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

Date: January 2010

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

Land use forest cover:

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

#### **Erosion protection**

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

#### Rainfall

• Millimetres rainfall each month (black line).

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

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

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

#### **Acknowledgment of data:**

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

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









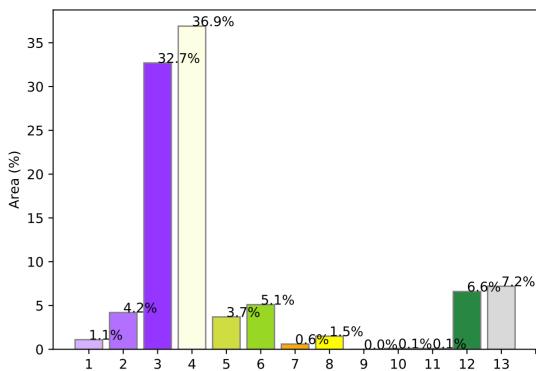


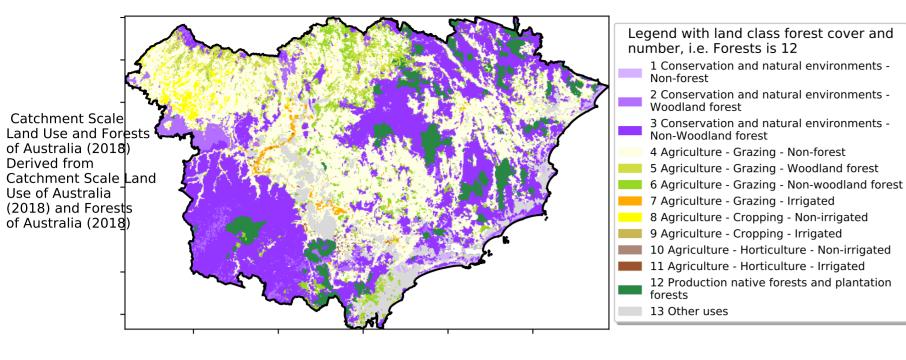


#### **Vegetation Cover Jan 2010**

#### 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 6 Agriculture - Grazing - Non-woodland forest

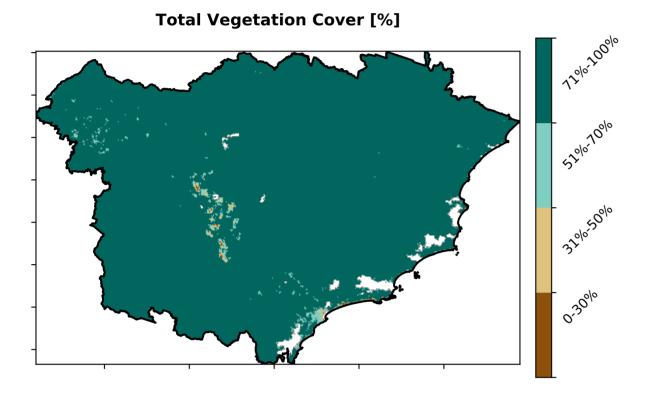
### Proportion of each land class in area 36.9%

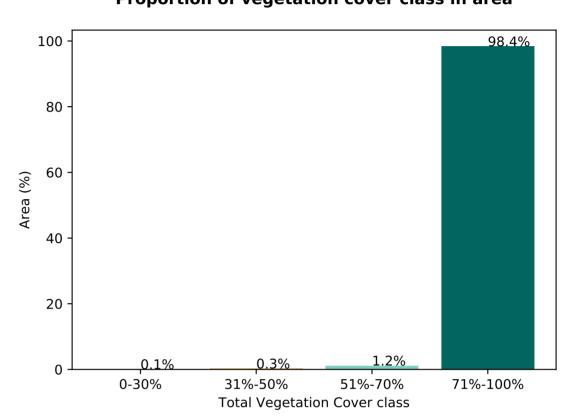




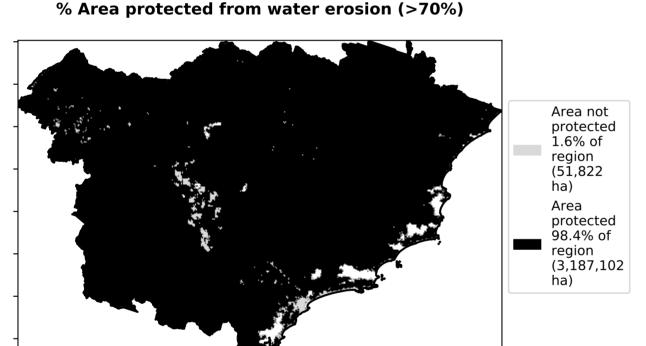
Proportion of vegetation cover class in area

Land use class

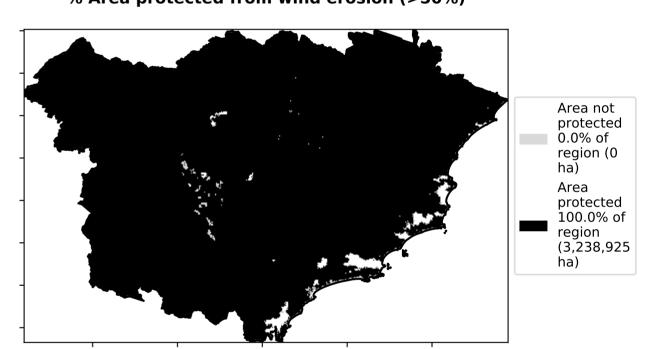




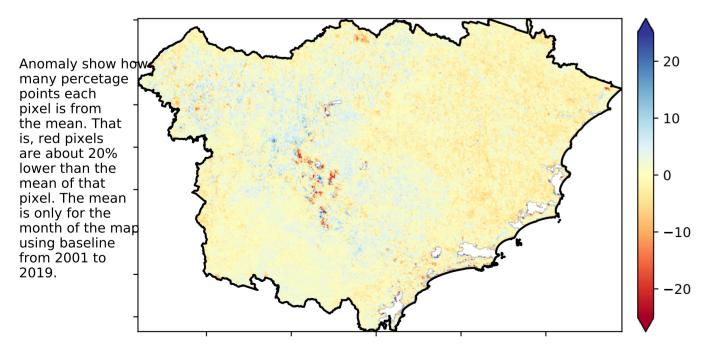




% Area protected from wind erosion (>50%)

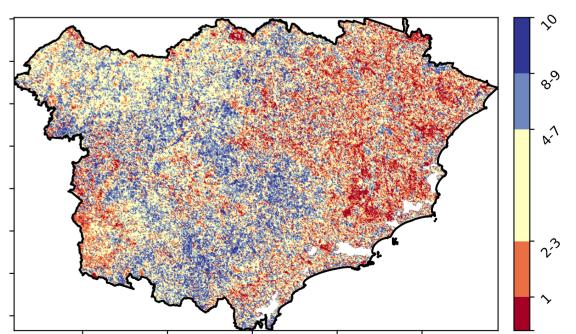






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### **Total Vegetation Cover Decile [%]**





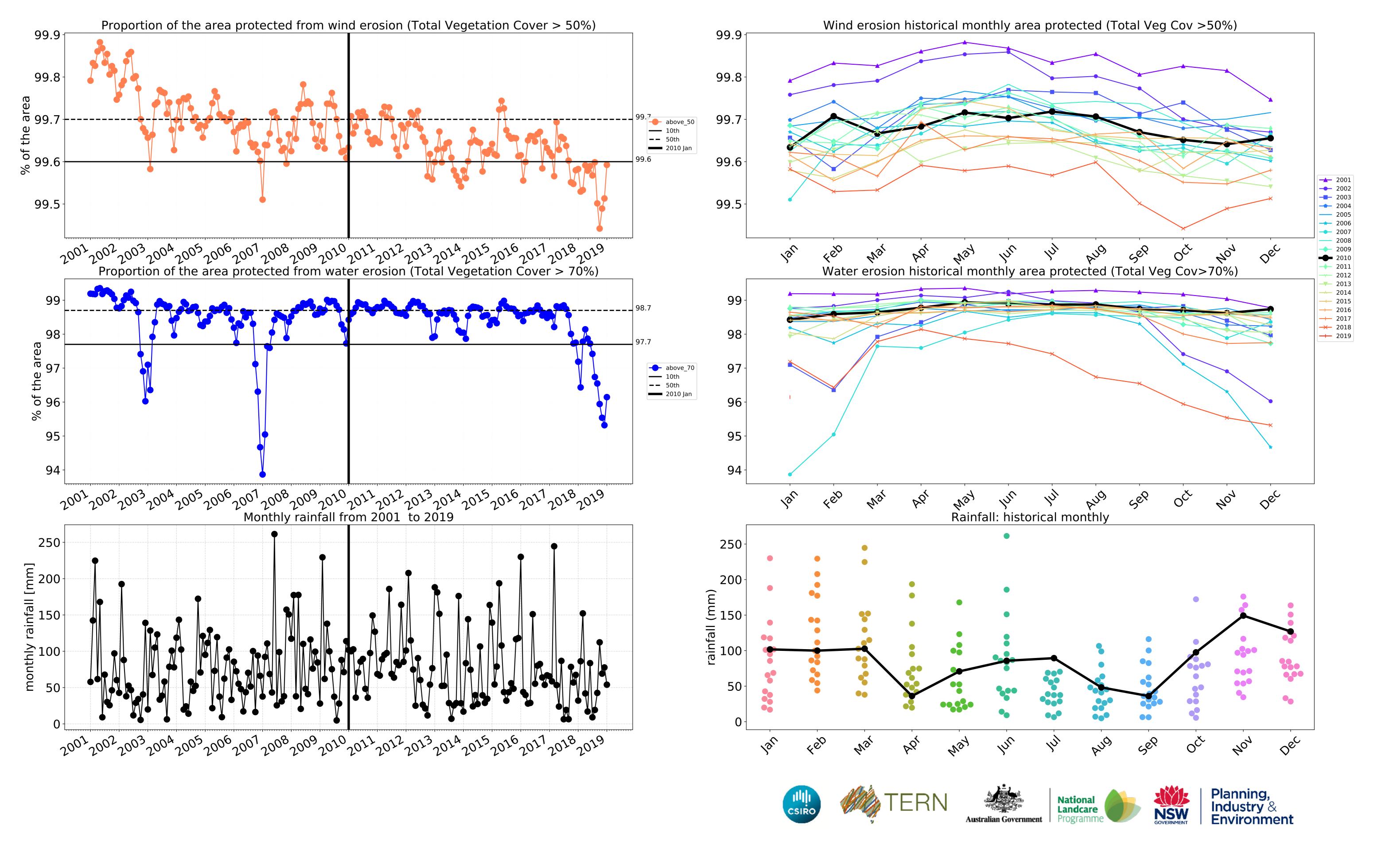


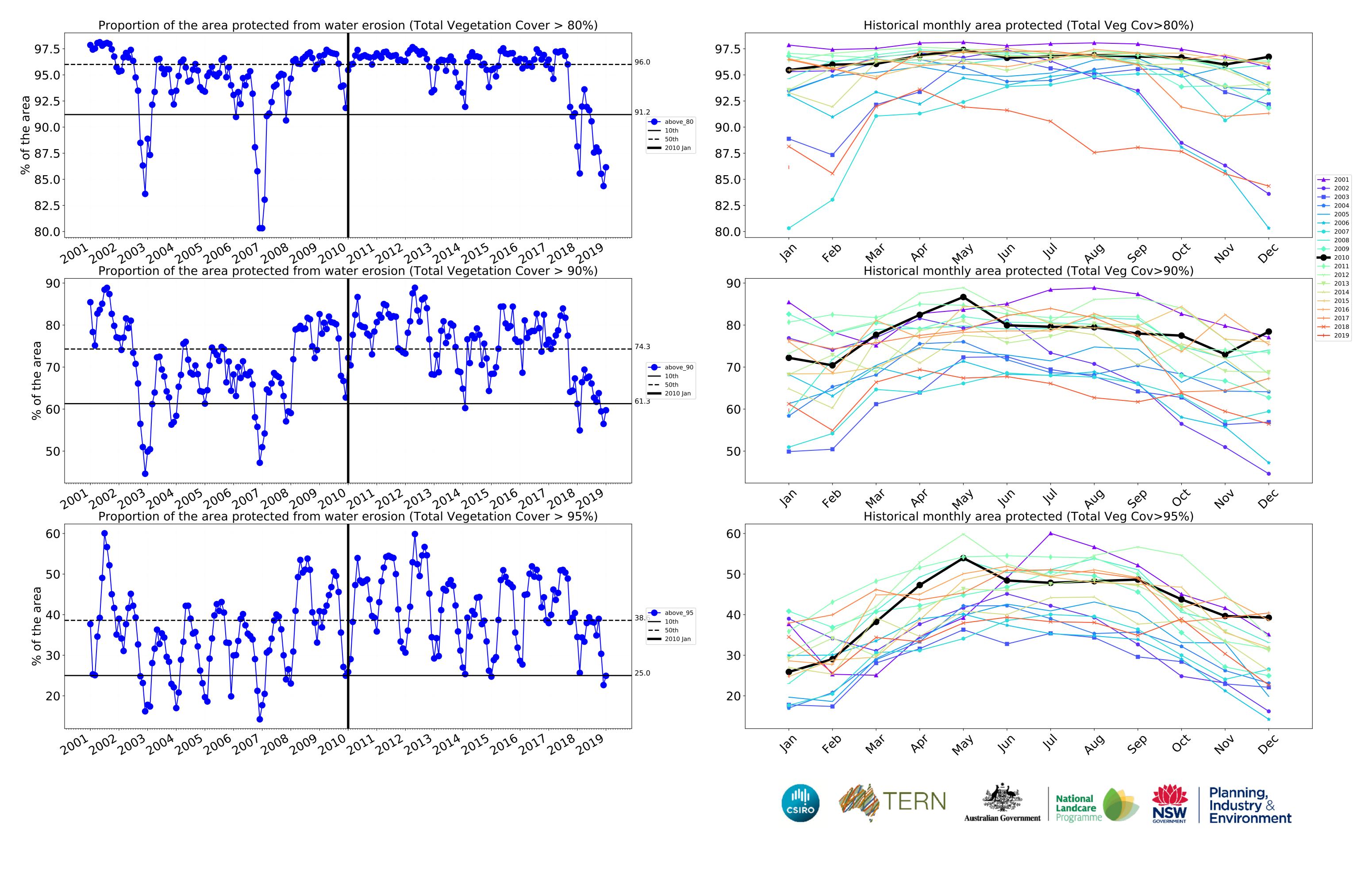






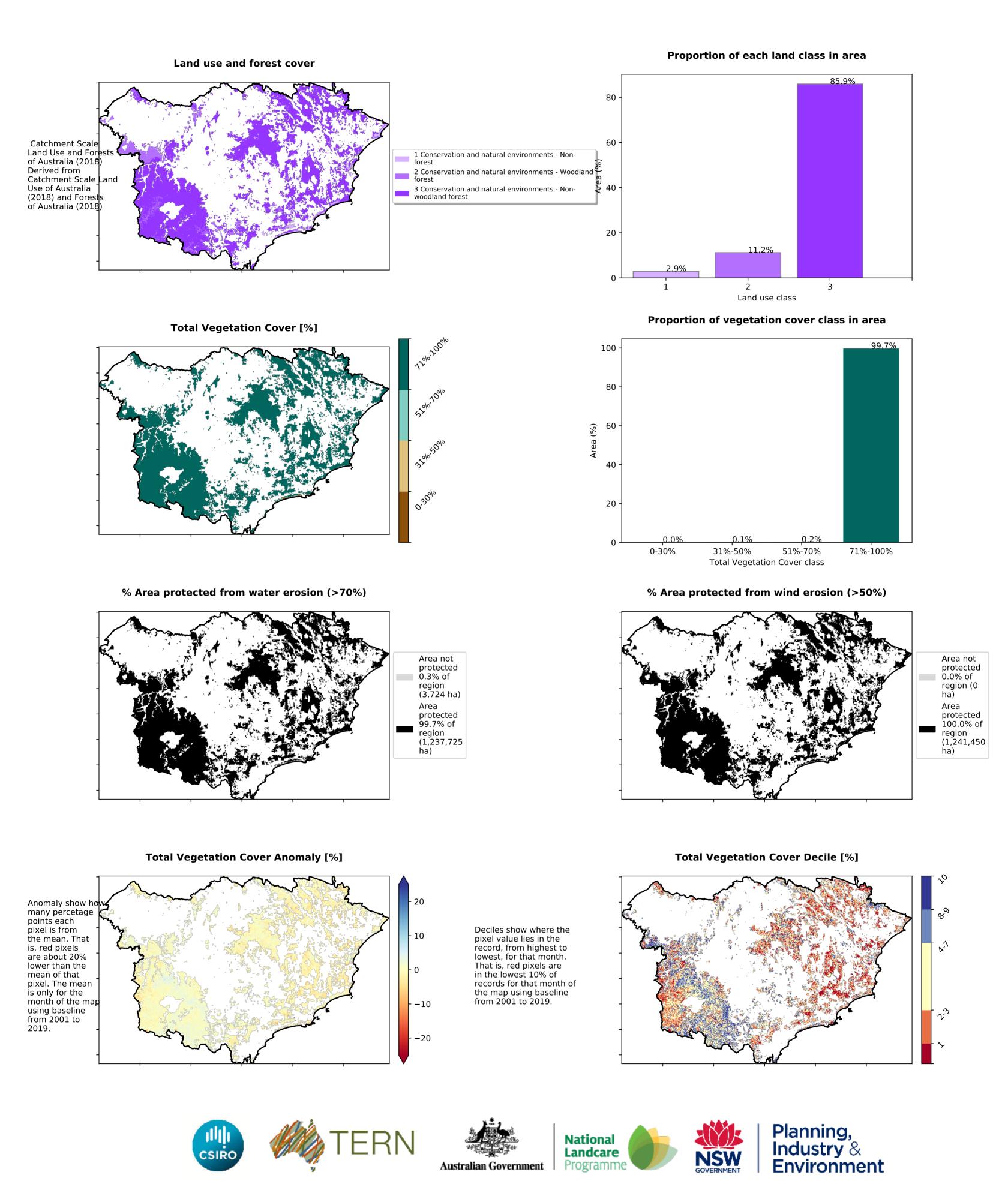




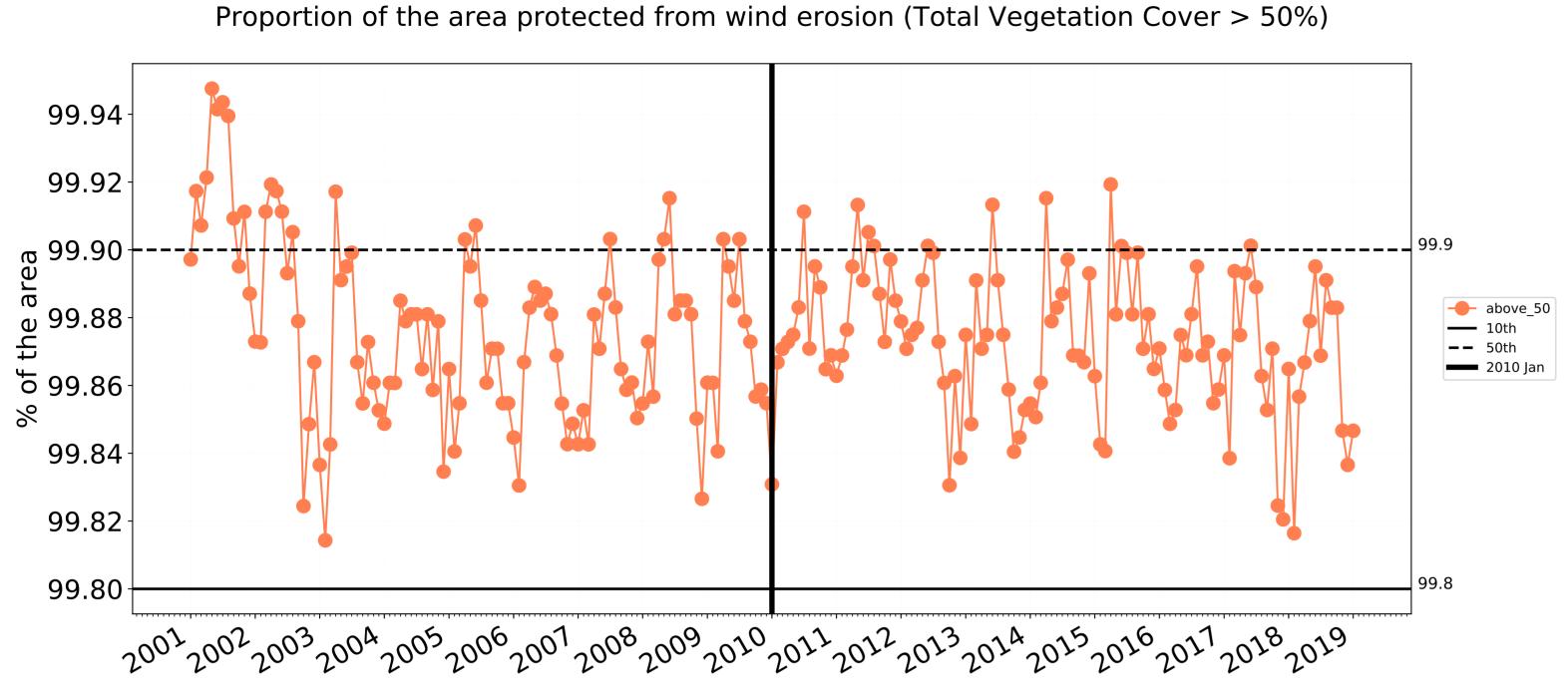


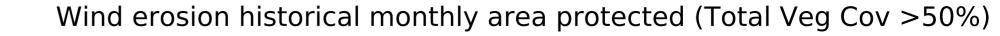
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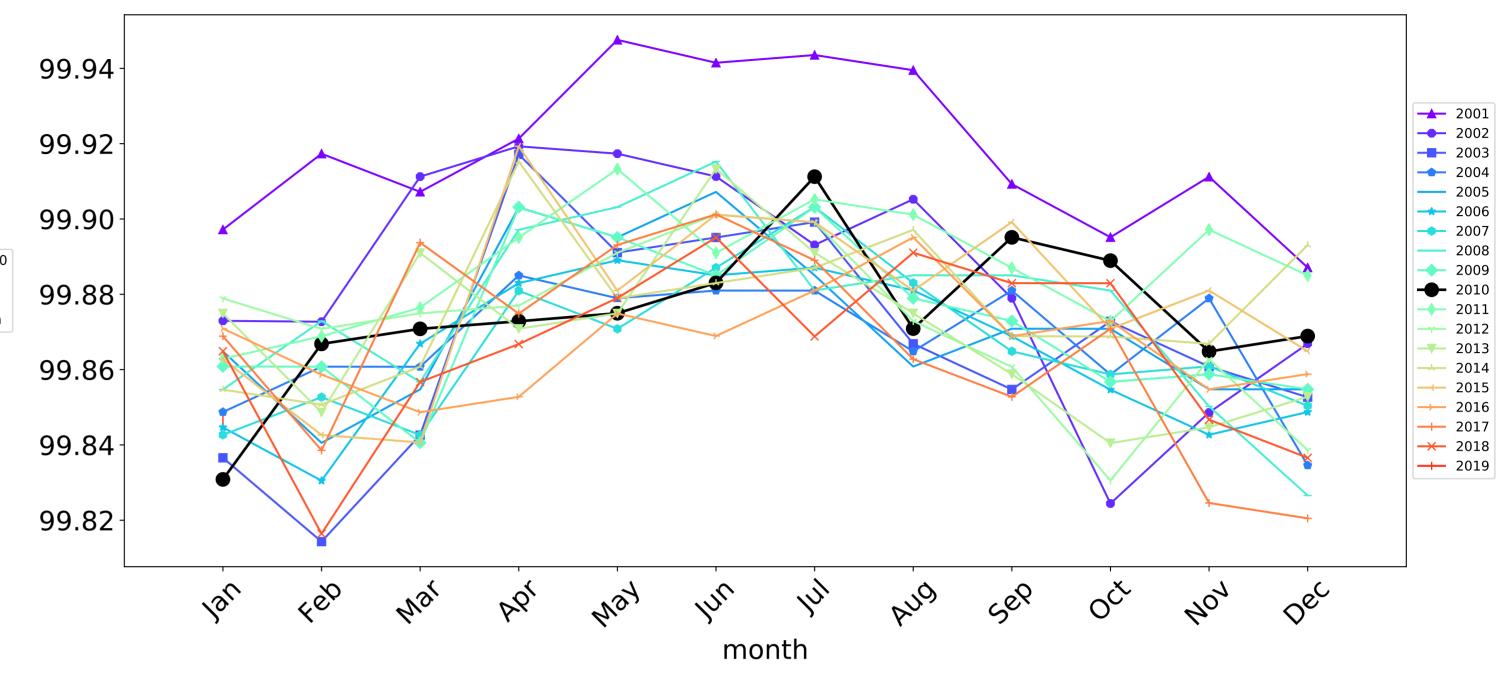
#### **Conservation and natural environments**

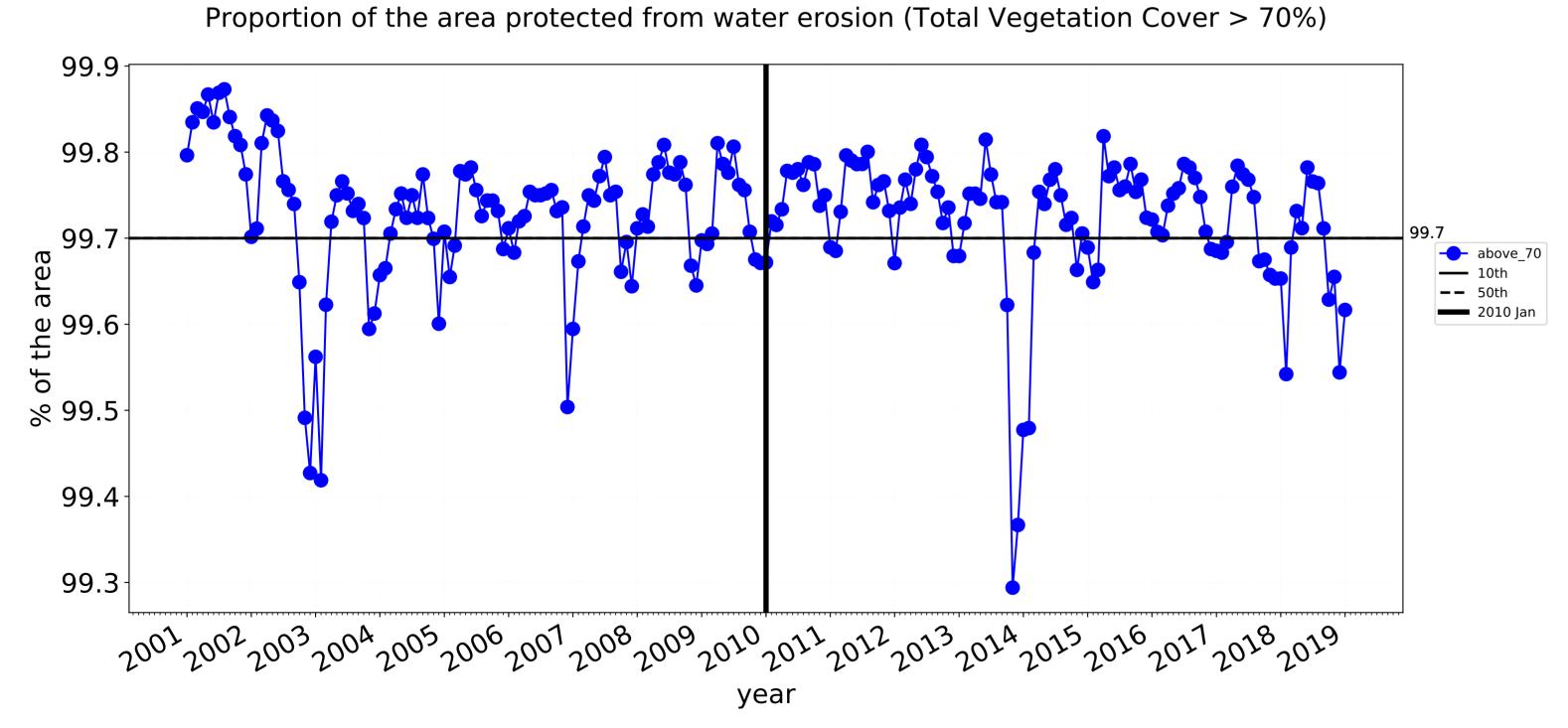


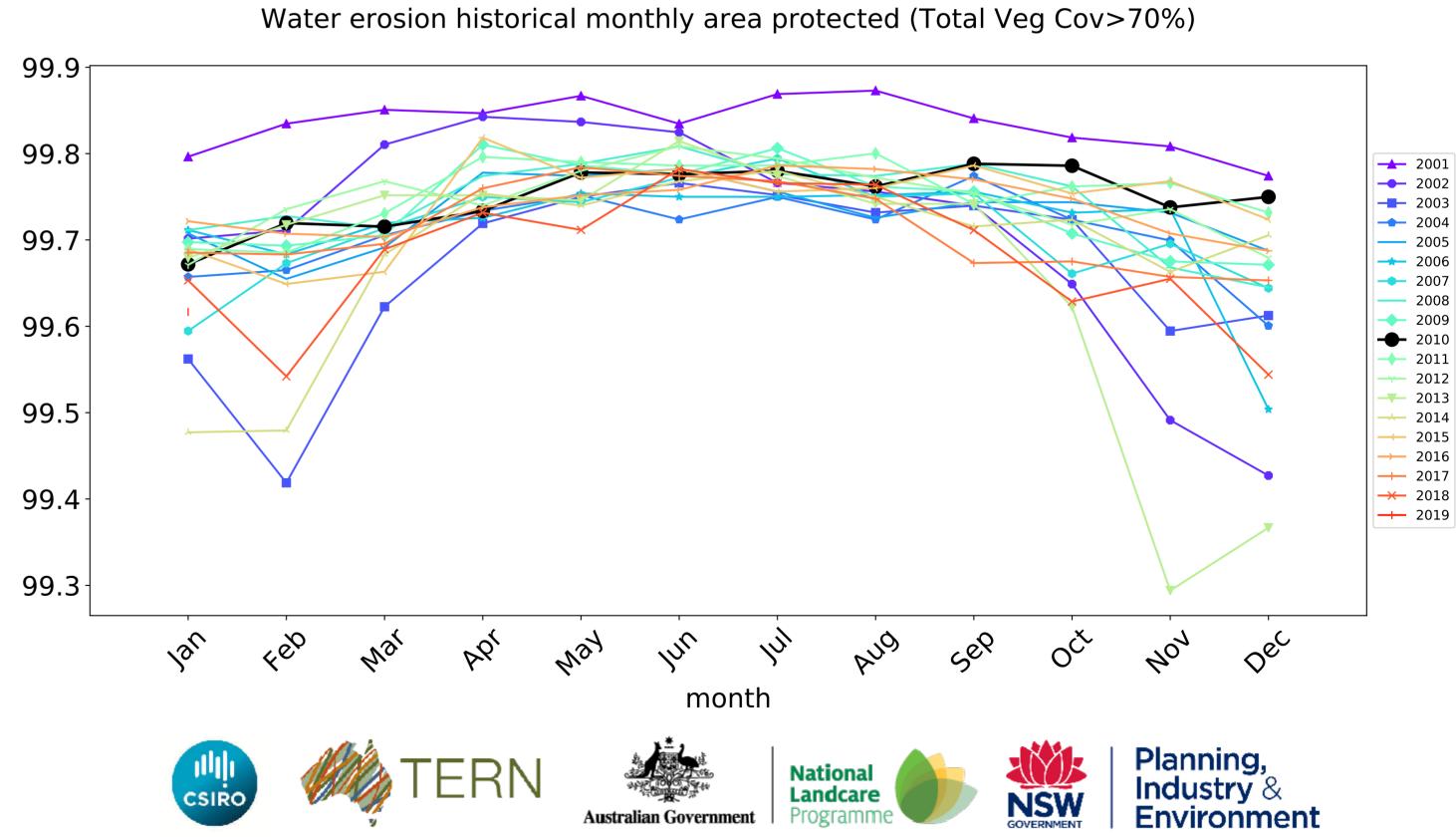
#### **Conservation and natural environments timeseries**

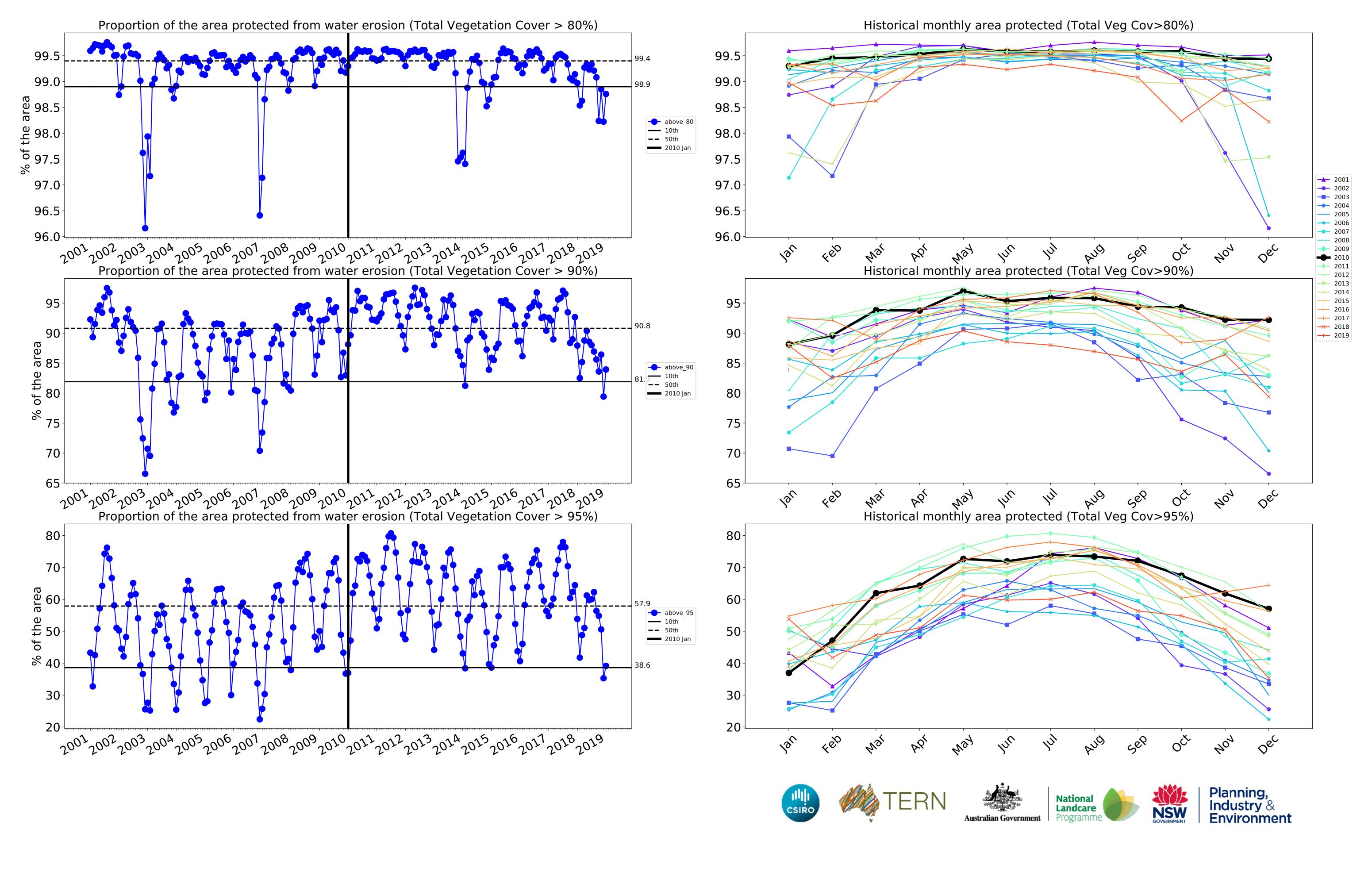




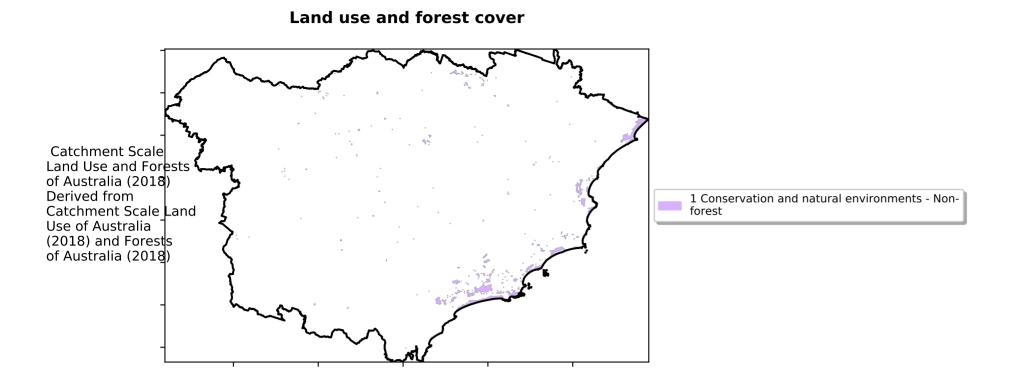






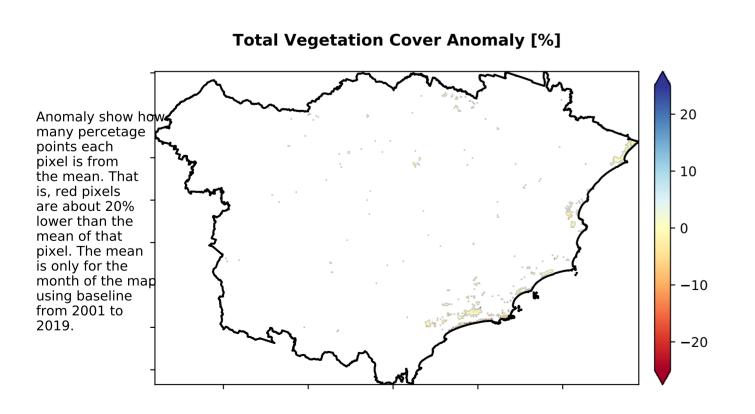


#### **Conservation and natural environments non forest**



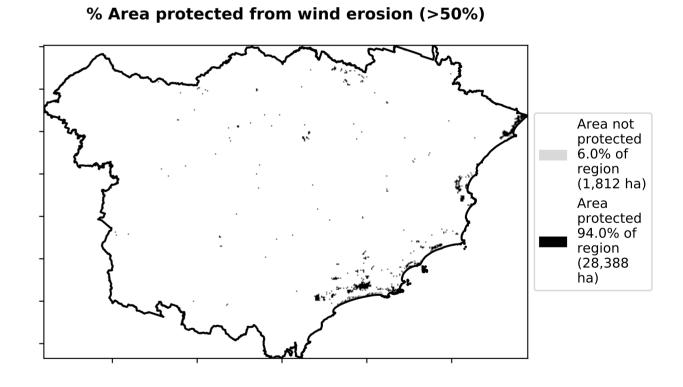
## Total Vegetation Cover [%] Talestadolo Tal

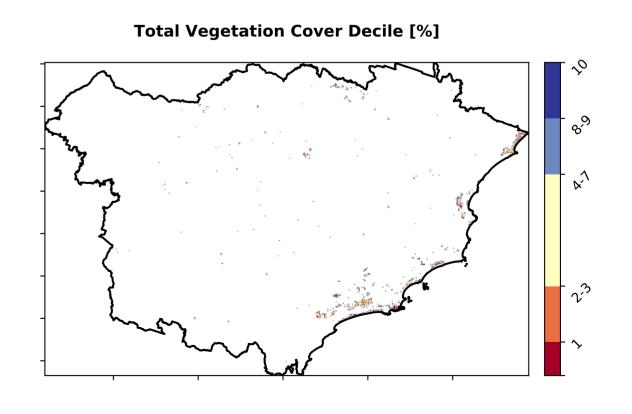
## % Area protected from water erosion (>70%) Area not protected 9.4% of region (2,838 ha) Area protected 90.6% of region (27,361 ha)



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.

# Proportion of vegetation cover class in area 90.6% 80 - 60 - 60 - 20 - 4.0% 2.0% 3.4% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class











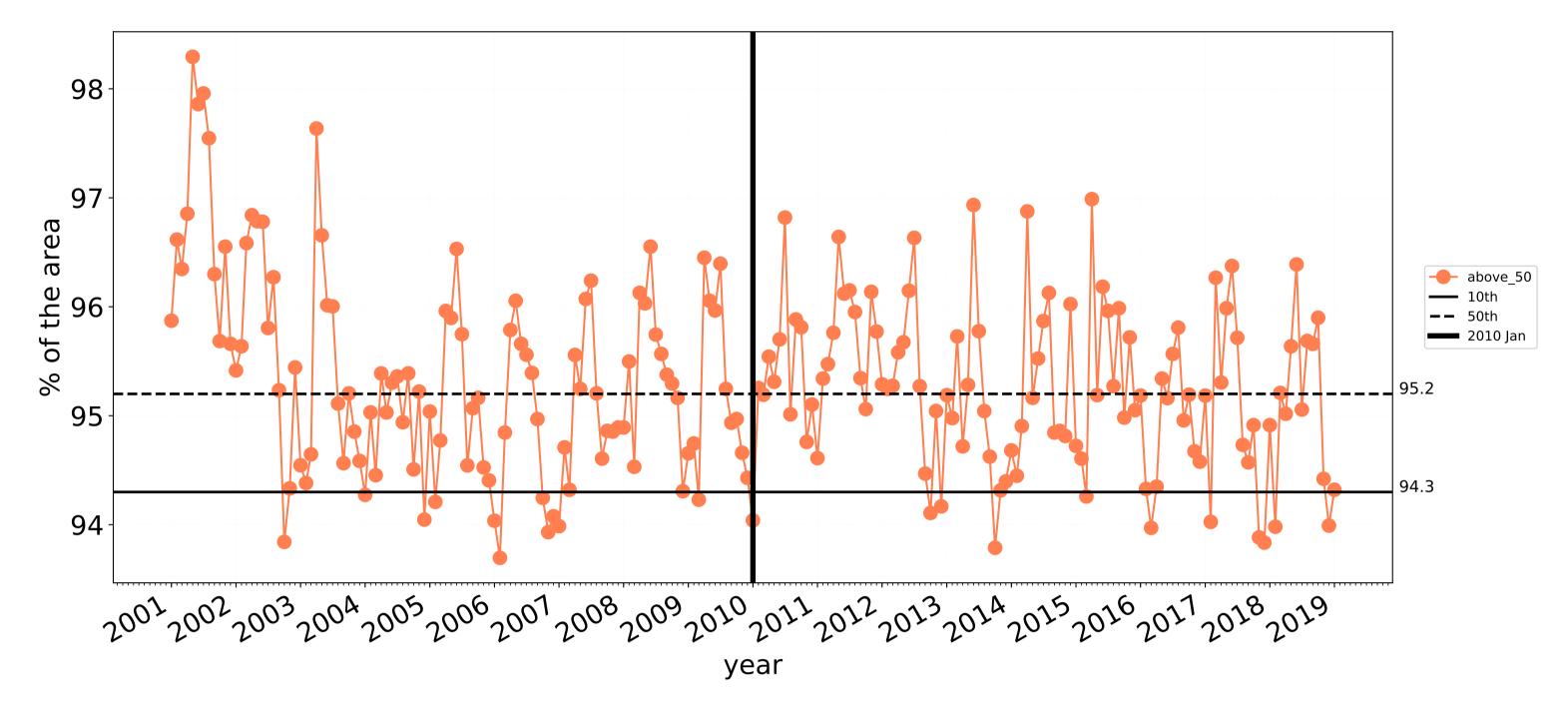




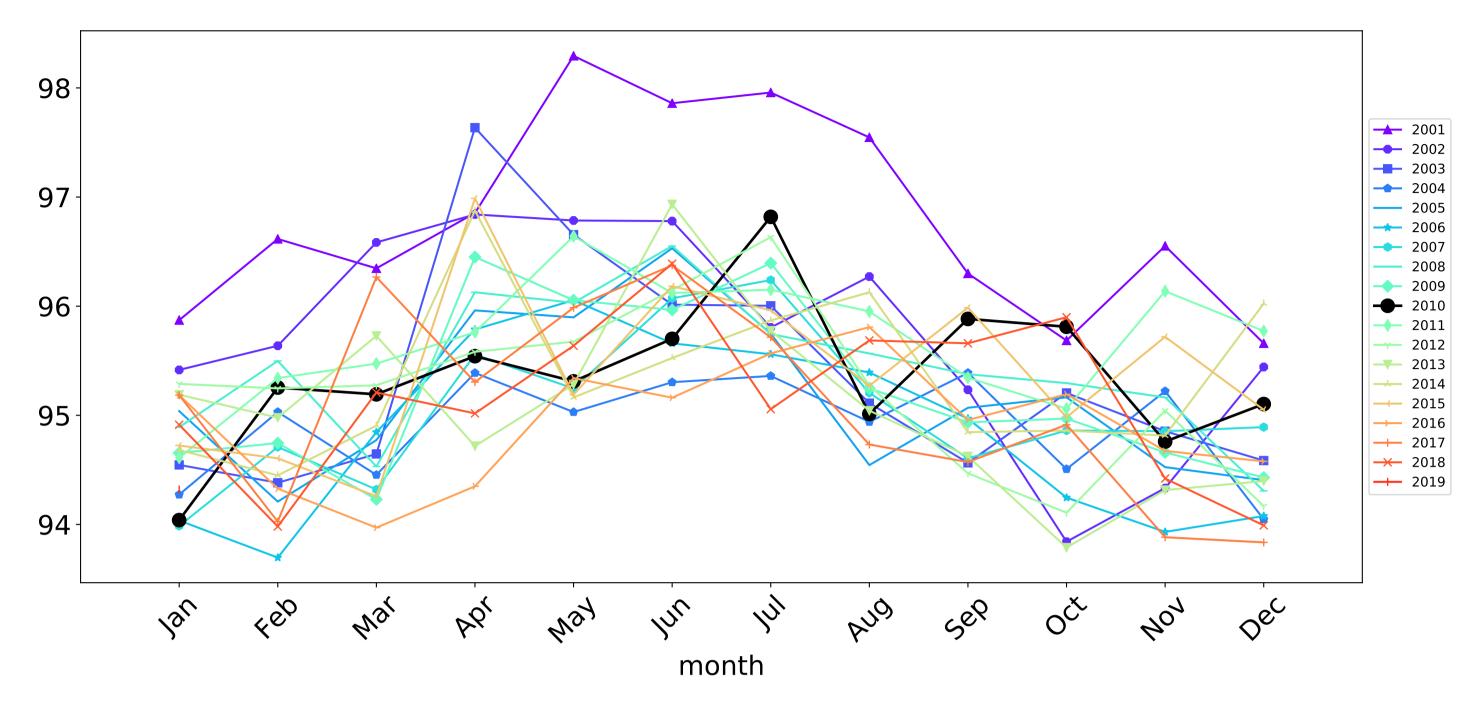


#### **Conservation and natural environments non forest timeseries**

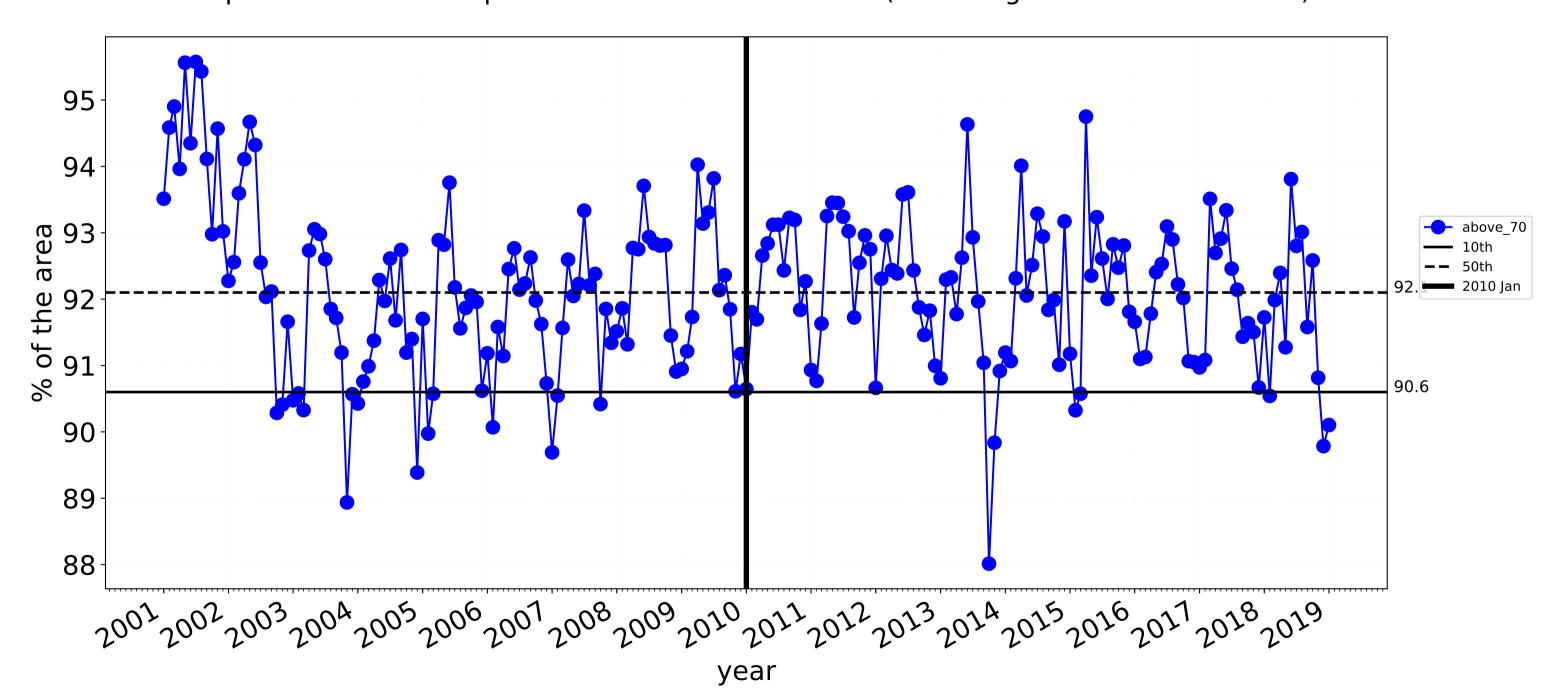




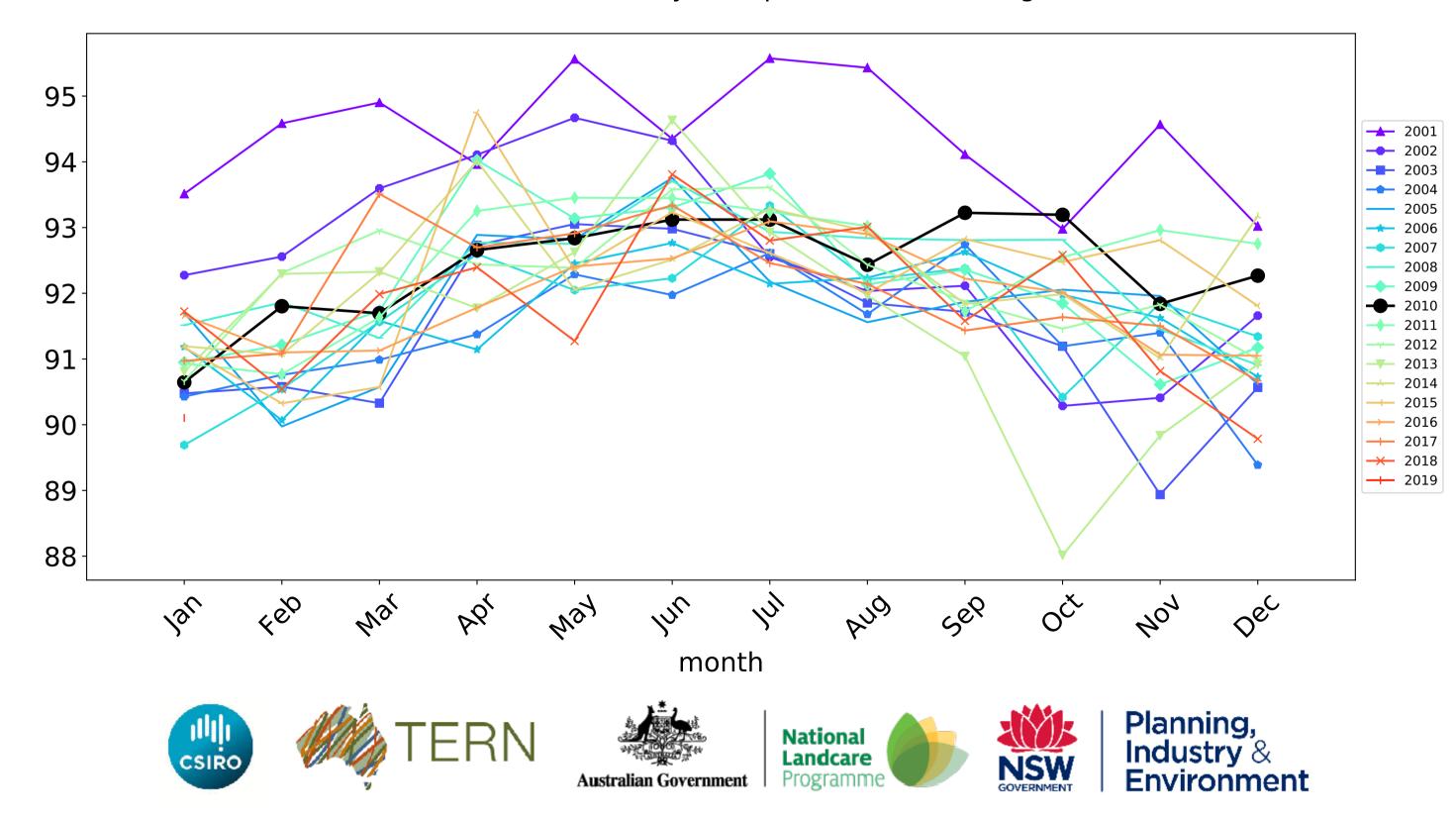
#### Wind erosion historical monthly area protected (Total Veg Cov >50%)

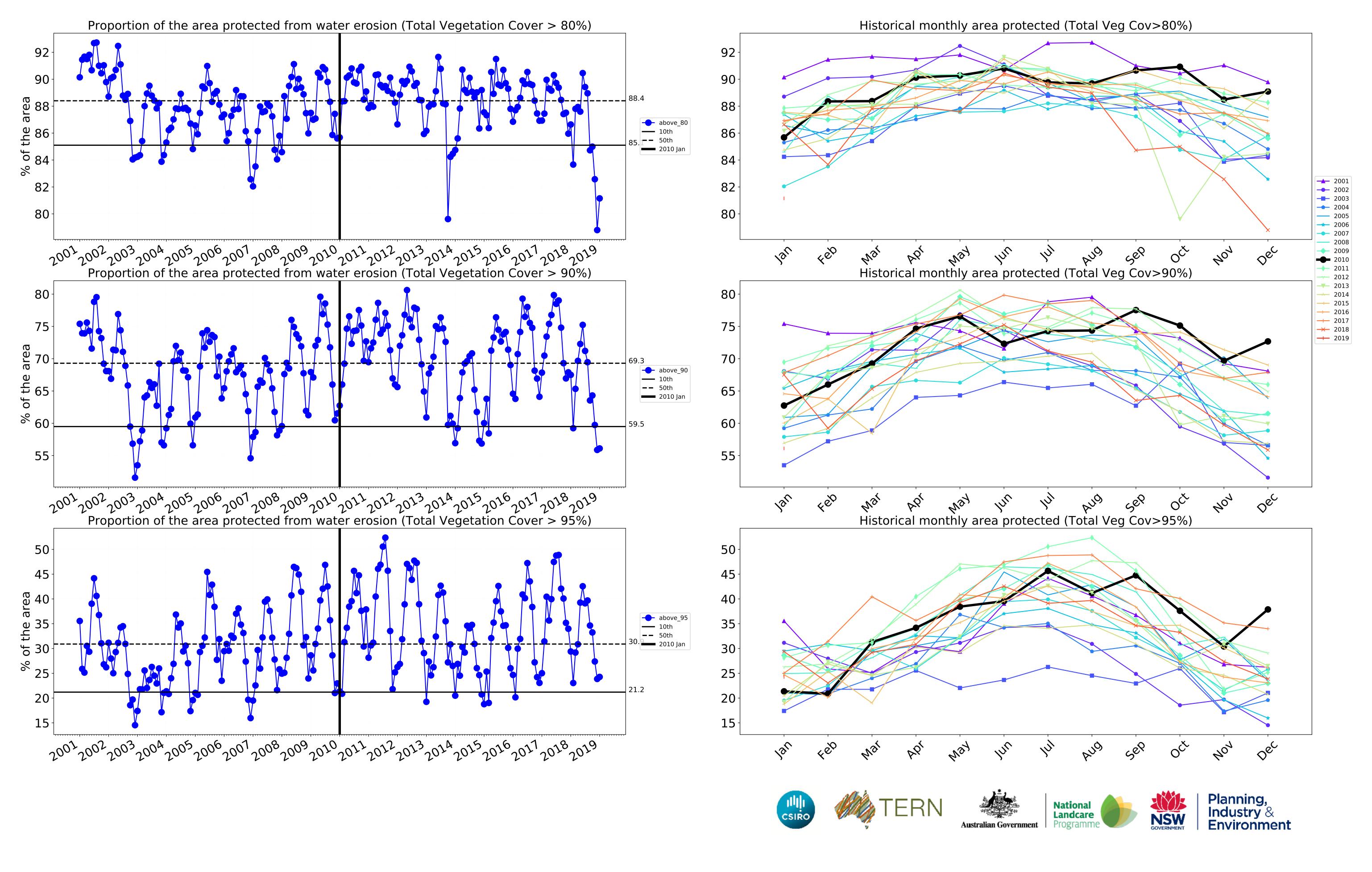


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

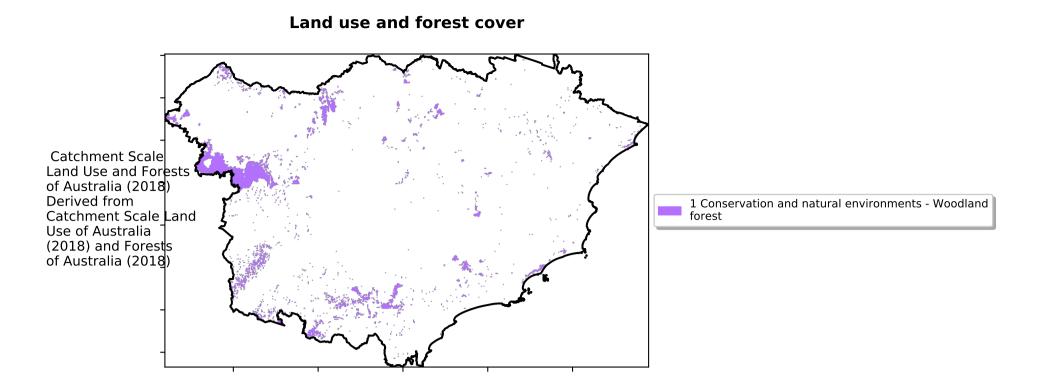


#### Water erosion historical monthly area protected (Total Veg Cov>70%)

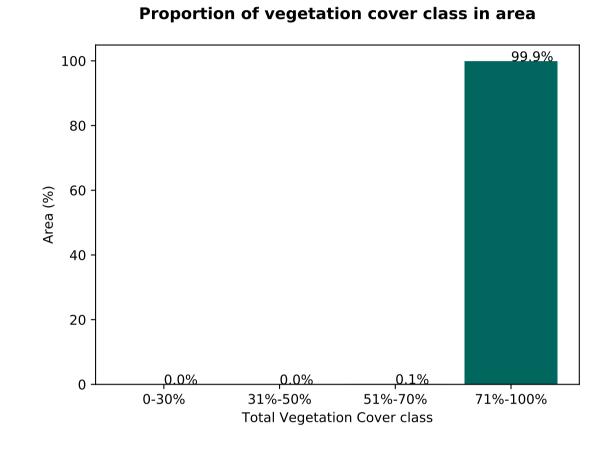


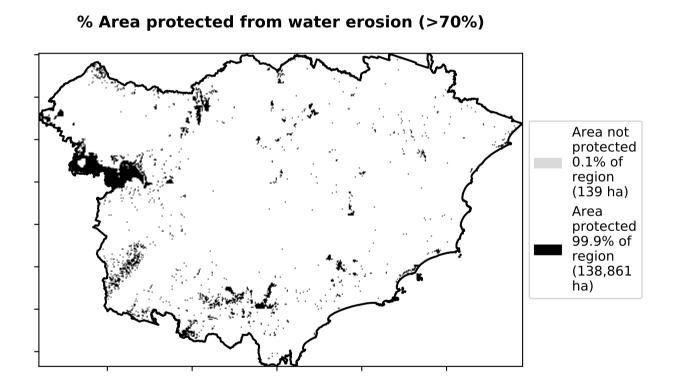


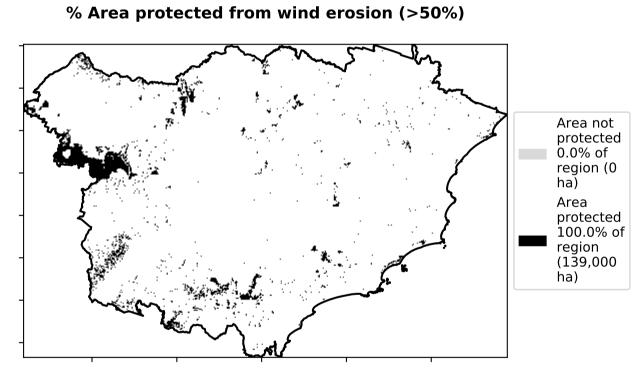
#### **Conservation and natural environments Woodland forest**

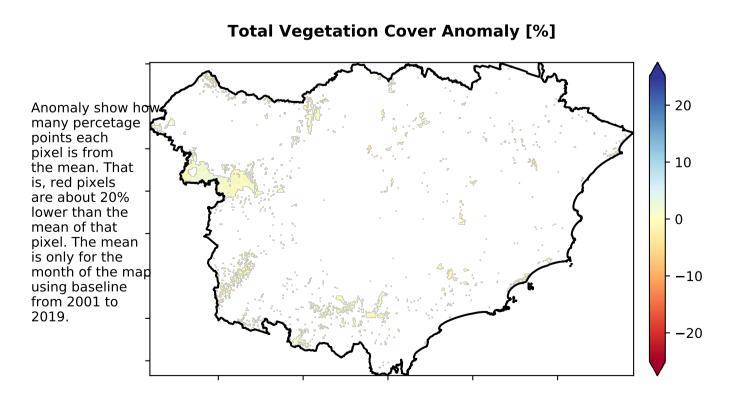


## Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]

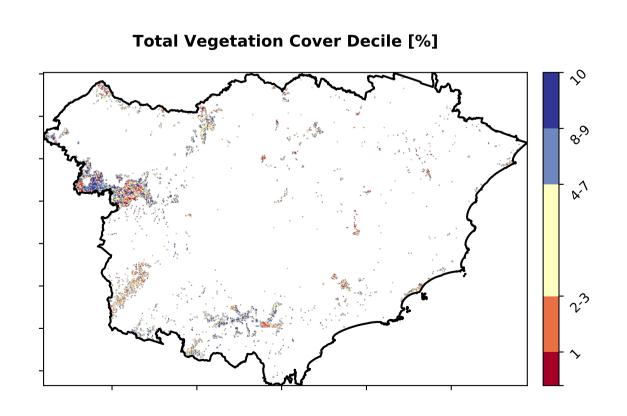








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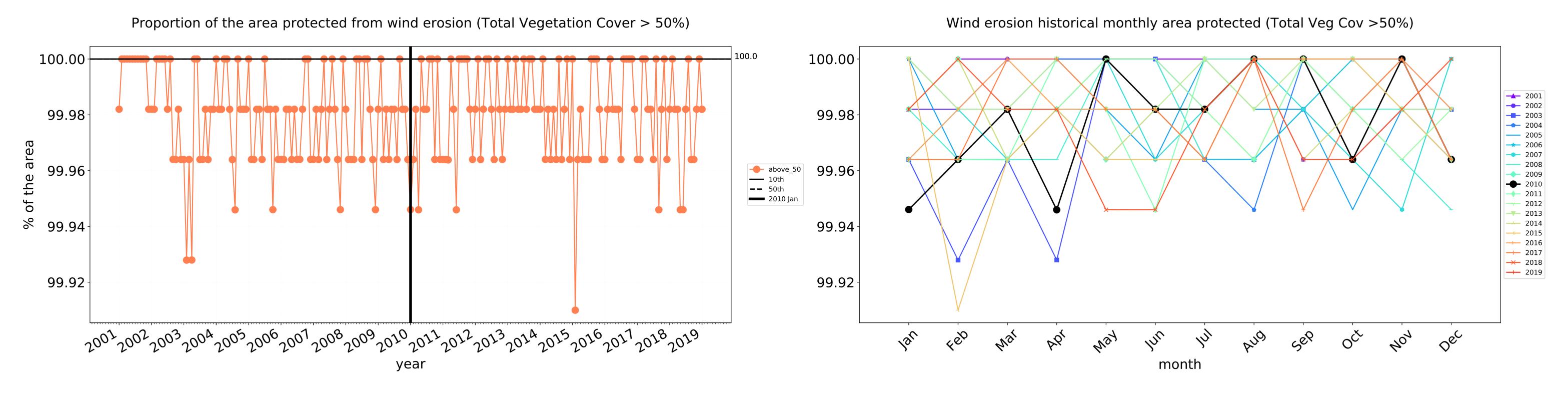


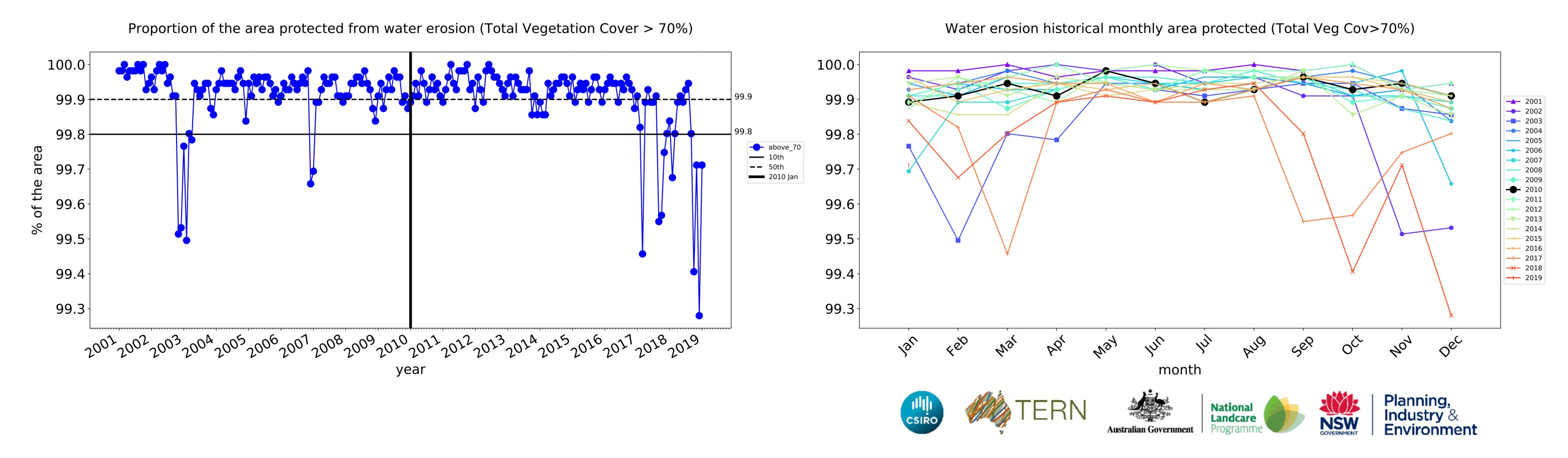


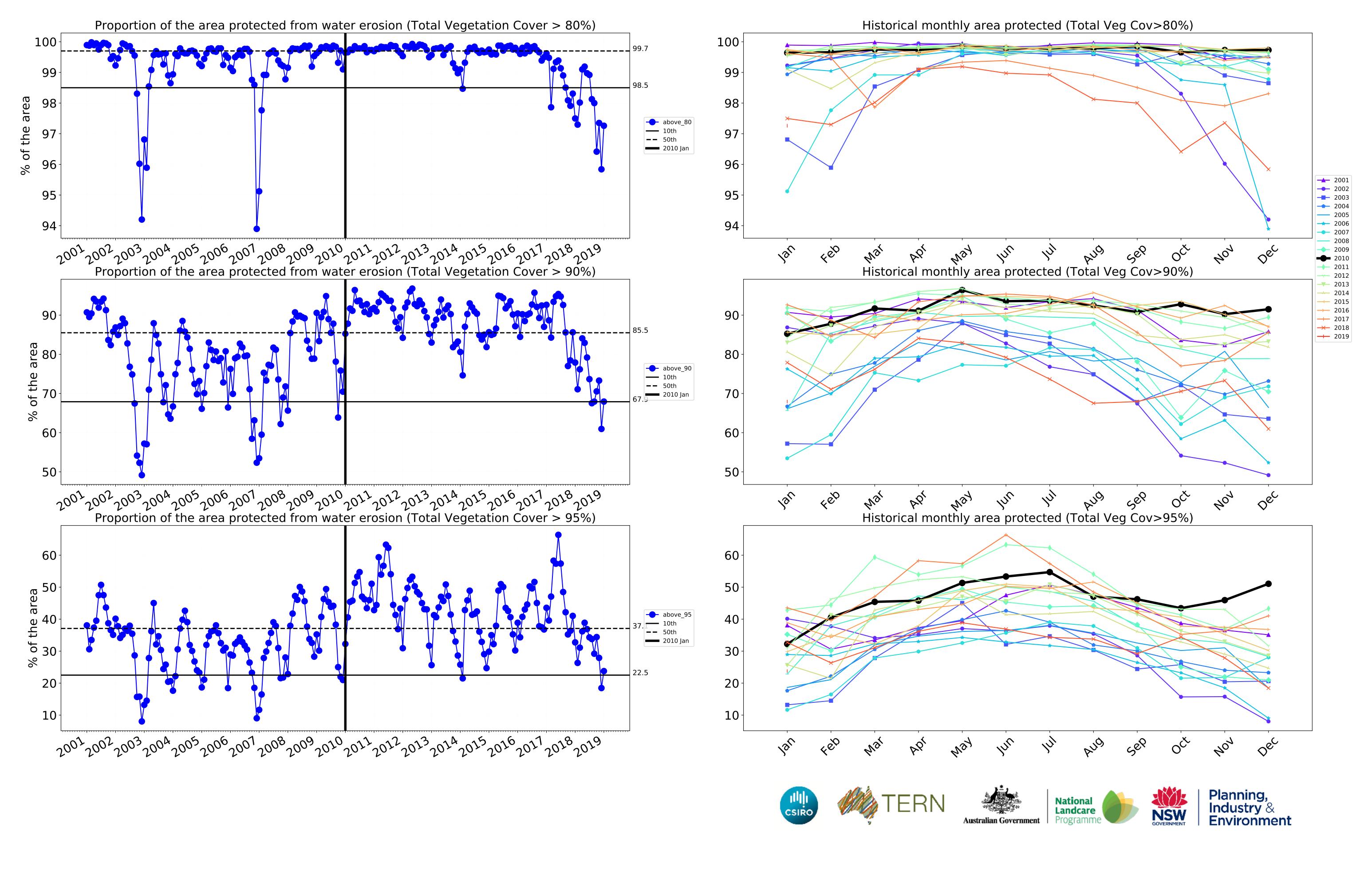




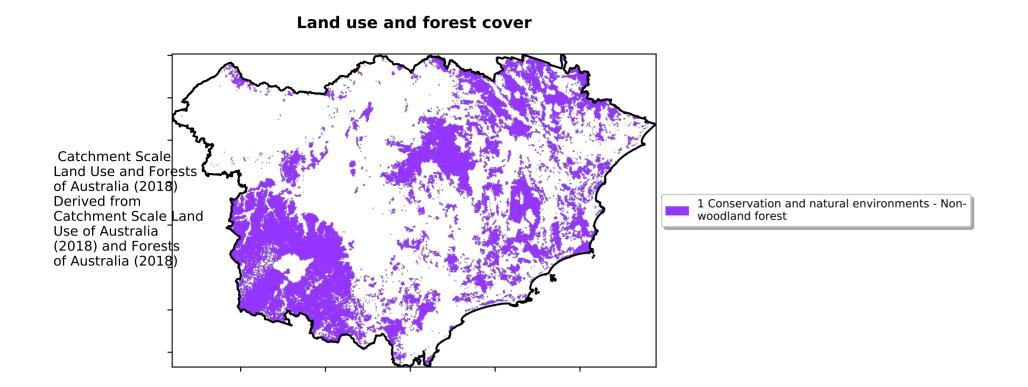
#### Conservation and natural environments Woodland forest timeseries



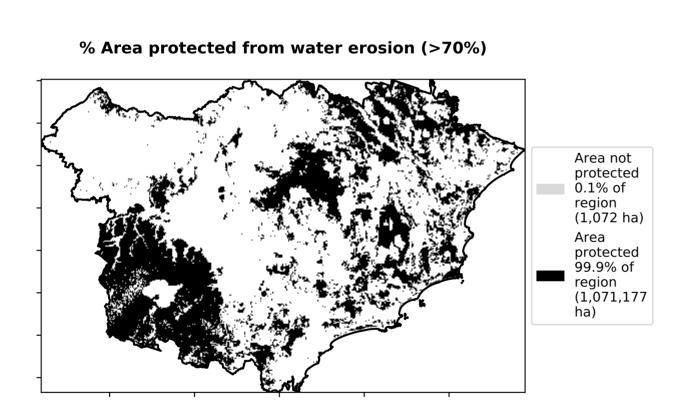


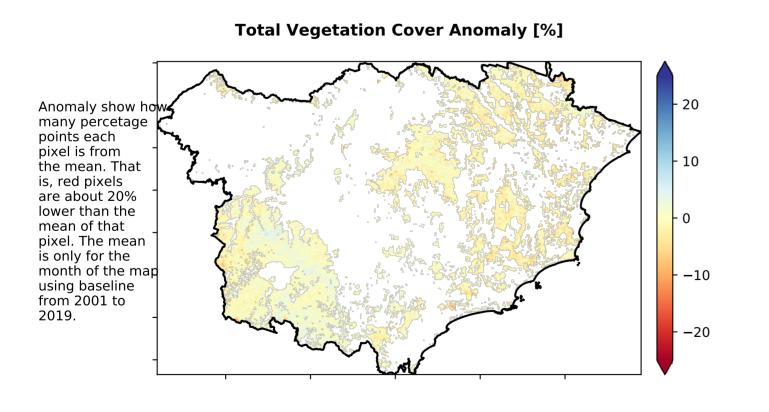


#### **Conservation and natural environments Forest (non woodland)**



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

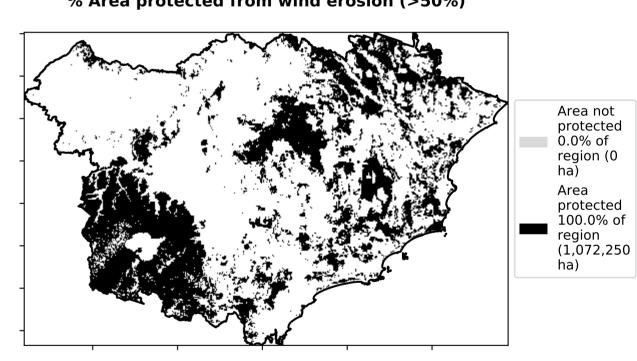


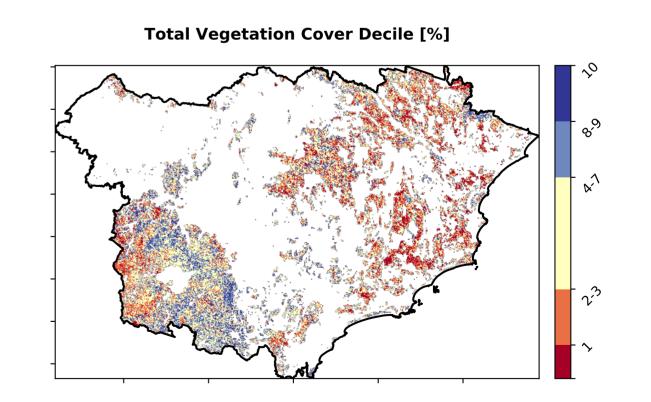


#### 100 80 60 40 20 0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class** % Area protected from wind erosion (>50%)

Proportion of vegetation cover class in area

99.9%









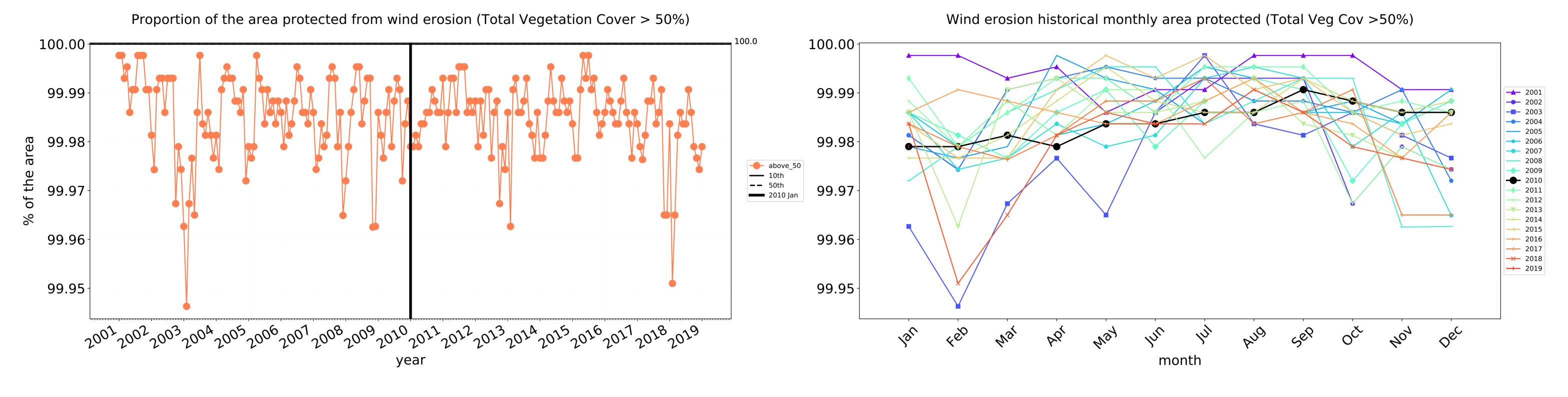
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline.

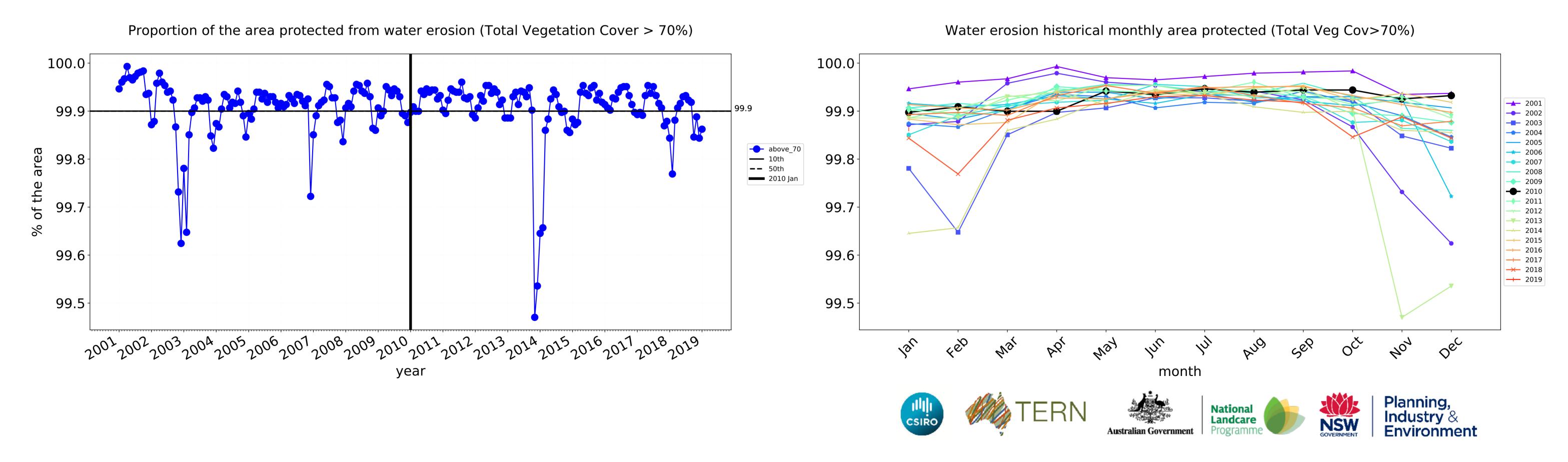
the map using baseline from 2001 to 2019.

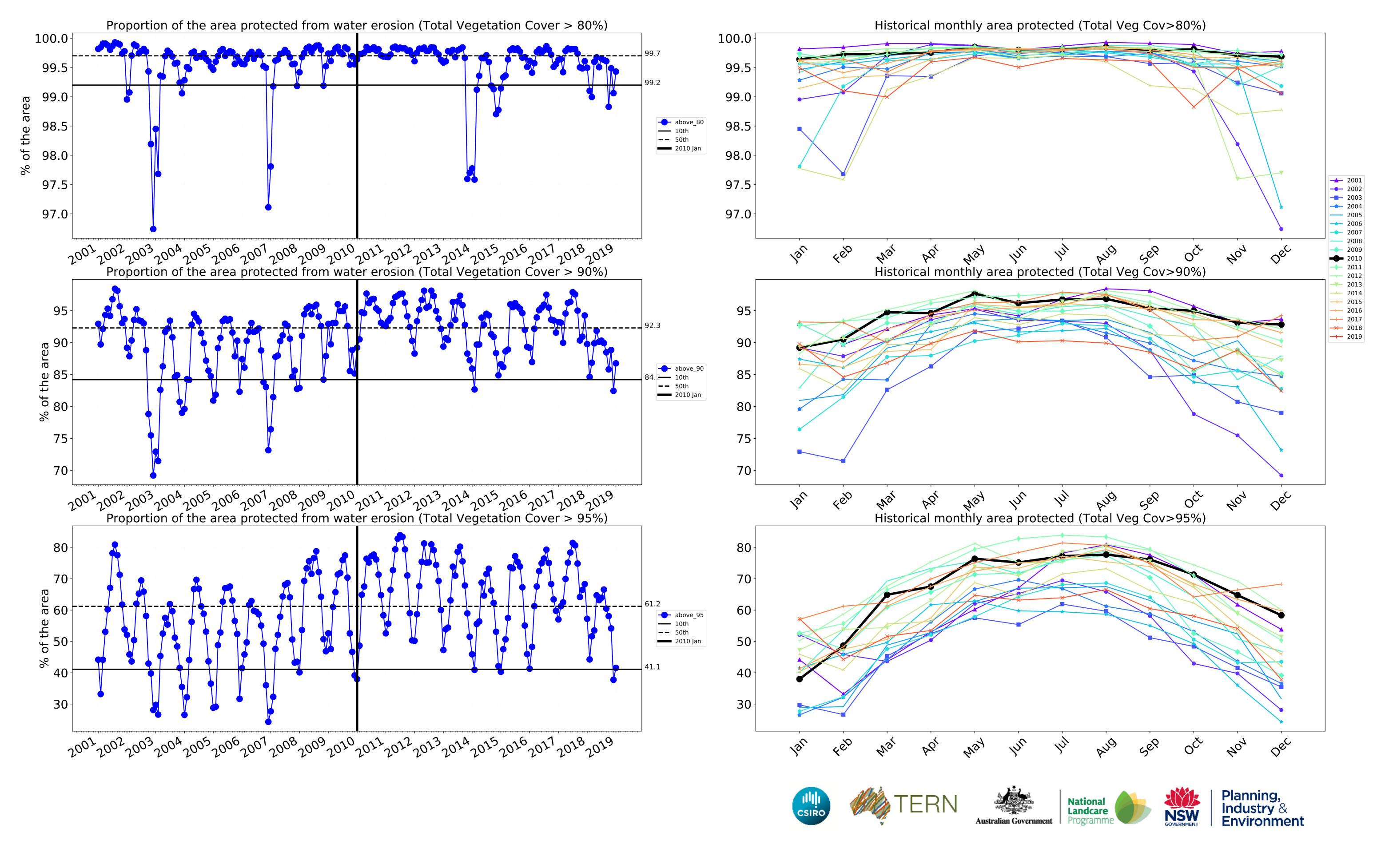




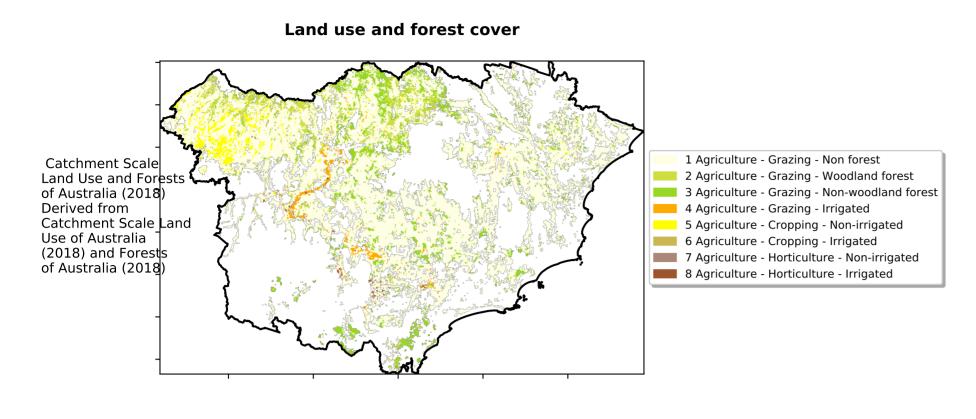


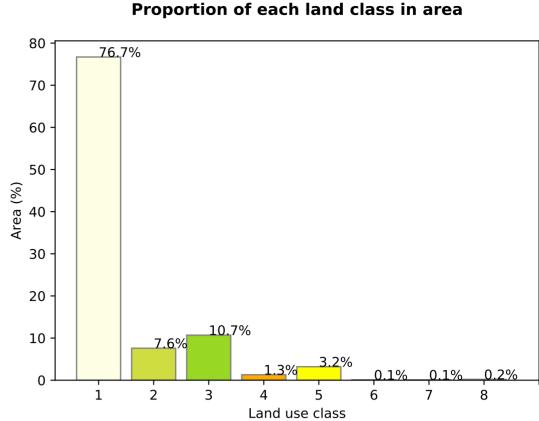


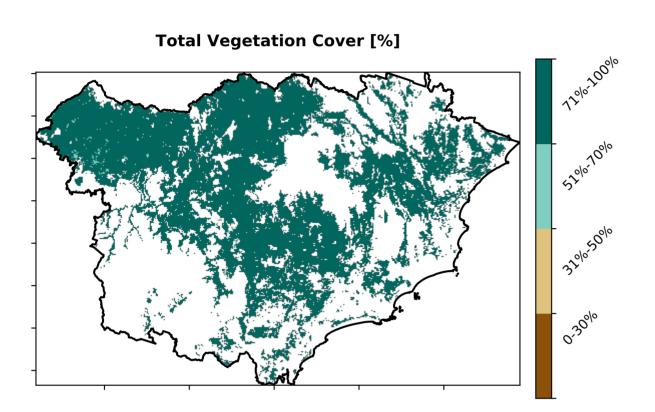


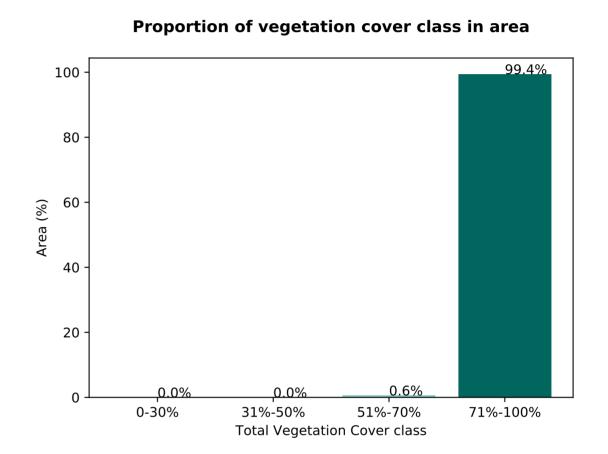


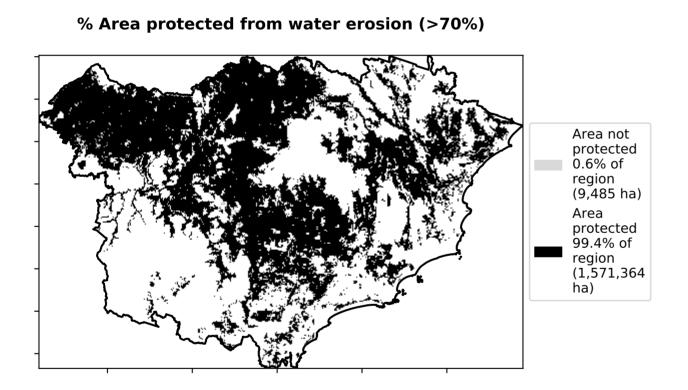
#### **Agriculture**

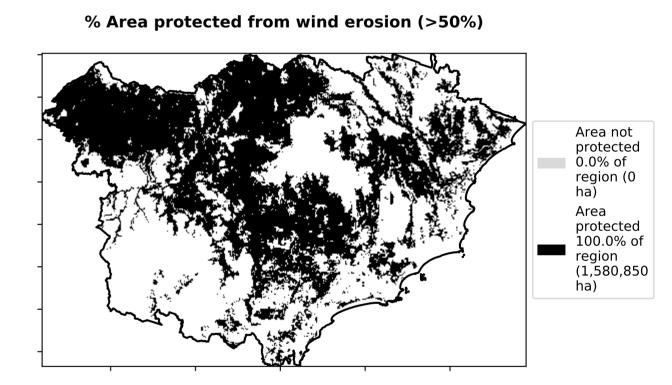


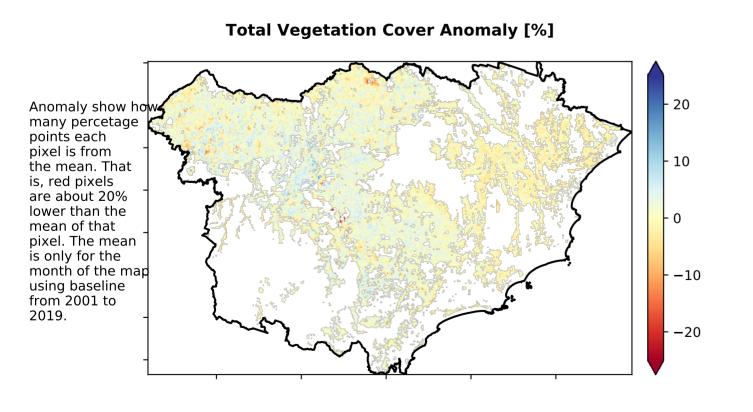




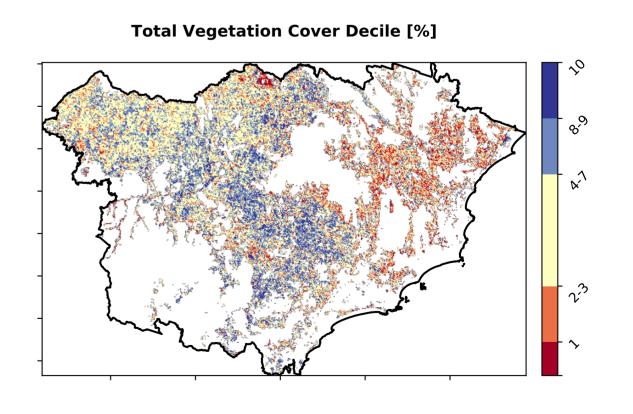








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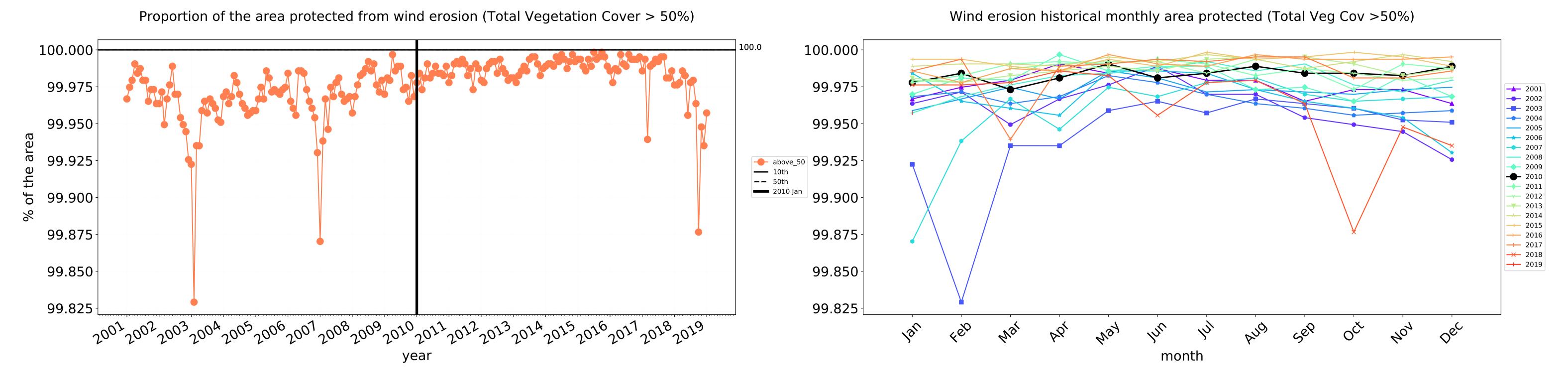


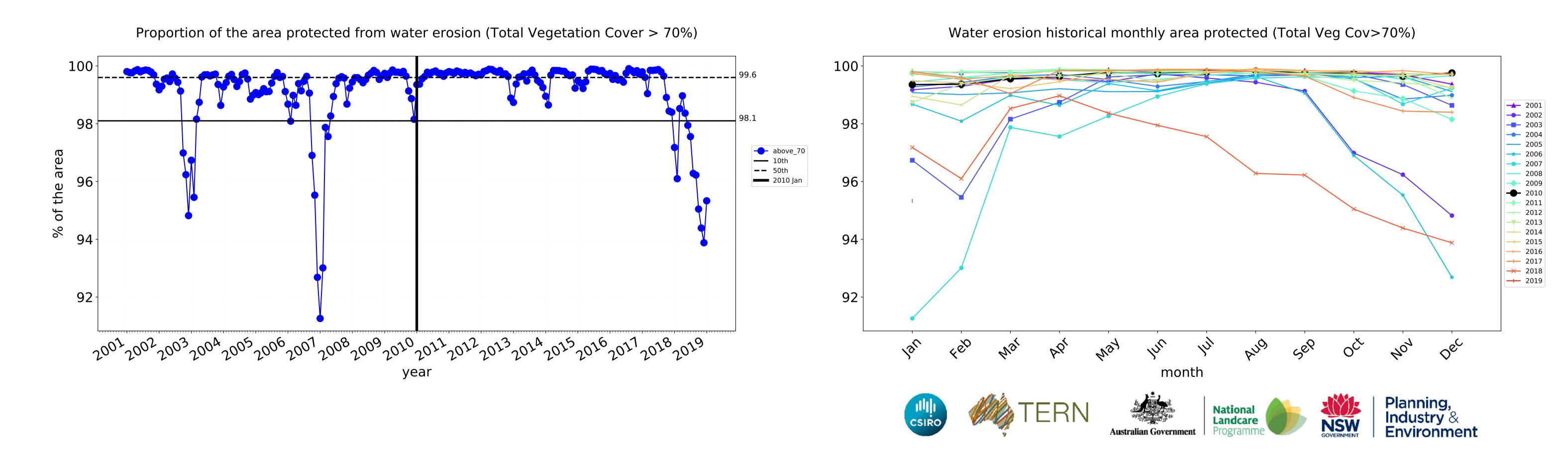


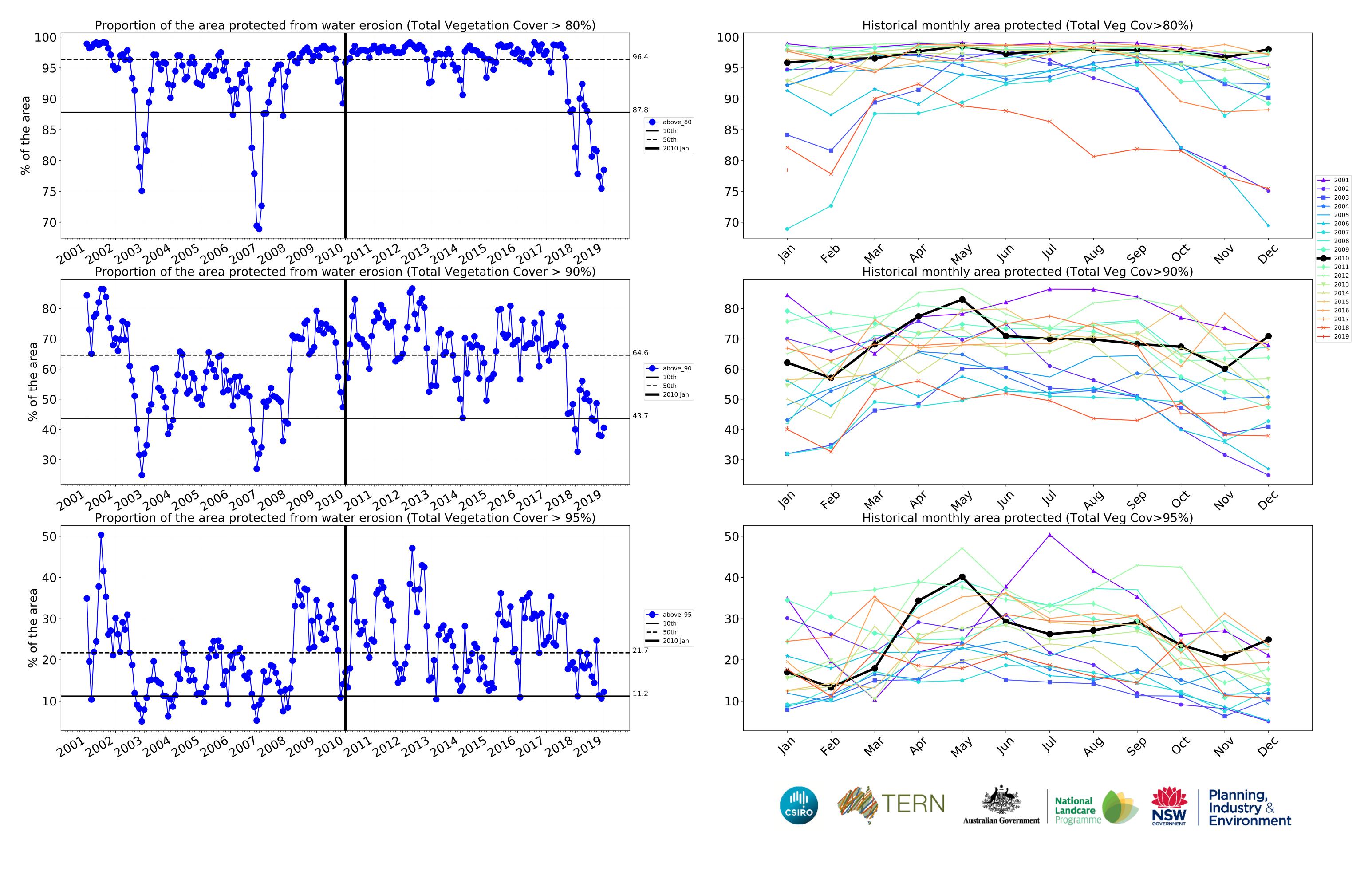




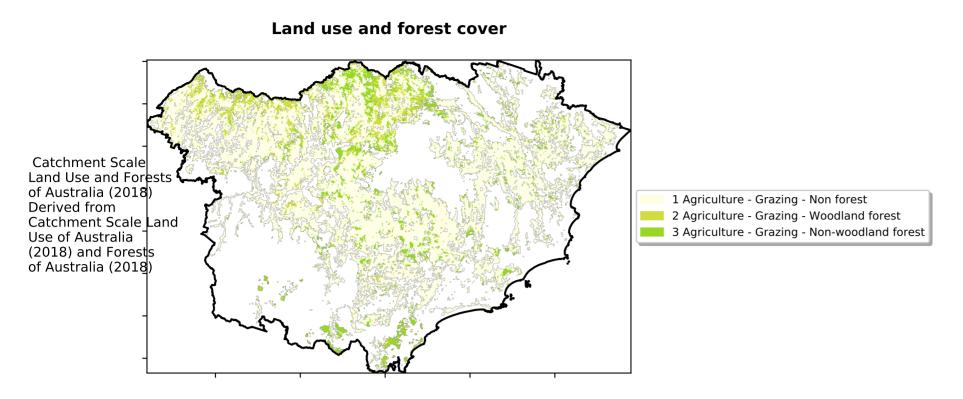
#### **Agriculture timeseries**



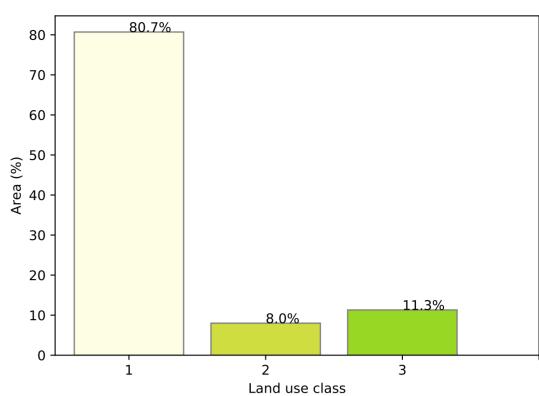




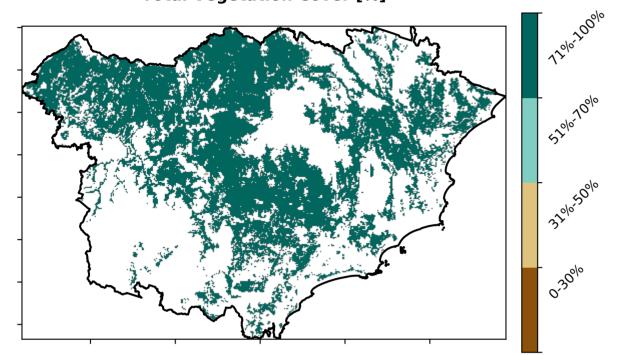
#### **Grazing**



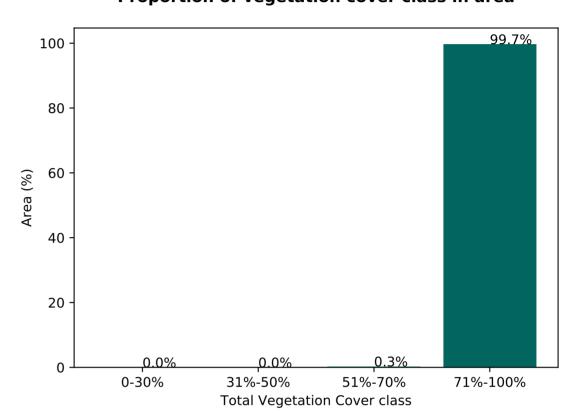
#### Proportion of each land class in area



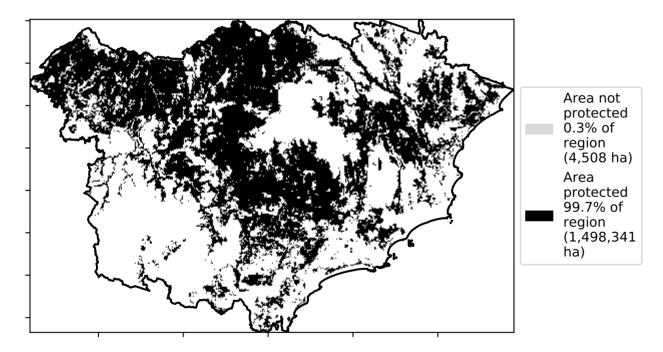




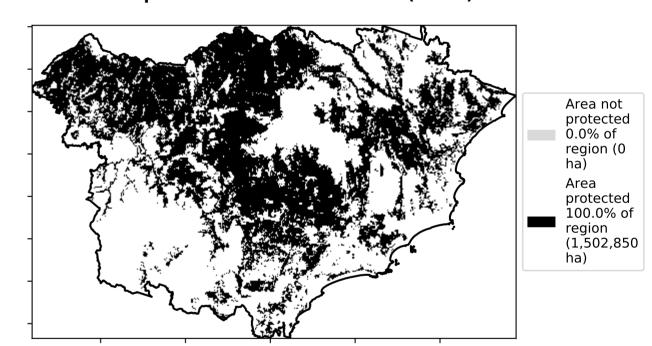
**Proportion of vegetation cover class in area** 



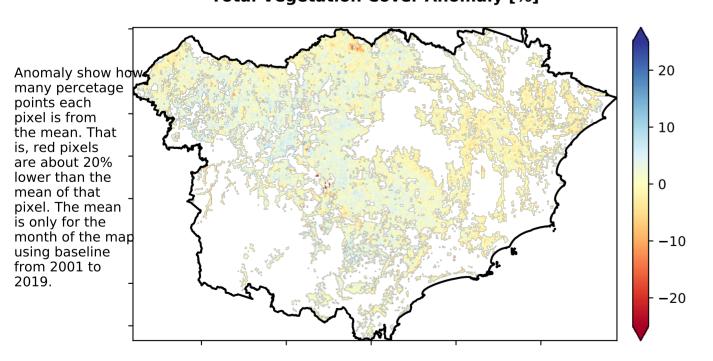
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

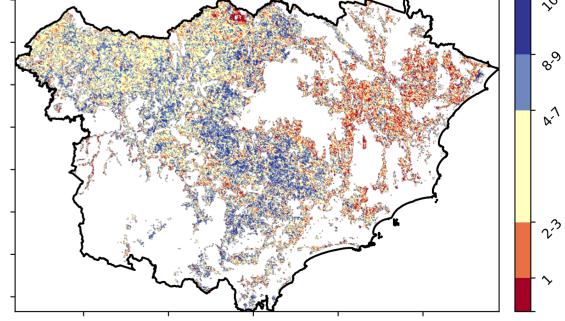


#### **Total Vegetation Cover Anomaly [%]**



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 man using baseline. the map using baseline from 2001 to 2019.

**Total Vegetation Cover Decile [%]** 







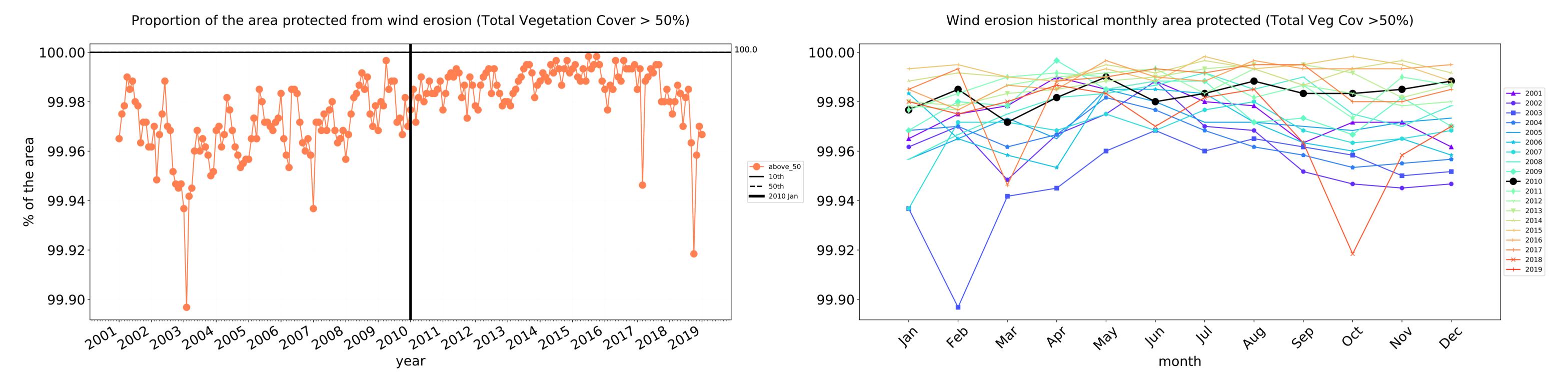


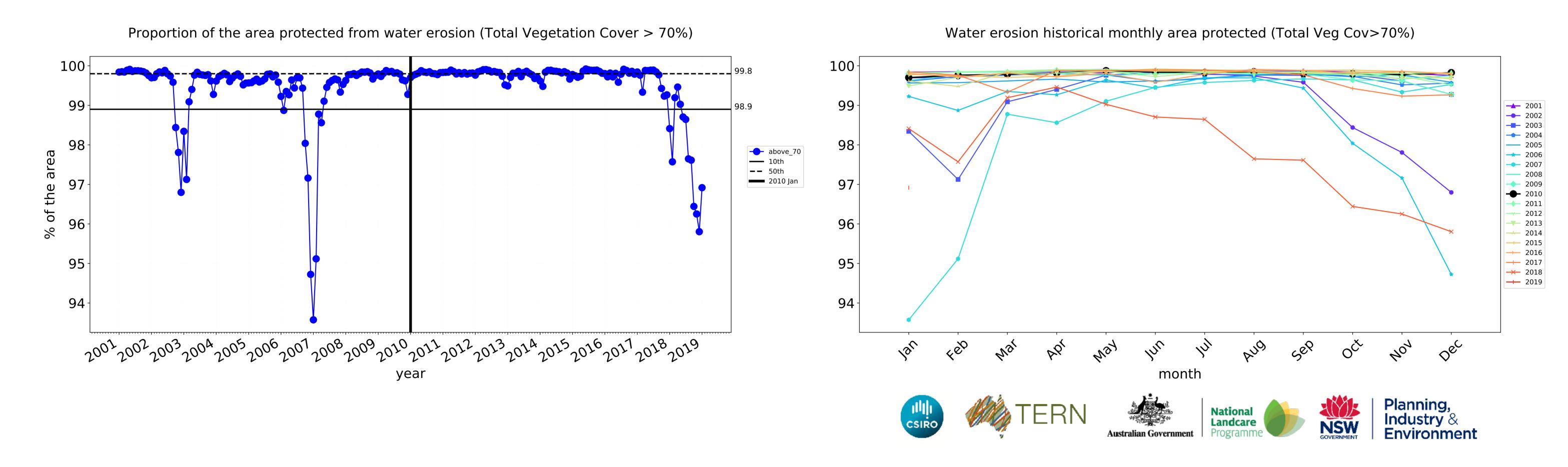


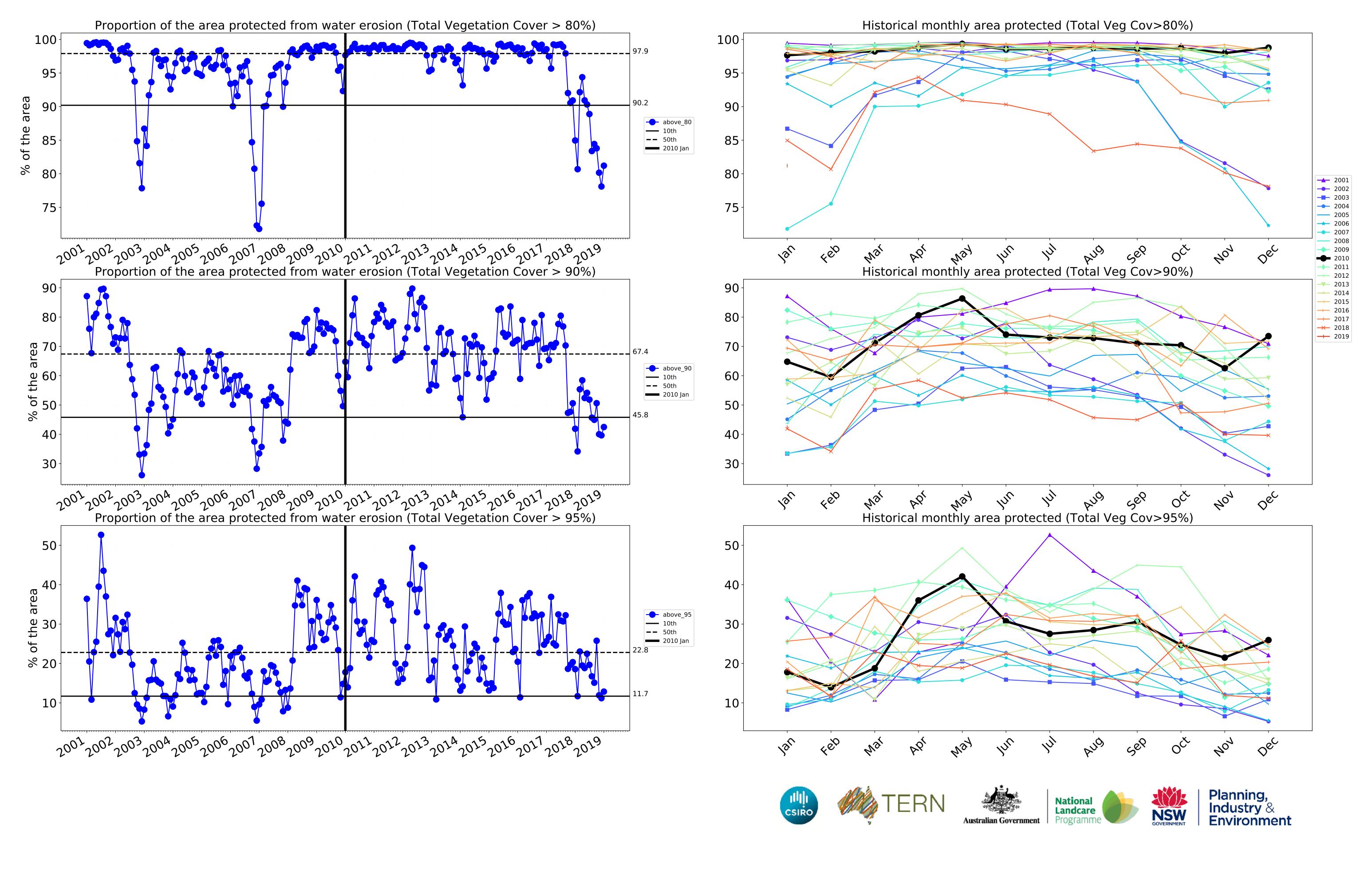




#### **Grazing timeseries**

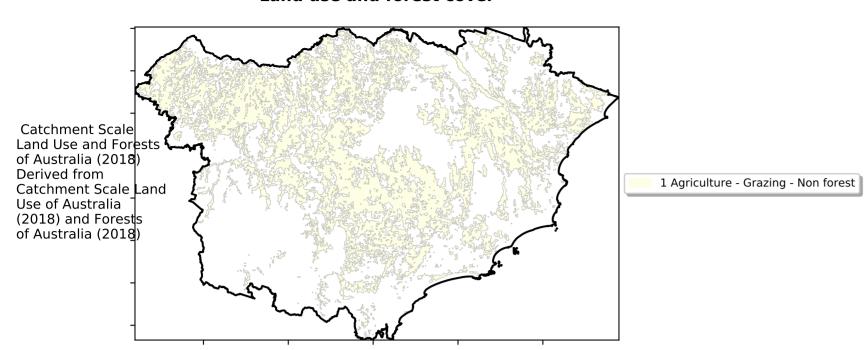




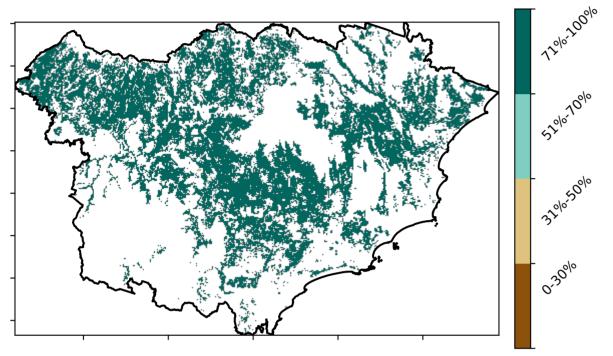


#### **Grazing non forest**

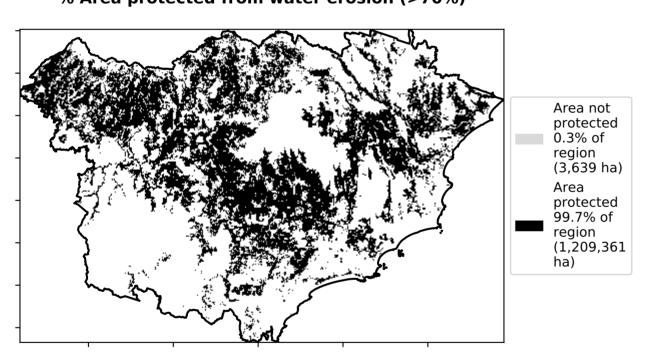
#### Land use and forest cover



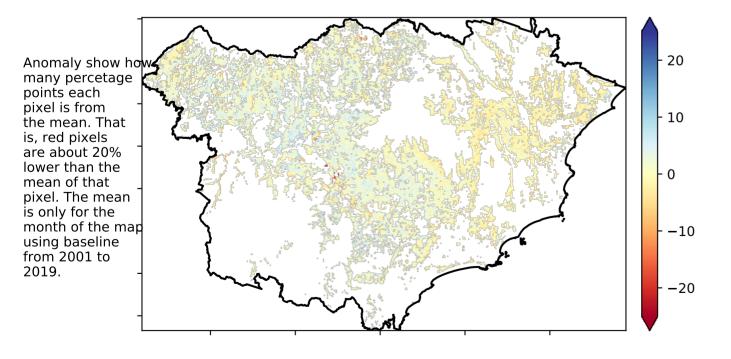
#### Total Vegetation Cover [%]



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

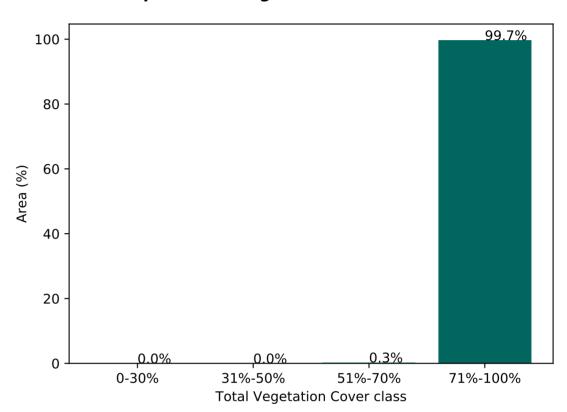


#### Total Vegetation Cover Anomaly [%]

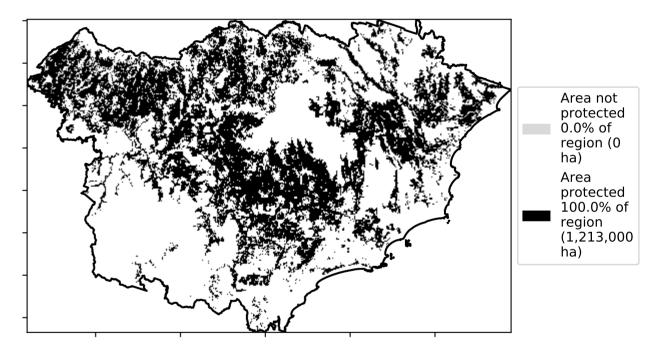


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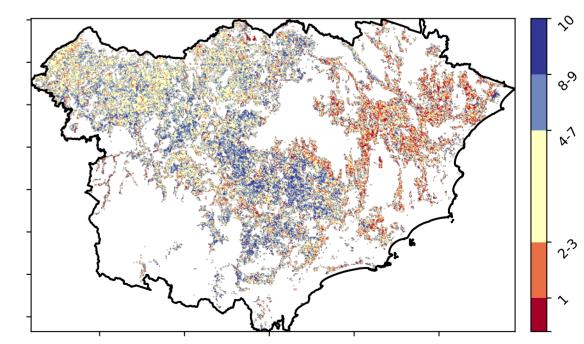
#### **Proportion of vegetation cover class in area**



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



#### Total Vegetation Cover Decile [%]







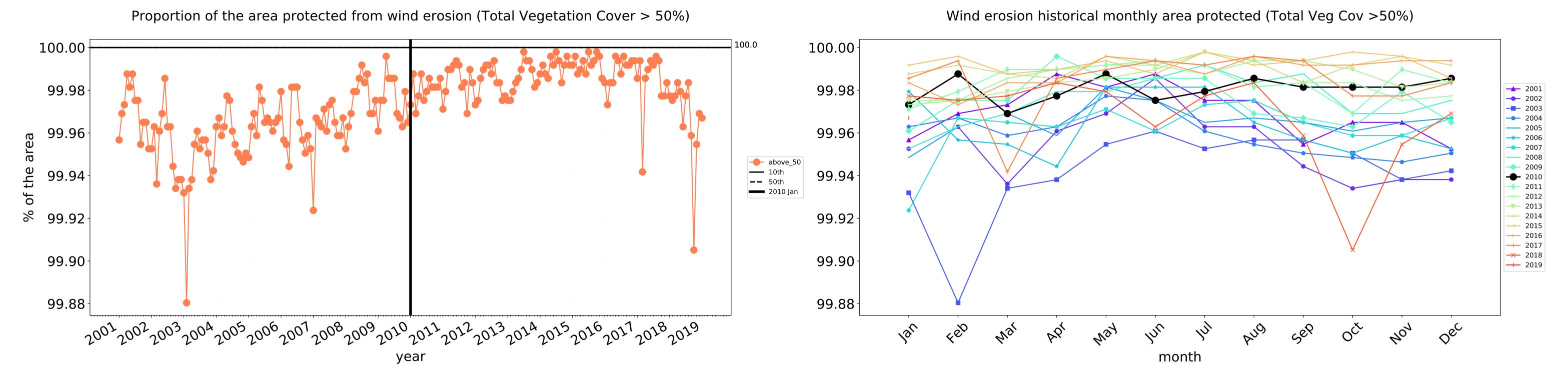


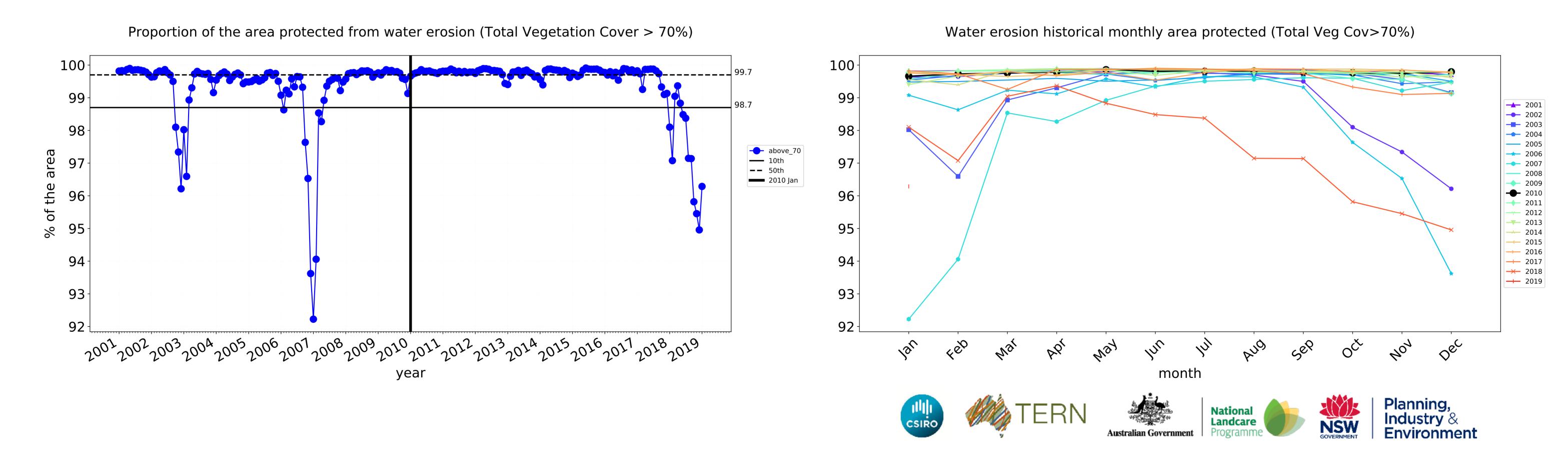


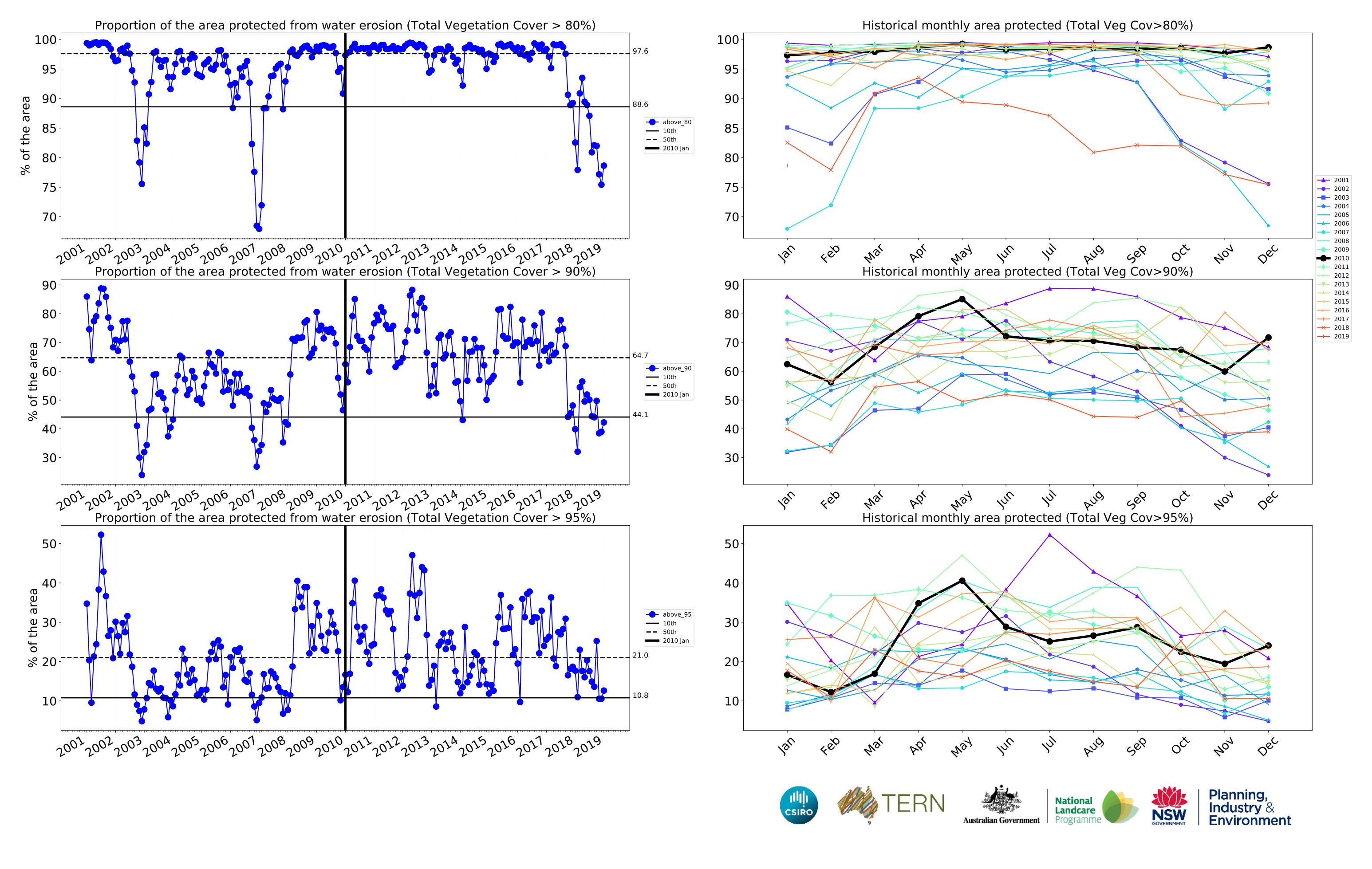




#### **Grazing non forest timeseries**





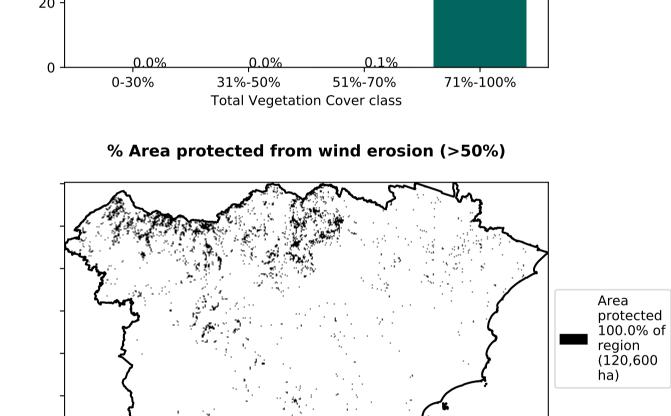


#### **Grazing Woodland forest**

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

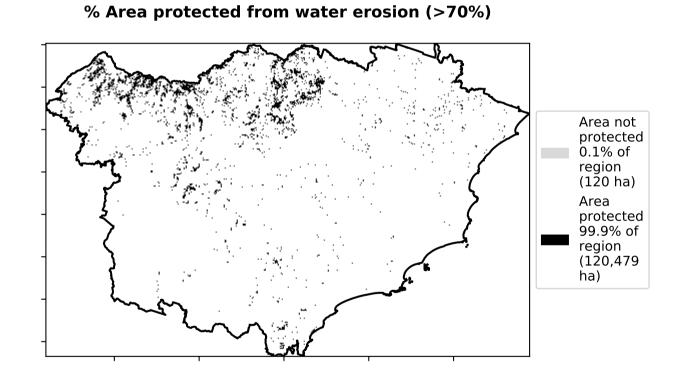
## **Total Vegetation Cover [%]**

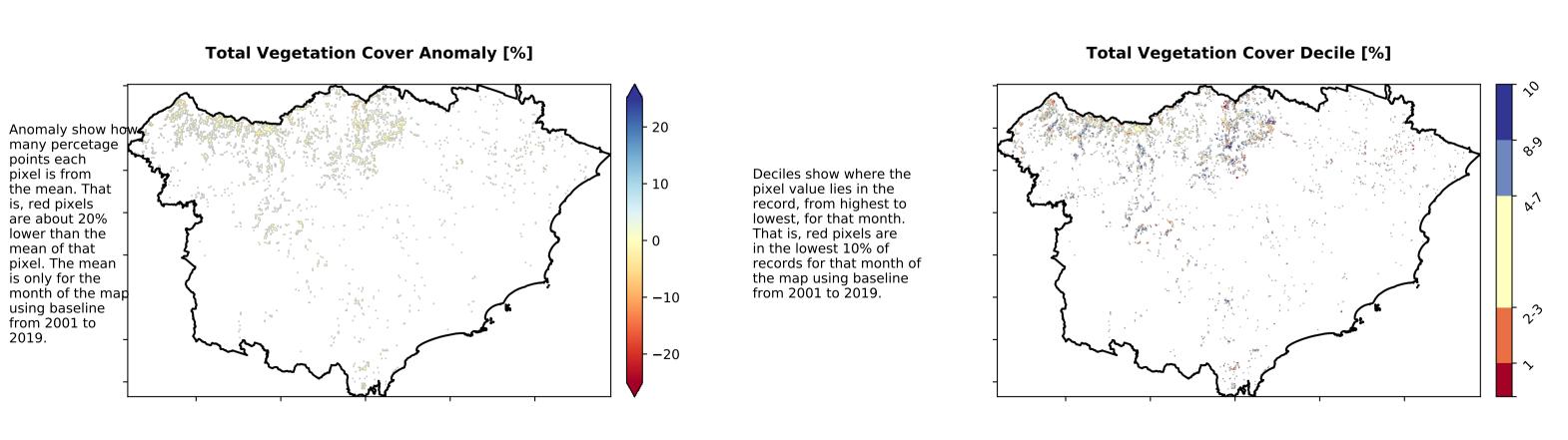
### 100 80 Area (%) 40 20 -0-30%



**Proportion of vegetation cover class in area** 

99.9%









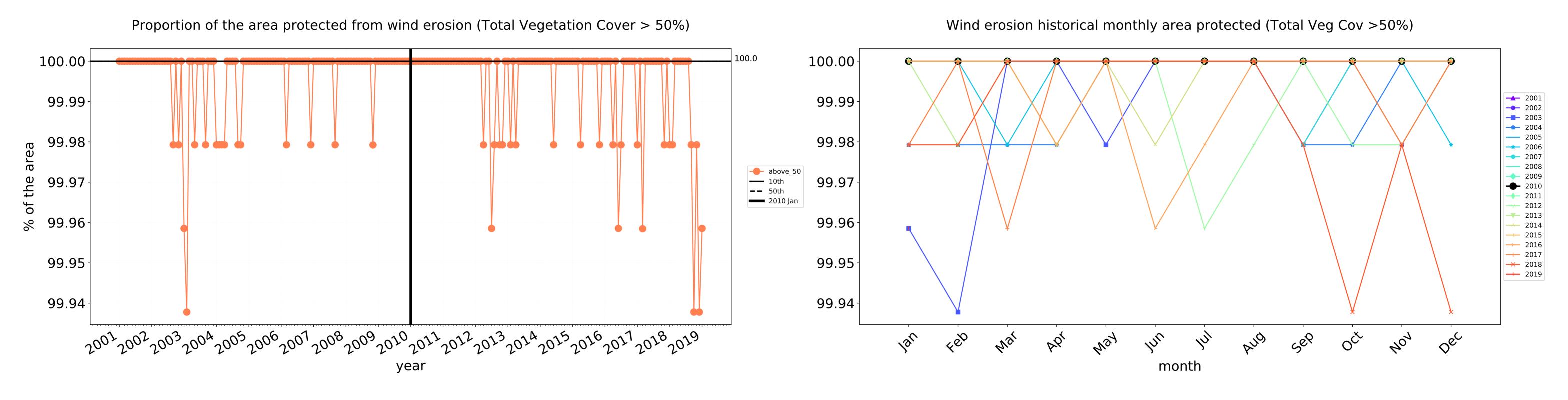


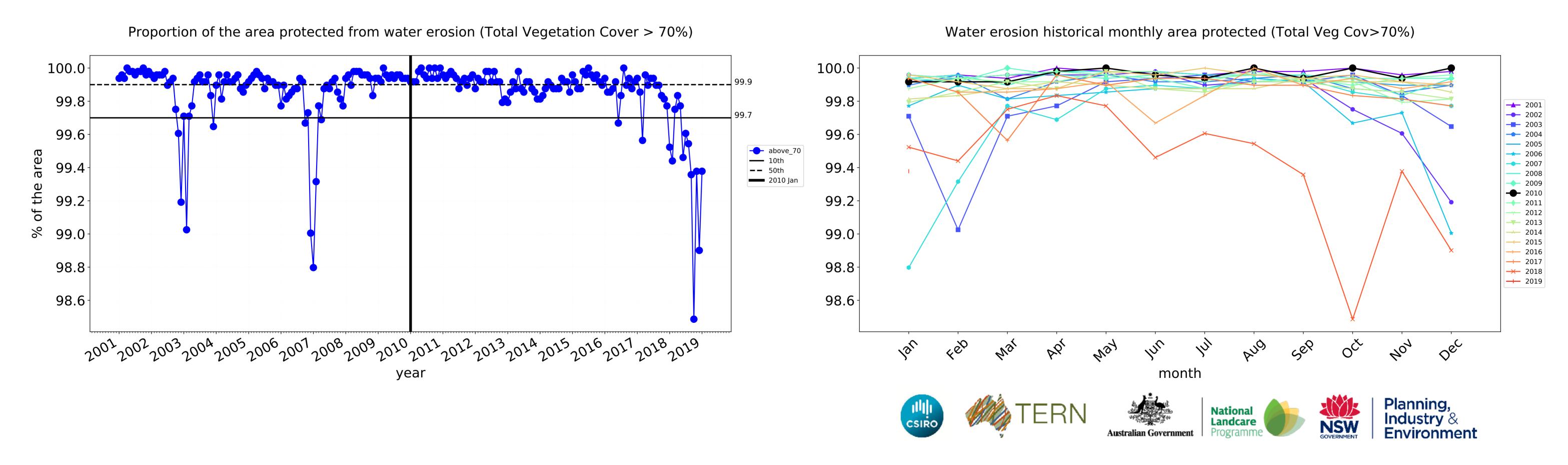


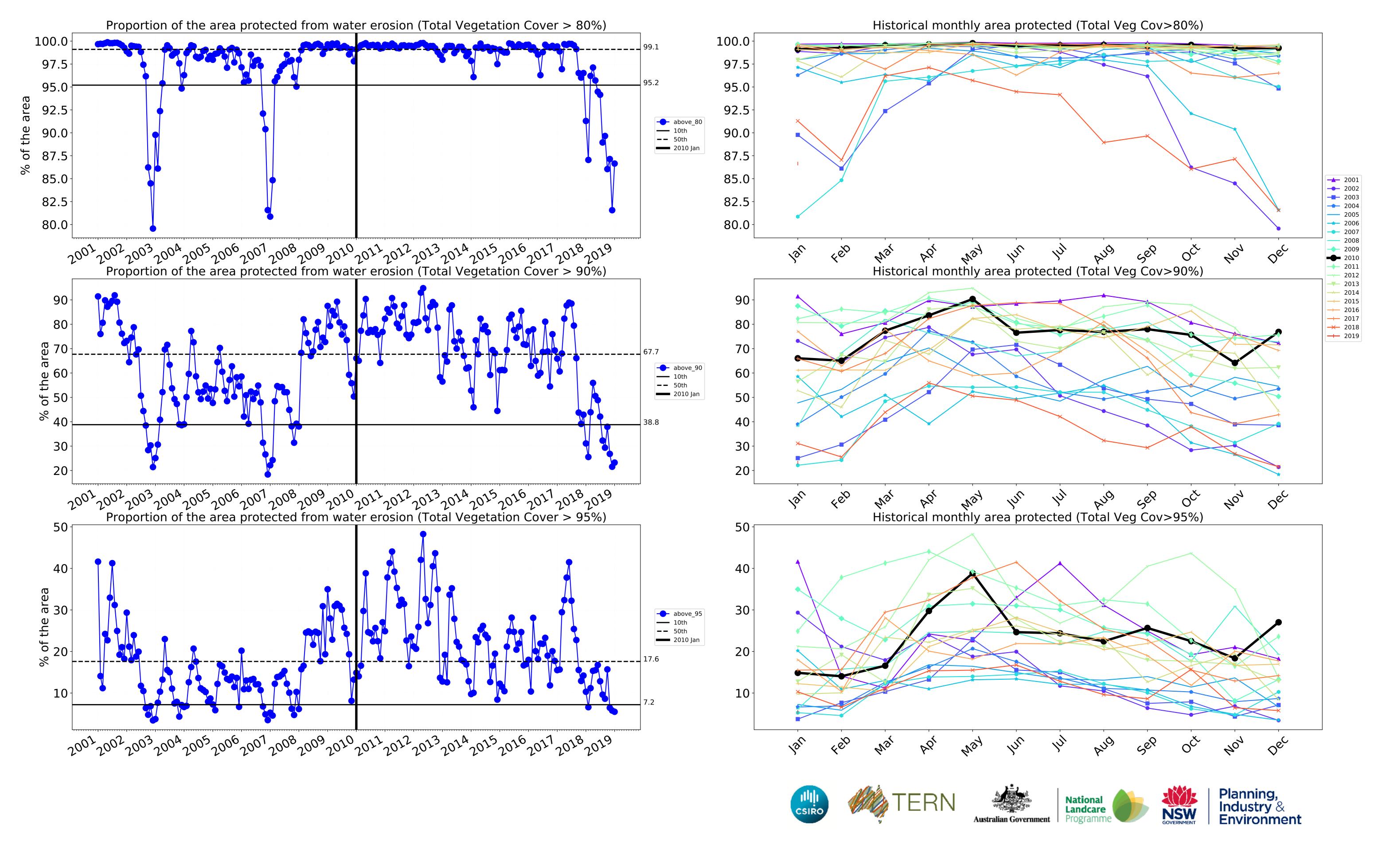




#### **Grazing Woodland forest timeseries**



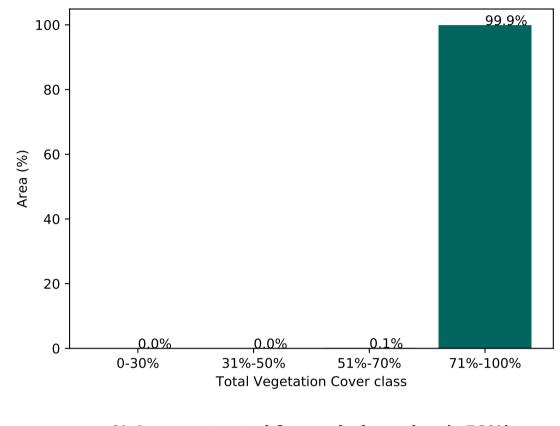




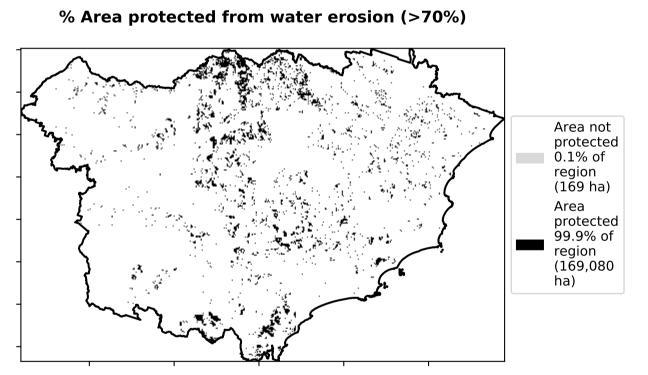
#### **Grazing - Forest (non woodland)**

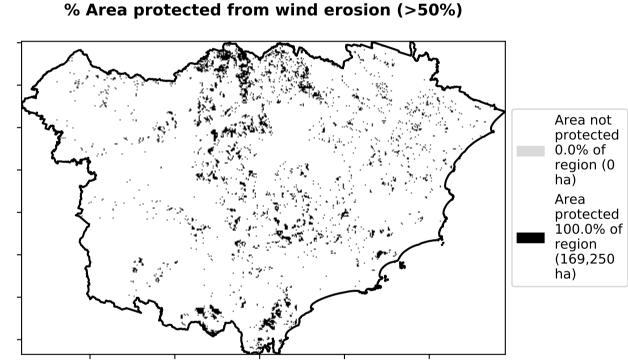
### **Land use and forest cover** Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Non-woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

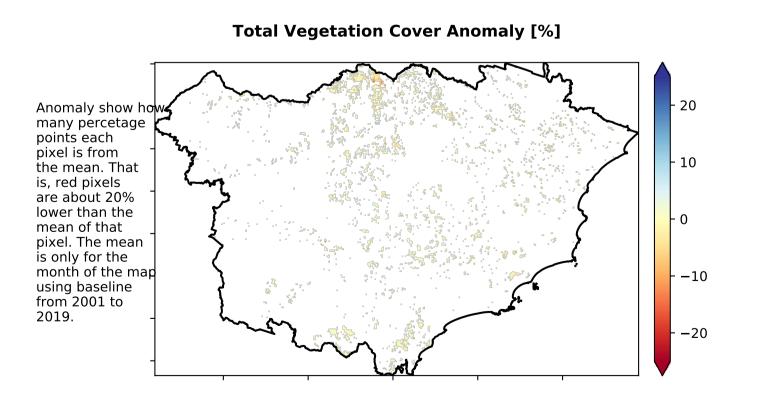
## **Total Vegetation Cover [%]**



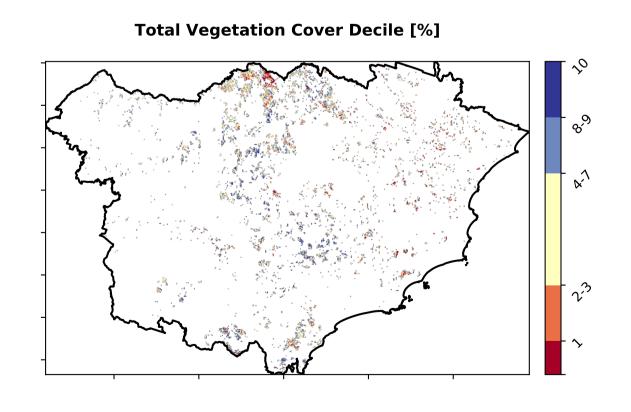
**Proportion of vegetation cover class in area** 







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





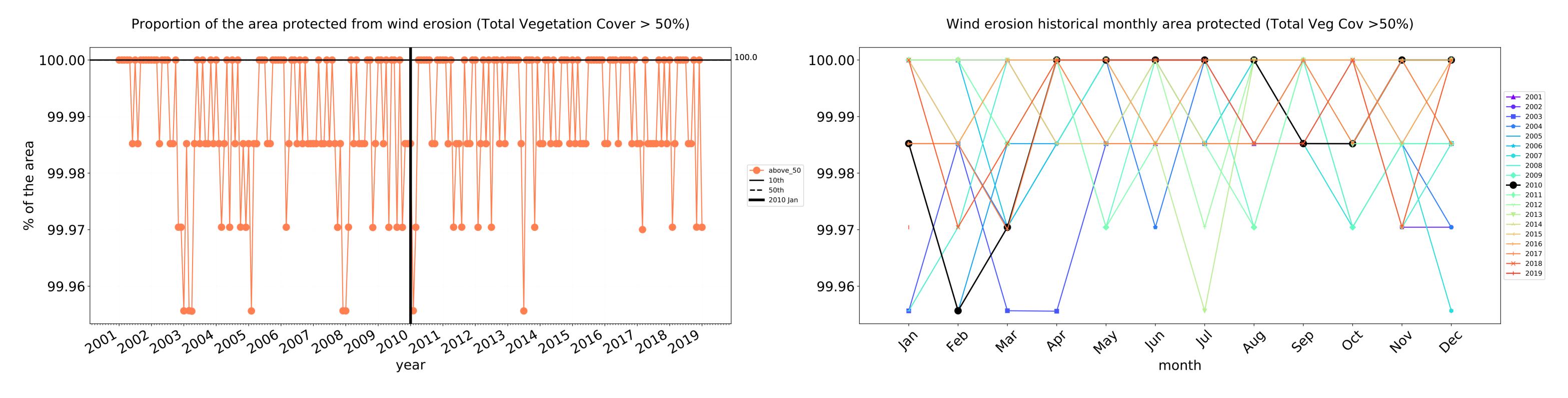


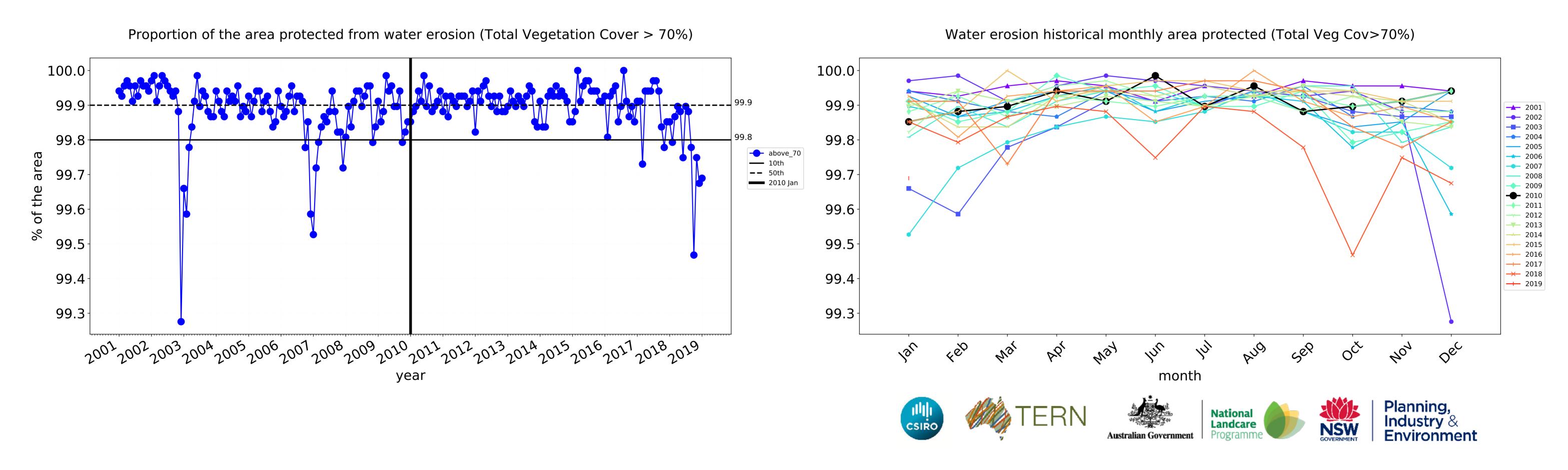


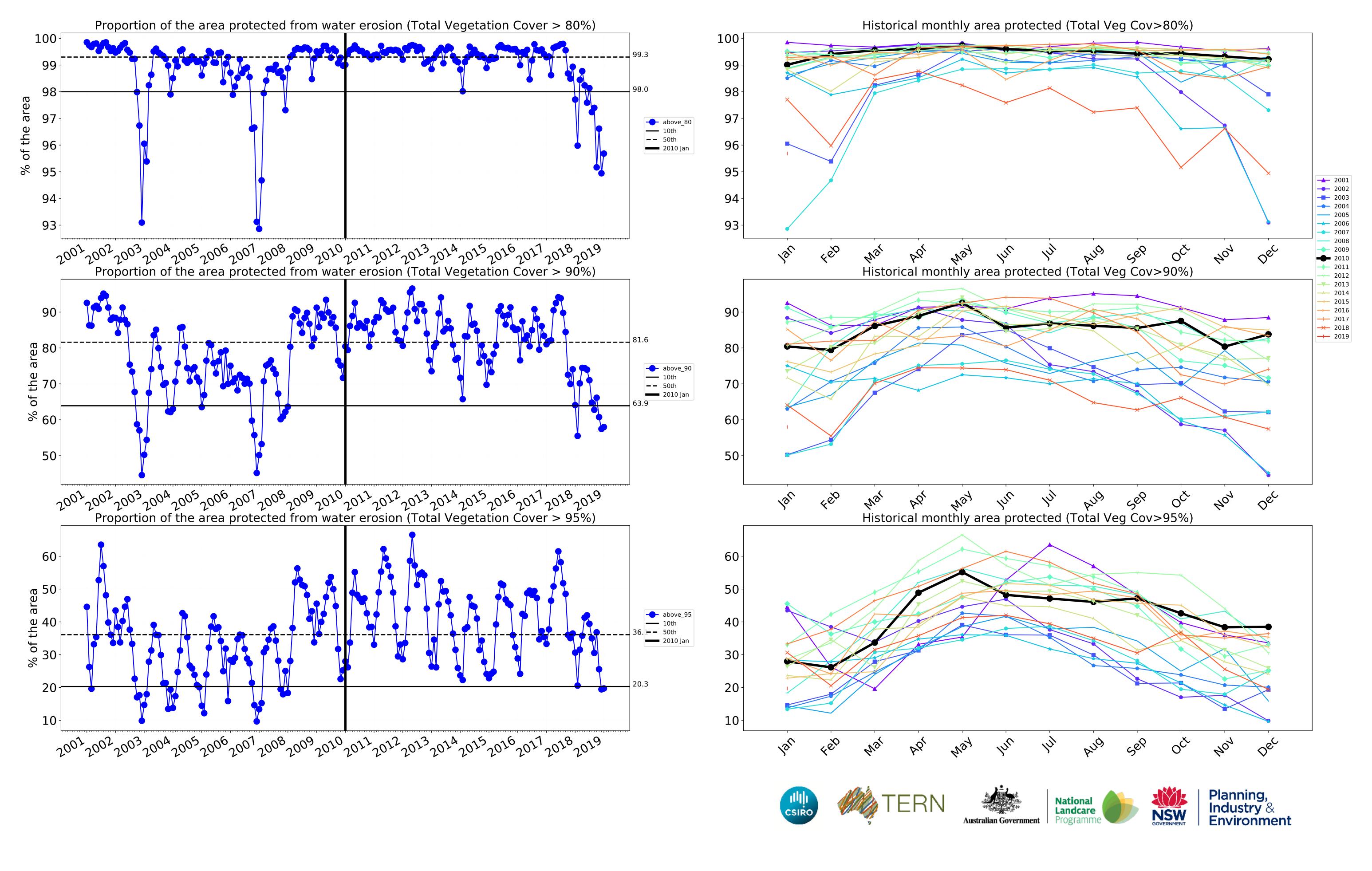






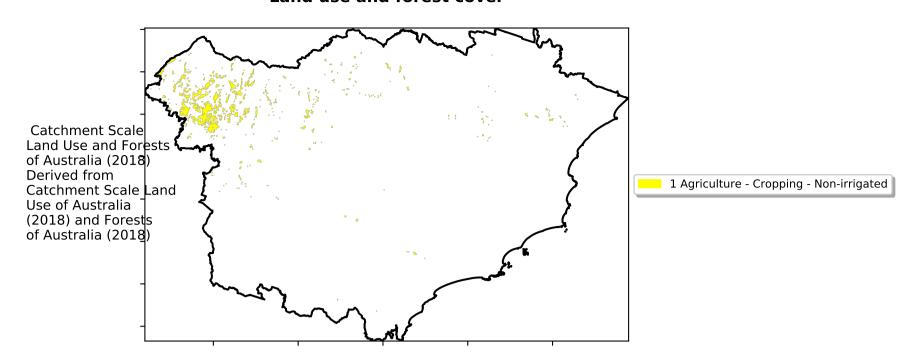




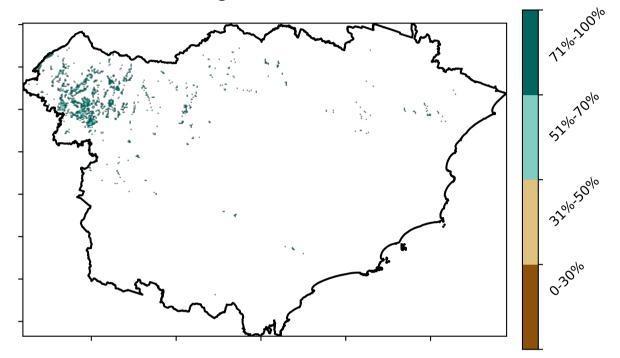


#### **Cropping**

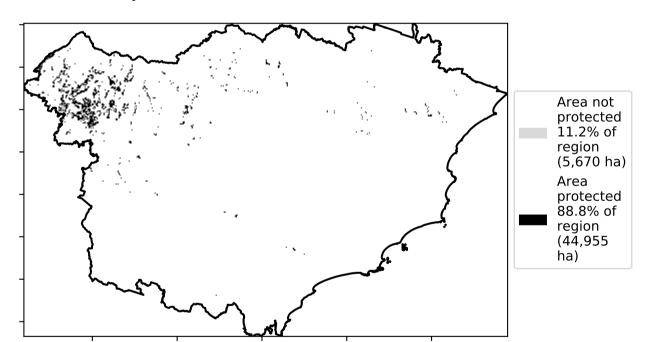
#### Land use and forest cover



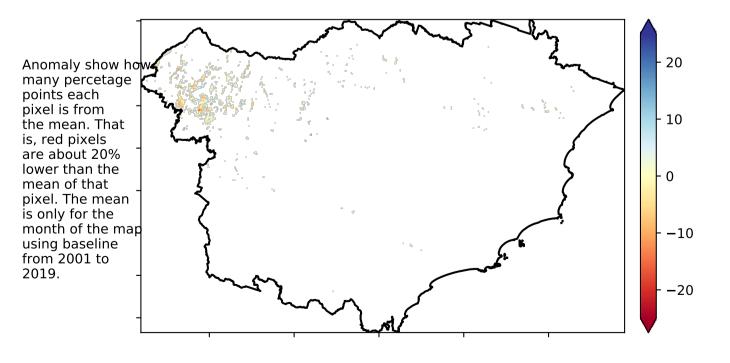
#### **Total Vegetation Cover [%]**



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

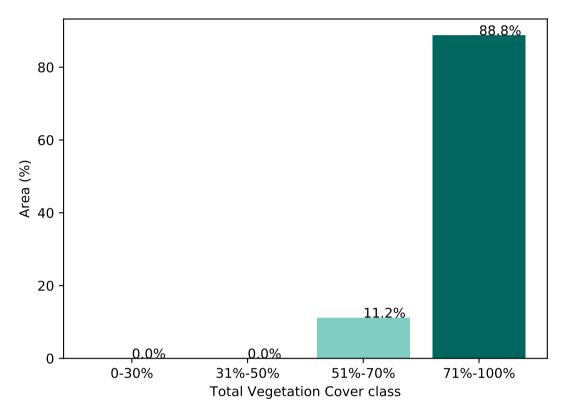


#### Total Vegetation Cover Anomaly [%]

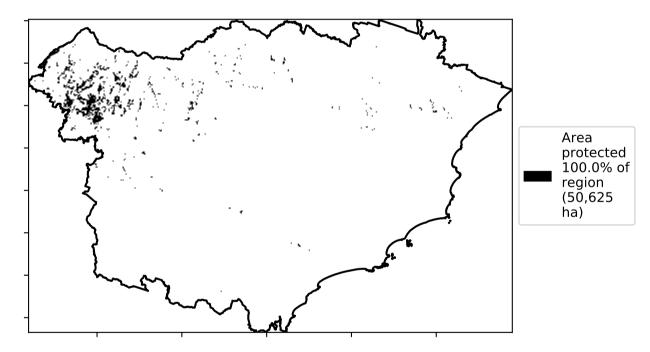


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

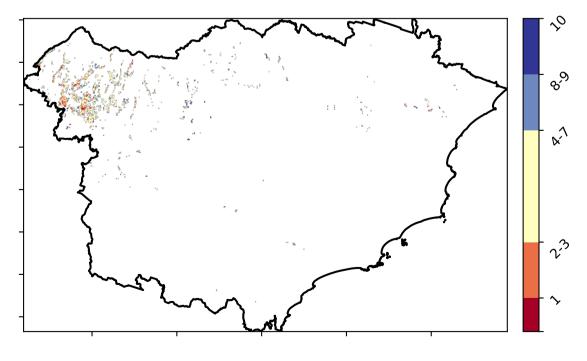
#### **Proportion of vegetation cover class in area**



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



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







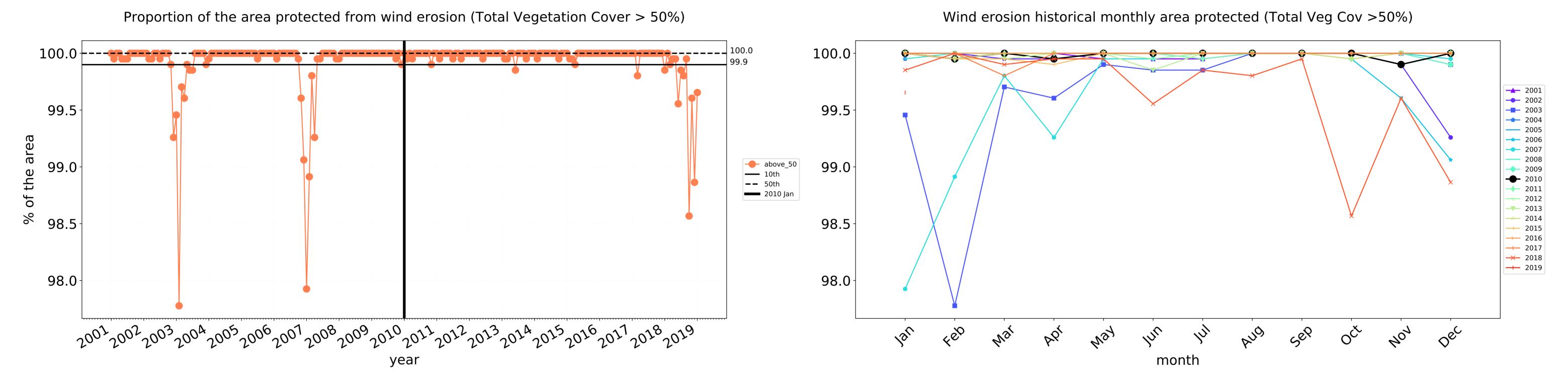


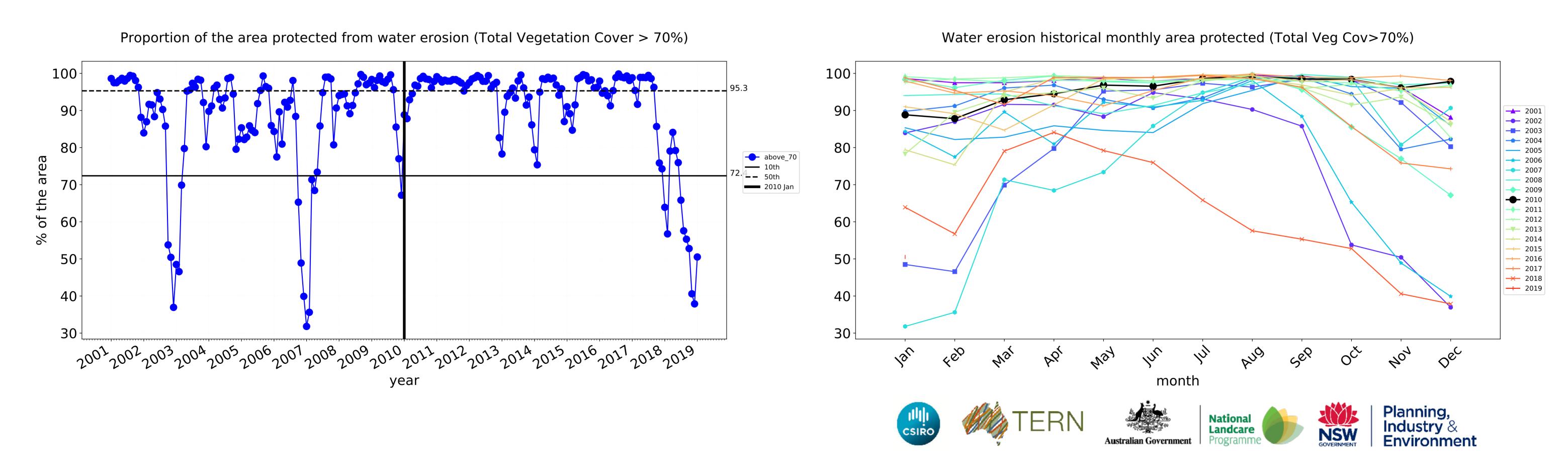


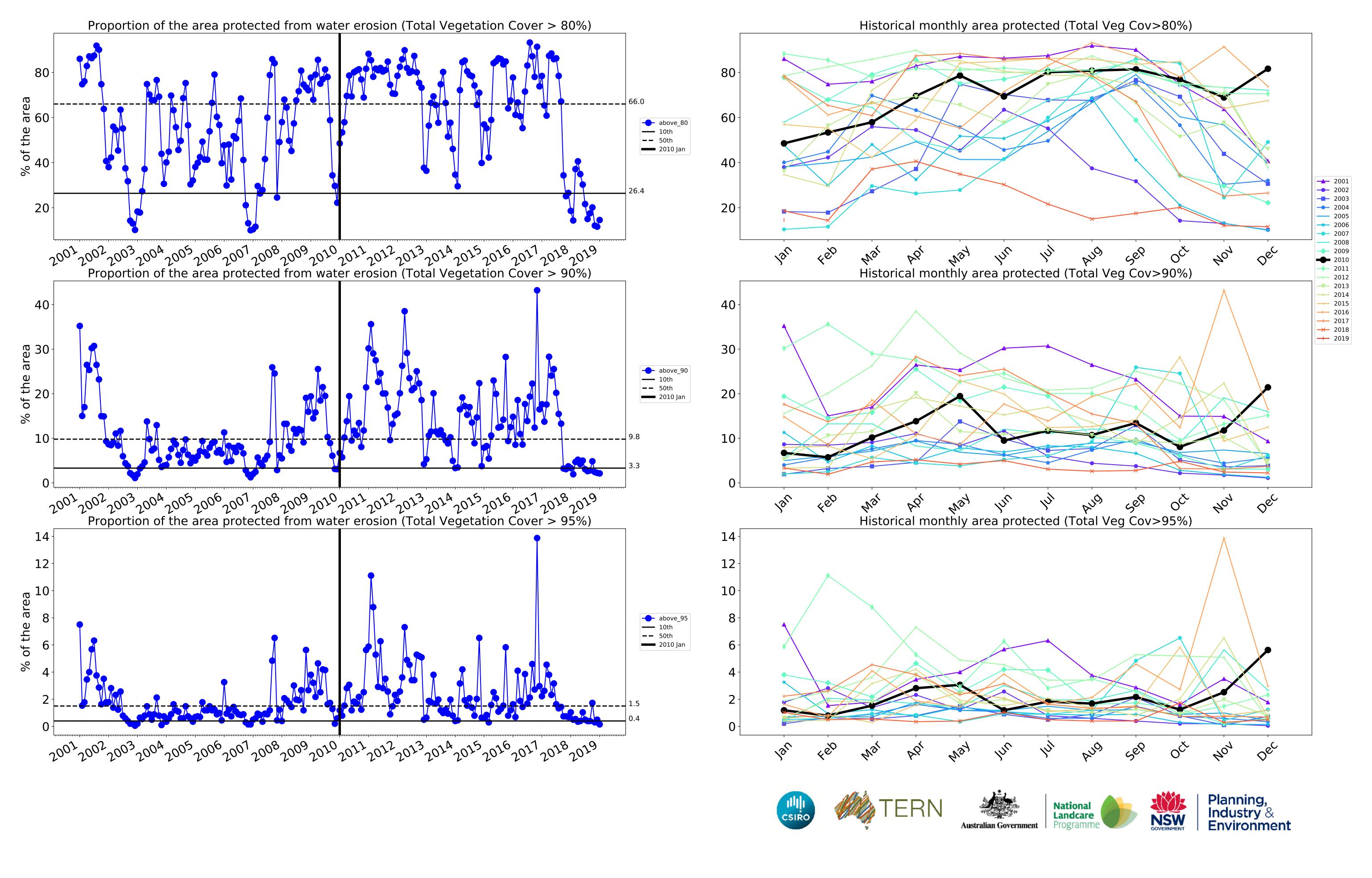




#### **Cropping timeseries**





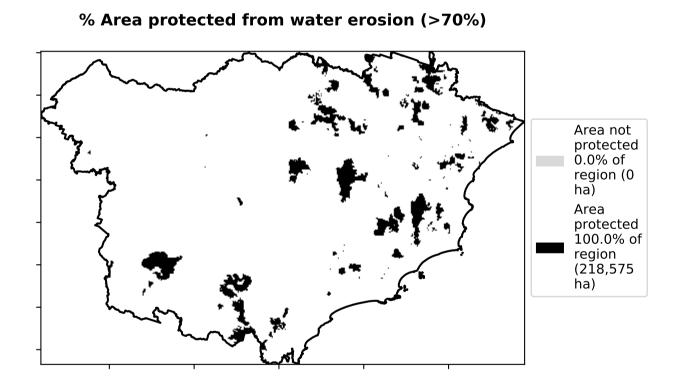


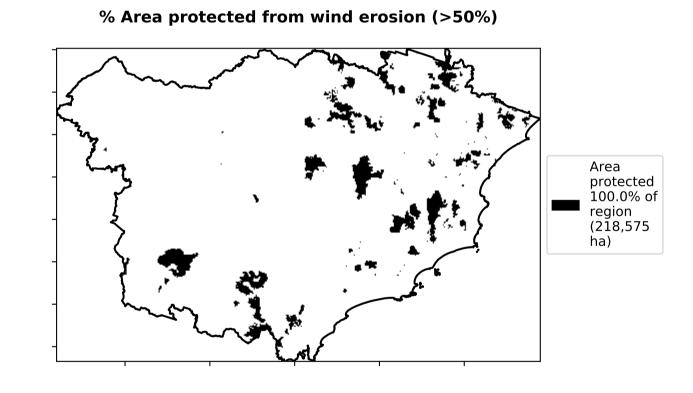
#### **Production native forests and plantation forests**

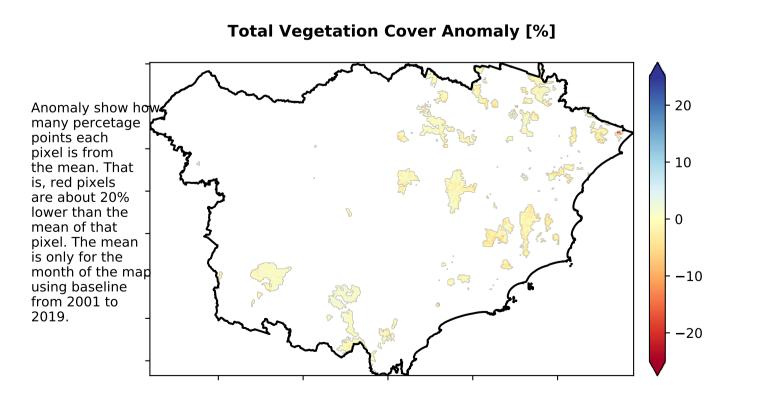
### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) 1 Production native forests and plantation forests of Australia (2018)

## Total Vegetation Cover [%]

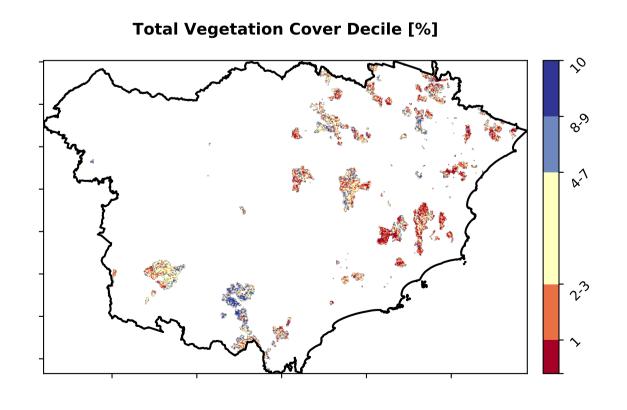
# Proportion of vegetation cover class in area 100 - 100.0% 80 - 100.0% 80 - 100.0% 90 - 100.0% 100 - 100.0% 1







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







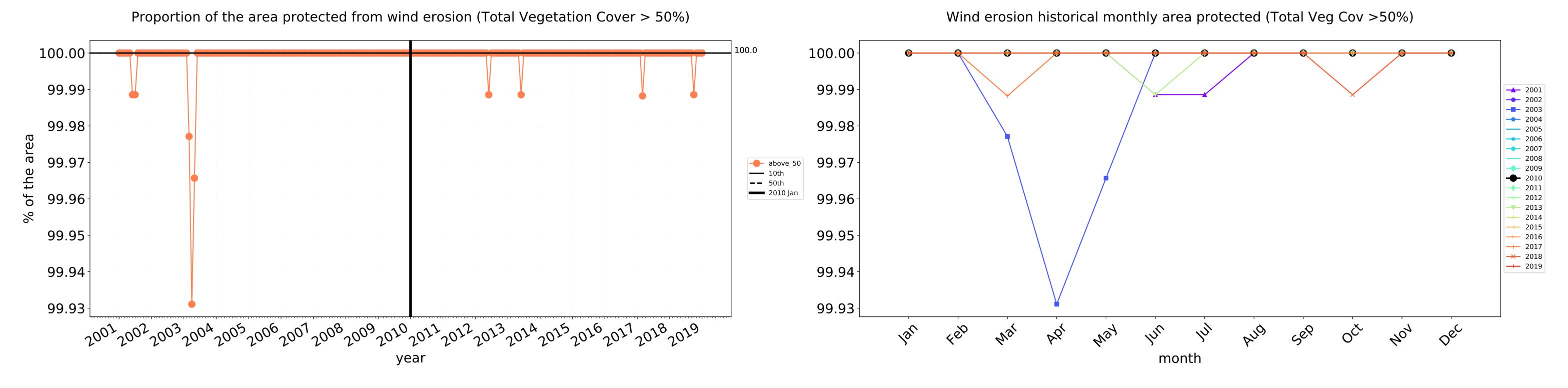


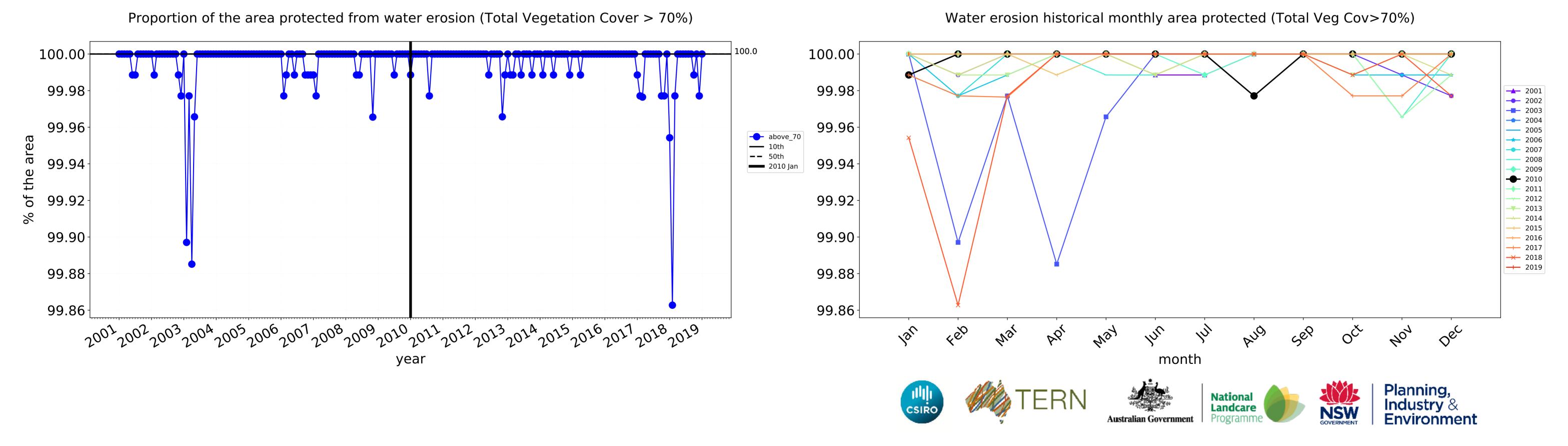


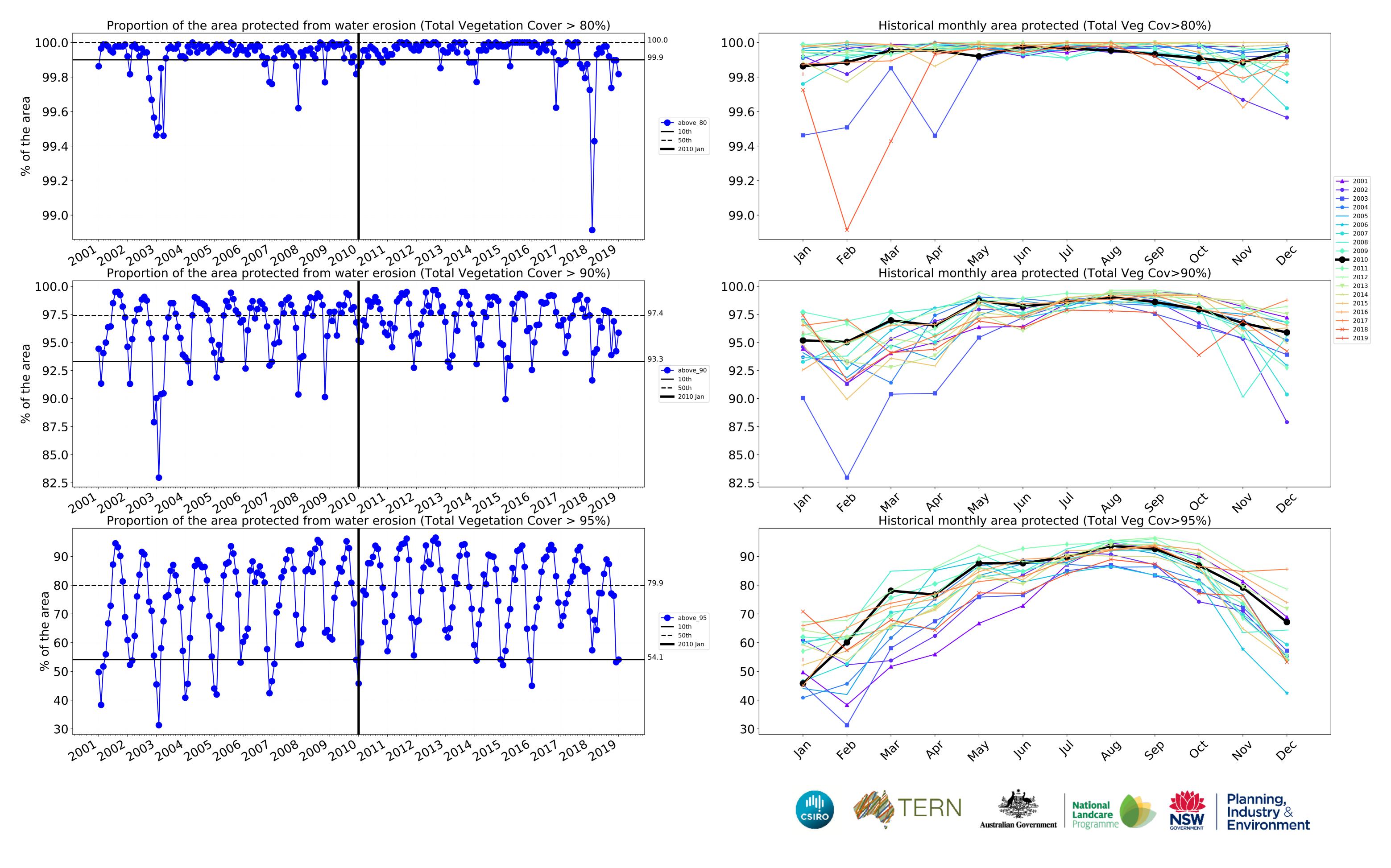




#### **Production native forests and plantation forests timeseries**







### Hunter (3,238,925 ha and no data 61,500 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	3,238,925	99.9% 3,235,803	99.6% 3,227,064	98.4% 3,187,886	95.5% 3,091,875	72.2% 2,338,627	25.9% 838,322
Conservation and natural environments	1,241,450	99.9% 1,240,200	99.8% 1,239,350	99.7% 1,237,375	99.3% 1,232,750	88.1% 1,094,025	36.9% 458,425
Conservation and natural environments non forest	30,200	96.0% 29,000	94.0% 28,400	90.6% 27,375	85.7% 25,875	62.7% 18,950	21.4% 6,450
Conservation and natural environments Woodland forest	139,000	100.0% 138,975	99.9% 138,925	99.9% 138,850	99.6% 138,500	85.3% 118,500	32.2% 44,825
Conservation and natural environments Forest (non woodland)	1,072,250	100.0% 1,072,225	100.0% 1,072,025	99.9% 1,071,150	99.6% 1,068,375	89.2% 956,575	38.0% 407,150
Agriculture	1,580,850	100.0% 1,580,800	100.0% 1,580,500	99.4% 1,570,625	95.9% 1,515,275	62.1% 982,025	17.0% 268,600
Grazing	1,502,850	100.0% 1,502,800	100.0% 1,502,500	99.7% 1,498,375	97.6% 1,467,500	64.8% 973,425	17.8% 267,400
Grazing non forest	1,213,000	100.0% 1,212,950	100.0% 1,212,675	99.7% 1,208,875	97.3% 1,180,400	62.5% 757,625	16.7% 202,125
Grazing Woodland forest	120,600	100.0% 120,600	100.0% 120,600	99.9% 120,500	99.1% 119,525	66.0% 79,650	14.9% 17,925
Grazing - Forest (non woodland)	169,250	100.0% 169,250	100.0% 169,225	99.9% 169,000	99.0% 167,575	80.4% 136,150	28.0% 47,350
Cropping	50,625	100.0% 50,625	100.0% 50,625	88.8% 44,975	48.5% 24,575	6.7% 3,400	1.2% 600
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,550	99.9% 218,275	95.2% 208,050	45.8% 100,100











