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

Date: January 2018

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 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









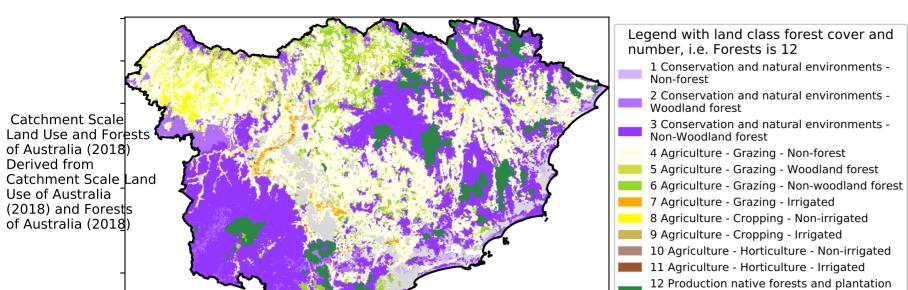




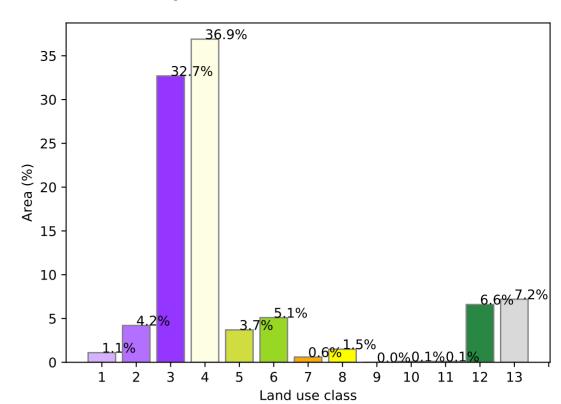
### **Vegetation Cover Jan 2018**

### Land use and forest cover number, i.e. Forests is 12 Non-Woodland forest 4 Agriculture - Grazing - Non-forest

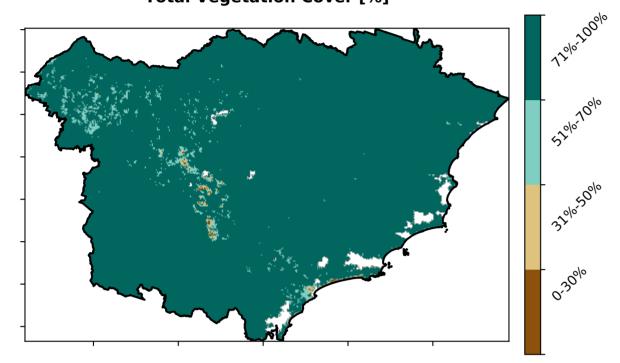
13 Other uses



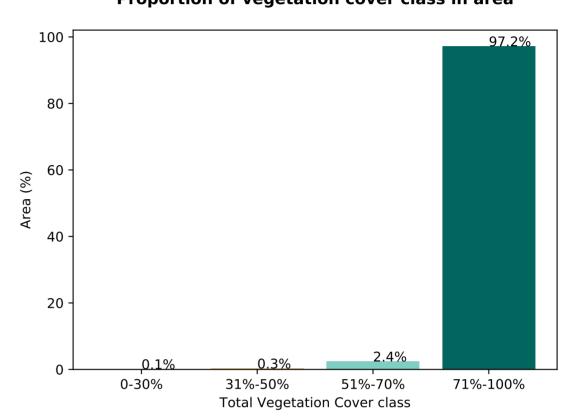
### Proportion of each land class in area



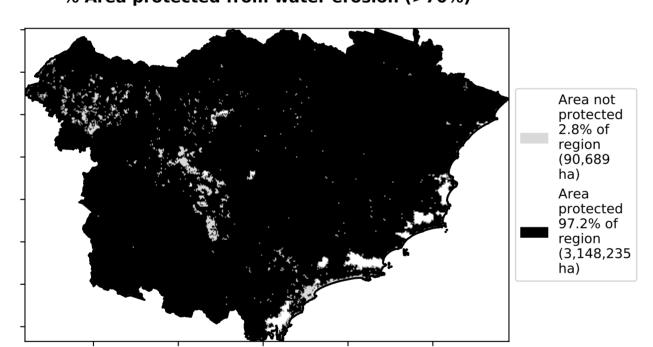




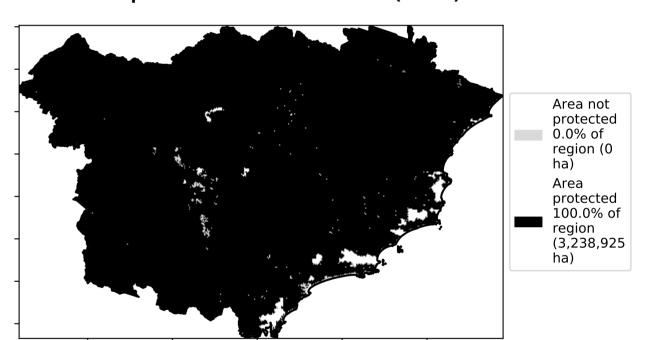
Proportion of vegetation cover class in area



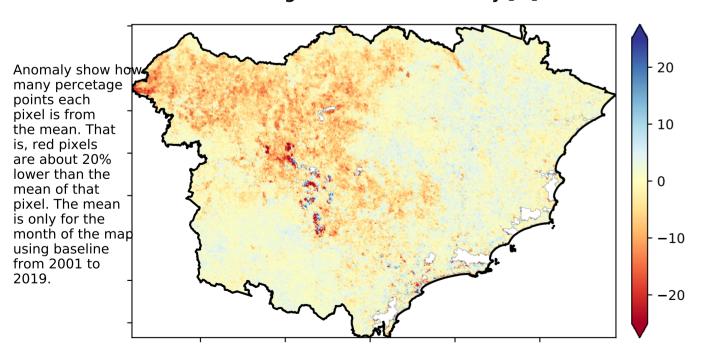
### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

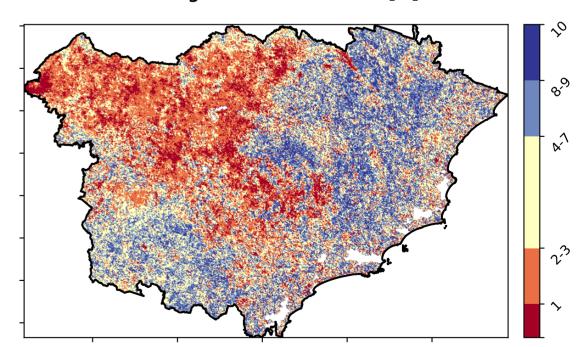


### **Total Vegetation Cover Anomaly [%]**



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 [%]**





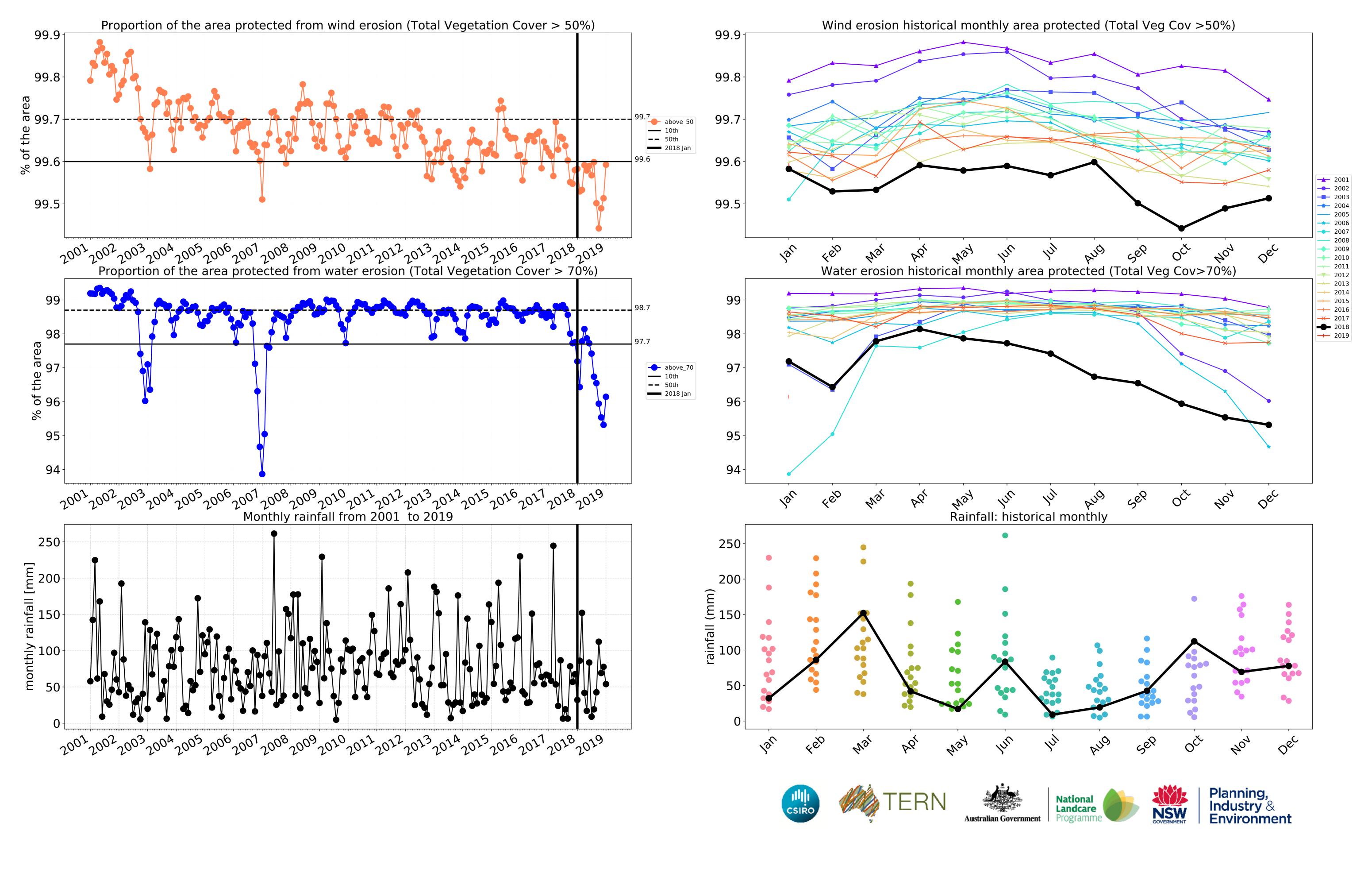


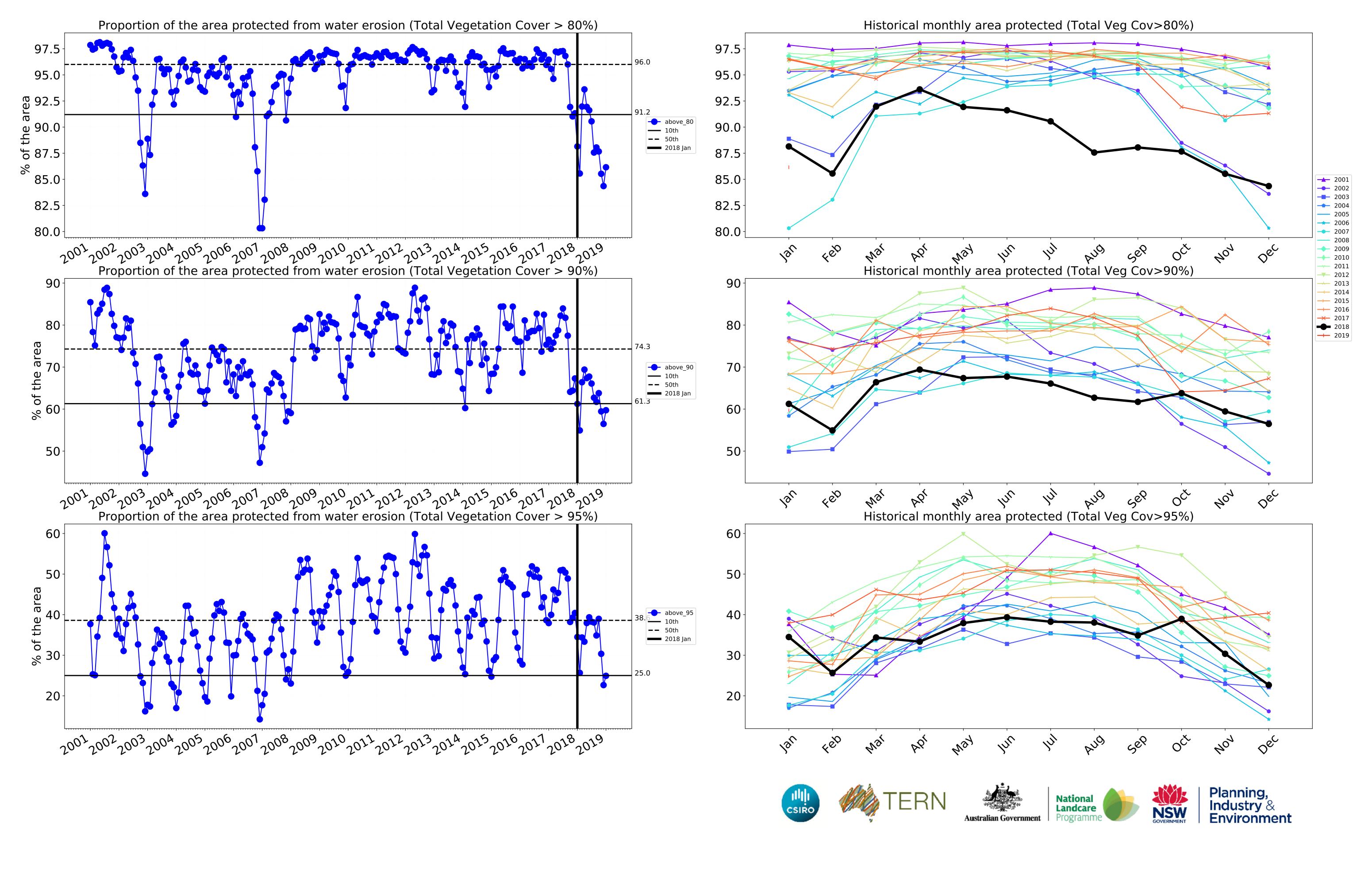






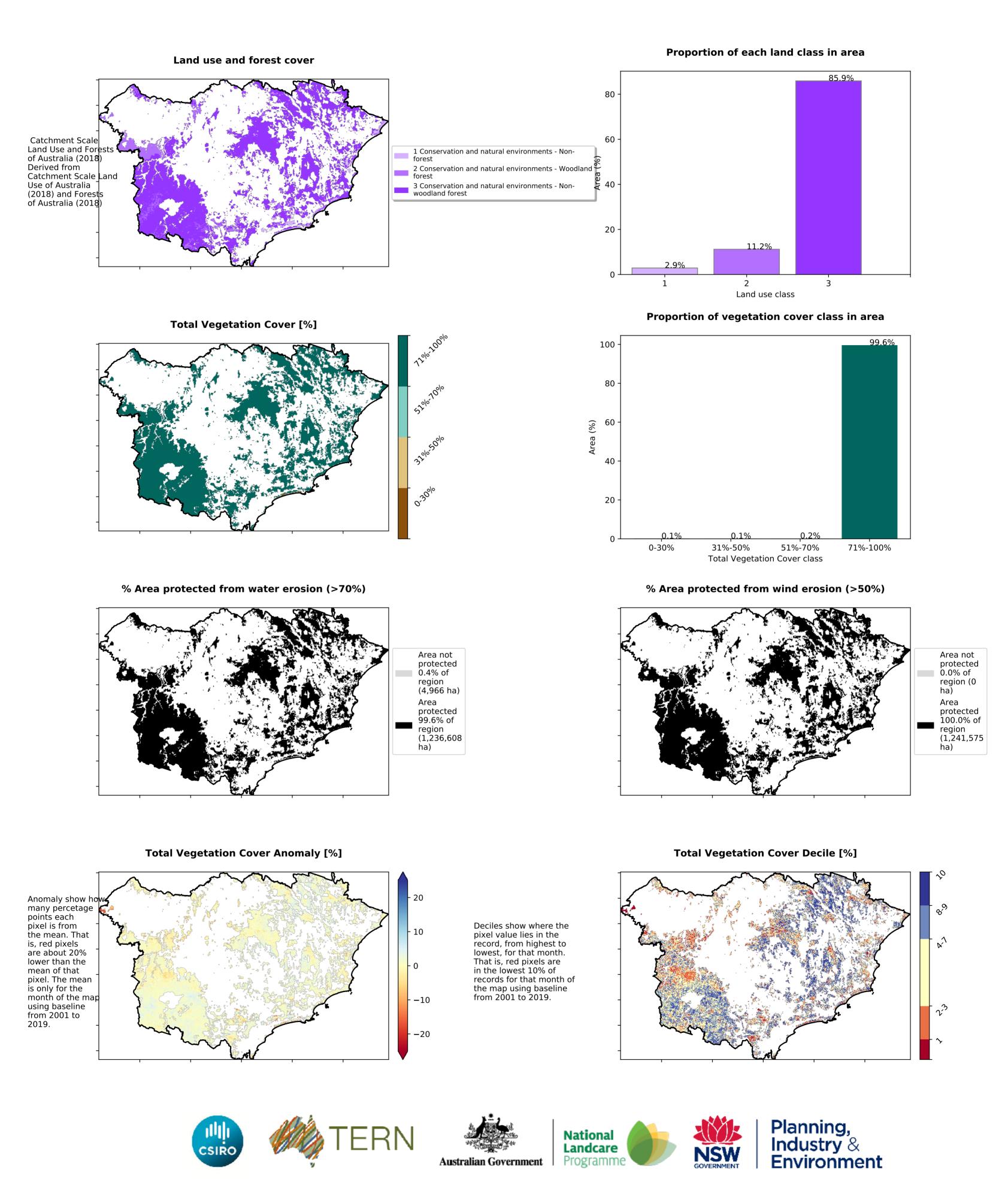




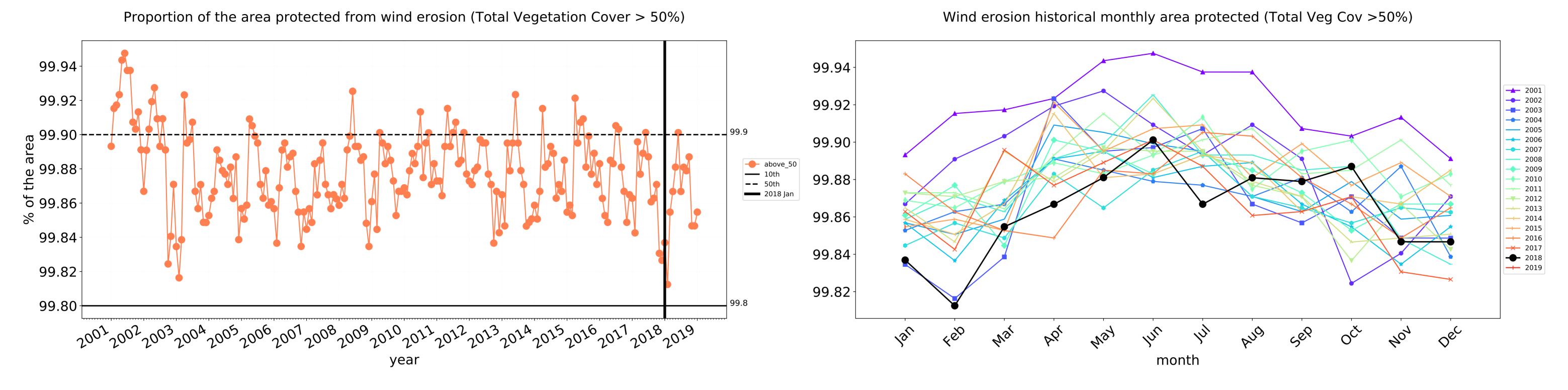


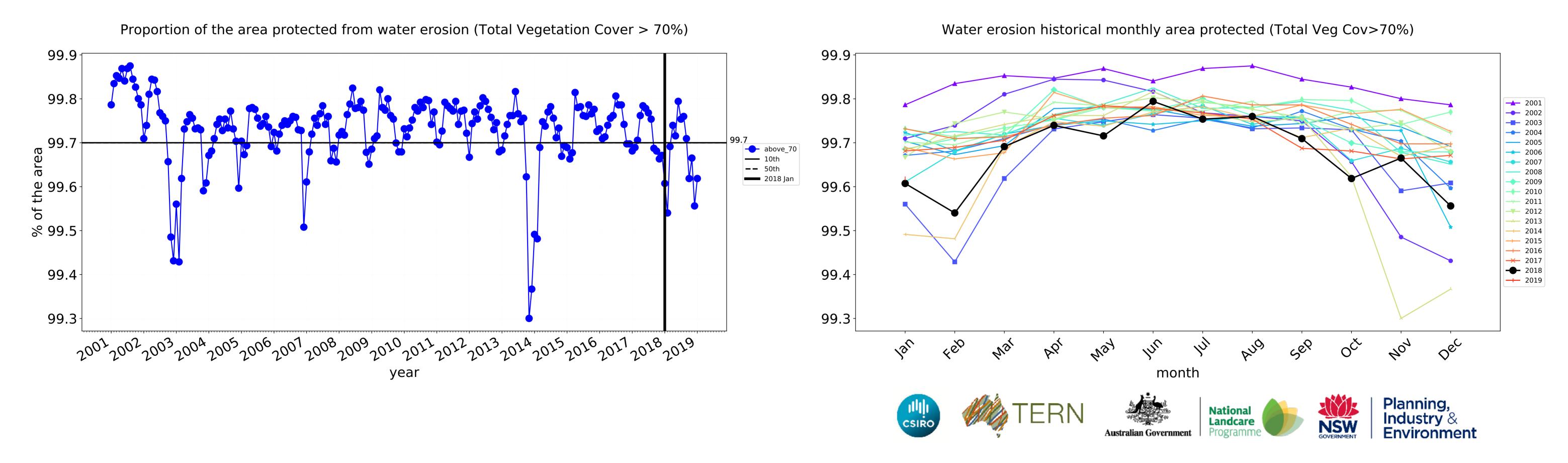
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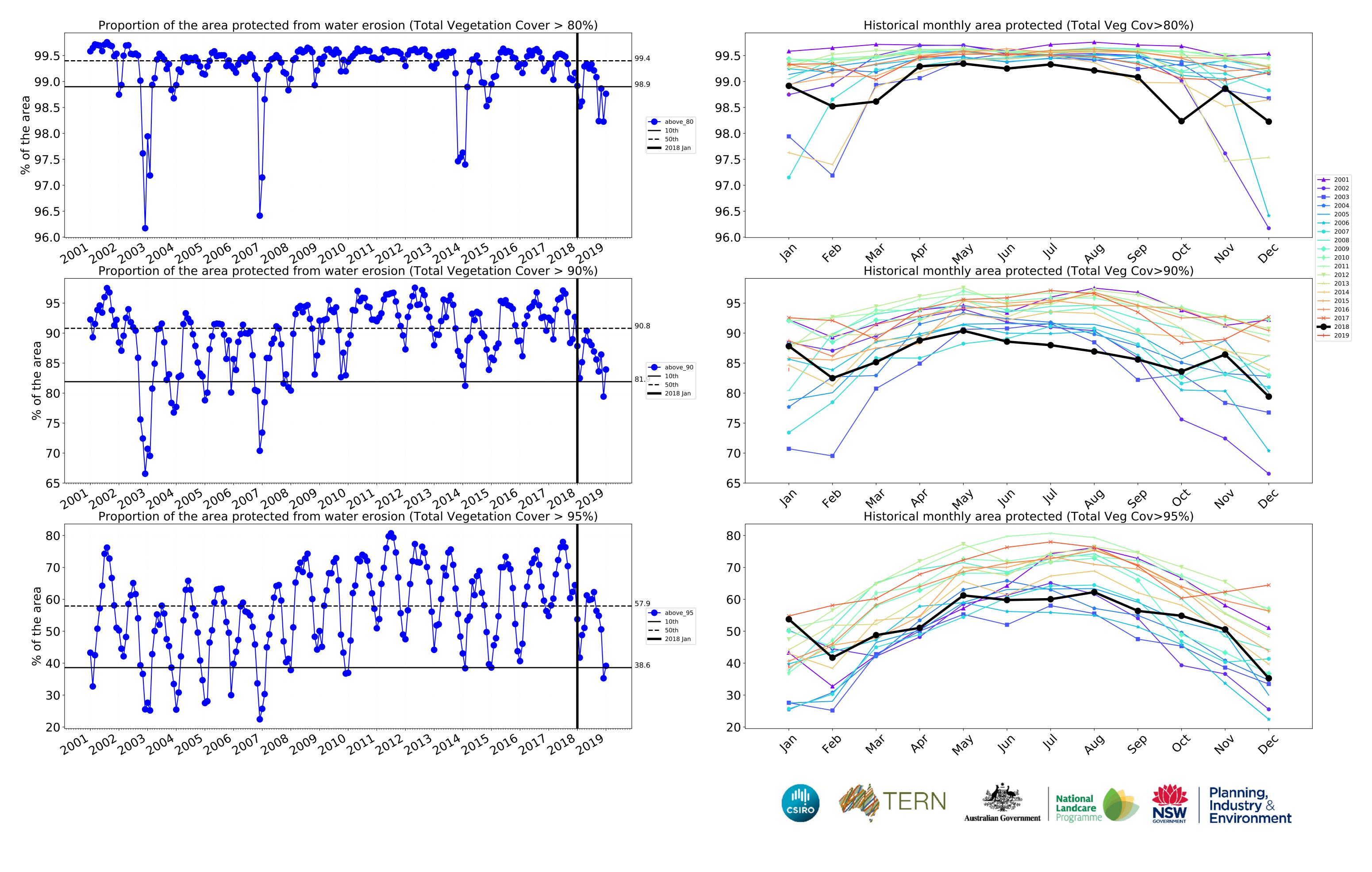
### **Conservation and natural environments**



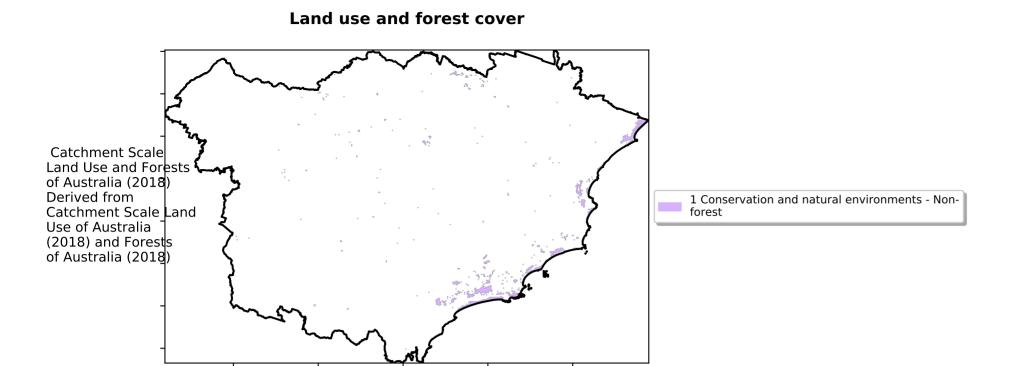
### **Conservation and natural environments timeseries**



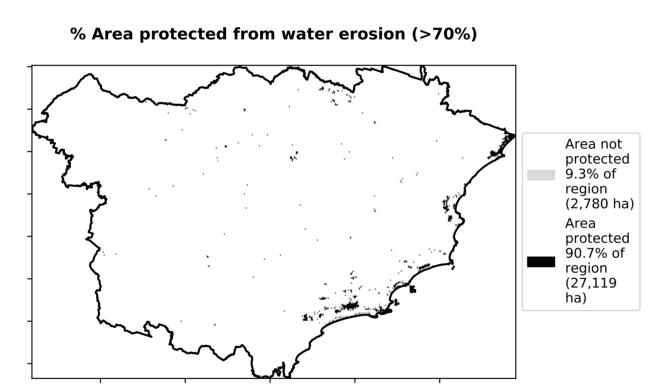


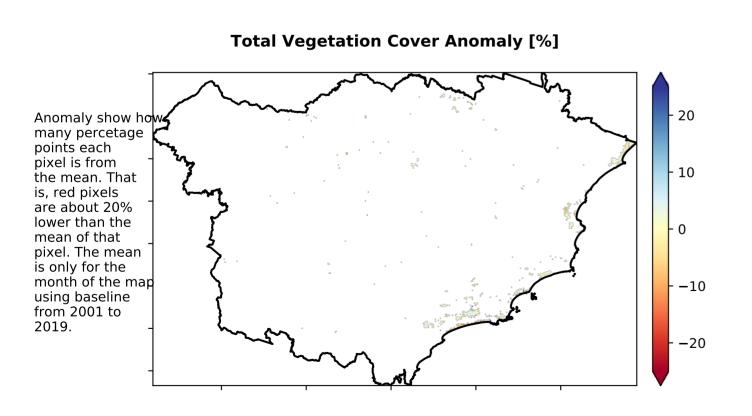


### **Conservation and natural environments non forest**



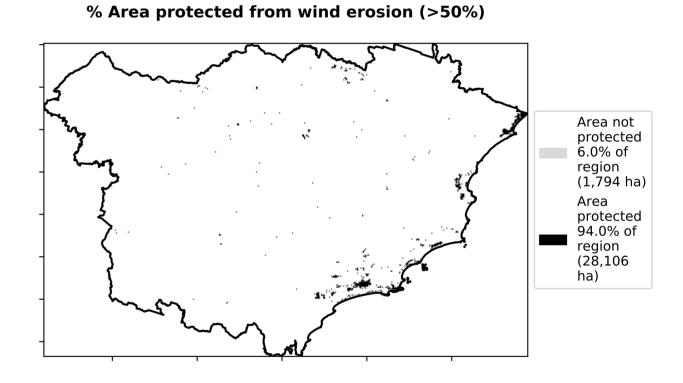
## Total Vegetation Cover [%] Tiple Judolo Jiple Judolo Ji

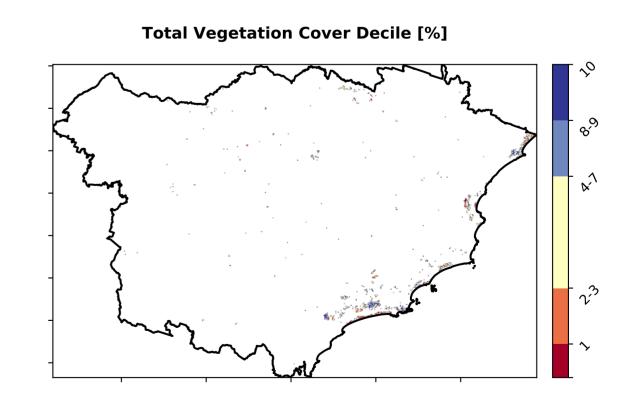




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# Proportion of vegetation cover class in area 90.7% 80 - 60 - 60 - 20 - 4.5% 0-30% 31%-50% Total Vegetation Cover class









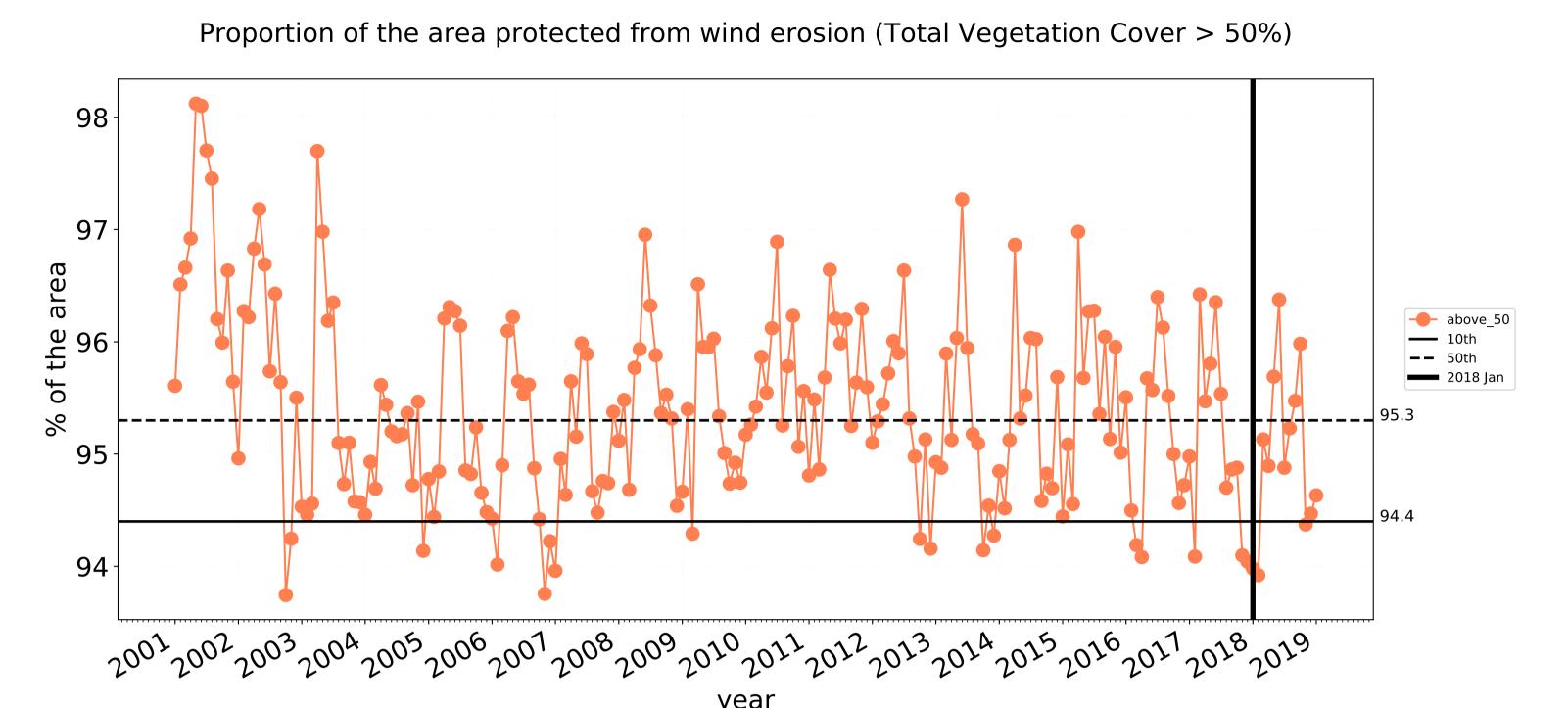




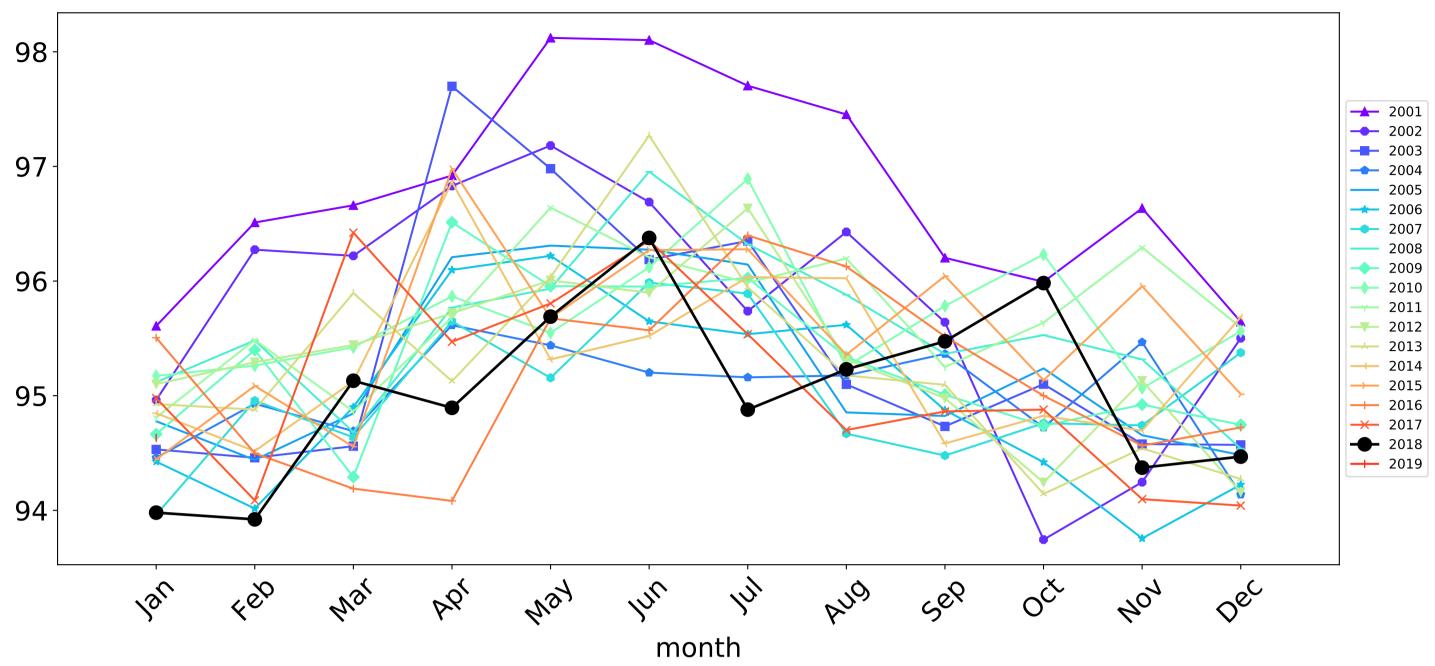


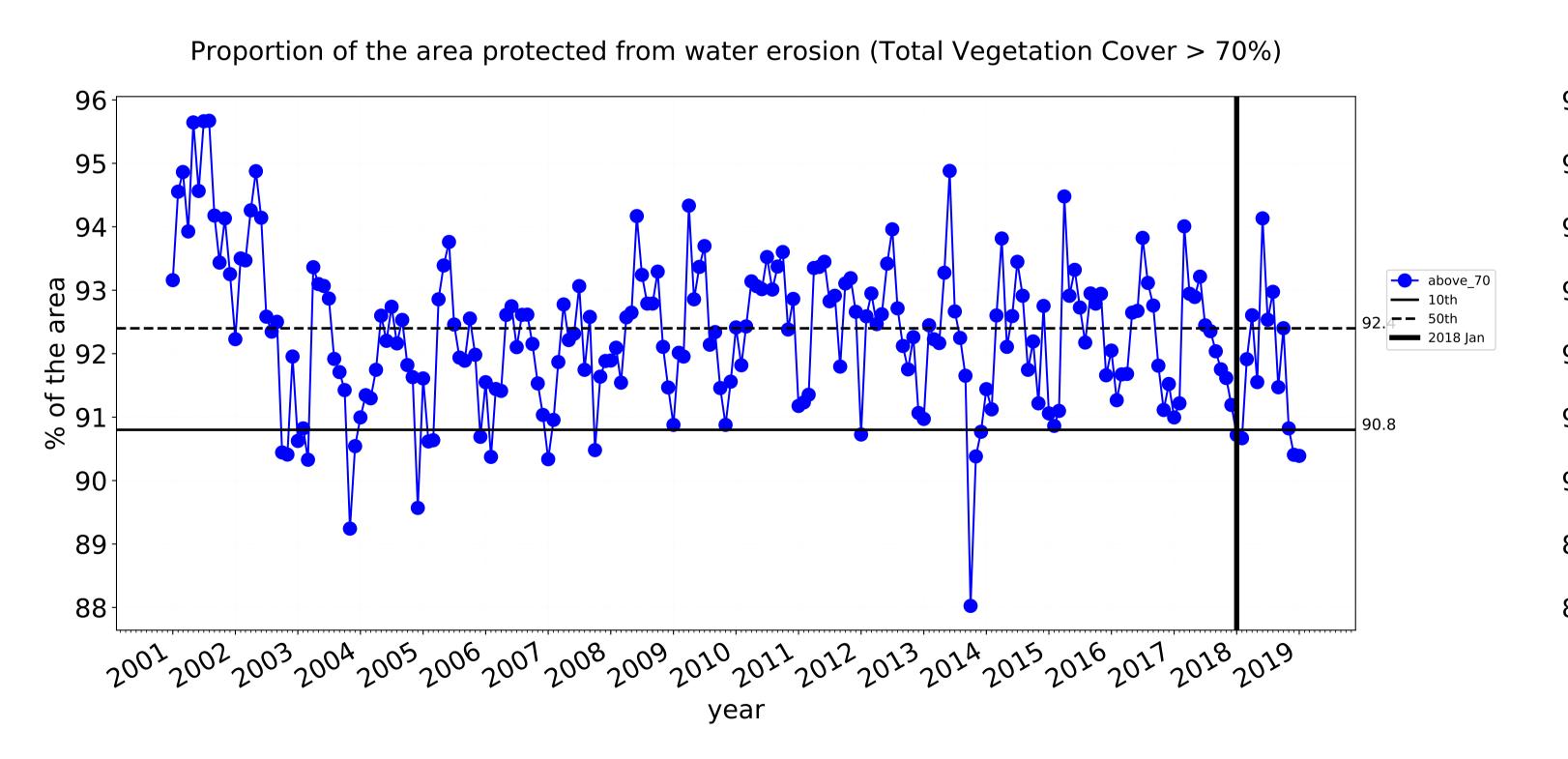


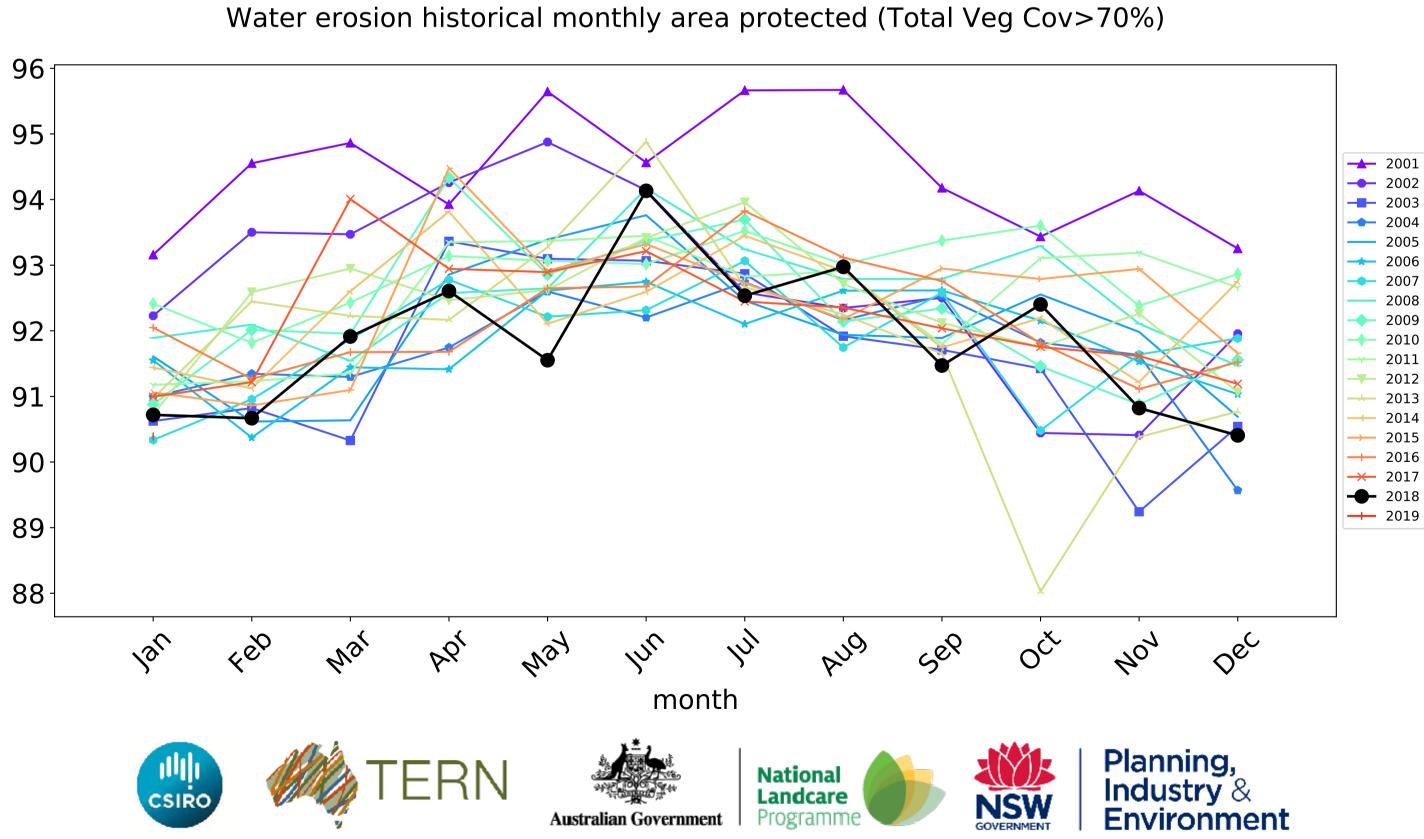
### **Conservation and natural environments non forest timeseries**

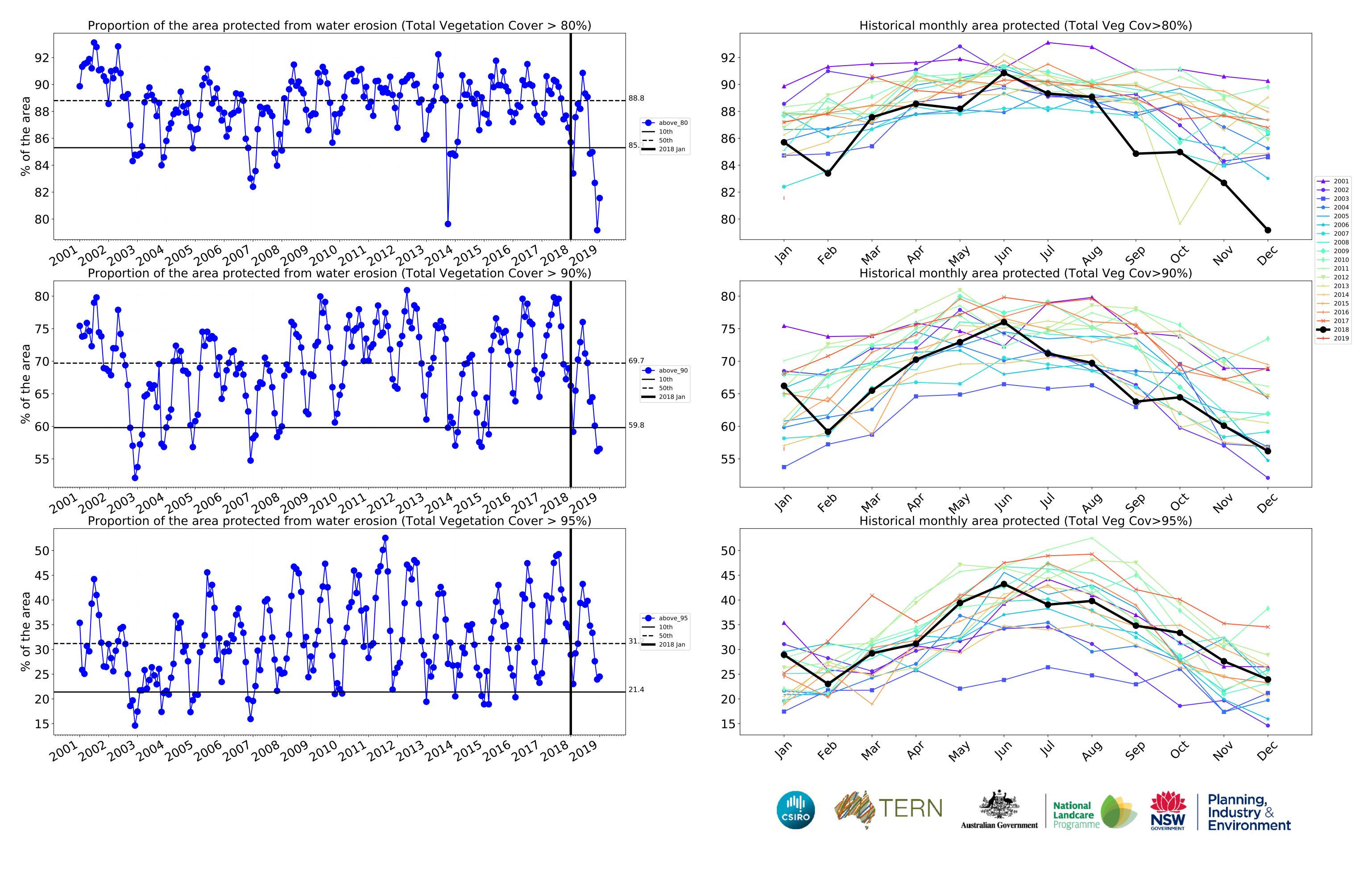




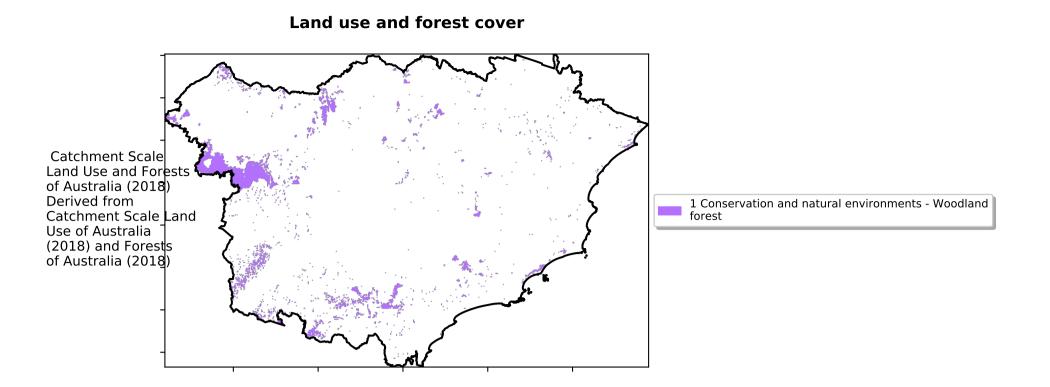


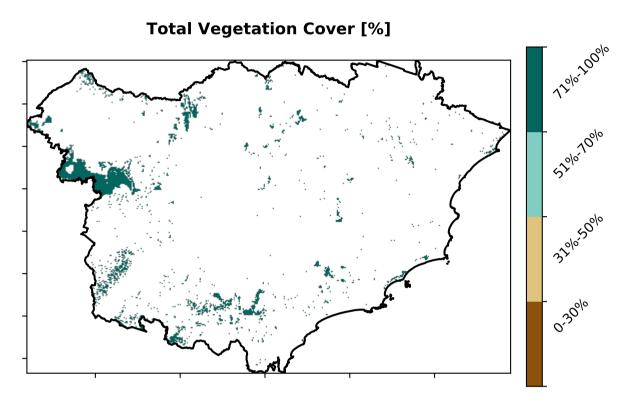


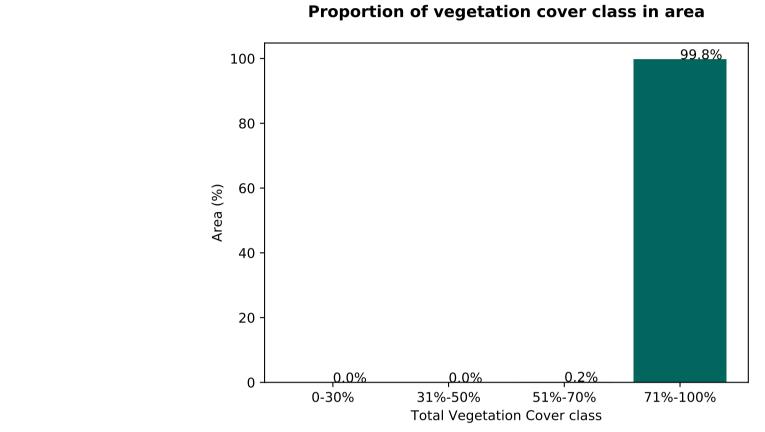


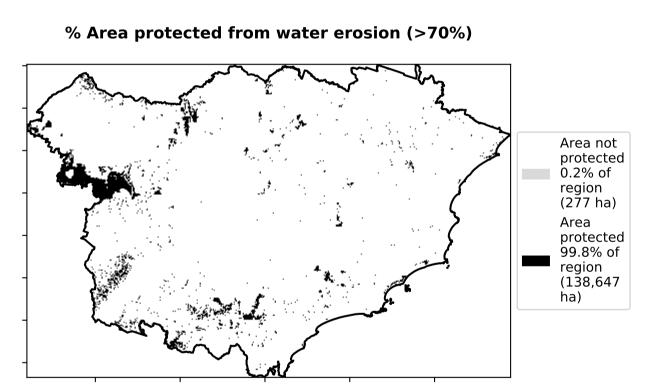


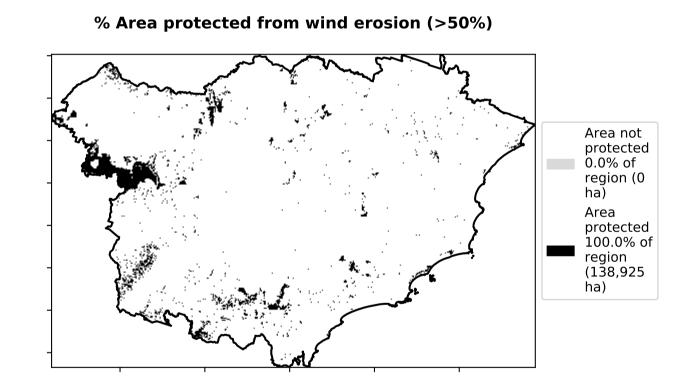
### **Conservation and natural environments Woodland forest**

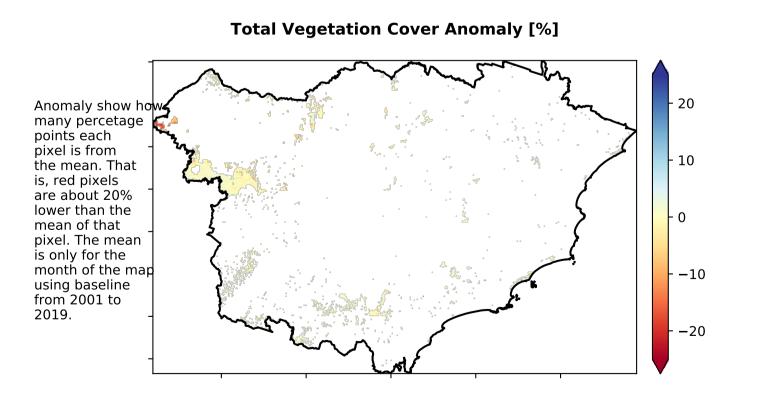




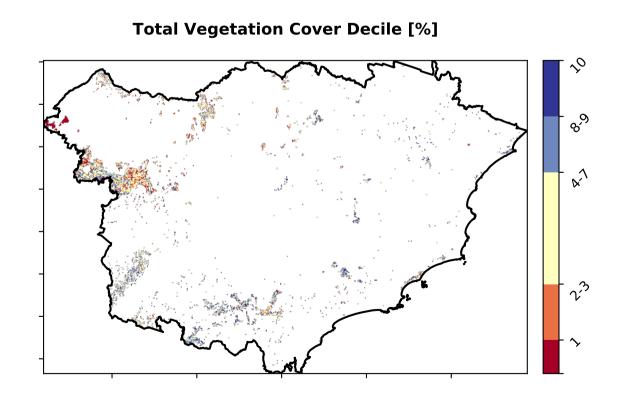








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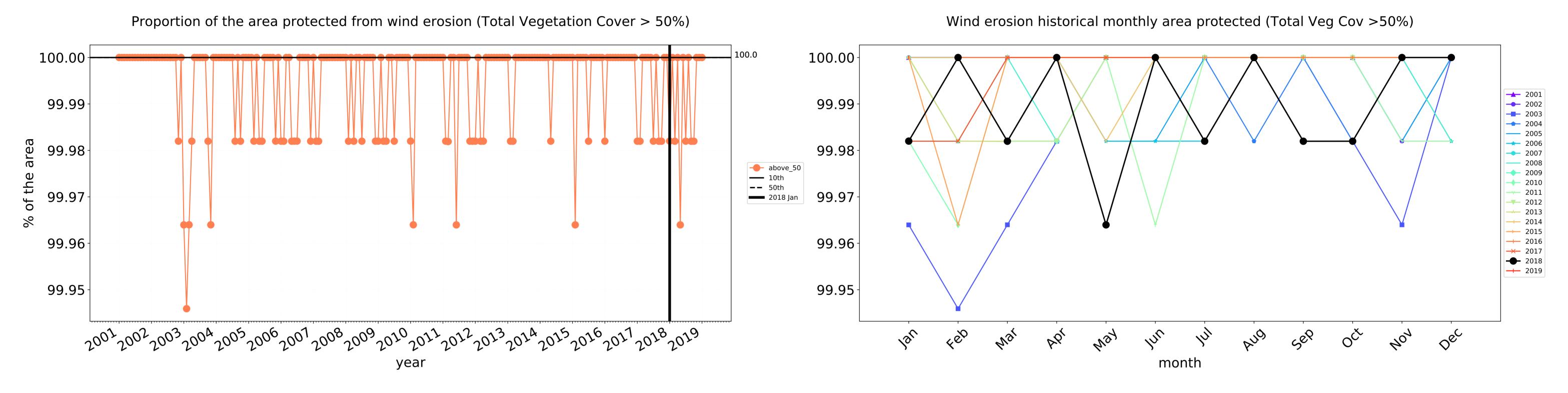


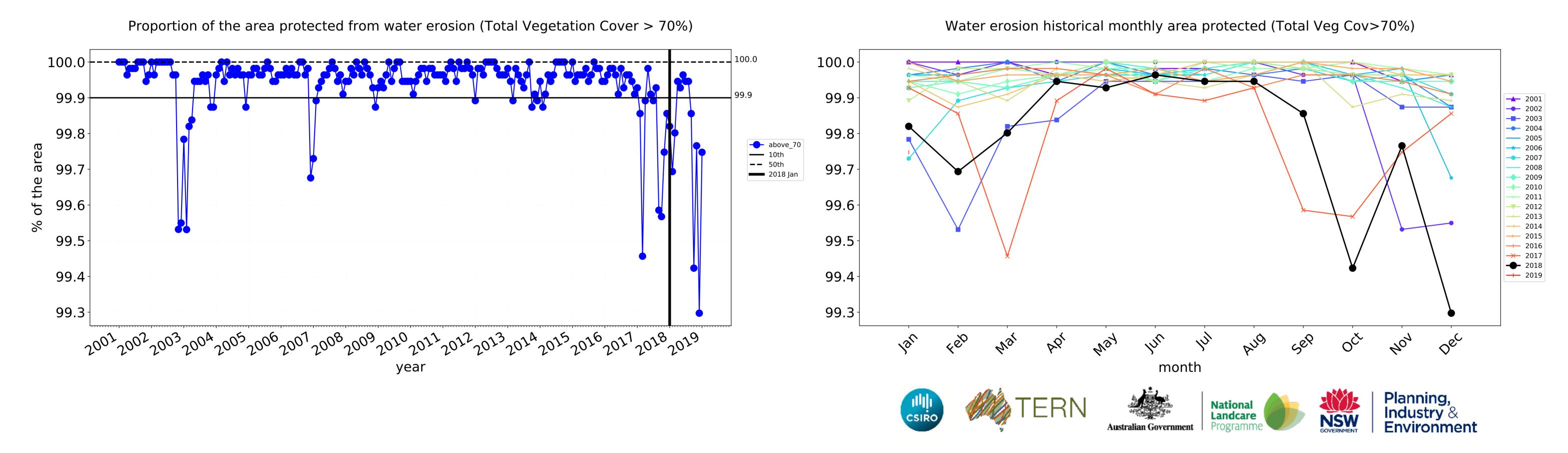


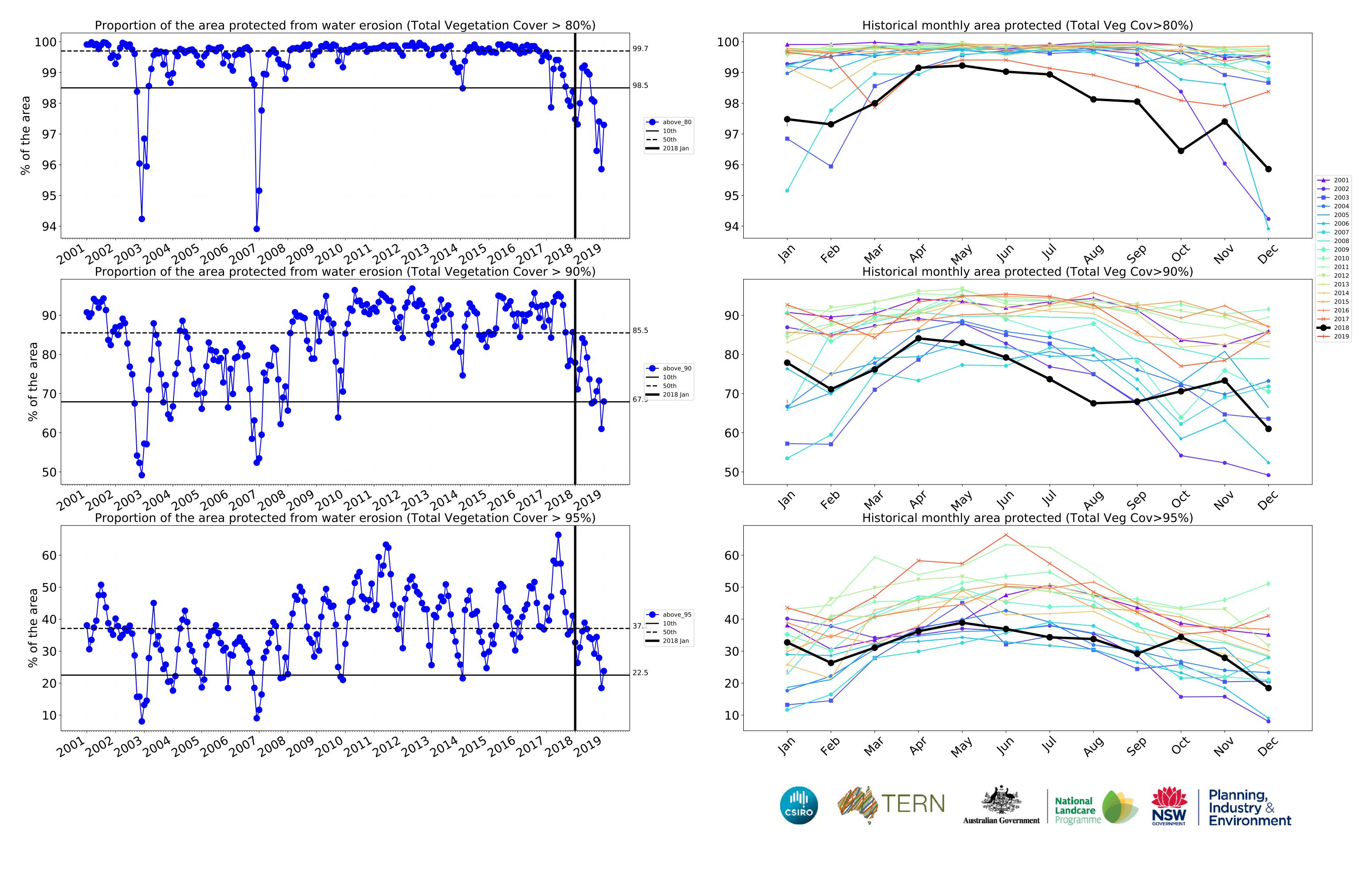






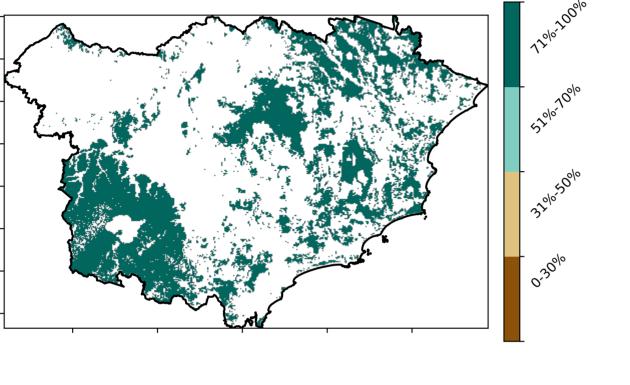


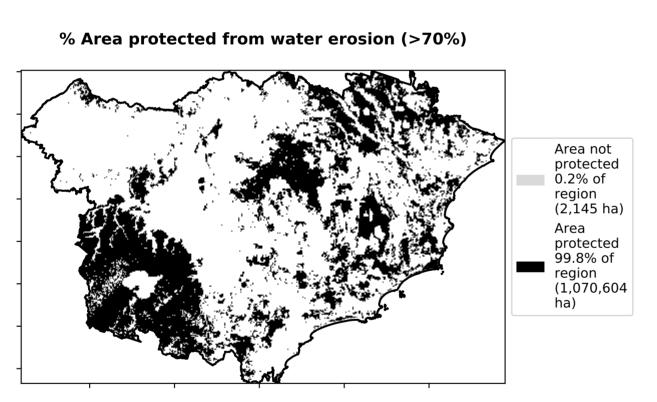


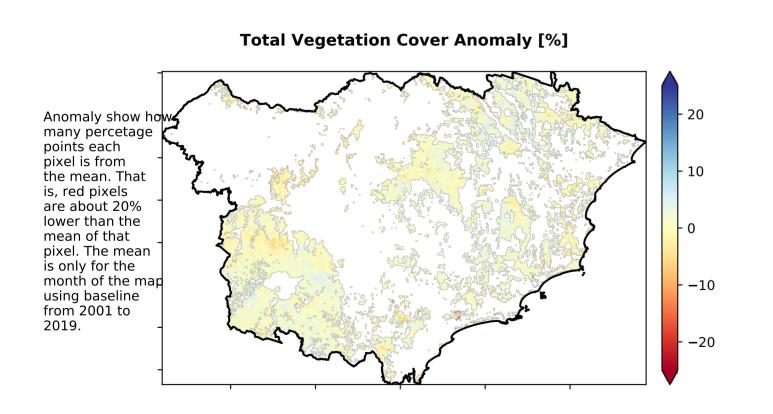


### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Use of Australia (2018) and Forests of Australia (2018) 1 Conservation and natural environments - Nonwoodland forest

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

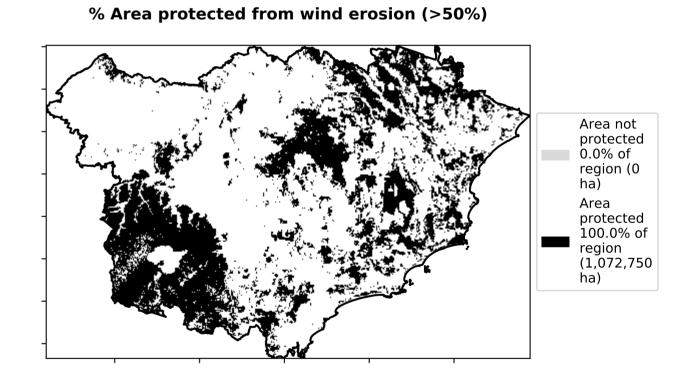


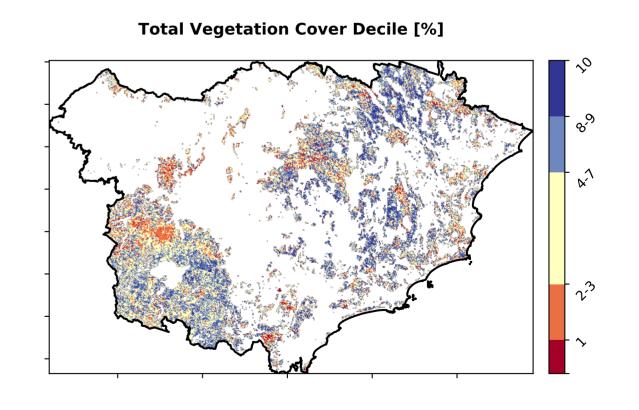




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### Proportion of vegetation cover class in area 99.8% 100 80 60 40 20 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**







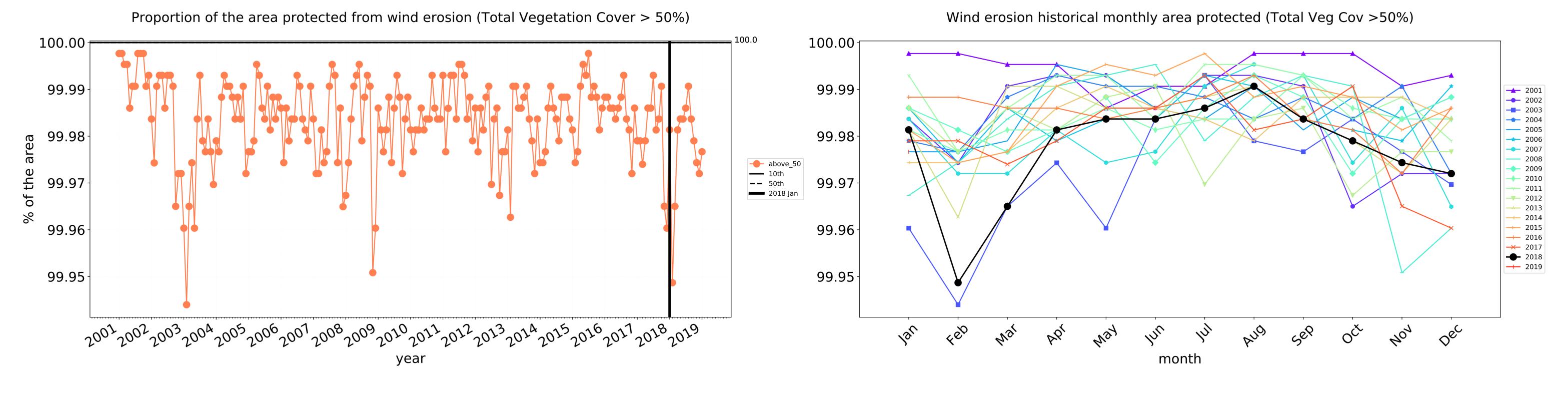


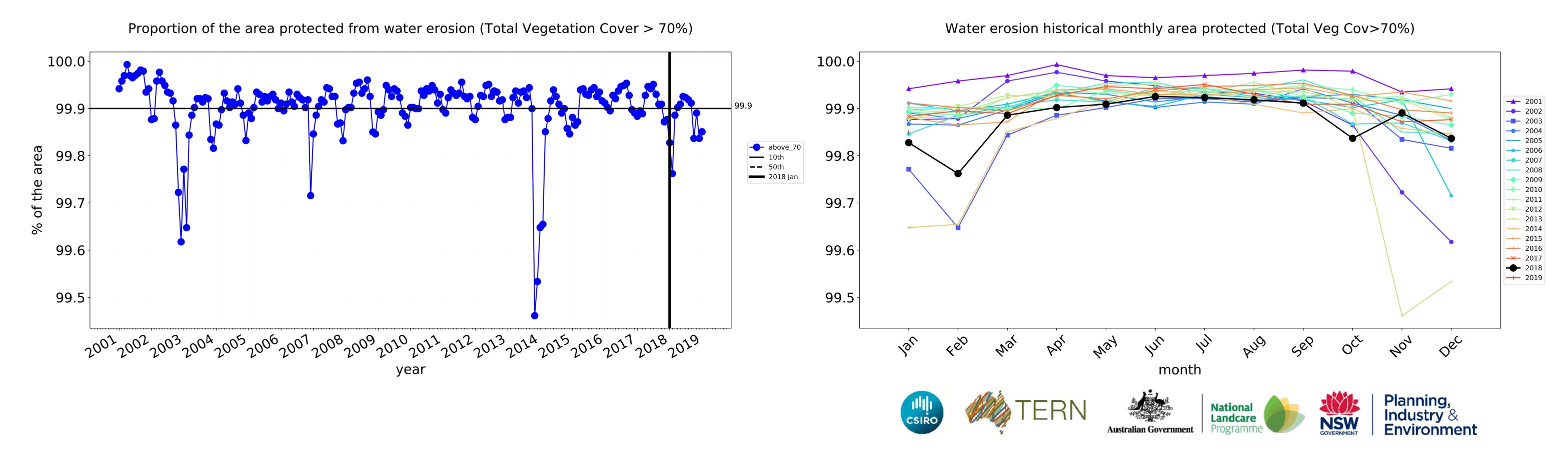


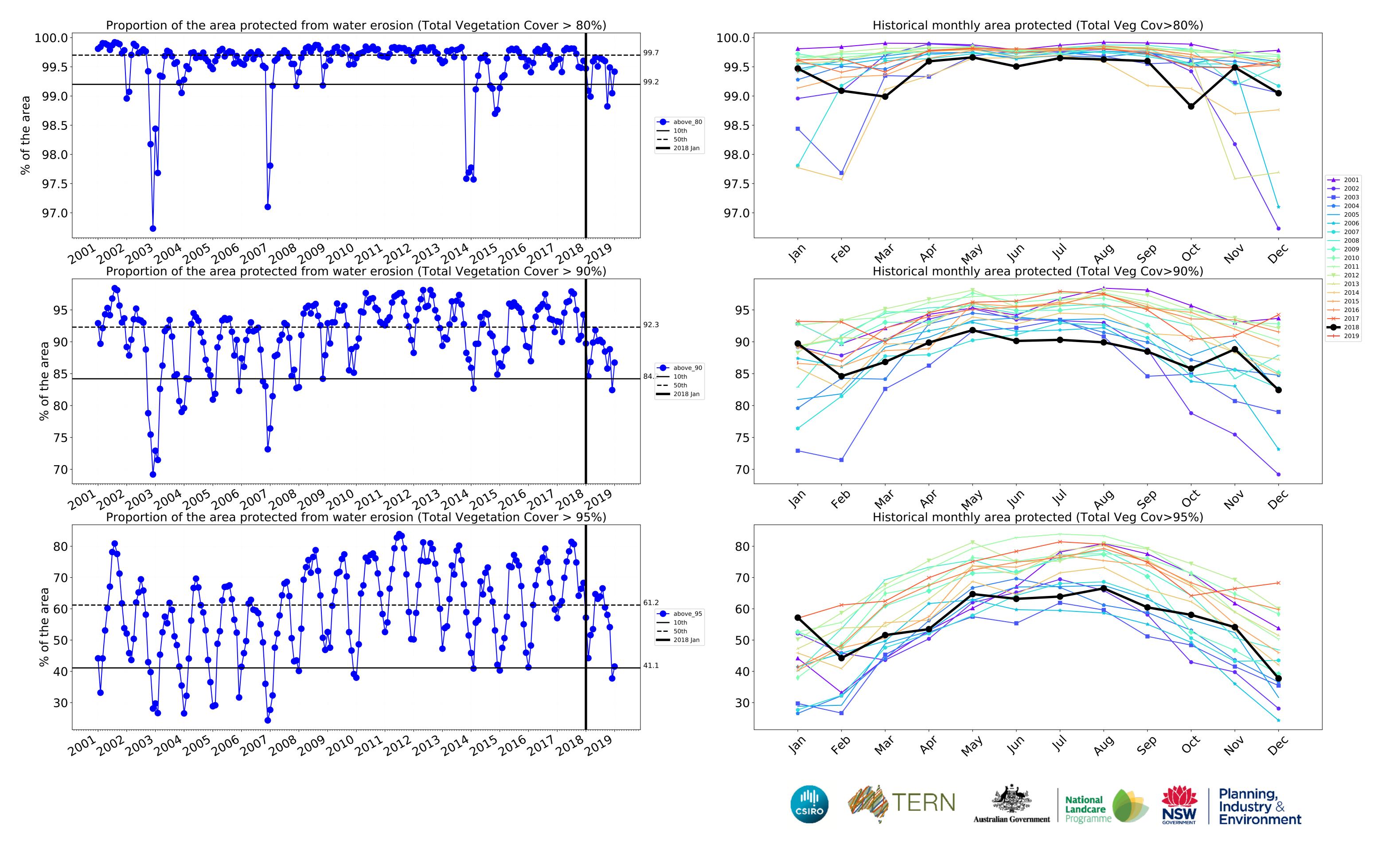




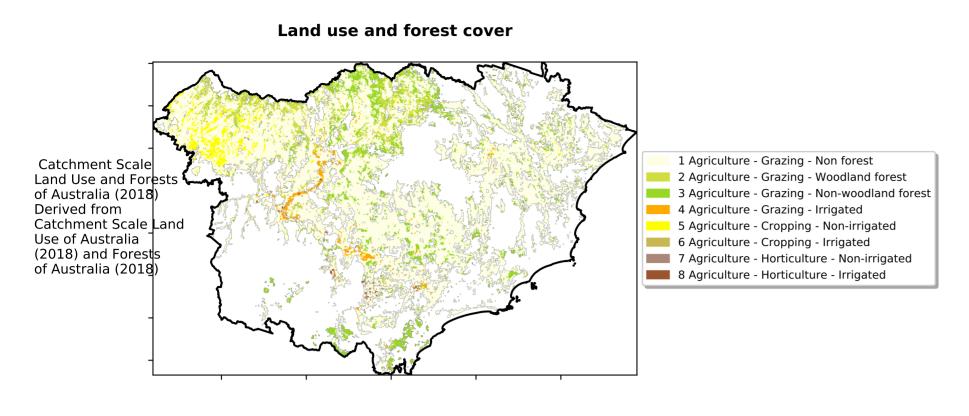


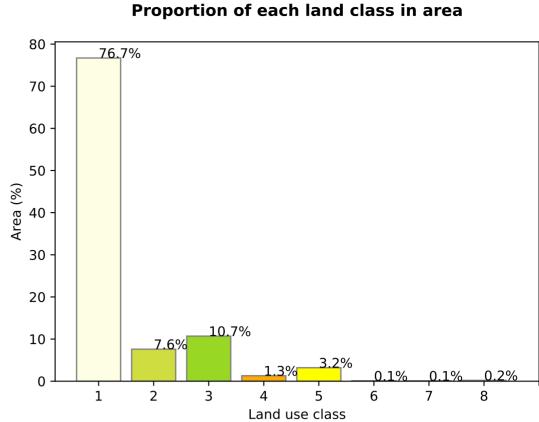


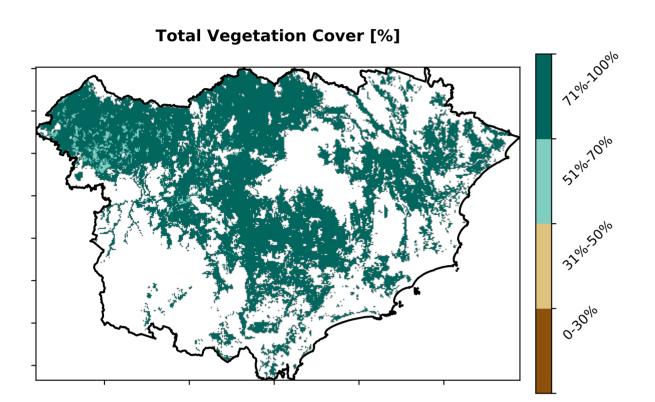


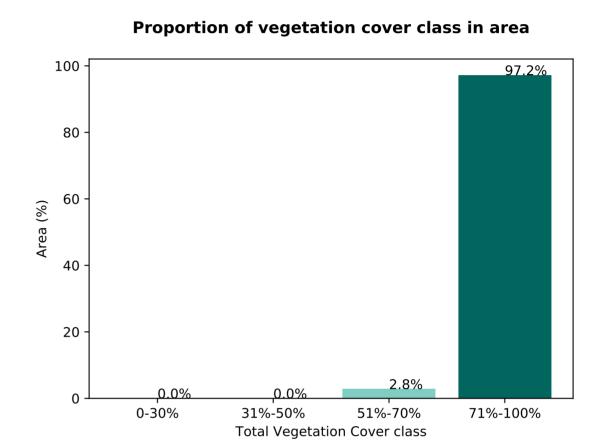


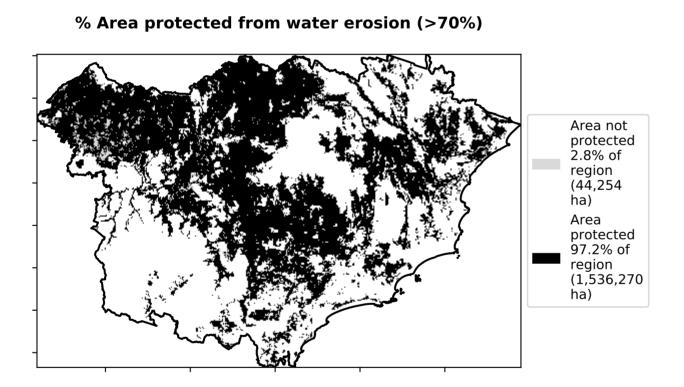
### **Agriculture**

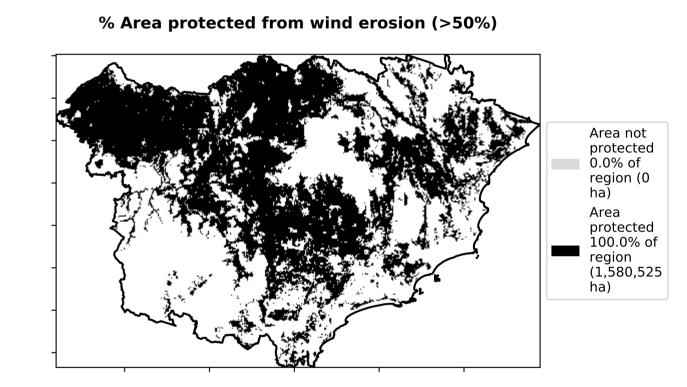


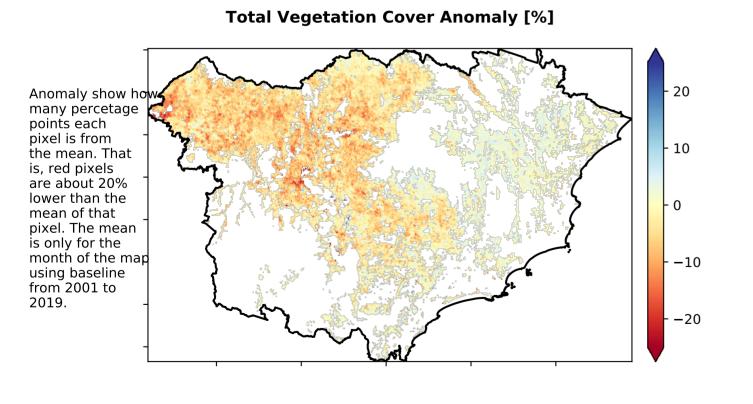




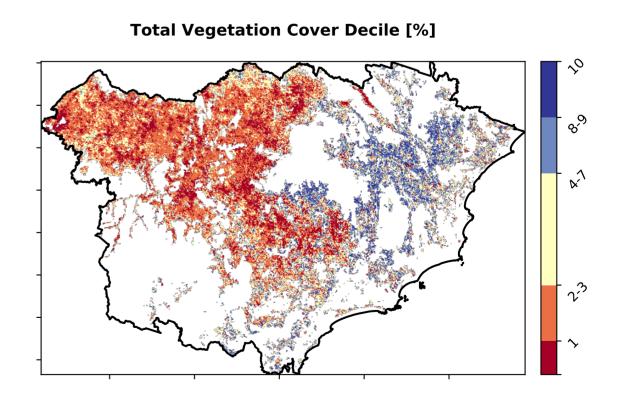








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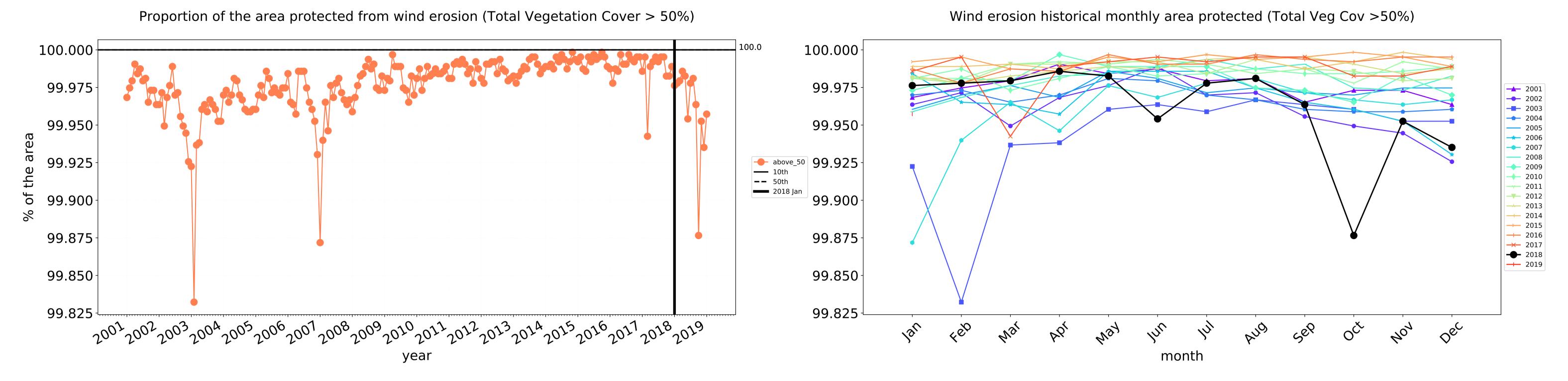


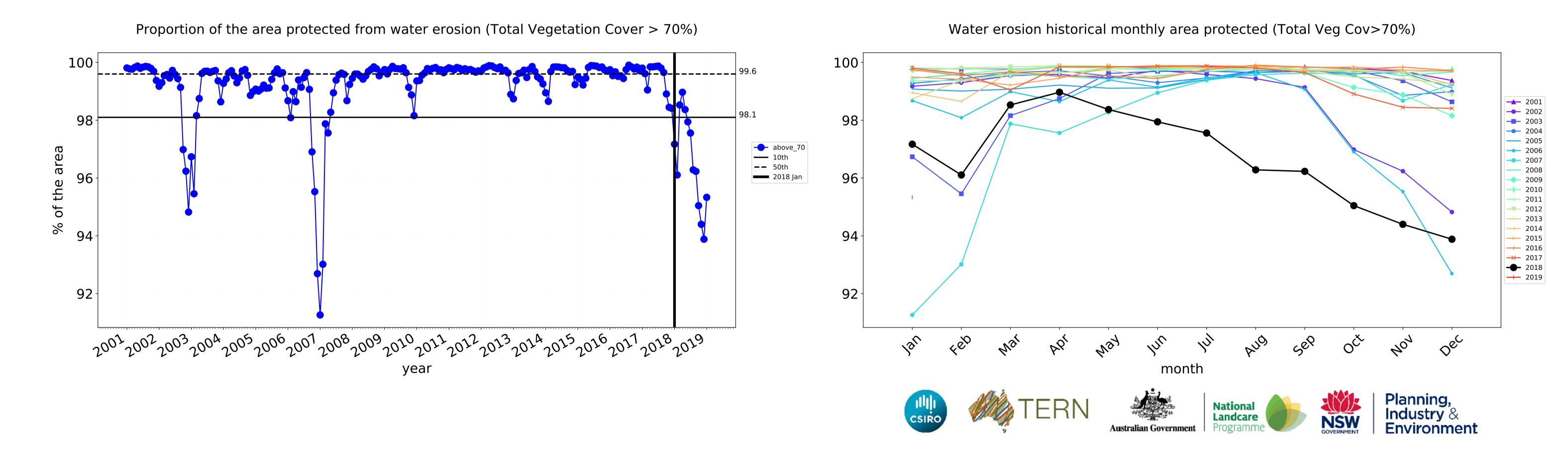


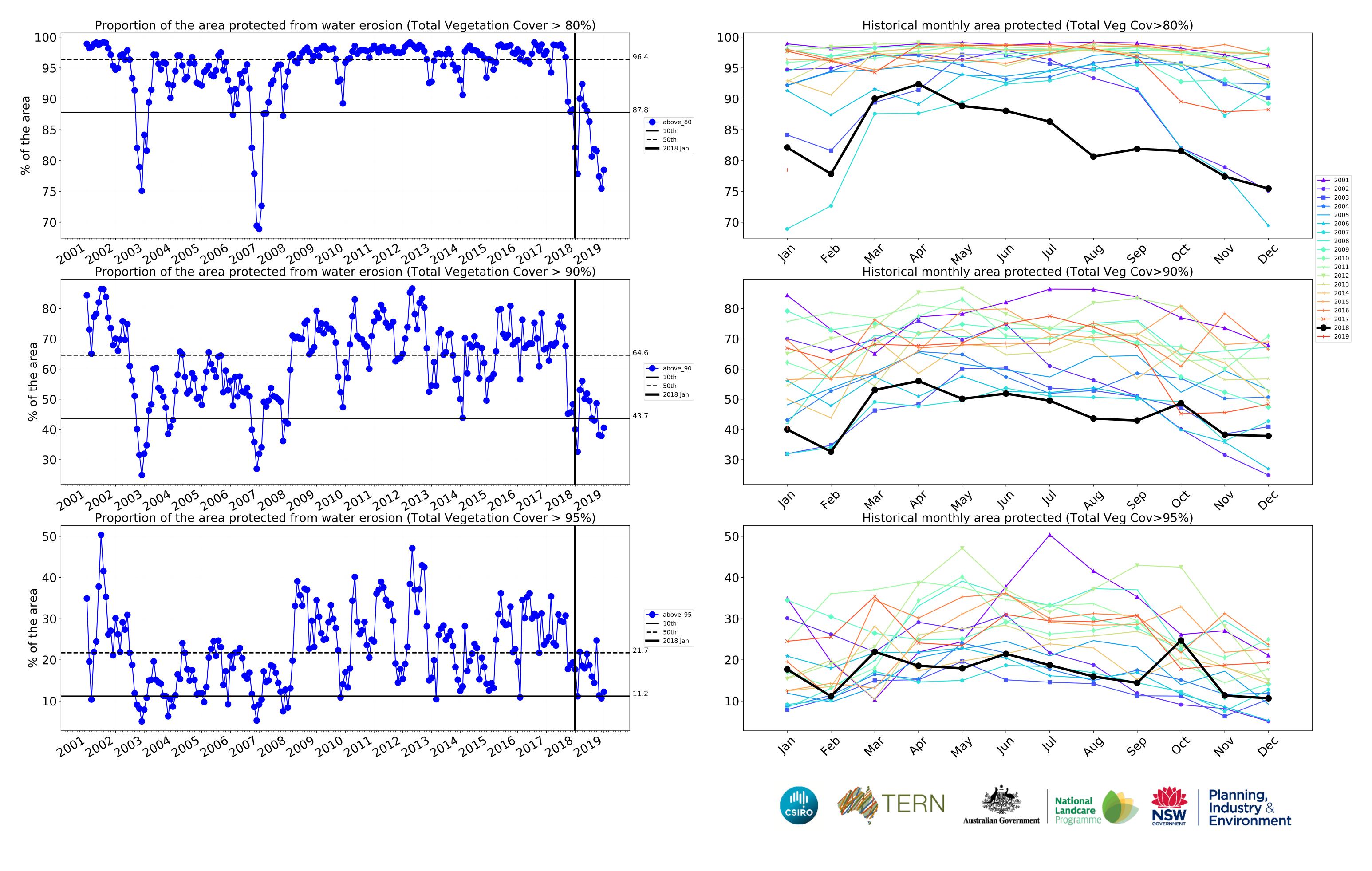




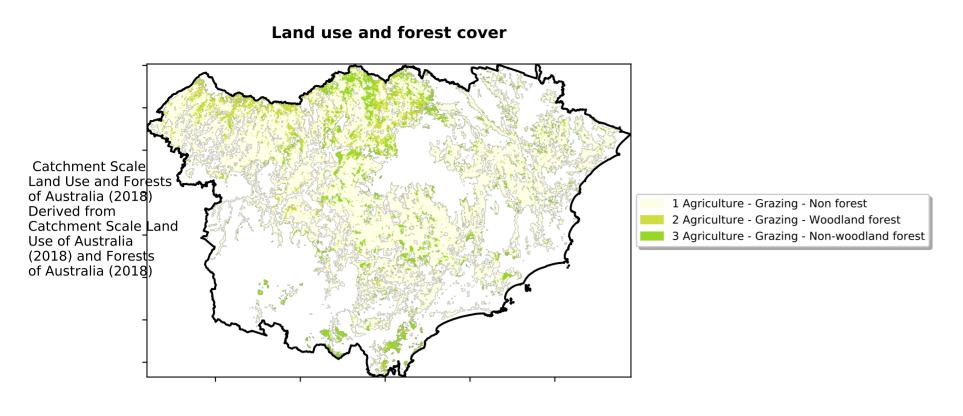
### **Agriculture timeseries**



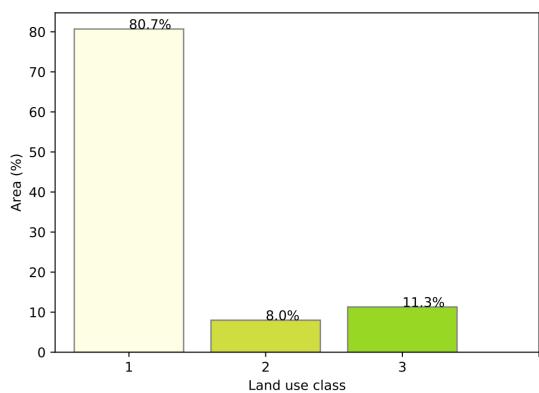




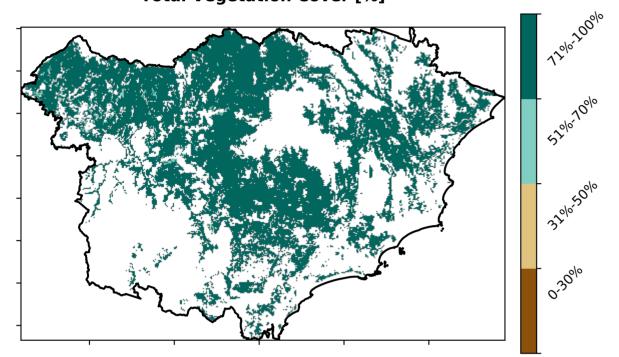
### **Grazing**



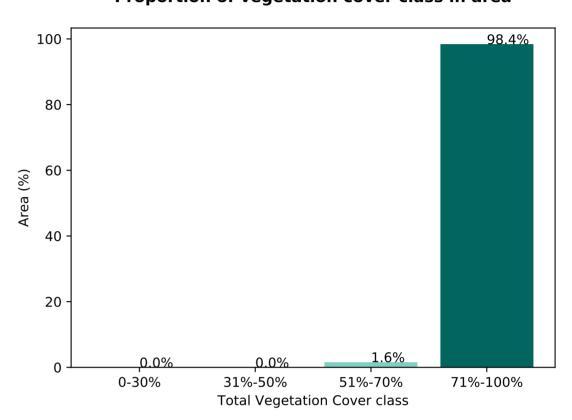
### Proportion of each land class in area



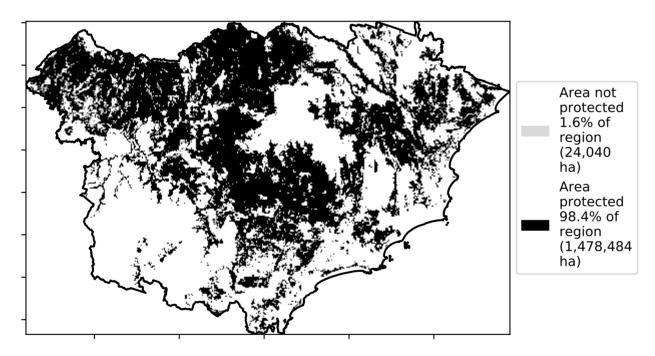
**Total Vegetation Cover [%]** 



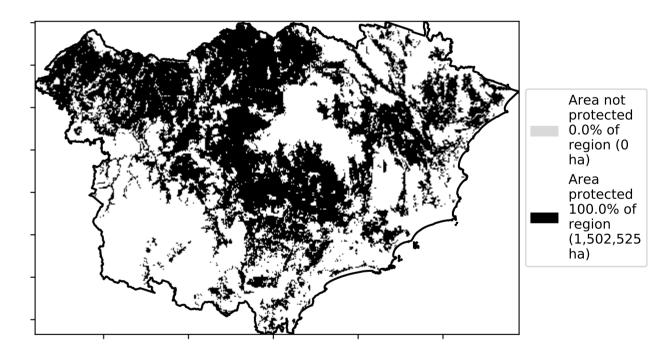
Proportion of vegetation cover class in area



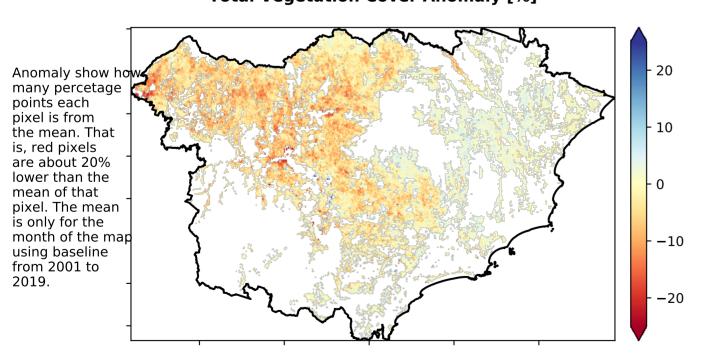
% Area protected from water erosion (>70%)



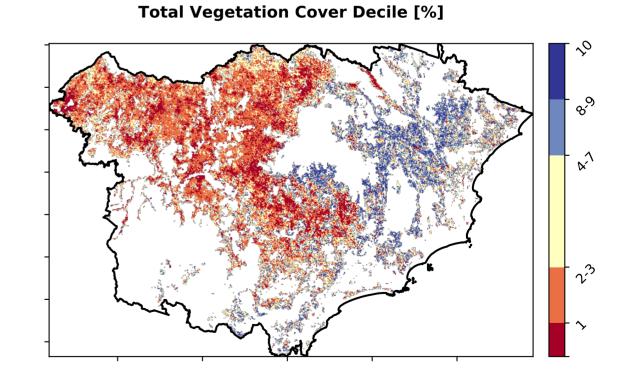
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



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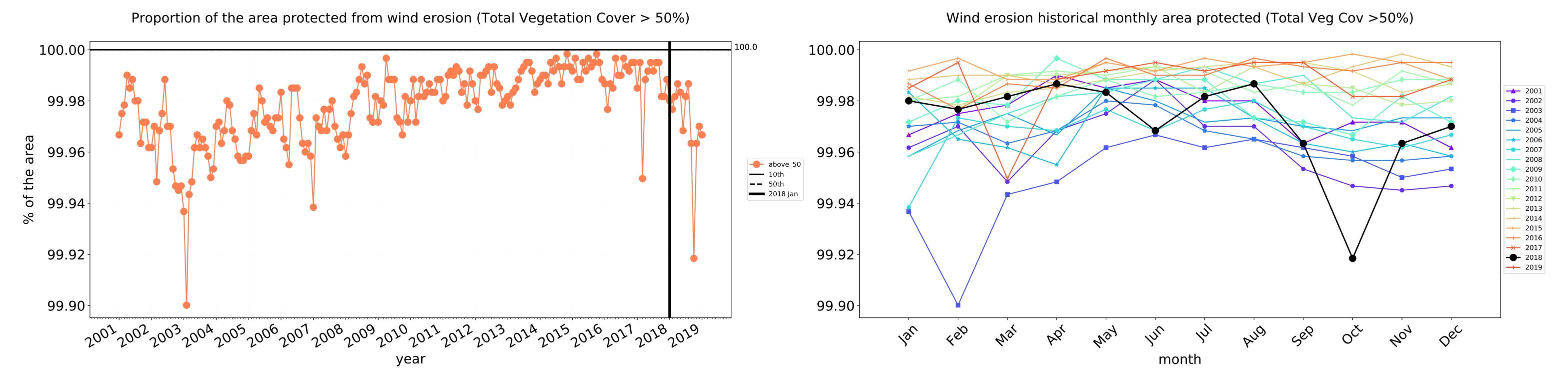


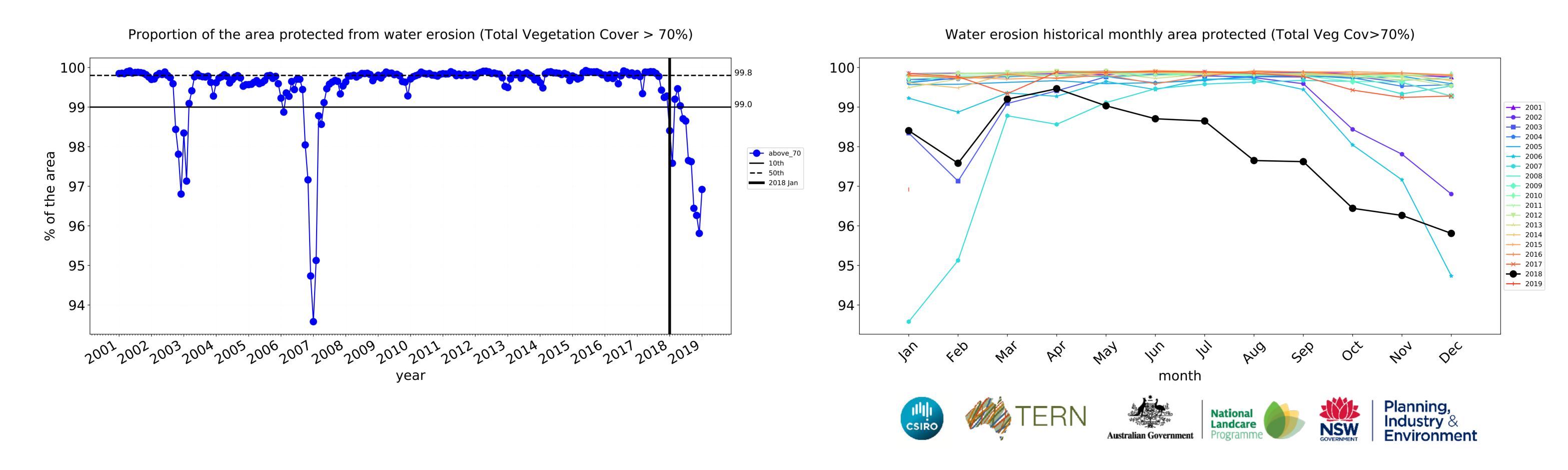


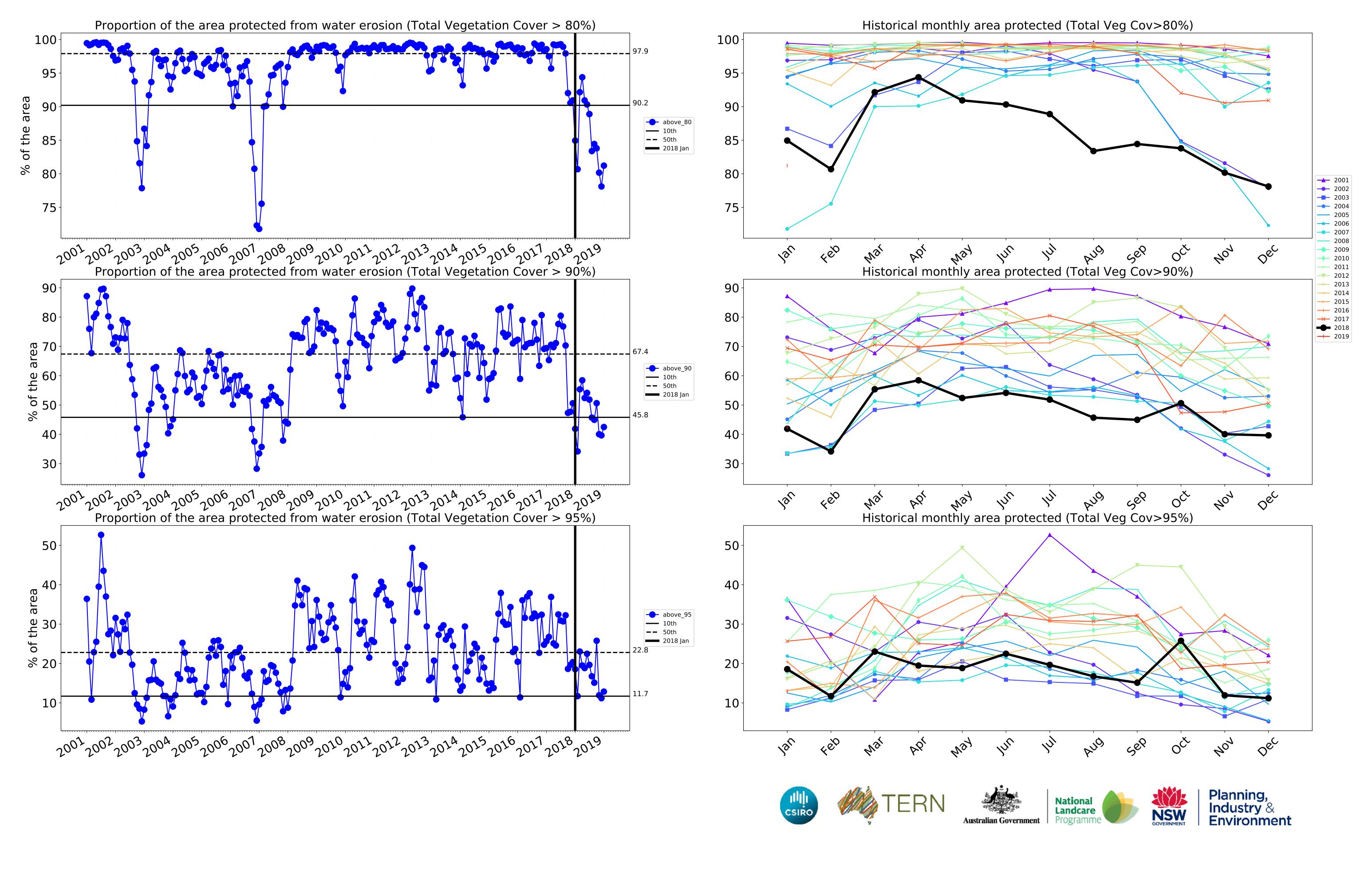




### **Grazing timeseries**

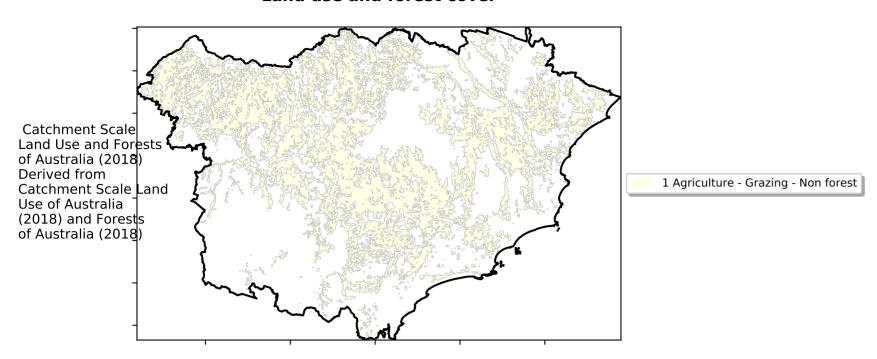




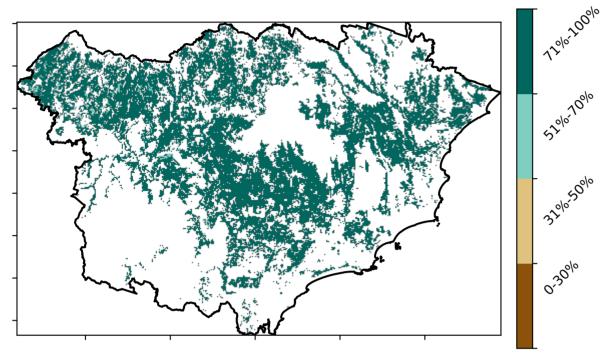


### **Grazing non forest**

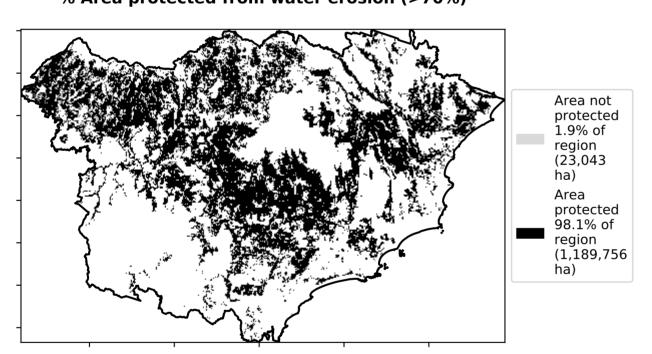
### Land use and forest cover



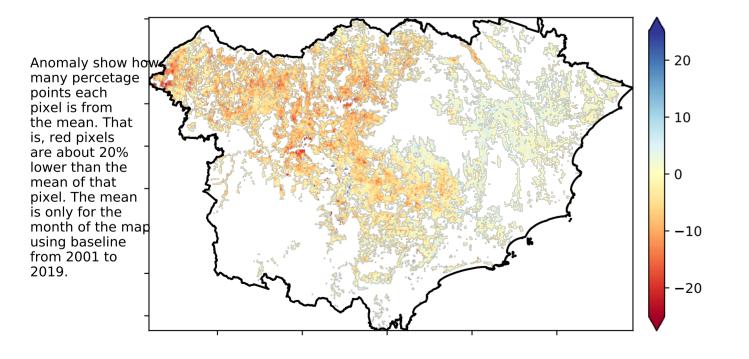
### Total Vegetation Cover [%]



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

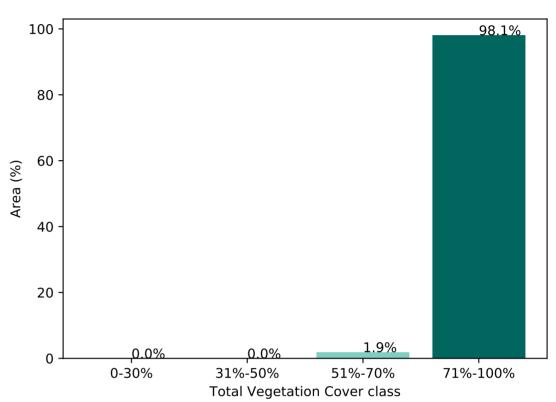


### Total Vegetation Cover Anomaly [%]

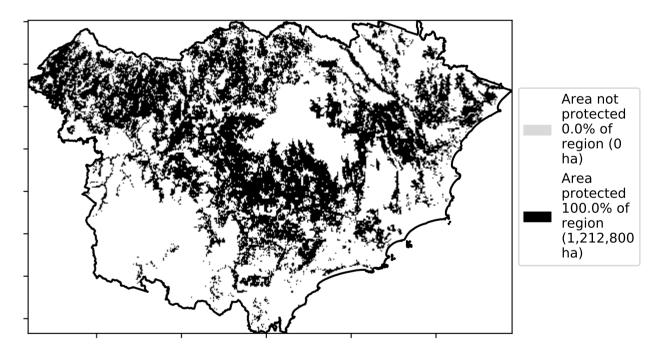


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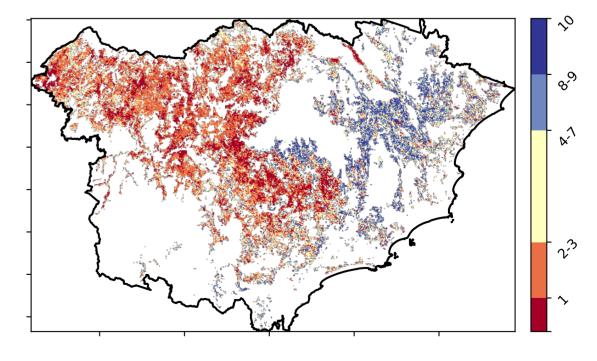
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]







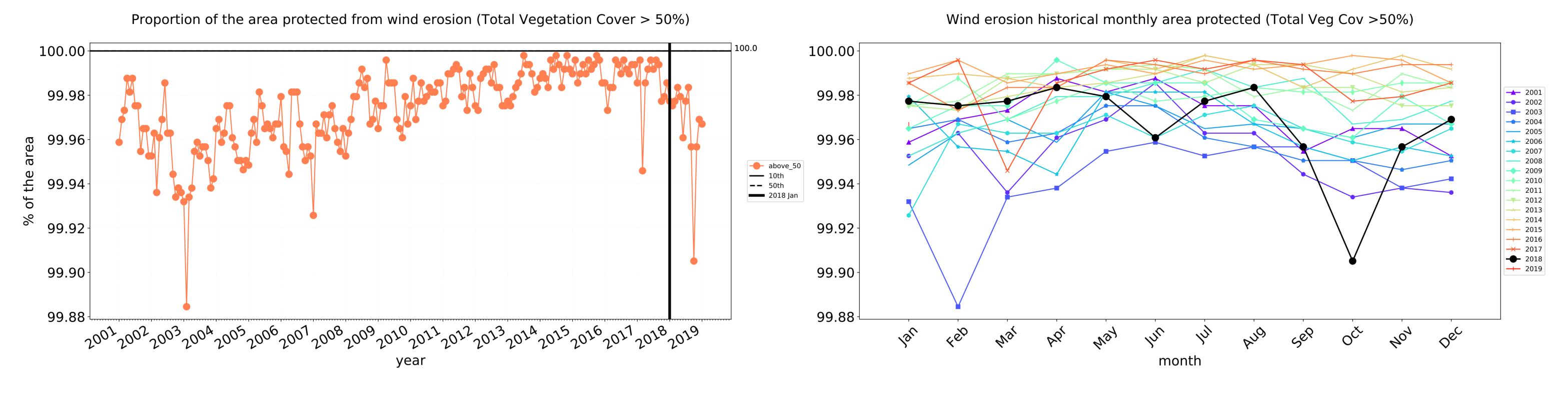


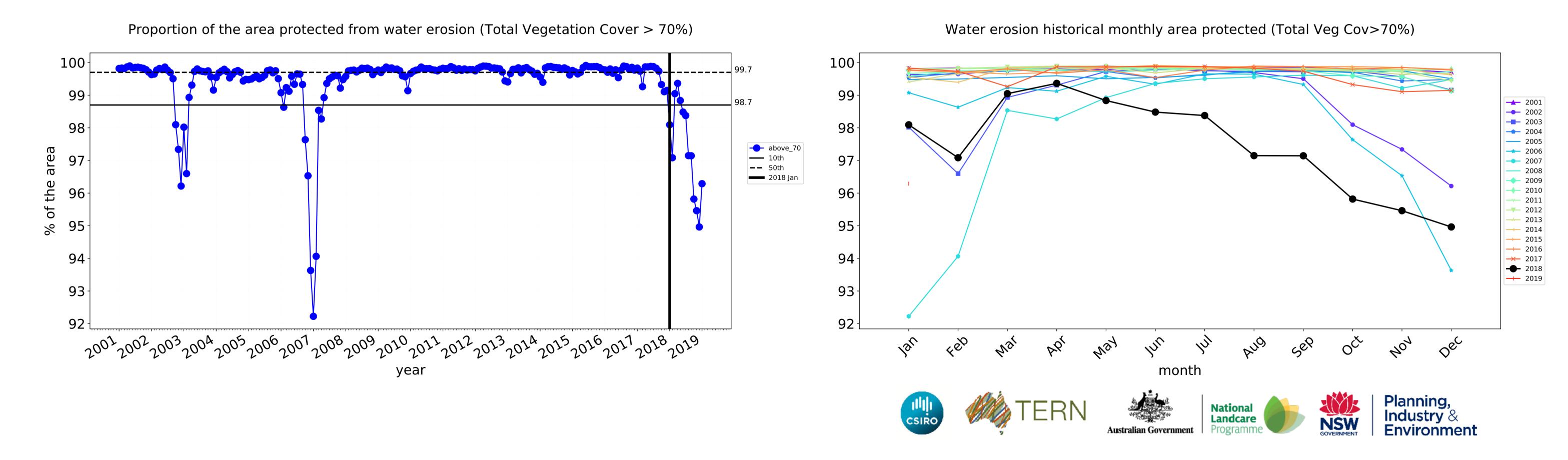


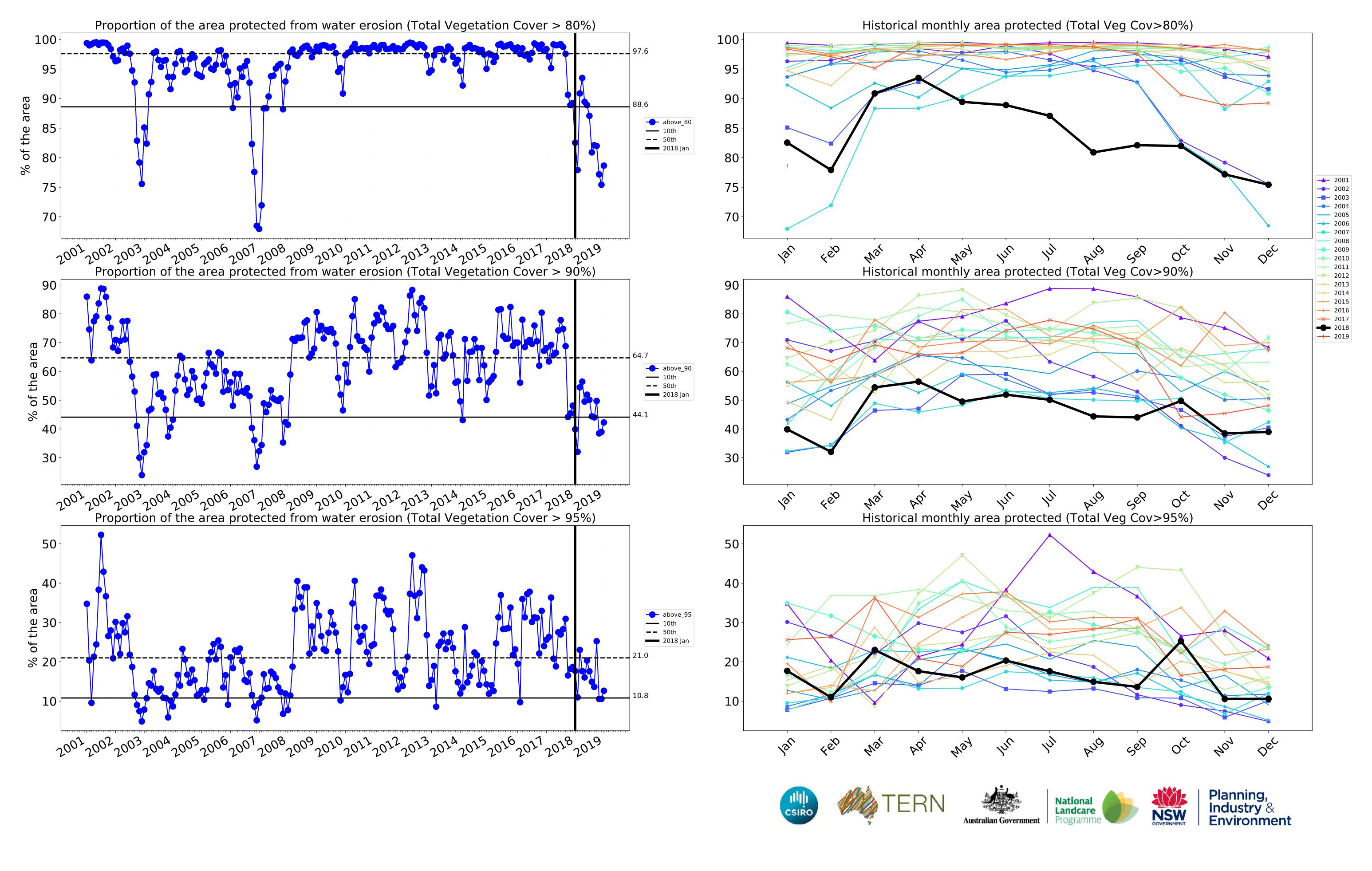




### **Grazing non forest timeseries**







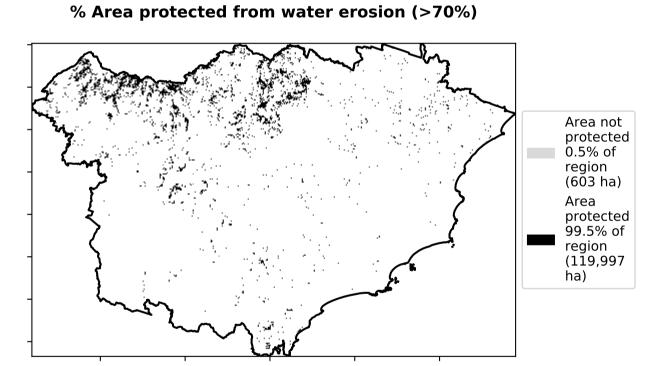
### **Grazing Woodland forest**

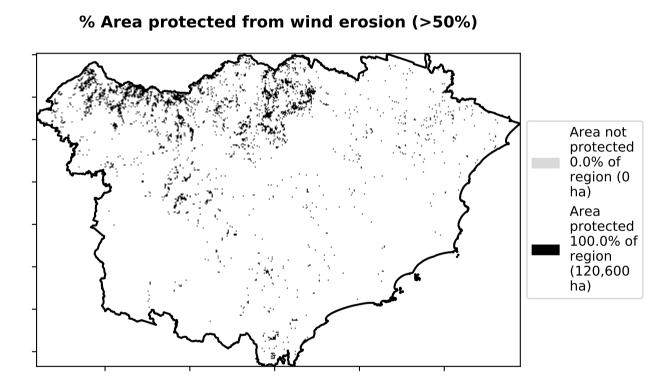
### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

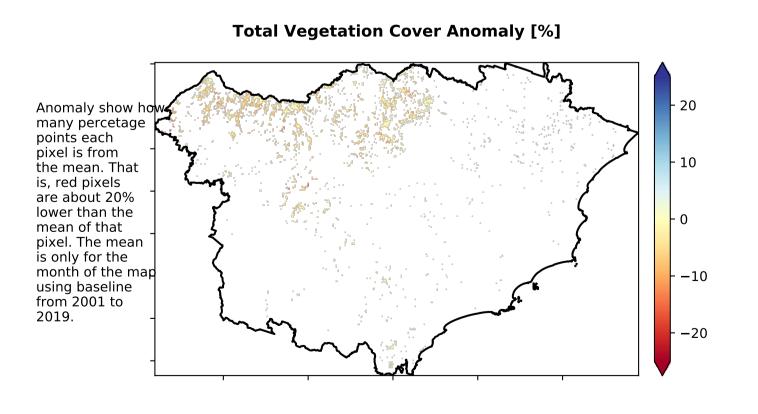
## **Total Vegetation Cover [%]**

### 99.5% 100 80 Area (%) 20 · 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**

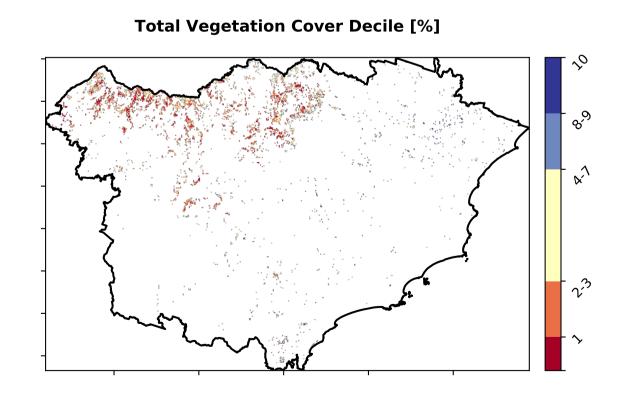
**Proportion of vegetation cover class in area** 







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.







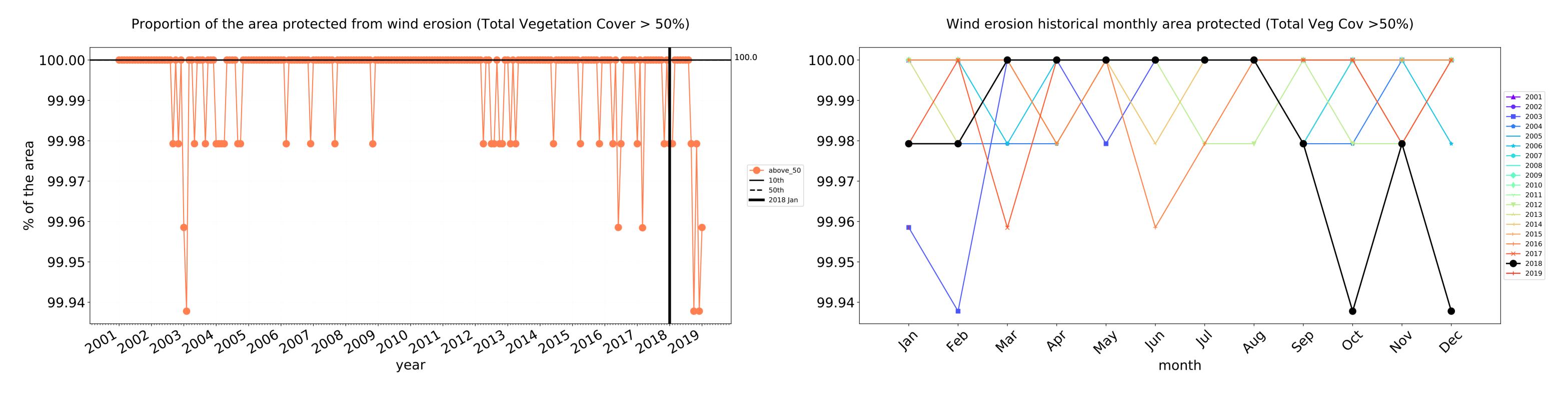


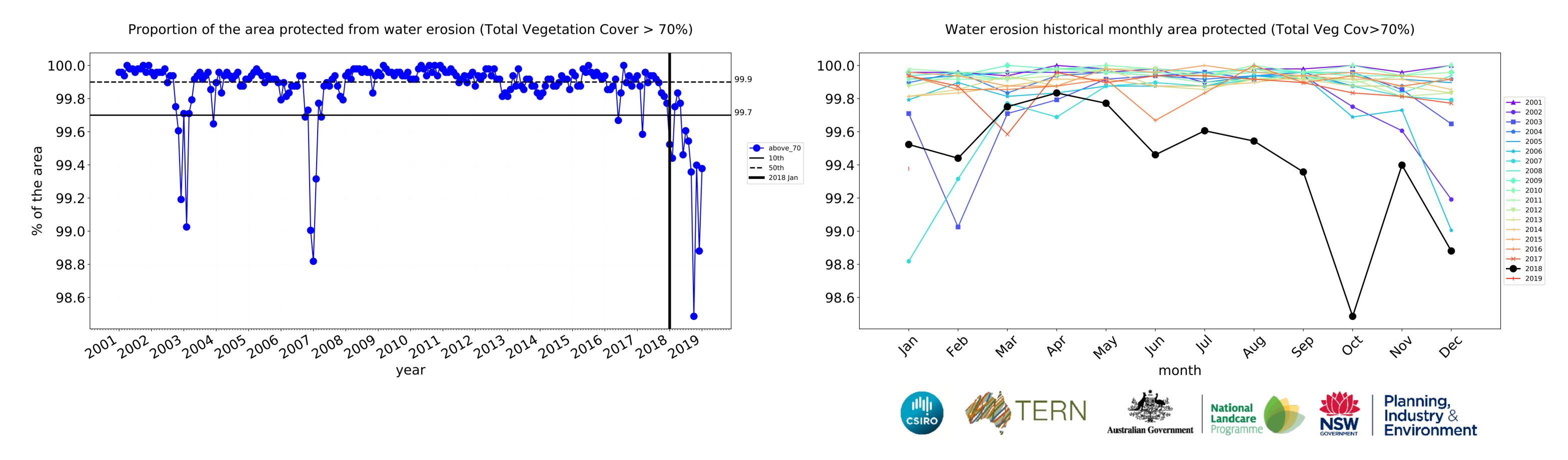


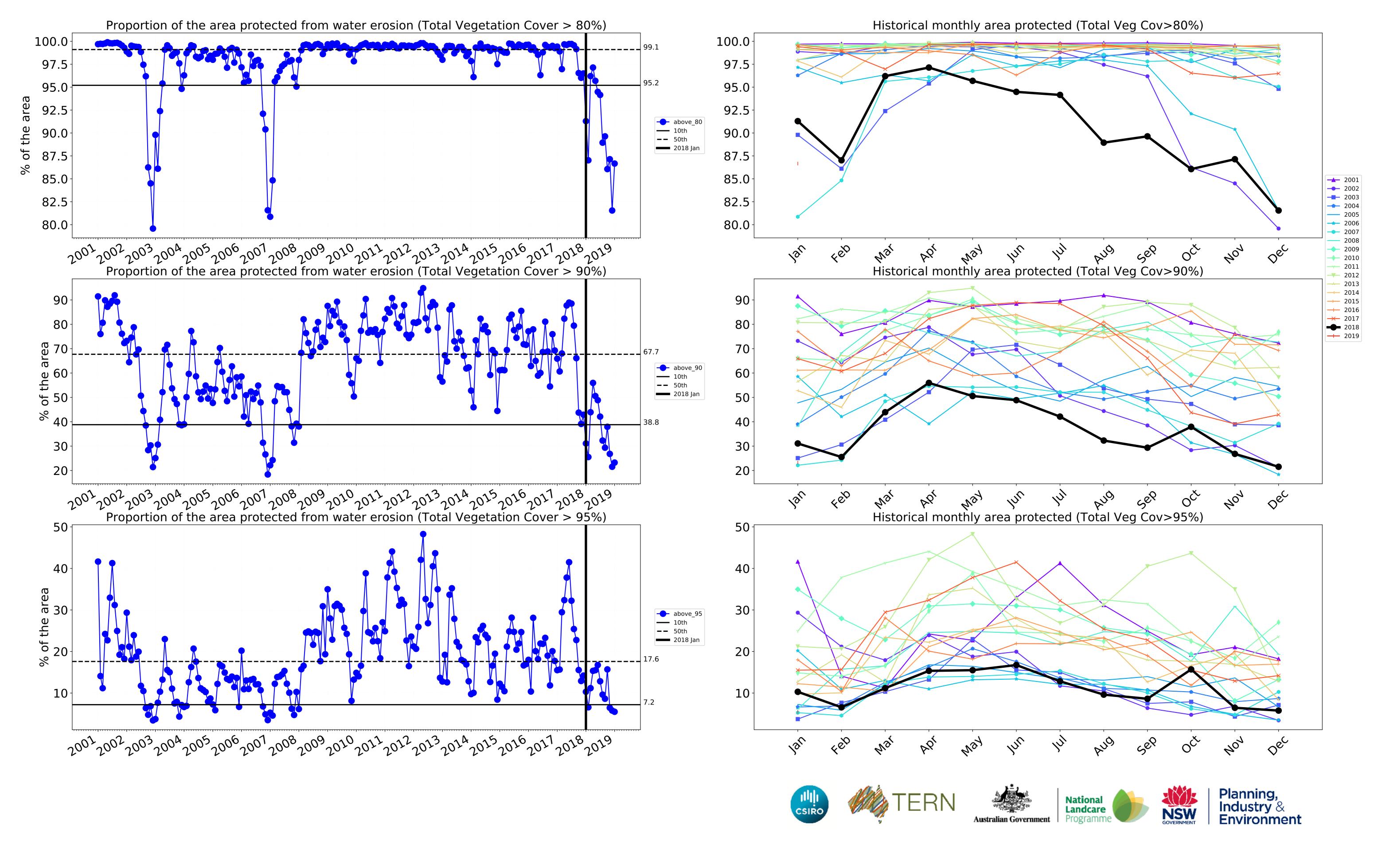




### **Grazing Woodland forest timeseries**





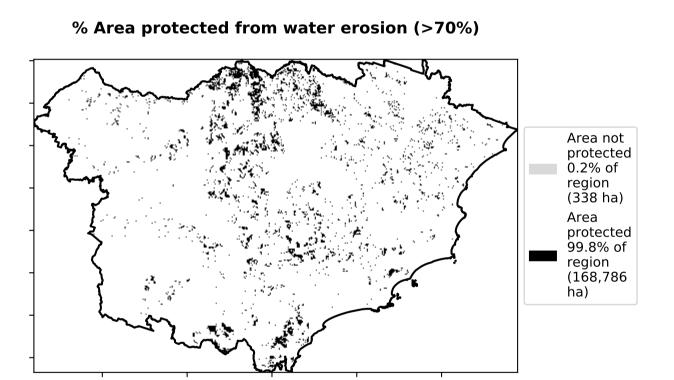


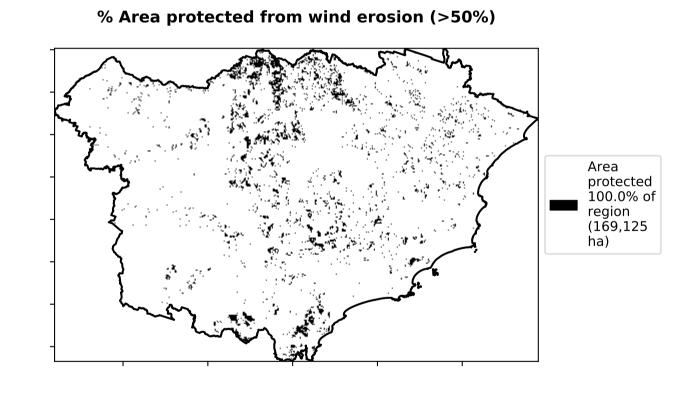
### **Grazing - Forest (non woodland)**

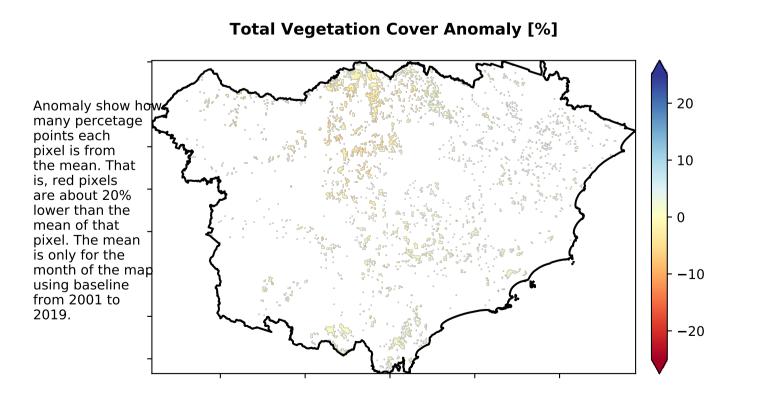
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Use of Australia (2018) Australia (2018) Australia (2018) I Agriculture - Grazing - Non-woodland forest 1 Agriculture - Grazing - Non-woodland forest

## Total Vegetation Cover [%]

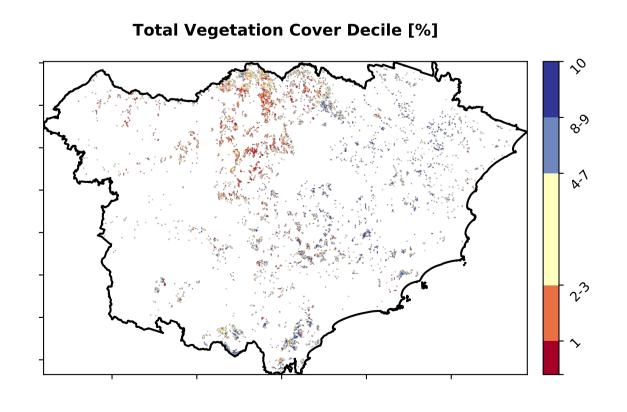
# Proportion of vegetation cover class in area 100 - 99.8% 80 - 99.8% 40 - 20 - 0.0% 0.0% 0.2% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class







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.





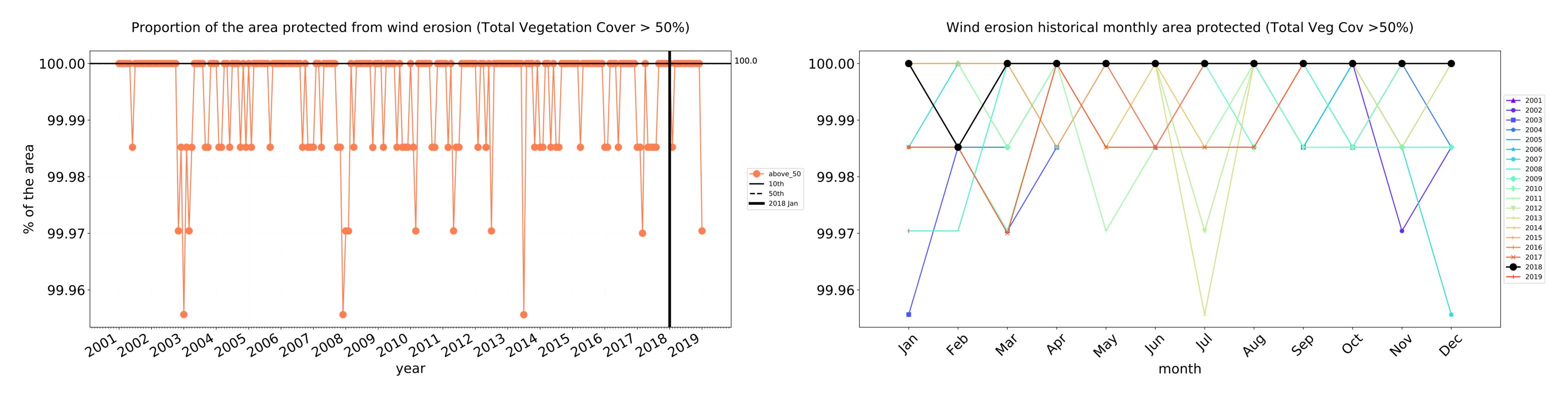


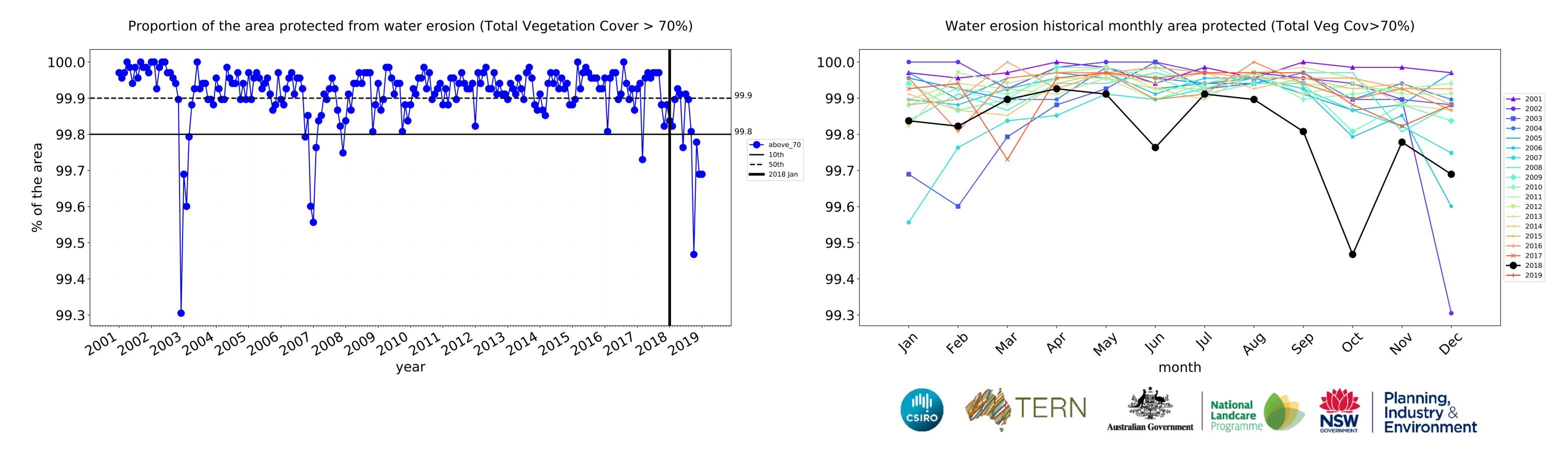


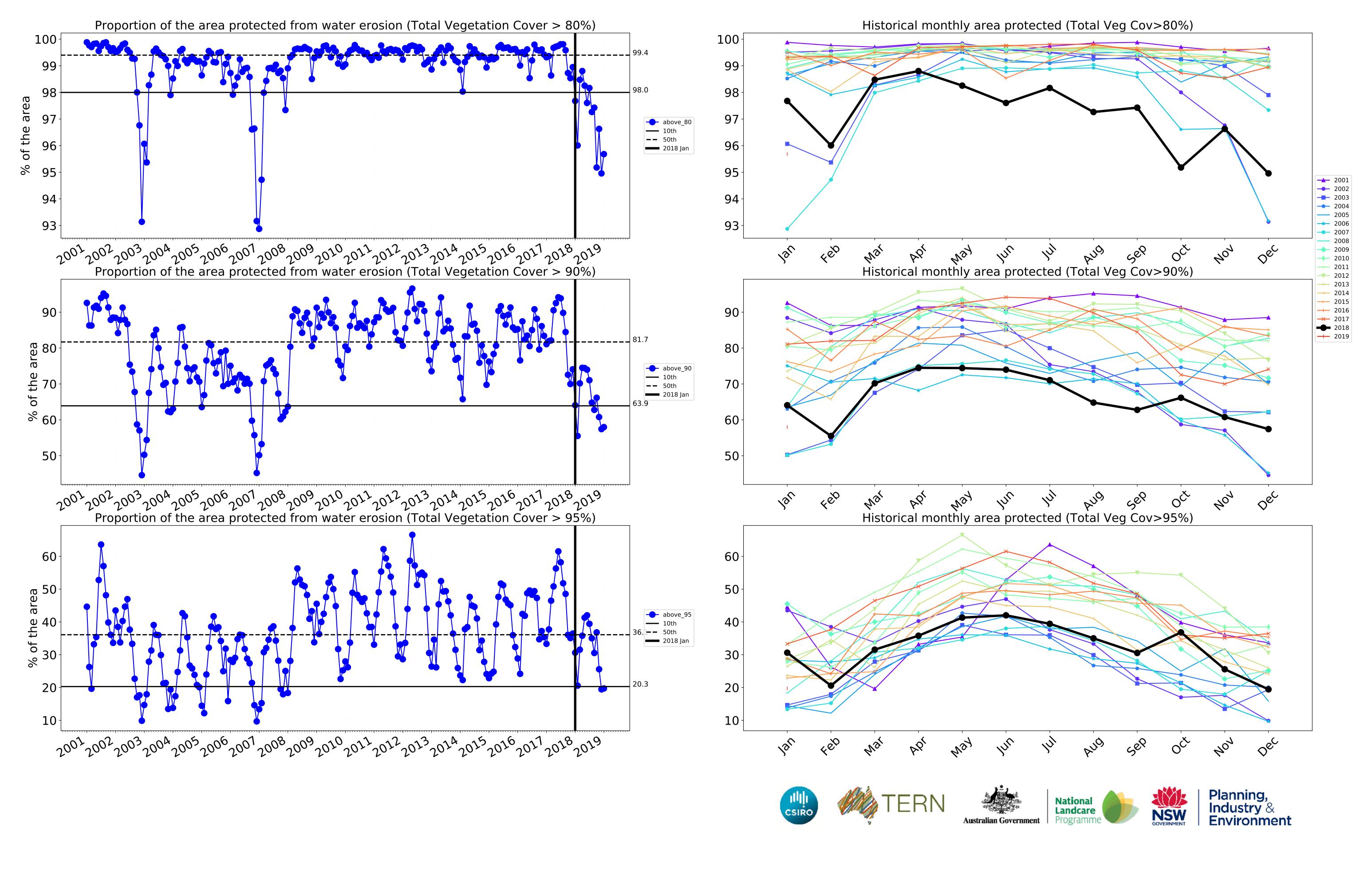






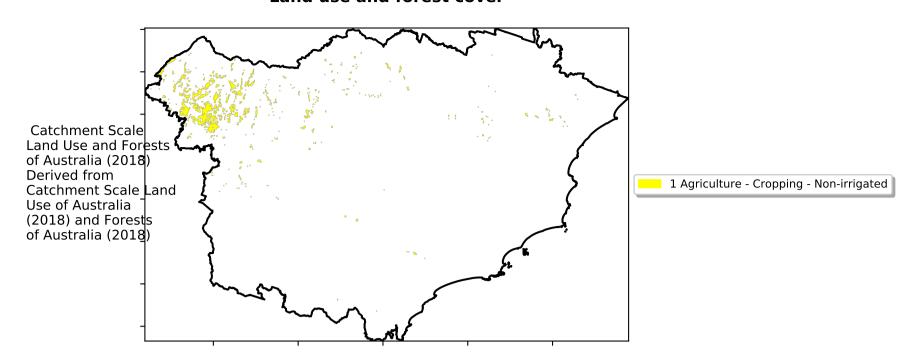




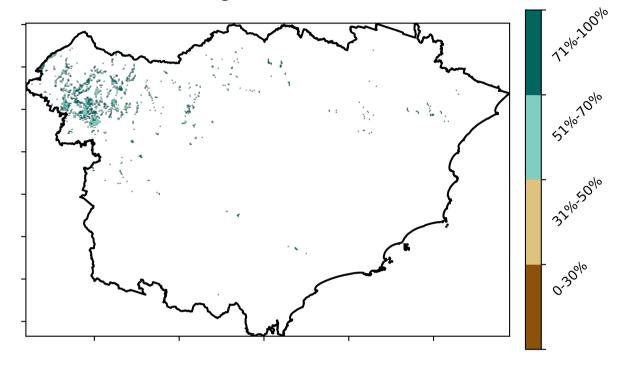


### **Cropping**

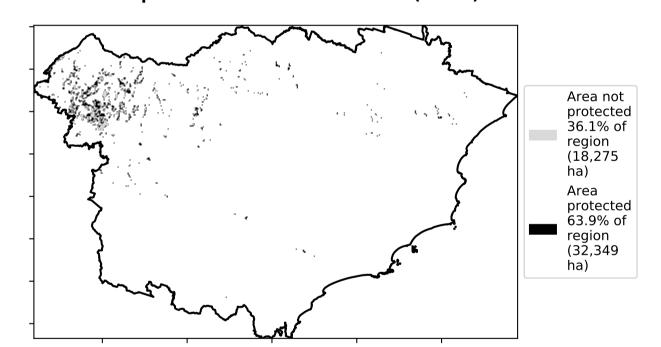
### Land use and forest cover



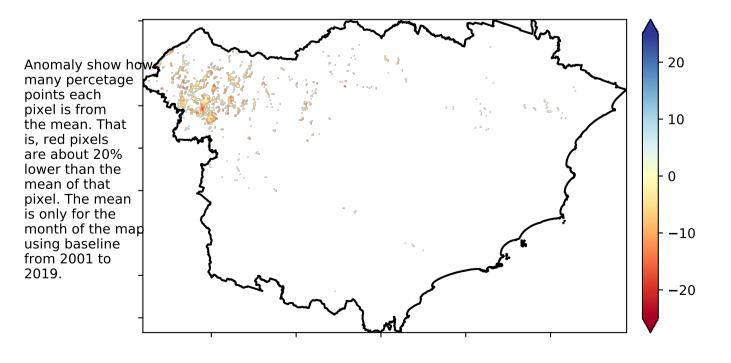
### Total Vegetation Cover [%]



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

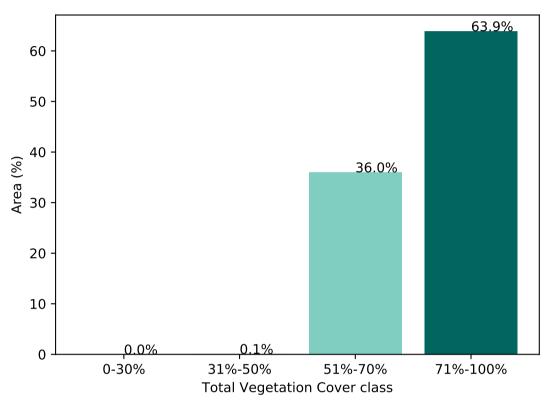


### Total Vegetation Cover Anomaly [%]

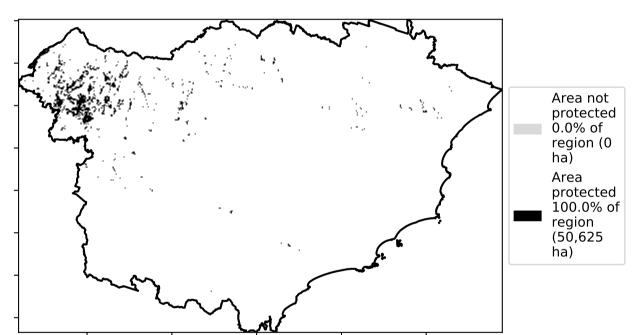


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

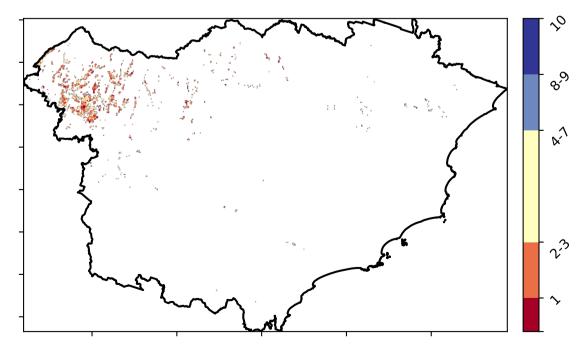
### Proportion of vegetation cover class in area



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



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







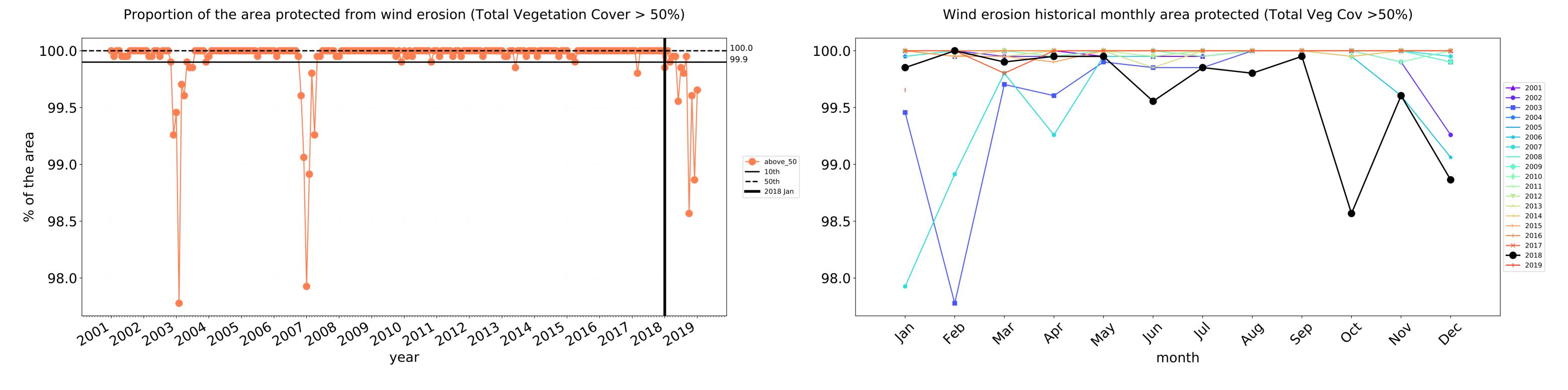


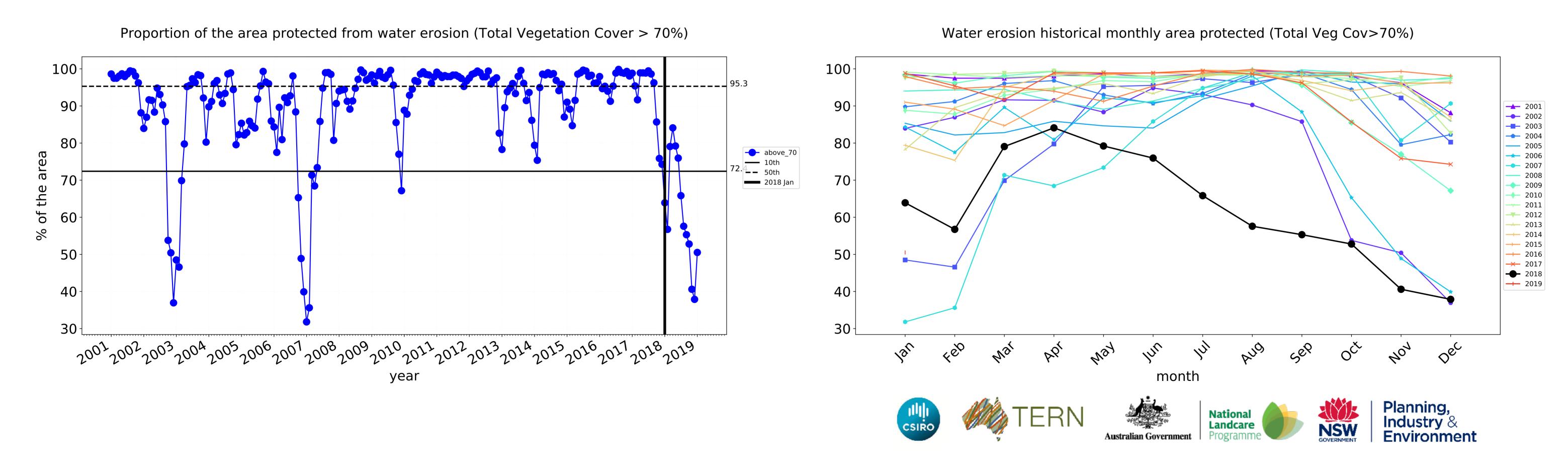


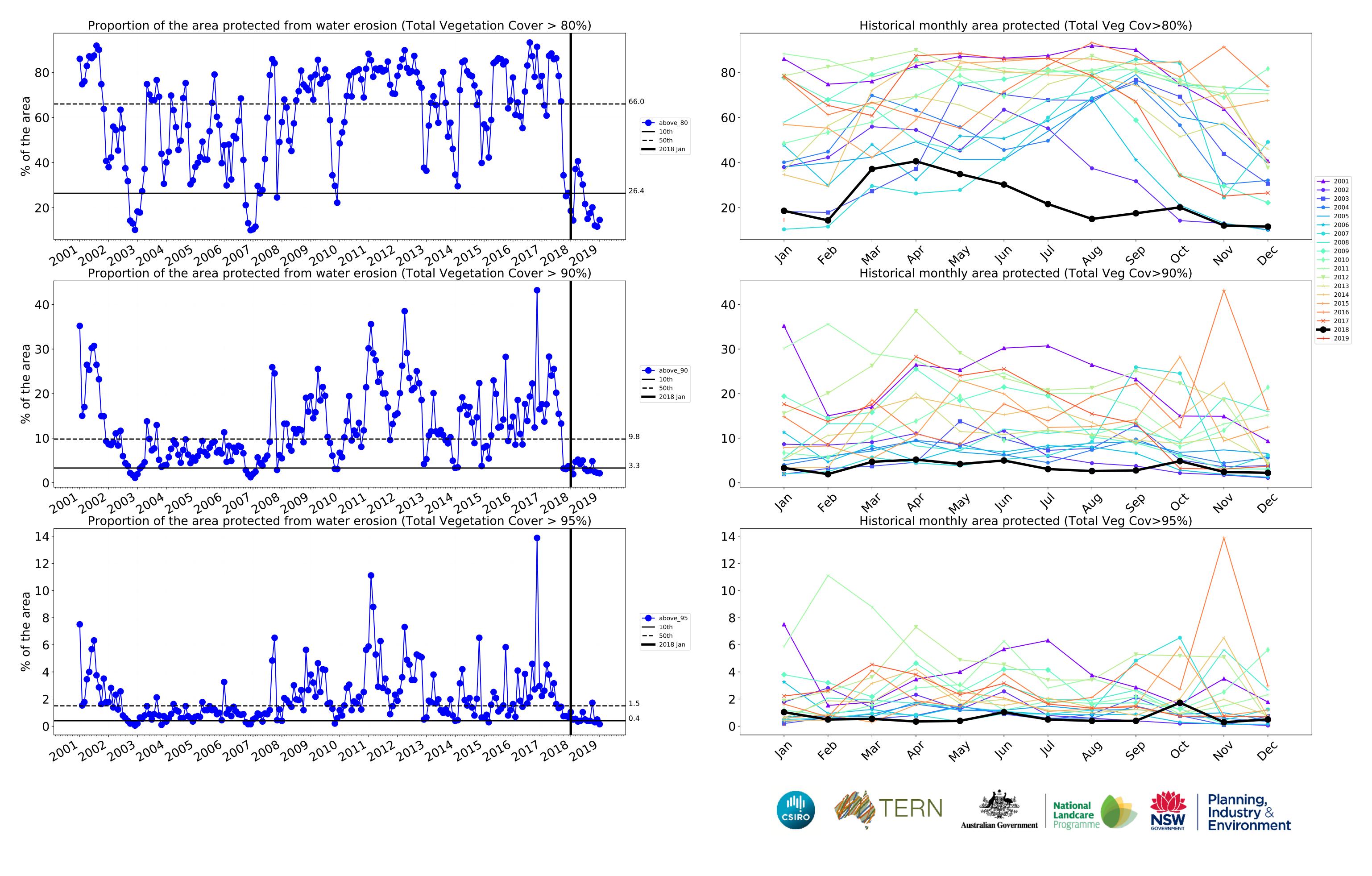




### **Cropping timeseries**





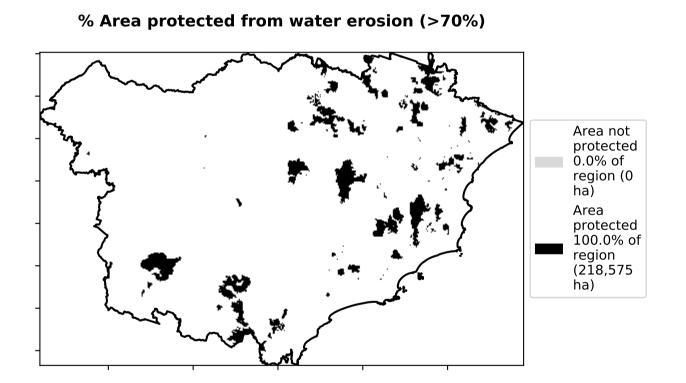


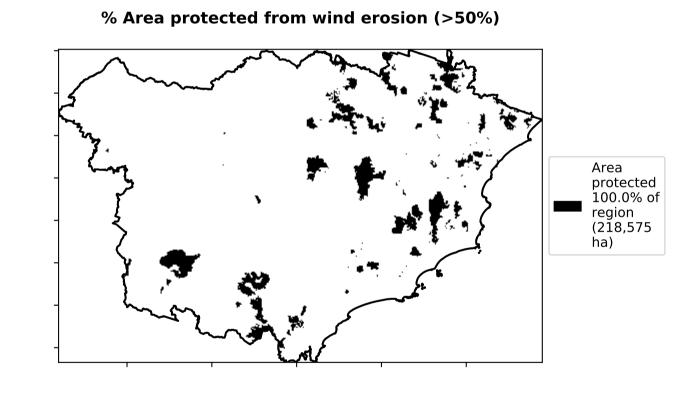
### **Production native forests and plantation forests**

### **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) 1 Production native forests and plantation forests

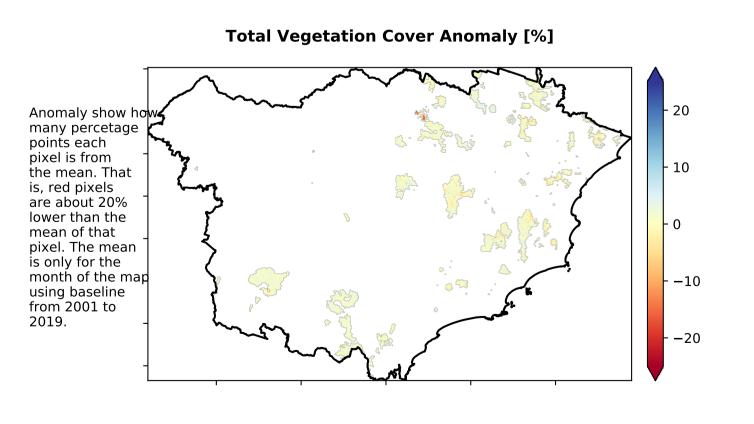
## **Total Vegetation Cover [%]**

### 100.0% 100 Area (%) 60 40 20 -0.0% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**

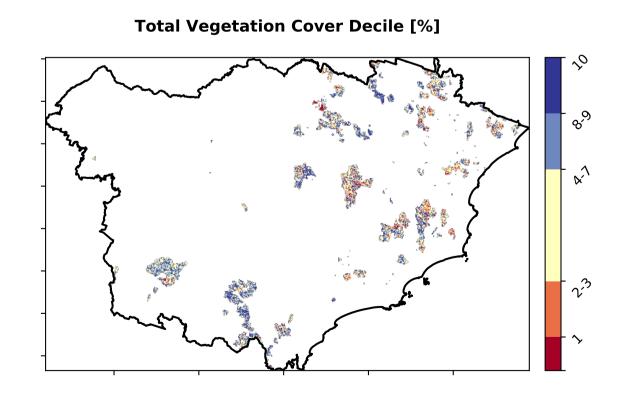




**Proportion of vegetation cover class in area** 



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.







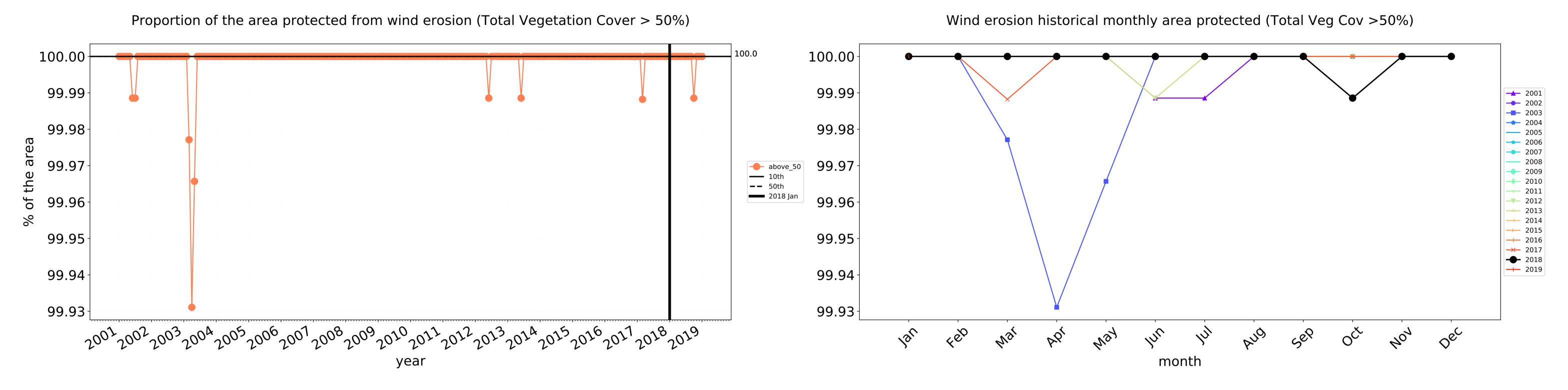


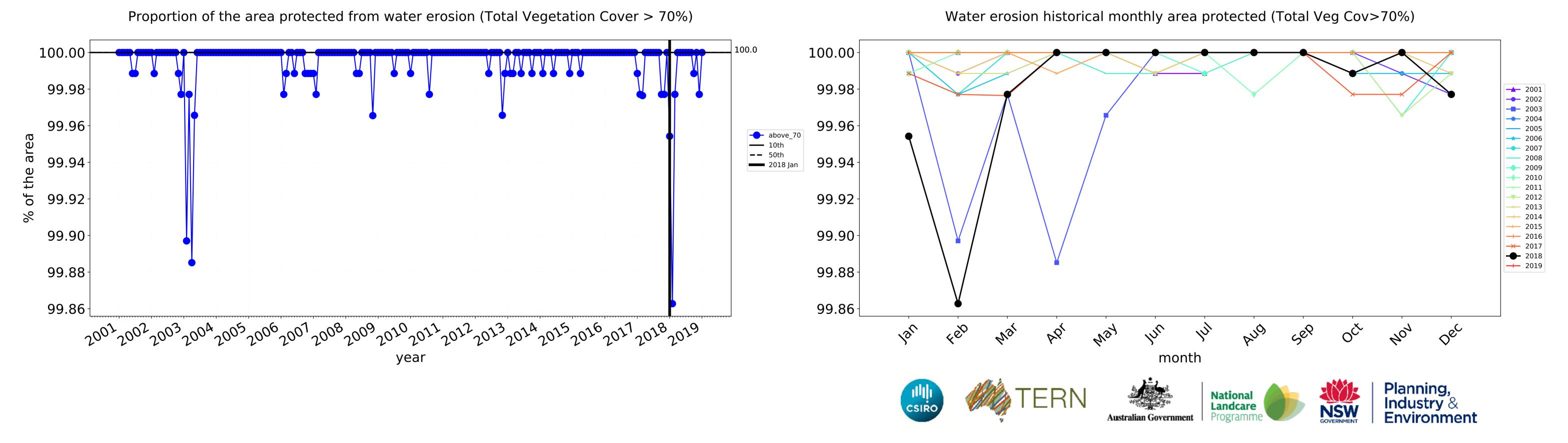


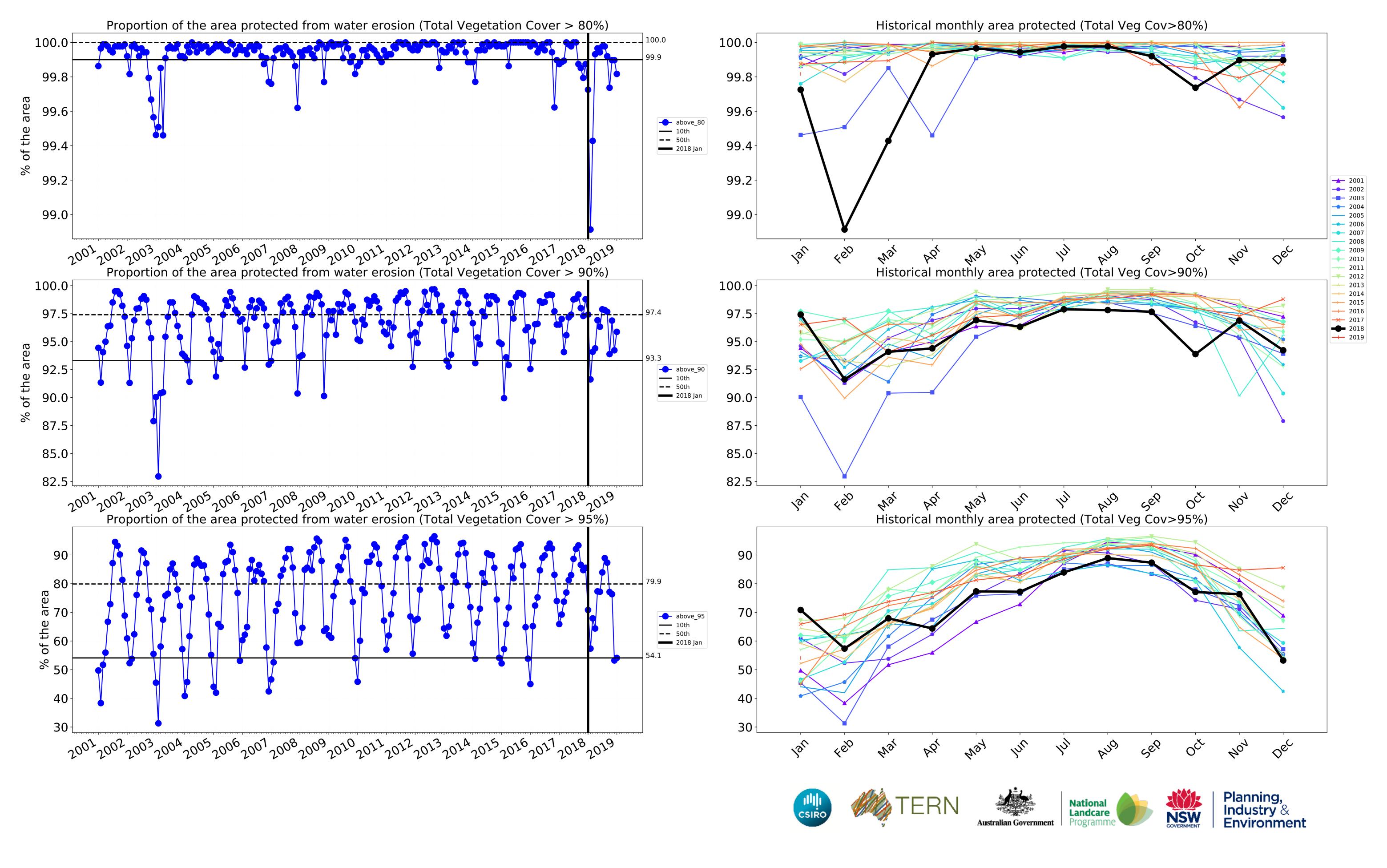




### **Production native forests and plantation forests timeseries**







### Hunter (3,238,925 ha and no data 61,500 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	3,238,925	99.9% 3,234,277	99.6% 3,225,406	97.2% 3,147,866	88.1% 2,854,999	61.2% 1,983,646	34.5% 1,117,166
Conservation and natural environments	1,241,575	99.9% 1,240,200	99.8% 1,239,550	99.6% 1,236,700	98.9% 1,228,125	87.8% 1,090,575	53.8% 667,500
Conservation and natural environments non forest	29,900	95.5% 28,550	94.0% 28,100	90.7% 27,125	85.7% 25,625	66.2% 19,800	28.9% 8,650
Conservation and natural environments Woodland forest	138,925	100.0% 138,925	100.0% 138,900	99.8% 138,675	97.5% 135,425	77.9% 108,200	32.7% 45,475
Conservation and natural environments Forest (non woodland)	1,072,750	100.0% 1,072,725	100.0% 1,072,550	99.8% 1,070,900	99.5% 1,067,075	89.7% 962,575	57.2% 613,375
Agriculture	1,580,525	100.0% 1,580,475	100.0% 1,580,150	97.2% 1,535,800	82.1% 1,297,750	40.0% 632,150	17.7% 279,450
Grazing	1,502,525	100.0% 1,502,475	100.0% 1,502,225	98.4% 1,478,550	84.9% 1,276,375	41.9% 629,375	18.6% 278,775
Grazing non forest	1,212,800	100.0% 1,212,750	100.0% 1,212,525	98.1% 1,189,675	82.5% 1,001,075	39.9% 483,525	17.7% 214,550
Grazing Woodland forest	120,600	100.0% 120,600	100.0% 120,575	99.5% 120,025	91.3% 110,100	31.1% 37,500	10.3% 12,425
Grazing - Forest (non woodland)	169,125	100.0% 169,125	100.0% 169,125	99.8% 168,850	97.7% 165,200	64.1% 108,350	30.6% 51,800
Cropping	50,625	100.0% 50,625	99.9% 50,550	63.9% 32,350	18.6% 9,425	3.3% 1,675	1.0% 525
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,475	99.7% 217,975	97.4% 212,925	70.8% 154,800











