### 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: December 2016** 

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







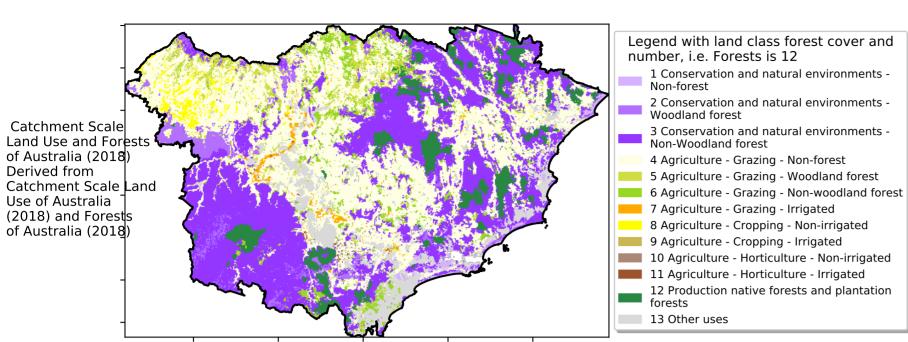




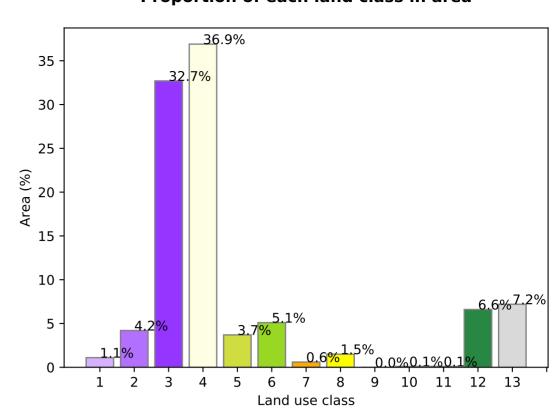


### **Vegetation Cover Dec 2016**

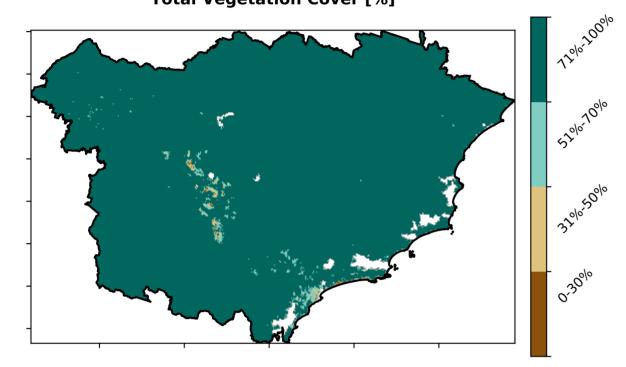
### Land use and forest cover



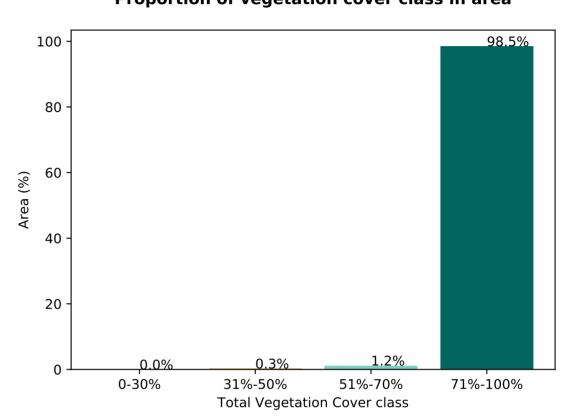
### Proportion of each land class in area



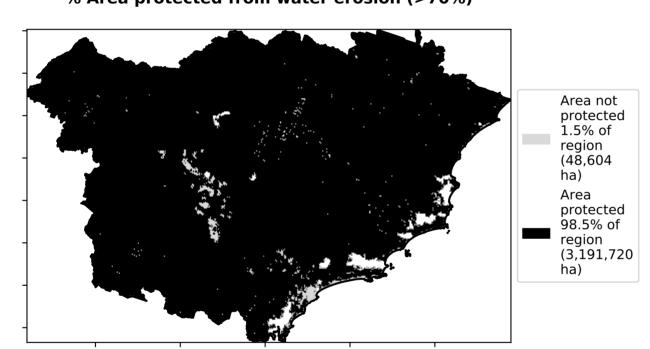
### Total Vegetation Cover [%]



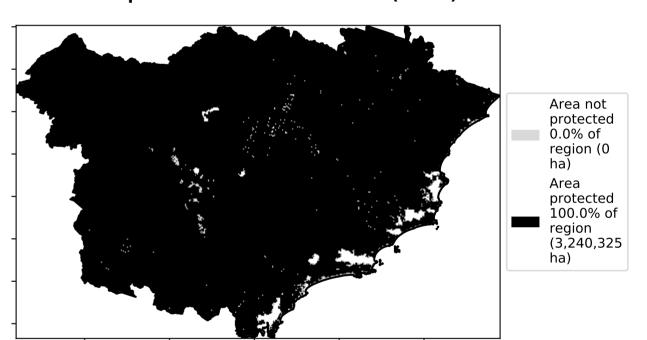
Proportion of vegetation cover class in area



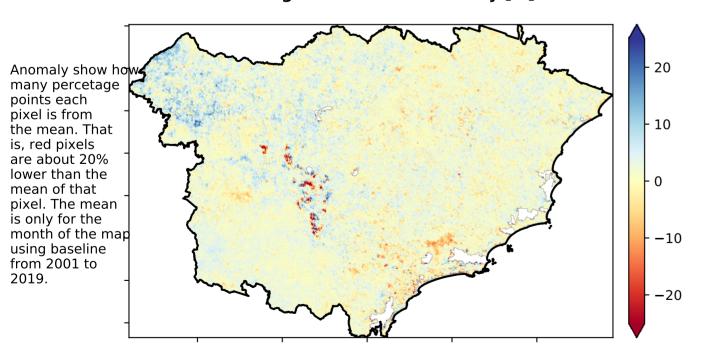
### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

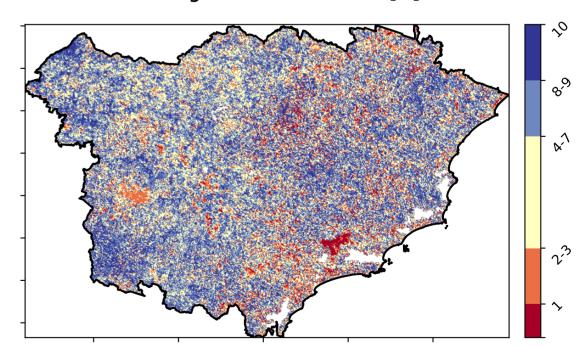


### Total Vegetation Cover Anomaly [%]



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 [%]**





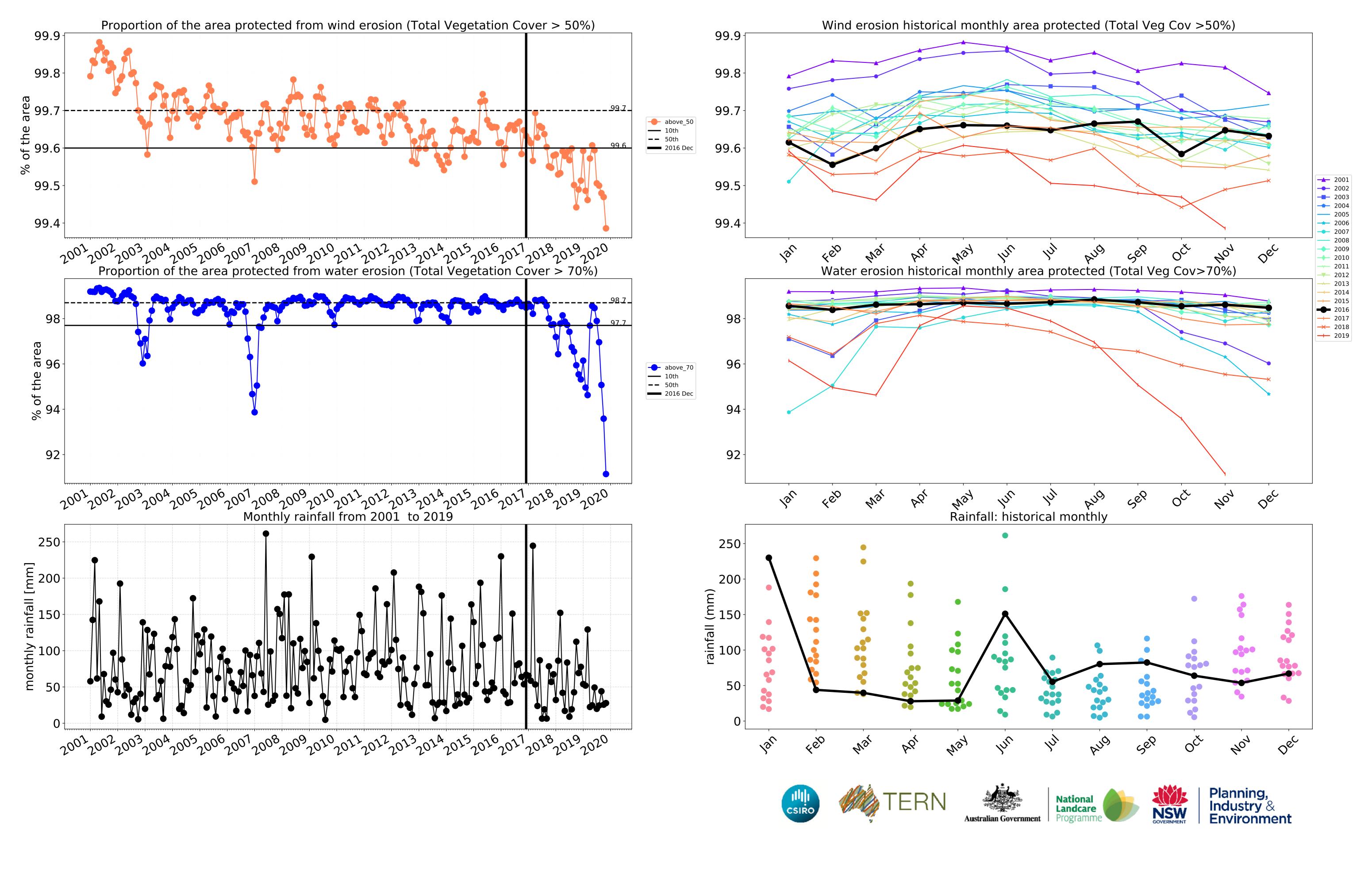


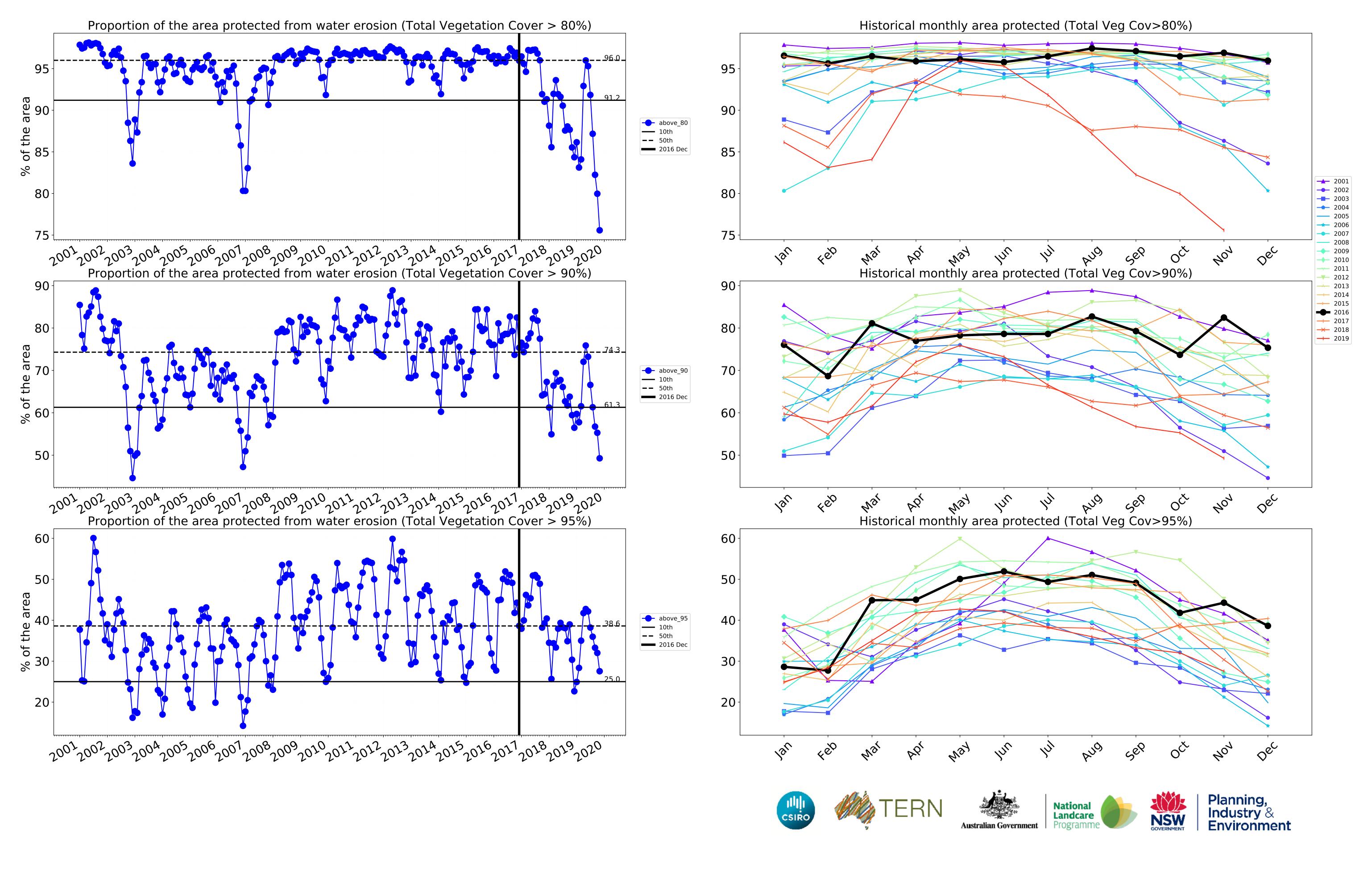




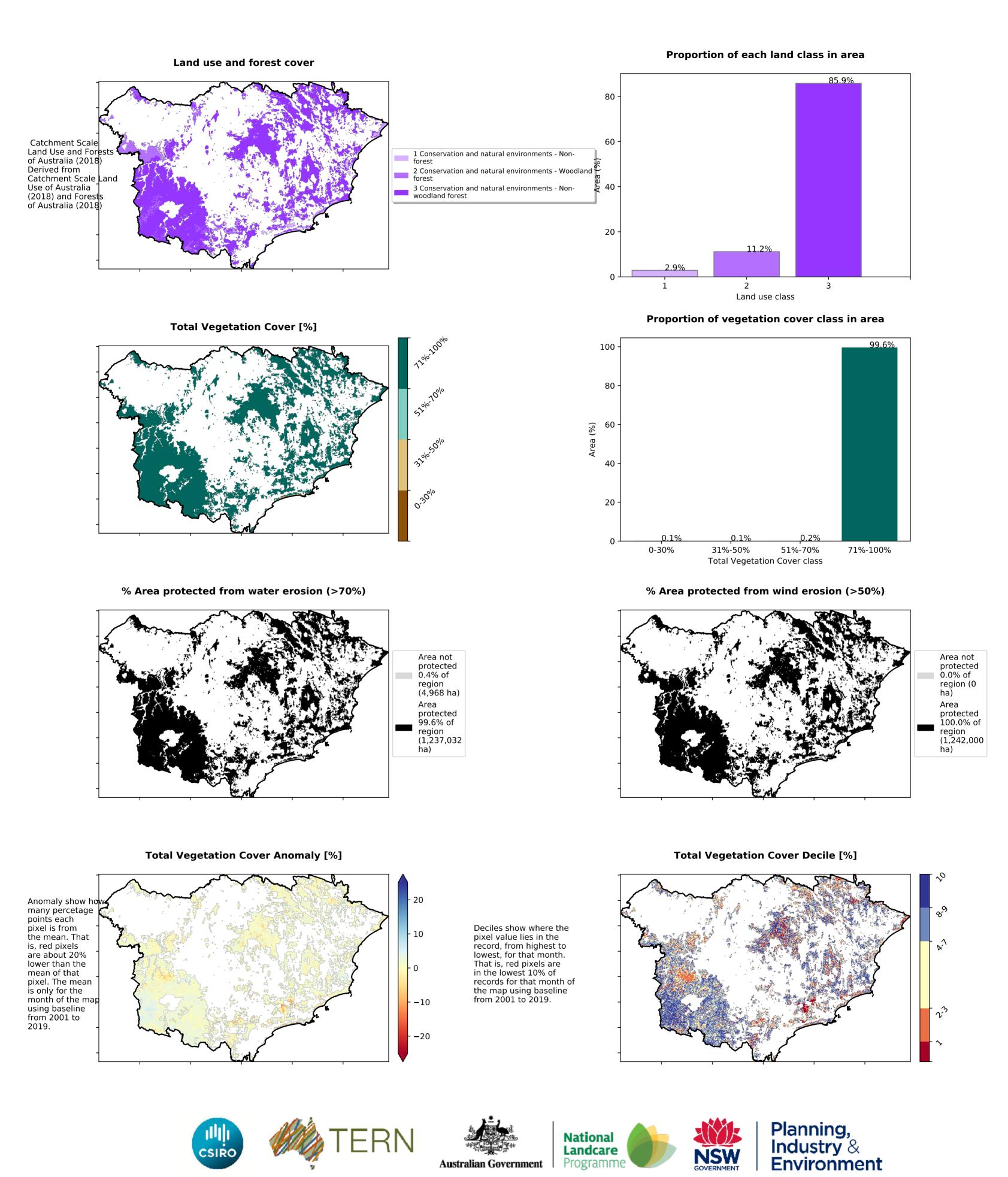




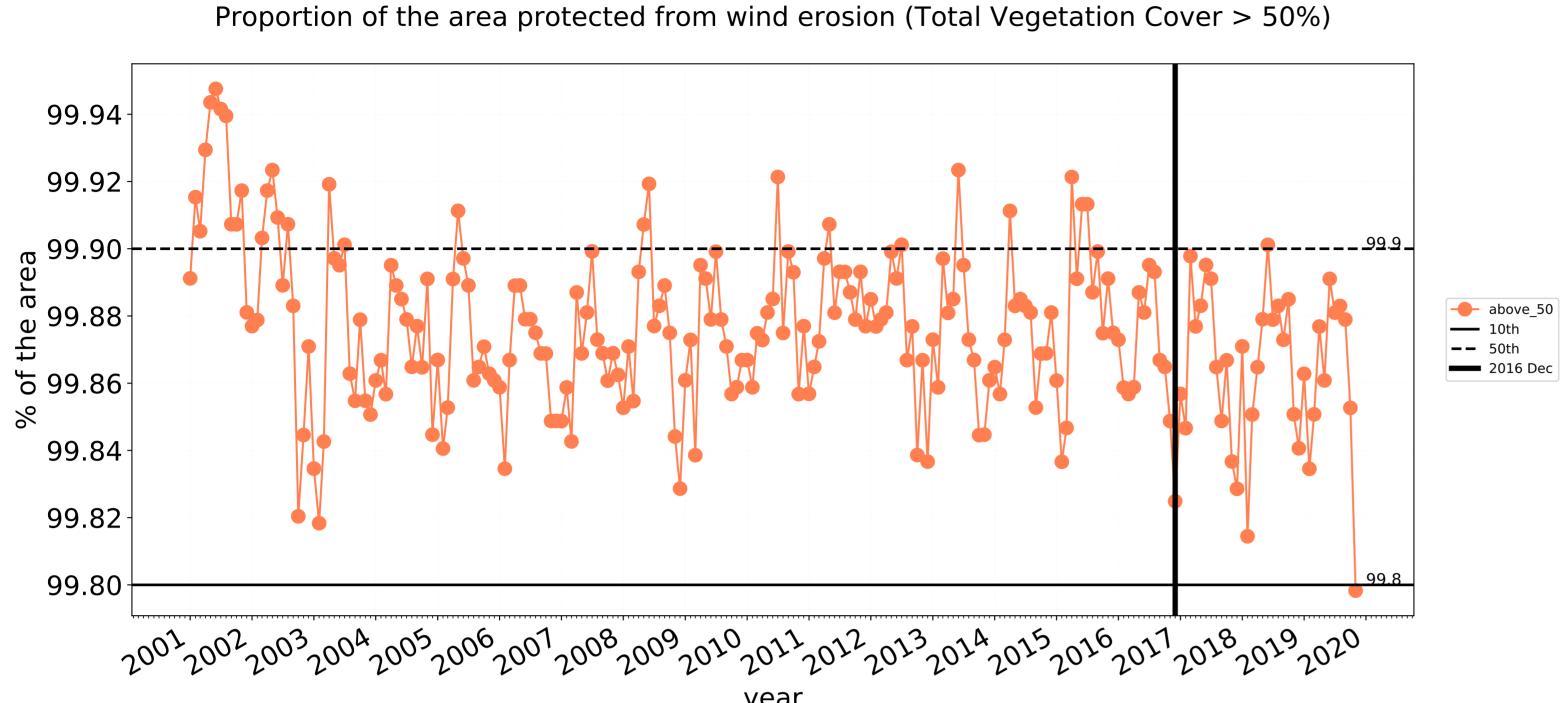


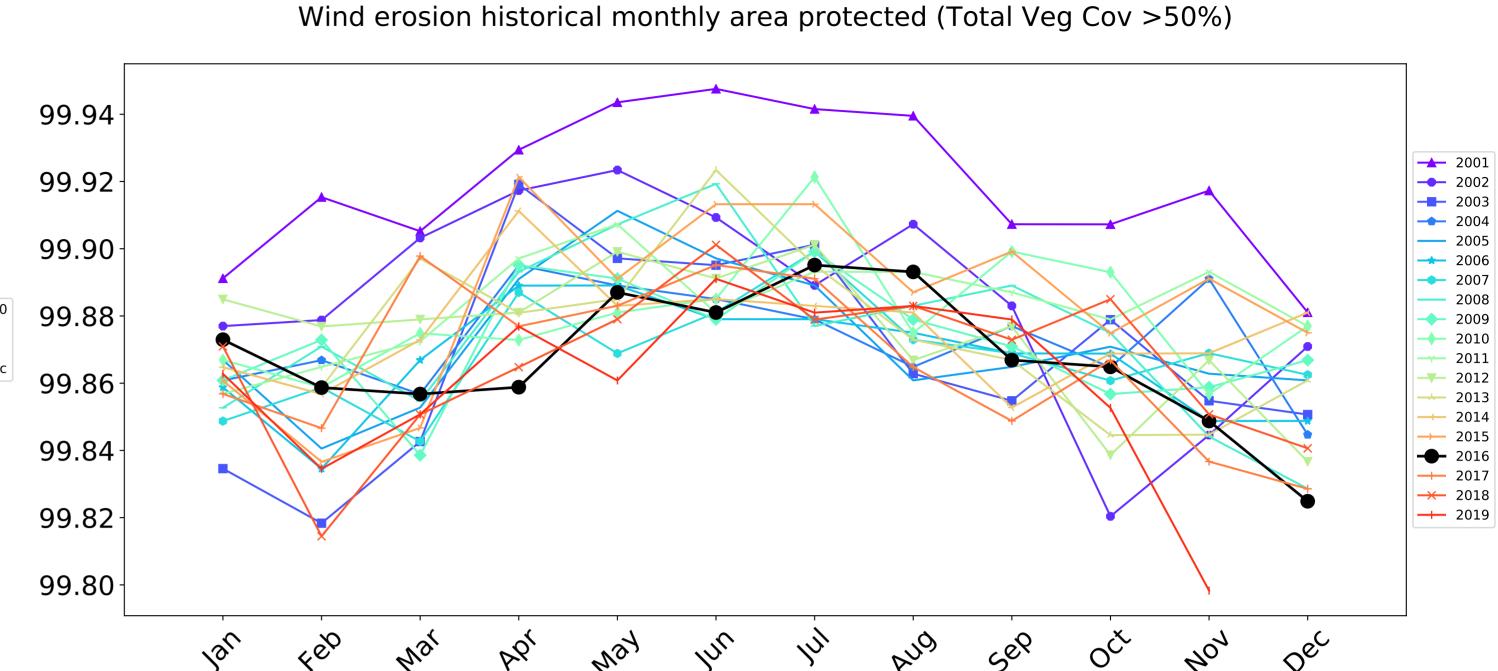


### **Conservation and natural environments**

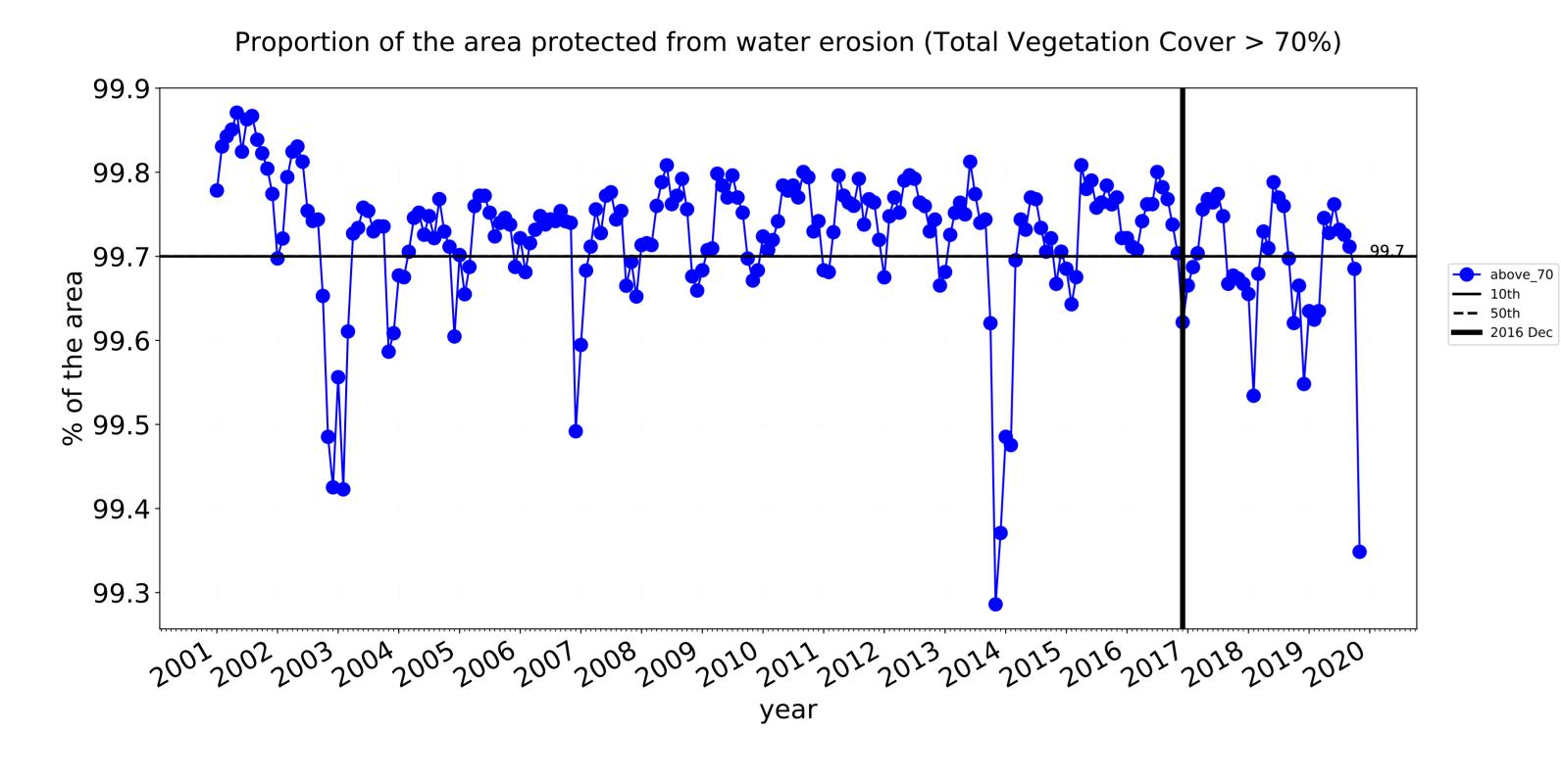


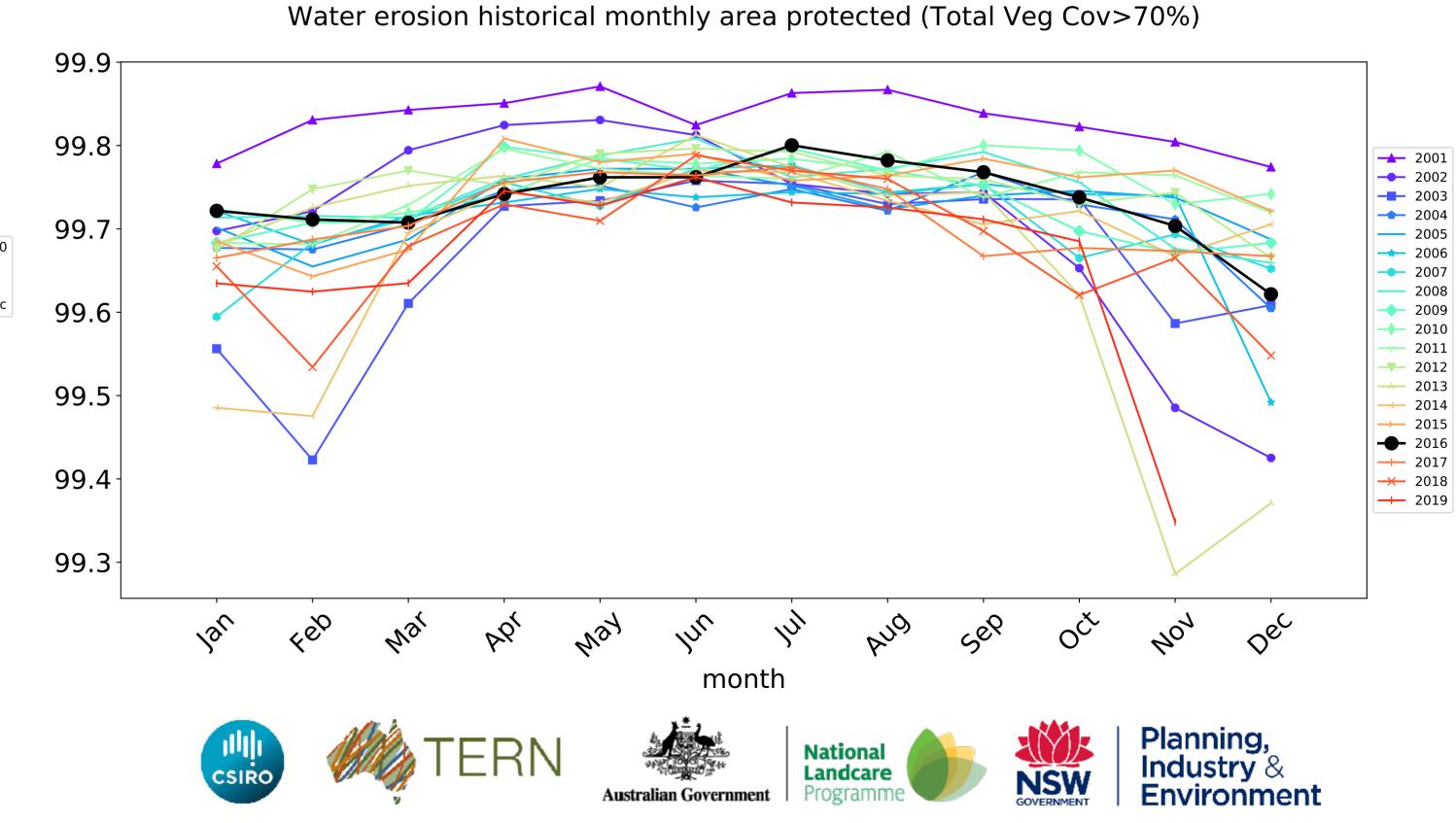
### **Conservation and natural environments timeseries**

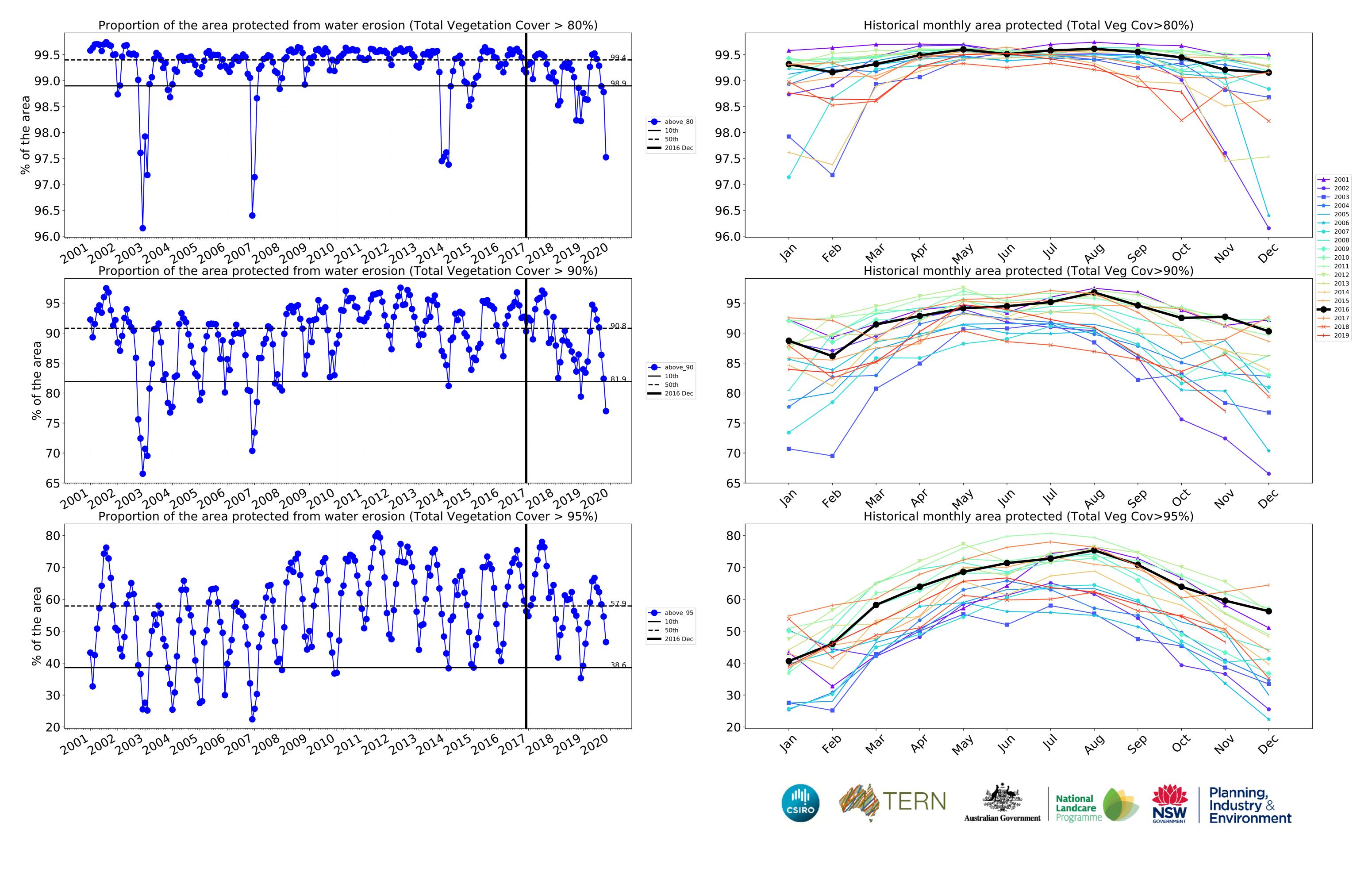




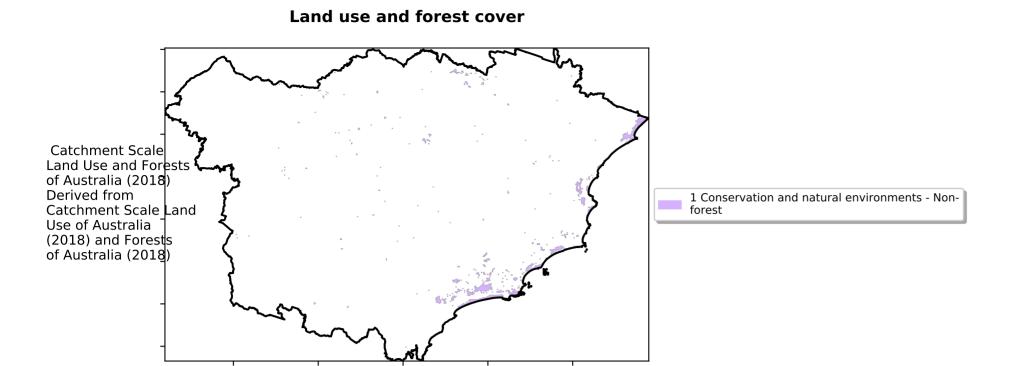
month





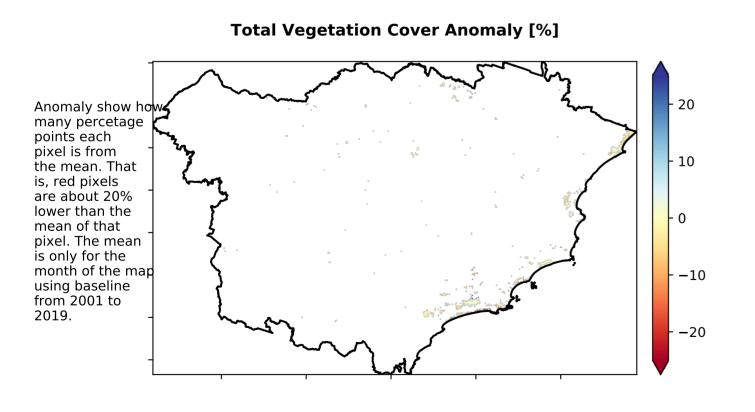


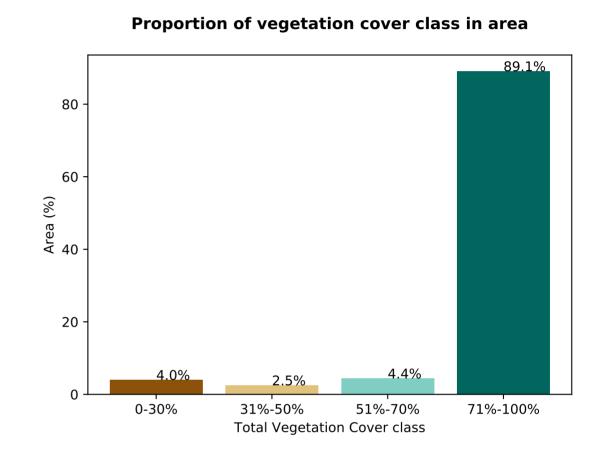
### **Conservation and natural environments non forest**

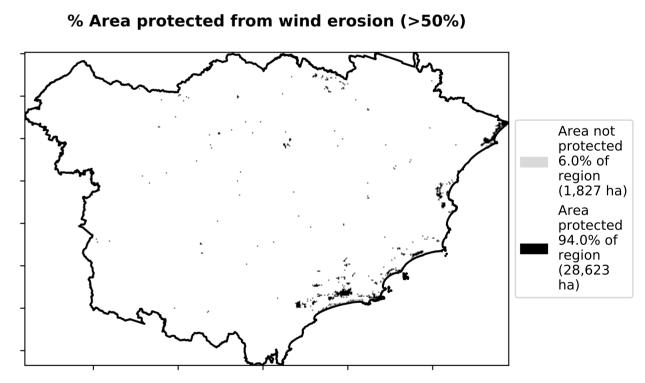


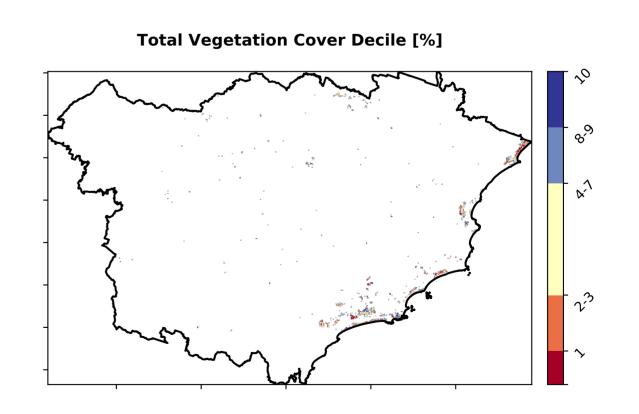
### Total Vegetation Cover [%]

### Area not protected 10.9% of region (3,319 ha) Area protected 10.9% of region (27,130 ha)













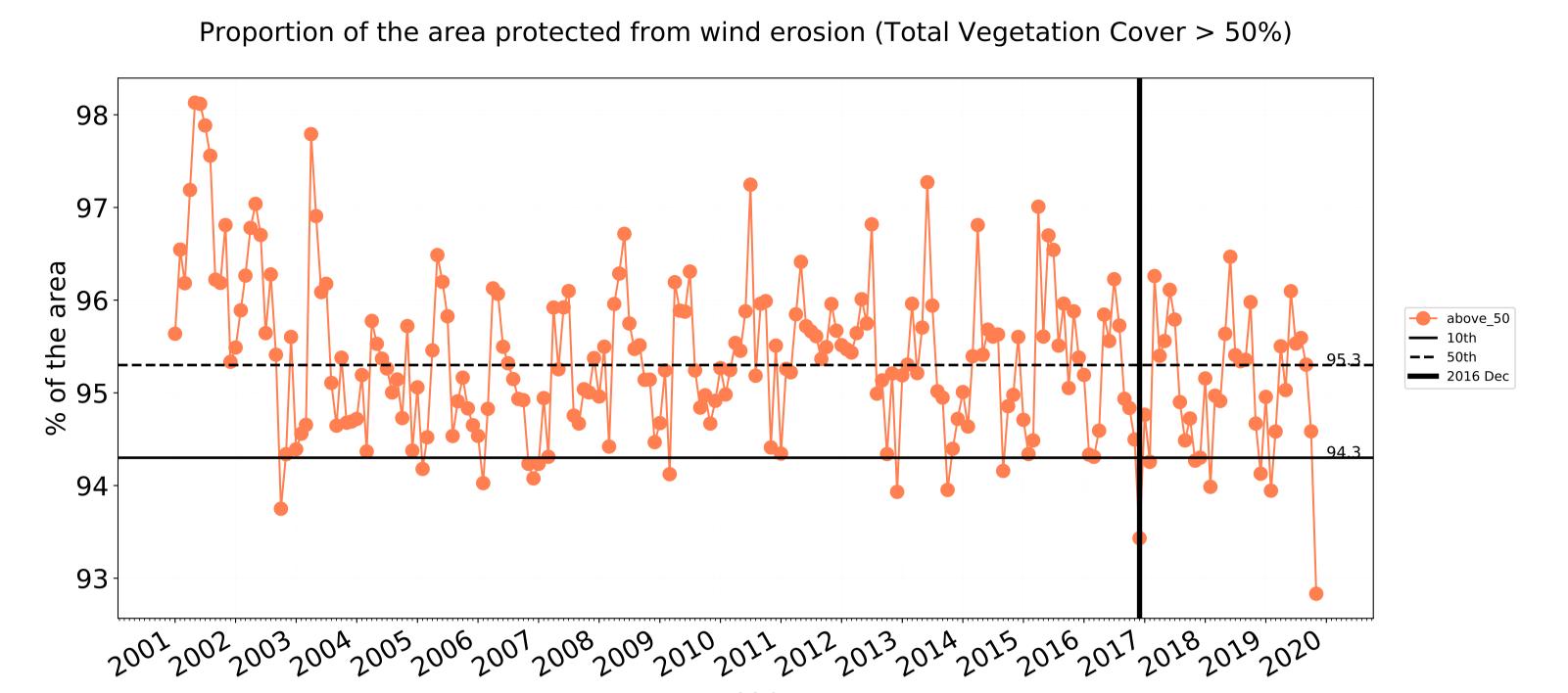




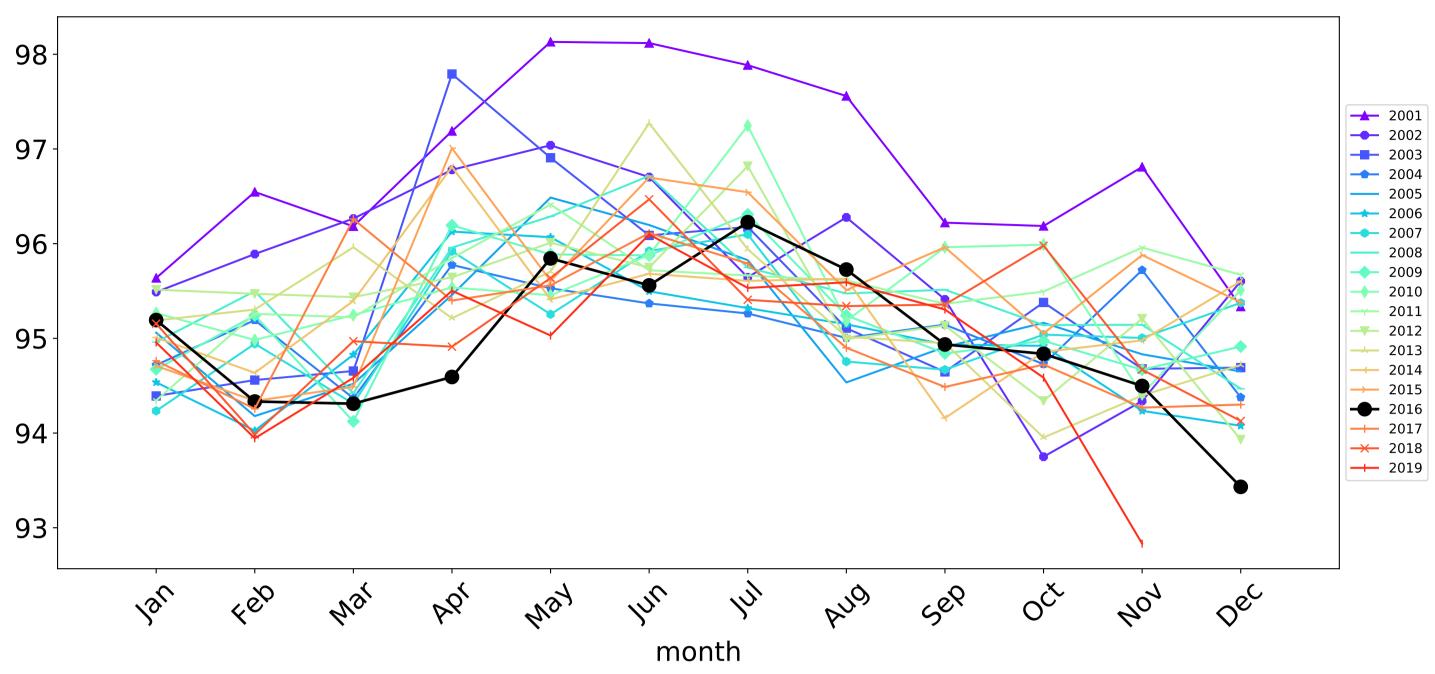


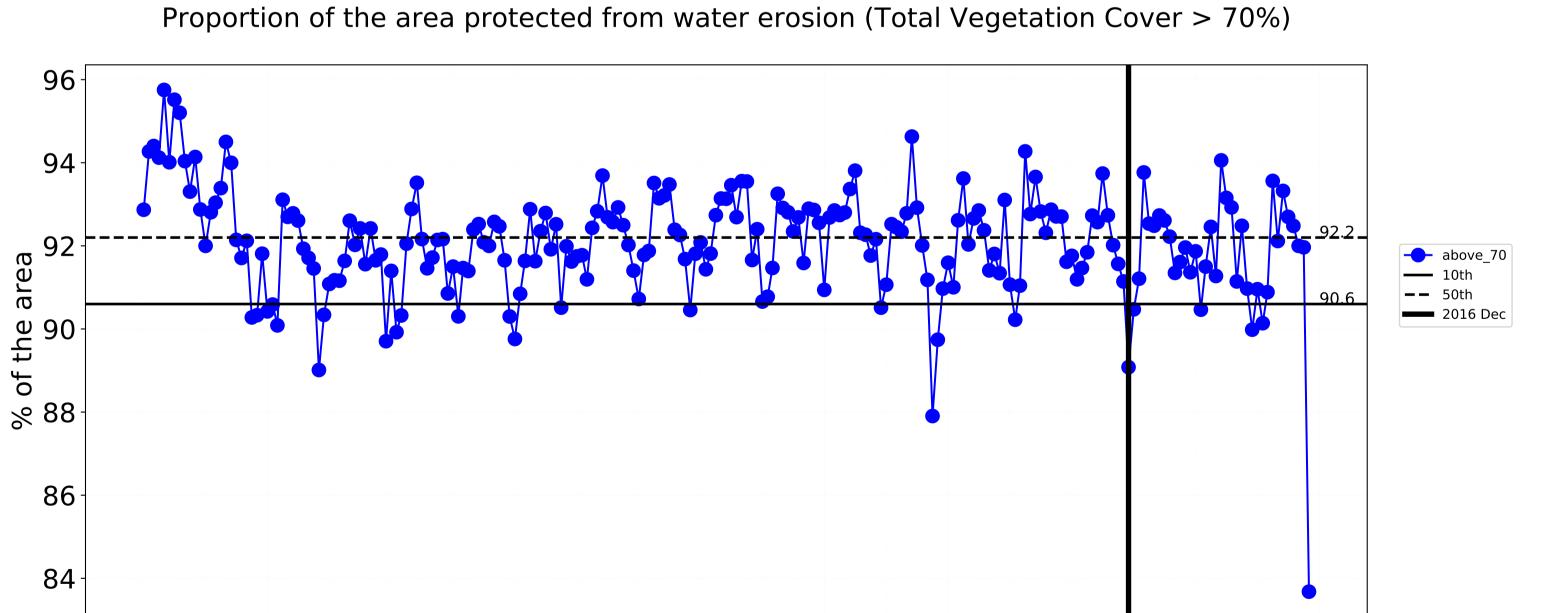


### **Conservation and natural environments non forest timeseries**



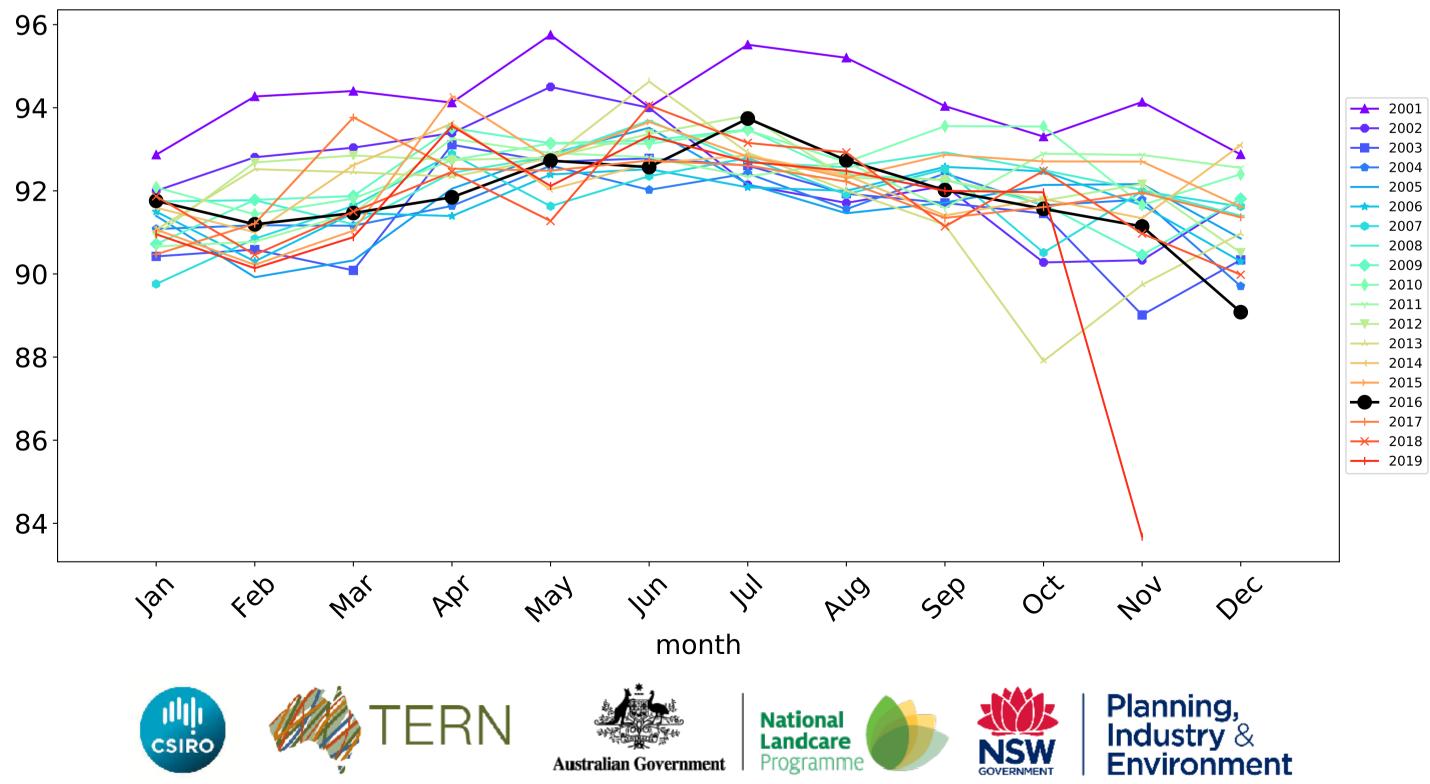


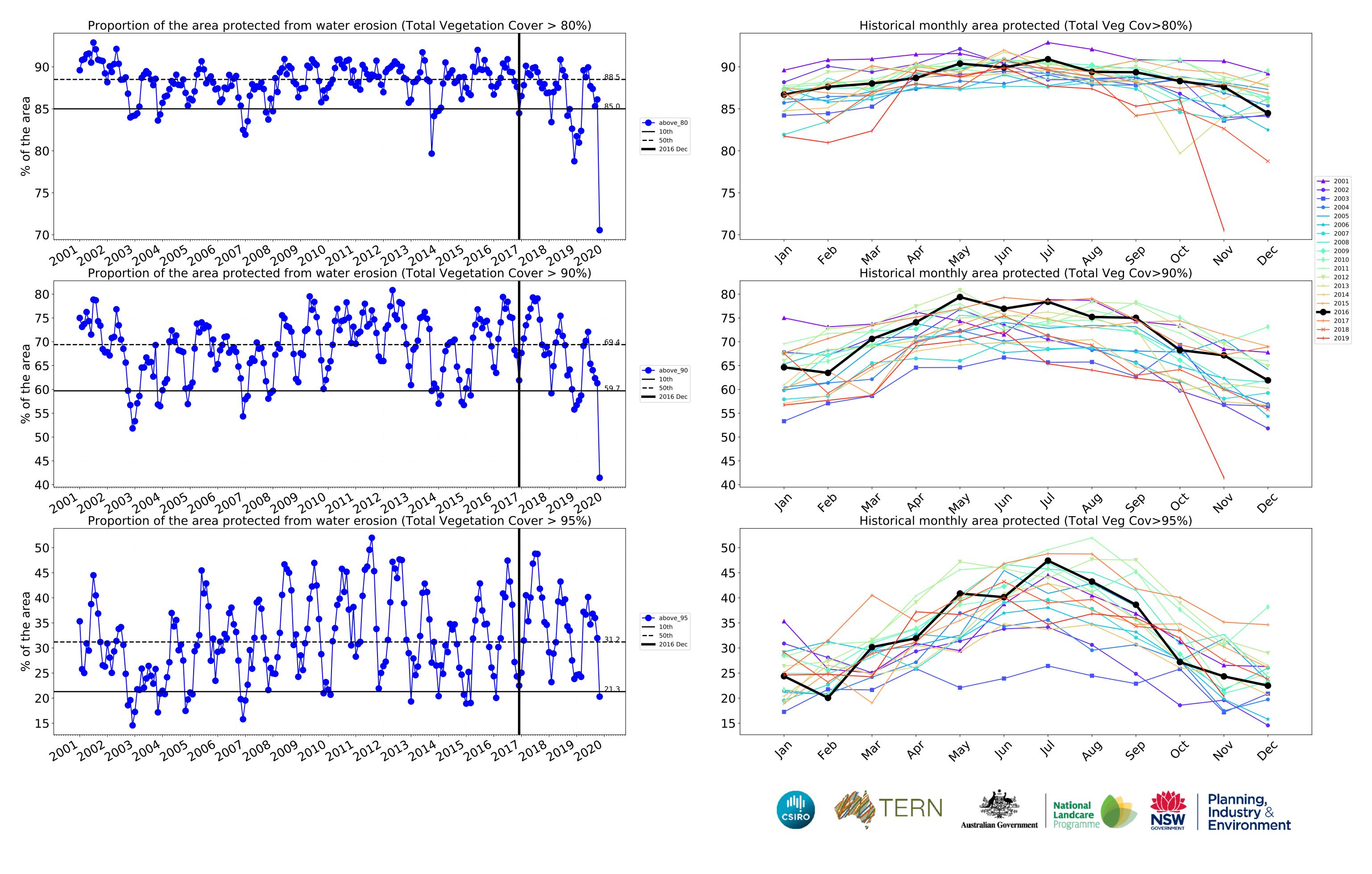




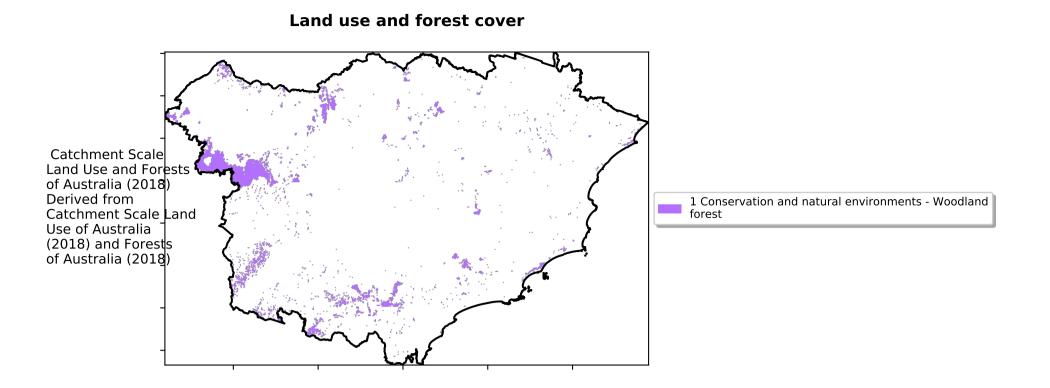
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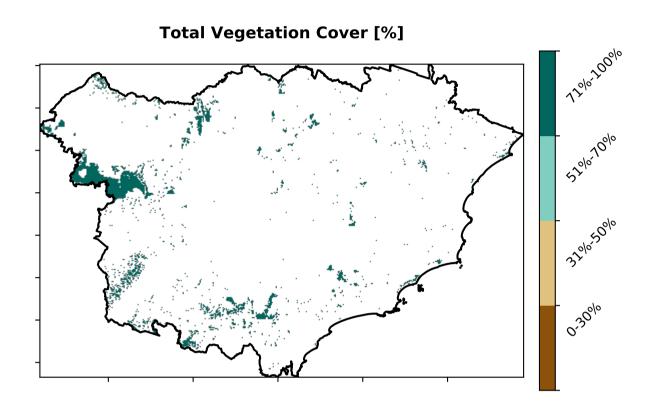
### Water erosion historical monthly area protected (Total Veg Cov>70%)

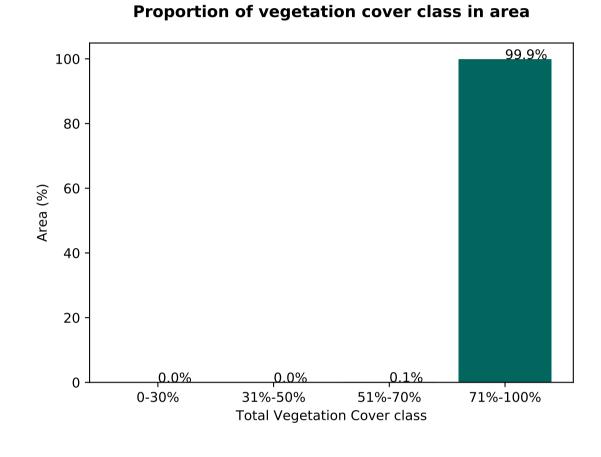


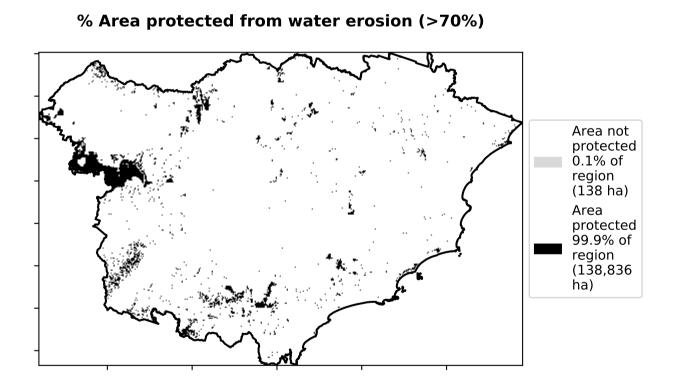


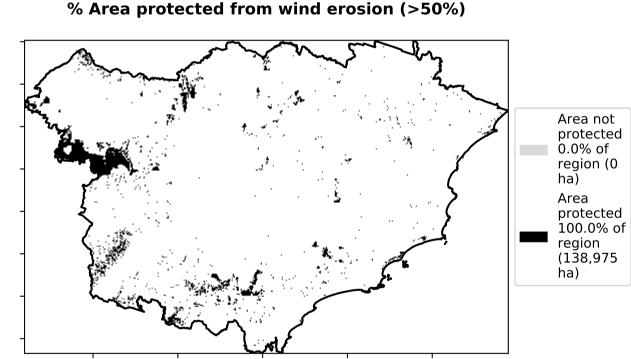
### **Conservation and natural environments Woodland forest**

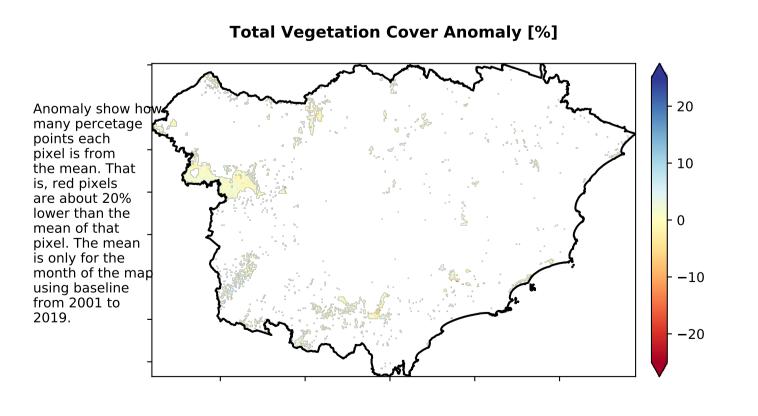


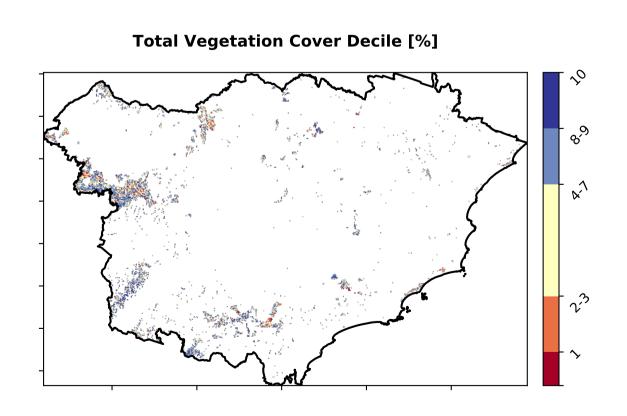
















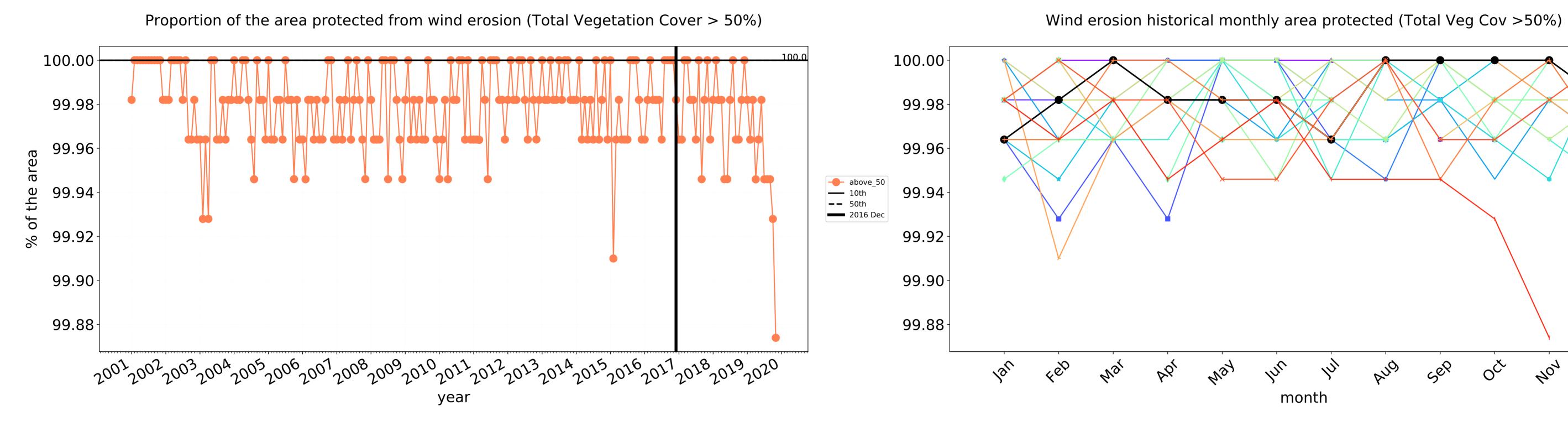


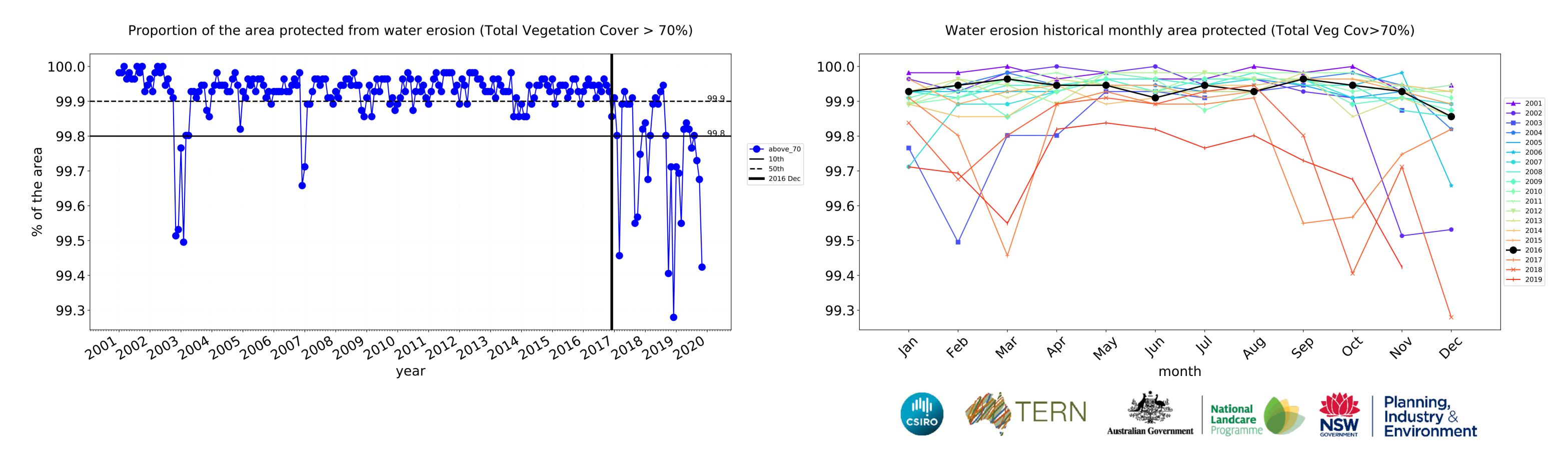




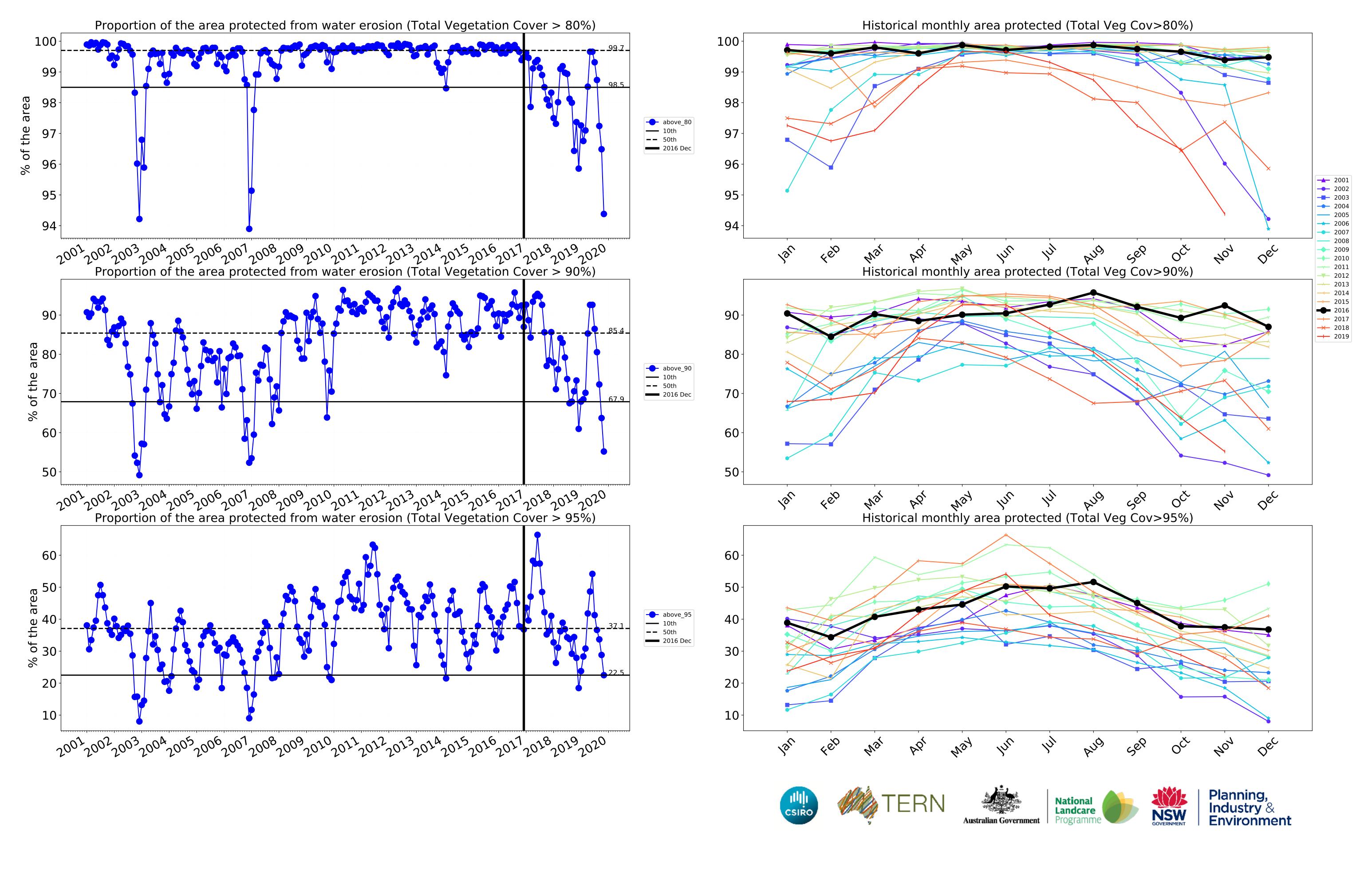


### Conservation and natural environments Woodland forest timeseries

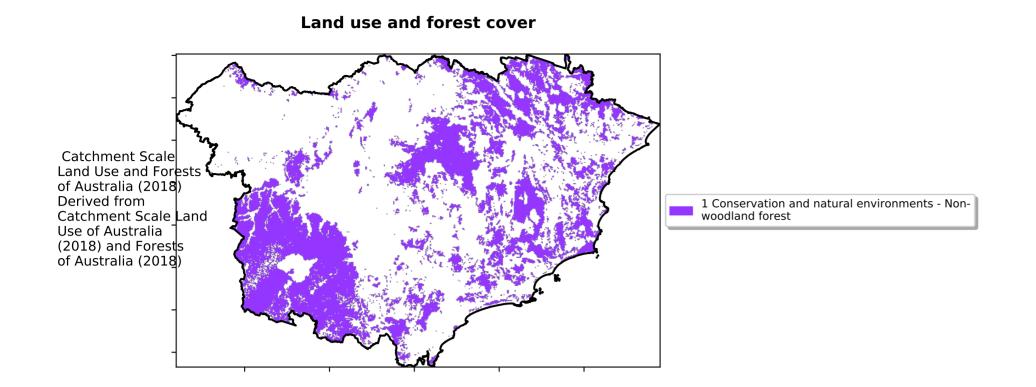




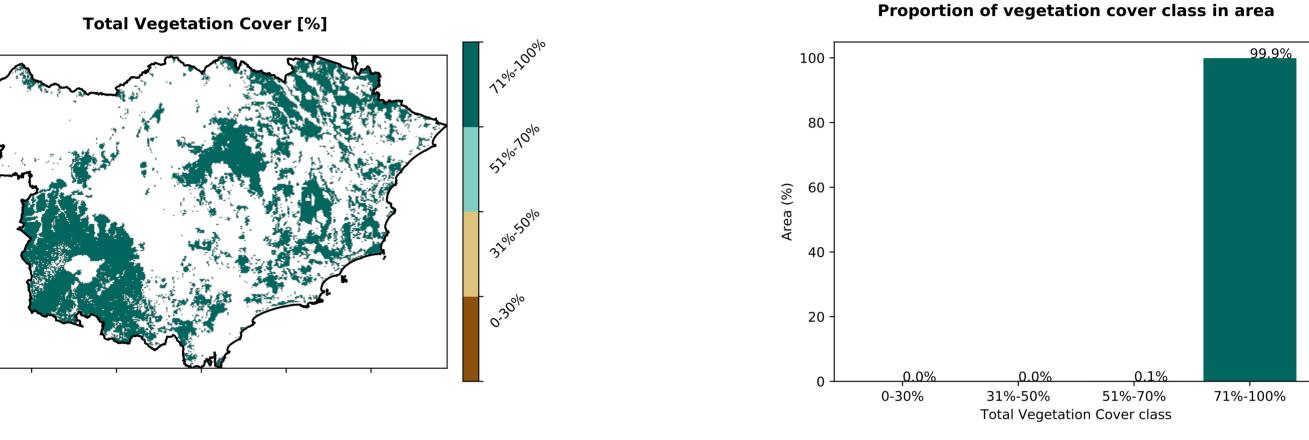
→ 2018
→ 2019

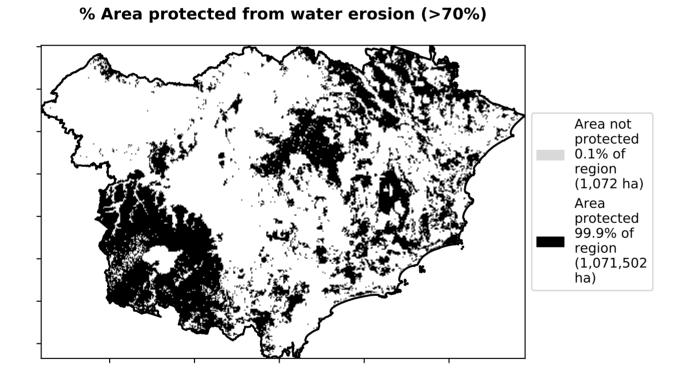


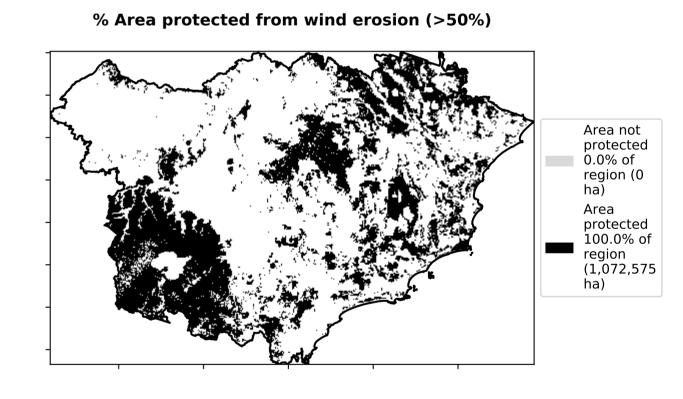
### **Conservation and natural environments Forest (non woodland)**

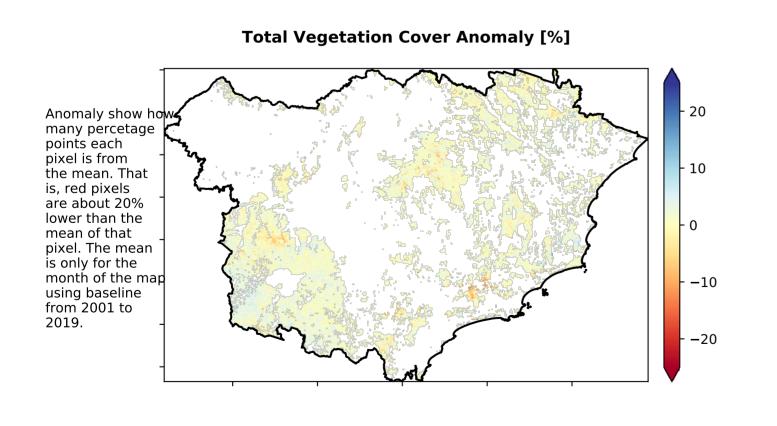


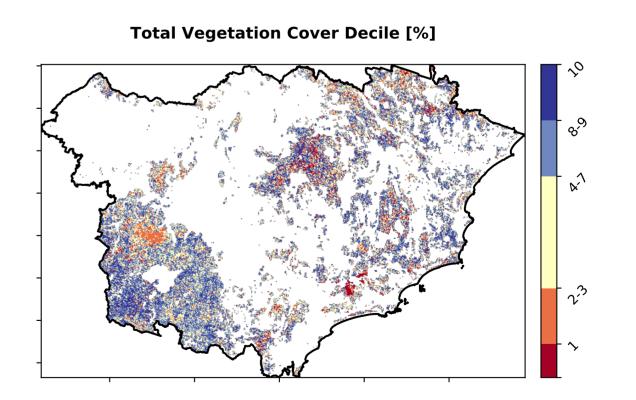
## **Total Vegetation Cover [%]**















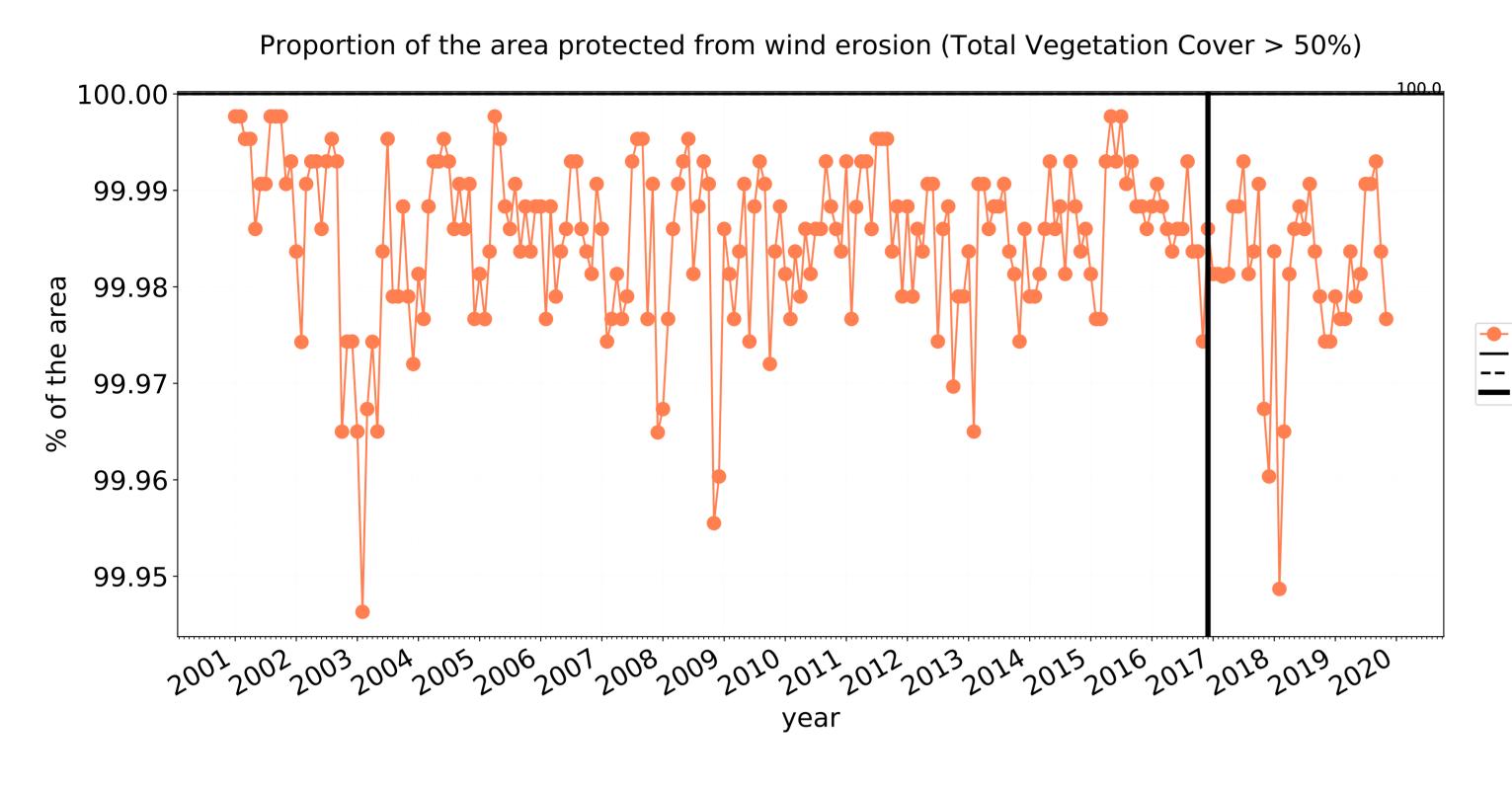


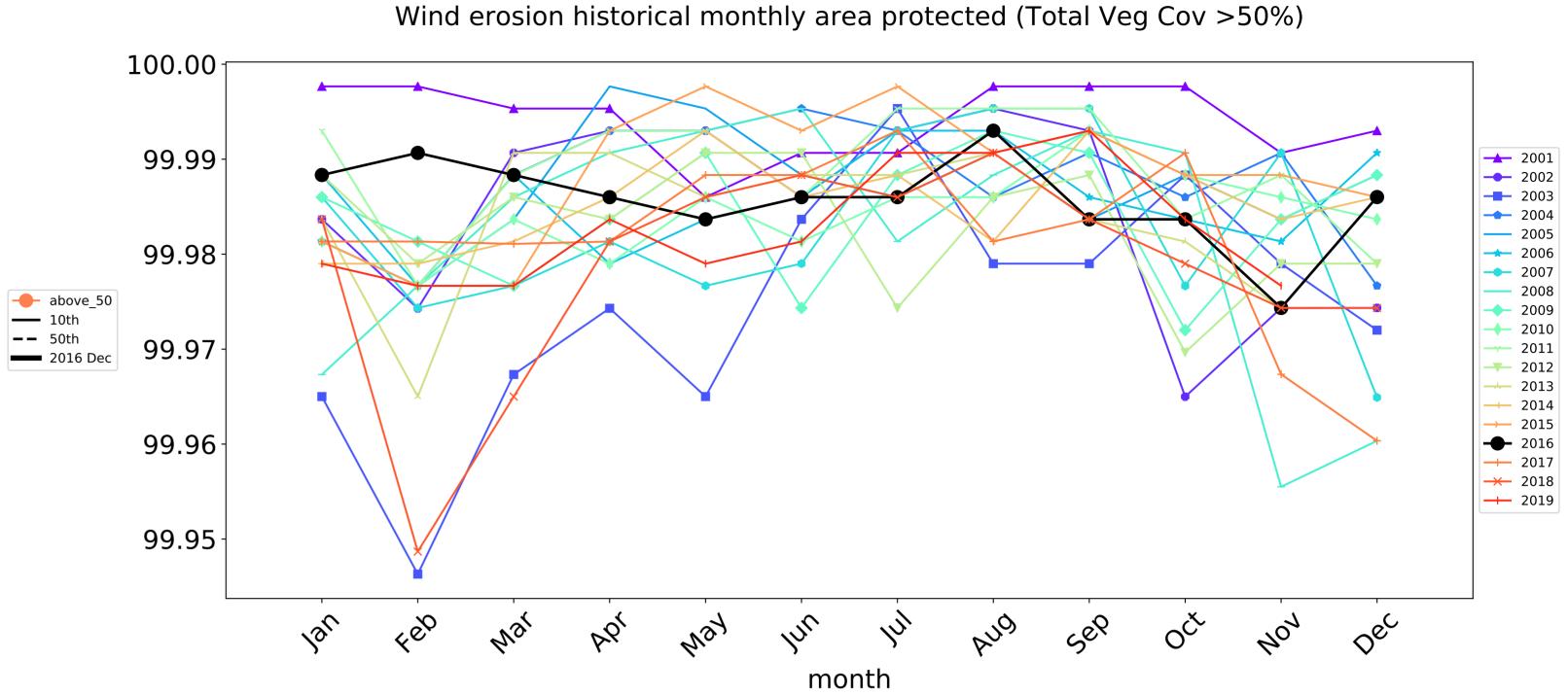


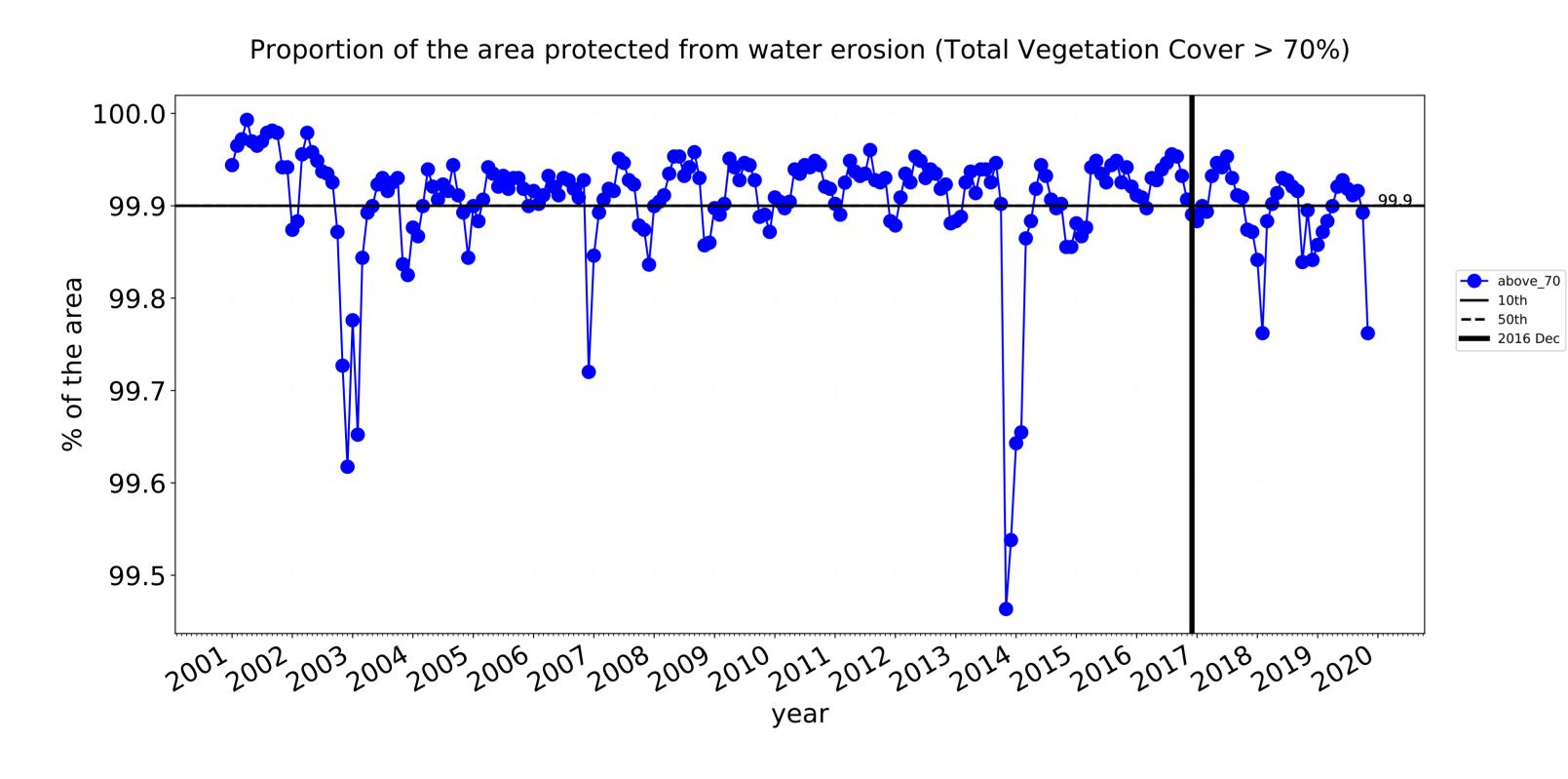


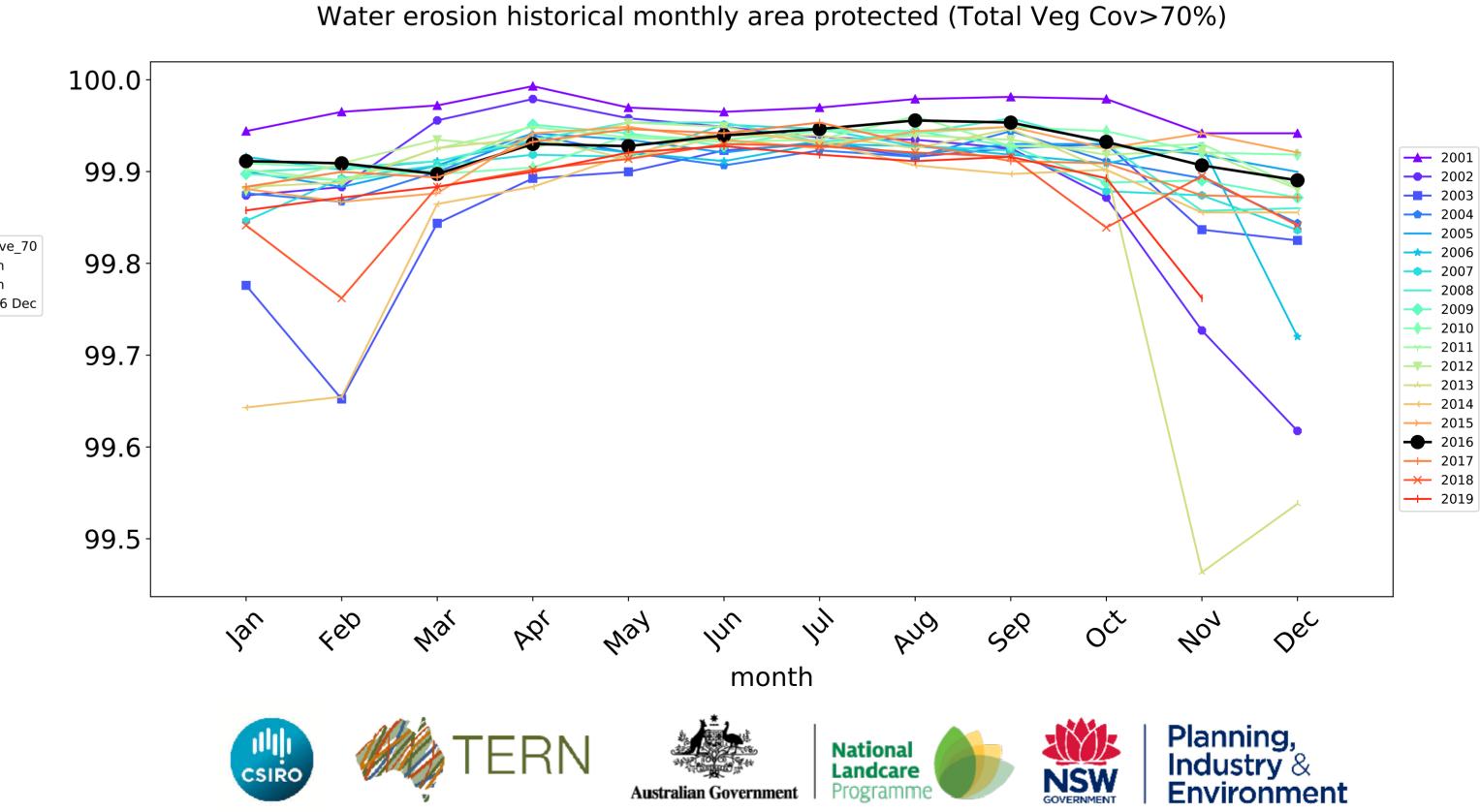


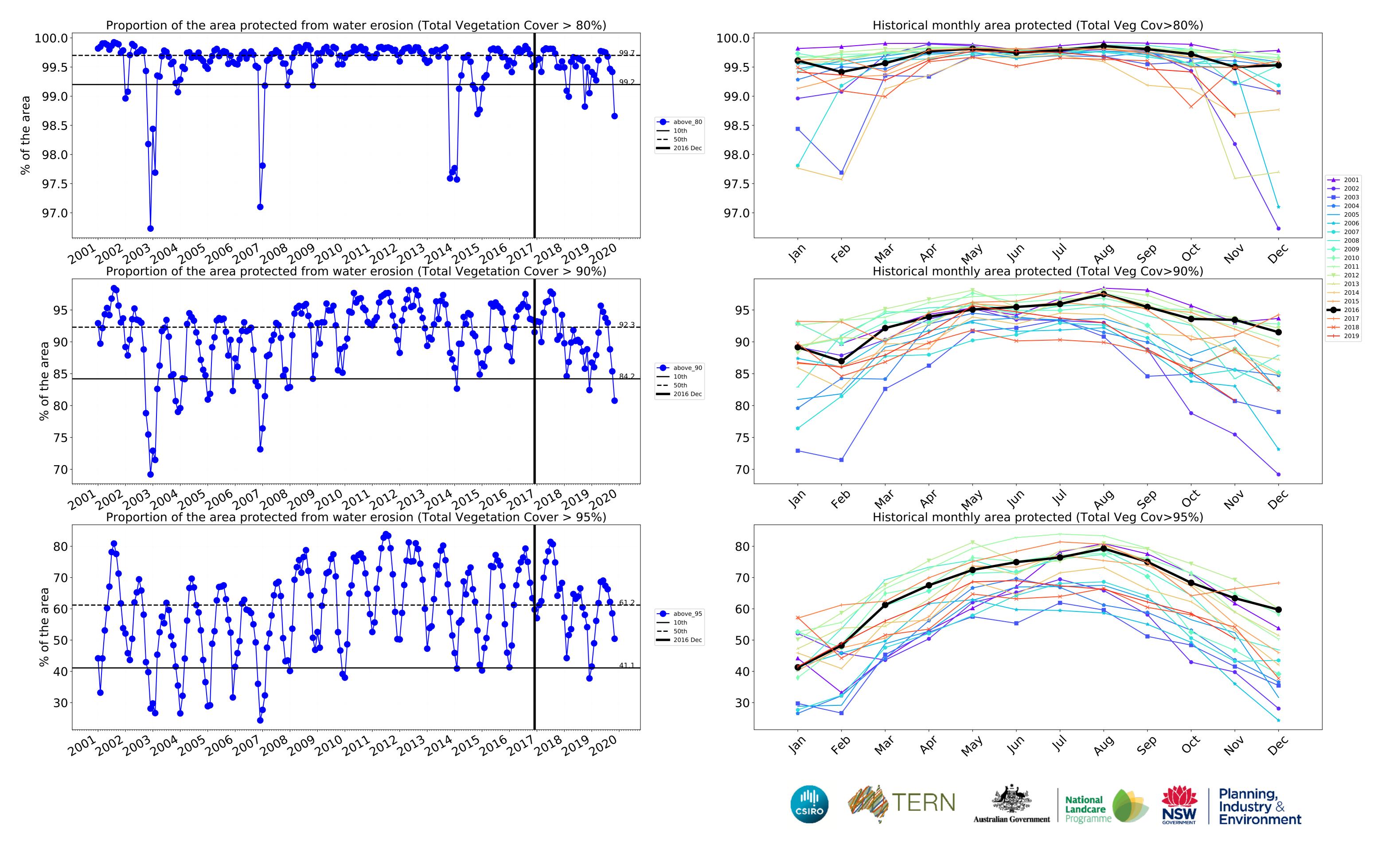
### Conservation and natural environments Forest (non woodland) timeseries



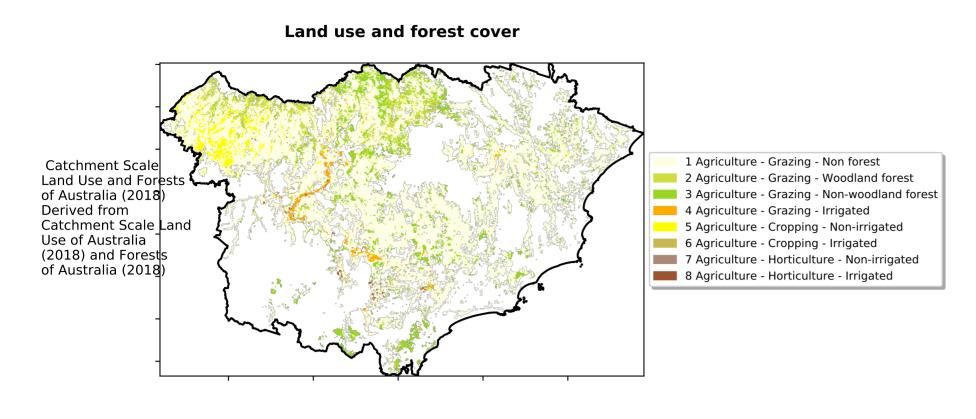


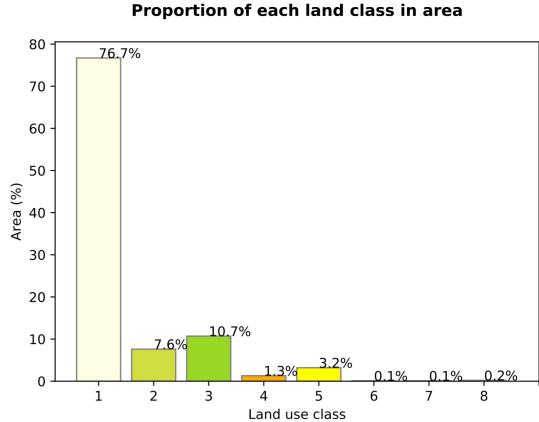




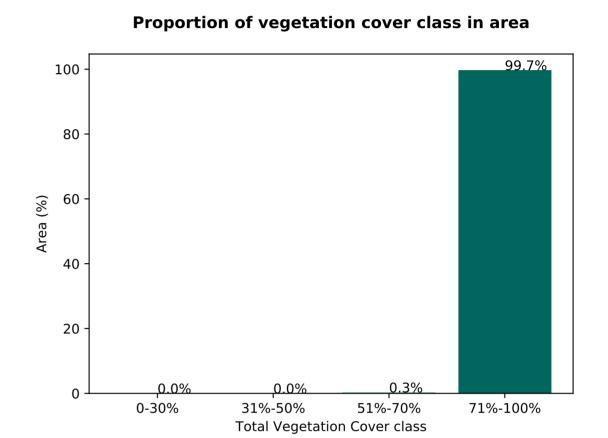


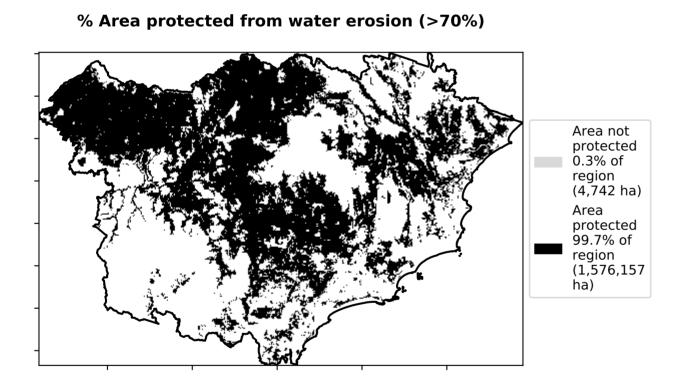
### **Agriculture**

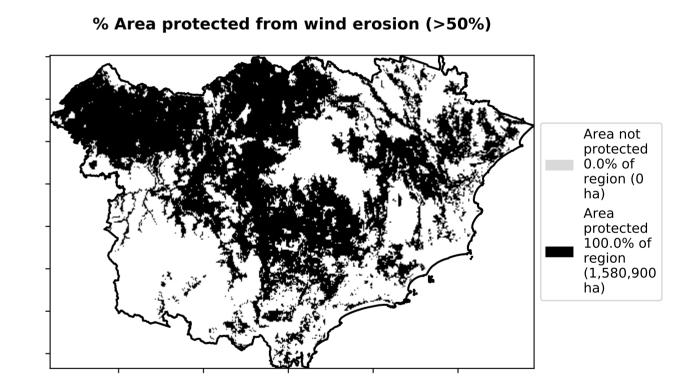


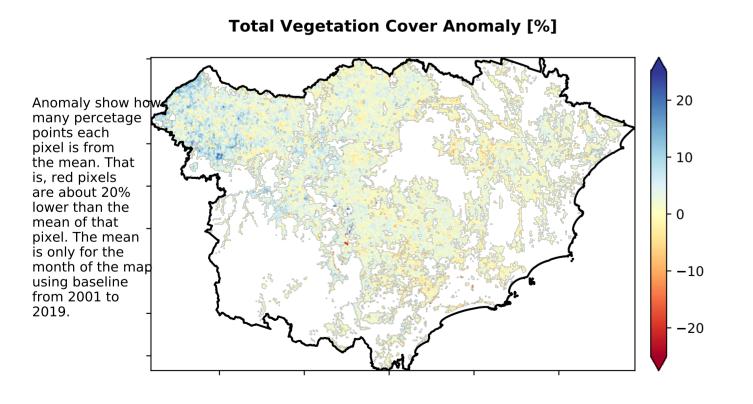


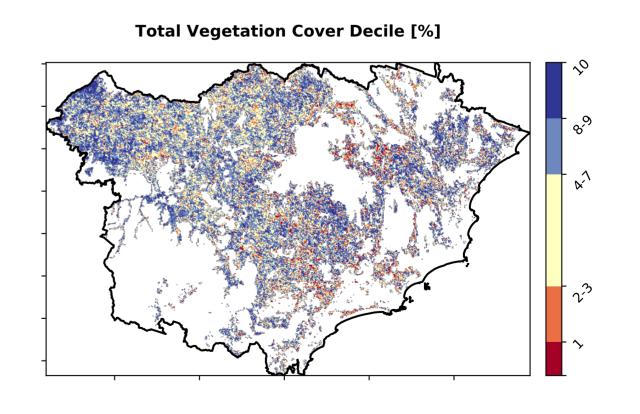
### Total Vegetation Cover [%] Total Vegetation Cover [%] Typic Jorden Ty













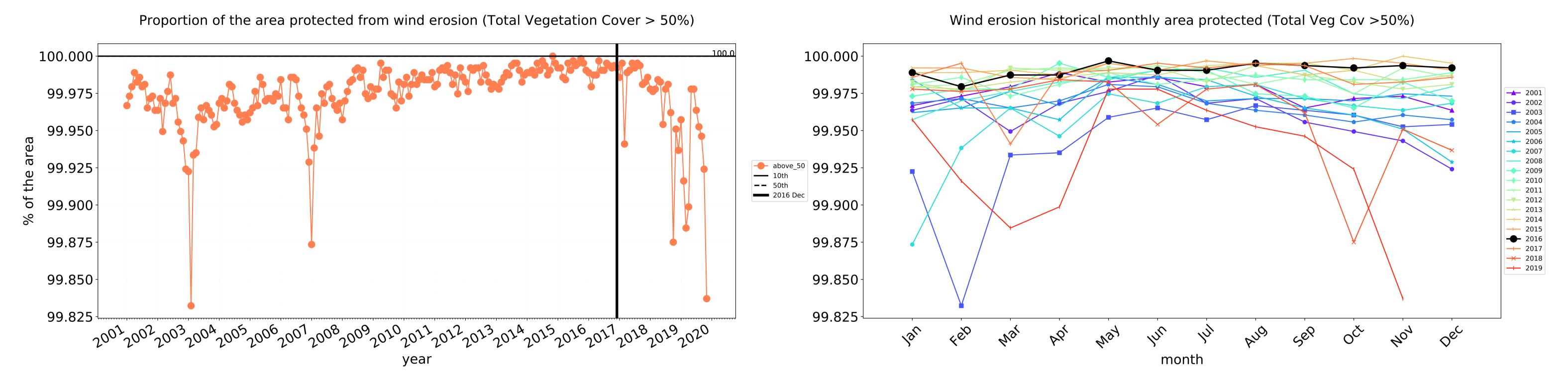


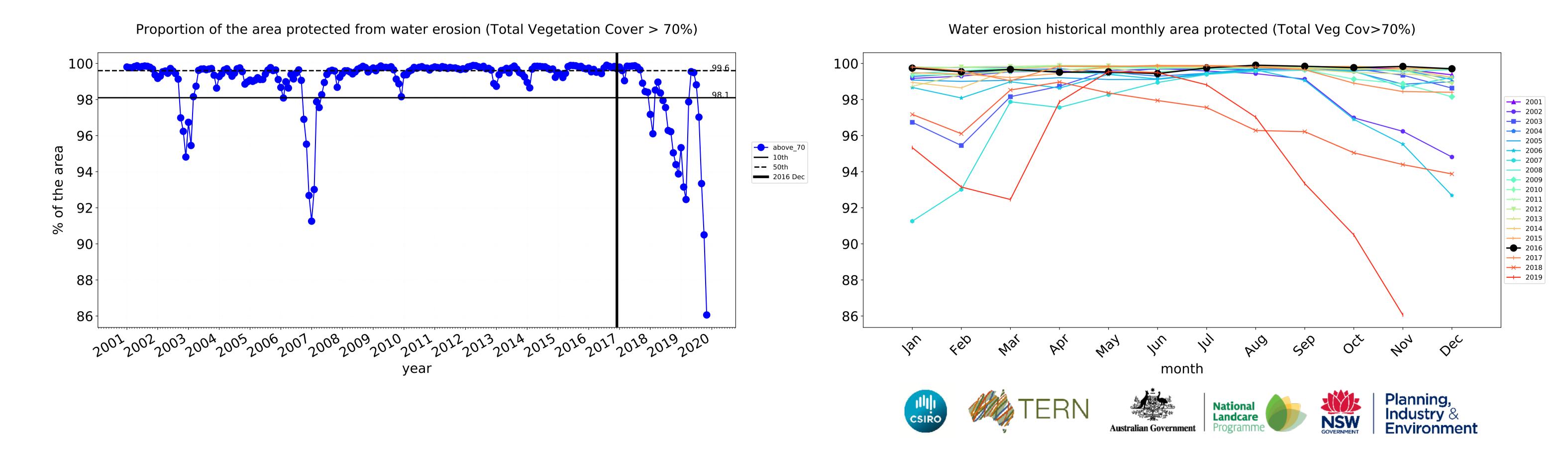


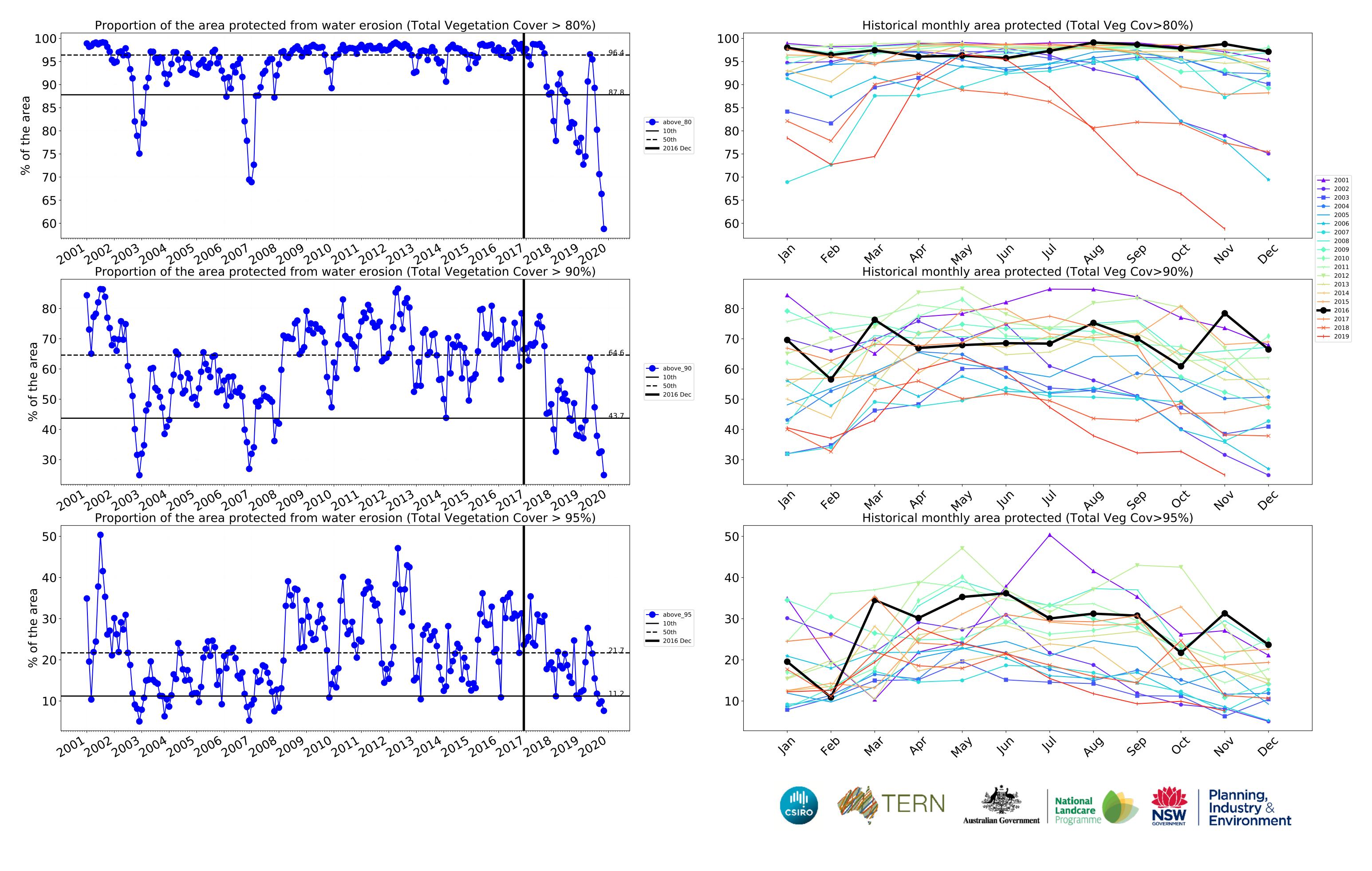




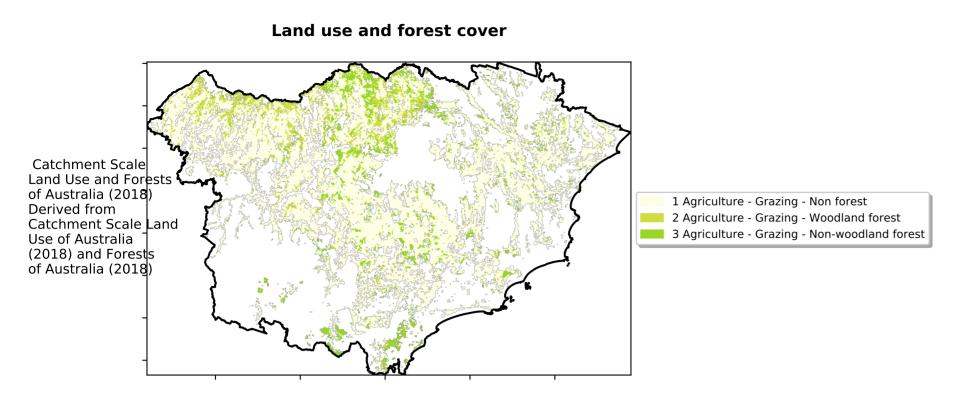
### **Agriculture timeseries**



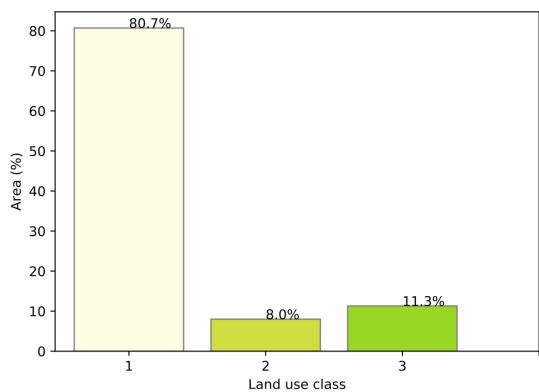




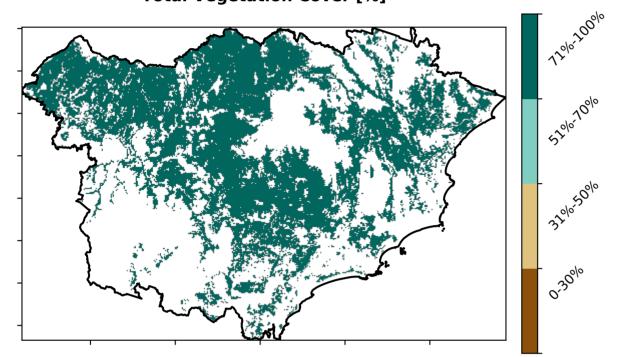
### **Grazing**



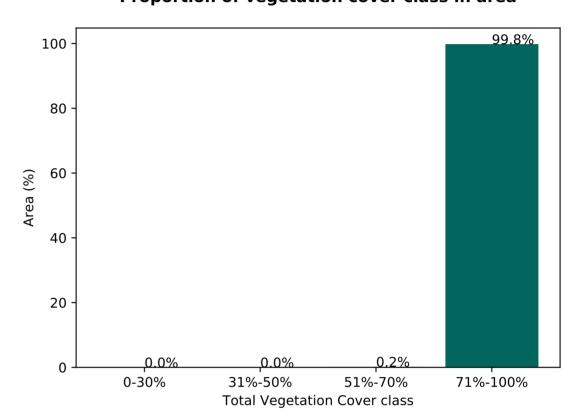
### Proportion of each land class in area



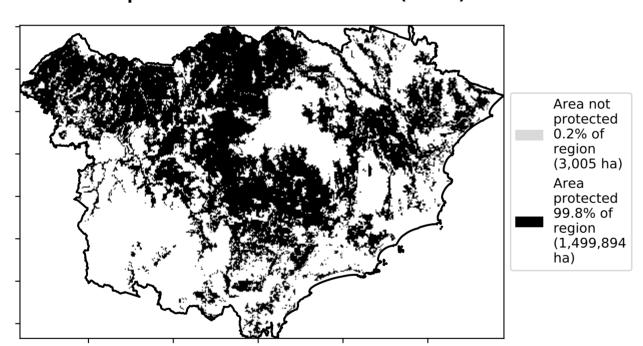
Total Vegetation Cover [%]



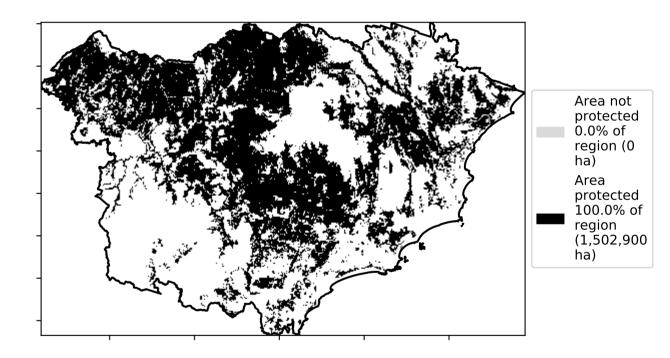
Proportion of vegetation cover class in area



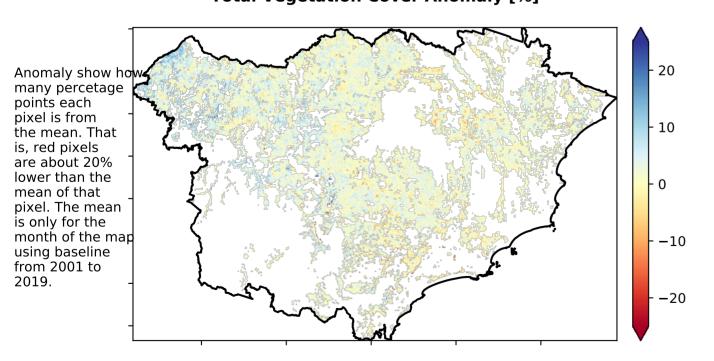
% Area protected from water erosion (>70%)

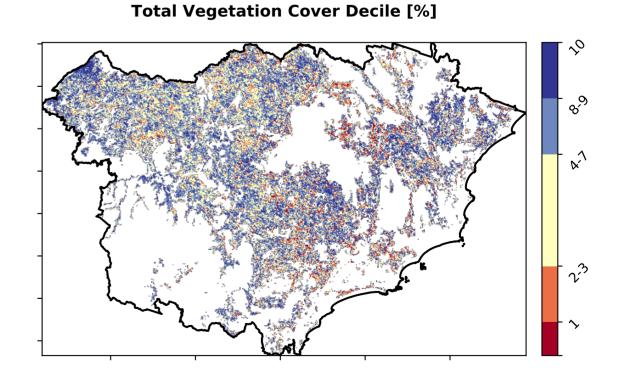


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]









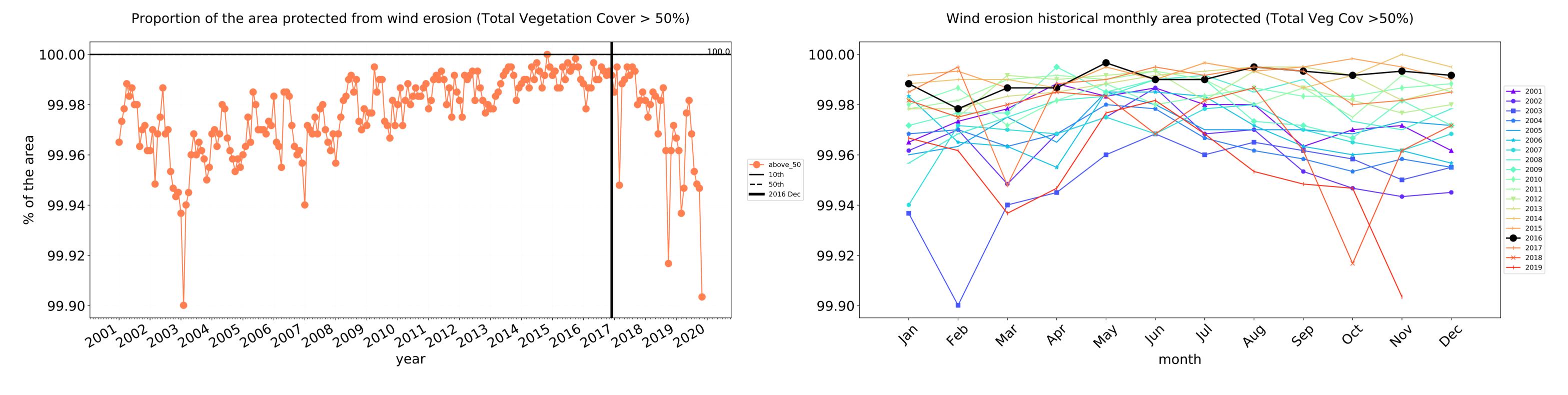


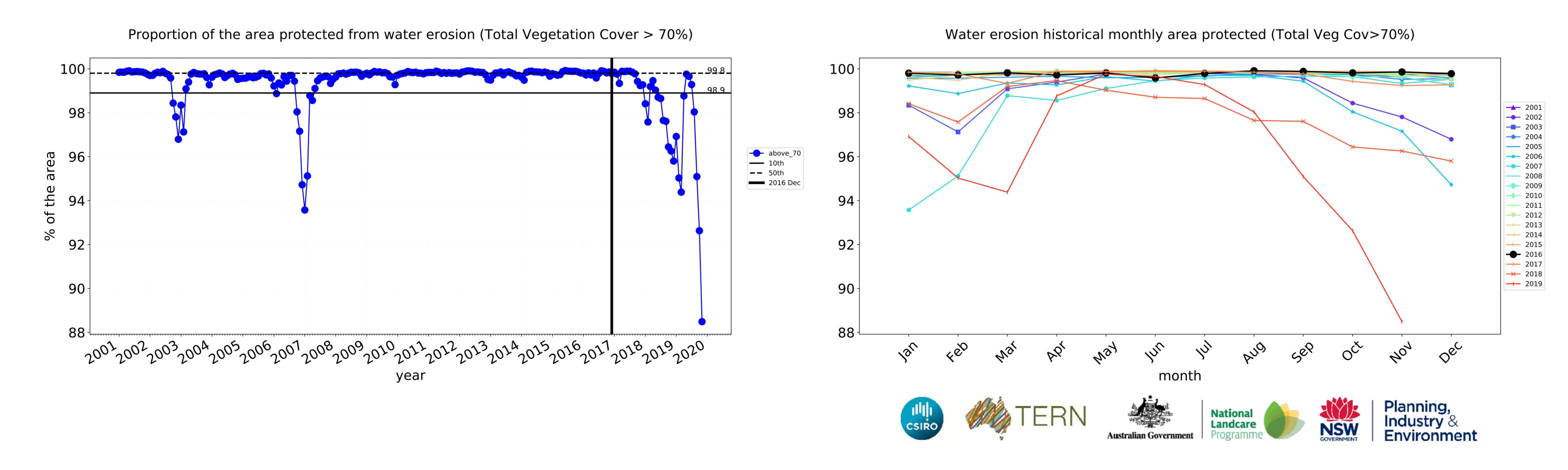


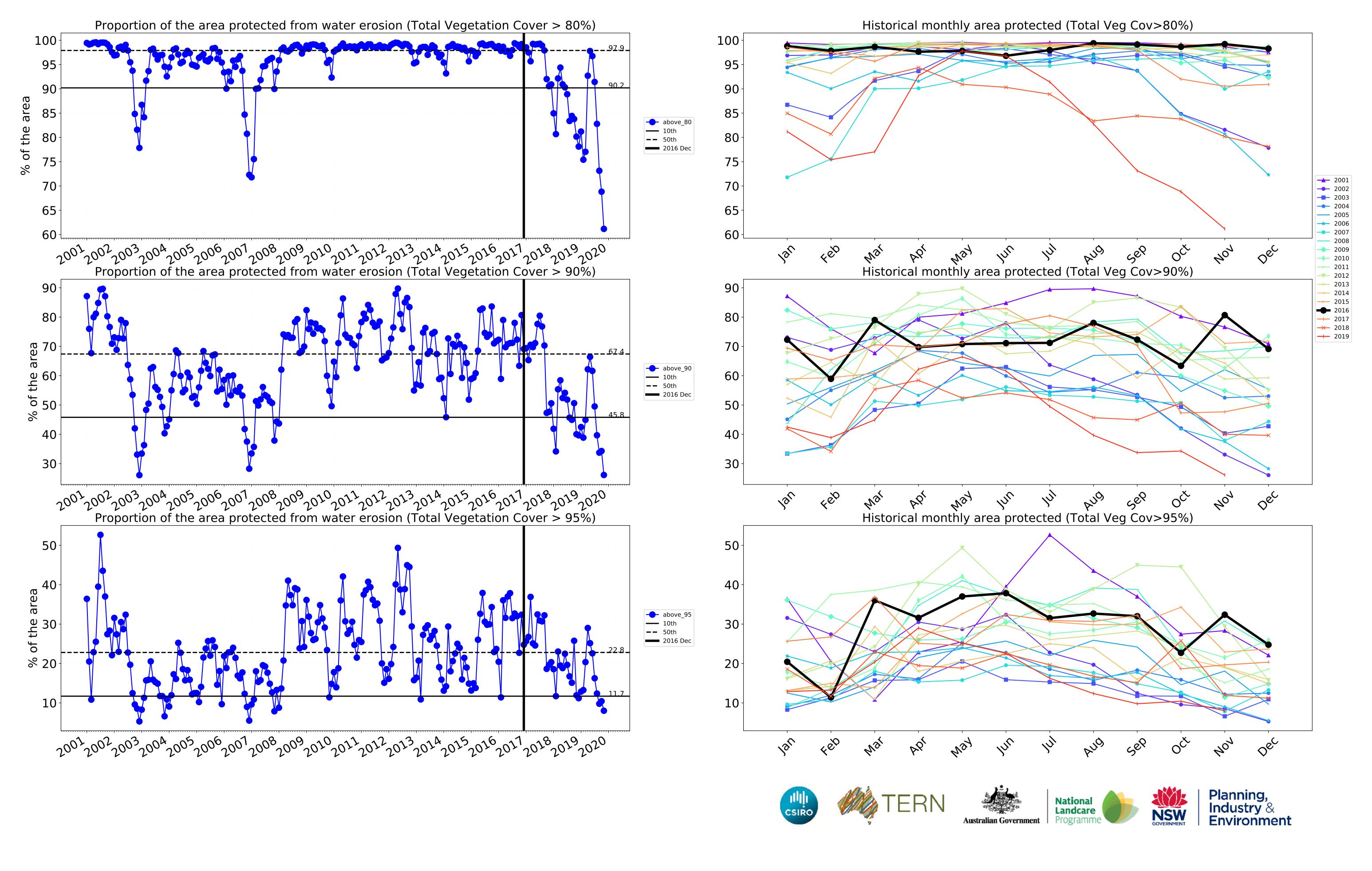




### **Grazing timeseries**

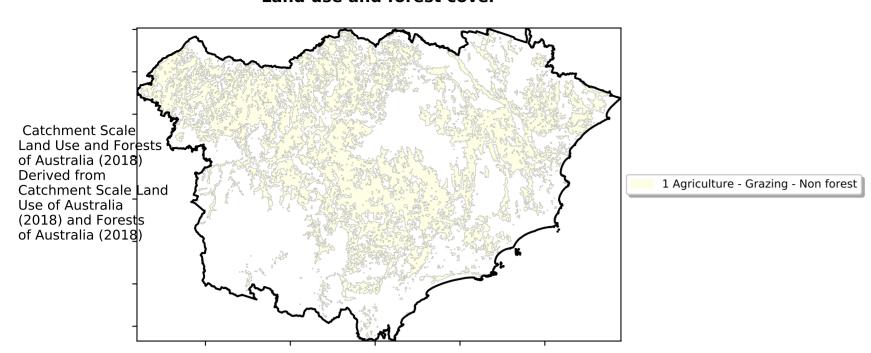




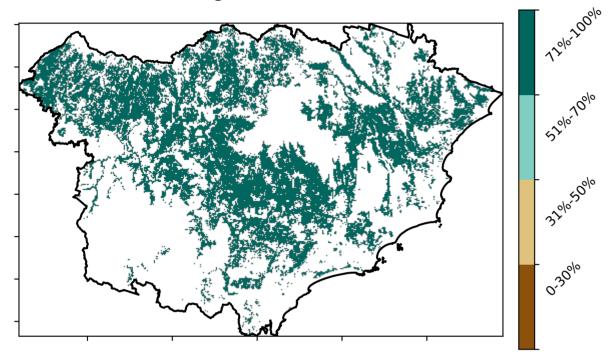


### **Grazing non forest**

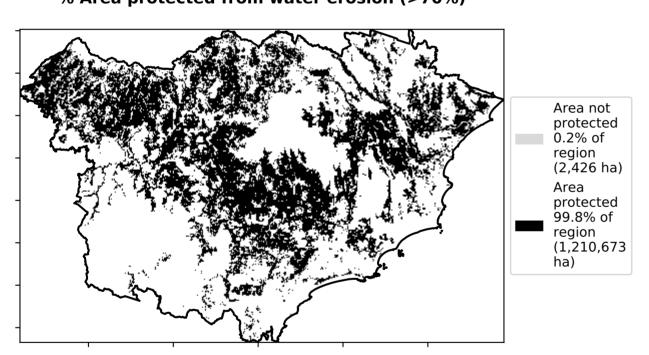
### Land use and forest cover



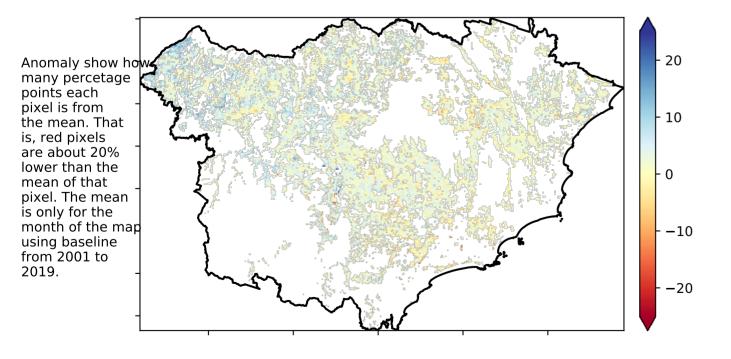
### Total Vegetation Cover [%]



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

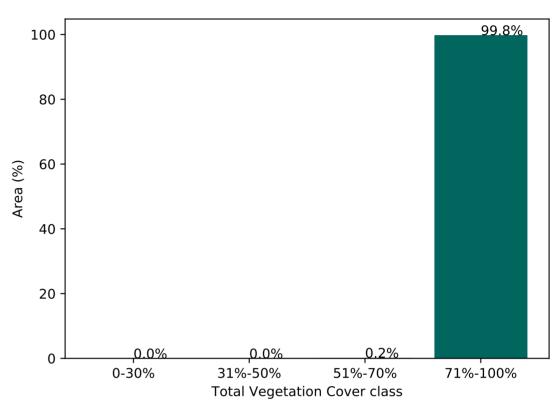


### Total Vegetation Cover Anomaly [%]

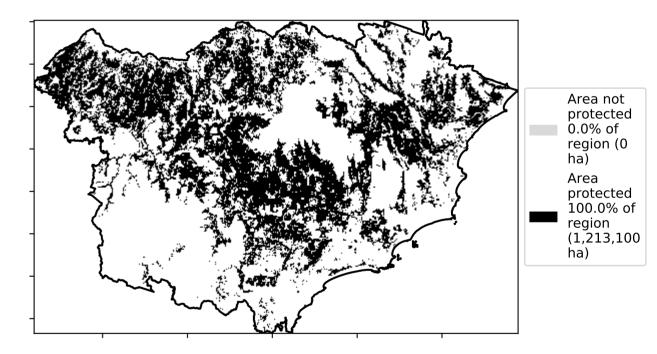


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

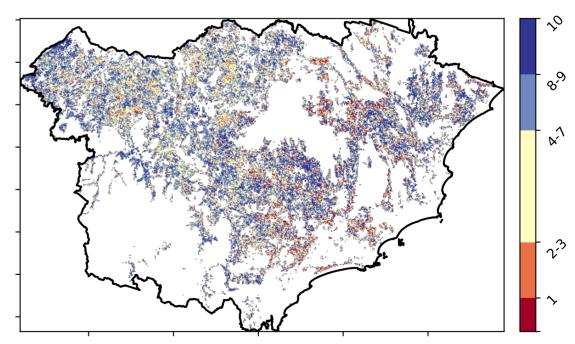
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]







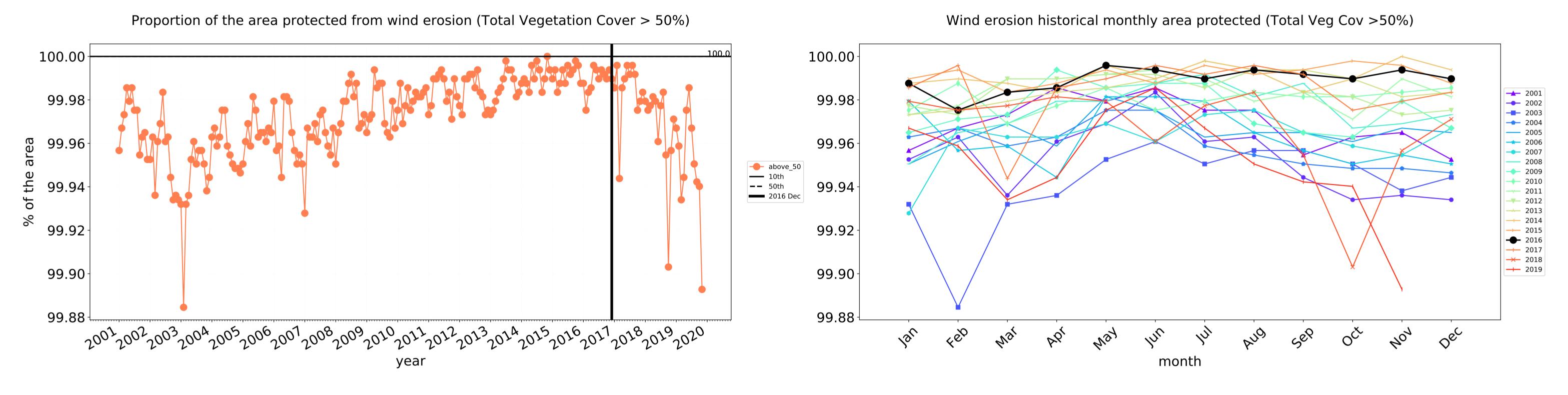


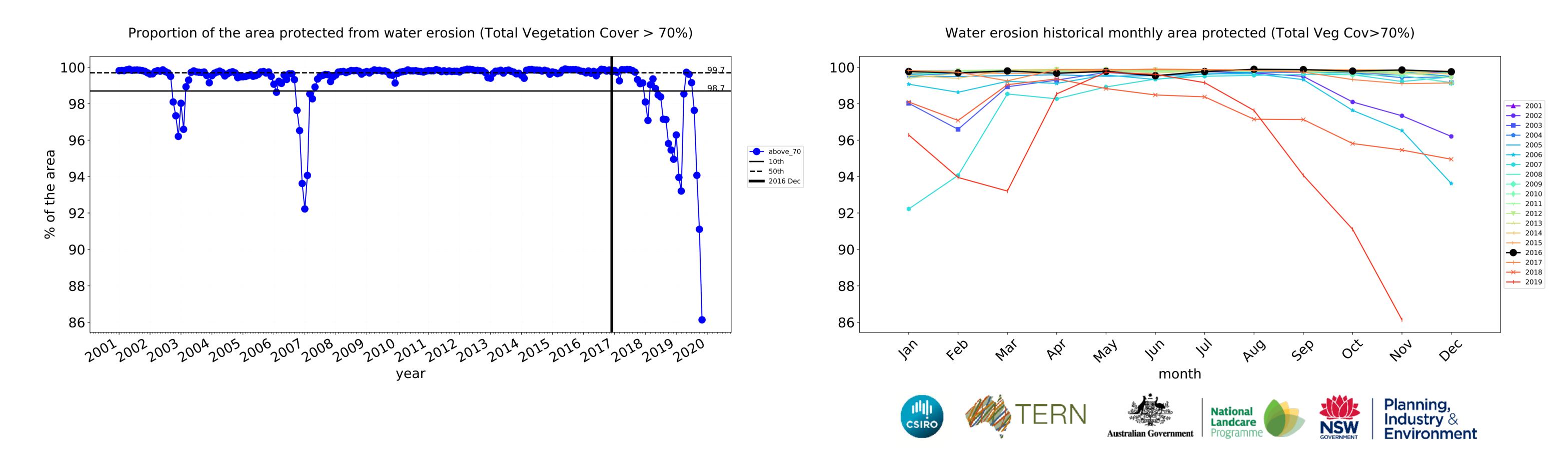


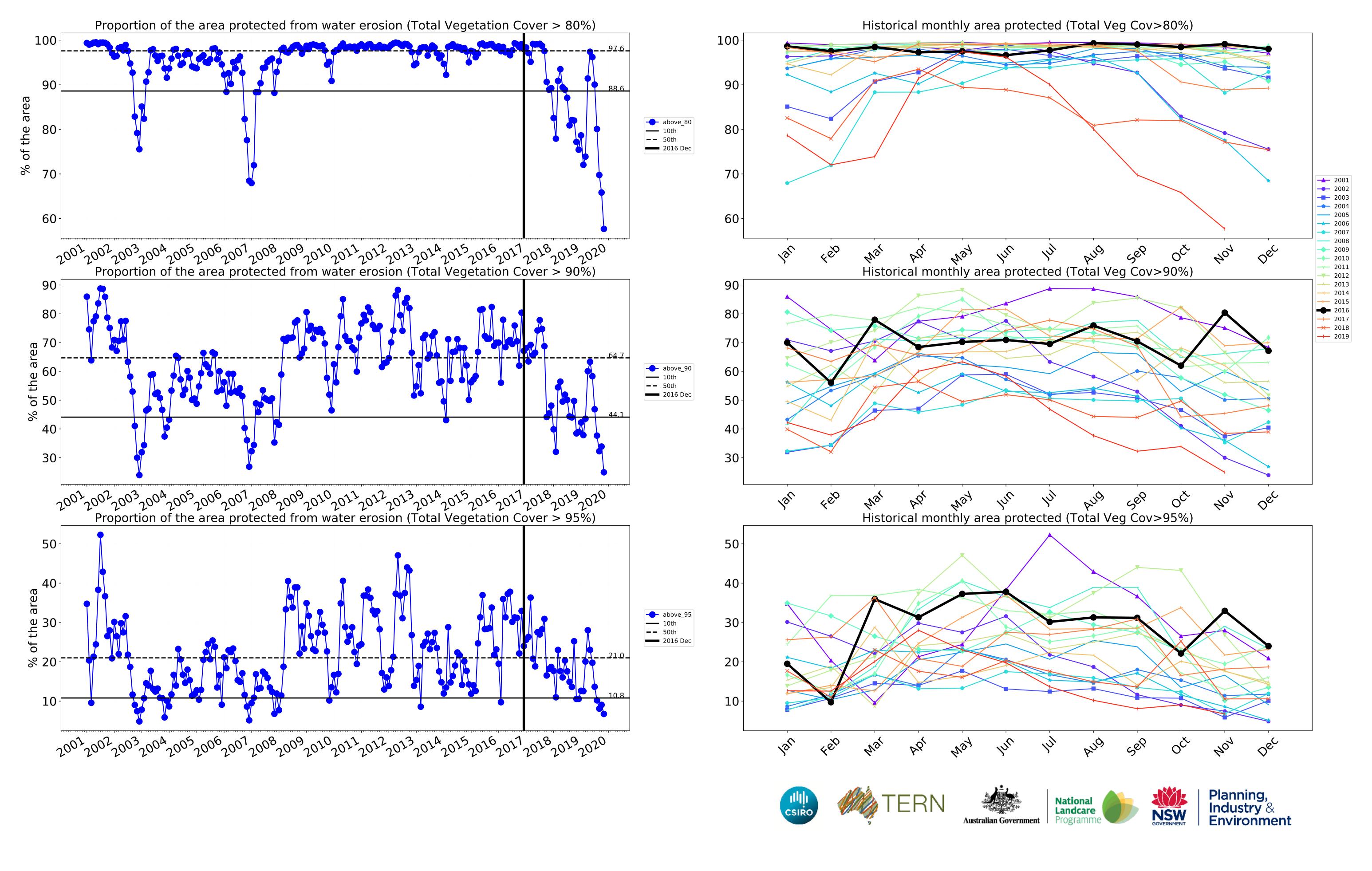




### **Grazing non forest timeseries**





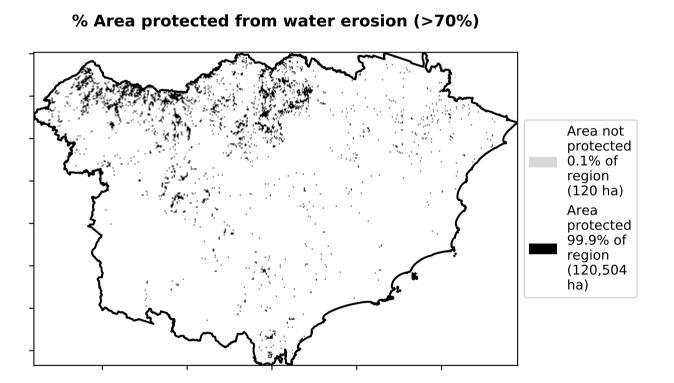


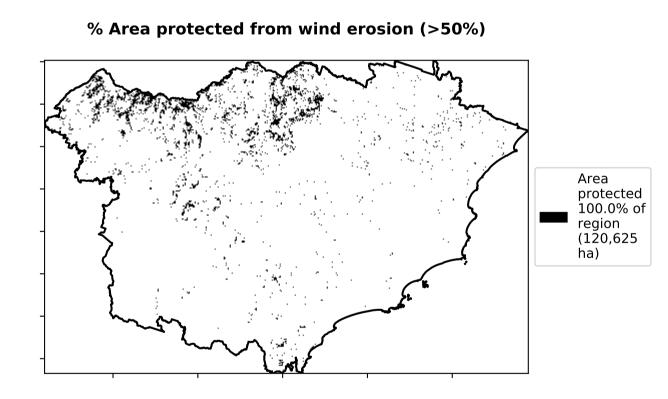
### **Grazing Woodland forest**

### **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)

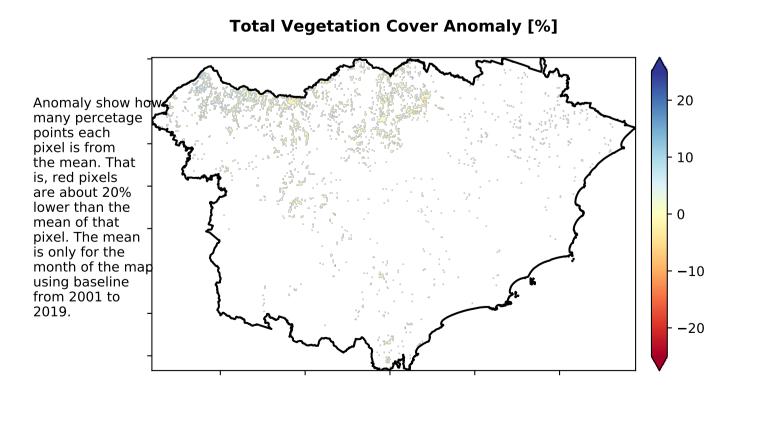
### **Total Vegetation Cover [%]**

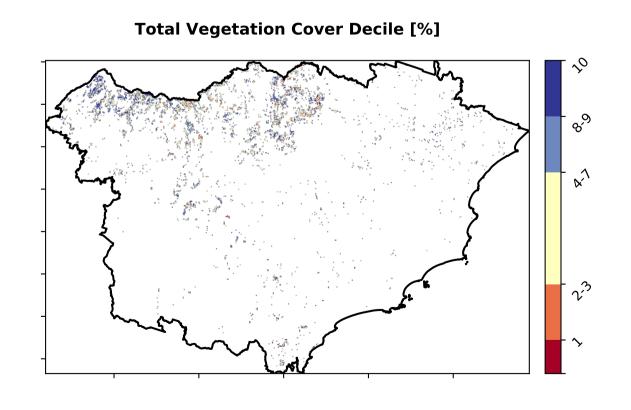
### 99.9% 100 80 Area (%) 40 20 -0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**





**Proportion of vegetation cover class in area** 









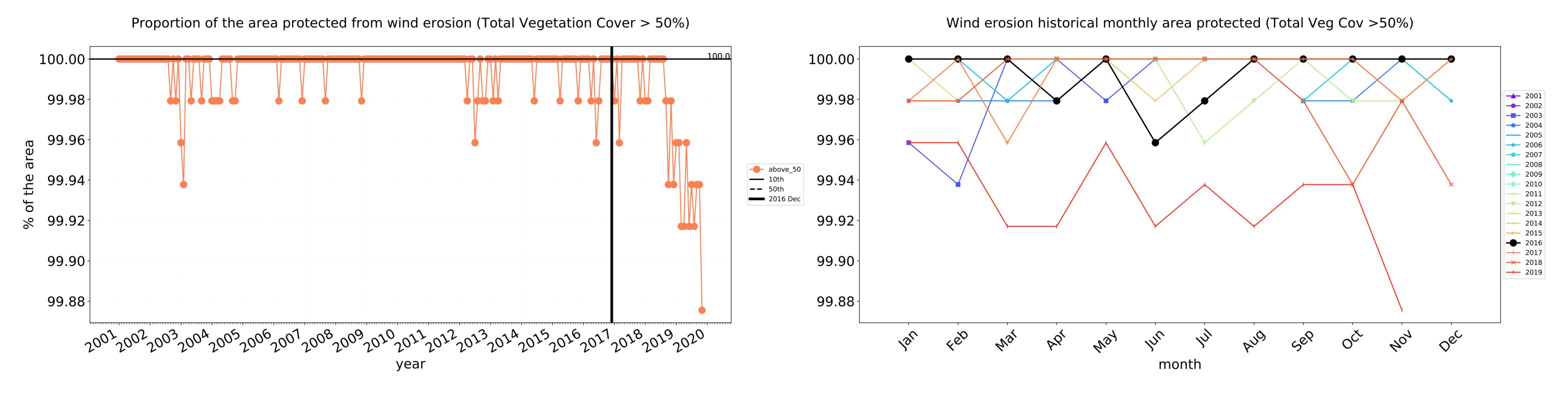


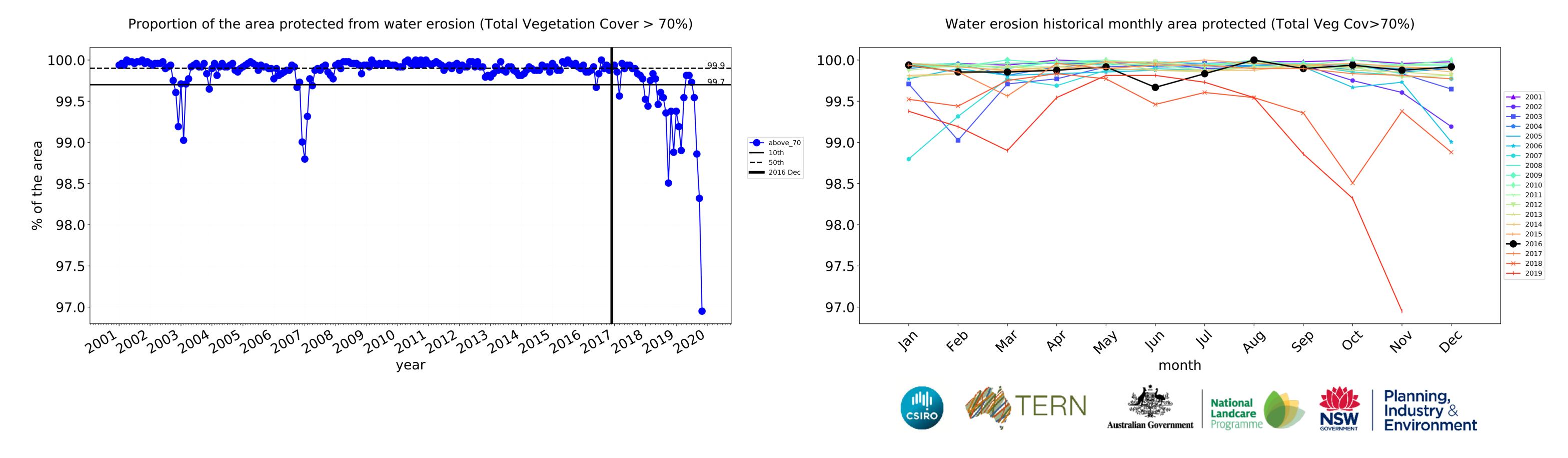


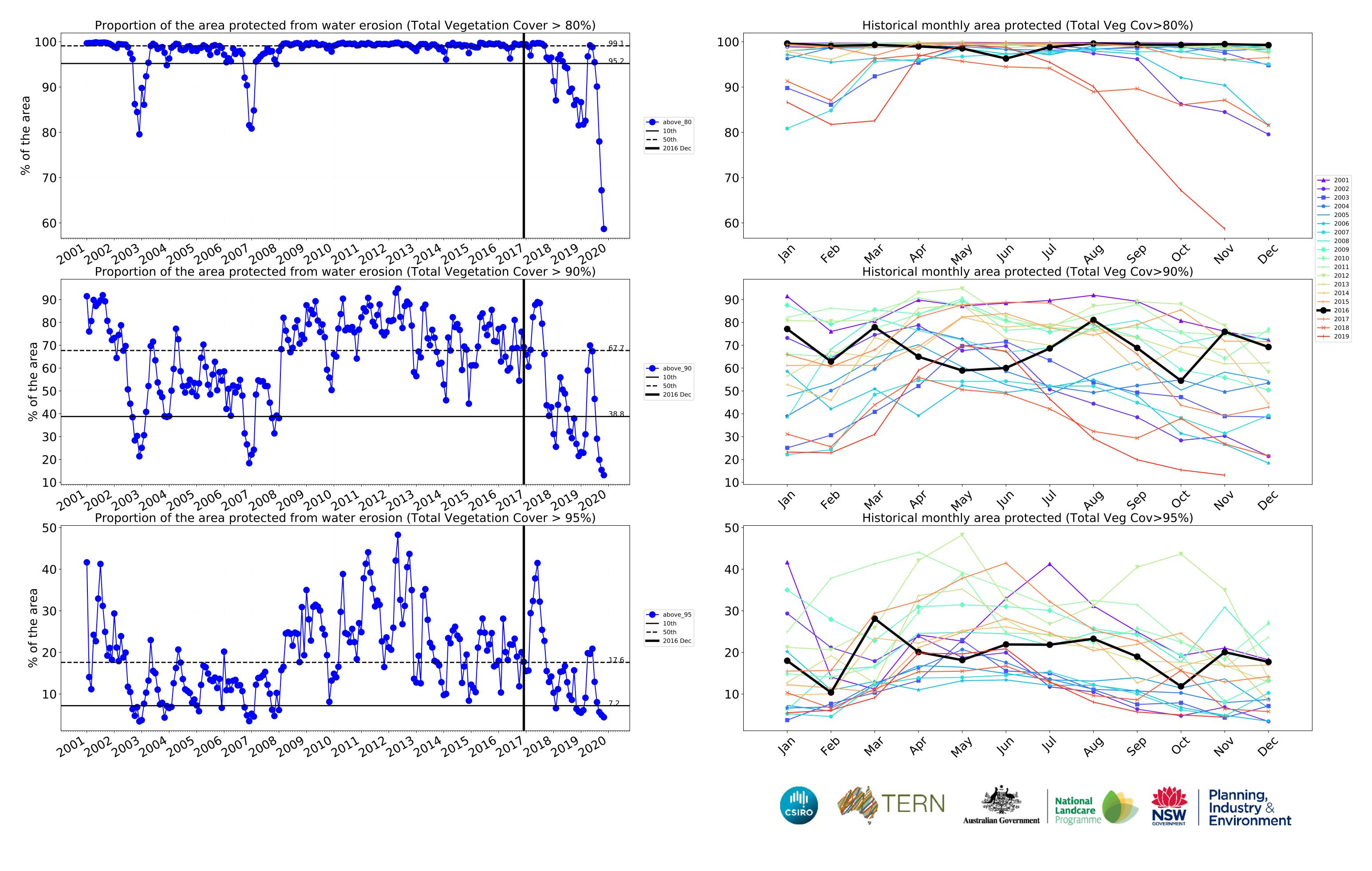




### **Grazing Woodland forest timeseries**





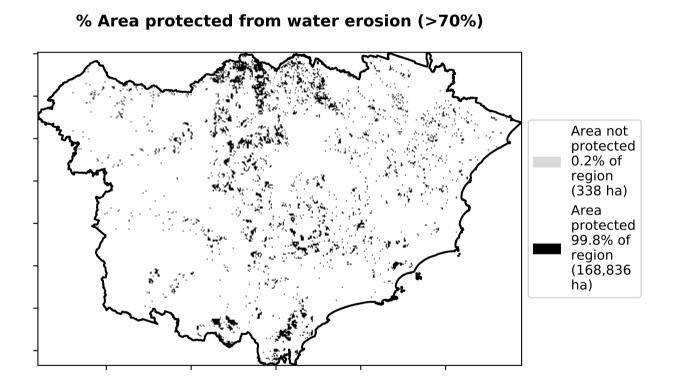


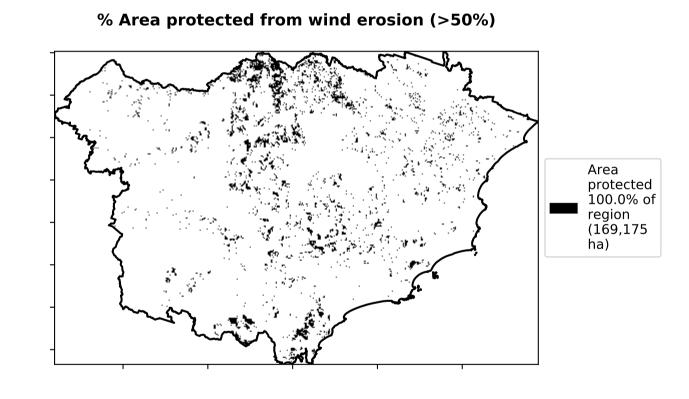
### **Grazing - Forest (non woodland)**

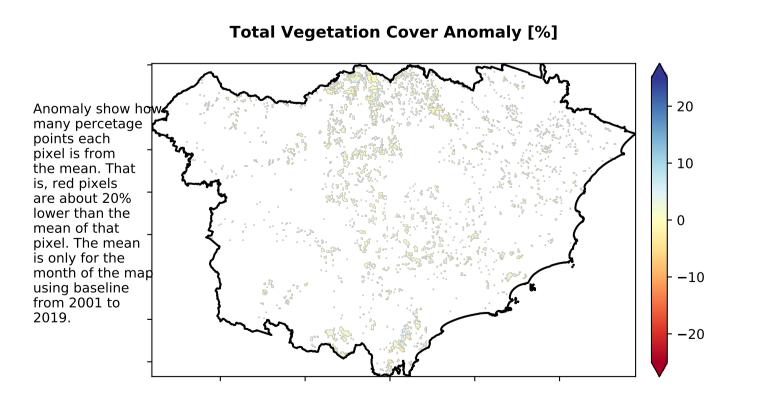
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

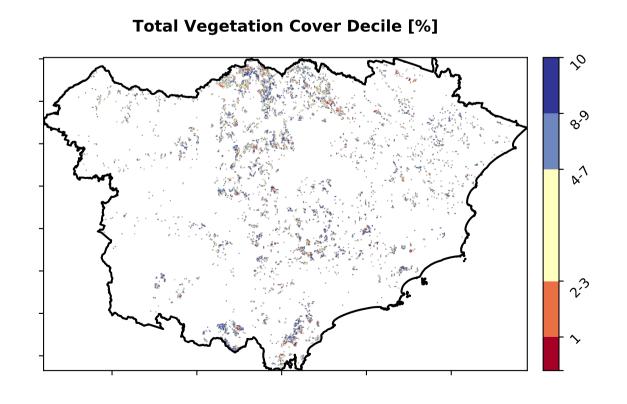
### Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]

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











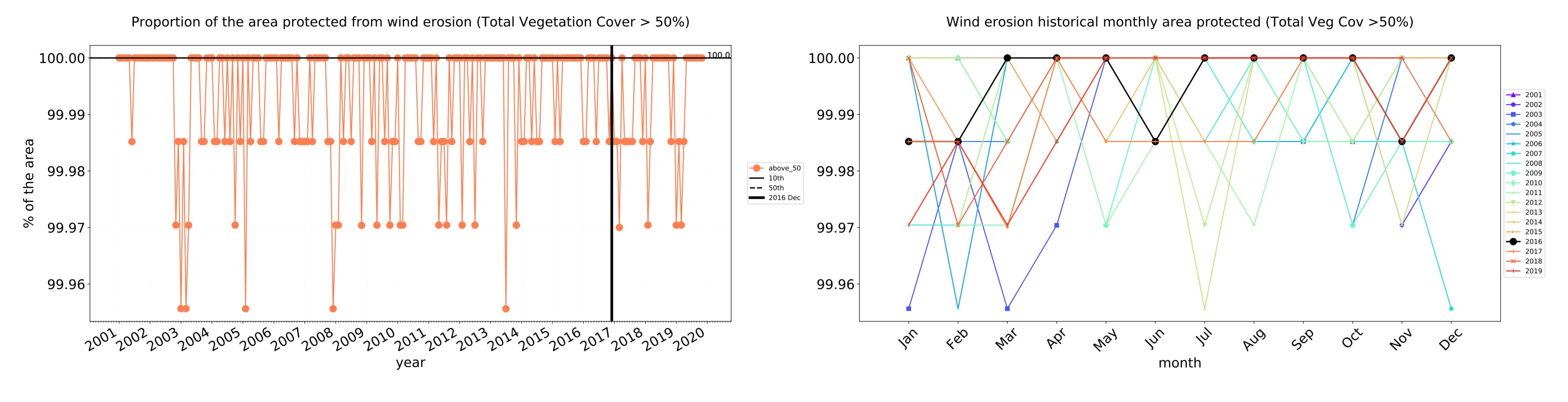


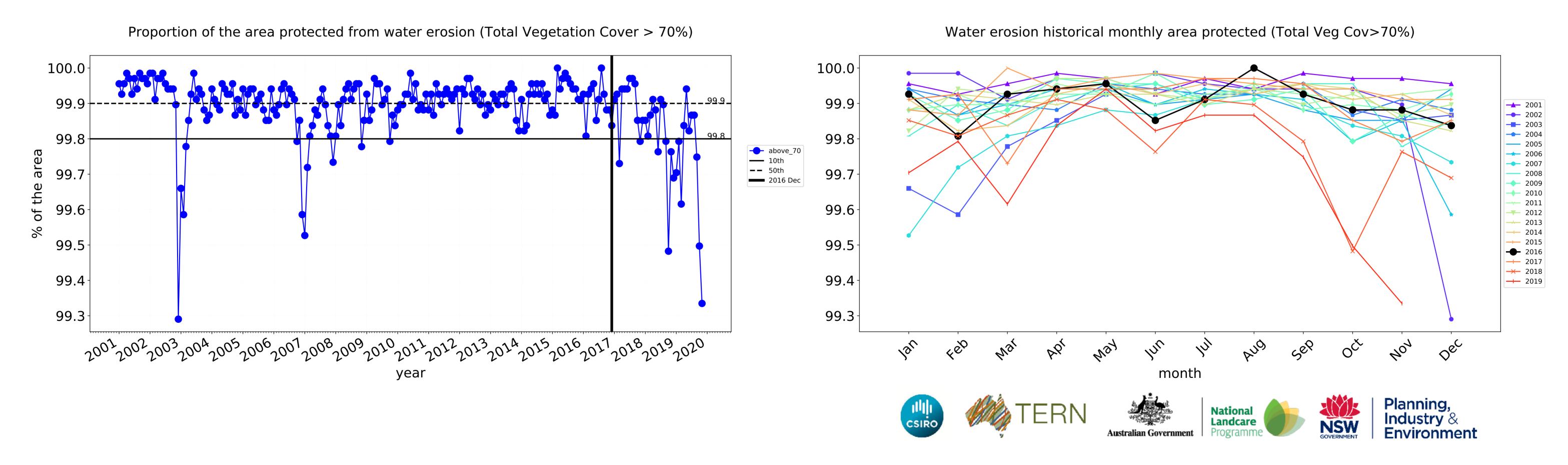


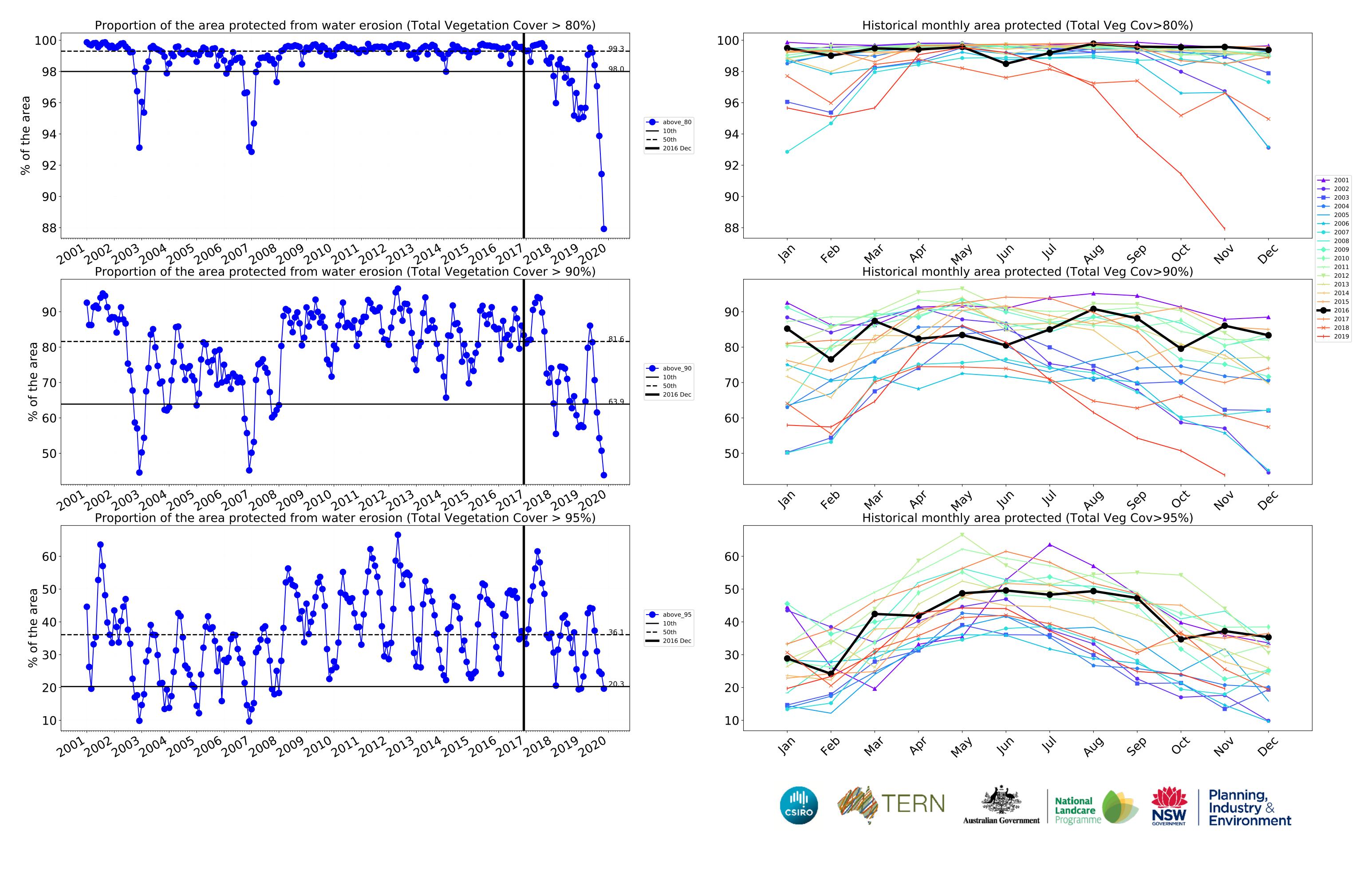






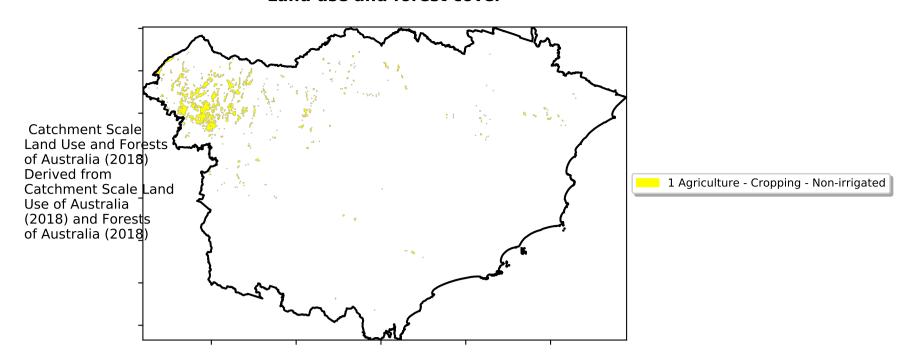




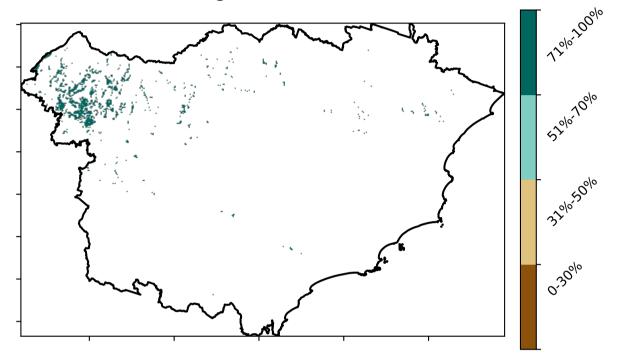


### **Cropping**

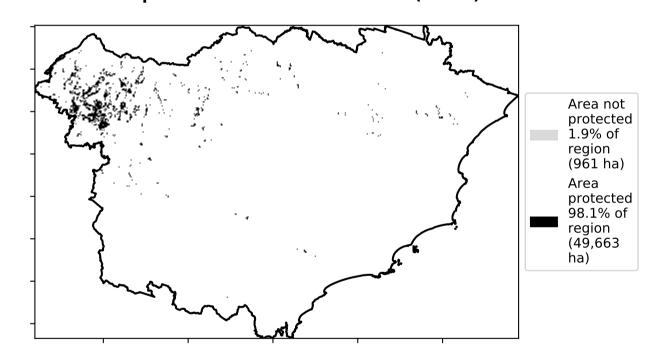
### Land use and forest cover



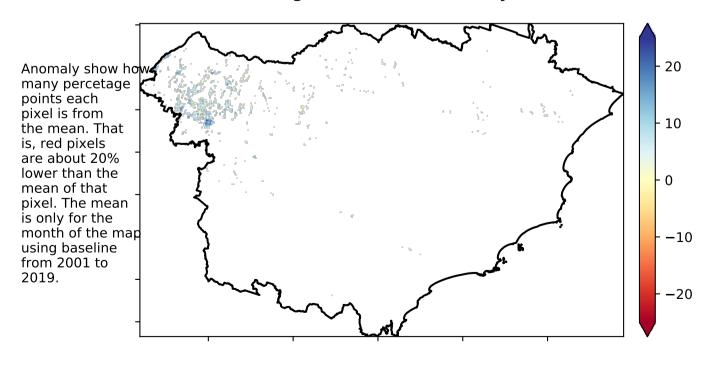
### **Total Vegetation Cover [%]**



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

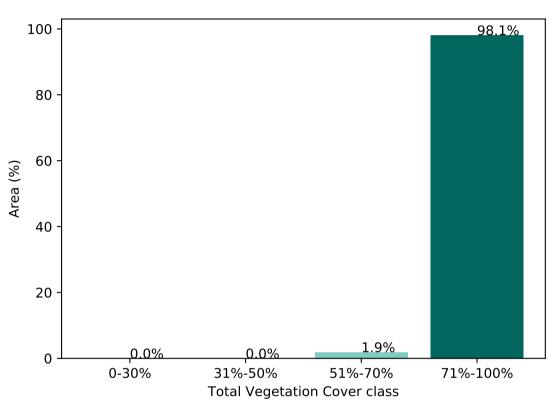


### Total Vegetation Cover Anomaly [%]

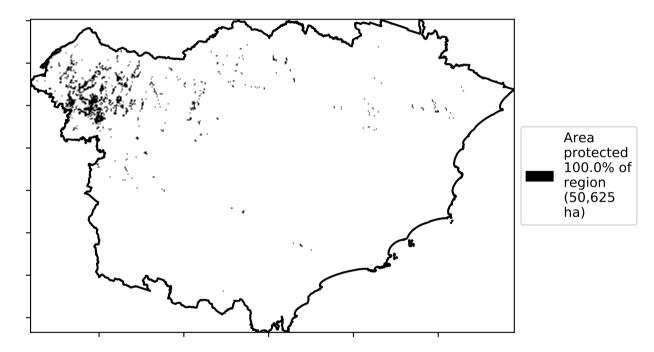


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

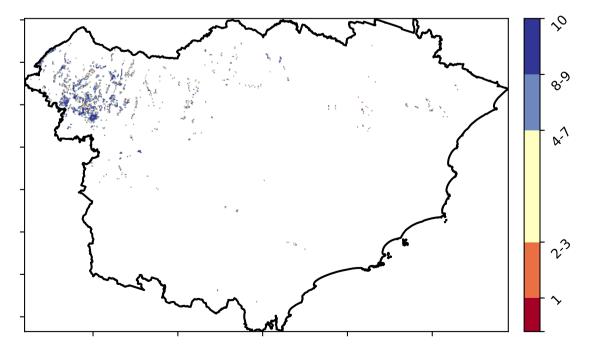
### **Proportion of vegetation cover class in area**



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



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







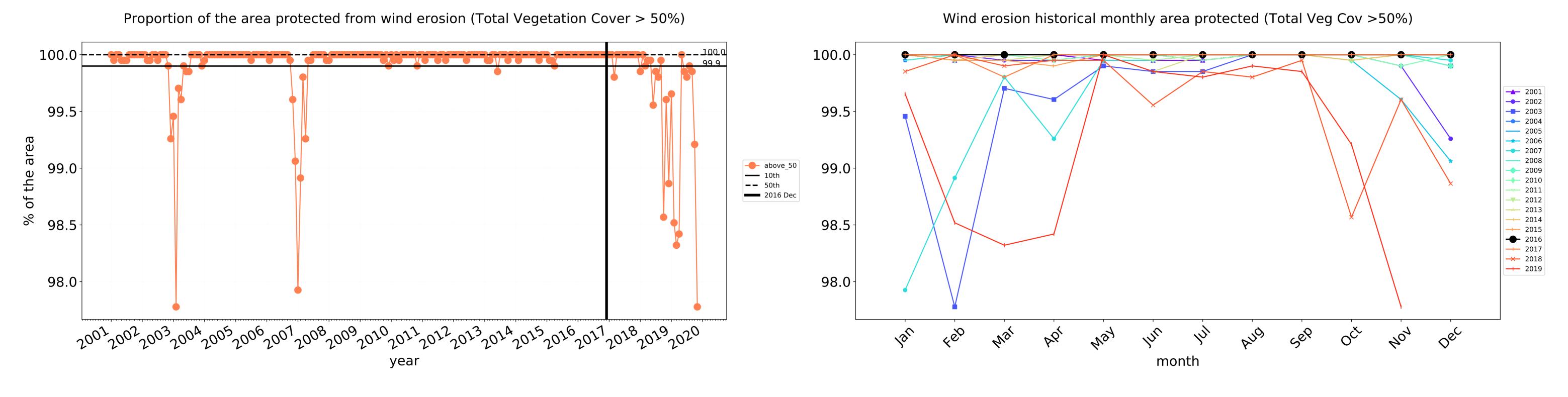


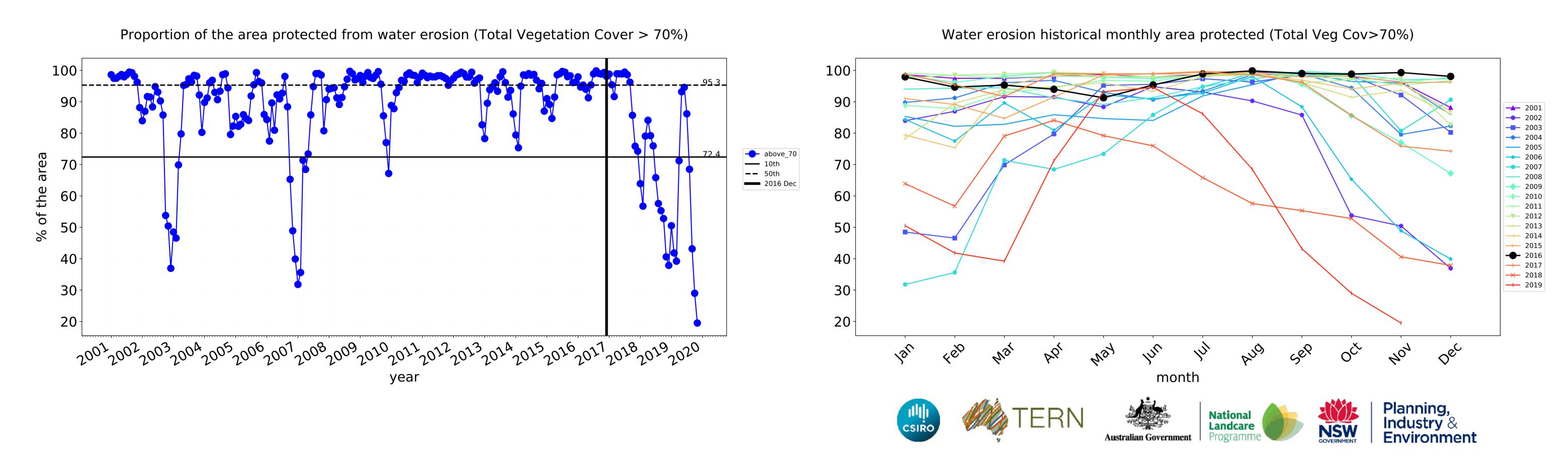


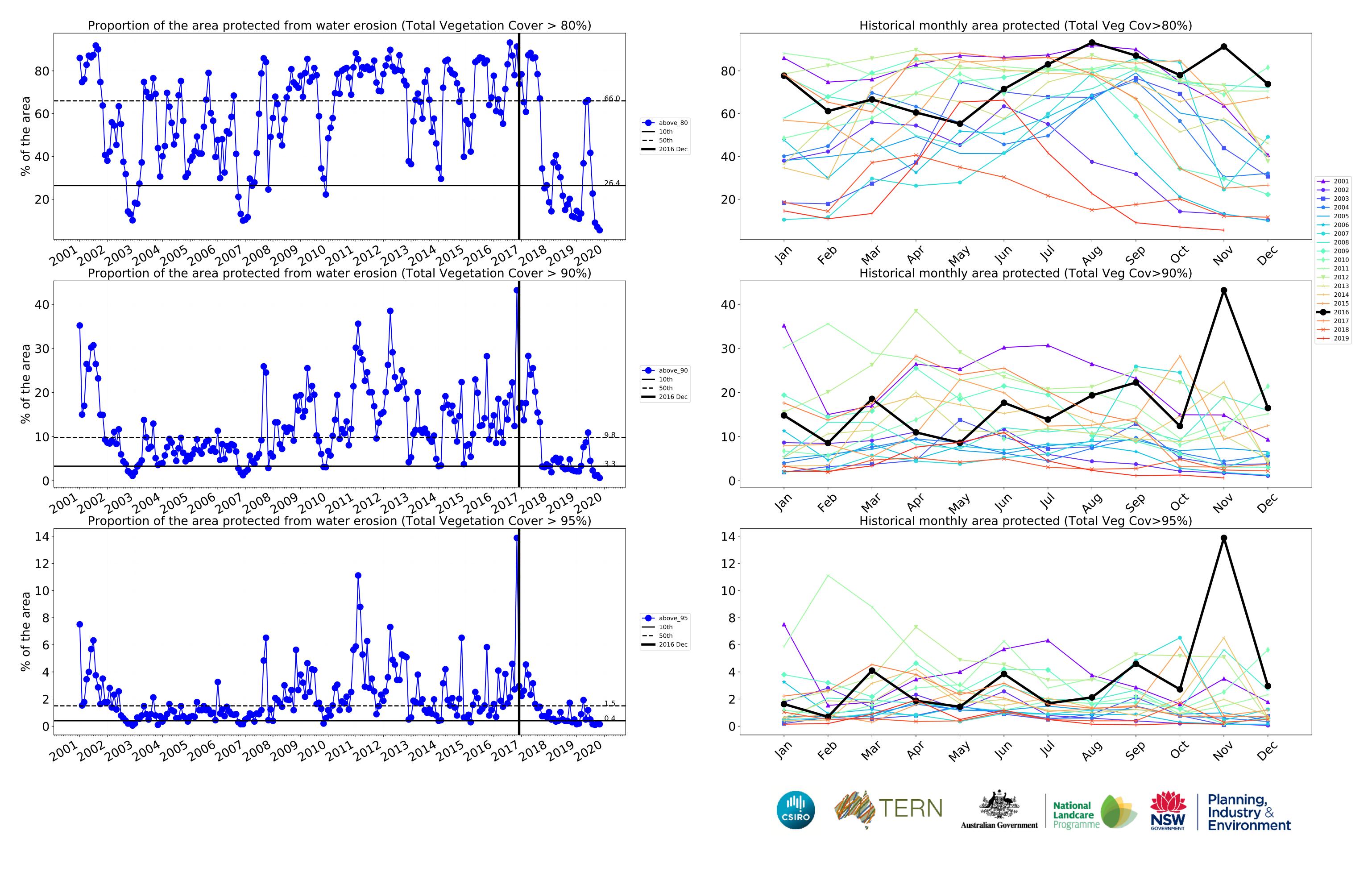




### **Cropping timeseries**





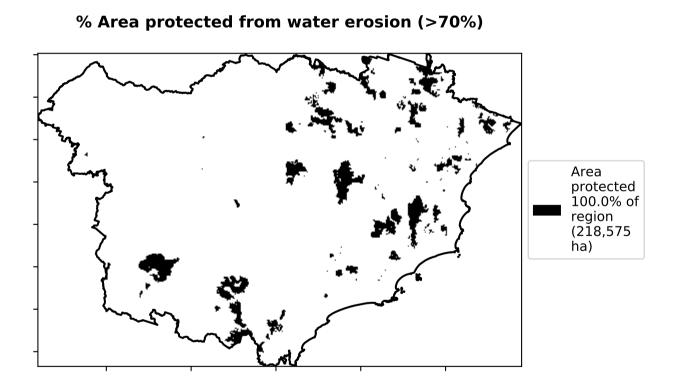


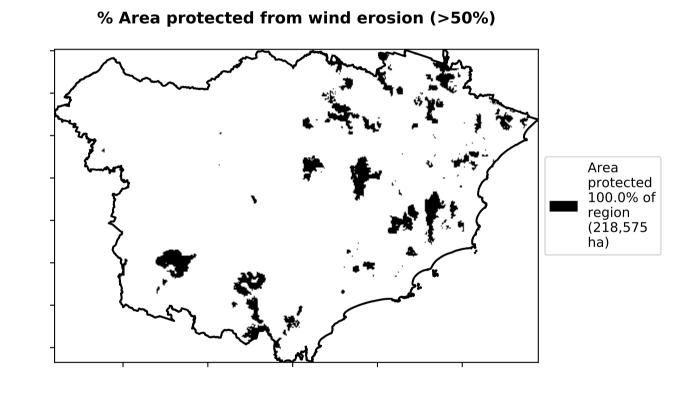
### **Production native forests and plantation forests**

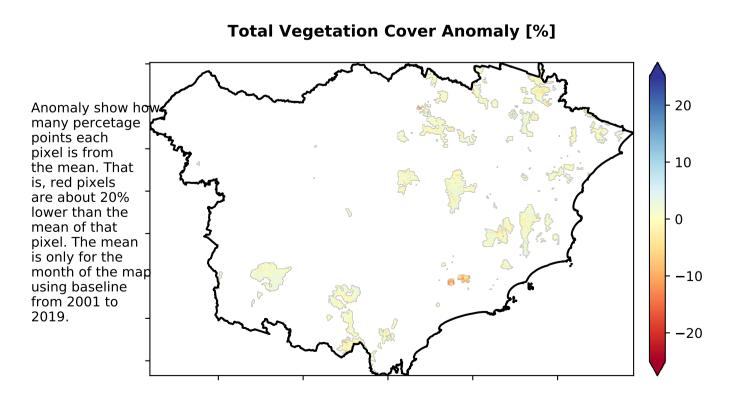
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) See of Australia (2018) See of Australia (2018)

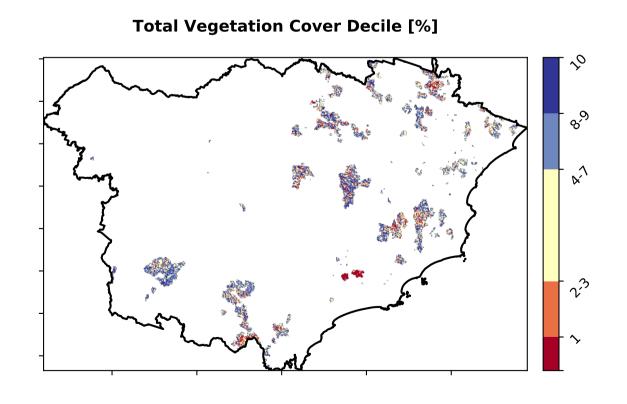
### Total Vegetation Cover [%] Total Vegetation Cover [%] Tiple to the state of the s

# Proportion of vegetation cover class in area 100 - 100.0% 80 - 20 - 20 - 20 - 0.0% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class













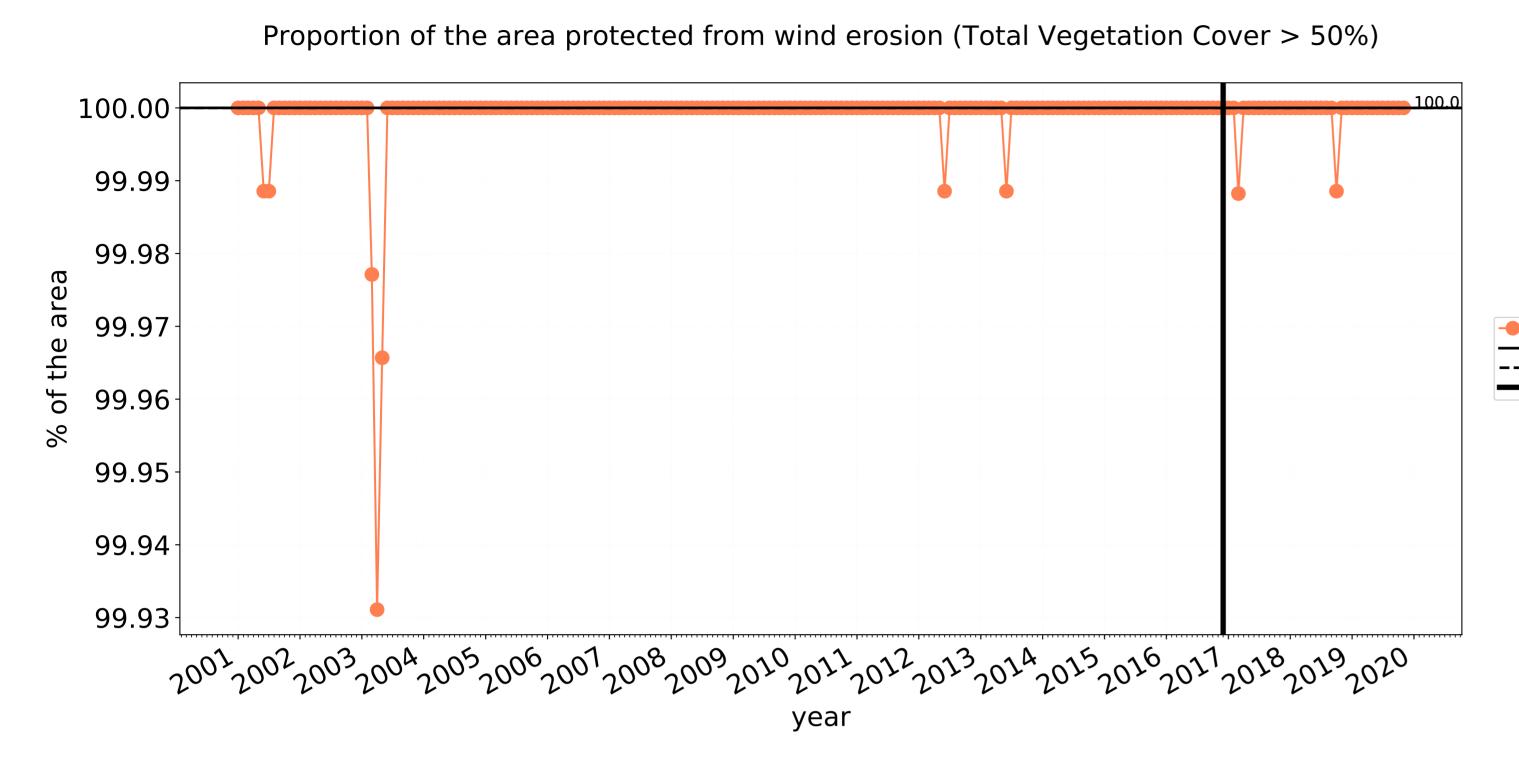


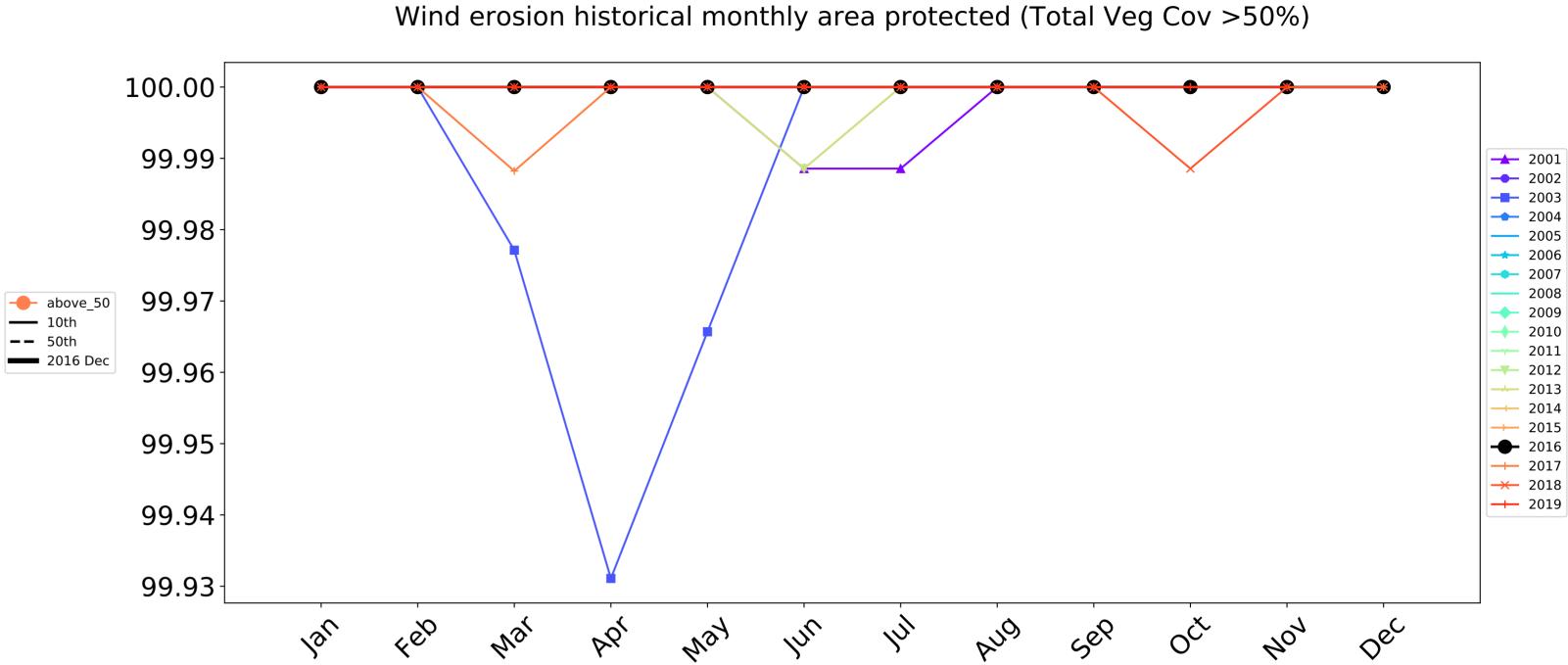




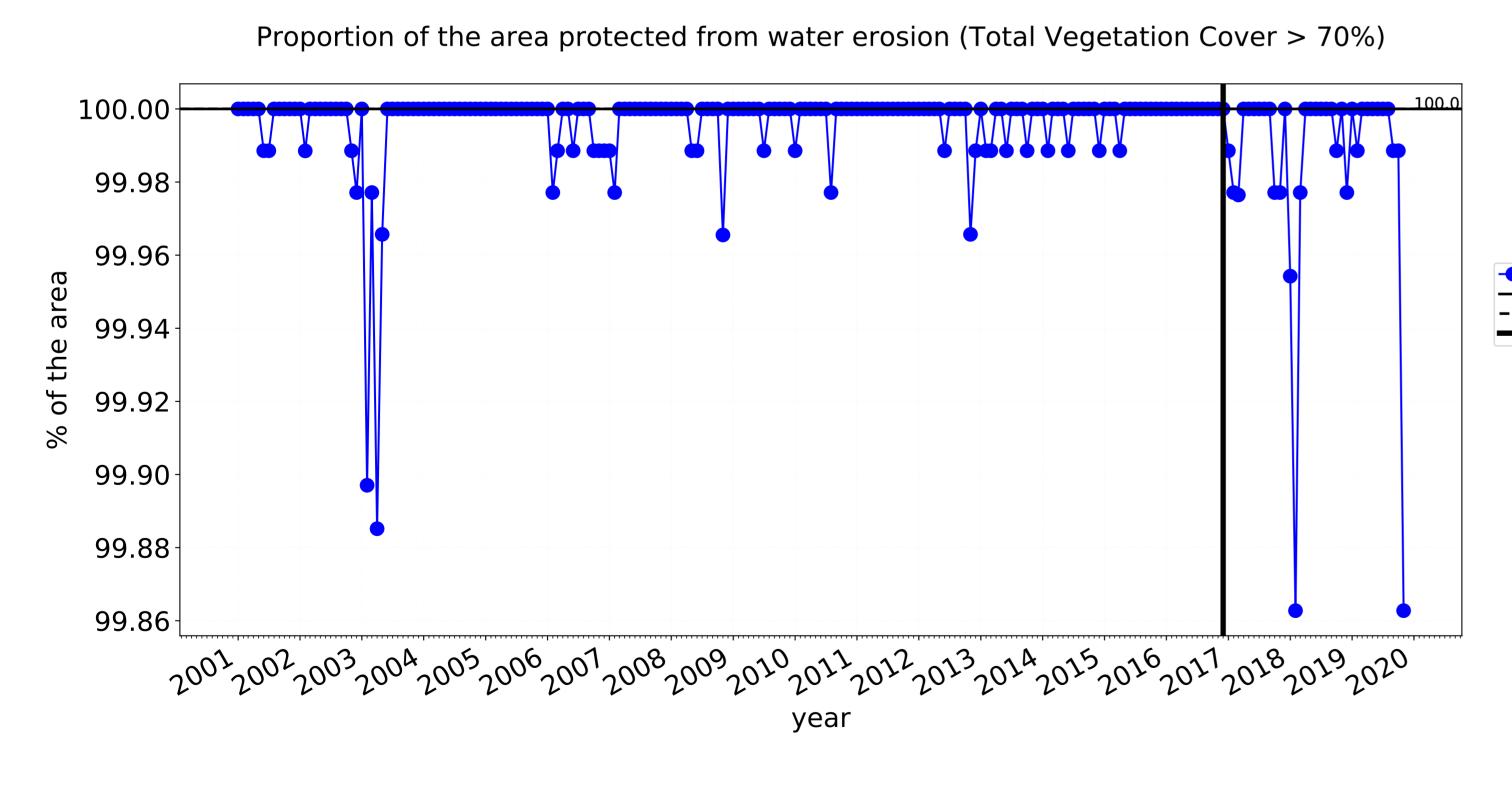


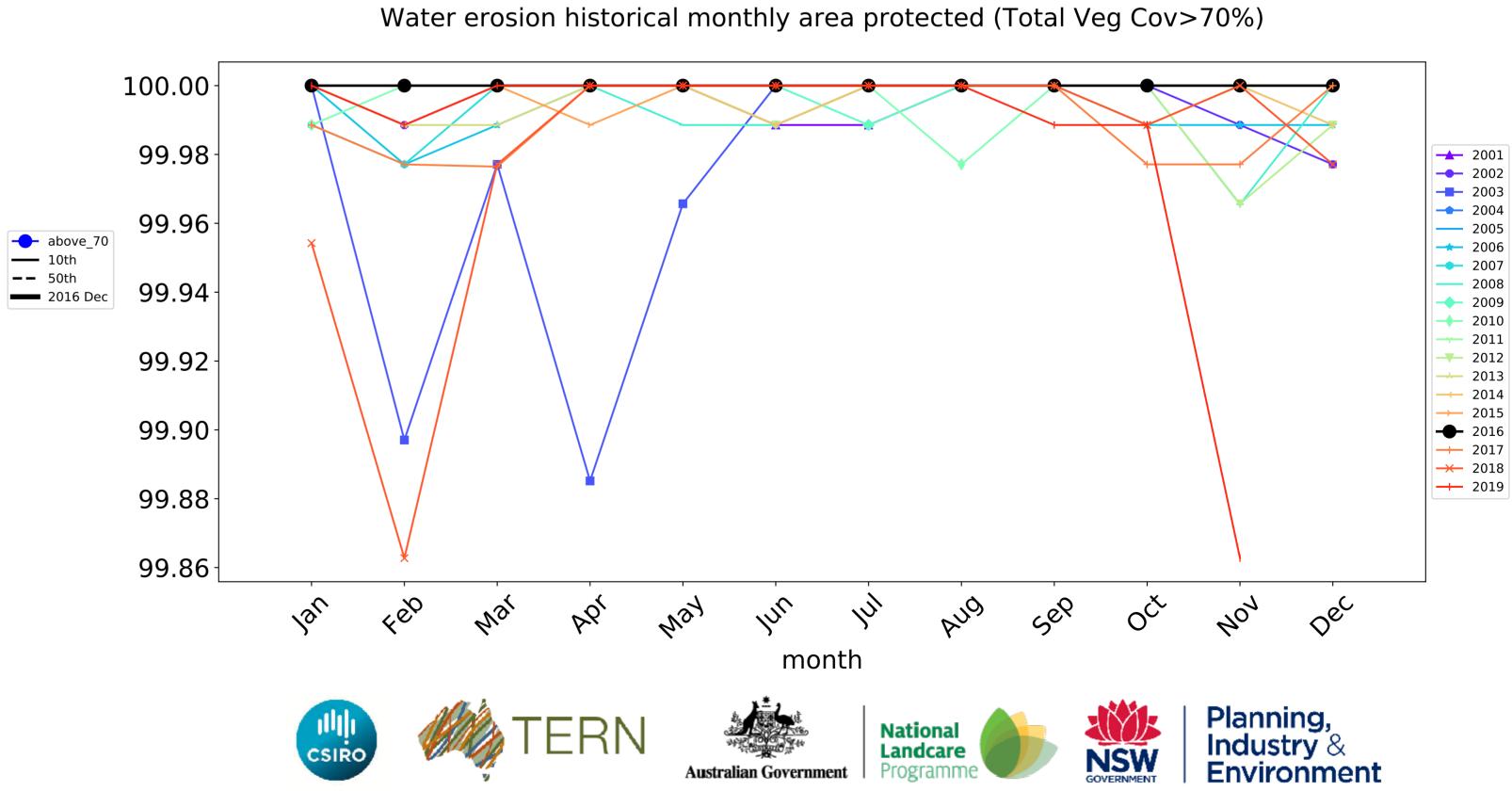
### **Production native forests and plantation forests timeseries**

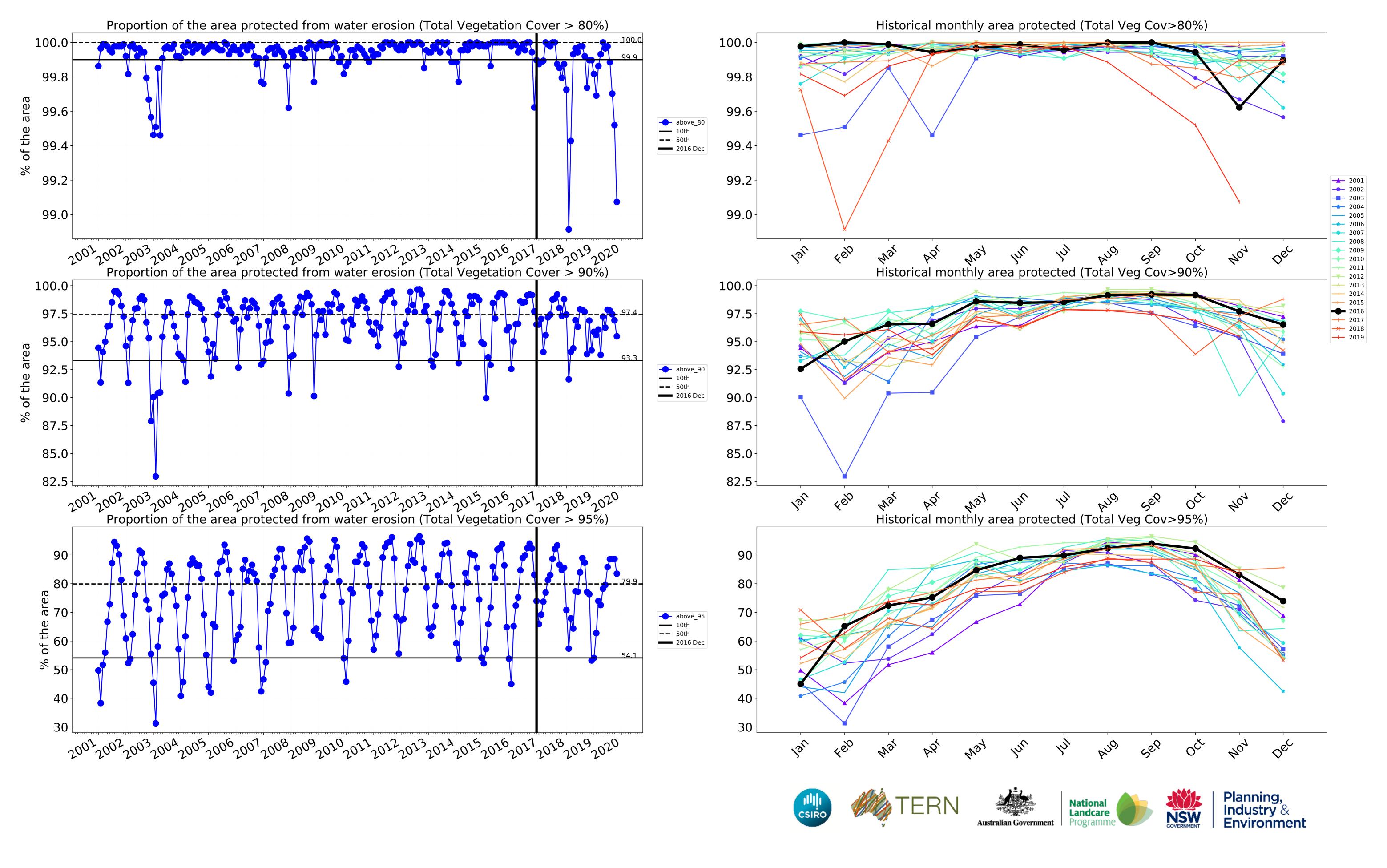




month







### Hunter (3,240,325 ha and no data 60,100 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	3,240,325	99.9% 3,237,001	99.6% 3,228,406	98.5% 3,191,001	96.0% 3,109,170	75.3% 2,441,231	38.6% 1,251,599
Conservation and natural environments	1,242,000	99.9% 1,240,725	99.8% 1,239,825	99.6% 1,237,300	99.2% 1,231,525	90.3% 1,121,300	56.3% 698,675
Conservation and natural environments non forest	30,450	95.9% 29,200	93.4% 28,450	89.1% 27,125	84.5% 25,725	61.9% 18,850	22.5% 6,850
Conservation and natural environments Woodland forest	138,975	100.0% 138,950	100.0% 138,950	99.9% 138,775	99.5% 138,250	87.0% 120,900	36.8% 51,100
natural environments Forest (non woodland)	1,072,575	100.0% 1,072,575	100.0% 1,072,425	99.9% 1,071,400	99.5% 1,067,550	91.5% 981,550	59.7% 640,725
Agriculture	1,580,900	100.0% 1,580,900	100.0% 1,580,775	99.7% 1,576,225	97.1% 1,535,450	66.5% 1,050,825	23.7% 374,025
Grazing	1,502,900	100.0% 1,502,900	100.0% 1,502,775	99.8% 1,499,575	98.3% 1,476,950	69.1% 1,038,925	24.8% 372,200
Grazing non forest	1,213,100	100.0% 1,213,100	100.0% 1,212,975	99.8% 1,210,150	98.0% 1,189,100	67.1% 814,400	24.0% 291,050
Grazing Woodland forest	120,625	100.0% 120,625	100.0% 120,625	99.9% 120,525	99.3% 119,725	69.2% 83,500	17.7% 21,375
Grazing - Forest (non woodland)	169,175	100.0% 169,175	100.0% 169,175	99.8% 168,900	99.4% 168,125	83.4% 141,025	35.3% 59,775
Cropping	50,625	100.0% 50,625	100.0% 50,625	98.1% 49,650	73.8% 37,375	16.5% 8,350	3.0% 1,500
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	99.9% 218,350	96.5% 210,975	73.9% 161,625











