# Total vegetation cover soil protection Region:NRM Burnett Mary QLD

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

Land use forest cover:

Date: January 2019

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

### **Erosion protection**

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

### Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data.

Water erosion protection for higher rainfall and steeper slopes:

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

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

### **Acknowledgment of data:**

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

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











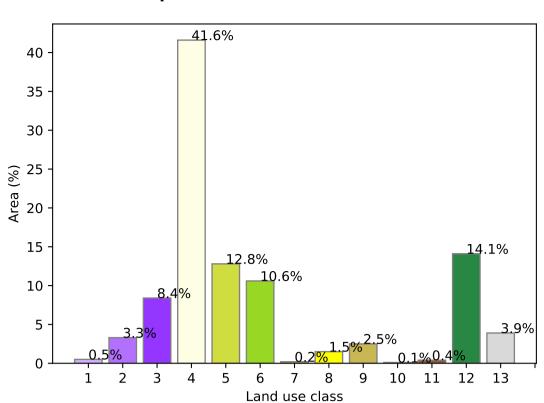


### **Vegetation Cover Jan 2019**

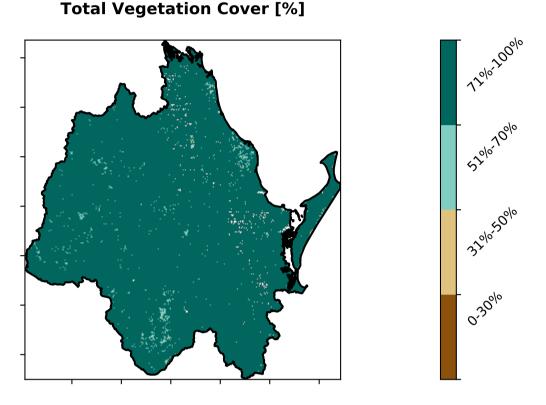
### Land use and forest cover

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

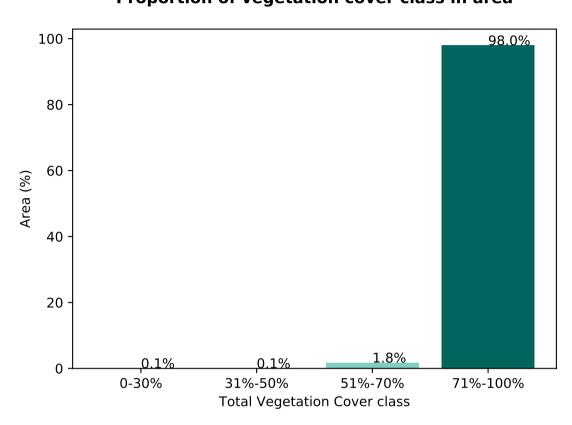
### Proportion of each land class in area



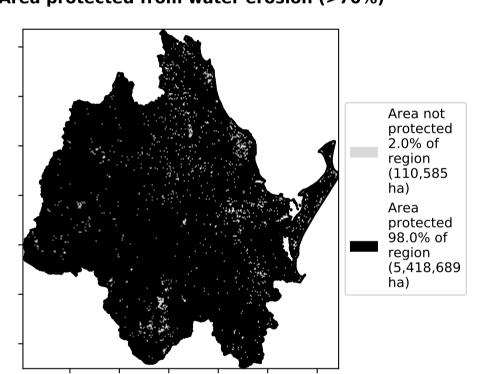
### Total Vagatation Cover [9/]



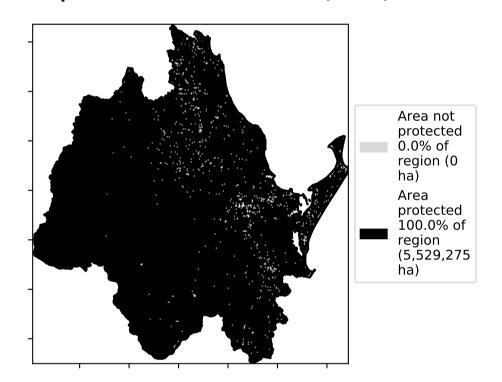
Proportion of vegetation cover class in area



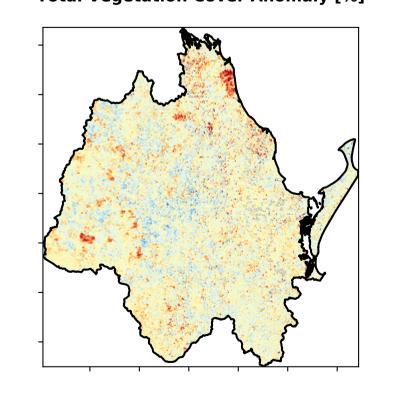
### % Area protected from water erosion (>70%)

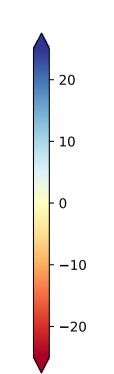


% Area protected from wind erosion (>50%)



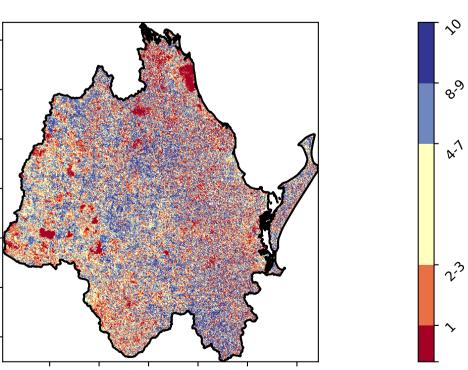
### Total Vegetation Cover Anomaly [%]





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

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



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

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

Derived from

Use of Australia

Land Use and Forests

Catchment Scale Land



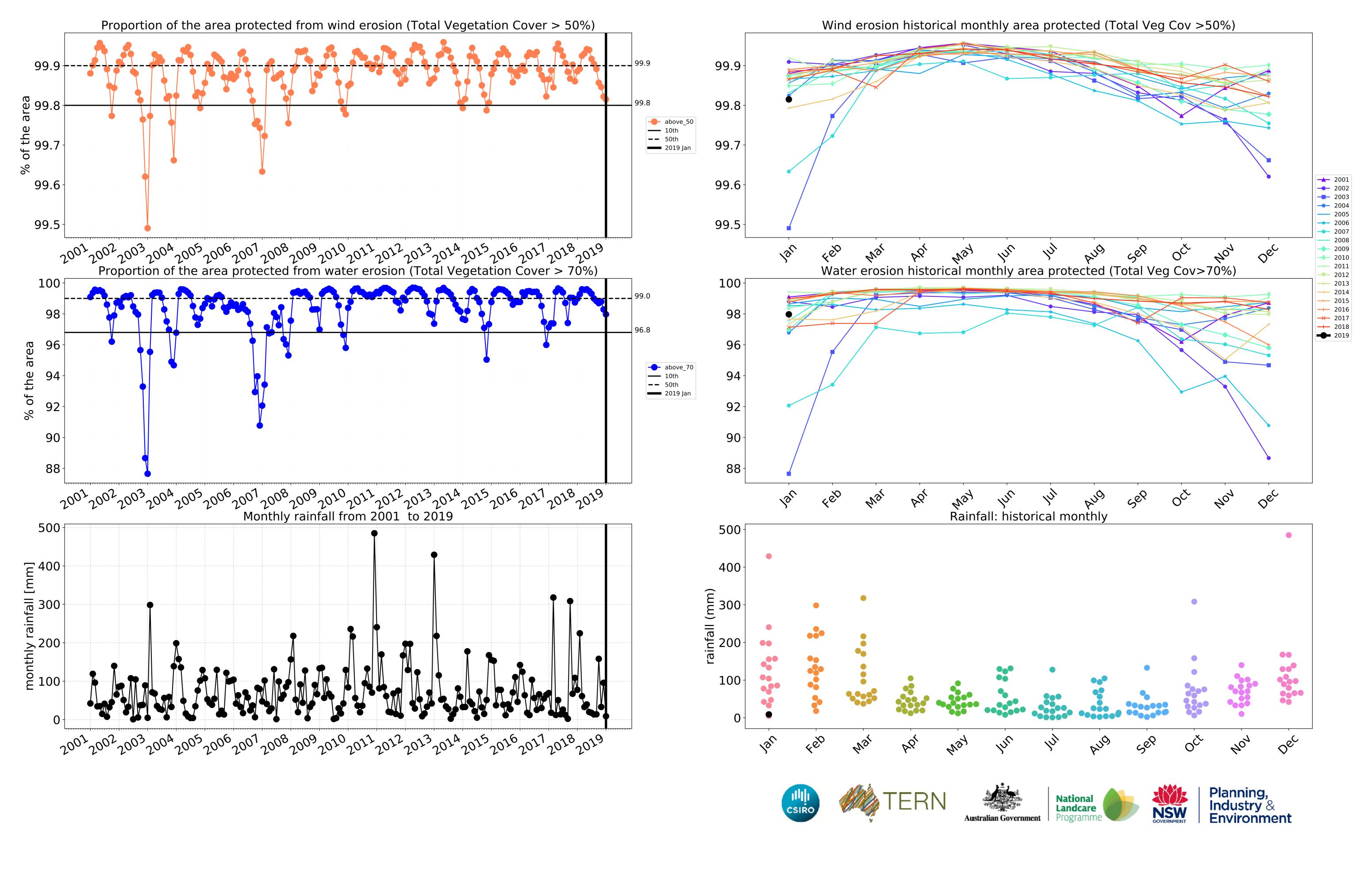




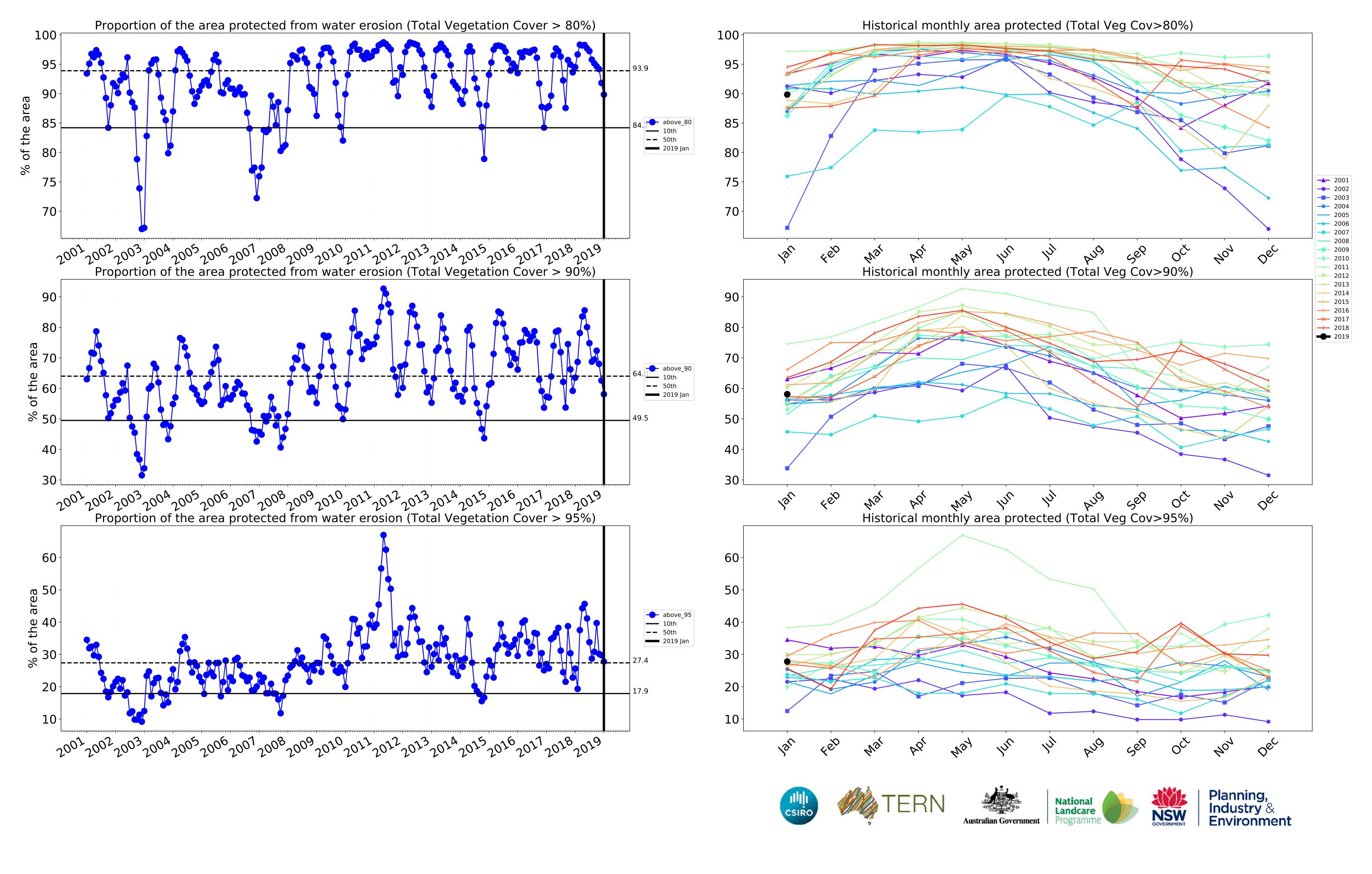








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### **Conservation and natural environments**

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

Anomaly show how many percetage points each

pixel is from

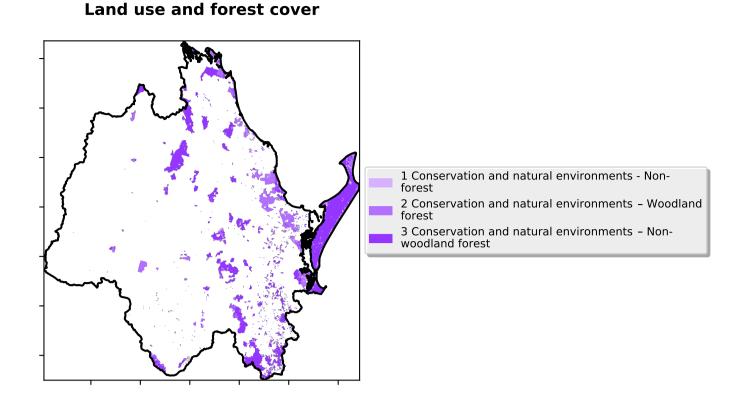
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pixel. The mean

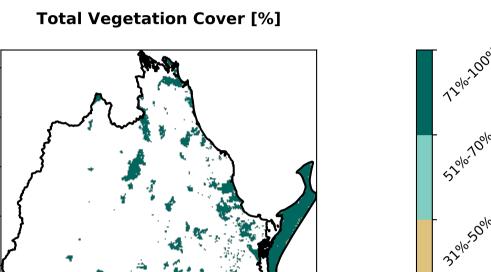
using baseline from 2001 to 2019.

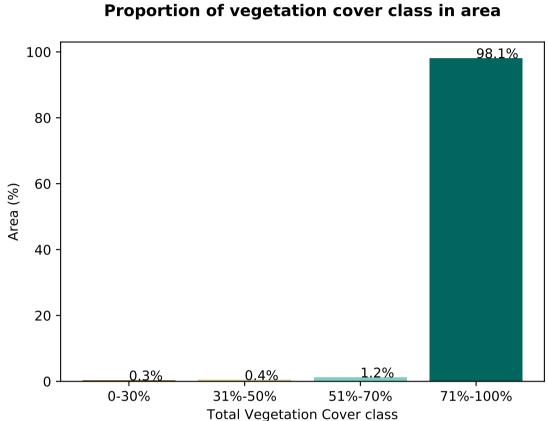
is only for the month of the map

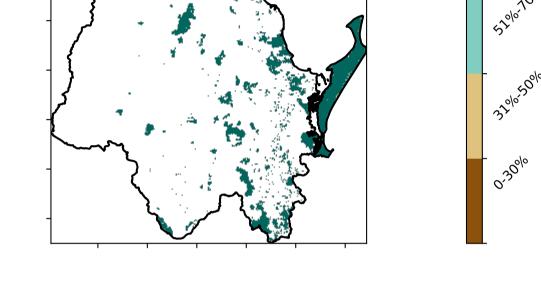


# 70 - 68.6% 60 - 50 - 27.0% 20 - 27.0% 1 2 2 3 Land use class

**Proportion of each land class in area** 

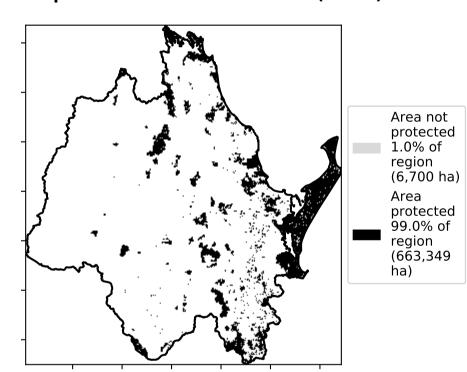






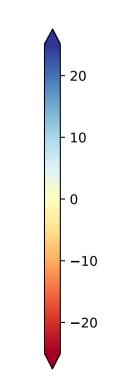
% Area protected from wind erosion (>50%)

# Area not protected 1.9% of region (12,730 ha) Area protected 98.1% of region (657,319 ha)

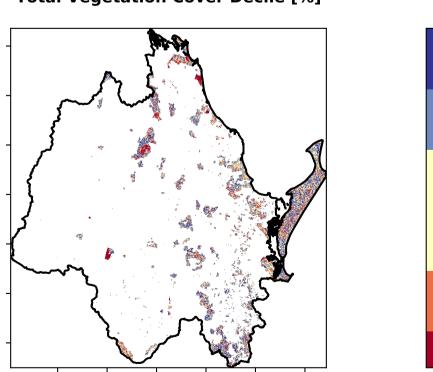


### Total Vegetation Cover Anomaly [%]

% Area protected from water erosion (>70%)



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







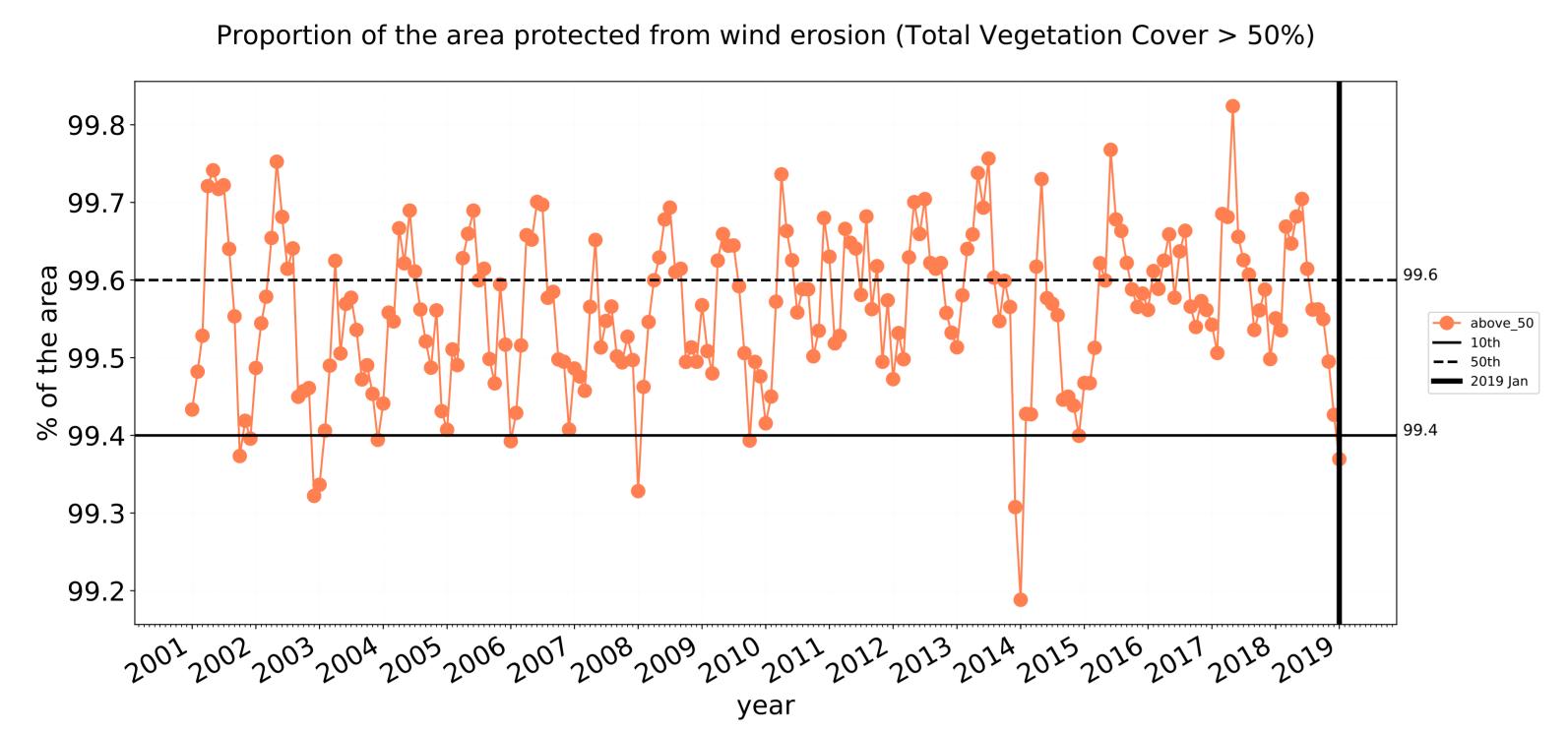




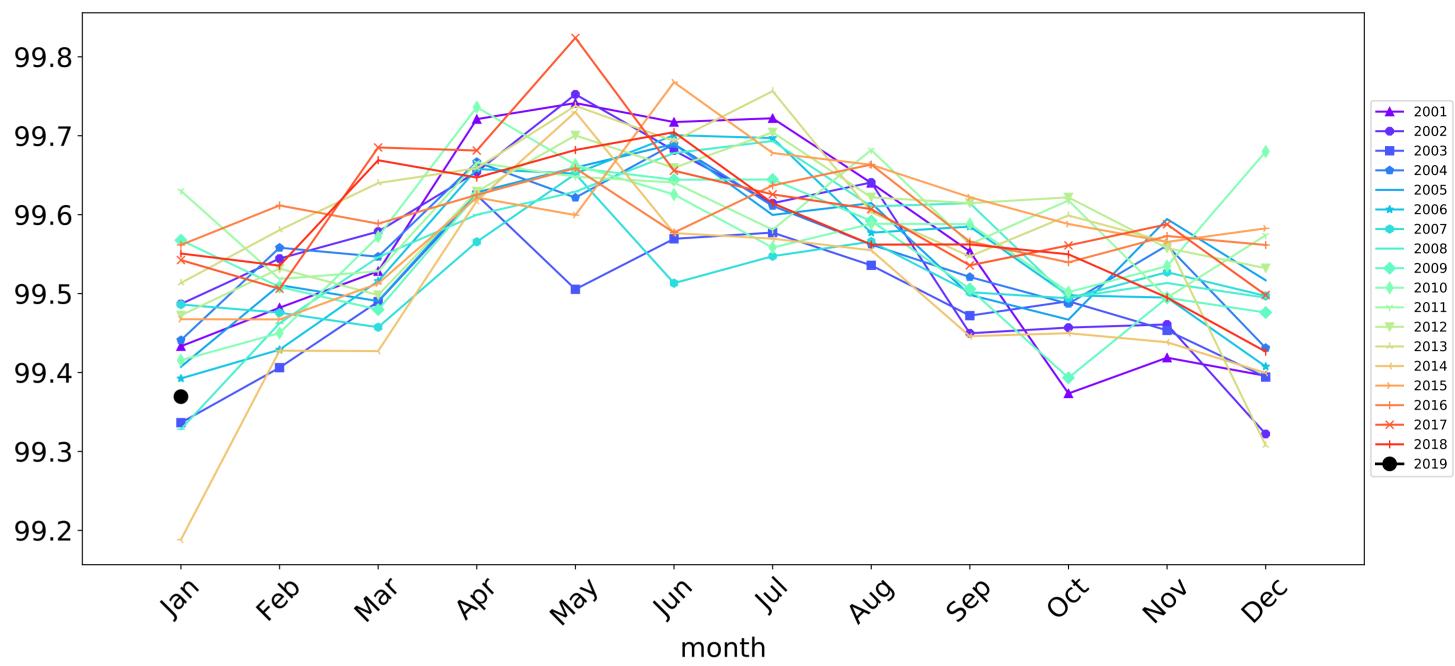


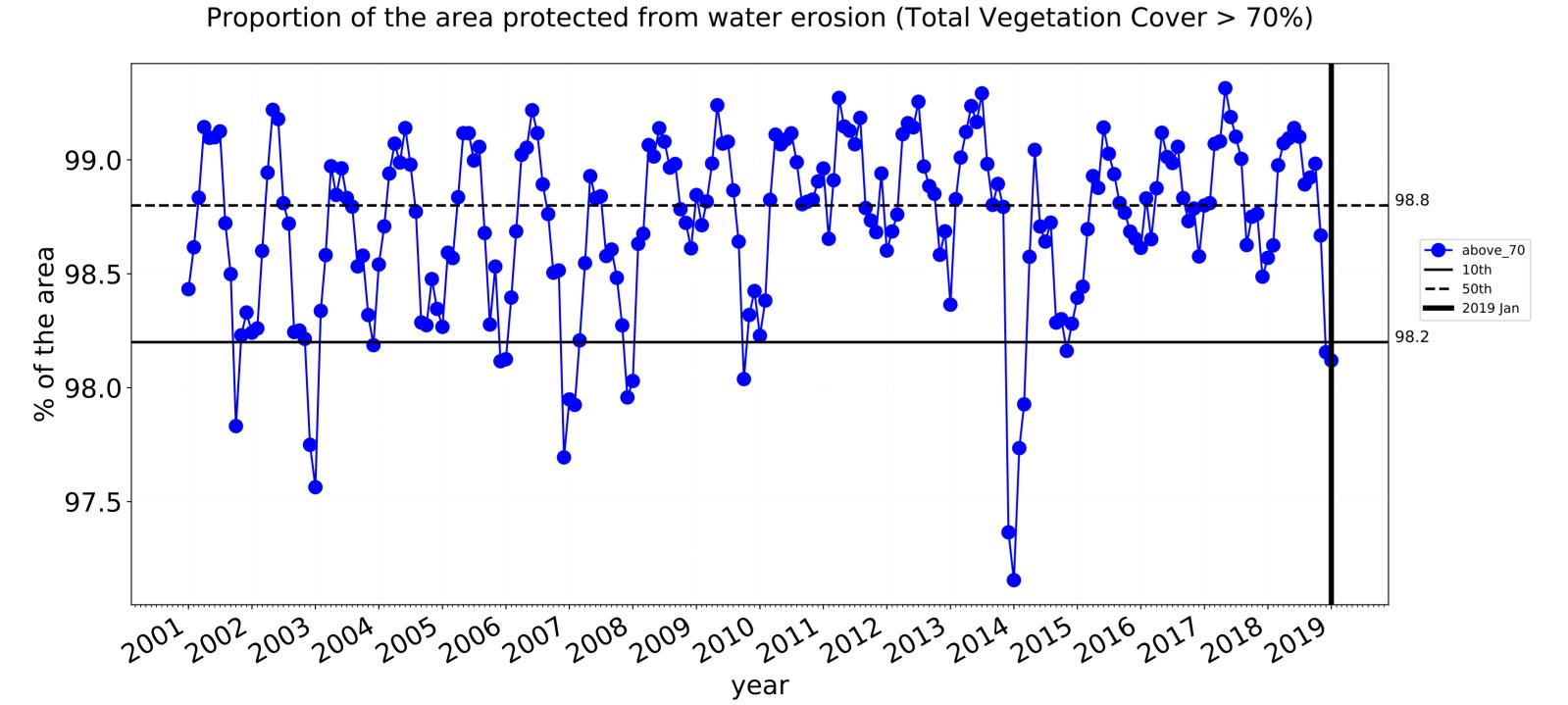


### **Conservation and natural environments timeseries**

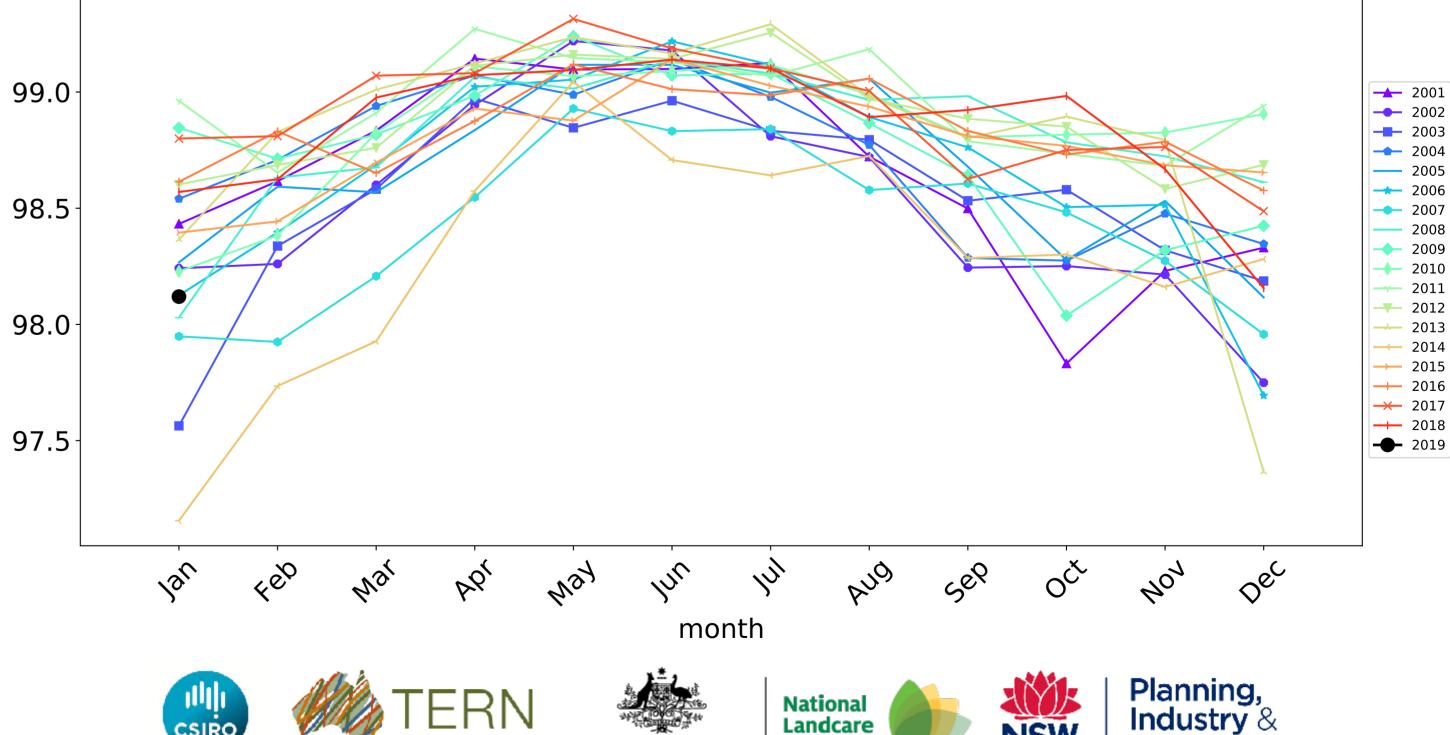


### Wind erosion historical monthly area protected (Total Veg Cov >50%)





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

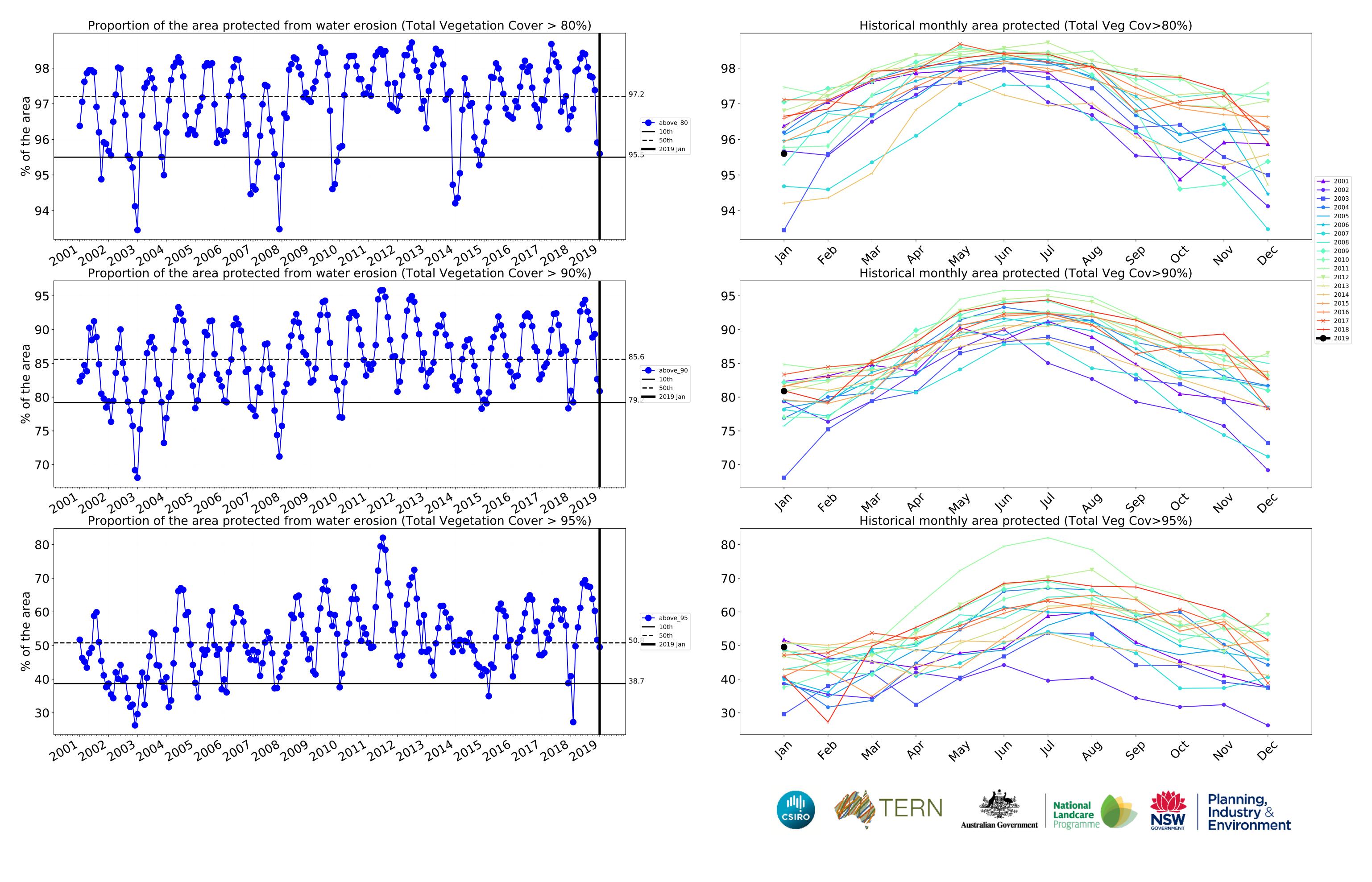












### **Conservation and natural environments Woodland forest**

### Land use and forest cover

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

Anomaly show how many percetage points each

pixel is from

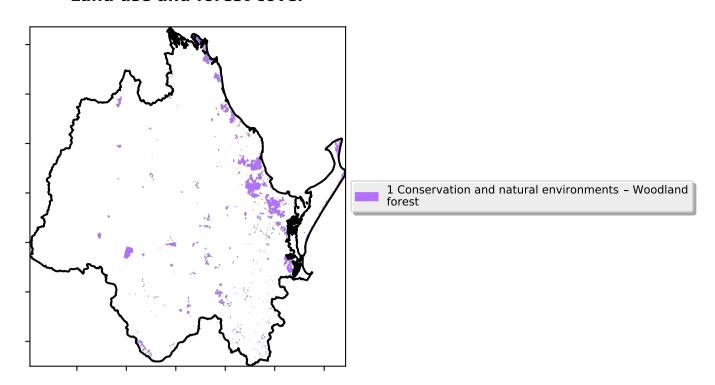
is, red pixels are about 20% lower than the

mean of that pixel. The mean

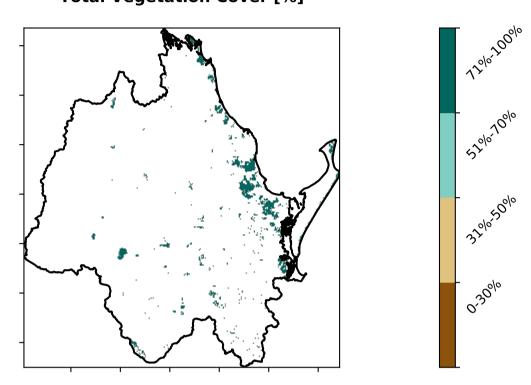
is only for the month of the map

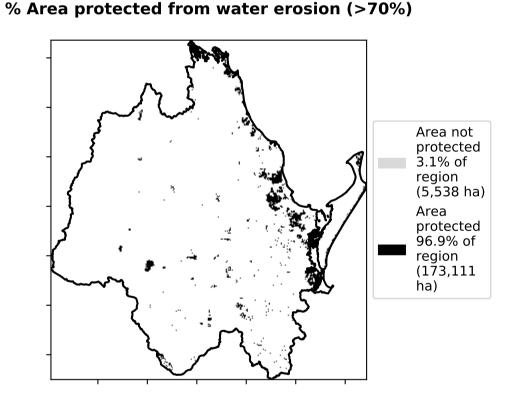
using baseline from 2001 to 2019.

the mean. That

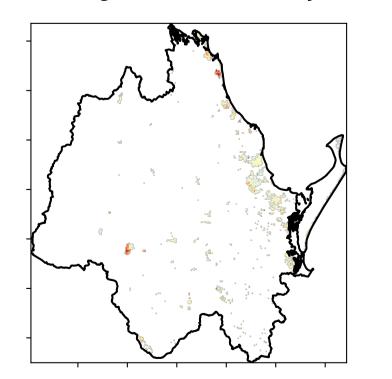


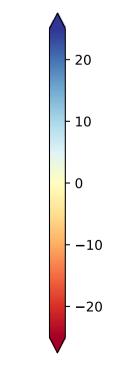
### **Total Vegetation Cover [%]**





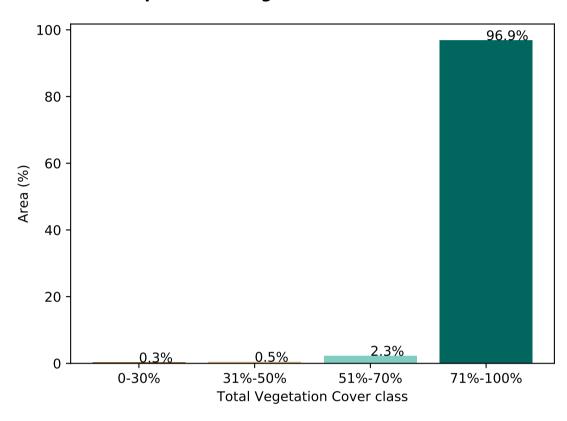
### Total Vegetation Cover Anomaly [%]



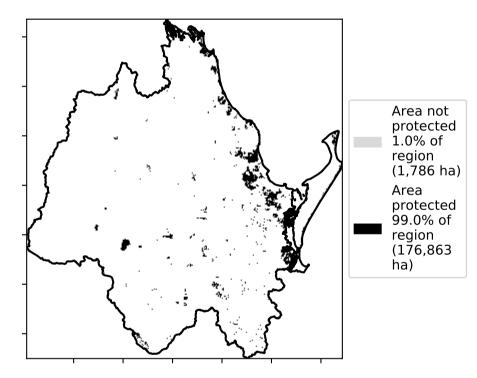


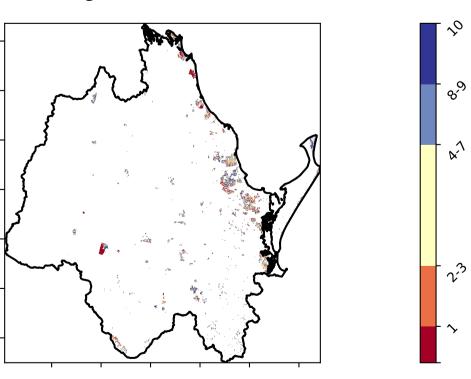
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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









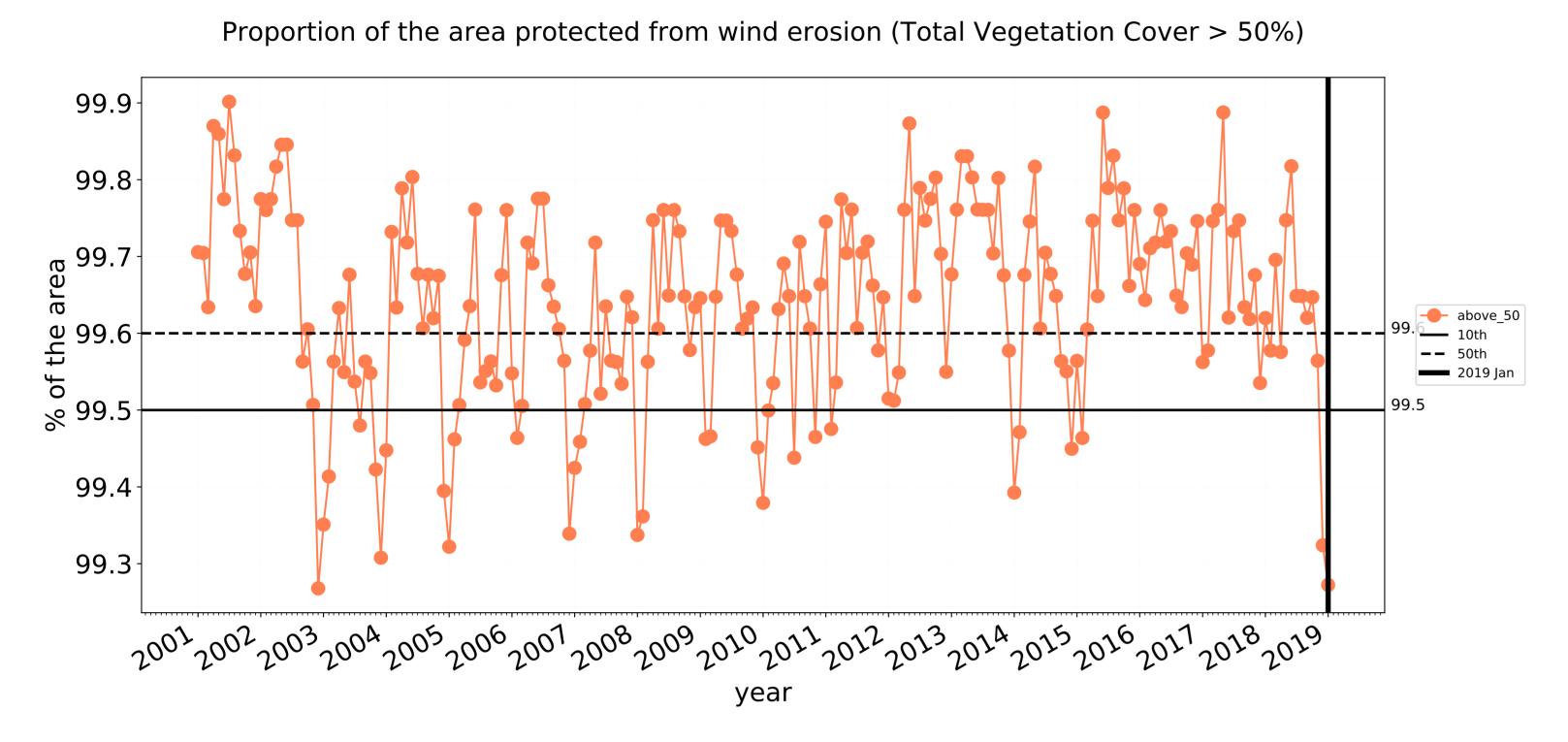




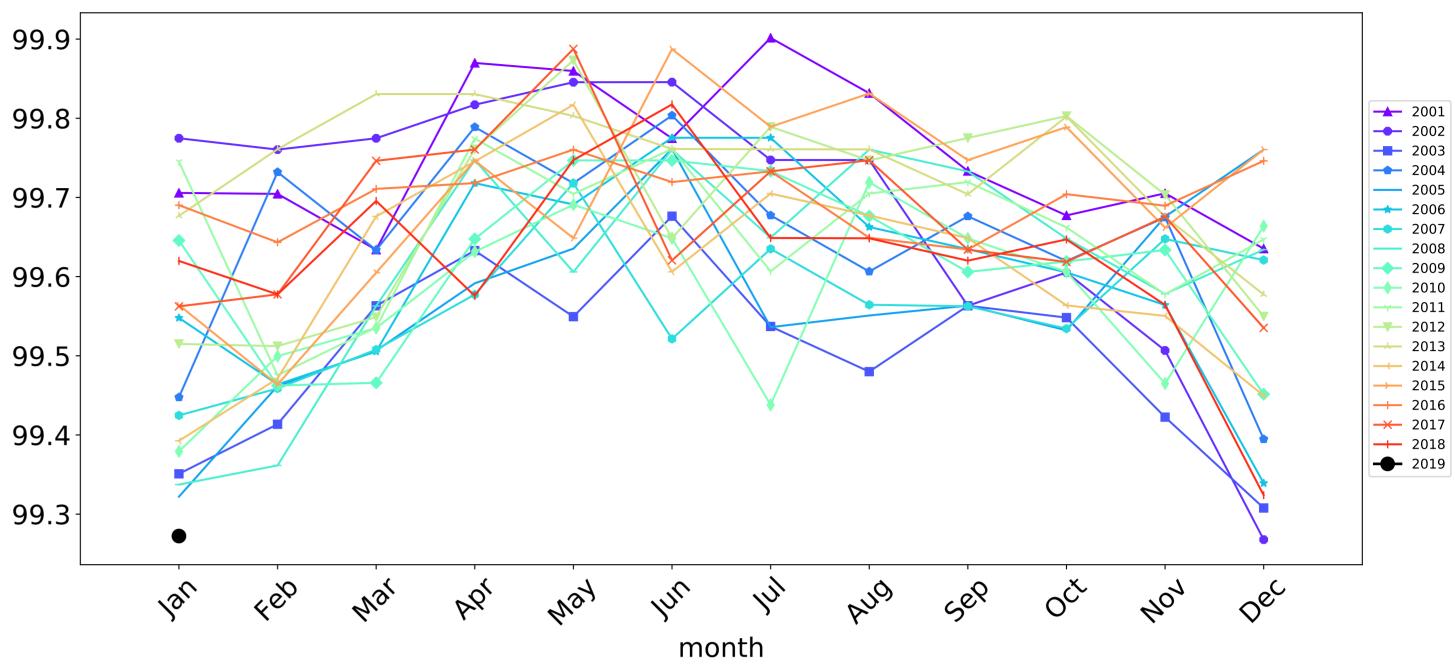


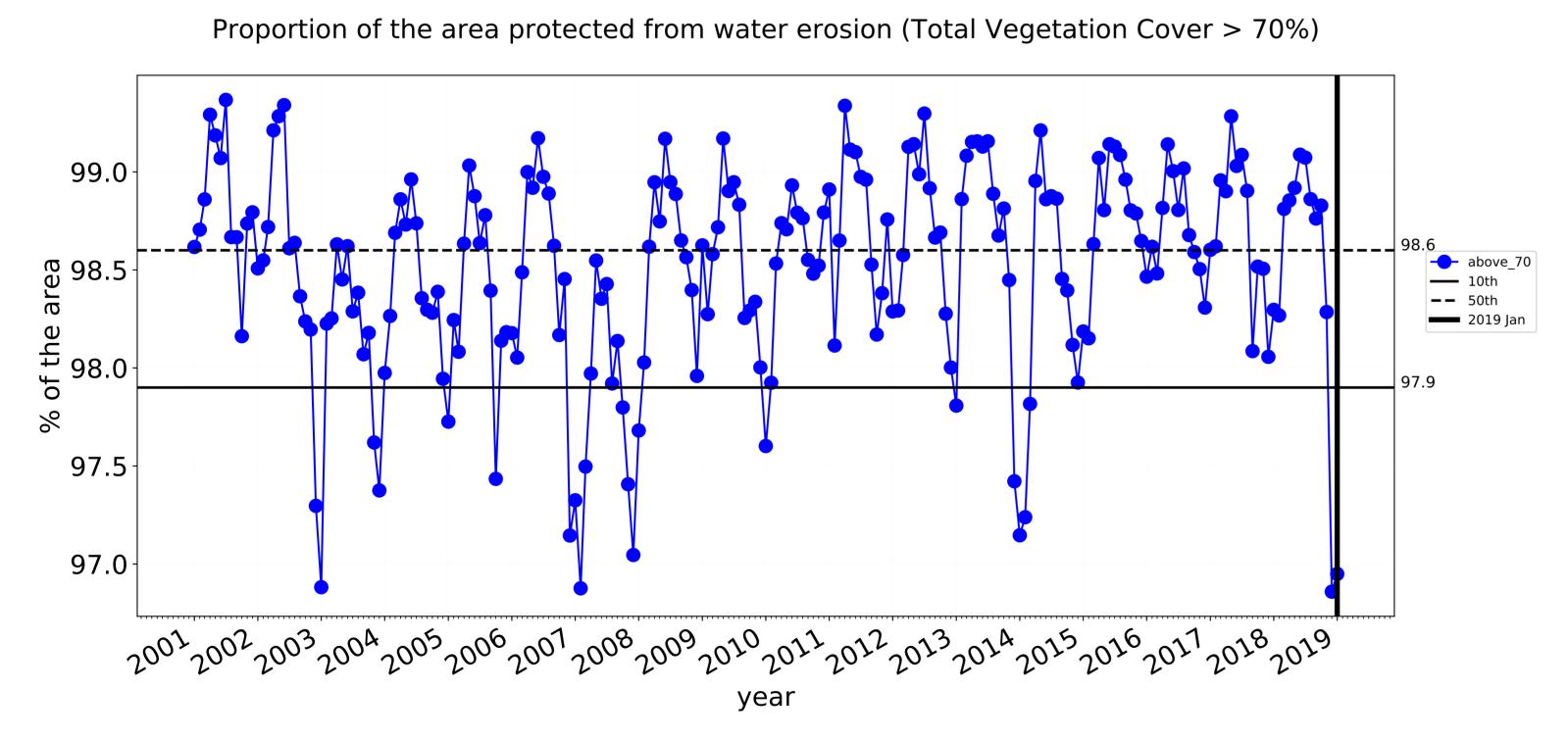


### **Conservation and natural environments Woodland forest timeseries**

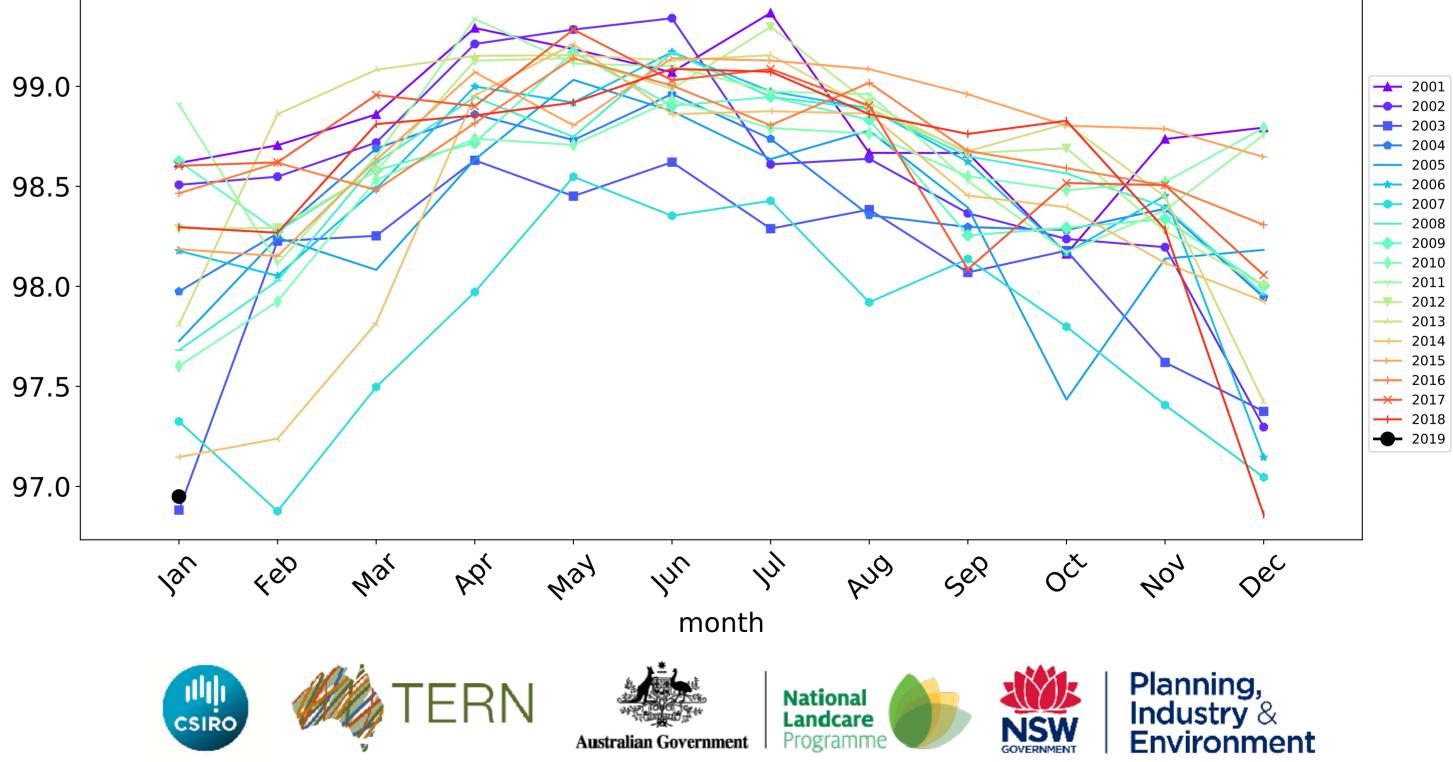


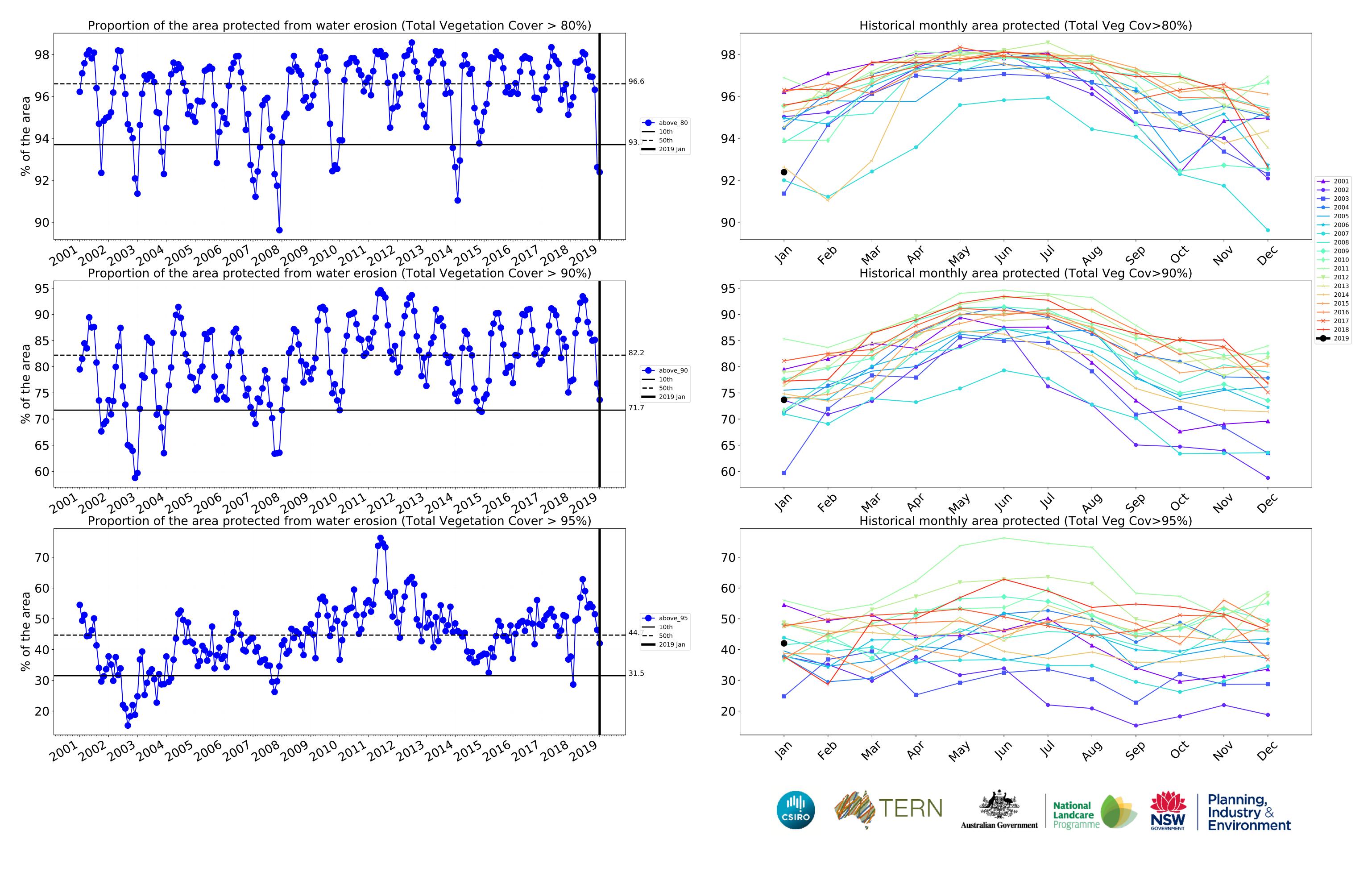
### Wind erosion historical monthly area protected (Total Veg Cov >50%)





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





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

### Land use and forest cover

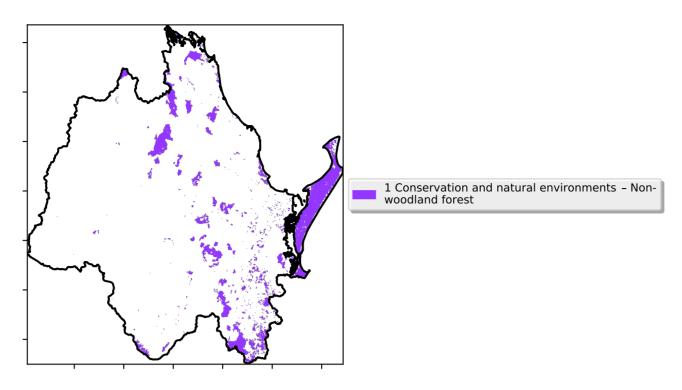
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each pixel is from the mean. That

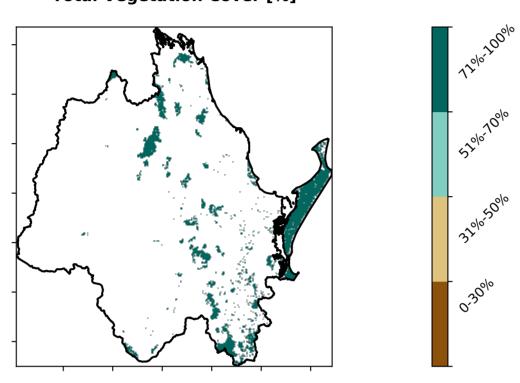
is, red pixels are about 20% lower than the

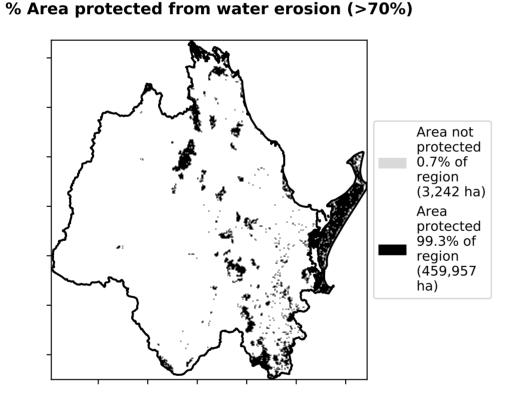
mean of that pixel. The mean

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

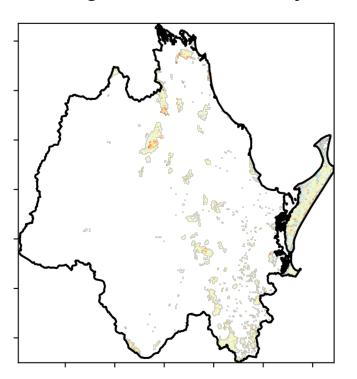


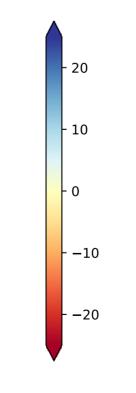
### **Total Vegetation Cover [%]**





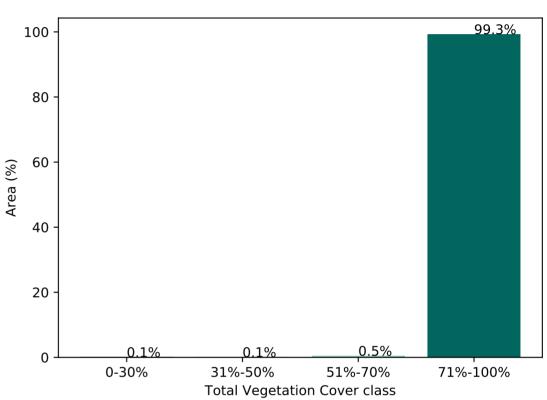
**Total Vegetation Cover Anomaly [%]** 



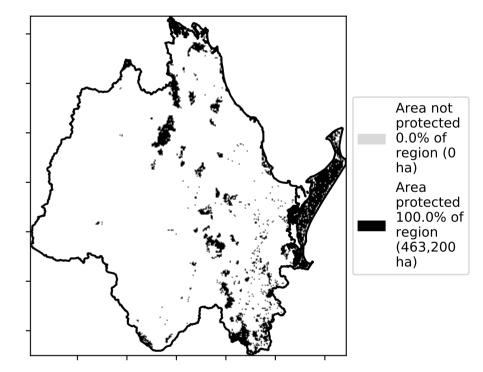


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

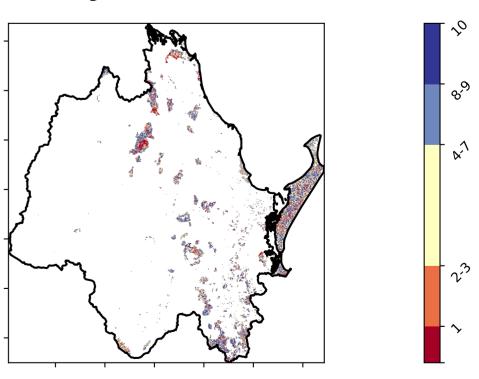
### Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





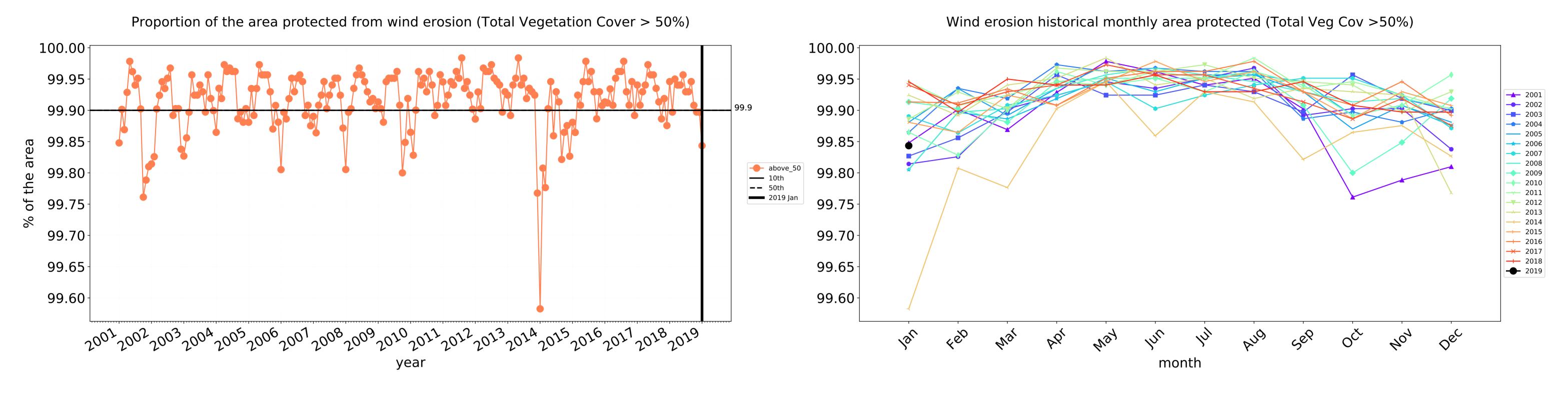


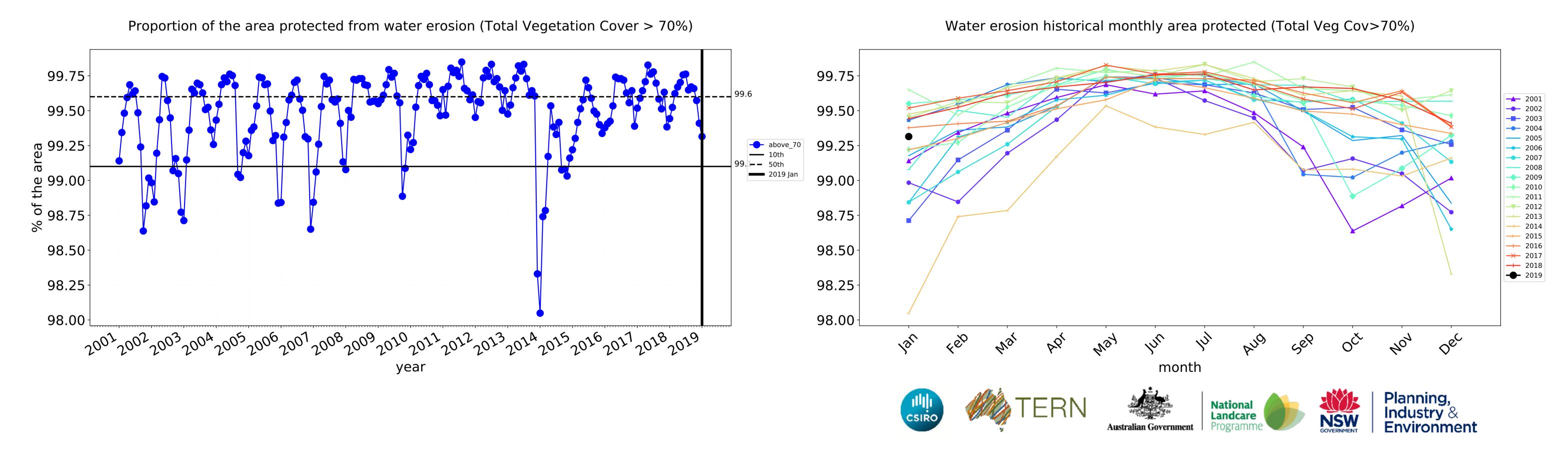


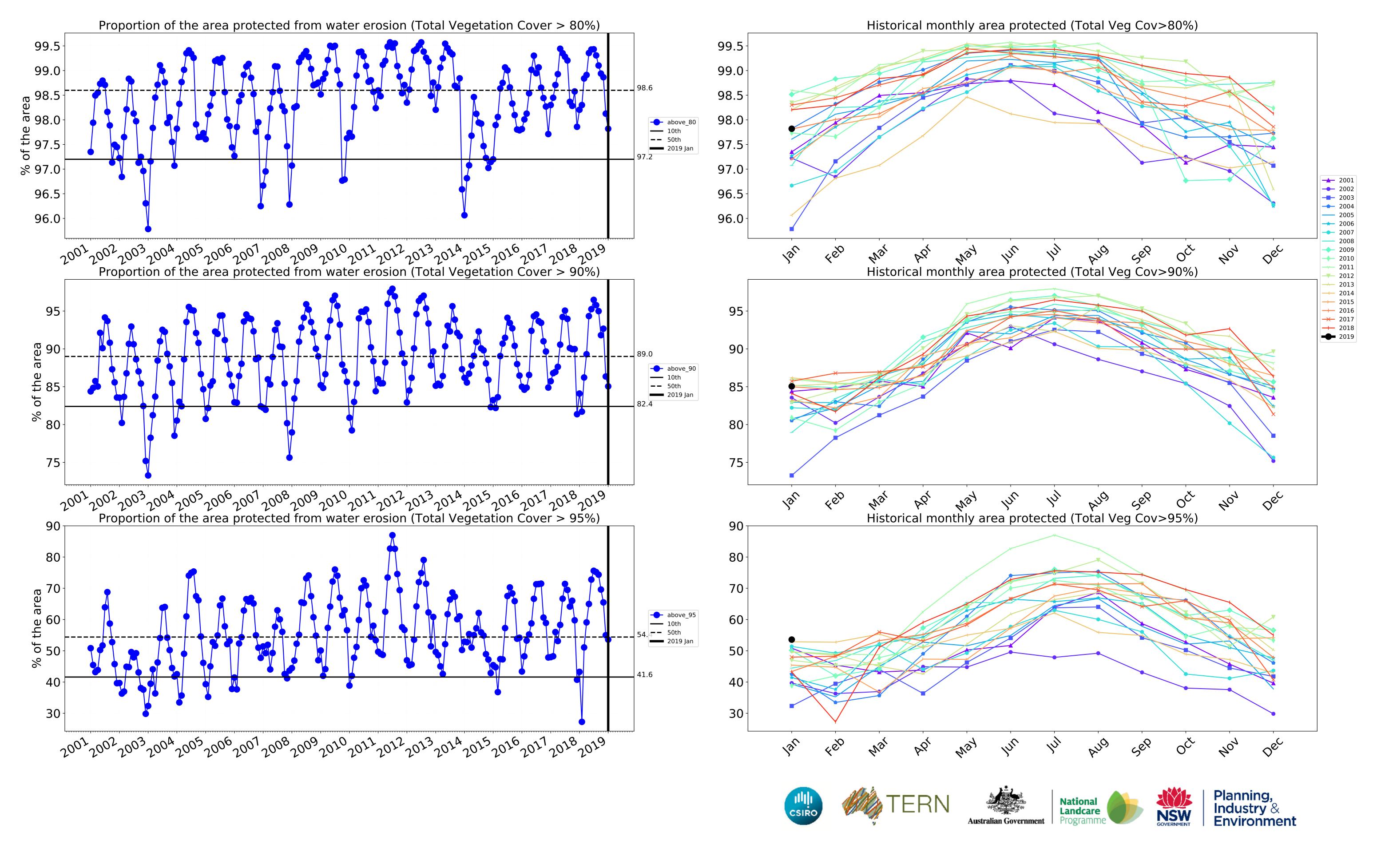












### **Agriculture**

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

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

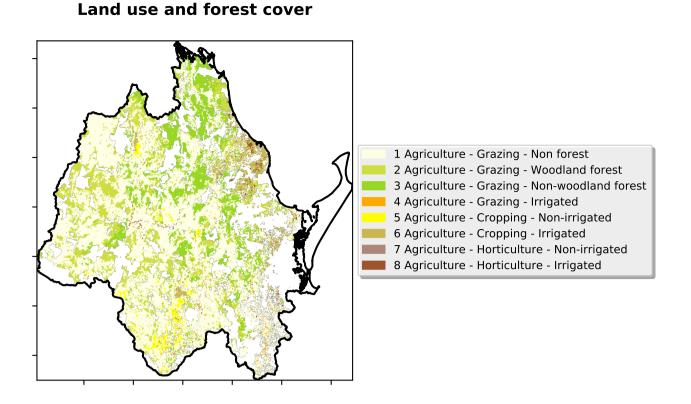
is, red pixels are about 20% lower than the mean of that

the mean. That

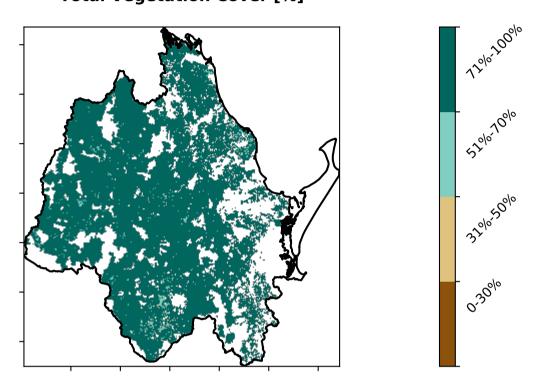
pixel. The mean

using baseline from 2001 to 2019.

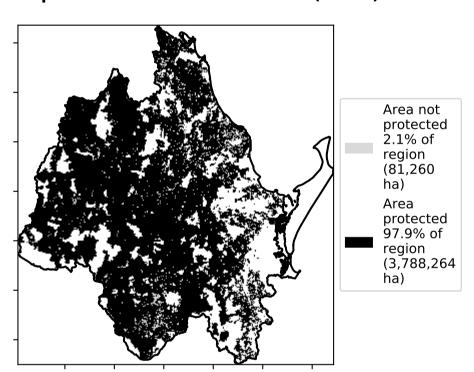
is only for the month of the map



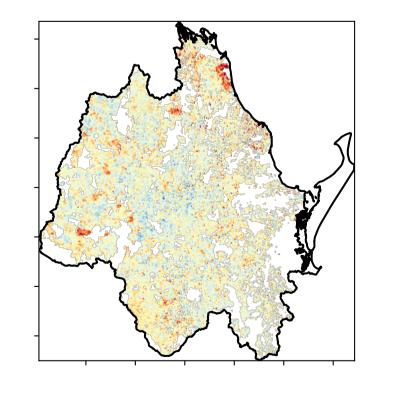
### **Total Vegetation Cover [%]**



% Area protected from water erosion (>70%)



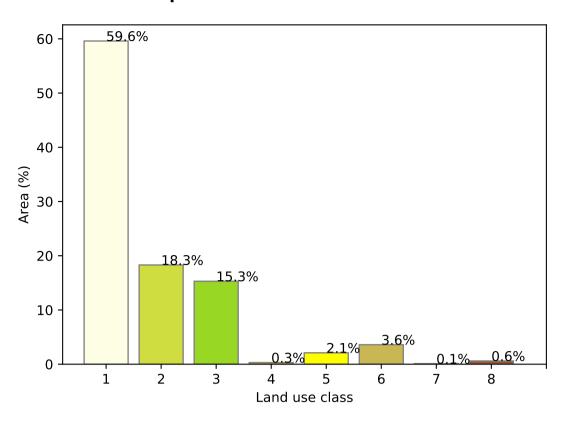
**Total Vegetation Cover Anomaly [%]** 



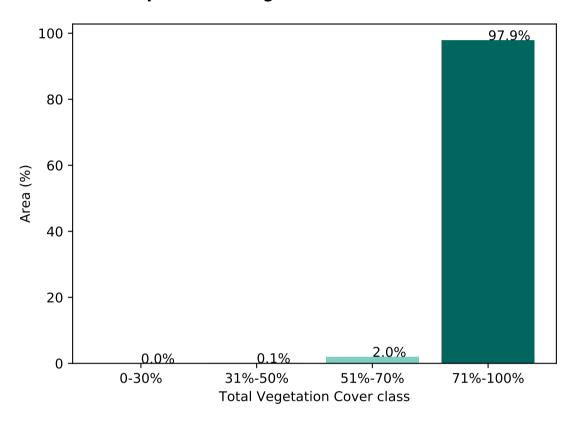
- 20 - 10 - 0 - -10 - -20

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

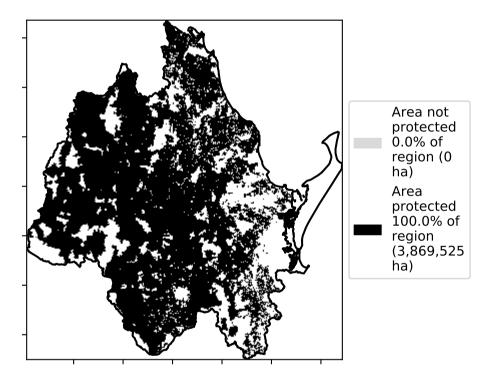
### Proportion of each land class in area



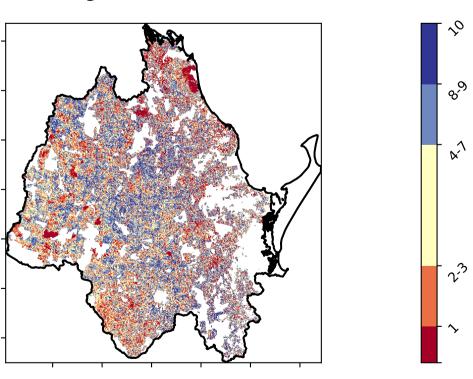
**Proportion of vegetation cover class in area** 



% Area protected from wind erosion (>50%)



**Total Vegetation Cover Decile [%]** 







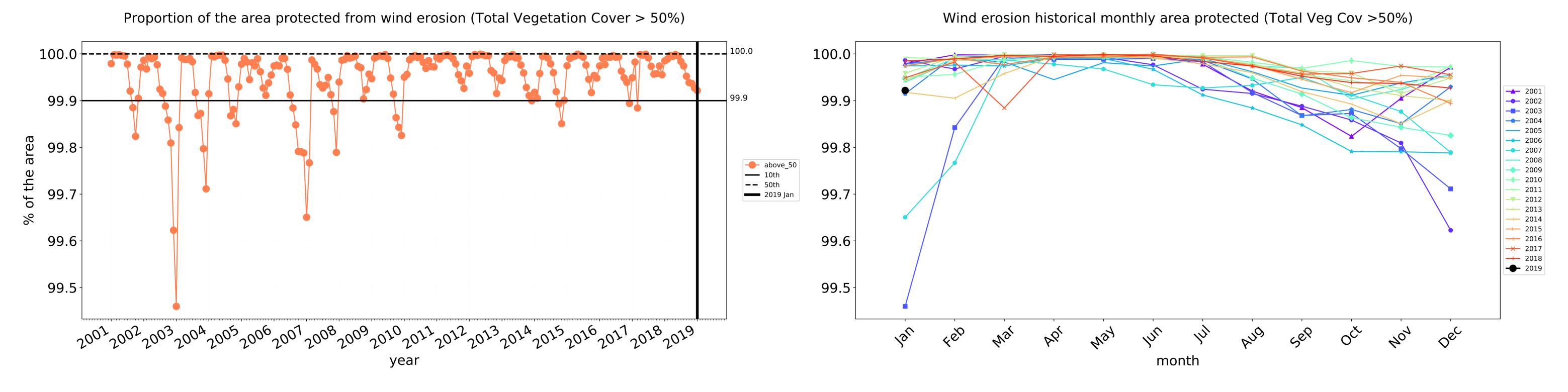


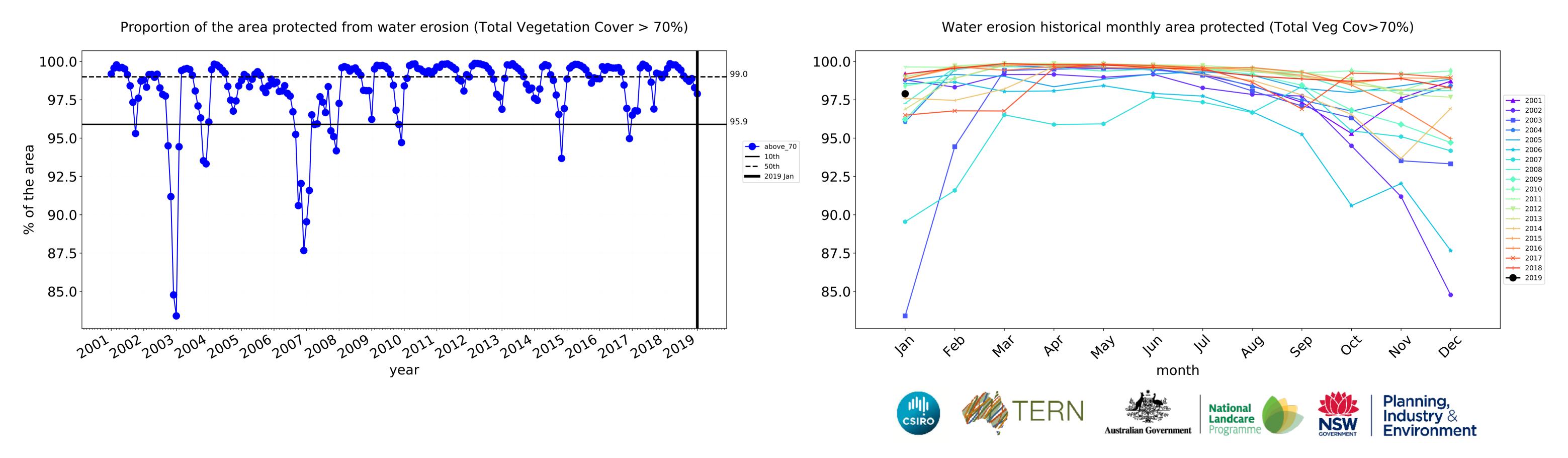


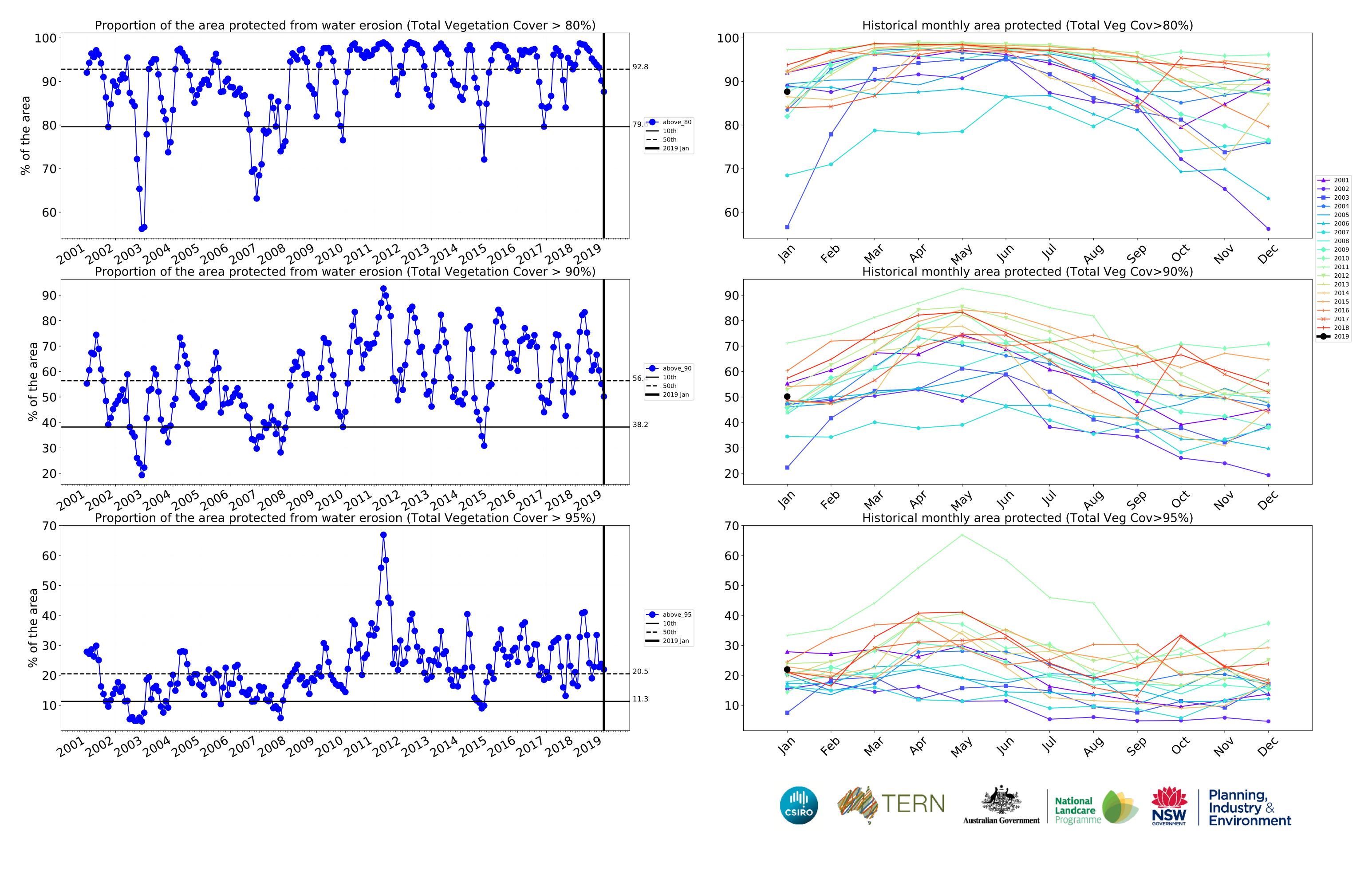




### **Agriculture timeseries**







### **Grazing**

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

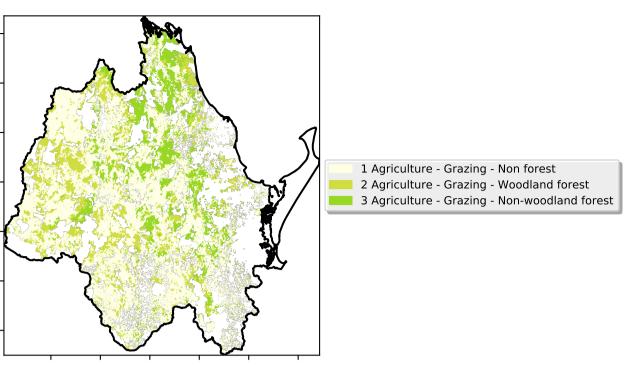
Anomaly show how many percetage points each

pixel is from the mean. That

is, red pixels are about 20% lower than the

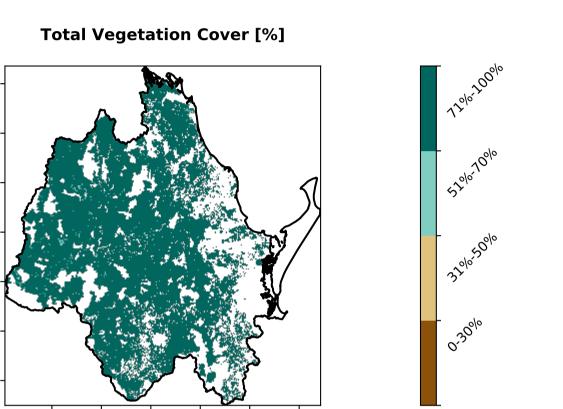
mean of that

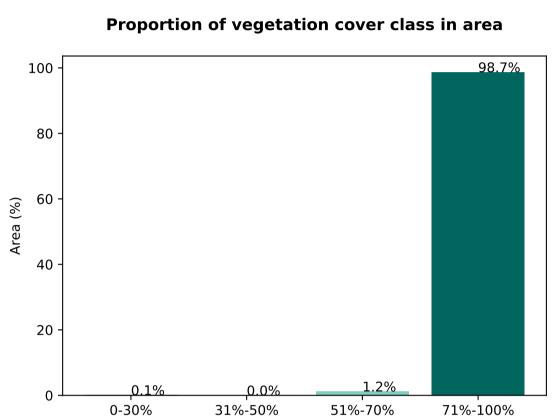
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



### 64.0% 60 50 Area (%) 19.6% 20 16.4% 10 2 3 Land use class

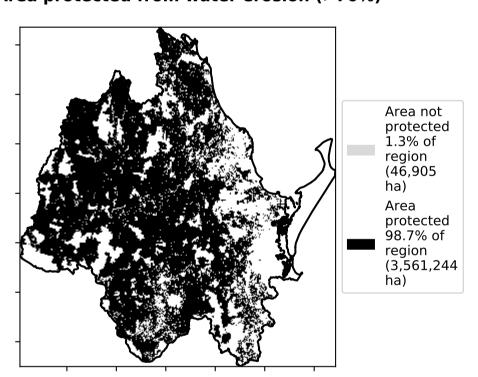
**Proportion of each land class in area** 





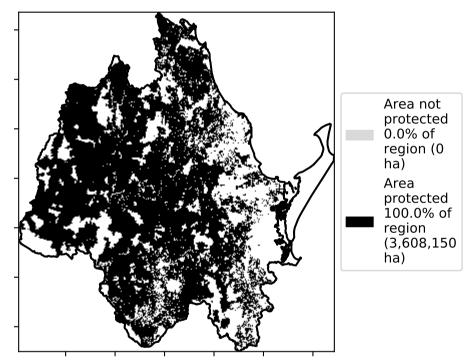


Land use and forest cover

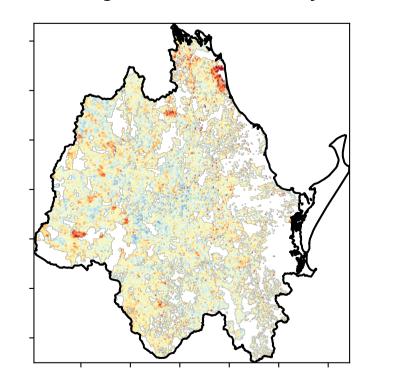


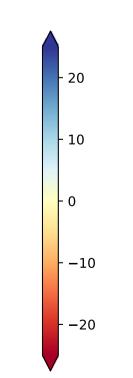
% Area protected from wind erosion (>50%)

**Total Vegetation Cover class** 

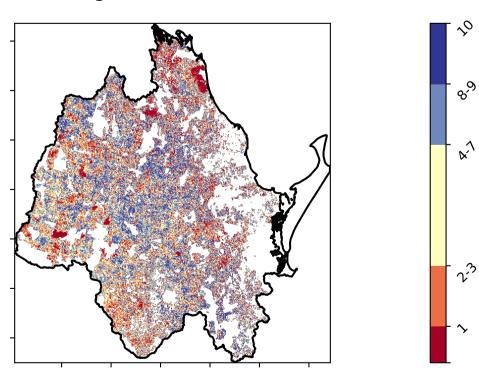


### **Total Vegetation Cover Anomaly [%]**





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







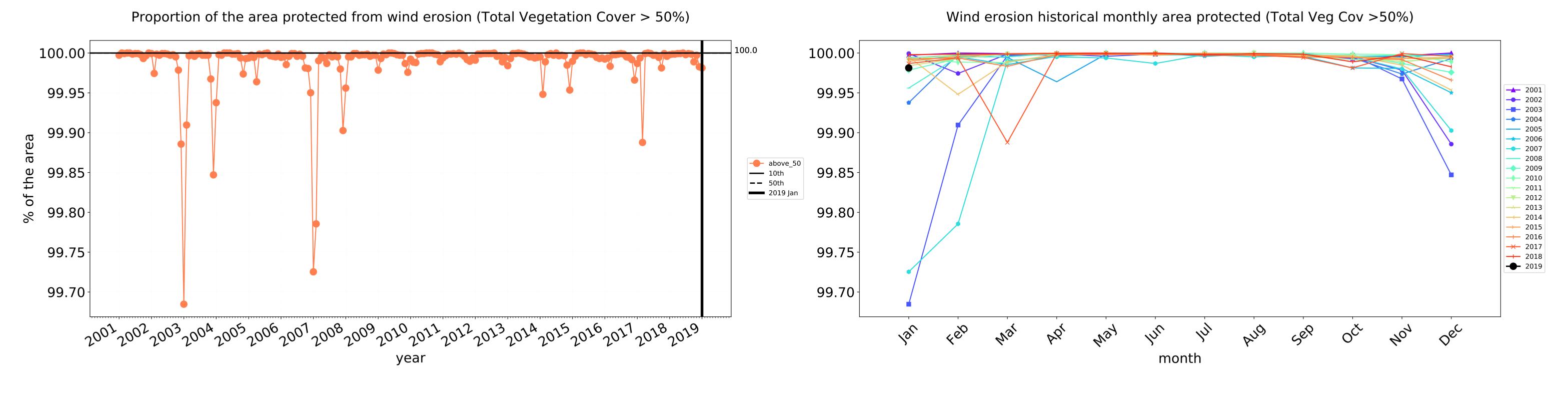


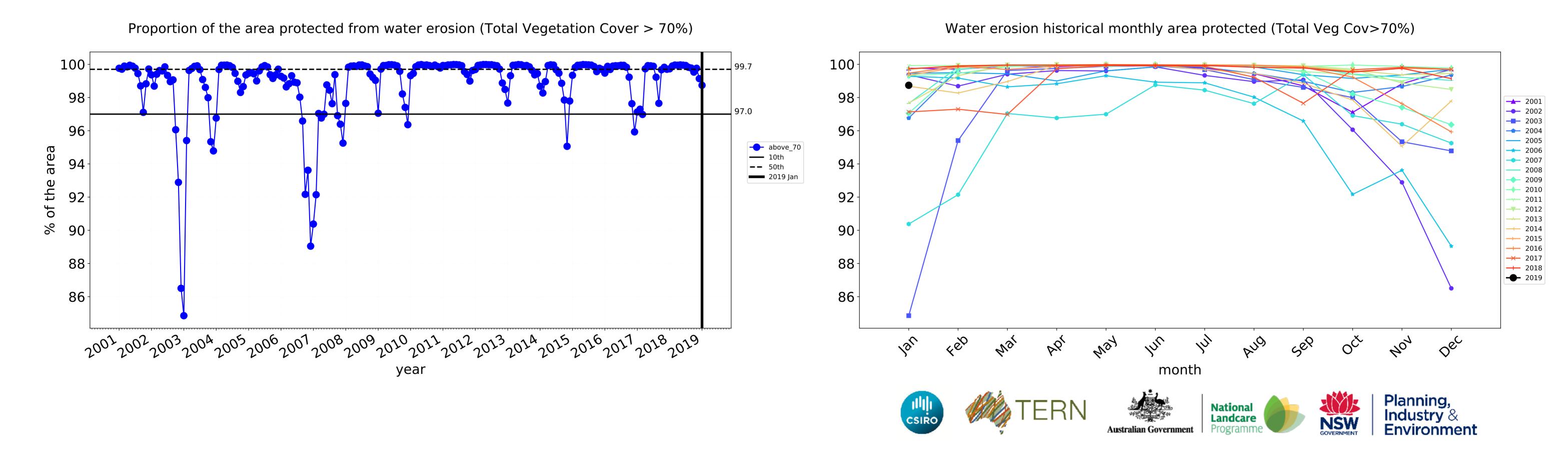


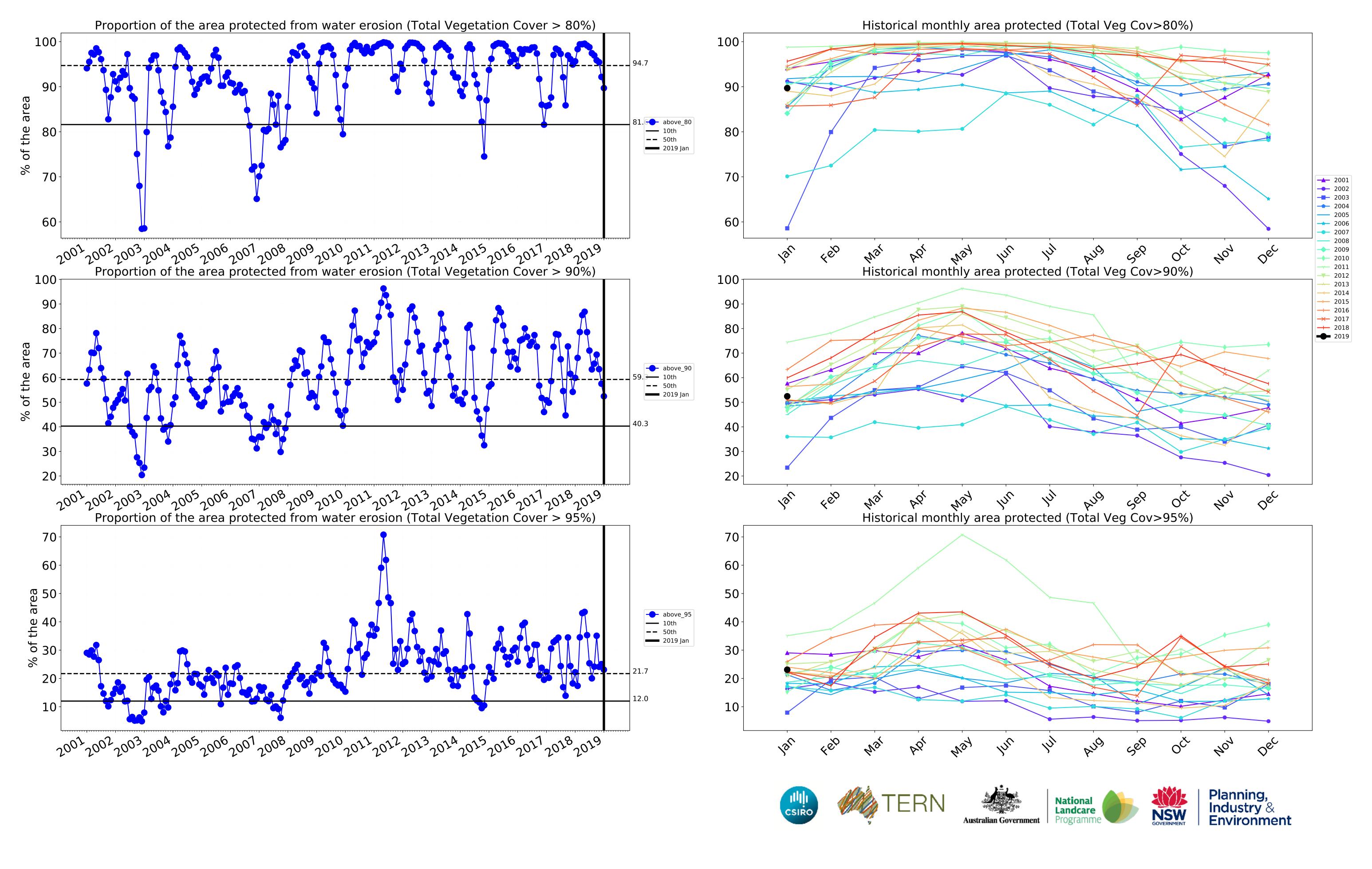




### **Grazing timeseries**



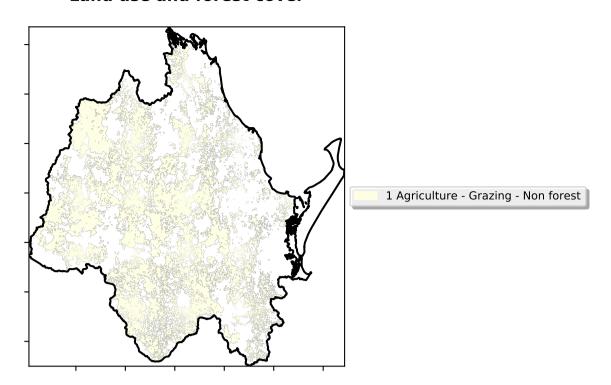




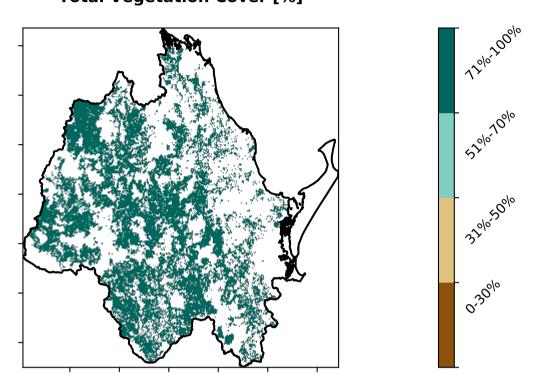
### **Grazing non forest**

### Land use and forest cover

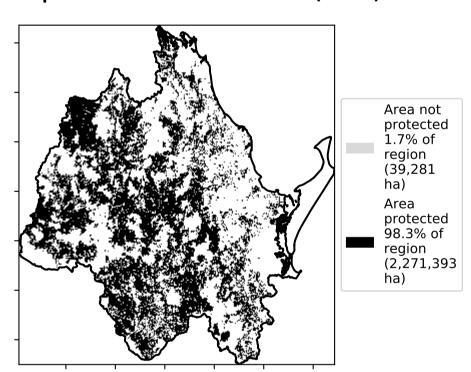
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



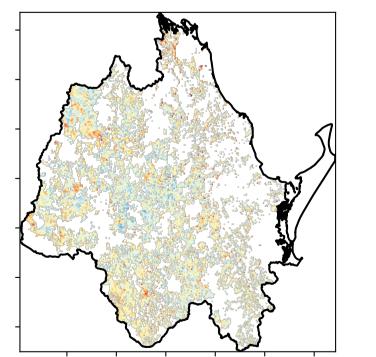
### **Total Vegetation Cover [%]**



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

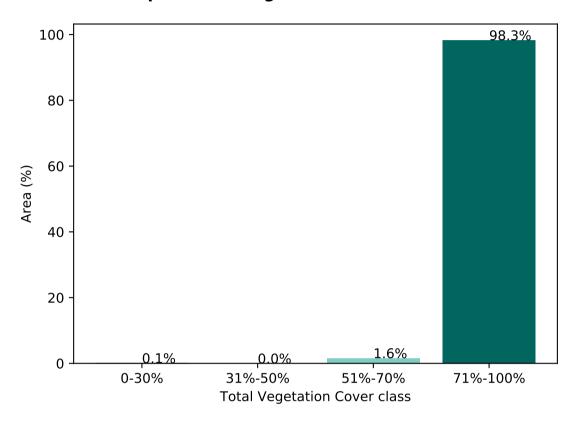


### Total Vegetation Cover Anomaly [%]

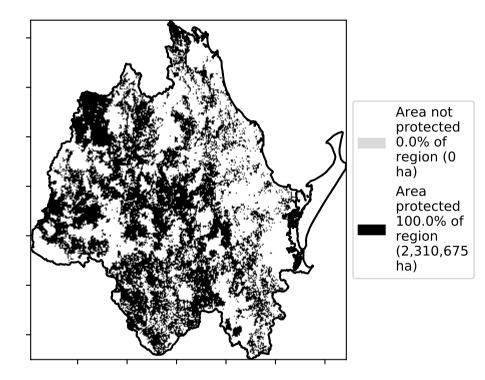


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

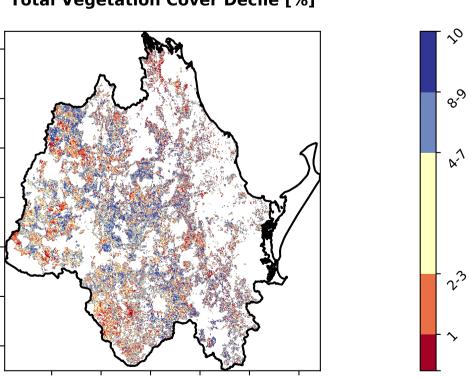
### **Proportion of vegetation cover class in area**

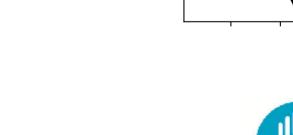


### % Area protected from wind erosion (>50%)



### Total Vegetation Cover Decile [%]





Anomaly show how many percetage points each

pixel is from the mean. That

is, red pixels are about 20% lower than the

mean of that

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



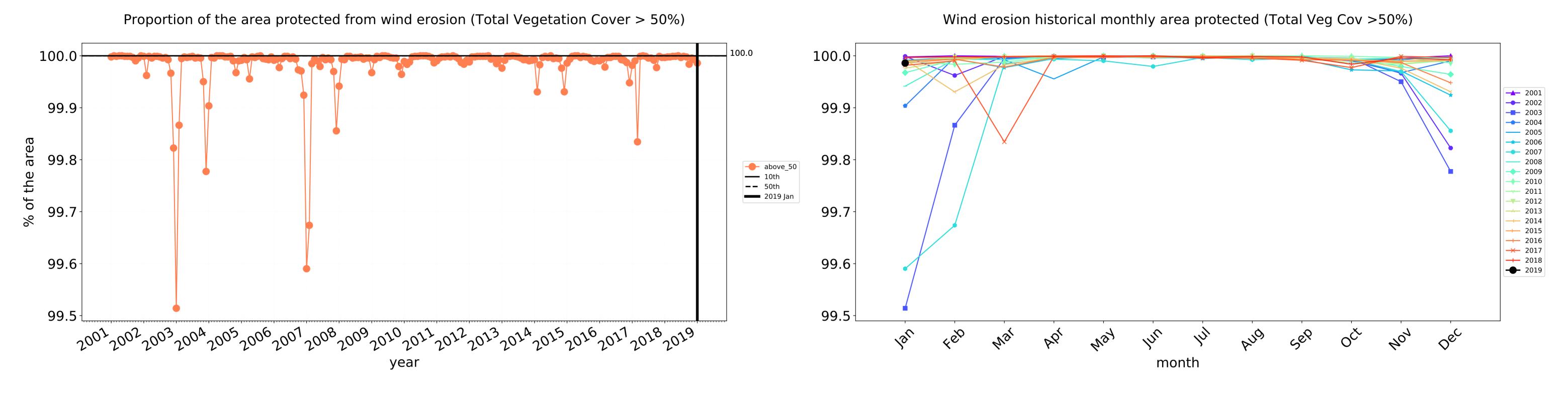


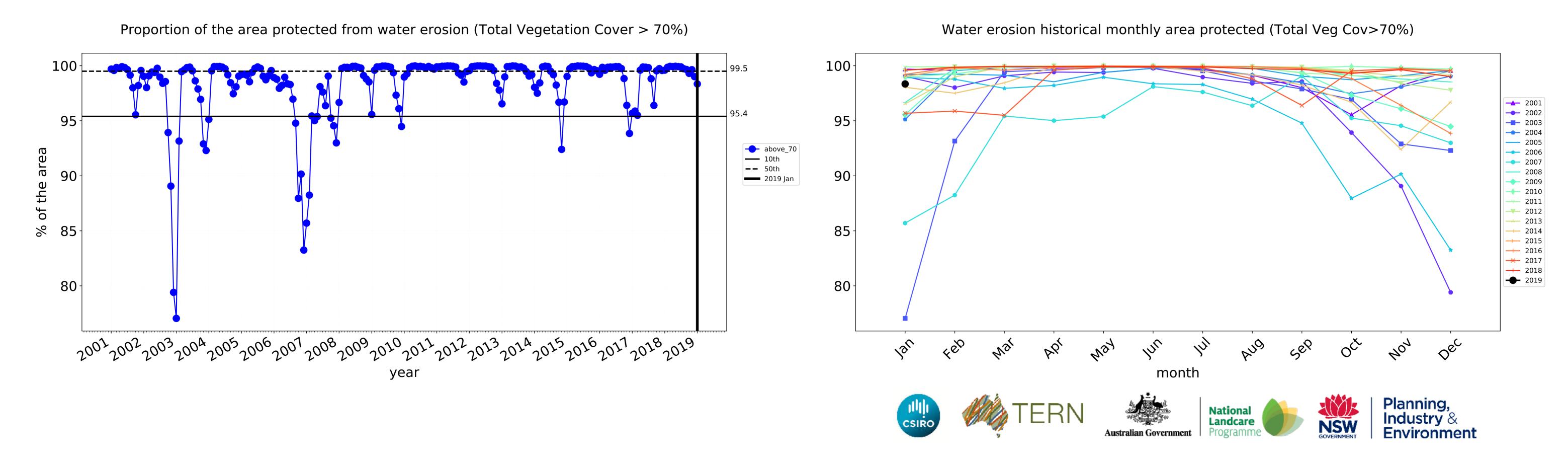


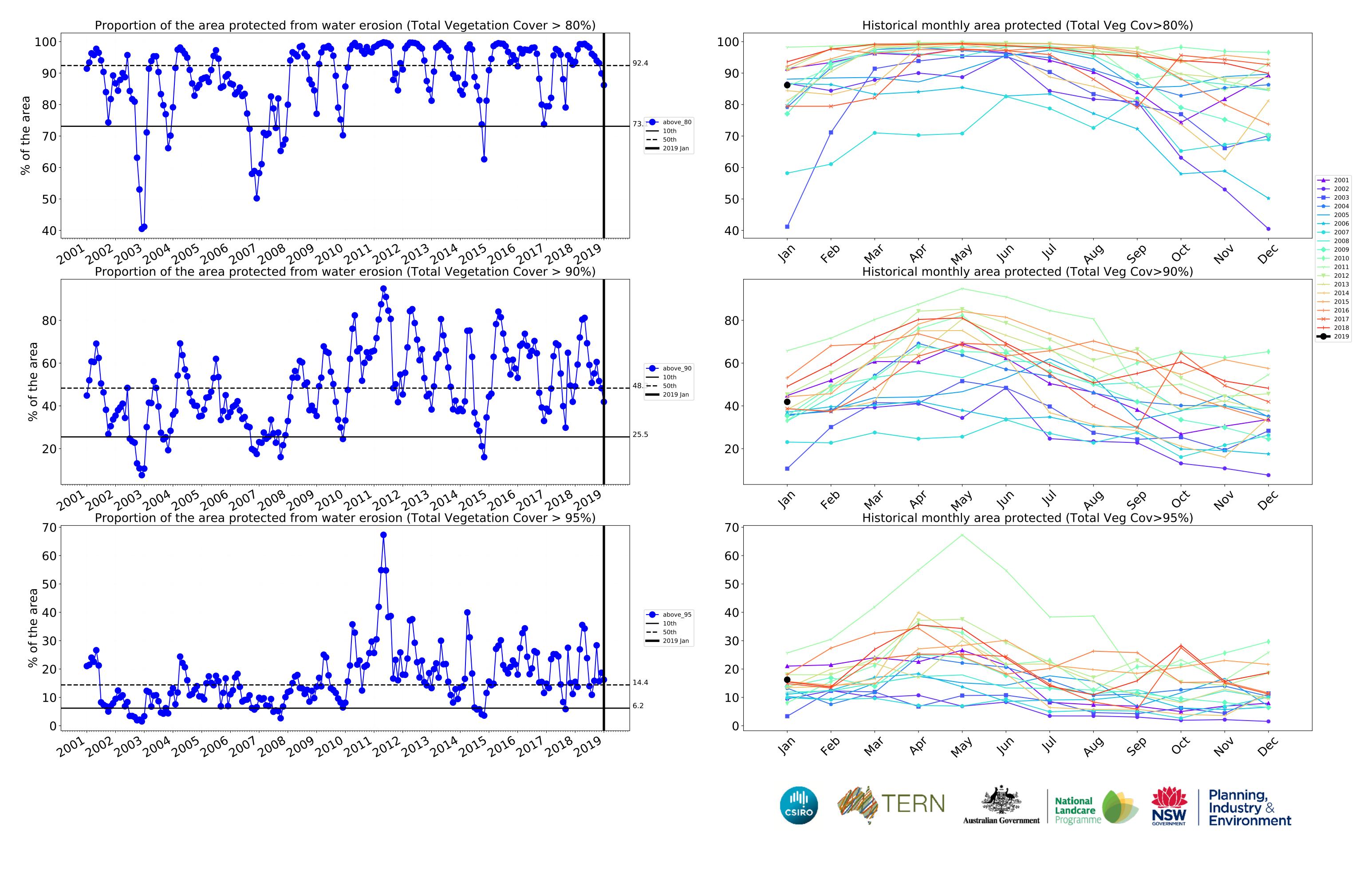




### **Grazing non forest timeseries**







### **Grazing Woodland forest**

### Land use and forest cover

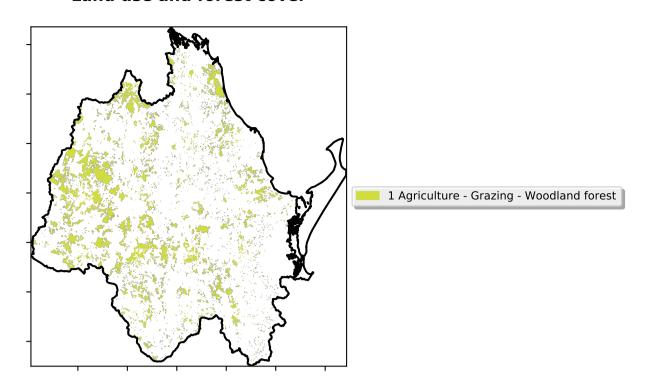
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

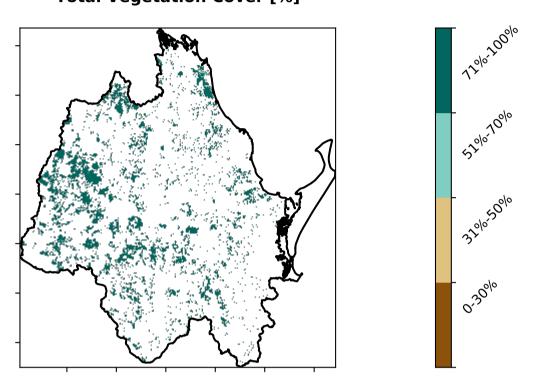
pixel is from the mean. That is, red pixels are about 20% lower than the

mean of that

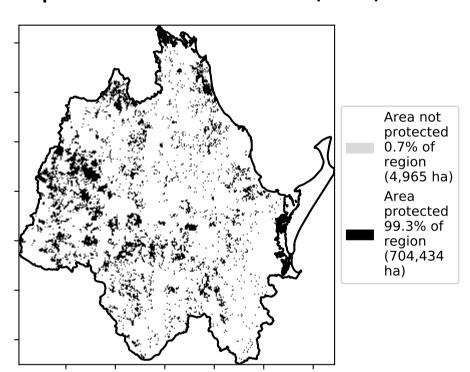
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



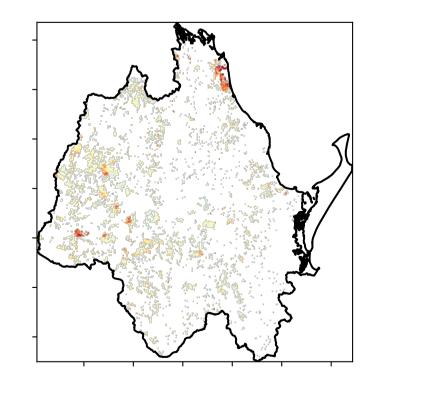
### **Total Vegetation Cover [%]**



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

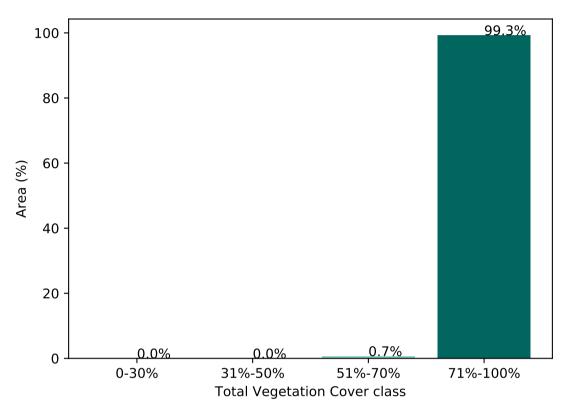


### **Total Vegetation Cover Anomaly [%]**

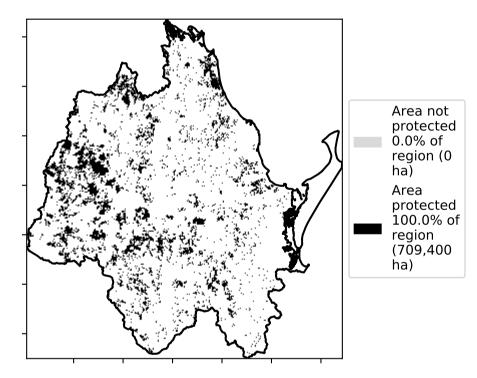


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

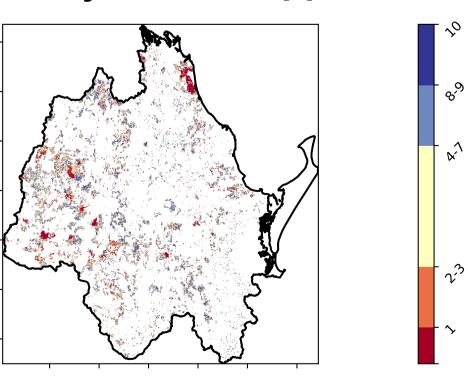
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]















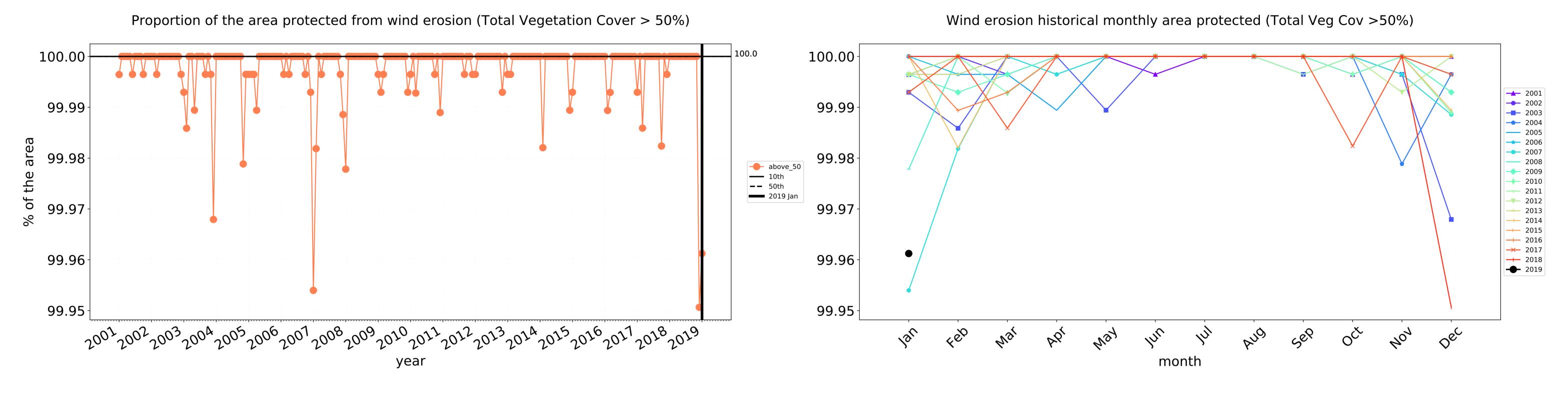
- 20

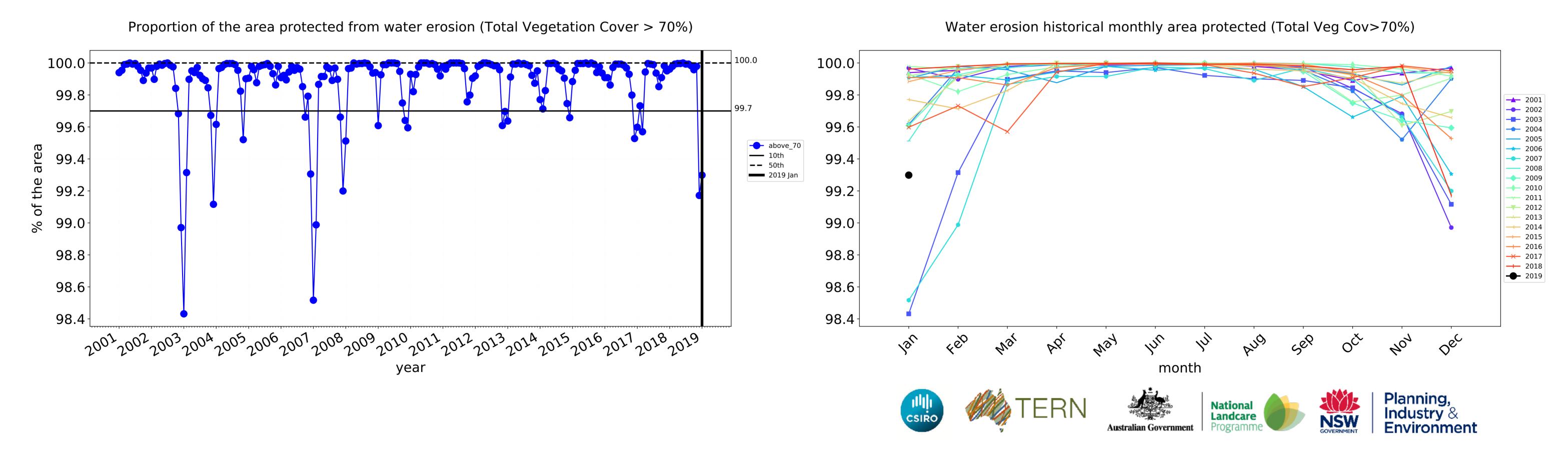
- 10

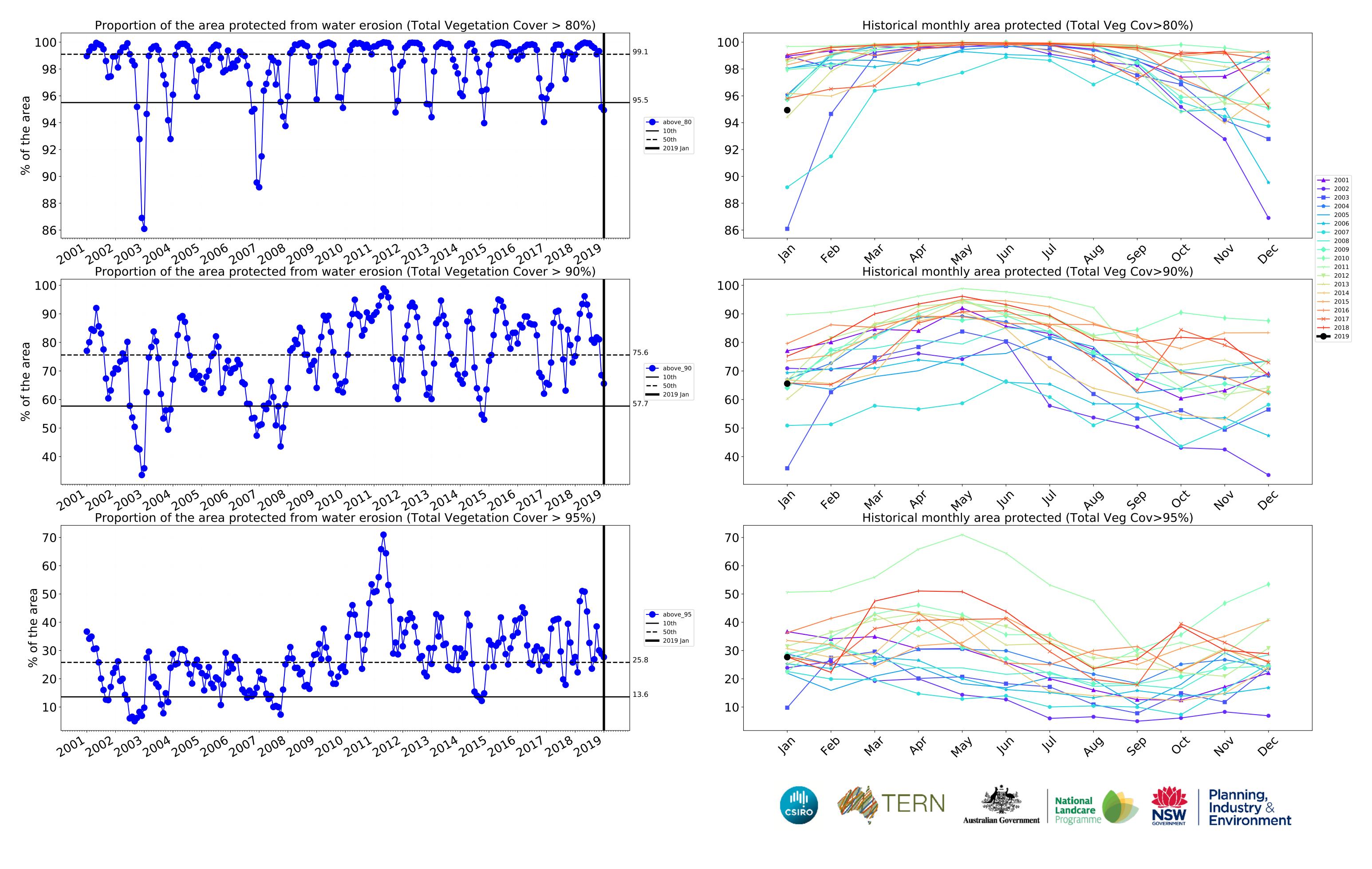
-10

**-**20

### **Grazing Woodland forest timeseries**







### **Grazing - Forest (non woodland)**

### Land use and forest cover

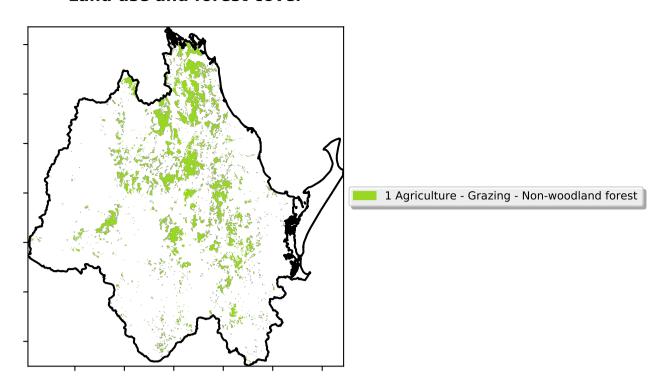
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

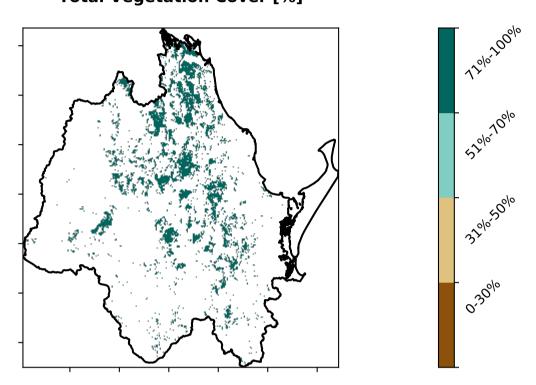
pixel is from the mean. That

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

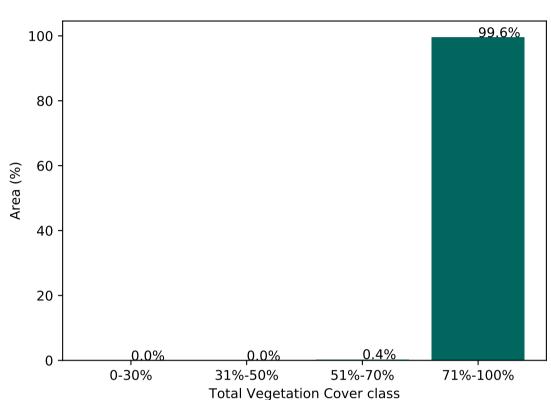
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



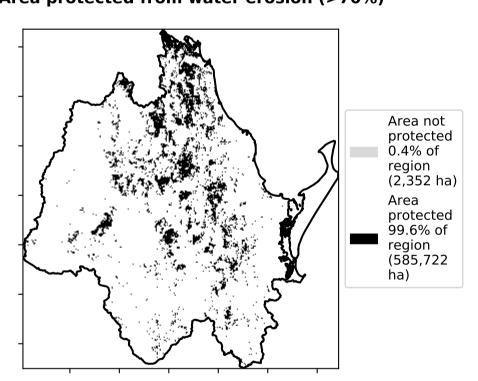
### **Total Vegetation Cover [%]**



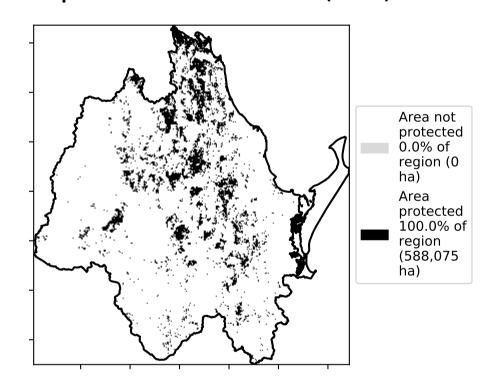
### Proportion of vegetation cover class in area



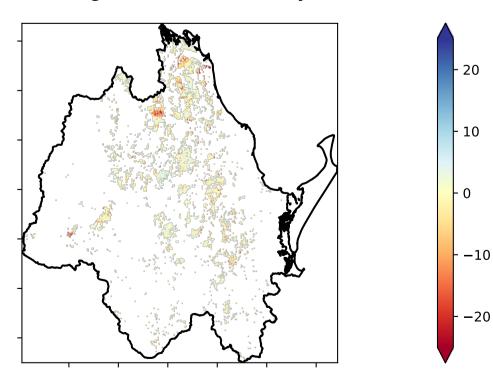
### % Area protected from water erosion (>70%)



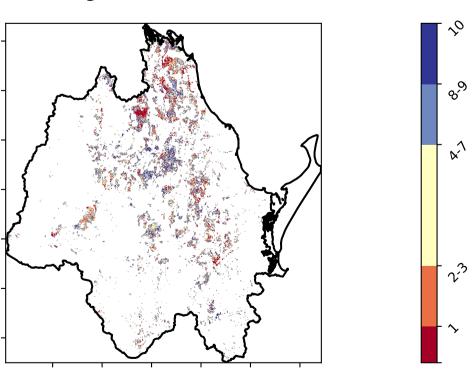
% Area protected from wind erosion (>50%)



### Total Vegetation Cover Anomaly [%]



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





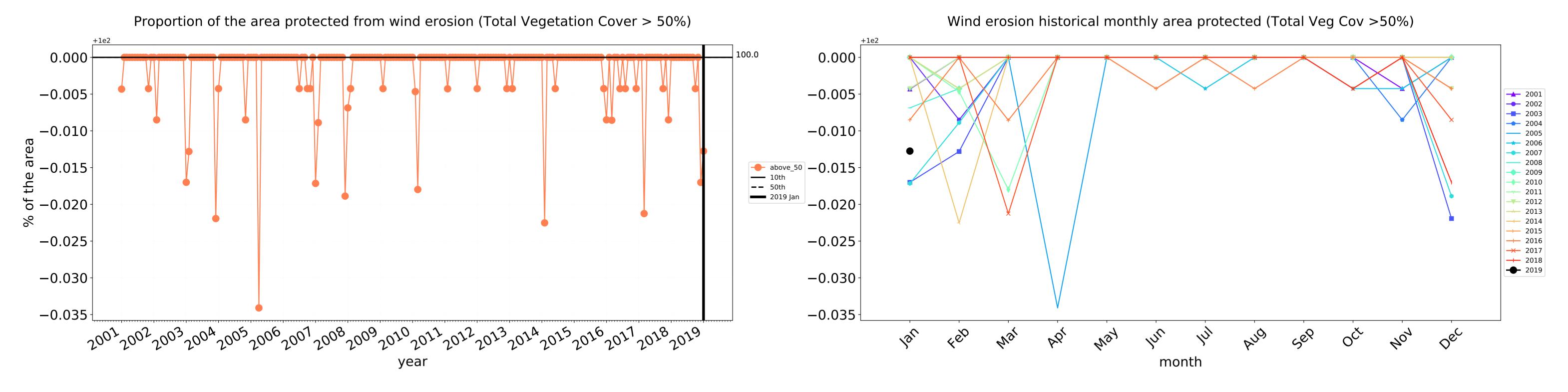


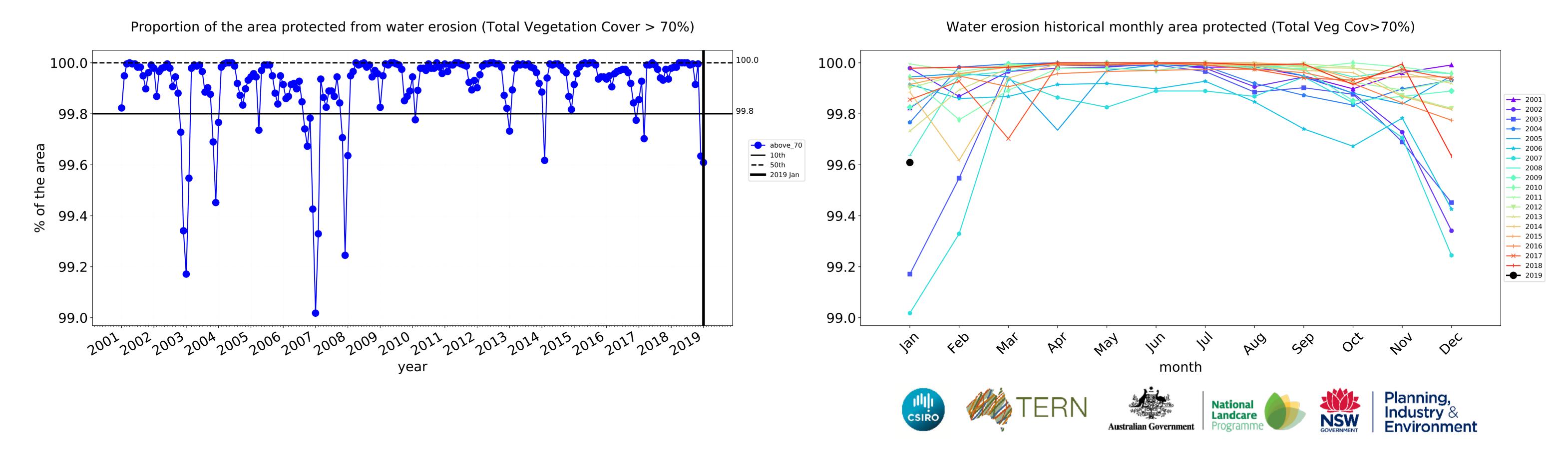


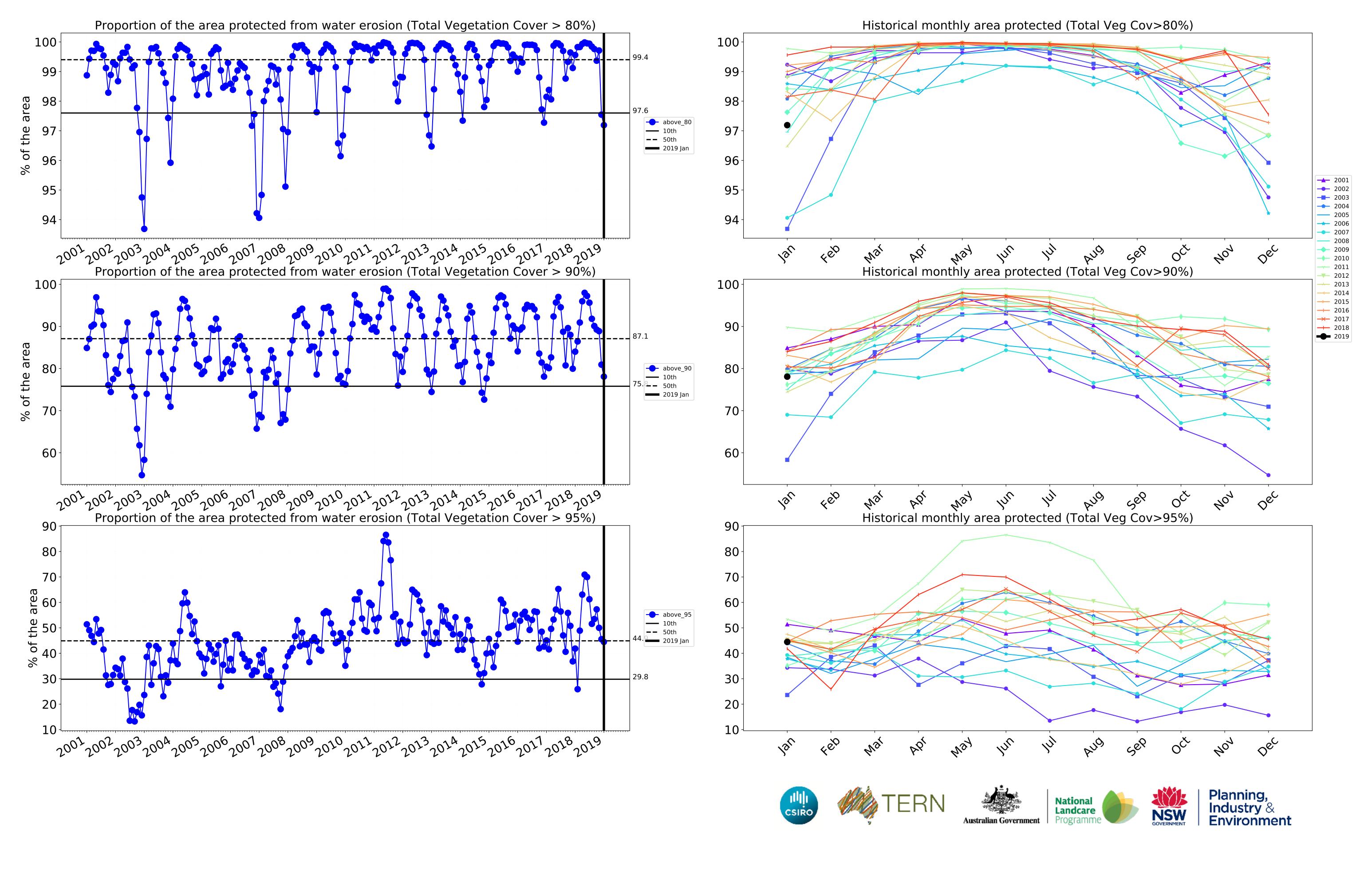












### **Cropping**

### Land use and forest cover

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

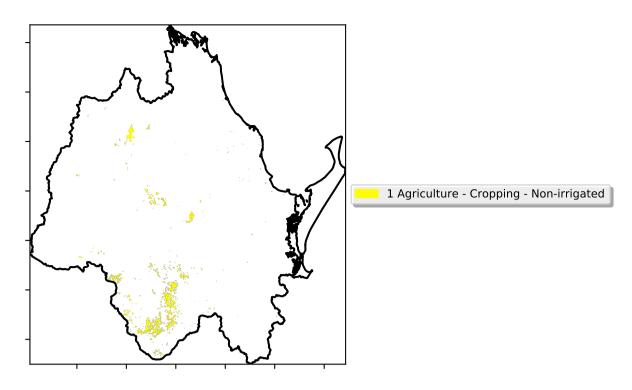
Anomaly show how many percetage points each

pixel is from the mean. That

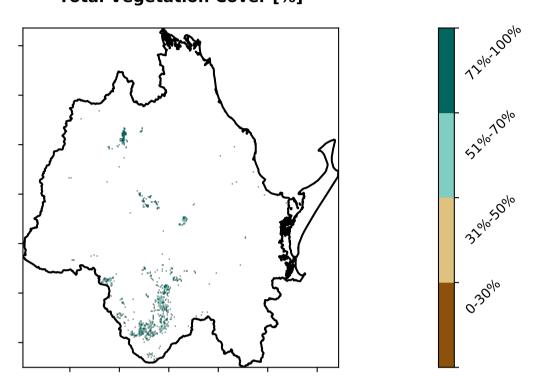
is, red pixels are about 20% lower than the

mean of that

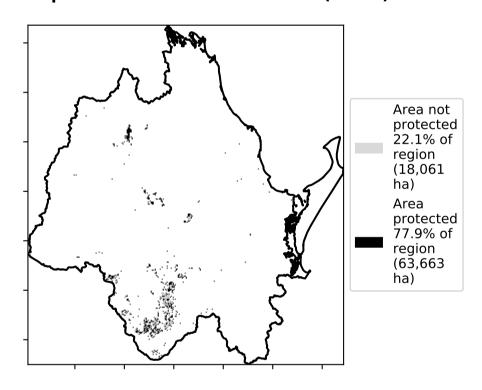
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



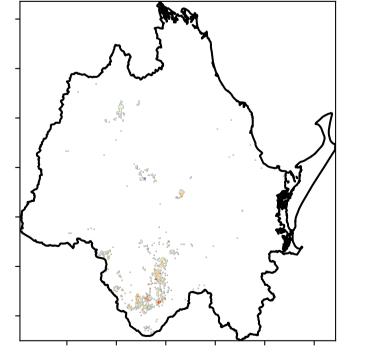
### **Total Vegetation Cover [%]**



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

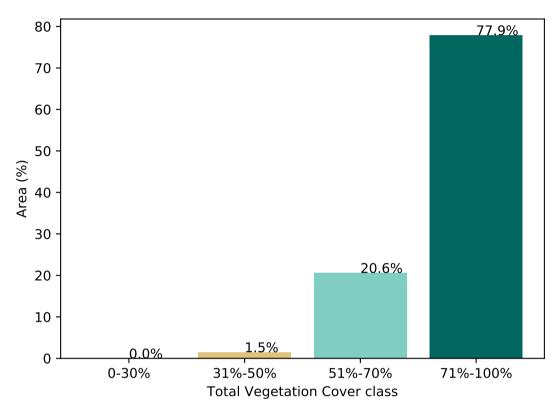


### **Total Vegetation Cover Anomaly [%]**

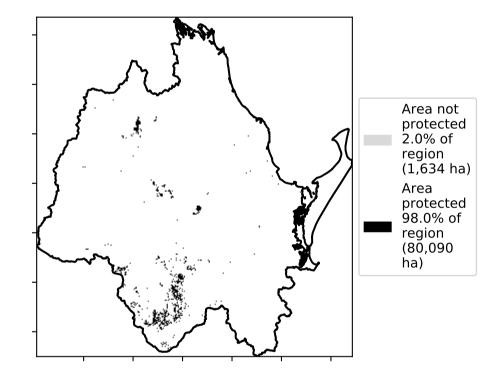


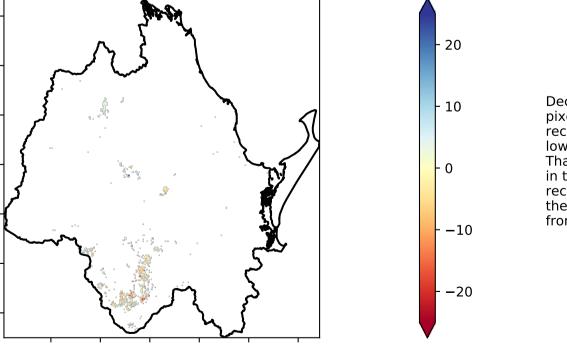
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseling. the map using baseline from 2001 to 2019.

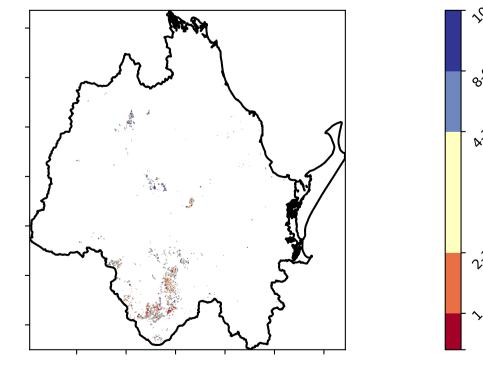
### Proportion of vegetation cover class in area



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











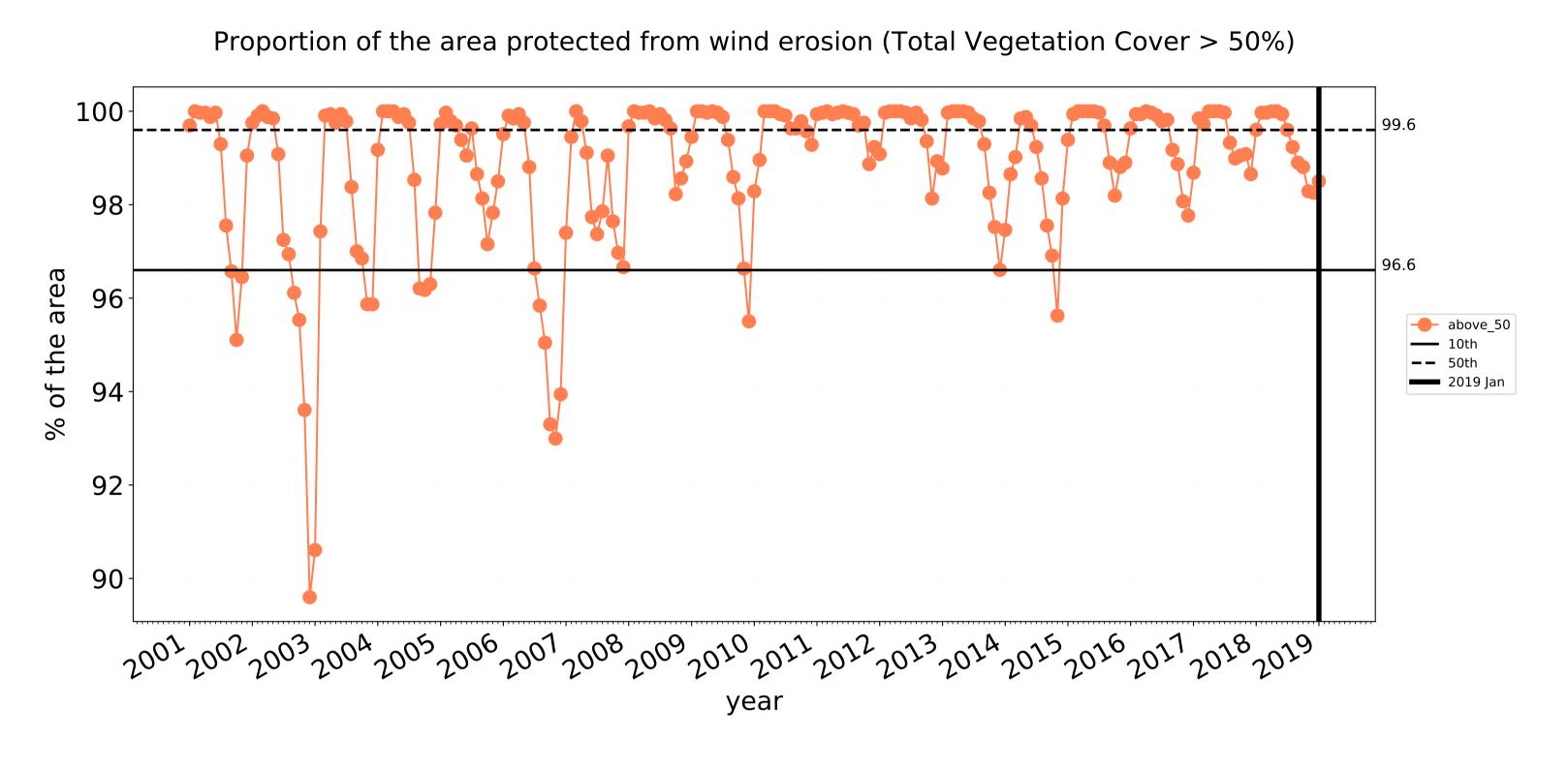


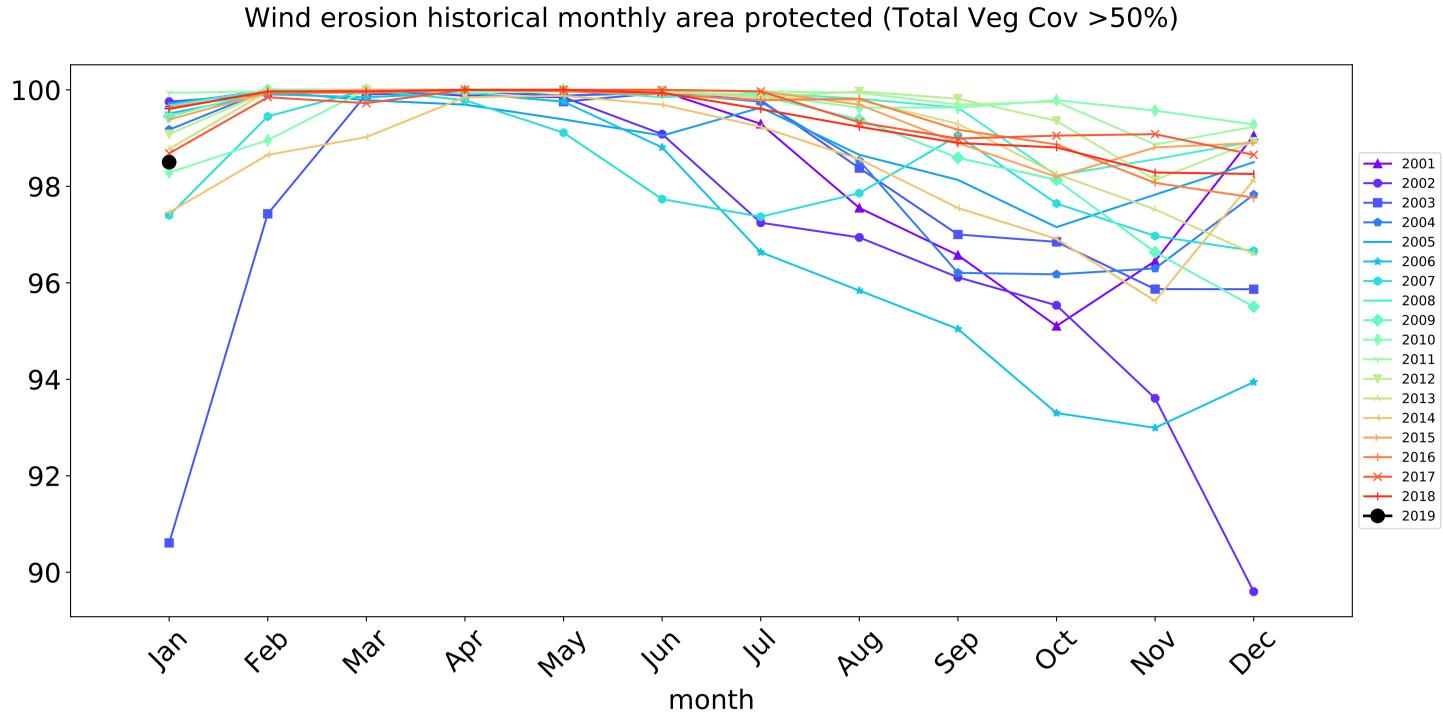


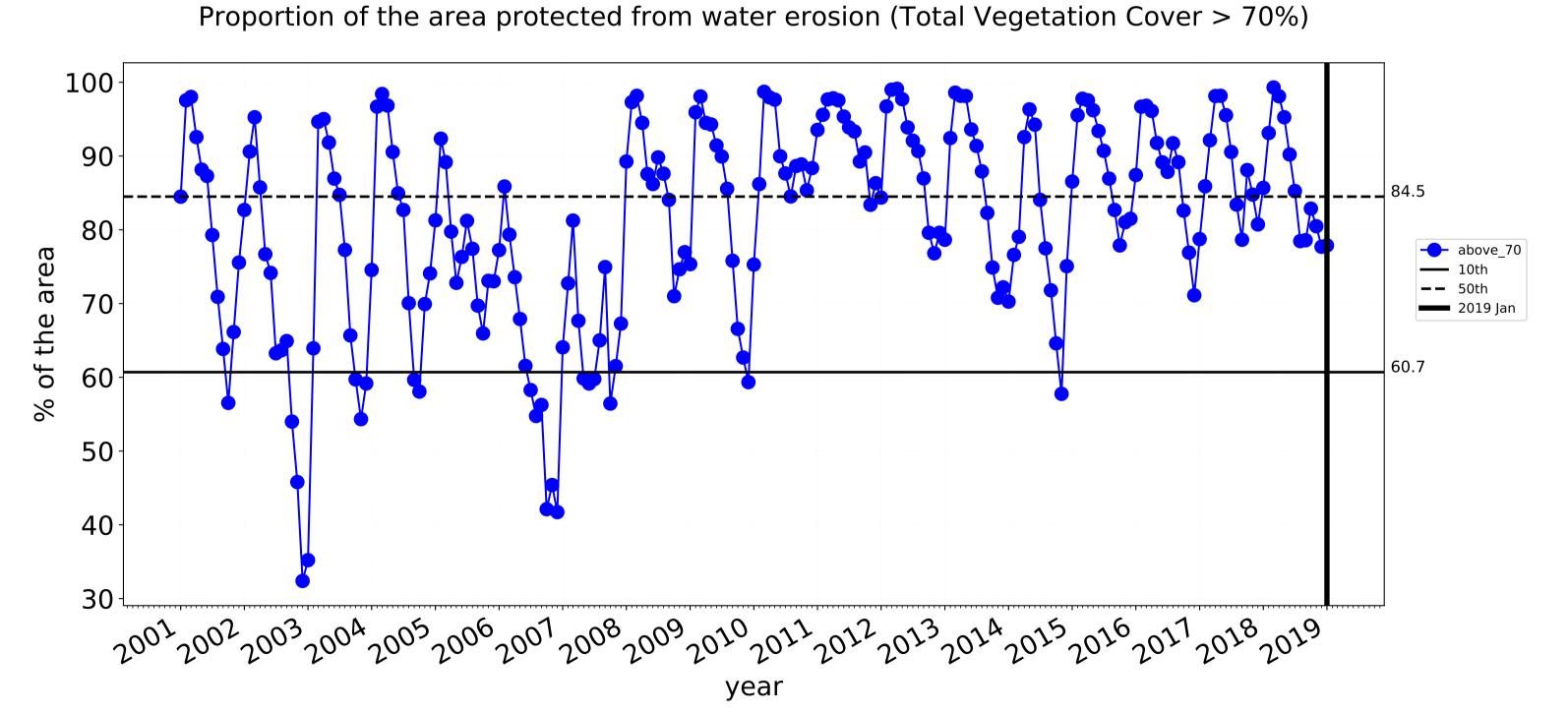


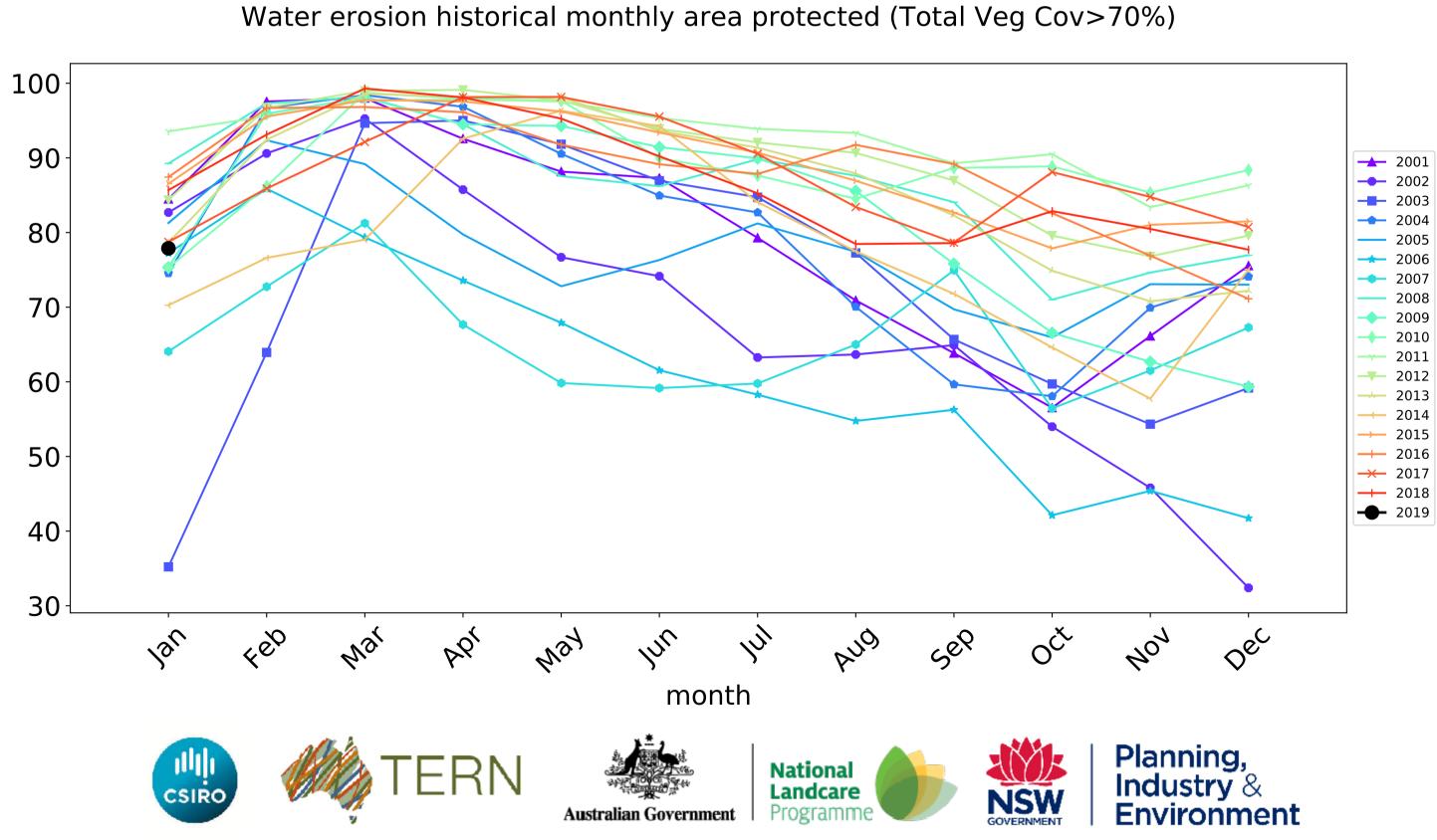


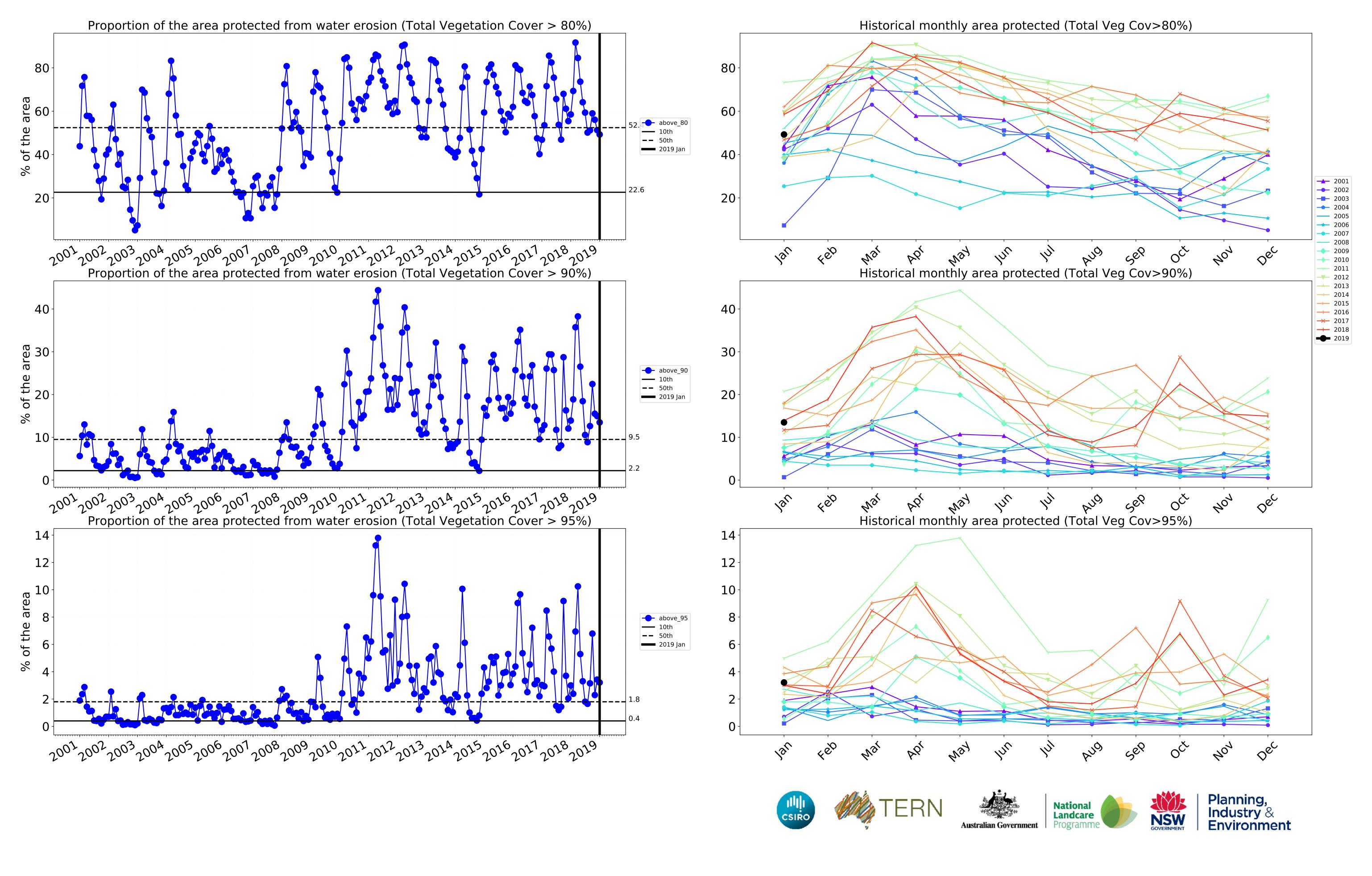
### **Cropping timeseries**











### Irrigation

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

Anomaly show how many percetage points each

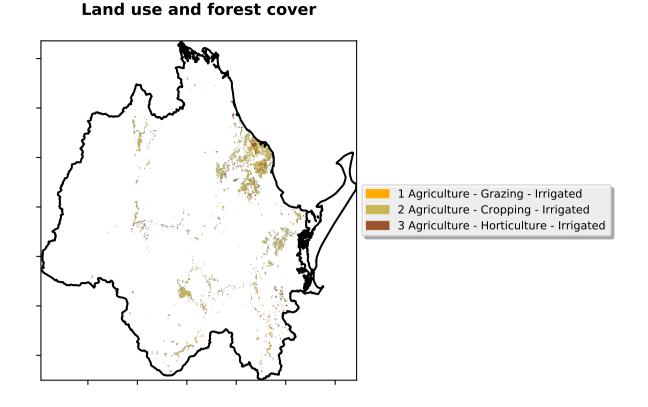
pixel is from

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

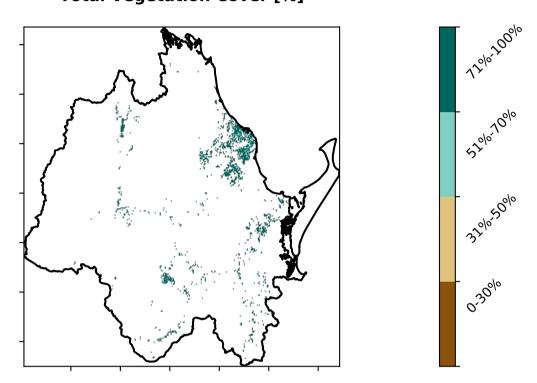
the mean. That

is only for the month of the map

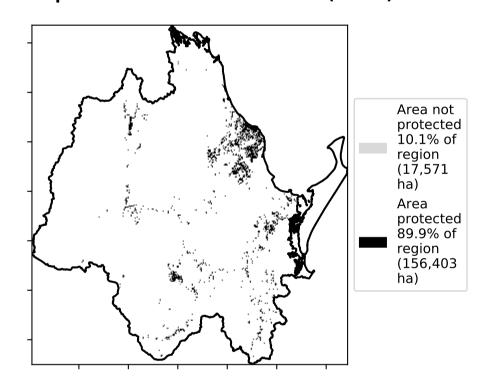
using baseline from 2001 to 2019.



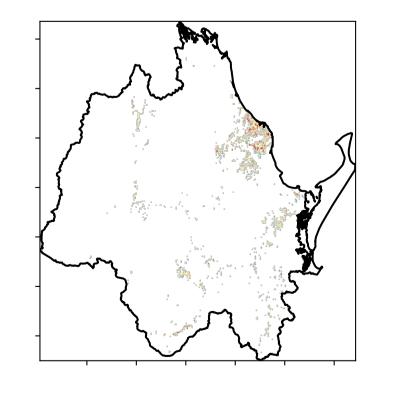
### **Total Vegetation Cover [%]**



% Area protected from water erosion (>70%)

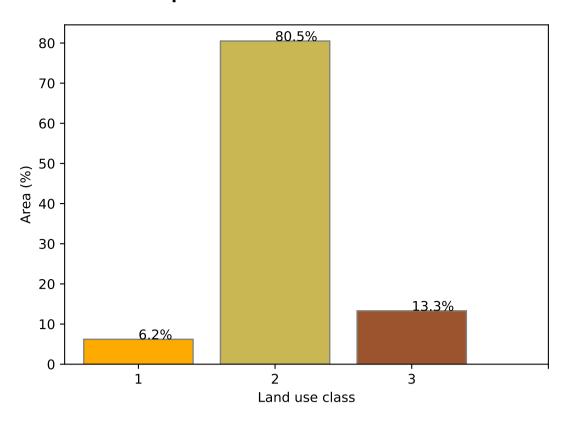


**Total Vegetation Cover Anomaly [%]** 

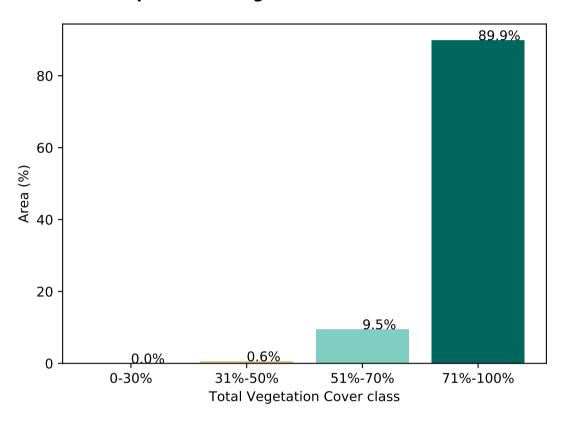


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

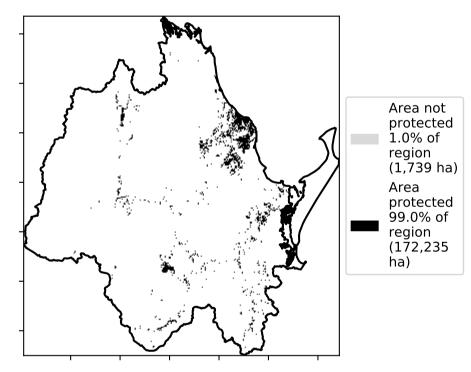
### Proportion of each land class in area



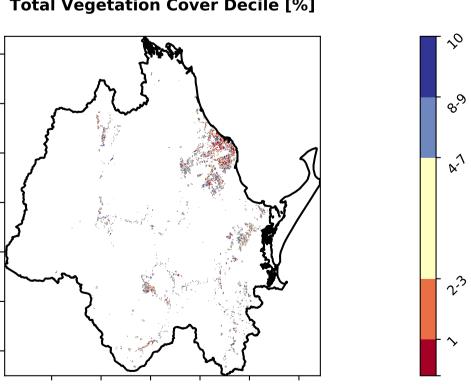
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



**Total Vegetation Cover Decile [%]** 















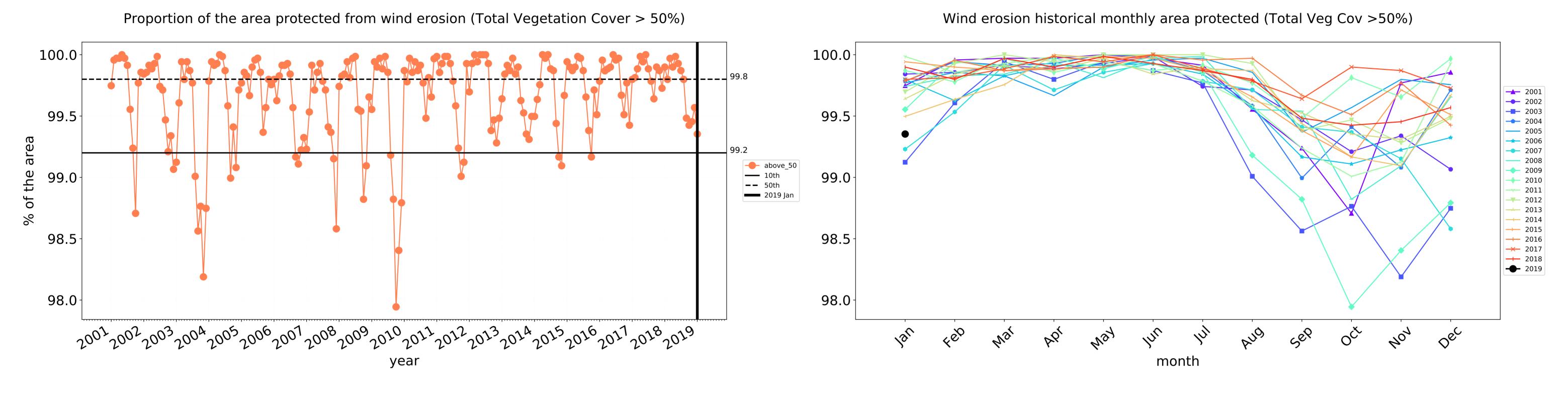
- 20

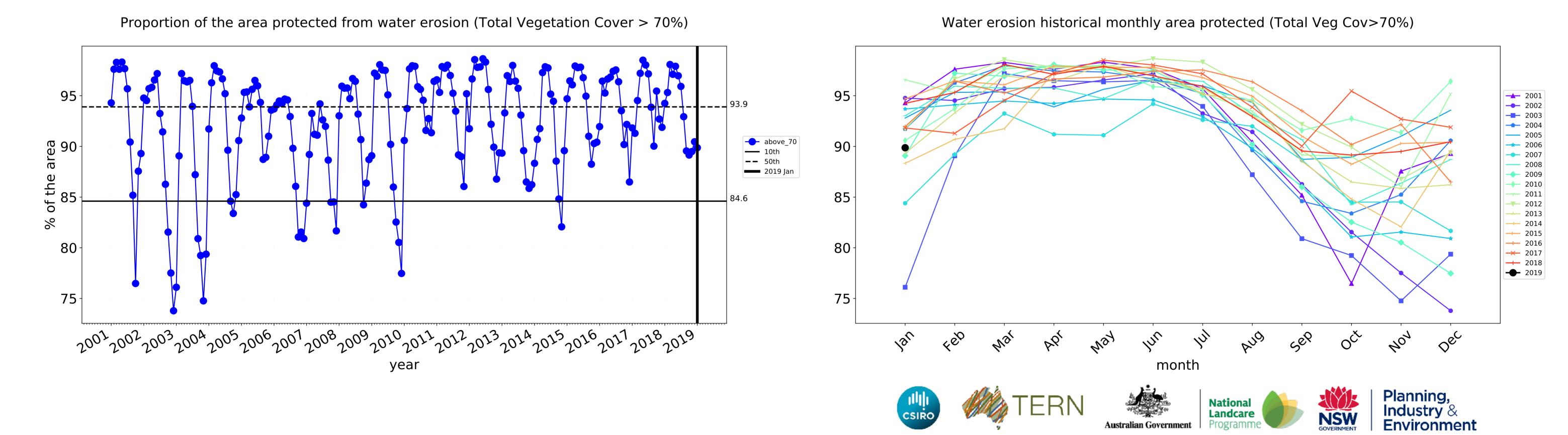
- 10

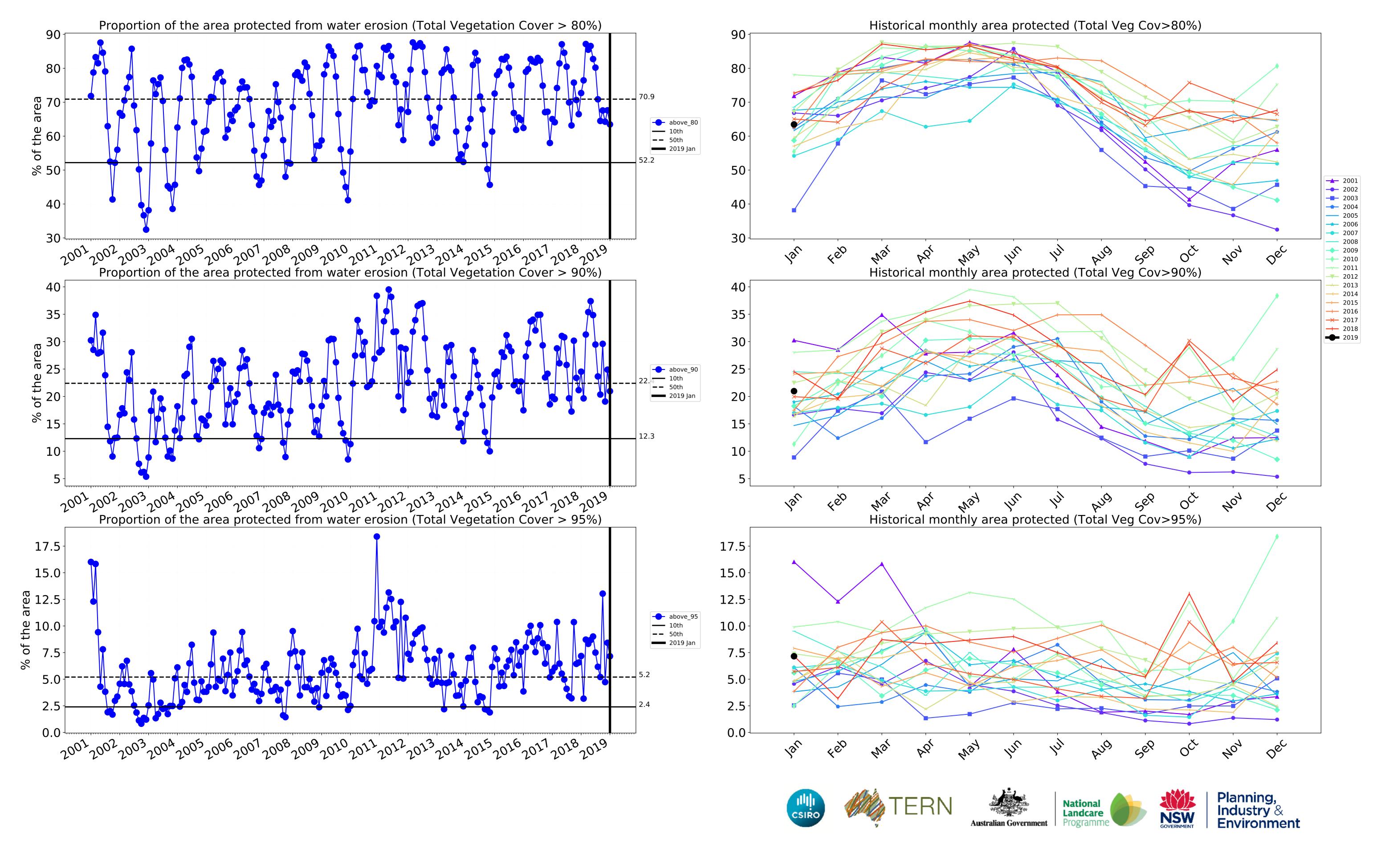
-10

**-**20

### Irrigation timeseries







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

### Land use and forest cover

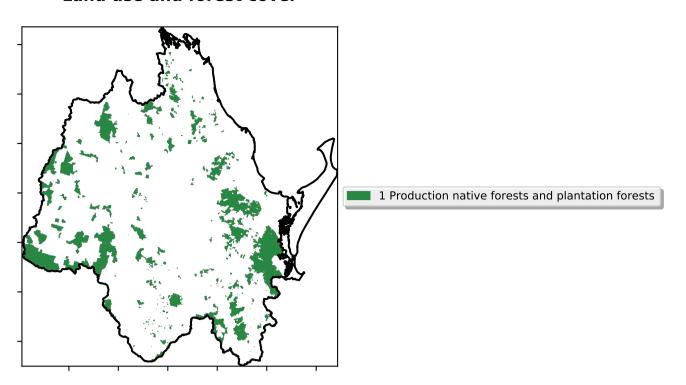
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

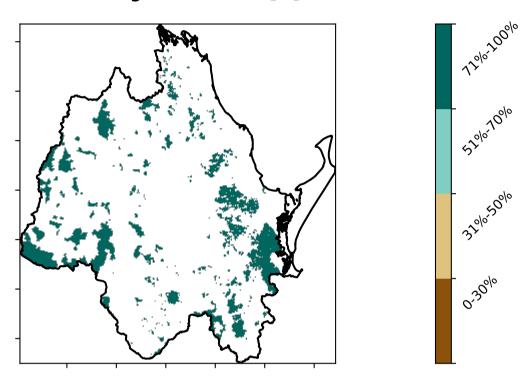
pixel is from the mean. That

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

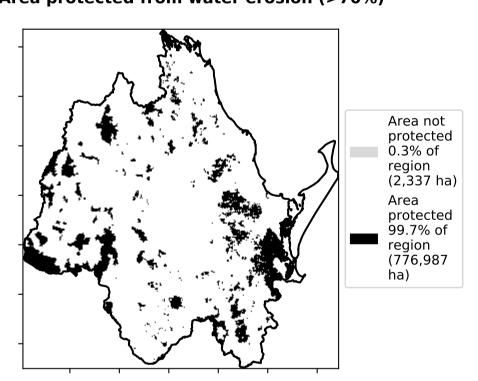
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



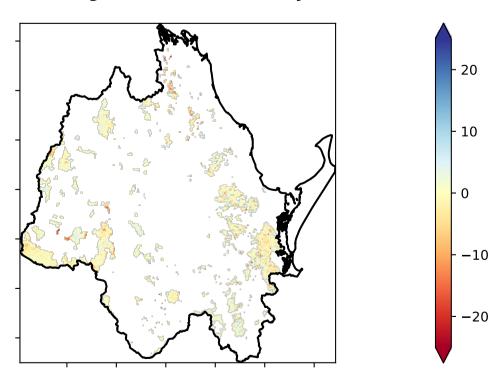
### **Total Vegetation Cover [%]**



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

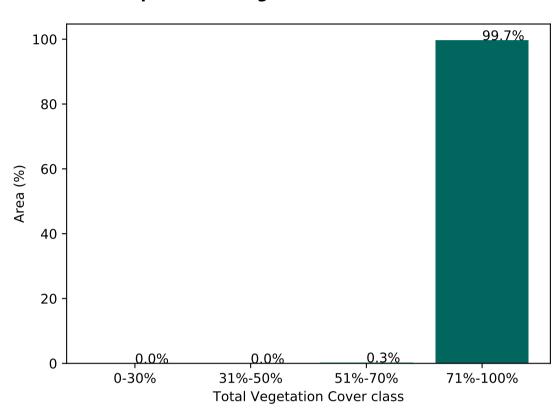


### Total Vegetation Cover Anomaly [%]

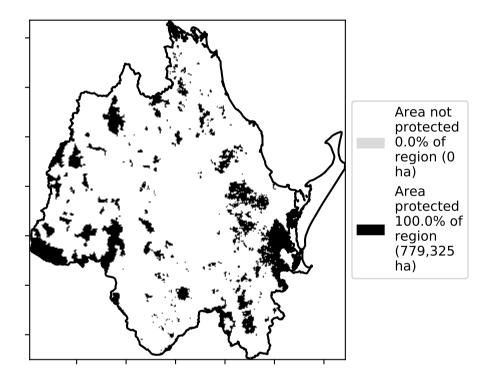


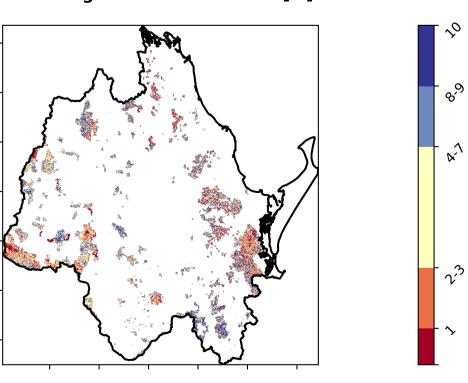
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### **Proportion of vegetation cover class in area**



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









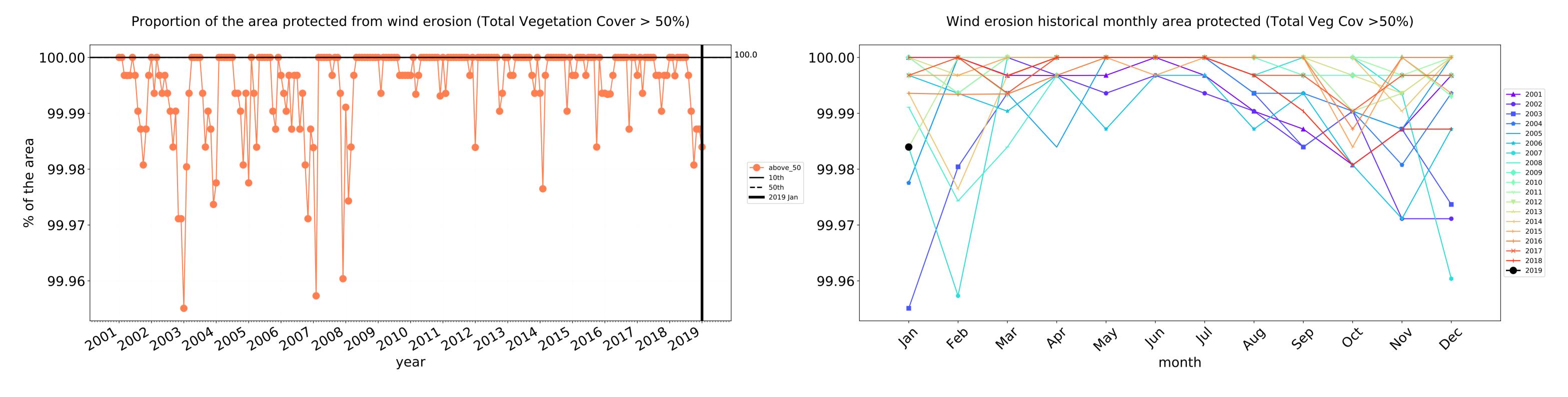


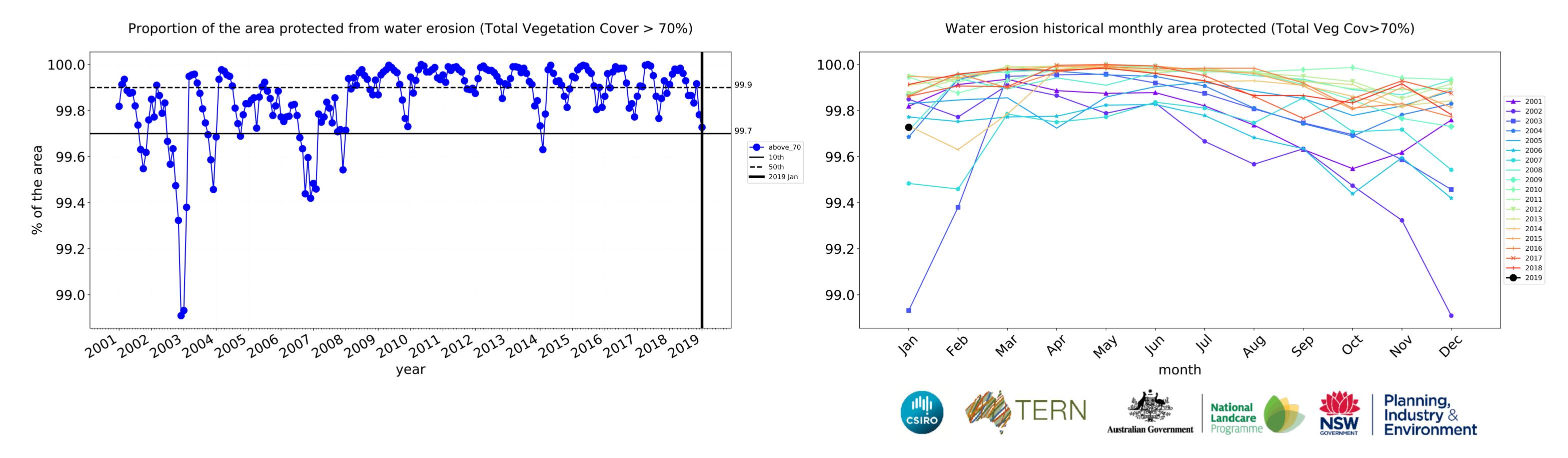


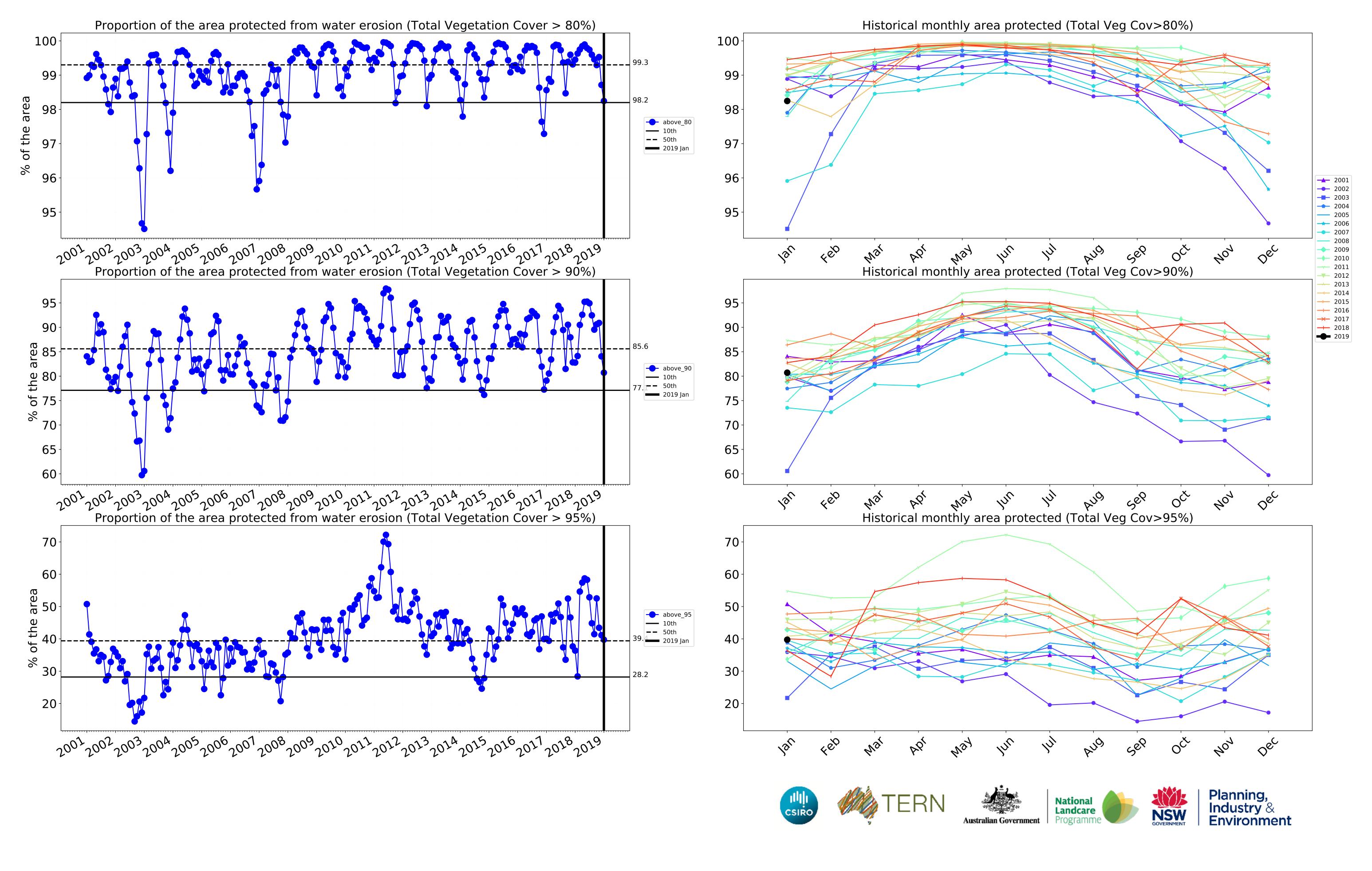




### **Production native forests and plantation forests timeseries**







# Burnett Mary (5,529,275 ha and no data 47,580 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	5,529,275	100.0% 5,526,950	99.8% 5,519,050	98.0% 5,417,050	89.8% 4,967,600	58.1% 3,212,475	27.8% 1,536,950
Conservation and natural environments	670,050	99.8% 668,500	99.4% 665,825	98.1% 657,450	95.6% 640,550	80.9% 541,975	49.5% 331,950
Conservation and natural environments Woodland forest	178,650	99.8% 178,250	99.3% 177,350	96.9% 173,200	92.4% 165,050	73.7% 131,600	42.0% 75,075
Conservation and natural environments Forest (non woodland)	463,200	100.0% 463,025	99.8% 462,475	99.3% 460,025	97.8% 453,100	85.0% 393,950	53.6% 248,175
Agriculture	3,869,525	100.0% 3,869,400	99.9% 3,866,500	97.9% 3,787,950	87.6% 3,391,375	50.2% 1,941,900	21.9% 849,200
Grazing	3,608,150	100.0% 3,608,125	100.0% 3,607,475	98.7% 3,562,625	89.7% 3,236,375	52.4% 1,892,075	23.1% 833,000
Grazing non forest	2,310,675	100.0% 2,310,650	100.0% 2,310,350	98.3% 2,272,425	86.2% 1,991,350	41.9% 967,775	16.2% 375,200
Grazing Woodland forest	709,400	100.0% 709,400	100.0% 709,125	99.3% 704,425	94.9% 673,475	65.6% 465,125	27.7% 196,275
Grazing - Forest (non woodland)	588,075	100.0% 588,075	100.0% 588,000	99.6% 585,775	97.2% 571,550	78.1% 459,175	44.5% 261,525
Cropping	81,725	100.0% 81,725	98.5% 80,500	77.9% 63,650	49.3% 40,250	13.5% 11,025	3.2% 2,625
Irrigation	173,975	99.9% 173,875	99.4% 172,850	89.9% 156,350	63.5% 110,400	21.0% 36,475	7.2% 12,450
Production native forests and plantation forests	779,325	100.0% 779,325	100.0% 779,200	99.7% 777,200	98.2% 765,650	80.7% 629,000	39.7% 309,725











