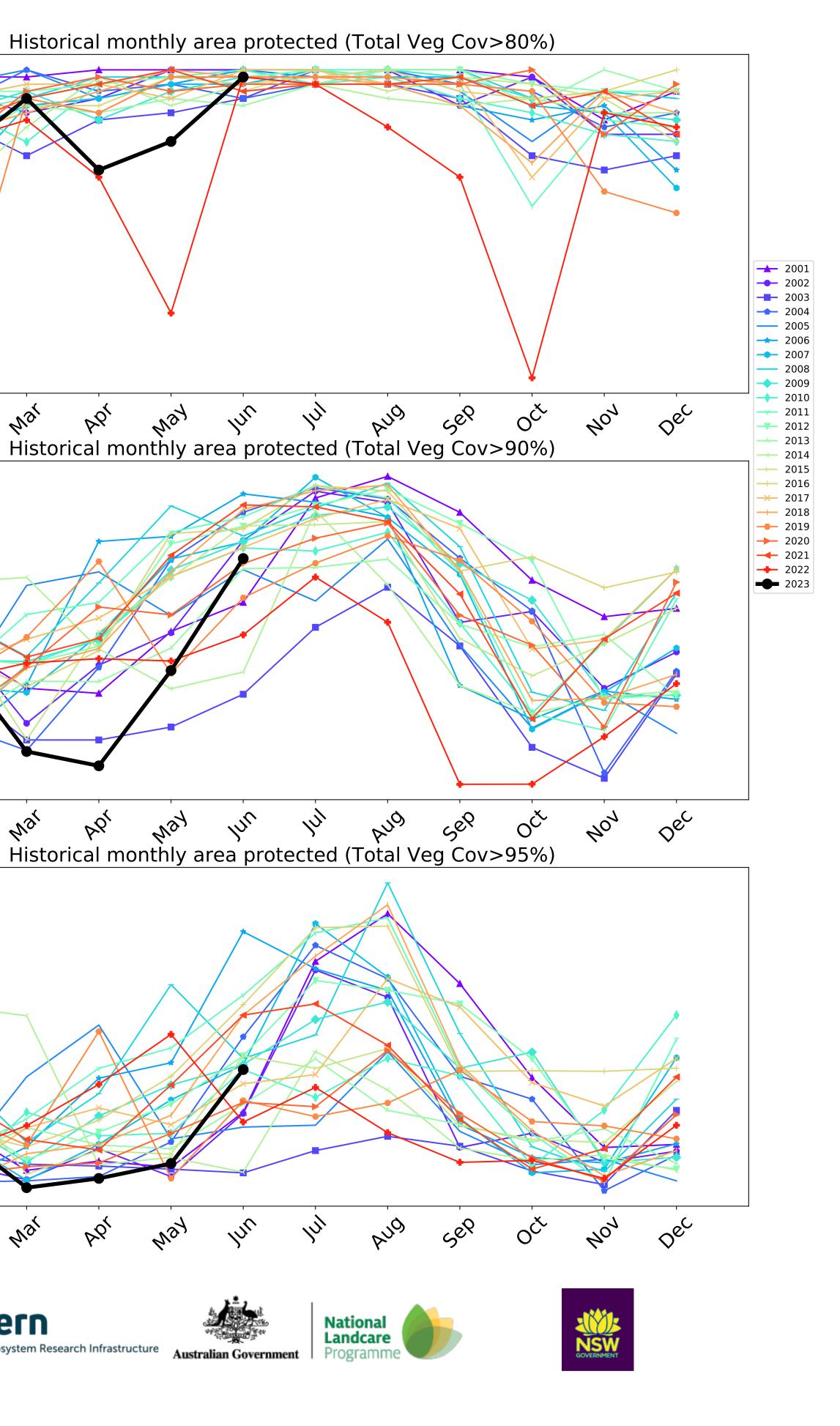






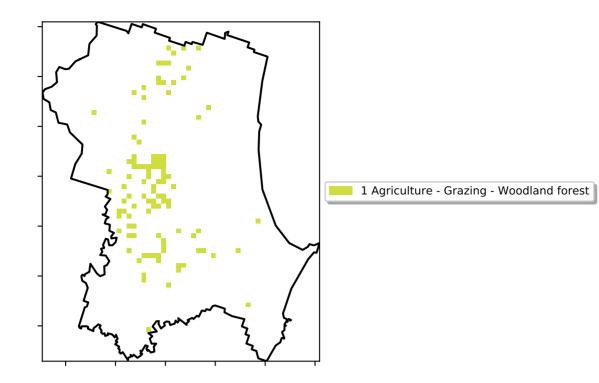




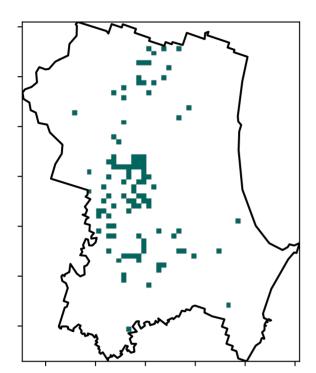


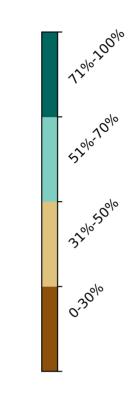
### **Grazing Woodland forest**

Land use and forest cover

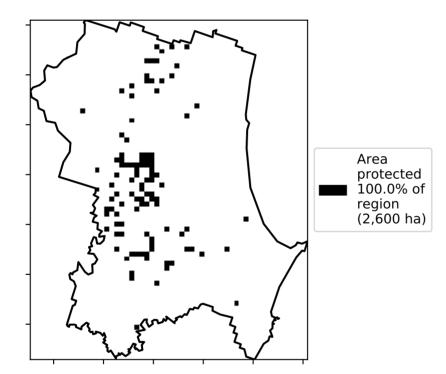


**Total Vegetation Cover [%]** 

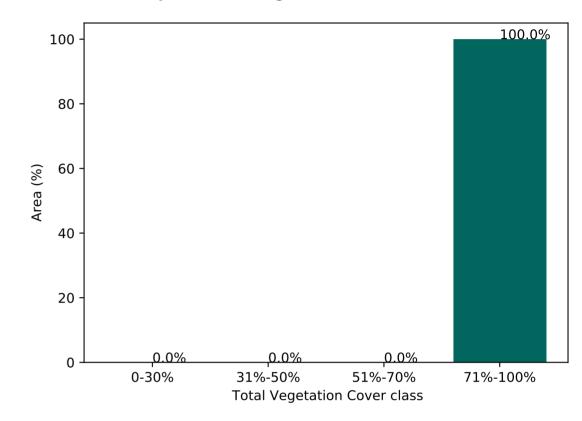




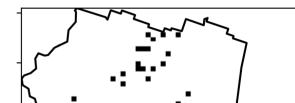
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

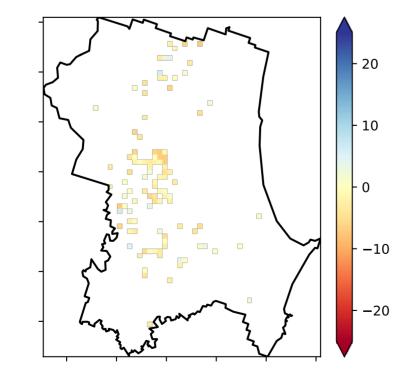


% Area protected from wind erosion (>50%)

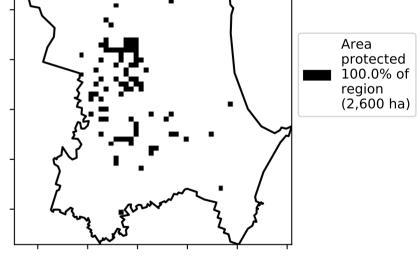


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

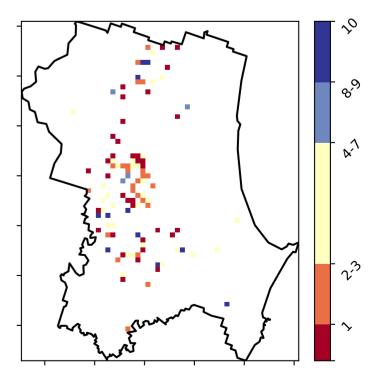
**Total Vegetation Cover Anomaly [%]** 



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.

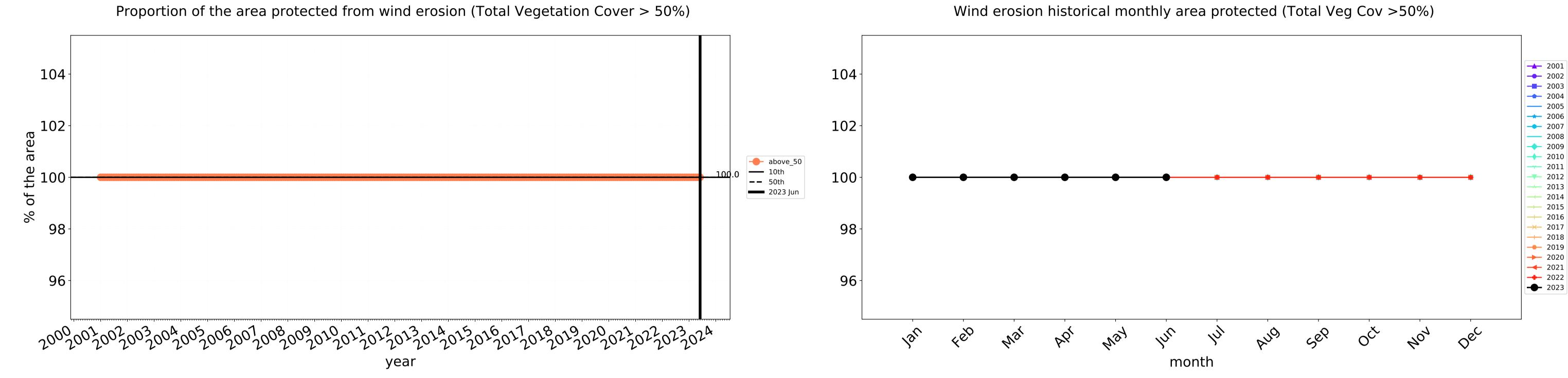


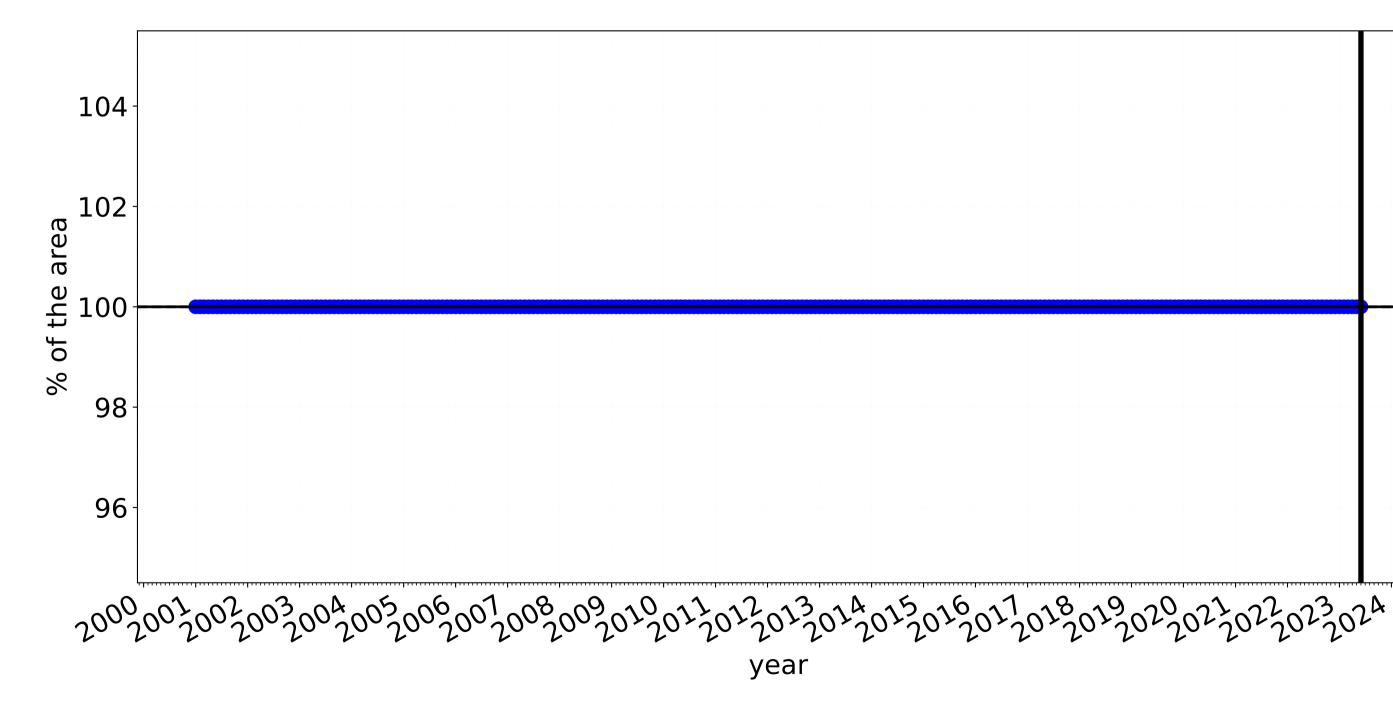
**Total Vegetation Cover Decile [%]** 



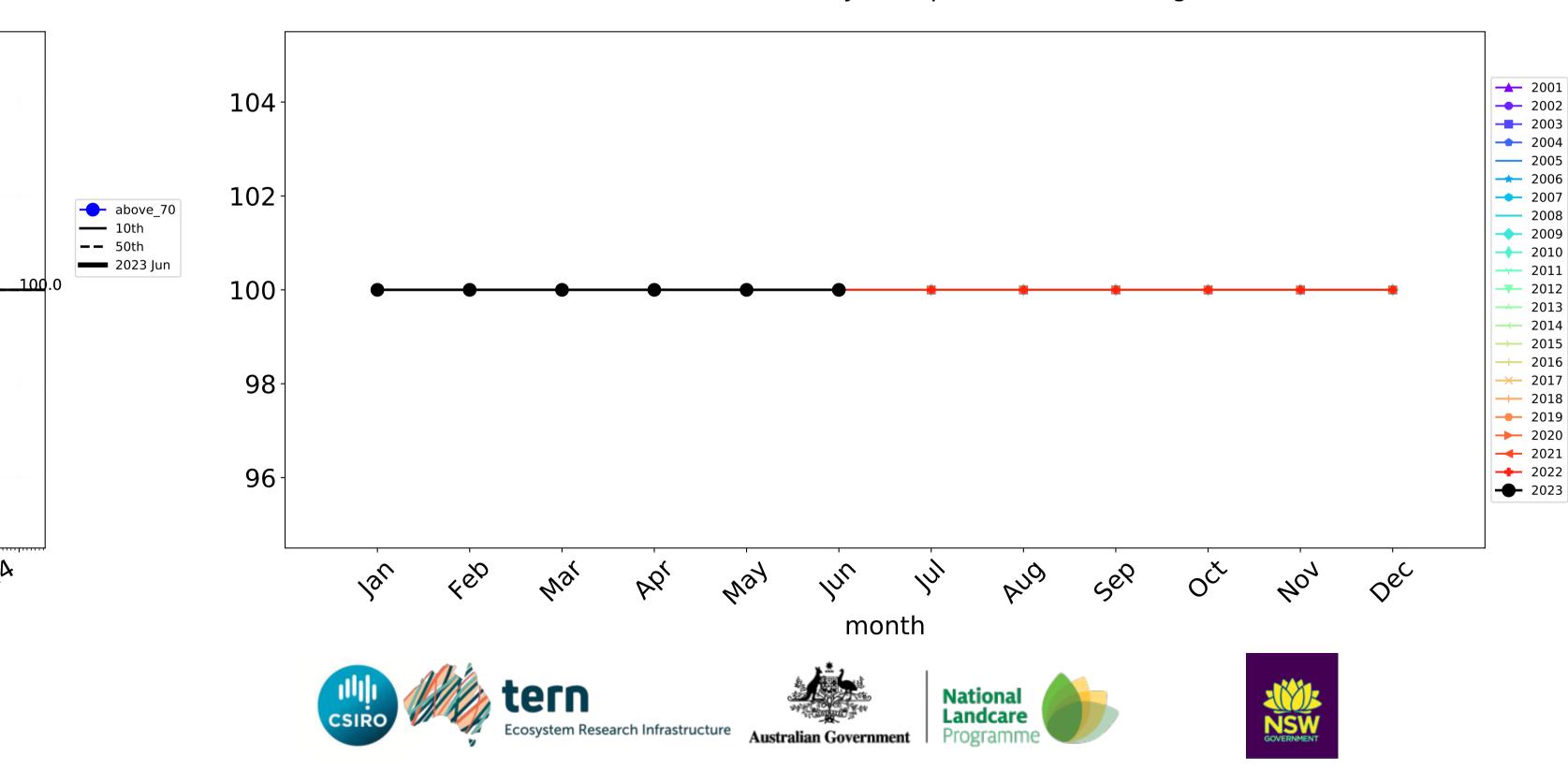


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



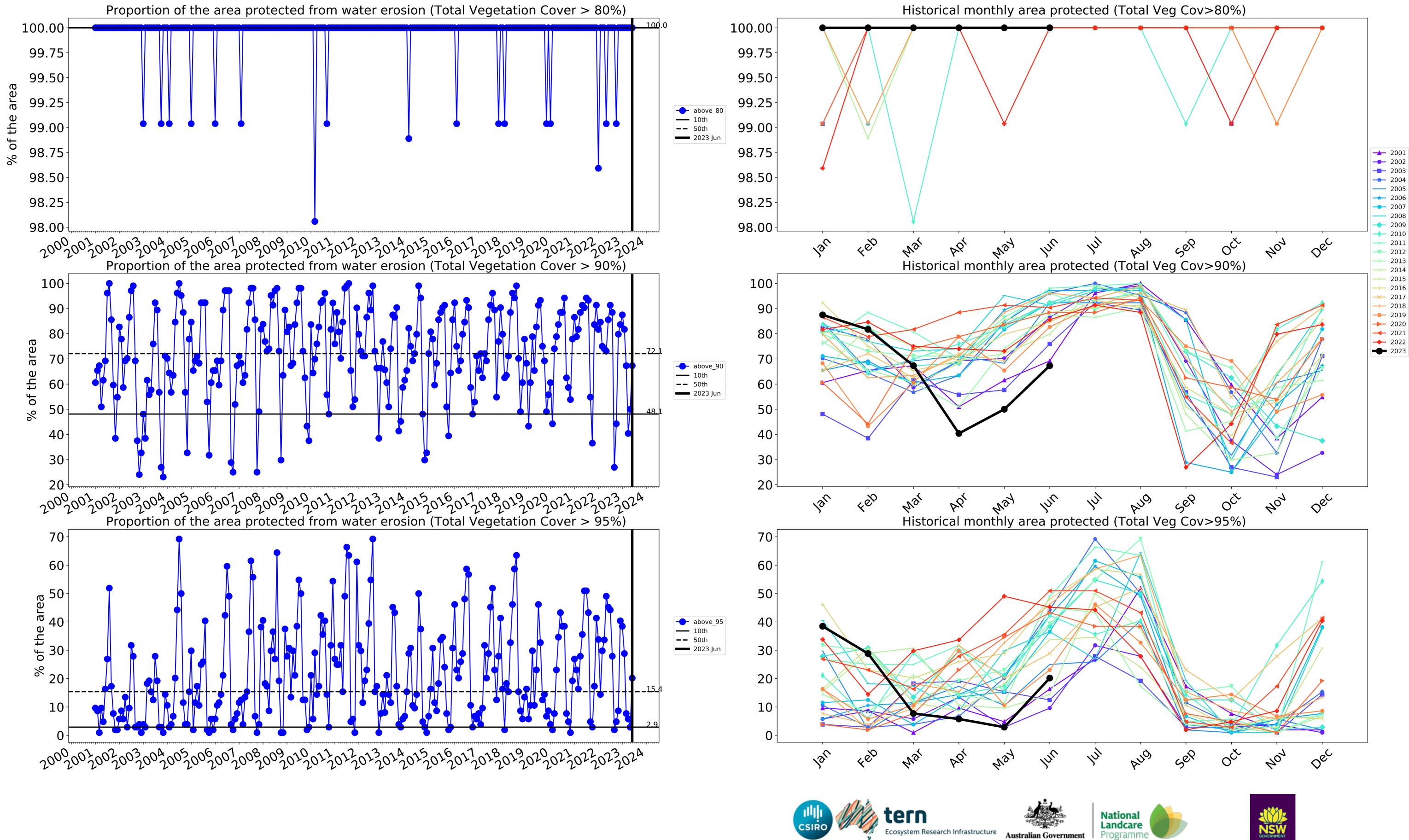


# Grazing Woodland forest timeseries



23

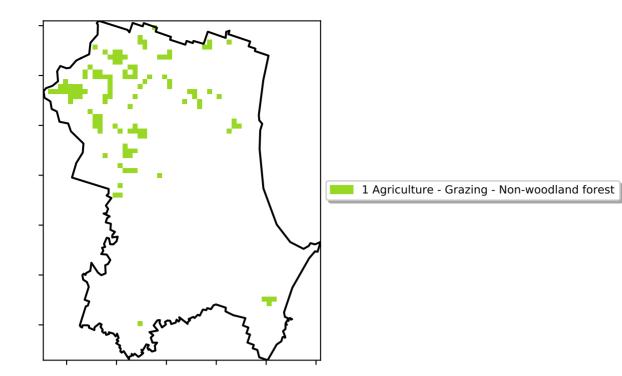
Water erosion historical monthly area protected (Total Veg Cov>70%)



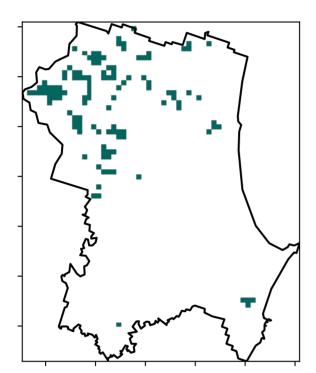
Australian Government

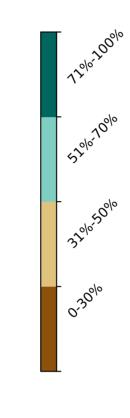
#### Grazing - Forest (non woodland)

Land use and forest cover

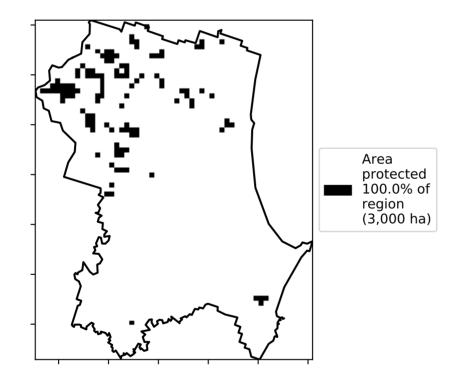


**Total Vegetation Cover [%]** 

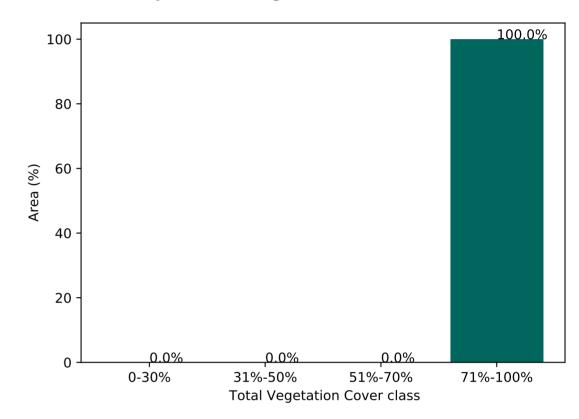




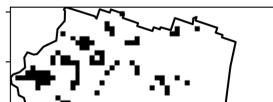
% Area protected from water erosion (>70%)





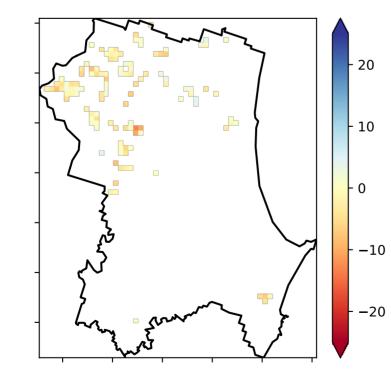


% Area protected from wind erosion (>50%)

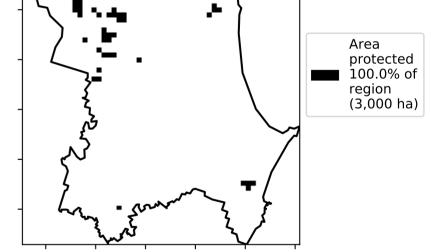


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

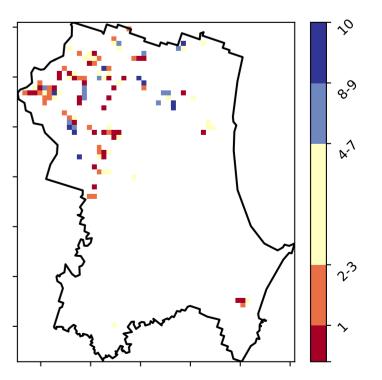
**Total Vegetation Cover Anomaly [%]** 



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.

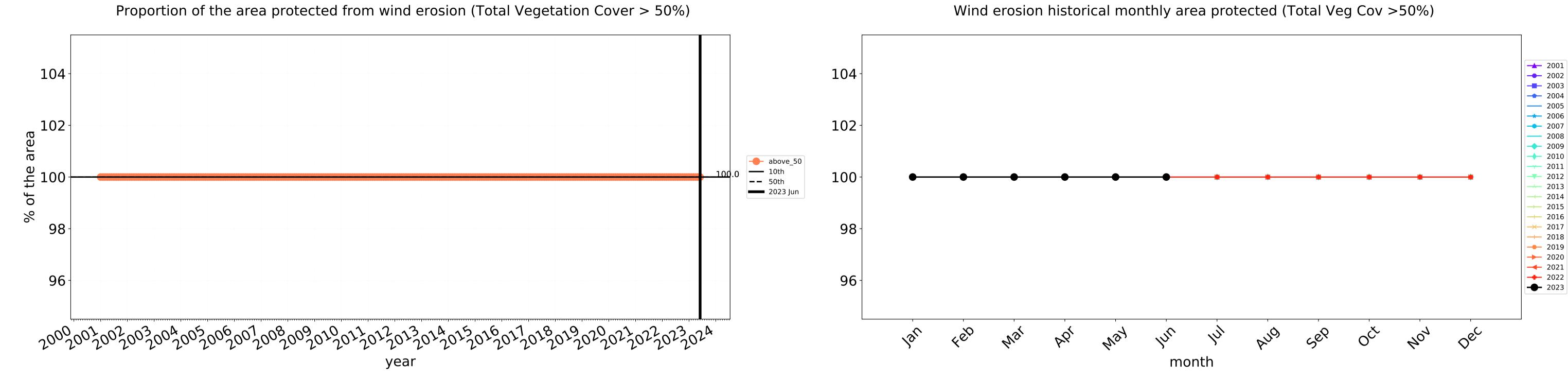


**Total Vegetation Cover Decile [%]** 

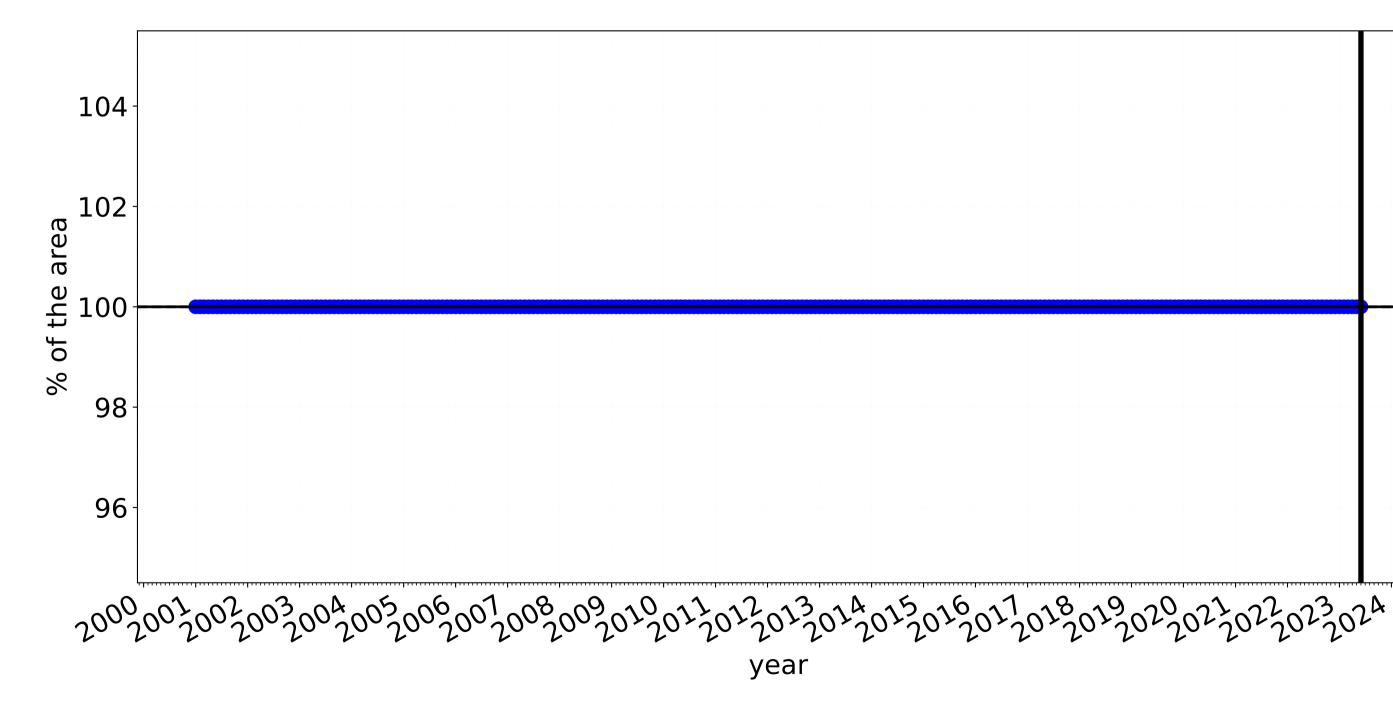




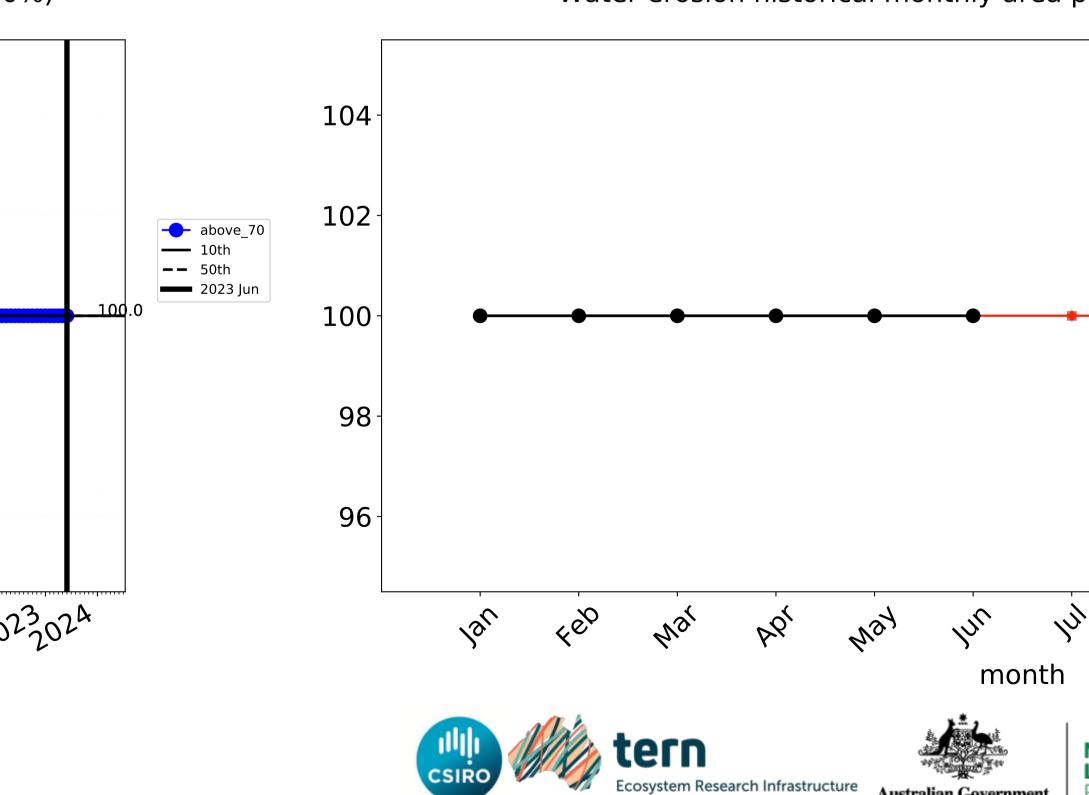
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.







# Grazing - Forest (non woodland) timeseries



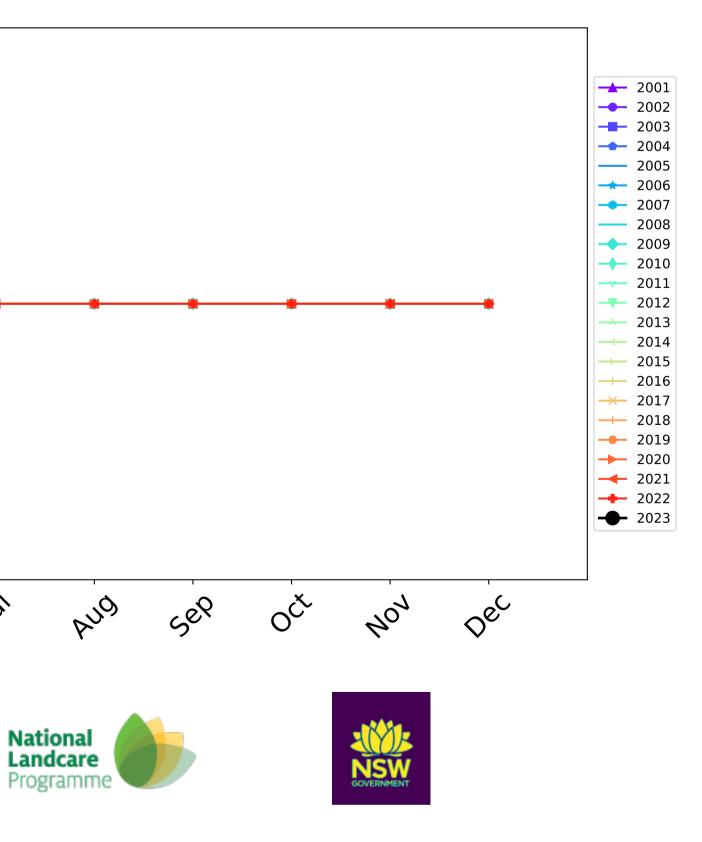
tern

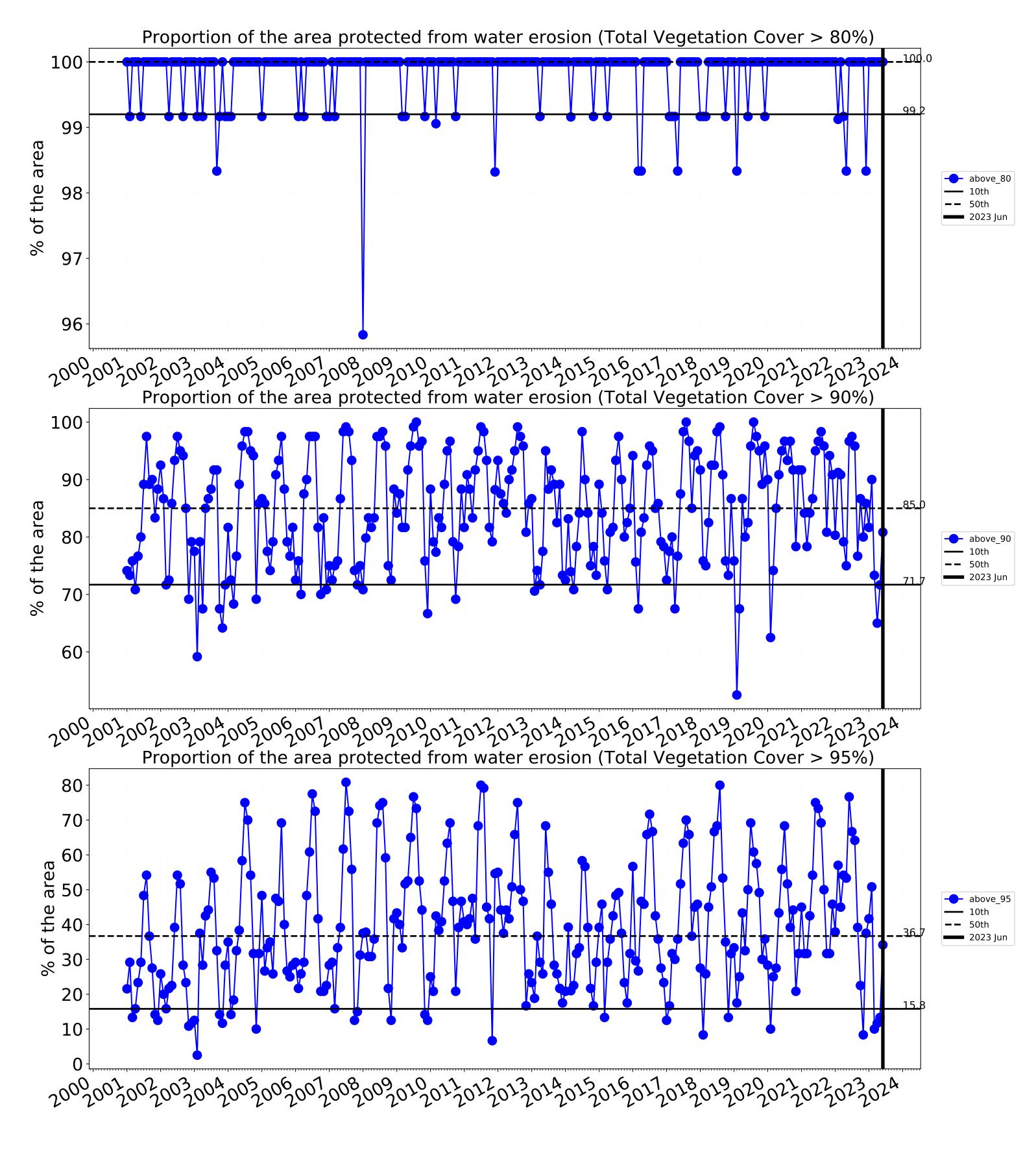
Ecosystem Research Infrastructure

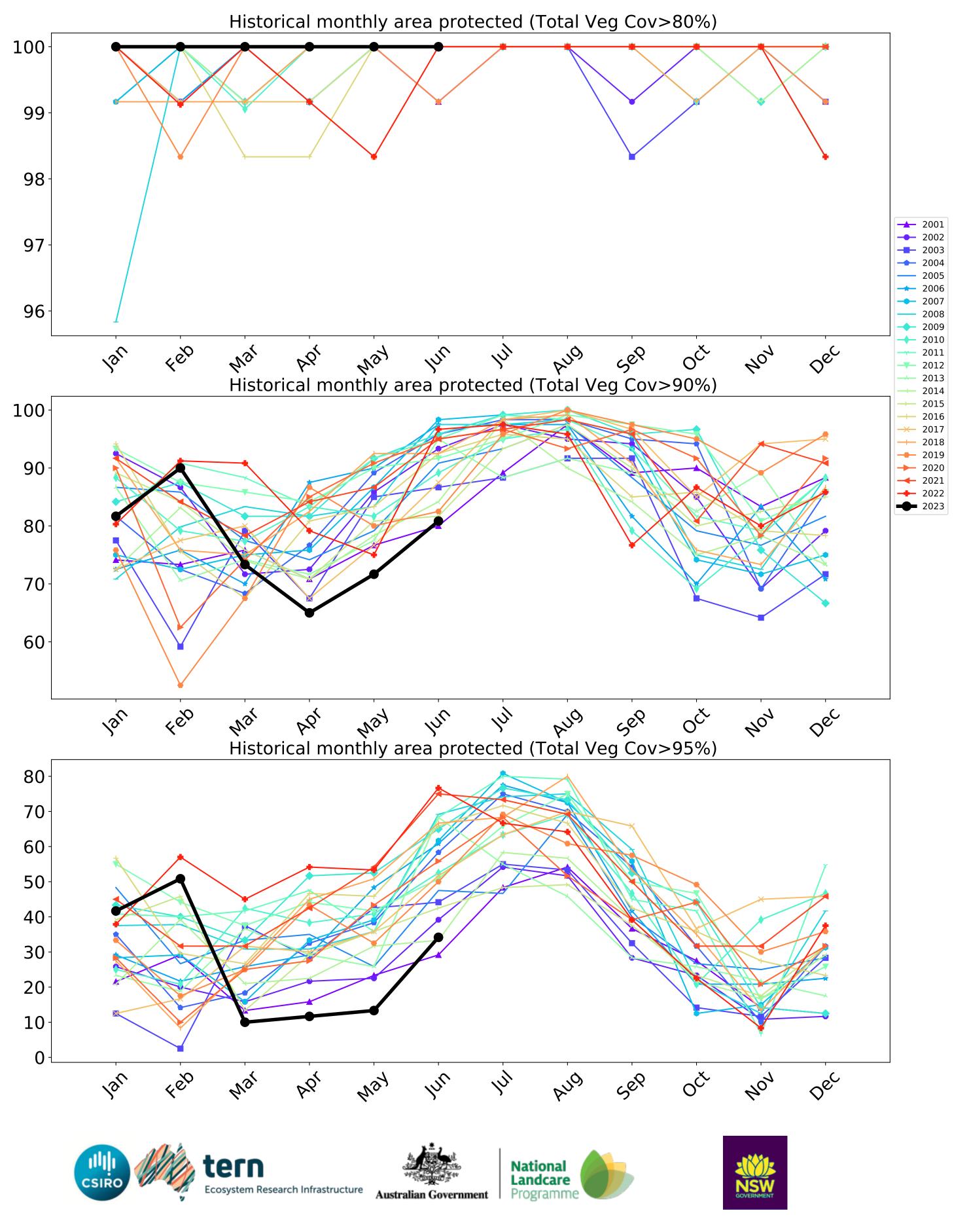
Water erosion historical monthly area protected (Total Veg Cov>70%)

30

Australian Government

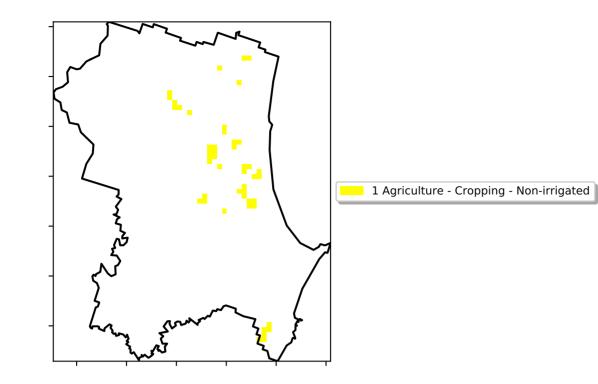




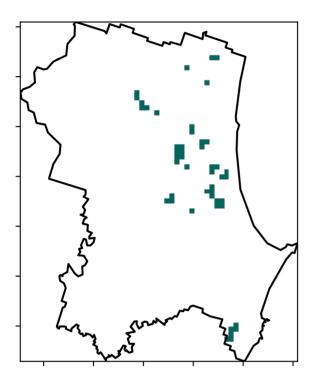


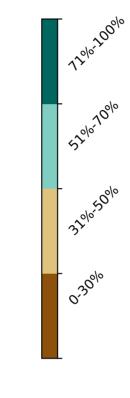
### Cropping

#### Land use and forest cover

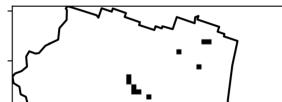


**Total Vegetation Cover [%]** 

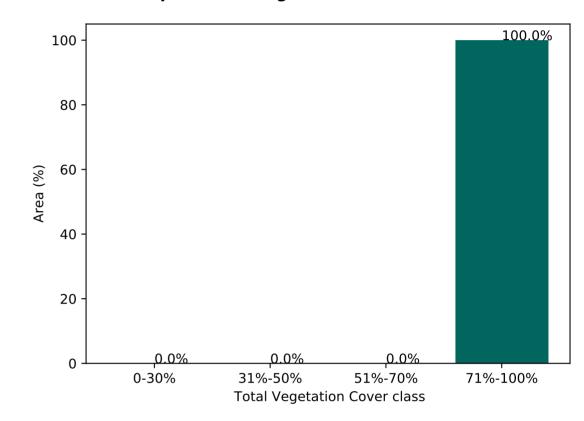




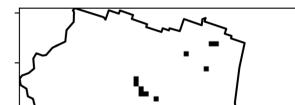
% Area protected from water erosion (>70%)



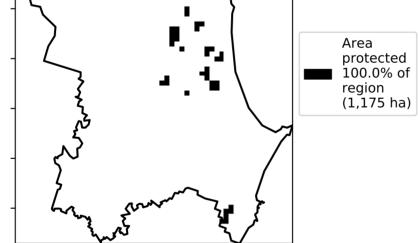
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

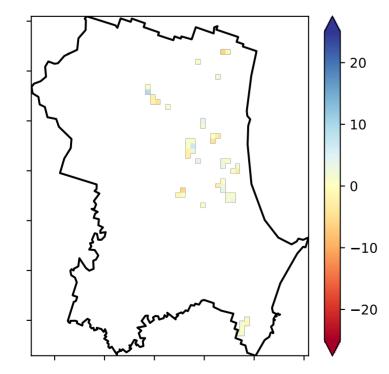




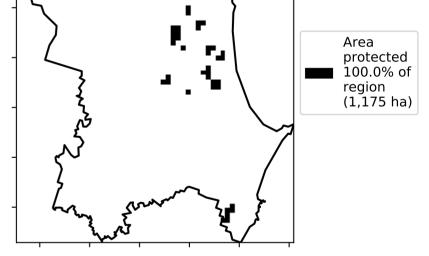


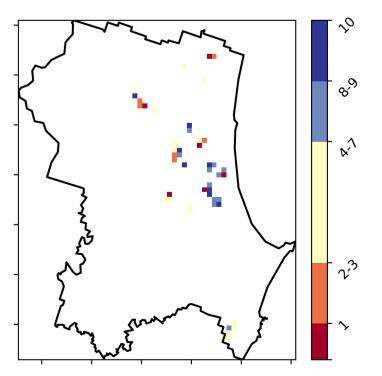
**Total Vegetation Cover Anomaly [%]** 

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.

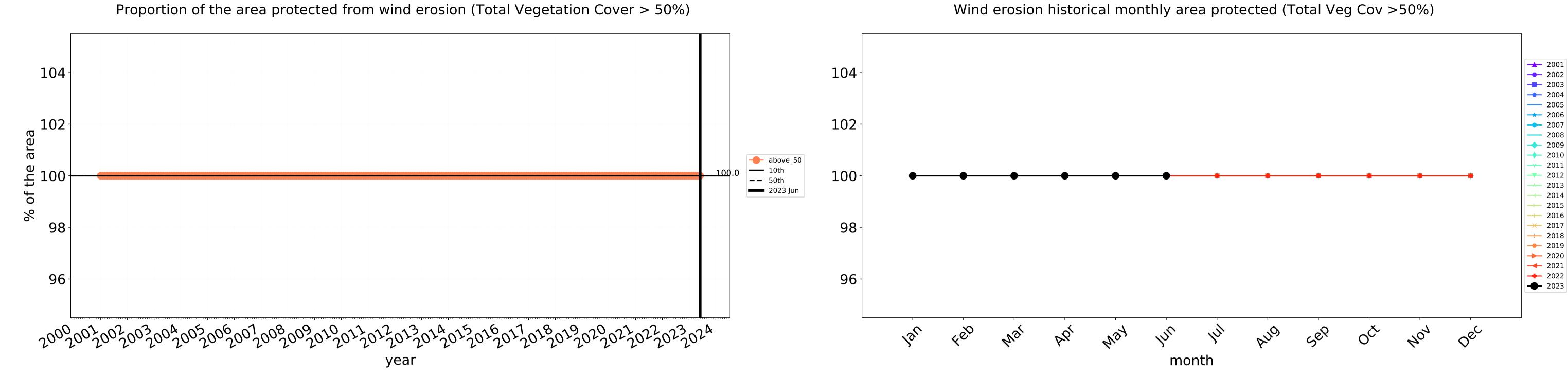


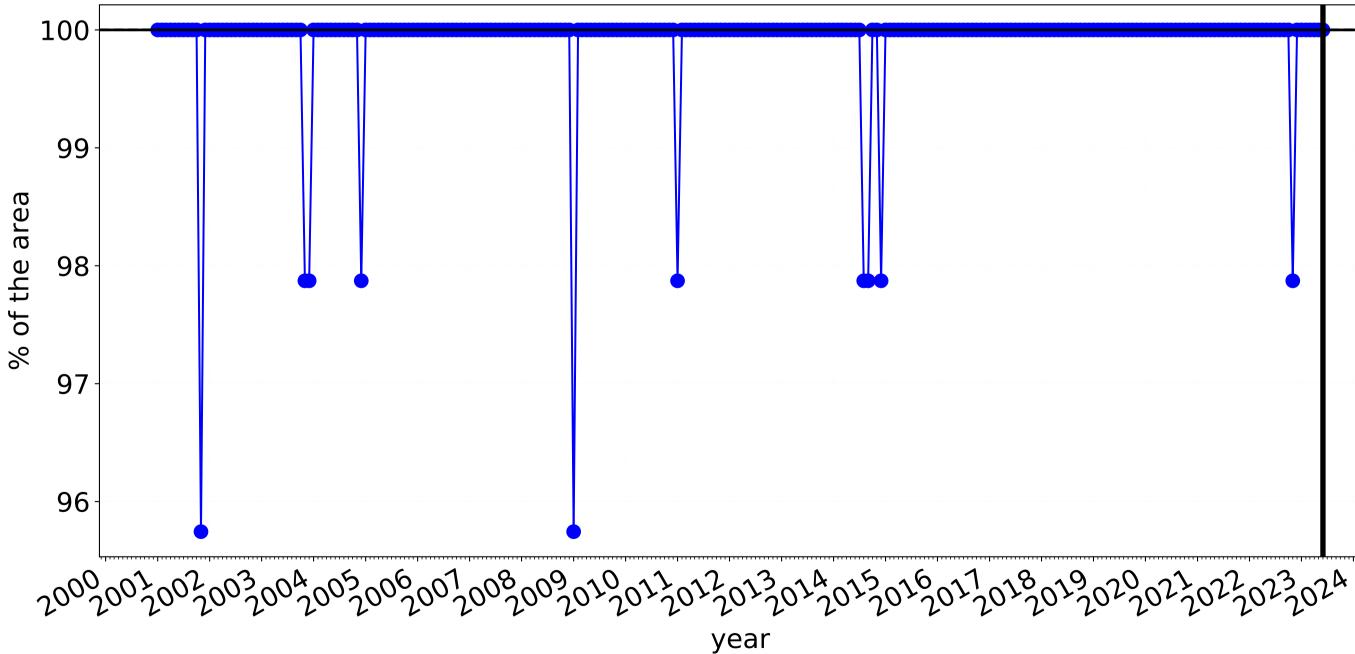
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



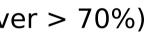






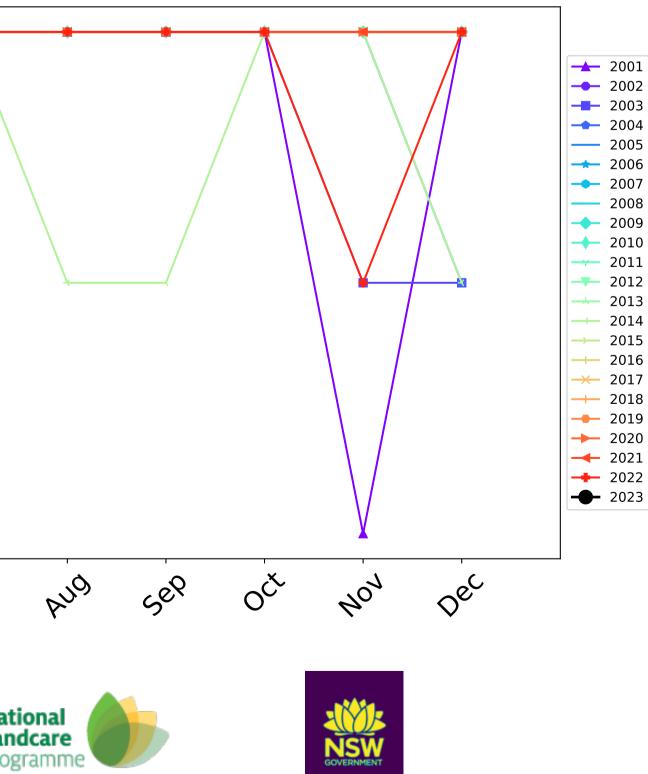


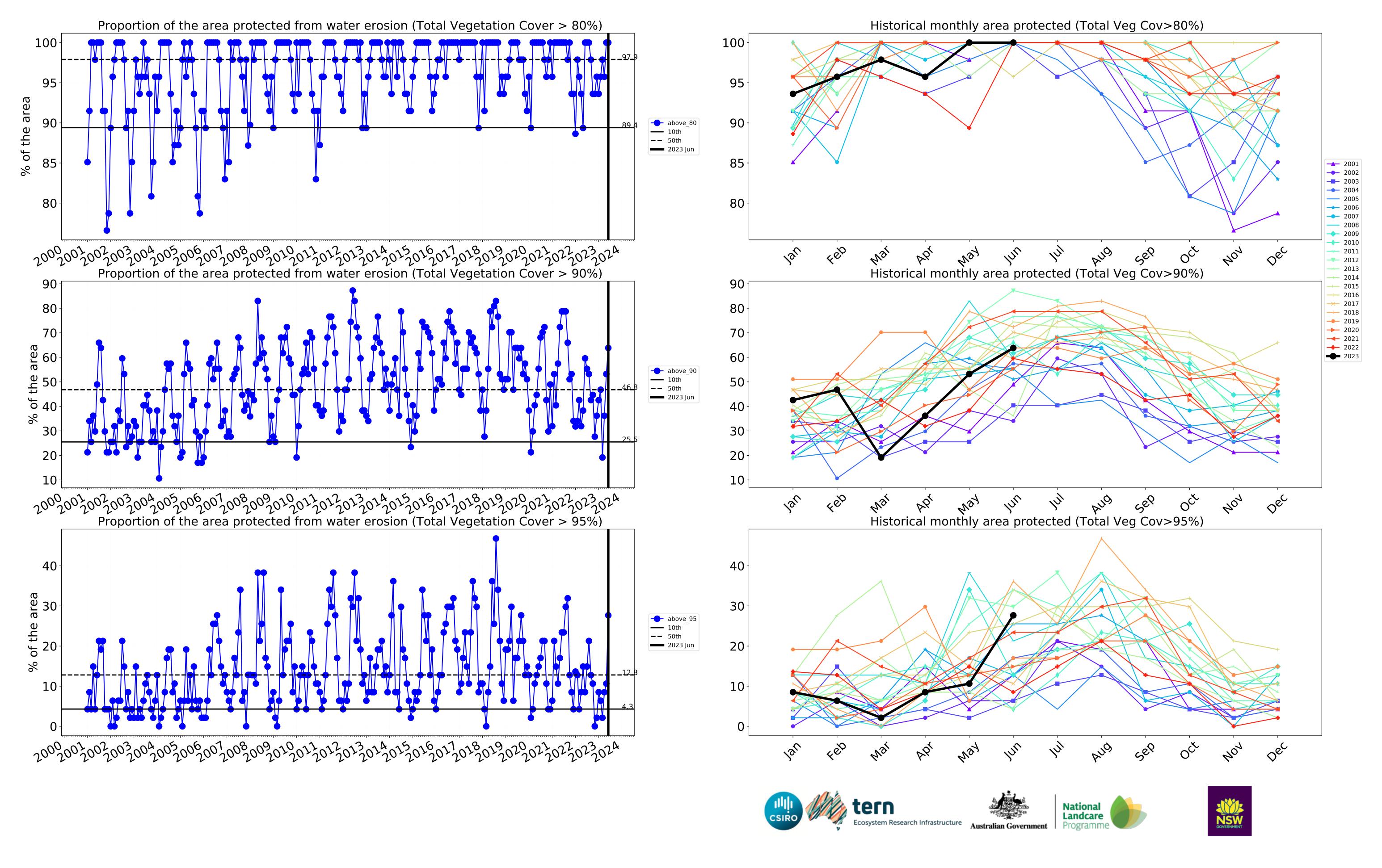
# **Cropping timeseries**



Water erosion historical monthly area protected (Total Veg Cov>70%) 100.0 100 99----- above\_70 **——** 10th **——** 50th **——** 2023 Jun 98 97 96-400 AUG Par PQ way War Sep OCL m hy month National Landcare Ecosystem Research Infrastructure Programm Australian Government

33





### Horticulture

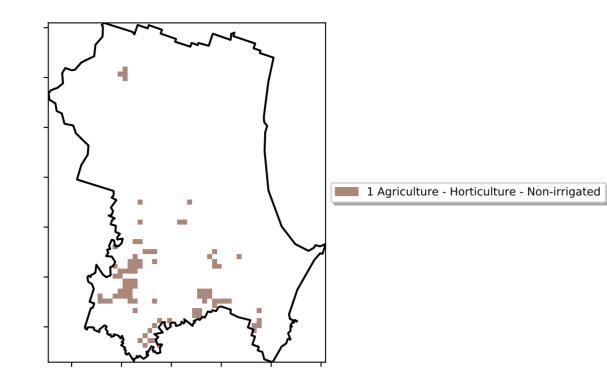
12º1010010

· 52% 70%

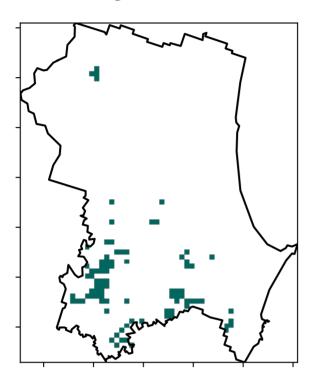
32%50%

0.30%

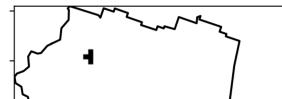
Land use and forest cover



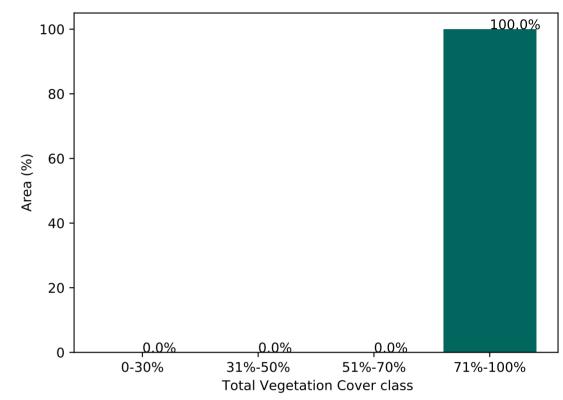
**Total Vegetation Cover [%]** 



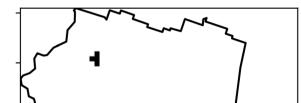
% Area protected from water erosion (>70%)



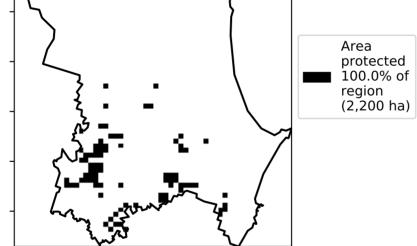




% Area protected from wind erosion (>50%)

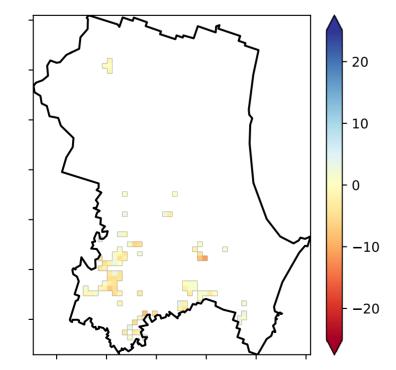


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

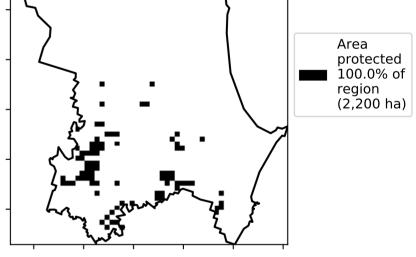


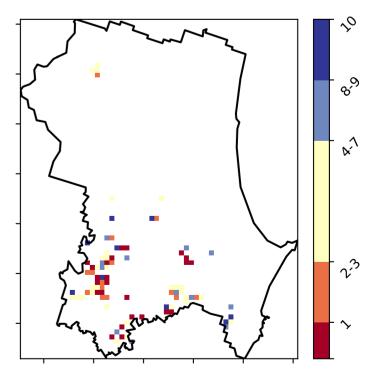
**Total Vegetation Cover Anomaly [%]** 

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.

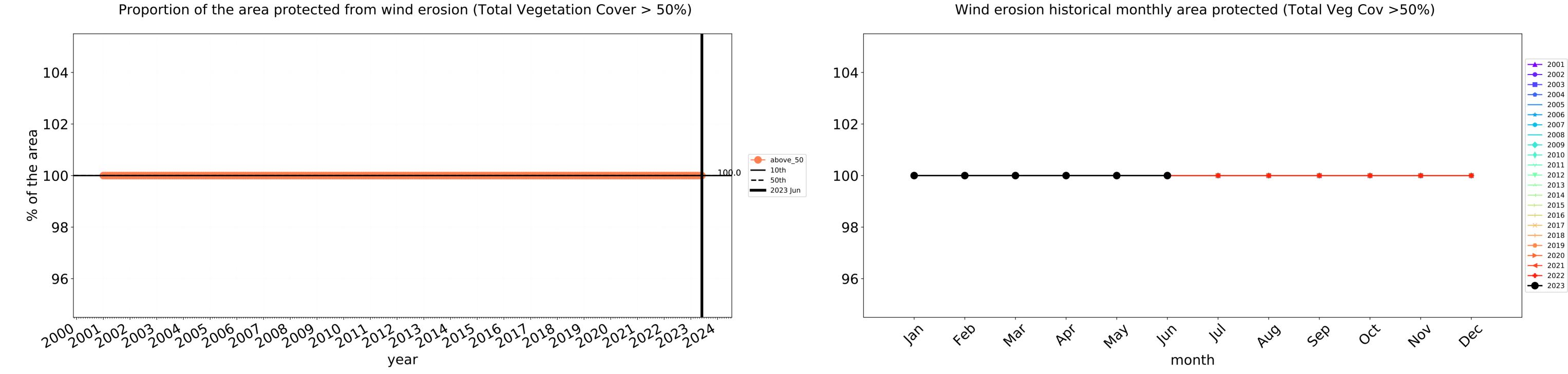


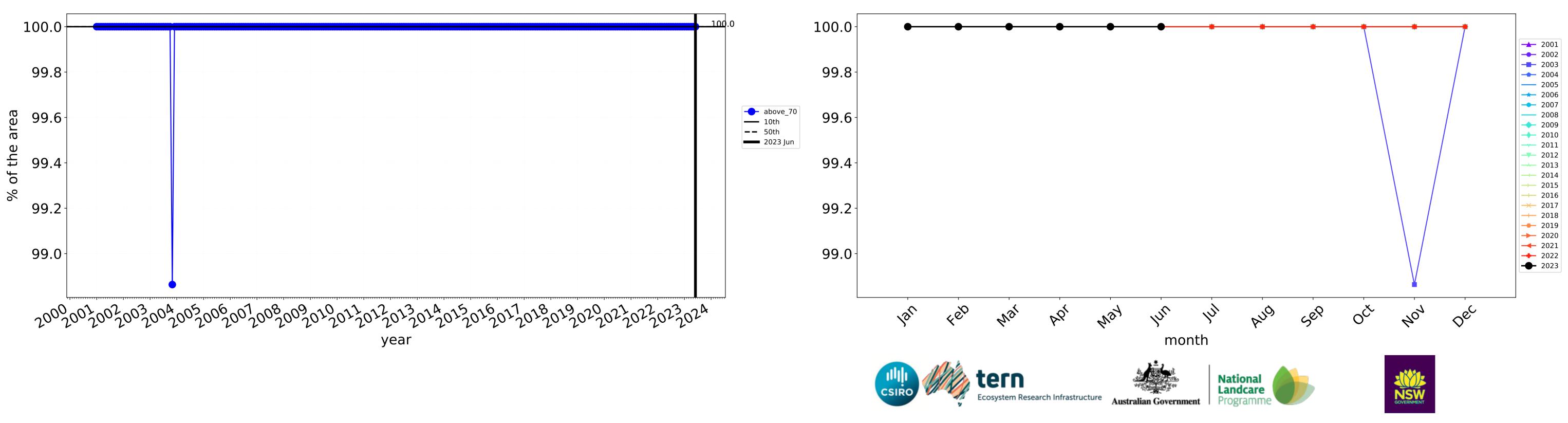
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





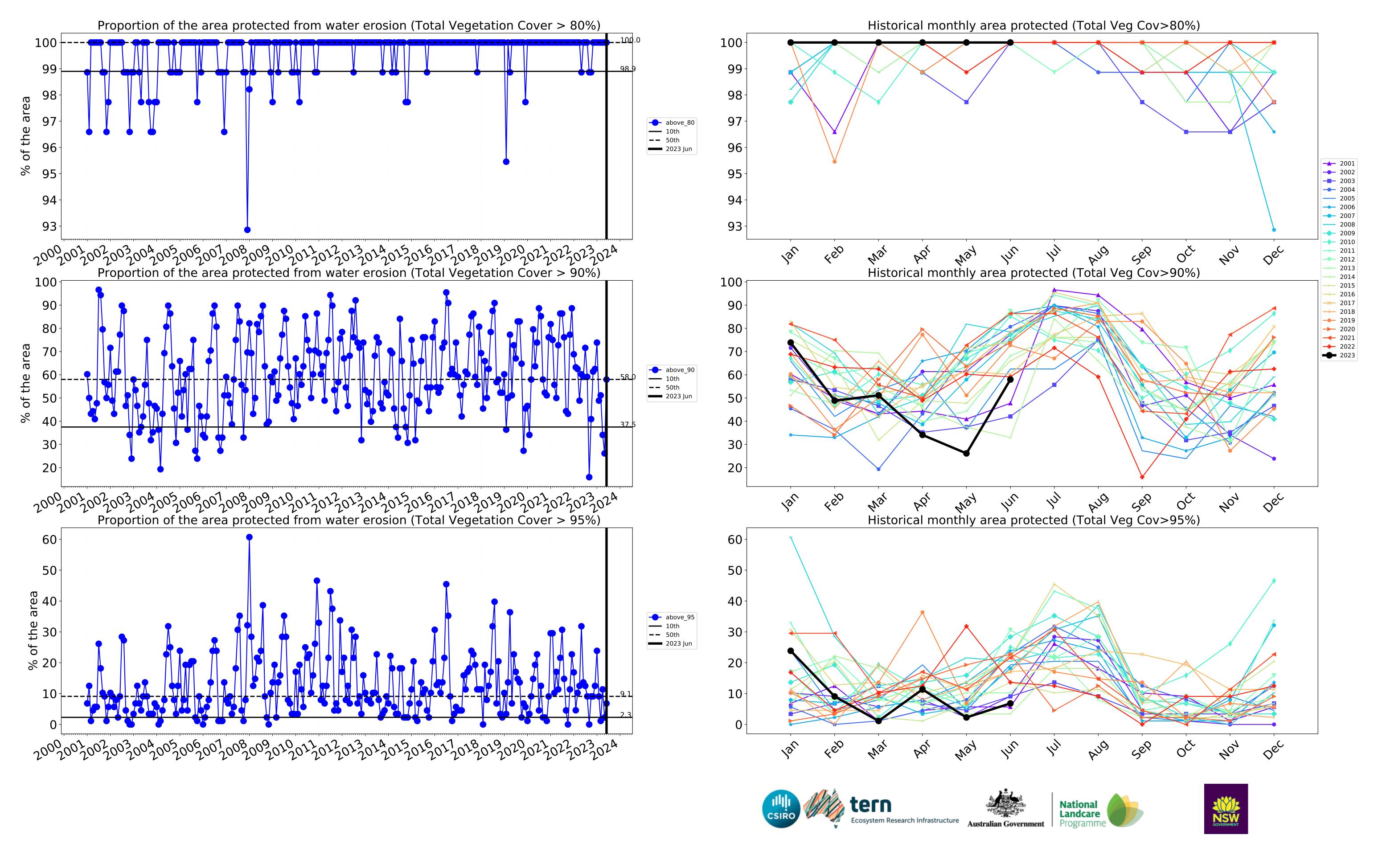






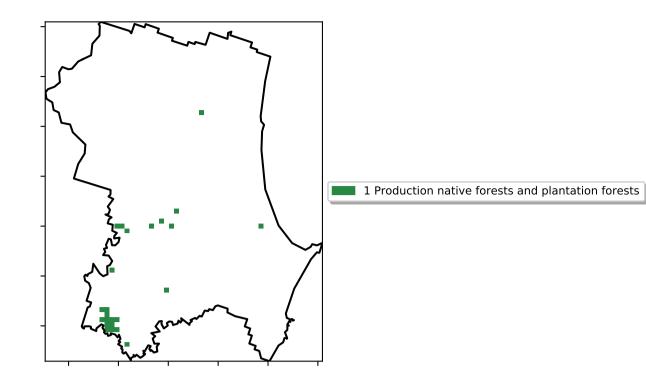
# Horticulture timeseries

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

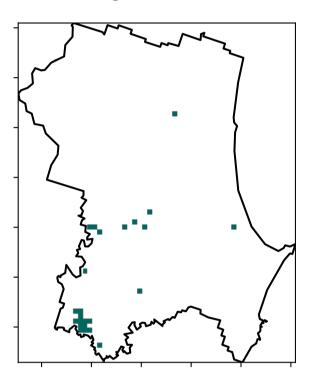


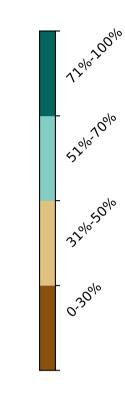
### **Production native forests and plantation forests**

Land use and forest cover

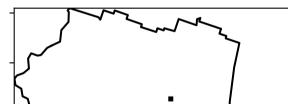


**Total Vegetation Cover [%]** 

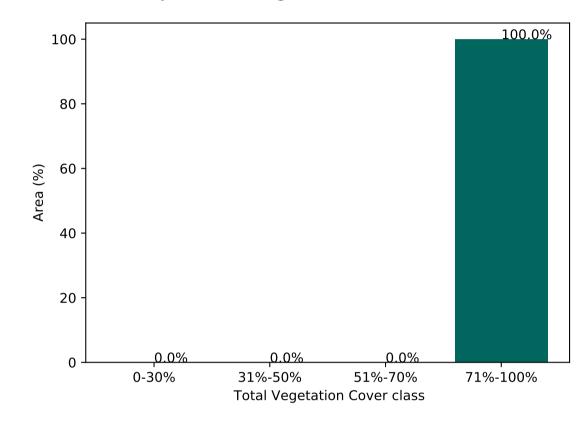




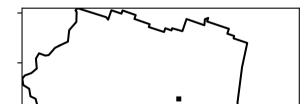
% Area protected from water erosion (>70%)



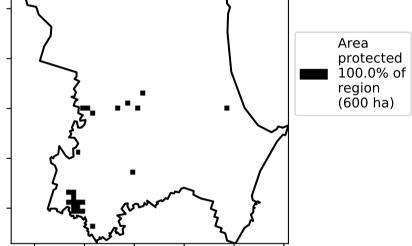
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

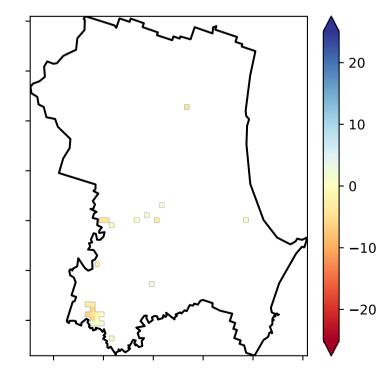




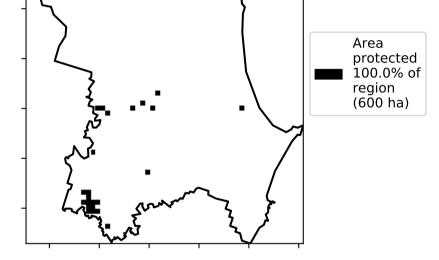


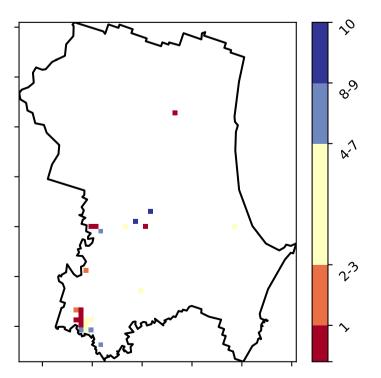
**Total Vegetation Cover Anomaly [%]** 

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.

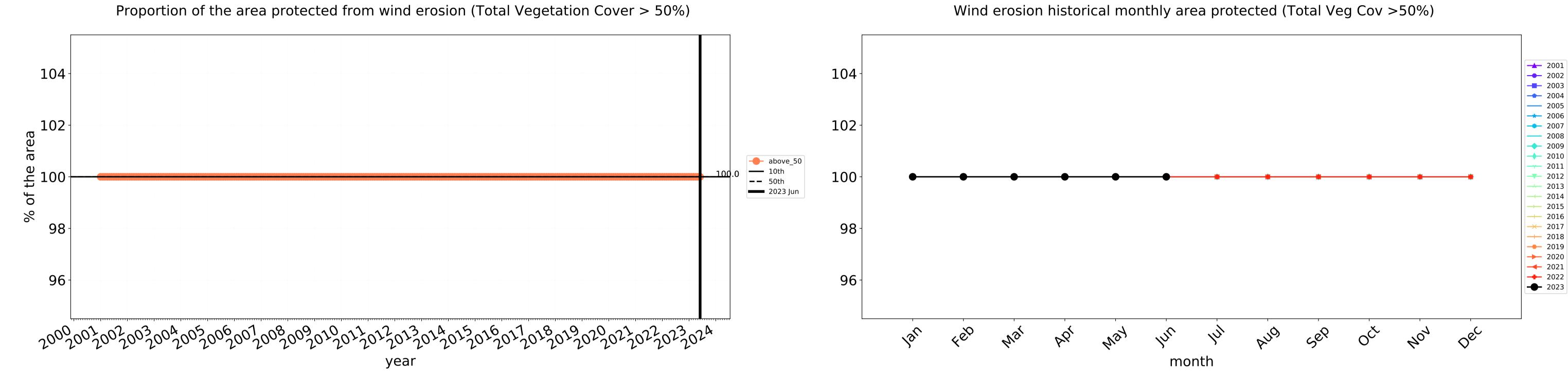


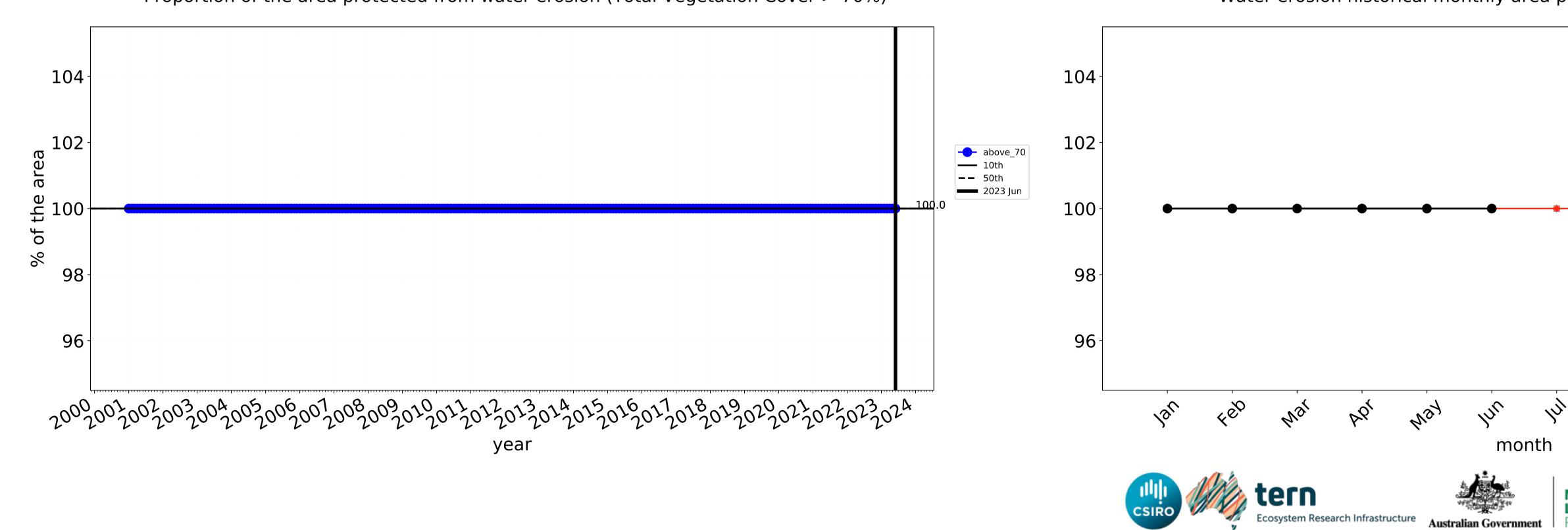
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





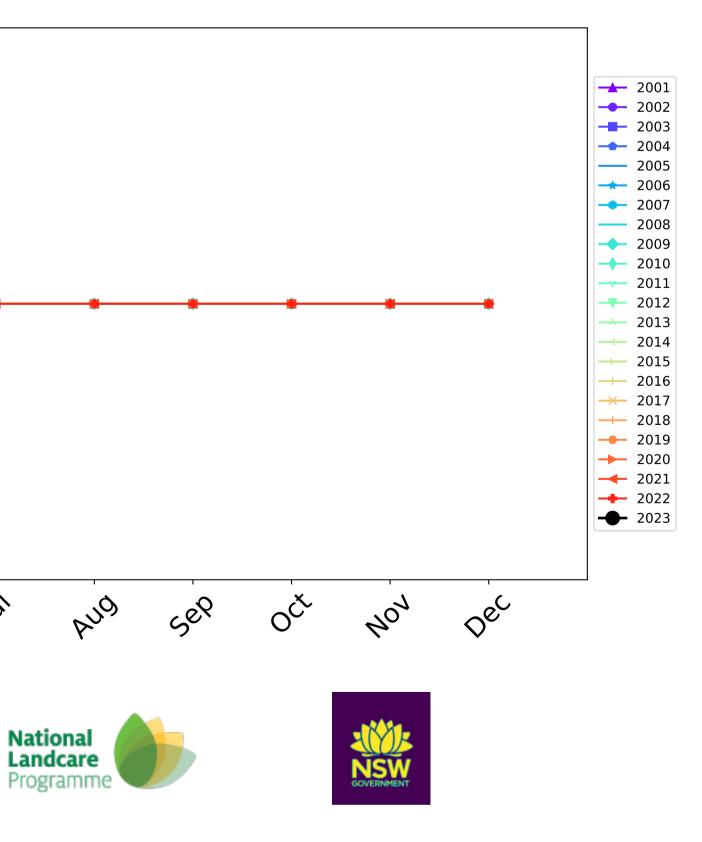


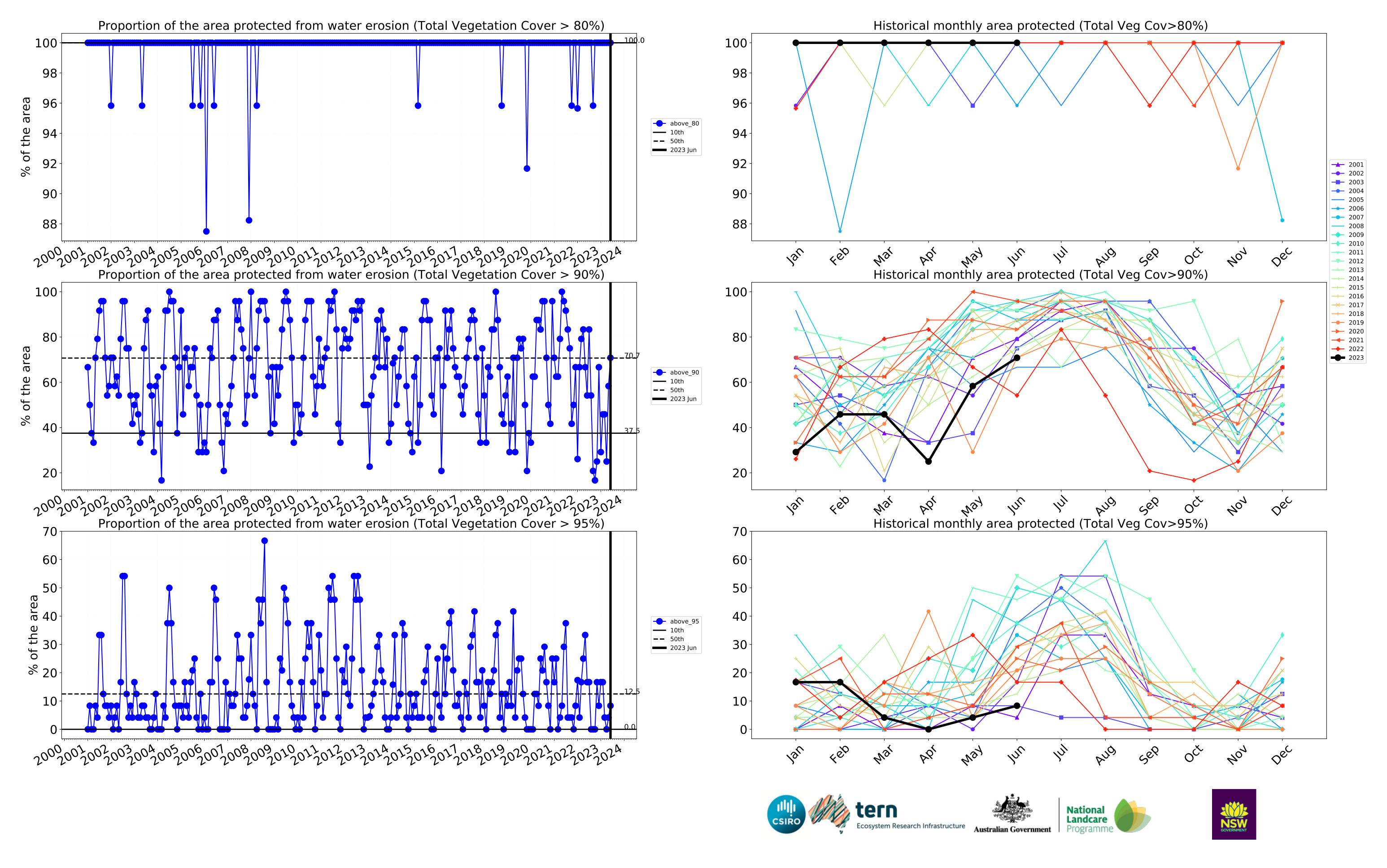




3**9** 

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





# Byron\_(A) (56,075 ha and no data 620 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	56,075	99.9% 56,000	99.7% 55,900	99.2% 55,600	97.3% 54,575	72.8% 40,850	23.8% 13,325
Conservation and natural environments	11,050	99.8% 11,025	99.5% 11,000	98.6% 10,900	95.9% 10,600	79.6% 8,800	44.3% 4,900
Conservation and natural environments non forest	1,250	100.0% 1,250	98.0% 1,225	92.0% 1,150	78.0% 975	58.0% 725	6.0% 75
Conservation and natural environments Woodland forest	625	100.0% 625	100.0% 625	100.0% 625	100.0% 625	88.0% 550	40.0% 250
Conservation and natural environments Forest (non woodland)	9,175	99.7% 9,150	99.7% 9,150	99.5% 9,125	98.1% 9,000	82.0% 7,525	49.9% 4,575
Agriculture	33,700	100.0% 33,700	100.0% 33,700	100.0% 33,700	99.9% 33,675	75.7% 25,500	21.3% 7,175
Grazing	30,300	100.0% 30,300	100.0% 30,300	100.0% 30,300	99.9% 30,275	77.5% 23,475	22.1% 6,700
Grazing non forest	24,700	100.0% 24,700	100.0% 24,700	100.0% 24,700	99.9% 24,675	78.1% 19,300	20.9% 5,150
Grazing Woodland forest	2,600	100.0% 2,600	100.0% 2,600	100.0% 2,600	100.0% 2,600	67.3% 1,750	20.2% 525
Grazing - Forest (non woodland)	3,000	100.0% 3,000	100.0% 3,000	100.0% 3,000	100.0% 3,000	80.8% 2,425	34.2% 1,025
Cropping	1,175	100.0% 1,175	100.0% 1,175	100.0% 1,175	100.0% 1,175	63.8% 750	27.7% 325
Horticulture	2,200	100.0% 2,200	100.0% 2,200	100.0% 2,200	100.0% 2,200	58.0% 1,275	6.8% 150
Production native forests and plantation forests	600	100.0% 600	100.0% 600	100.0% 600	100.0% 600	70.8% 425	8.3% 50

