### **Total vegetation cover soil protection Region:NRM Hunter NSW**

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: February 2017

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







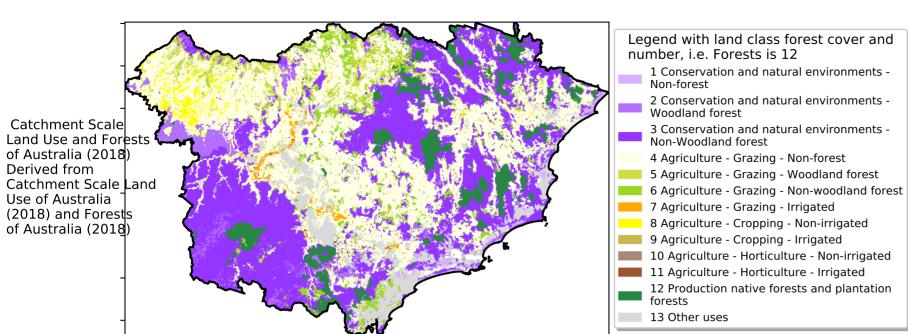




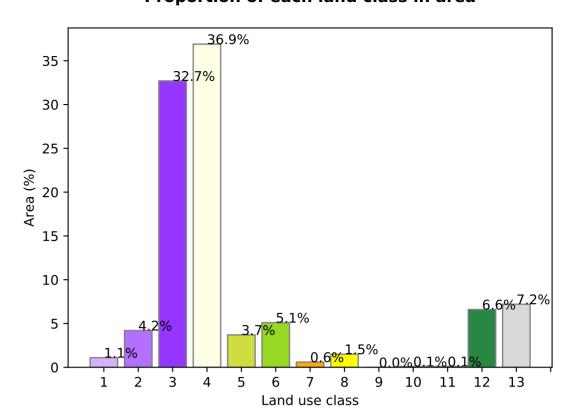


### **Vegetation Cover Feb 2017**

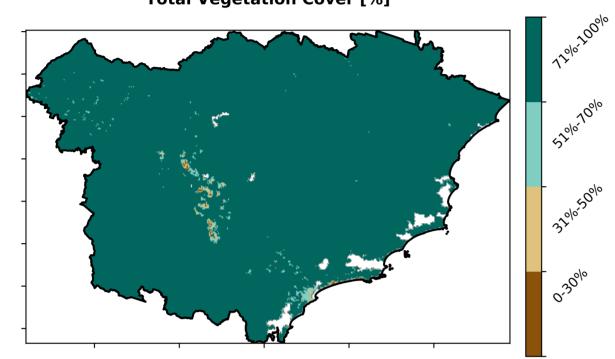
### Land use and forest cover



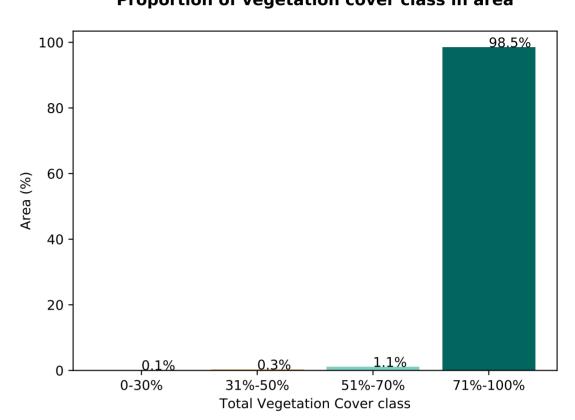
### Proportion of each land class in area



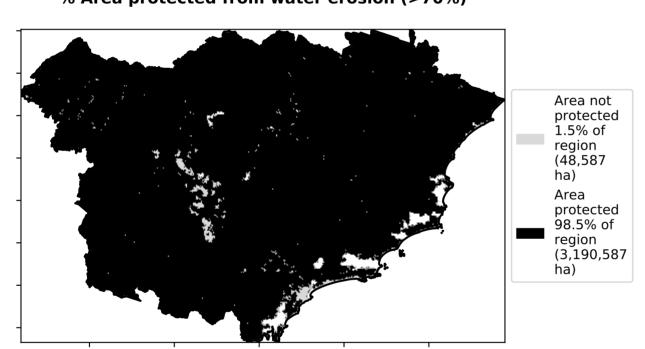
### Total Vegetation Cover [%]



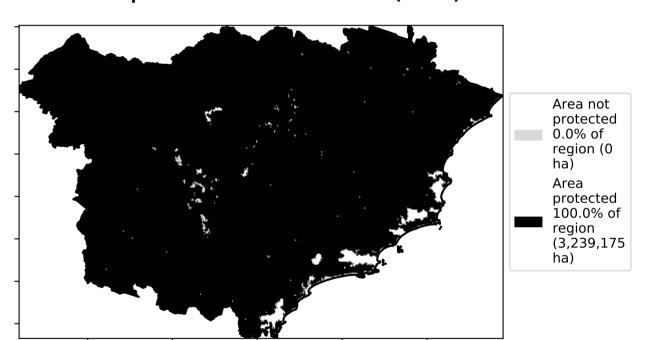
Proportion of vegetation cover class in area



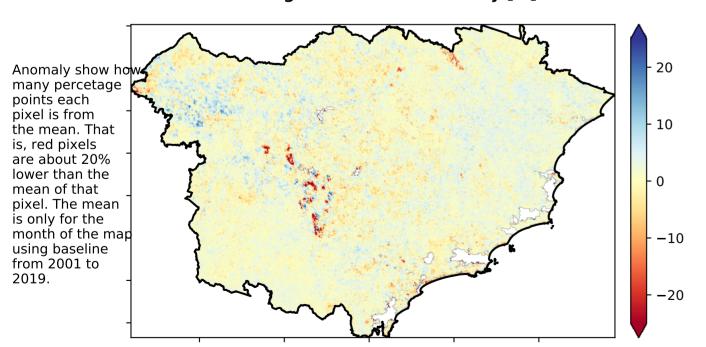
### % Area protected from water erosion (>70%)



% 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.

**Total Vegetation Cover Decile [%]** 



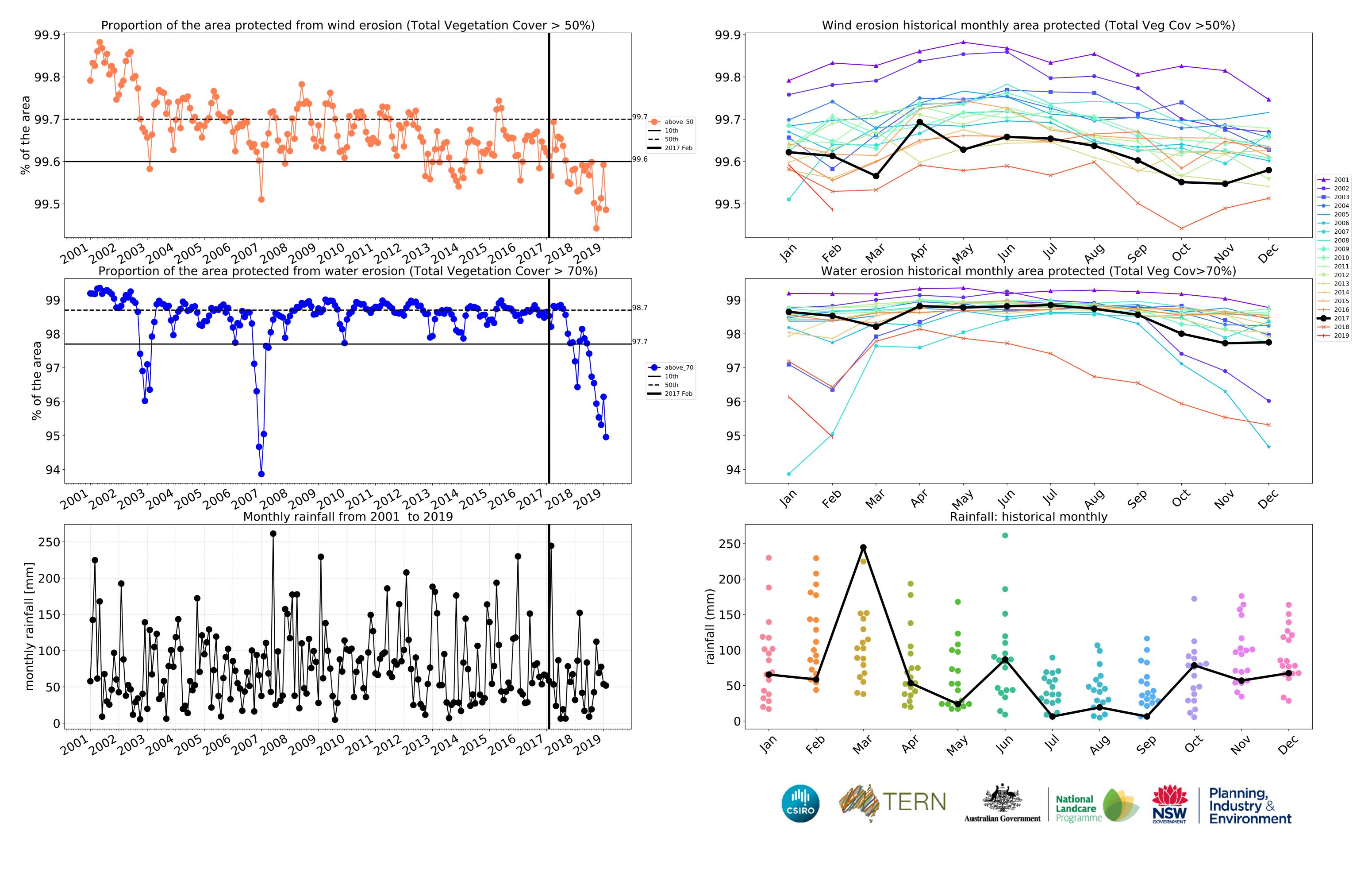


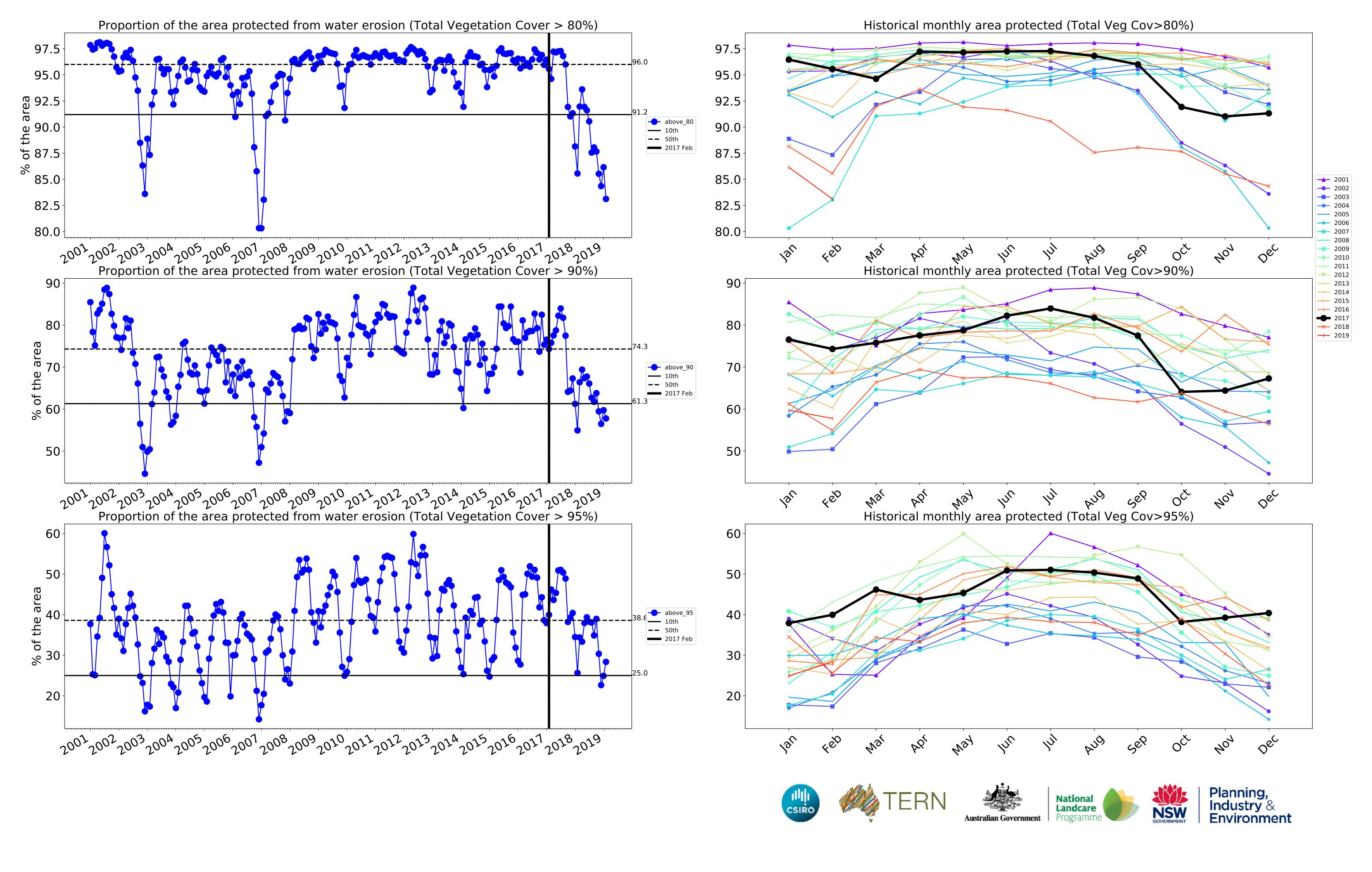






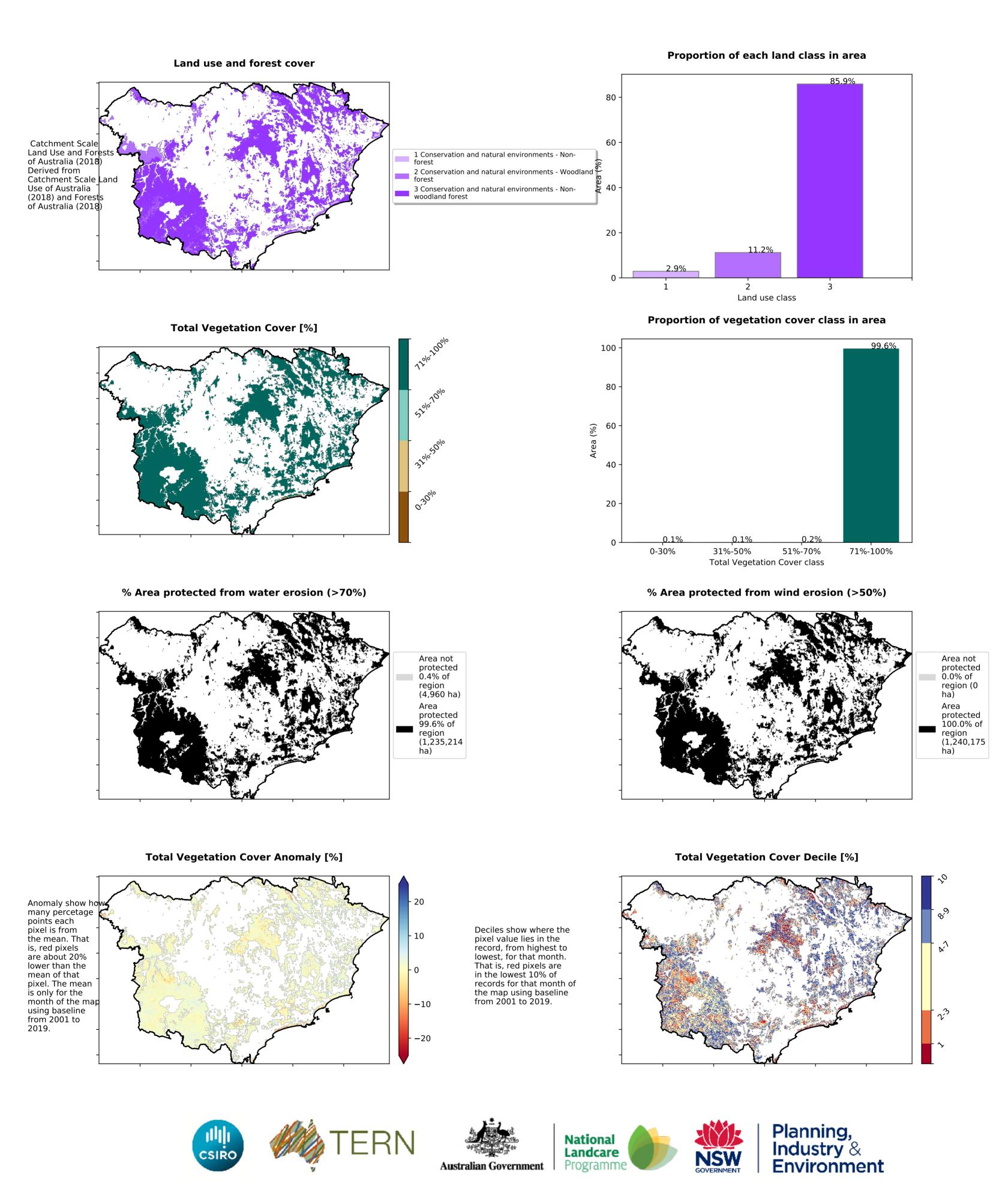




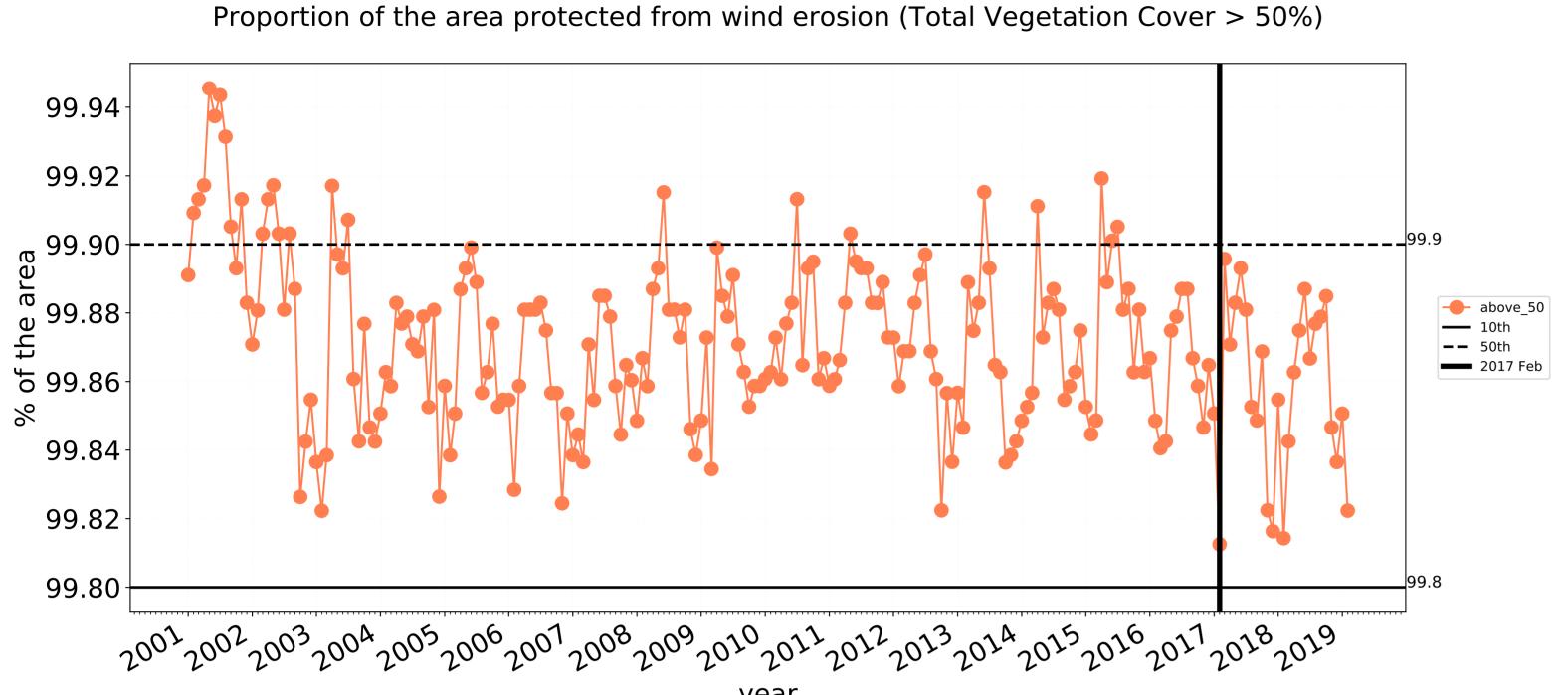


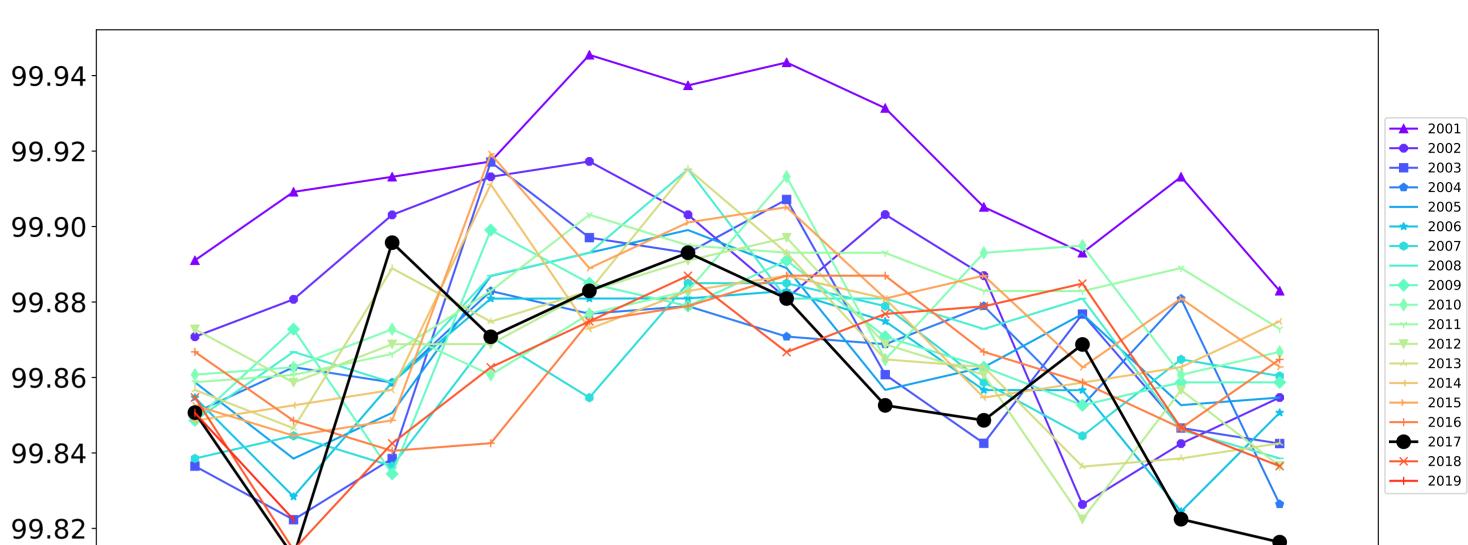
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### **Conservation and natural environments**



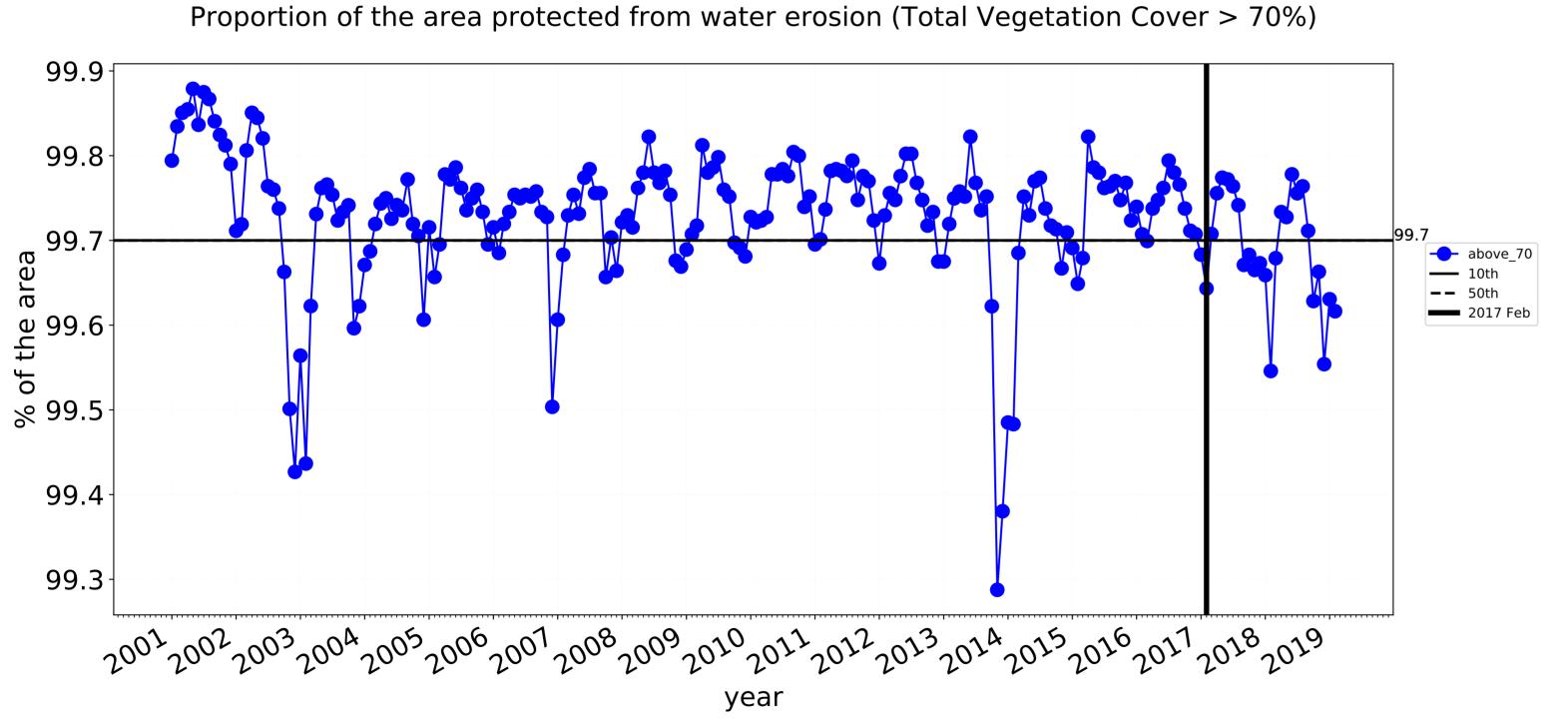
### **Conservation and natural environments timeseries**

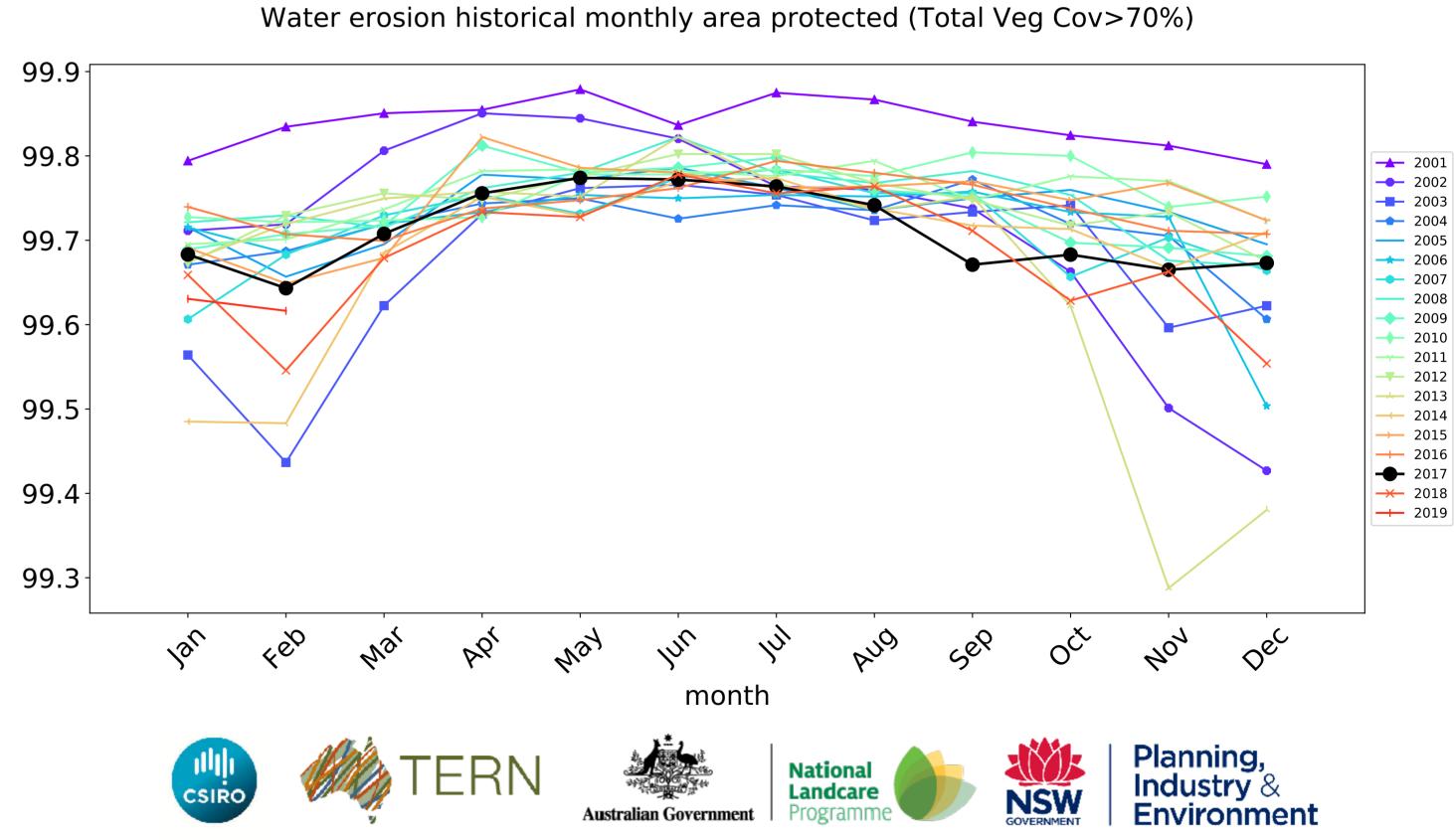


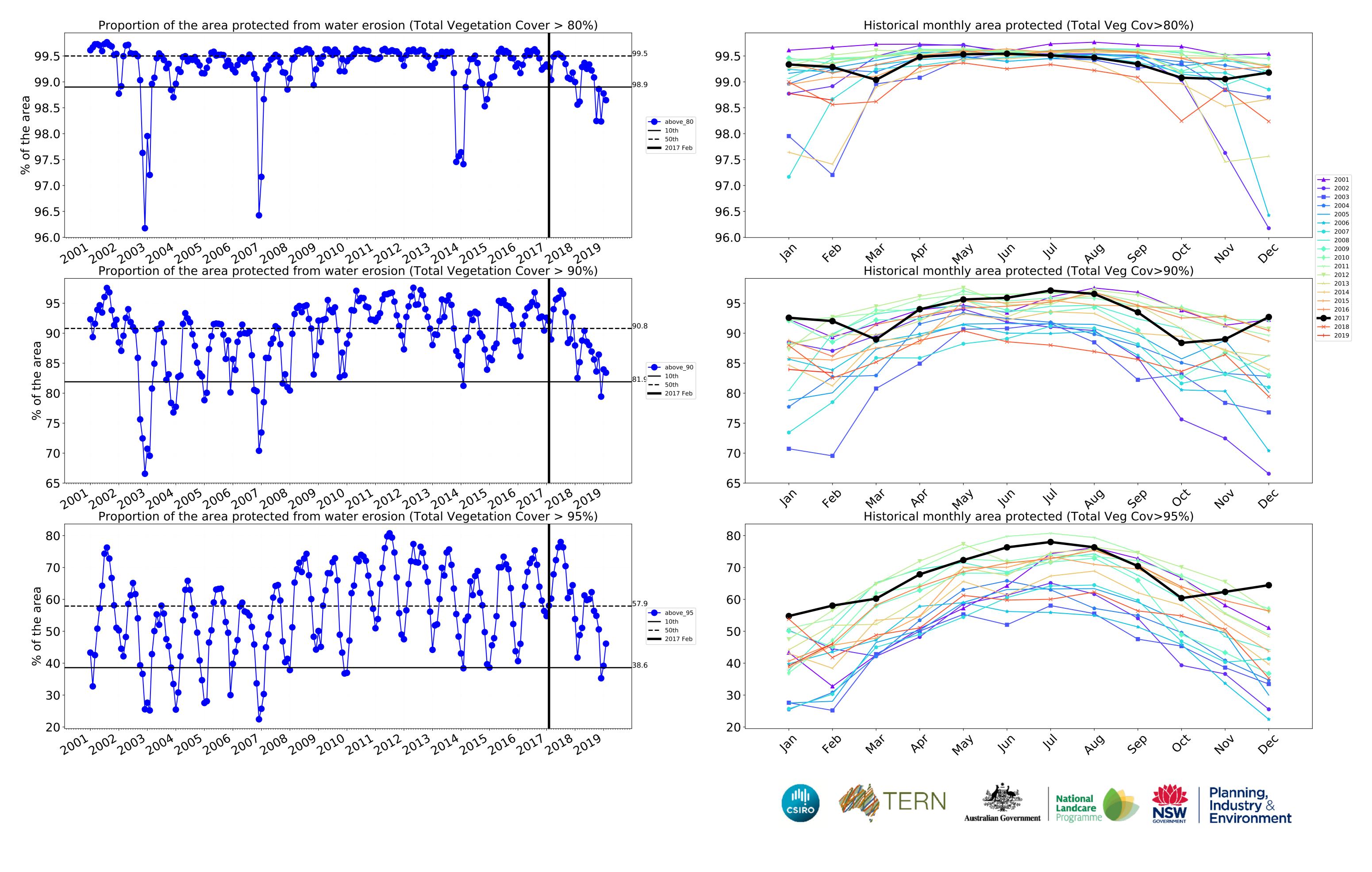


month

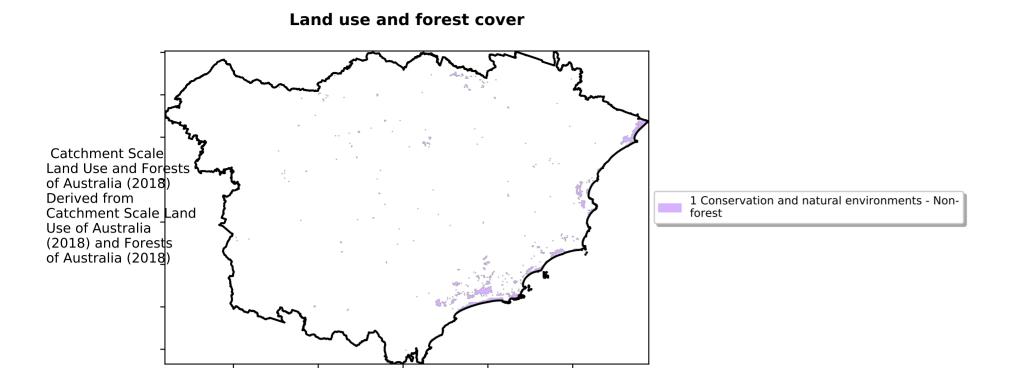
Wind erosion historical monthly area protected (Total Veg Cov >50%)





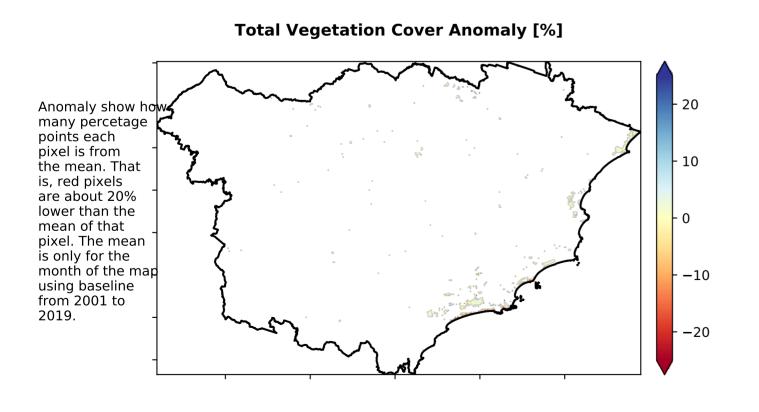


### **Conservation and natural environments non forest**



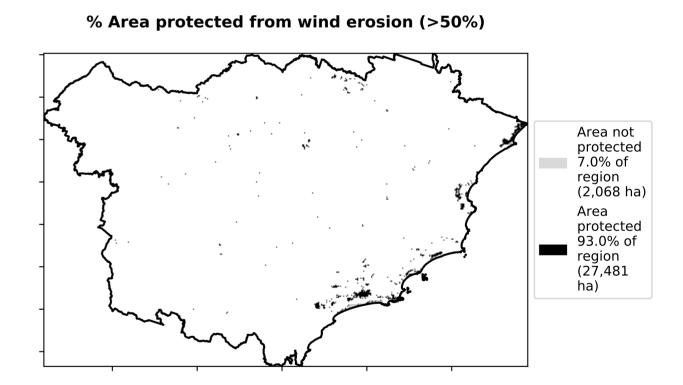
## Total Vegetation Cover [%]

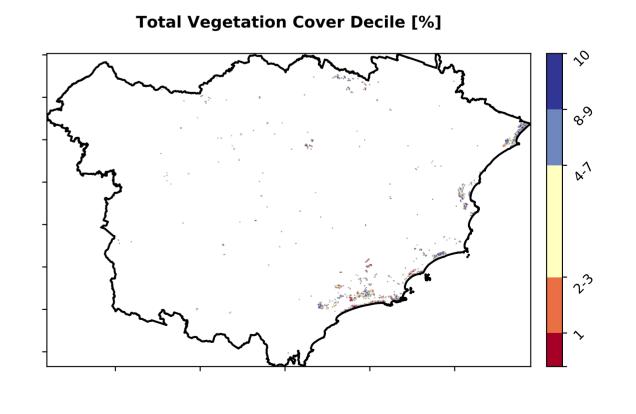
### % Area protected from water erosion (>70%) Area not protected 10.0% of region (2,955 ha) Area protected 90.0% of region (26,595 ha)



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# Proportion of vegetation cover class in area 90.0% 80 - 60 - 60 - 20 - 20 - 4.4% 0-30% 31%-50% Total Vegetation Cover class









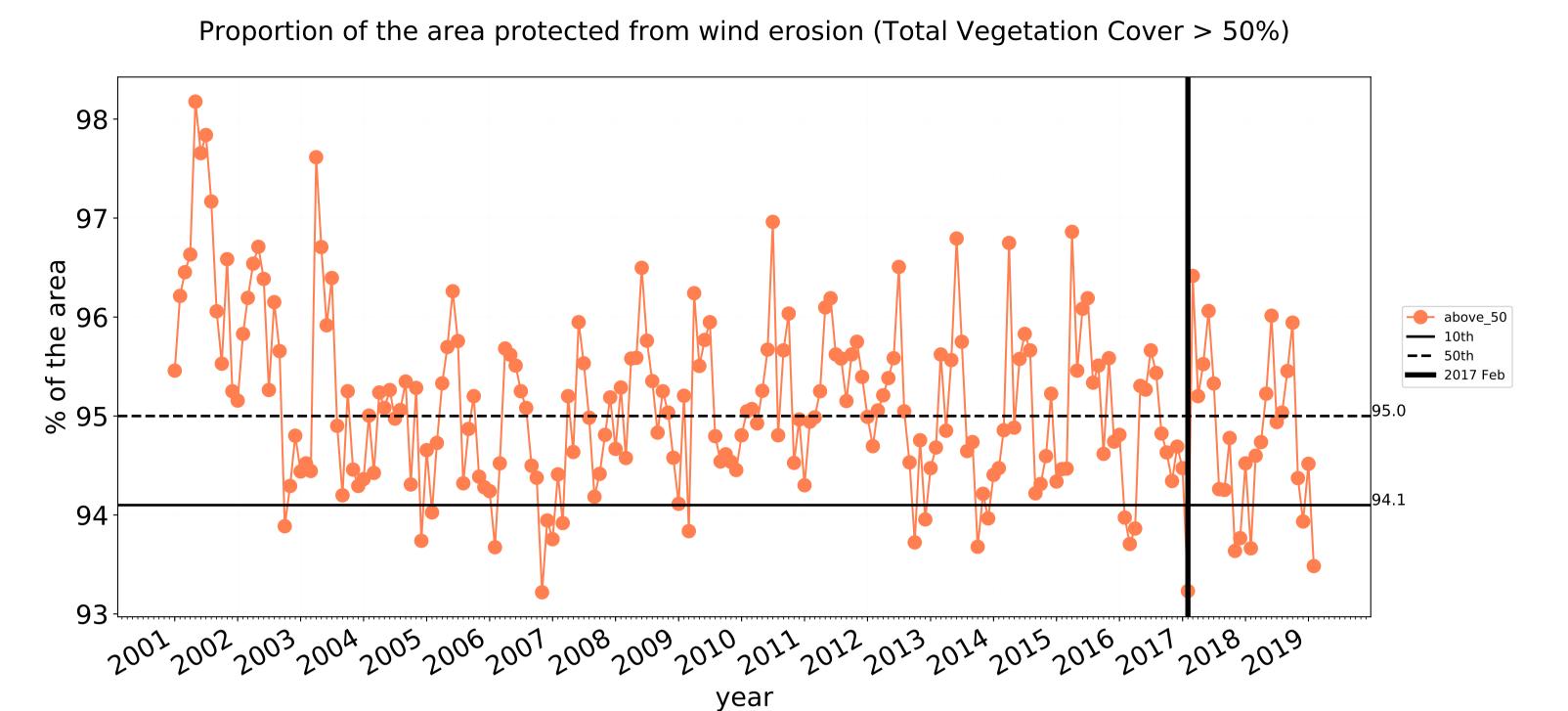




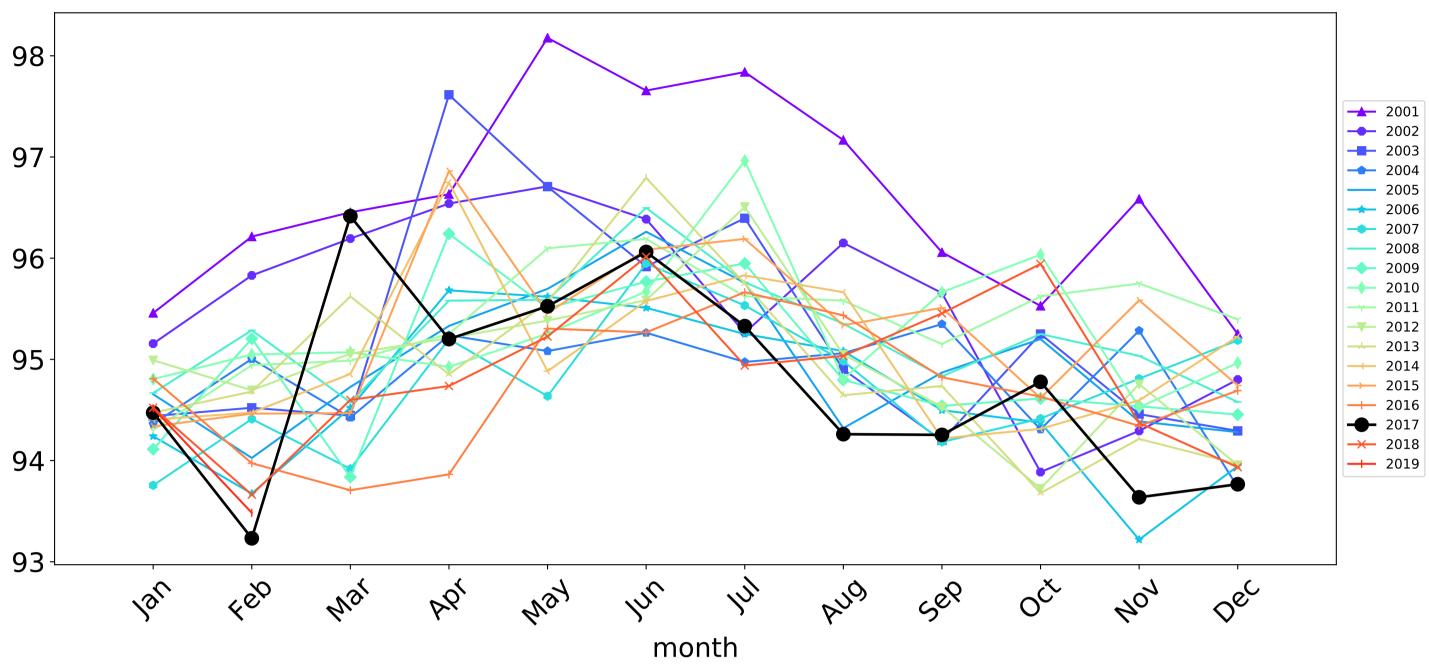


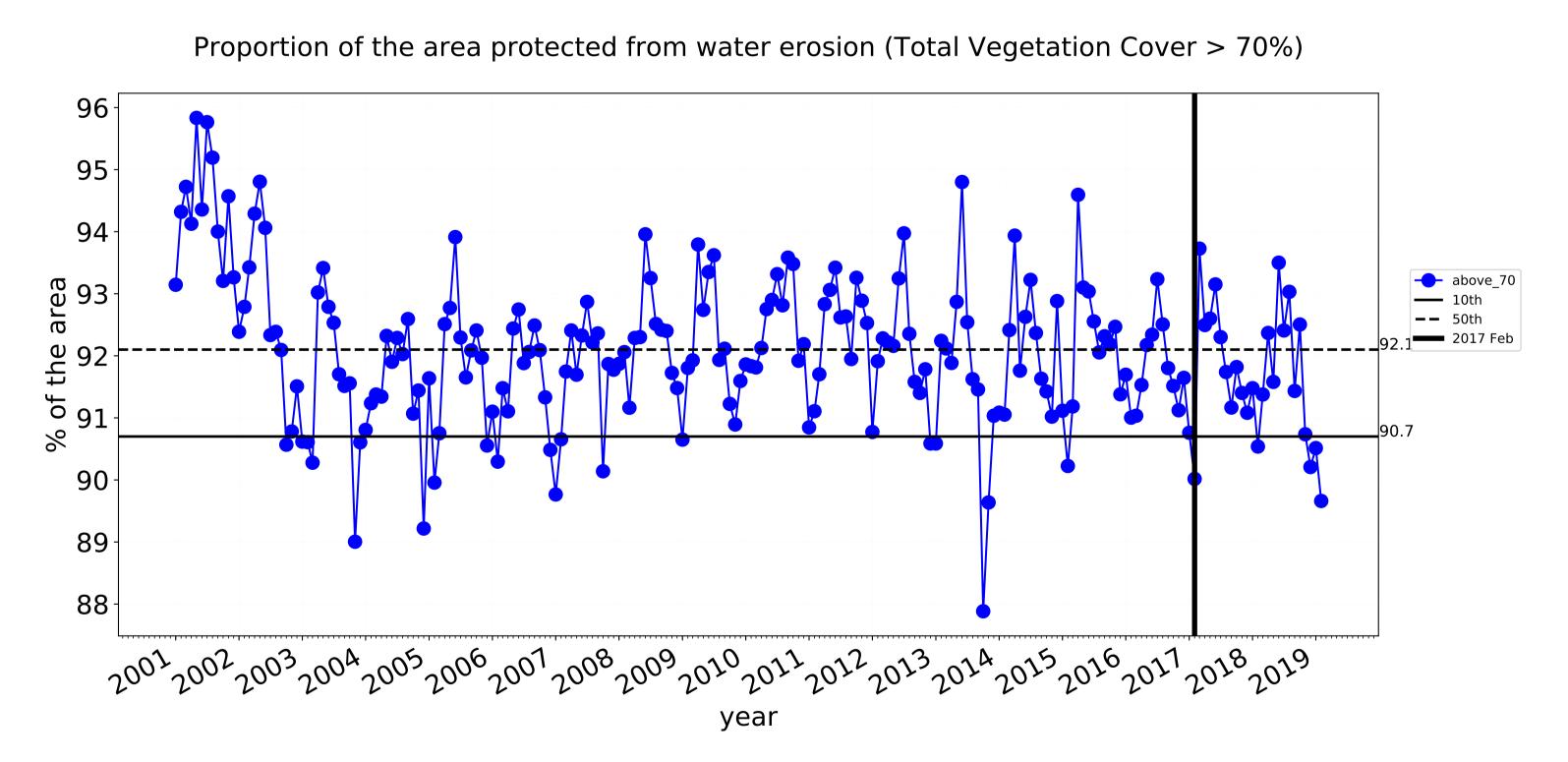


### **Conservation and natural environments non forest timeseries**

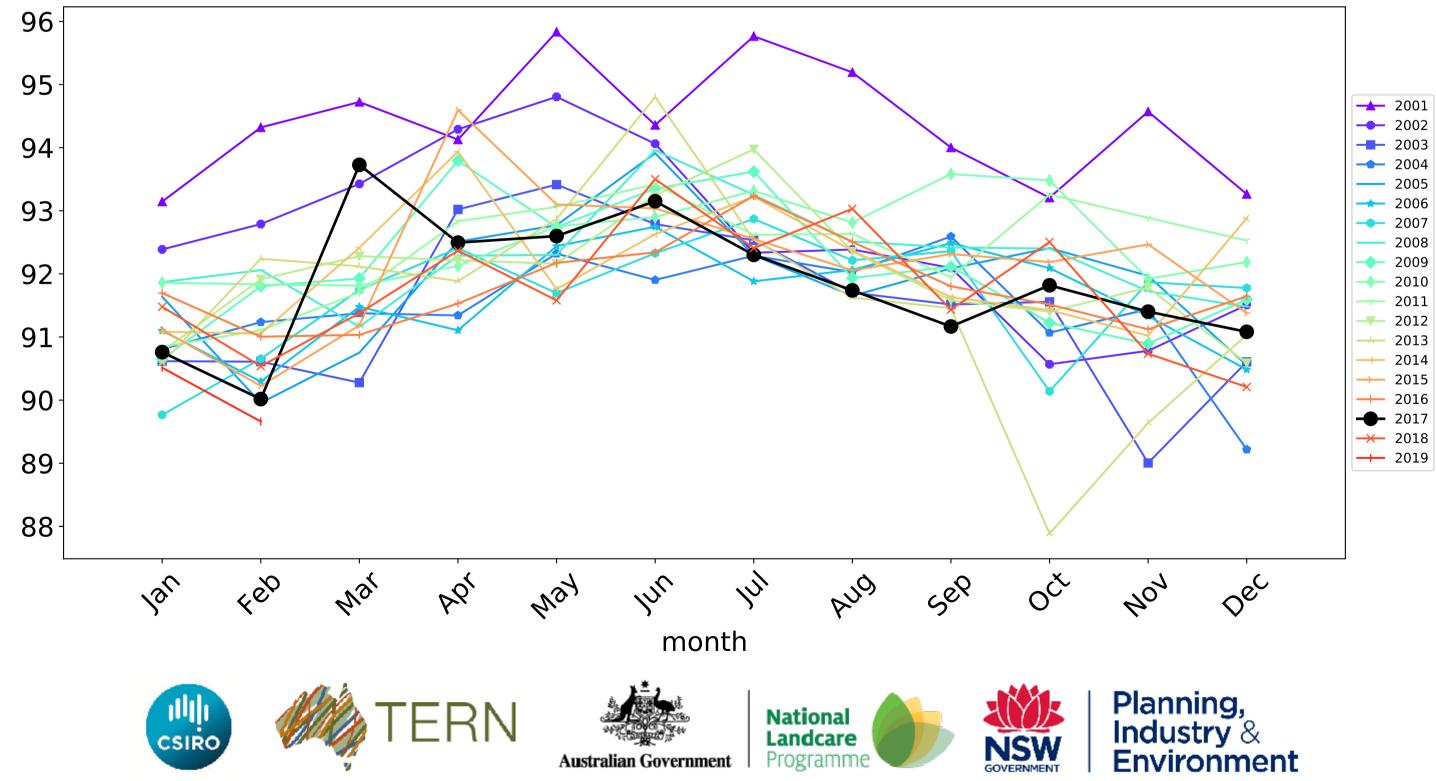




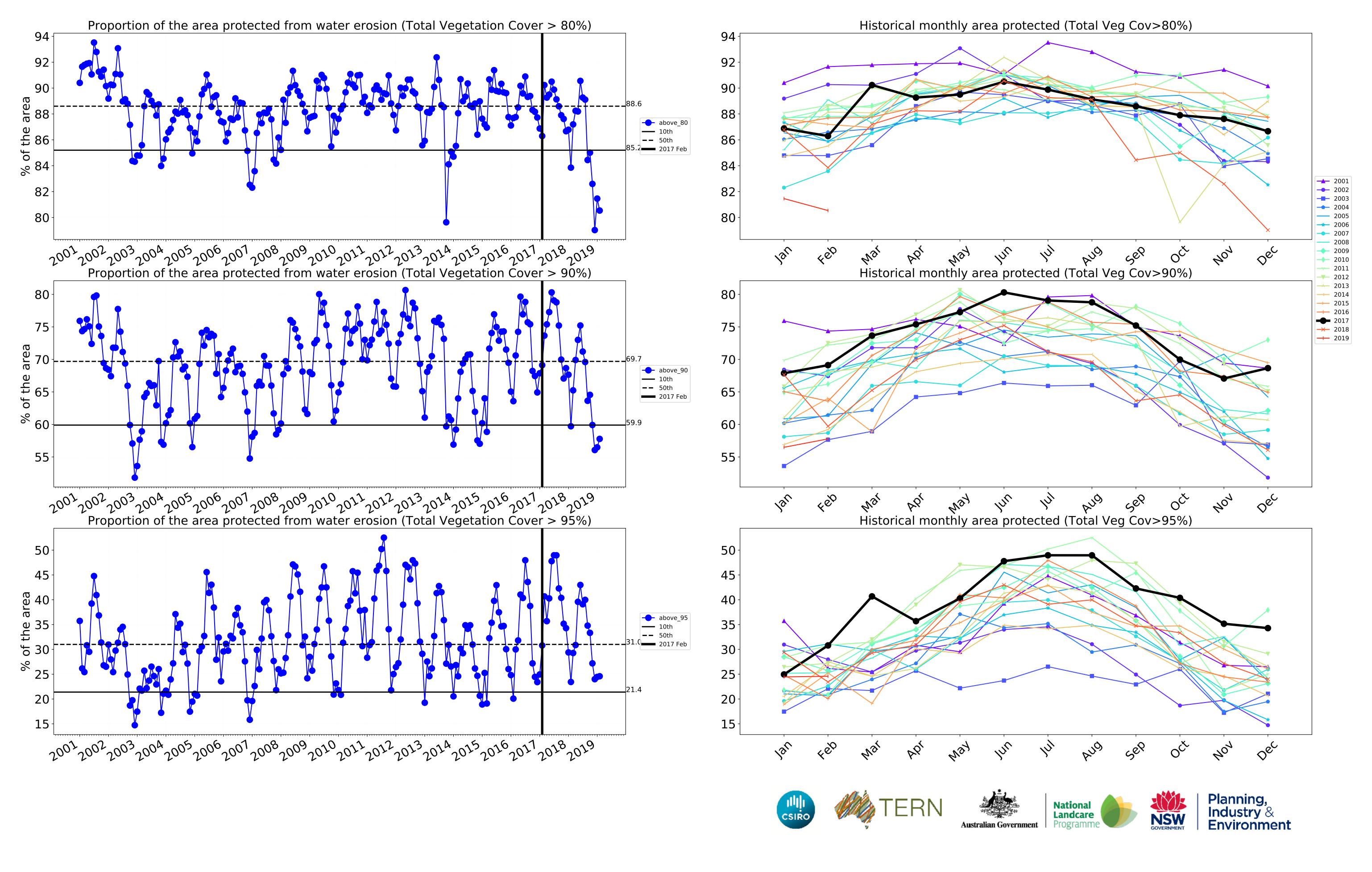




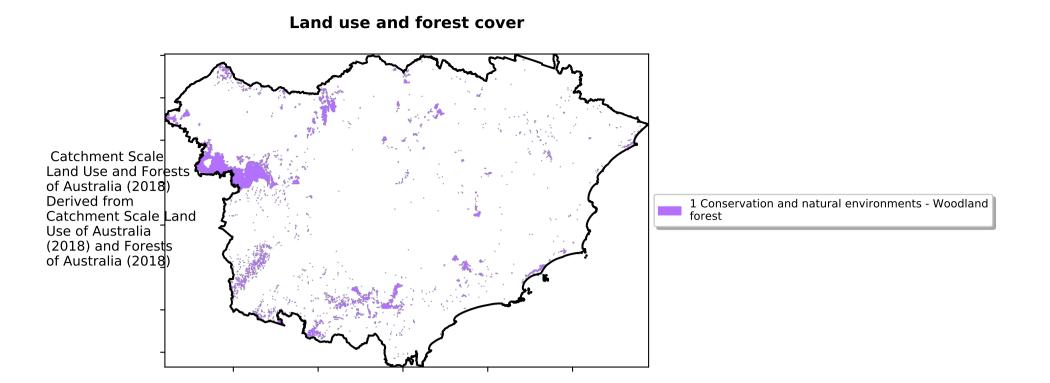




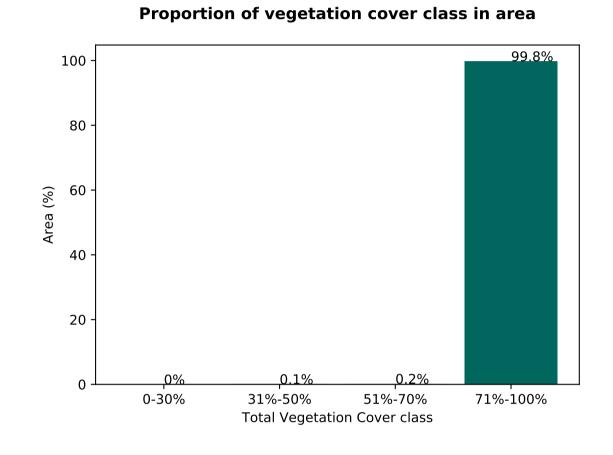
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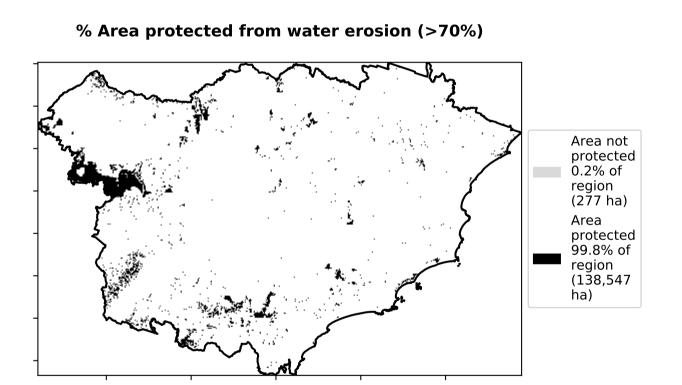


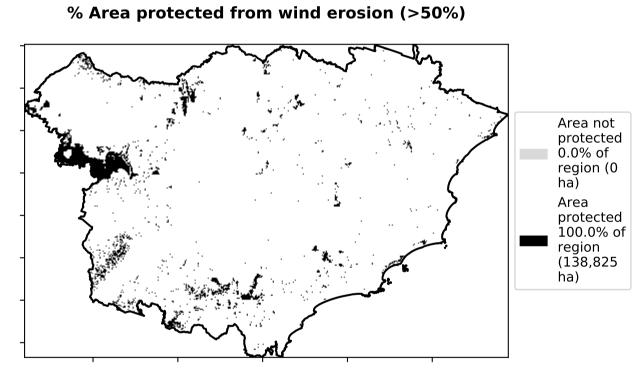
### **Conservation and natural environments Woodland forest**

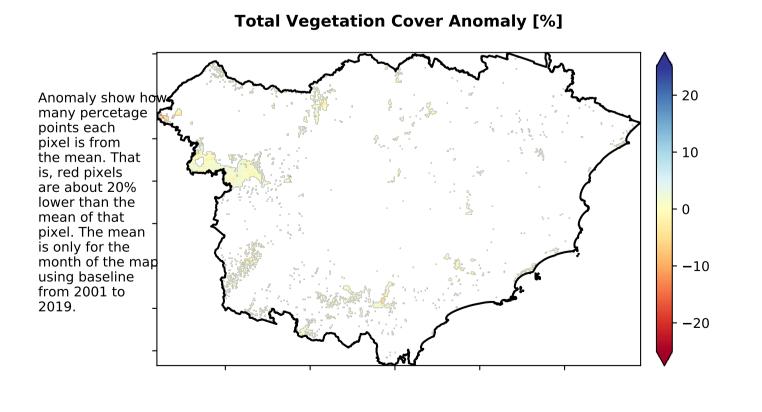


## Total Vegetation Cover [%]

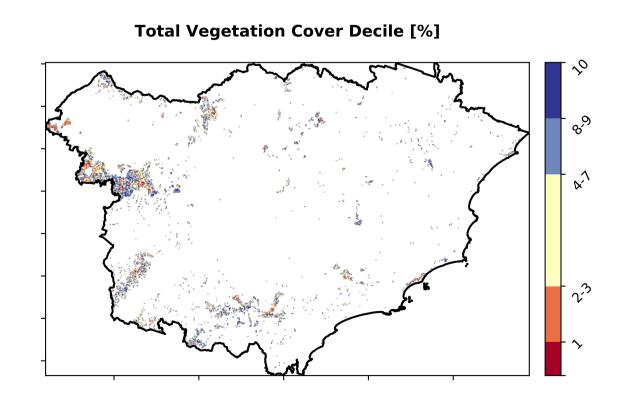








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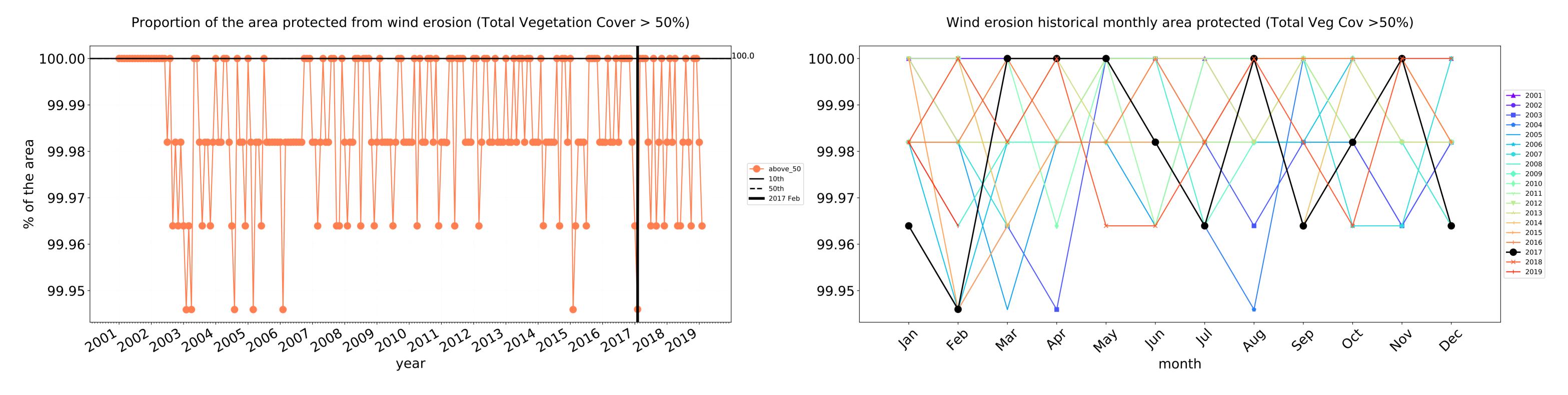


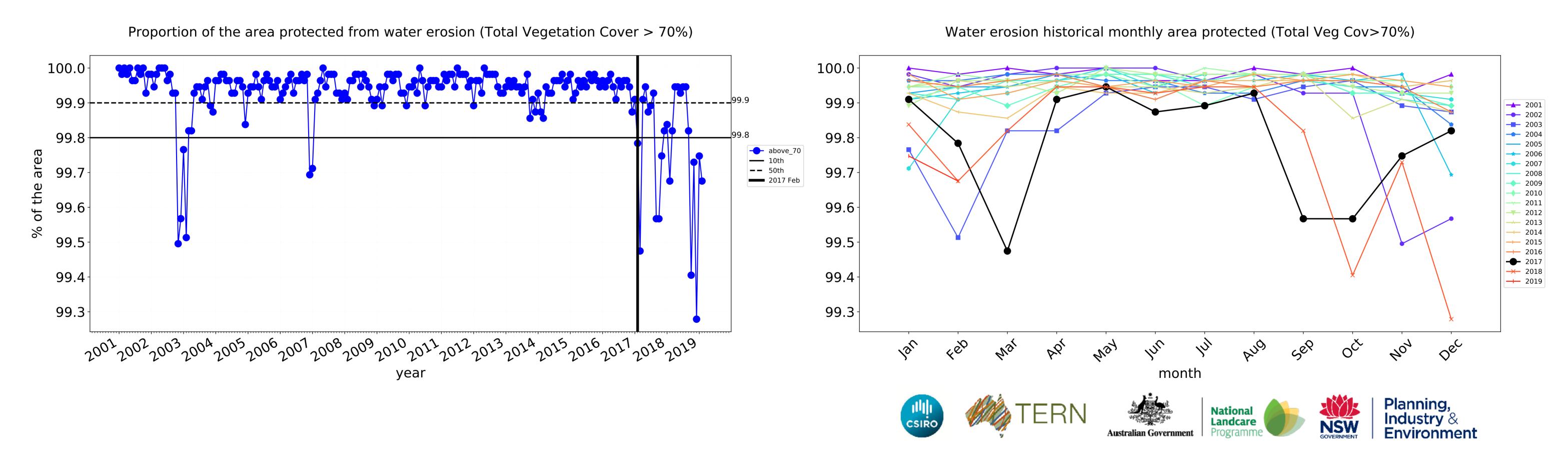


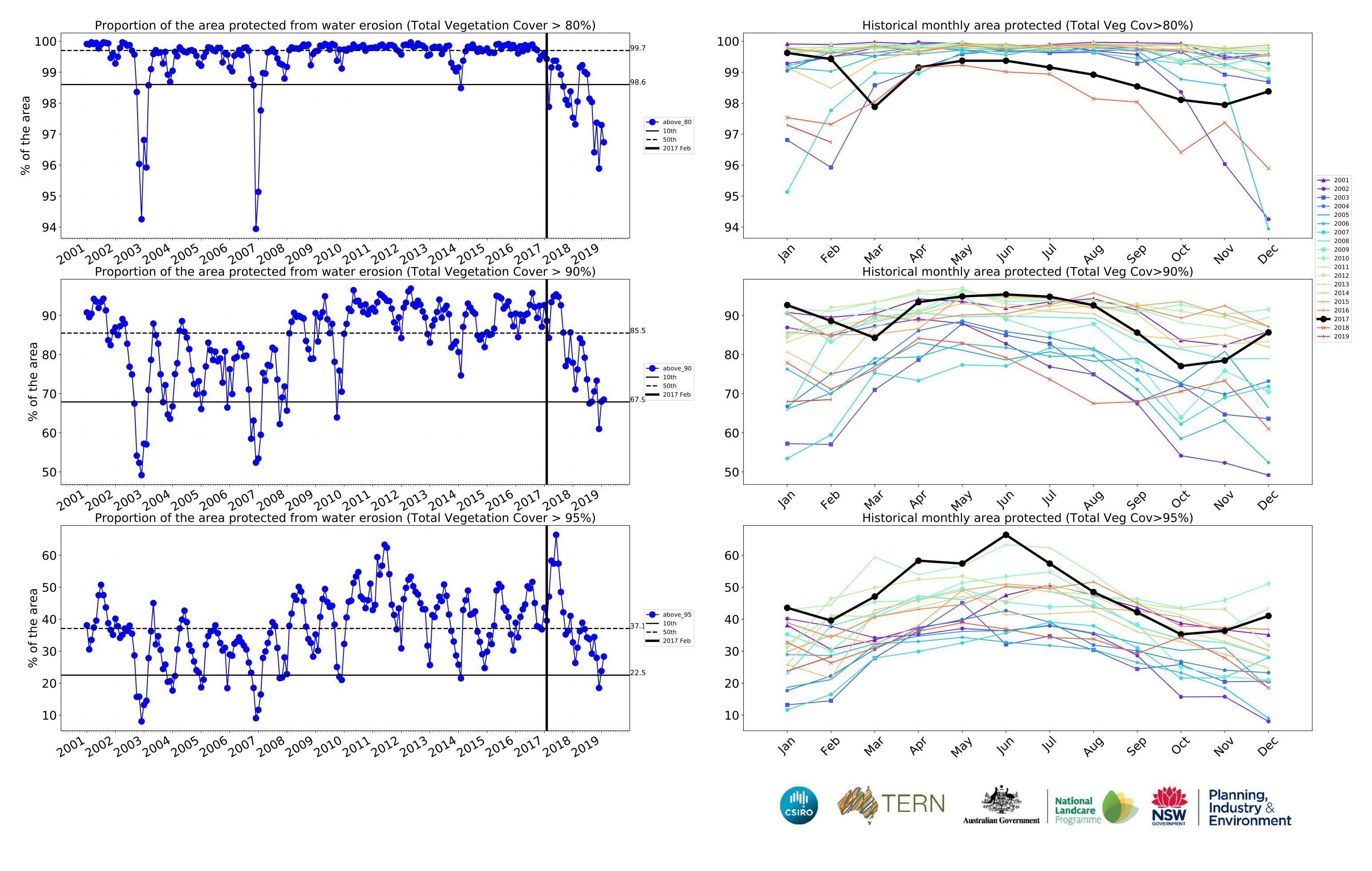




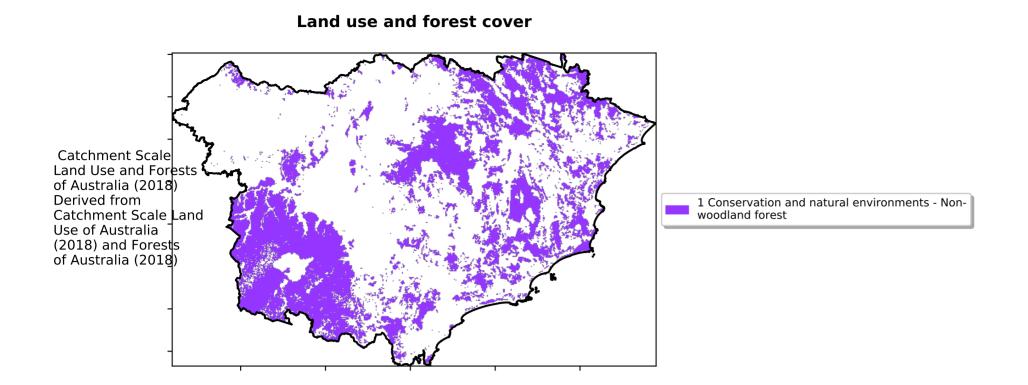
### Conservation and natural environments Woodland forest timeseries



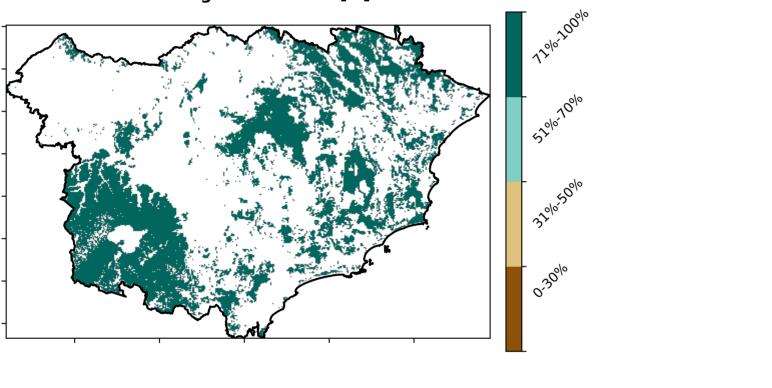


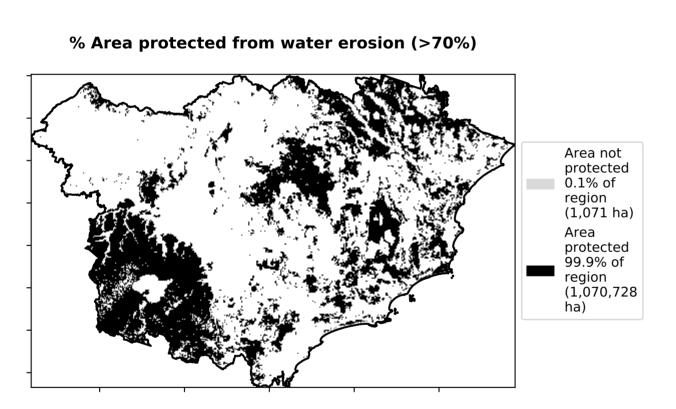


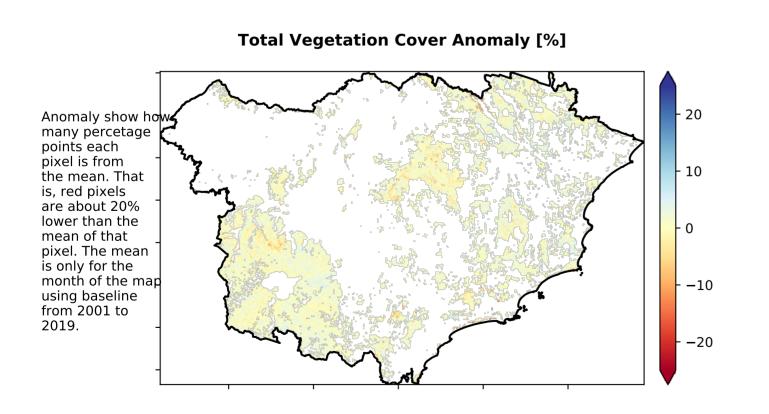
### **Conservation and natural environments Forest (non woodland)**



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

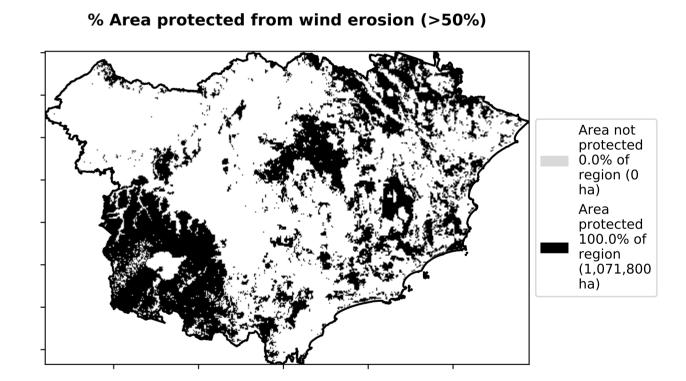


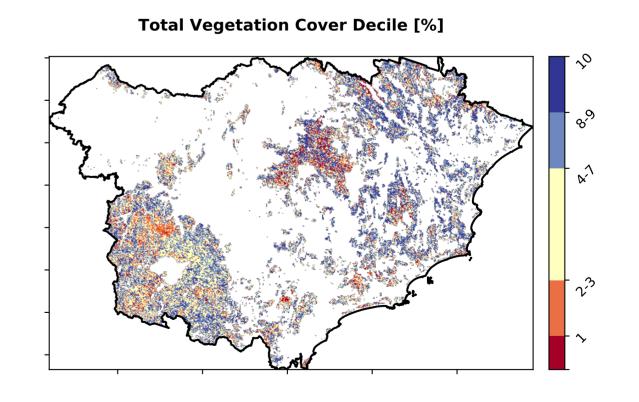




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area 99.9% 100 80 60 40 20 0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**









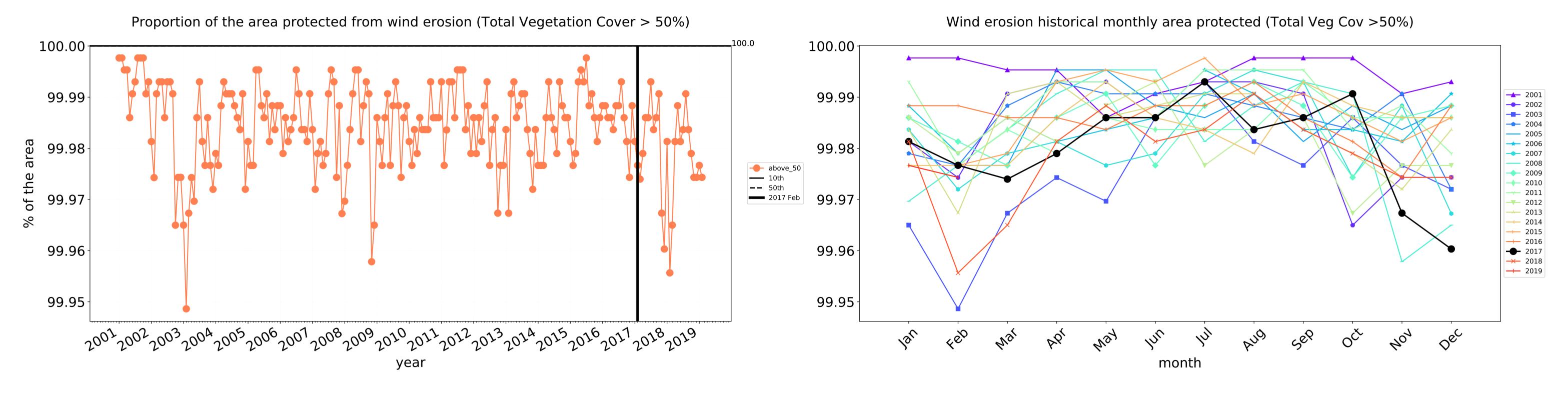


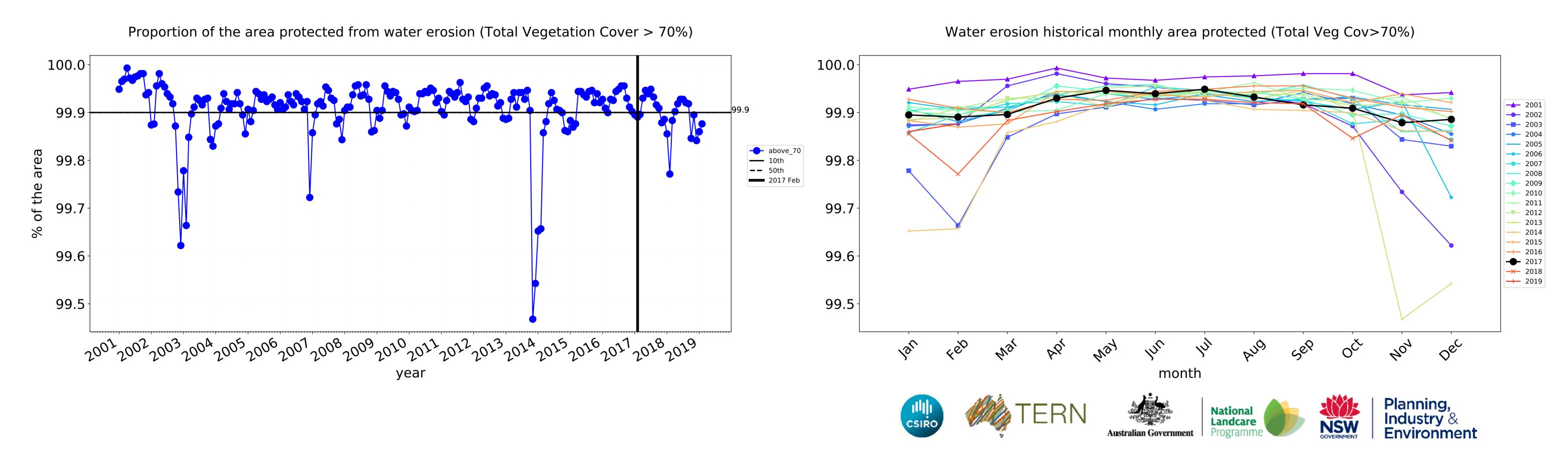


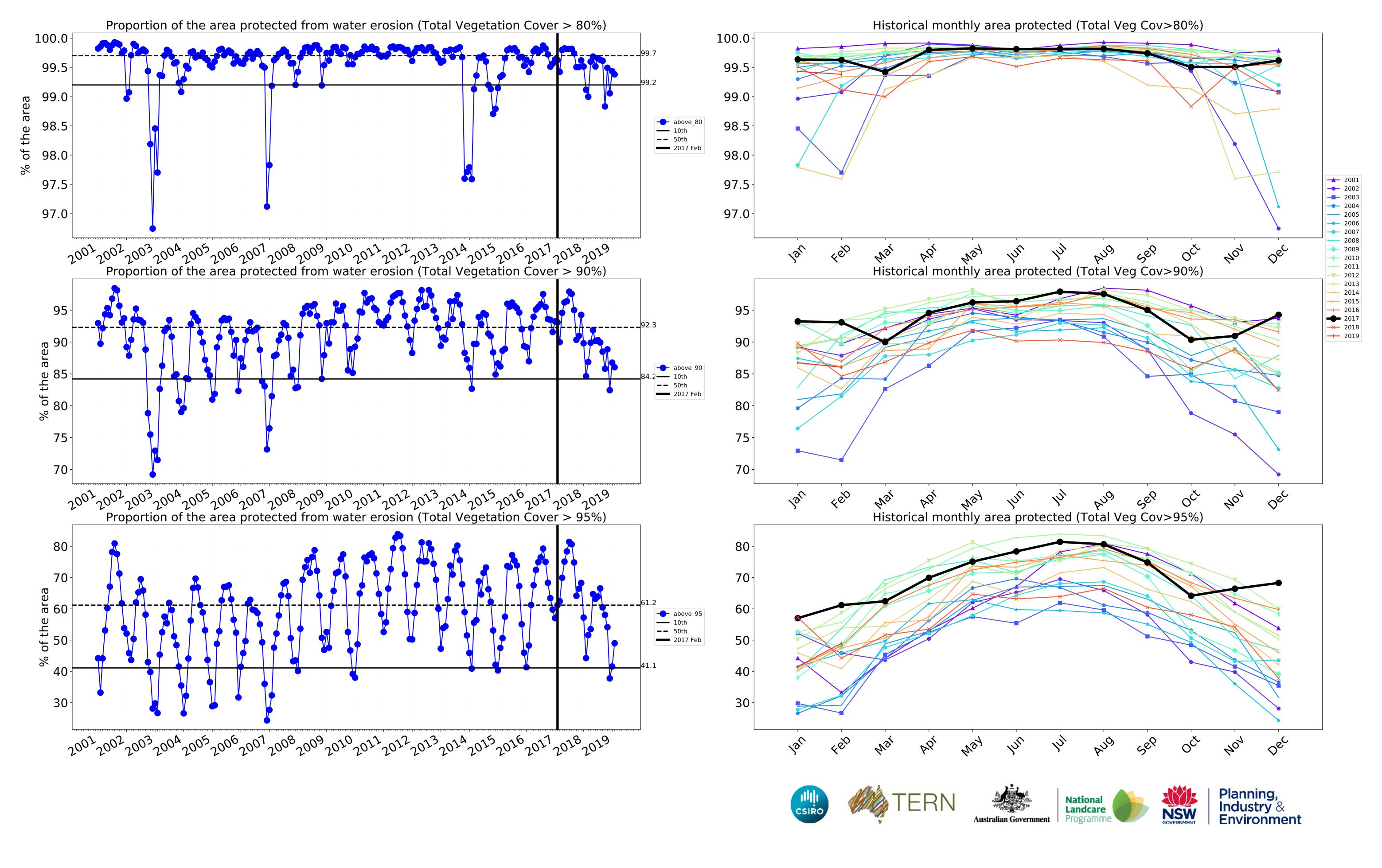




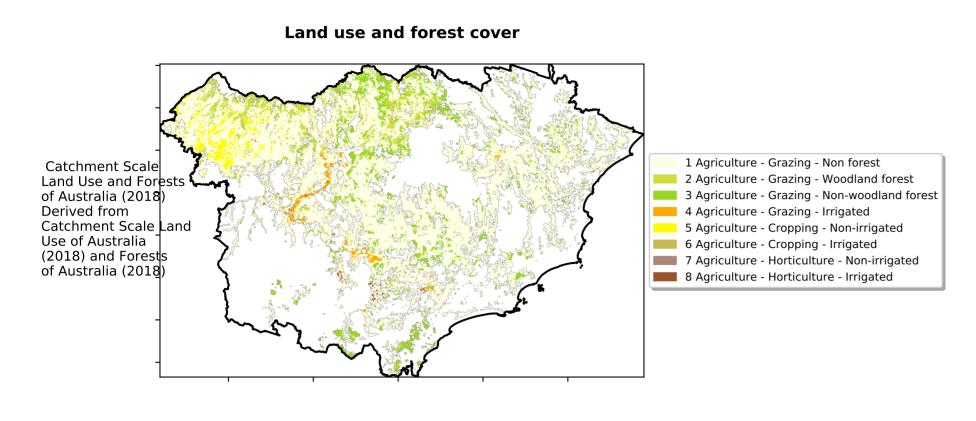
### Conservation and natural environments Forest (non woodland) timeseries





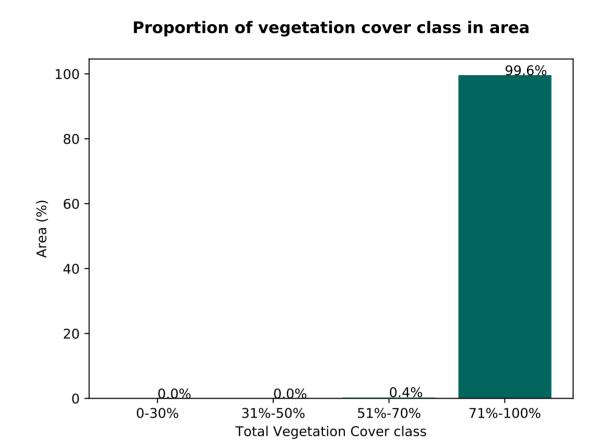


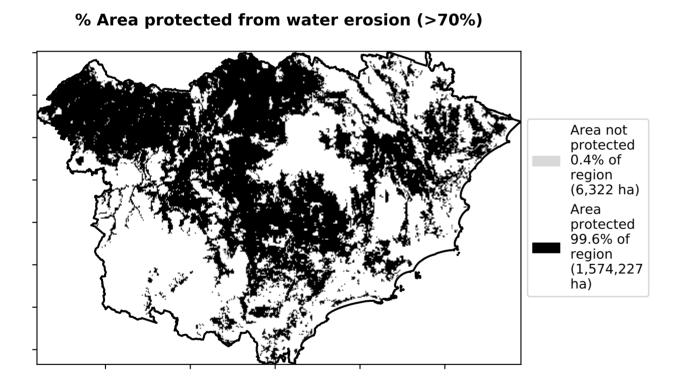
### **Agriculture**

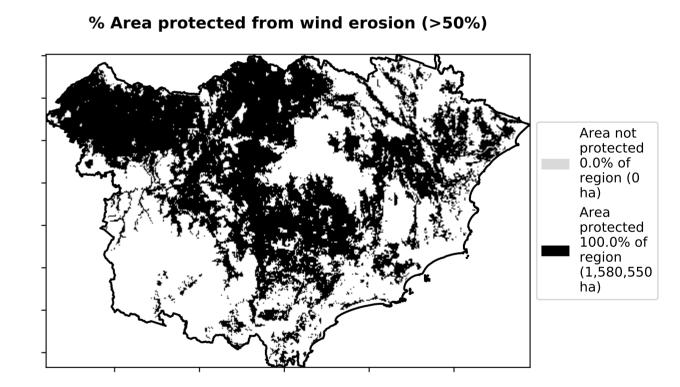


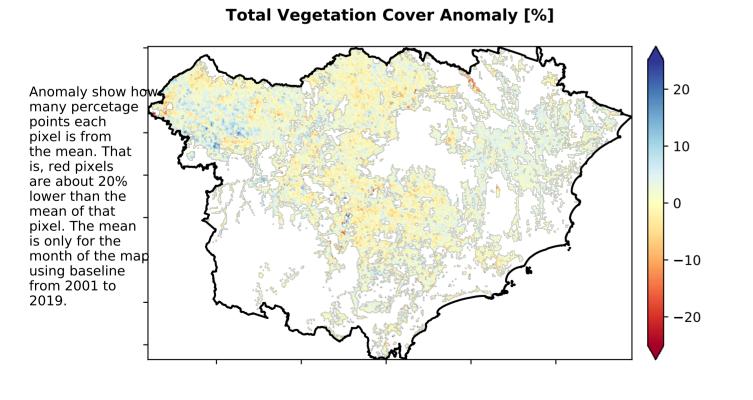


## Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]

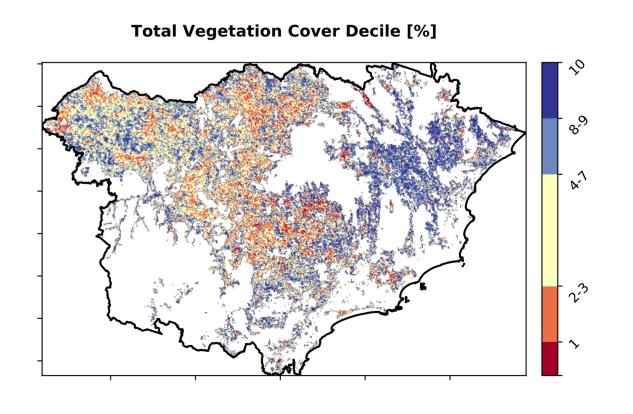








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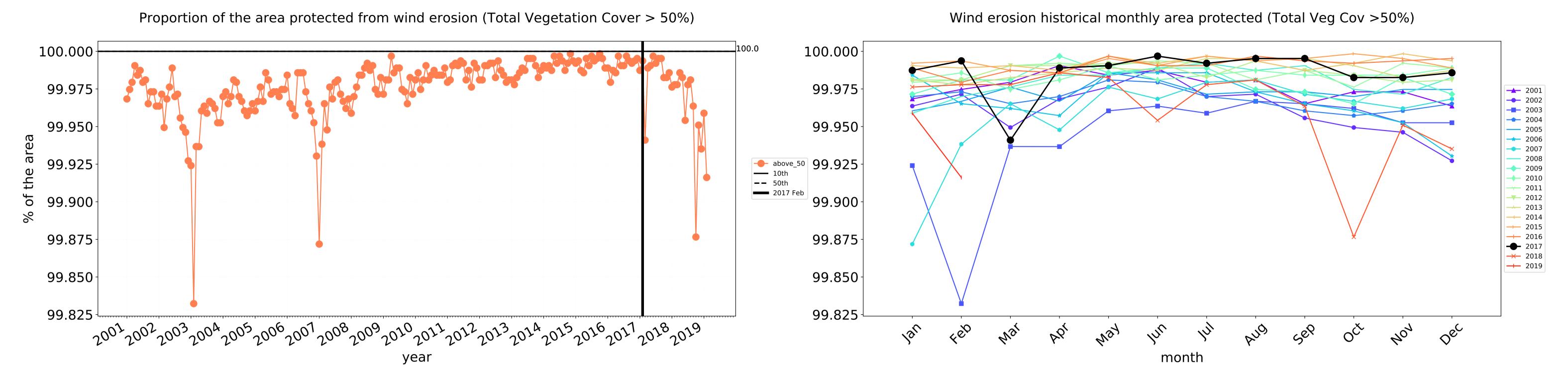


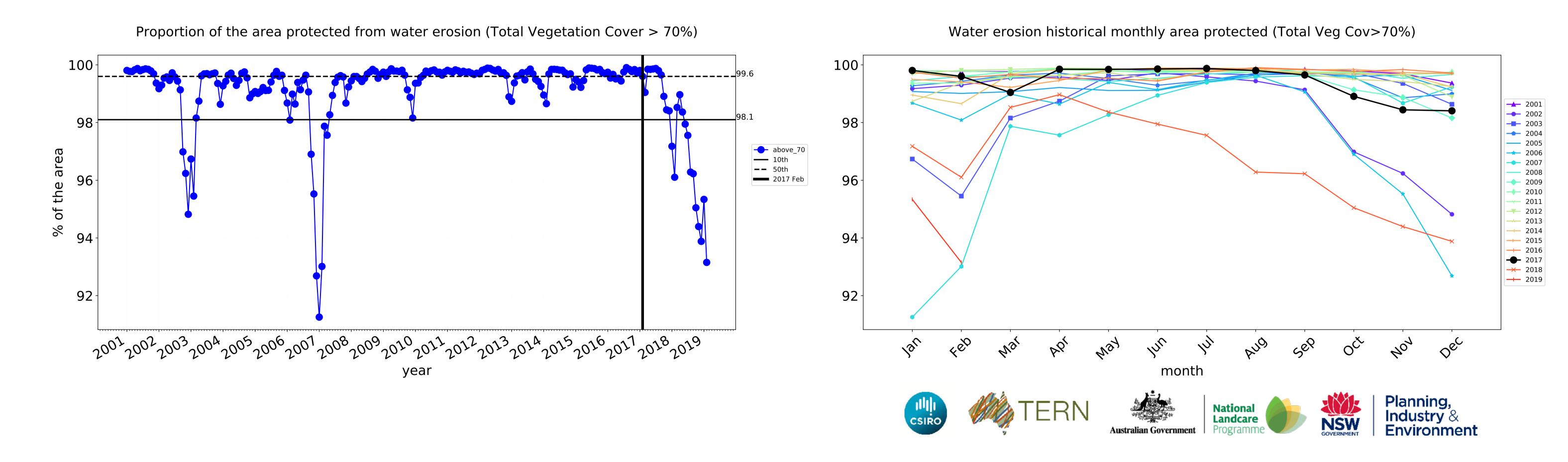


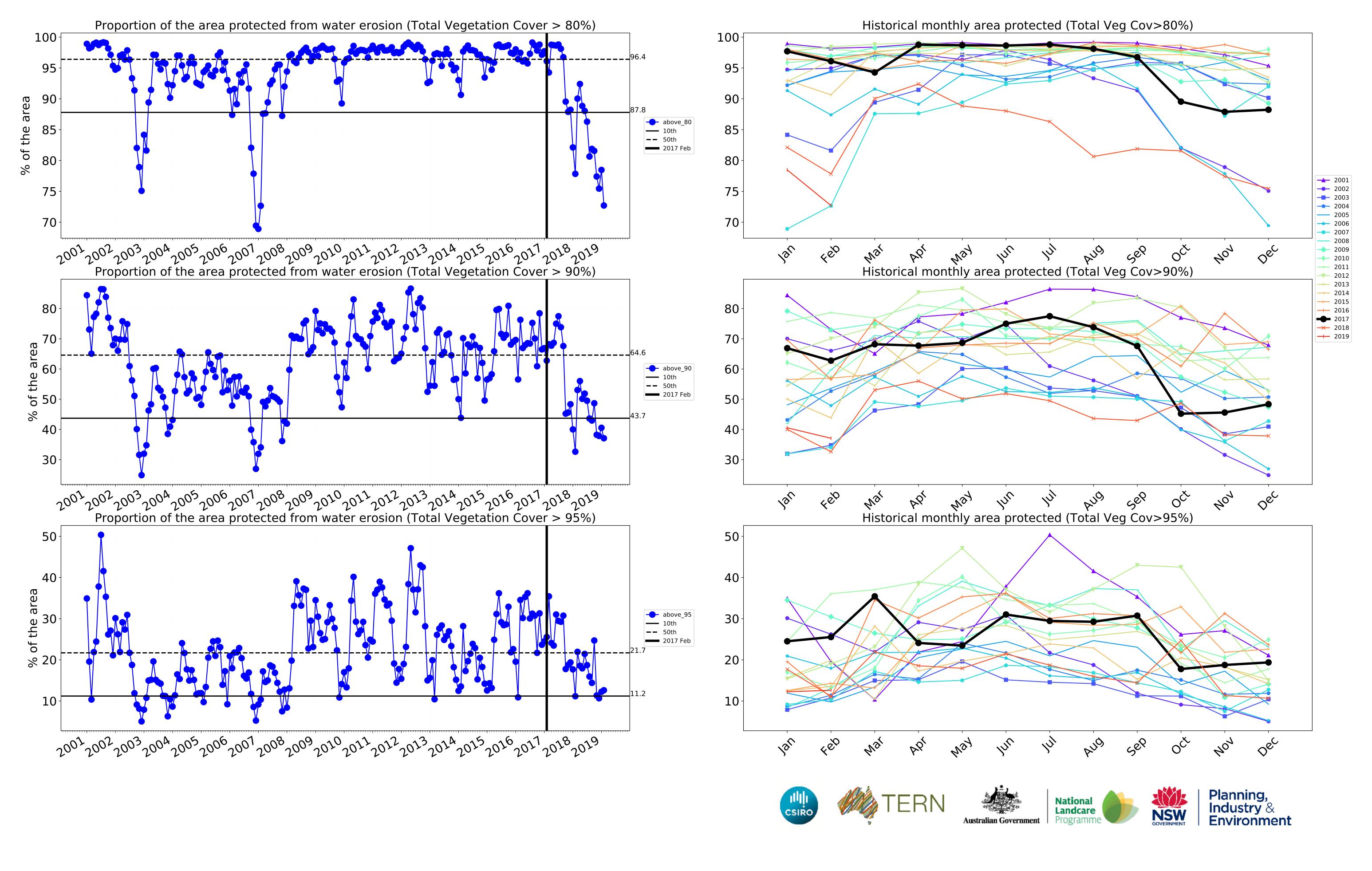




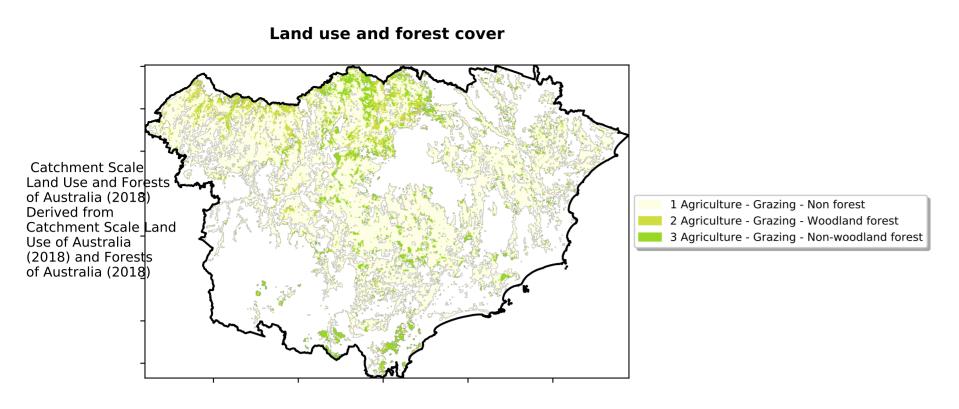
### **Agriculture timeseries**



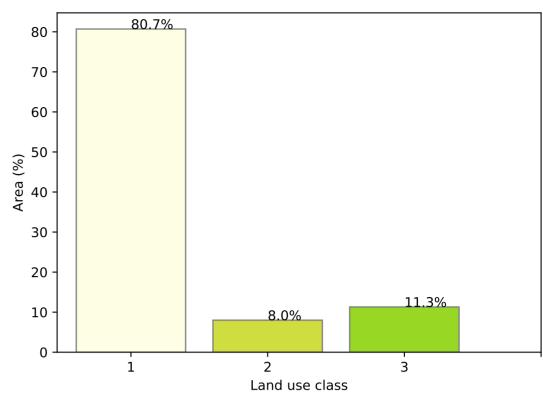




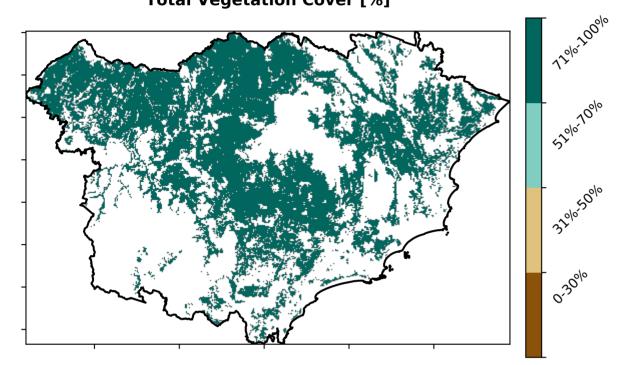
### **Grazing**



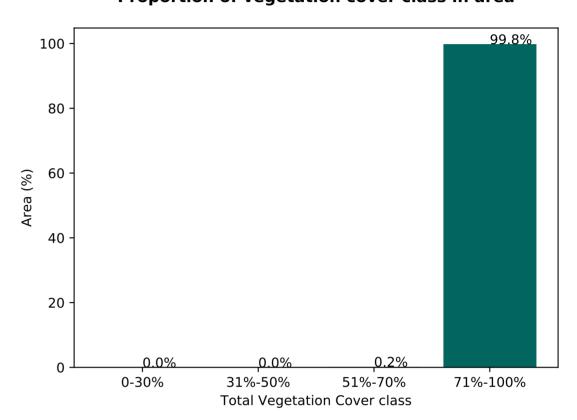
### Proportion of each land class in area



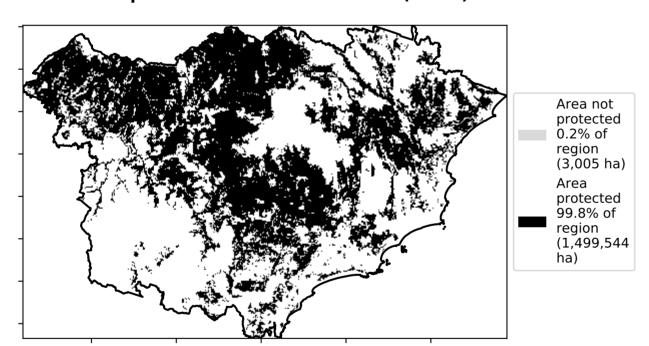
Total Vegetation Cover [%]



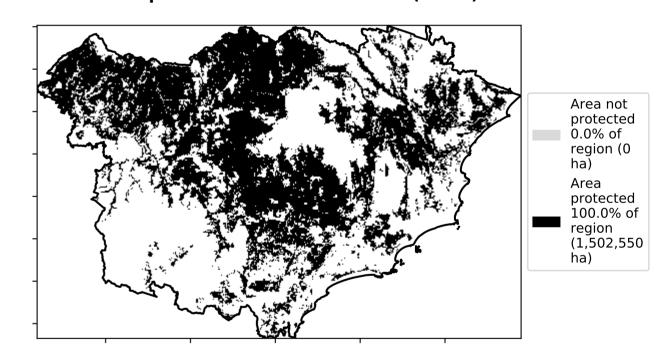
Proportion of vegetation cover class in area



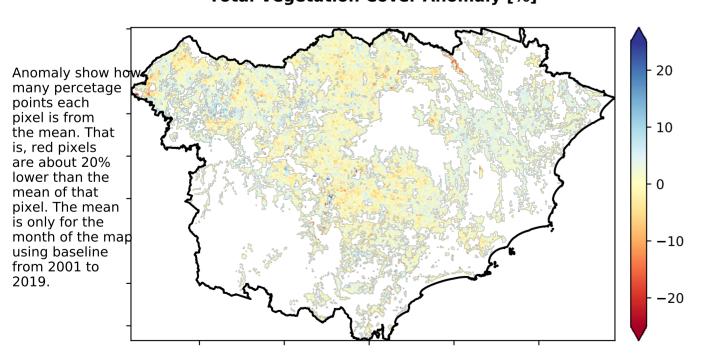
% Area protected from water erosion (>70%)



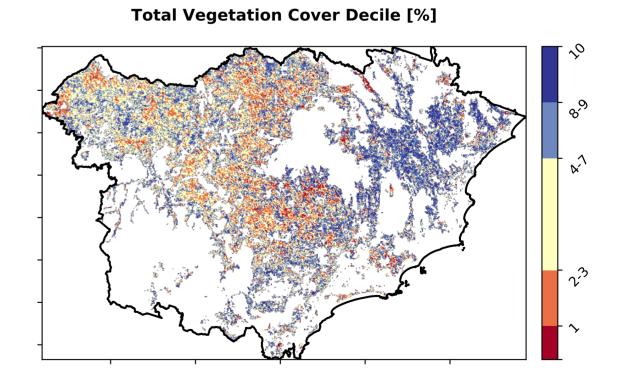
% Area protected from wind erosion (>50%)



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.







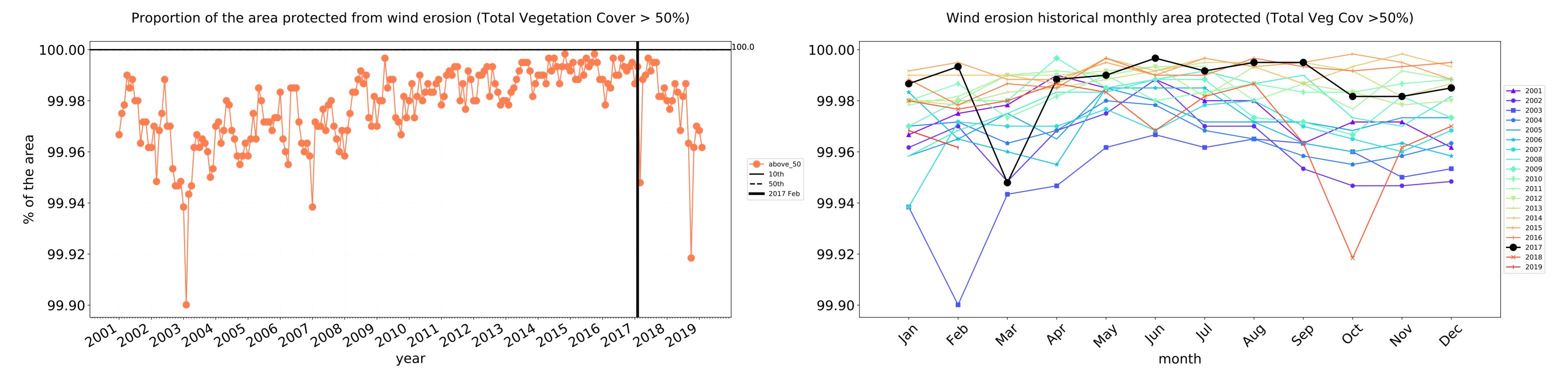


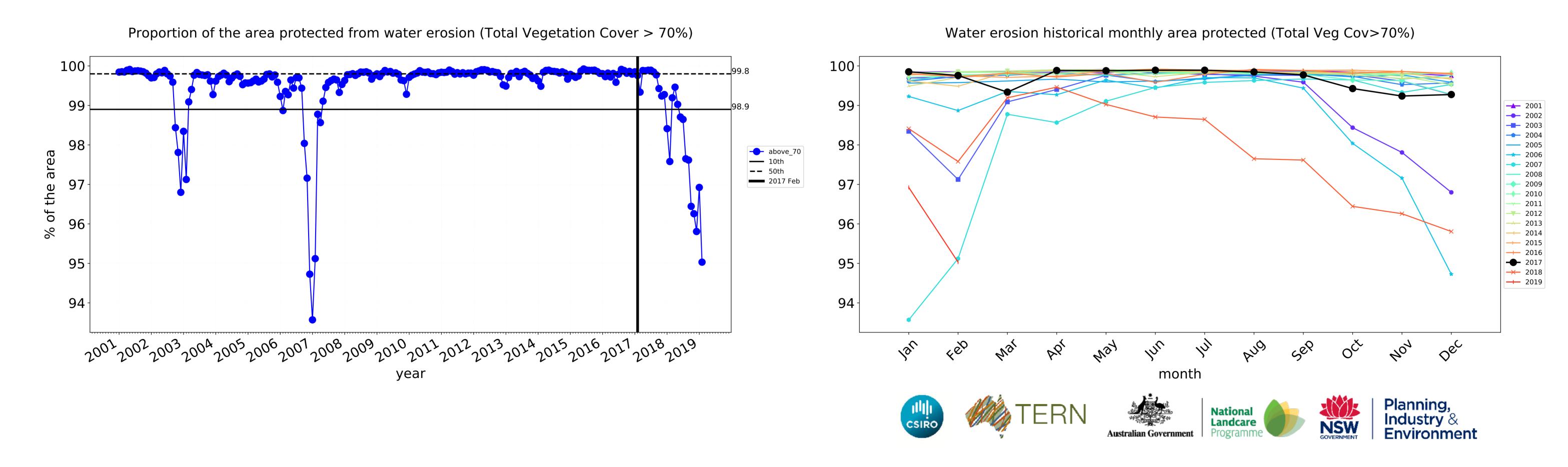


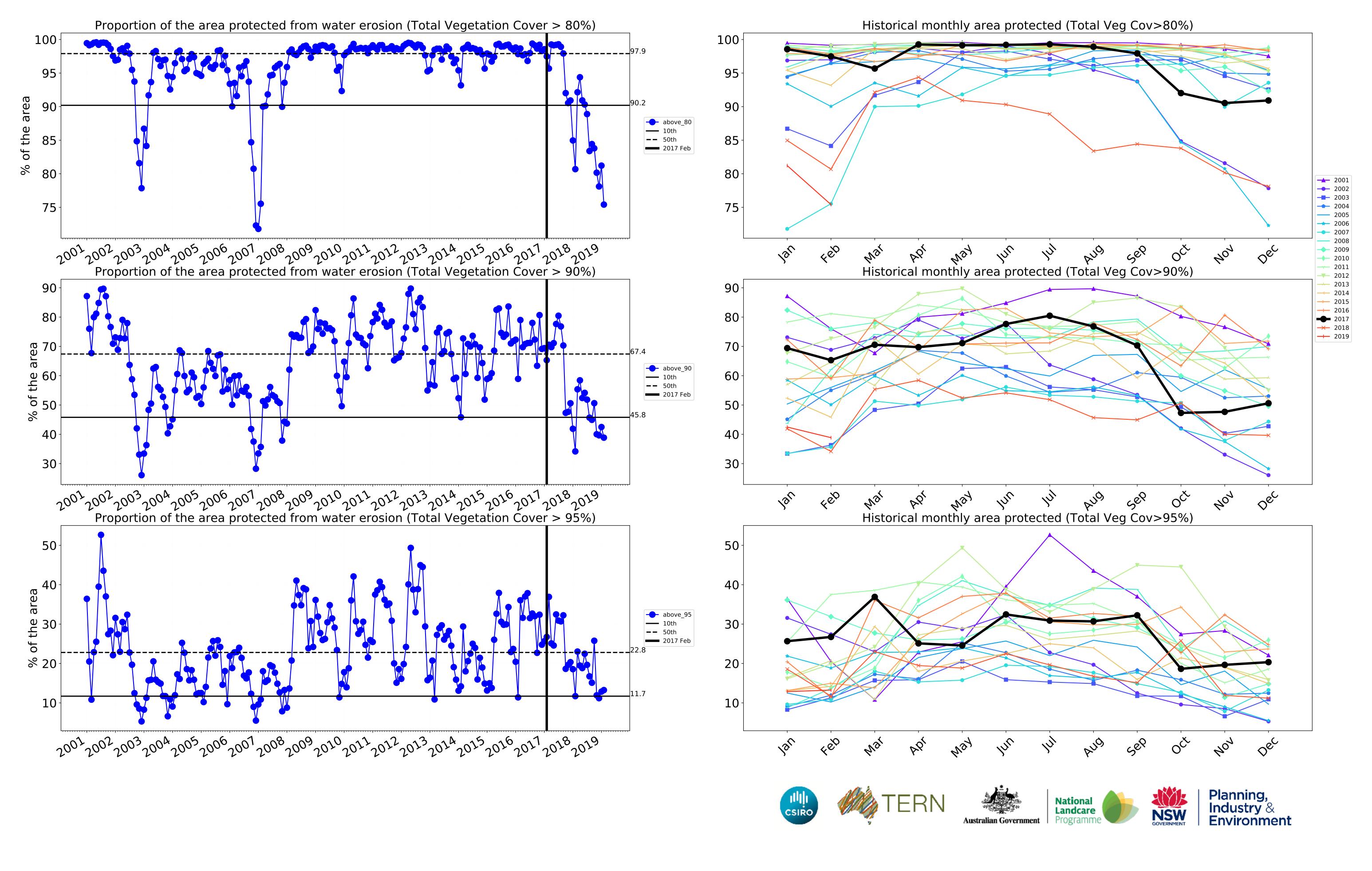




### **Grazing timeseries**

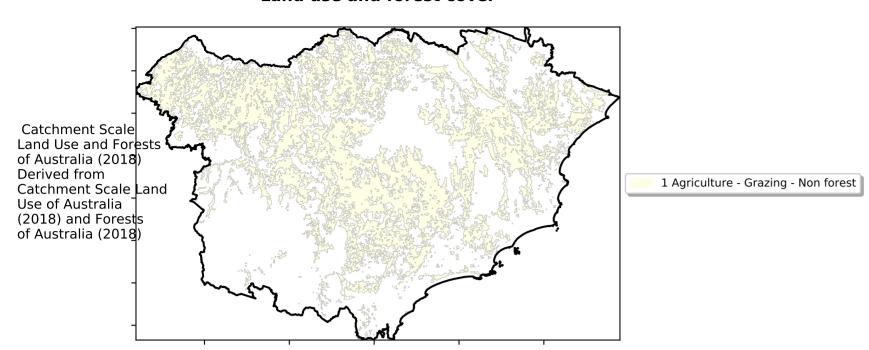




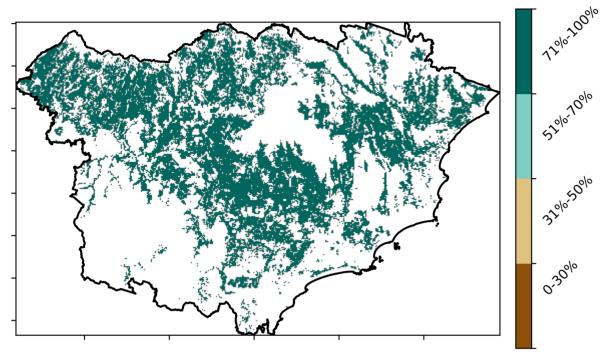


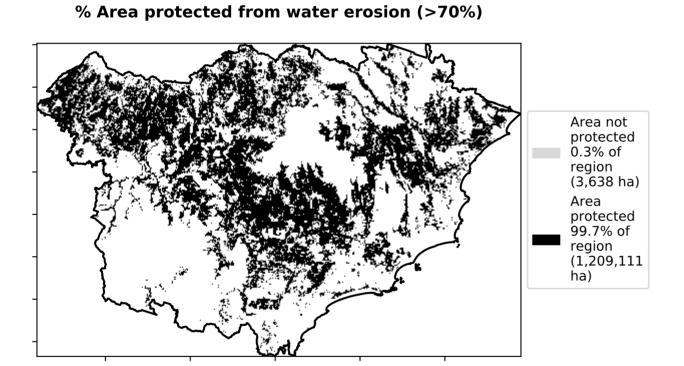
### **Grazing non forest**

### Land use and forest cover

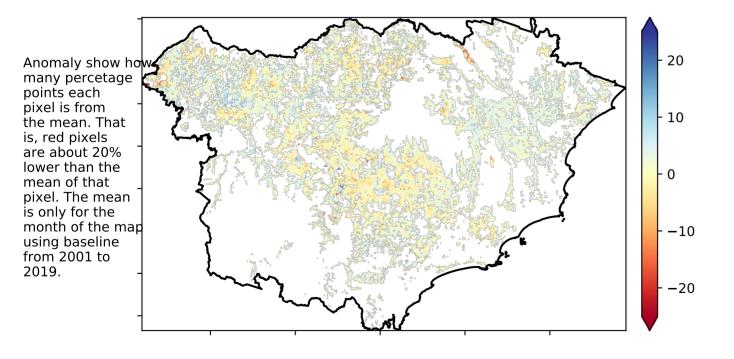


### Total Vegetation Cover [%]



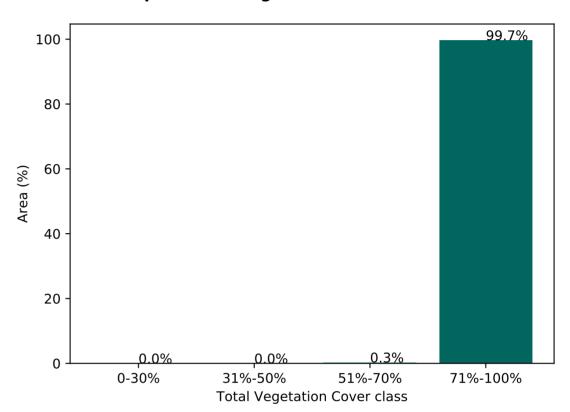


### Total Vegetation Cover Anomaly [%]

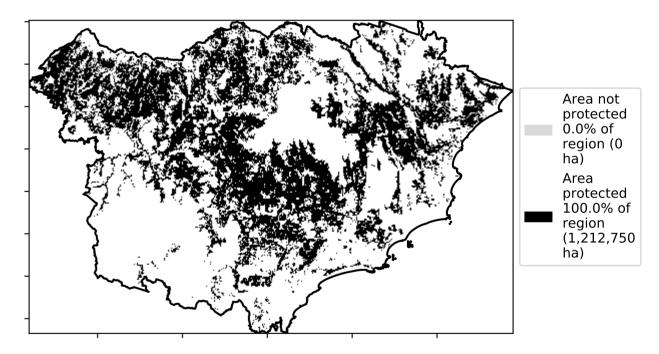


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

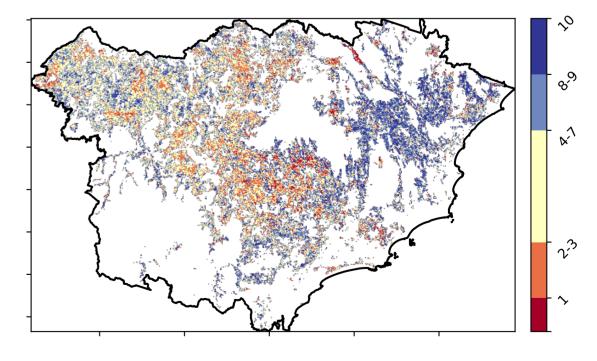
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]







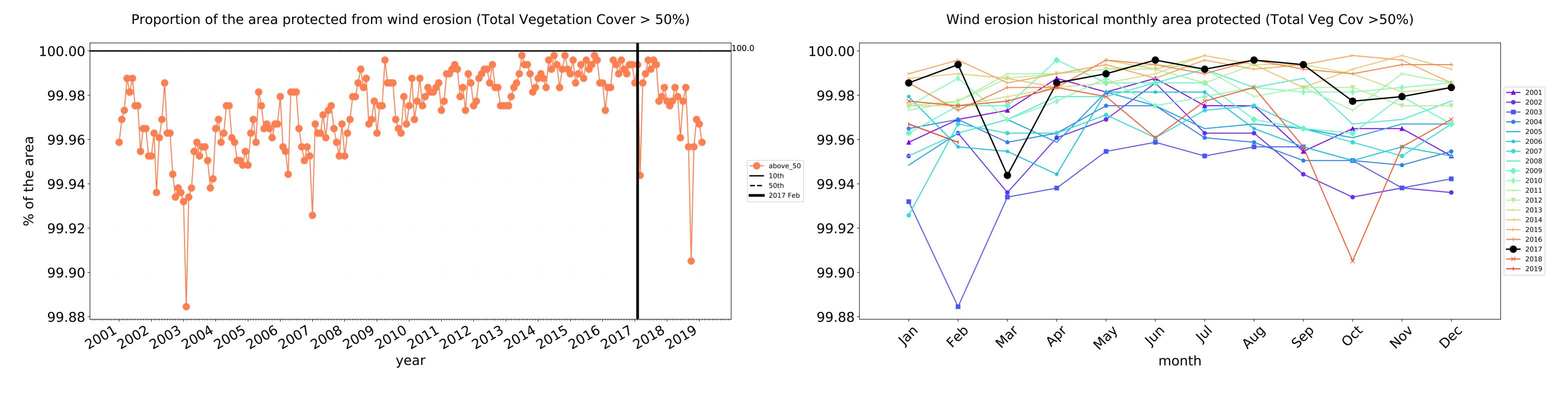


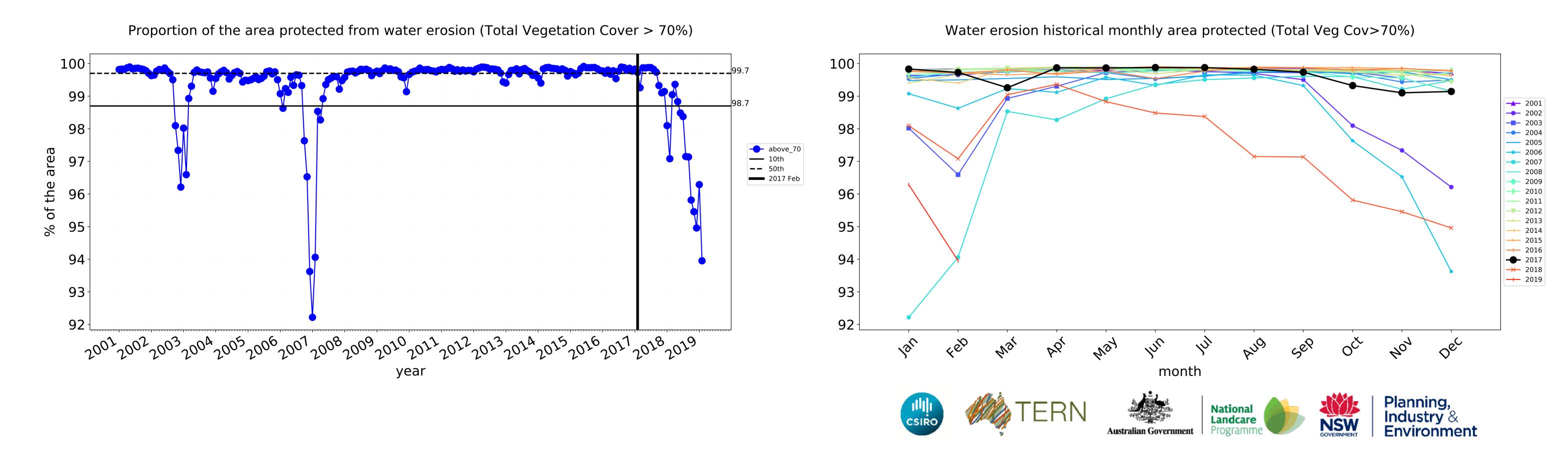


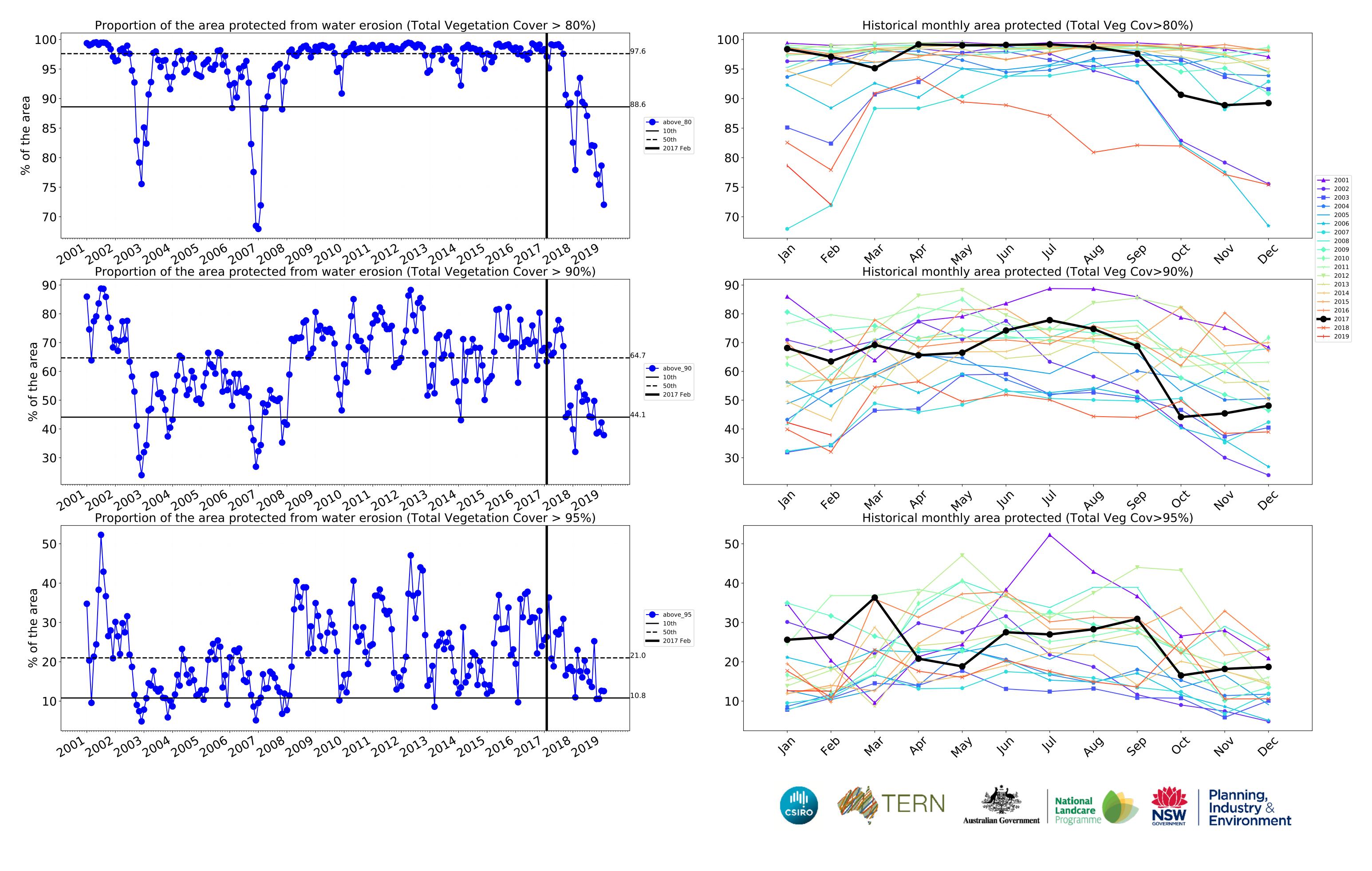




### **Grazing non forest timeseries**







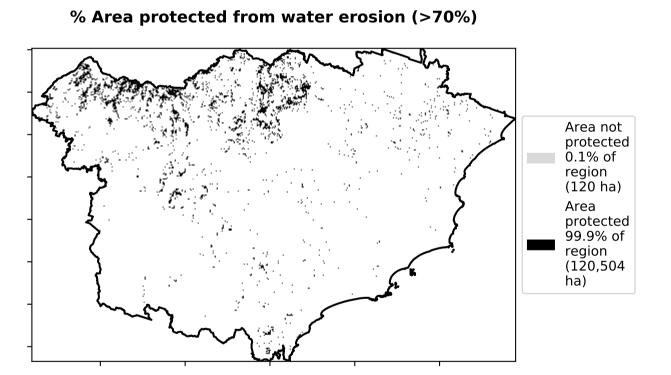
### **Grazing Woodland forest**

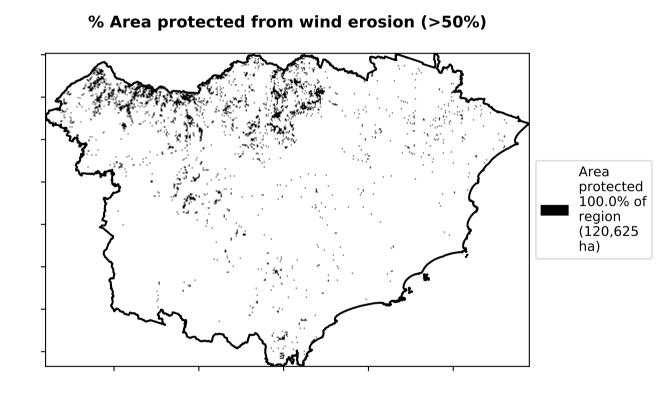
### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

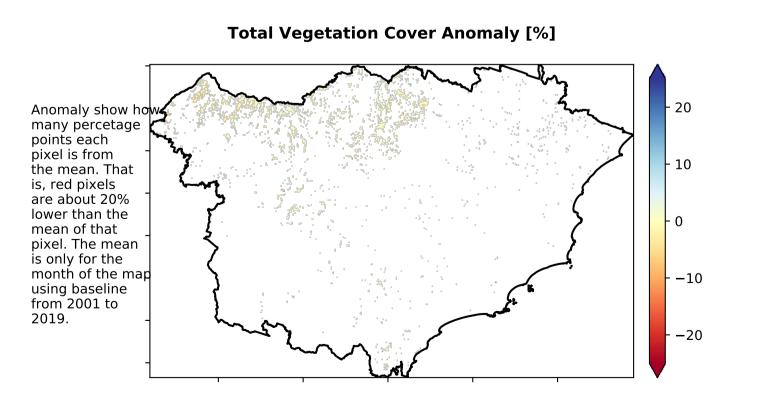
## **Total Vegetation Cover [%]**

### 99.9% 100 80 Area (%) 40 20 -0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**

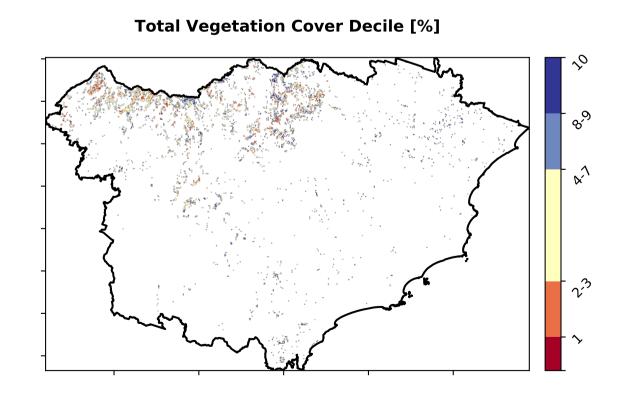
**Proportion of vegetation cover class in area** 







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.







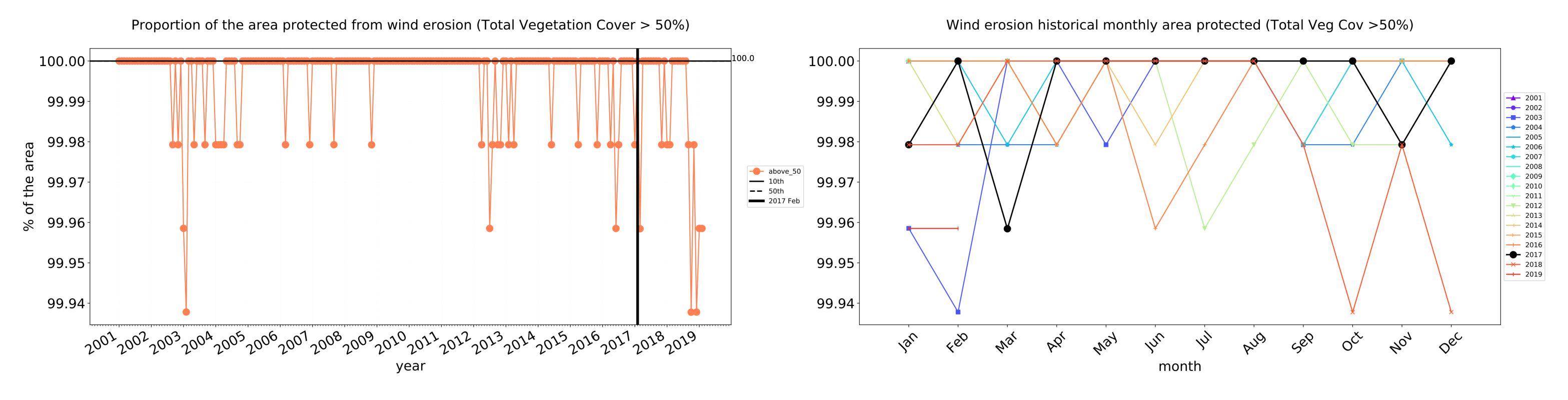


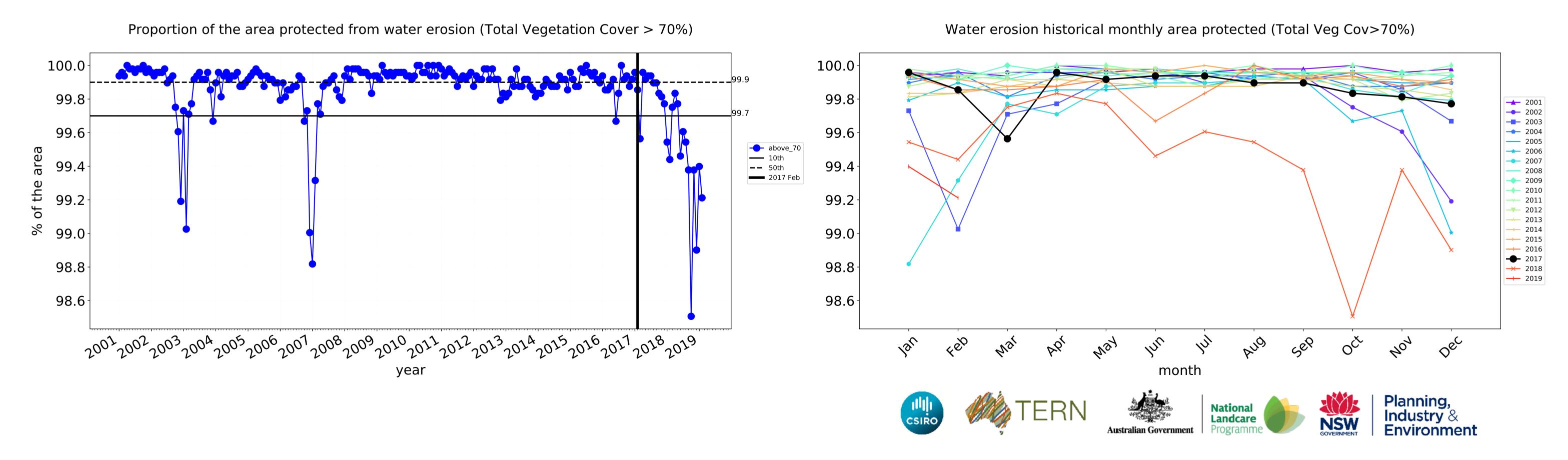


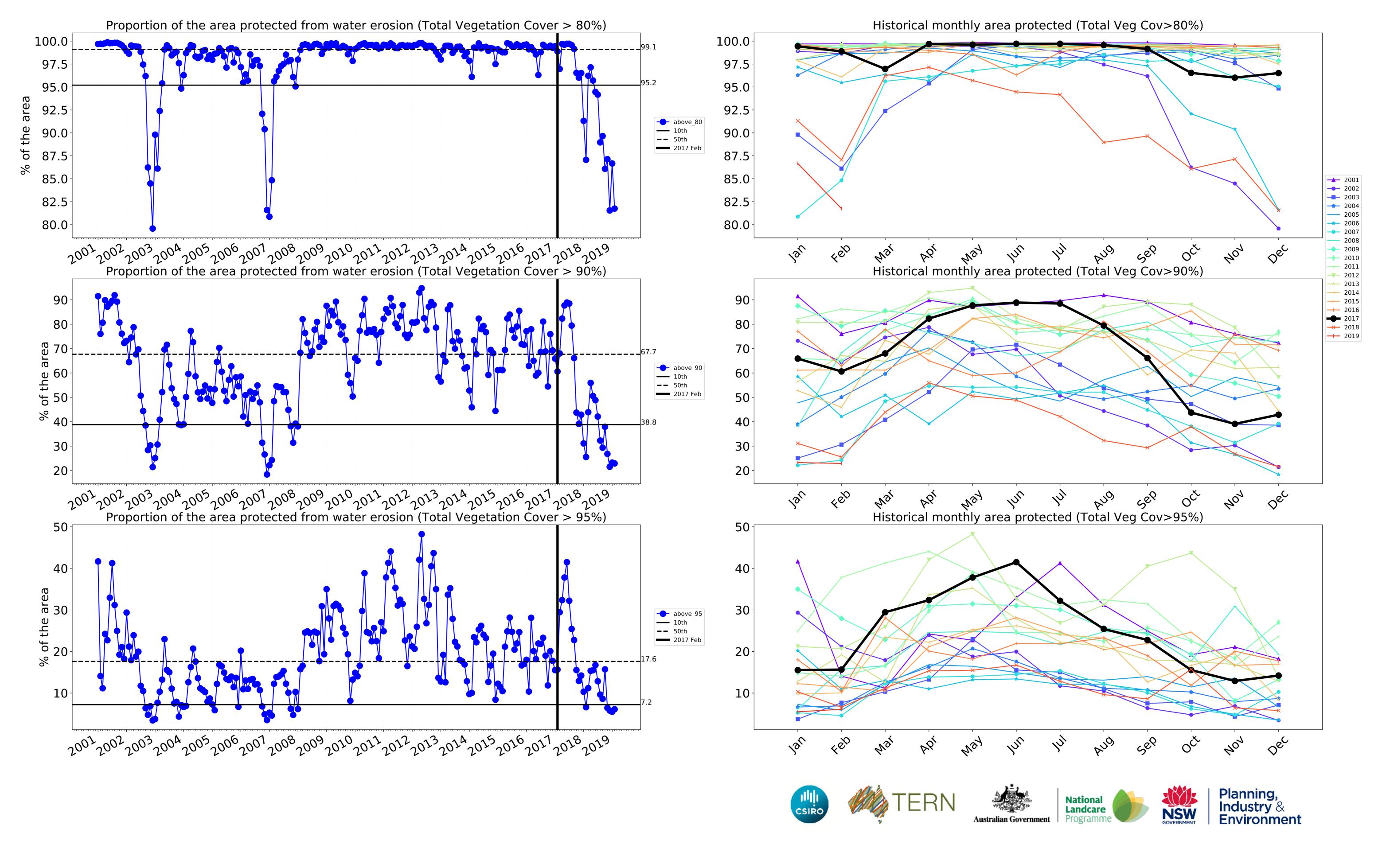




### **Grazing Woodland forest timeseries**





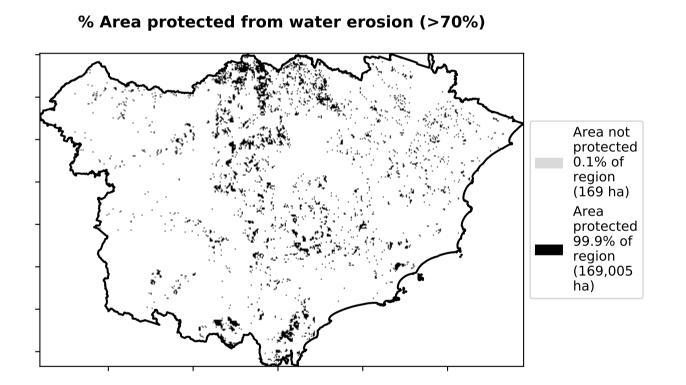


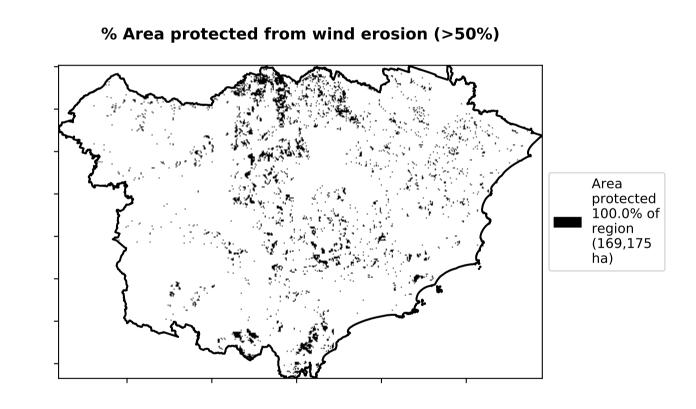
### **Grazing - Forest (non woodland)**

### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Non-woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

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

### 100 Area (%) 60 40 20 -0.1% 31%-50% 51%-70% 0-30% **Total Vegetation Cover class**

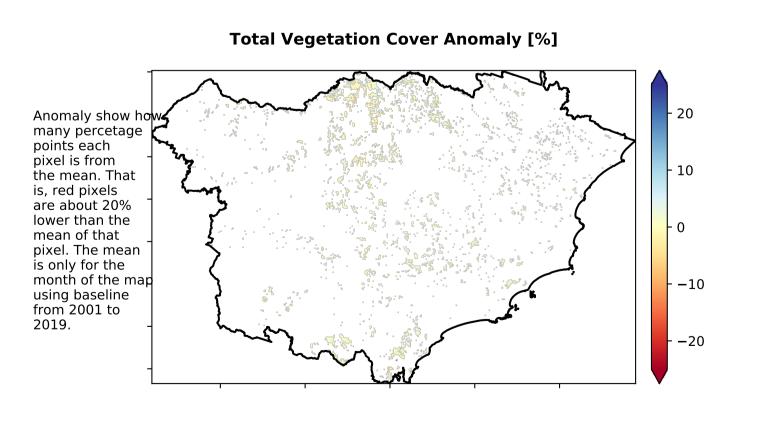




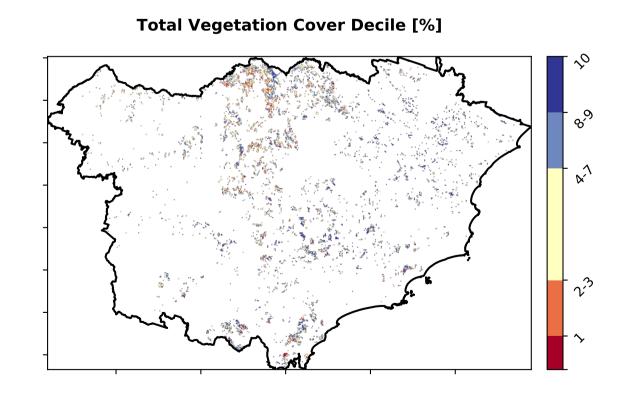
**Proportion of vegetation cover class in area** 

99.9%

71%-100%



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.





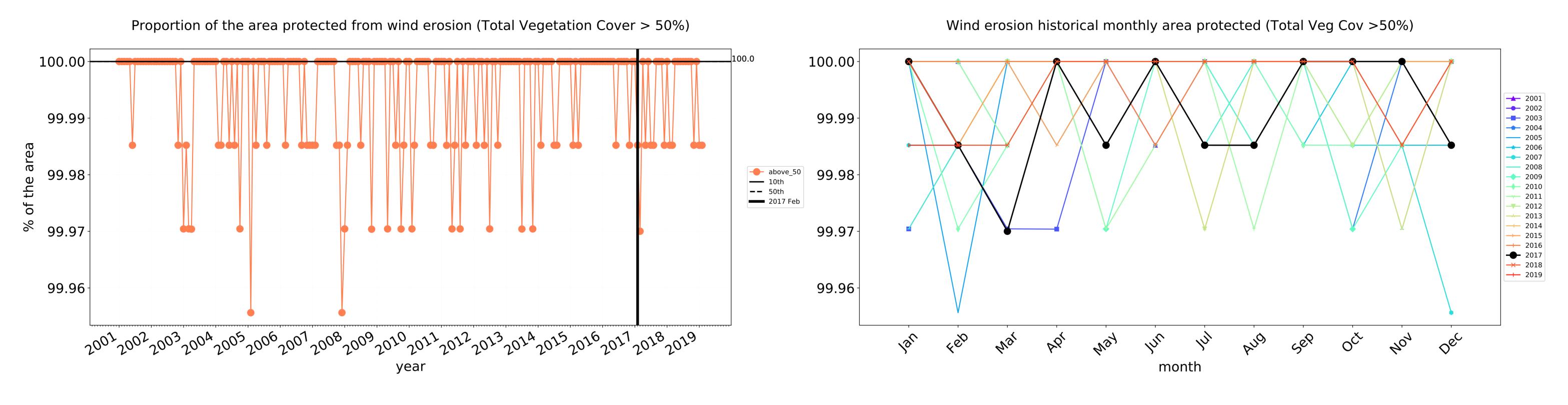


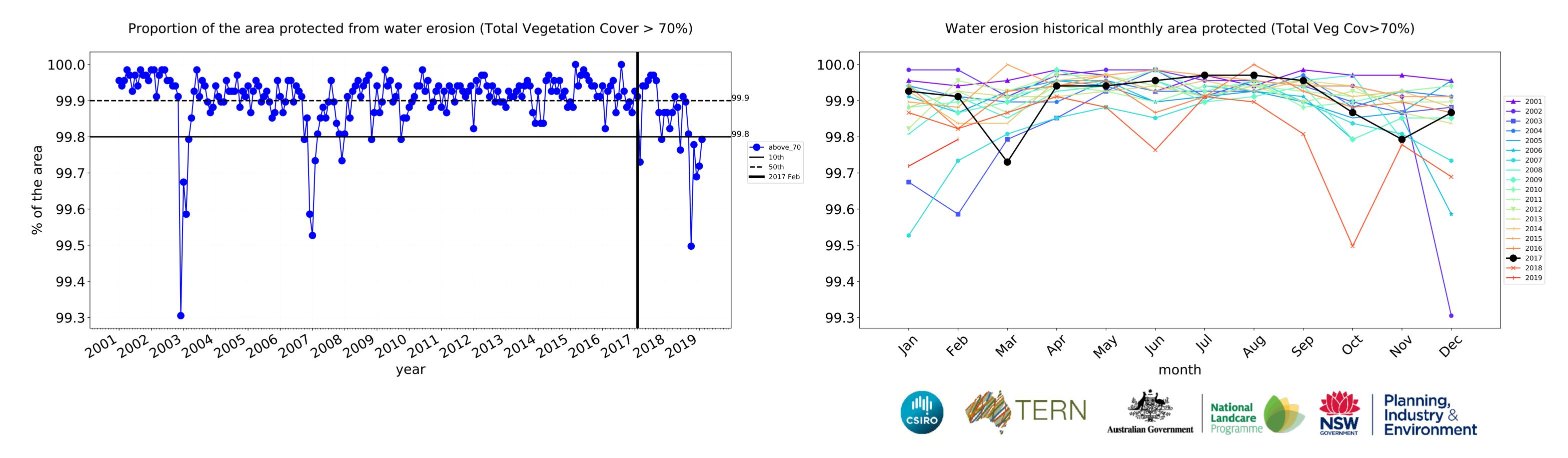


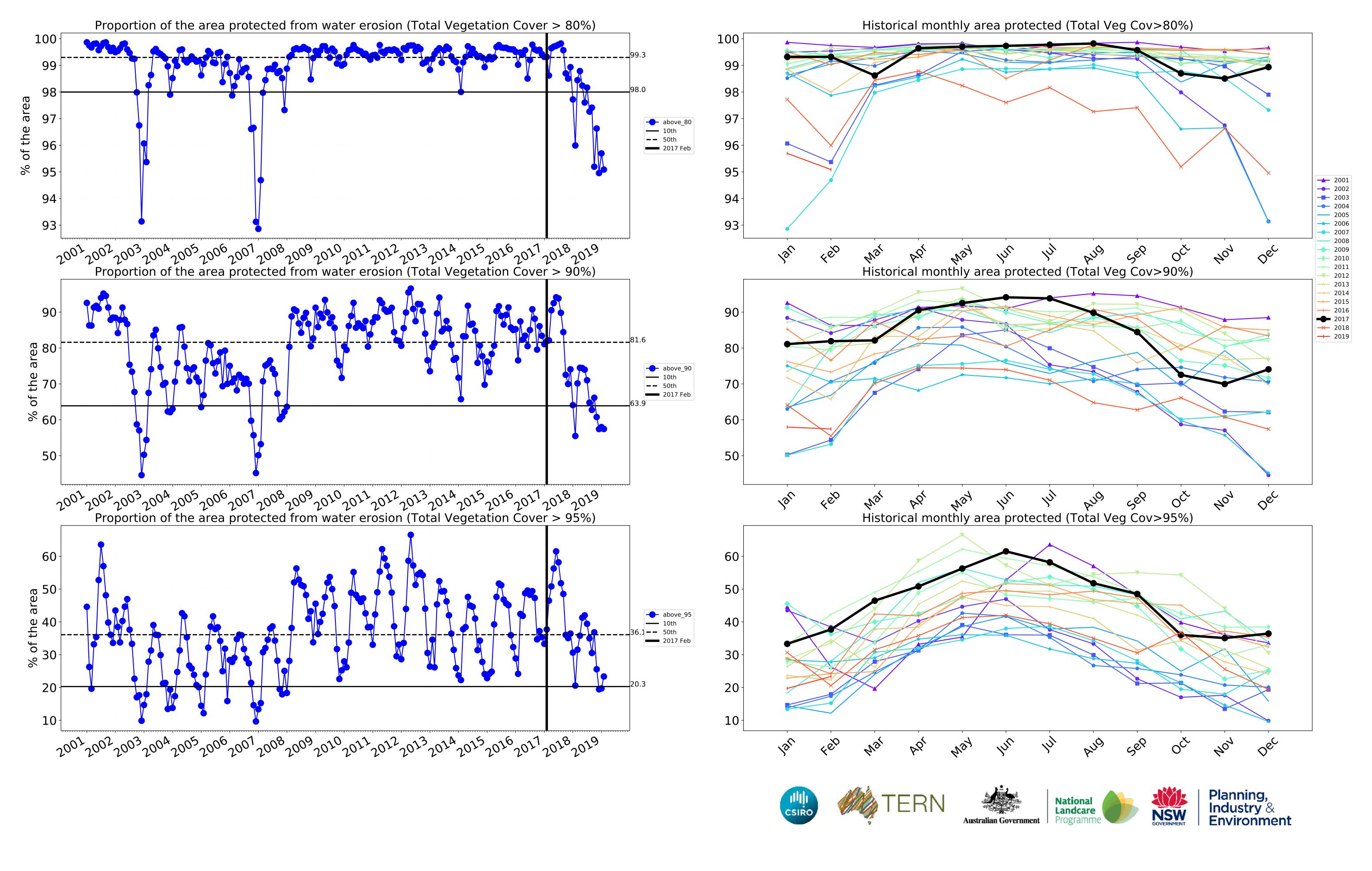






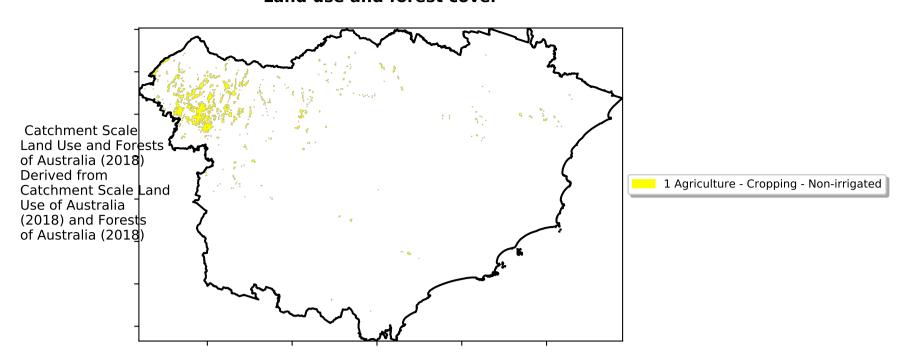




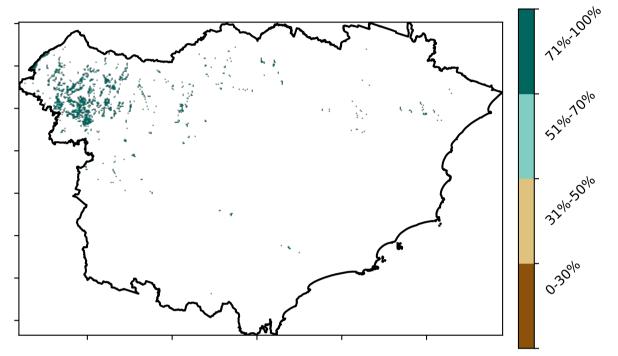


### **Cropping**

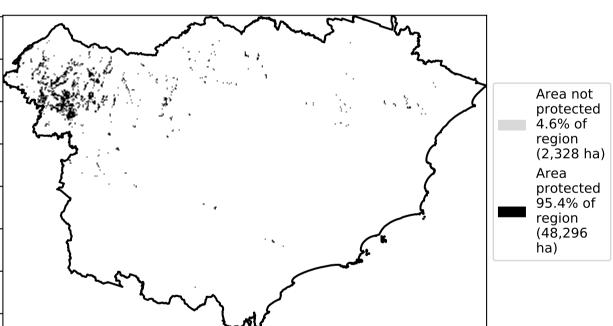
### **Land use and forest cover**

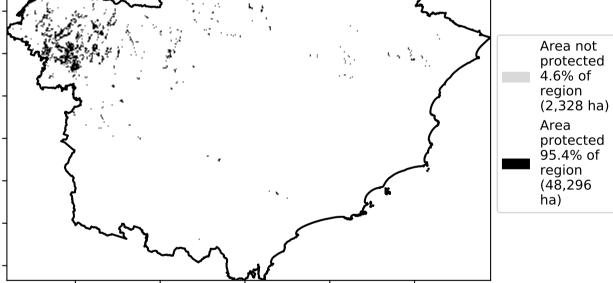


### **Total Vegetation Cover [%]**

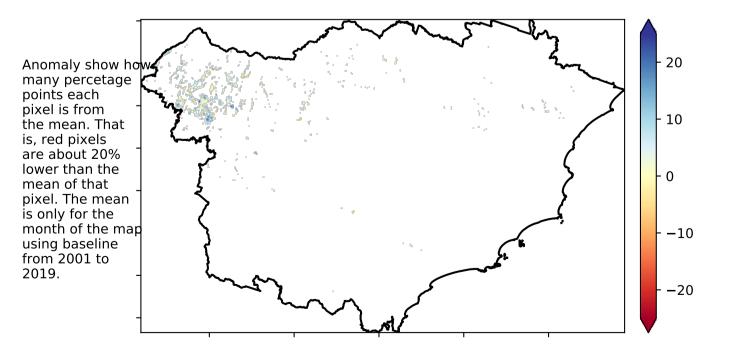


% Area protected from water erosion (>70%)



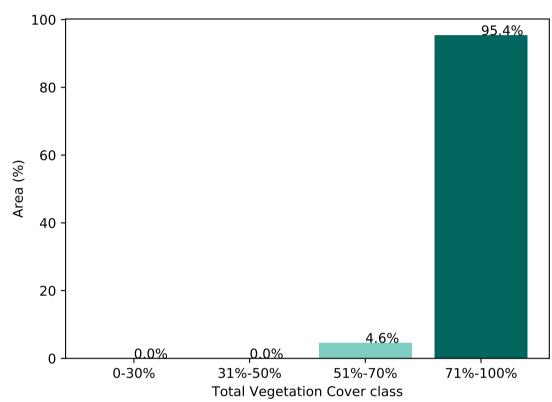


### **Total Vegetation Cover Anomaly [%]**

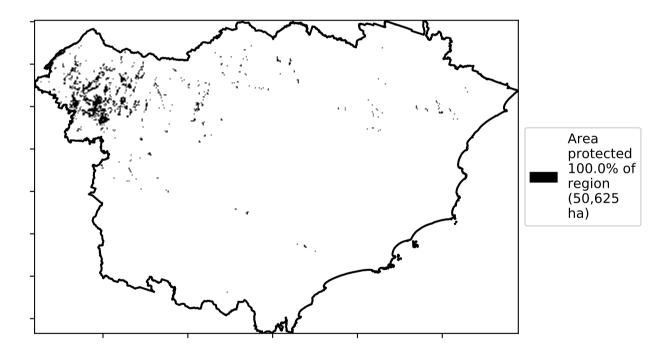


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseling. the map using baseline from 2001 to 2019.

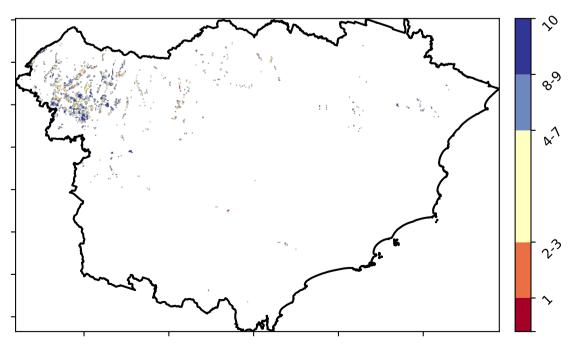
### **Proportion of vegetation cover class in area**



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



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







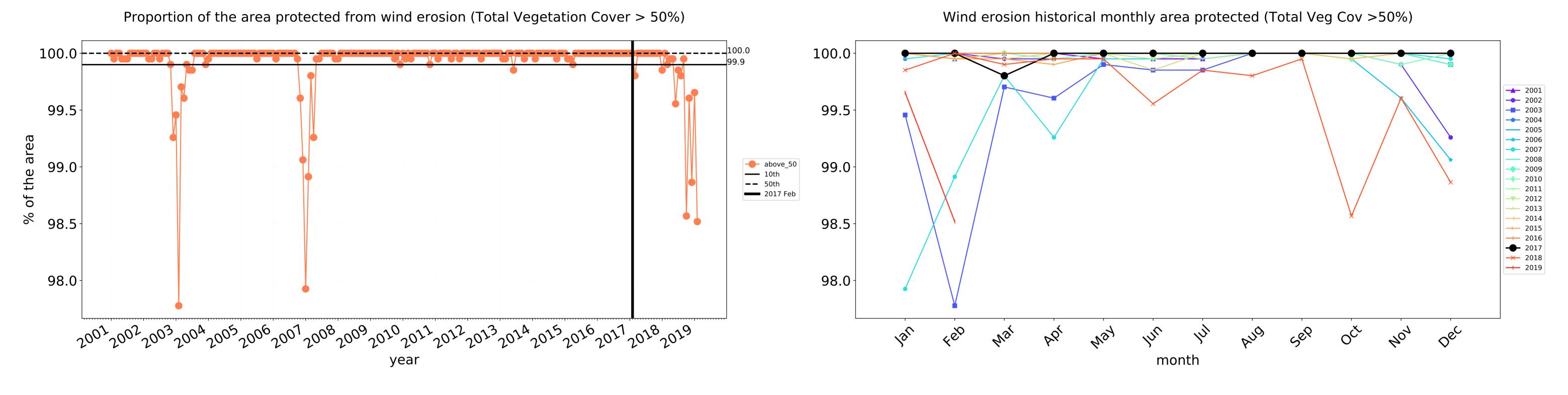


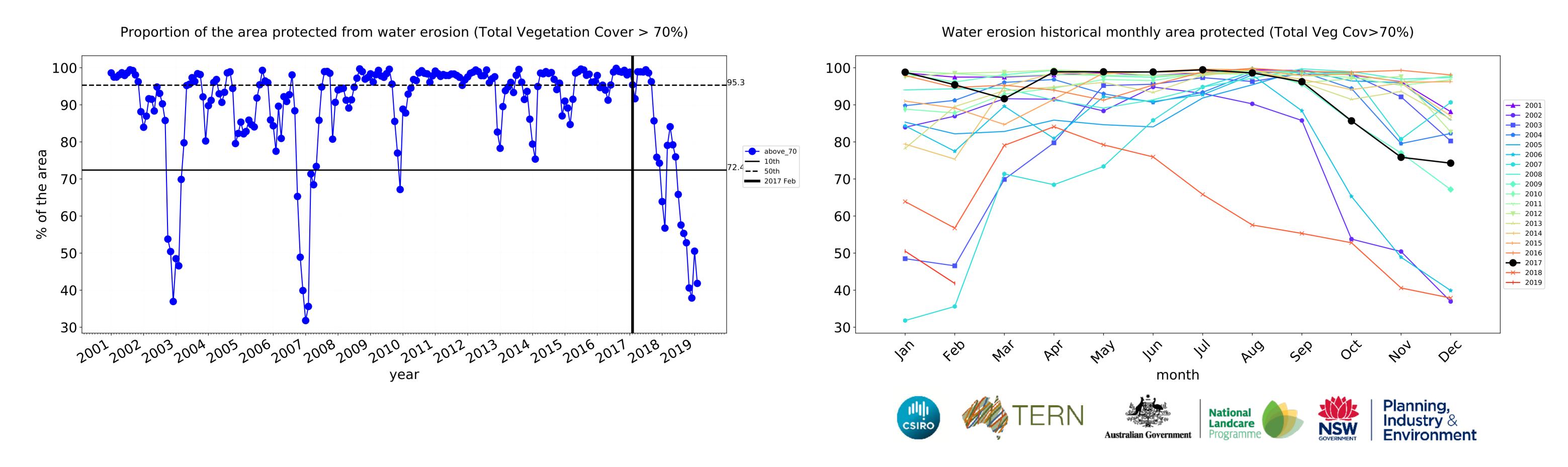


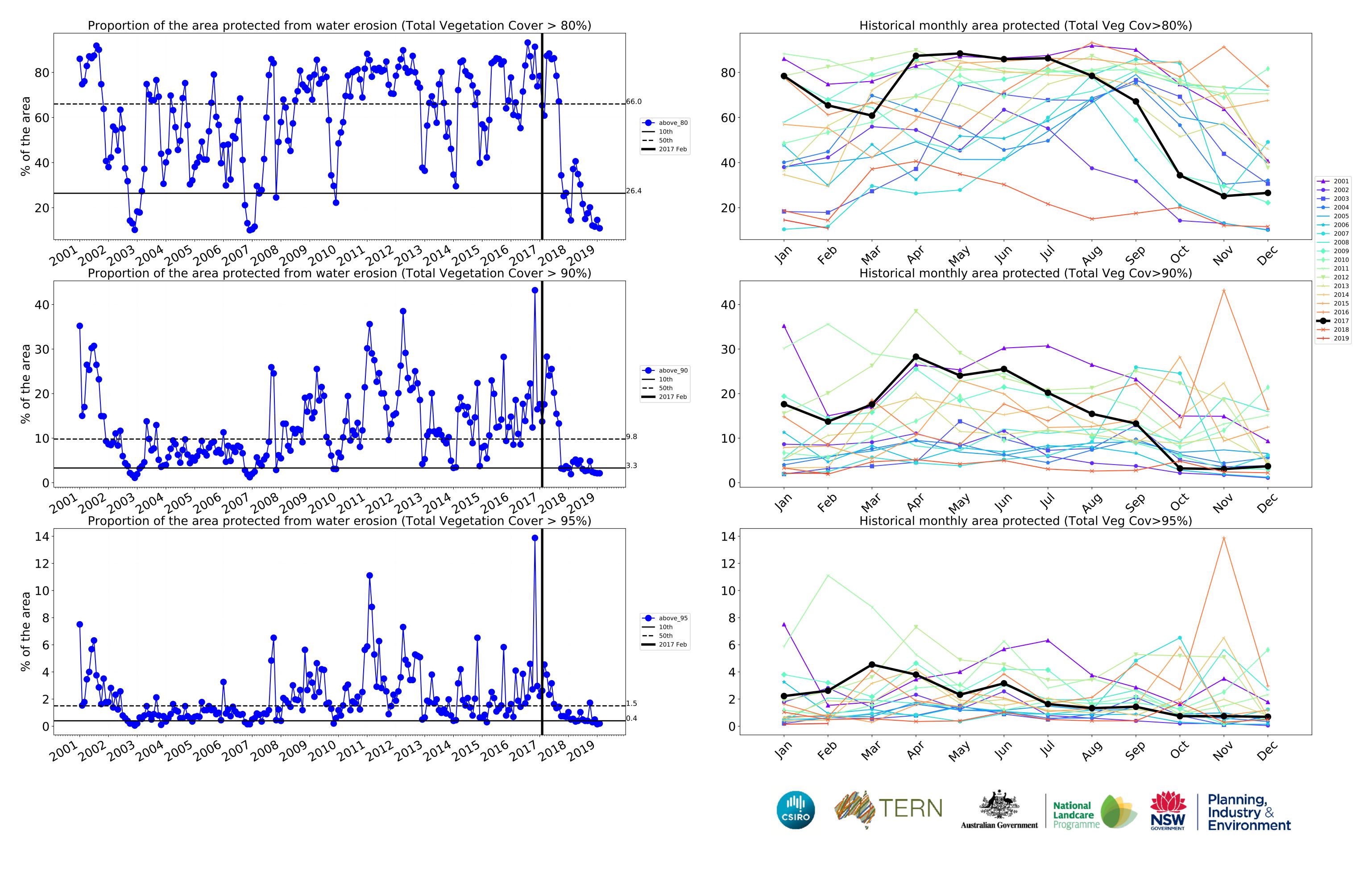




### **Cropping timeseries**





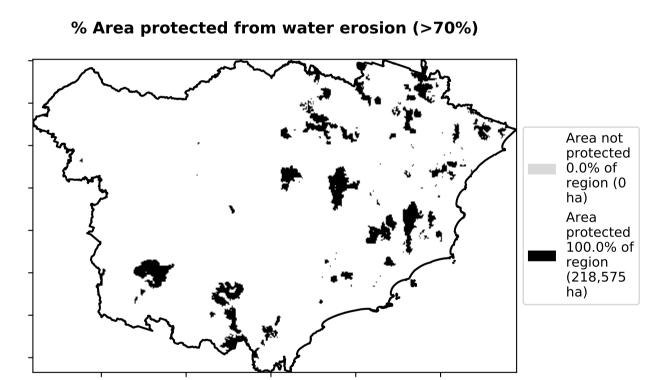


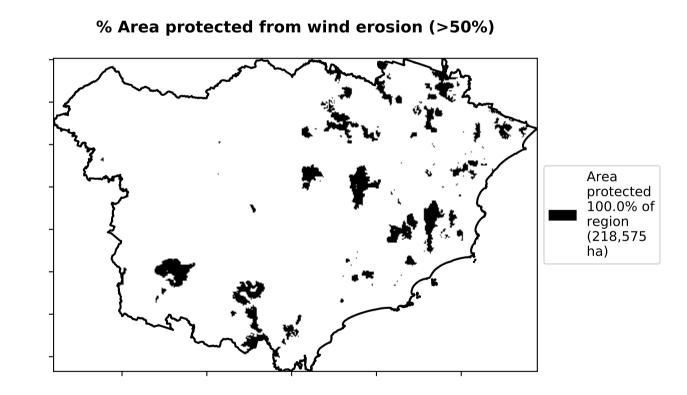
### **Production native forests and plantation forests**

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

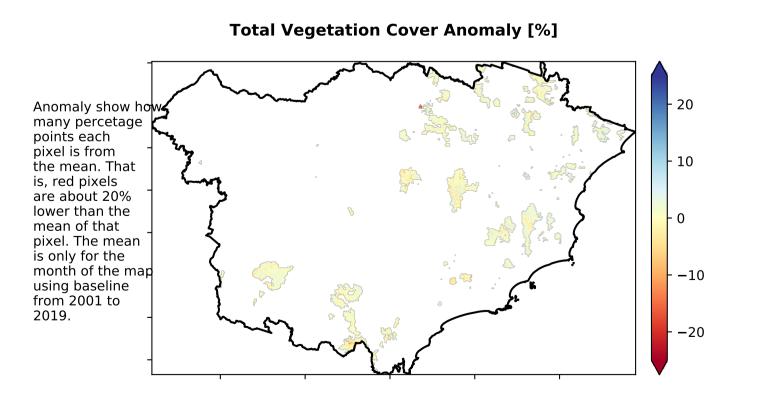
## Total Vegetation Cover [%]

# 100 - 100.0% 100 - 100.0% 80 - 100.0% 30 - 100.0% 30 - 100.0% 30 - 100.0% 30 - 100.0% 40 - 100.0% 100.

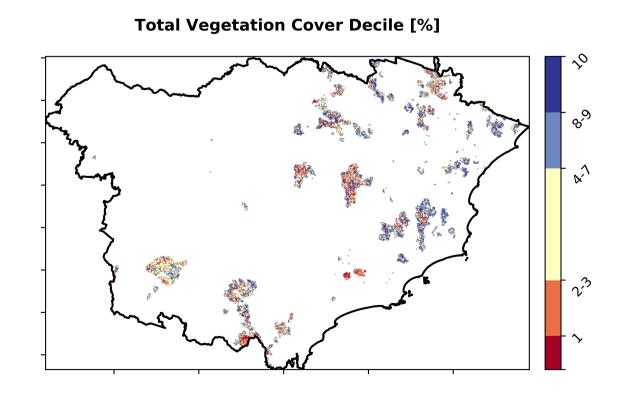




**Proportion of vegetation cover class in area** 



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.







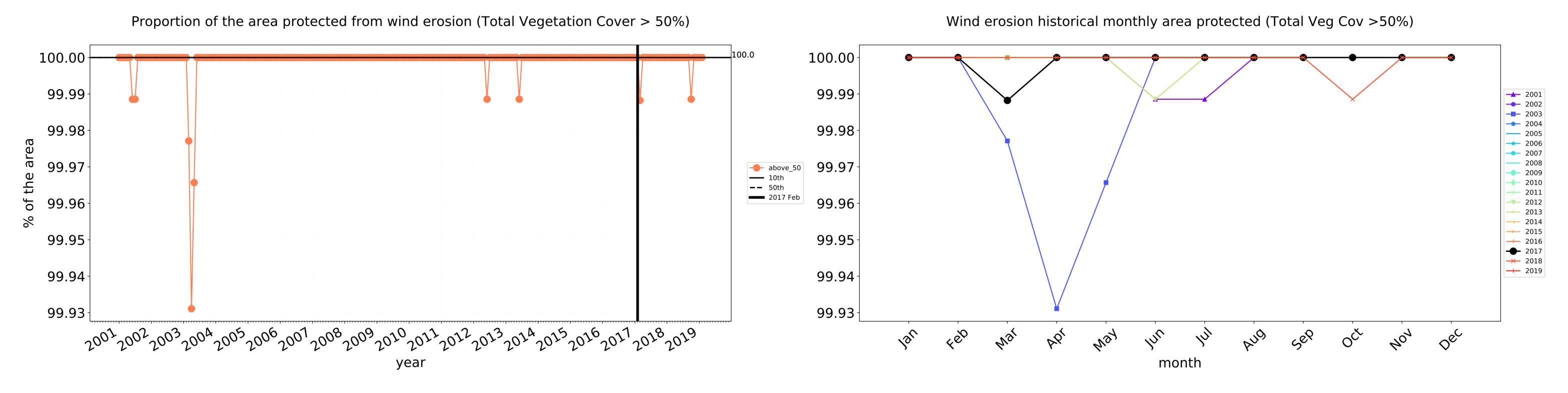


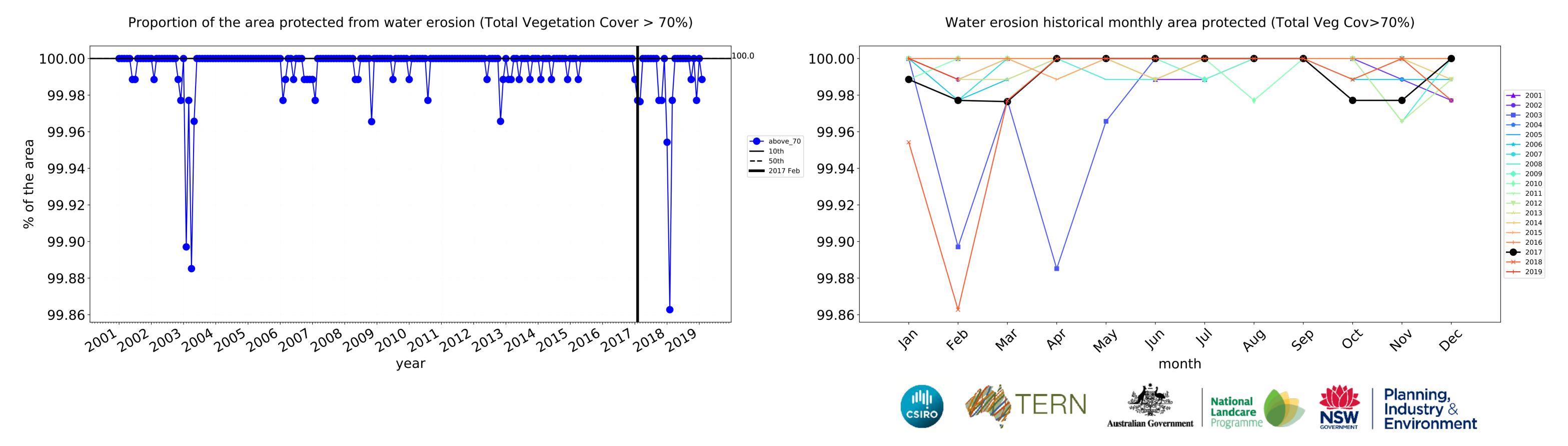


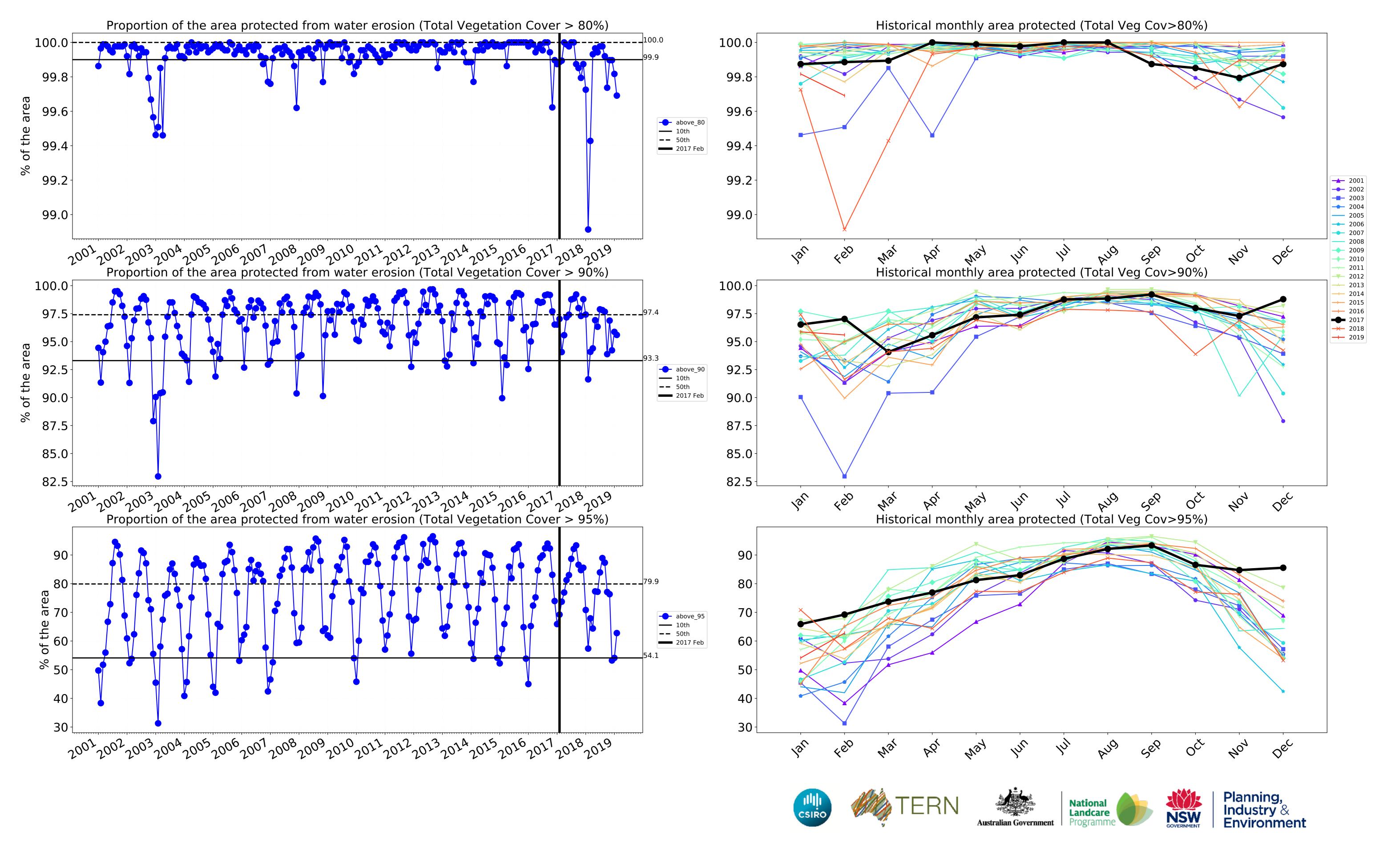




### **Production native forests and plantation forests timeseries**







### Hunter (3,239,175 ha and no data 61,250 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	3,239,175	99.9% 3,235,074	99.6% 3,226,649	98.5% 3,191,598	95.6% 3,095,696	74.3% 2,407,155	40.0% 1,294,379
Conservation and natural environments	1,240,175	99.9% 1,238,825	99.8% 1,237,850	99.6% 1,235,750	99.3% 1,231,325	92.0% 1,141,225	58.0% 719,875
Conservation and natural environments non forest	29,550	95.6% 28,250	93.2% 27,550	90.0% 26,600	86.3% 25,500	69.1% 20,425	30.8% 9,100
Conservation and natural environments Woodland forest	138,825	100.0% 138,825	99.9% 138,750	99.8% 138,525	99.4% 138,025	88.6% 123,025	39.6% 54,925
Conservation and natural environments Forest (non woodland)	1,071,800	100.0% 1,071,750	100.0% 1,071,550	99.9% 1,070,625	99.6% 1,067,800	93.1% 997,775	61.2% 655,850
Agriculture	1,580,550	100.0% 1,580,550	100.0% 1,580,450	99.6% 1,574,250	96.1% 1,518,850	62.8% 992,100	25.5% 403,675
Grazing	1,502,550	100.0% 1,502,550	100.0% 1,502,450	99.8% 1,498,925	97.5% 1,464,700	65.3% 981,200	26.7% 401,800
Grazing non forest	1,212,750	100.0% 1,212,750	100.0% 1,212,675	99.7% 1,209,450	97.1% 1,177,400	63.5% 769,500	26.3% 319,150
Grazing Woodland forest	120,625	100.0% 120,625	100.0% 120,625	99.9% 120,450	98.9% 119,275	60.6% 73,125	15.6% 18,875
Grazing - Forest (non woodland)	169,175	100.0% 169,175	100.0% 169,150	99.9% 169,025	99.3% 168,025	81.9% 138,575	37.7% 63,775
Cropping	50,625	100.0% 50,625	100.0% 50,625	95.4% 48,300	65.4% 33,100	13.7% 6,950	2.6% 1,325
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,525	99.9% 218,325	97.0% 212,075	69.2% 151,300











