### **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: September 2009** 

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







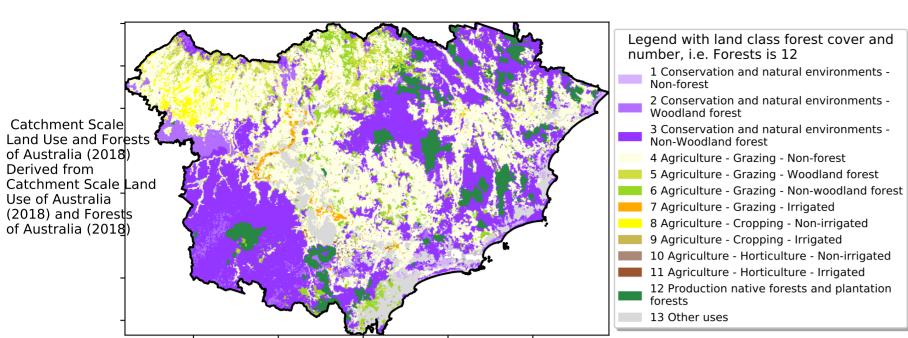




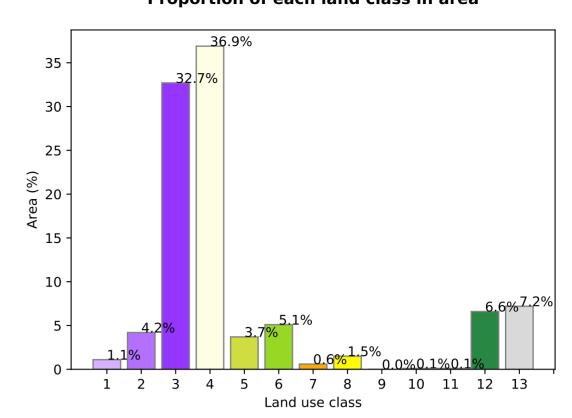


### **Vegetation Cover Sep 2009**

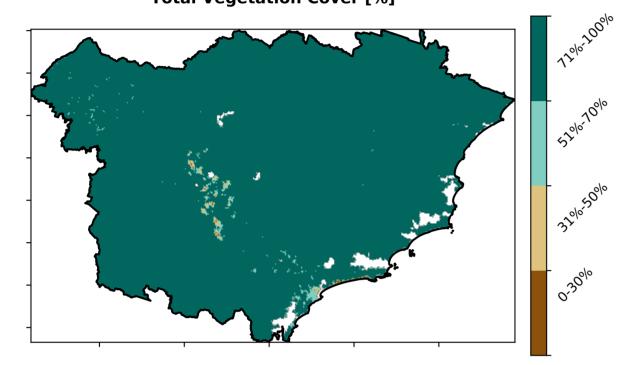
### Land use and forest cover



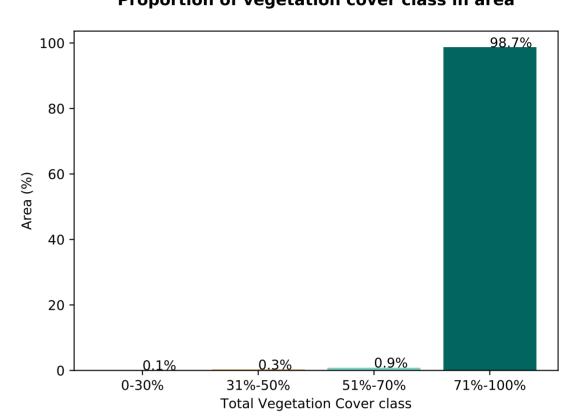
### Proportion of each land class in area



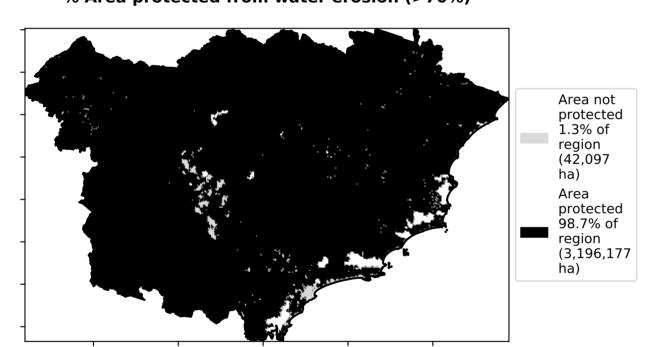
### Total Vegetation Cover [%]



Proportion of vegetation cover class in area



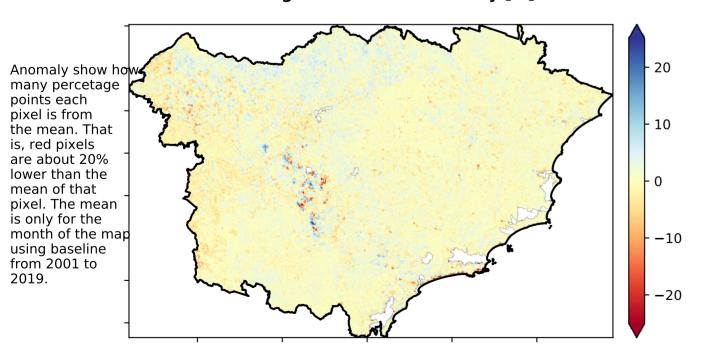
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

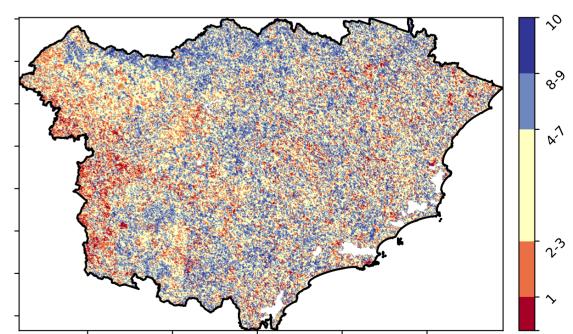


Total Vegetation Cover Anomaly [%]



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 [%]





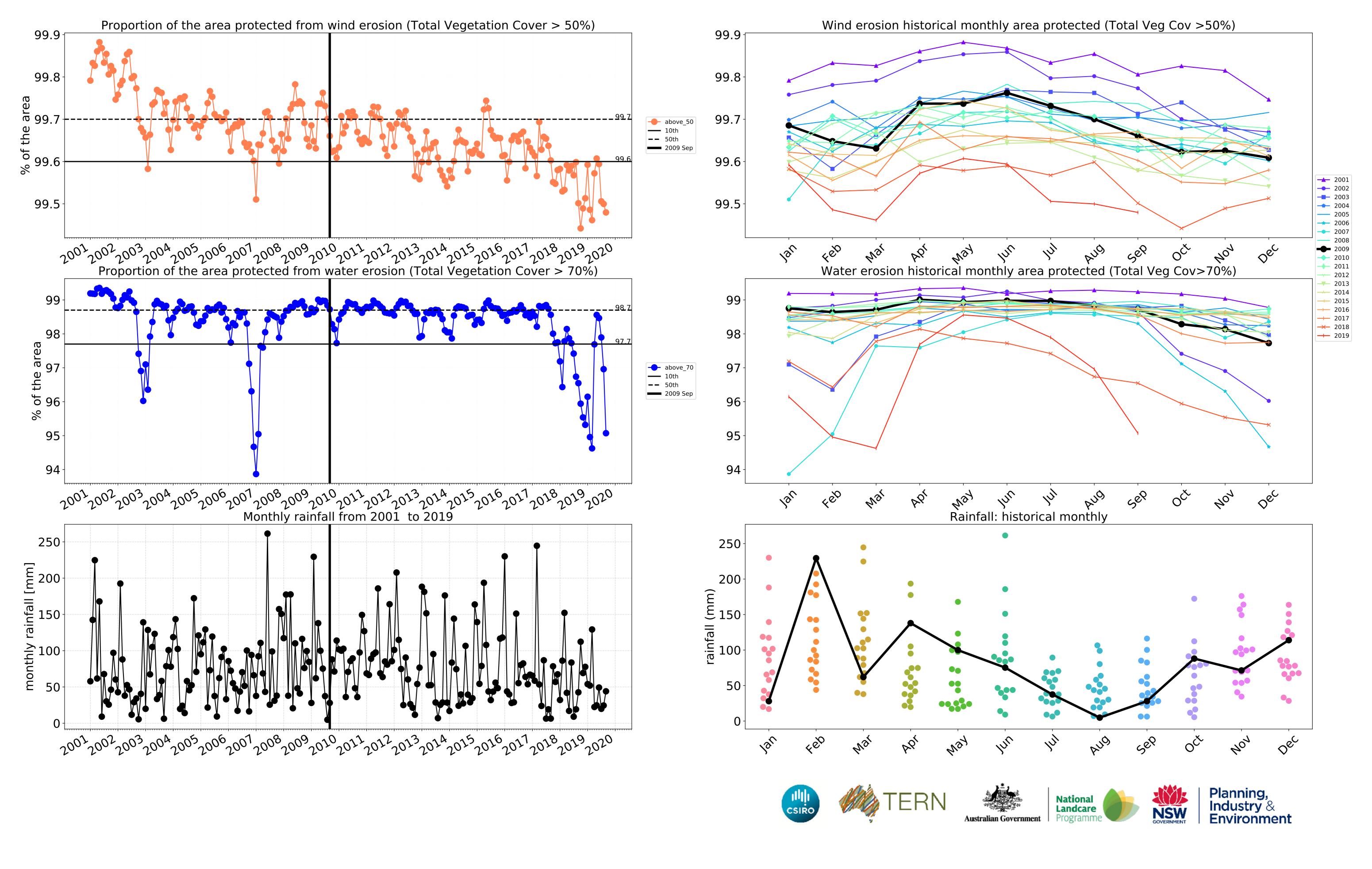


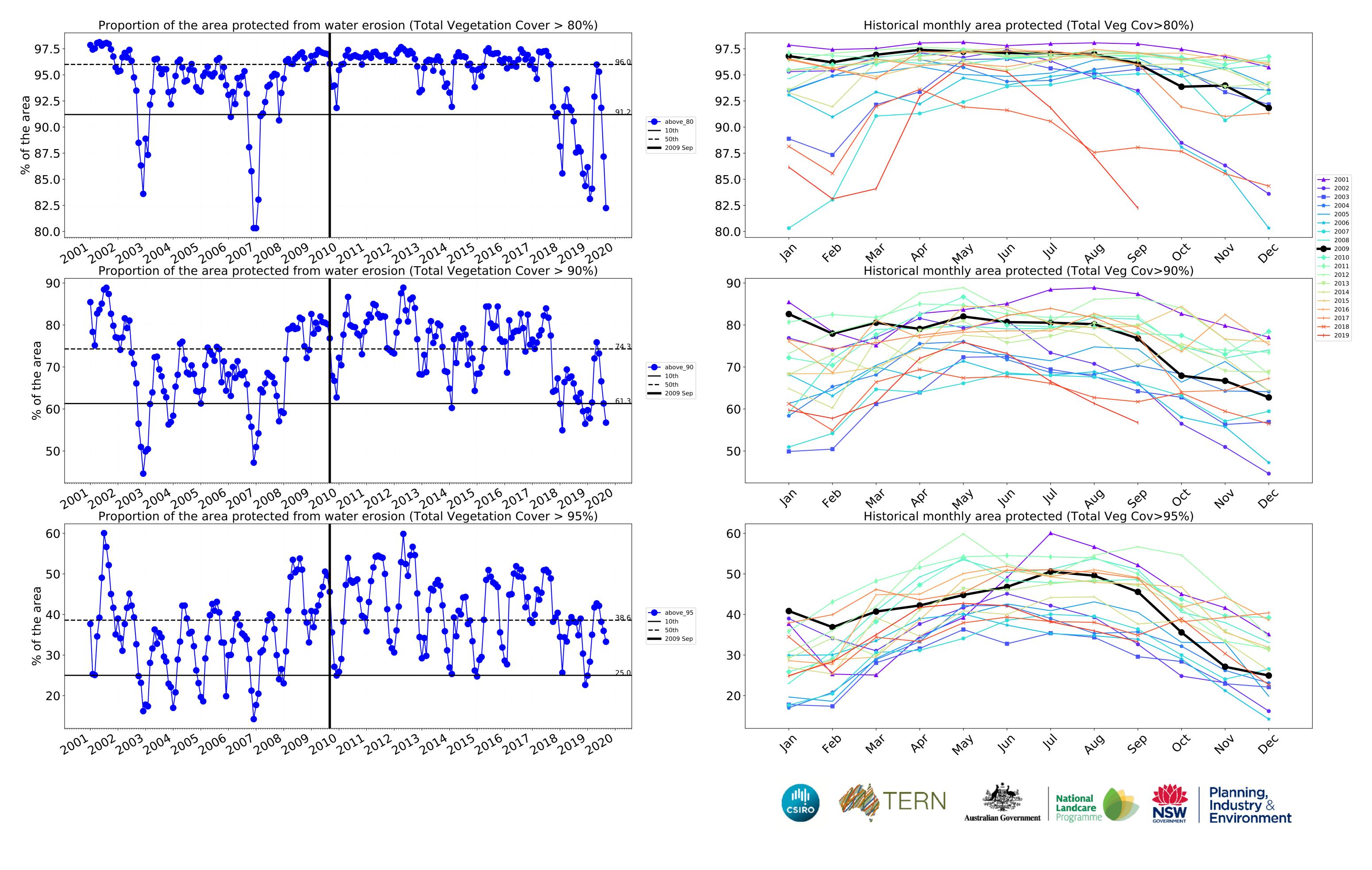






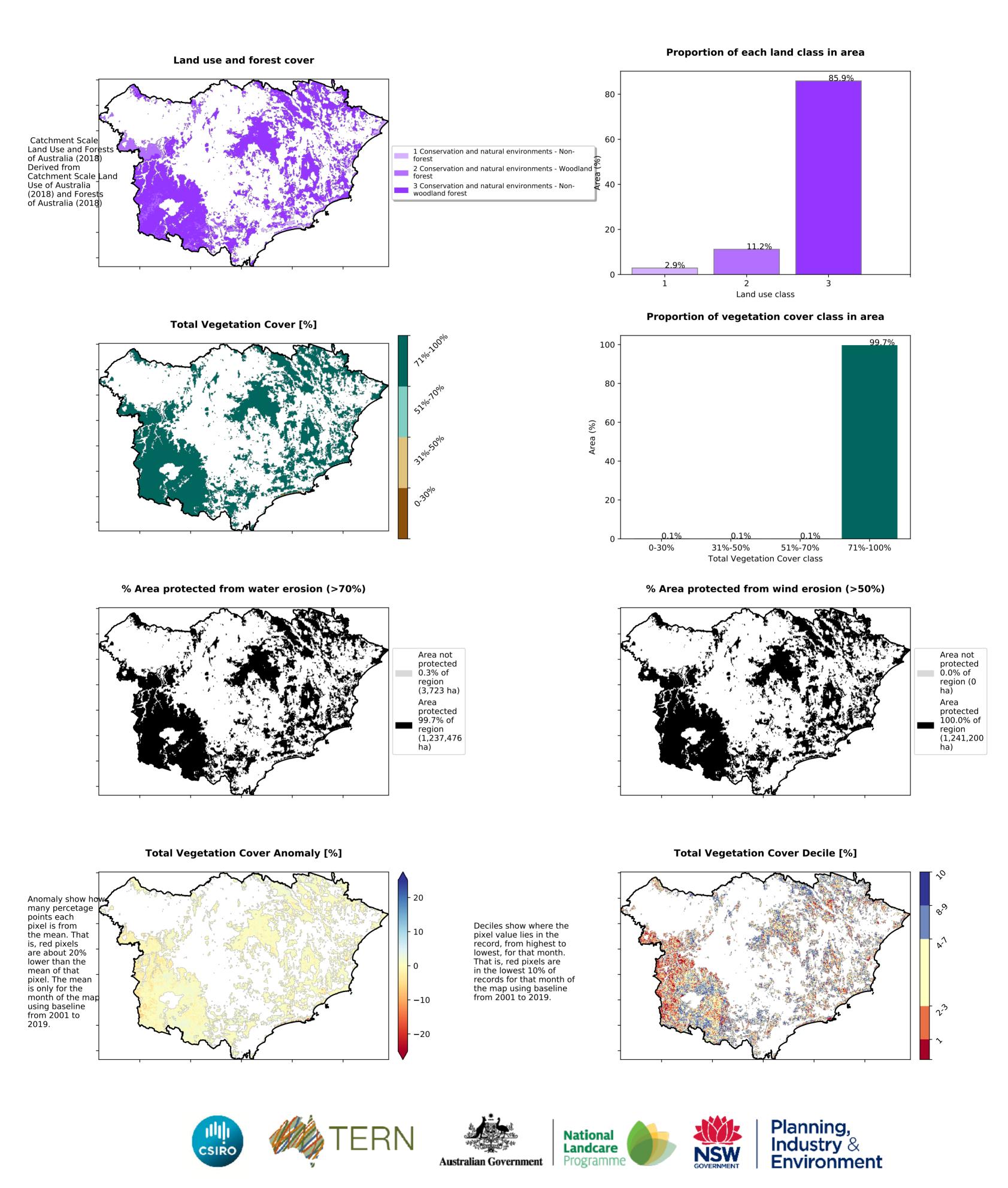




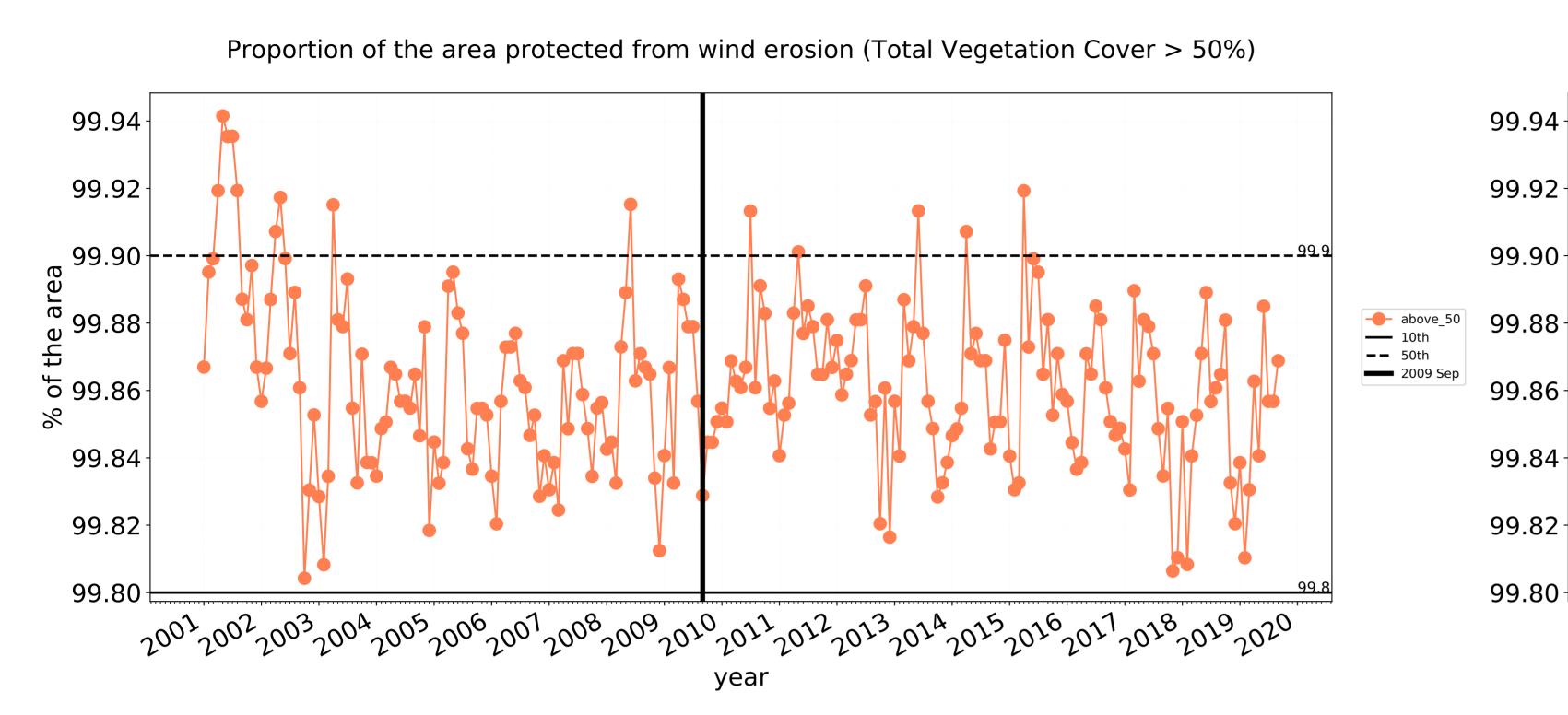


.

### **Conservation and natural environments**



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



### → 2001 → 2002 → 2003 → 2004 → 2005 → 2006 → 2007 → 2007 → 2009 → 2010 → 2010 → 2011

2012

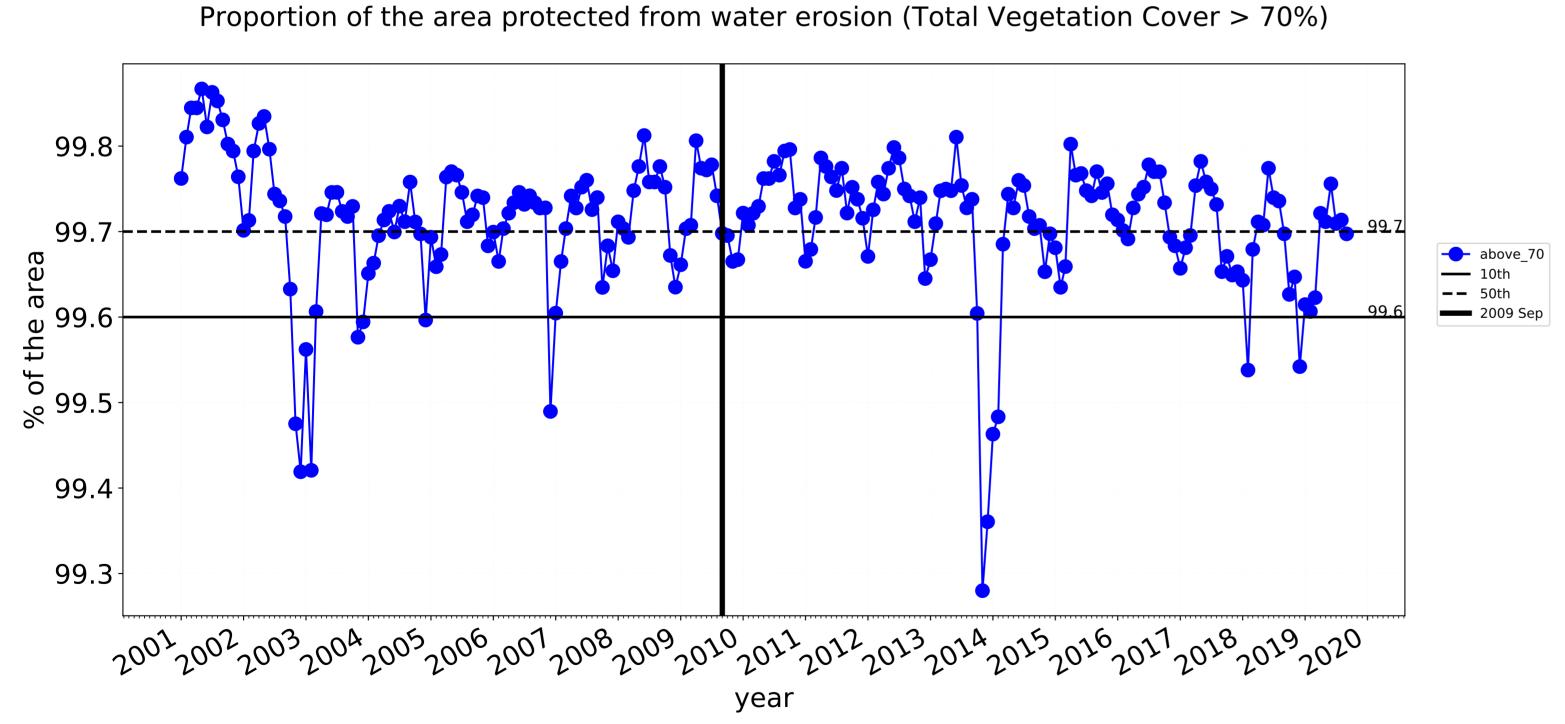
2013 2014 2015

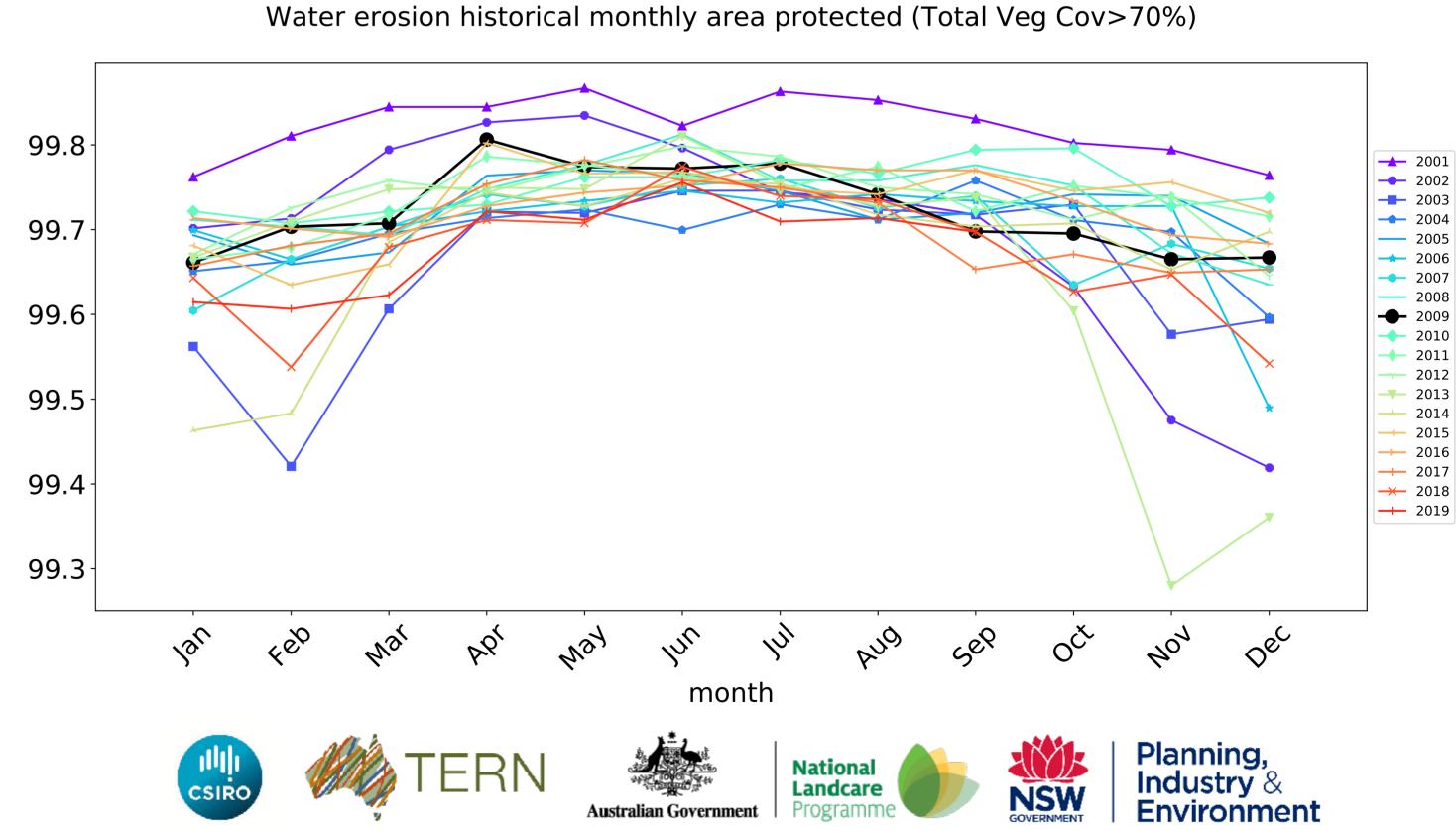
**→** 2016

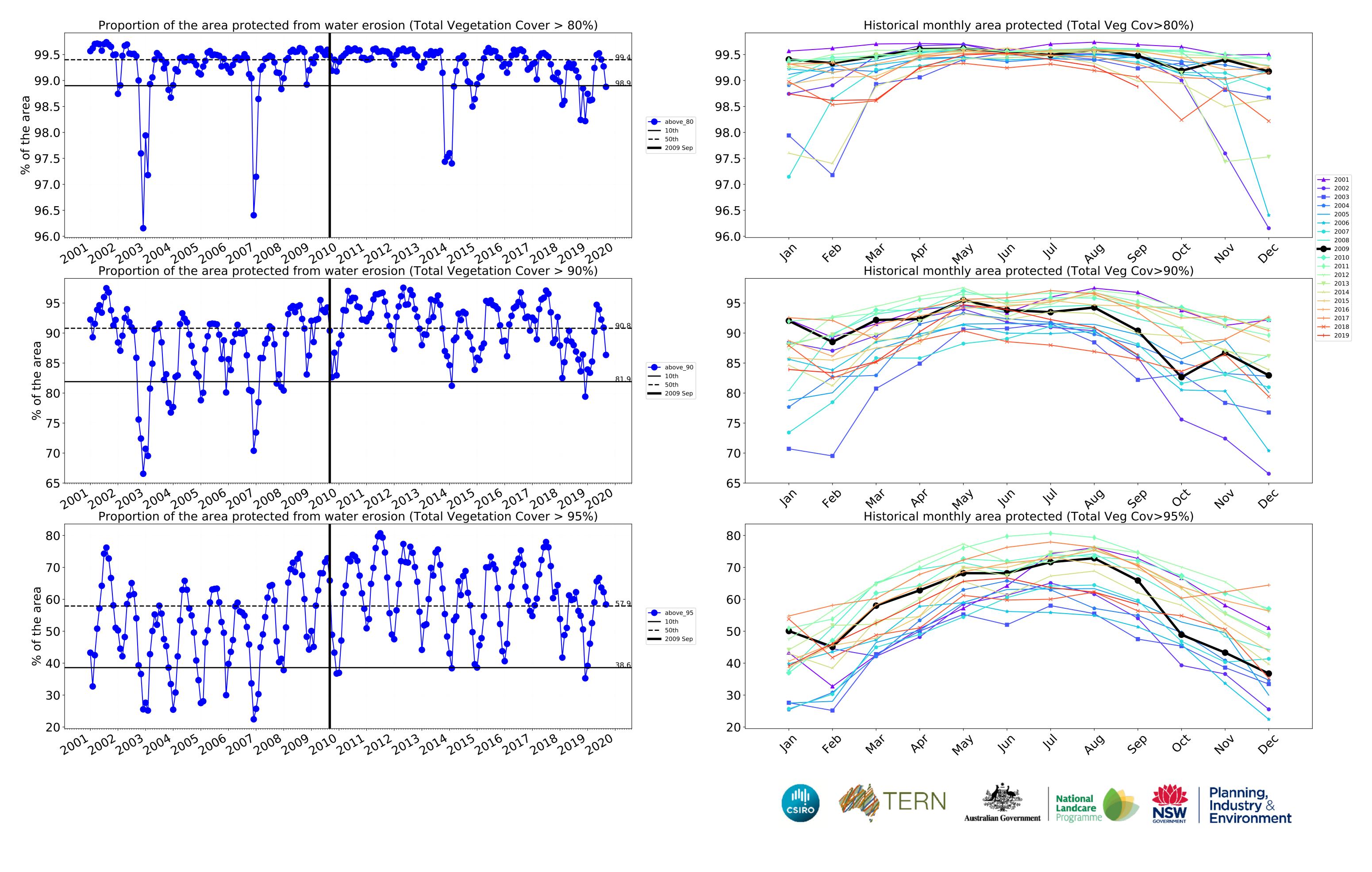
→ 2017 → 2018 → 2019

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

month



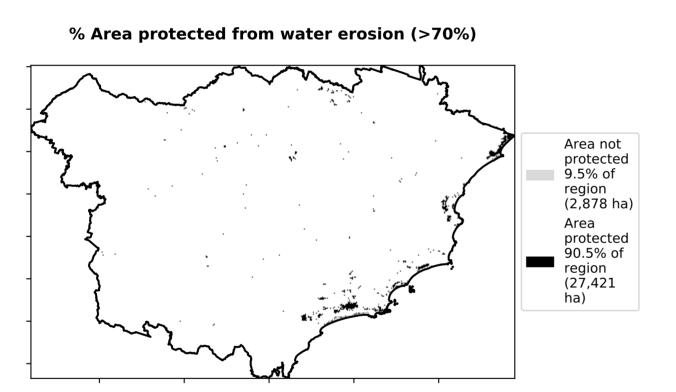


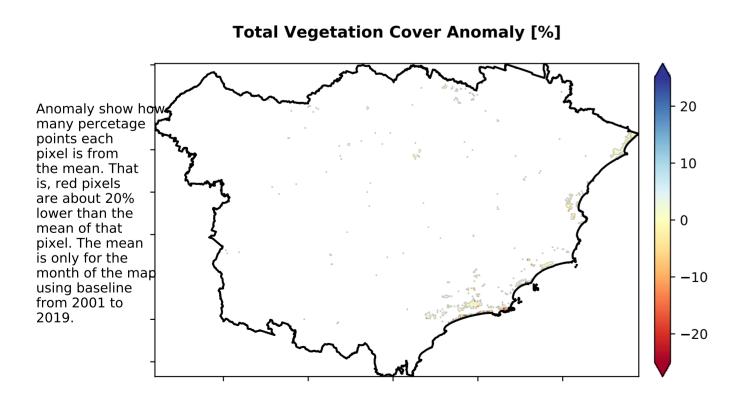


### **Conservation and natural environments non forest**

### Catchment Scale Land Use and Forests of Australia (2018) Catchment Scale Land Use and Forests of Australia (2018) 1 Conservation and natural environments - Nonforest forest

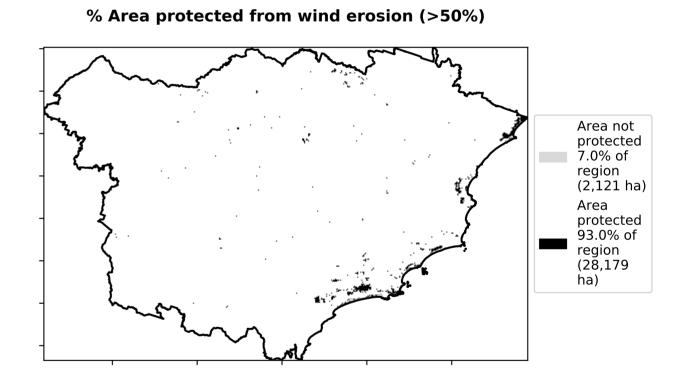
## Total Vegetation Cover [%]

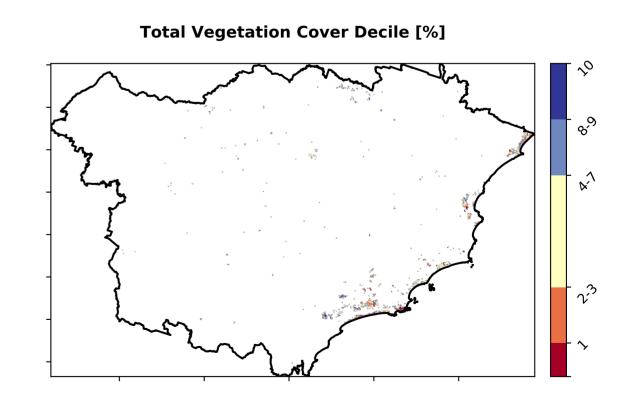




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

# Proportion of vegetation cover class in area 90.5% 80 - 60 - 60 - 20 - 4.6% 20 - 0-30% 31%-50% Total Vegetation Cover class









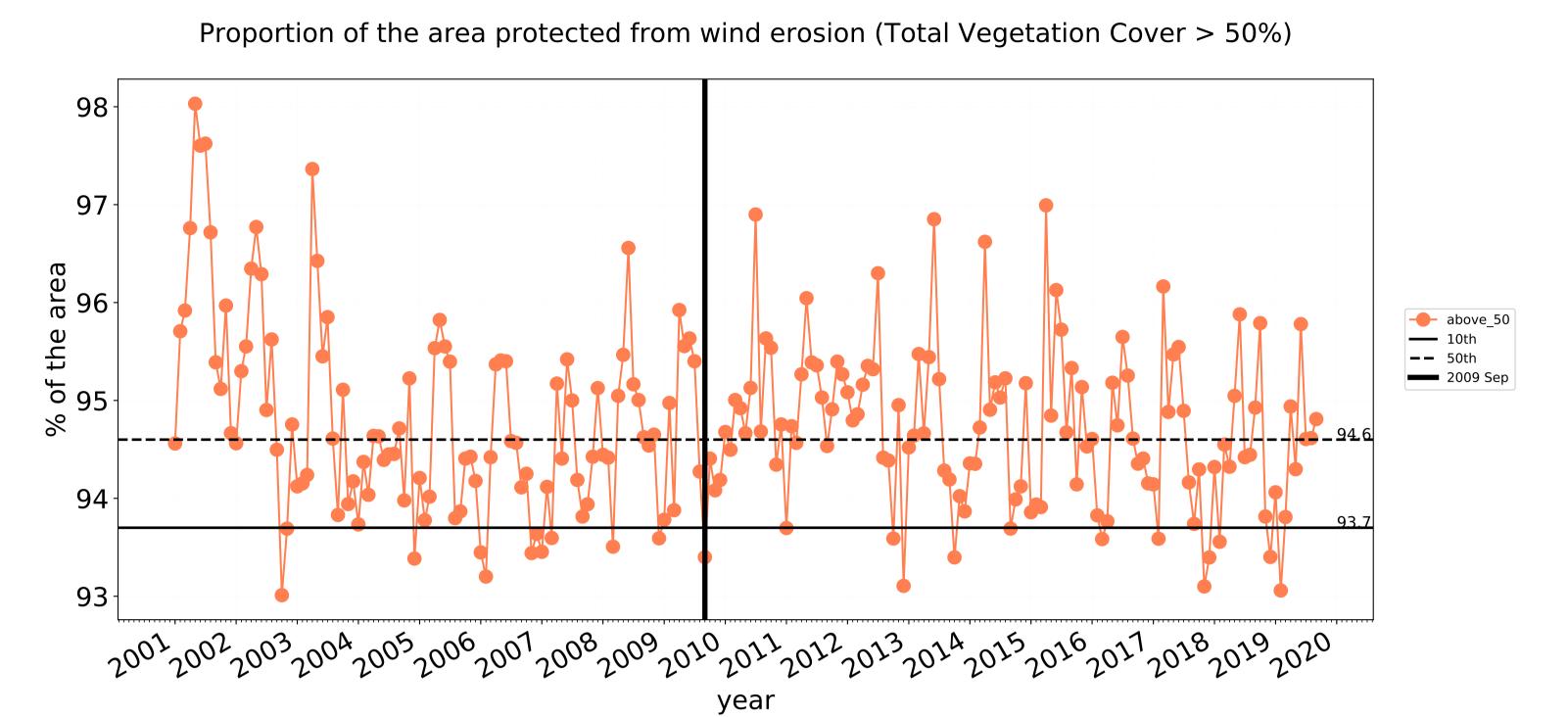




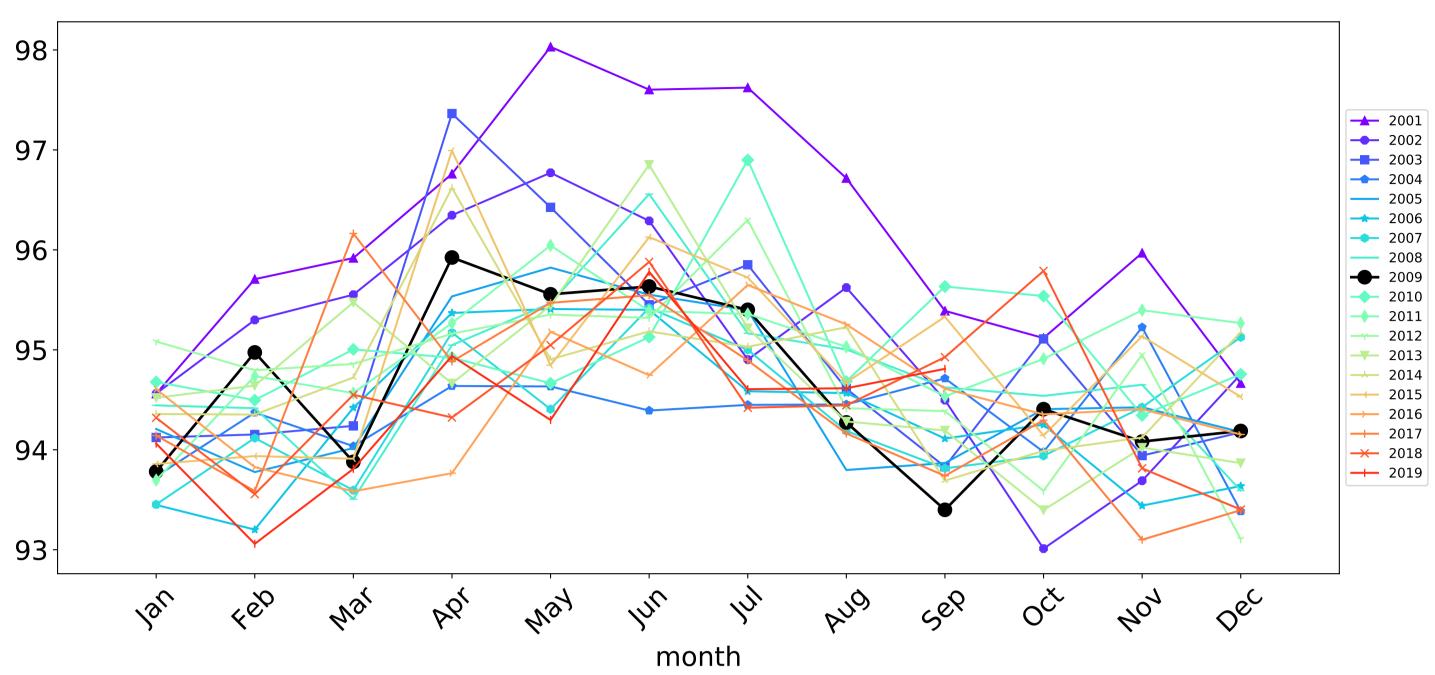




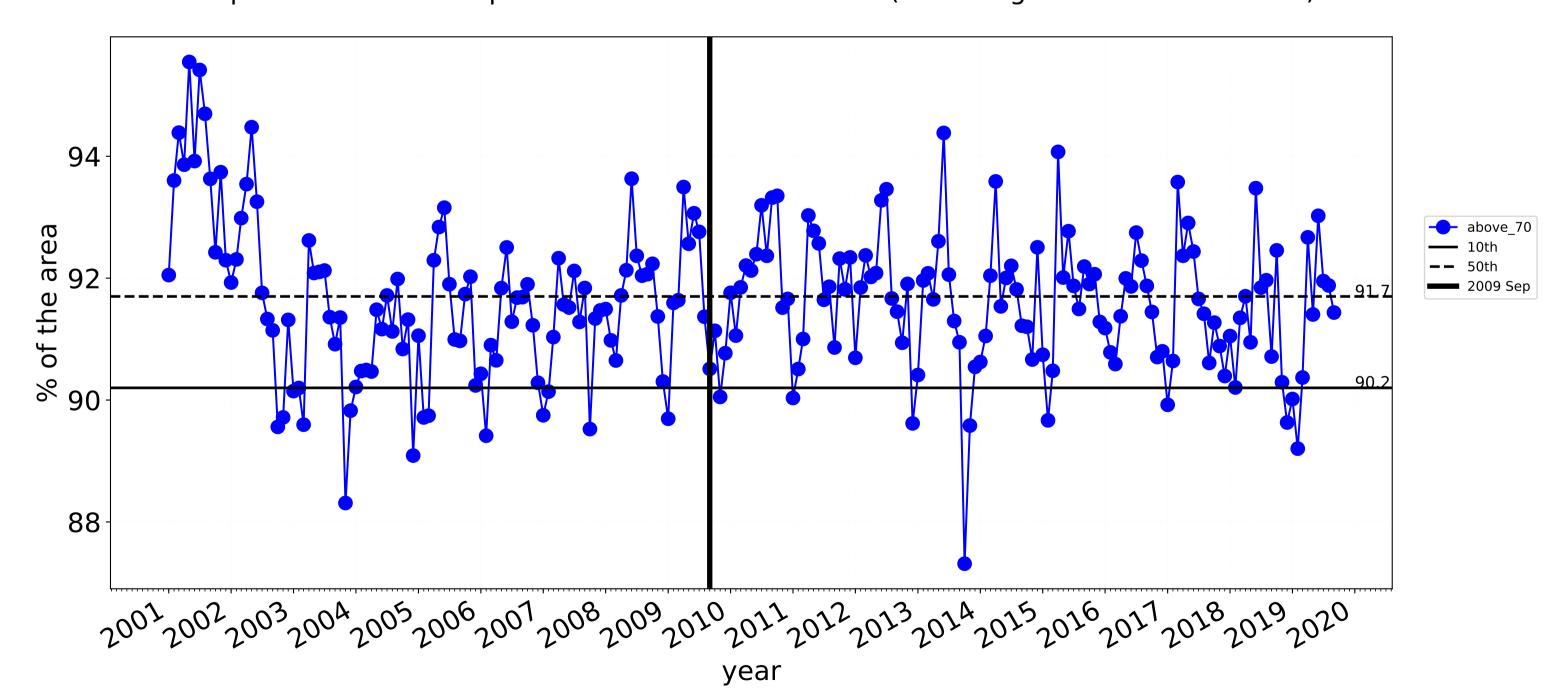
### **Conservation and natural environments non forest timeseries**



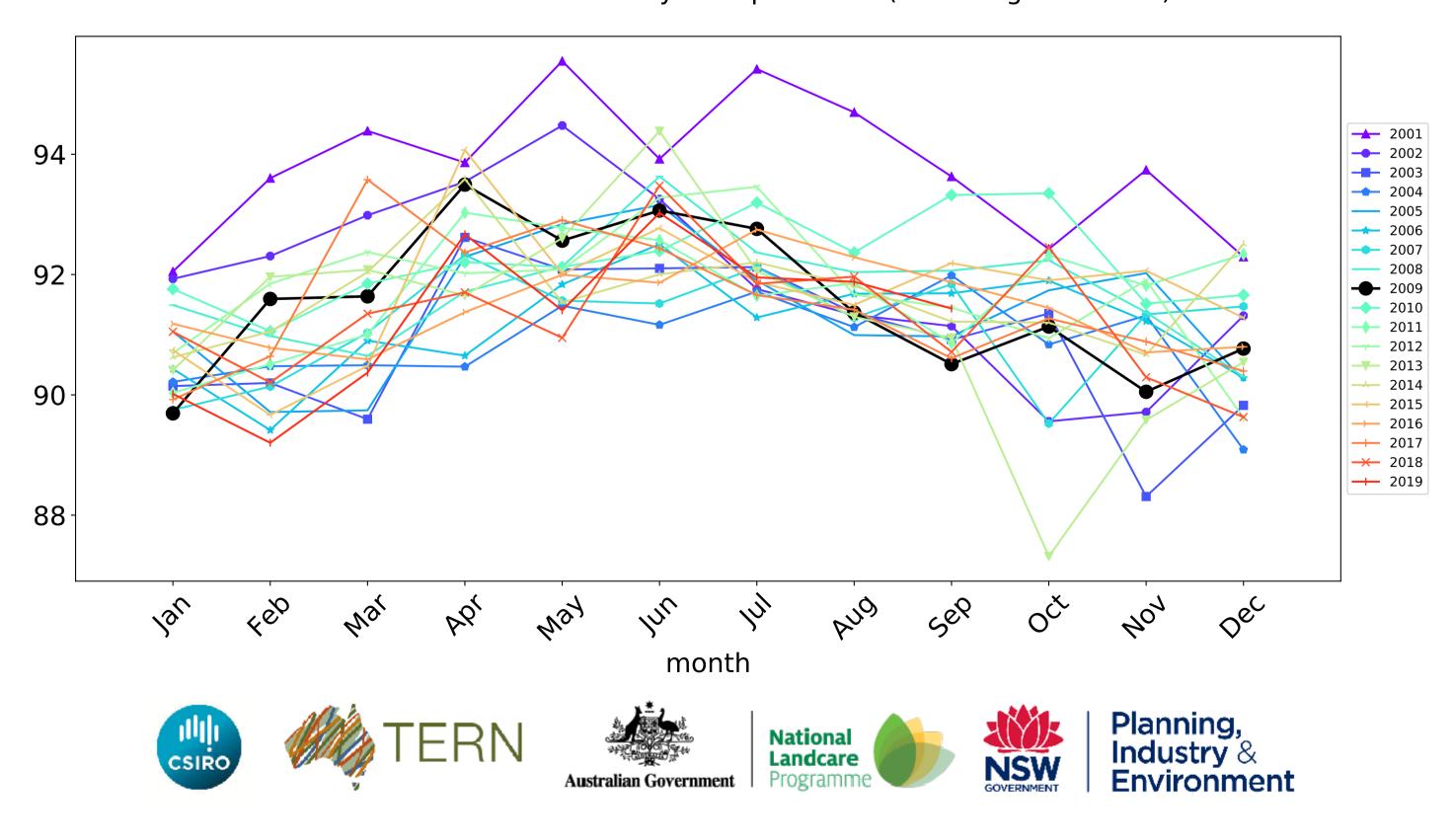


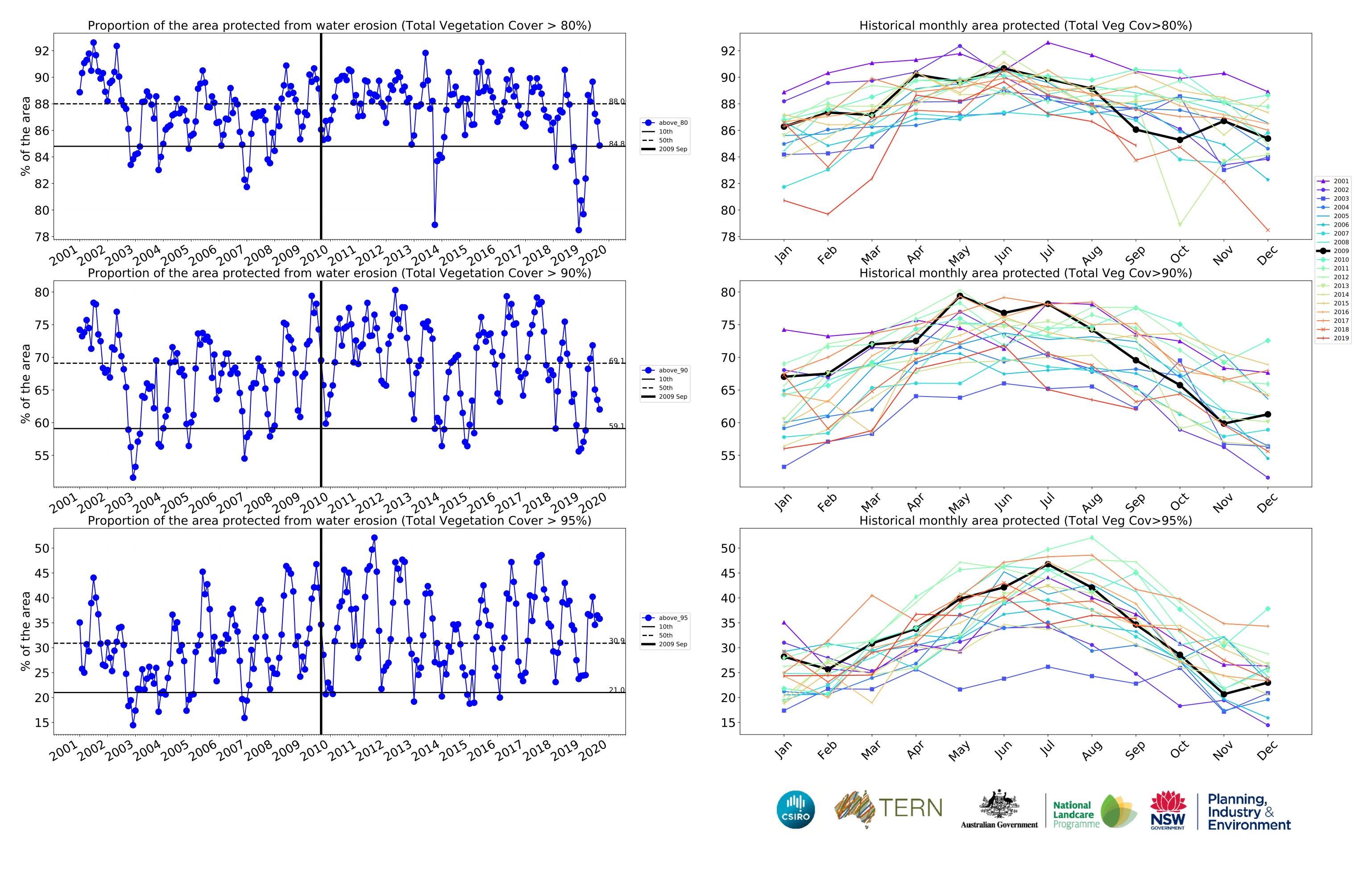


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

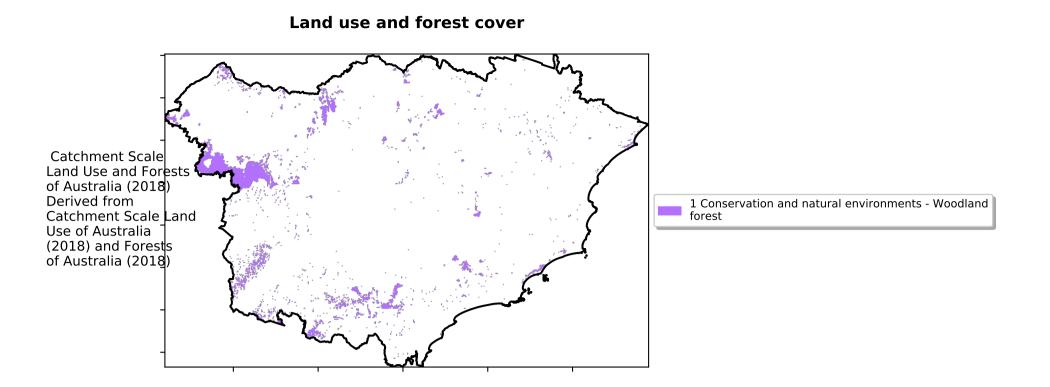


Water erosion historical monthly area protected (Total Veg Cov>70%)

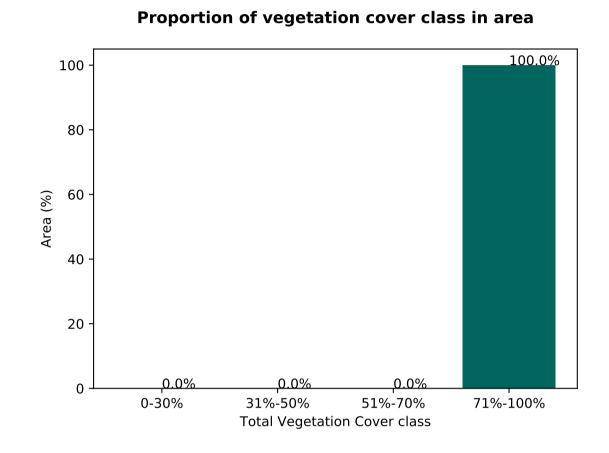


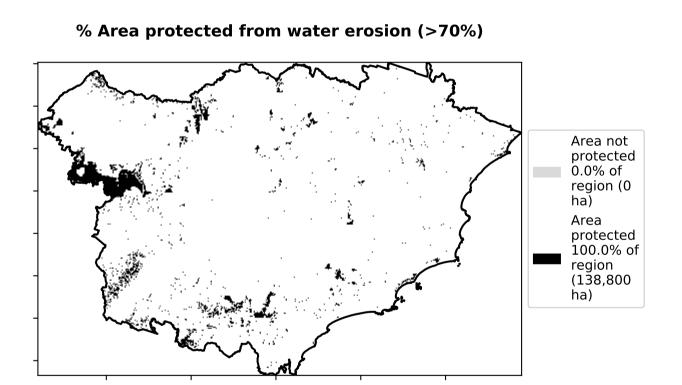


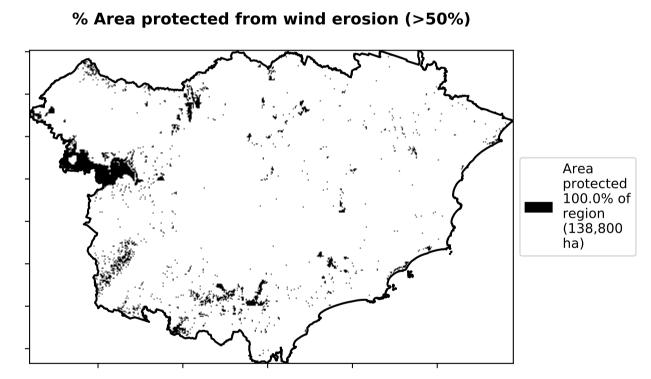
### **Conservation and natural environments Woodland forest**

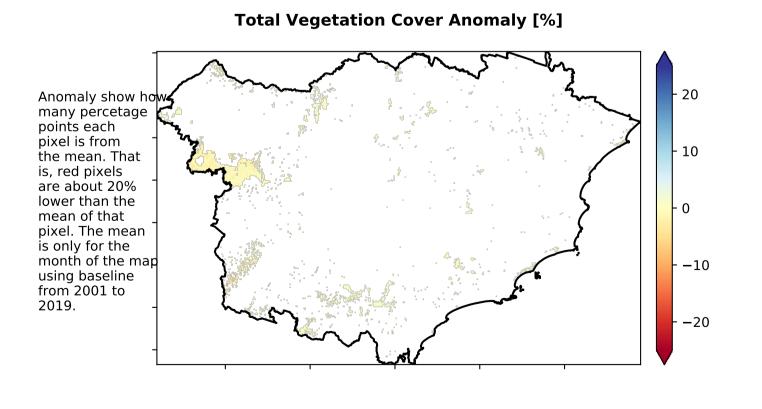


## 

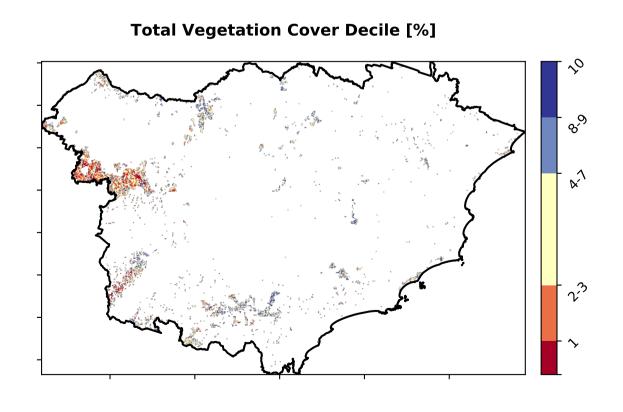








Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







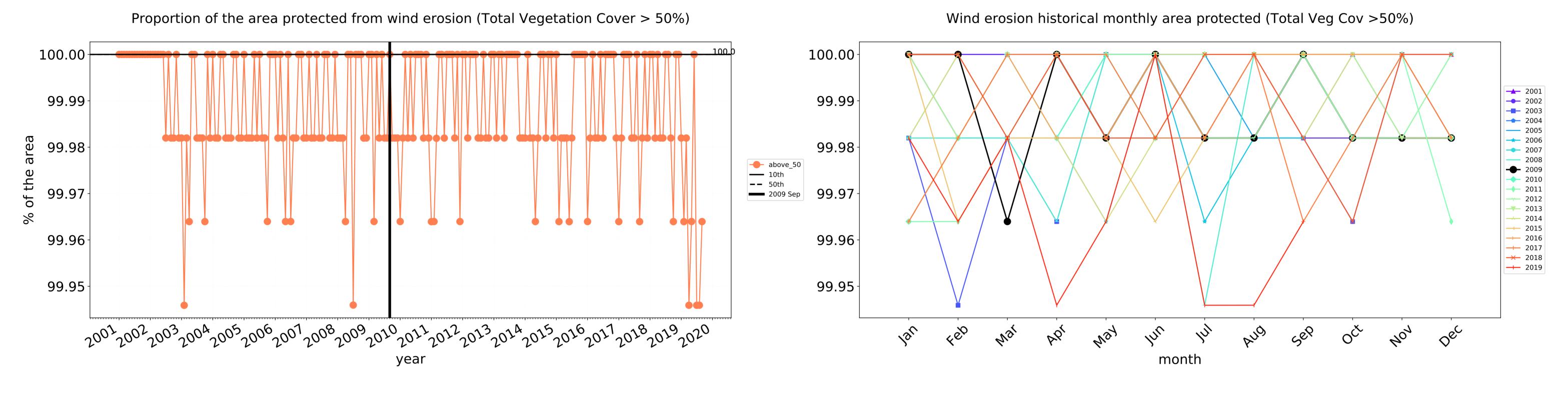


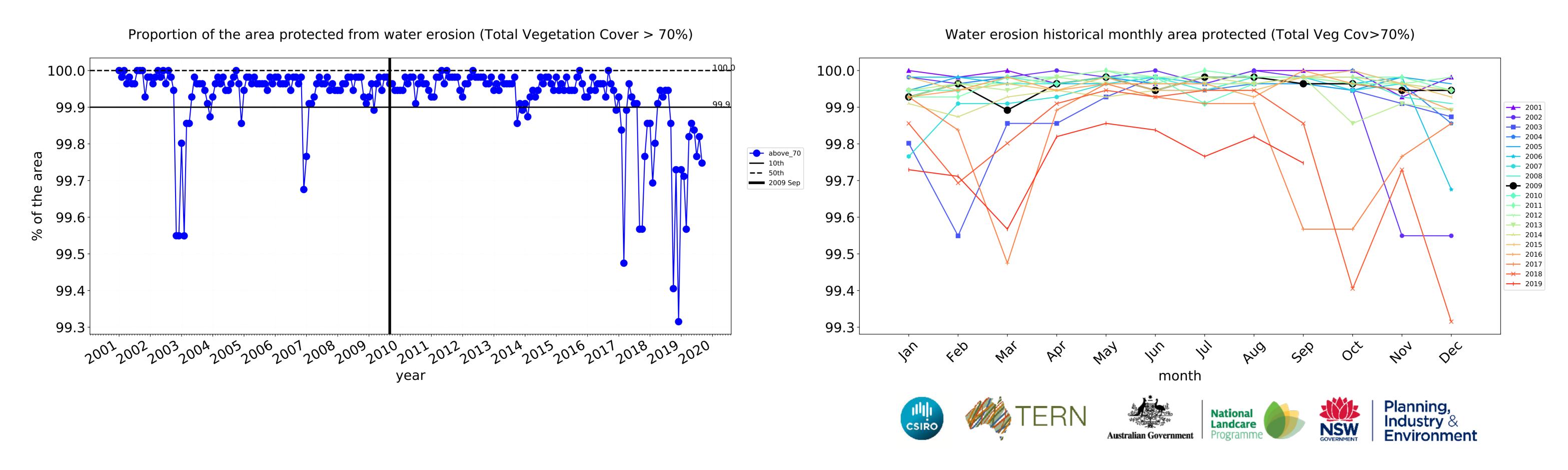


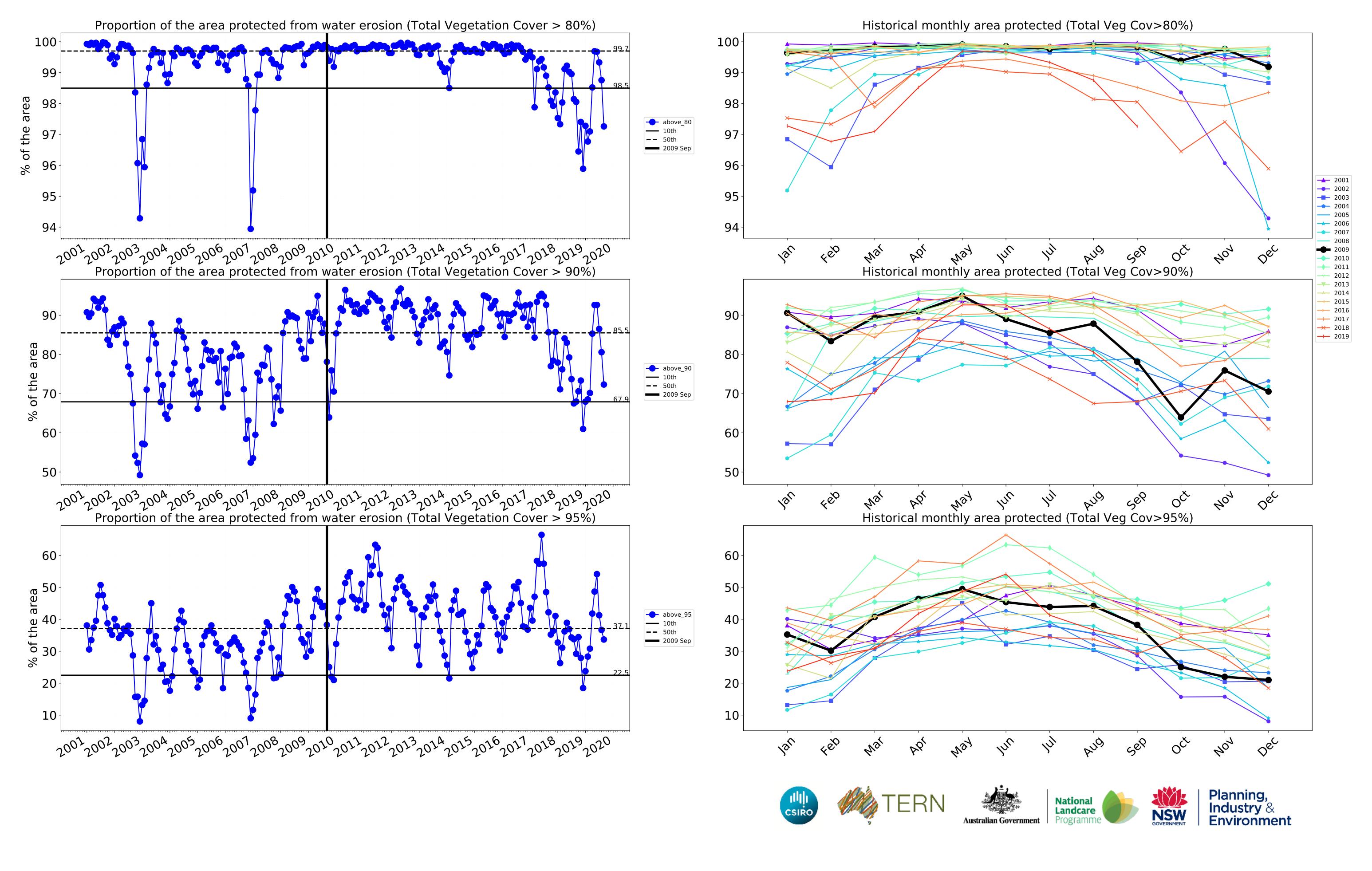




### Conservation and natural environments Woodland forest timeseries



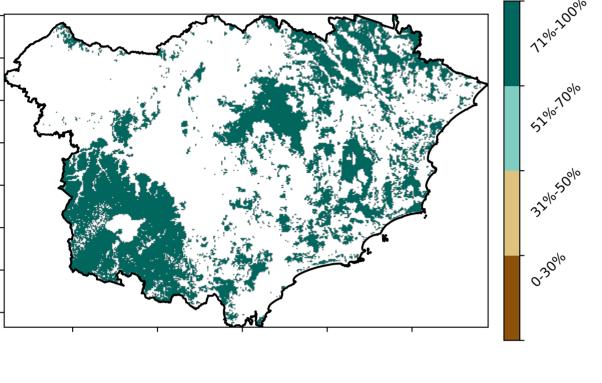


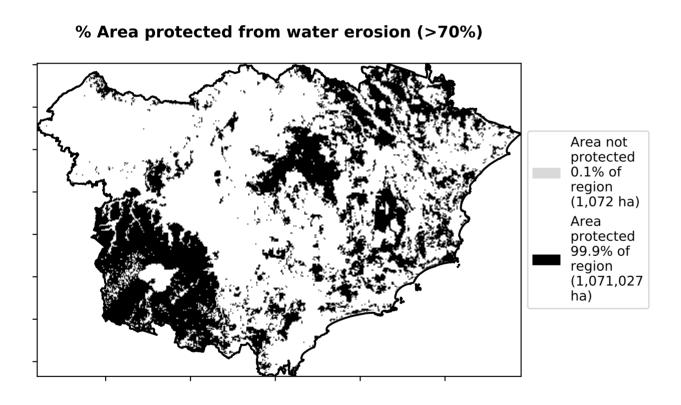


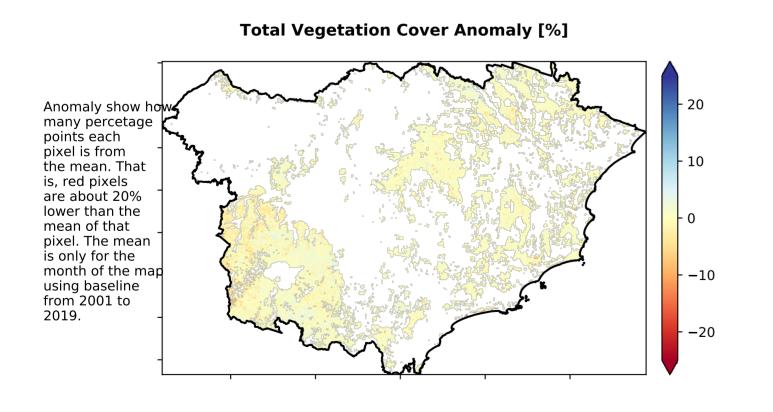
### **Conservation and natural environments Forest (non woodland)**

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

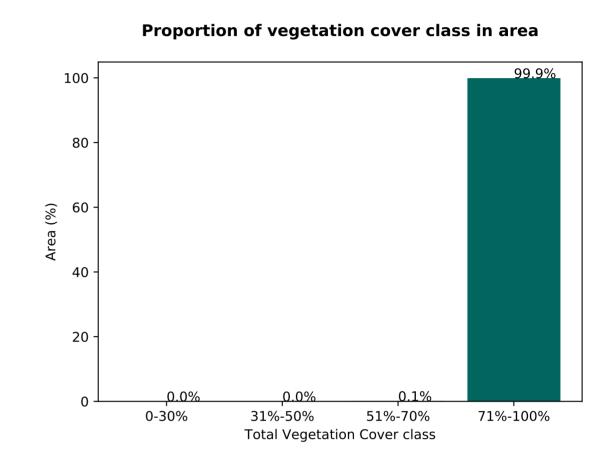
## **Total Vegetation Cover [%]**

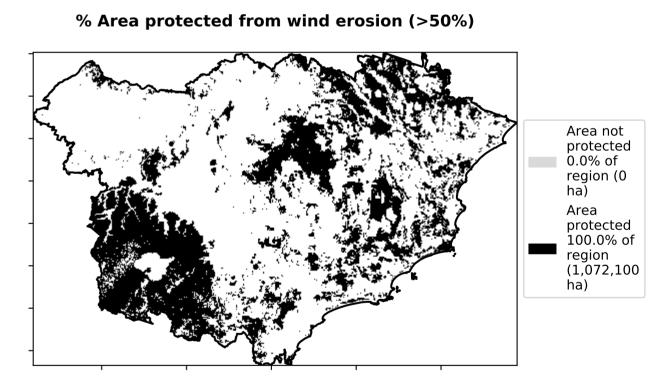


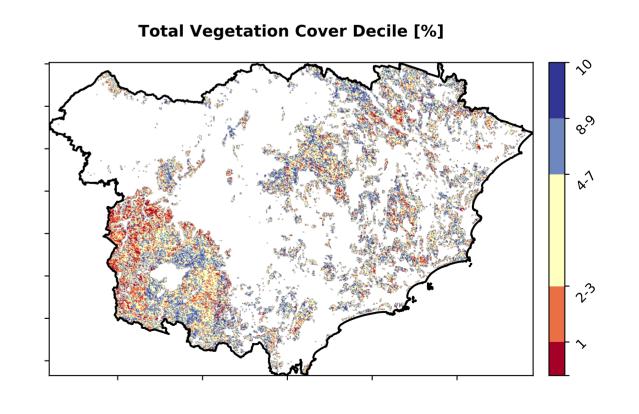




### Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.









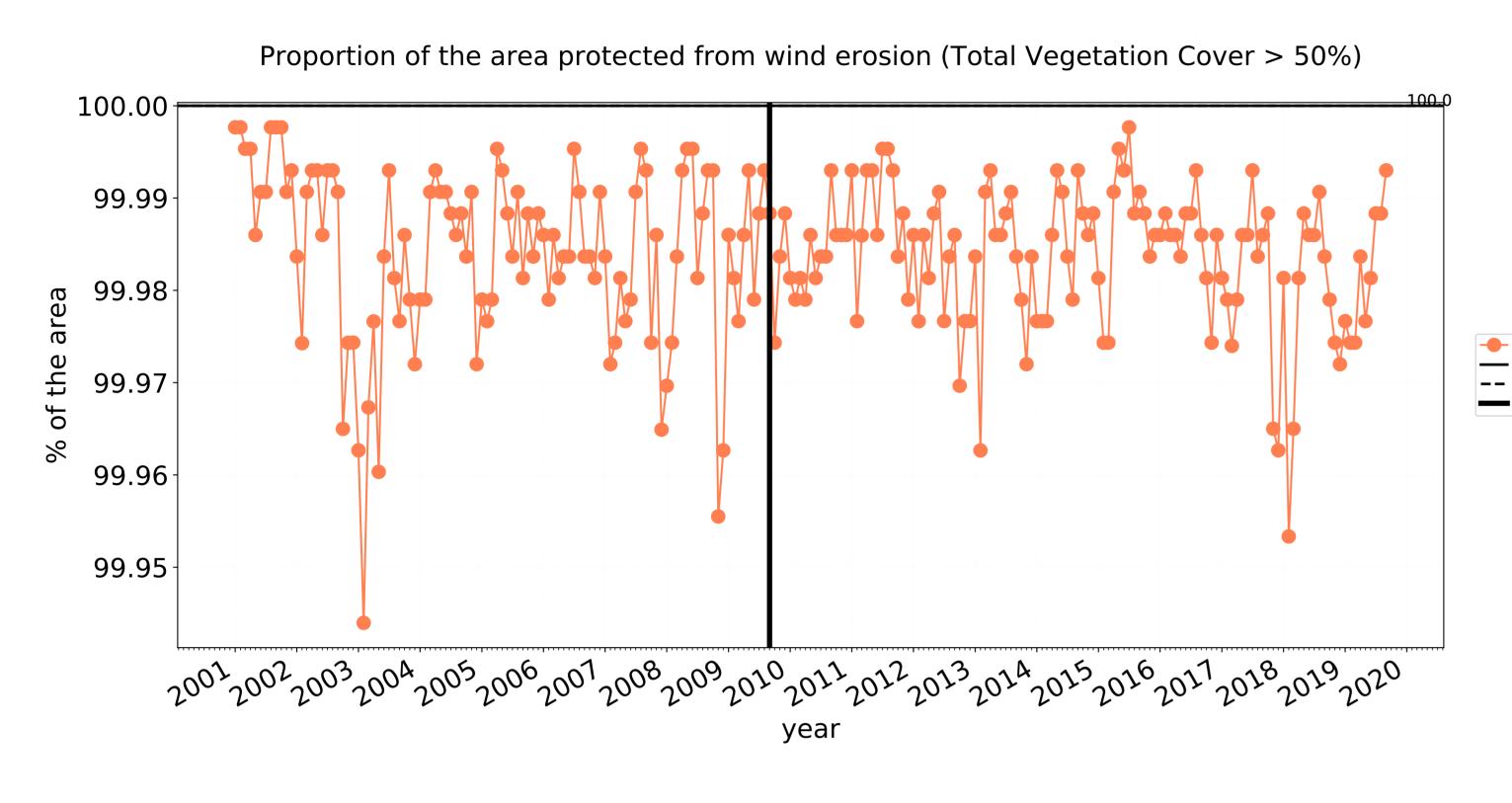


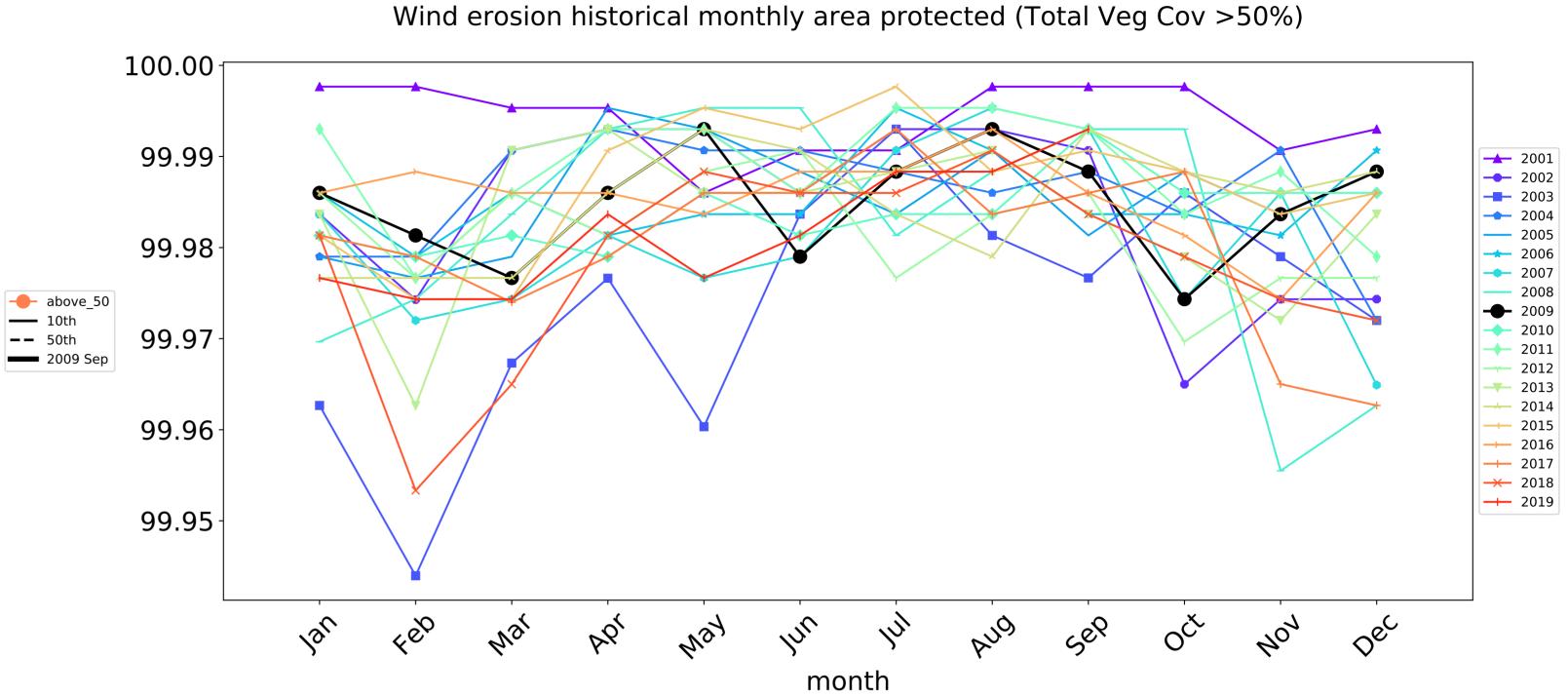


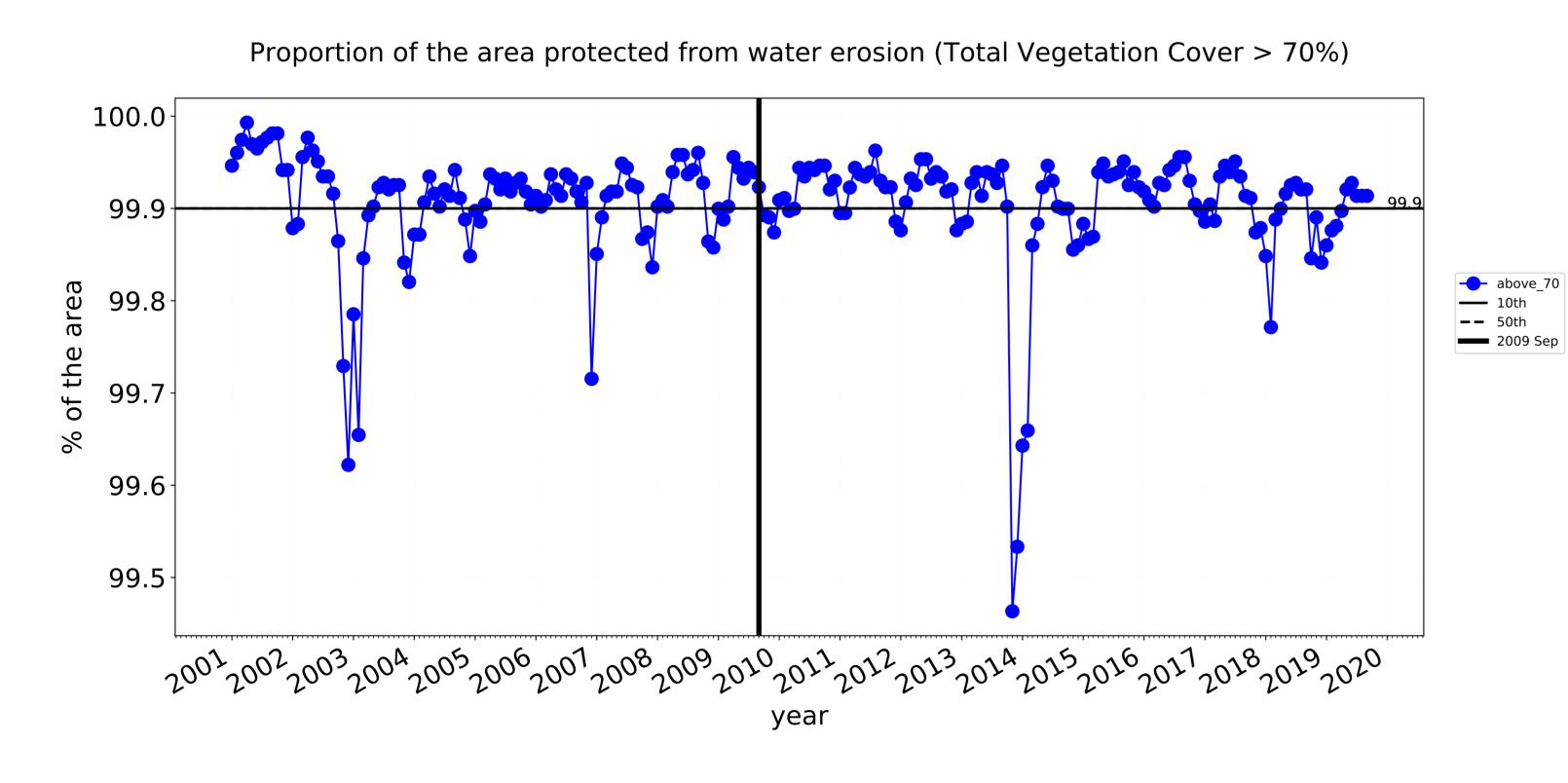


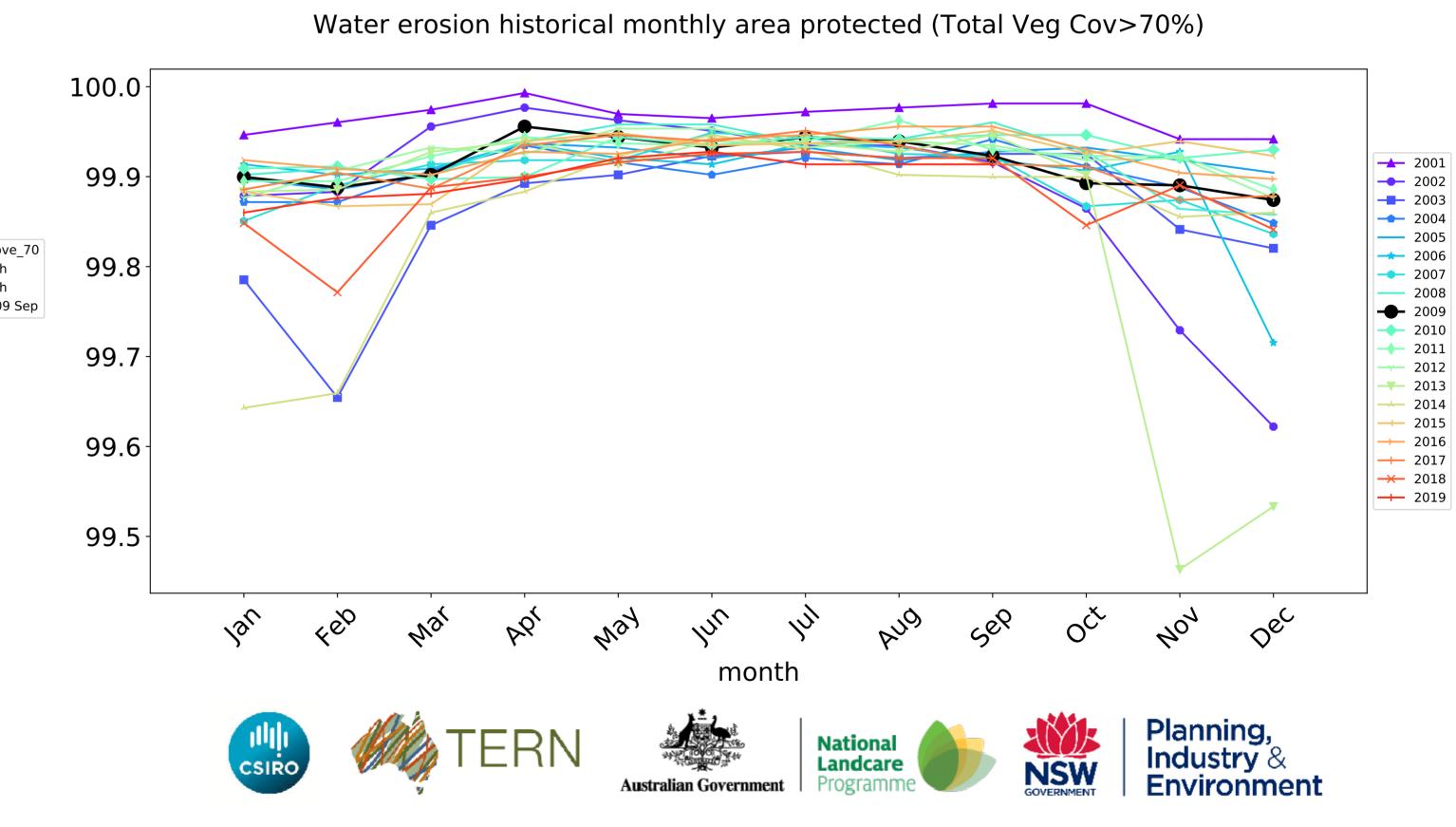


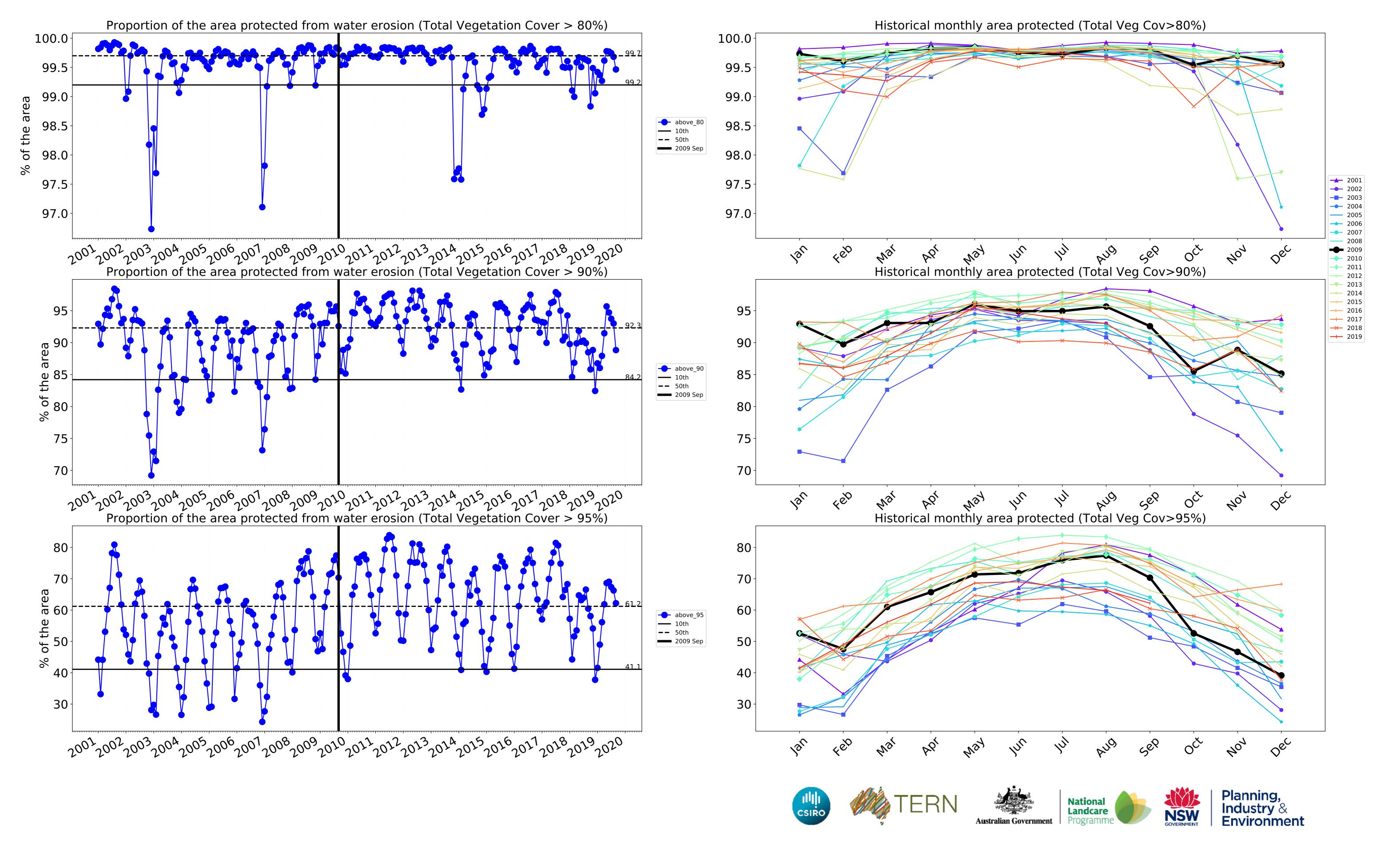




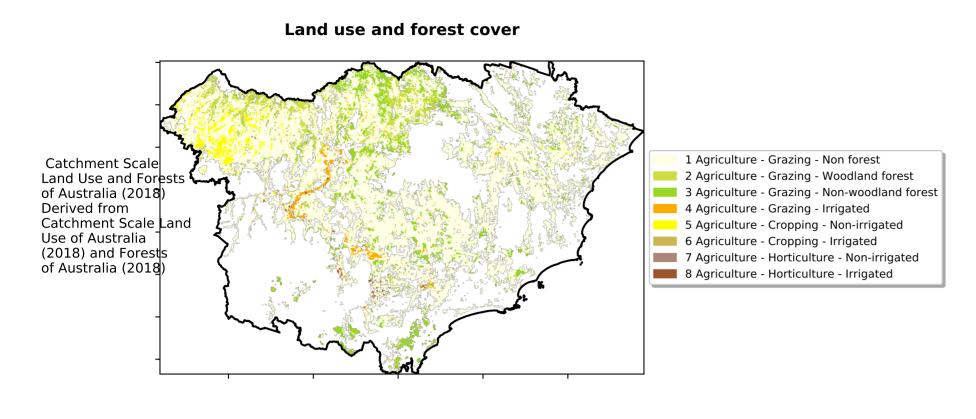


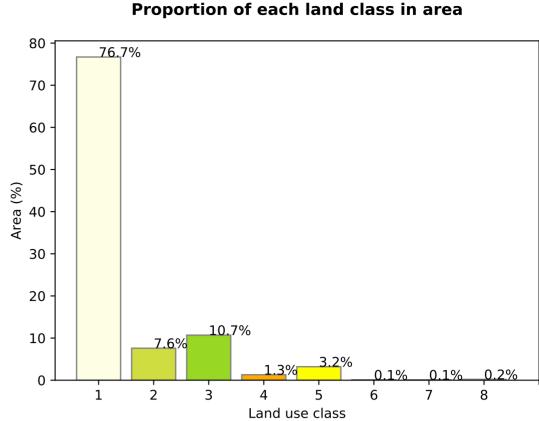


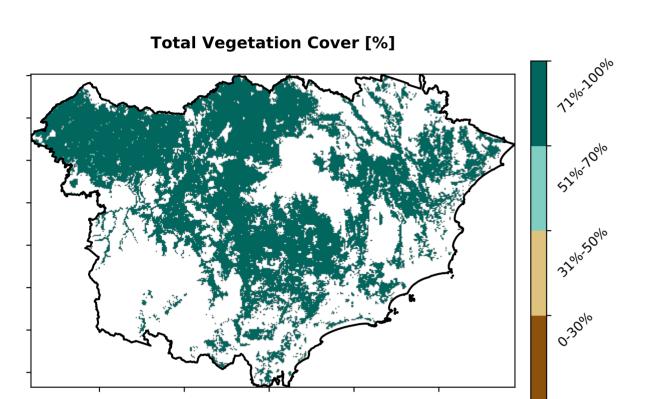


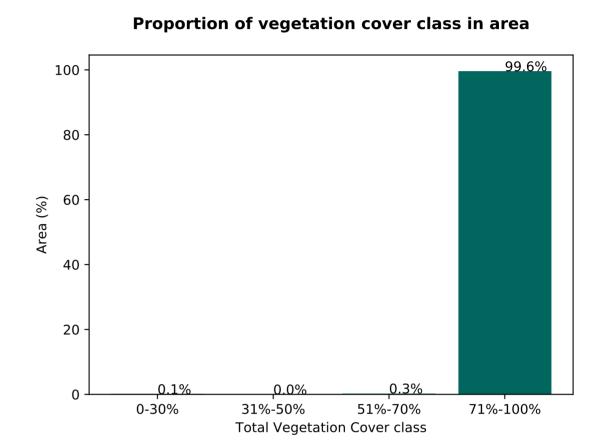


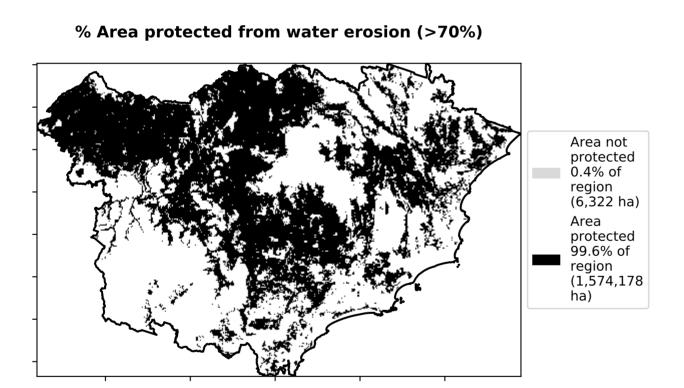
### **Agriculture**

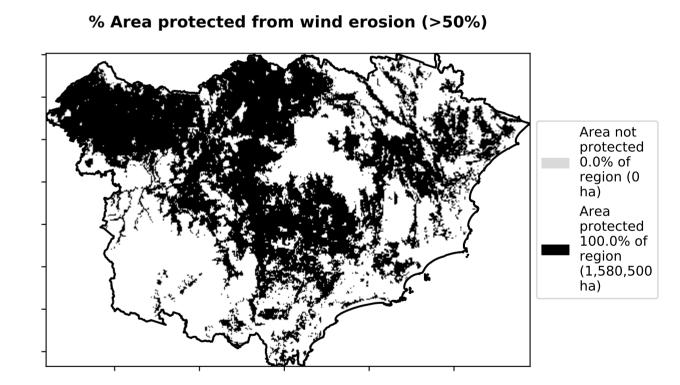


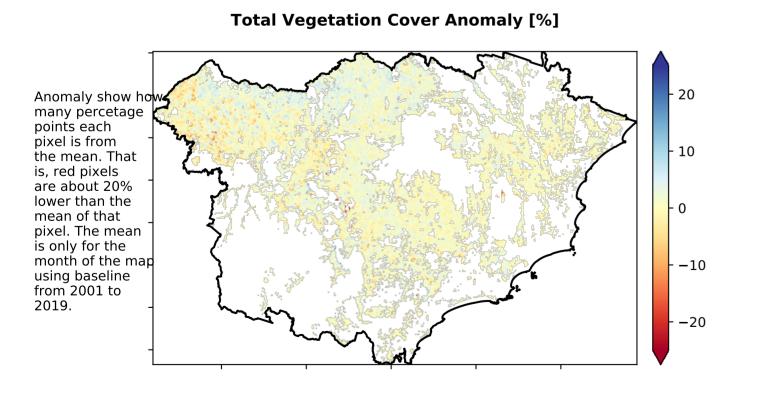




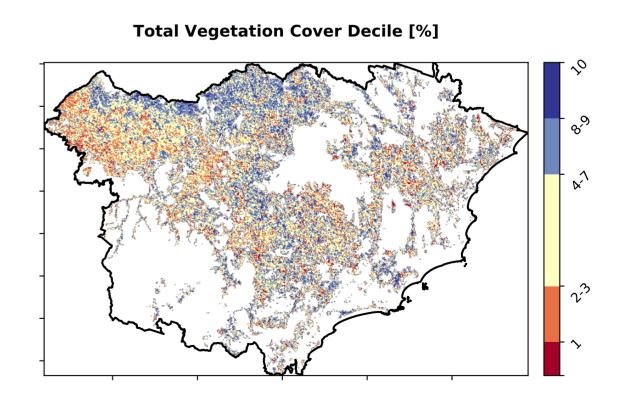








Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







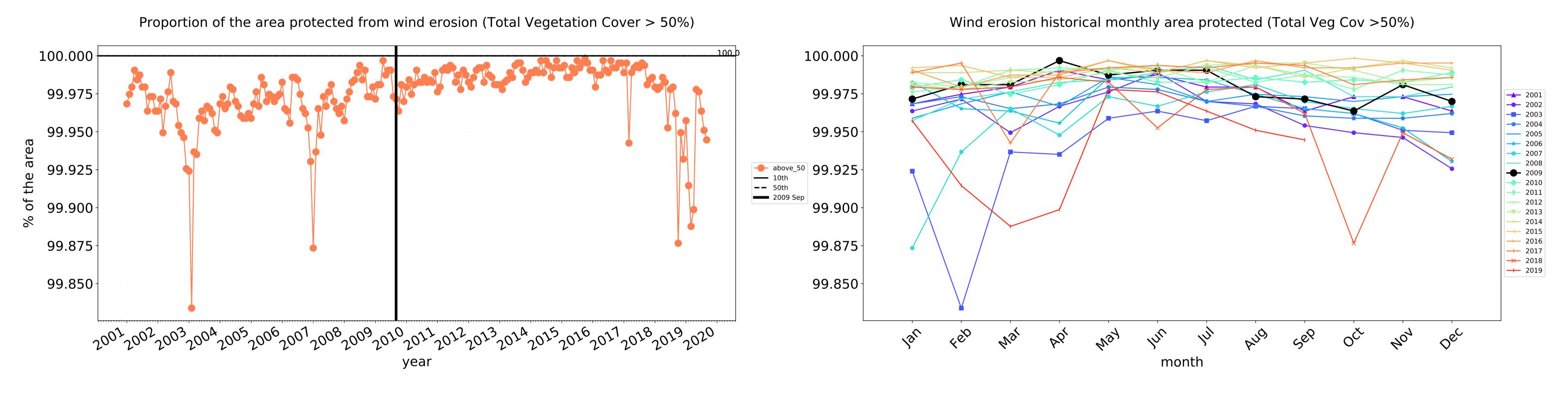


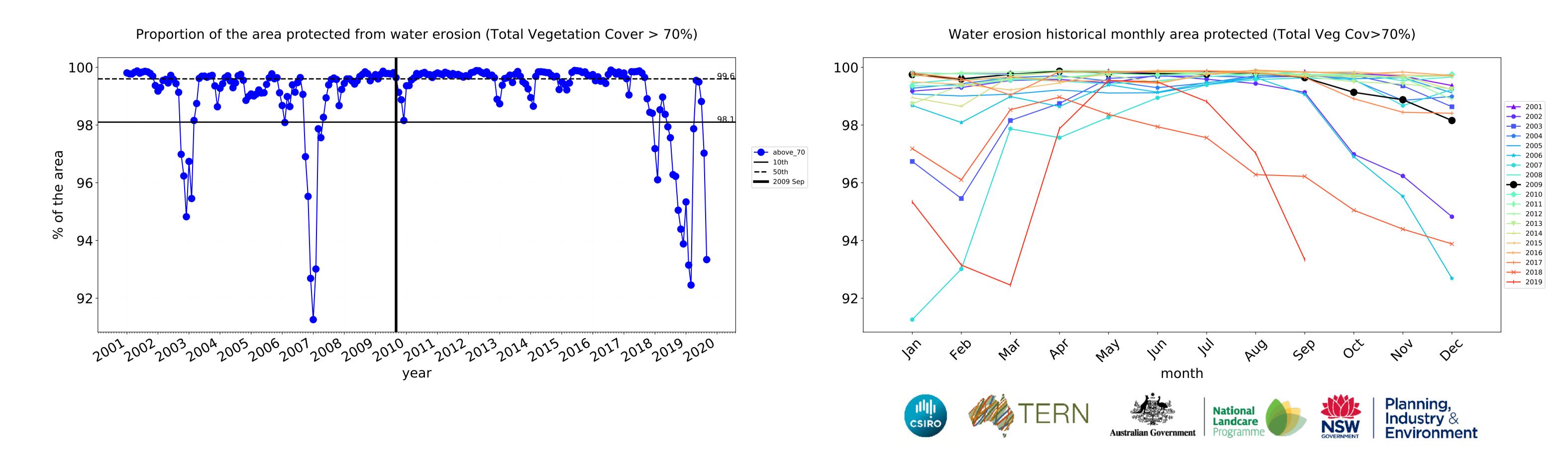


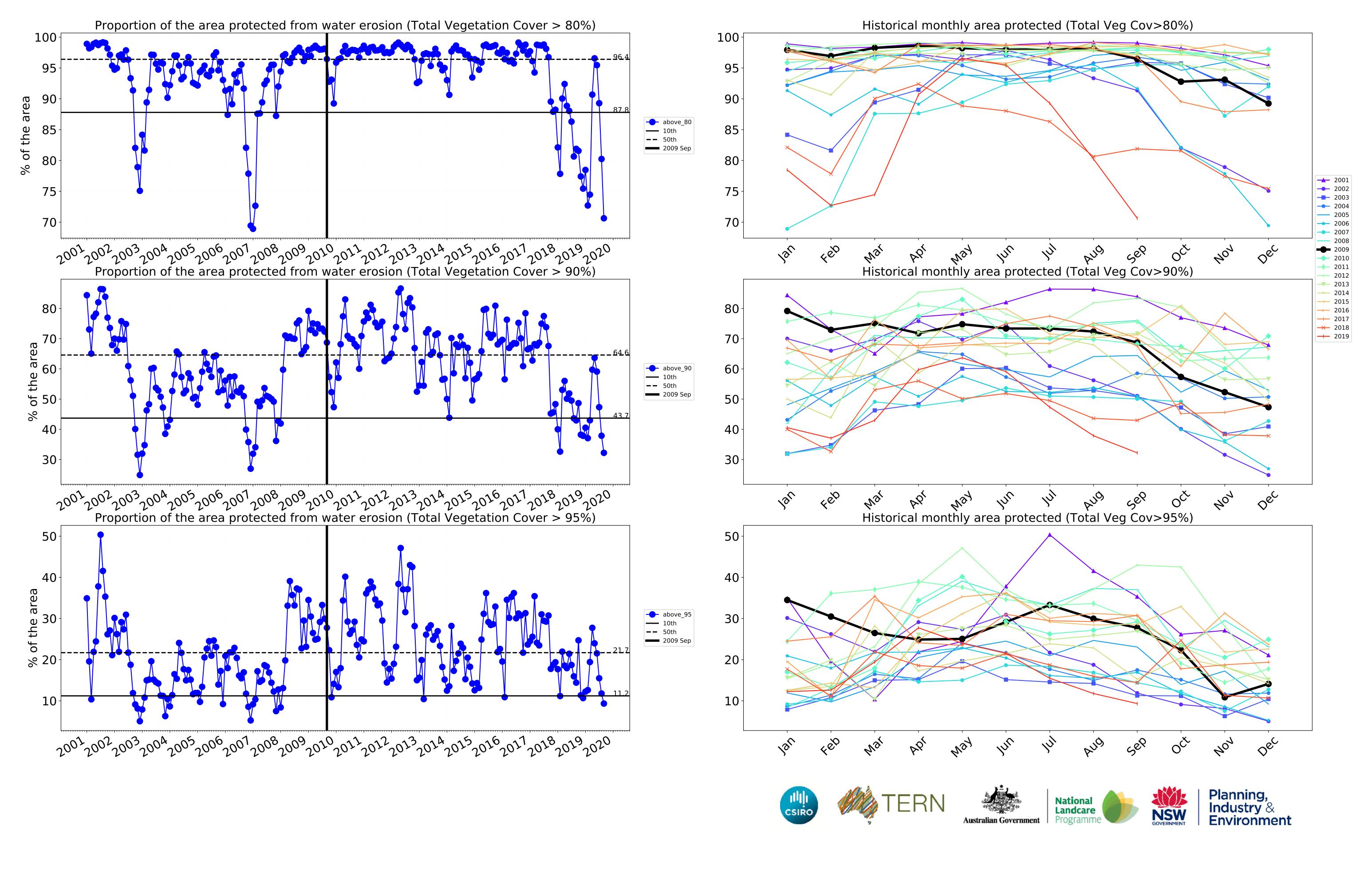




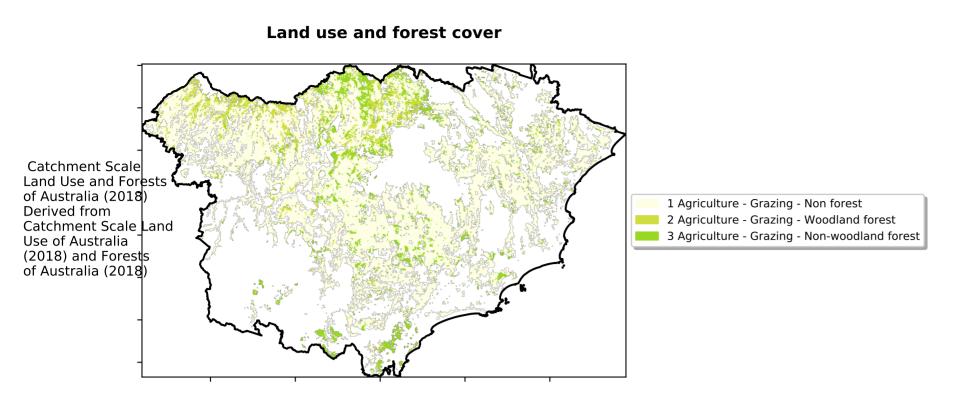
### **Agriculture timeseries**



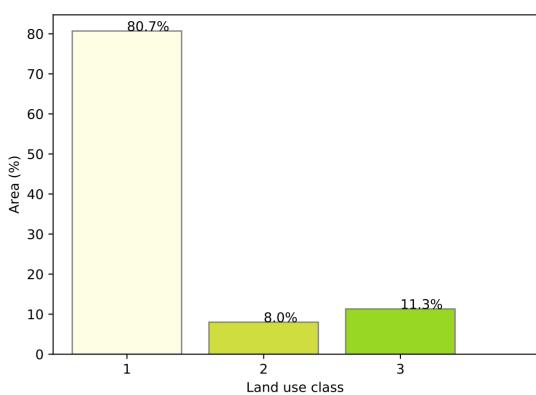




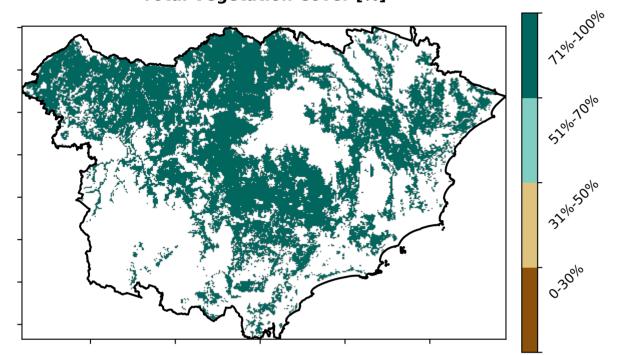
### **Grazing**



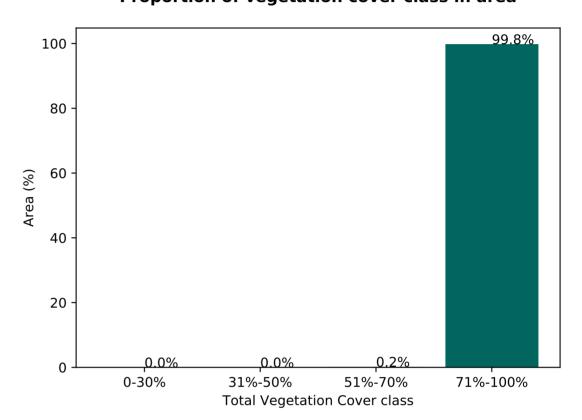
### Proportion of each land class in area



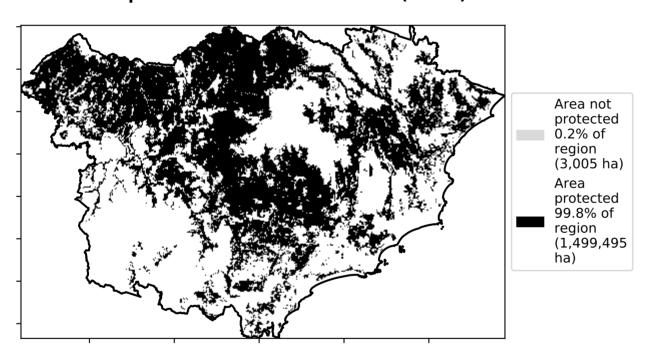




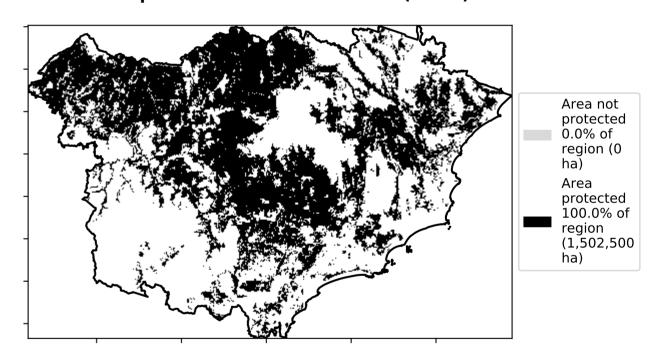
Proportion of vegetation cover class in area



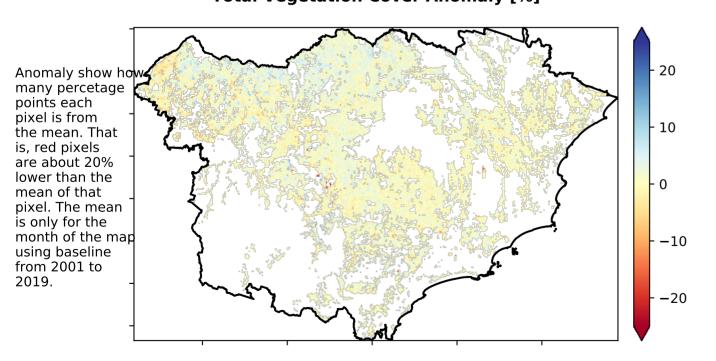
### % Area protected from water erosion (>70%)



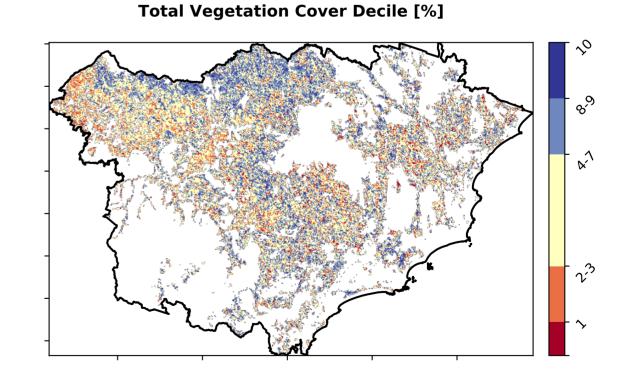
% Area protected from wind erosion (>50%)



### 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.







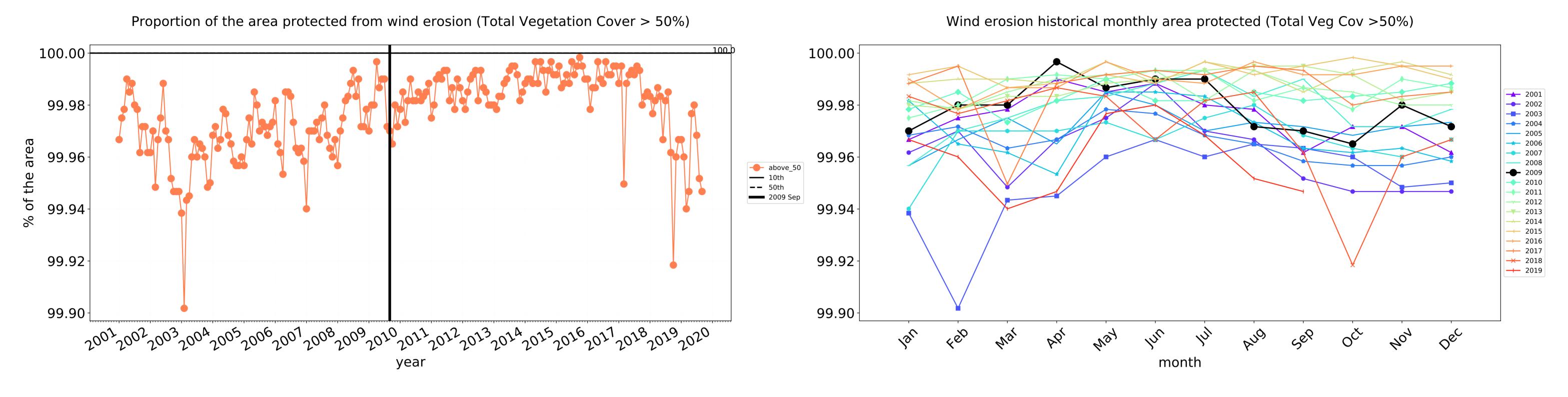


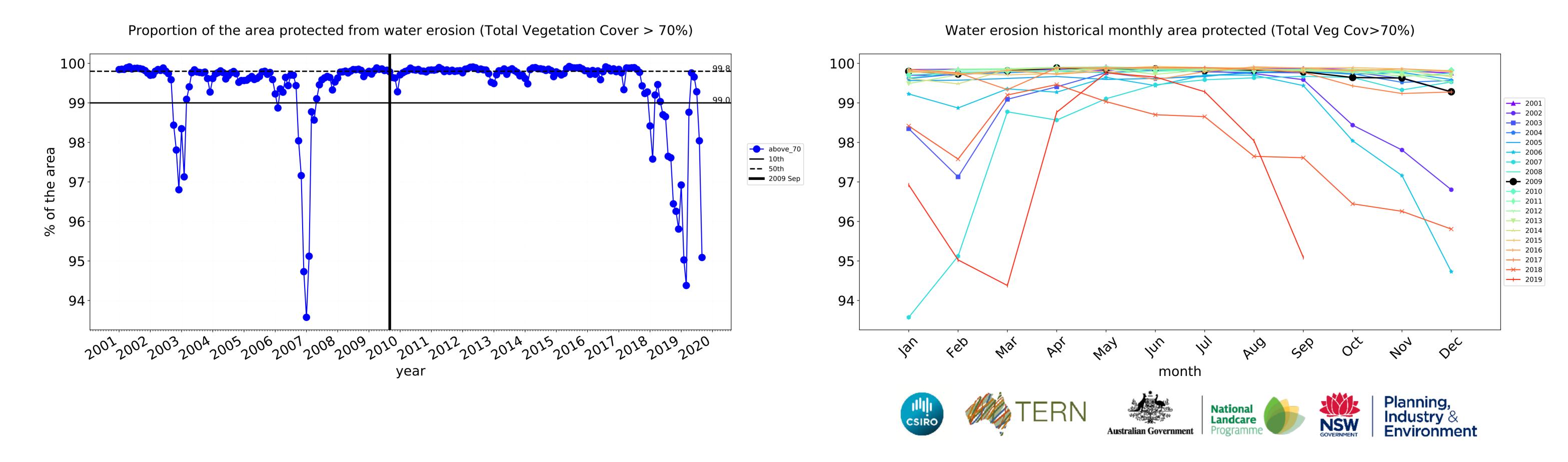


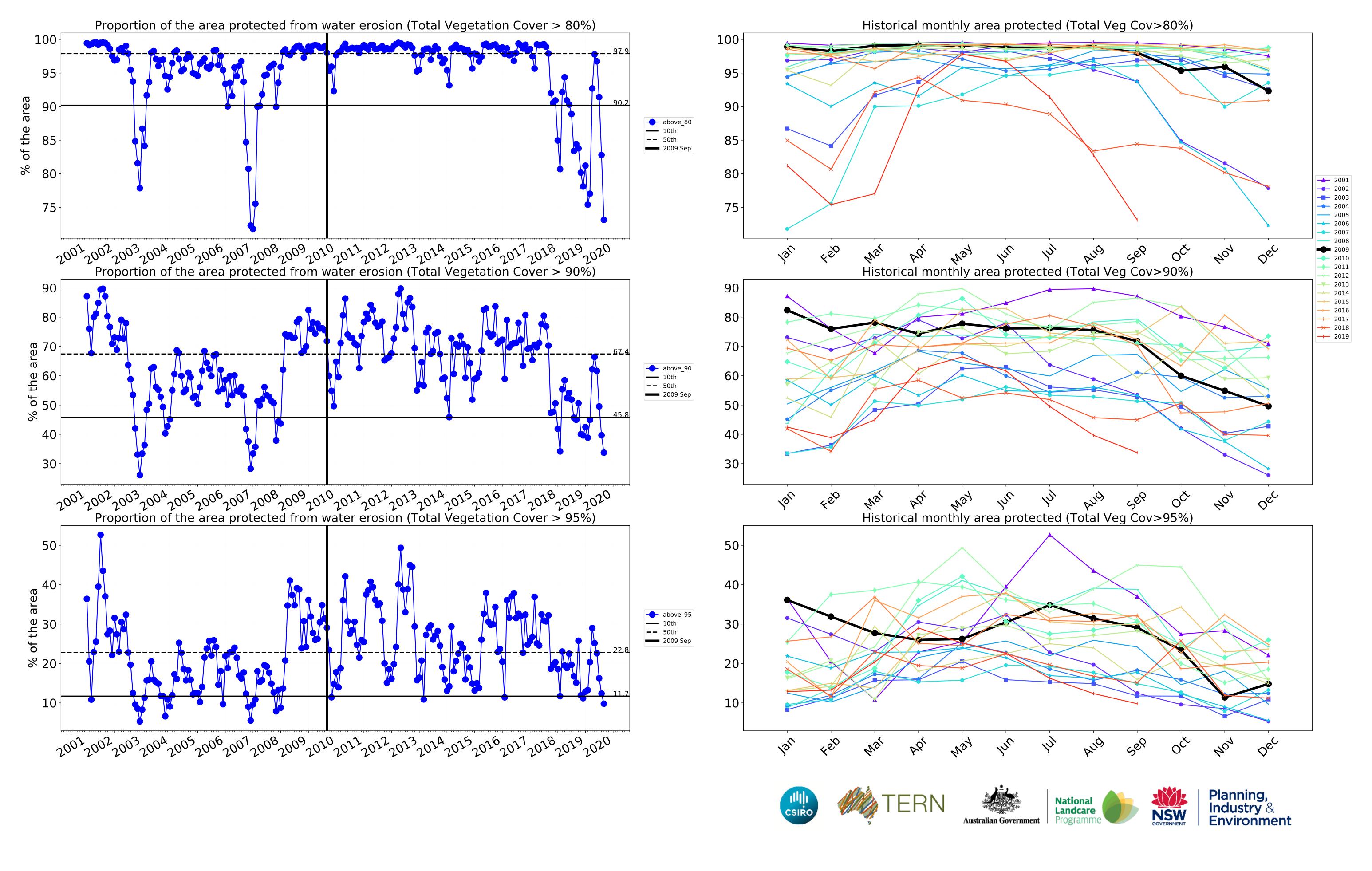




### **Grazing timeseries**

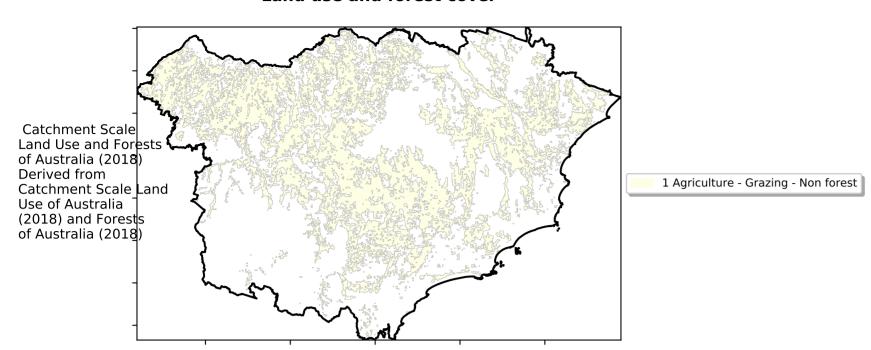




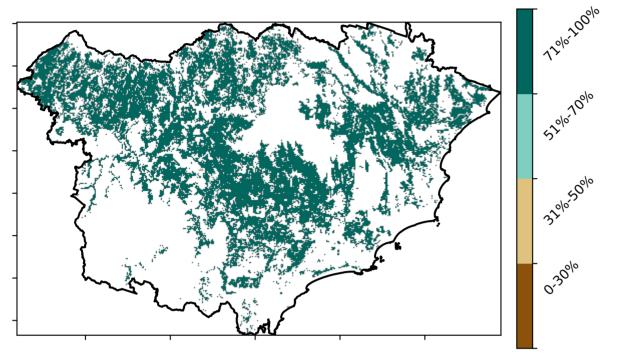


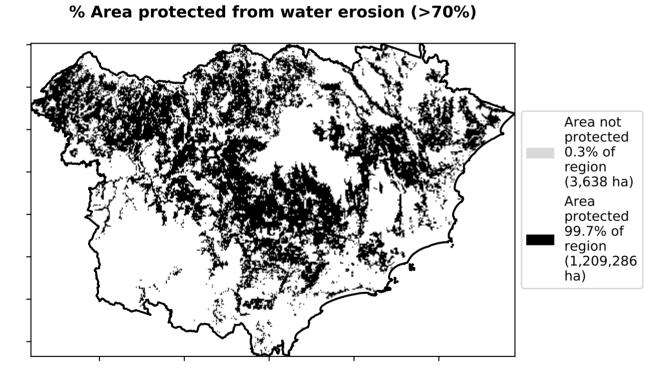
### **Grazing non forest**

### Land use and forest cover

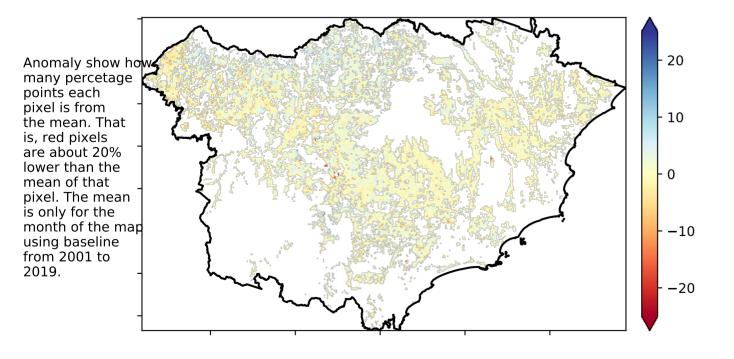


### Total Vegetation Cover [%]



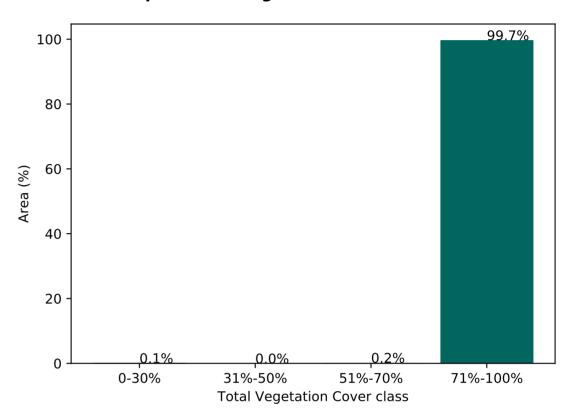


### Total Vegetation Cover Anomaly [%]

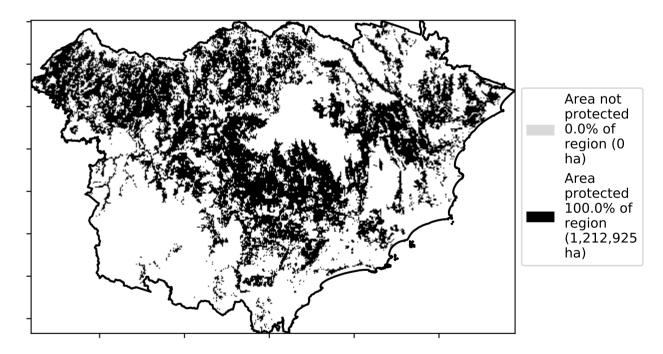


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

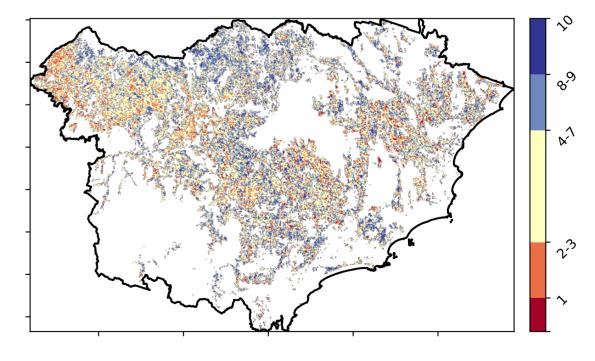
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]







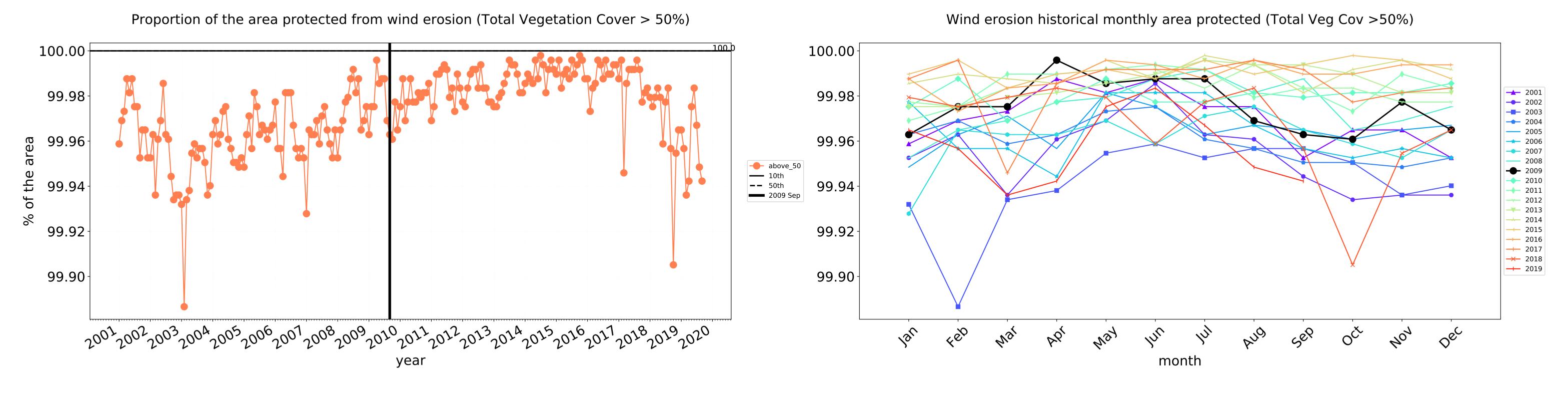


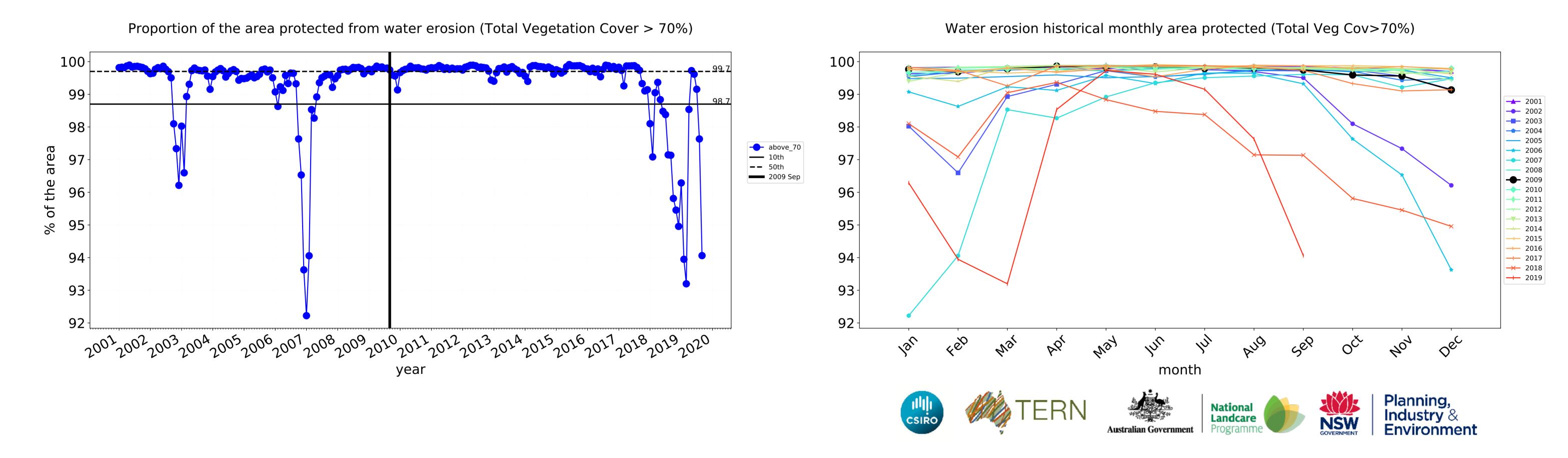


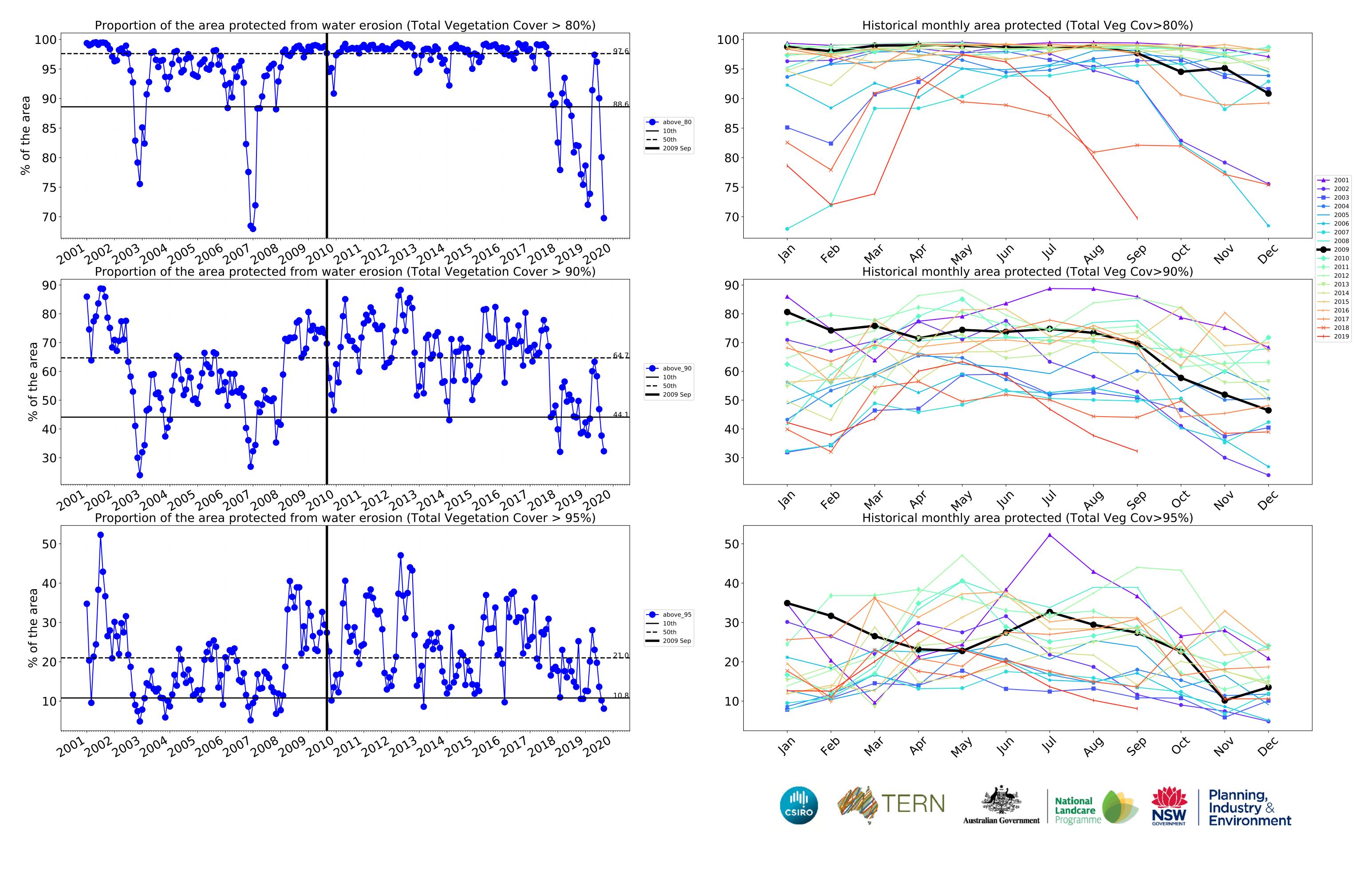




### **Grazing non forest timeseries**





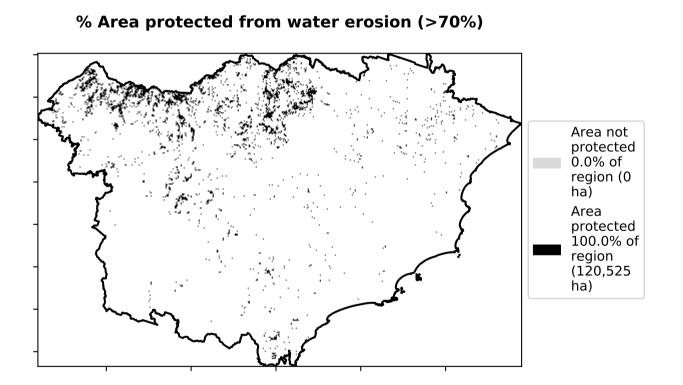


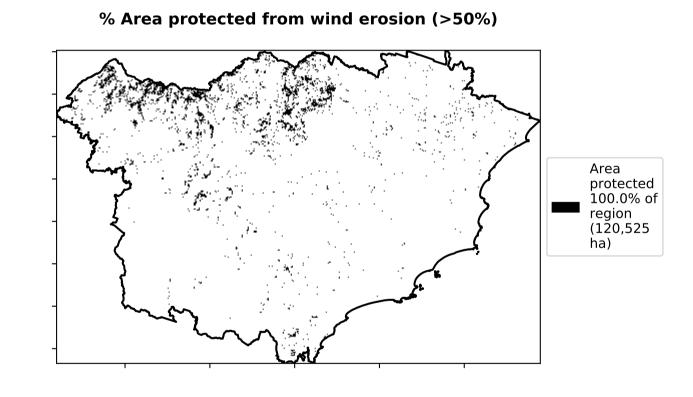
### **Grazing Woodland forest**

### **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)

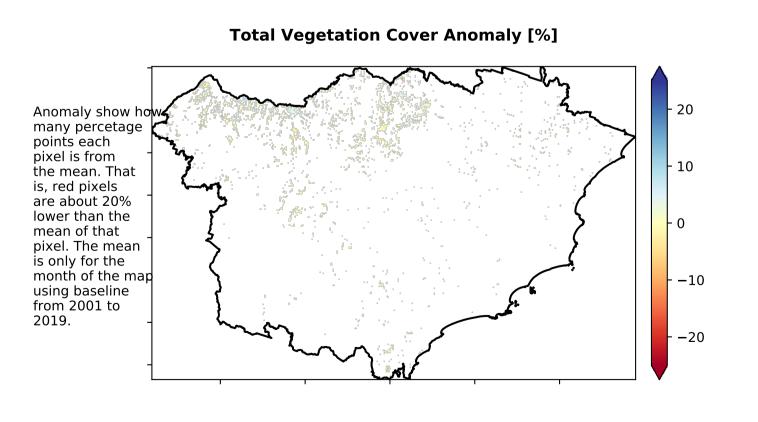
## **Total Vegetation Cover [%]**

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

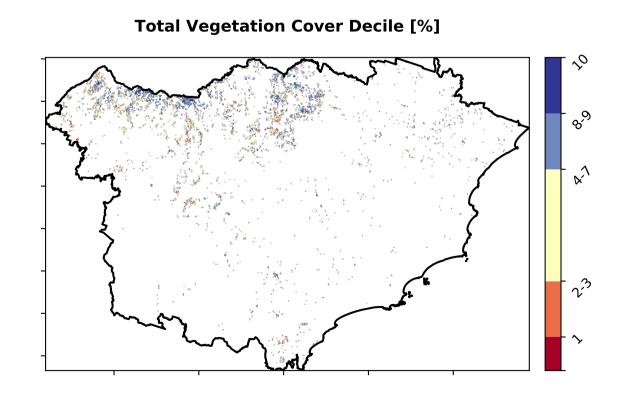




**Proportion of vegetation cover class in area** 



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.







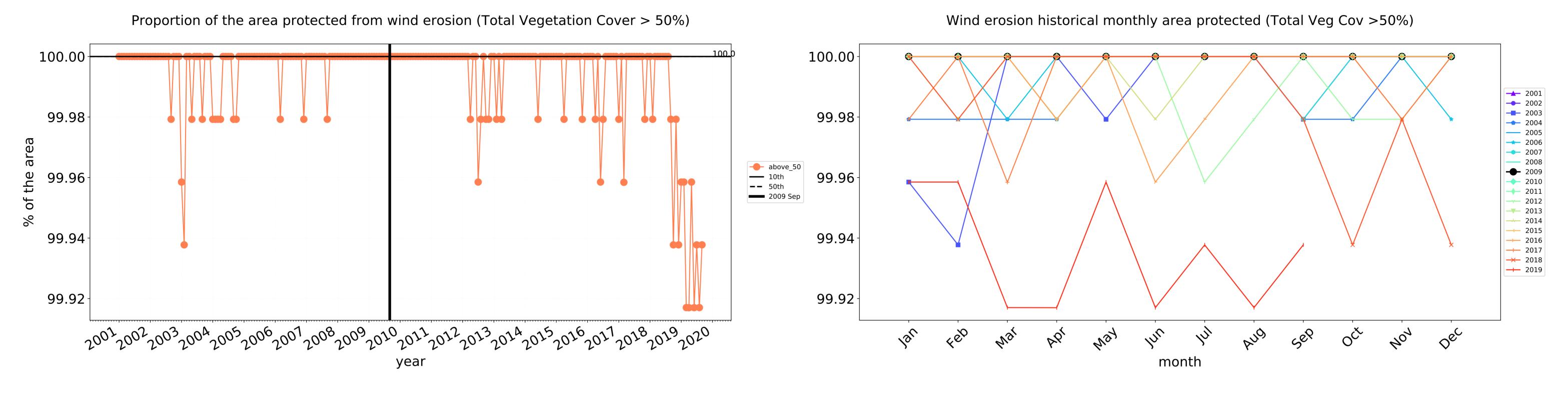


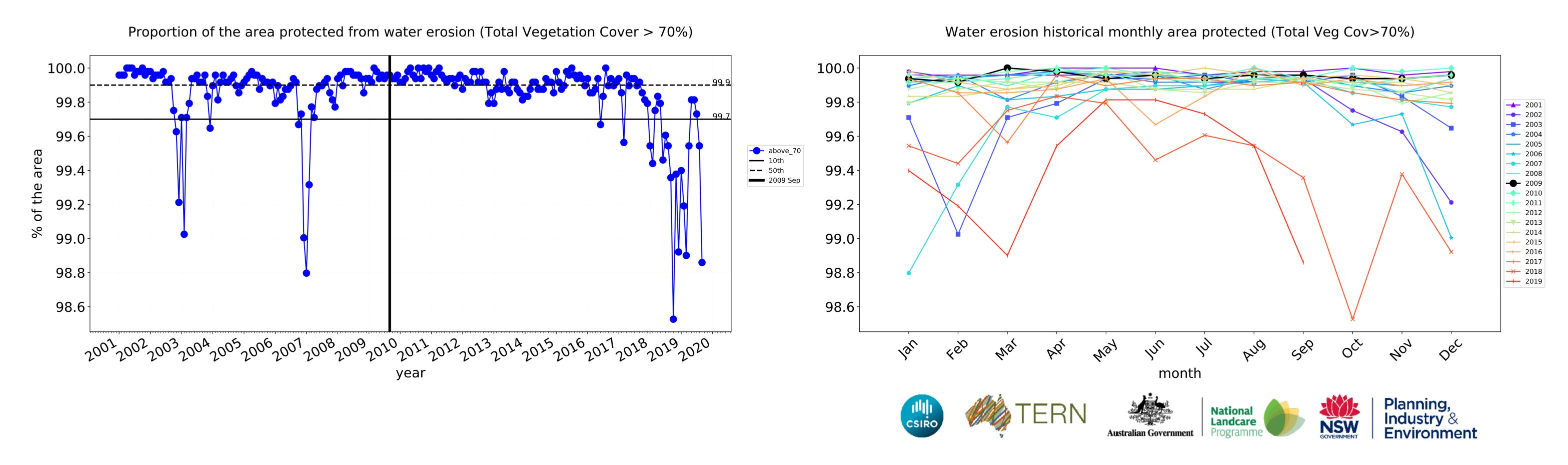


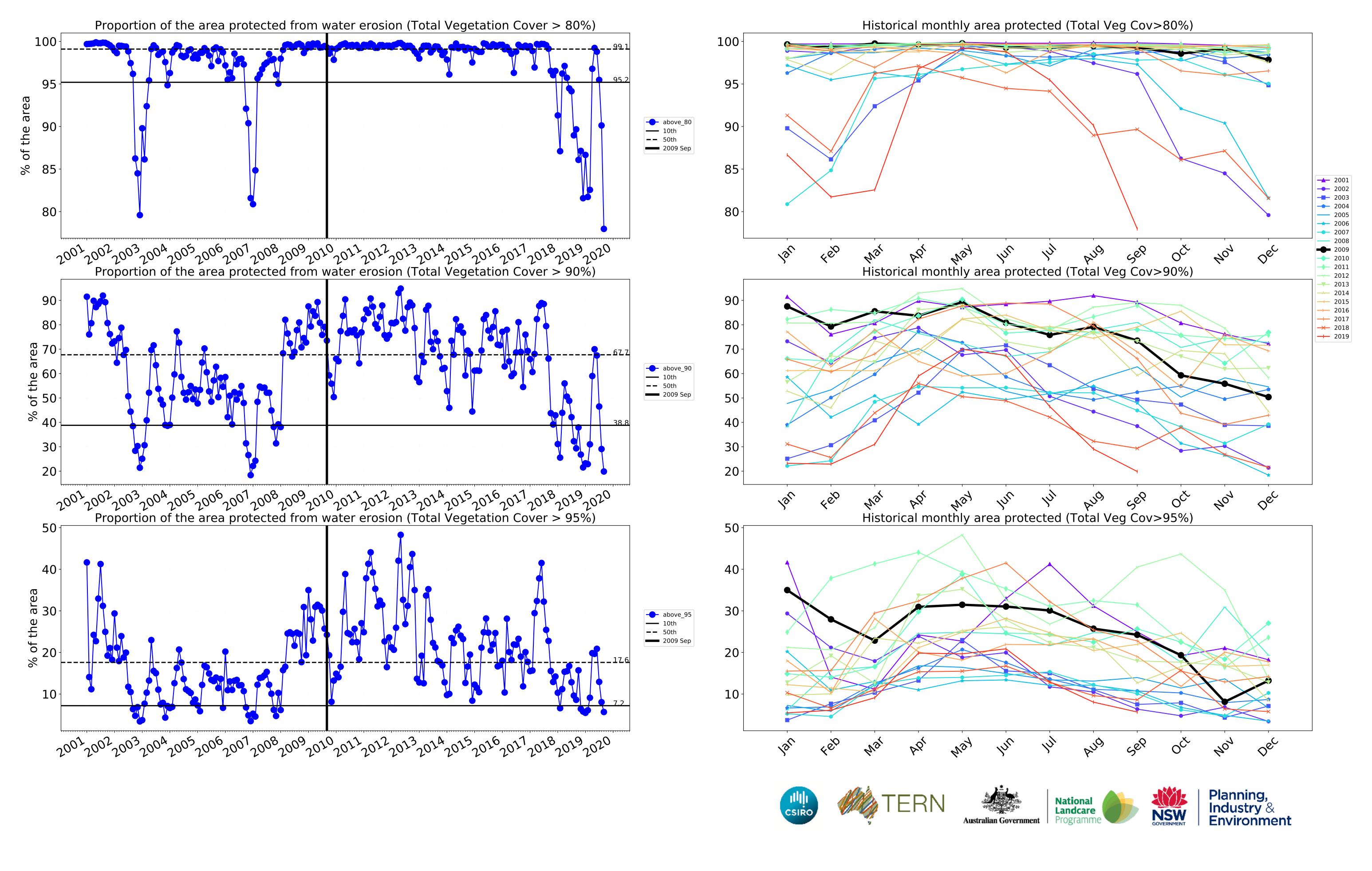




### **Grazing Woodland forest timeseries**





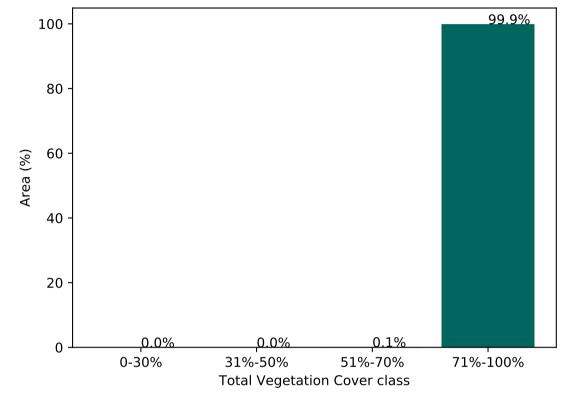


### **Grazing - Forest (non woodland)**

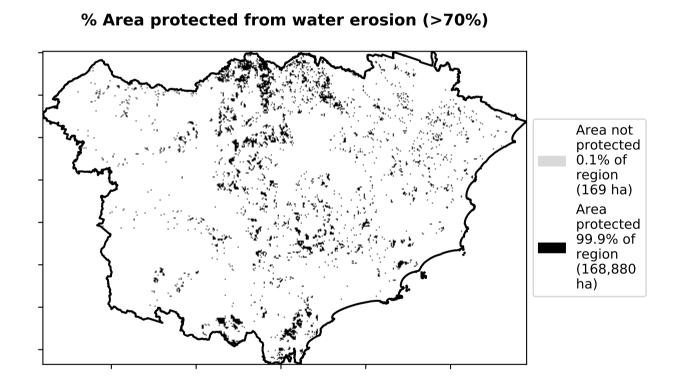
### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Non-woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

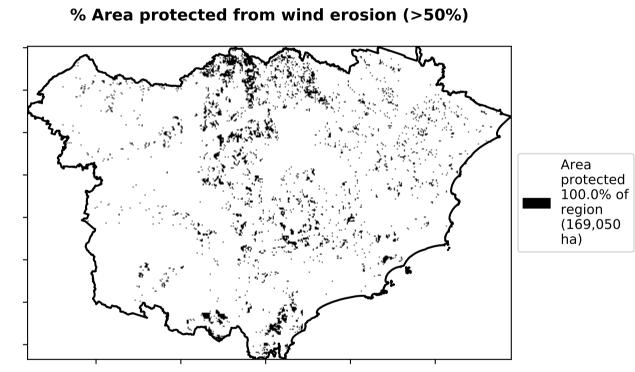
## **Total Vegetation Cover [%]**

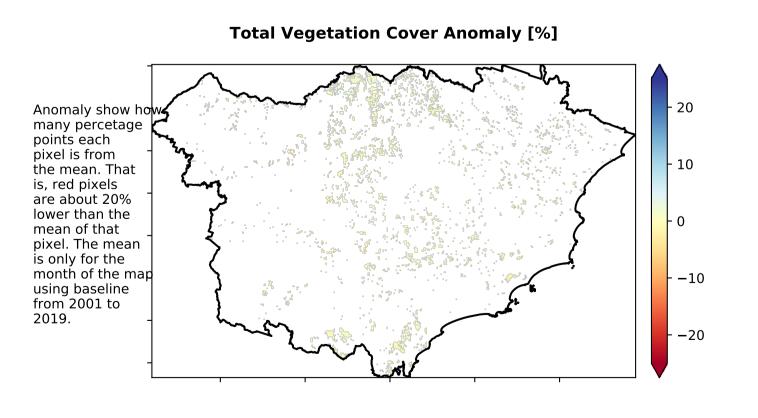
## Area (%)



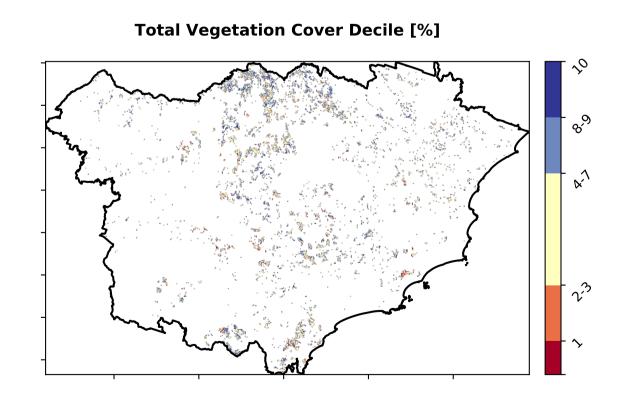
**Proportion of vegetation cover class in area** 







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.





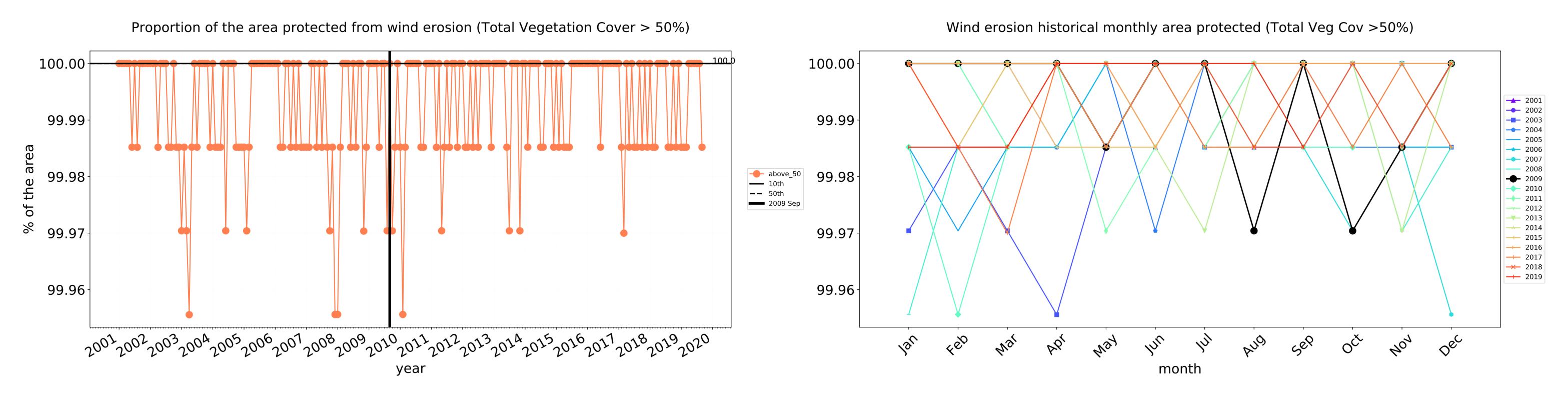


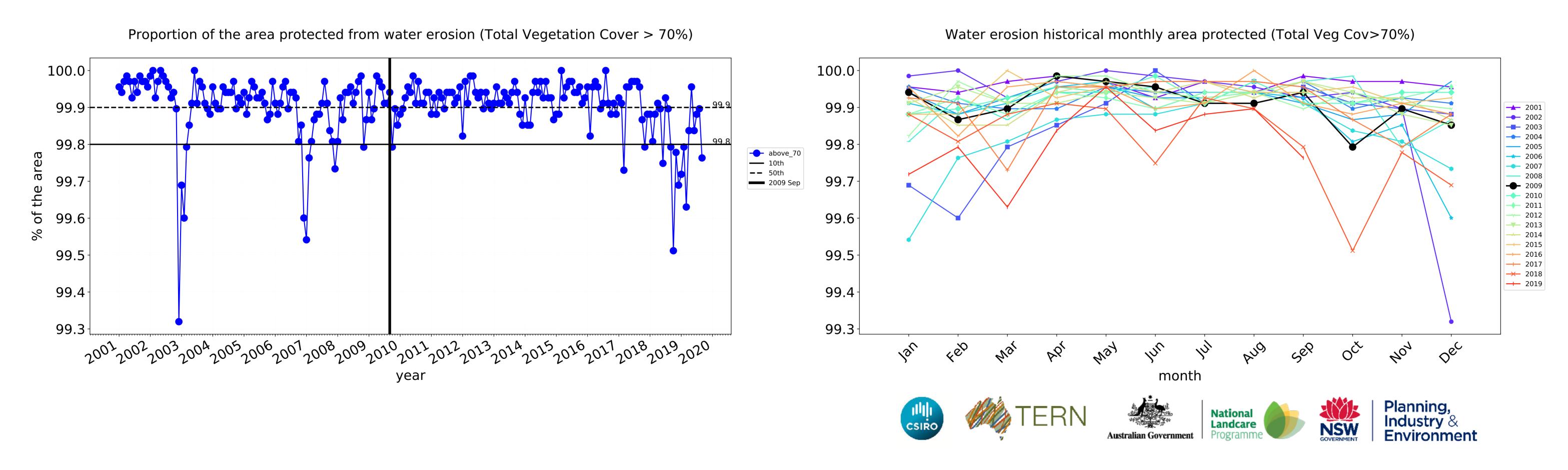


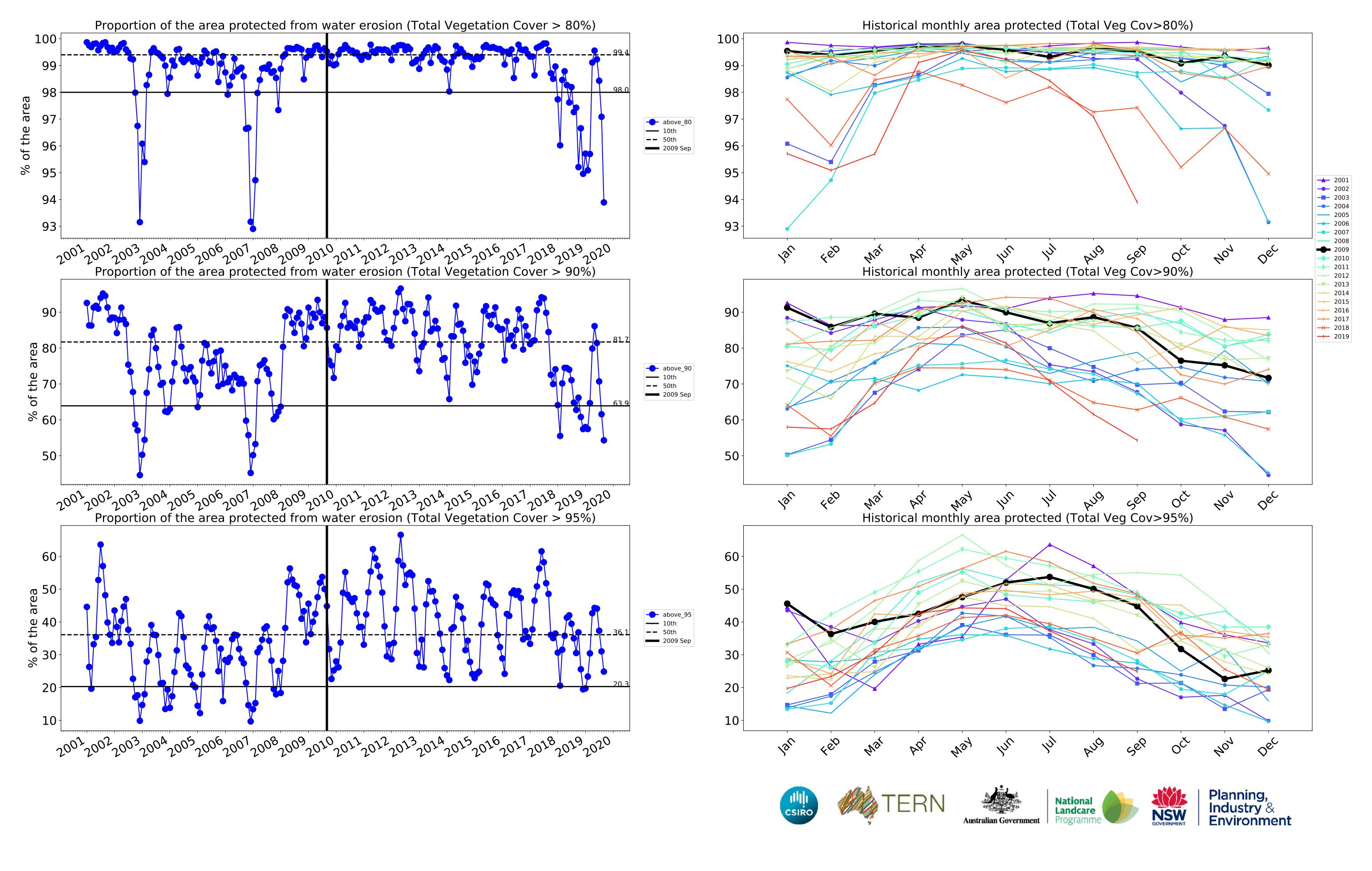






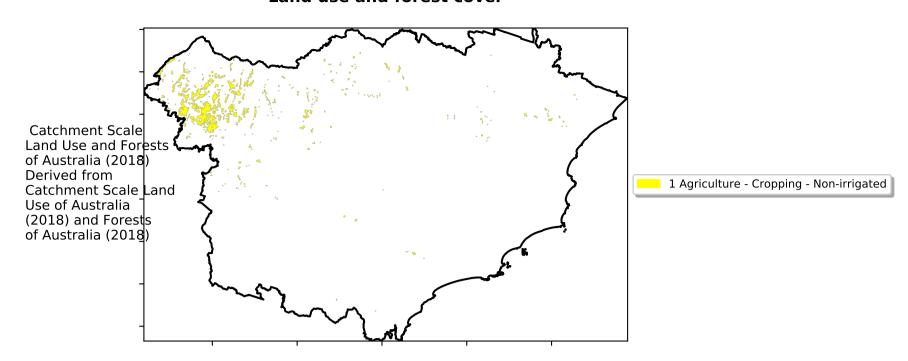




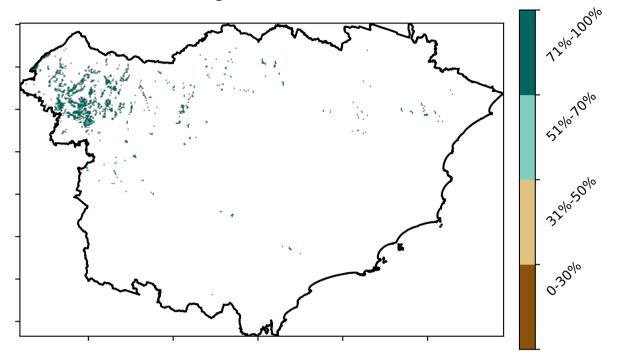


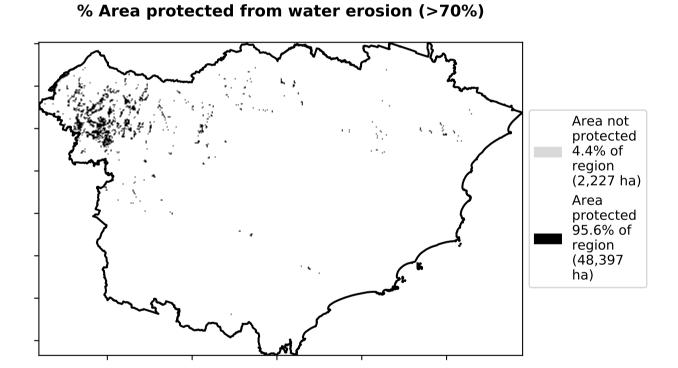
### **Cropping**

### Land use and forest cover

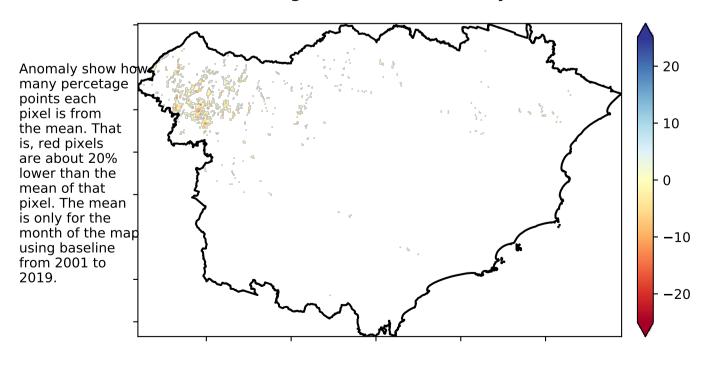


### **Total Vegetation Cover [%]**



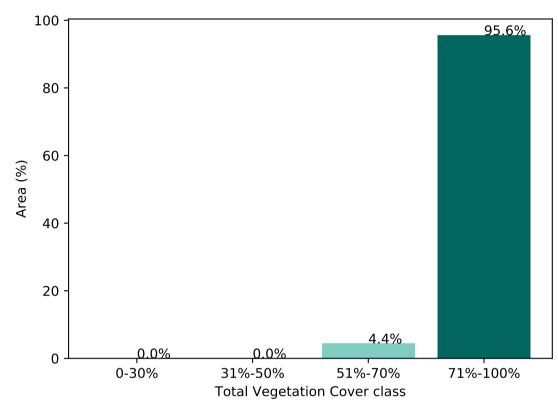


### Total Vegetation Cover Anomaly [%]

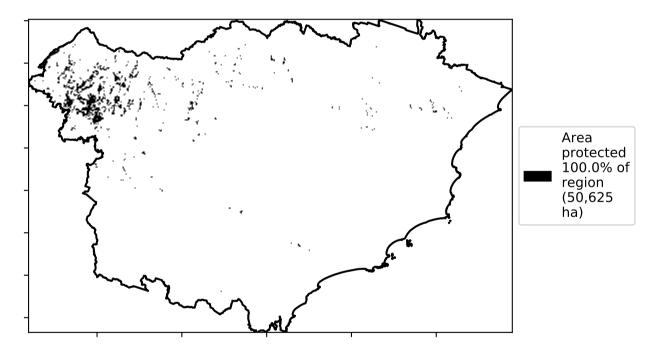


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

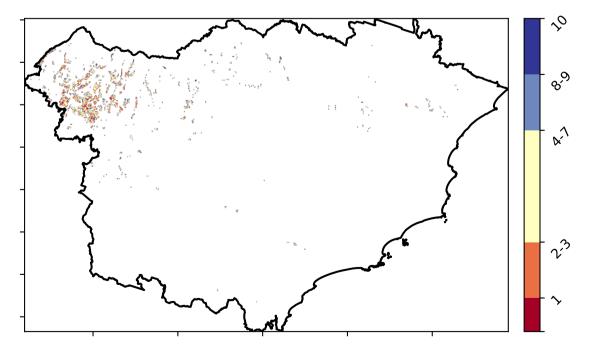
### **Proportion of vegetation cover class in area**



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



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







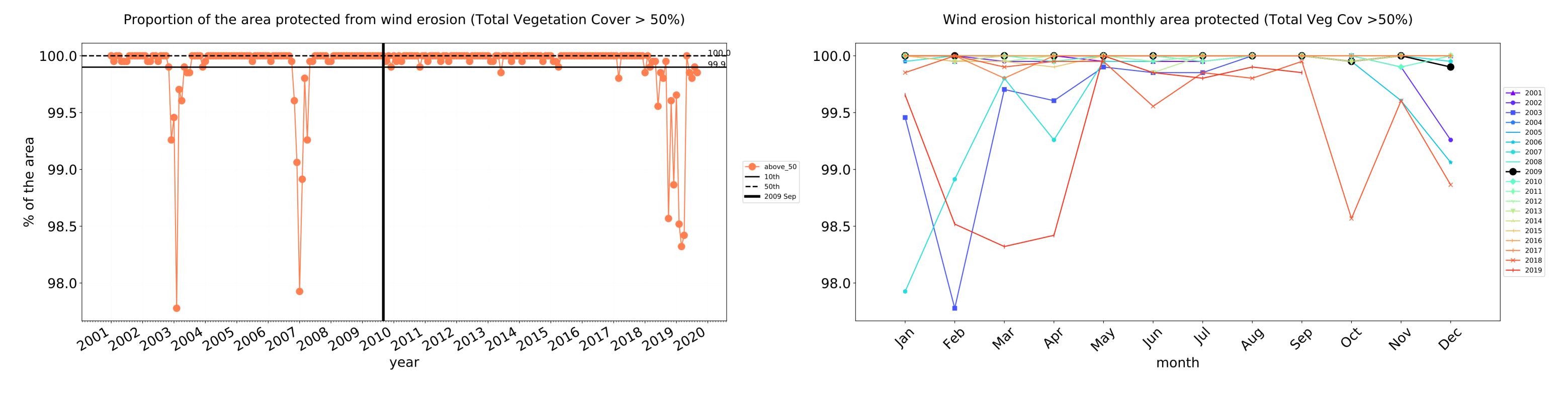


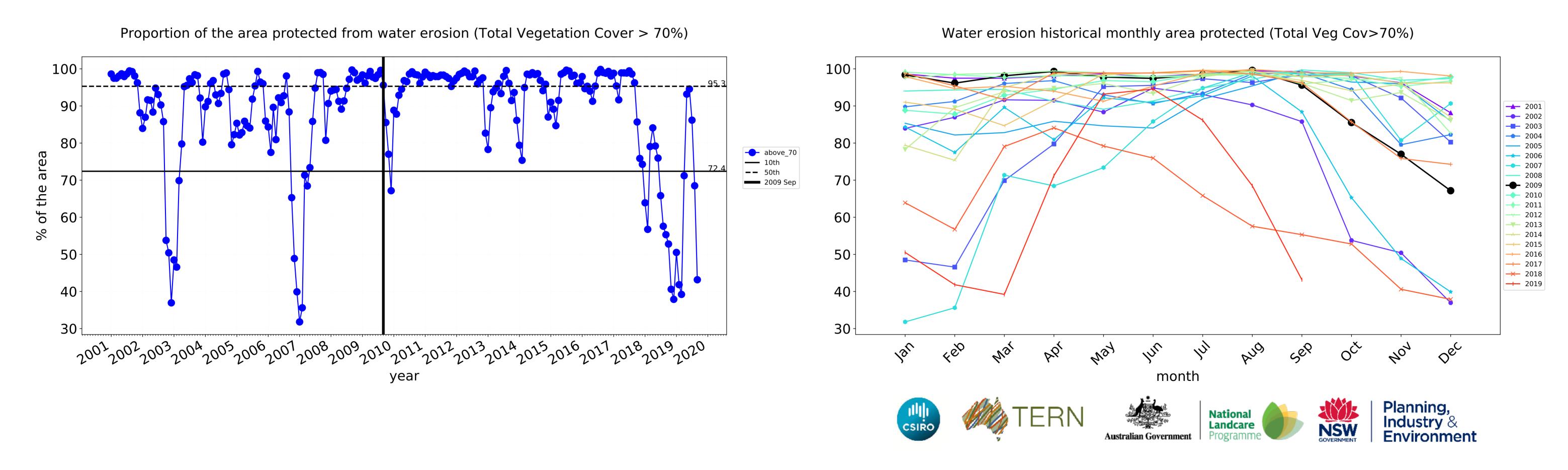


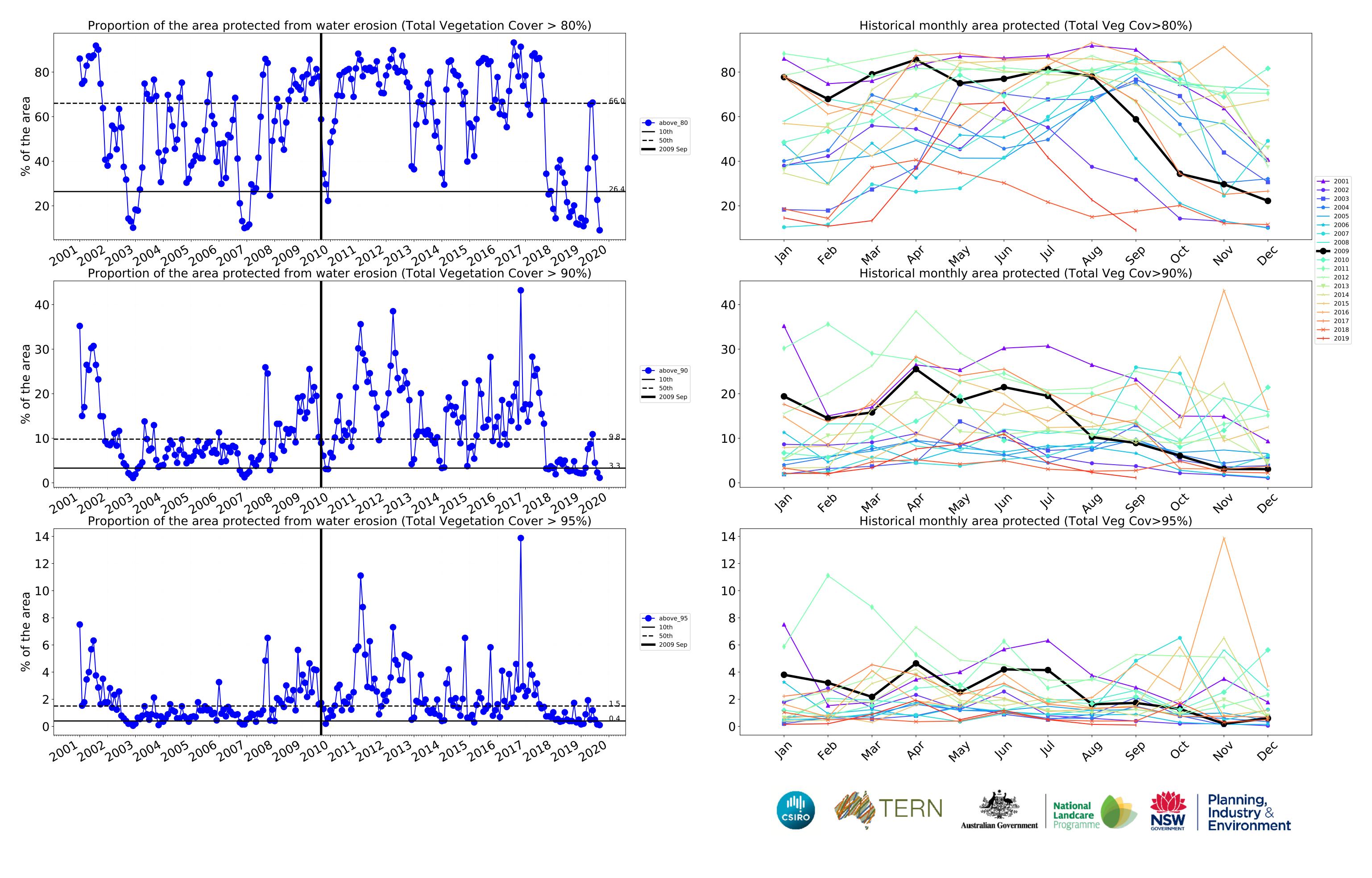




### **Cropping timeseries**





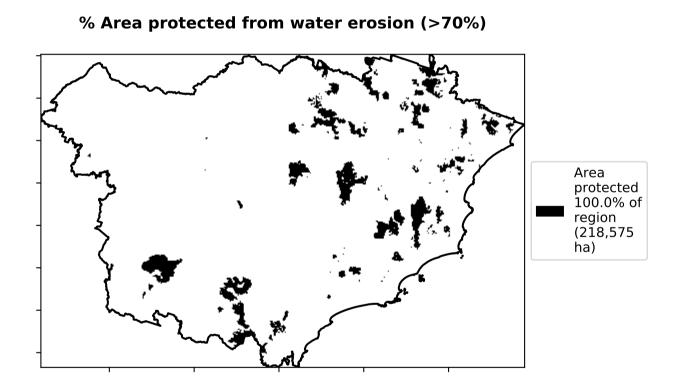


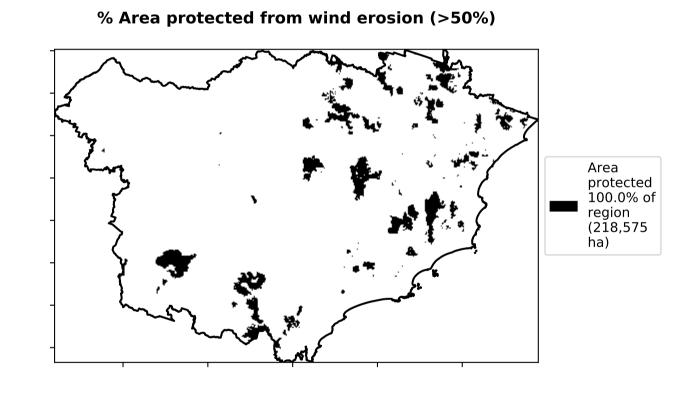
### **Production native forests and plantation forests**

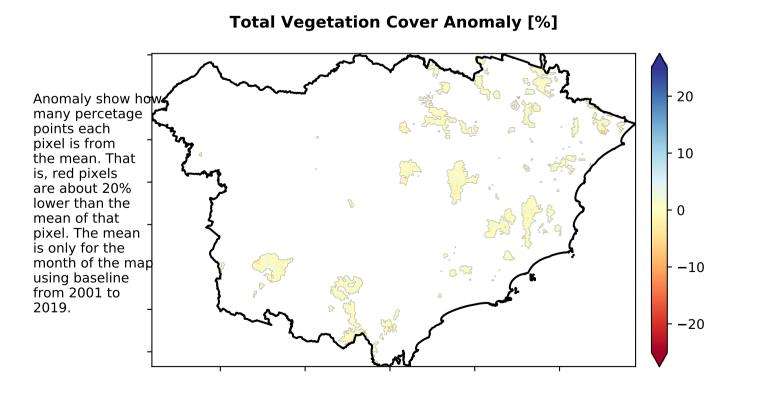
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) See of Australia (2018) See of Australia (2018)

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

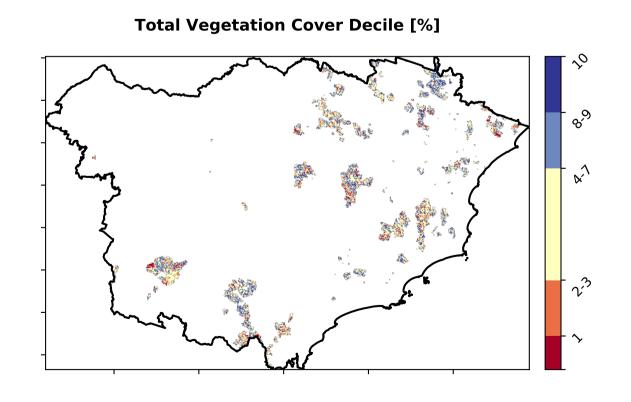
# Proportion of vegetation cover class in area 100 - 100.0% 80 - 20 - 20 - 20 - 0.0% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class







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.







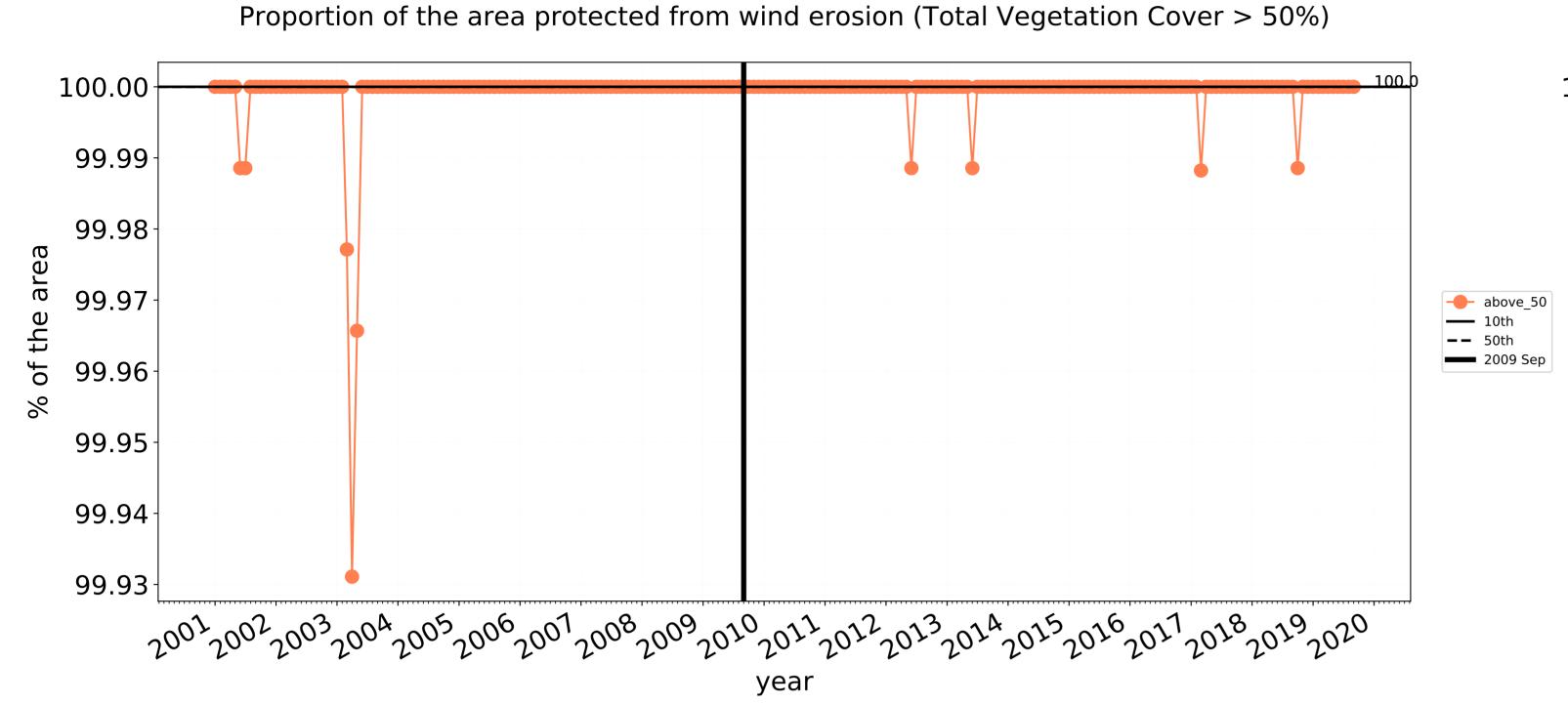


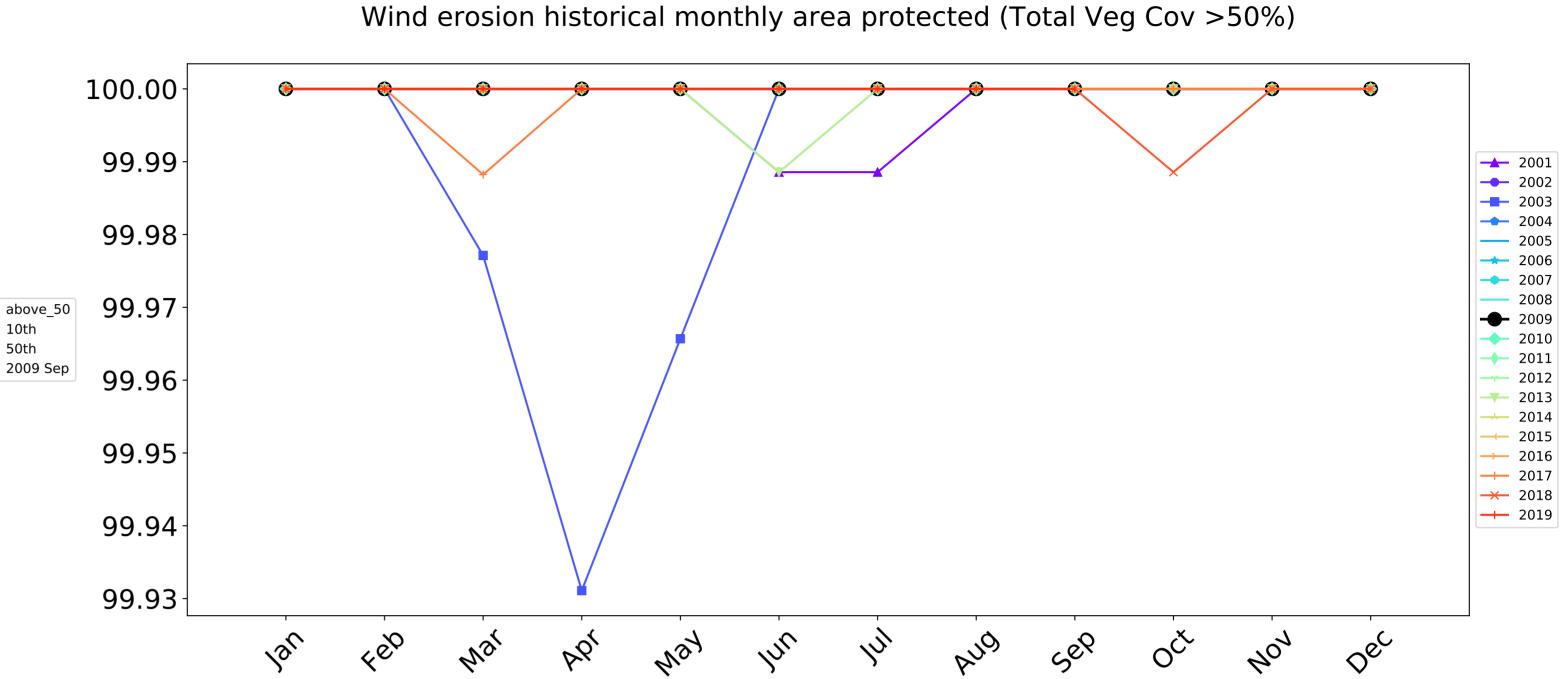




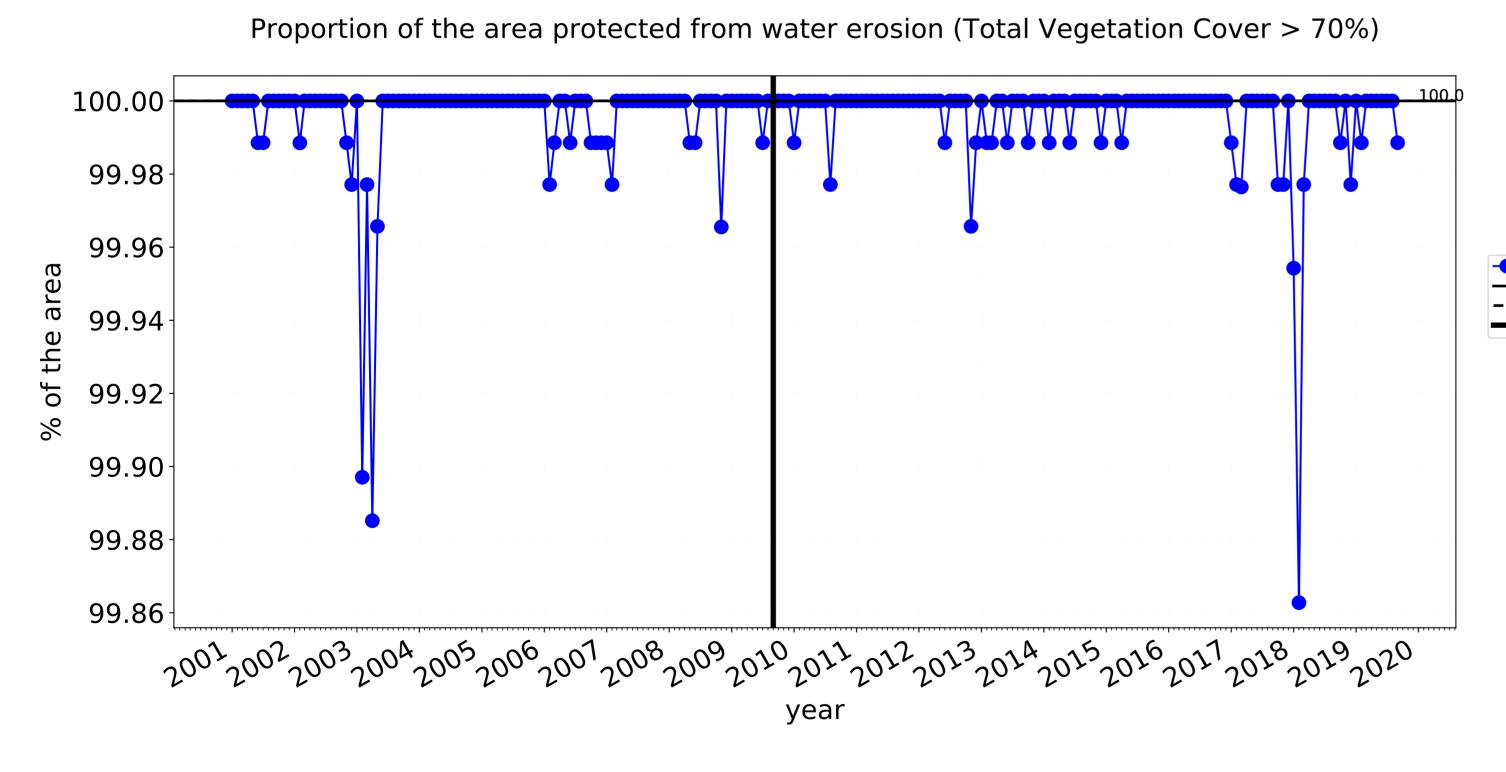


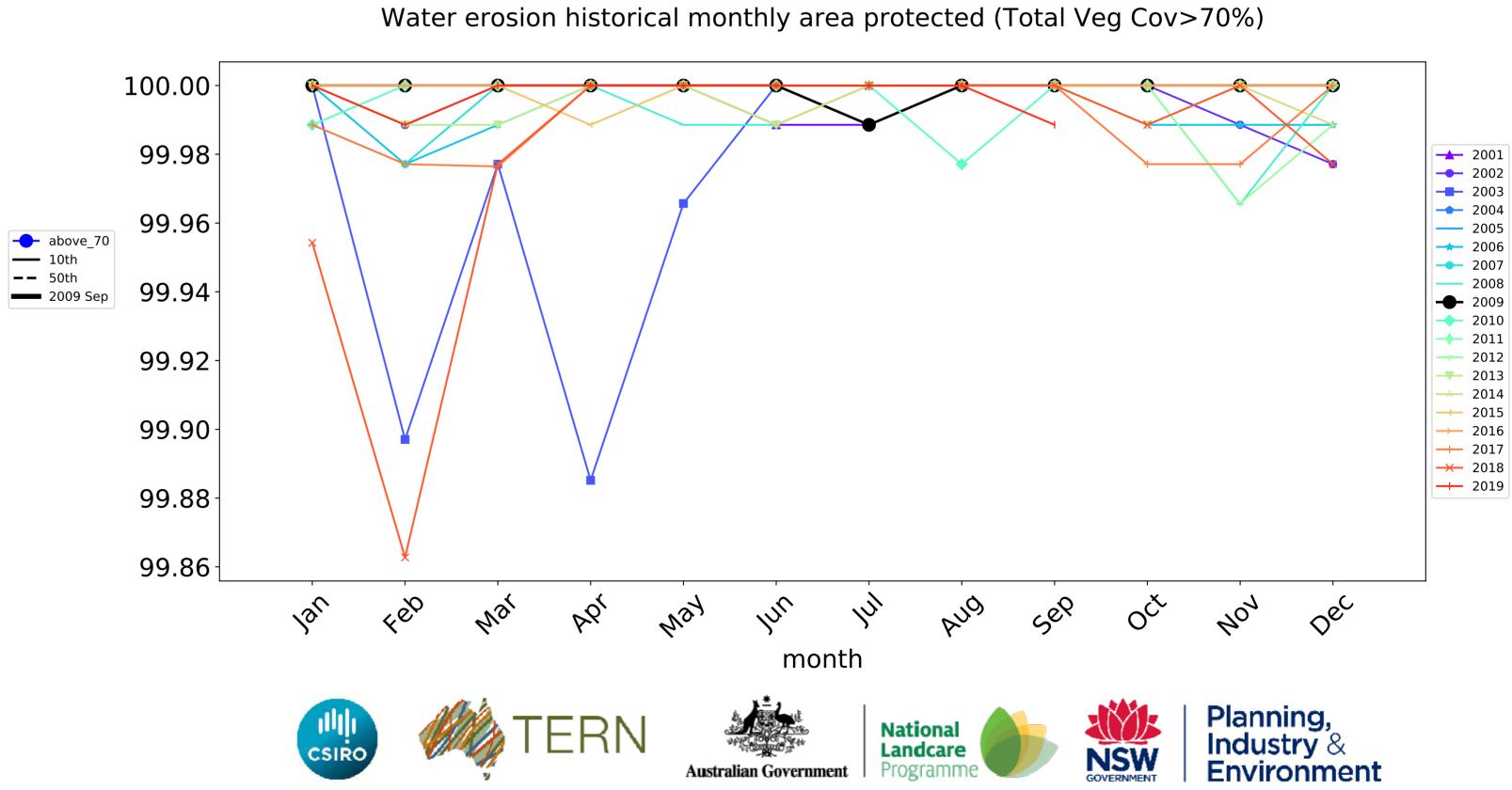
### **Production native forests and plantation forests timeseries**

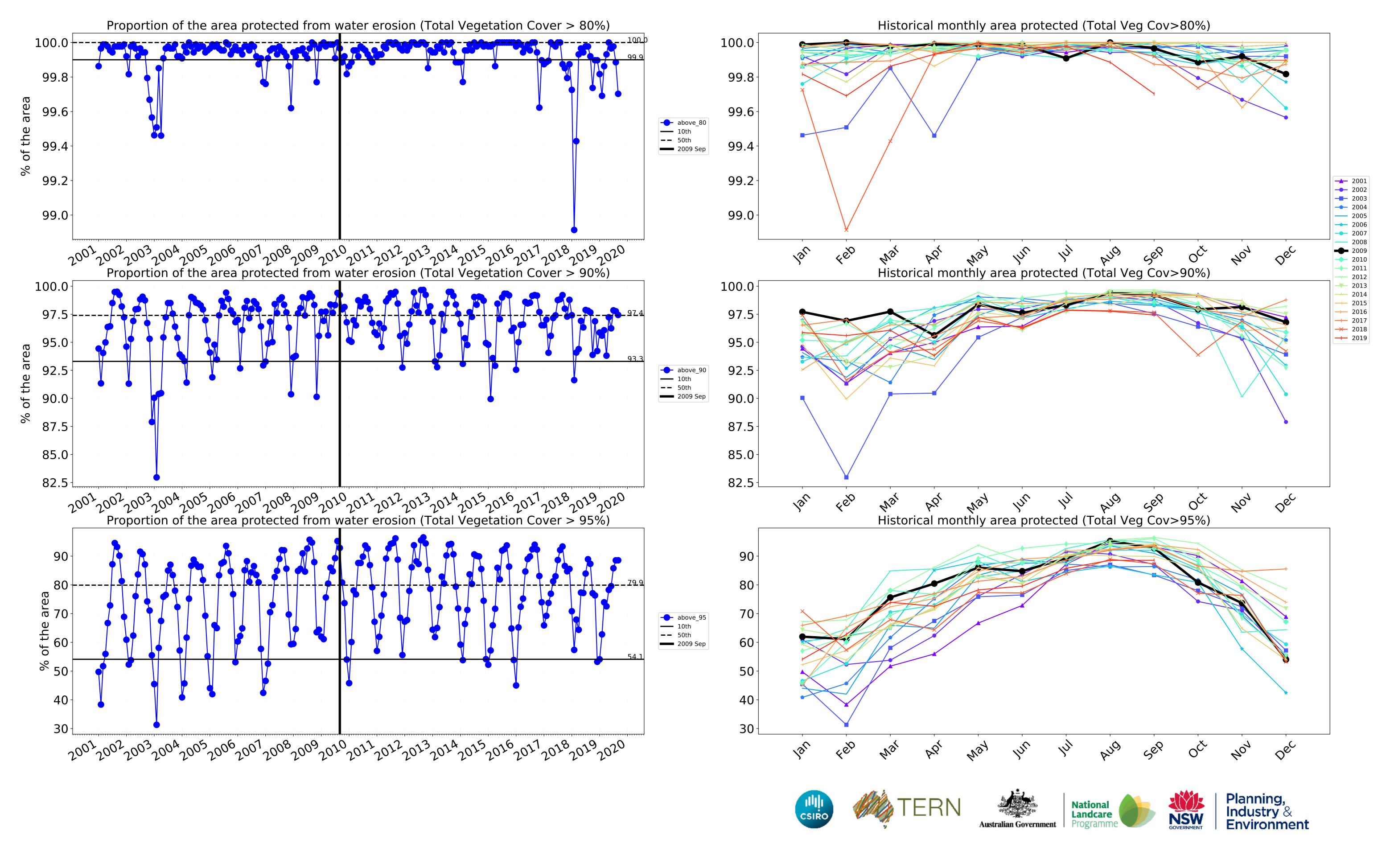




month







### Hunter (3,238,275 ha and no data 62,150 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	3,238,275	99.9% 3,235,400	99.7% 3,227,276	98.7% 3,196,907	96.1% 3,111,021	76.8% 2,487,327	45.6% 1,476,249
Conservation and natural environments	1,241,200	99.9% 1,239,775	99.8% 1,239,075	99.7% 1,237,450	99.5% 1,234,725	90.4% 1,121,900	65.9% 817,700
Conservation and natural environments non forest	30,300	95.4% 28,900	93.4% 28,300	90.5% 27,425	86.1% 26,075	69.6% 21,075	34.7% 10,500
Conservation and natural environments Woodland forest	138,800	100.0% 138,800	100.0% 138,800	100.0% 138,750	99.8% 138,575	78.1% 108,425	38.3% 53,100
natural environments Forest (non woodland)	1,072,100	100.0% 1,072,075	100.0% 1,071,975	99.9% 1,071,275	99.8% 1,070,075	92.6% 992,400	70.3% 754,100
Agriculture	1,580,500	100.0% 1,580,475	100.0% 1,580,050	99.6% 1,574,825	96.4% 1,524,325	68.7% 1,086,325	27.8% 438,675
Grazing	1,502,500	100.0% 1,502,475	100.0% 1,502,050	99.8% 1,499,275	98.0% 1,472,750	71.8% 1,078,300	29.1% 437,375
Grazing non forest	1,212,925	100.0% 1,212,900	100.0% 1,212,475	99.7% 1,209,850	97.7% 1,184,825	69.7% 844,925	27.4% 332,400
Grazing Woodland forest	120,525	100.0% 120,525	100.0% 120,525	100.0% 120,475	99.3% 119,675	73.5% 88,600	24.2% 29,225
Grazing - Forest (non woodland)	169,050	100.0% 169,050	100.0% 169,050	99.9% 168,950	99.5% 168,250	85.6% 144,775	44.8% 75,750
Cropping	50,625	100.0% 50,625	100.0% 50,625	95.6% 48,400	58.8% 29,775	8.9% 4,525	1.7% 875
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	100.0% 218,500	99.2% 216,875	92.9% 202,975











