### Total vegetation cover soil protection Region:LGA Gympie\_(R) QLD

## **Date: November 2019**

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:

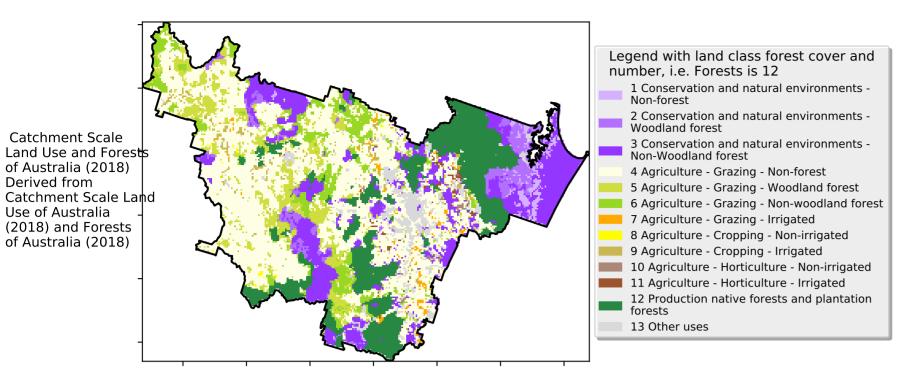
https://doi.org/10.4225/08/5848a3f19a7b3



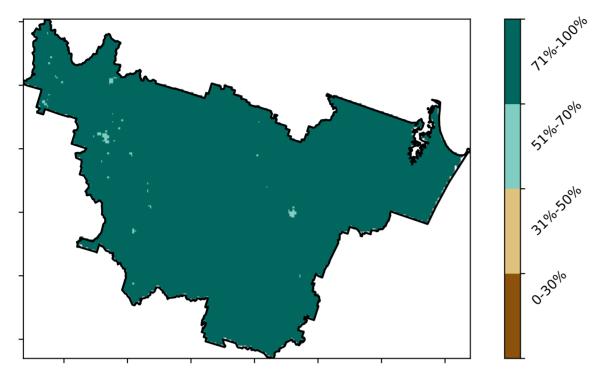
### **Vegetation Cover Nov 2019**

#### Land use and forest cover

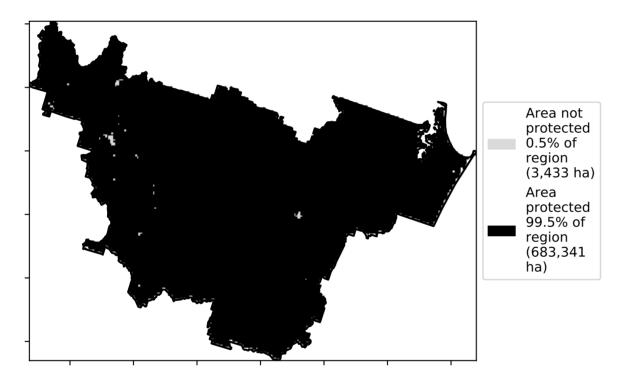
#### Proportion of each land class in area

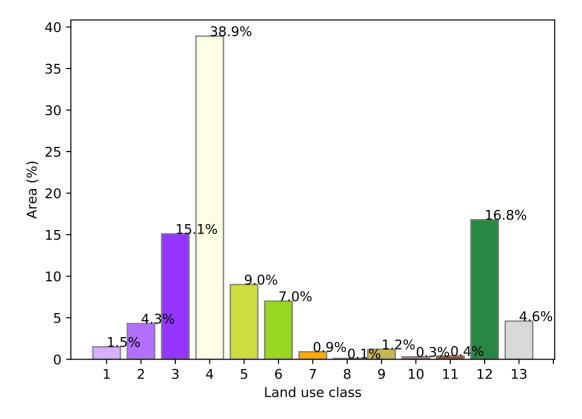


**Total Vegetation Cover [%]** 

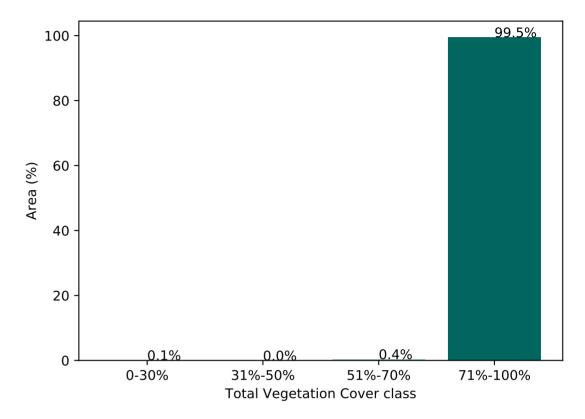


% Area protected from water erosion (>70%)





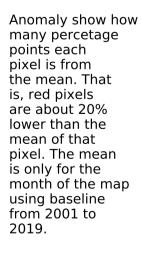
#### Proportion of vegetation cover class in area

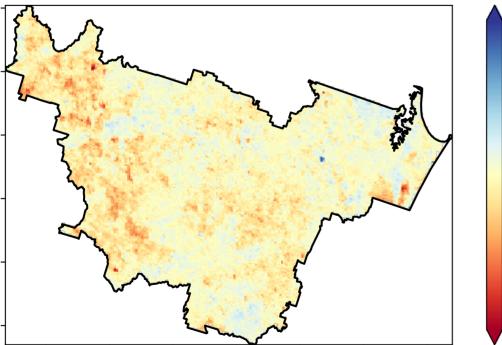


% Area protected from wind erosion (>50%)



**Total Vegetation Cover 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.

- 20

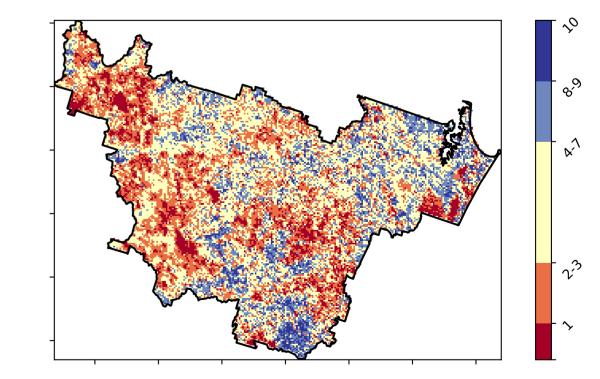
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0

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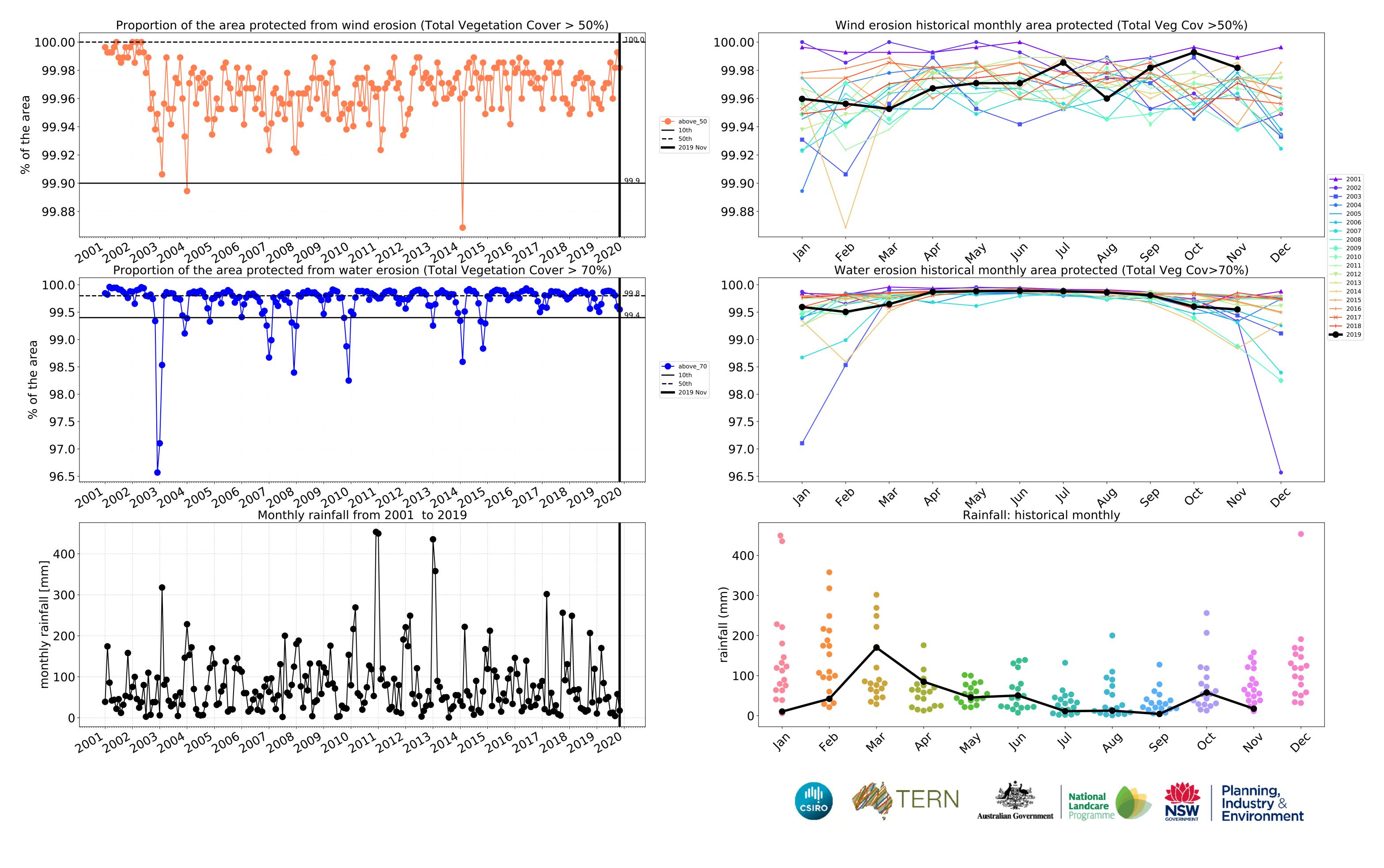
-20

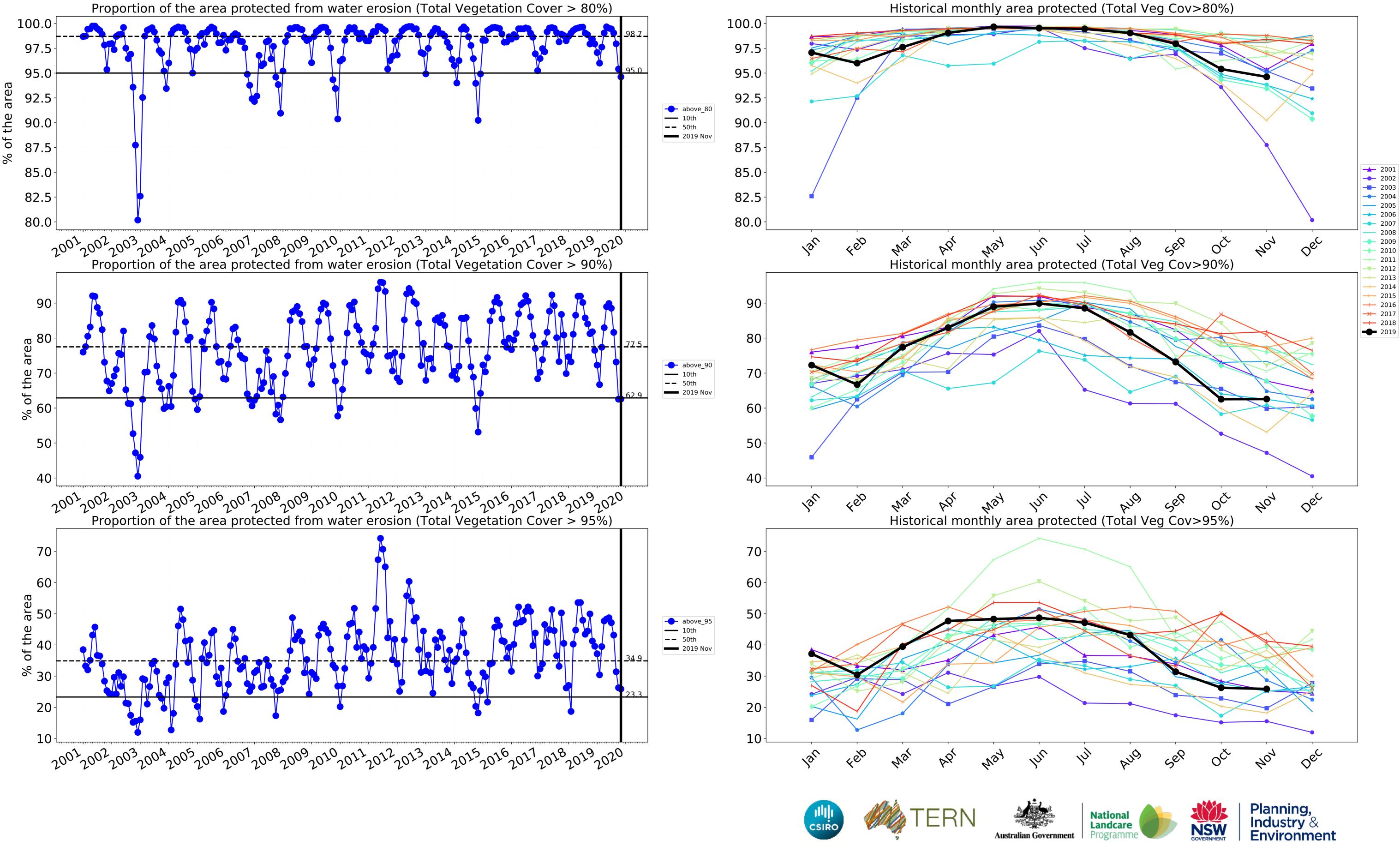
**Total Vegetation Cover Decile [%]** 





Aus

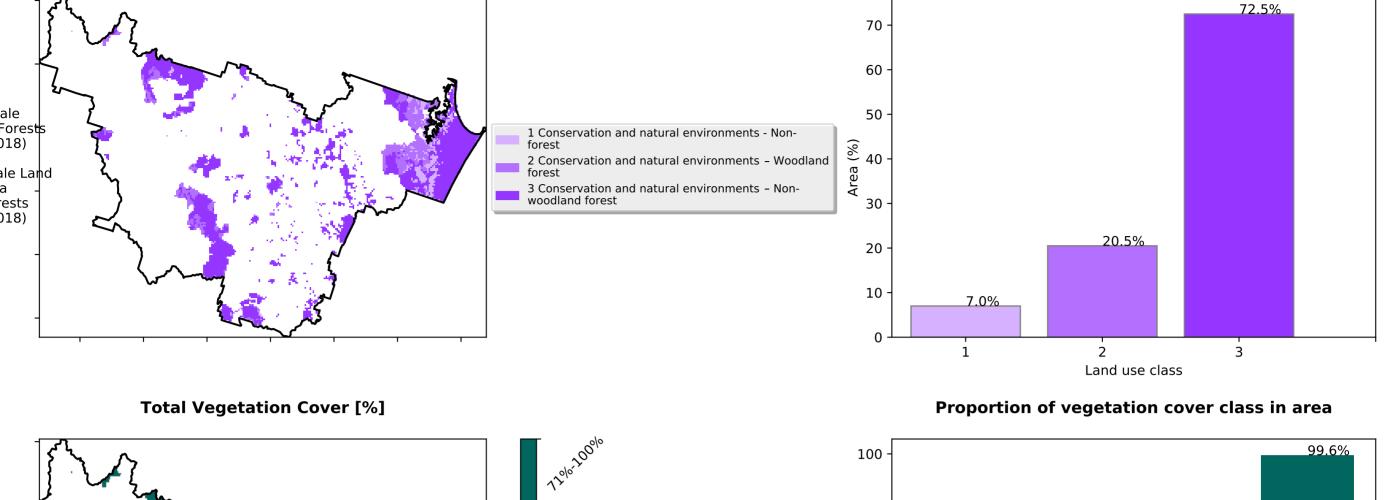


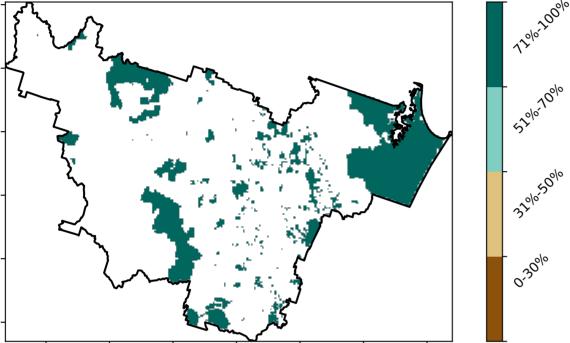


### **Conservation and natural environments**

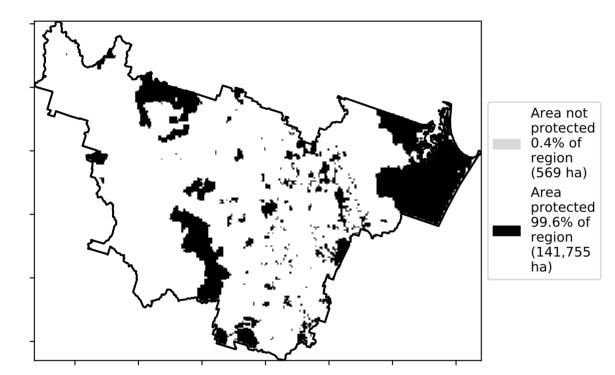
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) Land use and forest cover

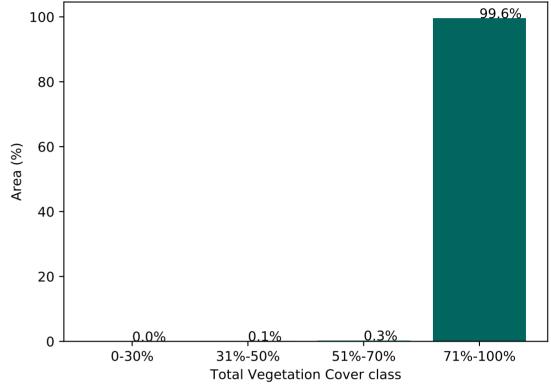
Proportion of each land class in area



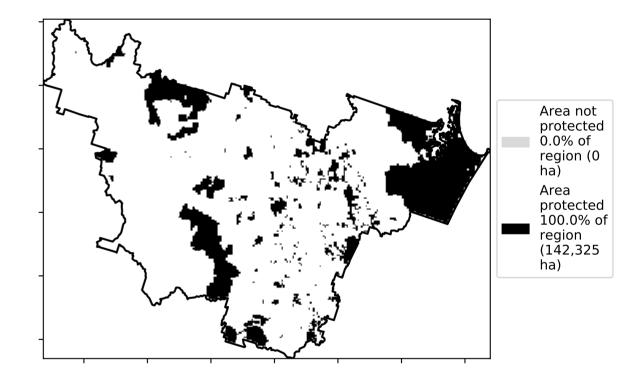


% Area protected from water erosion (>70%)

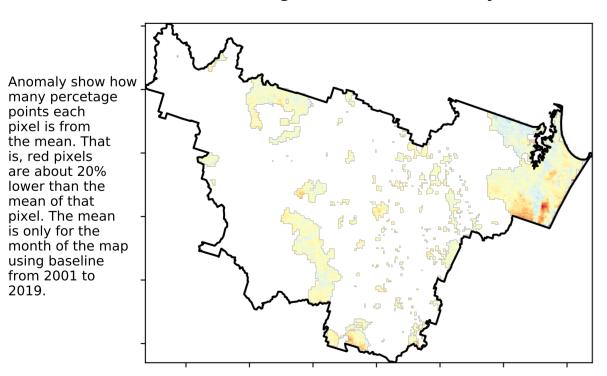




#### % Area protected from wind erosion (>50%)

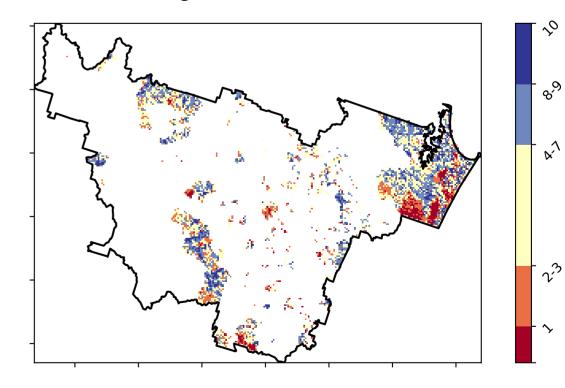


Total Vegetation Cover Anomaly [%]



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

**Total Vegetation Cover Decile [%]** 



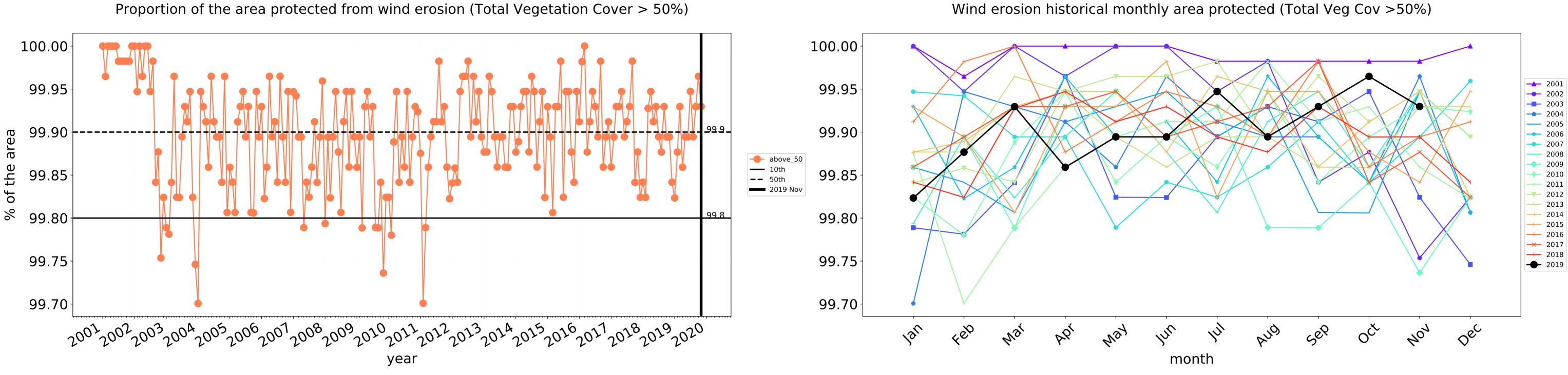


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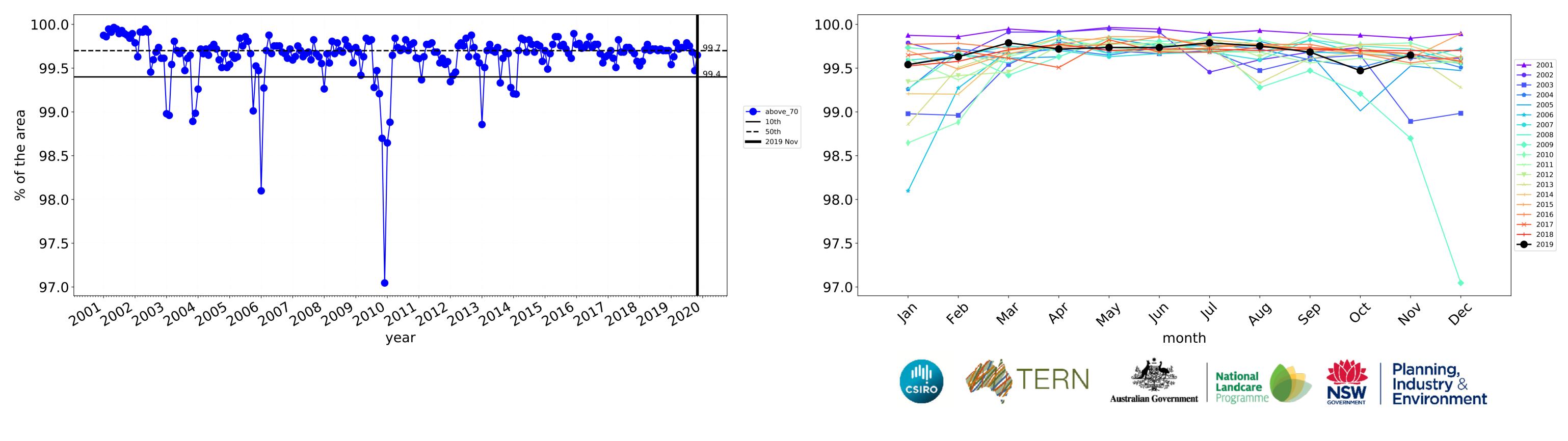
- 10

0

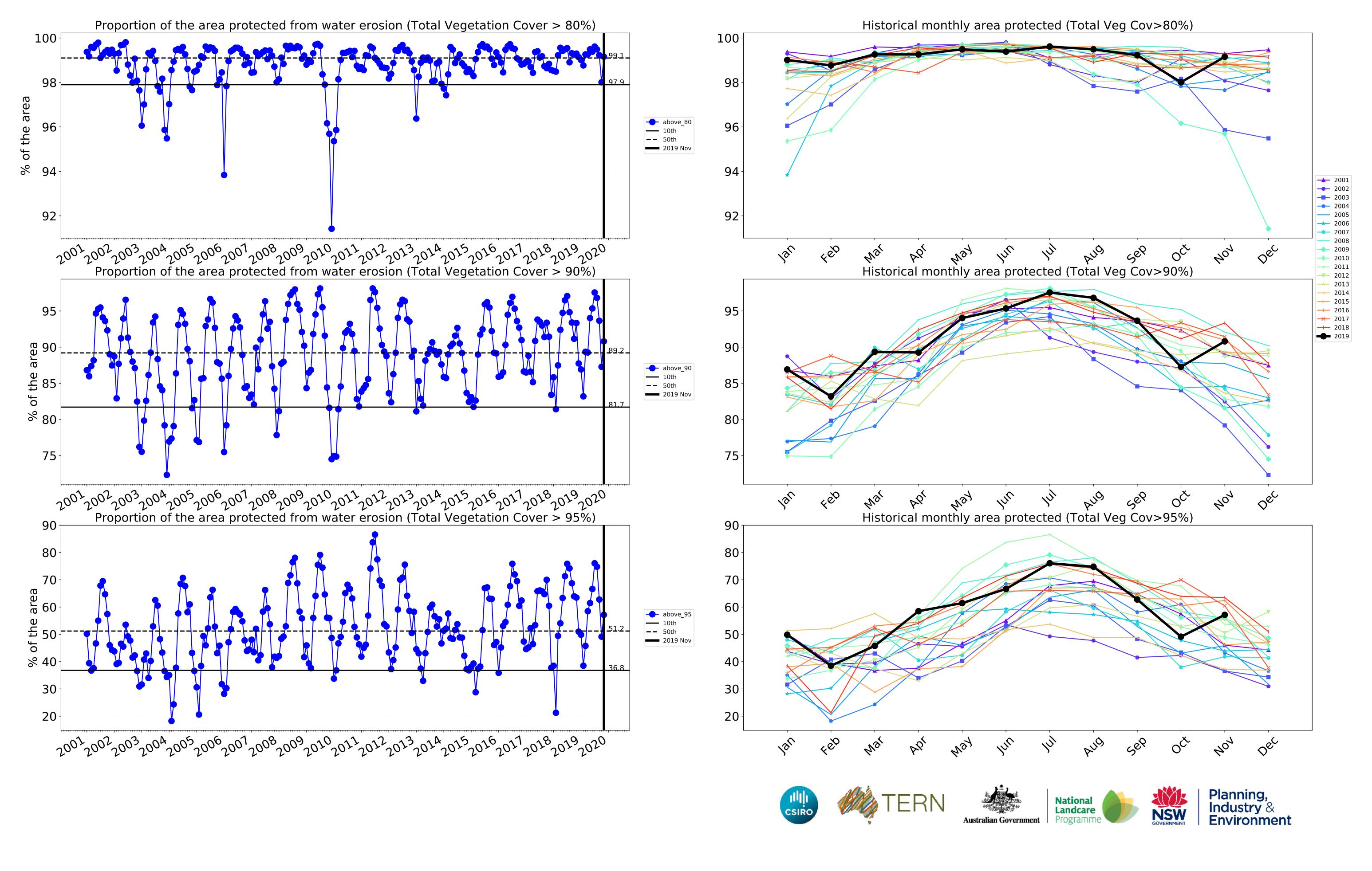
-10



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



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

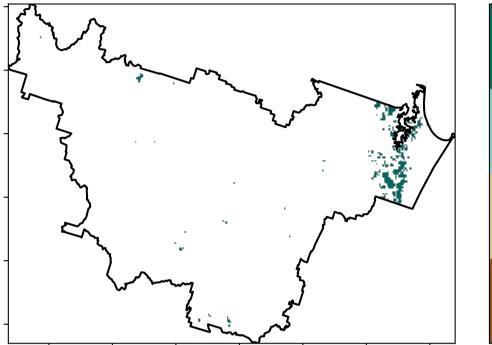


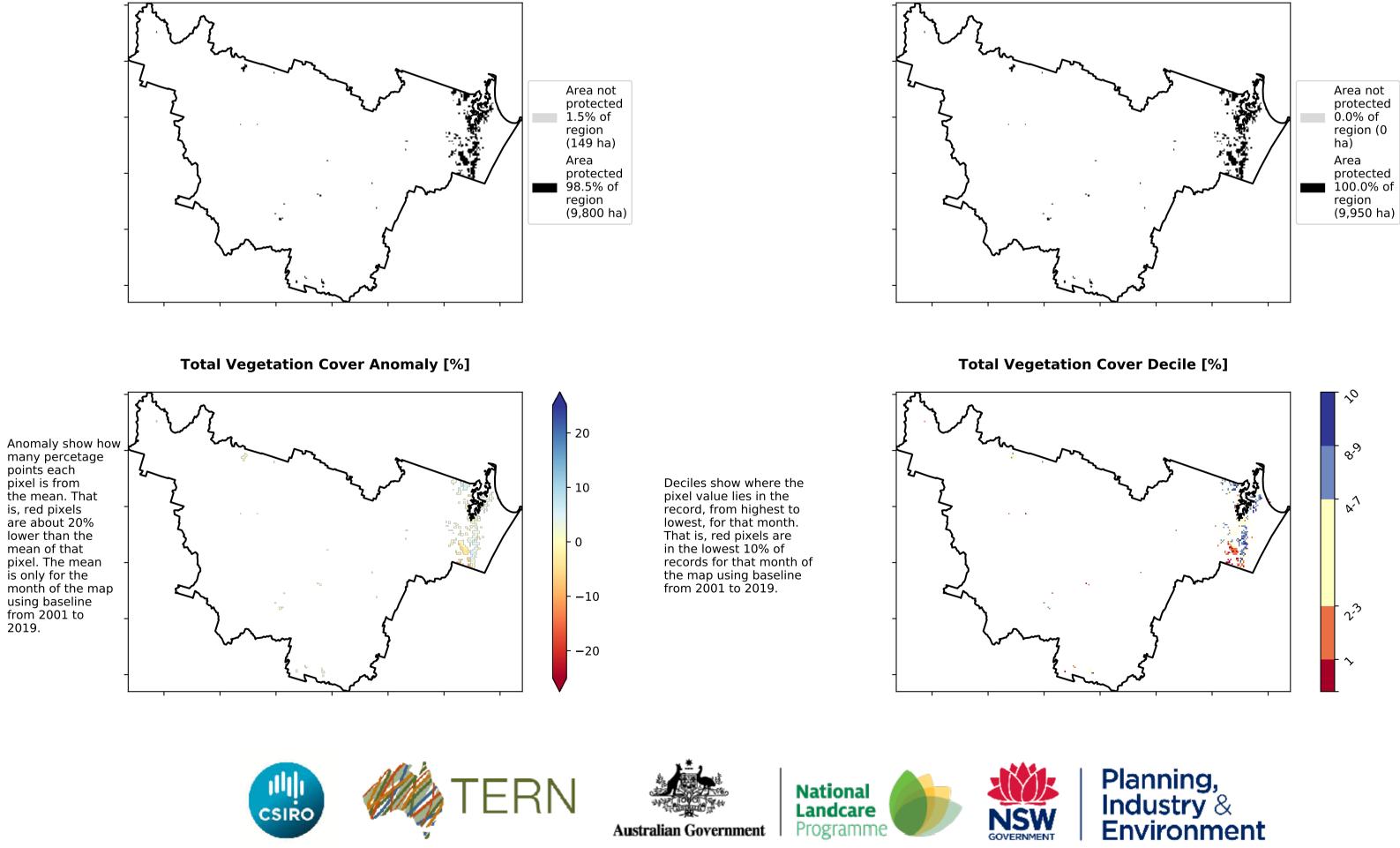
### **Conservation and natural environments non forest**

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

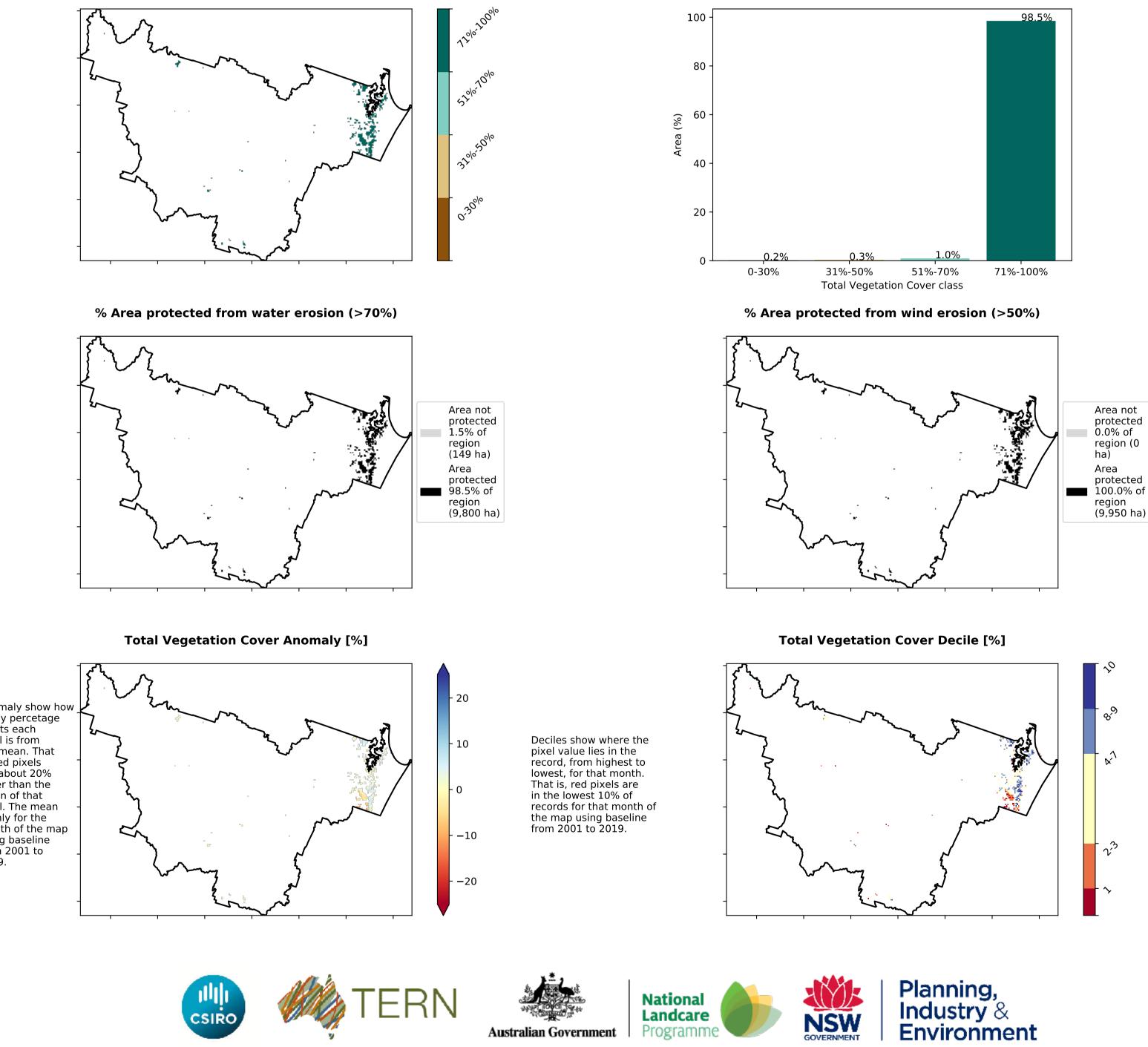
**Total Vegetation Cover [%]** 

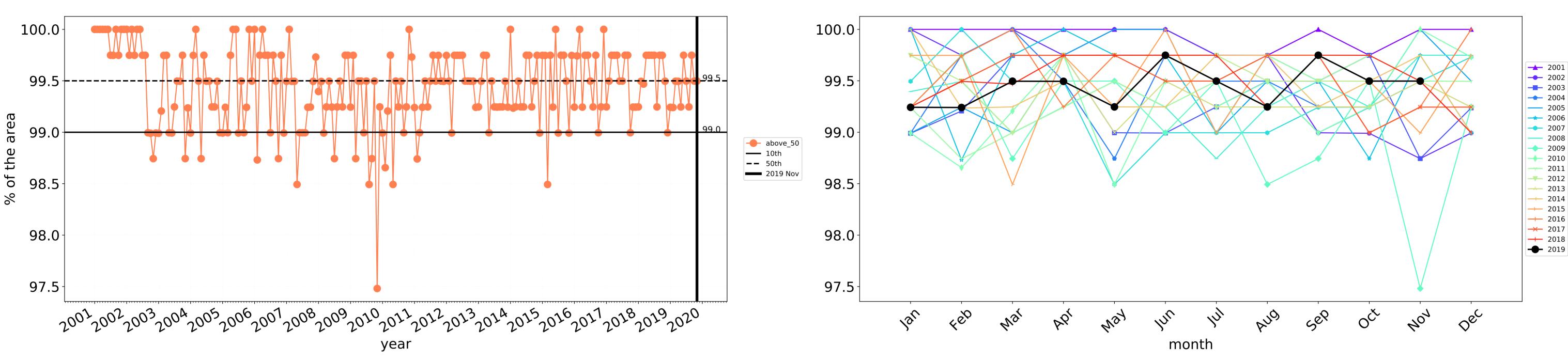
Land use and forest cover





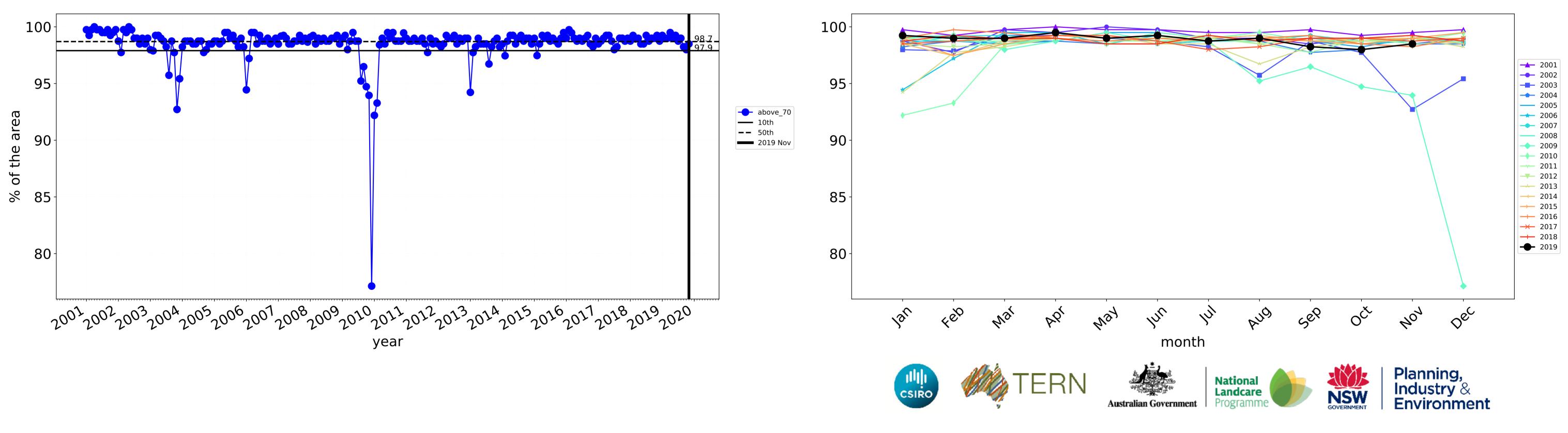
Proportion of vegetation cover class in area



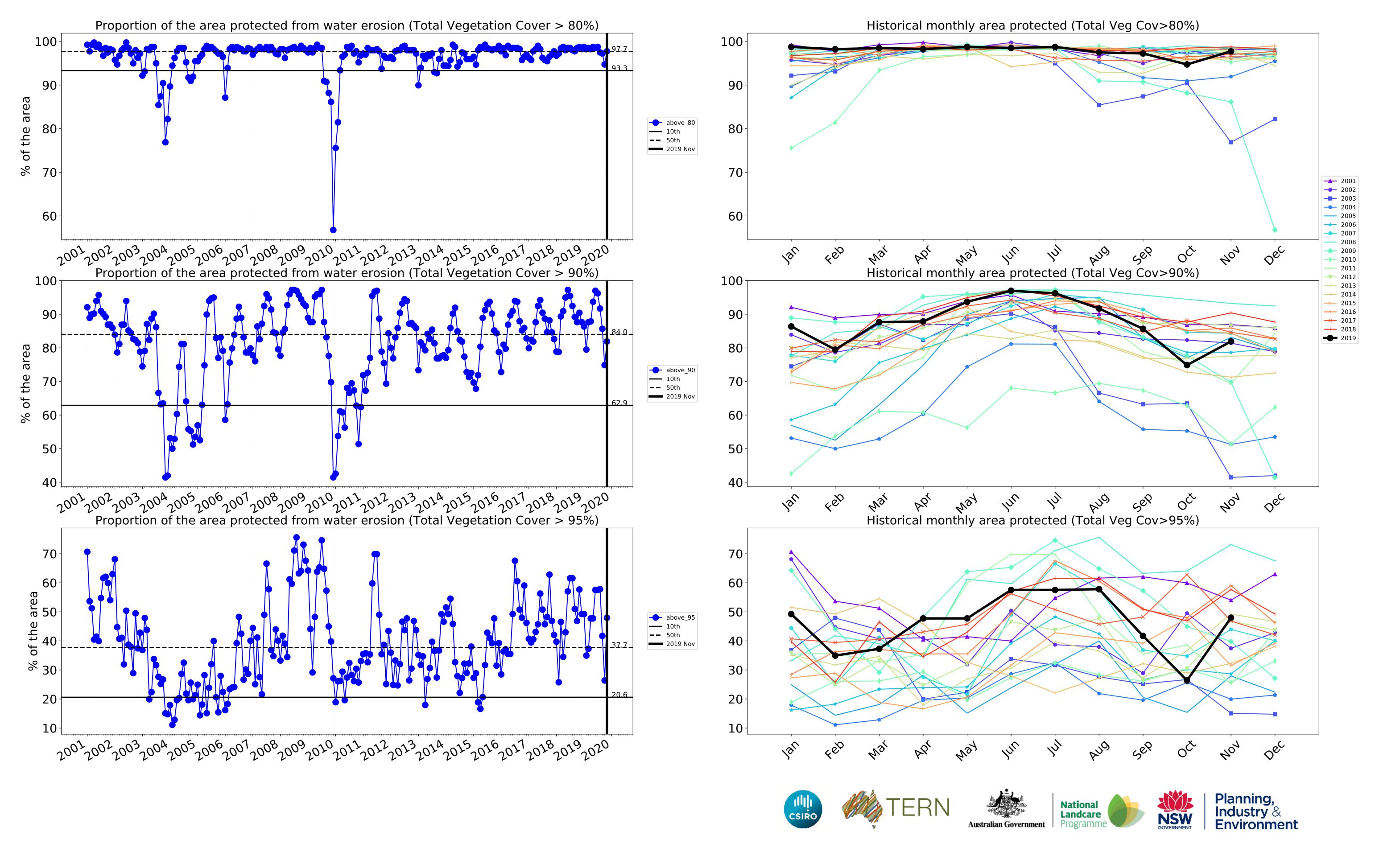


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



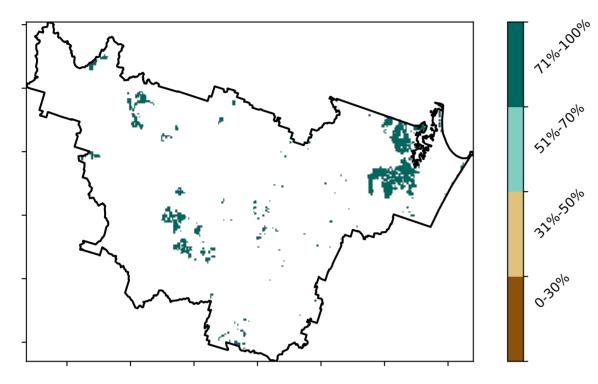
Water erosion historical monthly area protected (Total Veg Cov>70%)



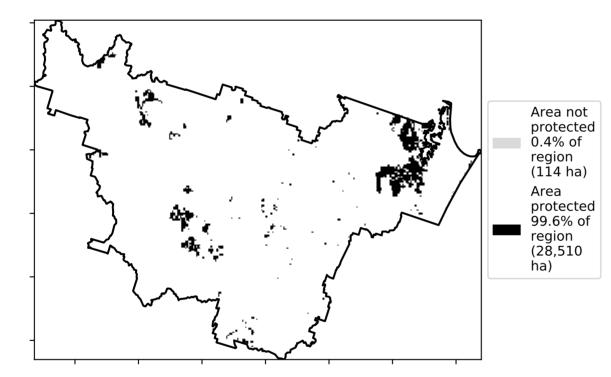
### **Conservation and natural environments Woodland forest**

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

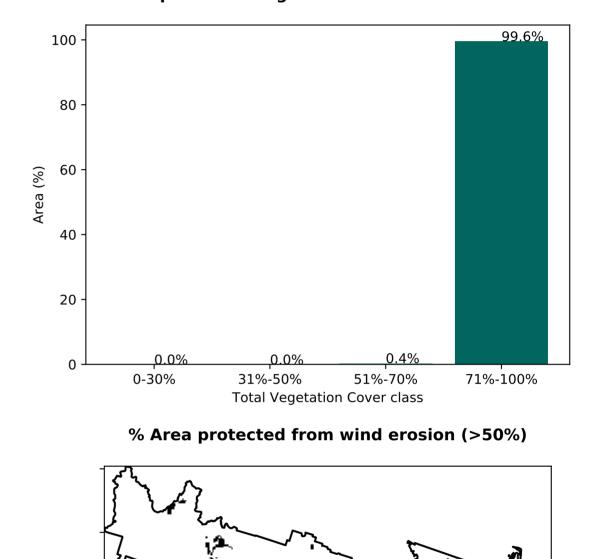
Total Vegetation Cover [%]



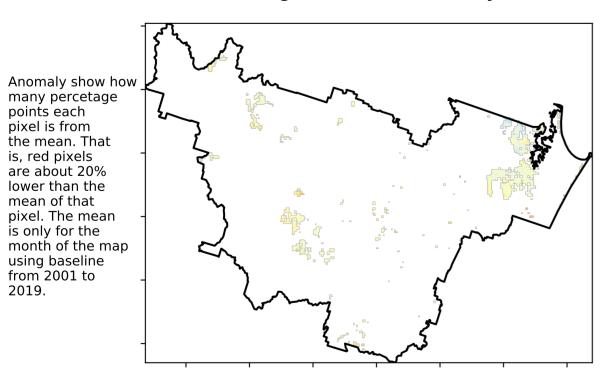
% Area protected from water erosion (>70%)



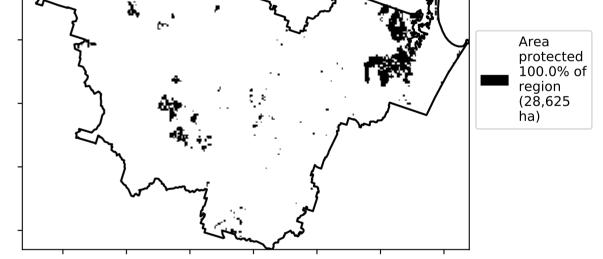
Proportion of vegetation cover class in area



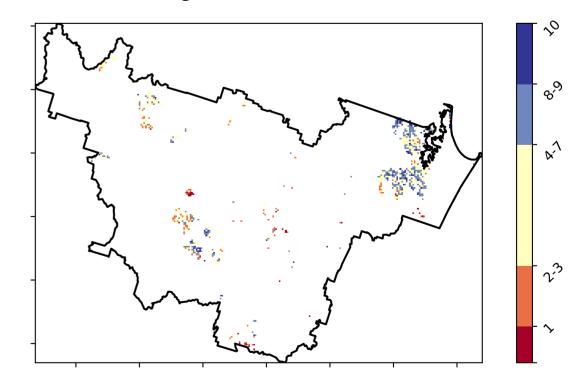
Total Vegetation Cover Anomaly [%]



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 [%]** 





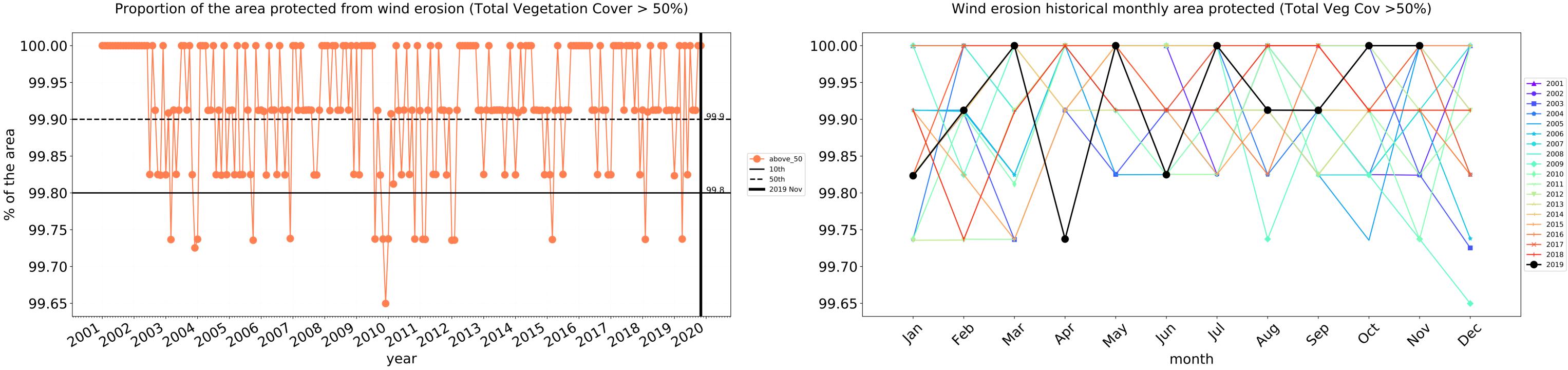
from 20

- 20

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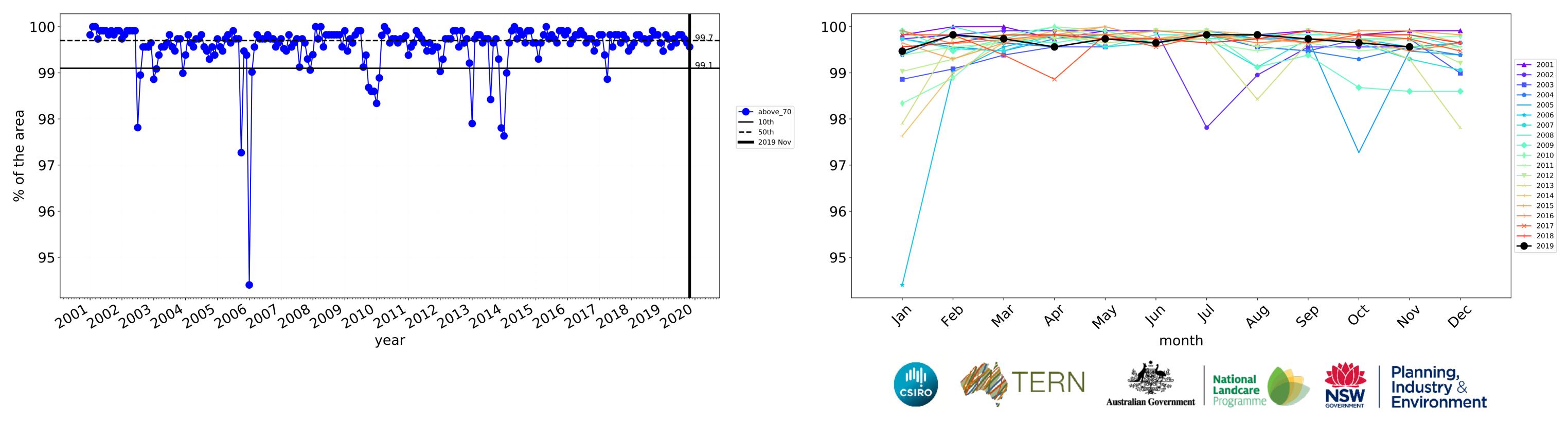
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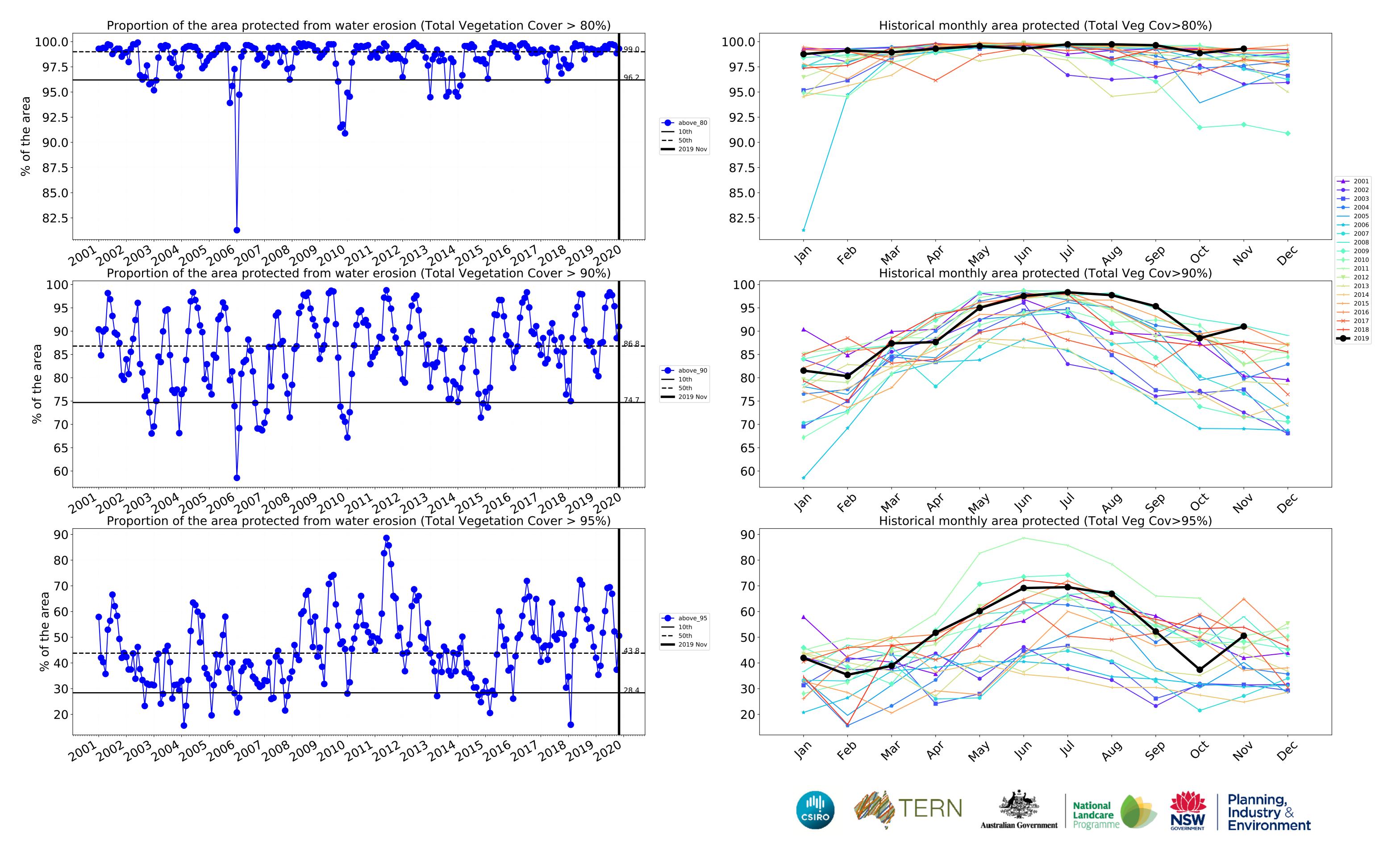


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

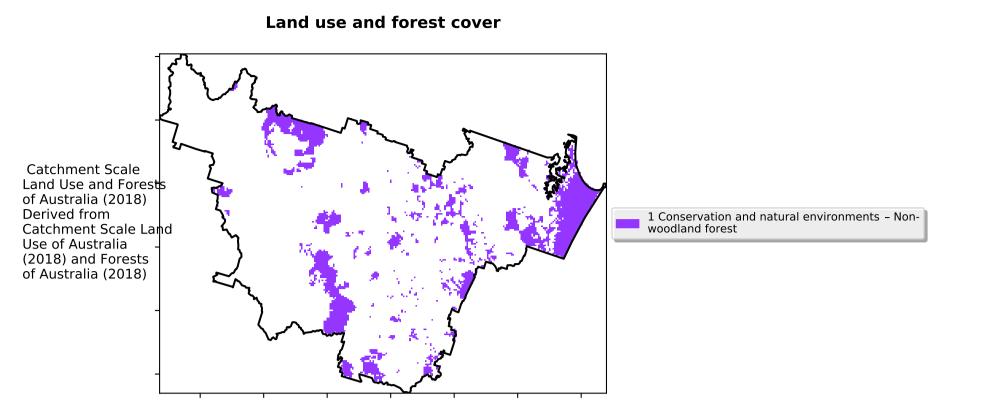
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



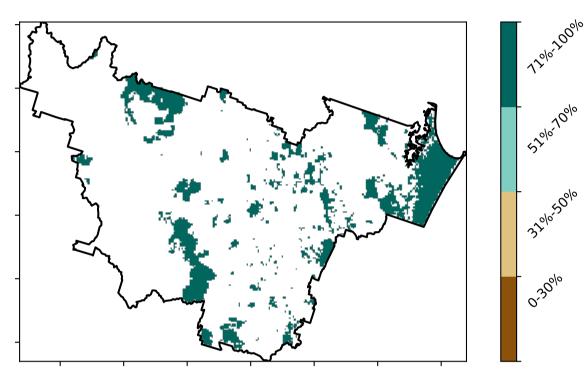
Water erosion historical monthly area protected (Total Veg Cov>70%)



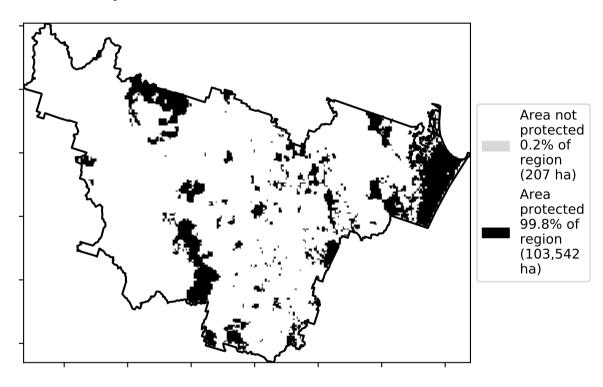
### **Conservation and natural environments Forest (non woodland)**



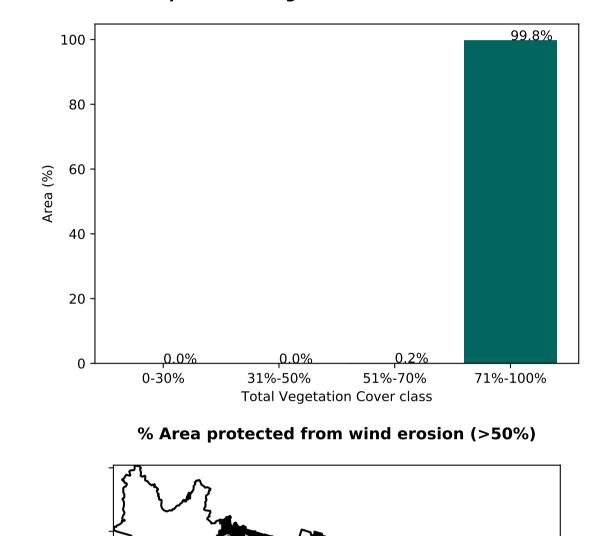
**Total Vegetation Cover [%]** 

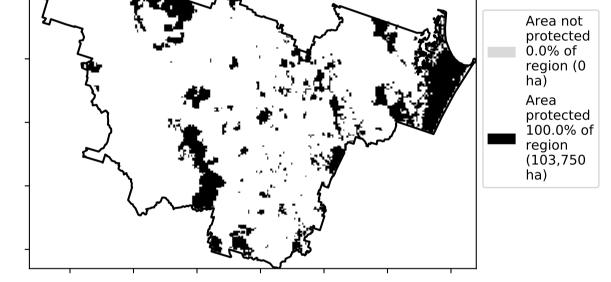


% Area protected from water erosion (>70%)

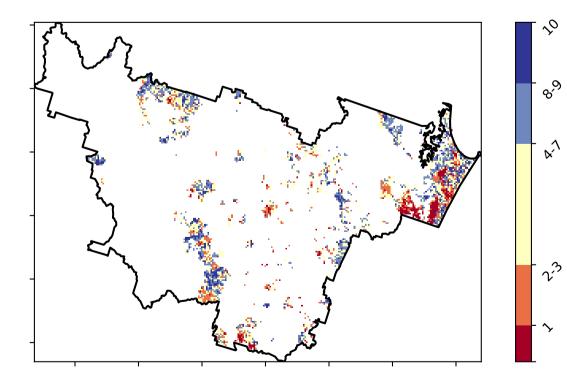


Proportion of vegetation cover class in area

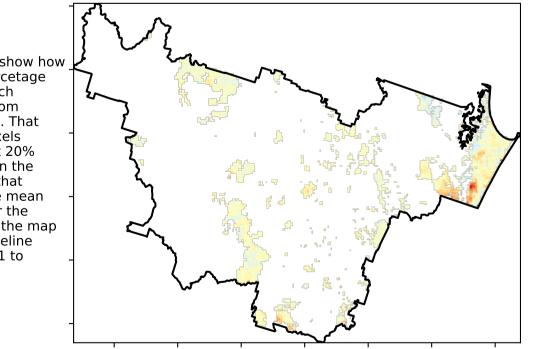




**Total Vegetation Cover Decile [%]** 



**Total Vegetation Cover Anomaly [%]** 





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the map using baseline from 2001 to 2019.

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

- 20

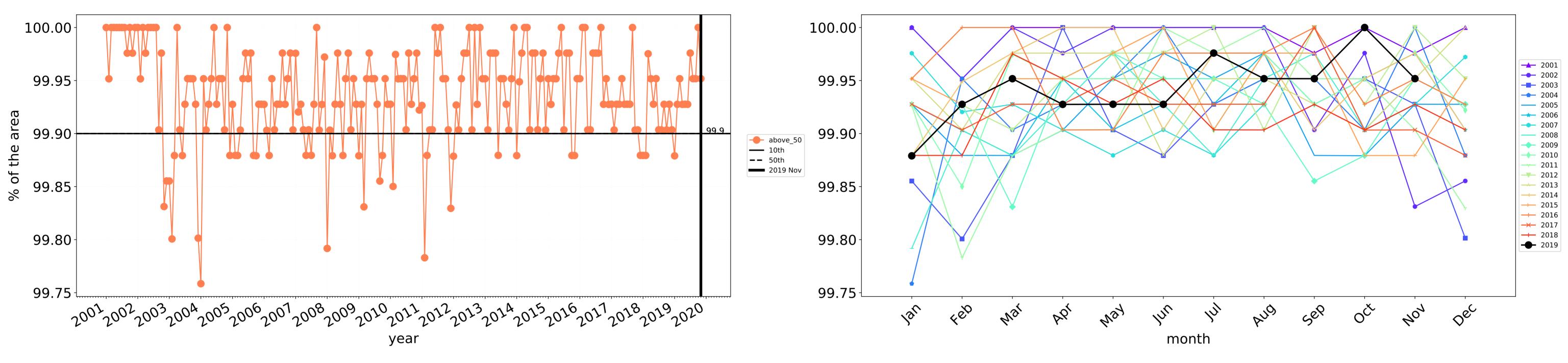
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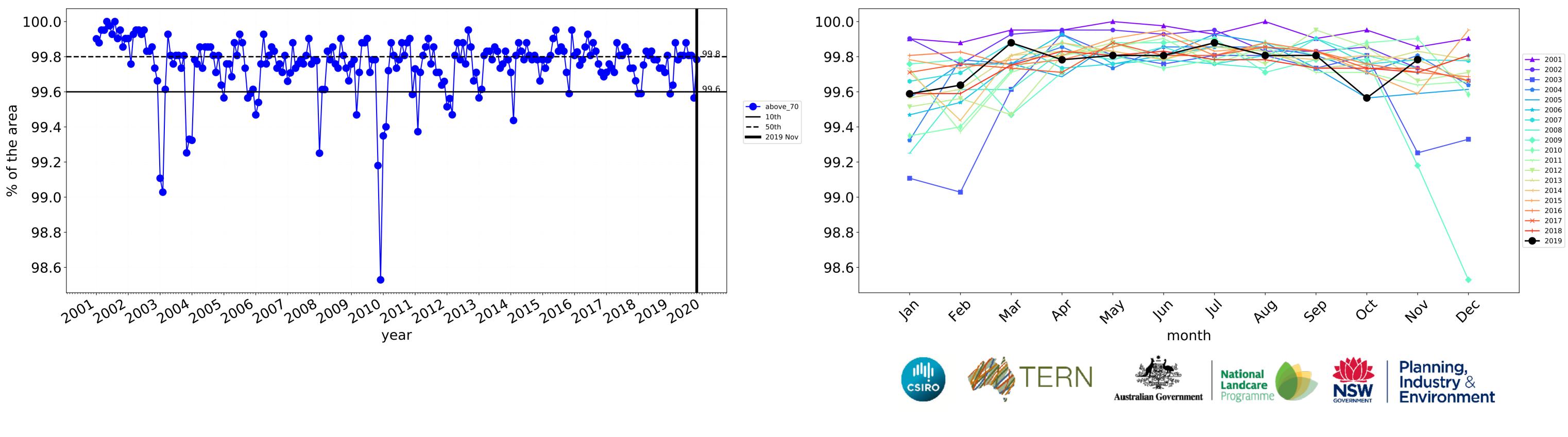
-20

50%

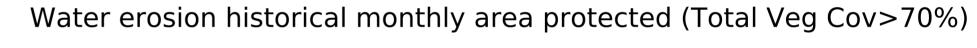


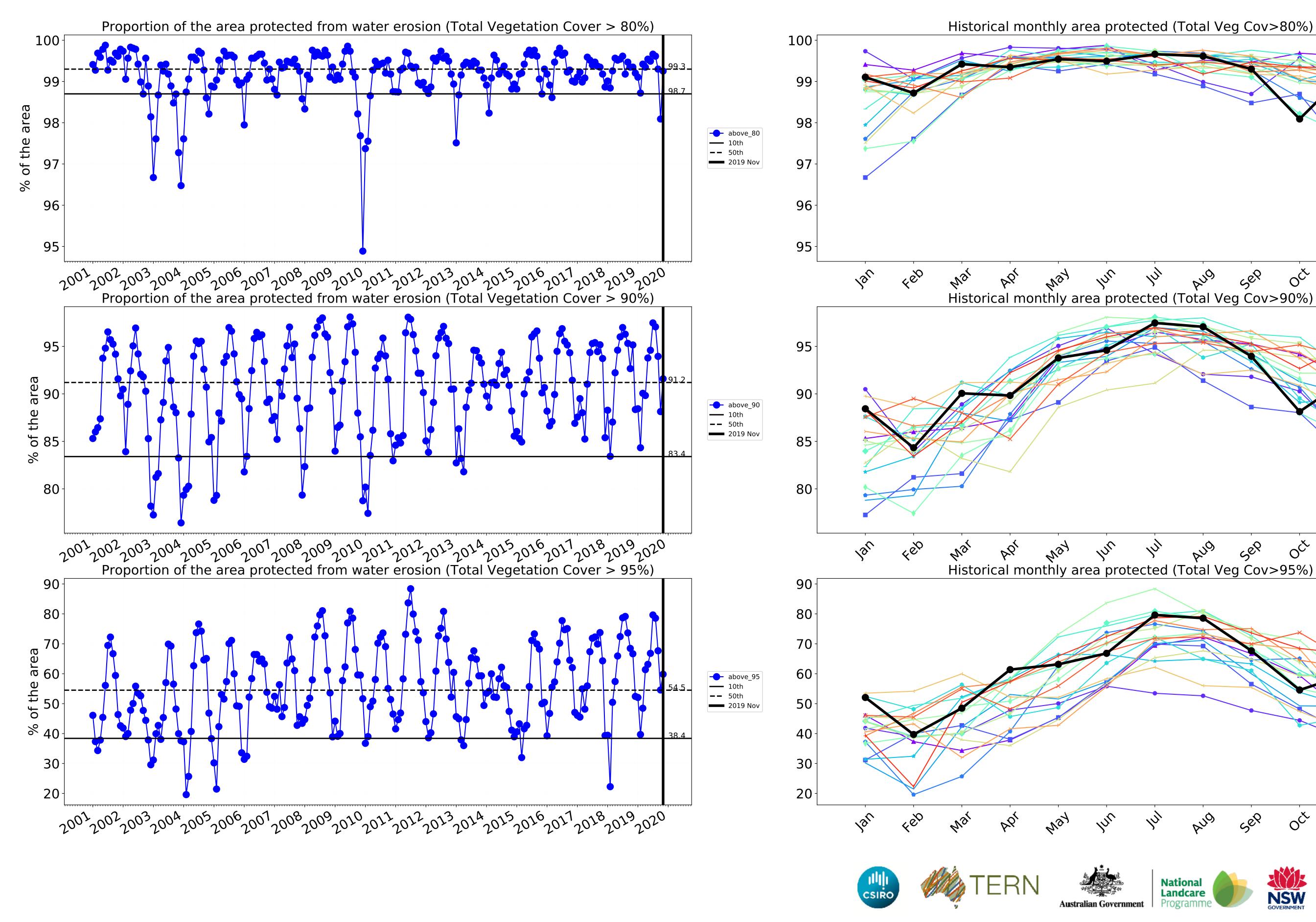
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

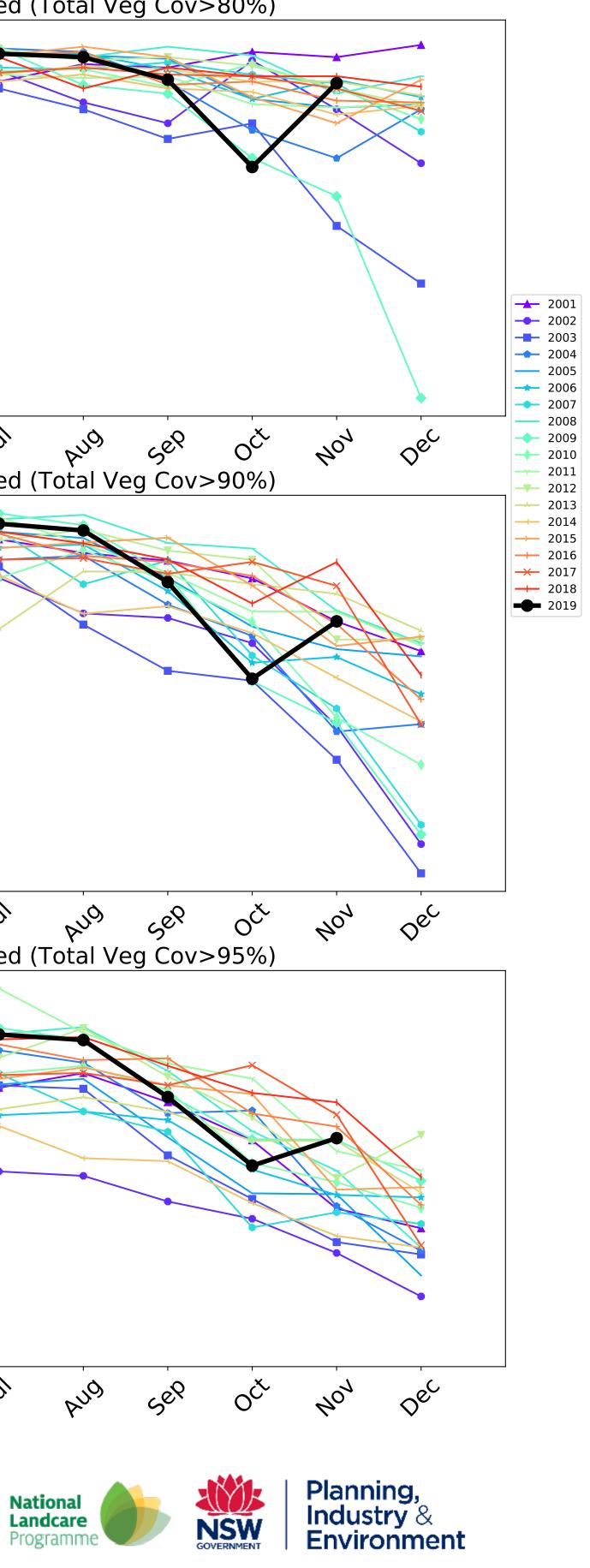
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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



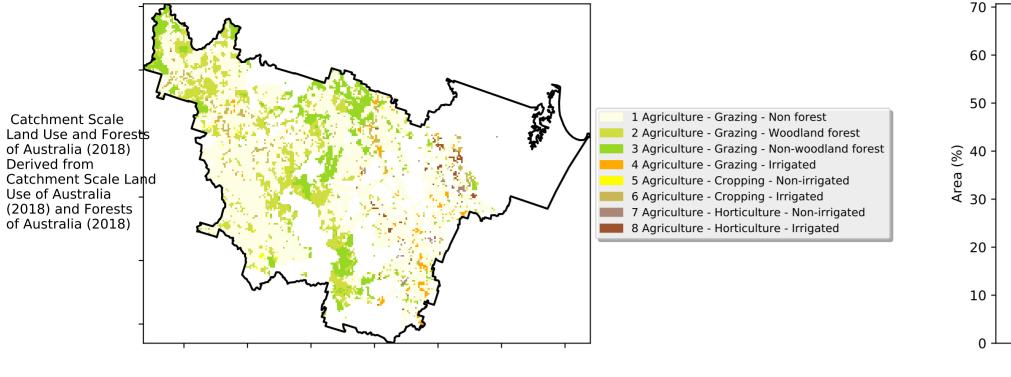




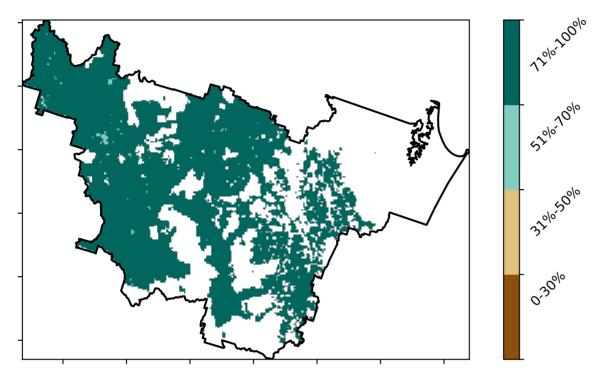
### Agriculture

Land use and forest cover

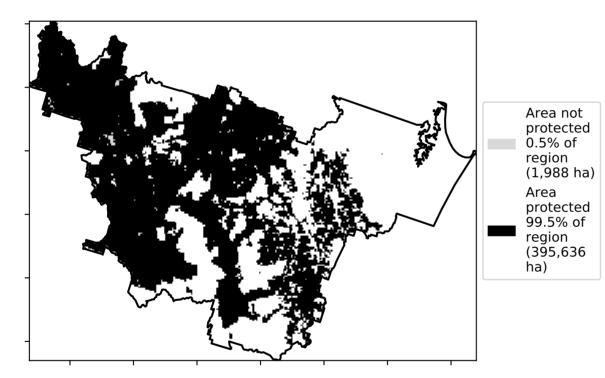
Proportion of each land class in area

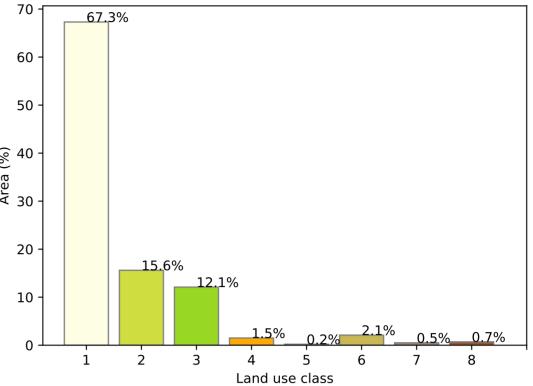


**Total Vegetation Cover [%]** 

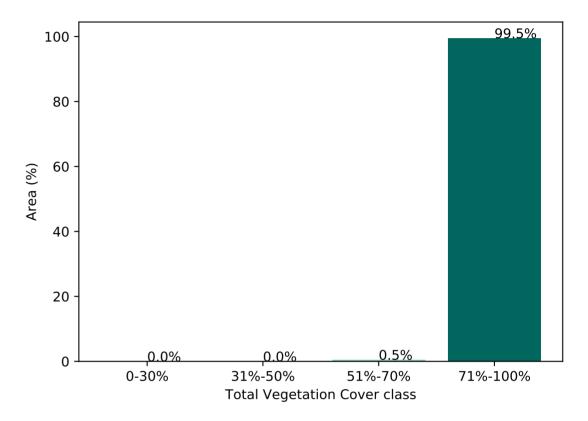


% Area protected from water erosion (>70%)

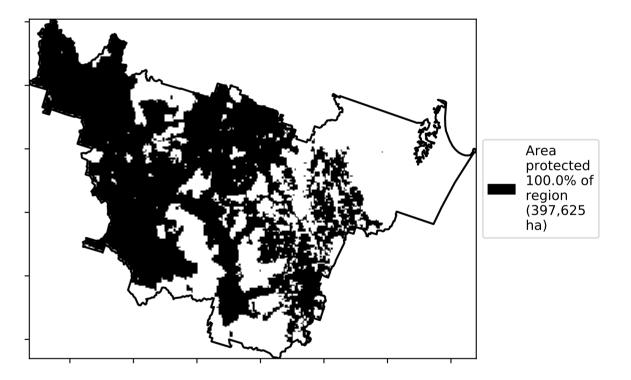




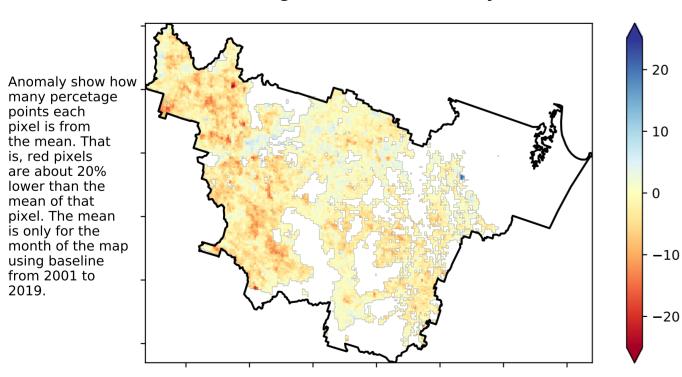
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

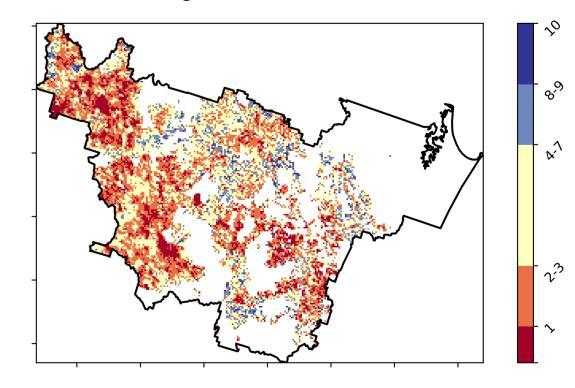


Total Vegetation Cover Anomaly [%]

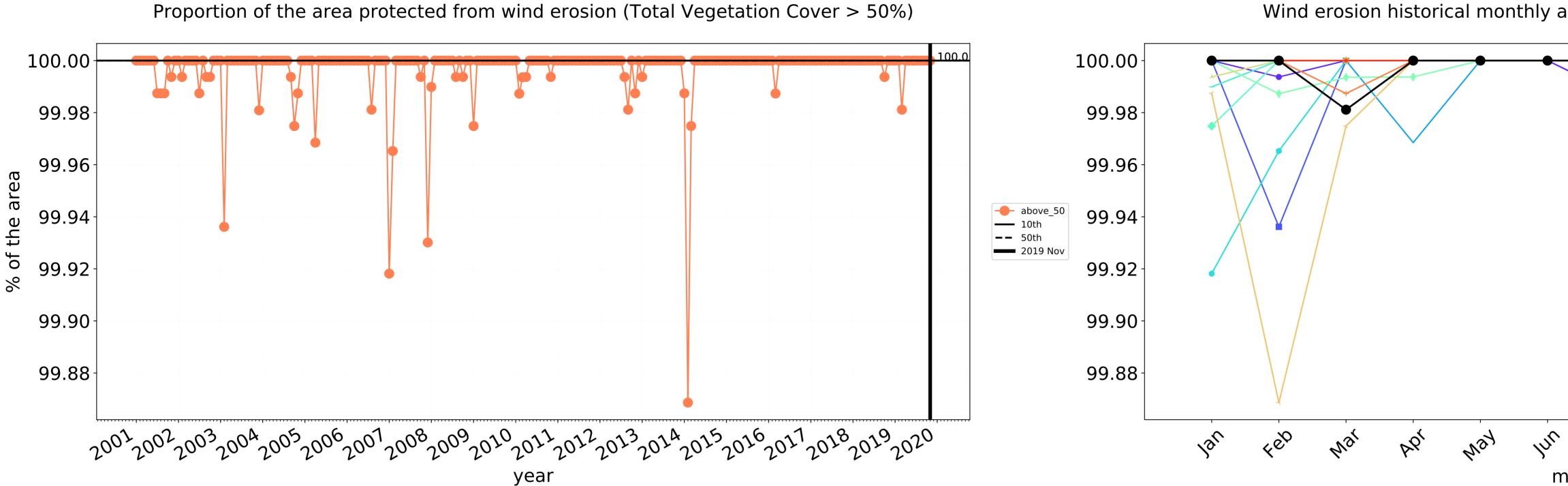


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

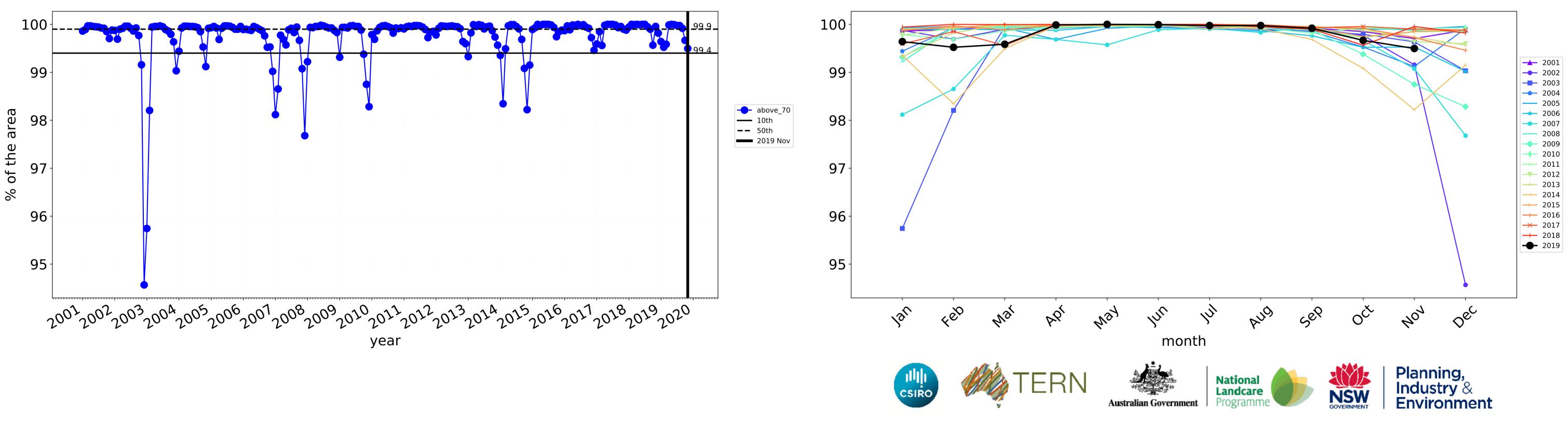
**Total Vegetation Cover Decile [%]** 



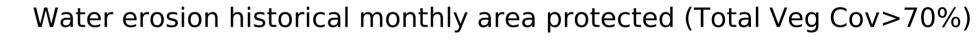




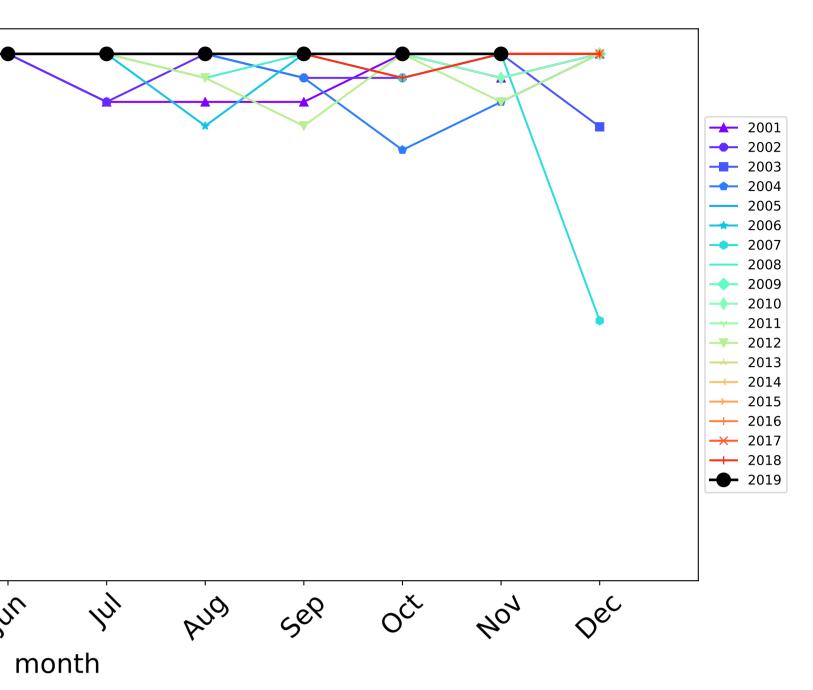
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

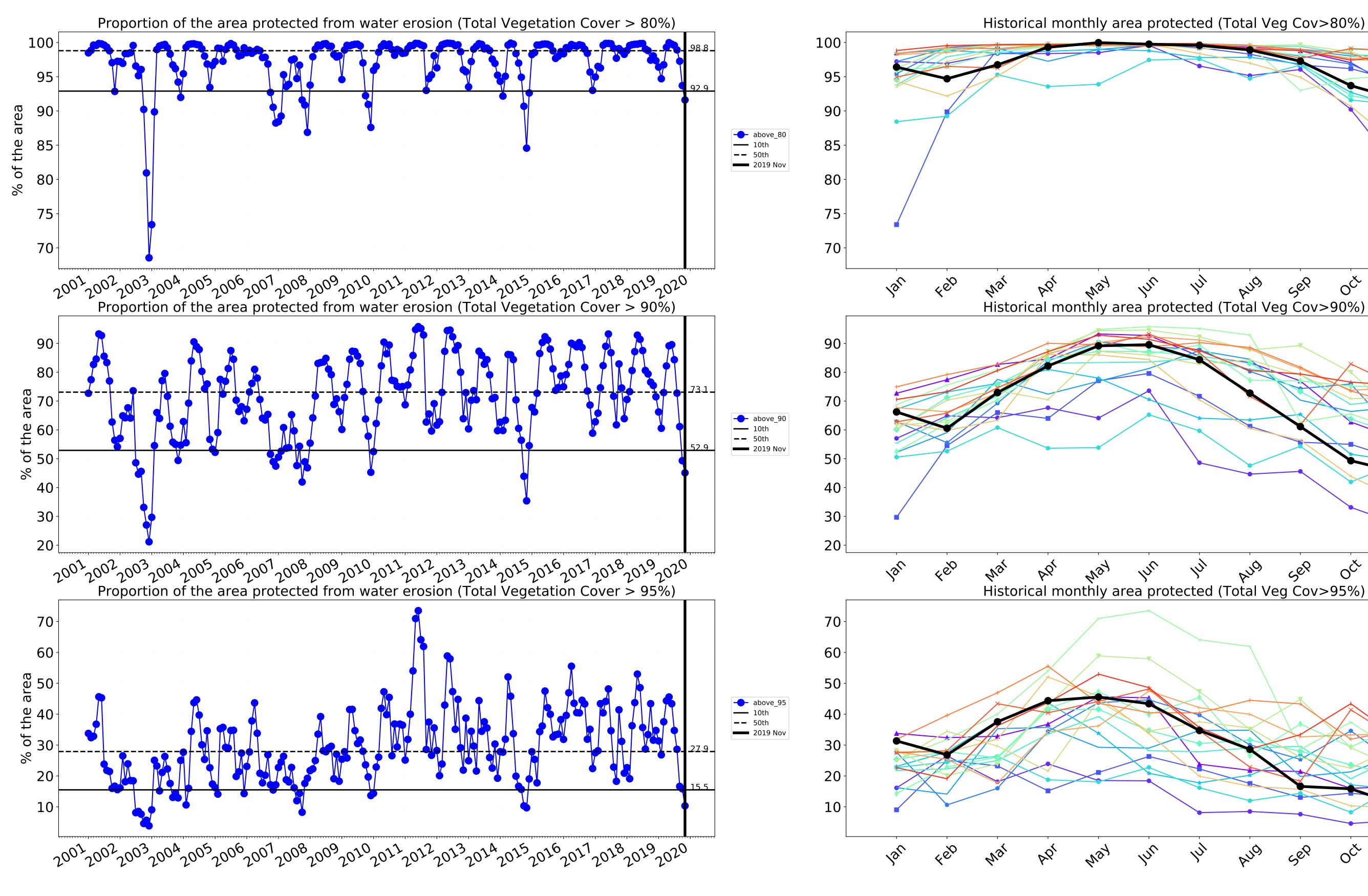


### Agriculture timeseries

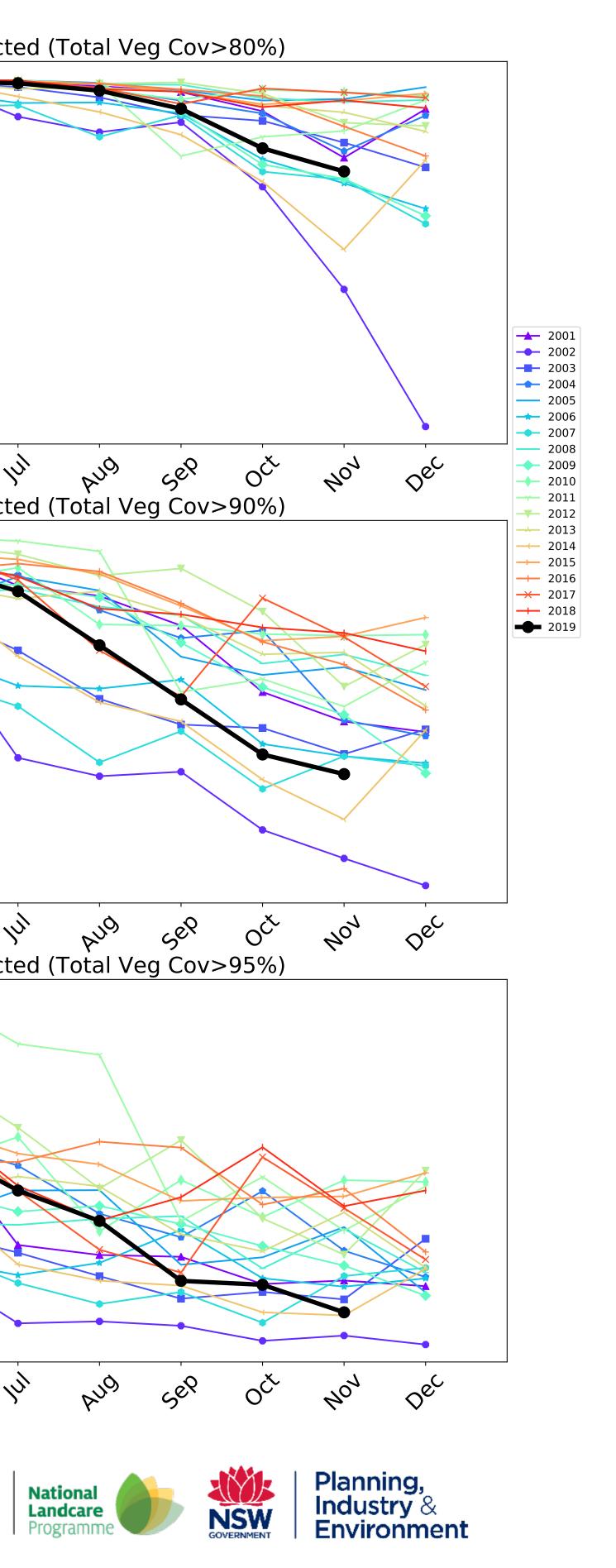


Wind erosion historical monthly area protected (Total Veg Cov >50%)









### Grazing

70.9% 70 60 · 50 · Catchment Scale Land Use and Forests of Australia (2018) Area (%) 1 Agriculture - Grazing - Non forest Derived from Catchment Scale Land 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests 30 of Australia (2018) 20 16.4% 10 0 1 2

Land use and forest cover

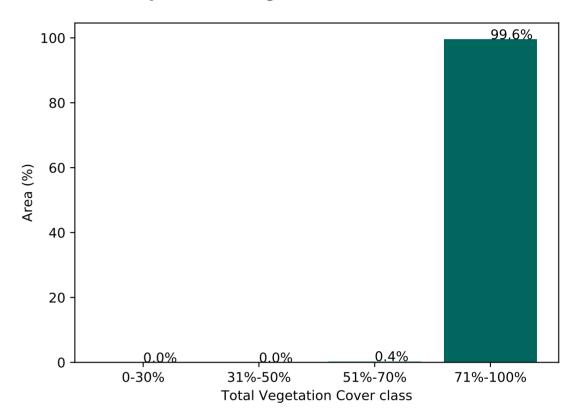
#### Proportion of each land class in area

Proportion of vegetation cover class in area

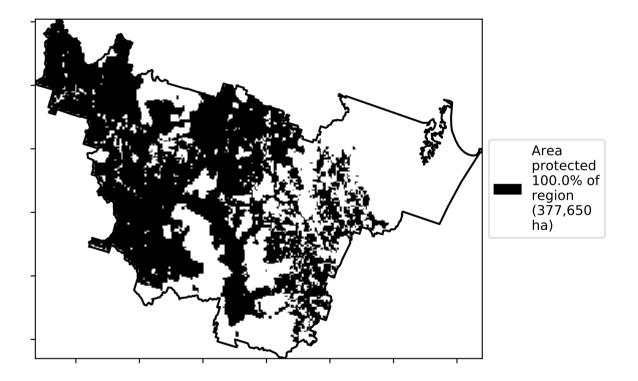
Land use class

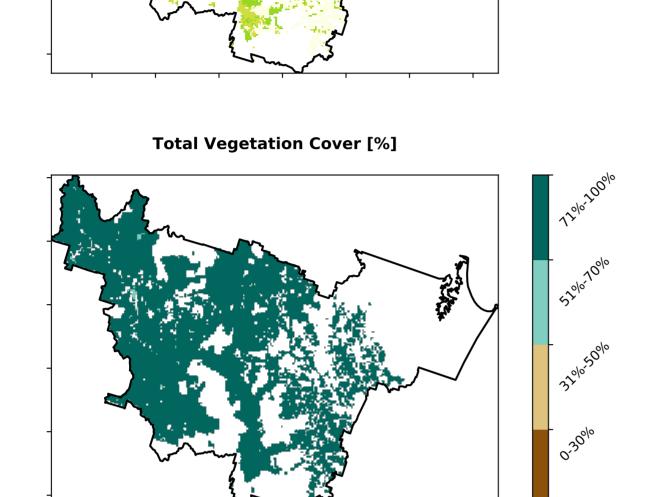
12.7%

3

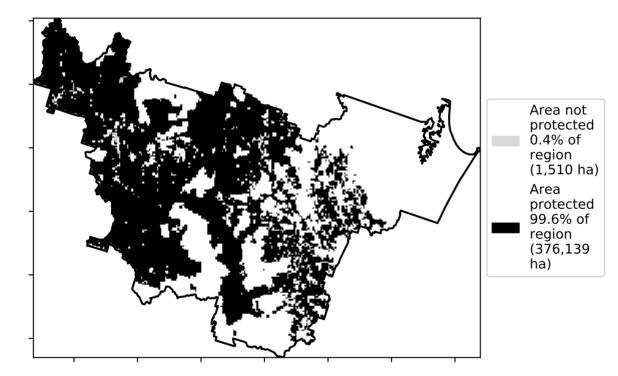


#### % Area protected from wind erosion (>50%)

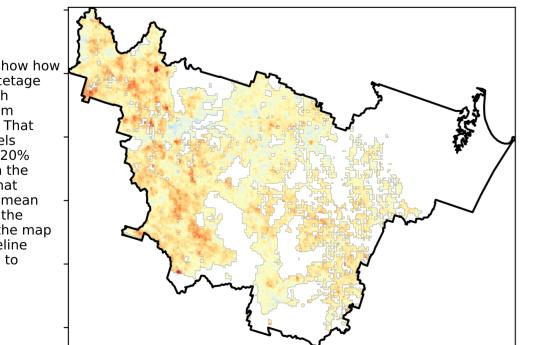




% Area protected from water erosion (>70%)

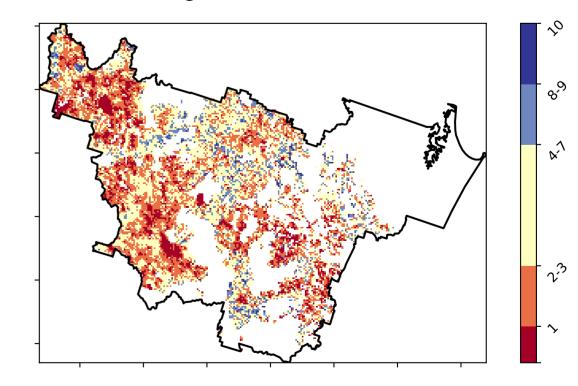


Total Vegetation Cover Anomaly [%]



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 [%]** 





20

- 20

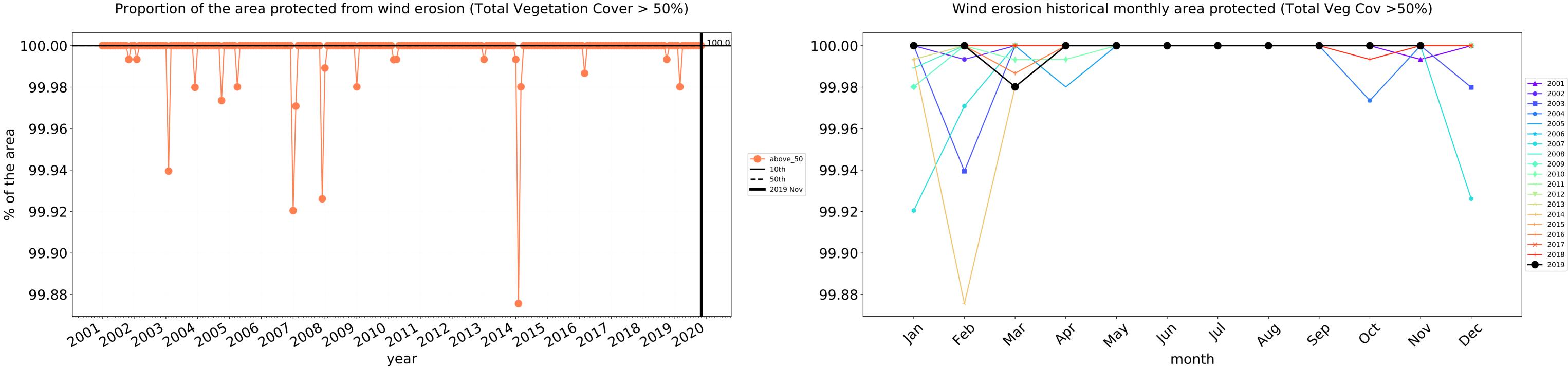
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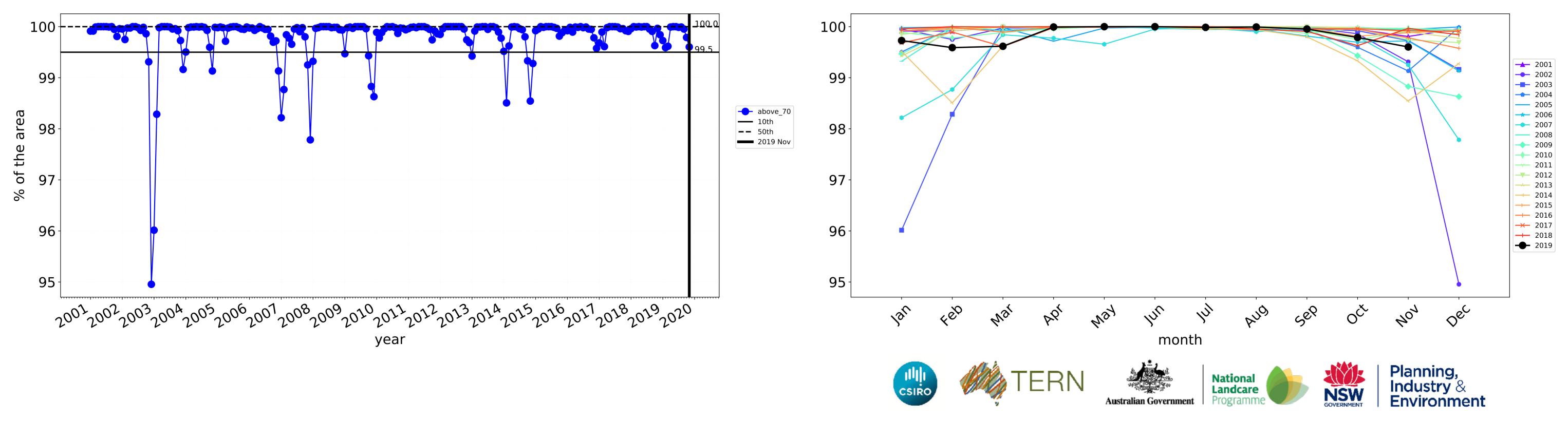
-10

-20

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.

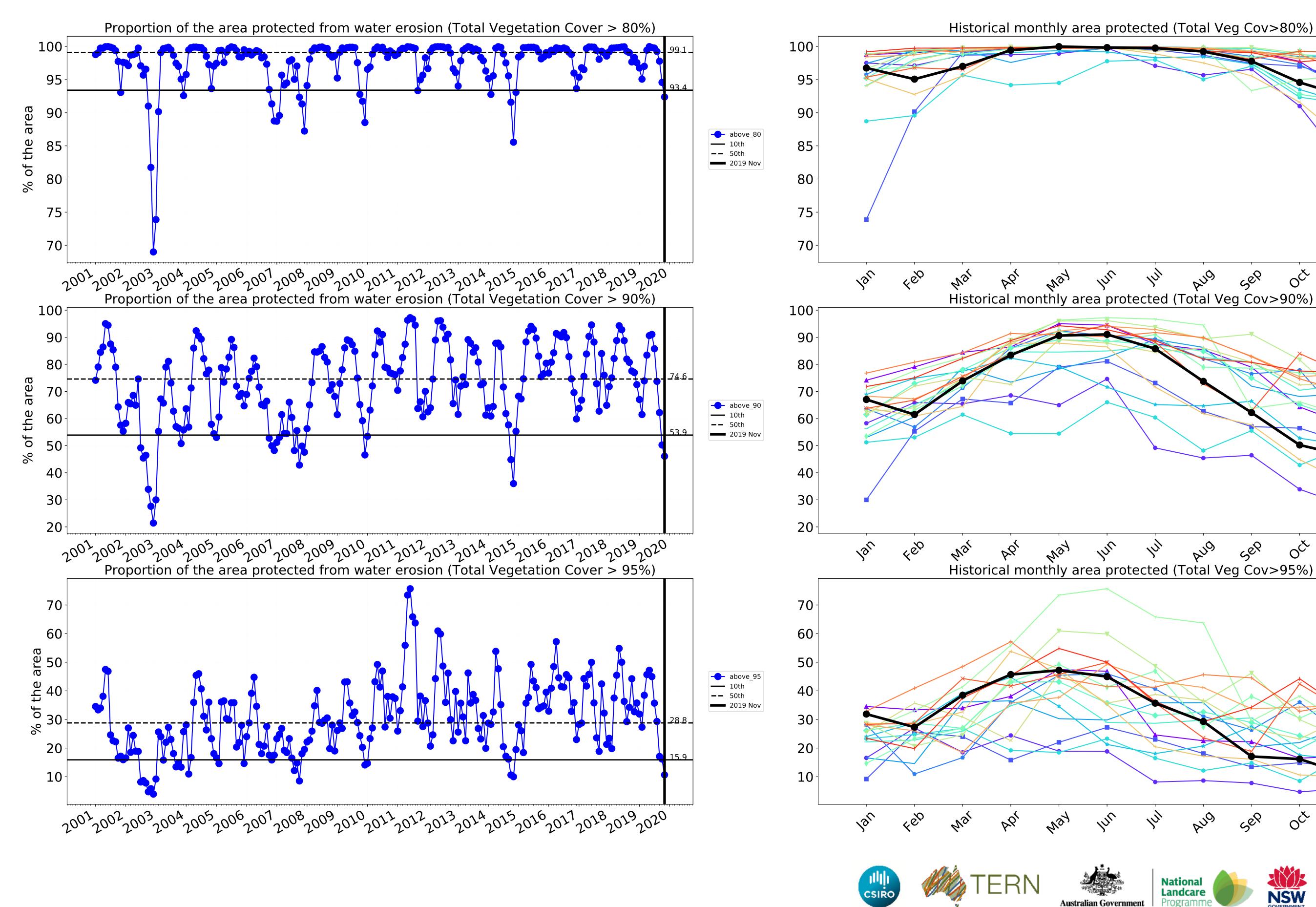


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

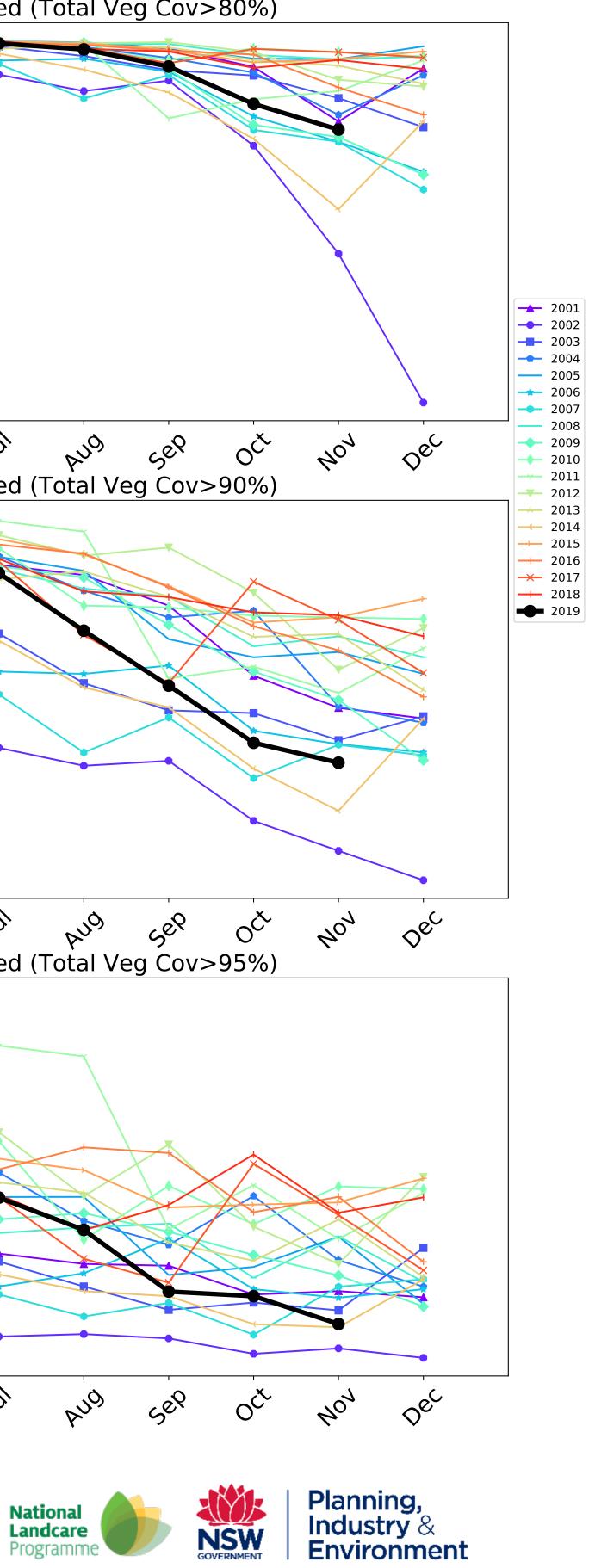


### Grazing timeseries

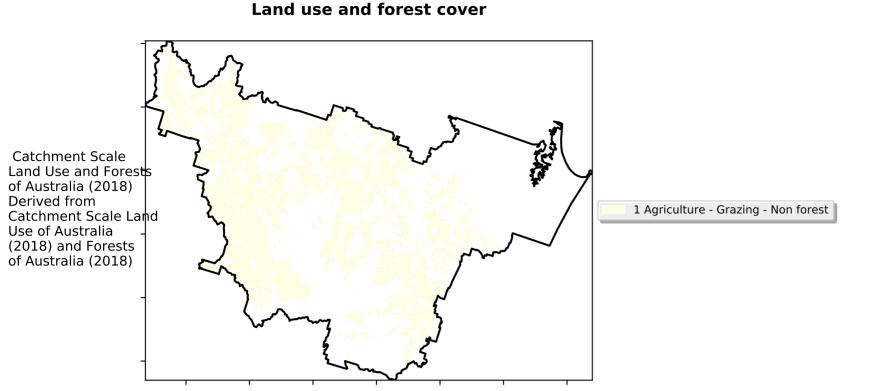




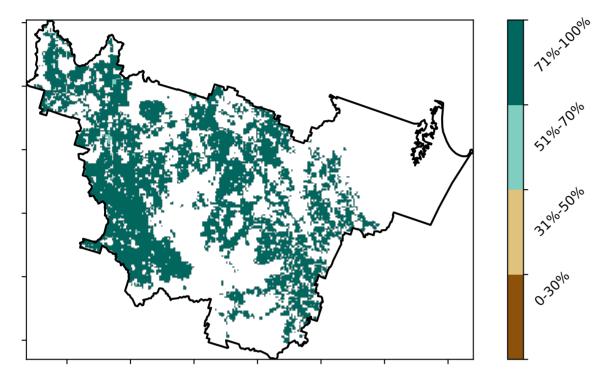




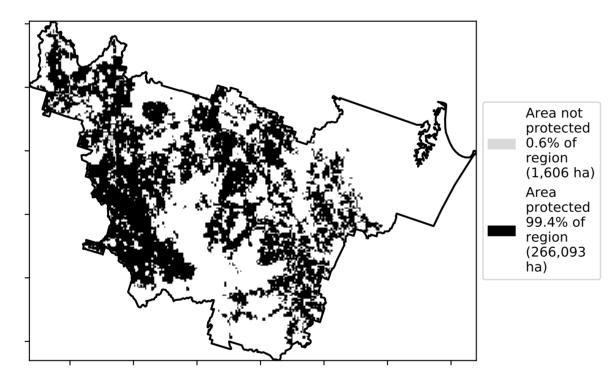
### **Grazing non forest**



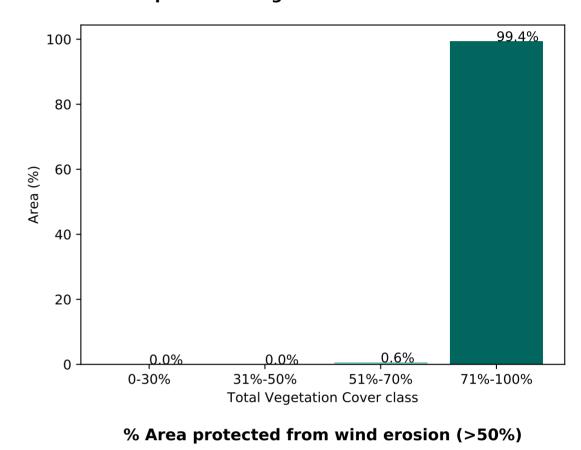
**Total Vegetation Cover [%]** 

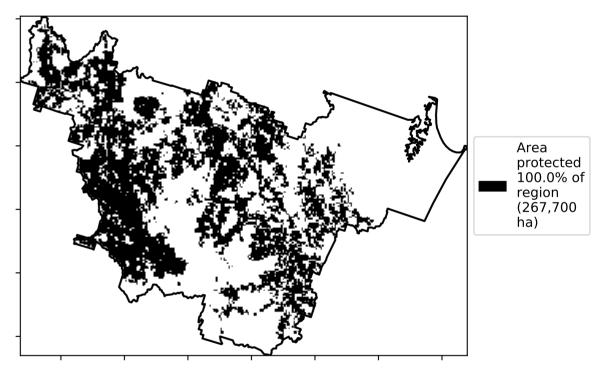


% Area protected from water erosion (>70%)

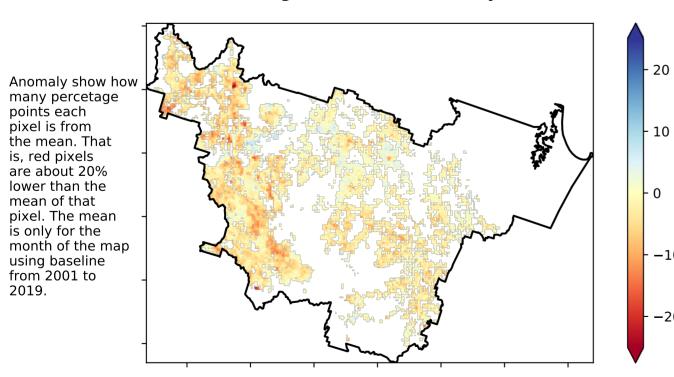


Proportion of vegetation cover class in area



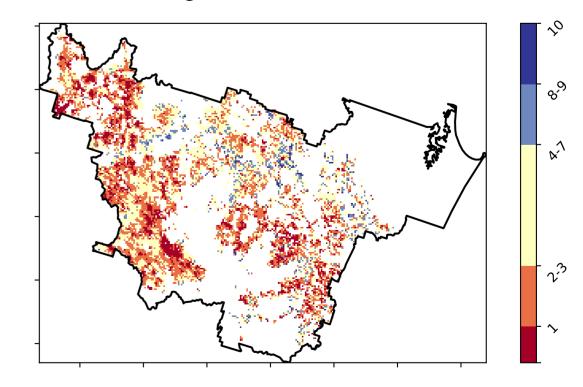


Total Vegetation Cover Anomaly [%]



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.

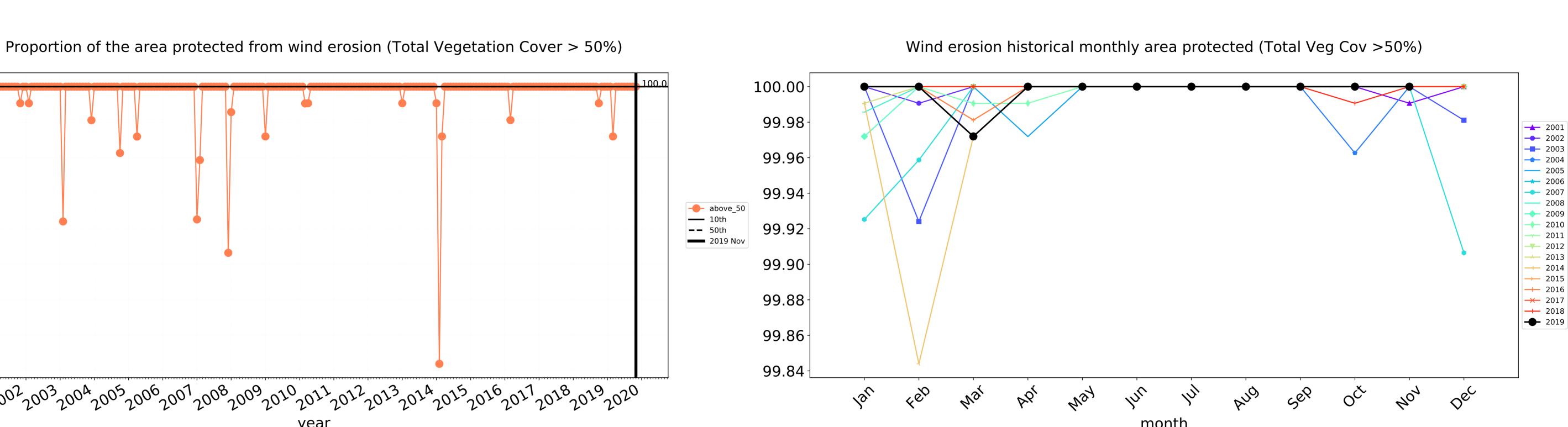
**Total Vegetation Cover Decile [%]** 

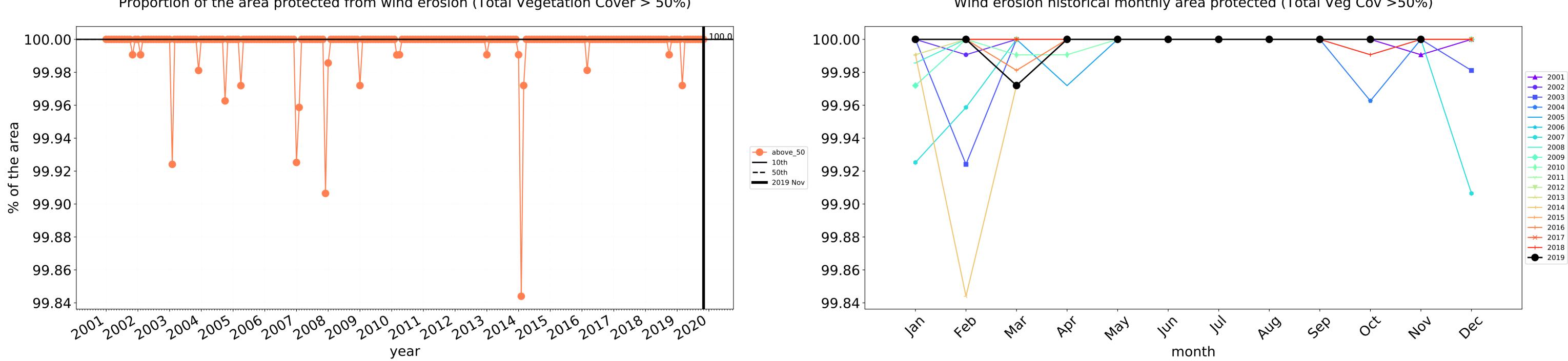




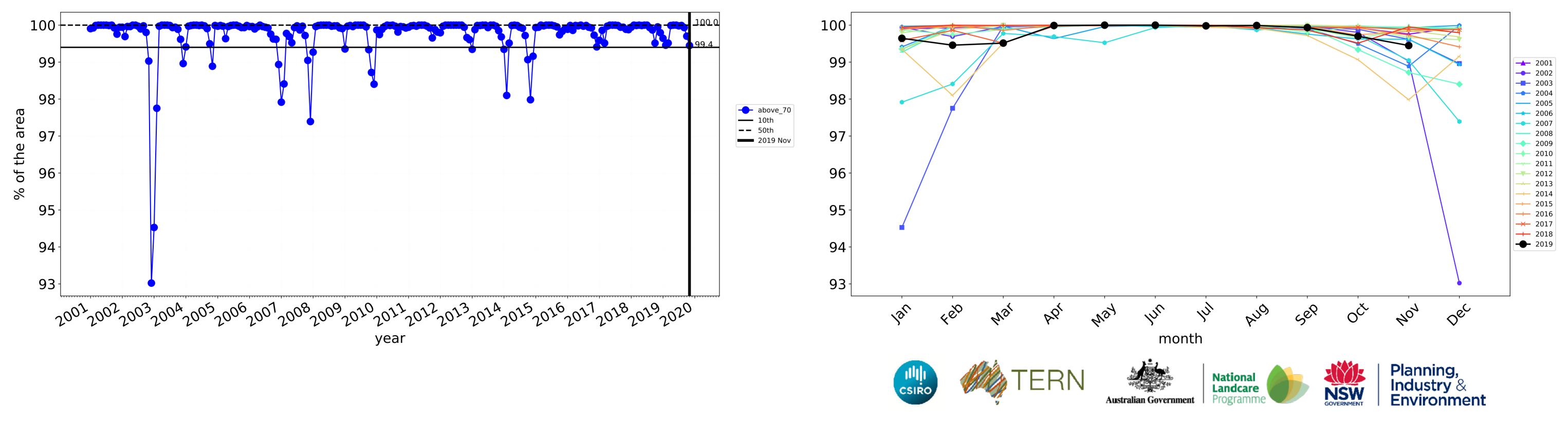
0

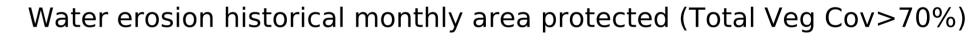
-10



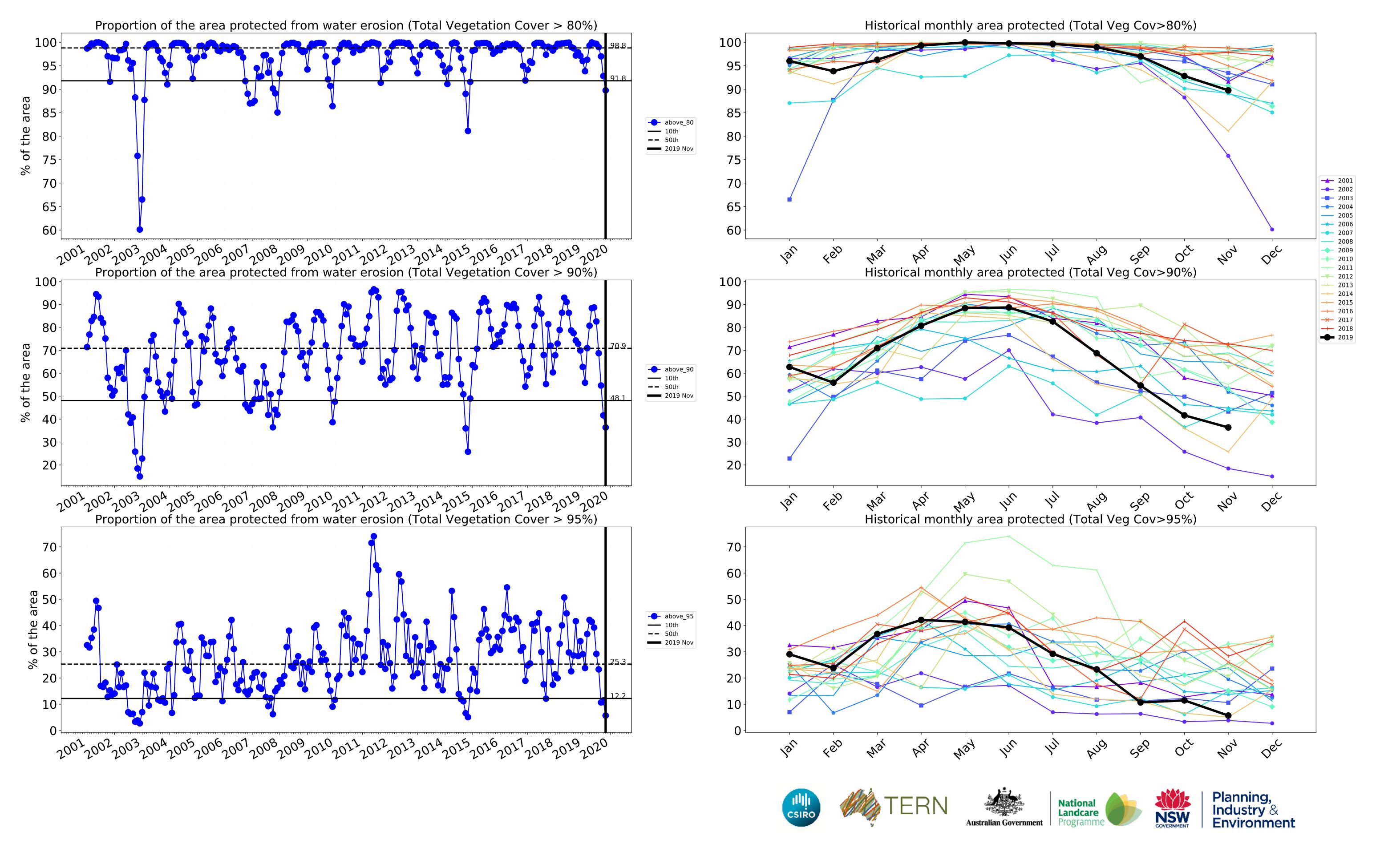


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

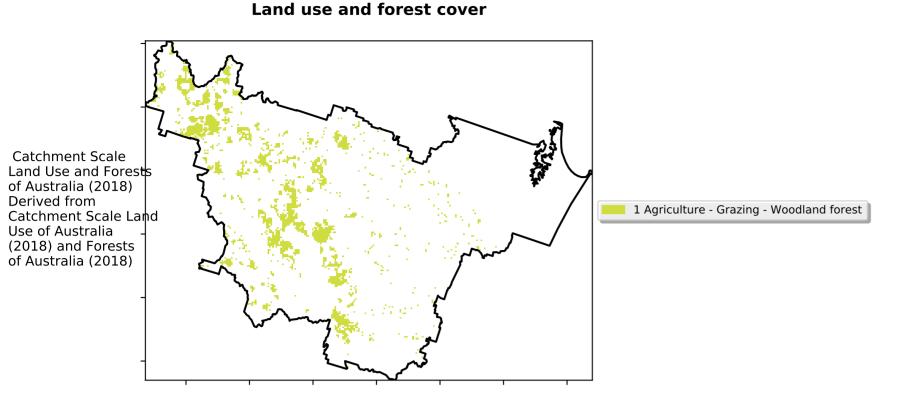




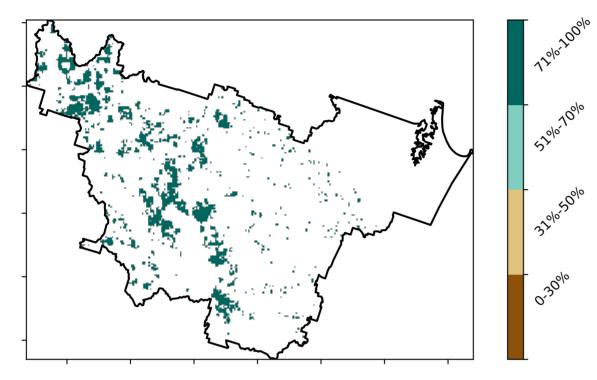
2**3** 



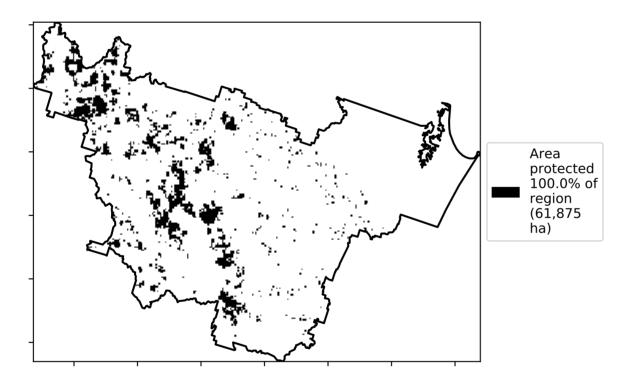
### **Grazing Woodland forest**



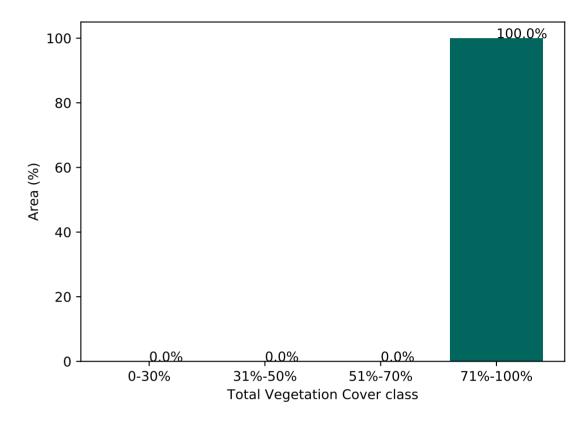
**Total Vegetation Cover [%]** 



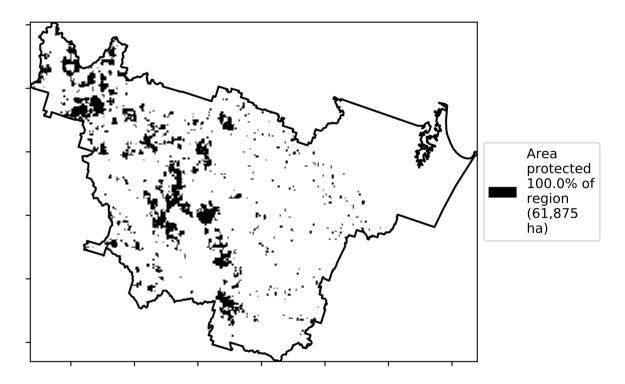
% Area protected from water erosion (>70%)



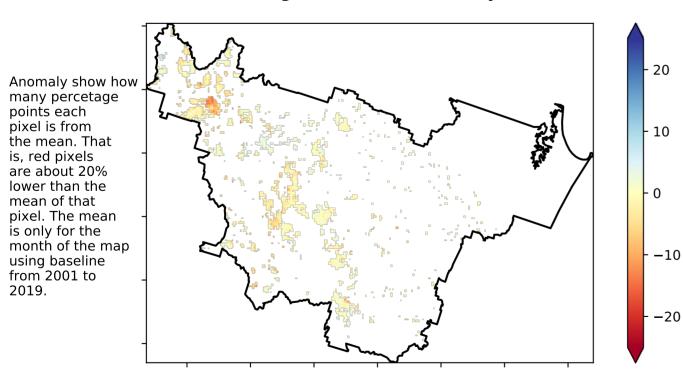
Proportion of vegetation cover class in area



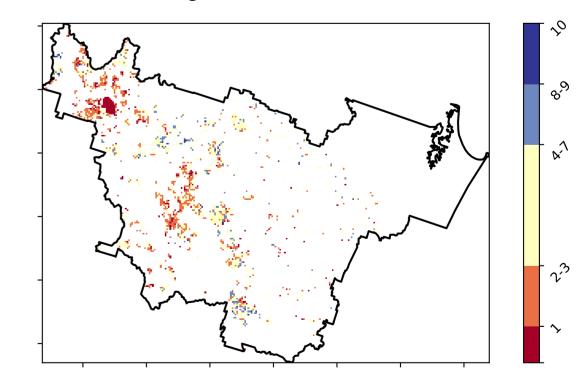
% Area protected from wind erosion (>50%)



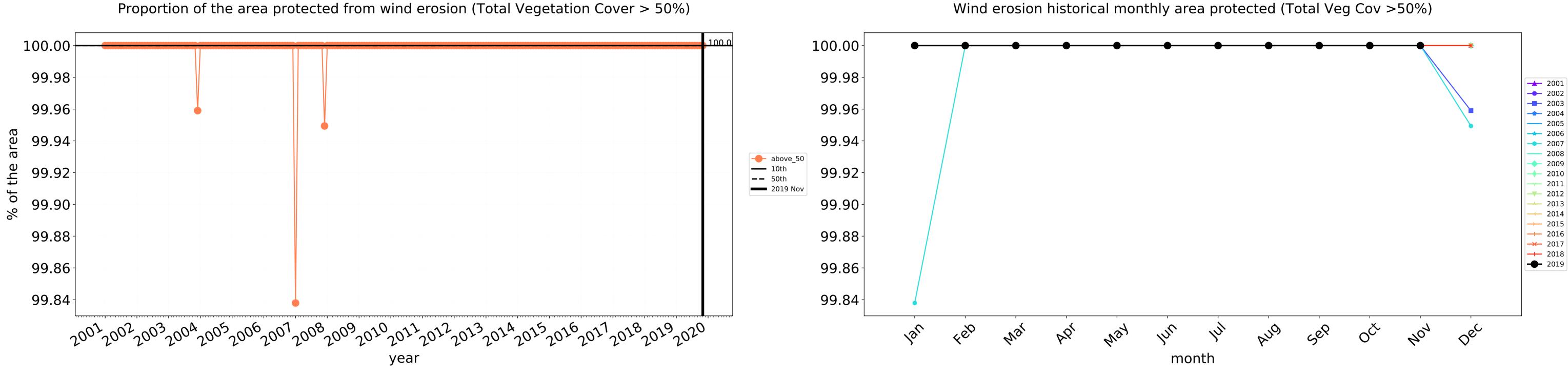
Total Vegetation Cover Anomaly [%]



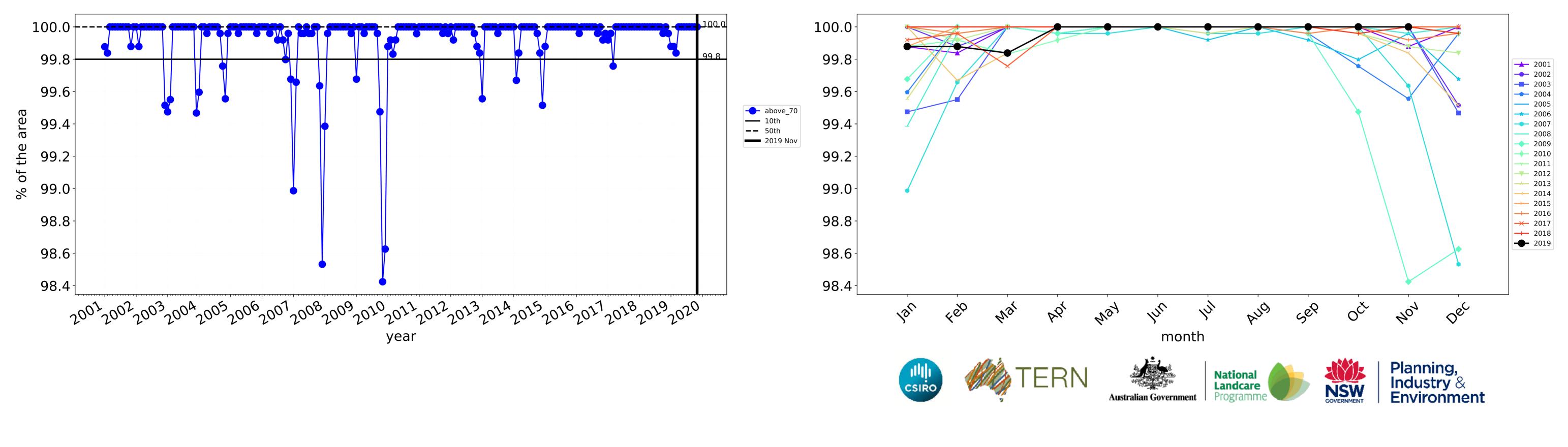
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]** 



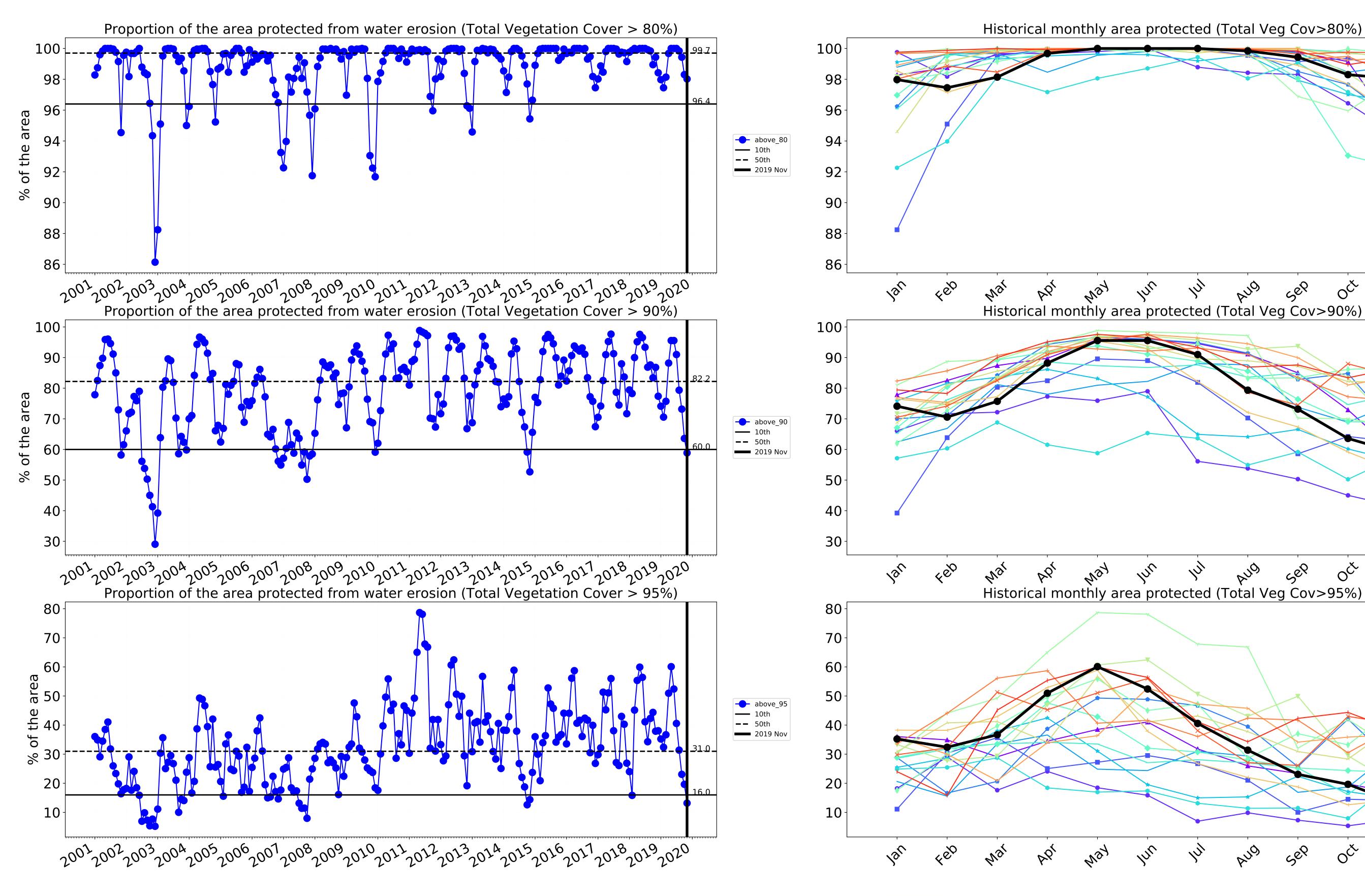




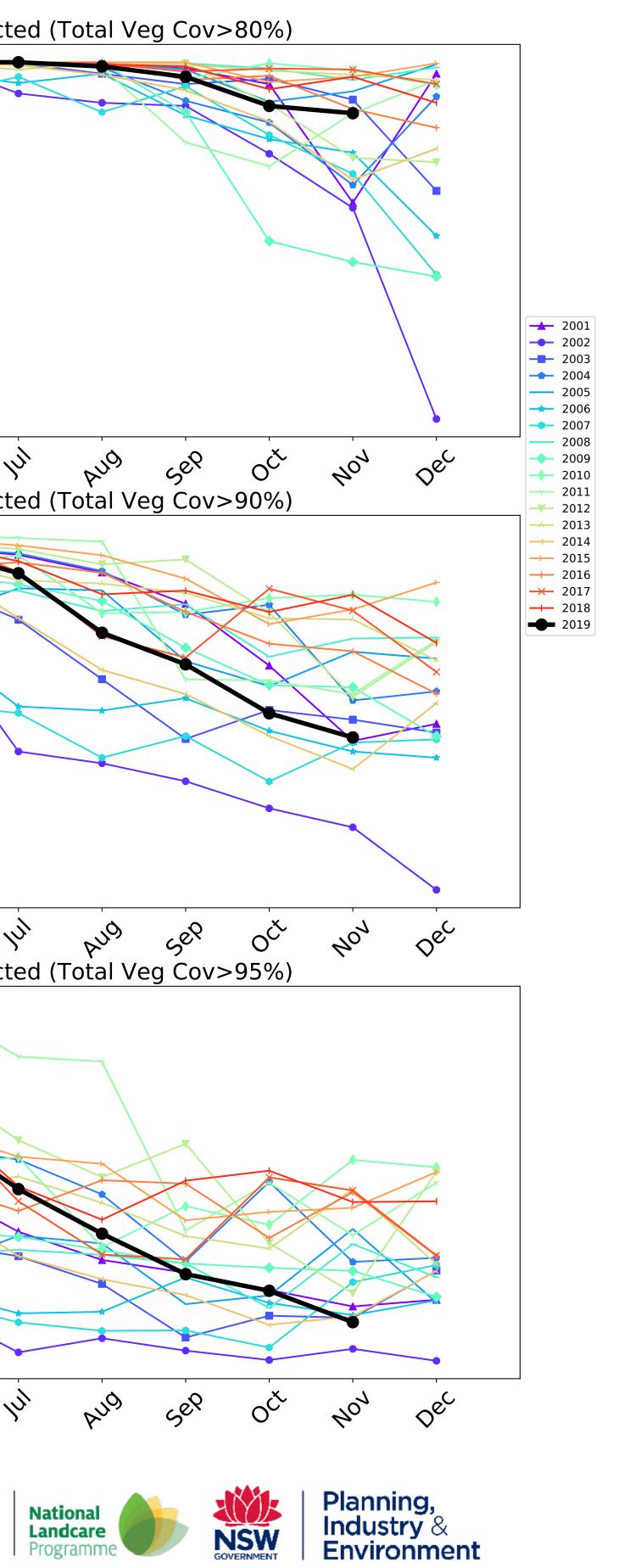
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



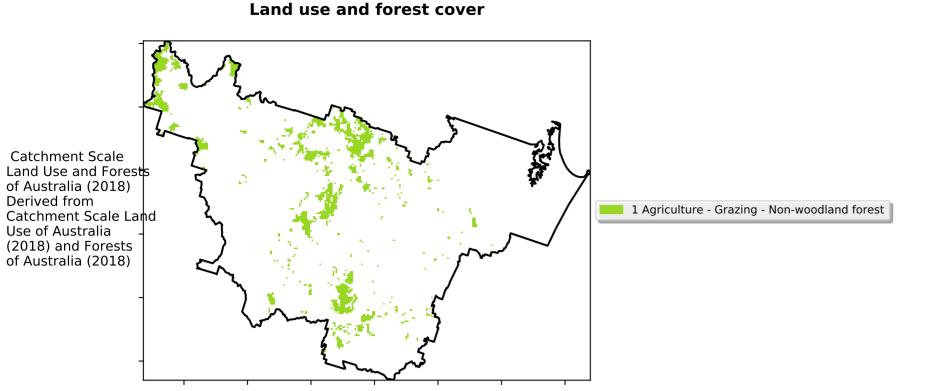
Water erosion historical monthly area protected (Total Veg Cov>70%)



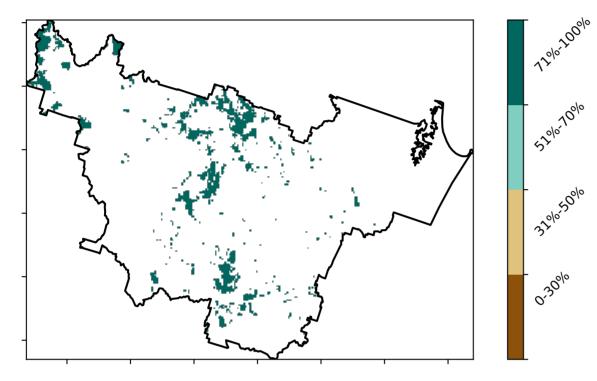




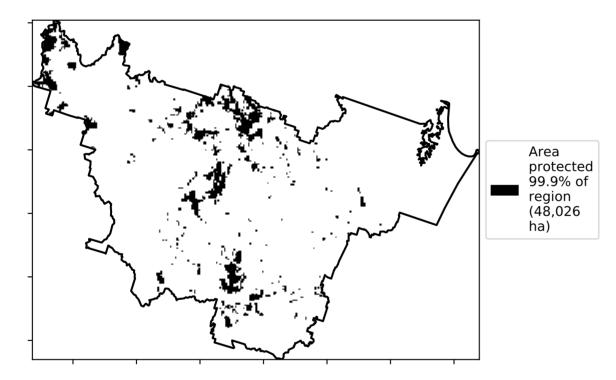
### Grazing - Forest (non woodland)



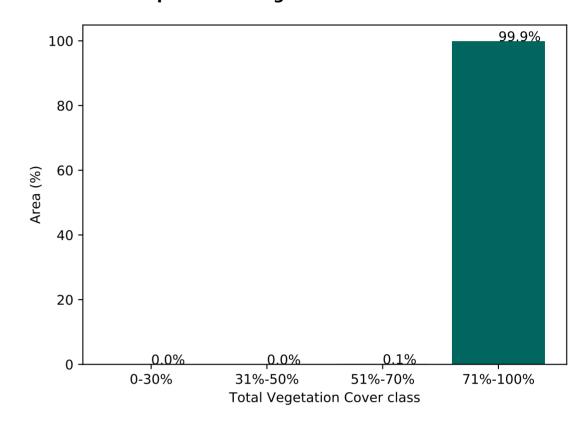
**Total Vegetation Cover [%]** 



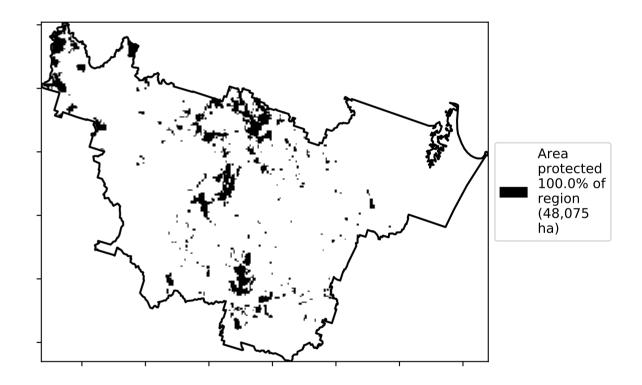
% Area protected from water erosion (>70%)



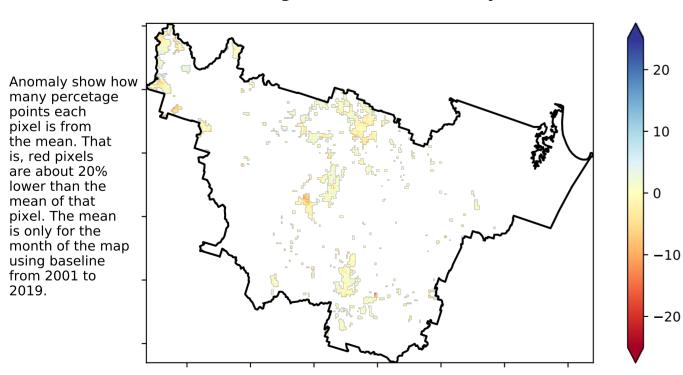
Proportion of vegetation cover class in area



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

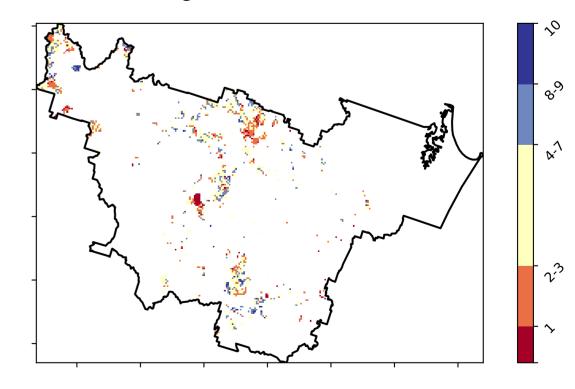


Total Vegetation Cover Anomaly [%]

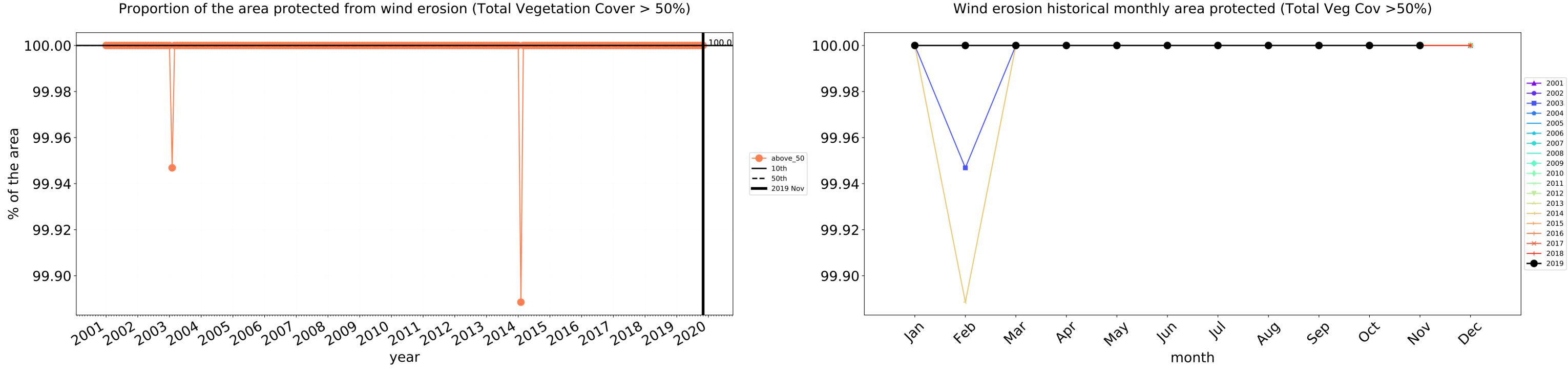


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

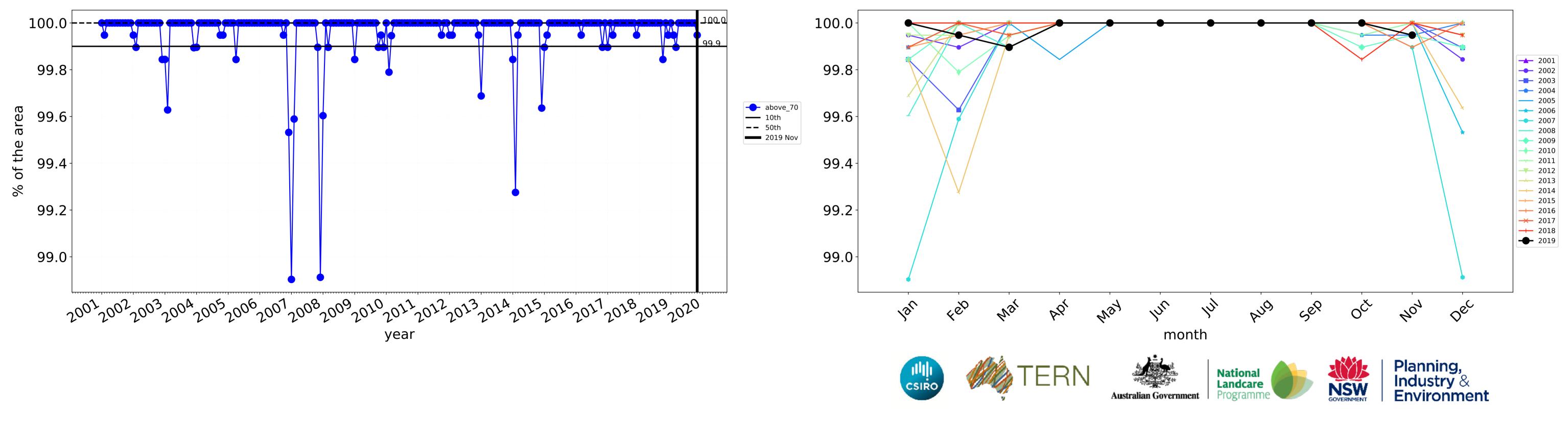
**Total Vegetation Cover Decile [%]** 



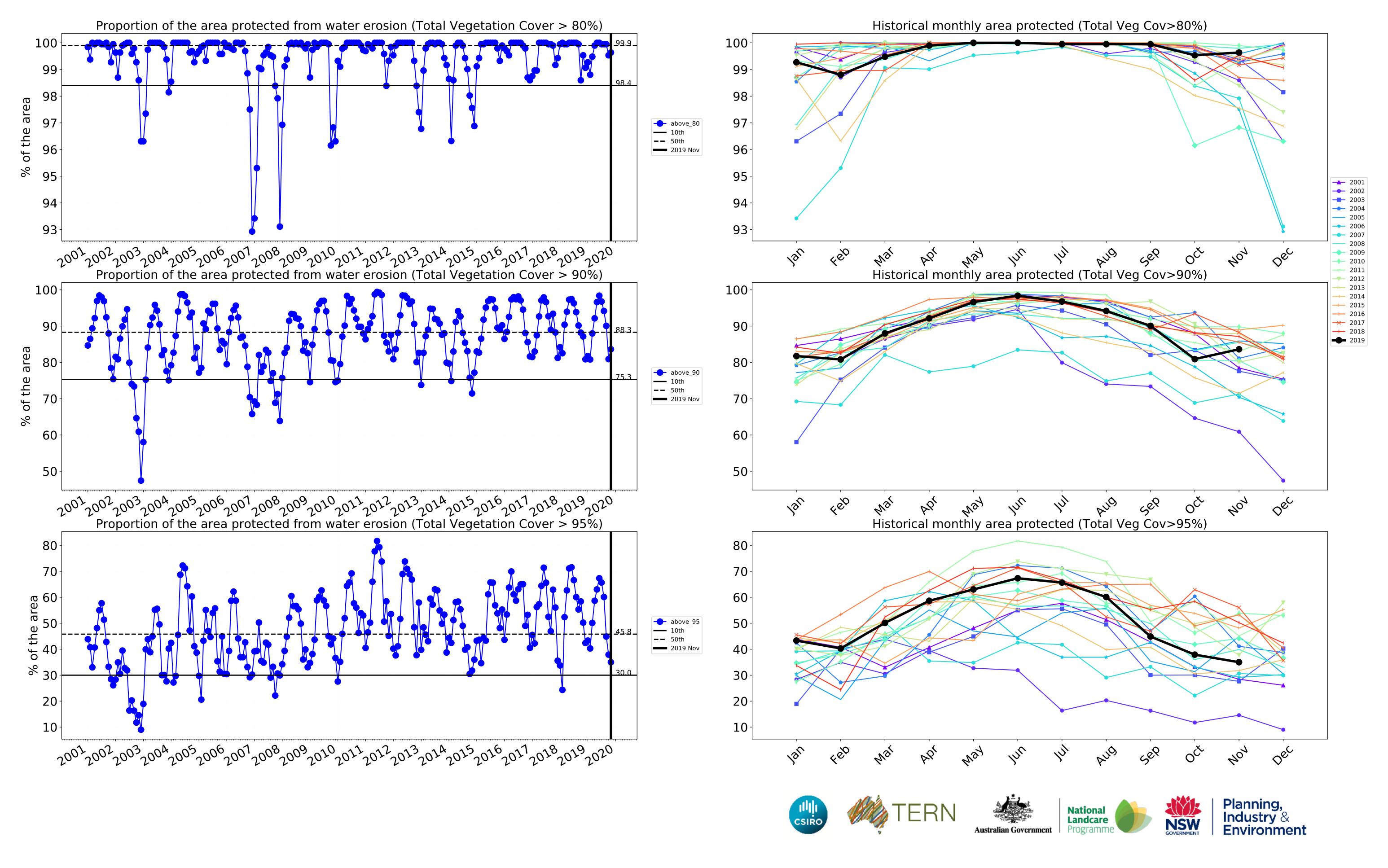




Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

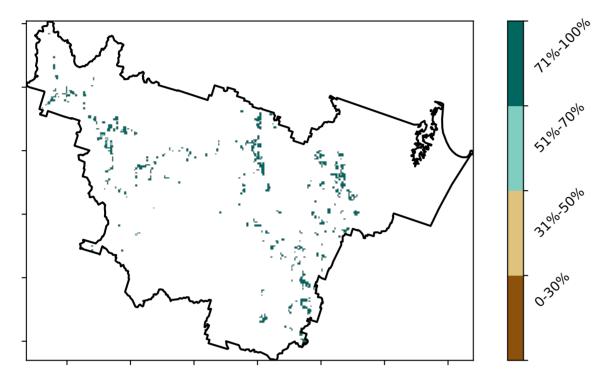


### Irrigation

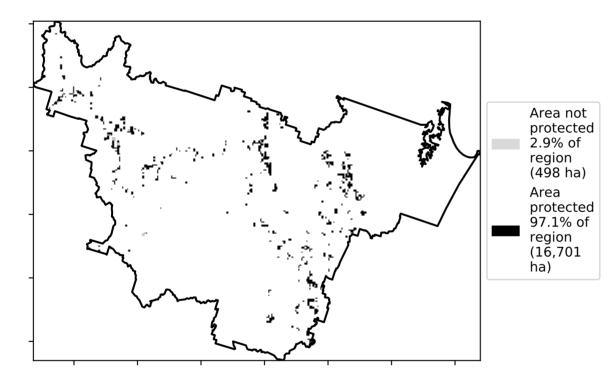
Catchment Scale Land Use and Forests of Australia (2018) 1 Agriculture - Grazing - Irrigated Derived from Catchment Scale Land Use of Australia (2018) and Forests 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated of Australia (2018)

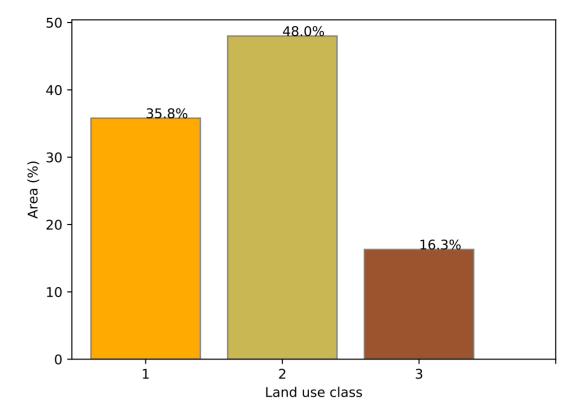
**Total Vegetation Cover [%]** 

Land use and forest cover



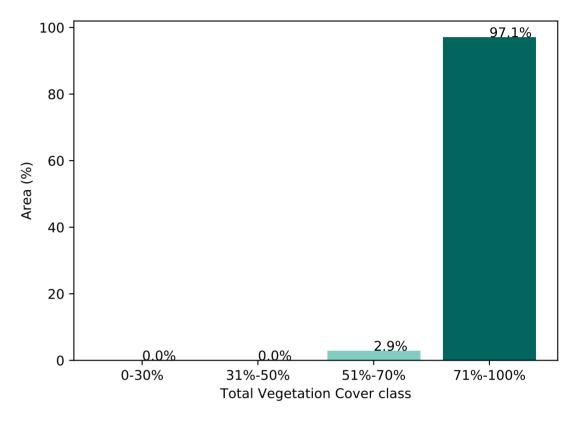
% Area protected from water erosion (>70%)



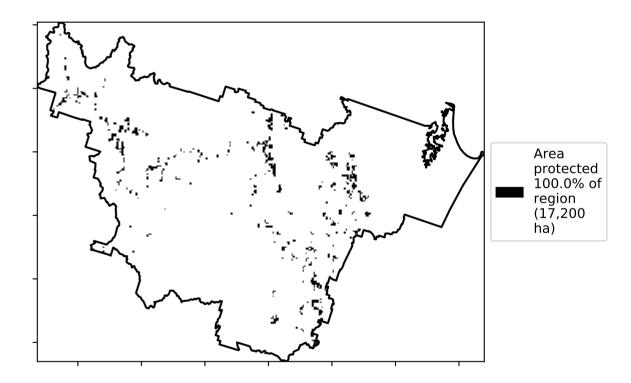


#### Proportion of each land class in area

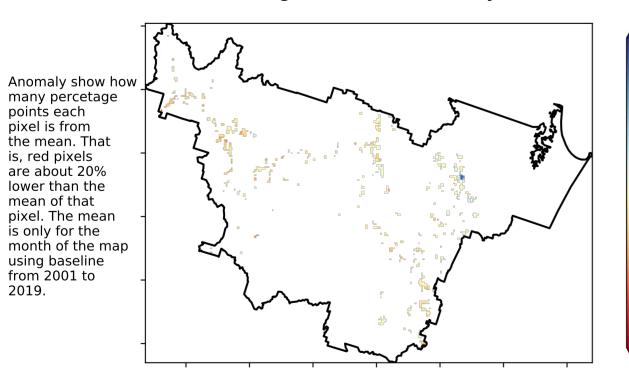
Proportion of vegetation cover class in area



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

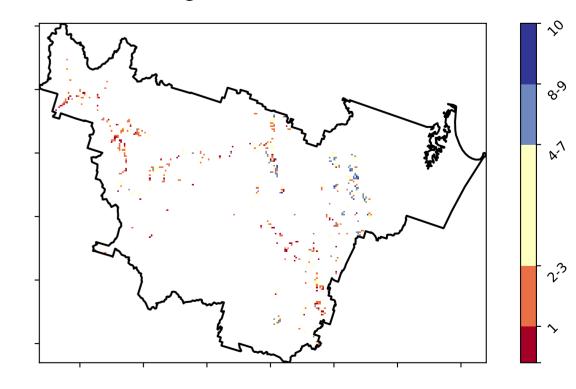


Total Vegetation Cover Anomaly [%]



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 [%]** 



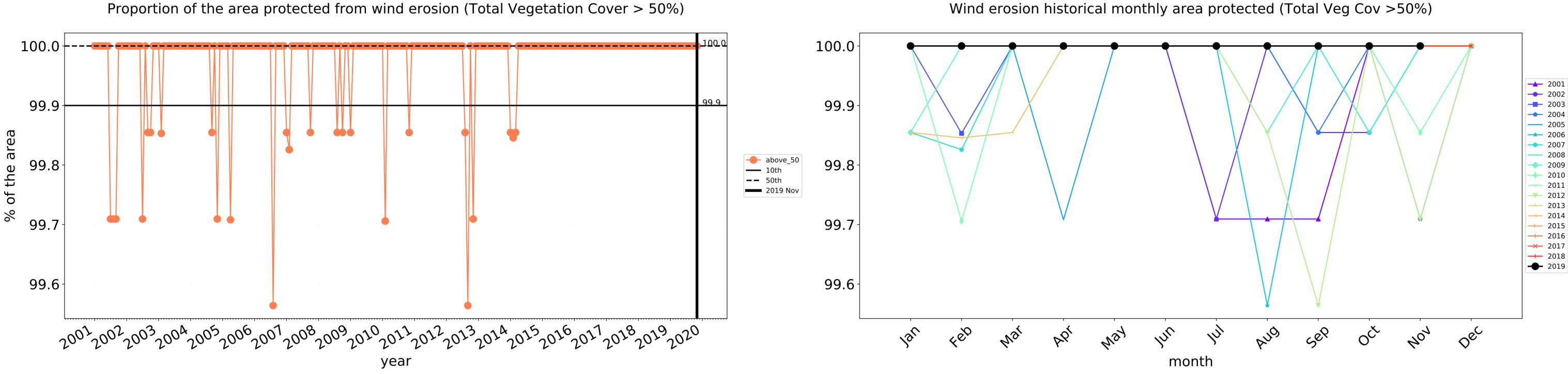


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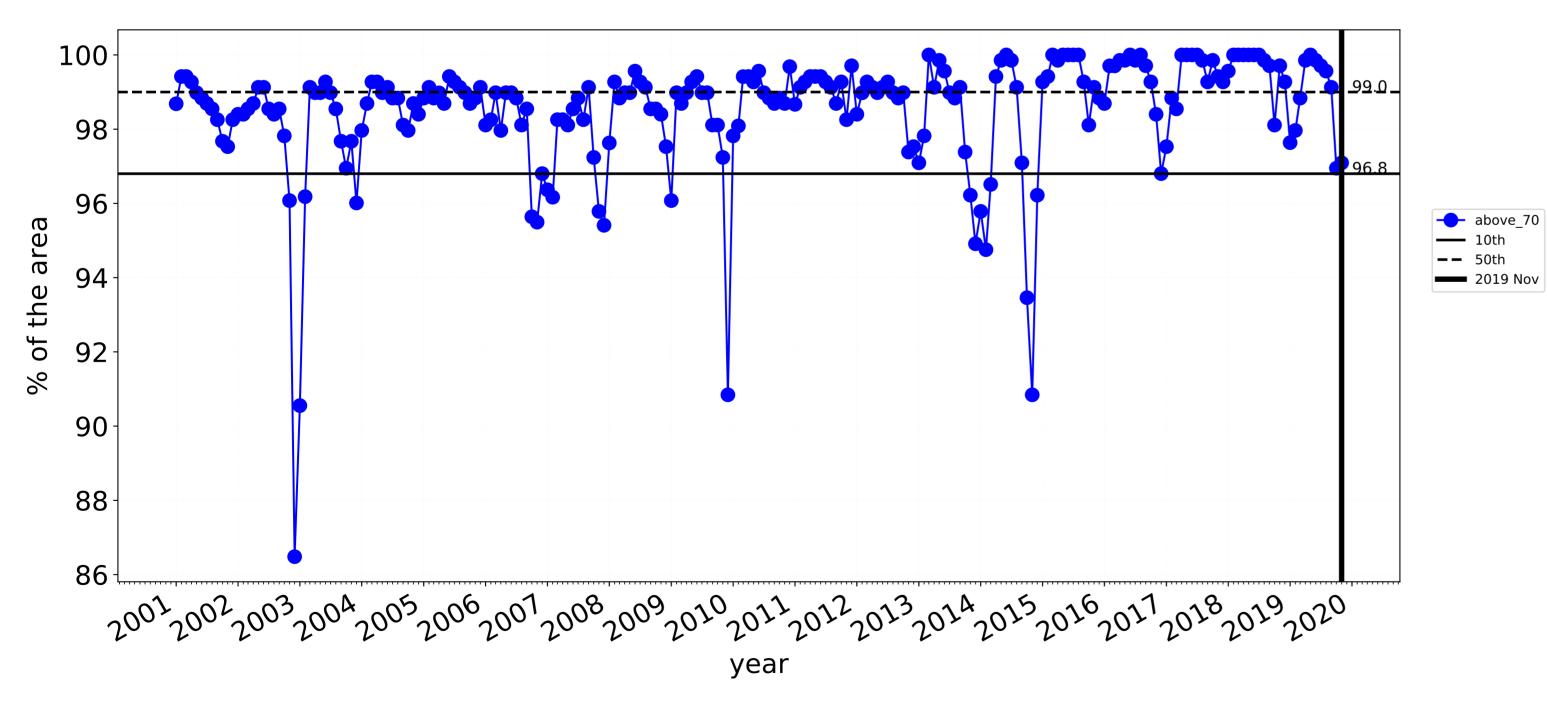
0

-10

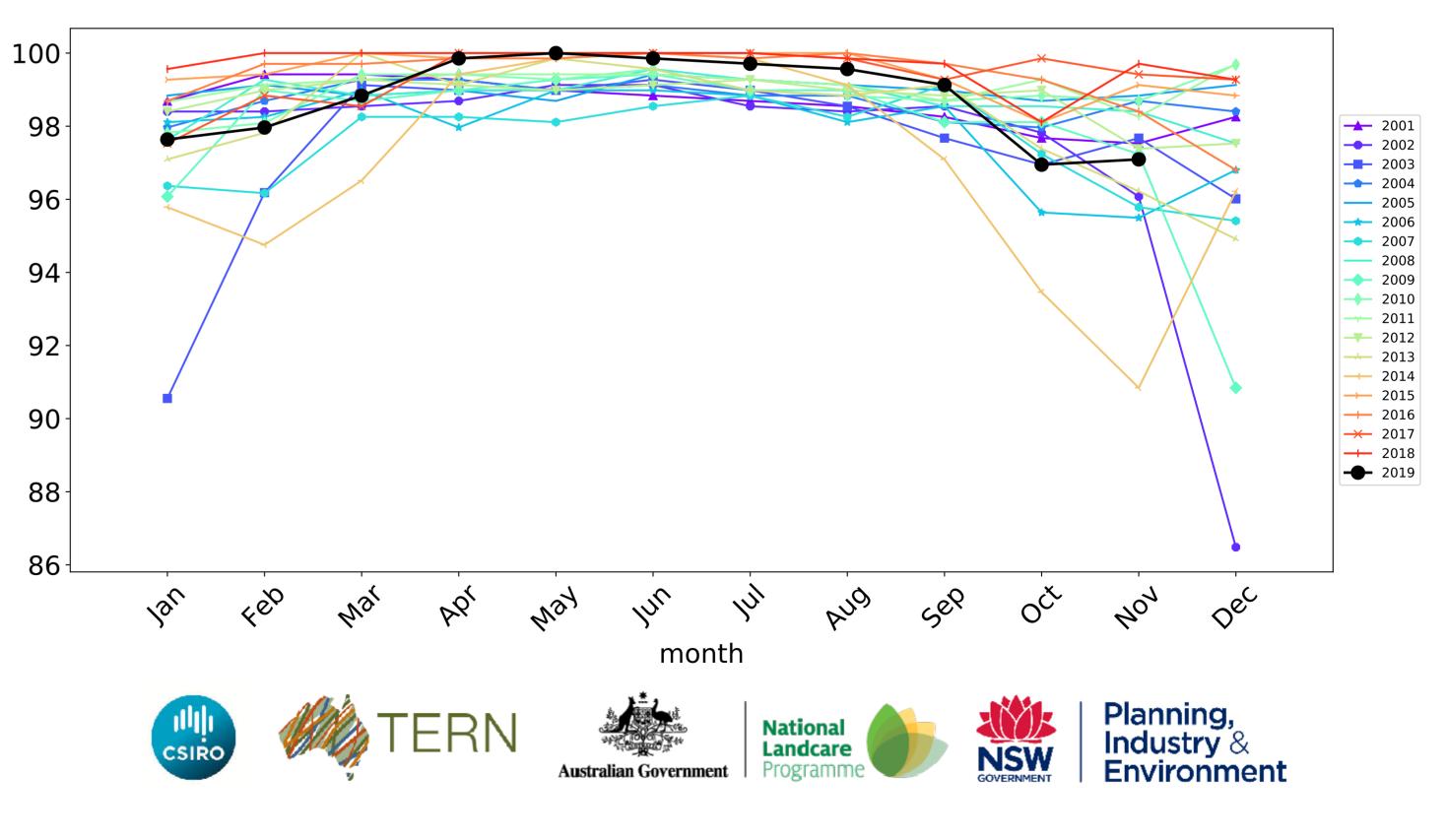


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

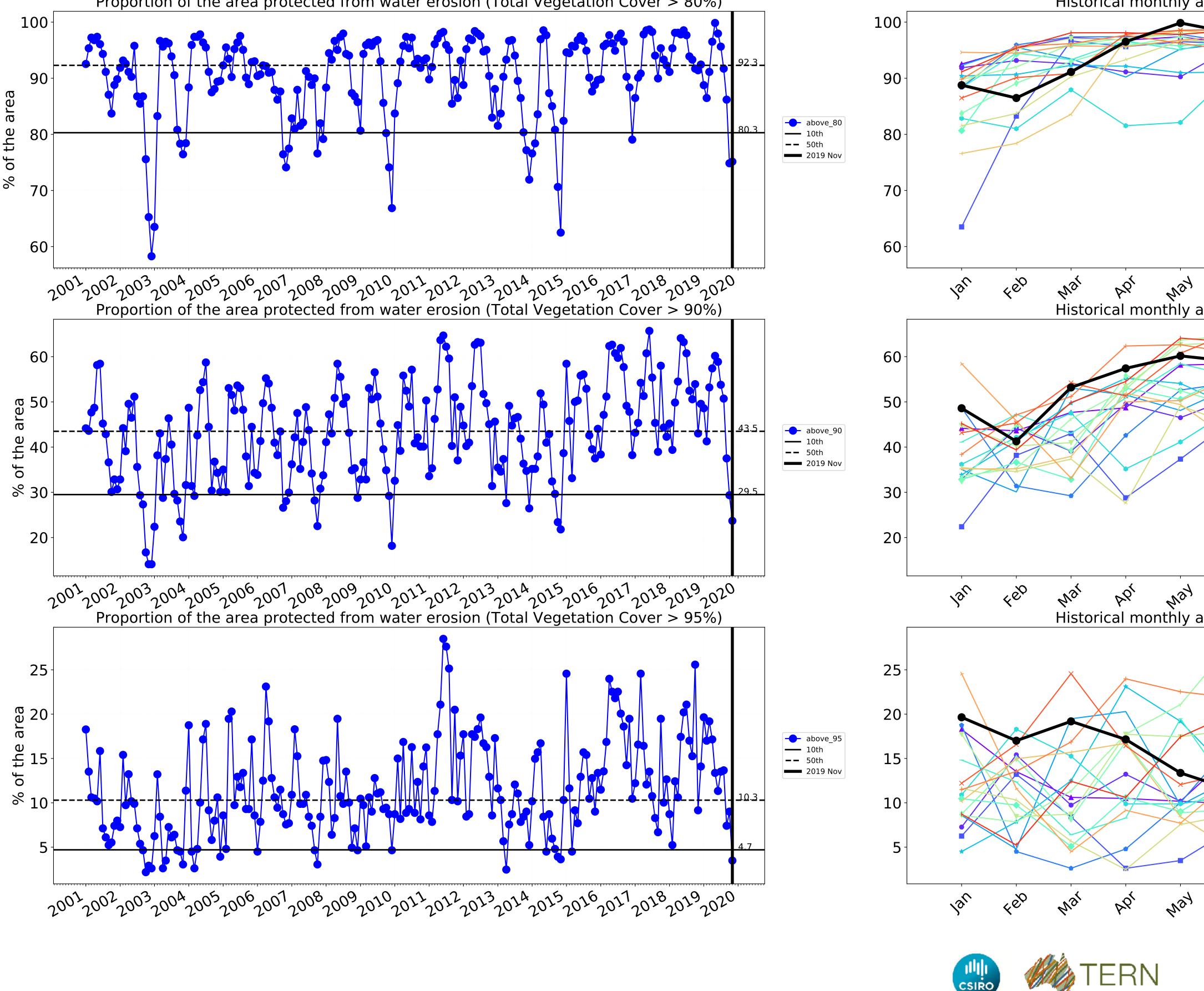


### Irrigation timeseries



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

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





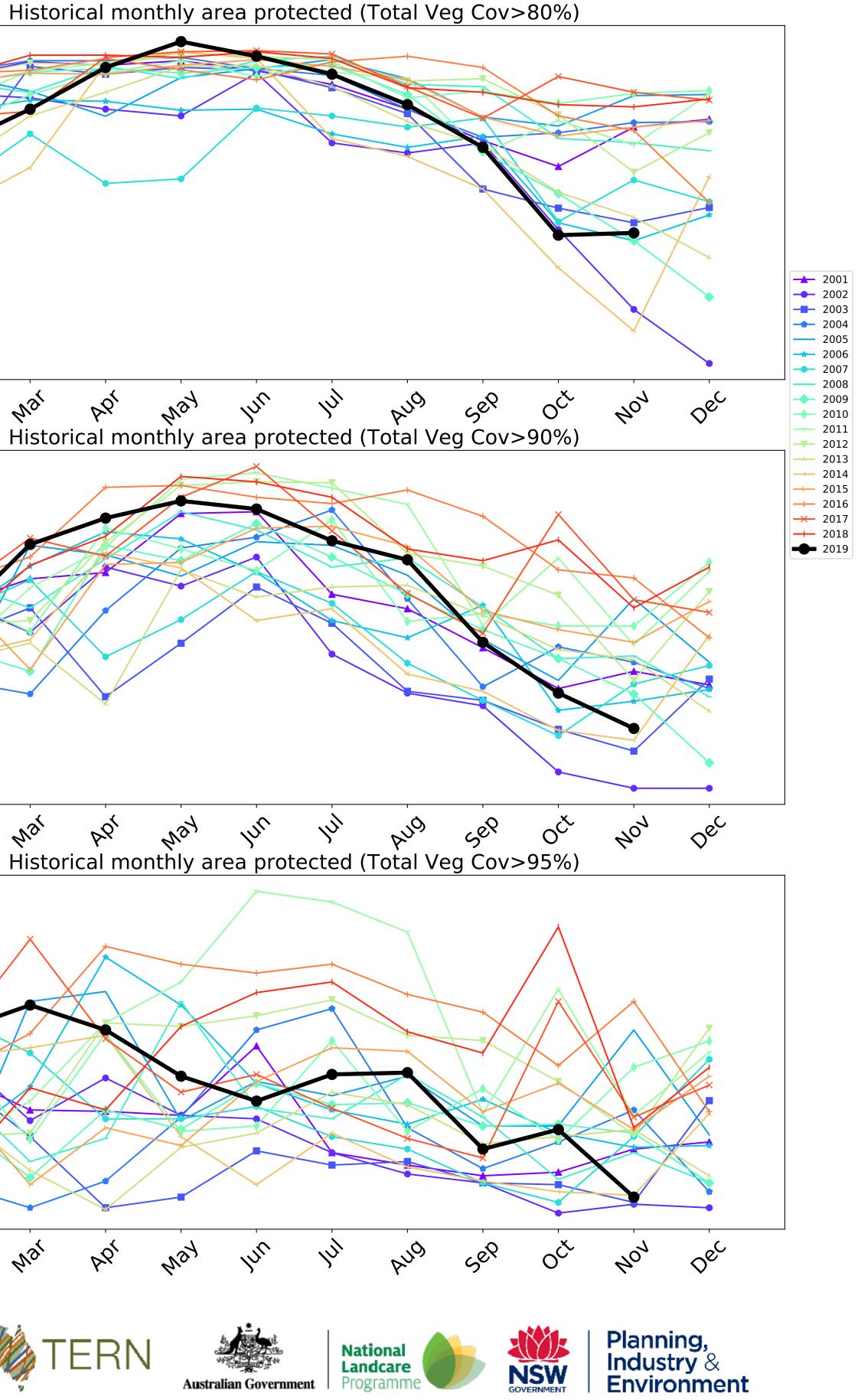
1's

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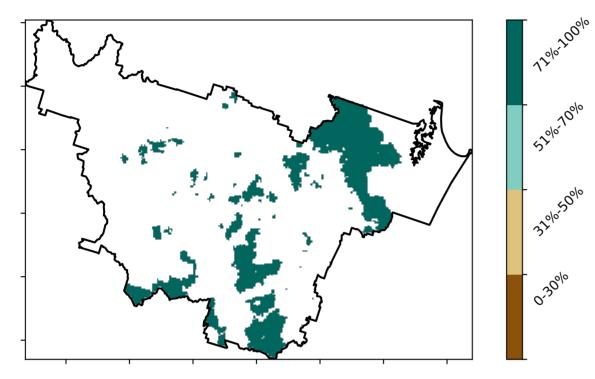


### **Production native forests and plantation forests**

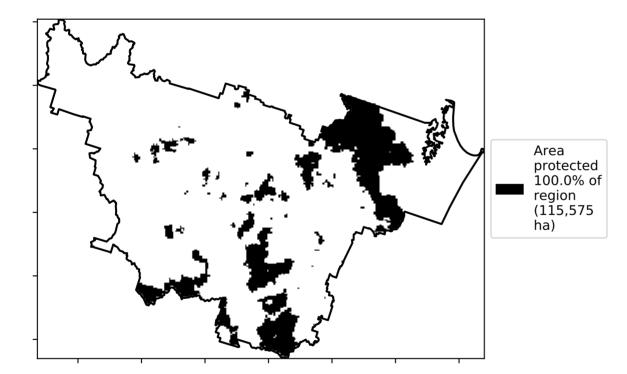
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]

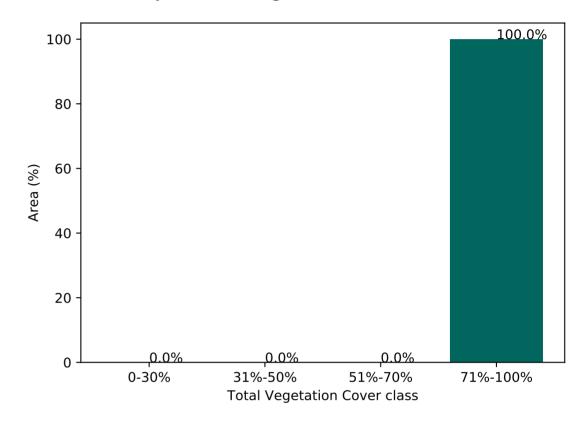
Land use and forest cover



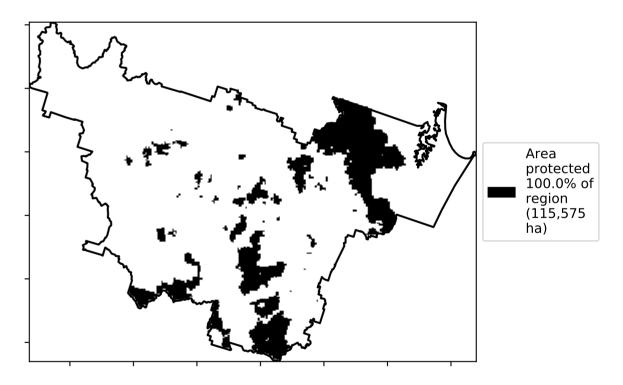
% Area protected from water erosion (>70%)



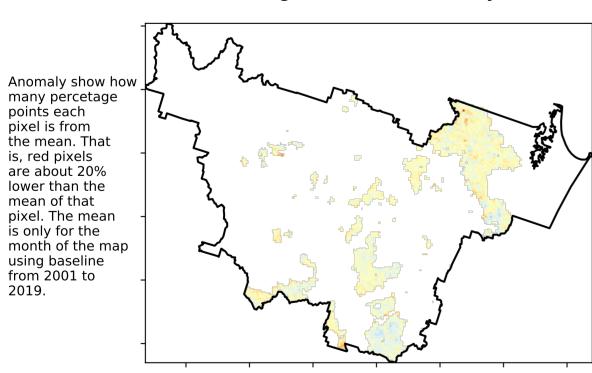
Proportion of vegetation cover class in area



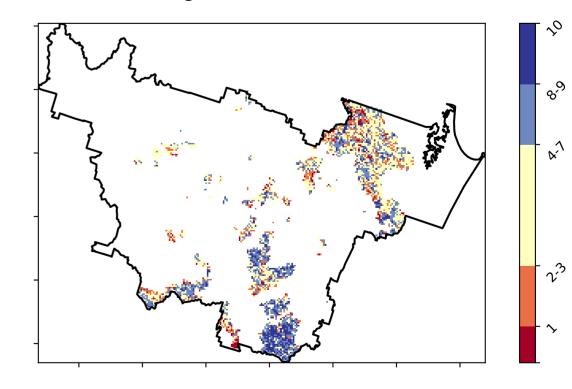
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



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 [%]** 



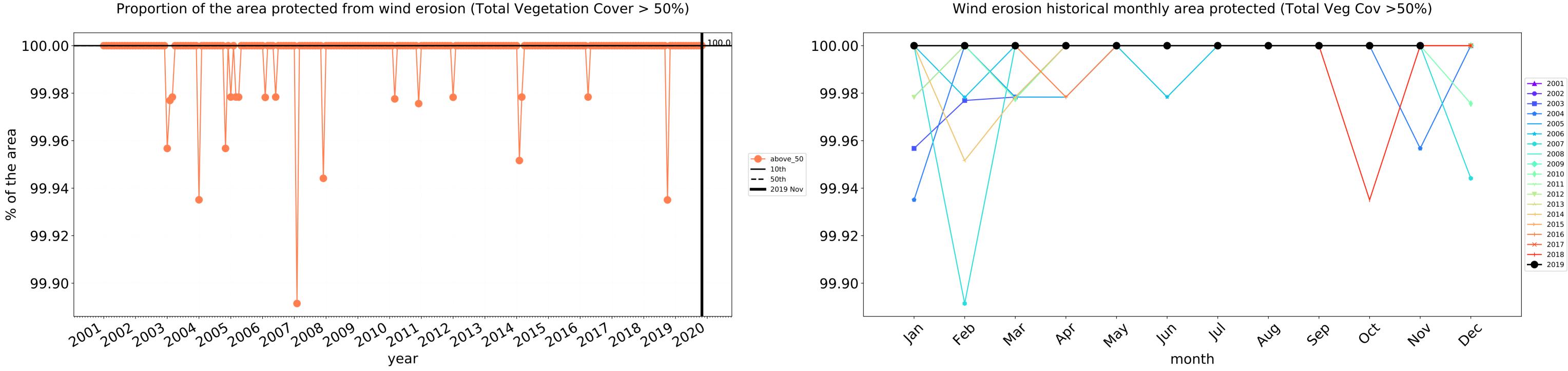


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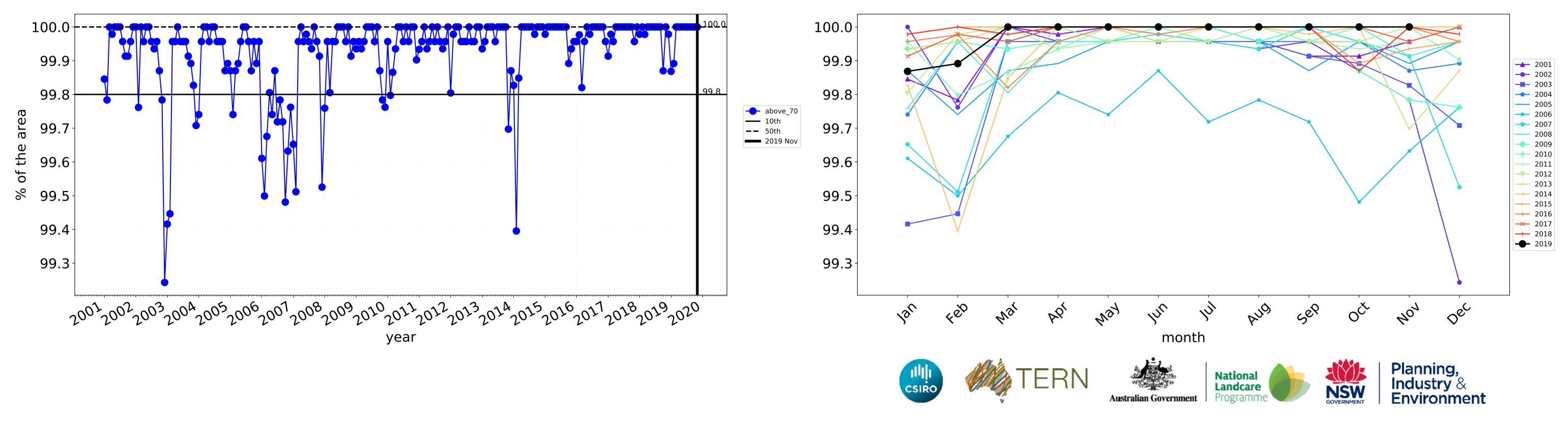
0

-10

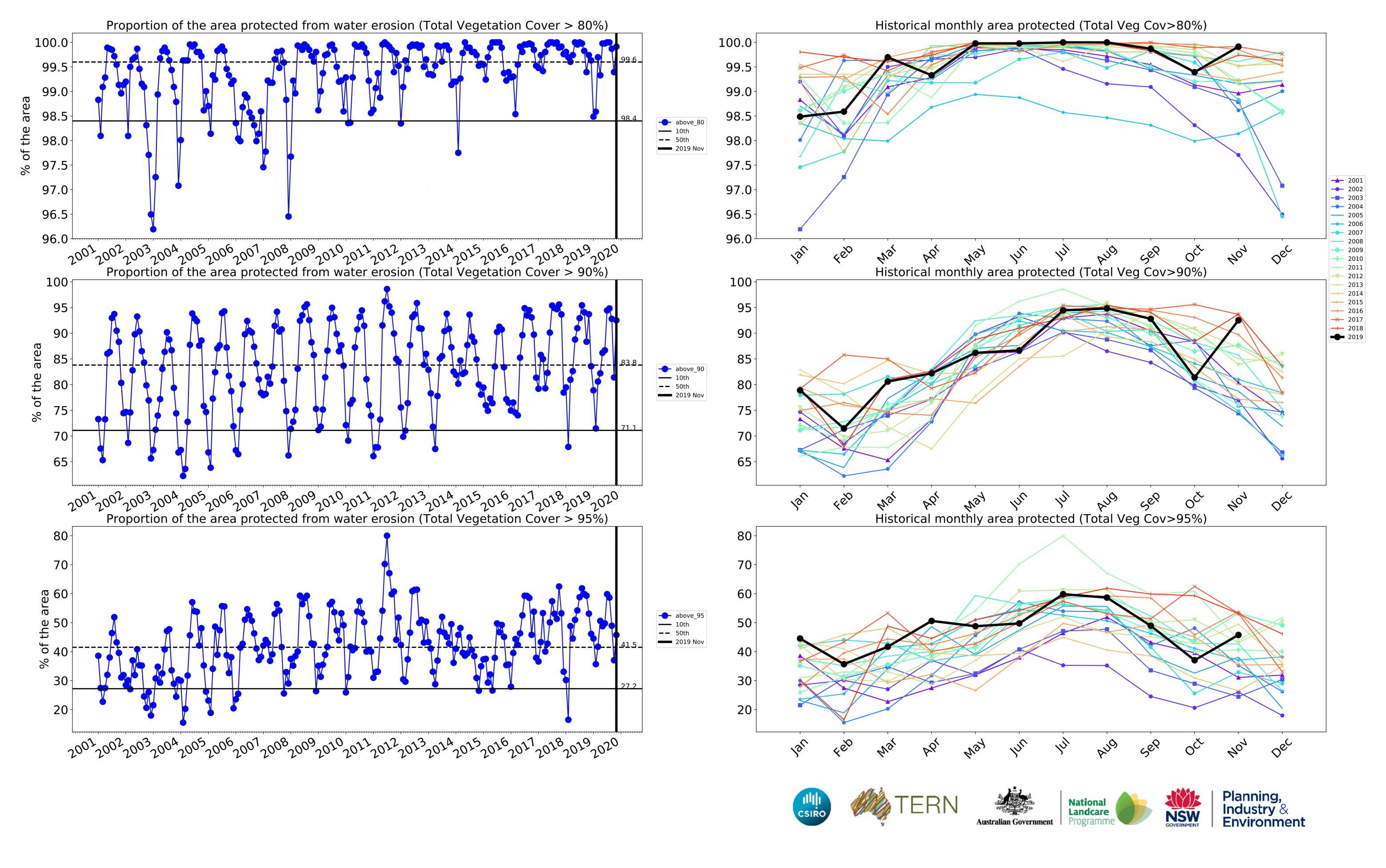


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



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



# Gympie\_(R) (686,775 ha and no data 1,600 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	686,775	100.0% 686,750	100.0% 686,650	99.5% 683,675	94.6% 649,800	62.6% 429,725	25.9% 177,775
Conservation and natural environments	142,325	100.0% 142,300	99.9% 142,225	99.6% 141,825	99.2% 141,125	90.8% 129,225	57.1% 81,325
Conservation and natural environments non forest	9,950	99.7% 9,925	99.5% 9,900	98.5% 9,800	97.7% 9,725	81.9% 8,150	48.0% 4,775
Conservation and natural environments Woodland forest	28,625	100.0% 28,625	100.0% 28,625	99.6% 28,500	99.3% 28,425	91.0% 26,050	50.6% 14,475
Conservation and natural environments Forest (non woodland)	103,750	100.0% 103,750	100.0% 103,700	99.8% 103,525	99.3% 102,975	91.6% 95,025	59.8% 62,075
Agriculture	397,625	100.0% 397,625	100.0% 397,625	99.5% 395,625	91.6% 364,250	45.1% 179,325	10.3% 41,025
Grazing	377,650	100.0% 377,650	100.0% 377,650	99.6% 376,150	92.4% 348,850	46.1% 173,975	10.6% 40,200
Grazing non forest	267,700	100.0% 267,700	100.0% 267,700	99.4% 266,225	89.8% 240,300	36.4% 97,350	5.7% 15,225
Grazing Woodland forest	61,875	100.0% 61,875	100.0% 61,875	100.0% 61,875	98.0% 60,650	58.9% 36,425	13.2% 8,150
Grazing - Forest (non woodland)	48,075	100.0% 48,075	100.0% 48,075	99.9% 48,050	99.6% 47,900	83.6% 40,200	35.0% 16,825
Irrigation	17,200	100.0% 17,200	100.0% 17,200	97.1% 16,700	75.1% 12,925	23.7% 4,075	3.5% 600
Production native forests and plantation forests	115,575	100.0% 115,575	100.0% 115,575	100.0% 115,575	99.9% 115,475	92.5% 106,925	45.7% 52,875

