### 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: October 2019** 

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







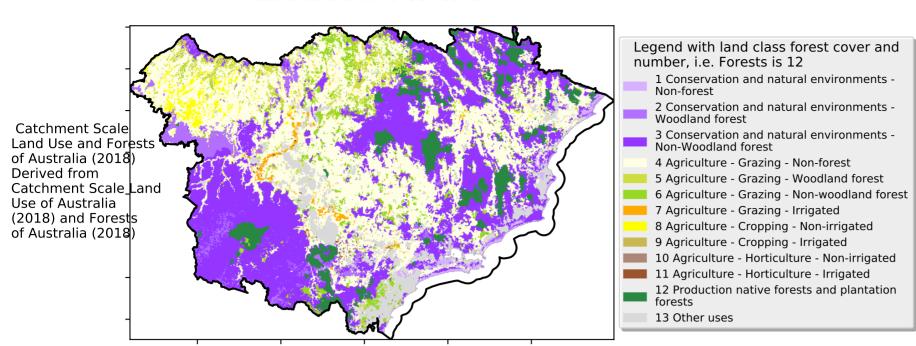




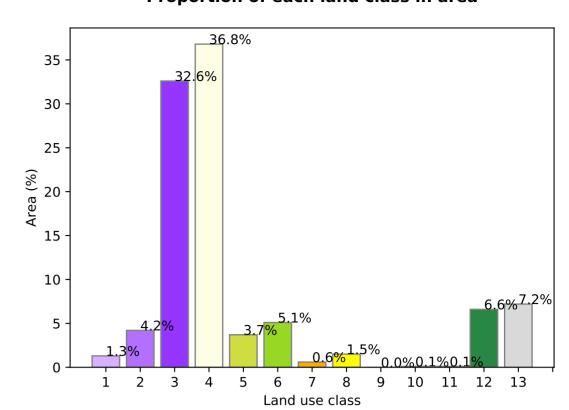


#### **Vegetation Cover Oct 2019**

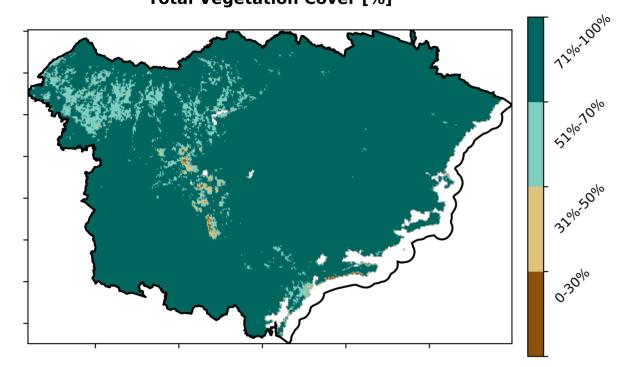
#### Land use and forest cover



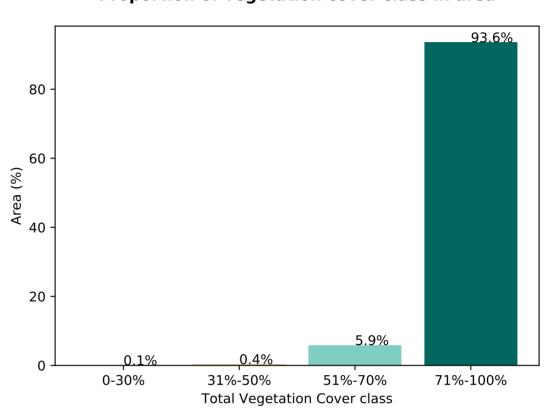
#### Proportion of each land class in area



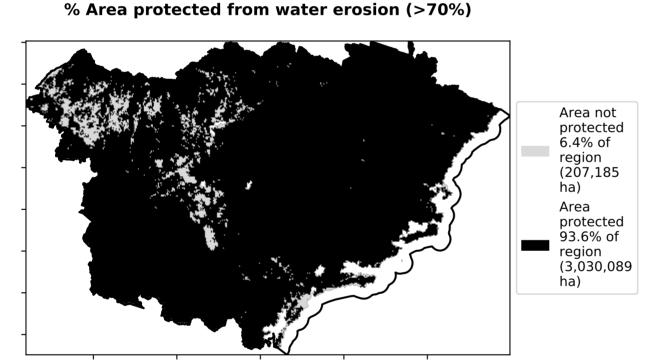
#### Total Vegetation Cover [%]



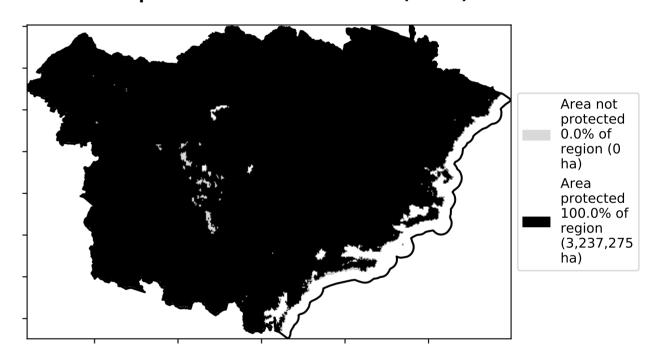
Proportion of vegetation cover class in area



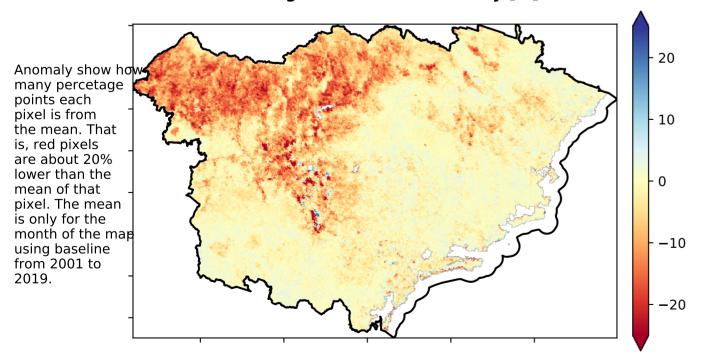
#### 0/ Aven protected from water exercise (> 700/)

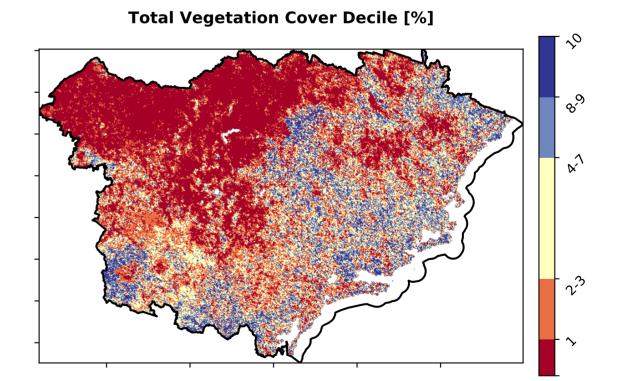


% Area protected from wind erosion (>50%)



#### Total Vegetation Cover Anomaly [%]







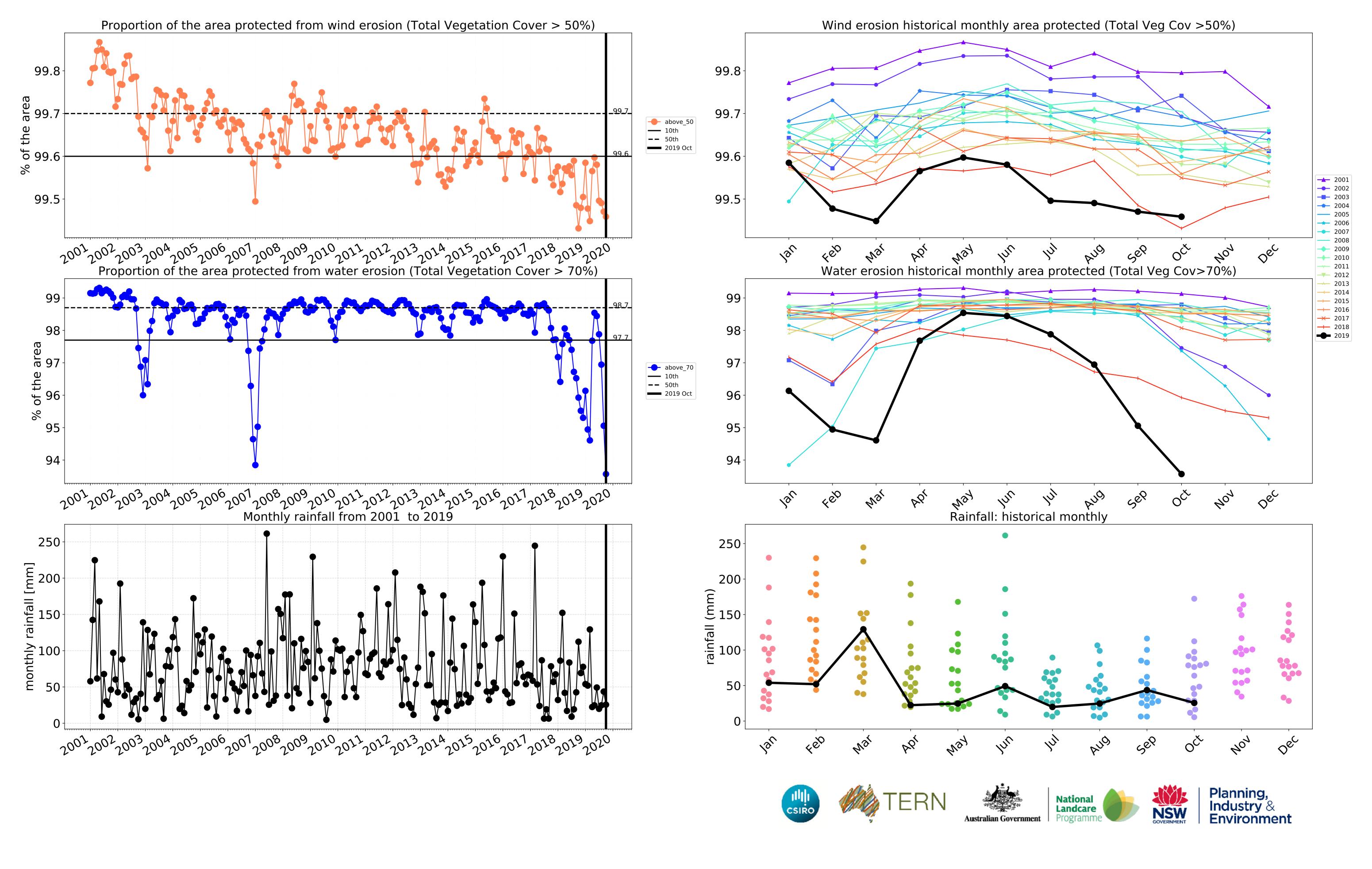


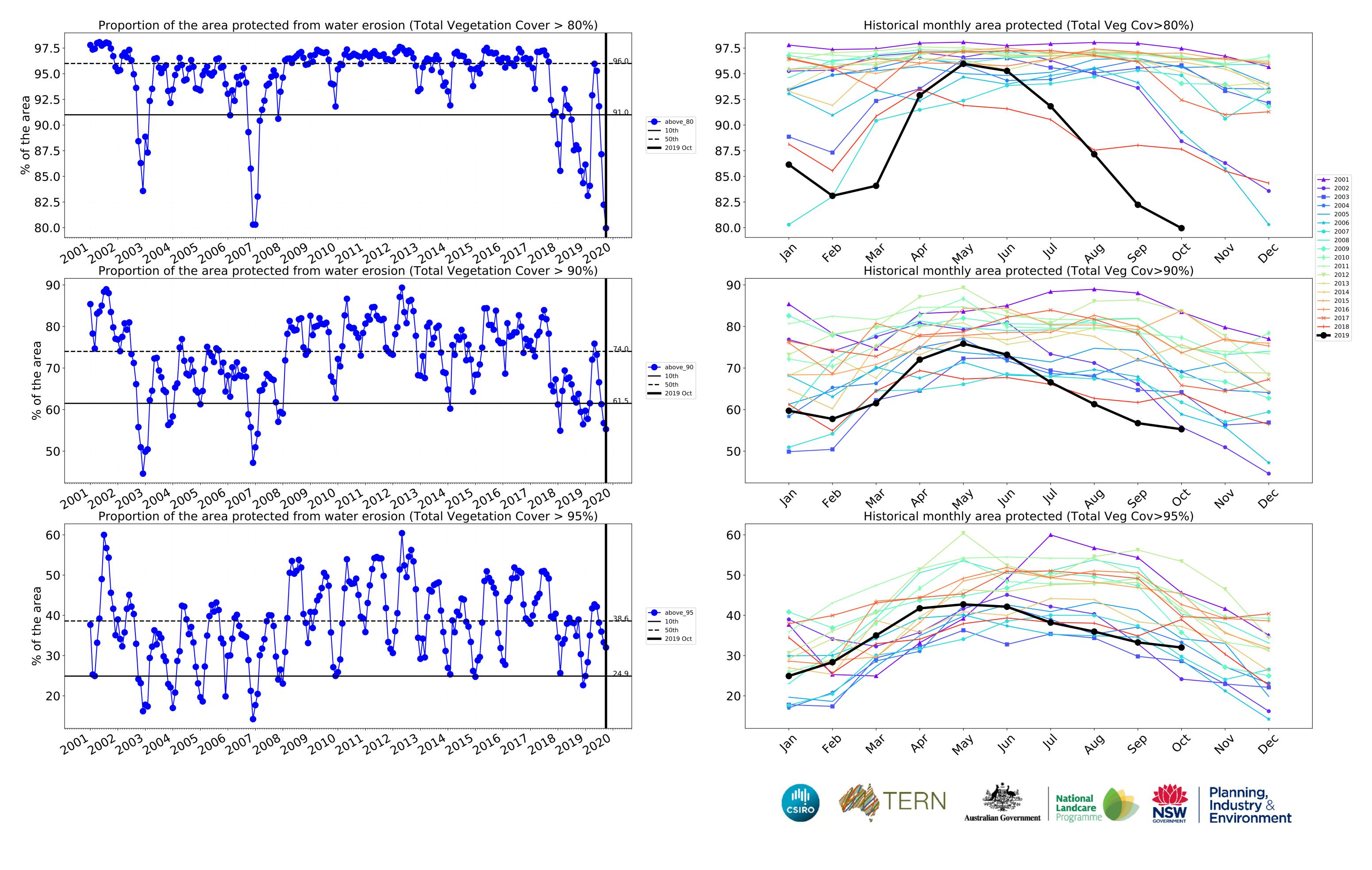






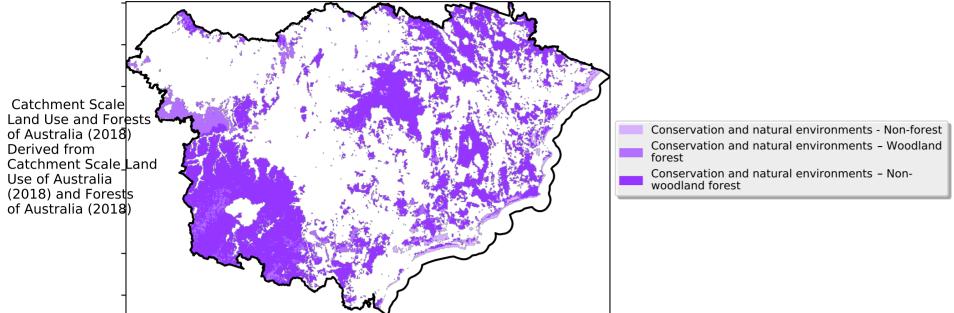




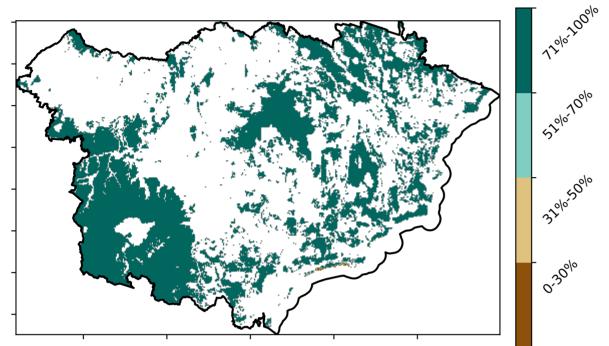


#### **Conservation and natural environments**

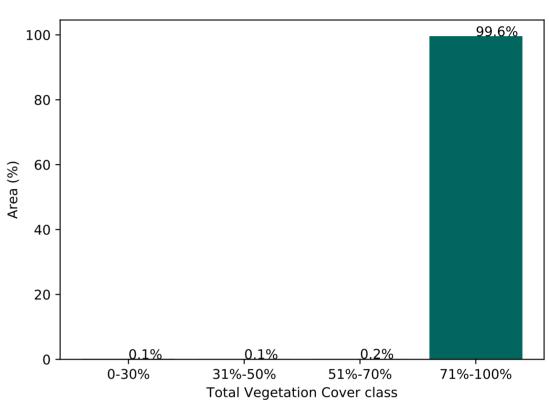
### Land use and forest cover



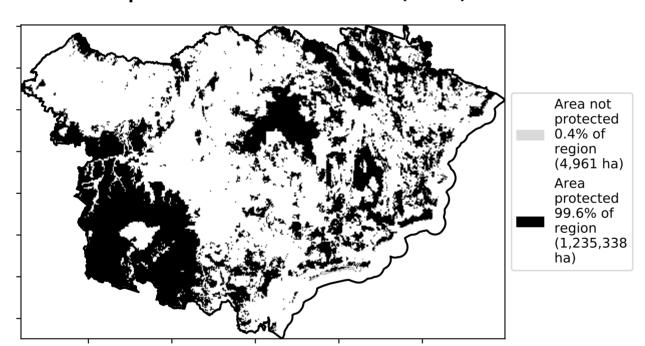
#### Total Vegetation Cover [%]



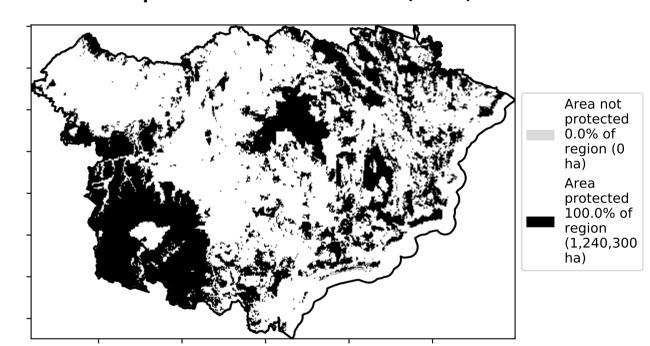
#### Proportion of vegetation cover class in area



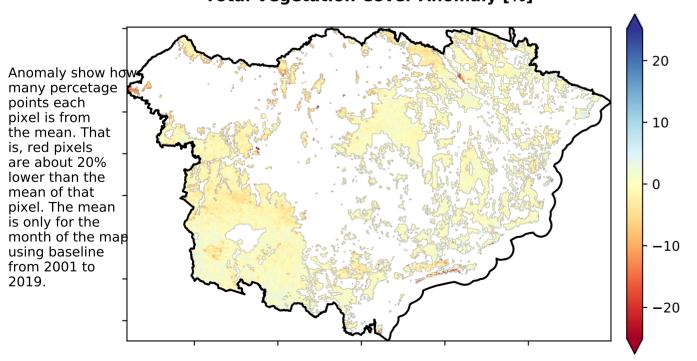
#### % Area protected from water erosion (>70%)

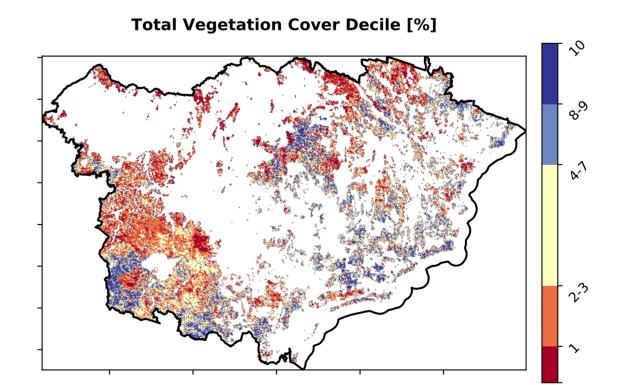


#### % Area protected from wind erosion (>50%)



#### Total Vegetation Cover Anomaly [%]









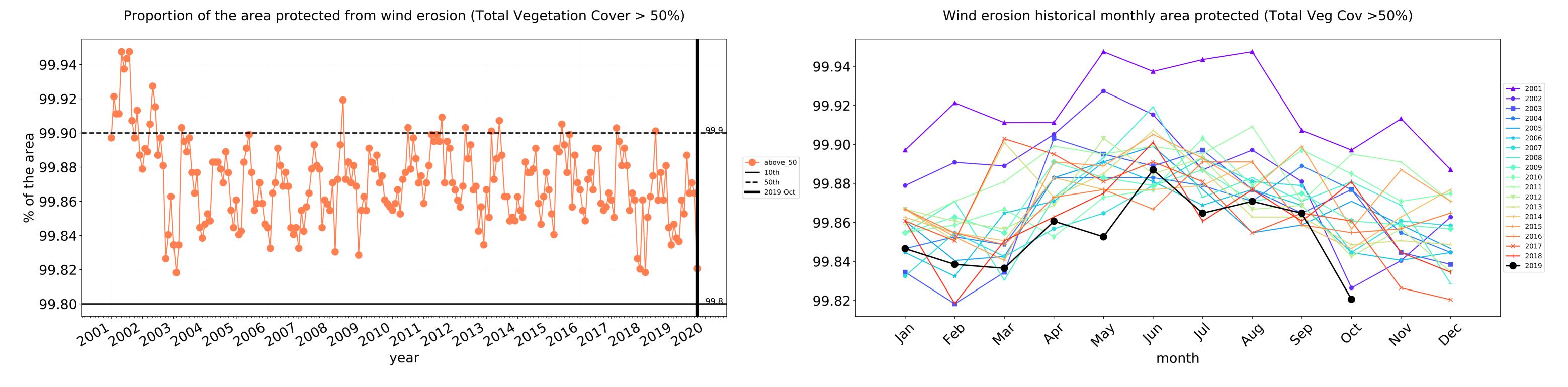


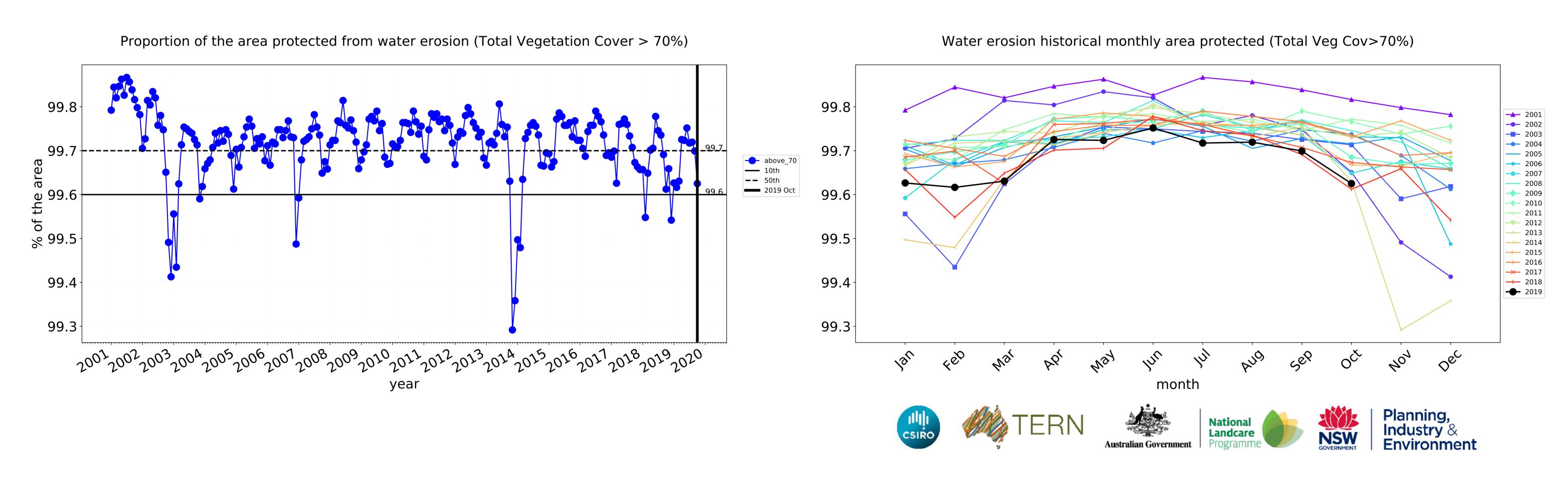


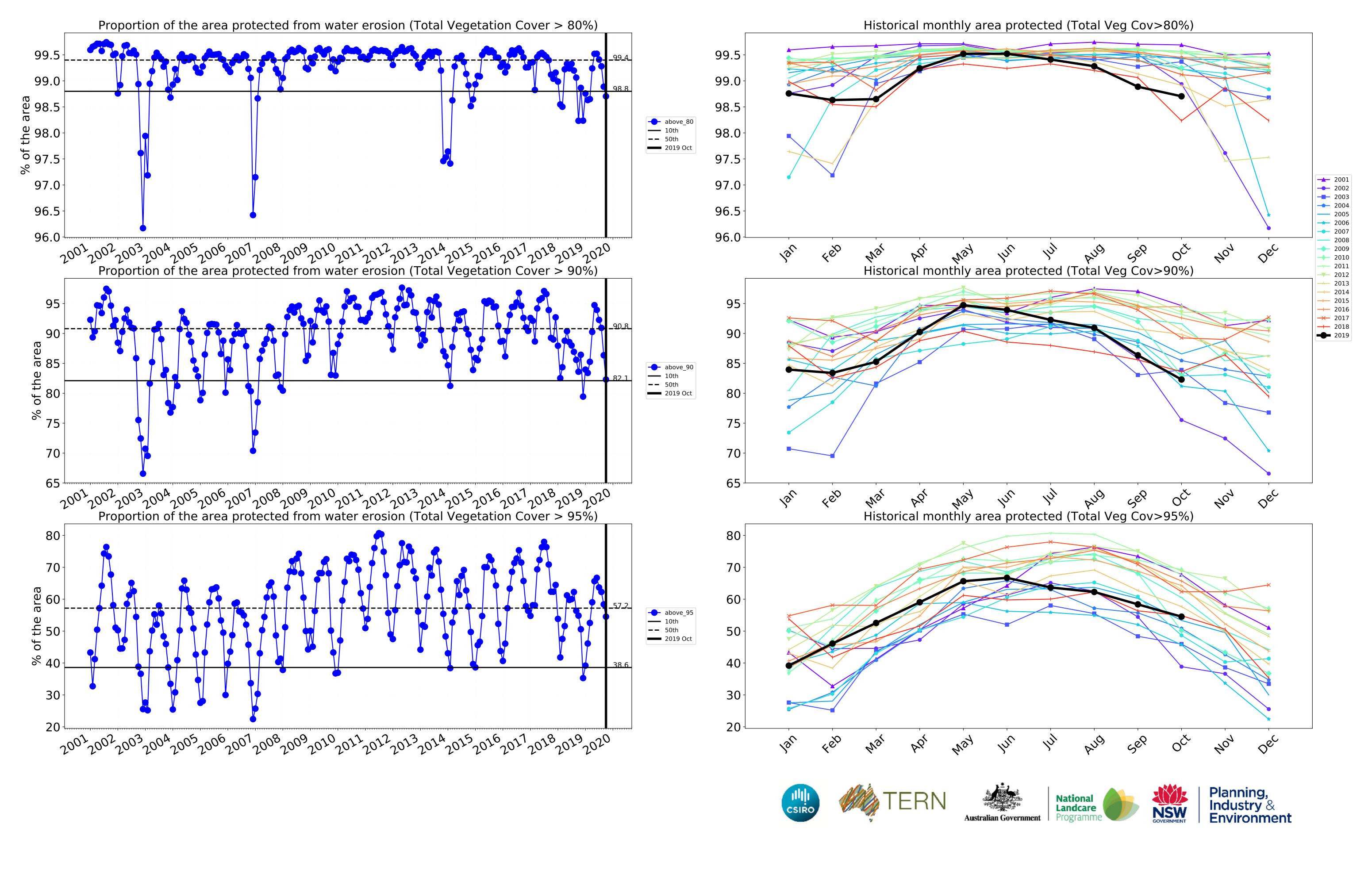




#### **Conservation and natural environments timeseries**



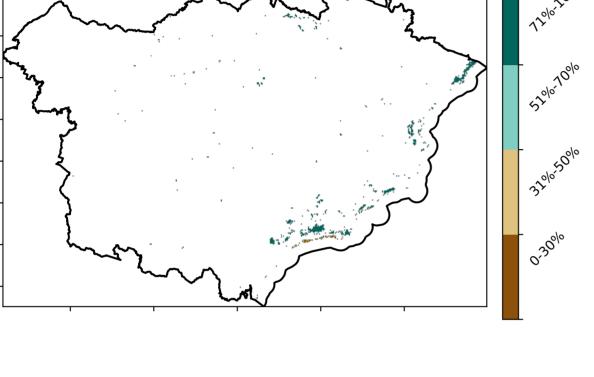


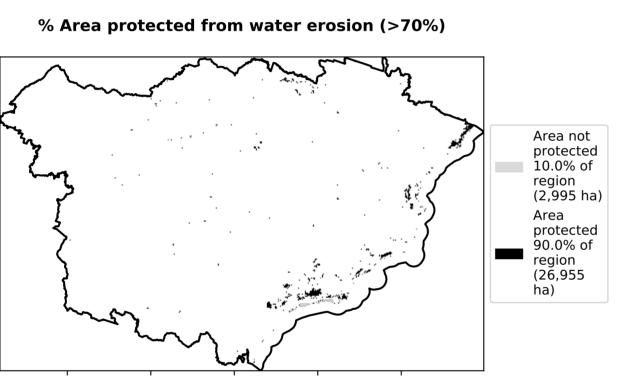


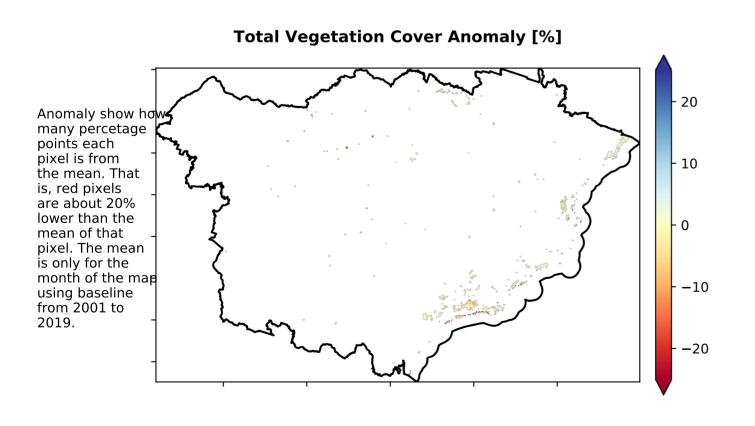
#### **Conservation and natural environments non forest**

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

# **Total Vegetation Cover [%]**

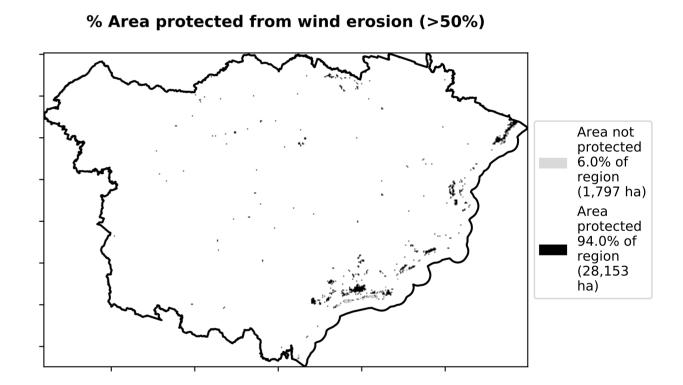


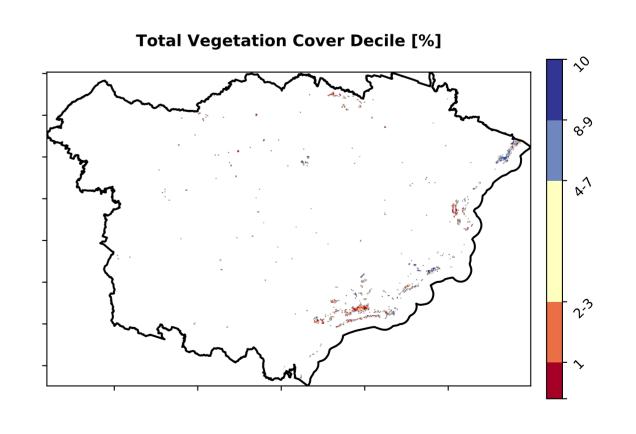




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area 90.0% 80 Area (%) 20 3.6% 2.3% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**









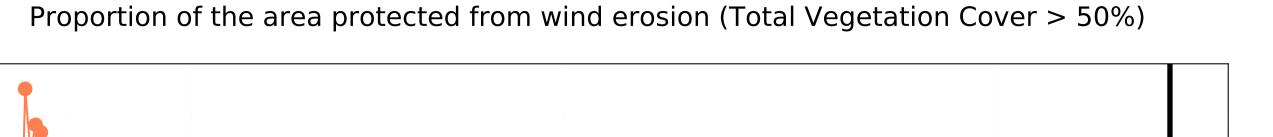


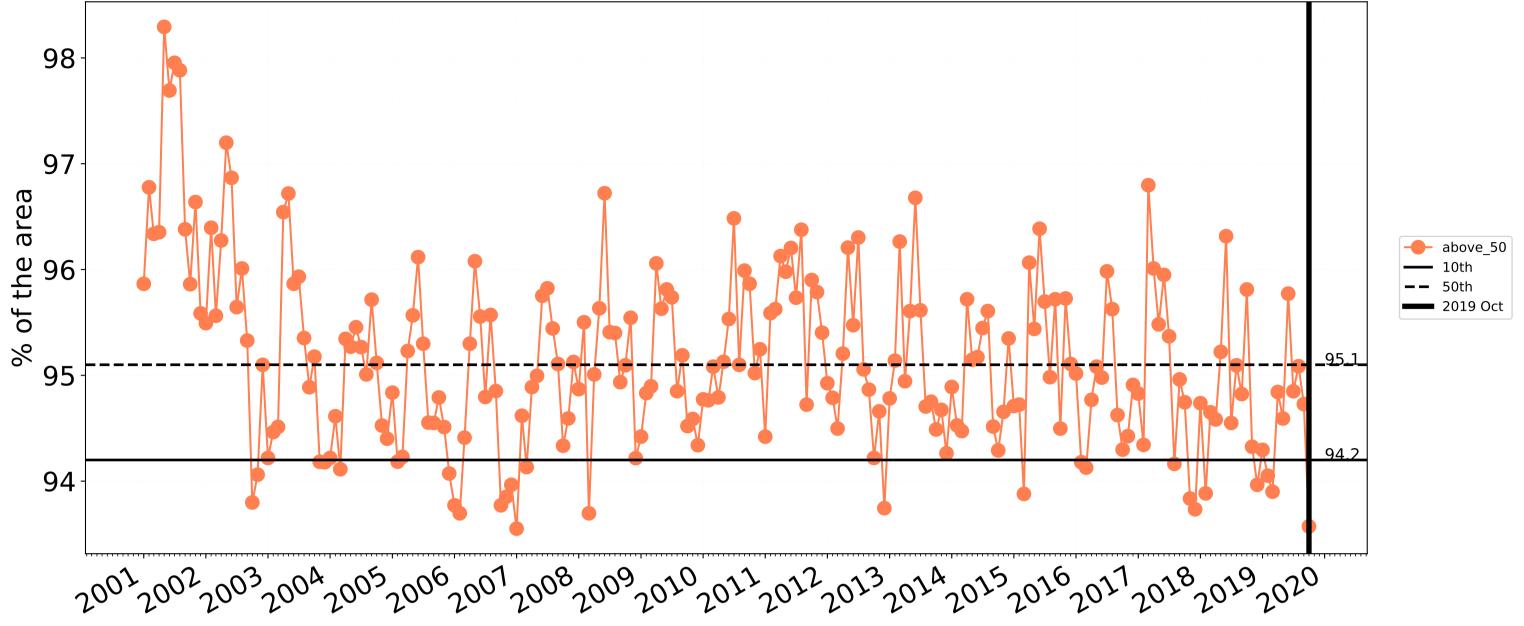




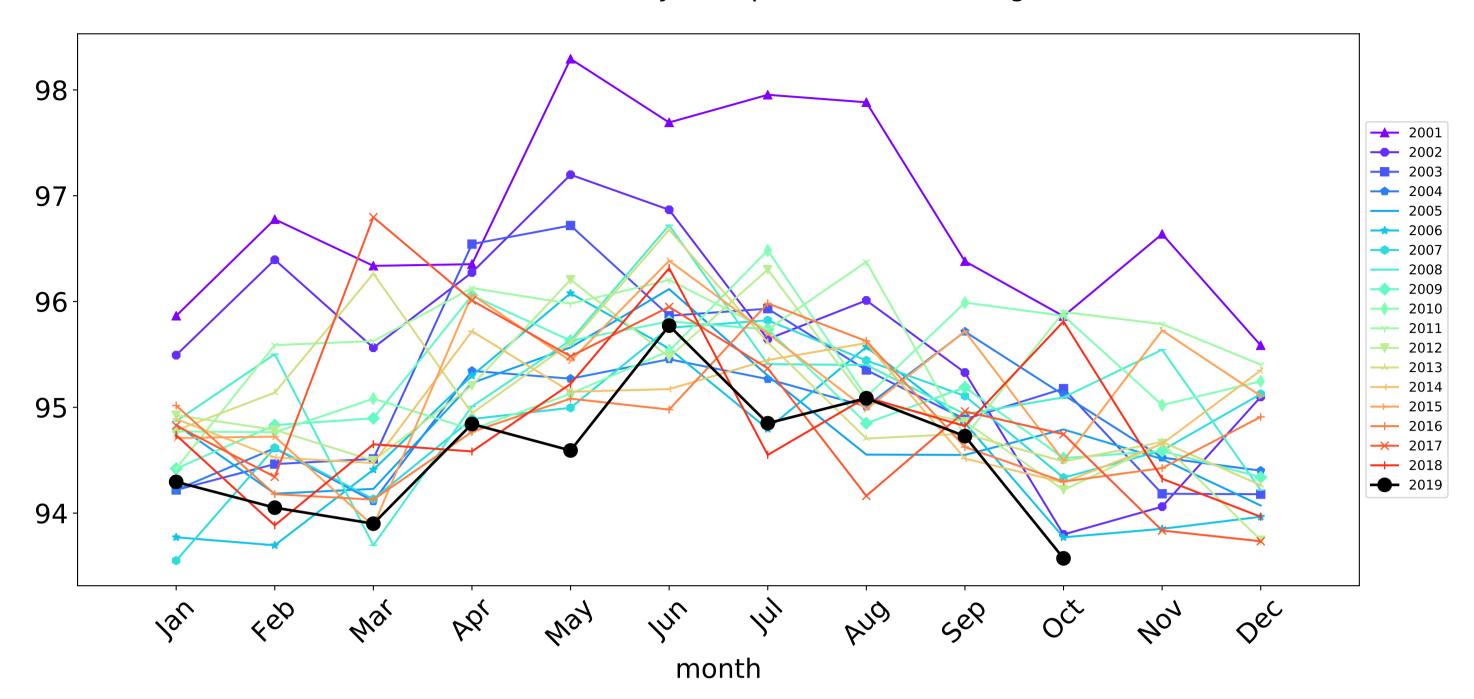


#### **Conservation and natural environments non forest timeseries**

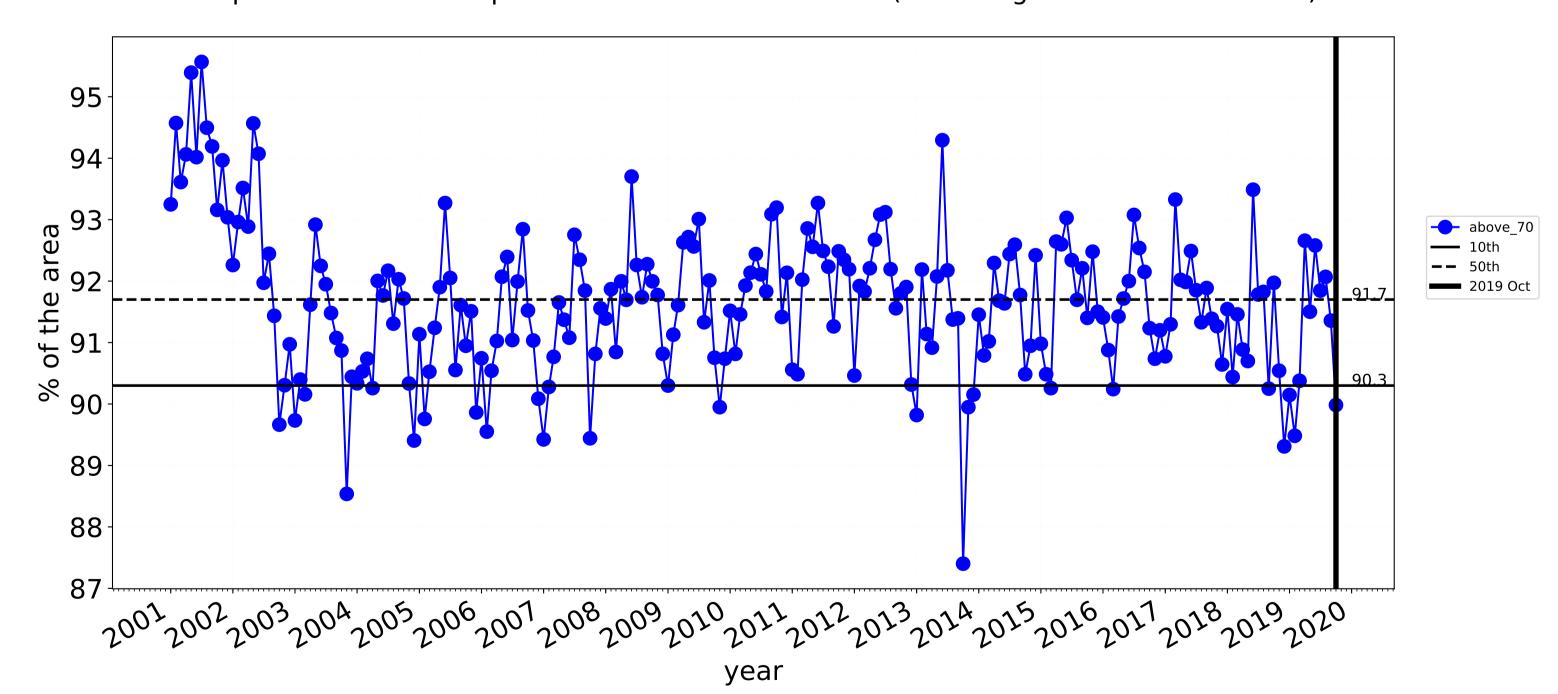




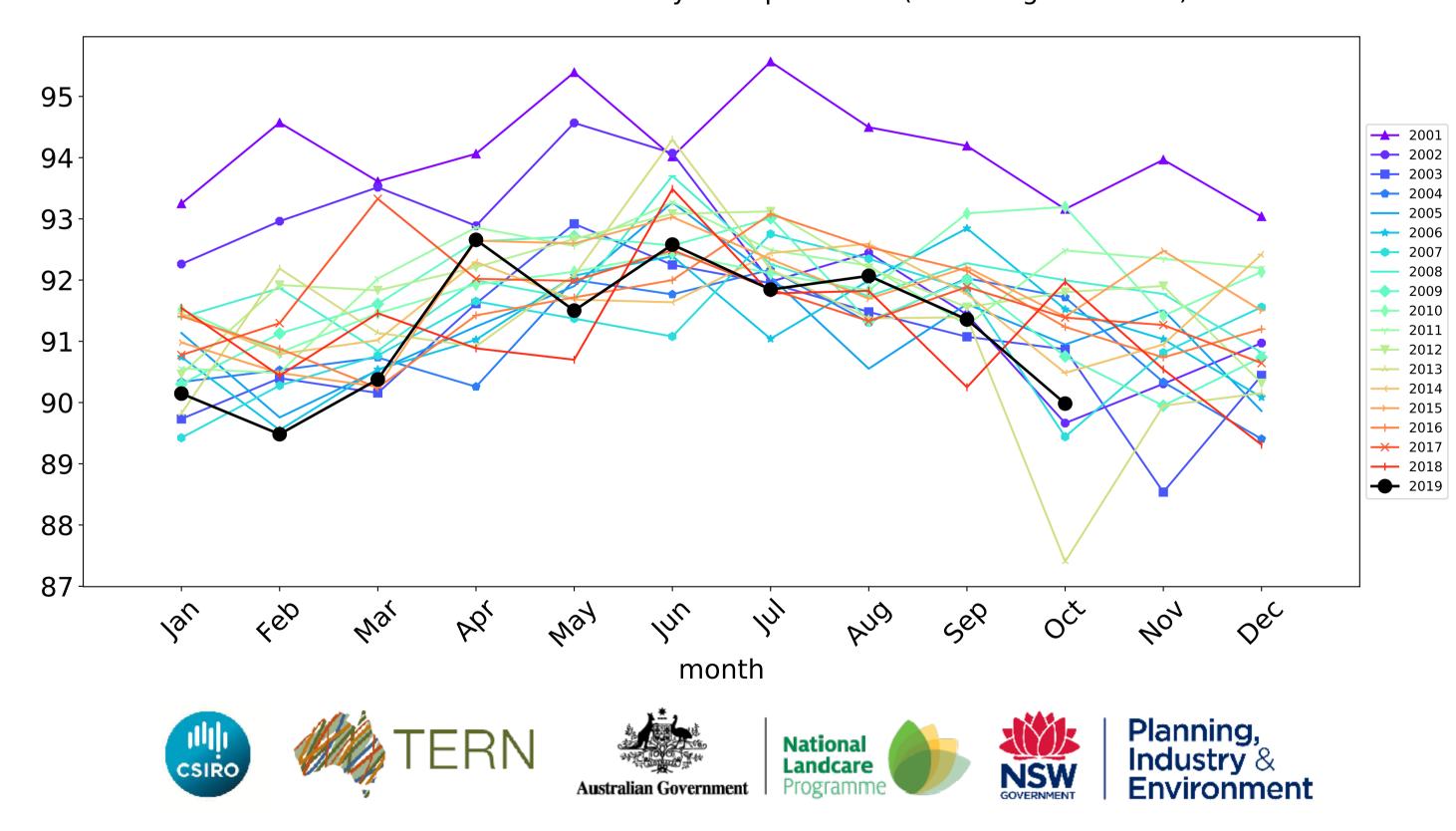
Wind erosion historical monthly area protected (Total Veg Cov >50%)

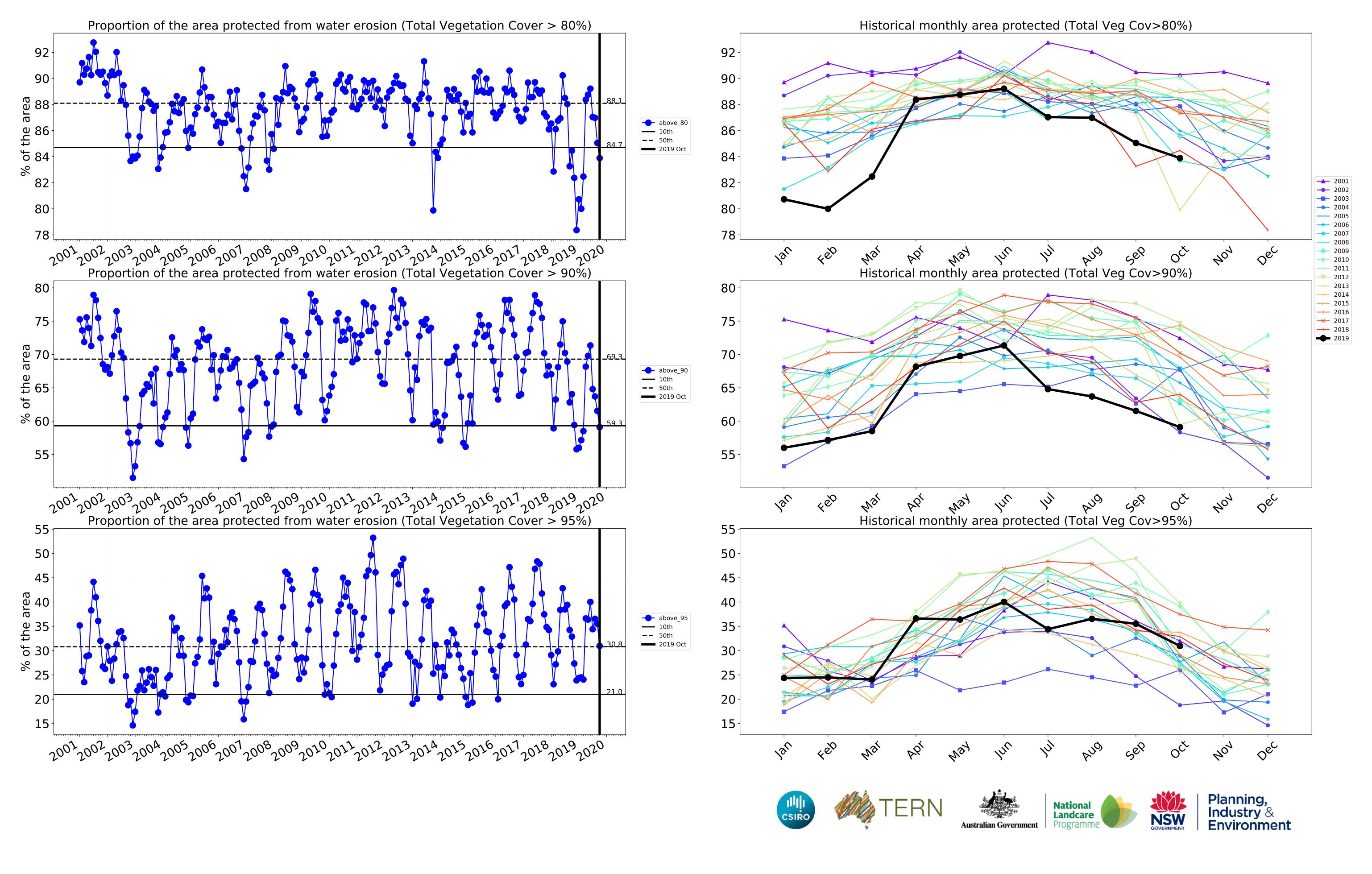


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

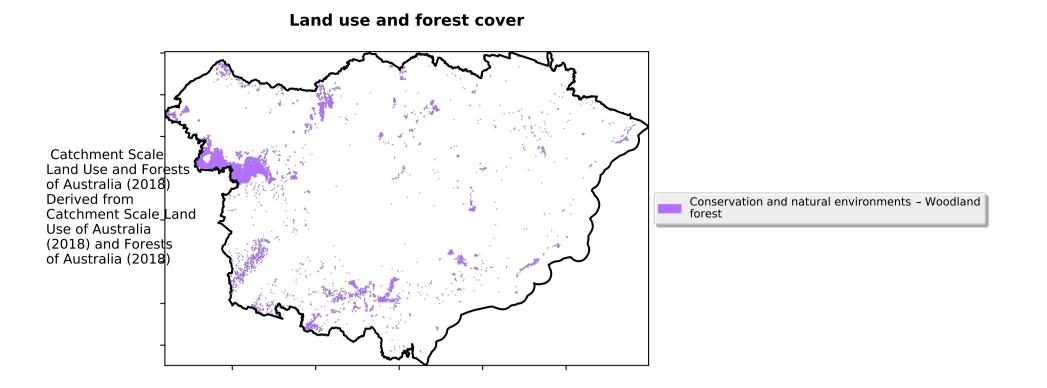


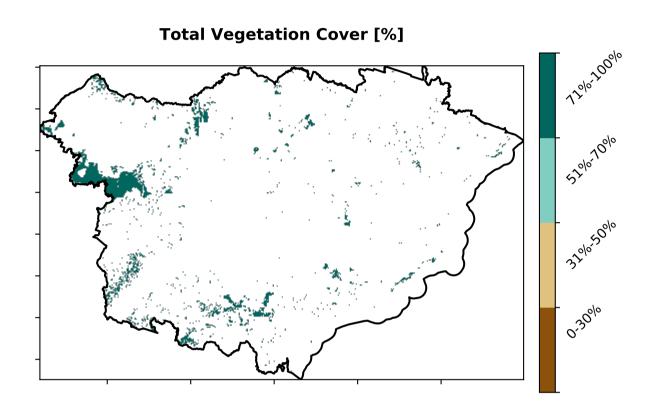
Water erosion historical monthly area protected (Total Veg Cov>70%)

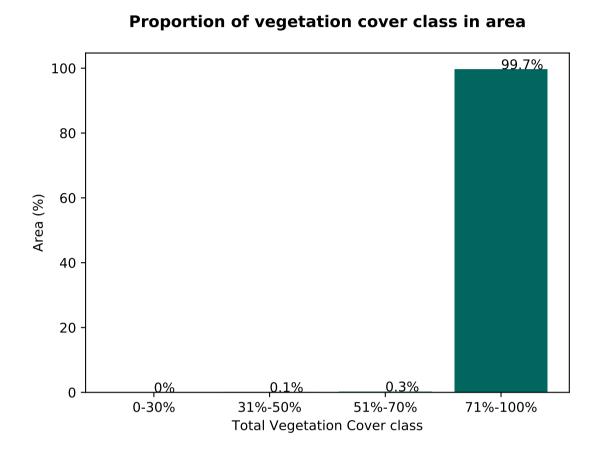


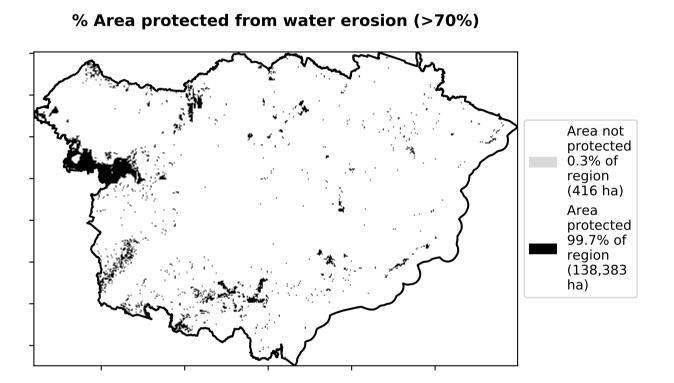


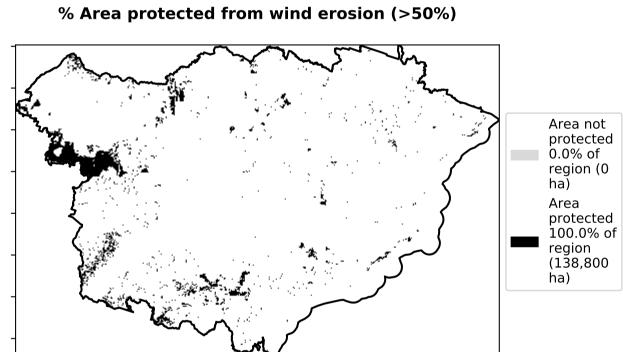
#### **Conservation and natural environments Woodland forest**

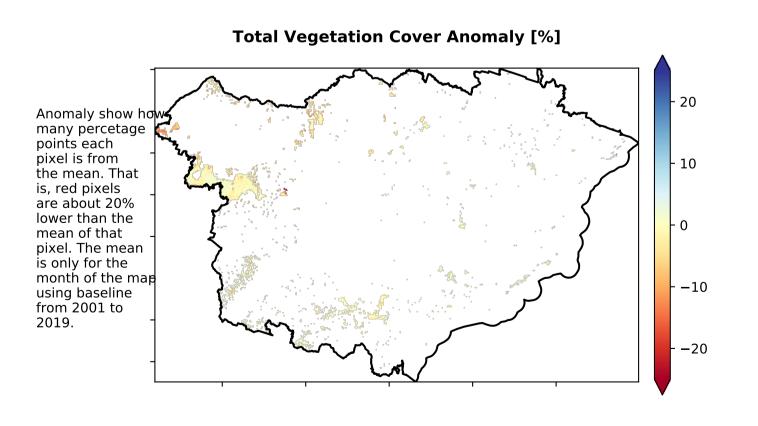


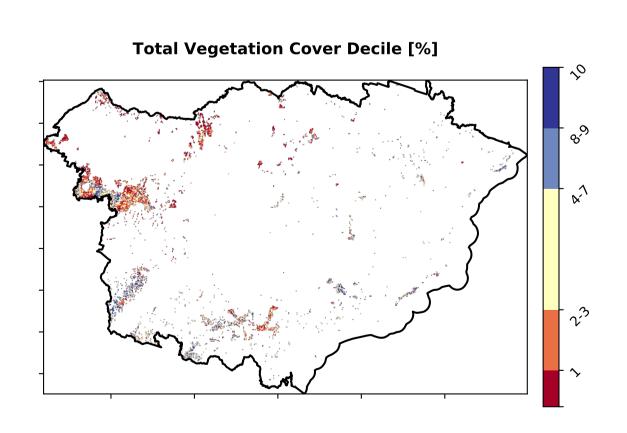














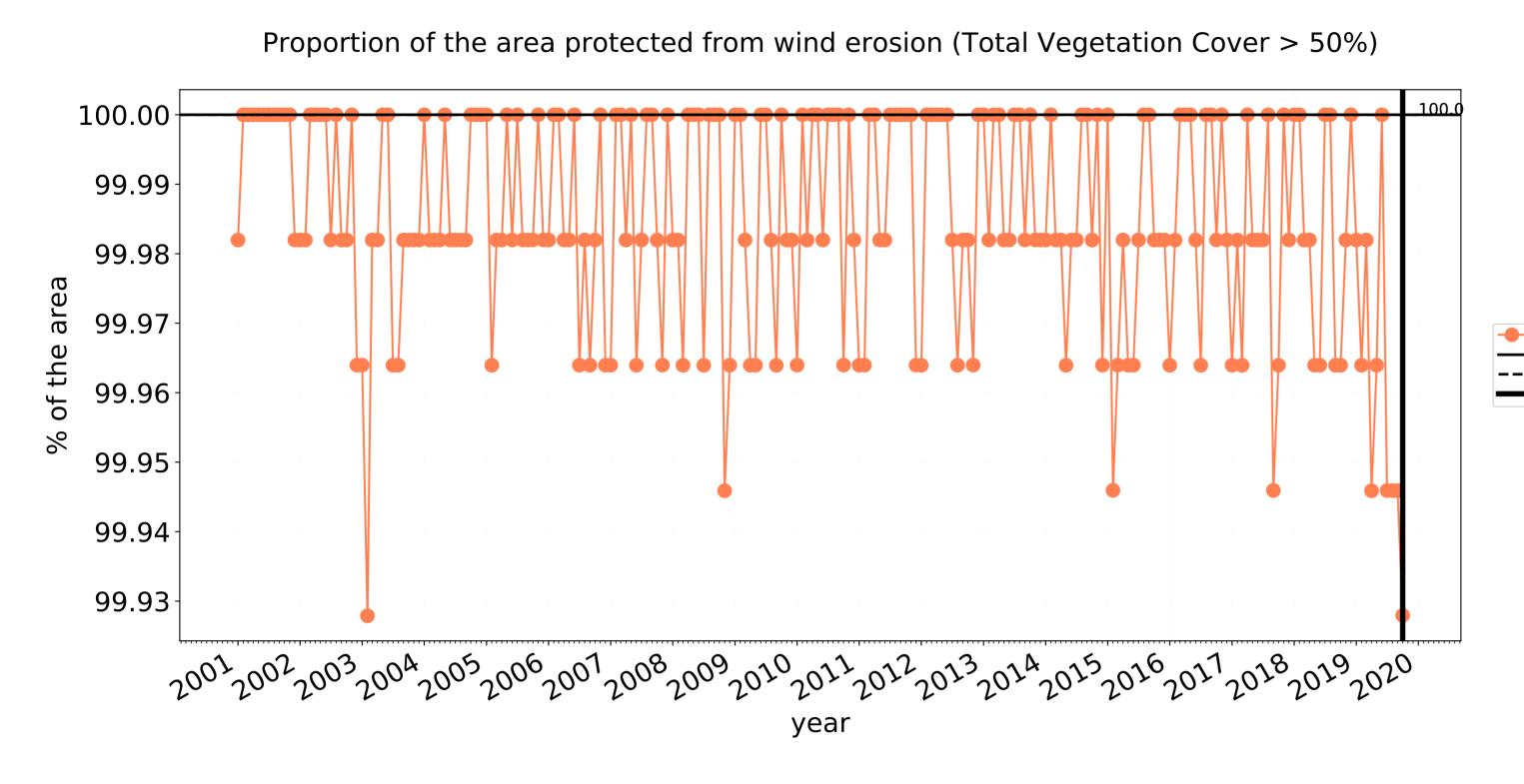










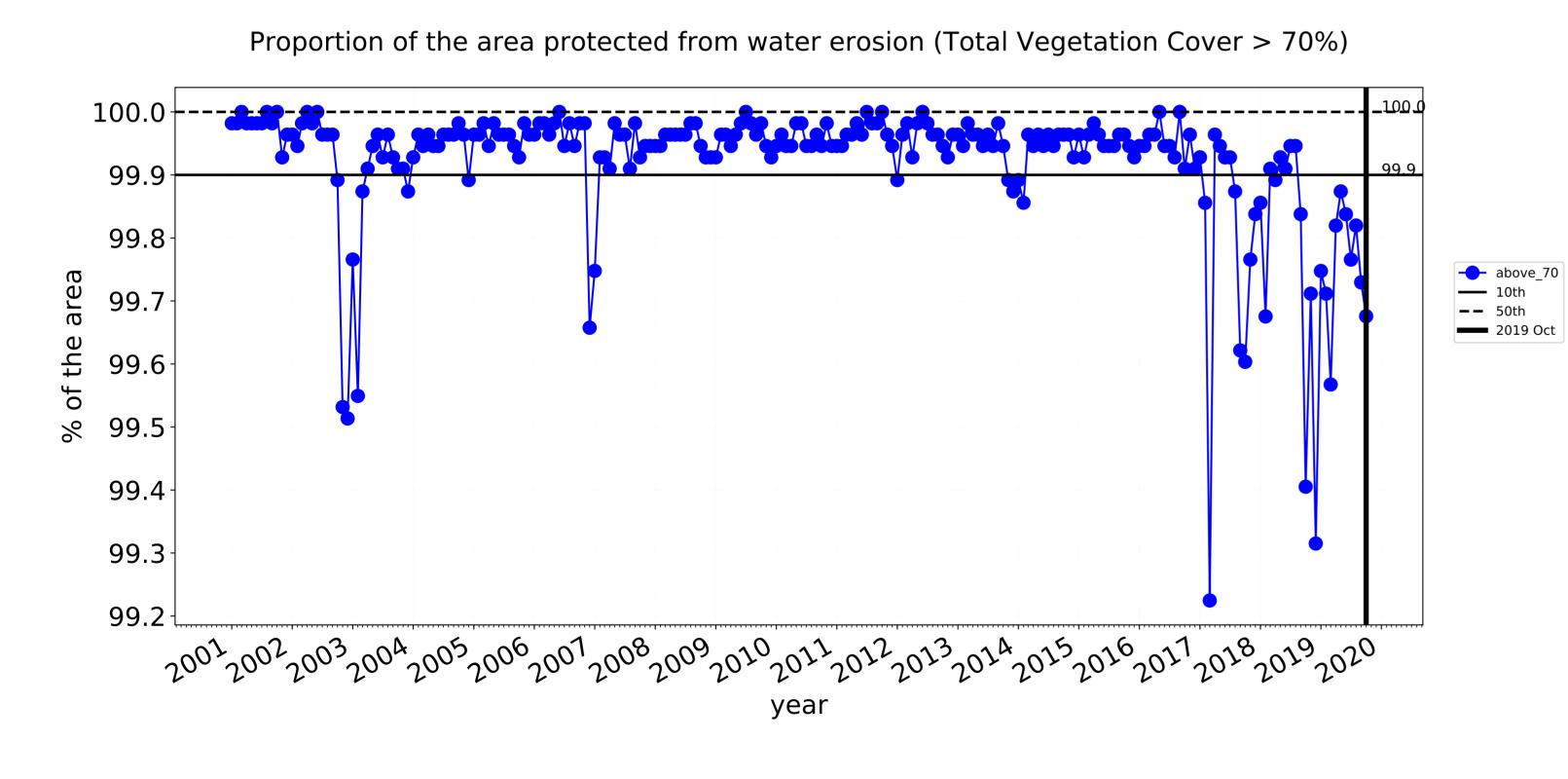


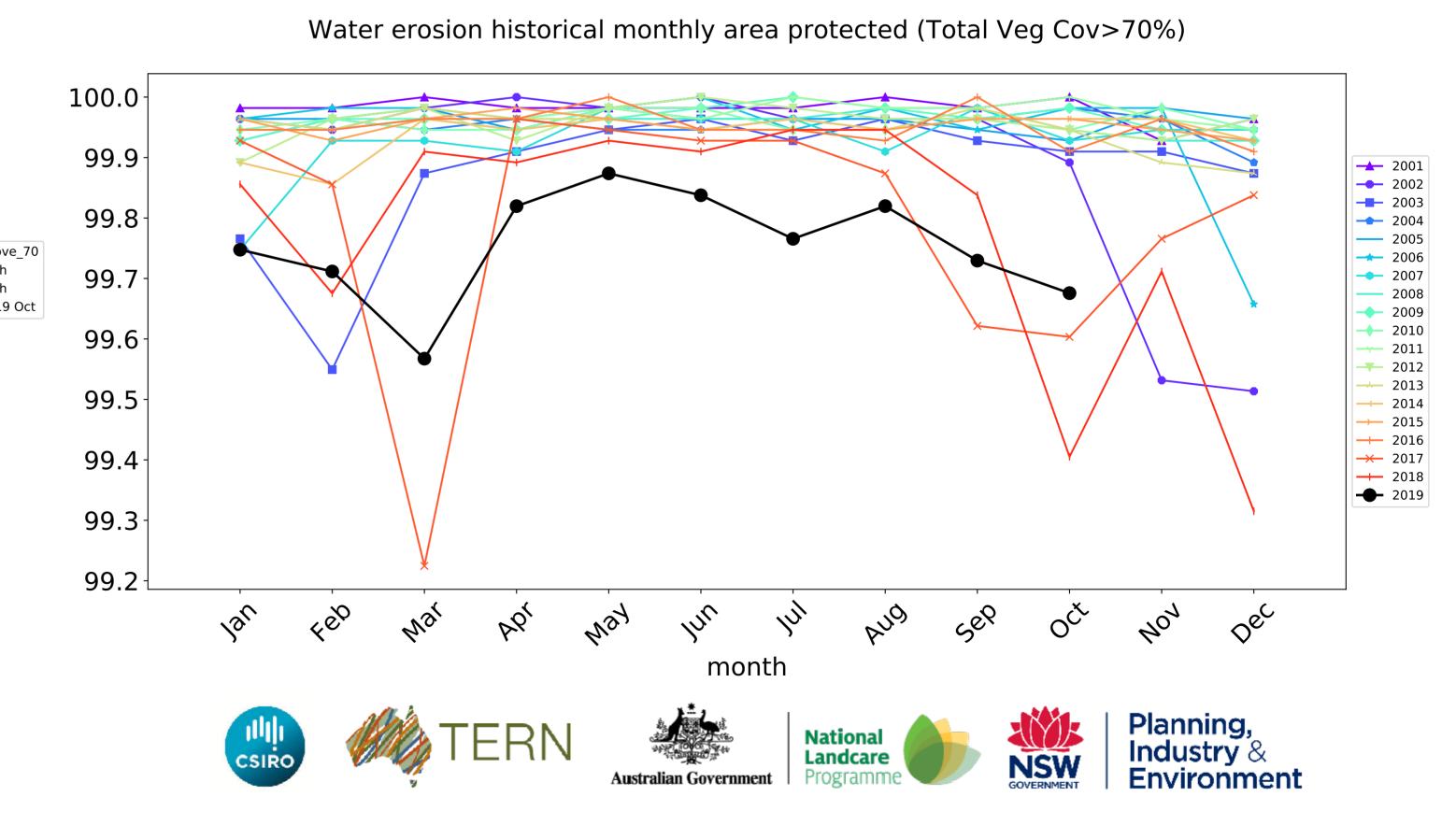
#### 100.00 99.99 → 2001 2003 99.98 99.97 10th 50th 2019 Oct 2011 99.96 <del>----</del> 2013 <del>←</del> 2014 99.95 <del>→</del> 2015 <del>----</del> 2016 <del>×</del> 2017 → 2018 99.94 **2019**

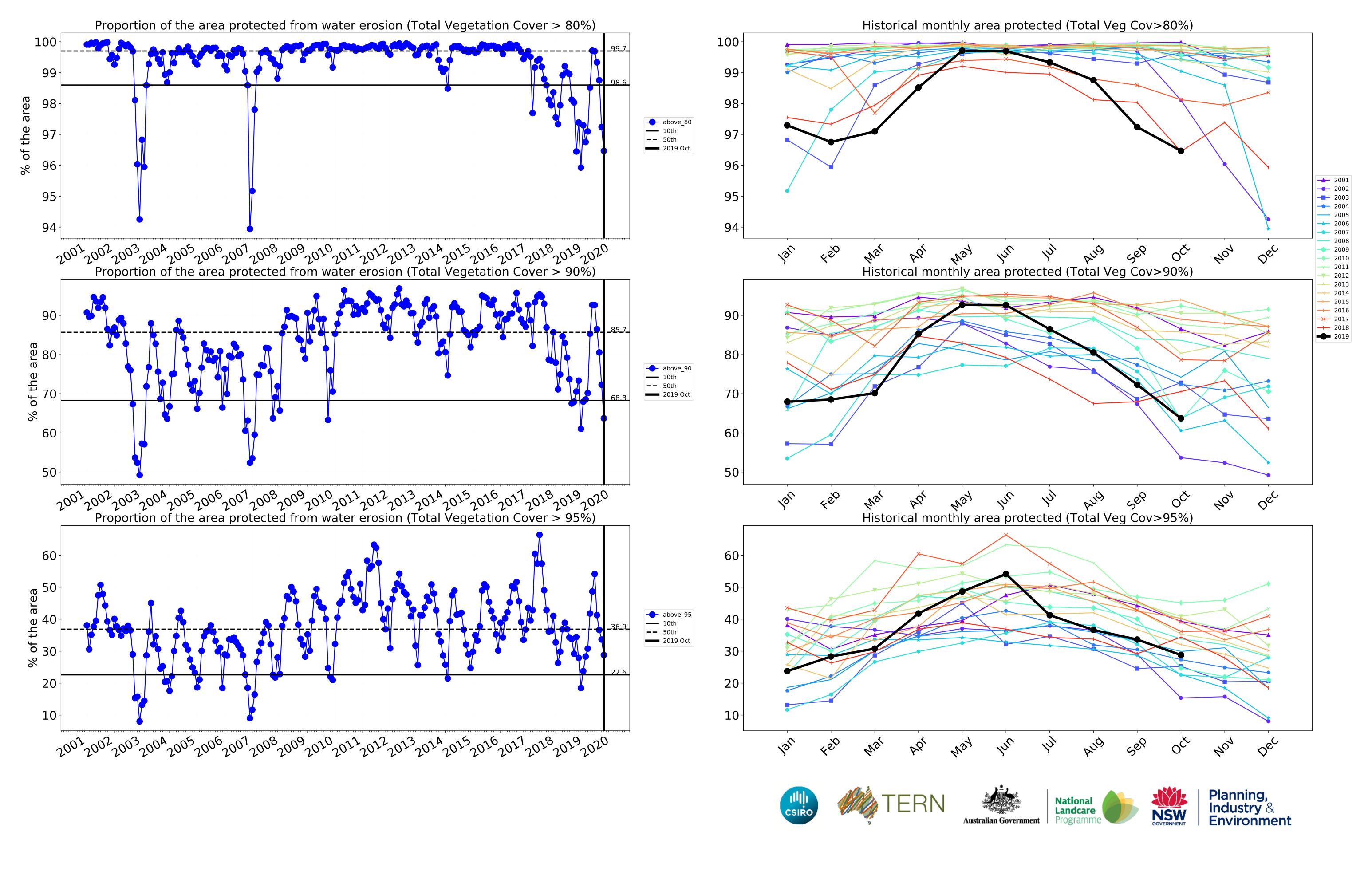
month

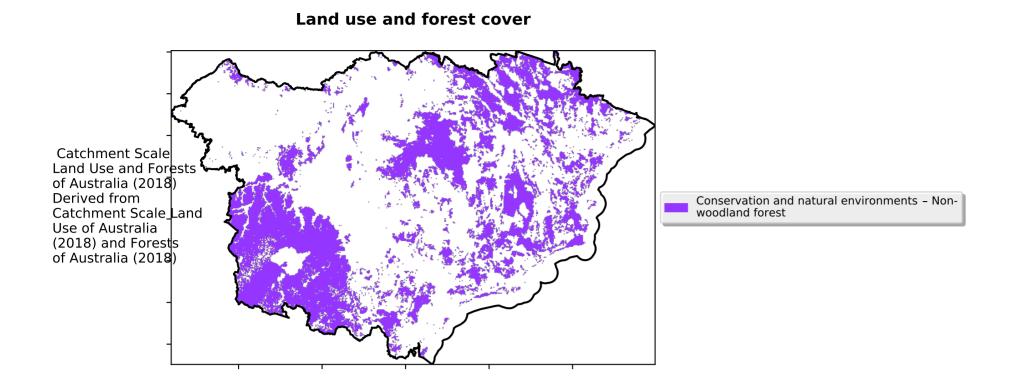
99.93

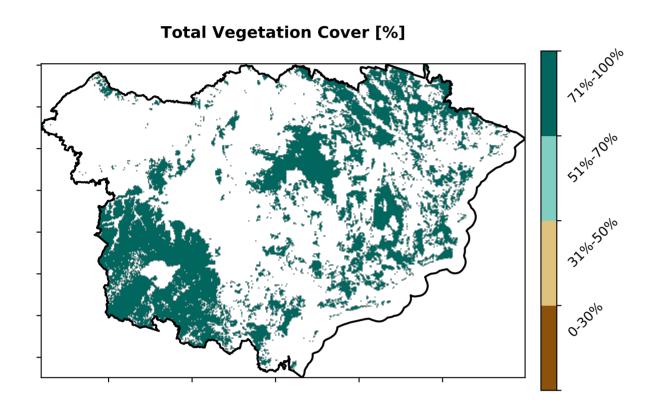
Wind erosion historical monthly area protected (Total Veg Cov >50%)

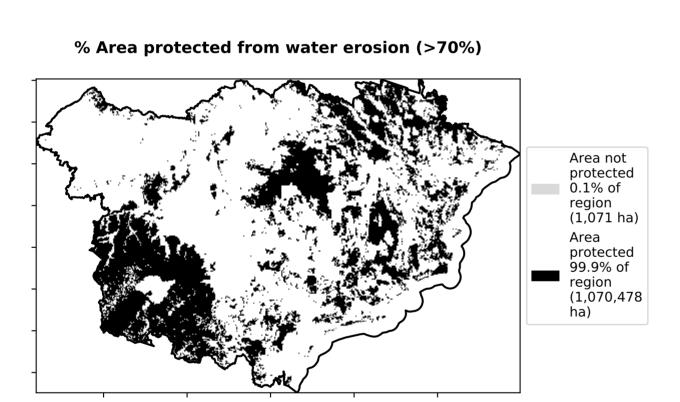


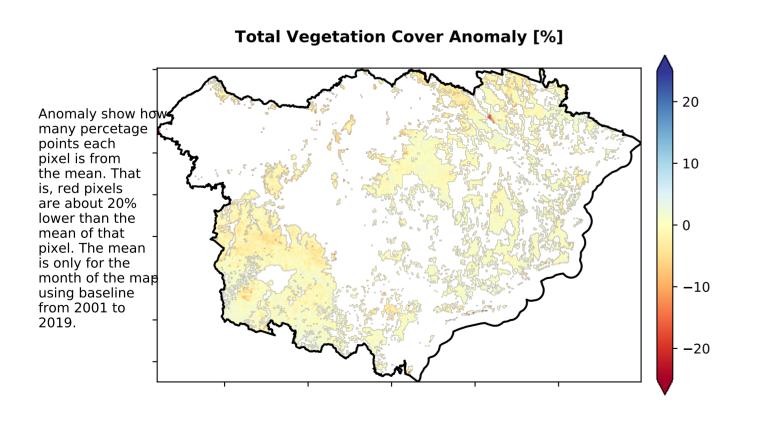


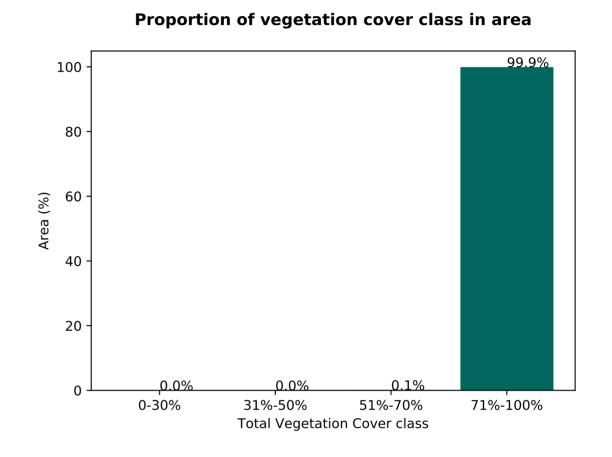


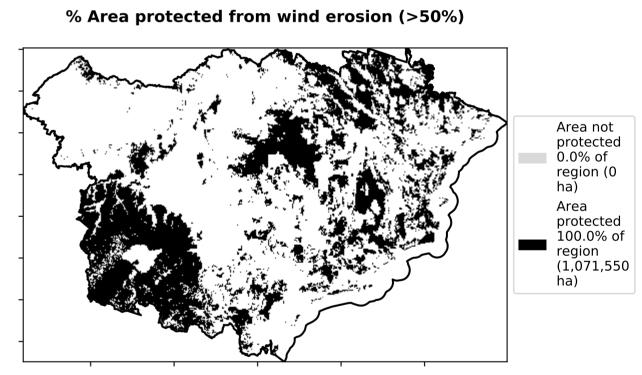


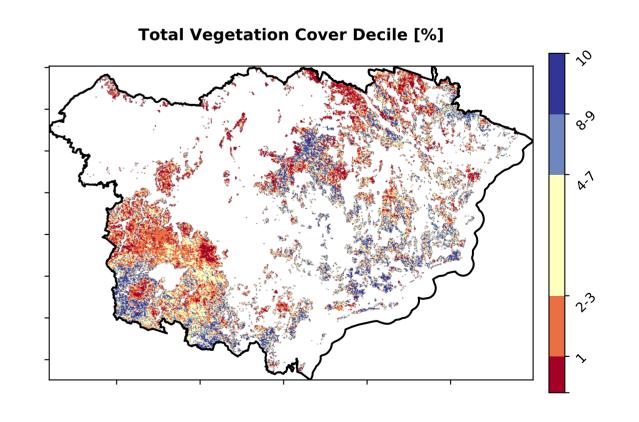














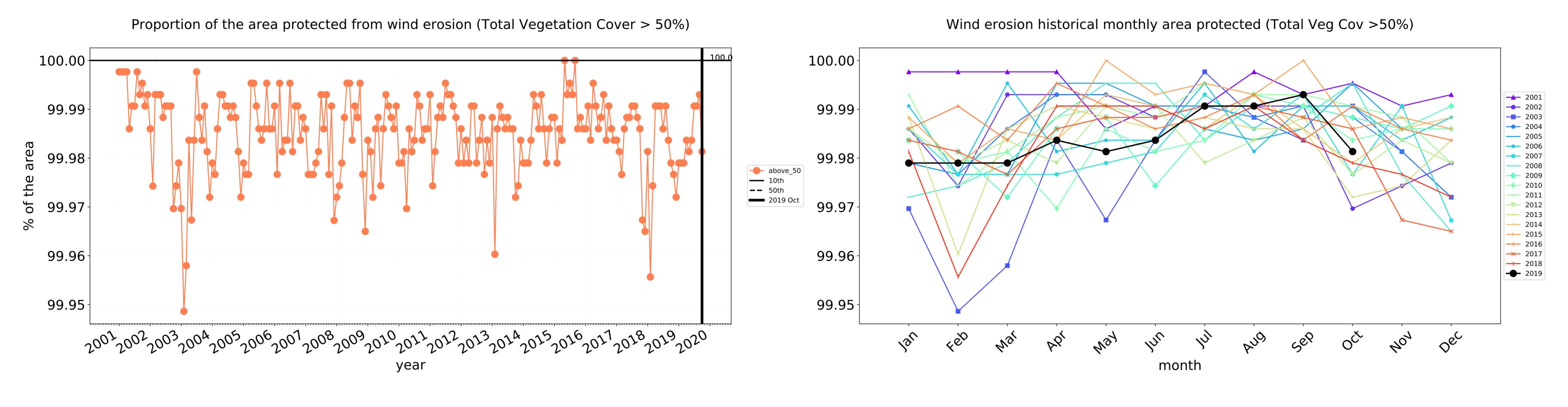


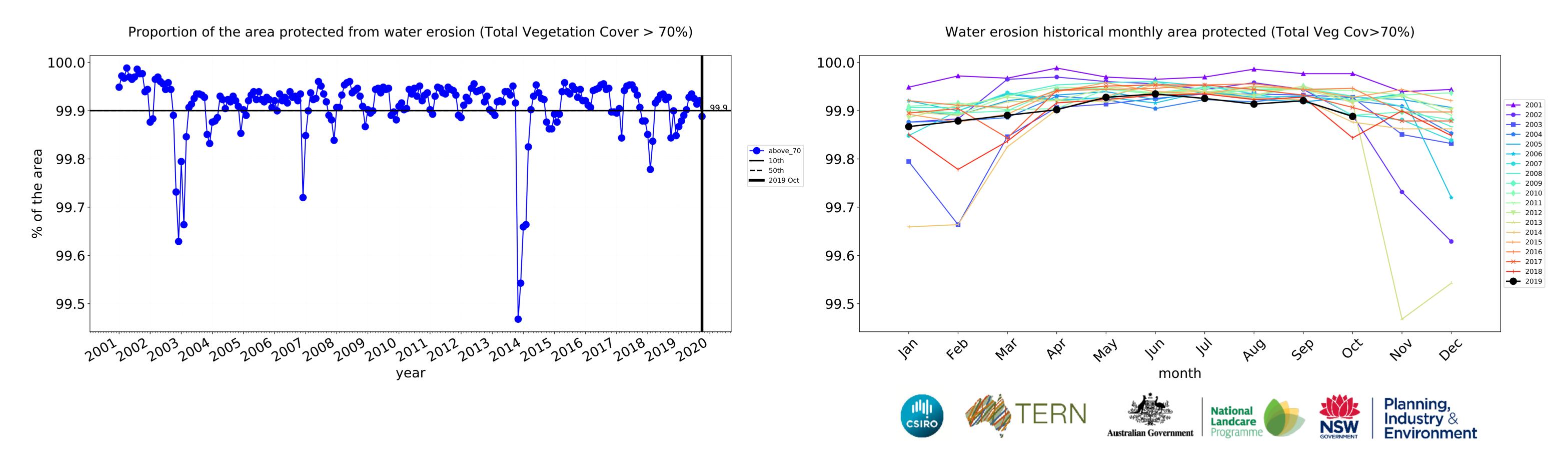


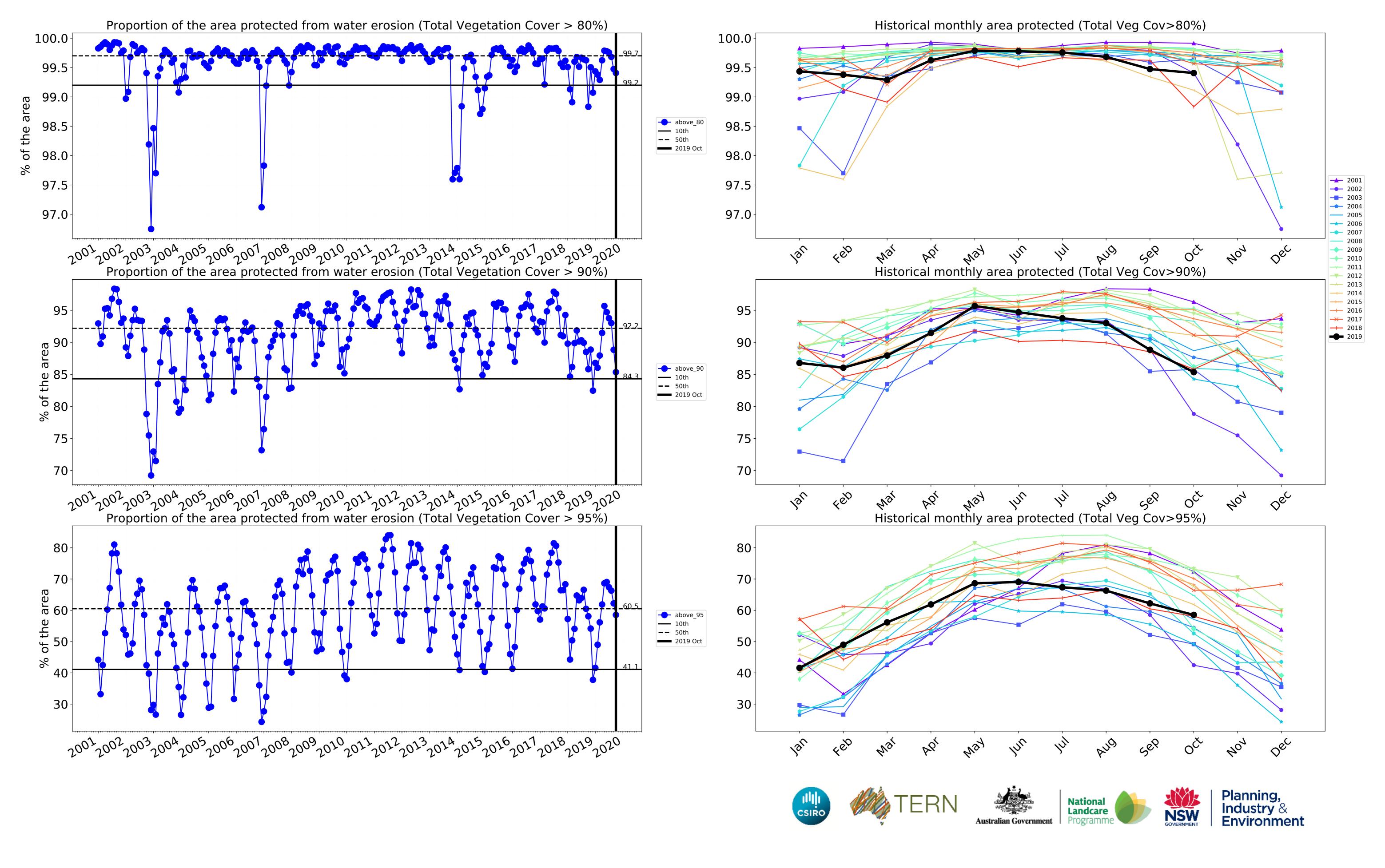






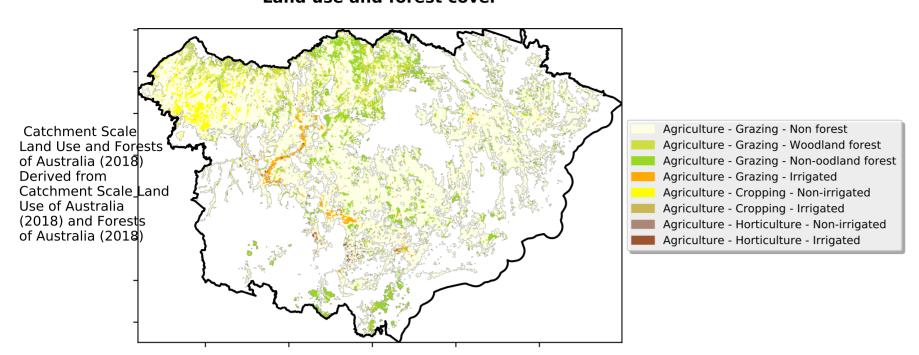




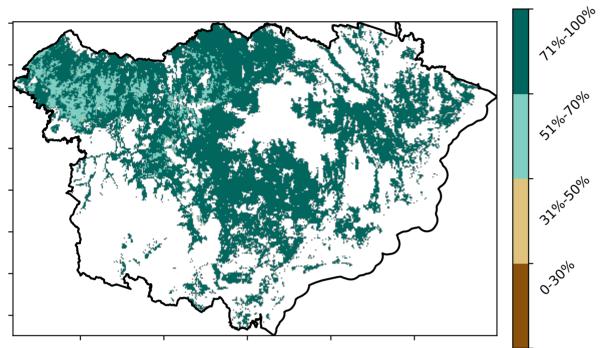


#### **Agriculture**

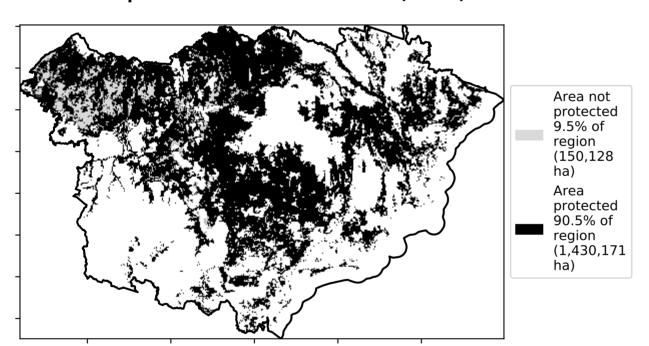
#### Land use and forest cover



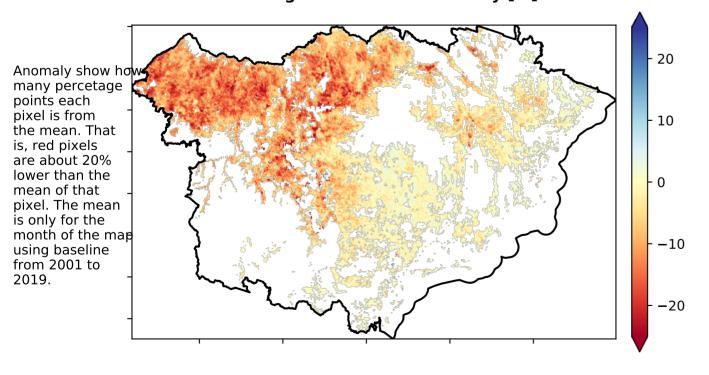
#### Total Vegetation Cover [%]



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

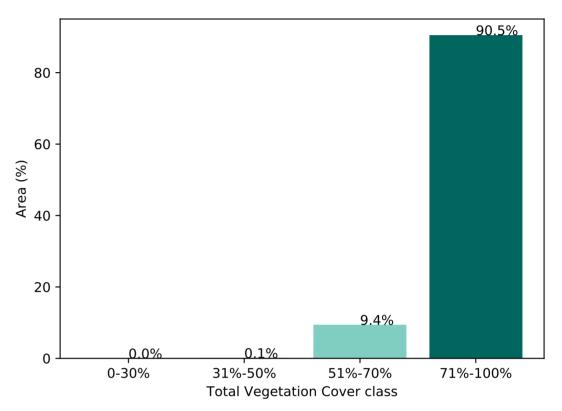


#### Total Vegetation Cover Anomaly [%]

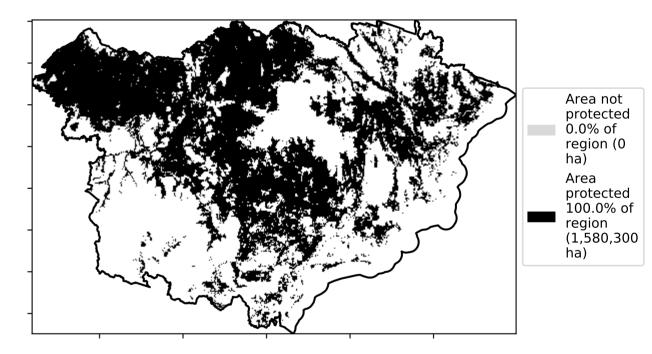


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

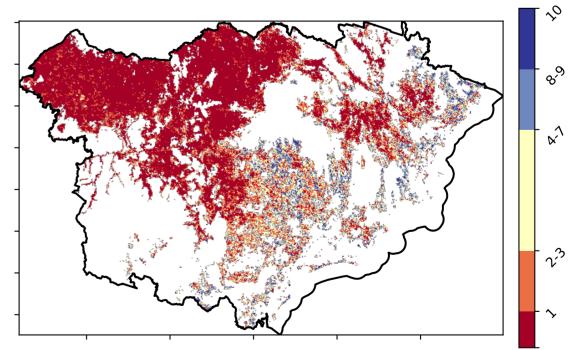
#### **Proportion of vegetation cover class in area**



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



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







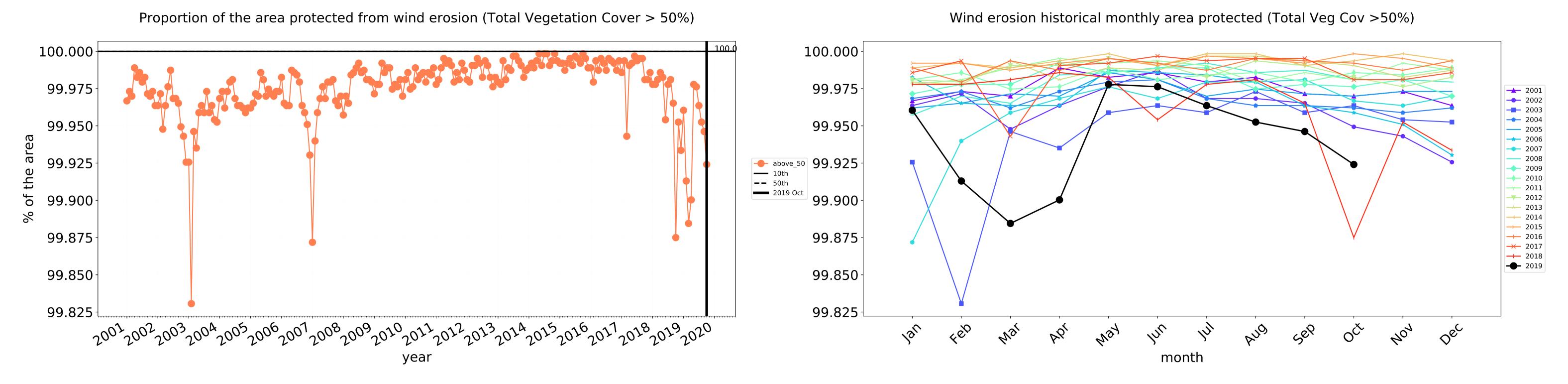


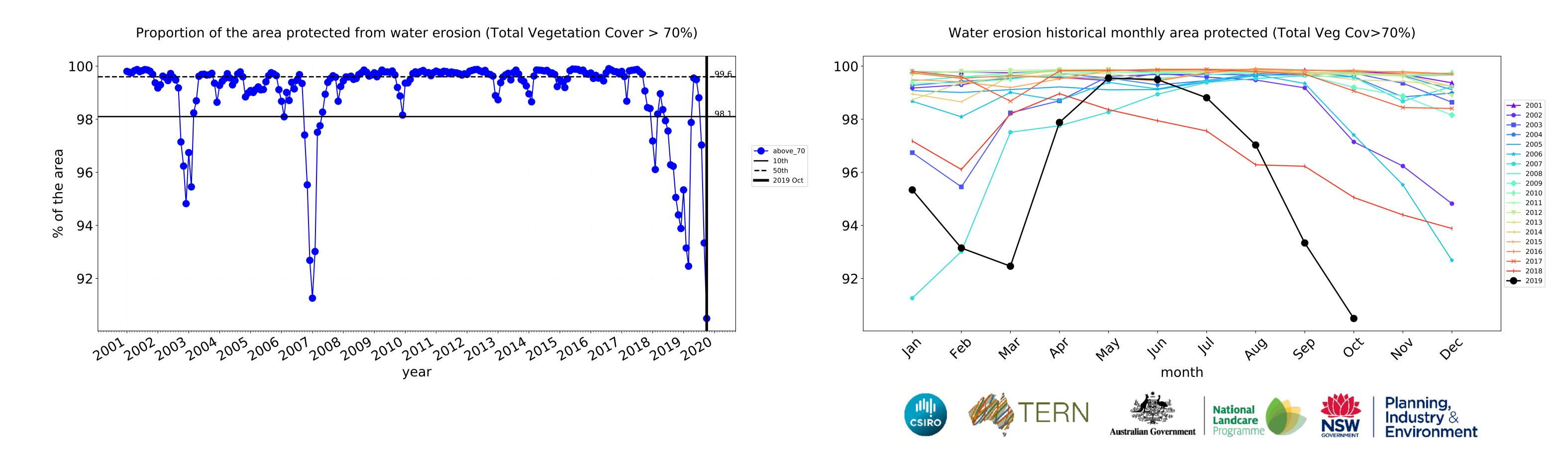


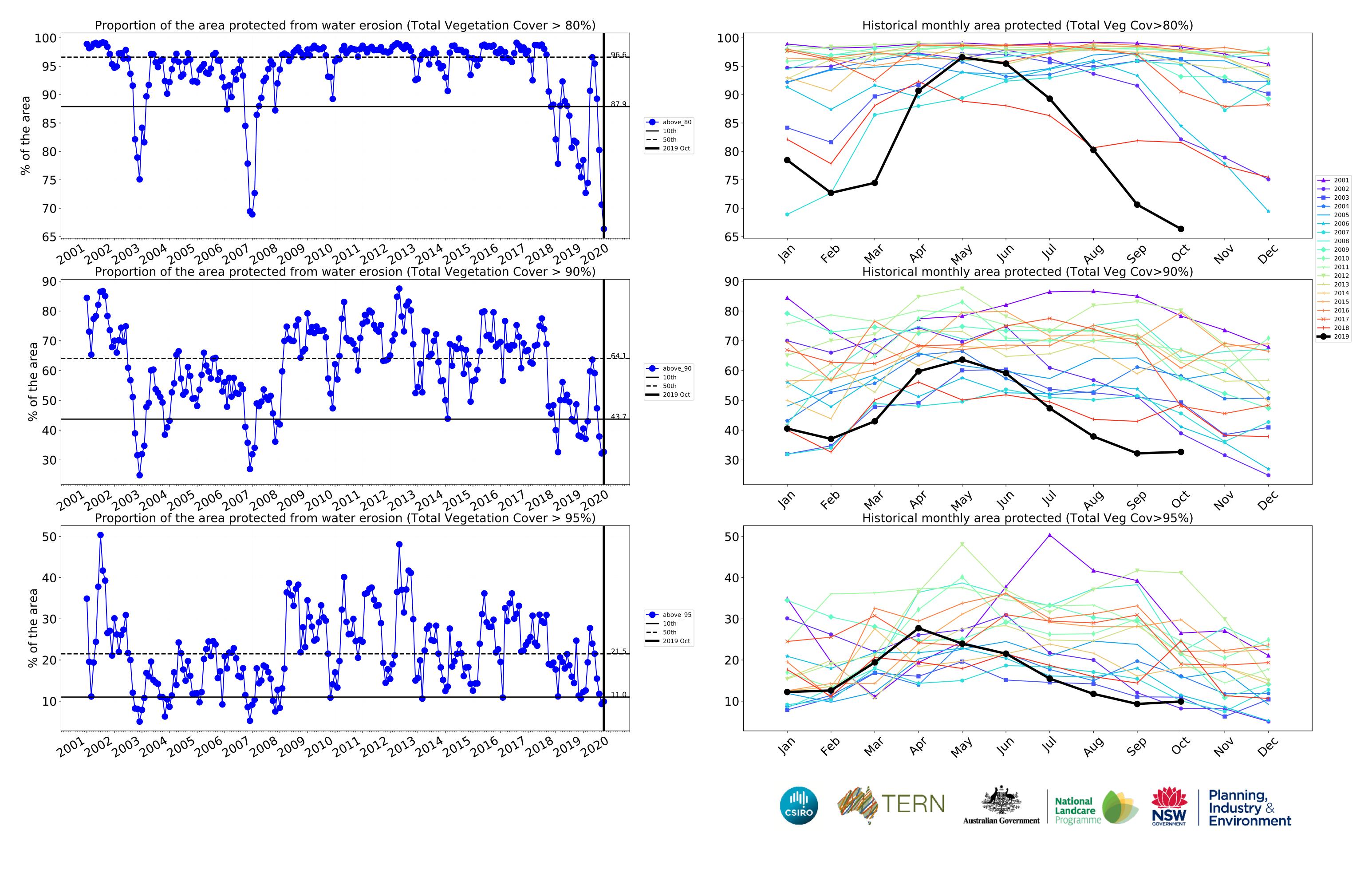




#### **Agriculture timeseries**

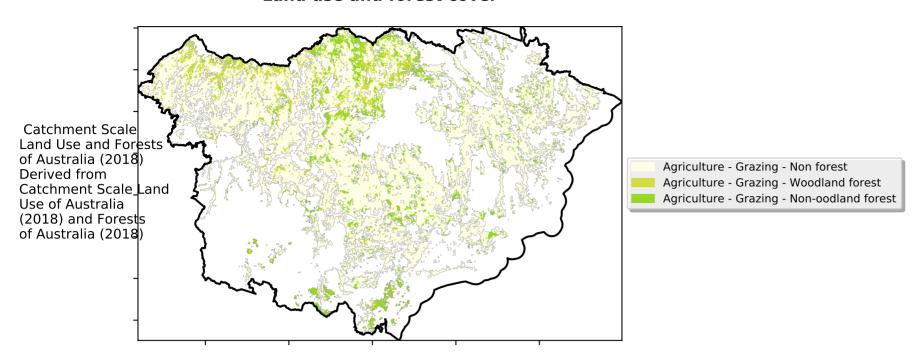




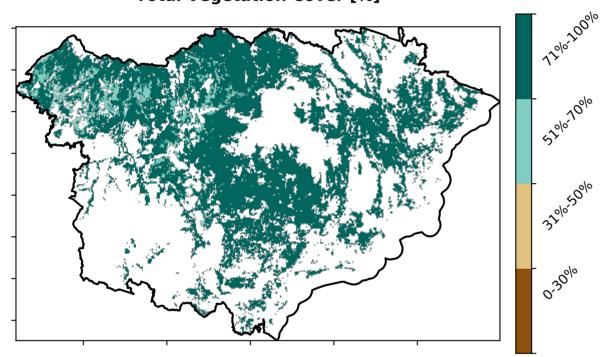


#### **Grazing**

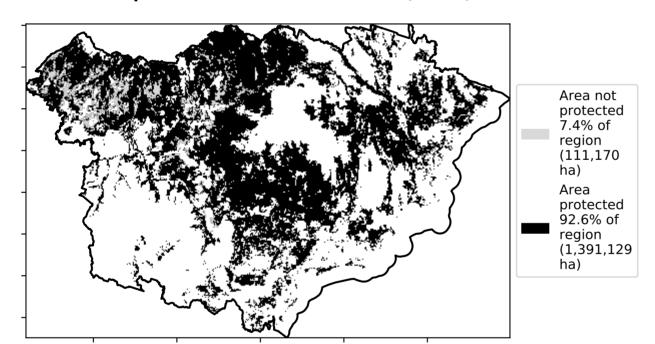
#### Land use and forest cover



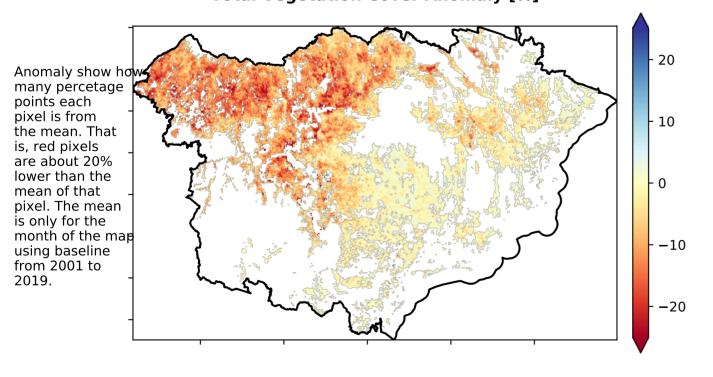
#### Total Vegetation Cover [%]



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

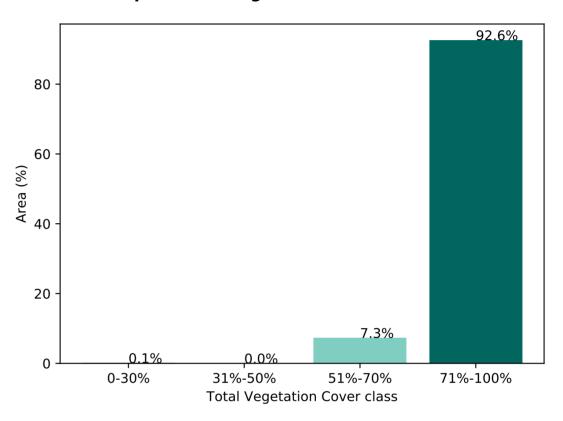


#### Total Vegetation Cover Anomaly [%]

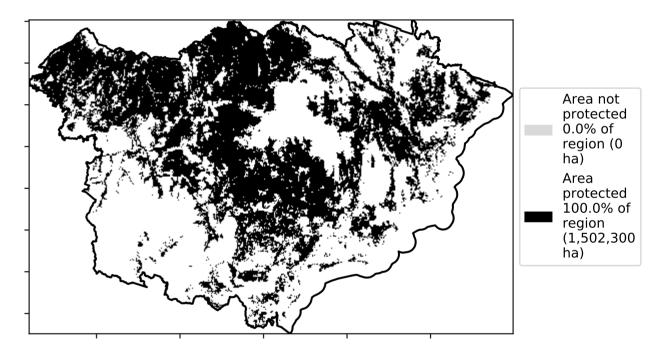


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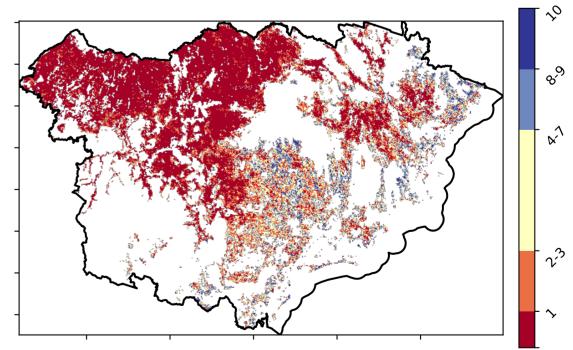
#### **Proportion of vegetation cover class in area**



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



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







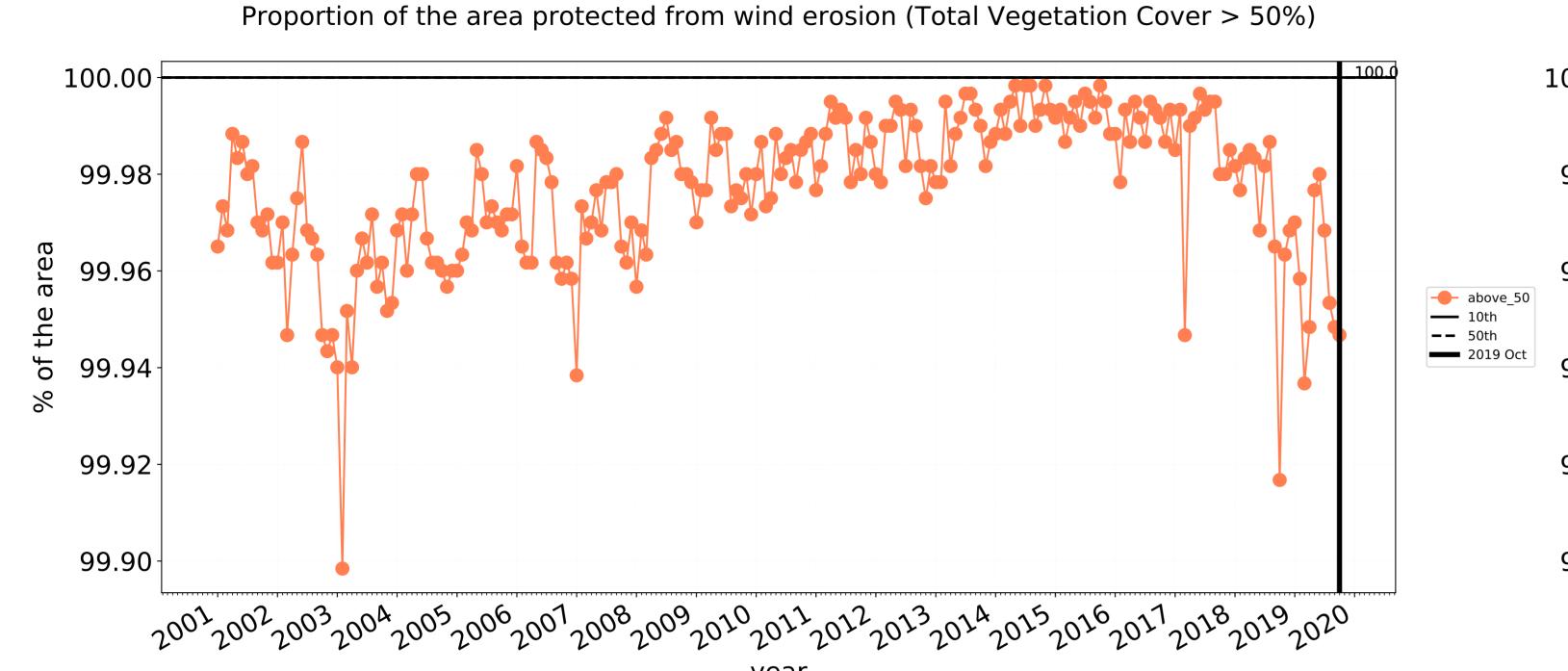


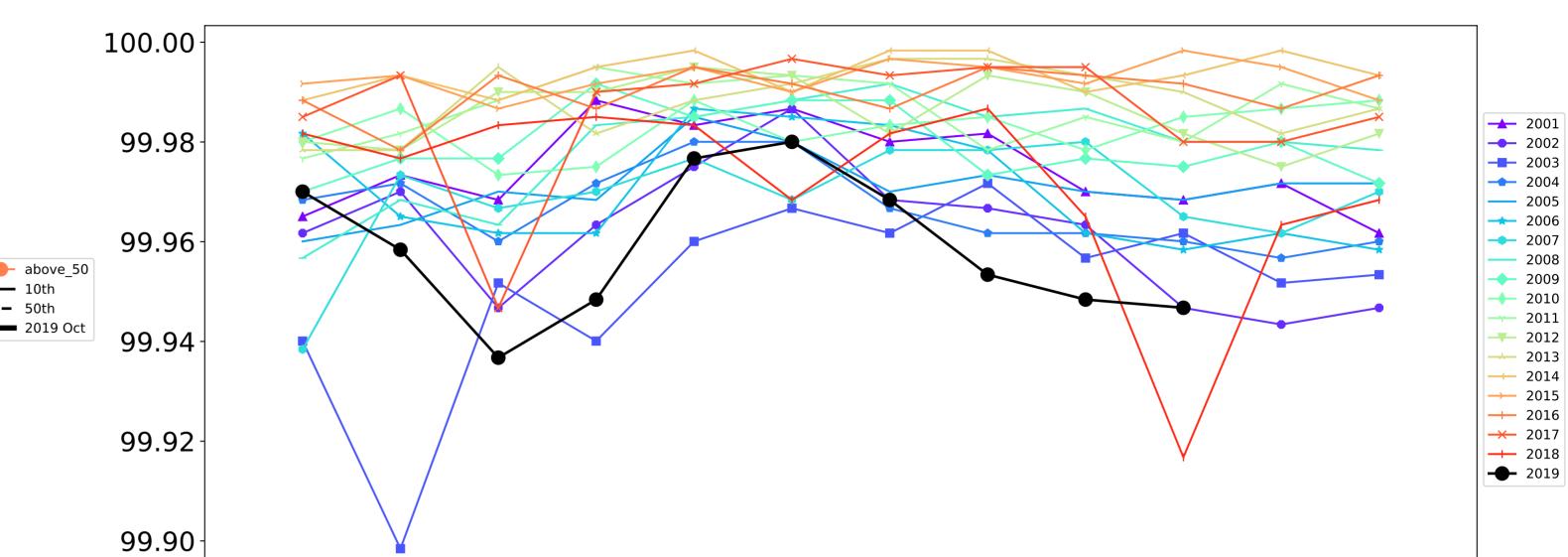






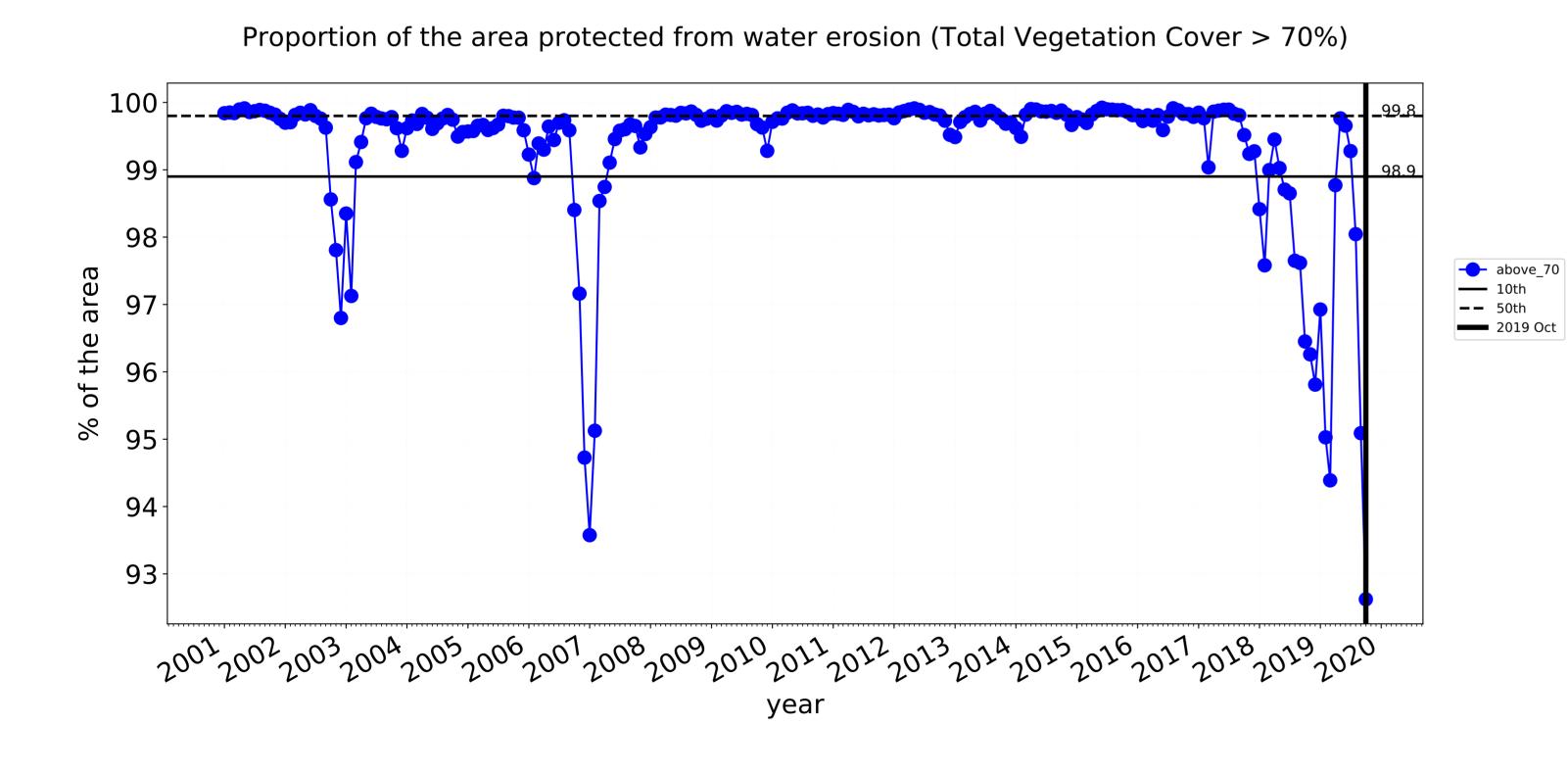
#### **Grazing timeseries**

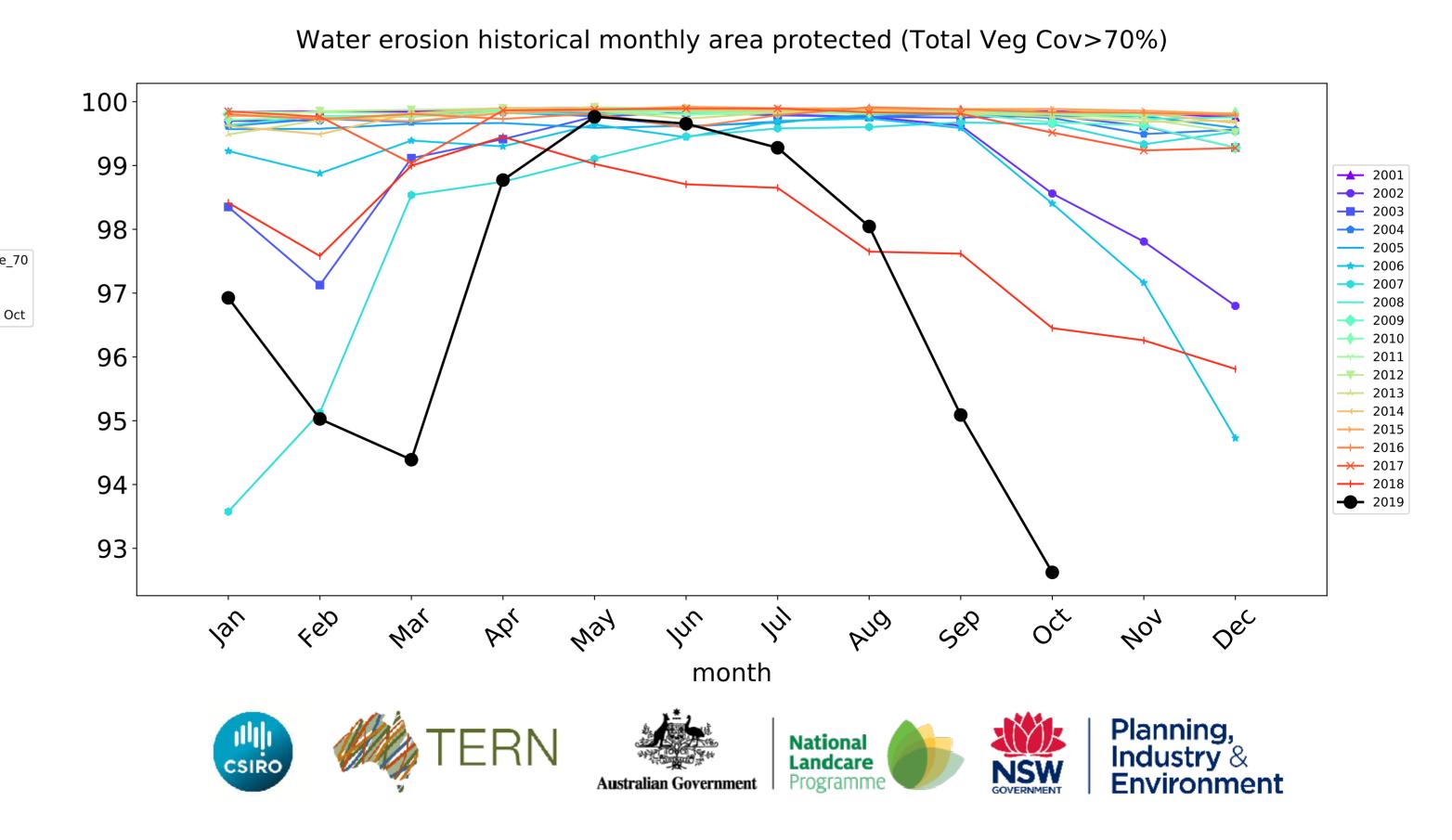


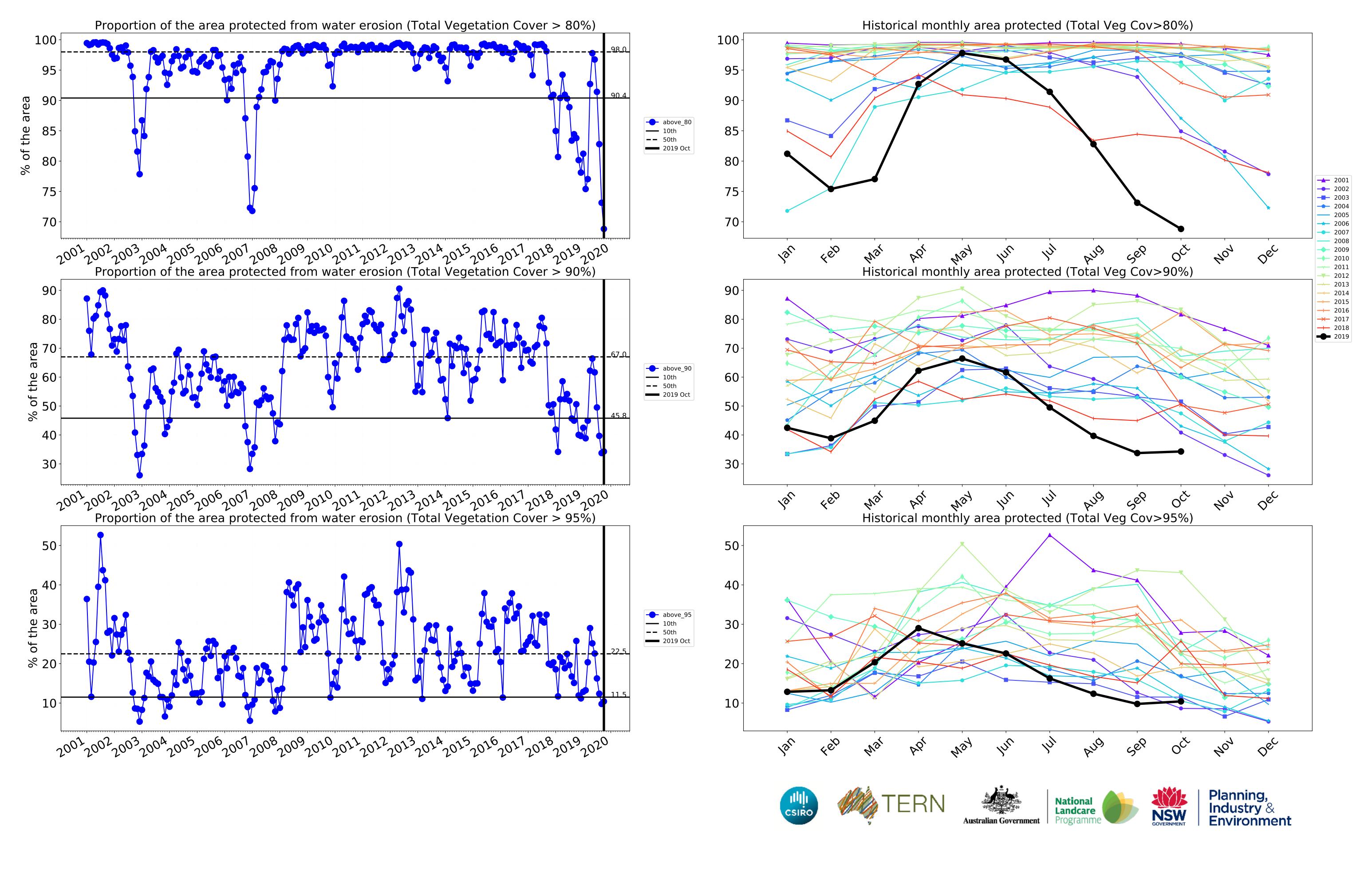


month

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

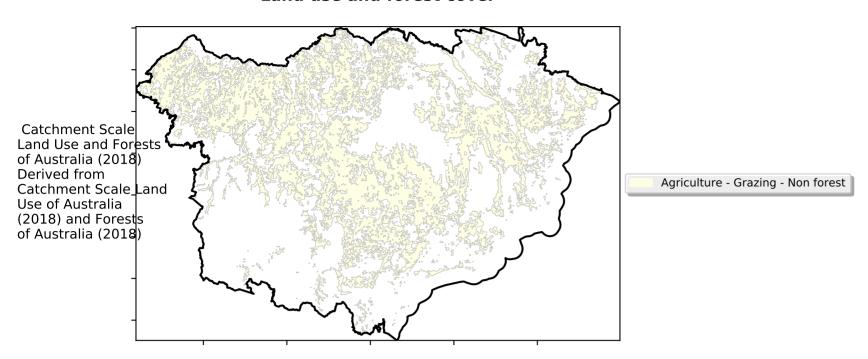




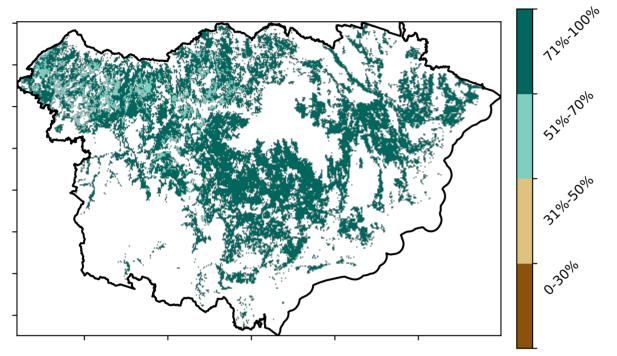


#### **Grazing non forest**

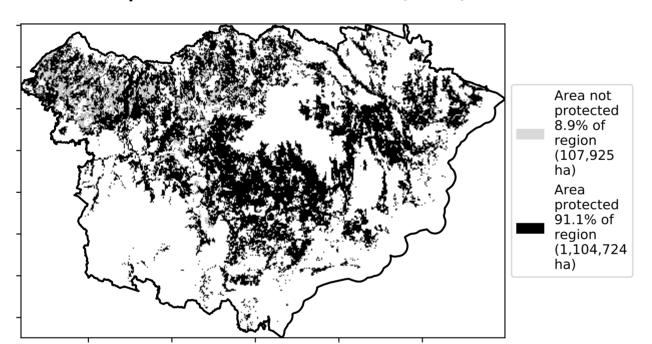
#### Land use and forest cover



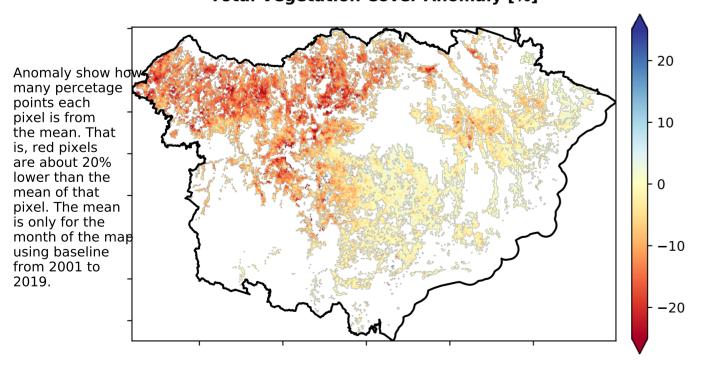
#### Total Vegetation Cover [%]



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

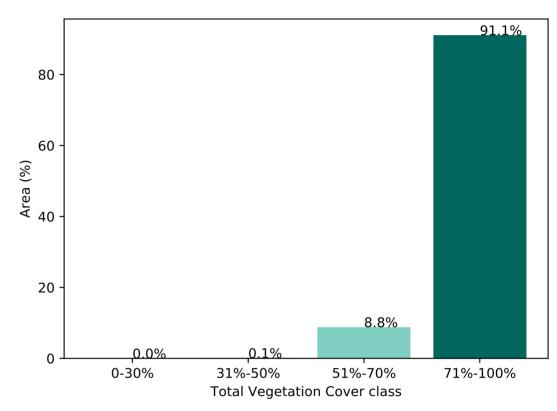


#### Total Vegetation Cover Anomaly [%]

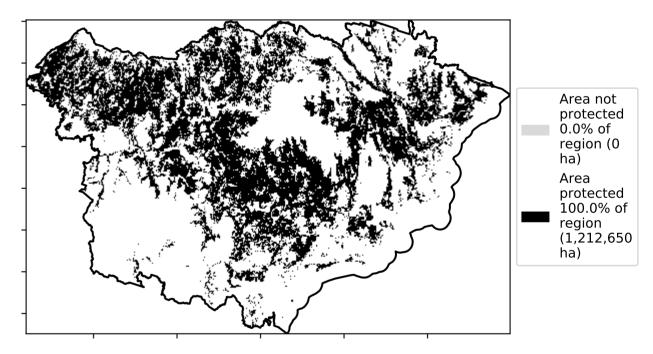


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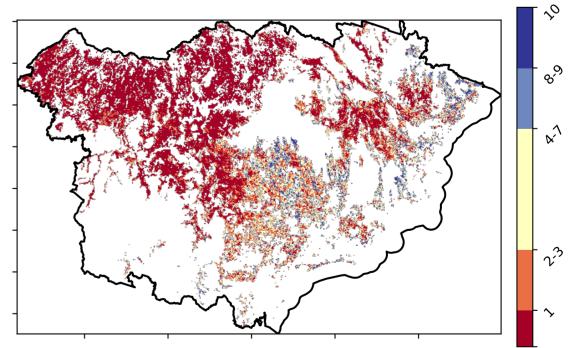
#### **Proportion of vegetation cover class in area**



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



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







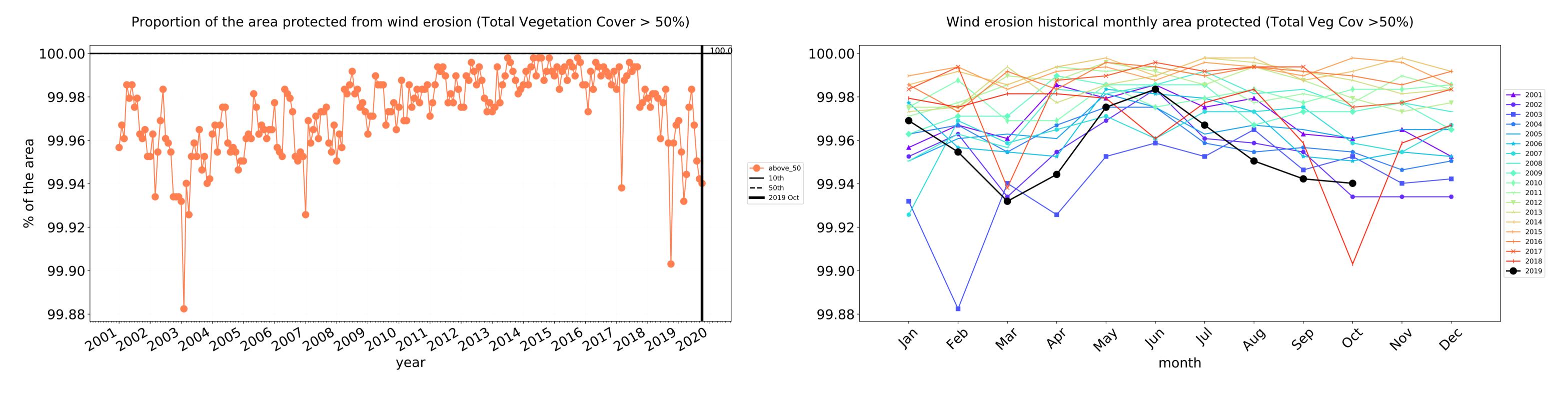


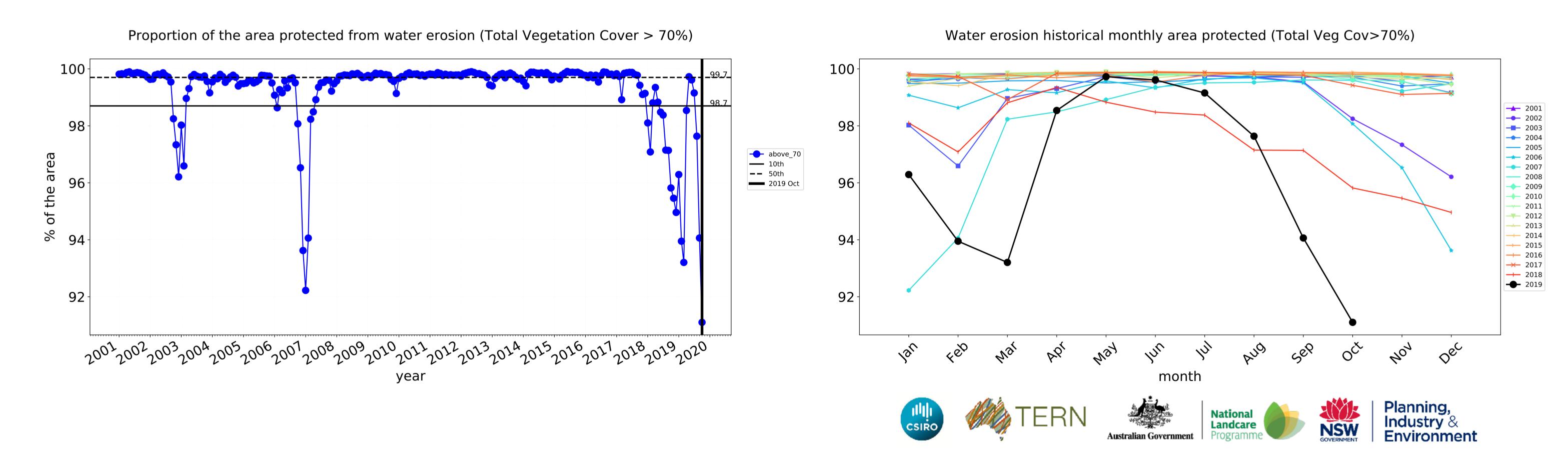


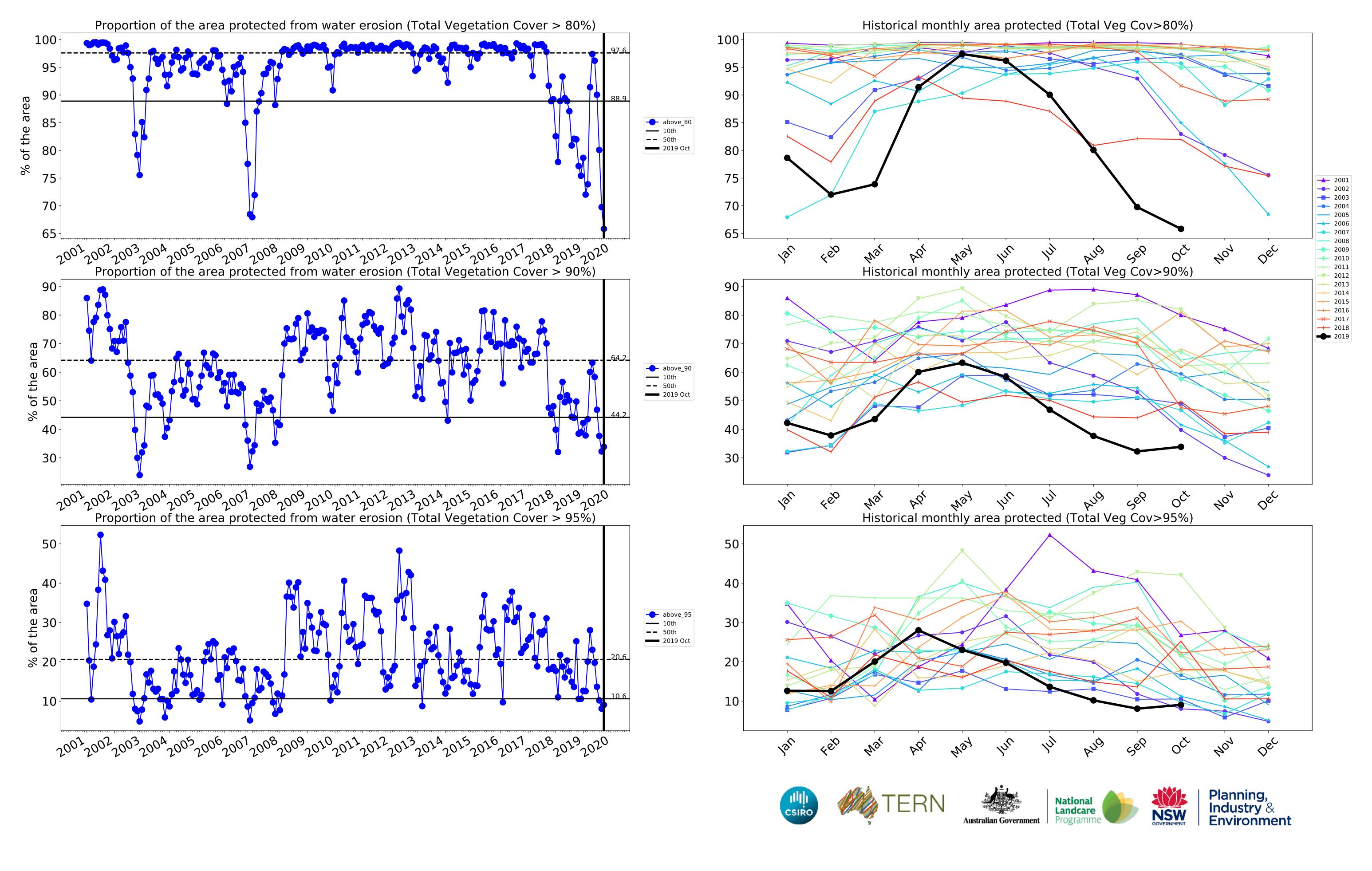




#### **Grazing non forest timeseries**





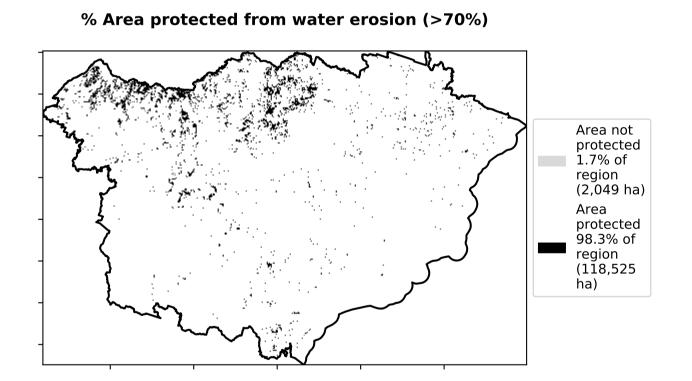


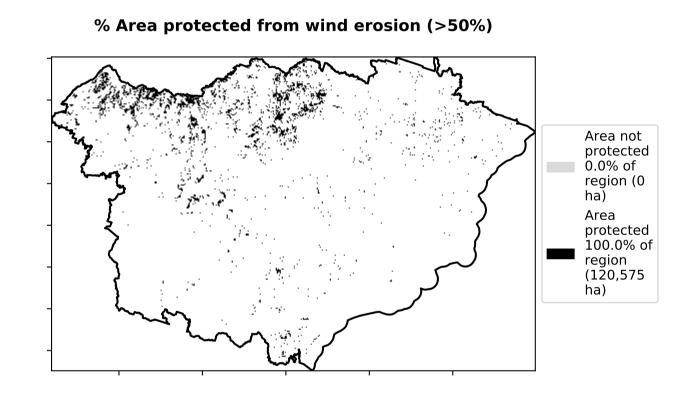
#### **Grazing Woodland forest**

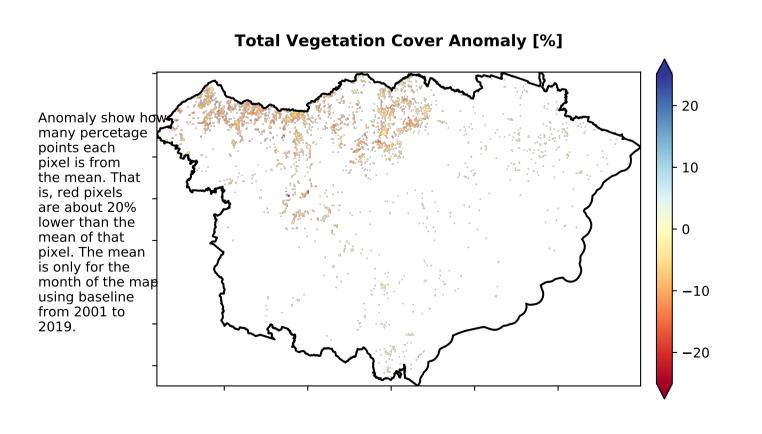
### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Agriculture - Grazing - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

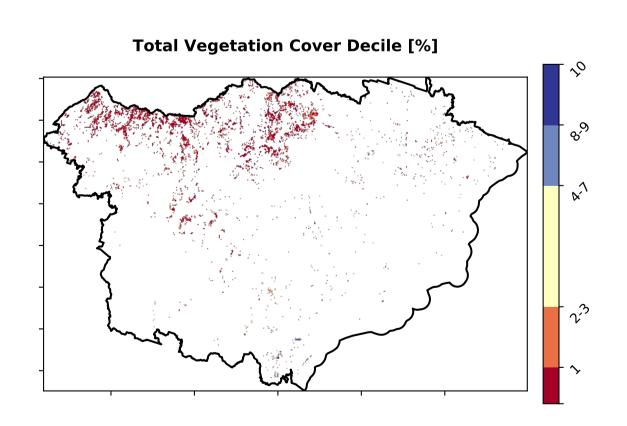
# **Total Vegetation Cover [%]**

#### **Proportion of vegetation cover class in area** 100 98.3% Area (%) 20 1.6% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**













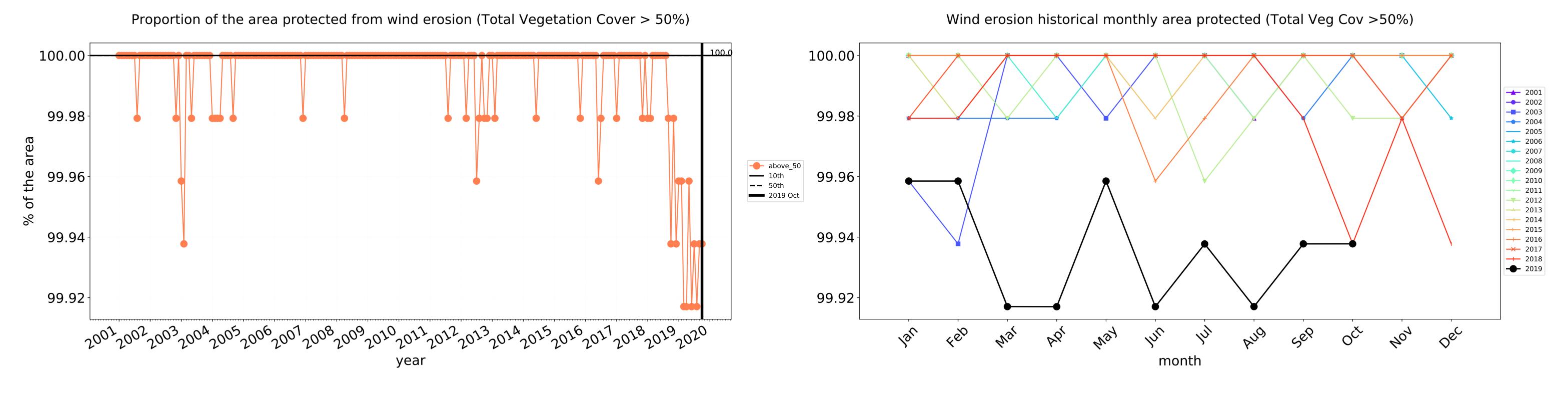


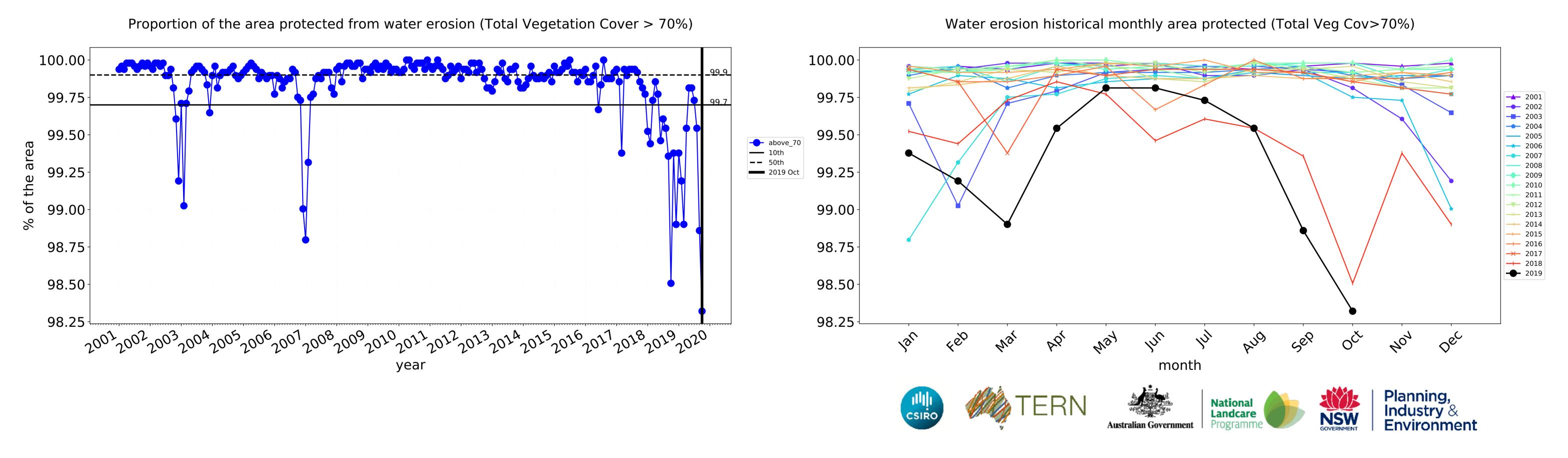


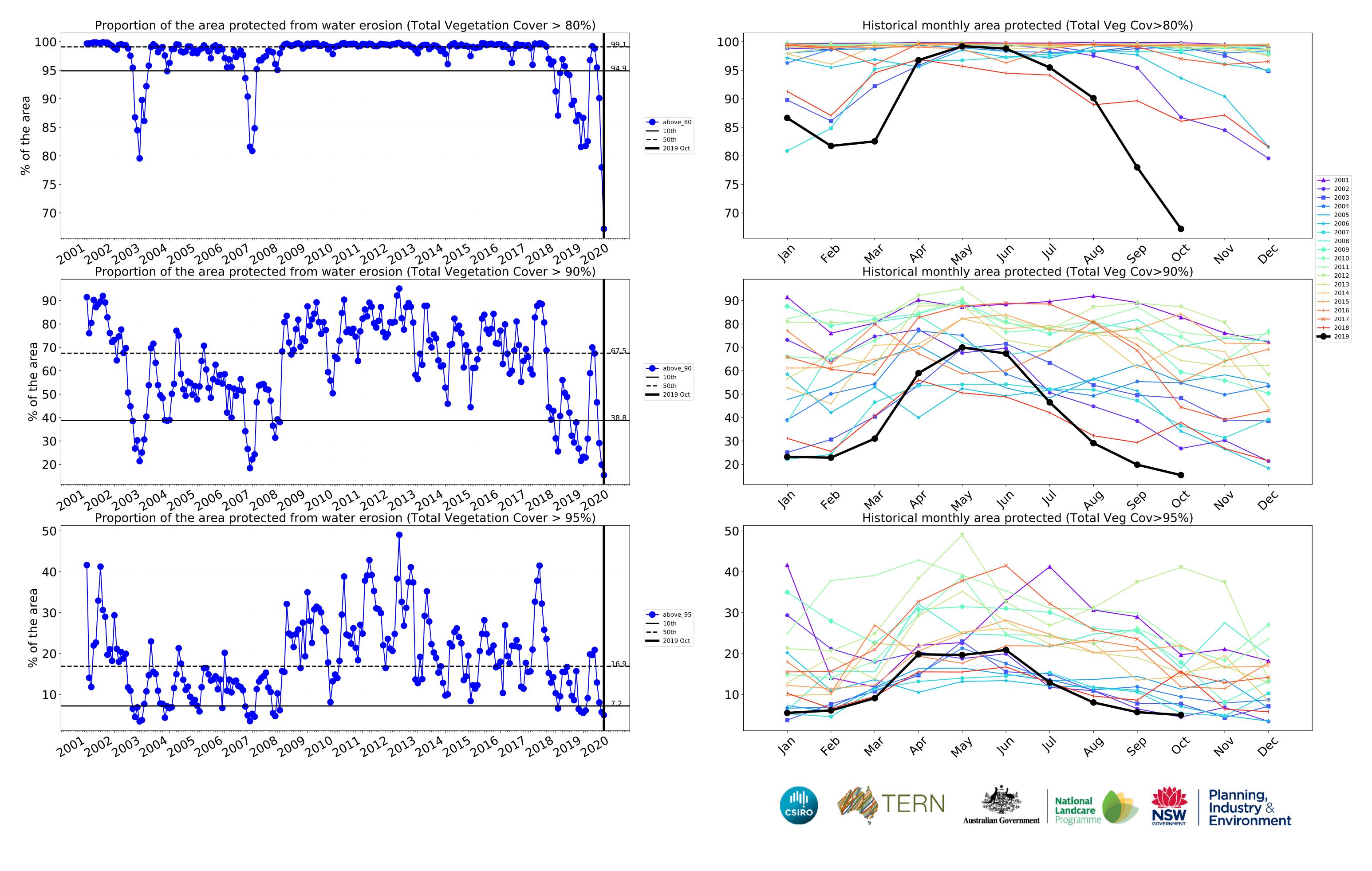




#### **Grazing Woodland forest timeseries**

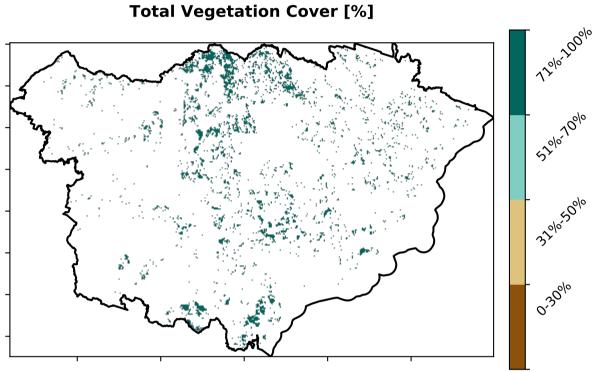


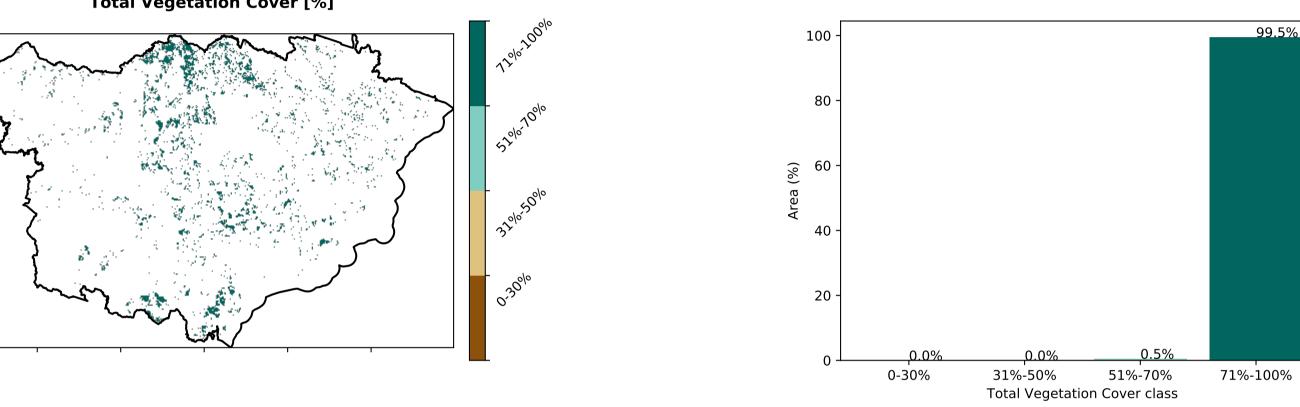


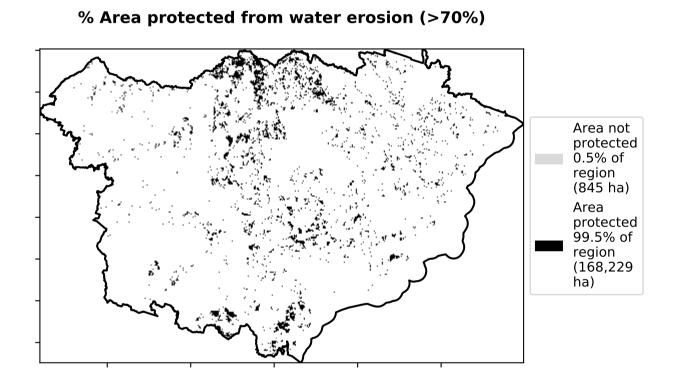


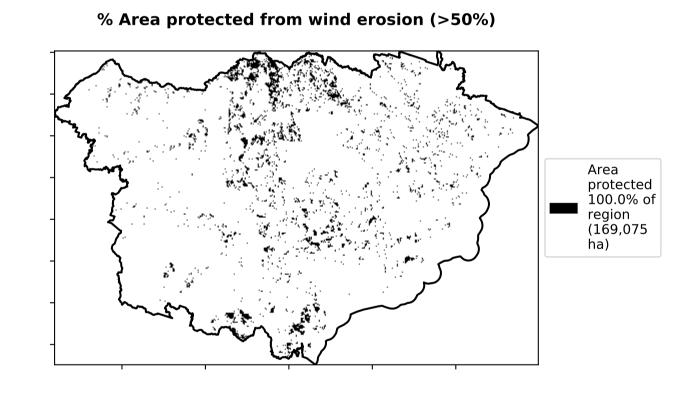
#### **Grazing - Forest (non woodland)**

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

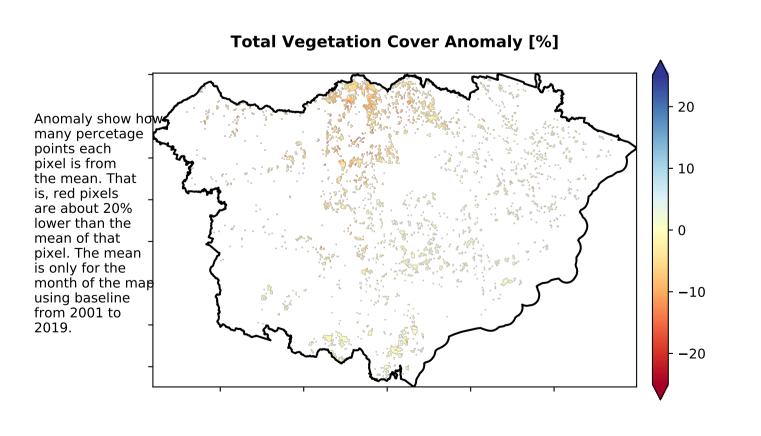


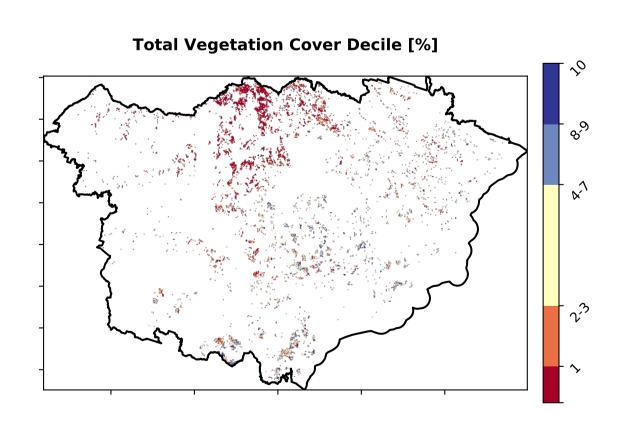






**Proportion of vegetation cover class in area** 







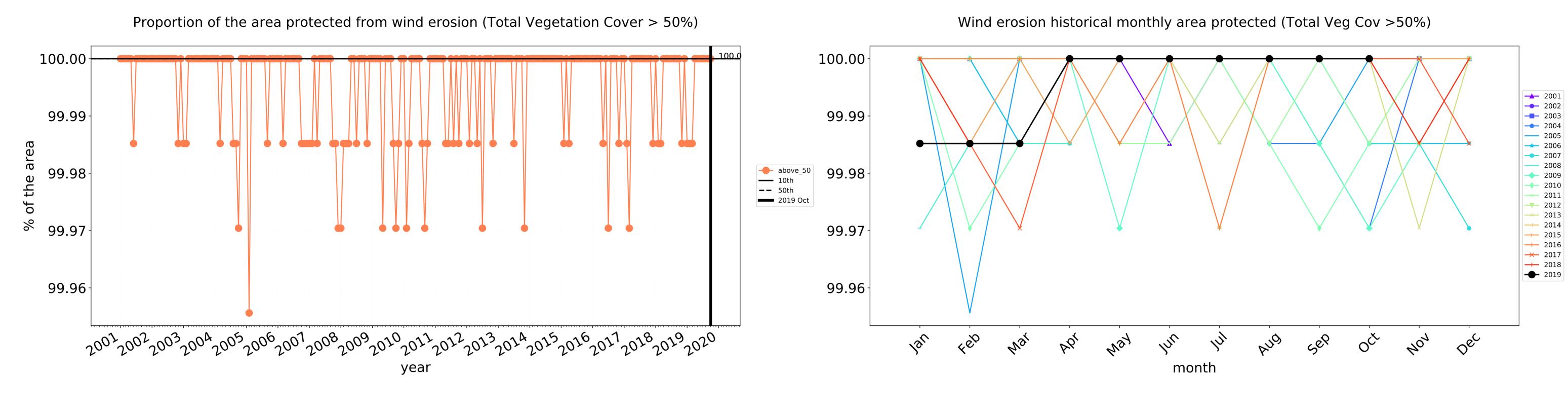


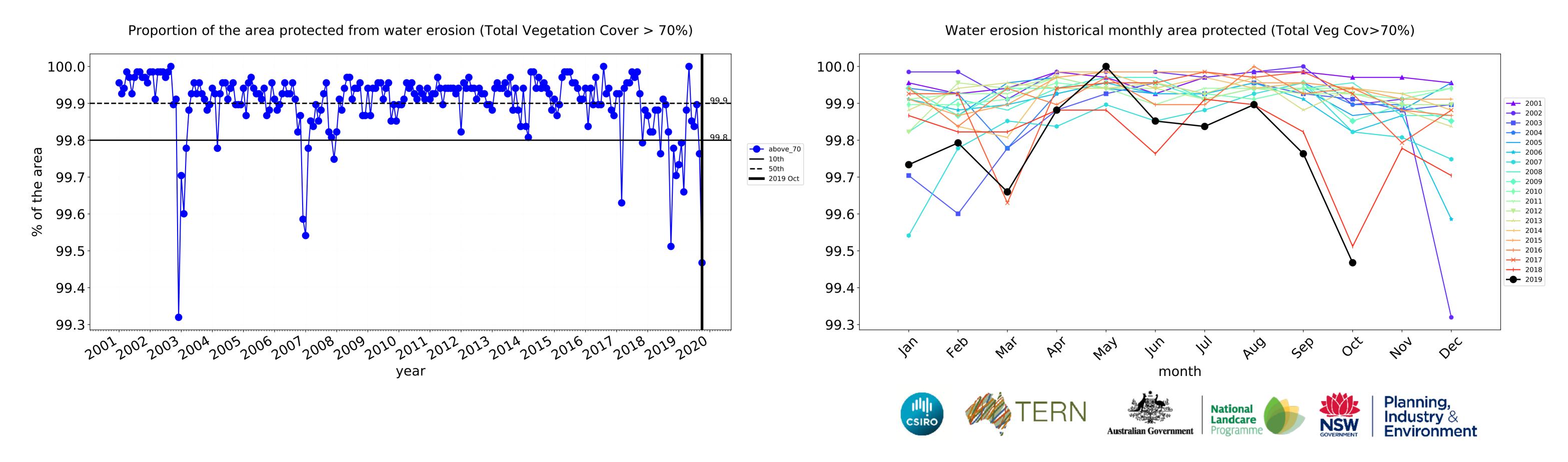


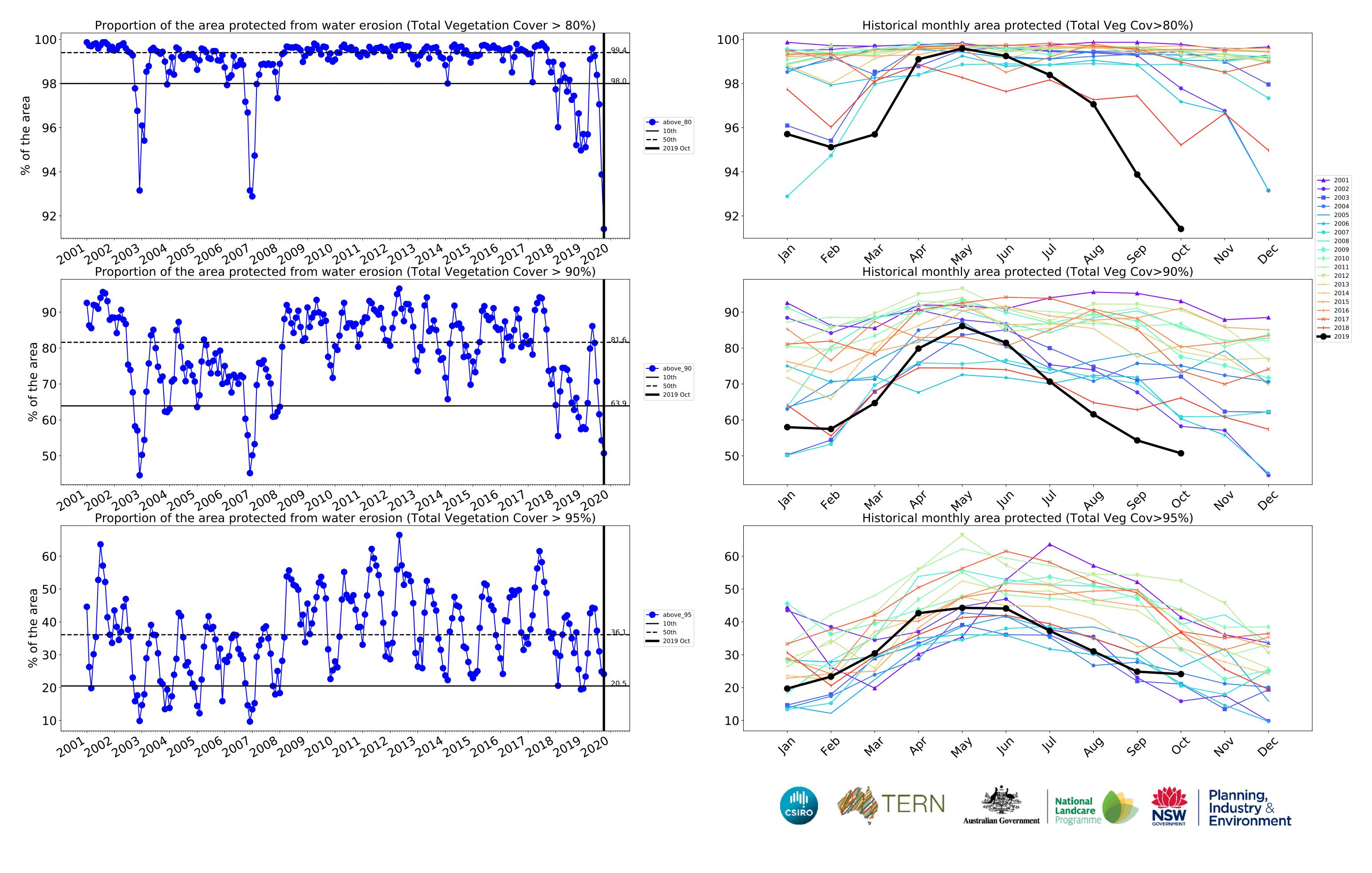






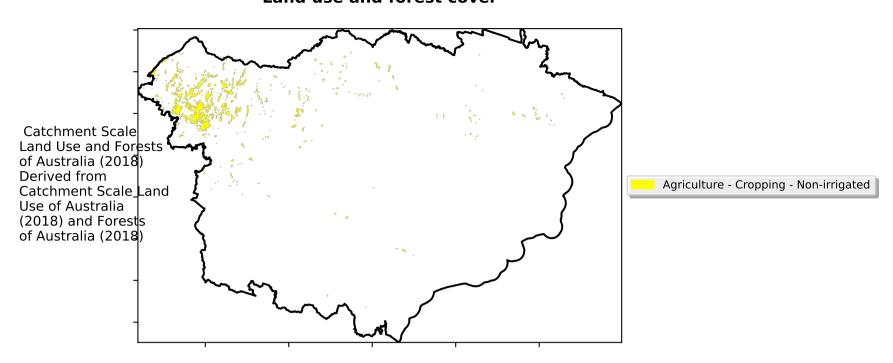




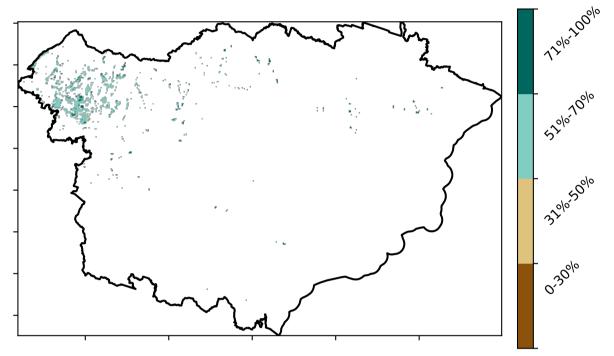


#### **Cropping**

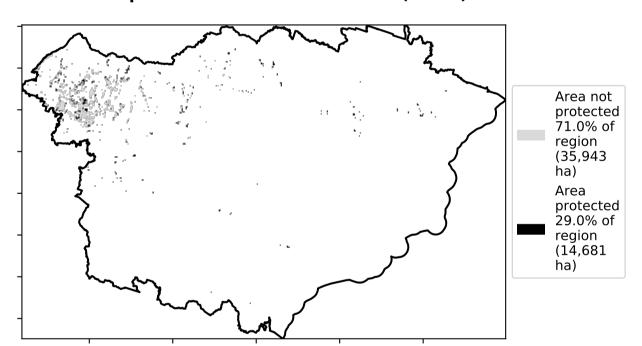
#### Land use and forest cover

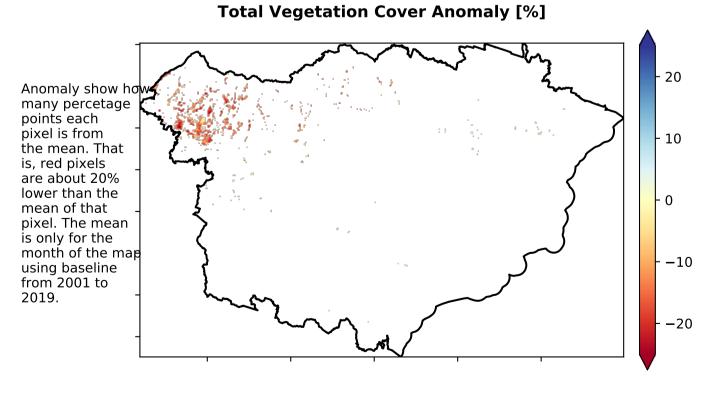


#### Total Vegetation Cover [%]



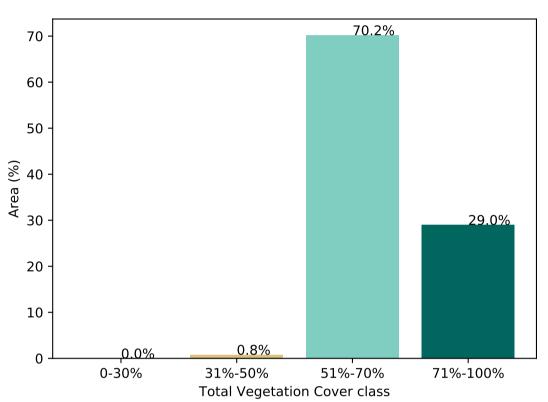
#### % Area protected from water erosion (>70%)



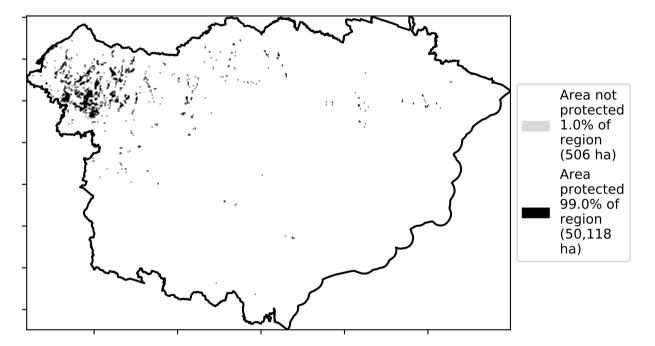


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

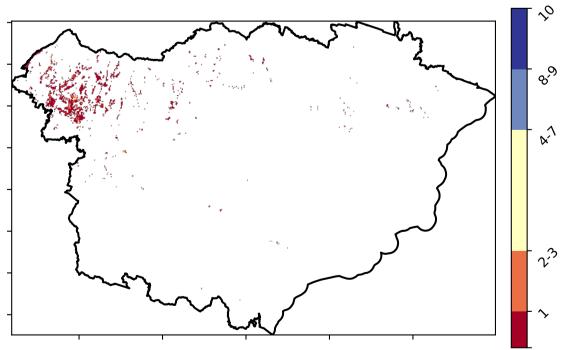
#### Proportion of vegetation cover class in area



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



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







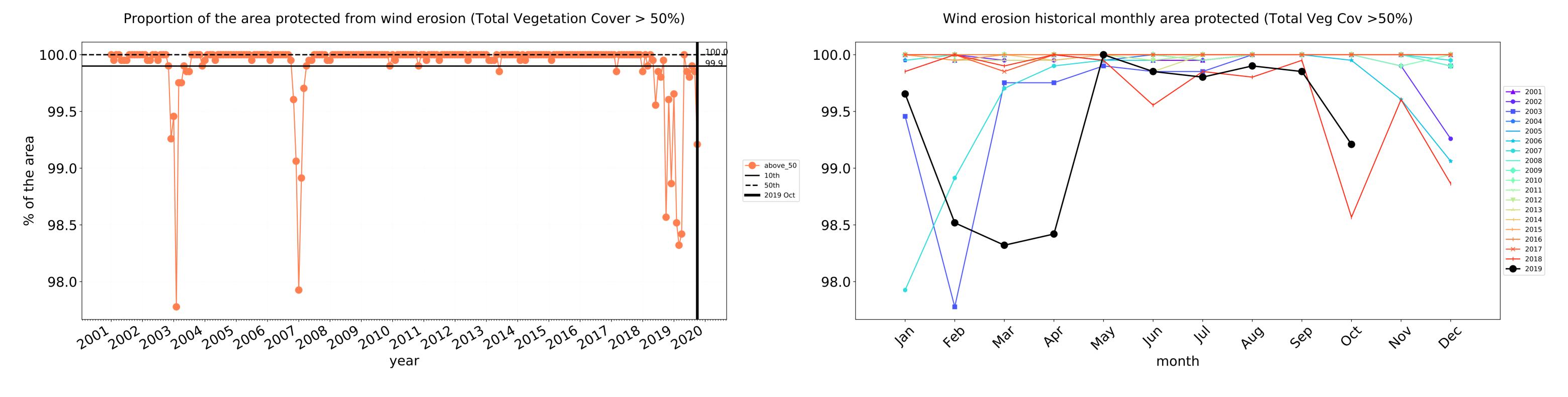


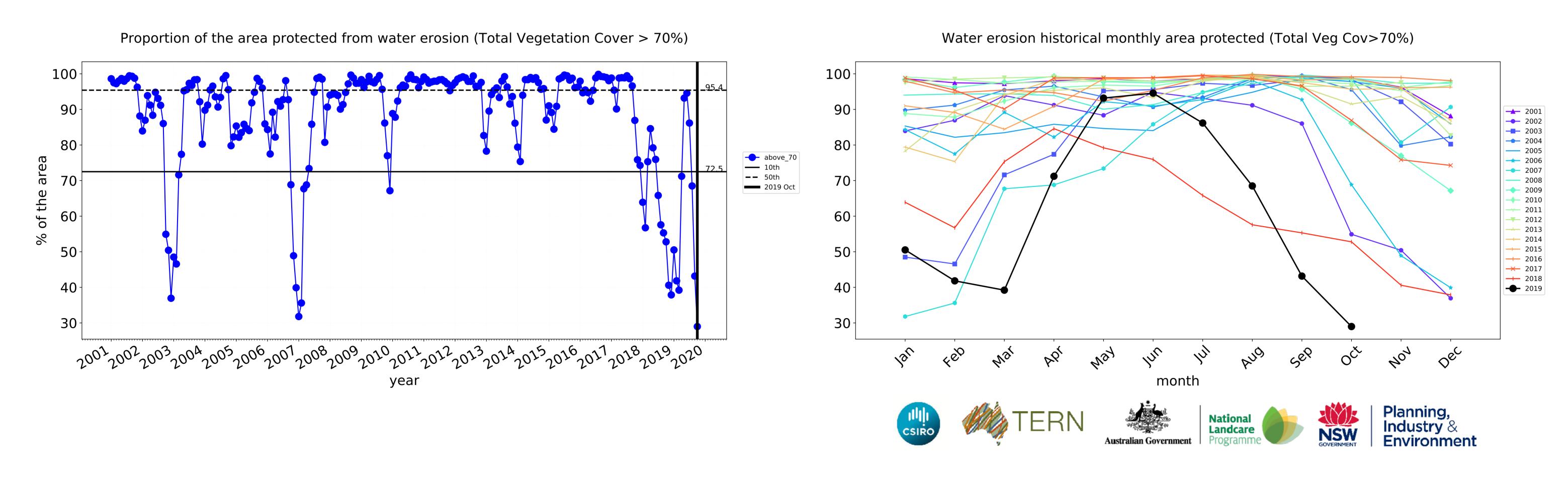


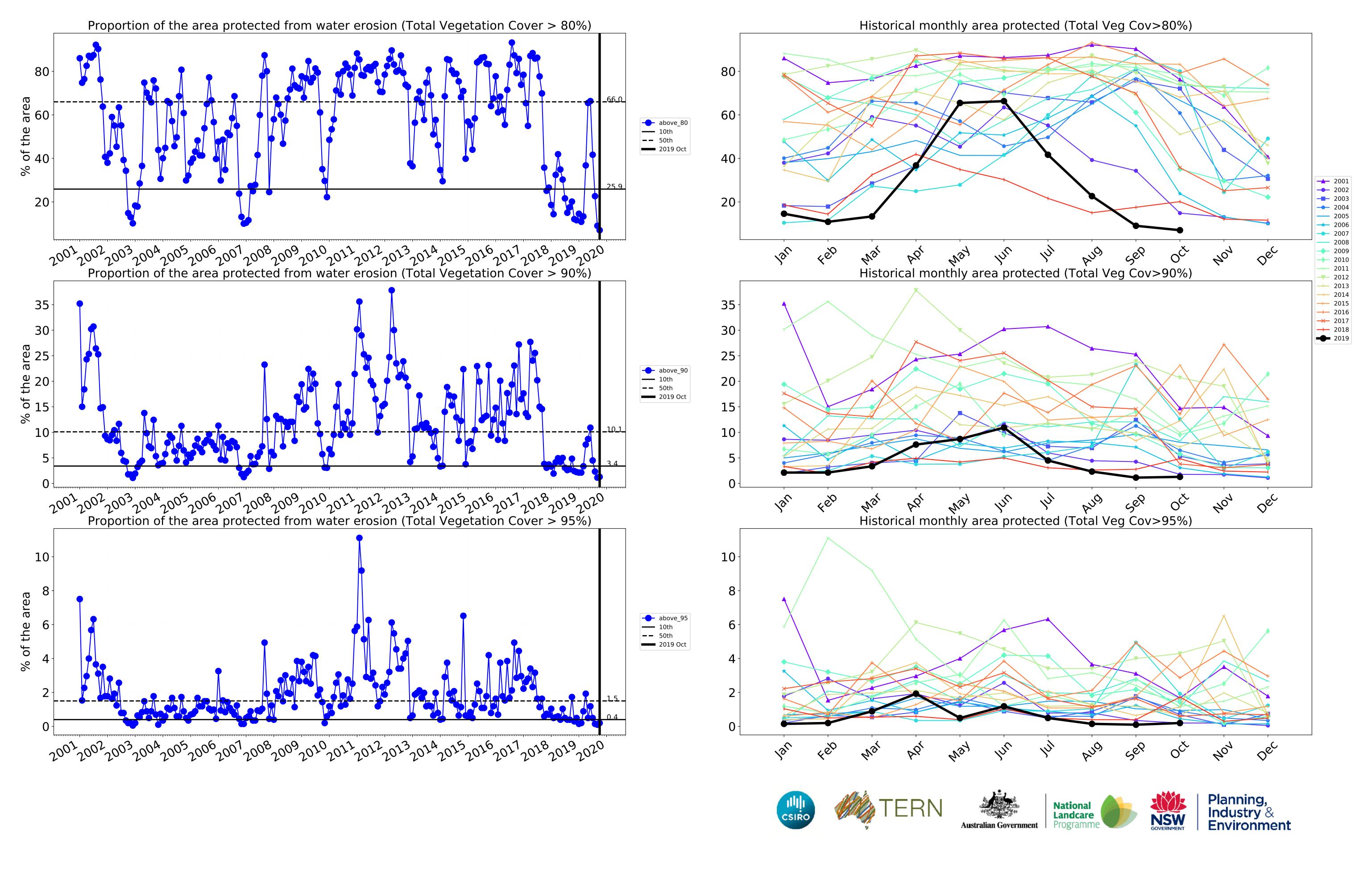




#### **Cropping timeseries**





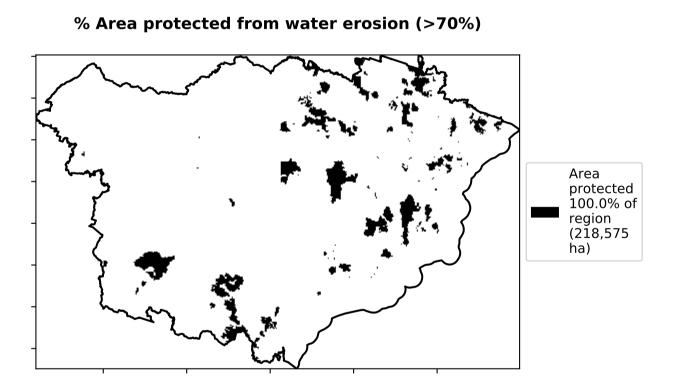


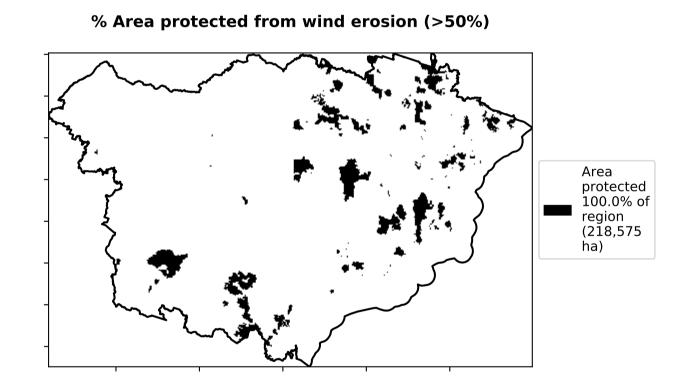
#### **Production native forests and plantation forests**

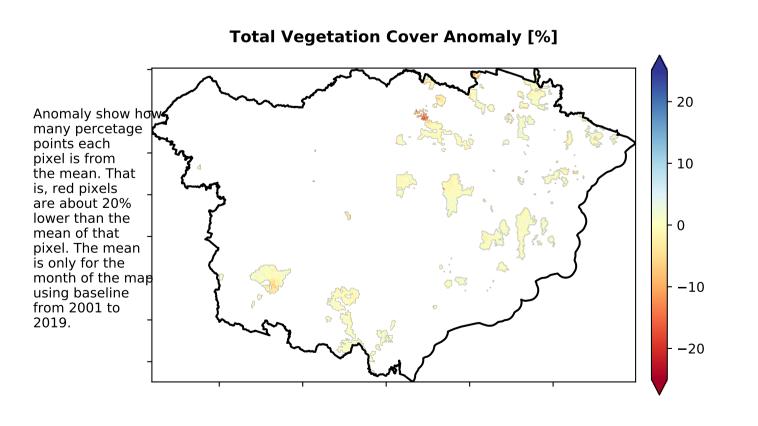
# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) Use of Australia (2018)

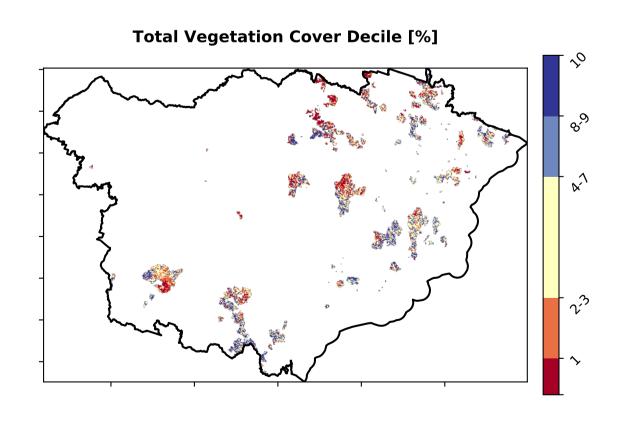
# Total Vegetation Cover [%]

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













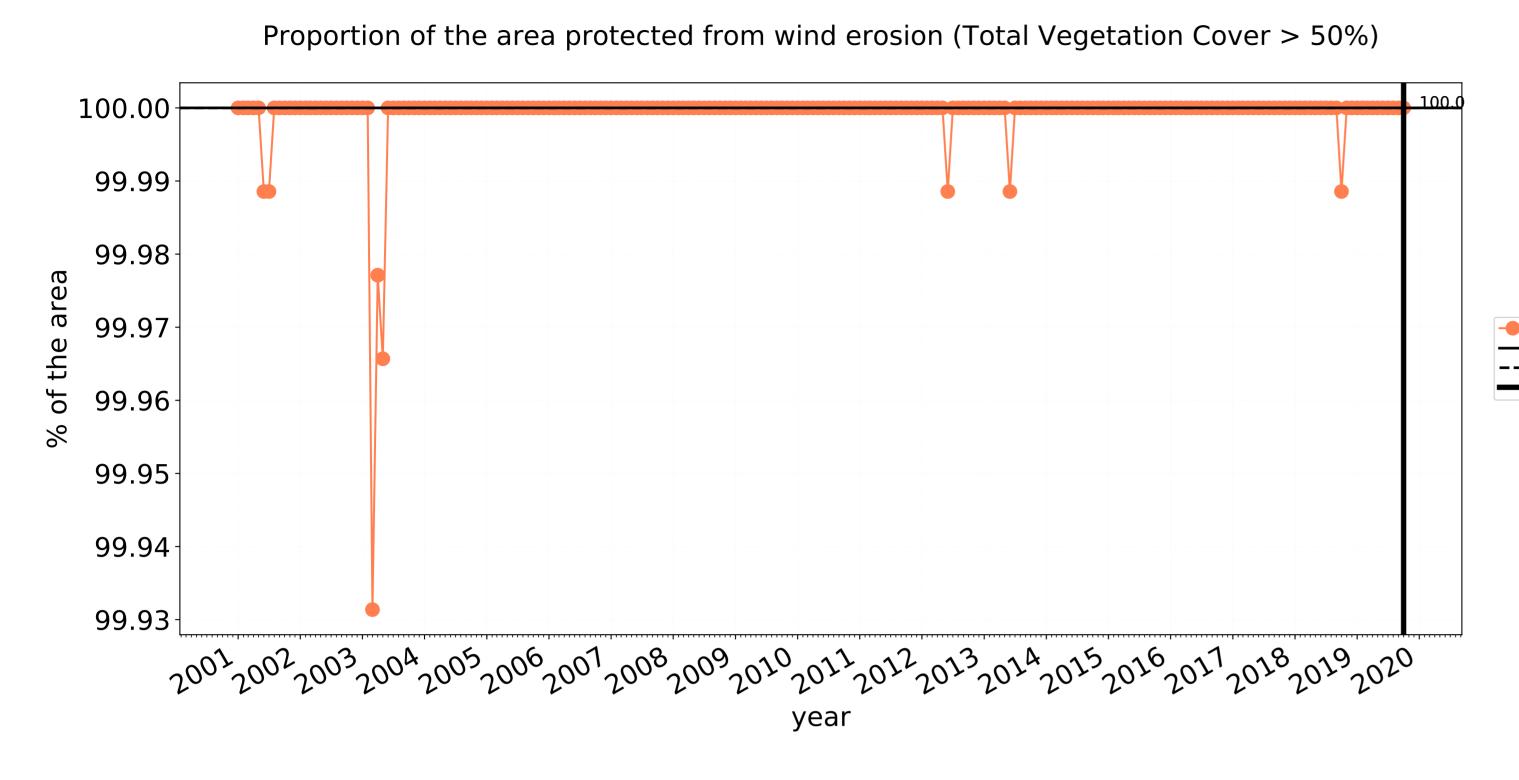


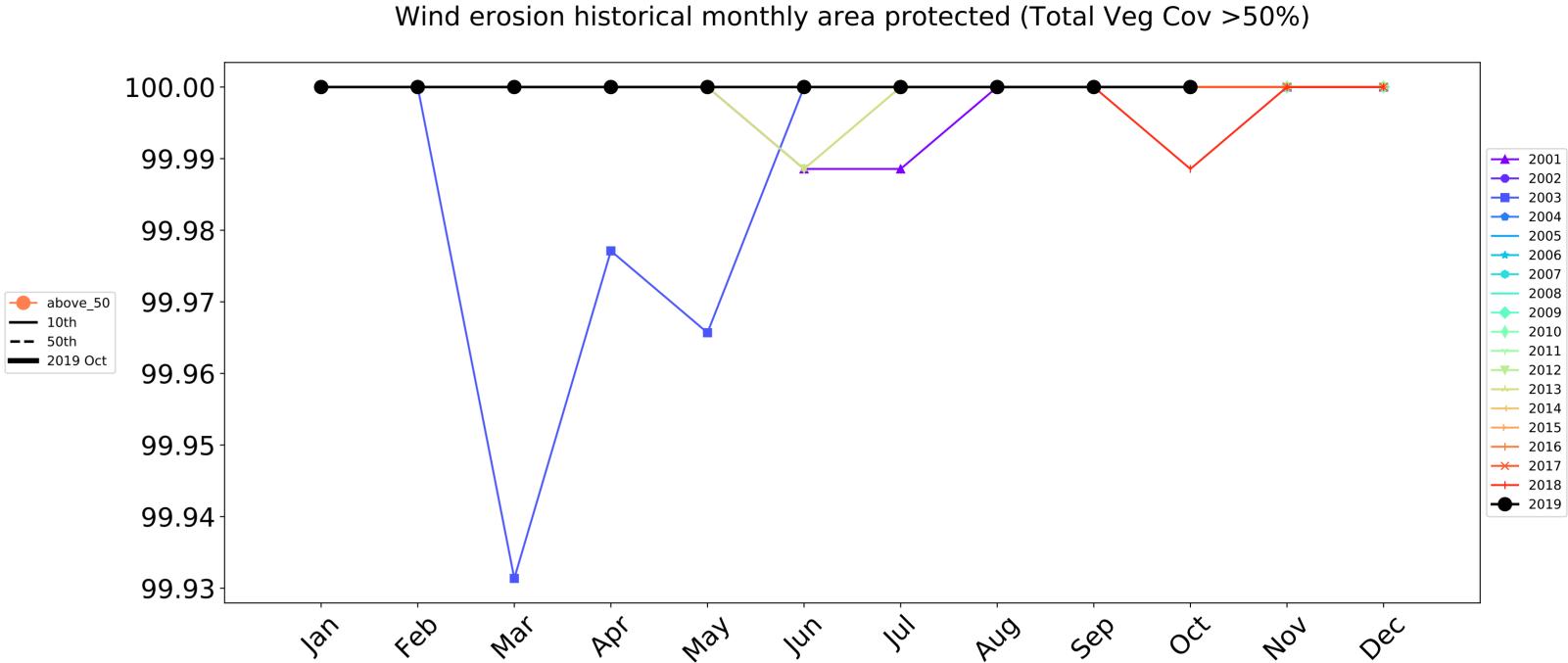






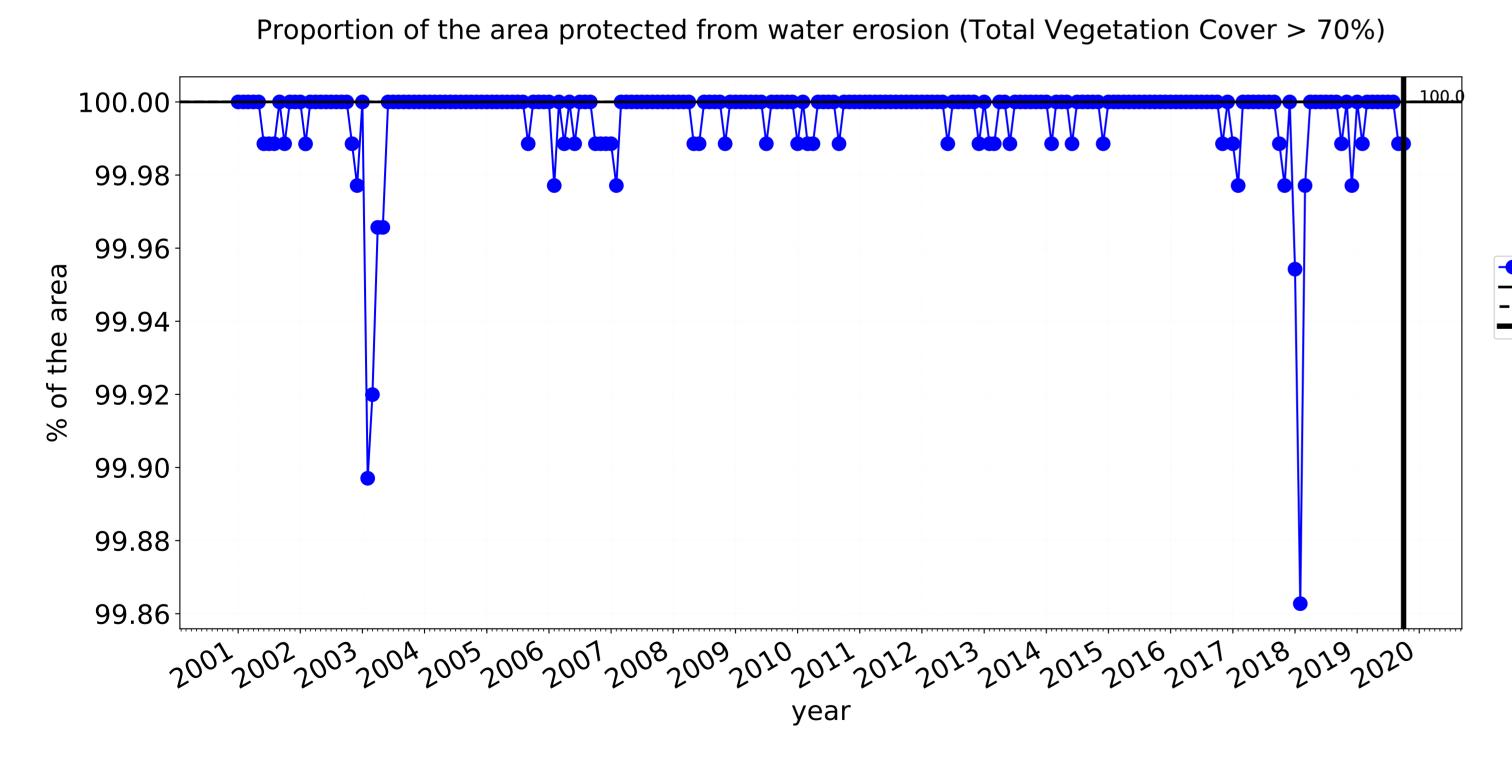
#### **Production native forests and plantation forests timeseries**

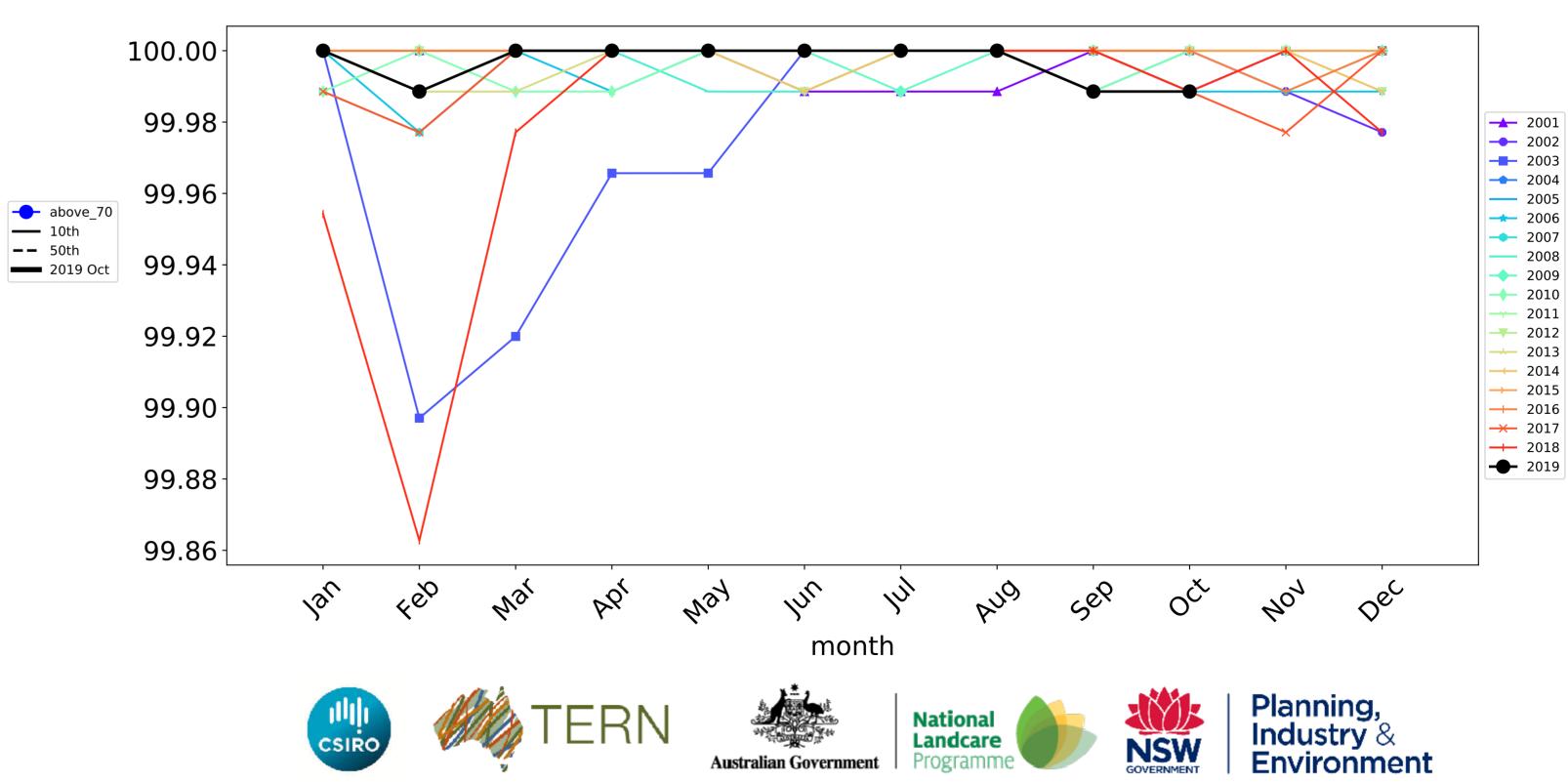


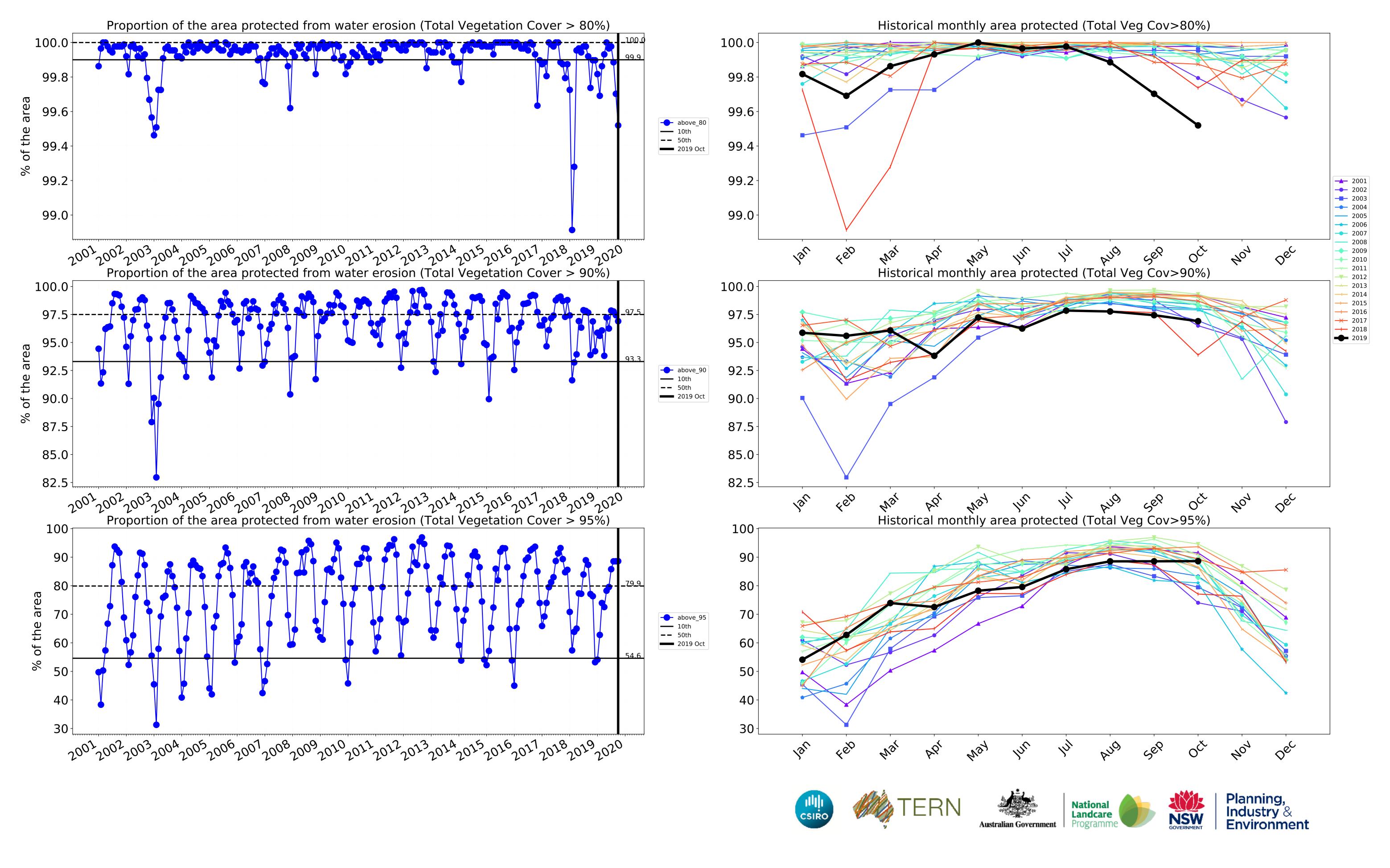


month

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







### Hunter (3,237,275 ha and no data 210,836 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	3,237,275	99.9% 3,233,275	99.5% 3,219,750	93.6% 3,029,075	80.0% 2,588,250	55.3% 1,789,325	32.0% 1,036,075
Conservation and natural environments	1,240,300	99.9% 1,239,000	99.8% 1,238,075	99.6% 1,235,650	98.7% 1,224,225	82.3% 1,020,750	54.5% 676,325
Conservation and natural environments non forest	29,950	95.8% 28,700	93.6% 28,025	90.0% 26,950	83.9% 25,125	59.1% 17,700	31.0% 9,275
Conservation and natural environments Woodland forest	138,800	100.0% 138,800	99.9% 138,700	99.7% 138,350	96.5% 133,900	63.7% 88,425	28.8% 39,975
natural environments Forest (non woodland)	1,071,550	100.0% 1,071,500	100.0% 1,071,350	99.9% 1,070,350	99.4% 1,065,200	85.4% 914,625	58.5% 627,075
Agriculture	1,580,300	100.0% 1,580,250	99.9% 1,579,100	90.5% 1,430,075	66.4% 1,048,600	32.7% 516,725	9.9% 156,750
Grazing	1,502,300	100.0% 1,502,250	99.9% 1,501,500	92.6% 1,391,475	68.8% 1,033,900	34.3% 515,100	10.4% 156,525
Grazing non forest	1,212,650	100.0% 1,212,600	99.9% 1,211,925	91.1% 1,104,750	65.8% 798,325	33.9% 410,800	9.1% 109,750
Grazing Woodland forest	120,575	100.0% 120,575	99.9% 120,500	98.3% 118,550	67.2% 81,025	15.4% 18,575	5.0% 6,000
Grazing - Forest (non woodland)	169,075	100.0% 169,075	100.0% 169,075	99.5% 168,175	91.4% 154,550	50.7% 85,725	24.1% 40,775
Cropping	50,625	100.0% 50,625	99.2% 50,225	29.0% 14,675	7.0% 3,550	1.3% 650	0.2% 100
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,550	99.5% 217,525	96.9% 211,800	88.6% 193,675











