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

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

Land use forest cover:

Date: February 2011

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

### **Erosion protection**

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

### Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

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

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

### **Acknowledgment of data:**

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

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













### **Vegetation Cover Feb 2011**

### Land use and forest cover Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments -2 Conservation and natural environments -3 Conservation and natural environments -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 7 Agriculture - Grazing - Irrigated

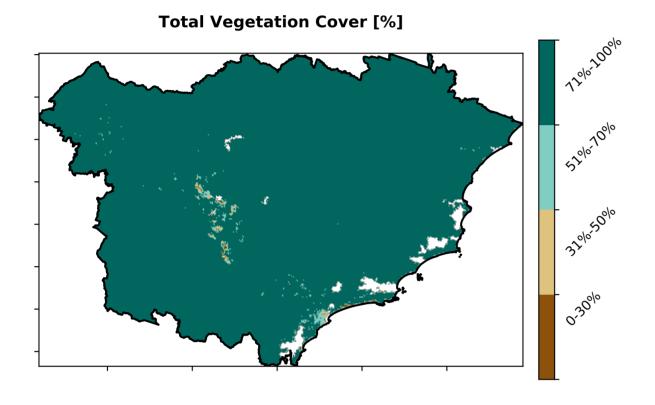
### 36.9% 35 30 -25 20 15 10 10 11 12 13

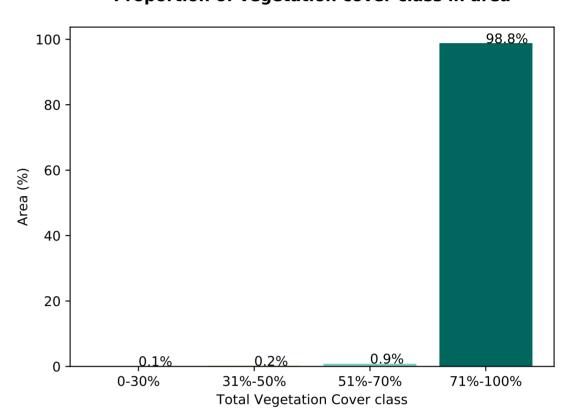
Proportion of each land class in area

### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018) 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation 13 Other uses

Proportion of vegetation cover class in area

Land use class

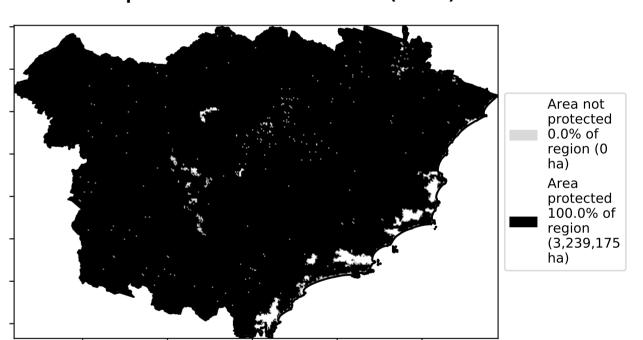




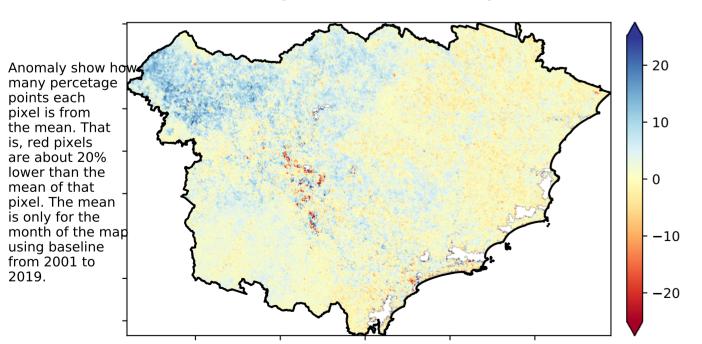
### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)







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 [%]** 



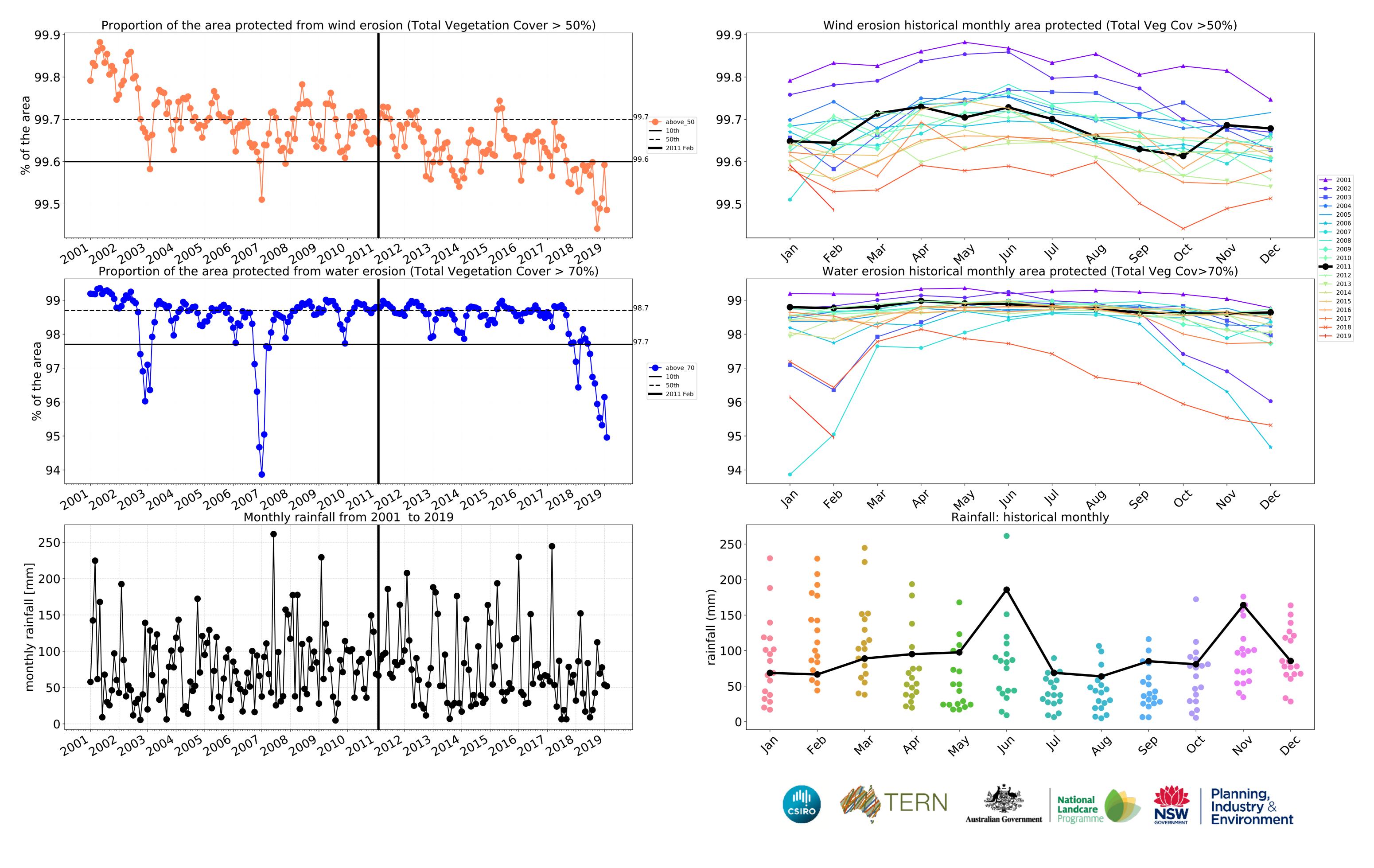


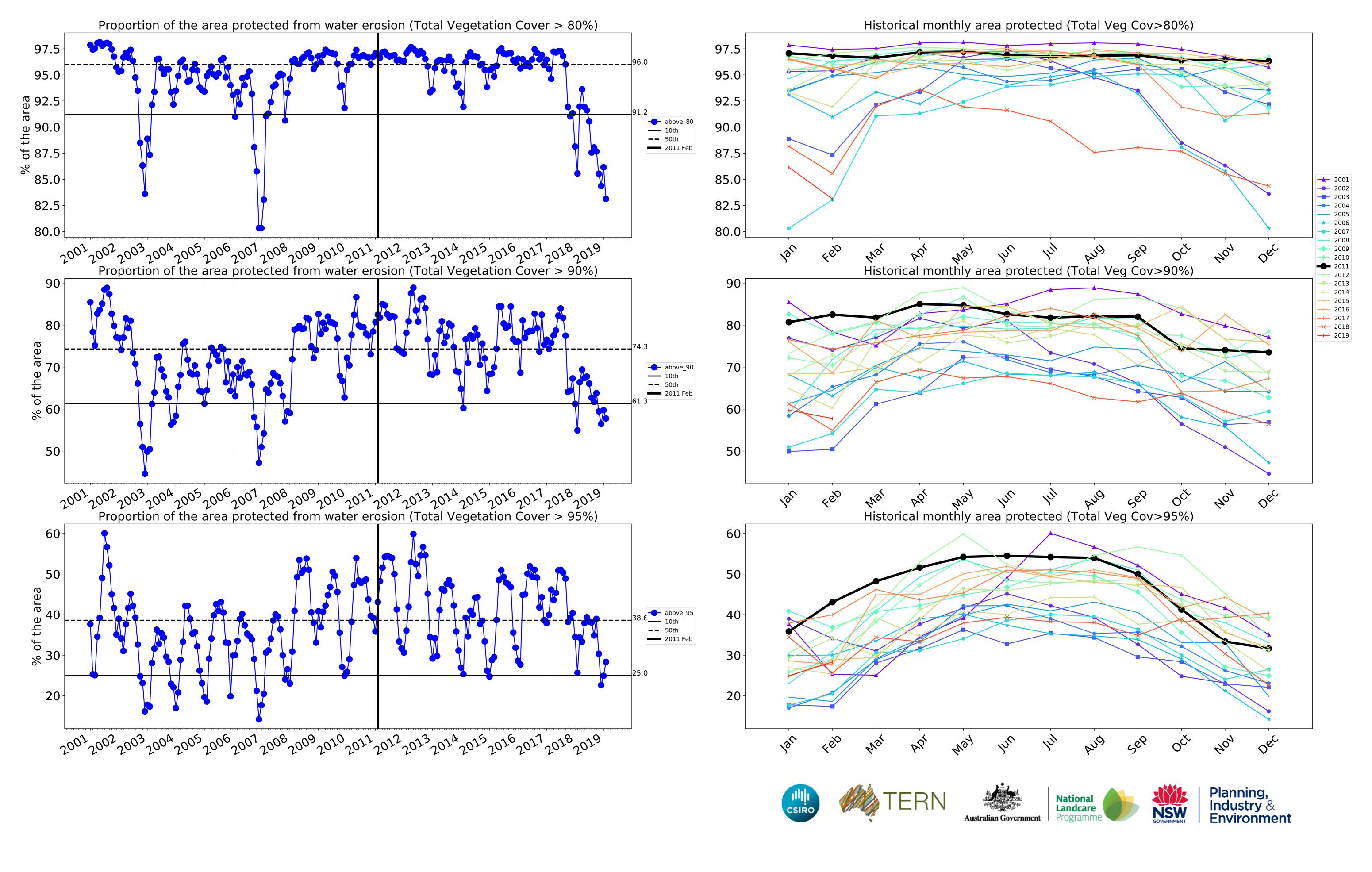






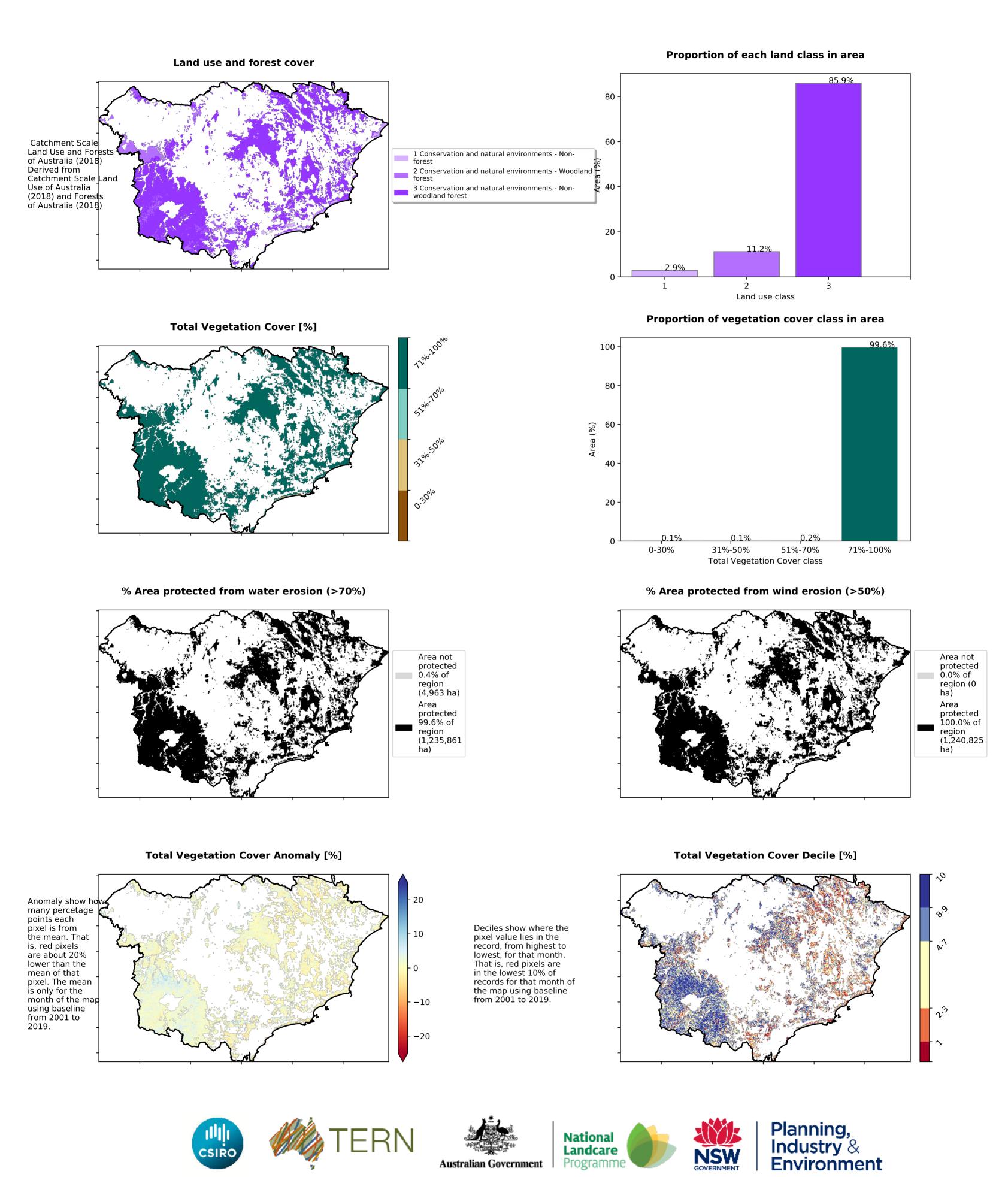




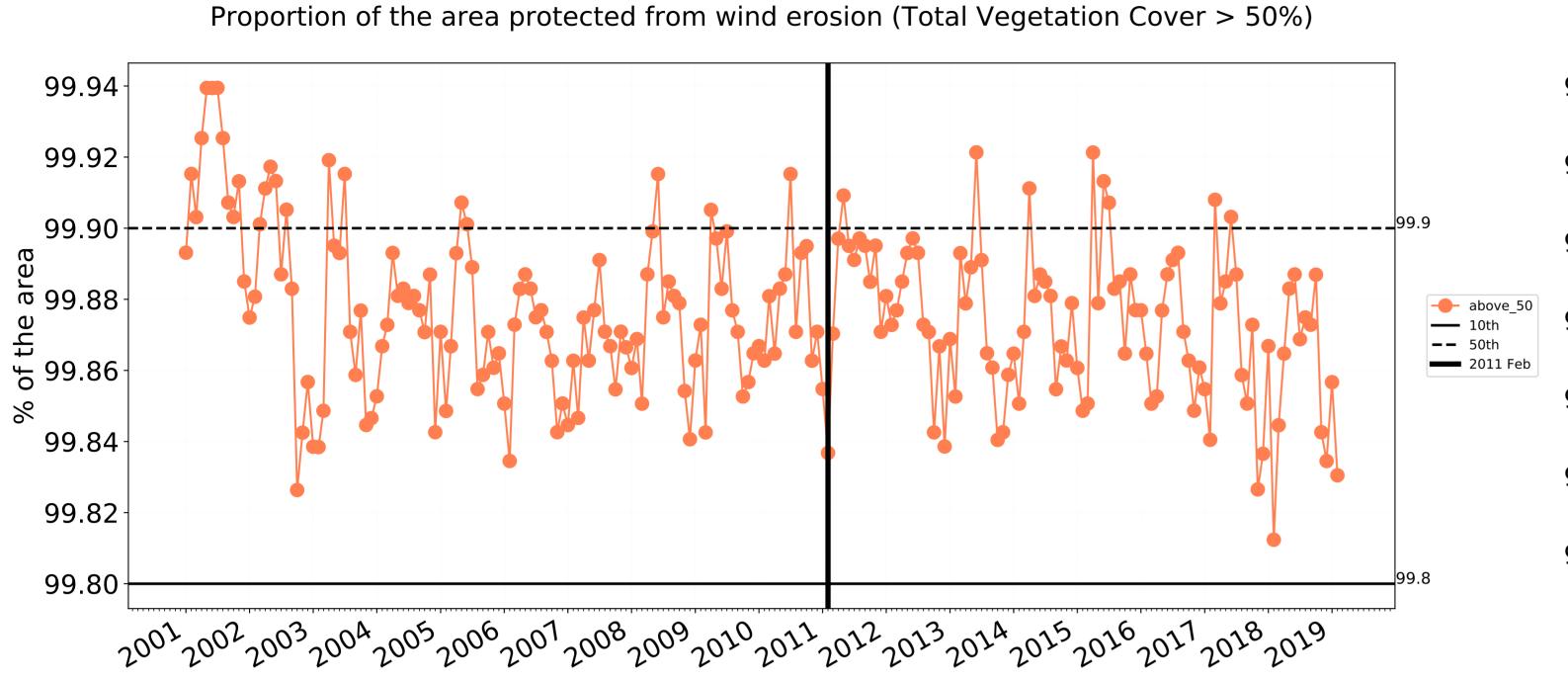


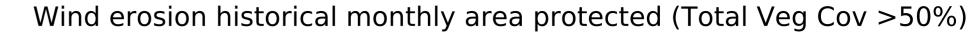
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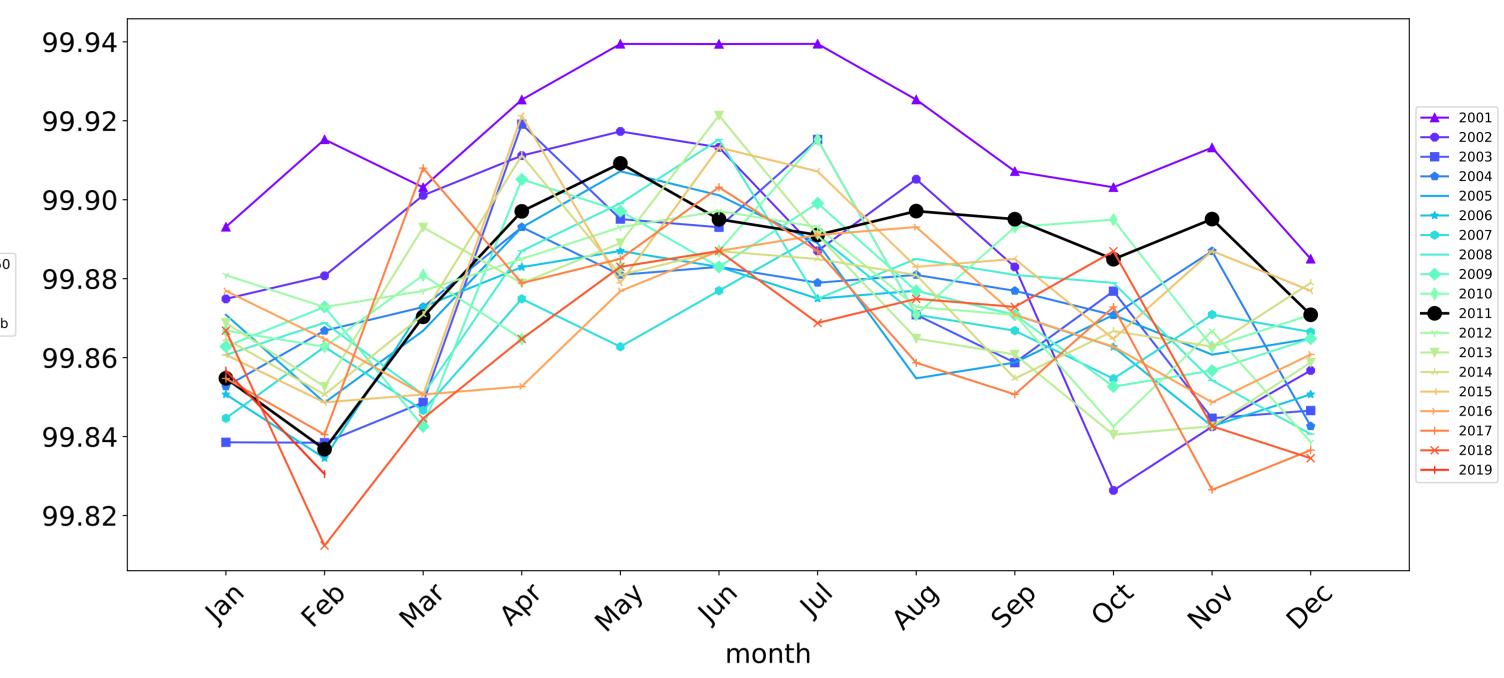
### **Conservation and natural environments**

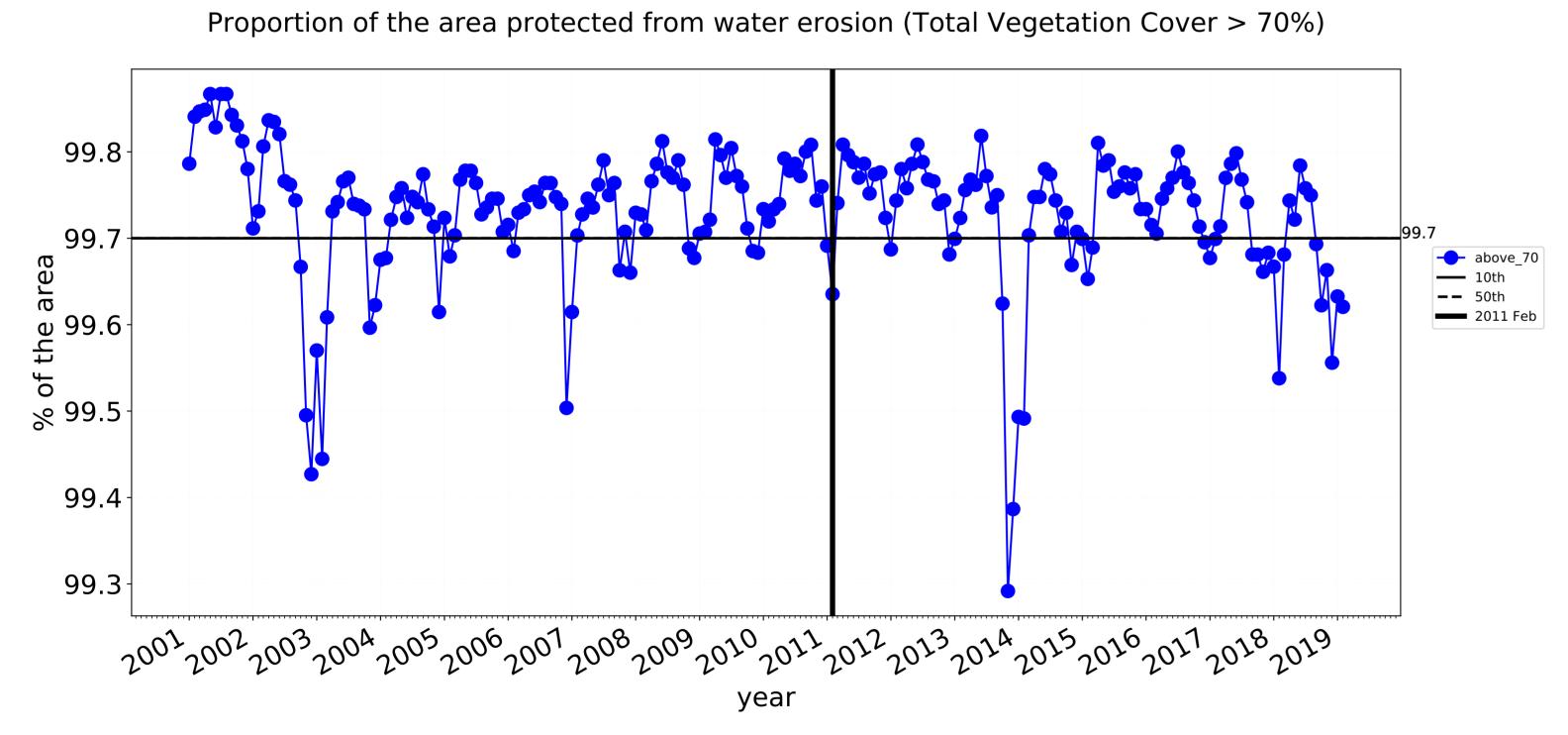


### **Conservation and natural environments timeseries**

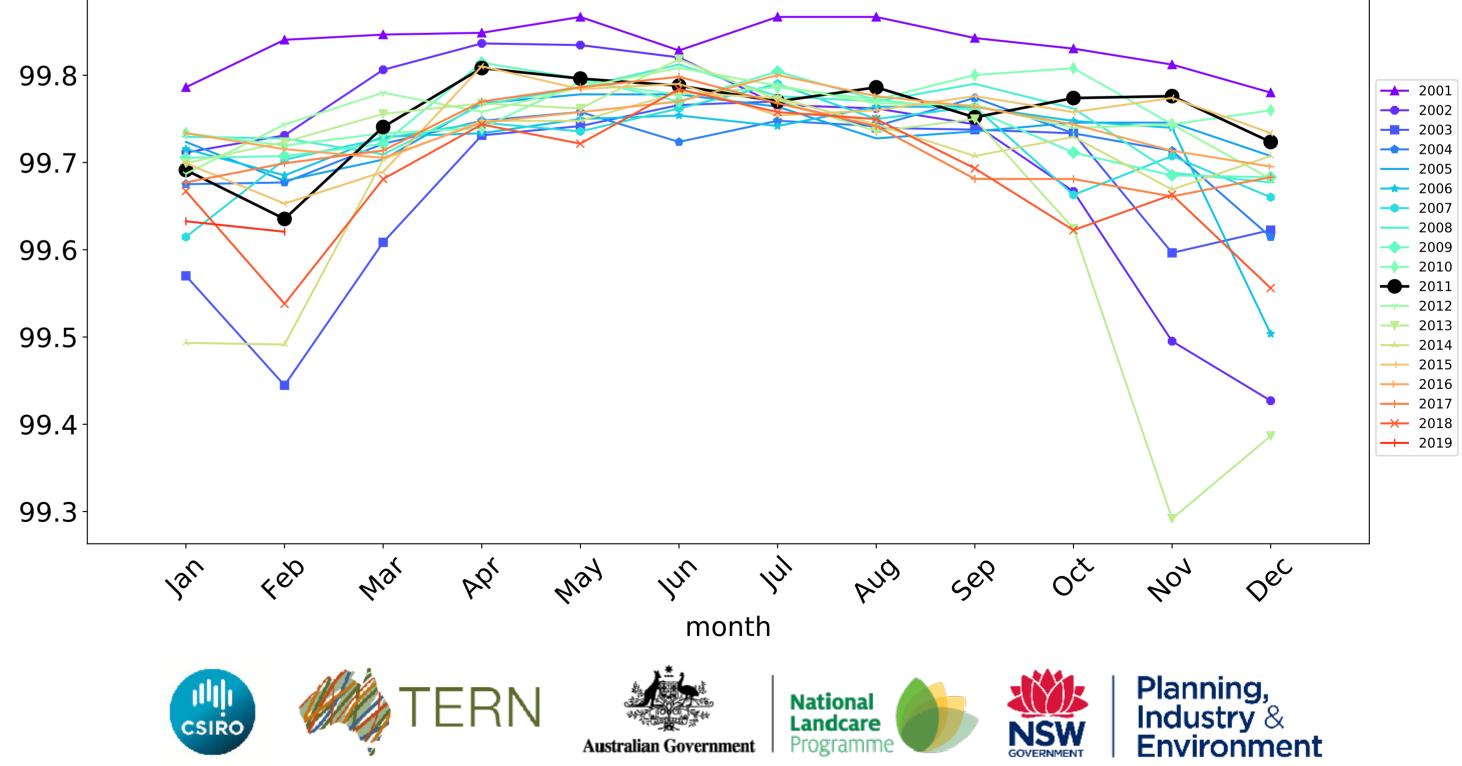


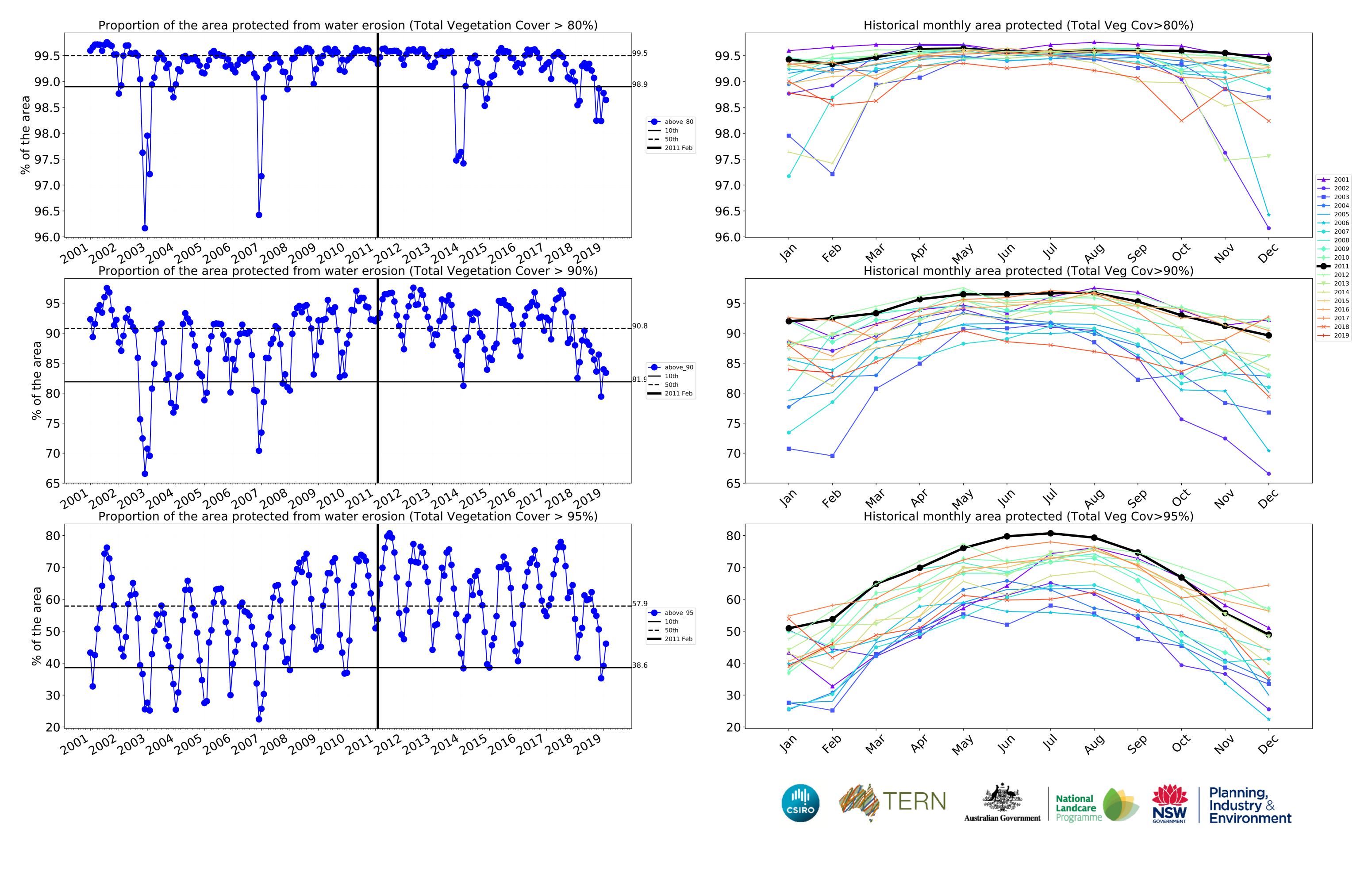




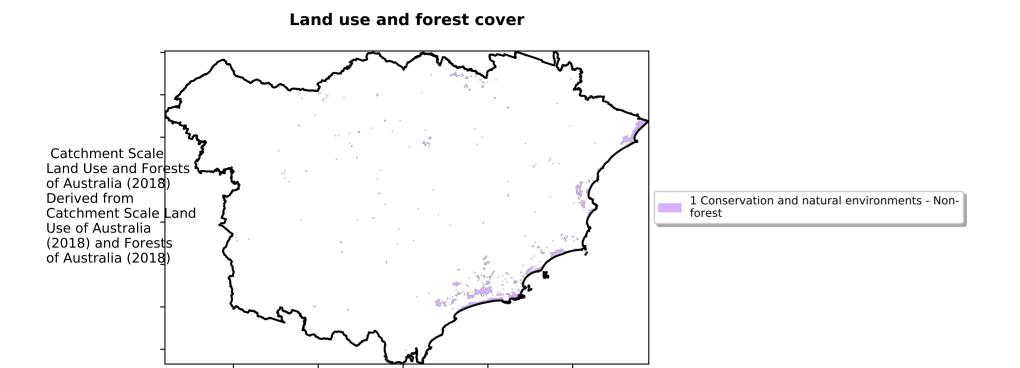


### Water erosion historical monthly area protected (Total Veg Cov>70%)



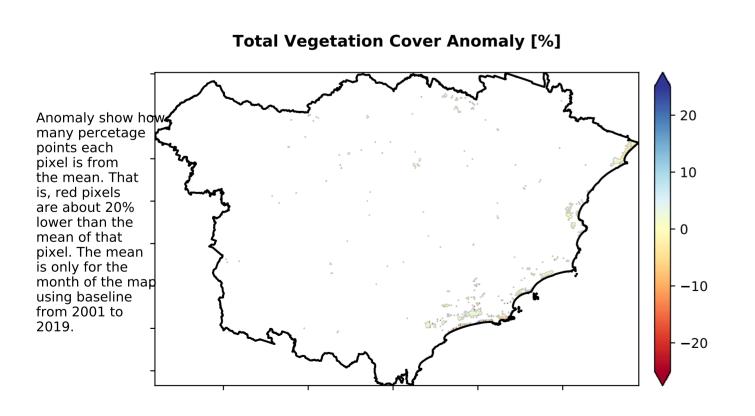


### **Conservation and natural environments non forest**



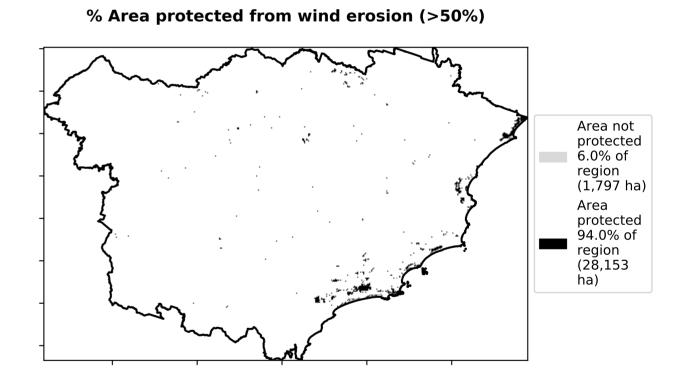
## Total Vegetation Cover [%] Talestage Tales

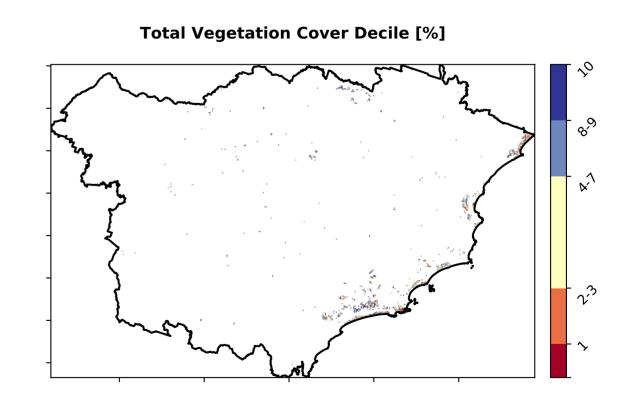
### Area not protected 10.9% of region (3,264 ha) Area protected 89.1% of region (26,685 ha)



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.

# 80 - 89.1% 80 - 60 - 60 - 20 - 3.9% 0 - 3.9% 1.9% 5.1% Total Vegetation Cover class in area









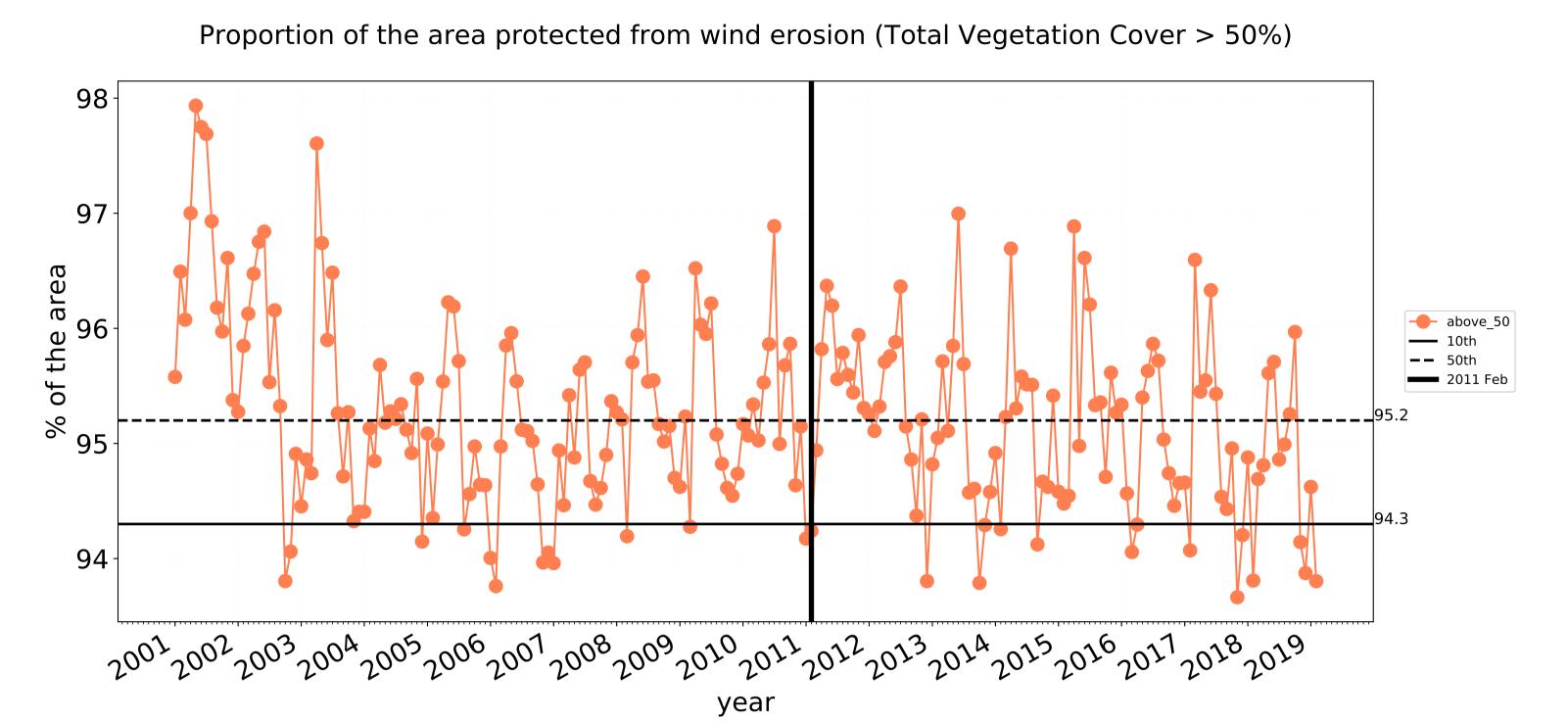




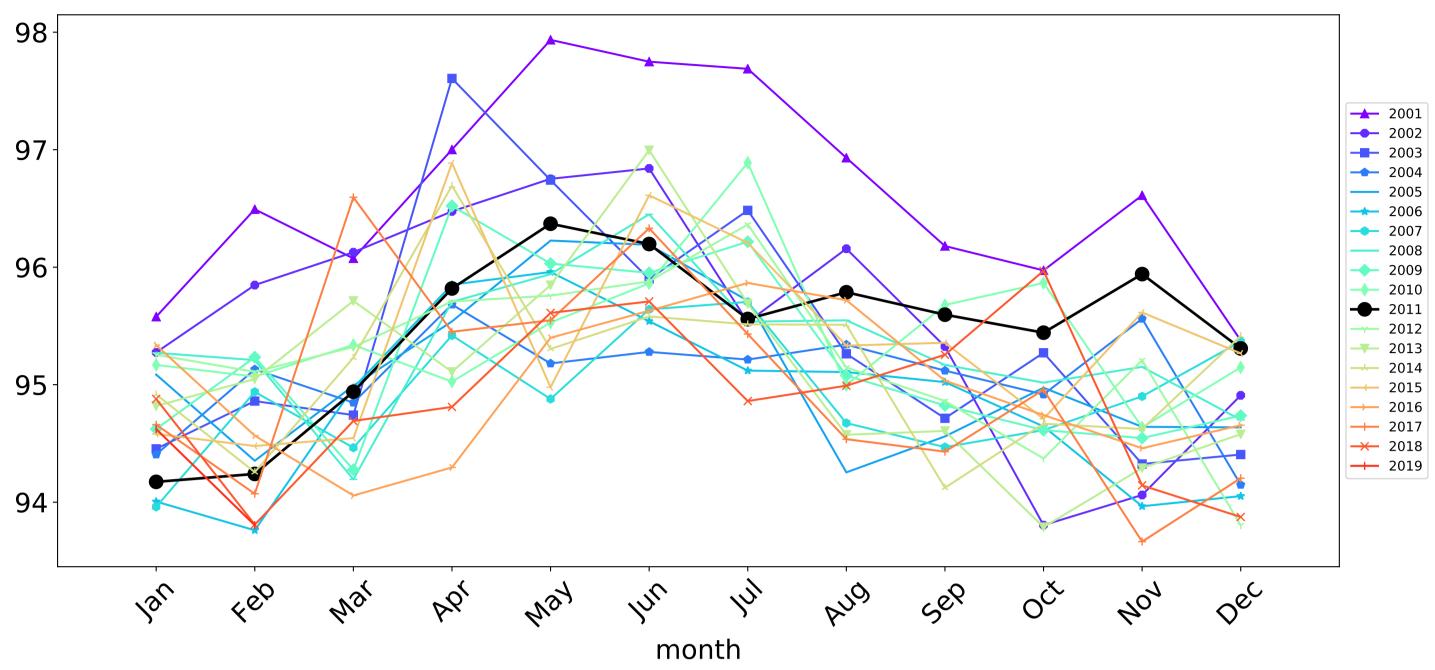




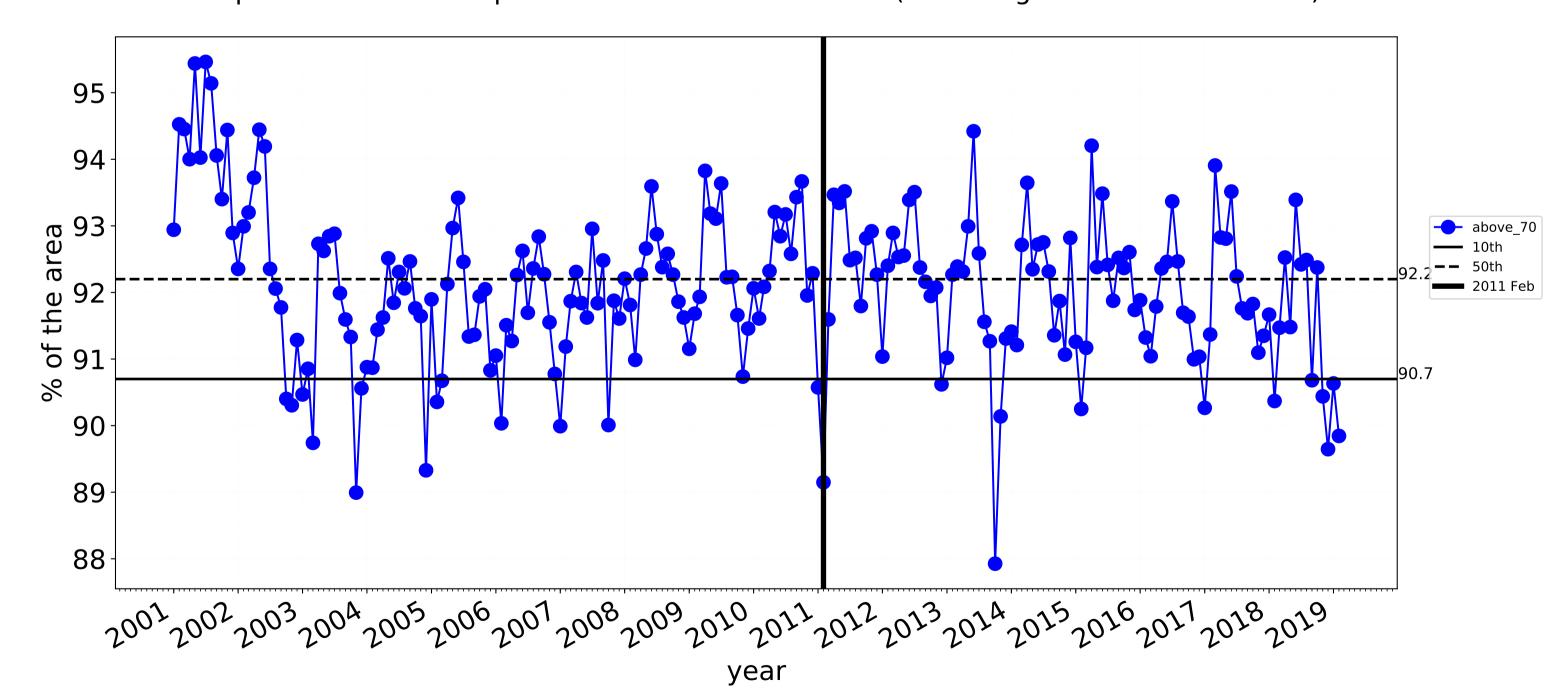
### **Conservation and natural environments non forest timeseries**



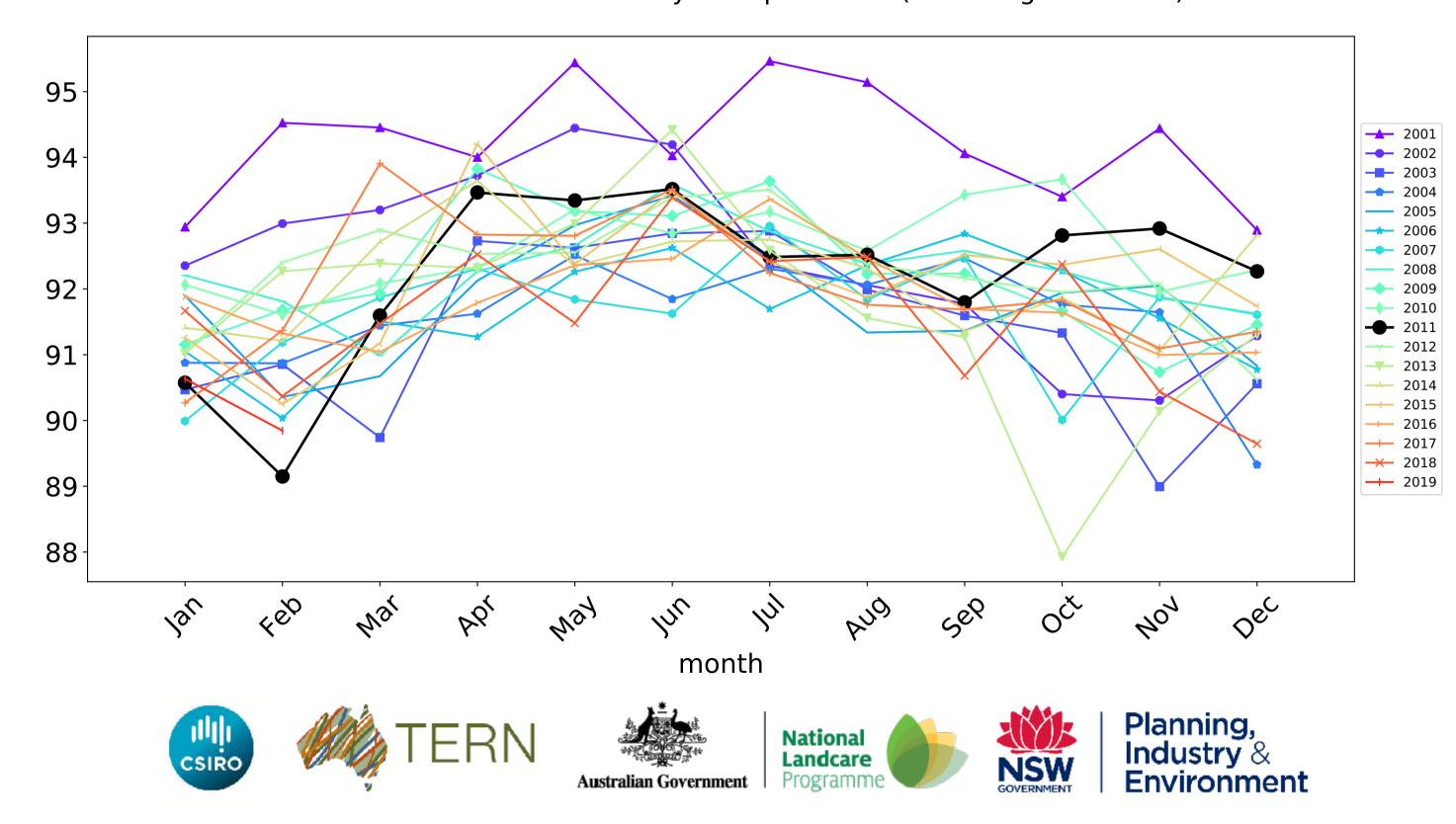


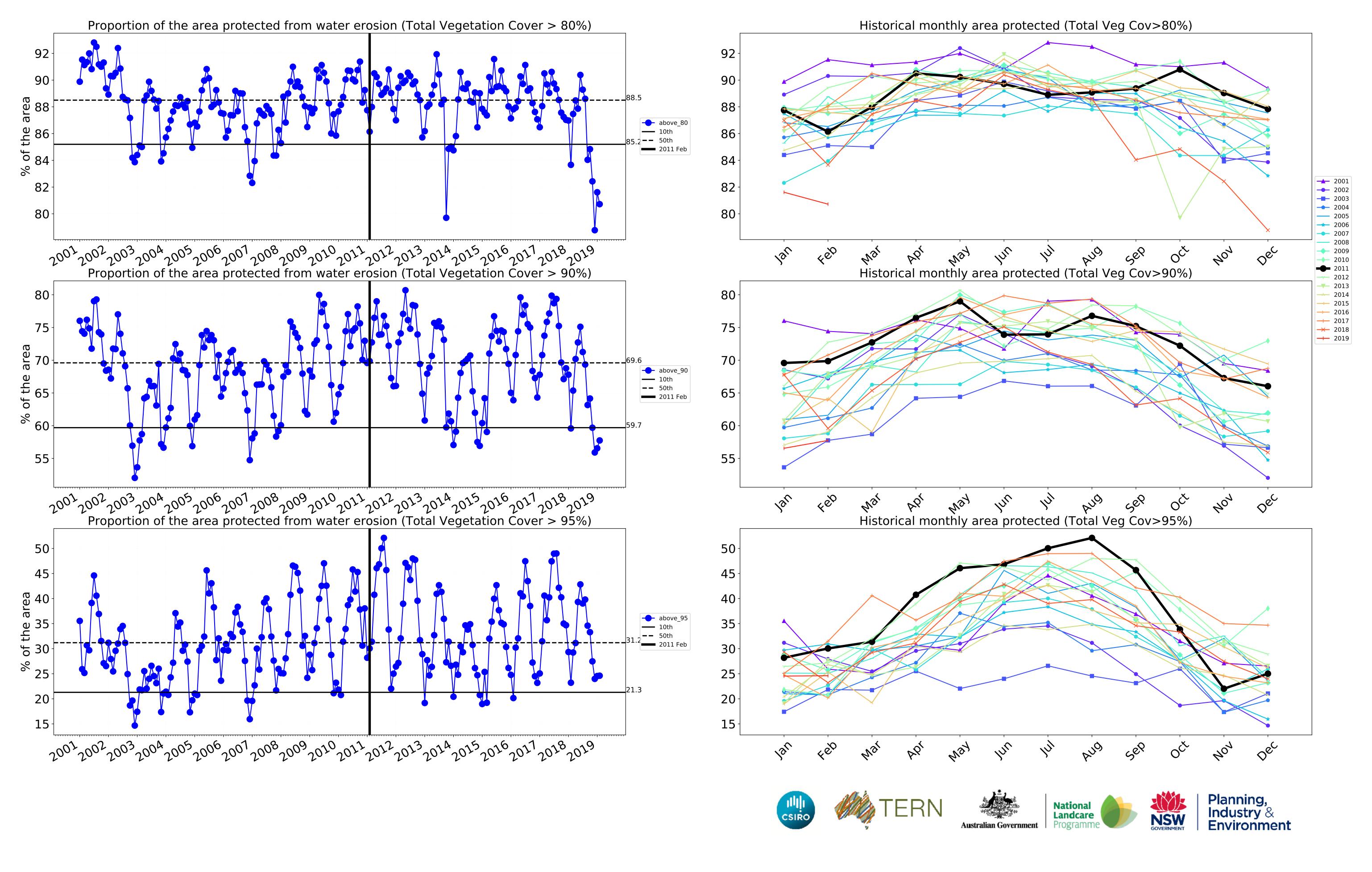


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

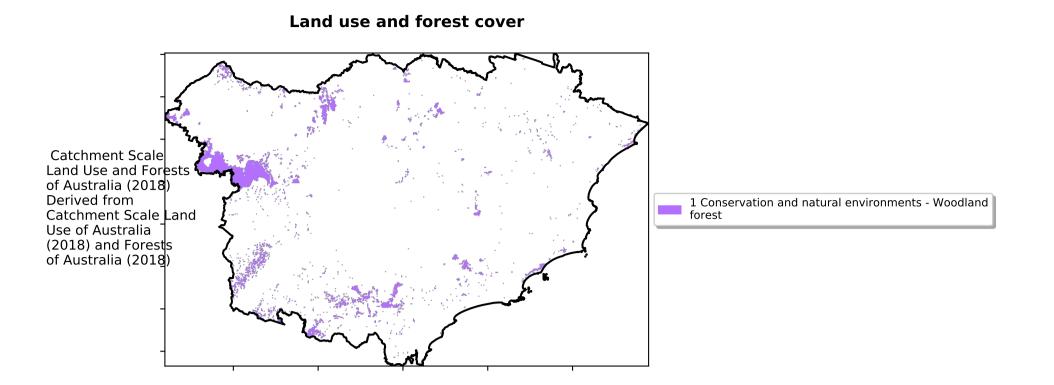


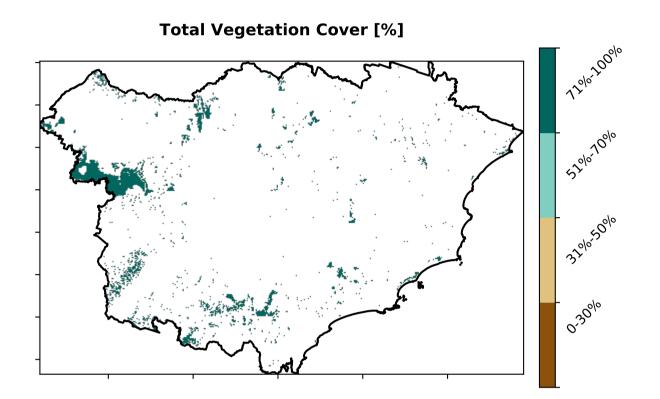
Water erosion historical monthly area protected (Total Veg Cov>70%)

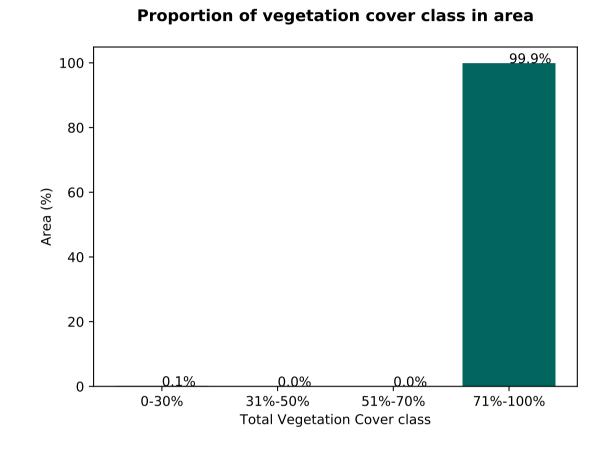


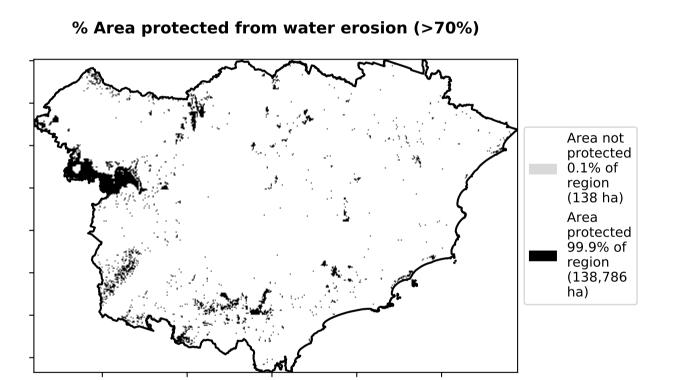


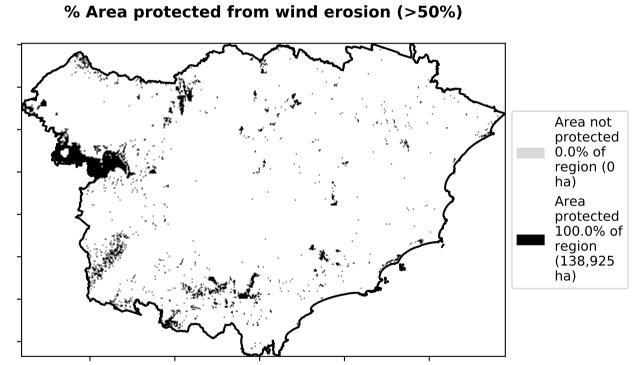
### **Conservation and natural environments Woodland forest**

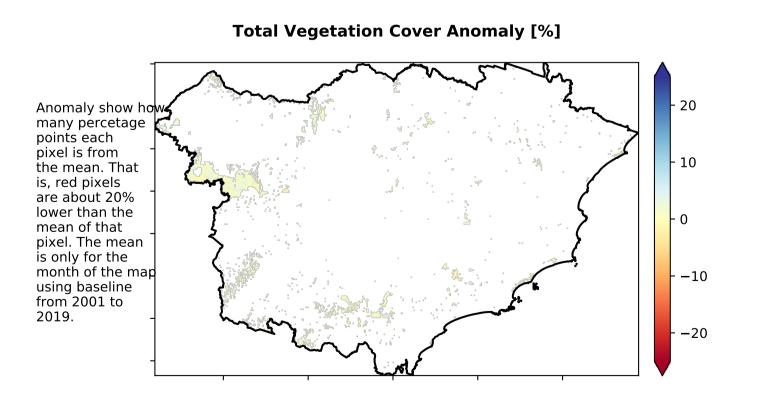


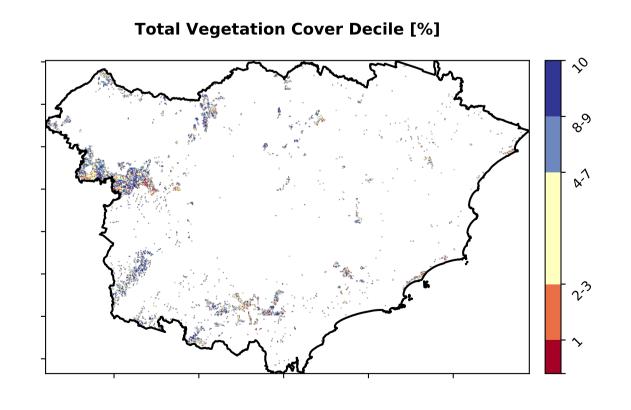
















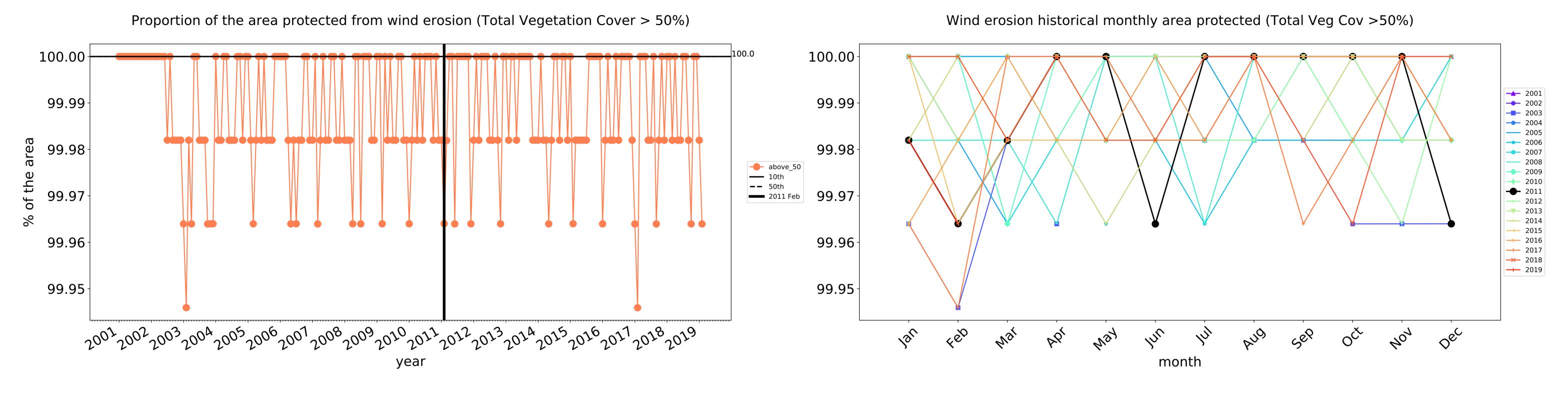


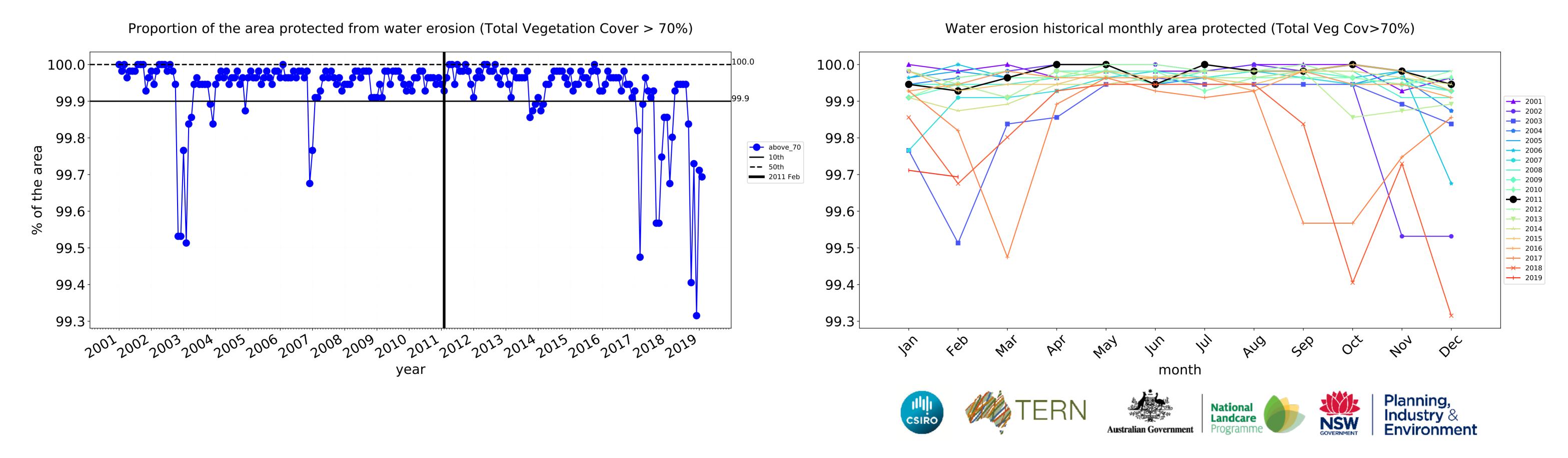


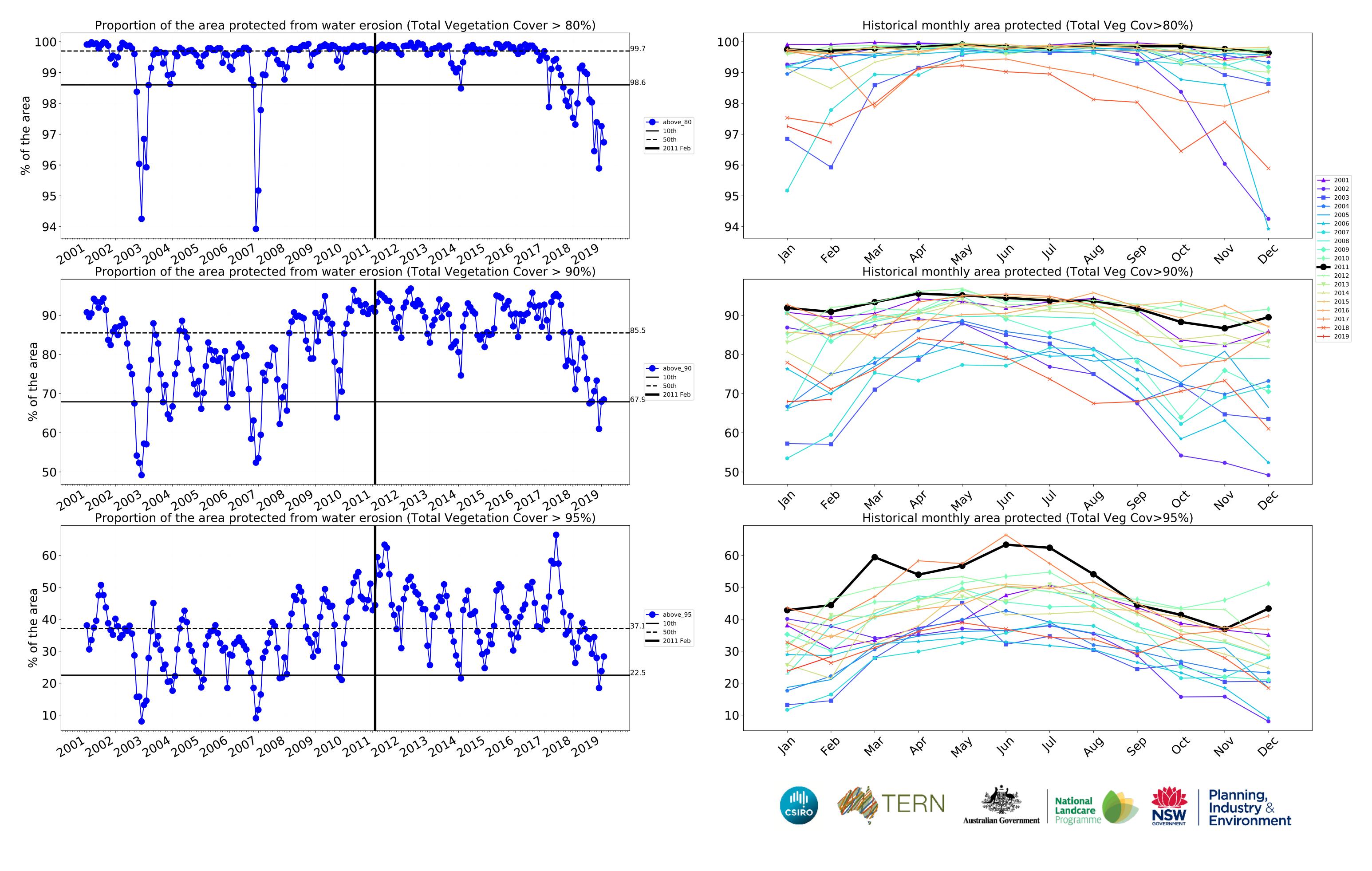




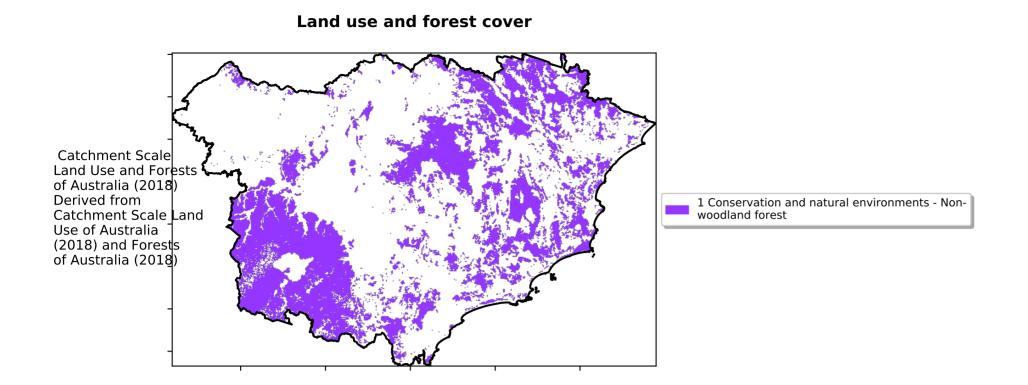
### **Conservation and natural environments Woodland forest timeseries**



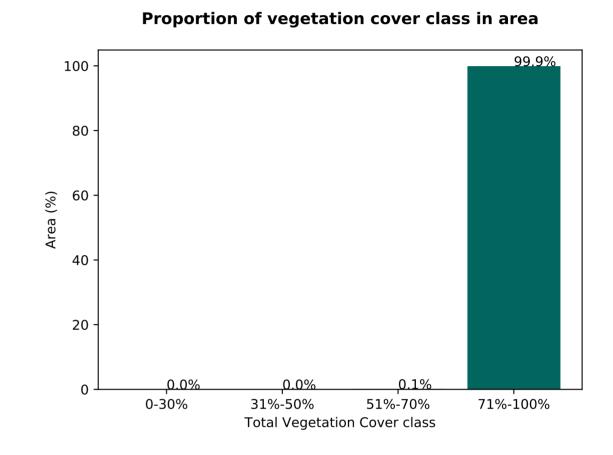


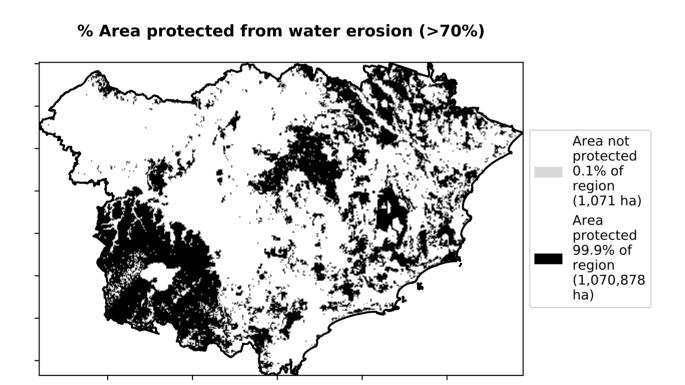


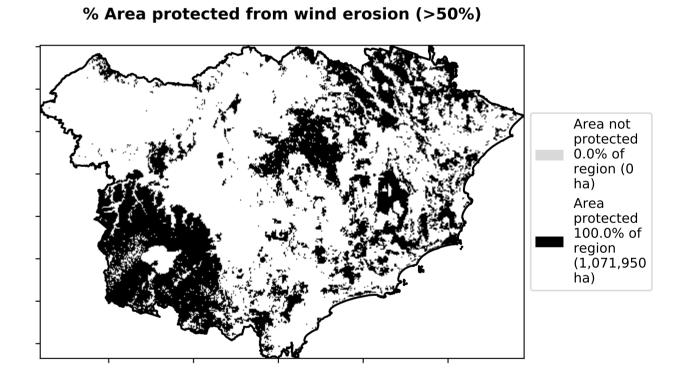
### **Conservation and natural environments Forest (non woodland)**

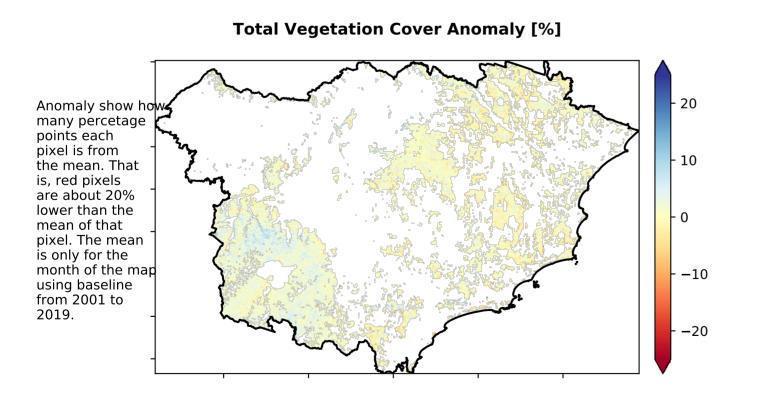


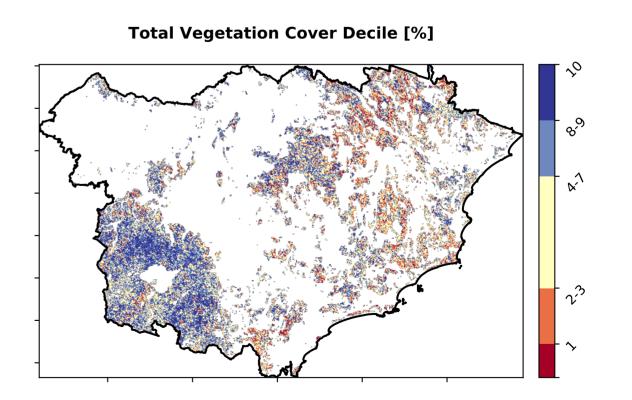
# Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]













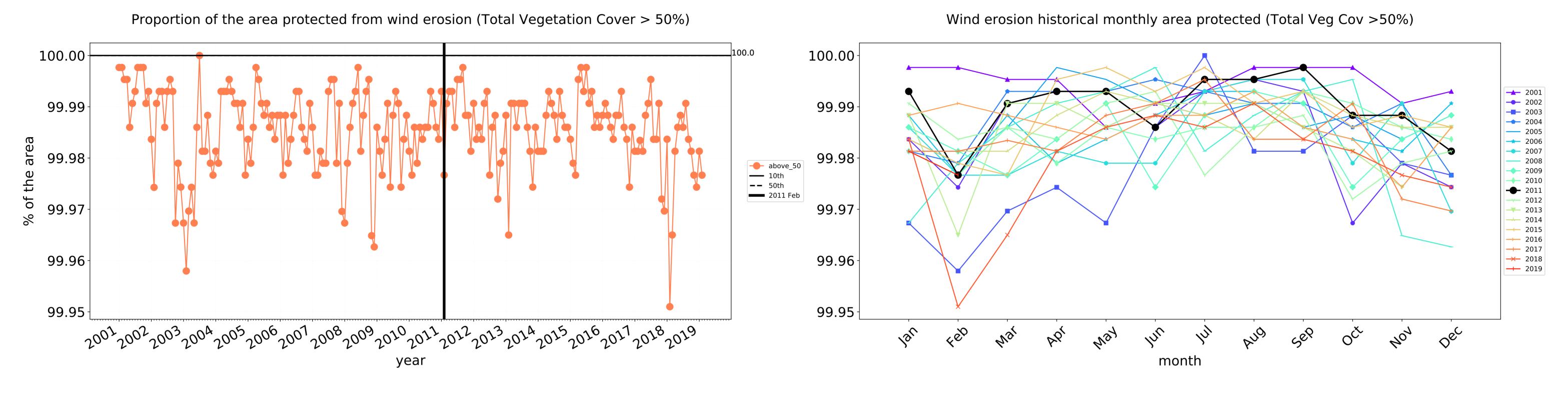


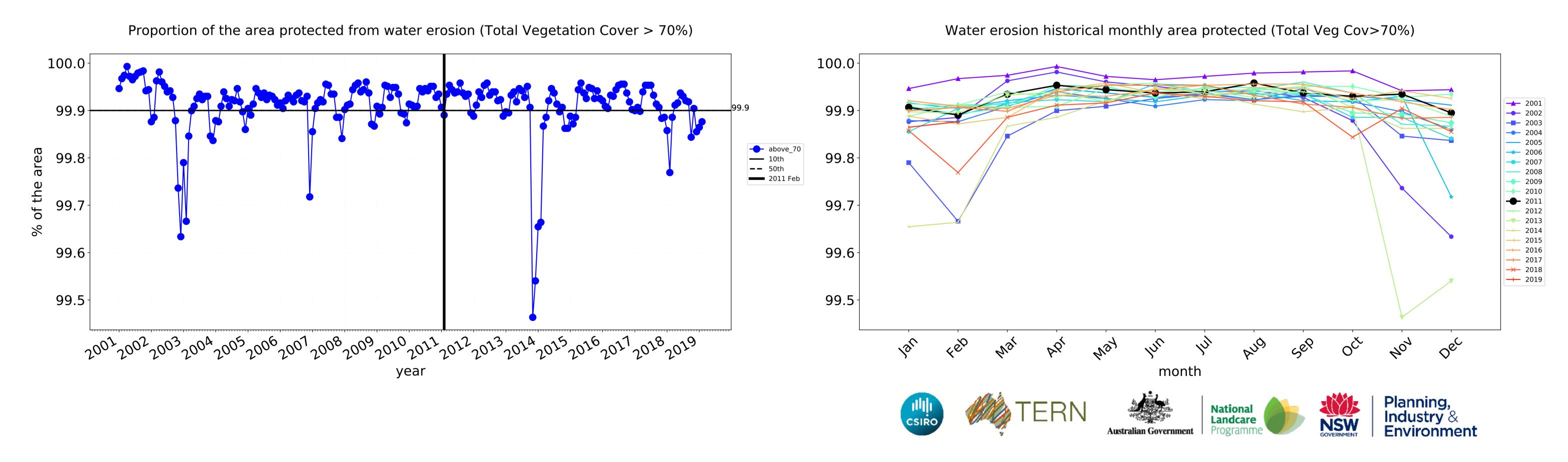


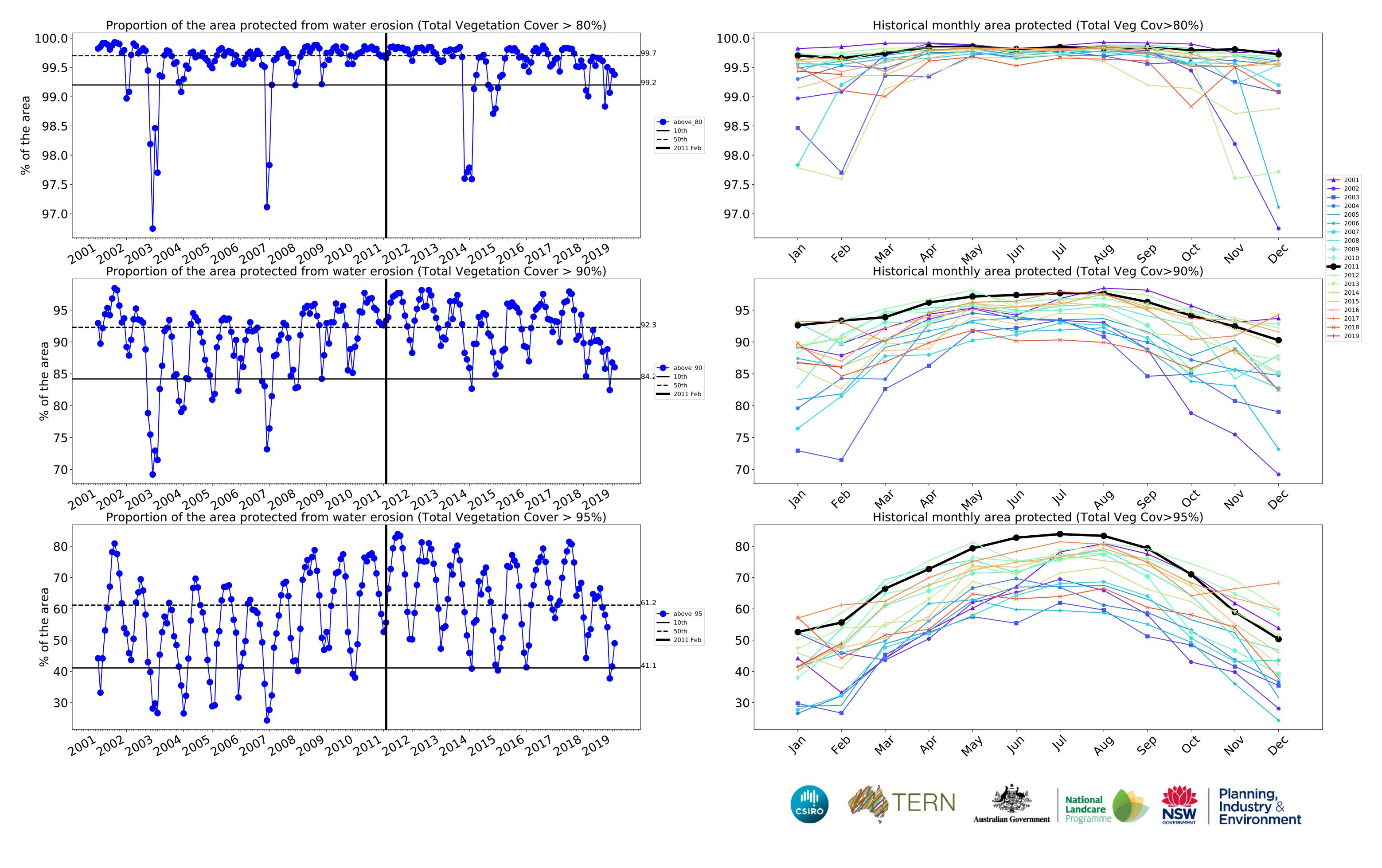




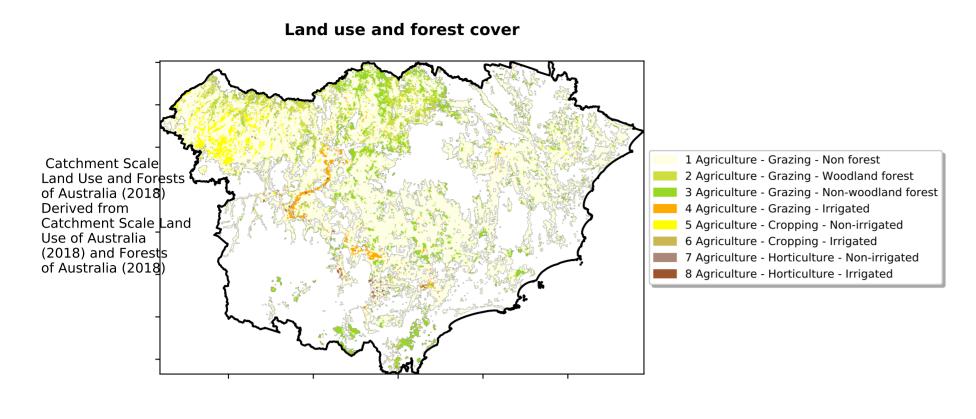


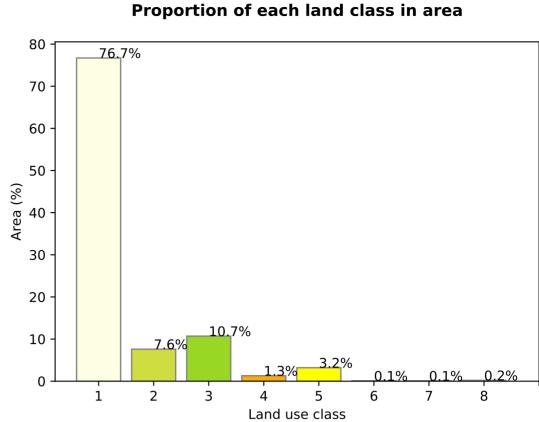


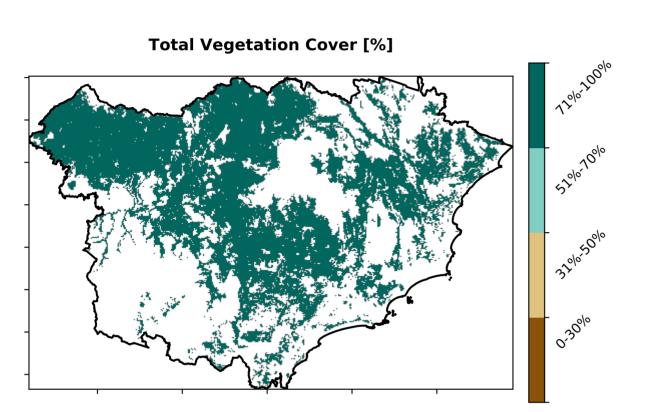


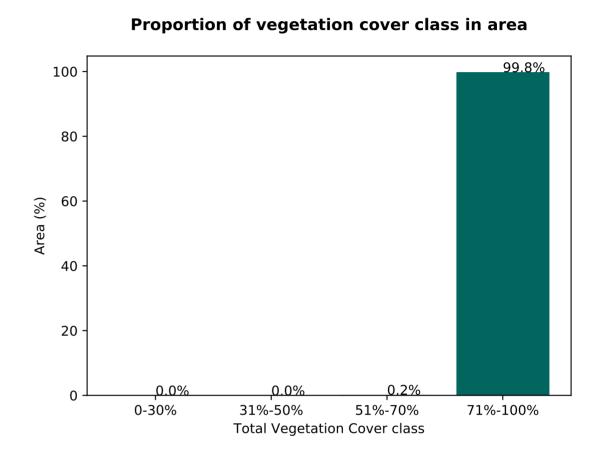


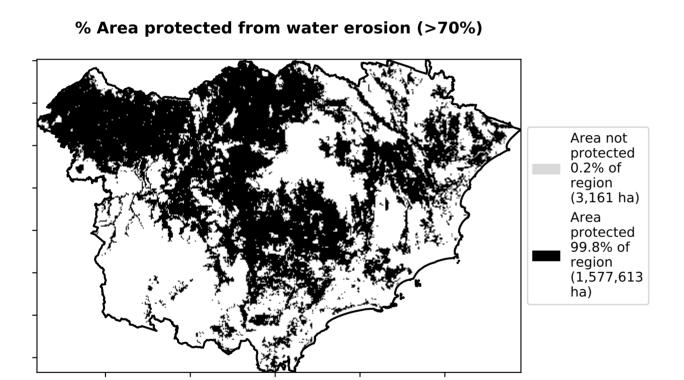
### **Agriculture**

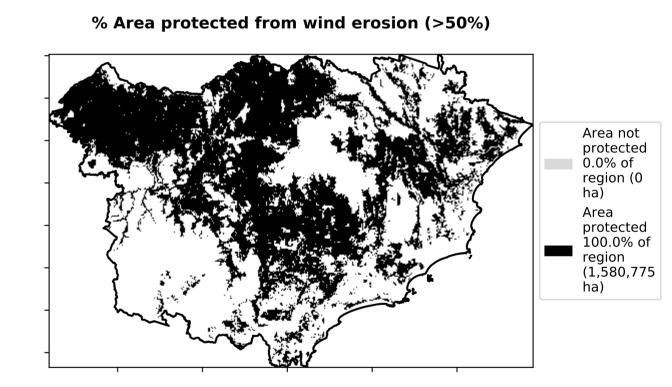


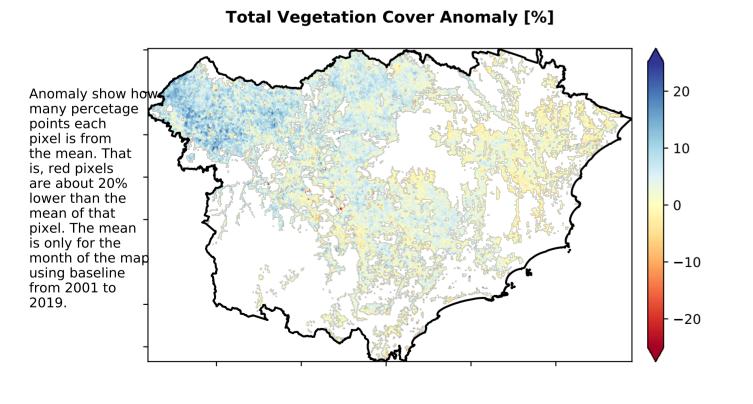


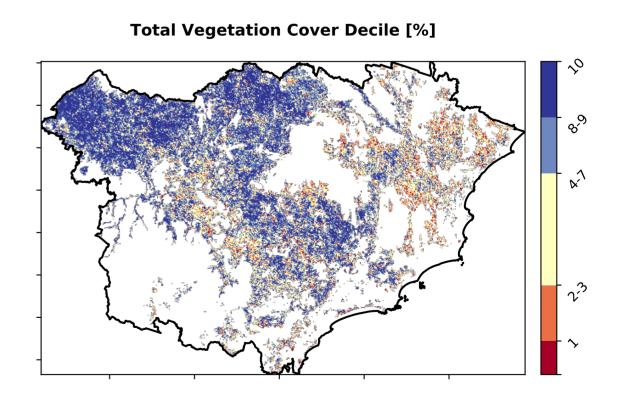
















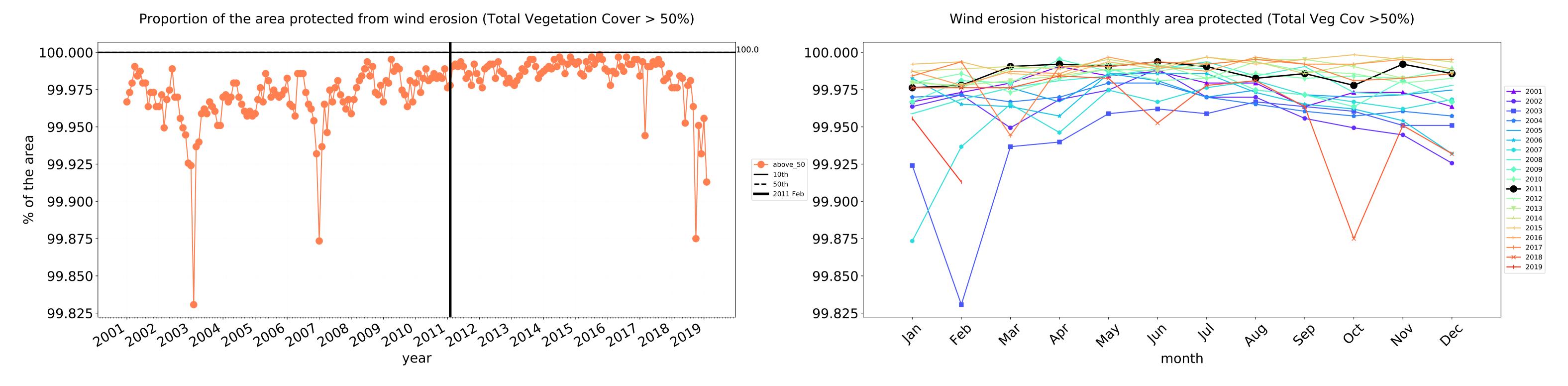


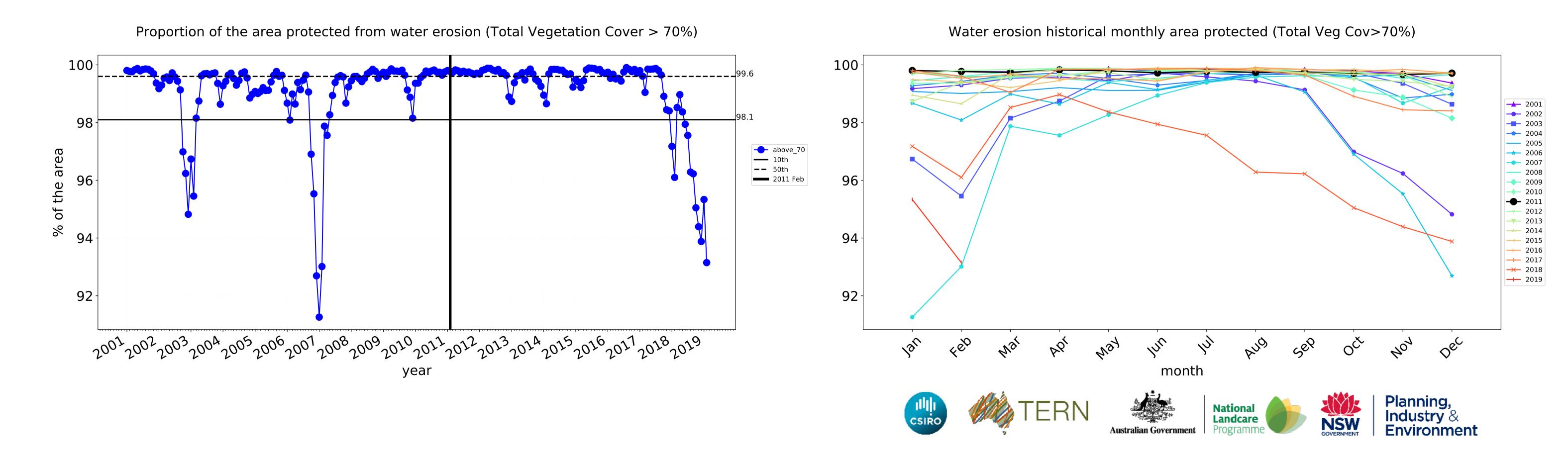


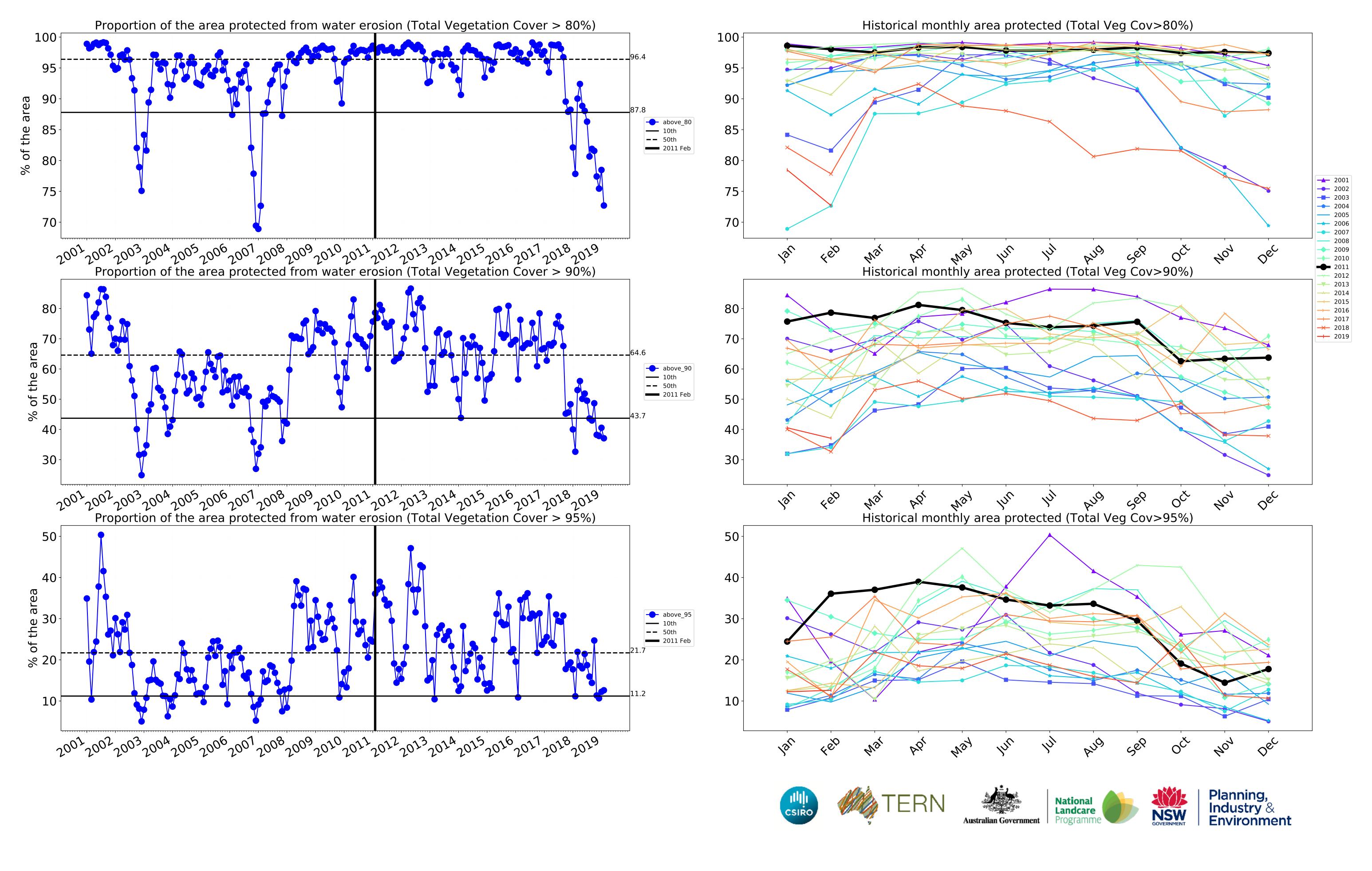




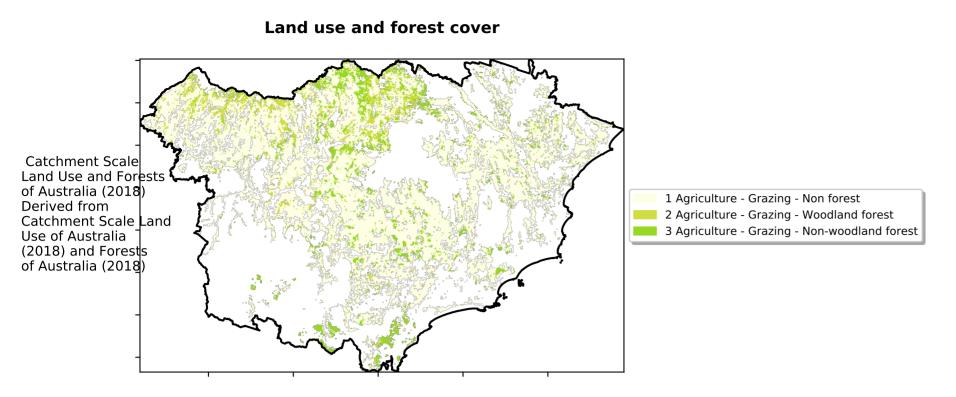
### **Agriculture timeseries**



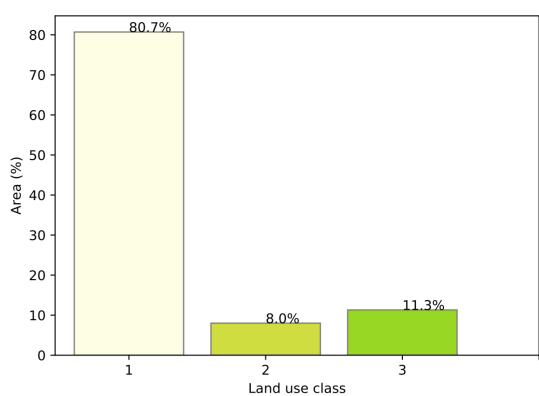




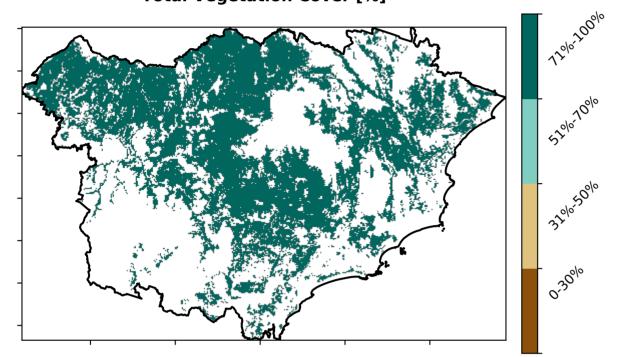
### **Grazing**



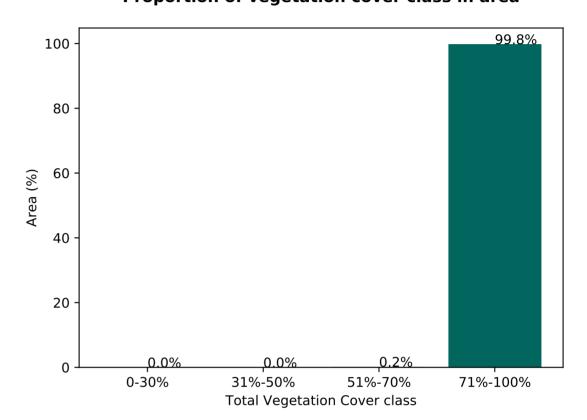
### Proportion of each land class in area



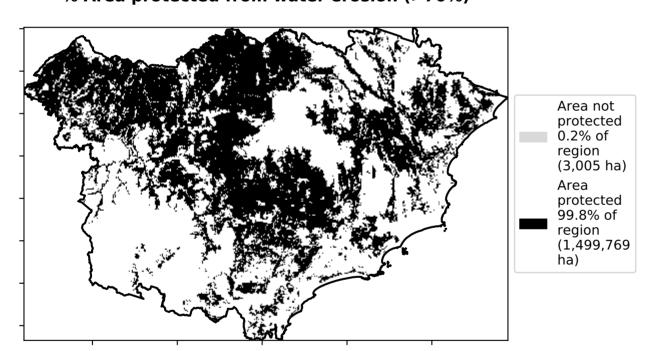
**Total Vegetation Cover [%]** 



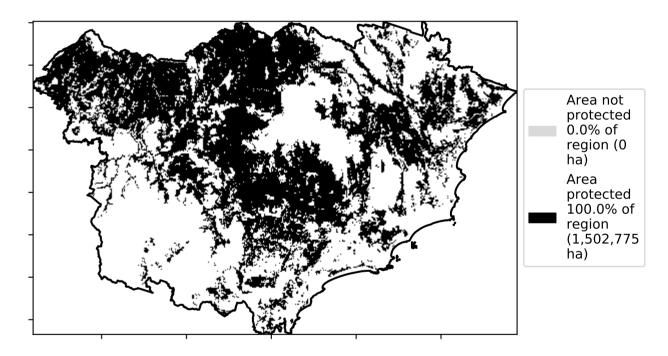
Proportion of vegetation cover class in area



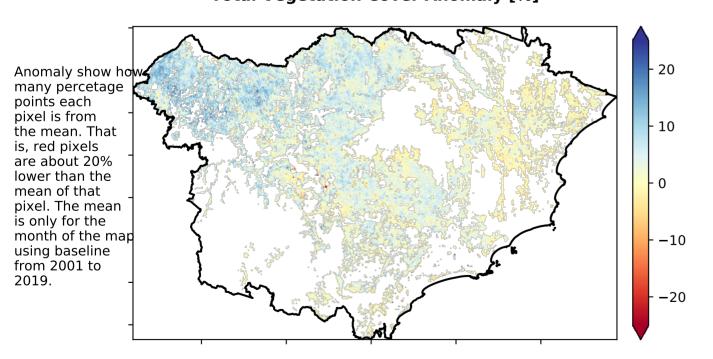
% Area protected from water erosion (>70%)



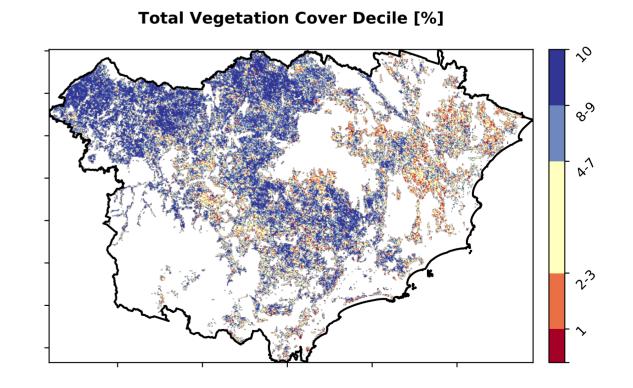
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



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







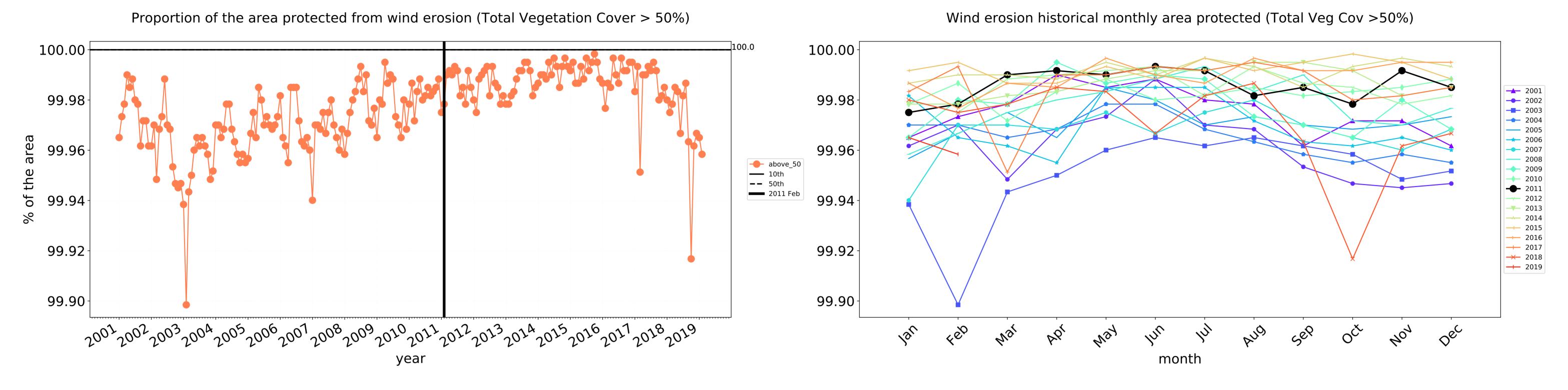


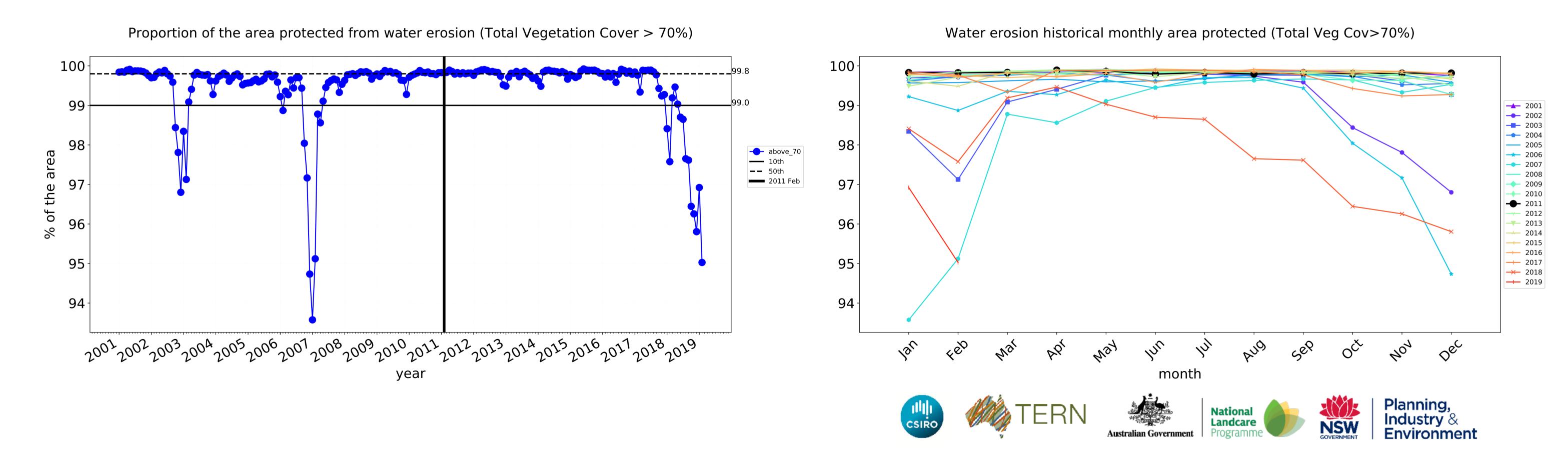


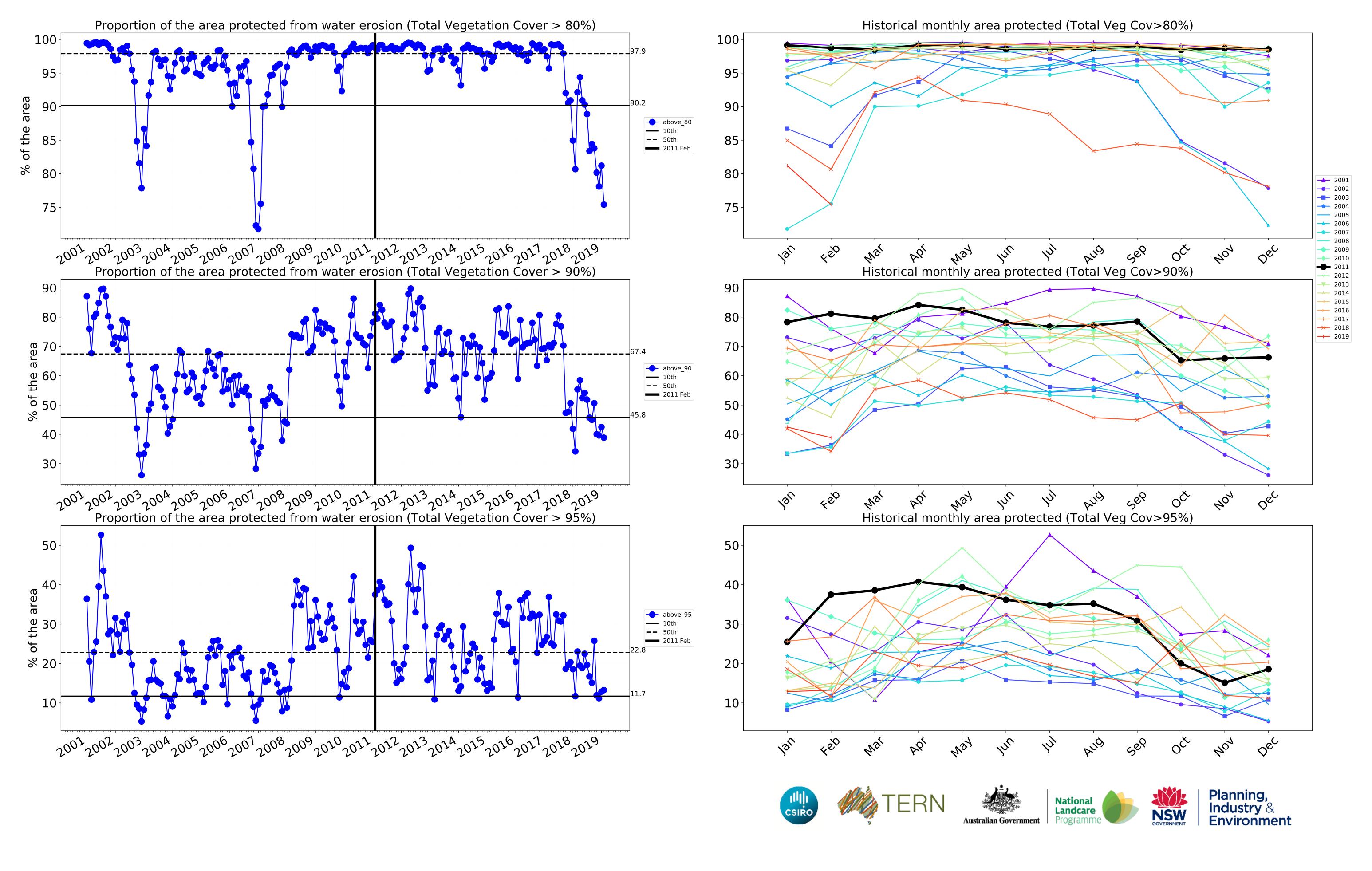




### **Grazing timeseries**

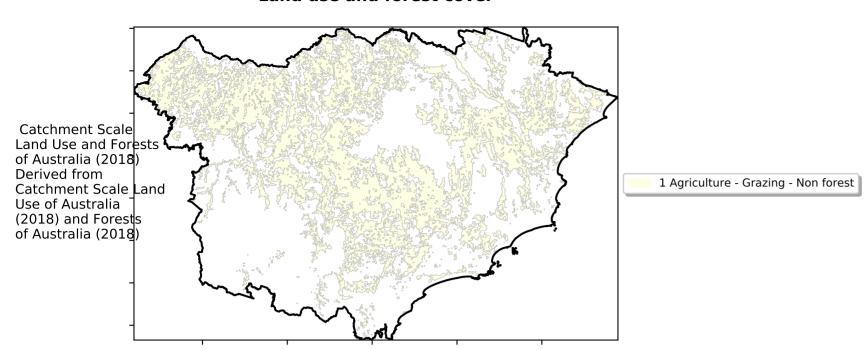




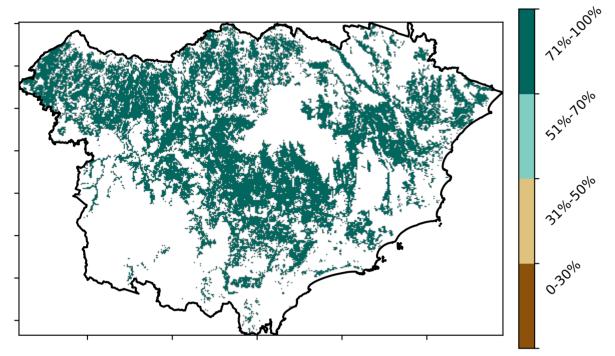


### **Grazing non forest**

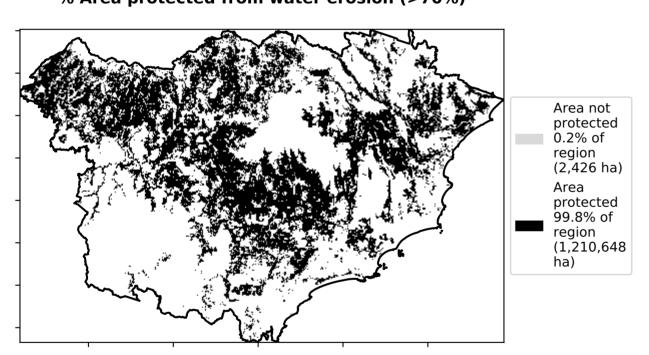
### Land use and forest cover



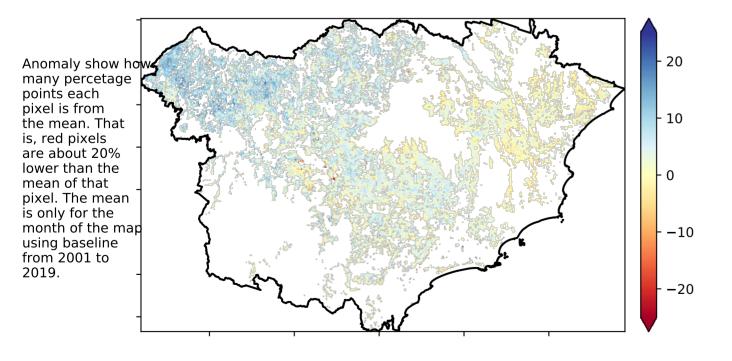
### Total Vegetation Cover [%]



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

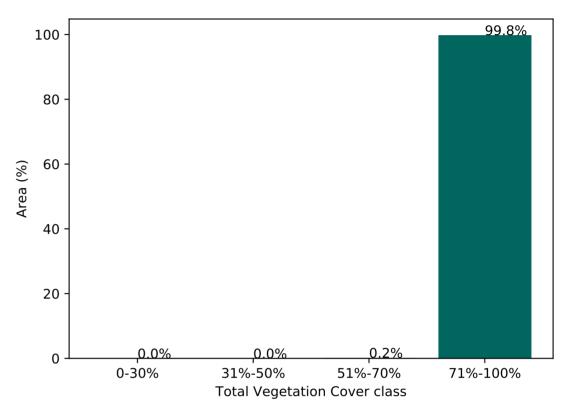


### Total Vegetation Cover Anomaly [%]

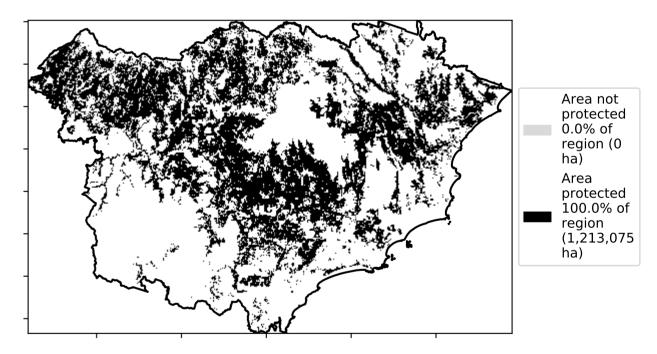


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

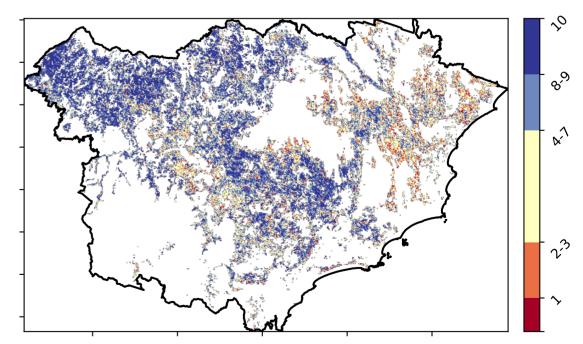
### **Proportion of vegetation cover class in area**



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



### Total Vegetation Cover Decile [%]







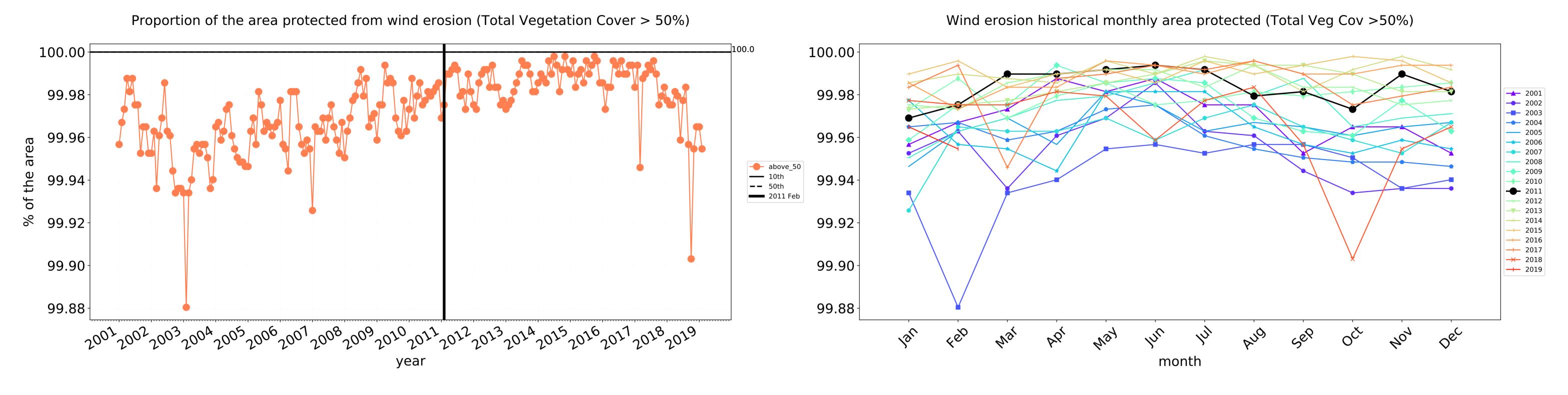


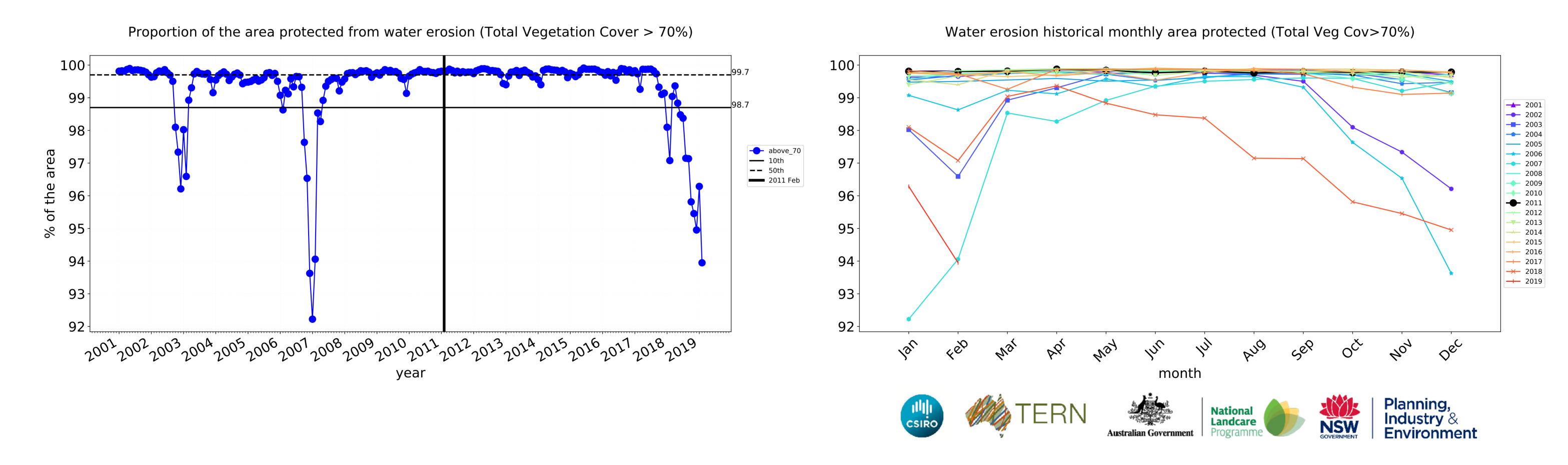


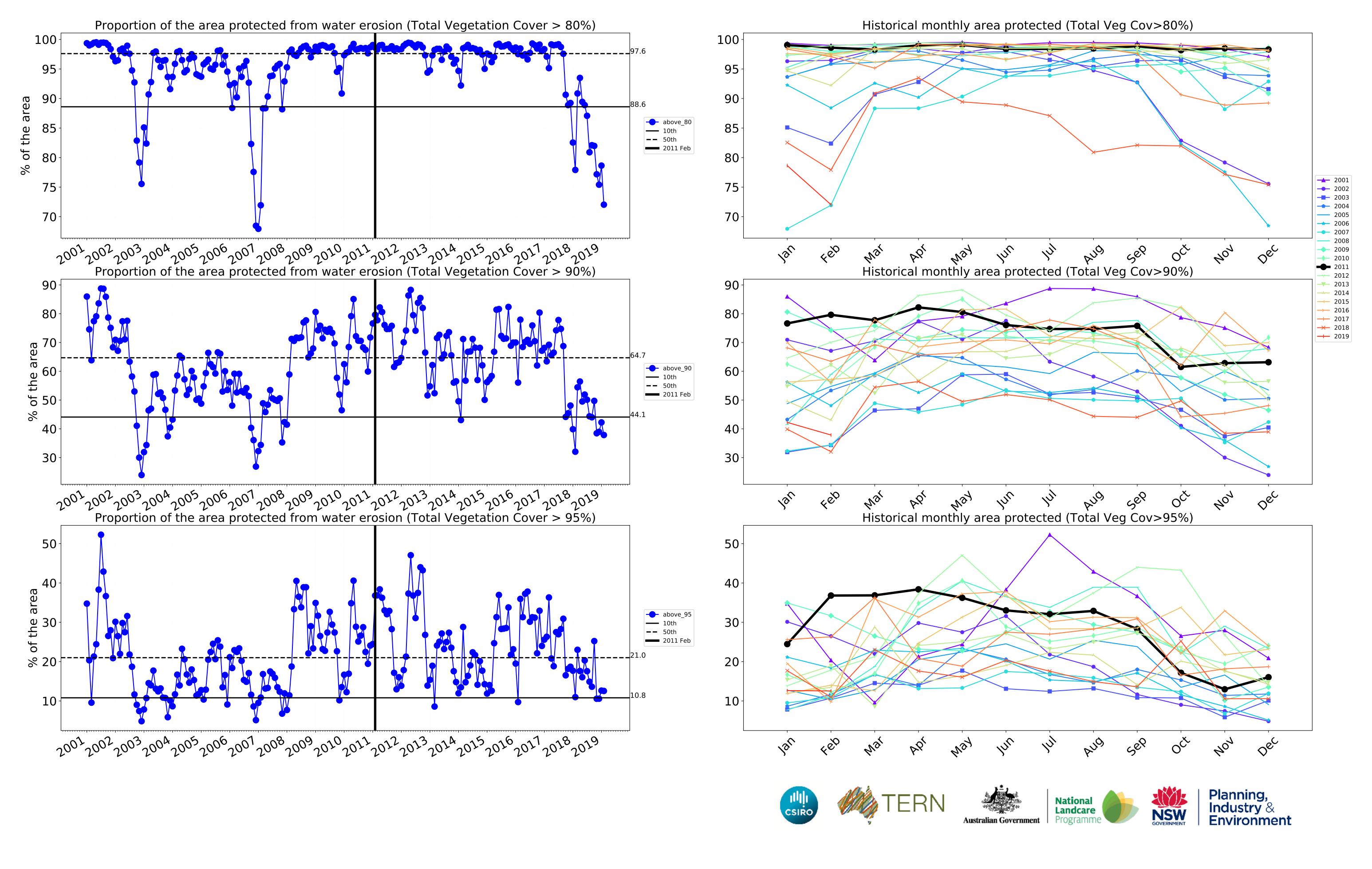




### **Grazing non forest timeseries**





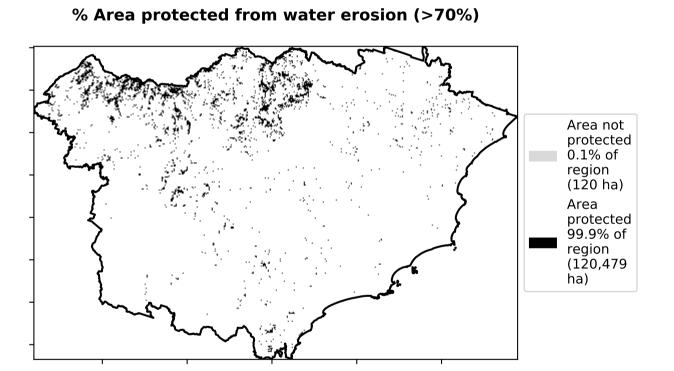


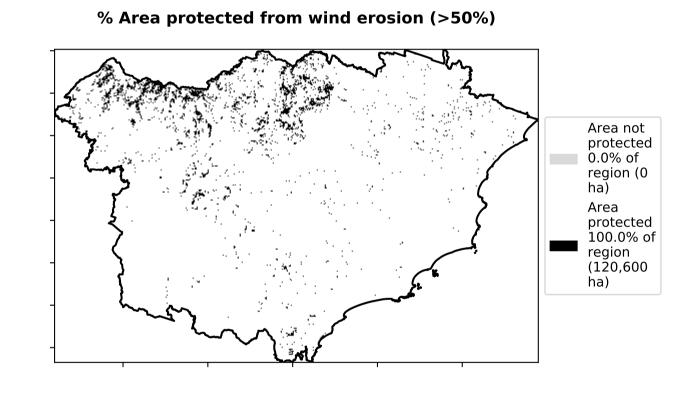
### **Grazing Woodland forest**

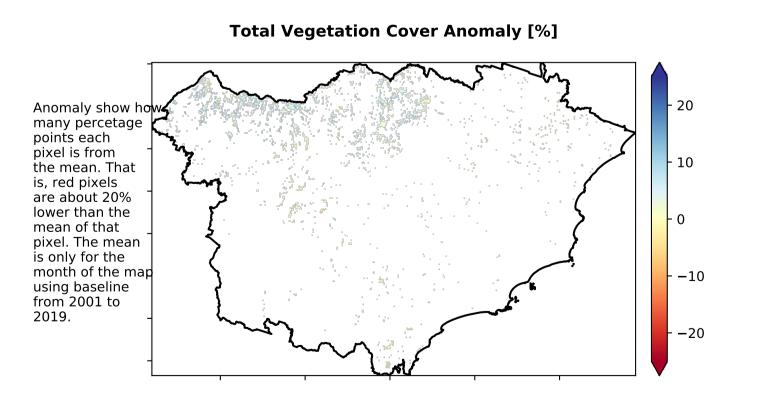
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) Of Australia (2018)

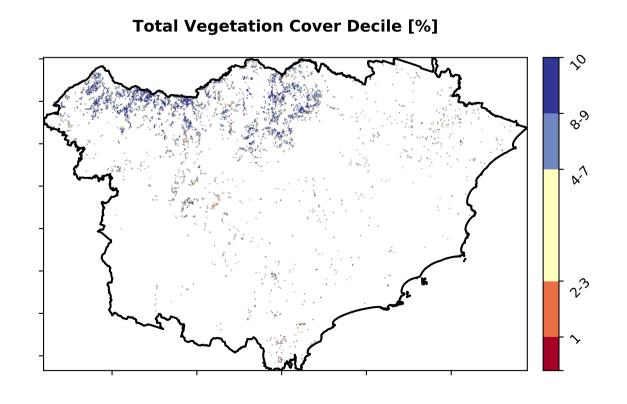
# Total Vegetation Cover [%]

# Proportion of vegetation cover class in area 100 99.9% 80 - 99.9% 40 - 20 - 0.0% 0.1% Total Vegetation Cover class 100 71%-100% 71%-100% Total Vegetation Cover class













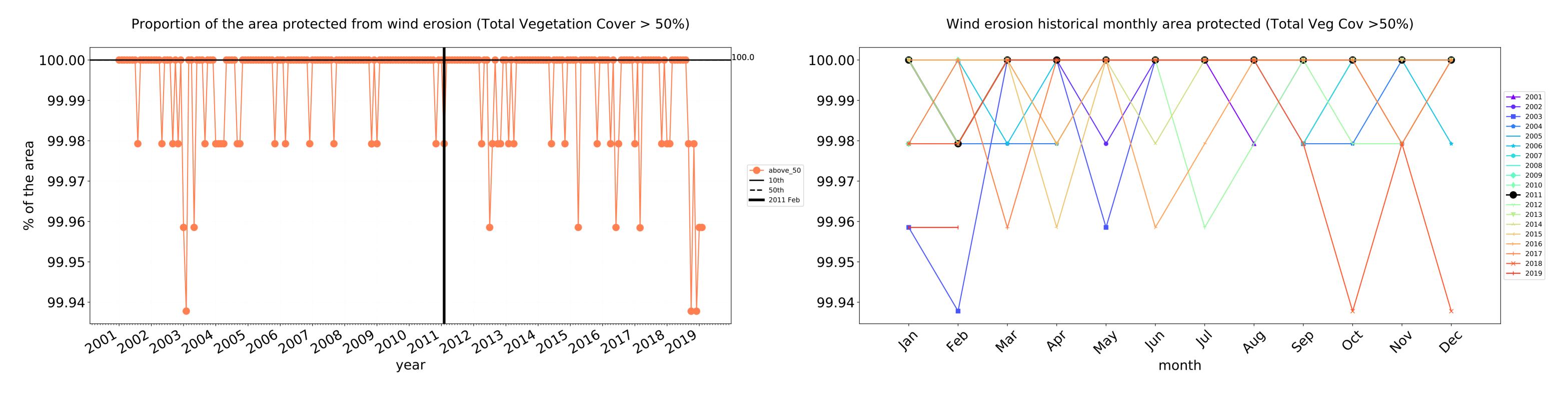


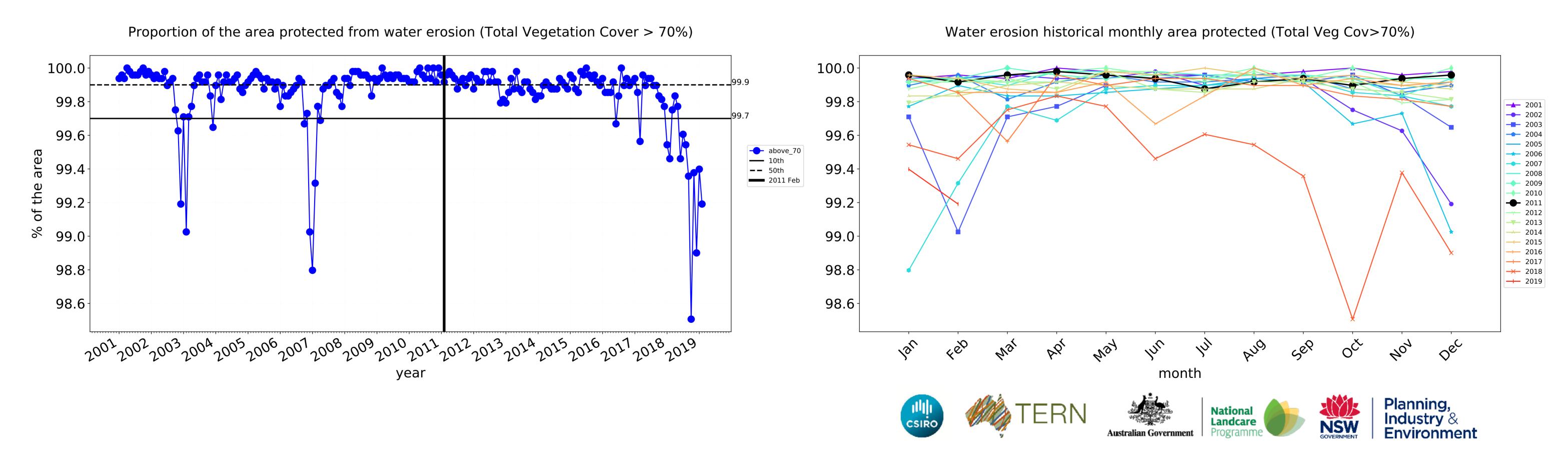


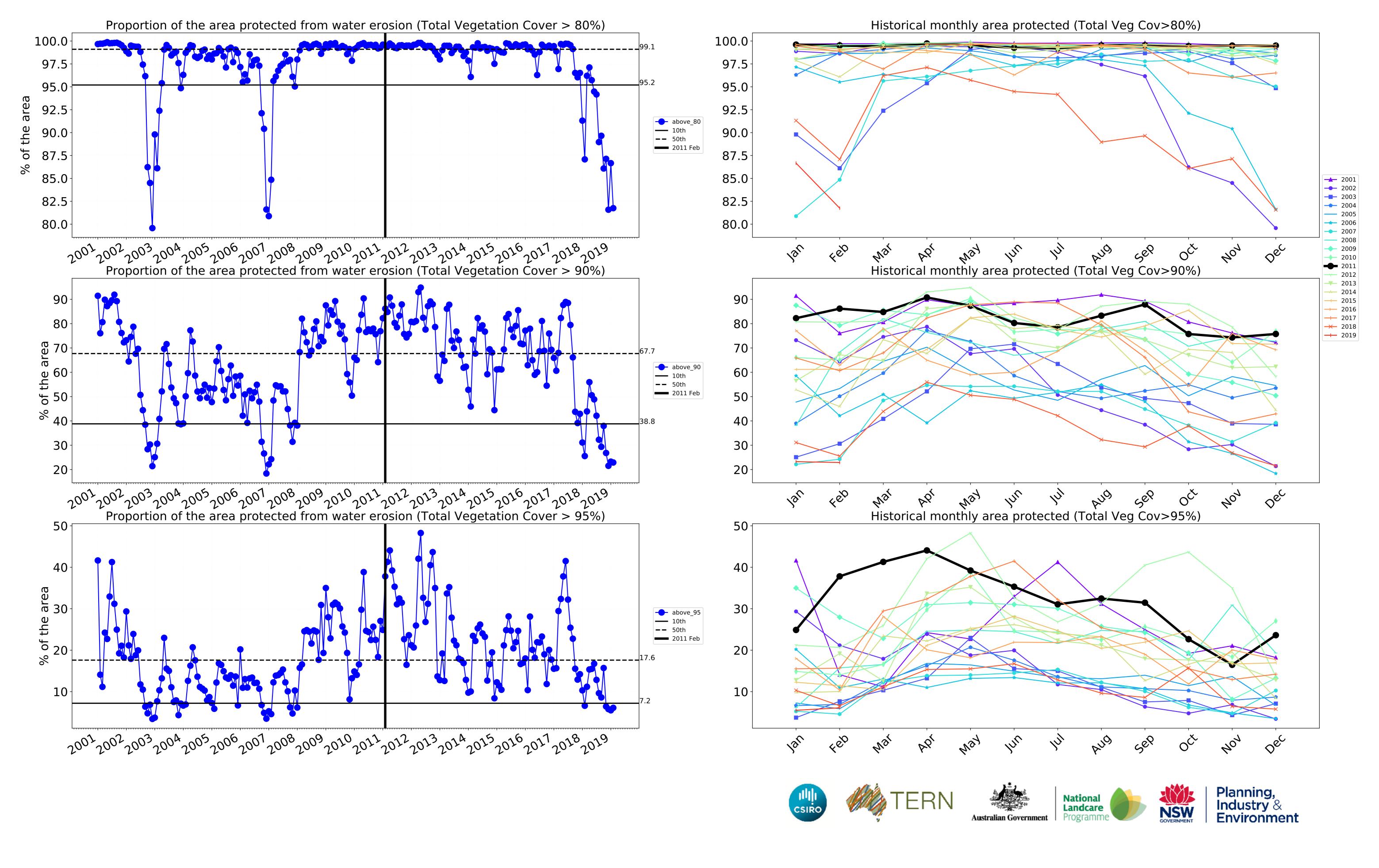




### **Grazing Woodland forest timeseries**



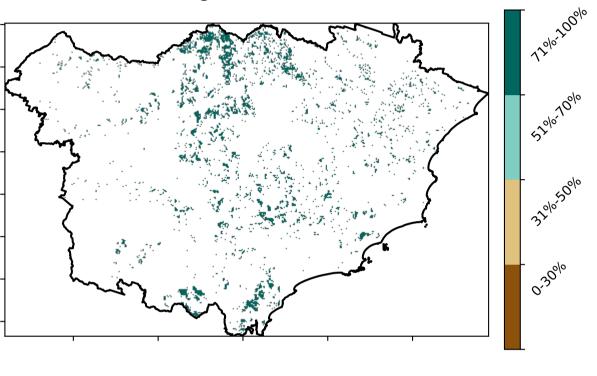


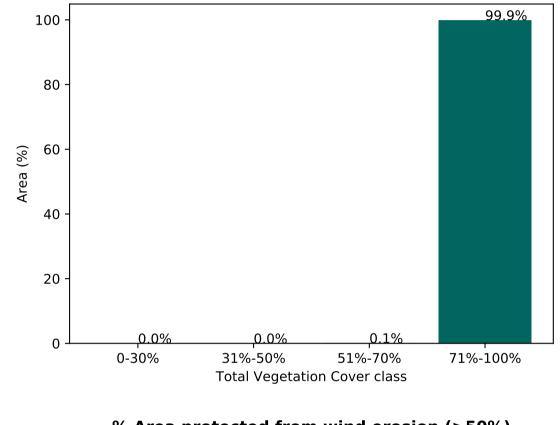


### **Grazing - Forest (non woodland)**

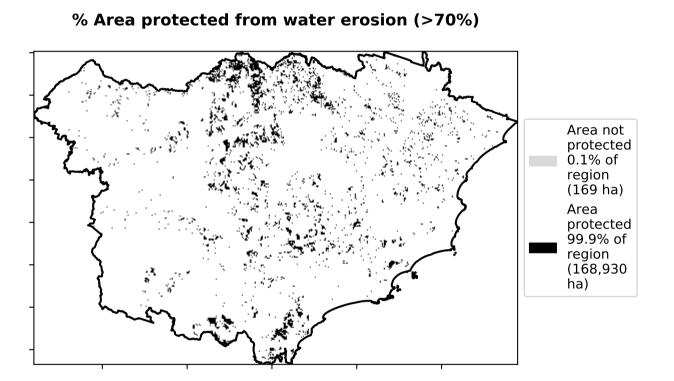
### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Non-woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

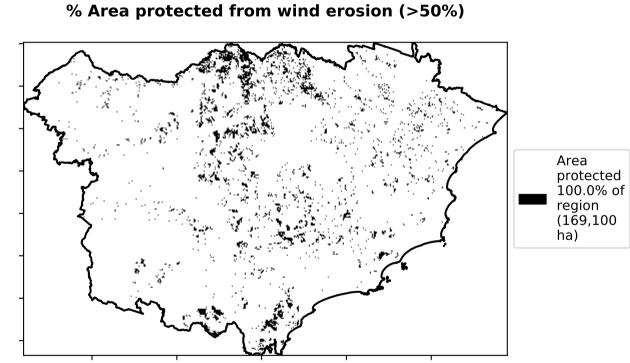
## **Total Vegetation Cover [%]**

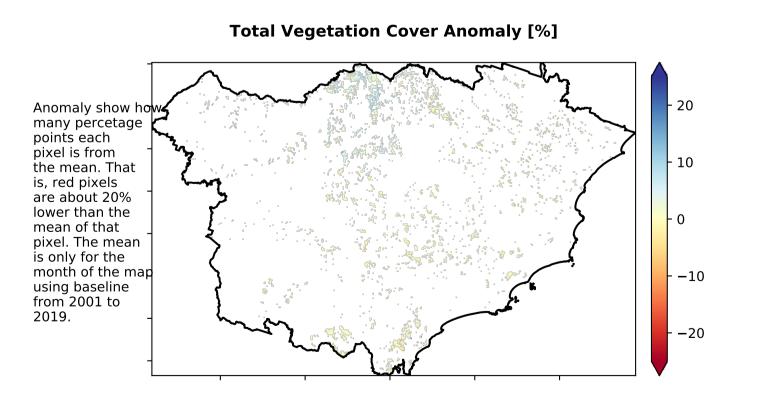


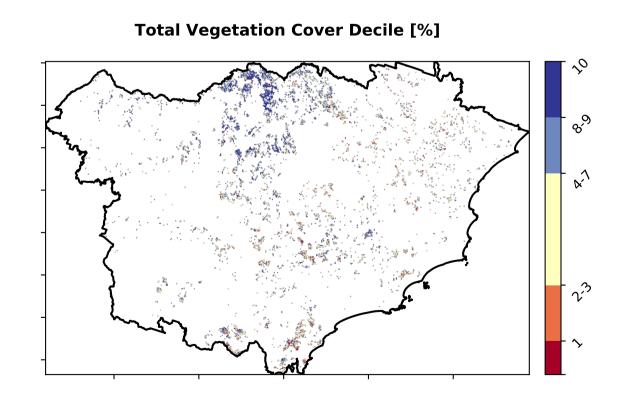


**Proportion of vegetation cover class in area** 











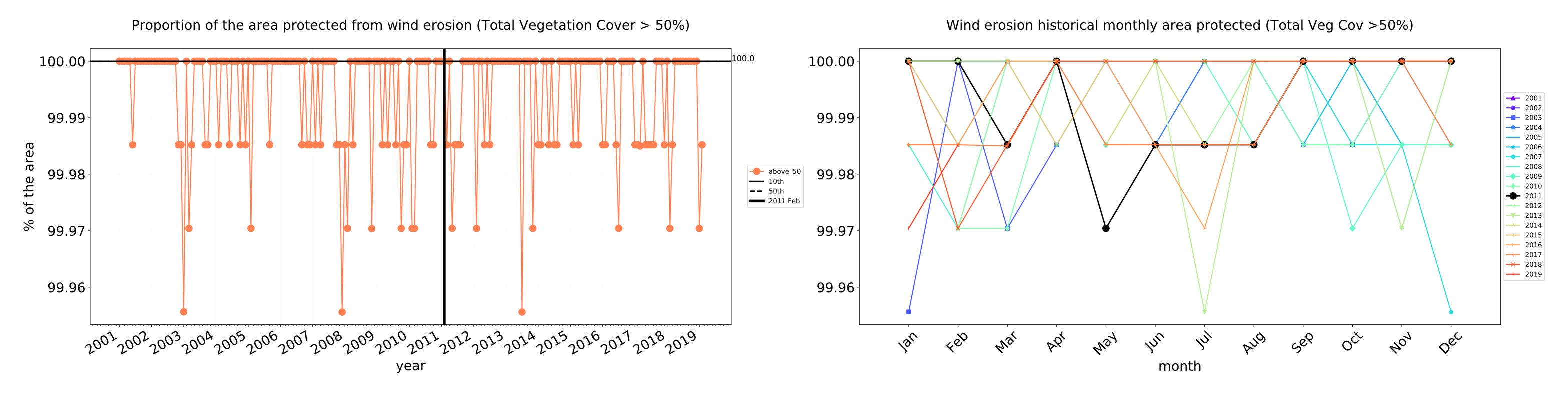


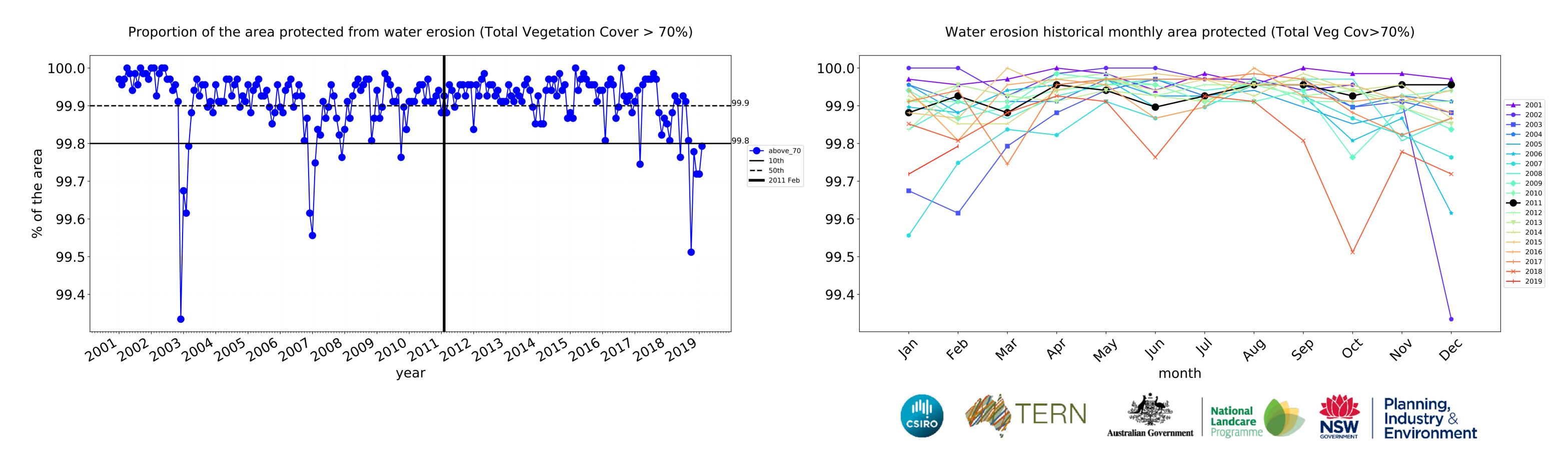


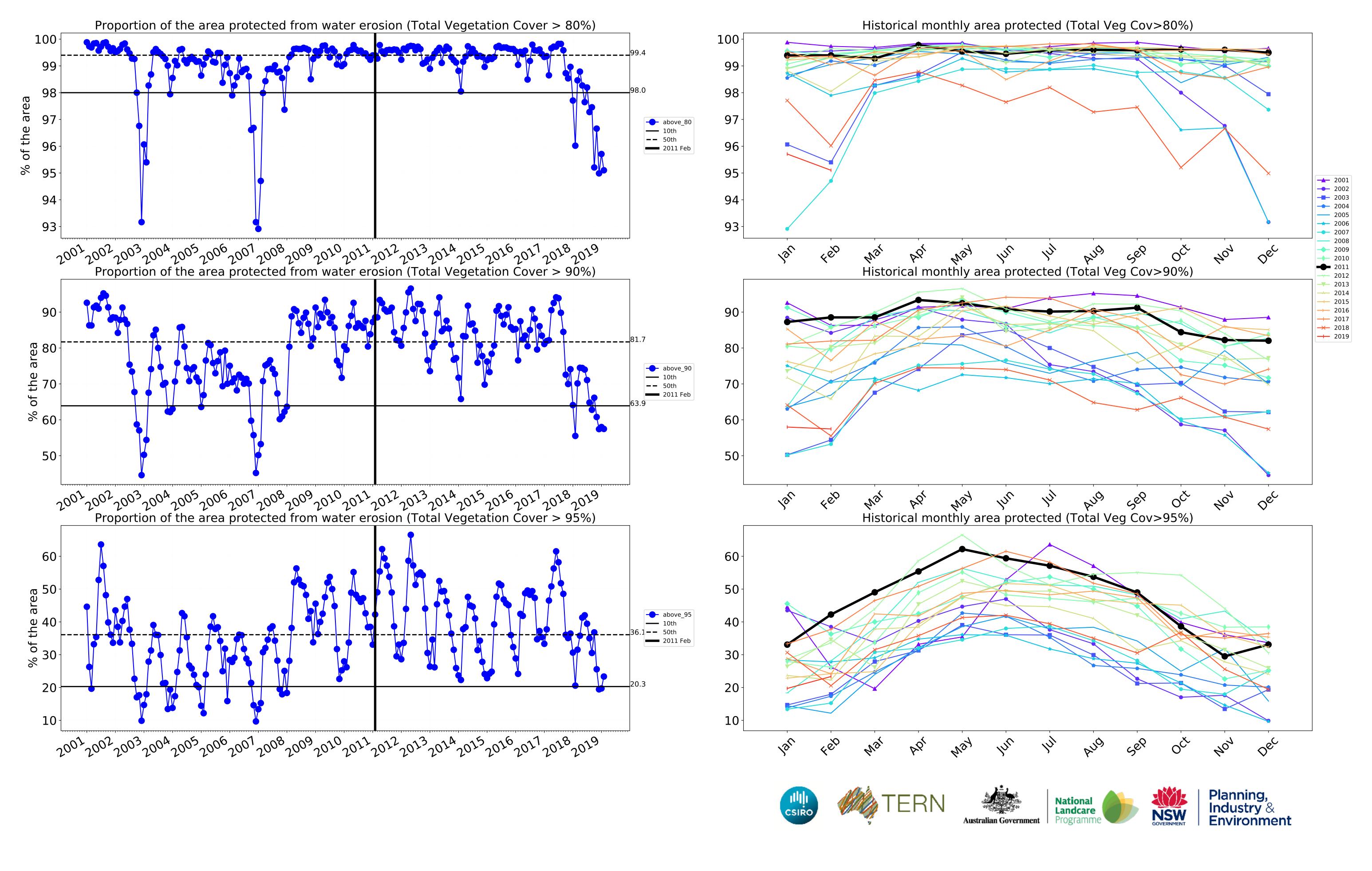






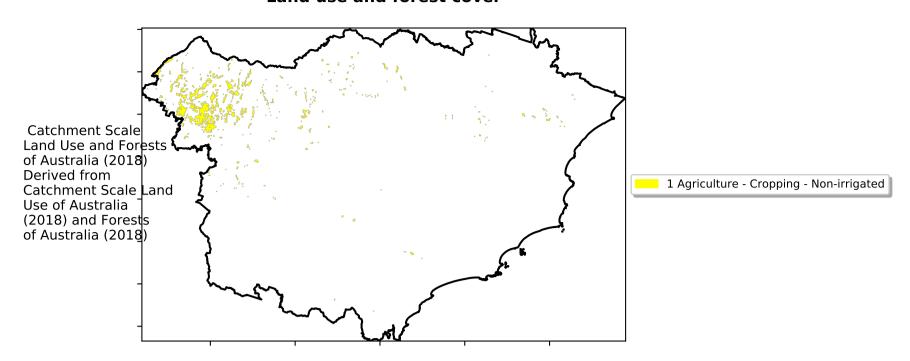




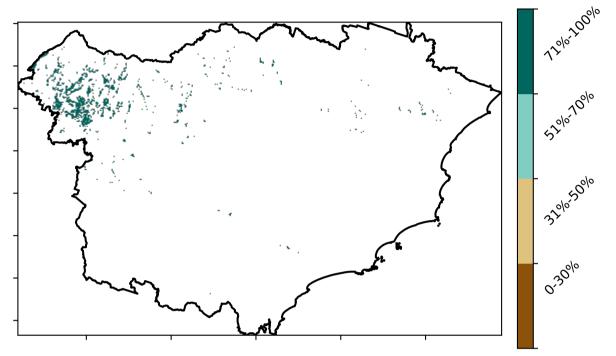


### **Cropping**

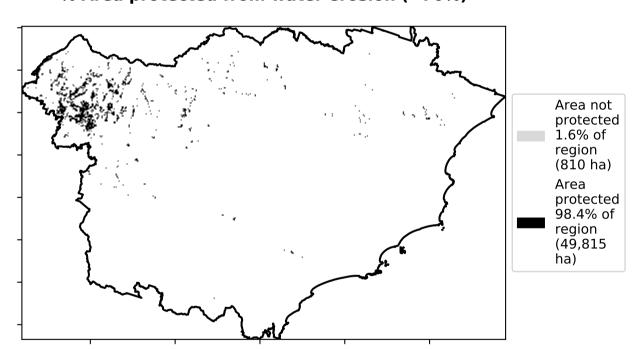
### Land use and forest cover



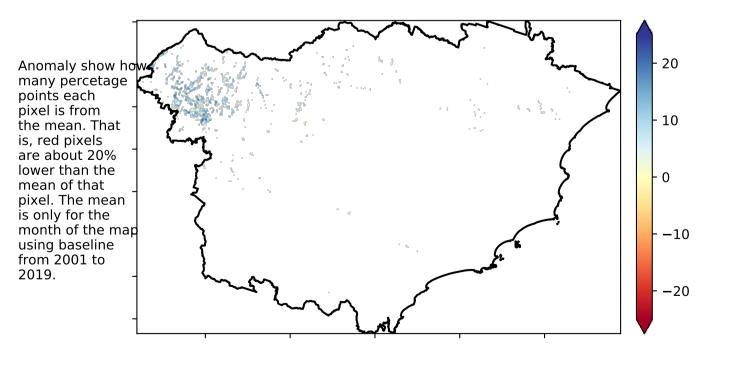
### **Total Vegetation Cover [%]**



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

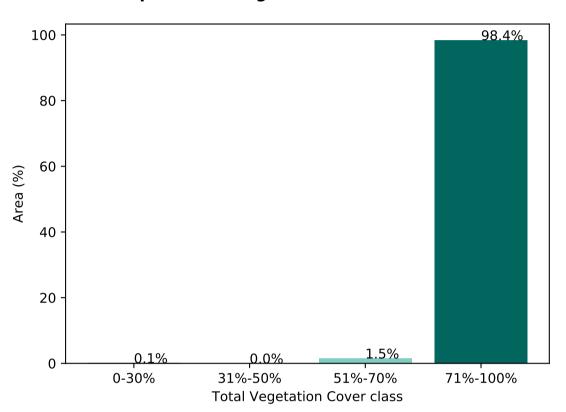


### Total Vegetation Cover Anomaly [%]

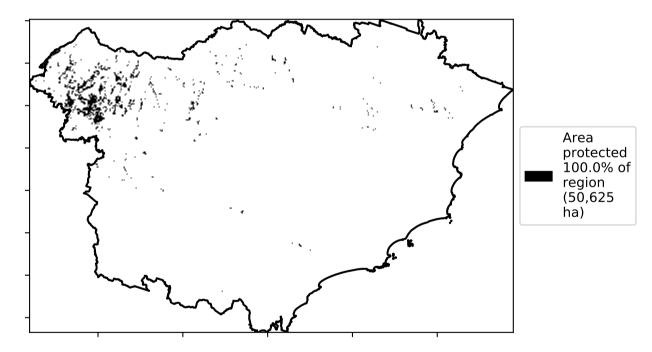


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

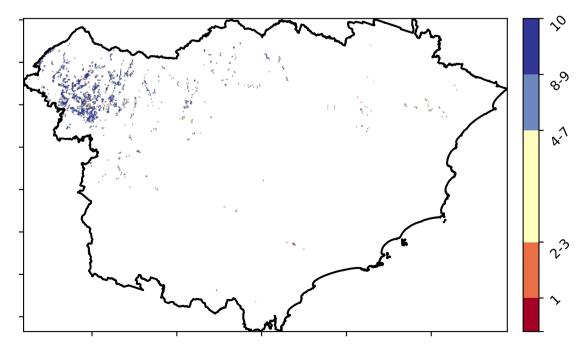
### **Proportion of vegetation cover class in area**



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



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







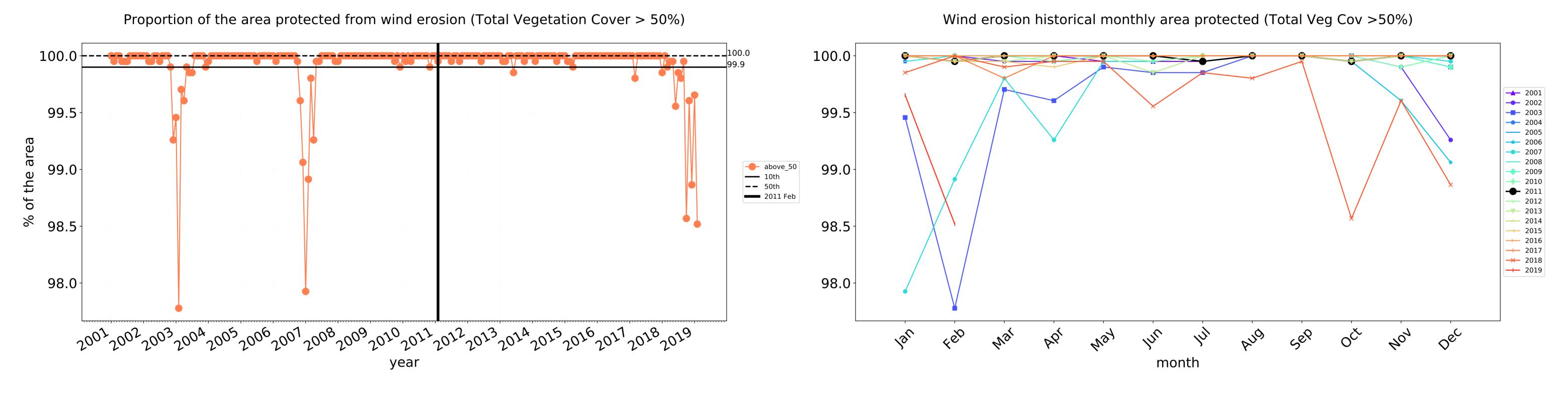


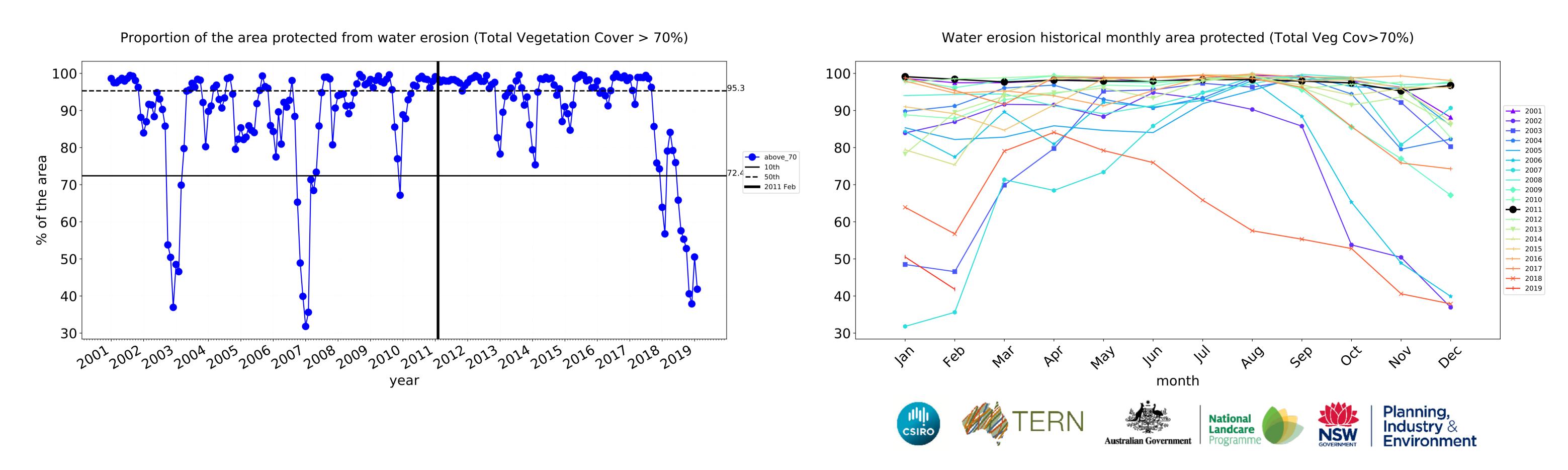


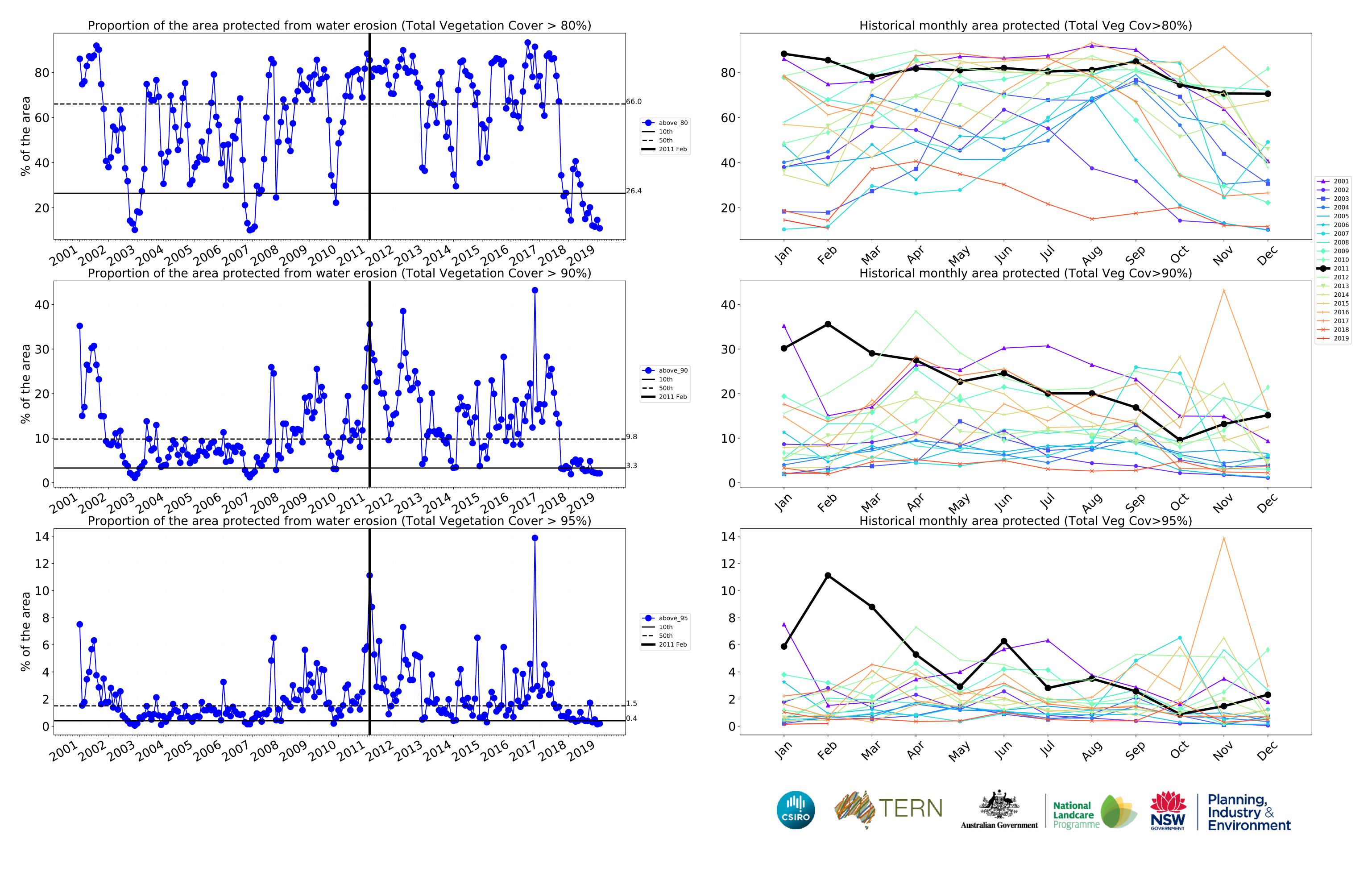




### **Cropping timeseries**





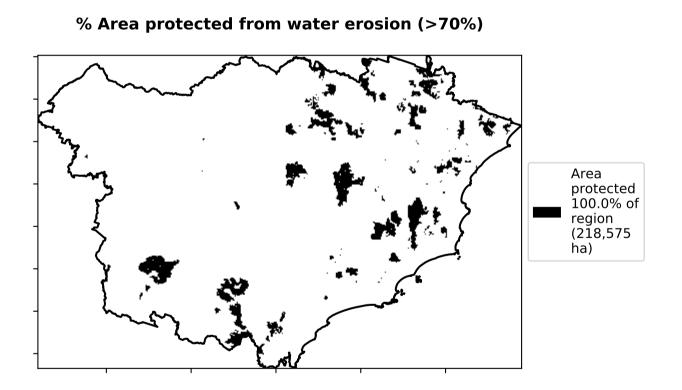


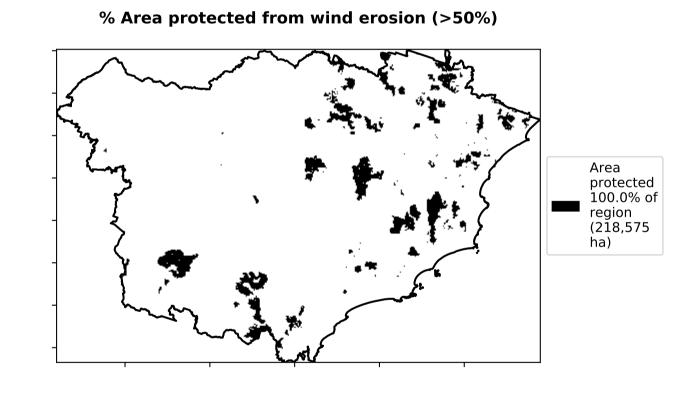
### **Production native forests and plantation forests**

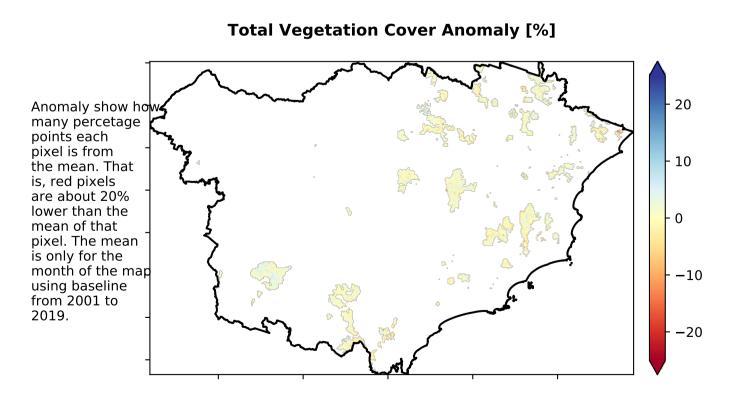
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) 1 Production native forests and plantation forests of Australia (2018)

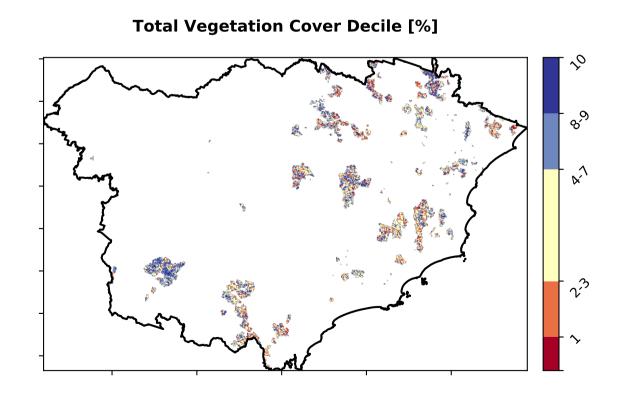
# Total Vegetation Cover [%]

# 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













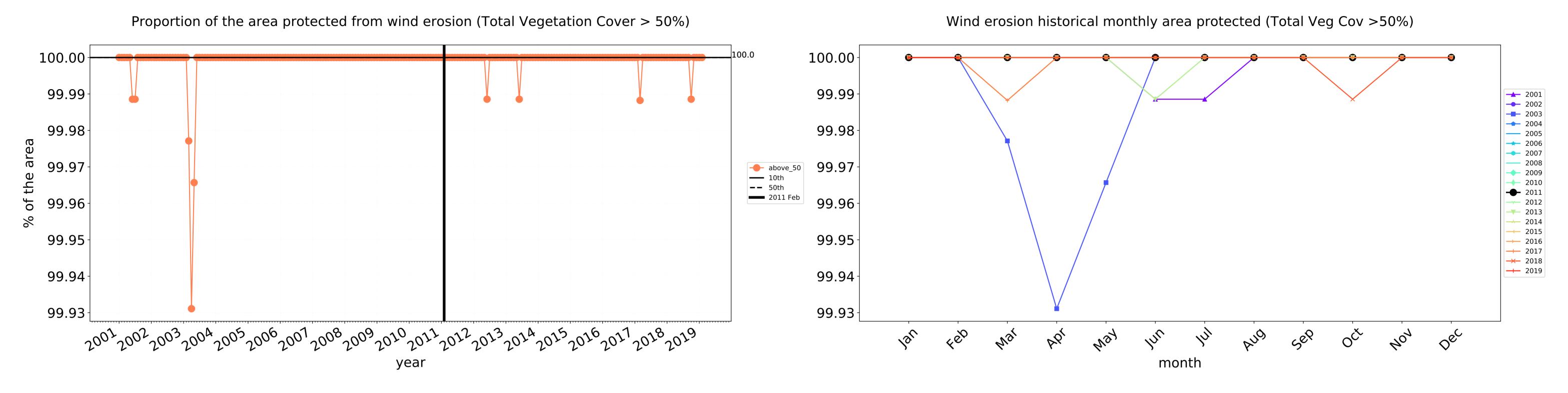


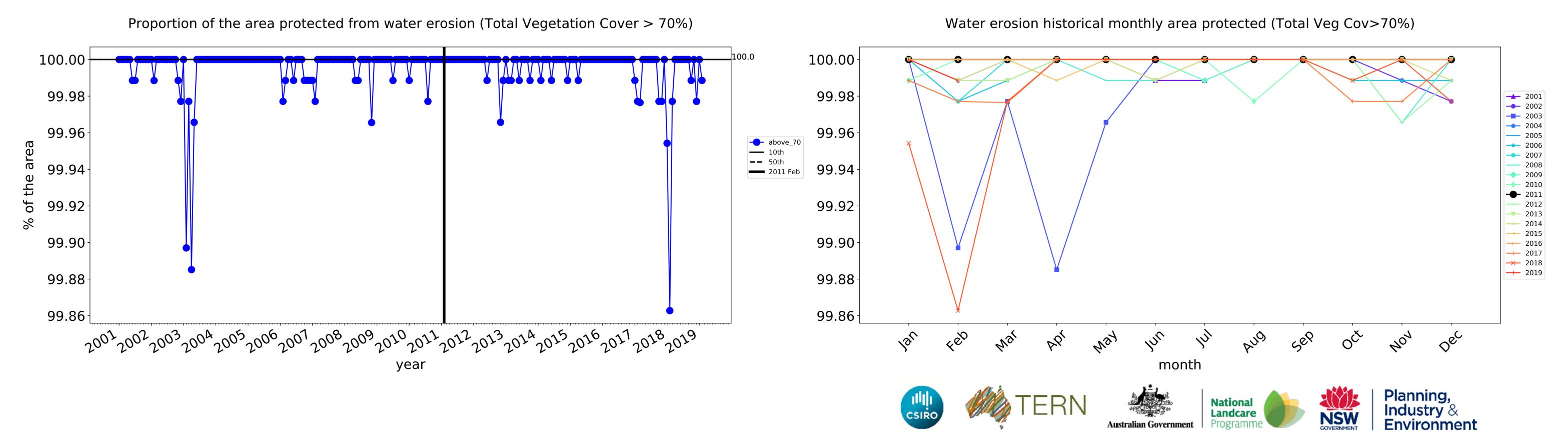


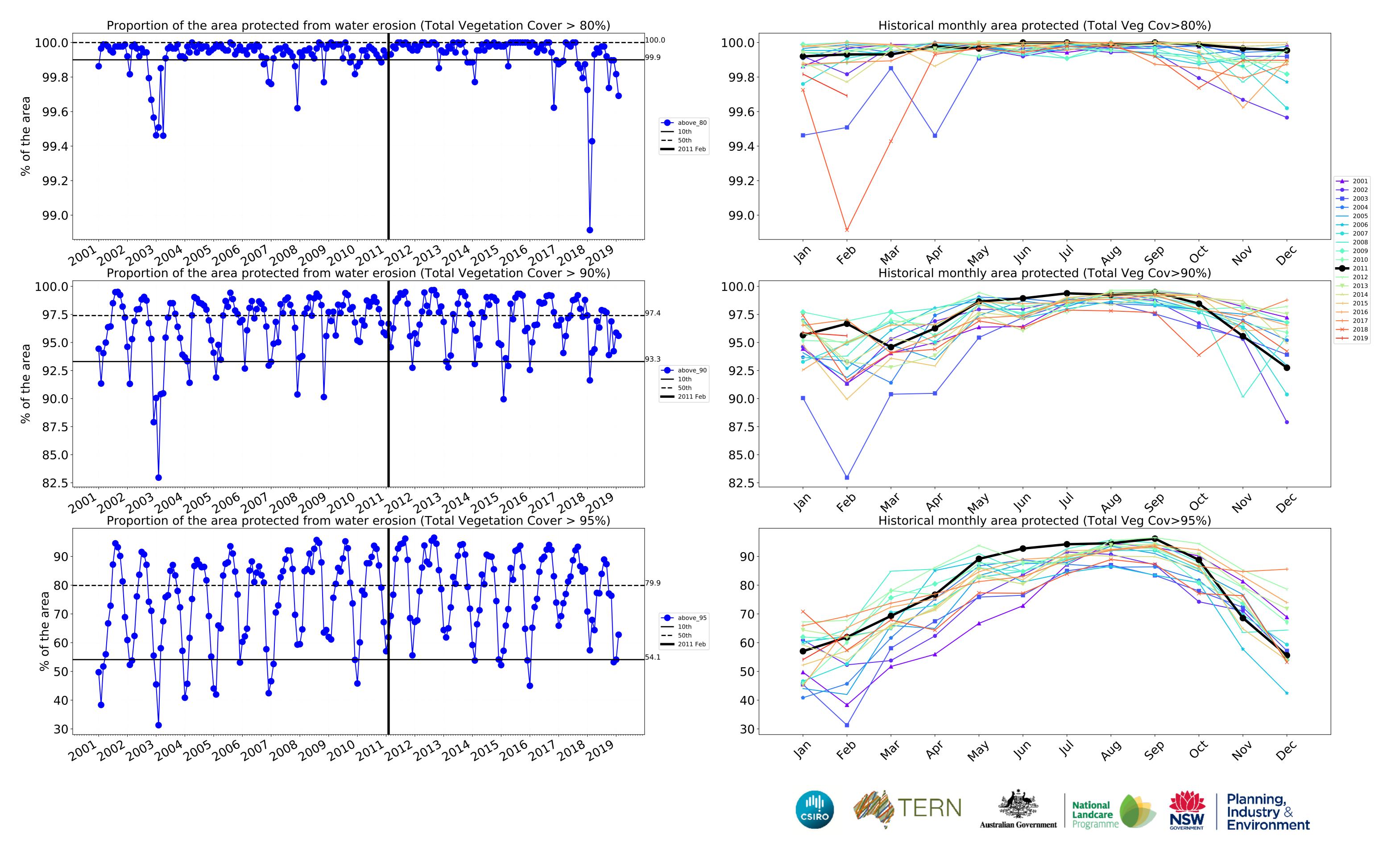




### **Production native forests and plantation forests timeseries**







### Hunter (3,239,175 ha and no data 61,250 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	3,239,175	99.9% 3,235,751	99.6% 3,227,655	98.8% 3,199,169	96.8% 3,136,624	82.5% 2,672,075	43.1% 1,395,296
Conservation and natural environments	1,240,825	99.9% 1,239,625	99.8% 1,238,800	99.6% 1,236,300	99.3% 1,232,600	92.5% 1,147,800	53.8% 667,025
Conservation and natural environments non forest	29,950	96.2% 28,800	94.2% 28,225	89.1% 26,700	86.1% 25,800	69.9% 20,925	30.1% 9,000
Conservation and natural environments Woodland forest	138,925	100.0% 138,925	100.0% 138,875	99.9% 138,825	99.7% 138,525	90.9% 126,250	44.4% 61,675
Conservation and natural environments Forest (non woodland)	1,071,950	100.0% 1,071,900	100.0% 1,071,700	99.9% 1,070,775	99.7% 1,068,275	93.3% 1,000,625	55.6% 596,350
Agriculture	1,580,775	100.0% 1,580,750	100.0% 1,580,425	99.8% 1,577,125	98.0% 1,549,850	78.6% 1,243,225	36.1% 570,075
Grazing	1,502,775	100.0% 1,502,750	100.0% 1,502,450	99.8% 1,500,150	98.8% 1,484,250	81.2% 1,219,525	37.5% 563,500
Grazing non forest	1,213,075	100.0% 1,213,050	100.0% 1,212,775	99.8% 1,210,675	98.6% 1,196,150	79.6% 965,900	36.8% 446,450
Grazing Woodland forest	120,600	100.0% 120,600	100.0% 120,575	99.9% 120,500	99.5% 120,025	86.2% 103,925	37.8% 45,600
Grazing - Forest (non woodland)	169,100	100.0% 169,100	100.0% 169,100	99.9% 168,975	99.4% 168,075	88.5% 149,700	42.3% 71,450
Cropping	50,625	100.0% 50,625	100.0% 50,600	98.4% 49,825	85.4% 43,250	35.6% 18,025	11.1% 5,625
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	99.9% 218,425	96.7% 211,300	61.9% 135,325











