### Total vegetation cover soil protection Region:LGA Whitsunday\_(R) QLD

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













**Date: December 2019** 

### **Vegetation Cover Dec 2019**

### Land use and forest cover

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

is, red pixels are about 20% lower than the

mean of that pixel. The mean is only for the

month of the map

using baseline from 2001 to

2019.

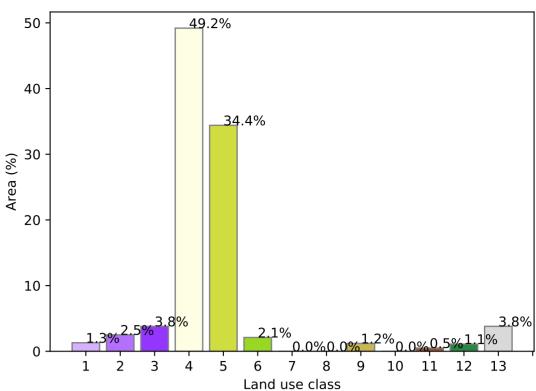
the mean. That

Derived from

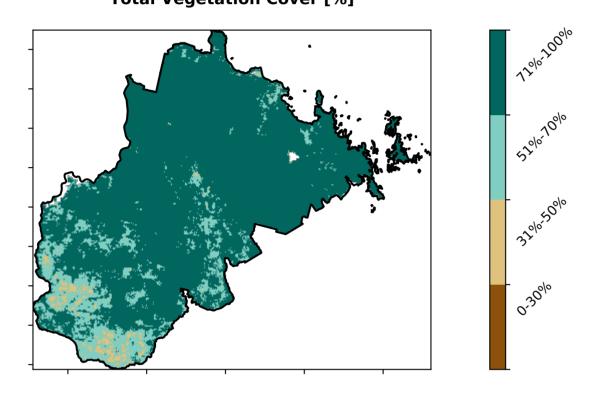
Use of Australia

### Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments -Land Use and Forests Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation forests 13 Other uses

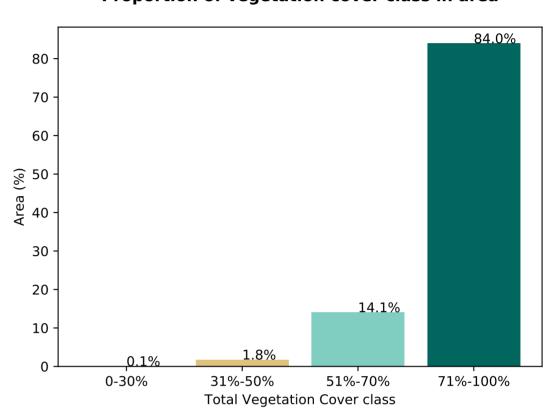
### Proportion of each land class in area

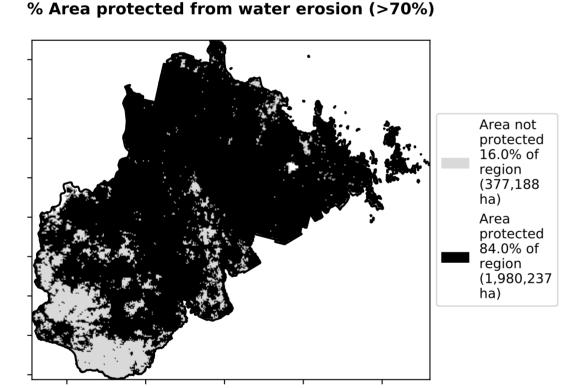


### **Total Vegetation Cover [%]**

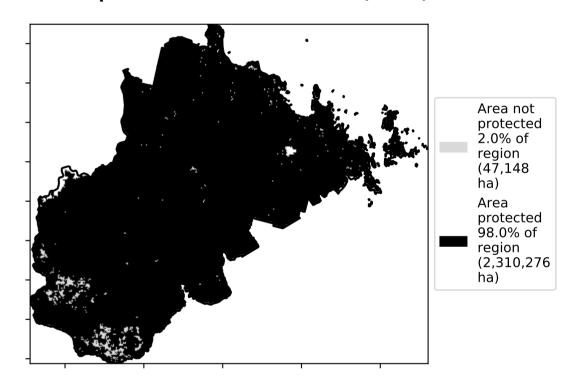


**Proportion of vegetation cover class in area** 

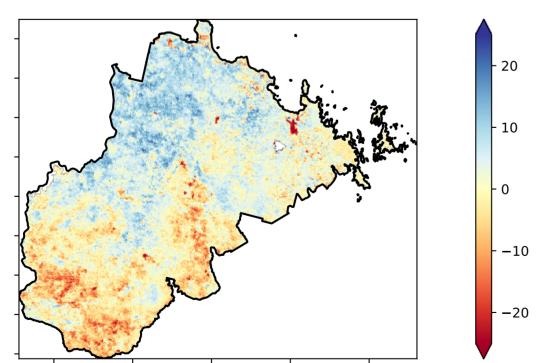




% Area protected from wind erosion (>50%)

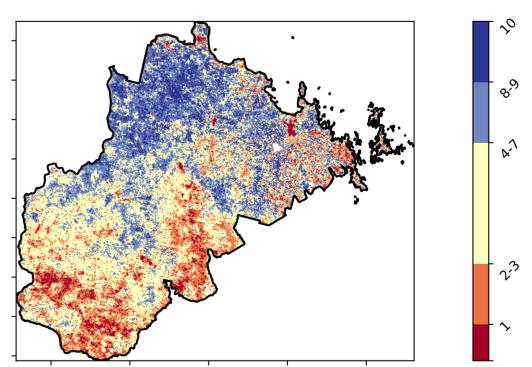


### **Total Vegetation Cover Anomaly [%]**



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

**Total Vegetation Cover Decile [%]** 





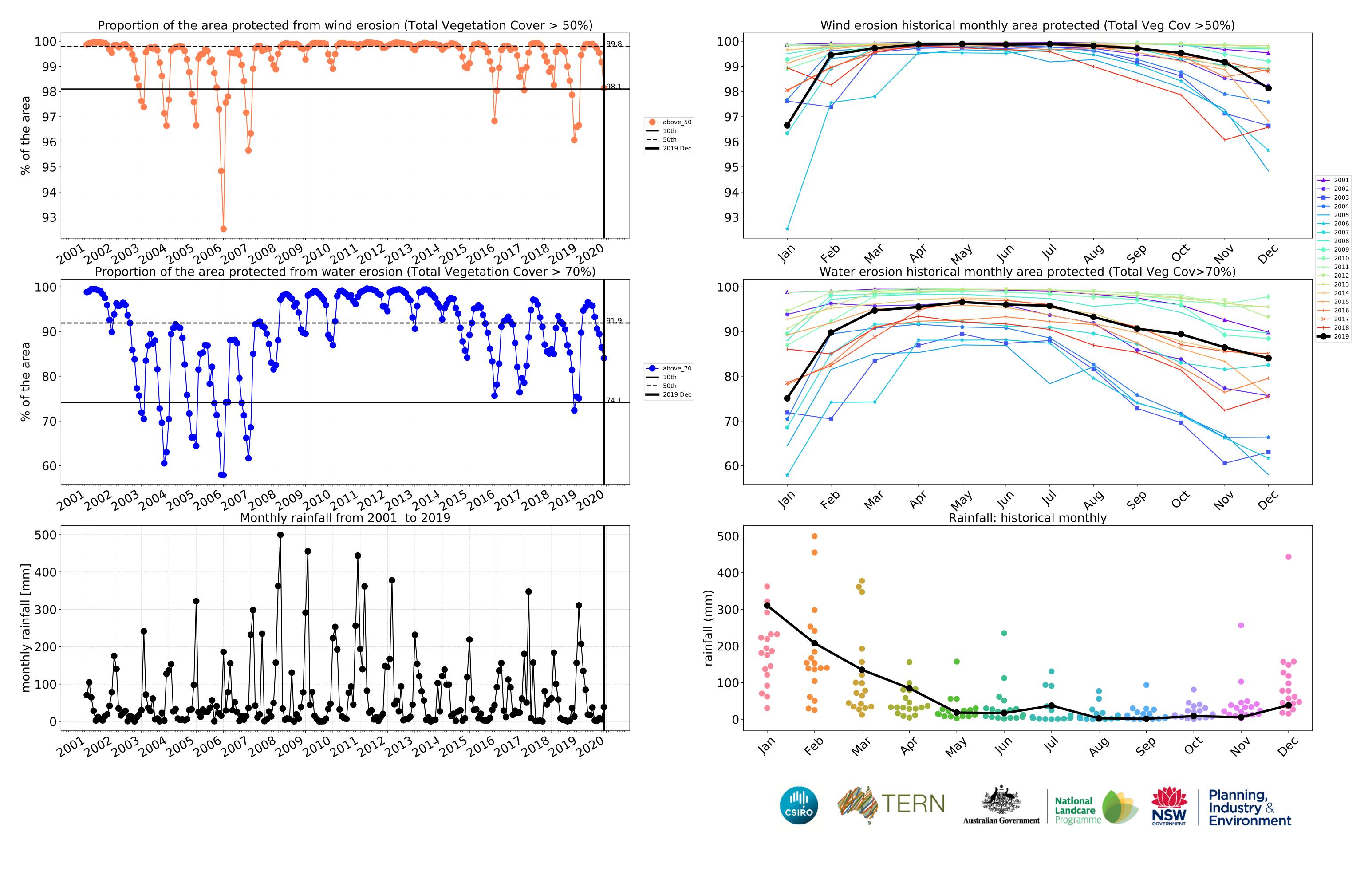












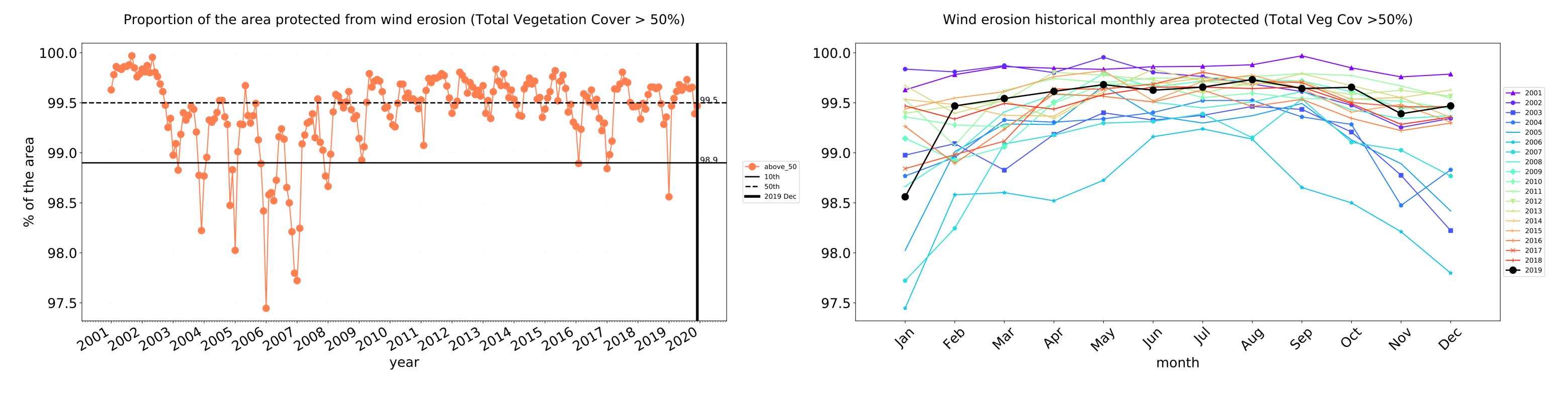
### **Conservation and natural environments**

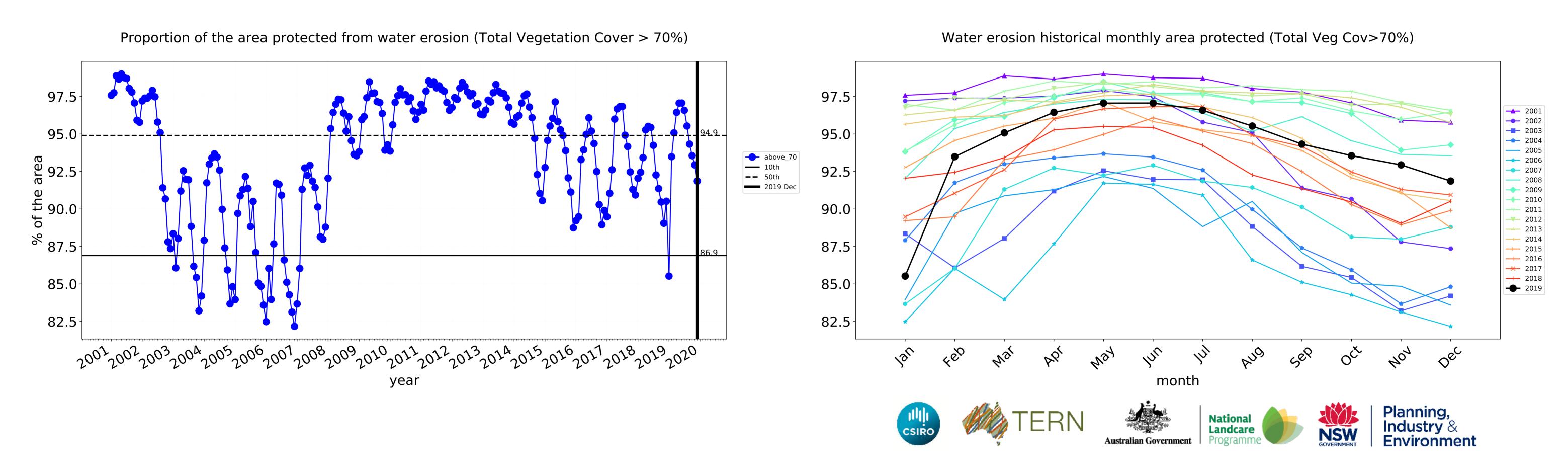
### Land use and forest cover Proportion of each land class in area 50.2% 50 40 Catchment Scale 32.8% Land Use and Forests 1 Conservation and natural environments - Nonof Australia (2018) Area (%) 0 Derived from 2 Conservation and natural environments - Woodland Catchment Scale Land Use of Australia 3 Conservation and natural environments - Non-(2018) and Forests of Australia (2018) 17.0% 10 2 3 Land use class Proportion of vegetation cover class in area **Total Vegetation Cover [%]** 91.9% 80 60 20 7.6% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class** % Area protected from water erosion (>70%) % Area protected from wind erosion (>50%) Area not Area not protected 0.0% of protected 8.1% of region (13,737 region (0 ha) ha) Area Area protected 100.0% of protected 91.9% of region (169,600 region (155,862 ha) ha) **Total Vegetation Cover Decile [%] Total Vegetation Cover Anomaly [%]** - 20 Anomaly show how many percetage points each pixel is from Deciles show where the pixel value lies in the - 10 the mean. That is, red pixels record, from highest to lowest, for that month. That is, red pixels are are about 20% lower than the mean of that in the lowest 10% of pixel. The mean records for that month of the map using baseline from 2001 to 2019. is only for the month of the map using baseline from 2001 to 2019. -10**-**20 Planning, Industry & Environment National

Australian Government

Landcare Programme

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





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

### Land use and forest cover 1 Conservation and natural environments - Non-

# **Total Vegetation Cover [%]**

Catchment Scale Land Use and Forests of Australia (2018)

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

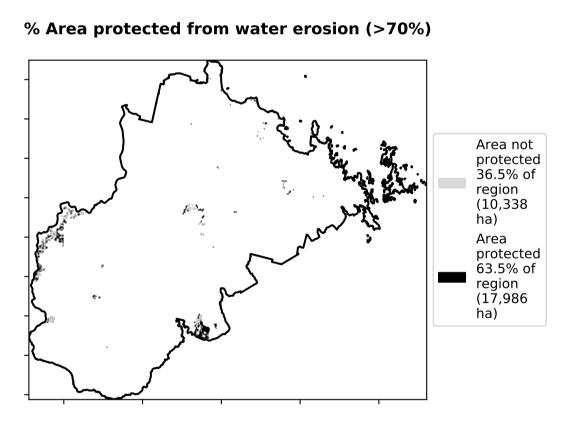
of Australia (2018)

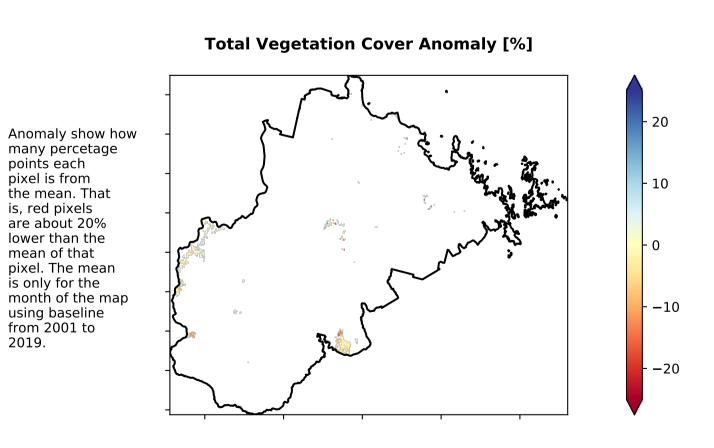
the mean. That is, red pixels

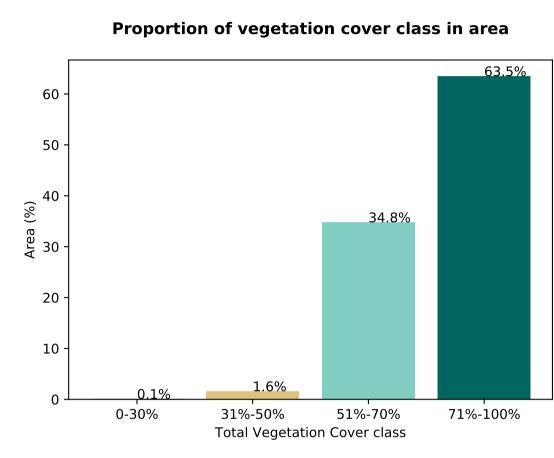
are about 20% lower than the

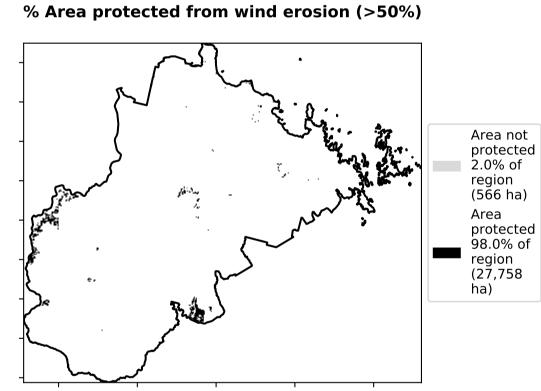
mean of that pixel. The mean

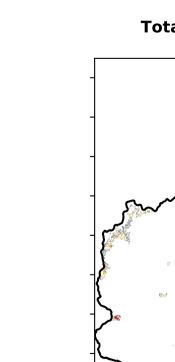
using baseline from 2001 to 2019.

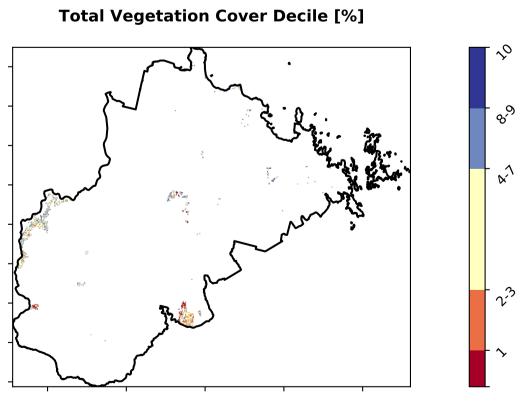


















Deciles show where the pixel value lies in the

record, from highest to

lowest, for that month.
That is, red pixels are
in the lowest 10% of
records for that month of

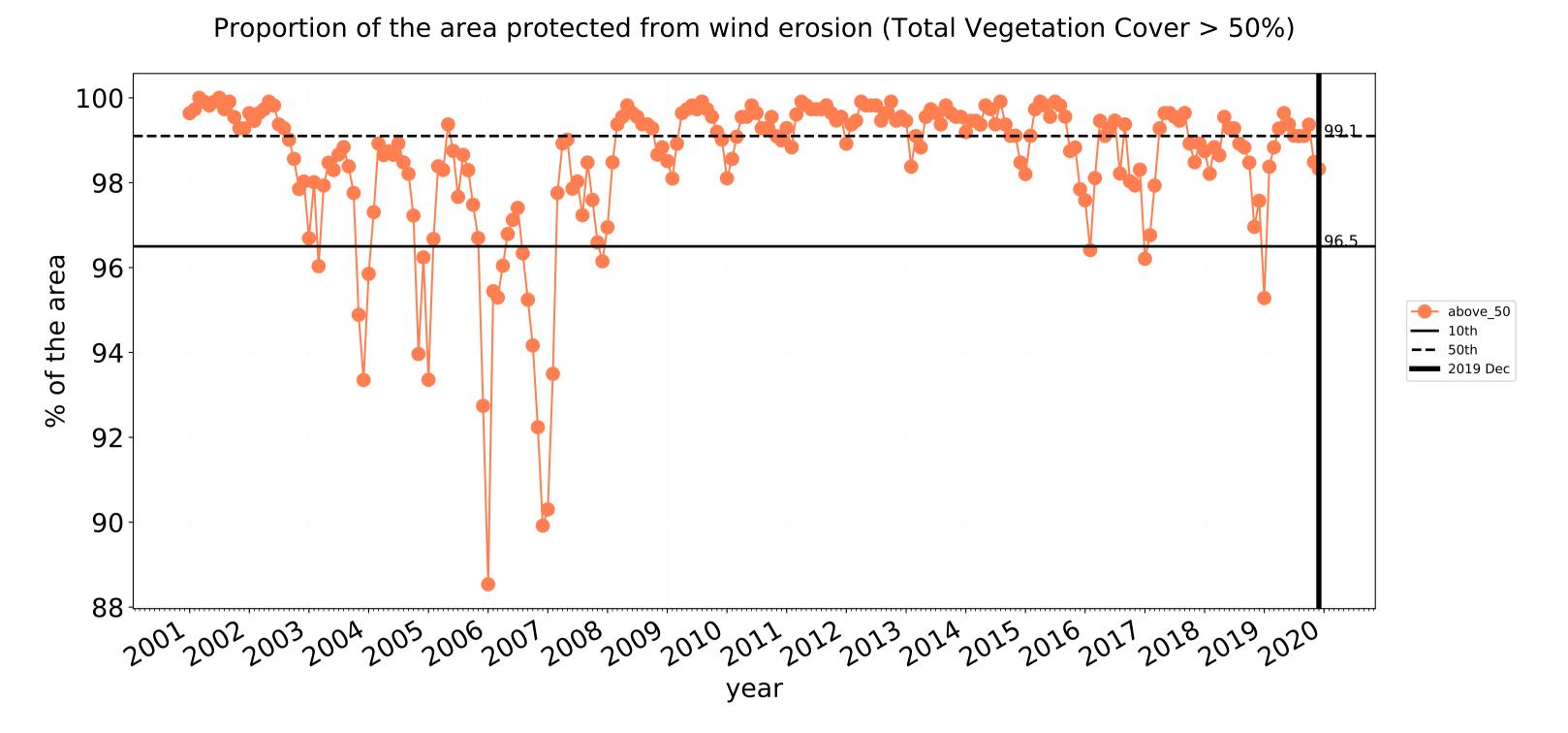
the map using baseline from 2001 to 2019.

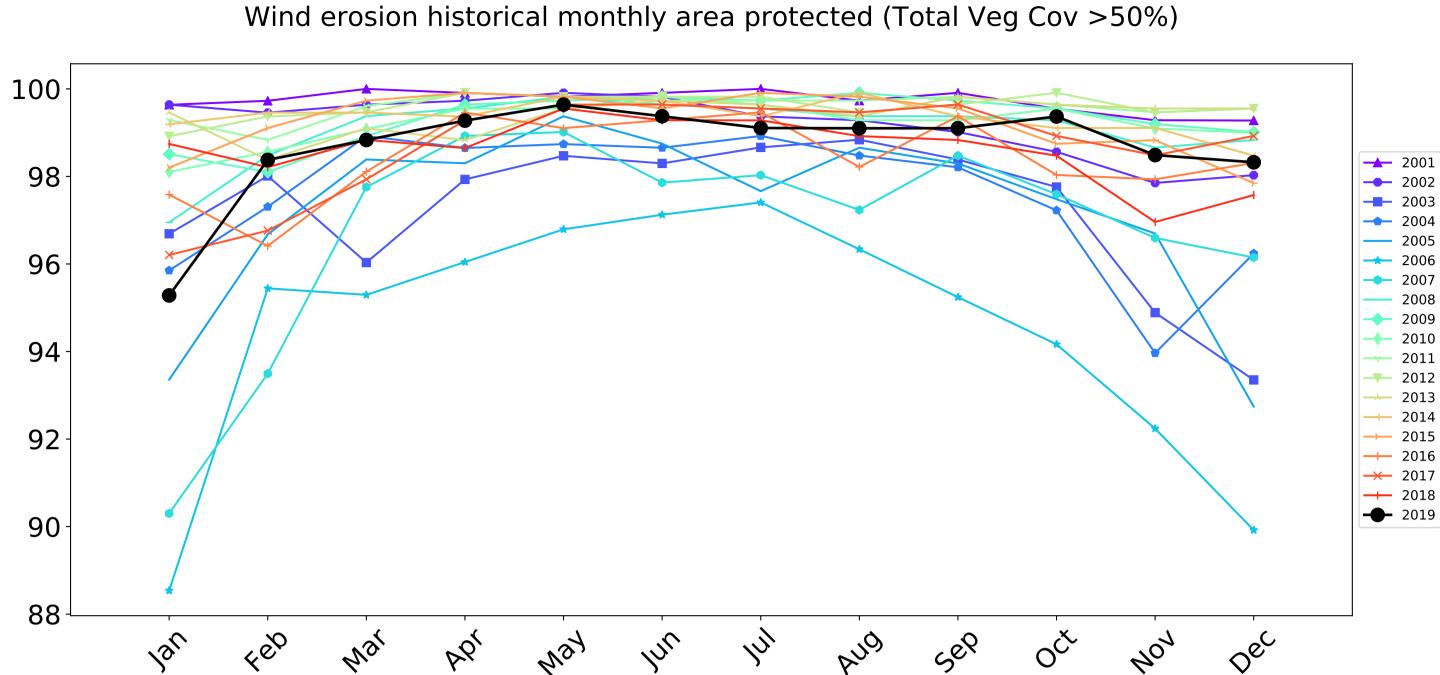




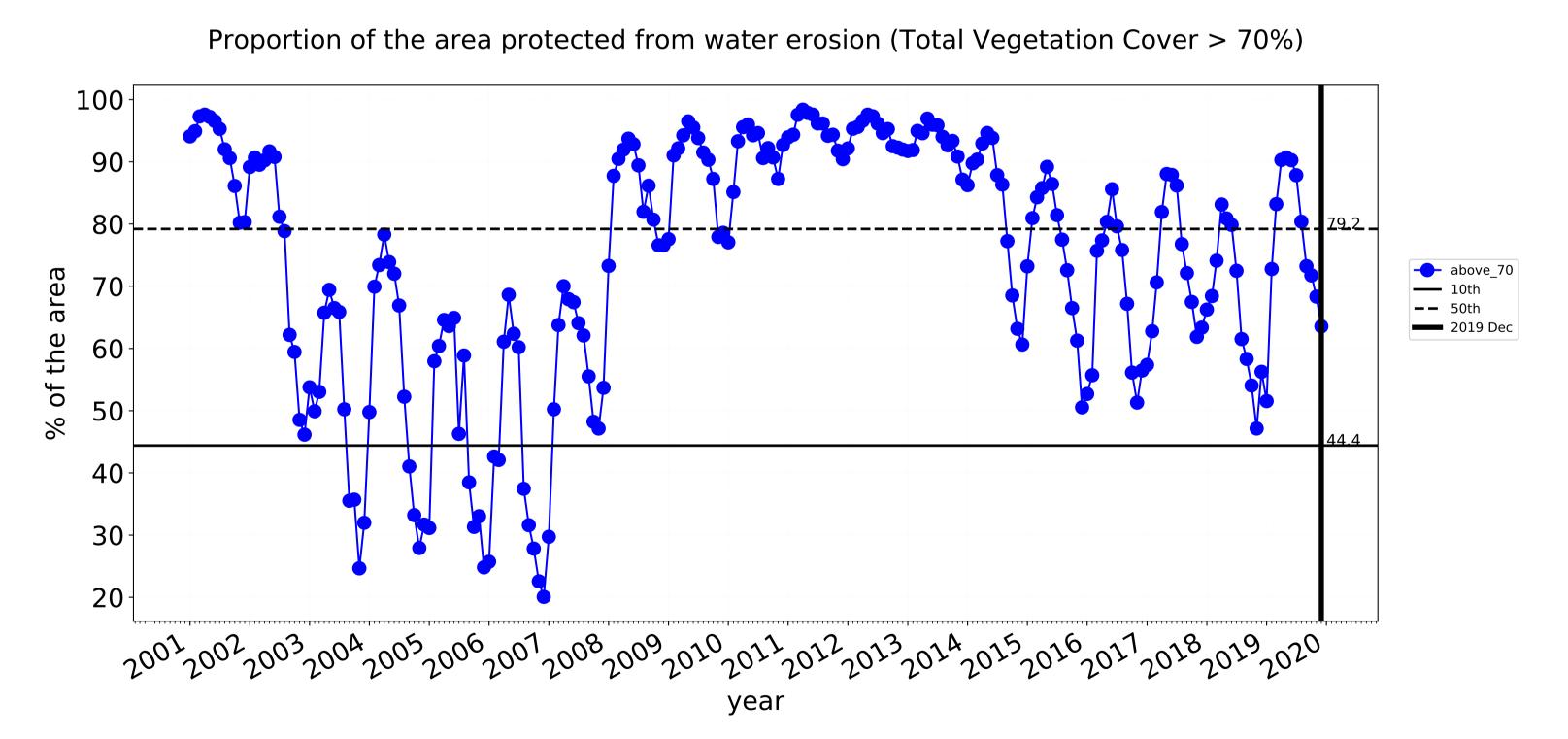


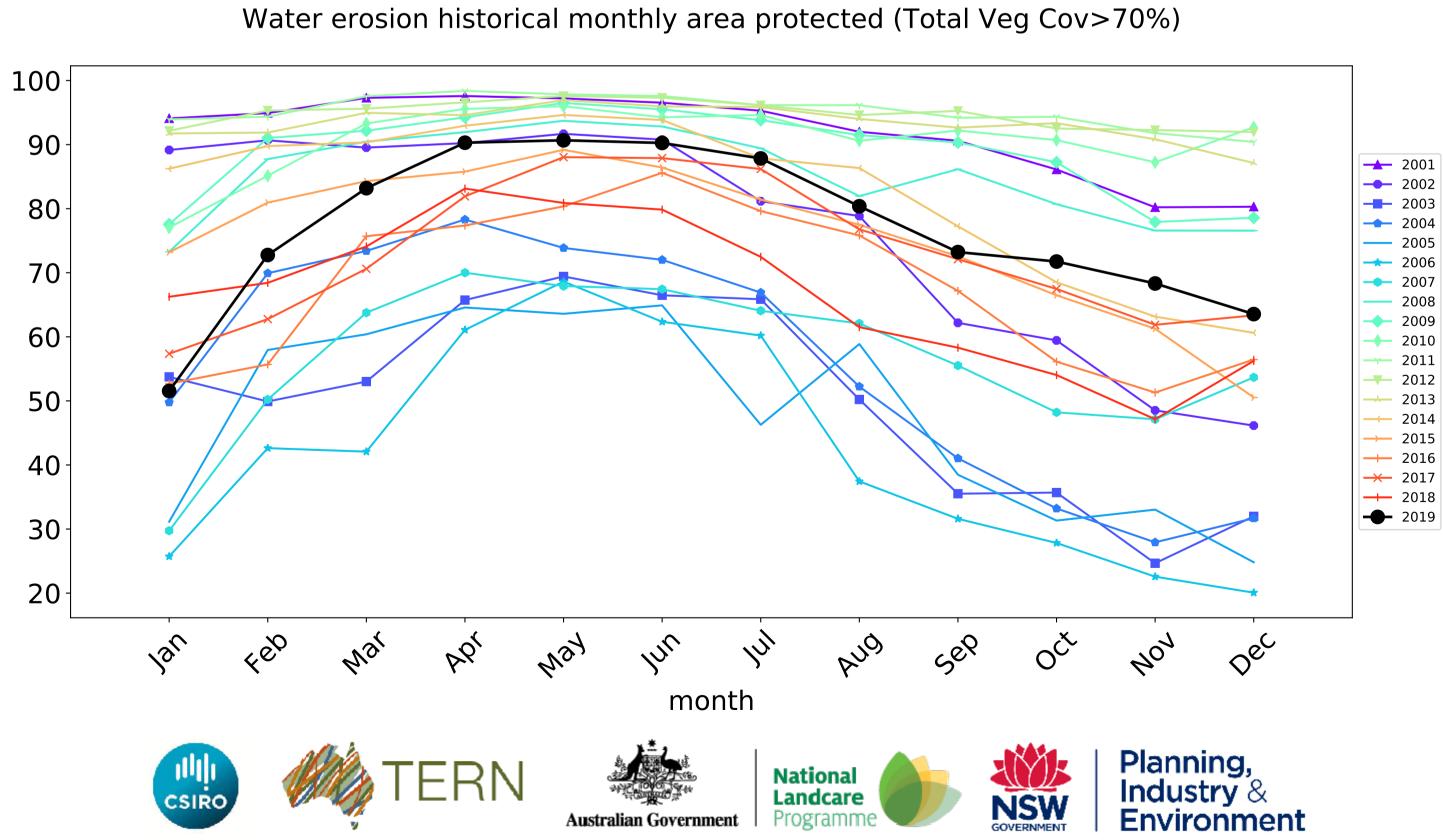
### **Conservation and natural environments non forest timeseries**





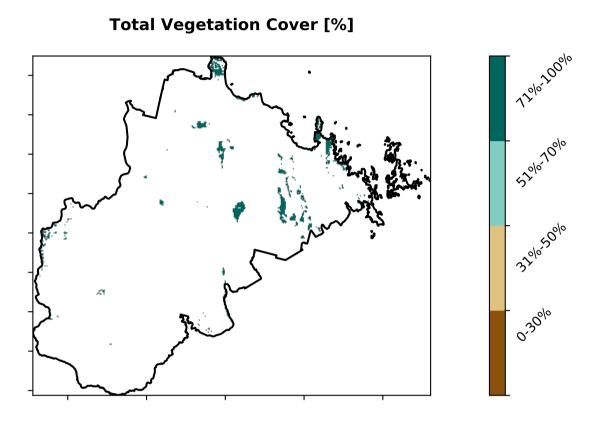
month



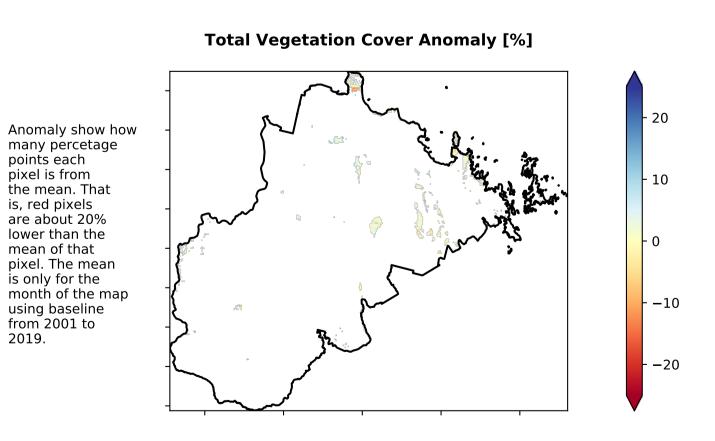


### **Conservation and natural environments Woodland forest**

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

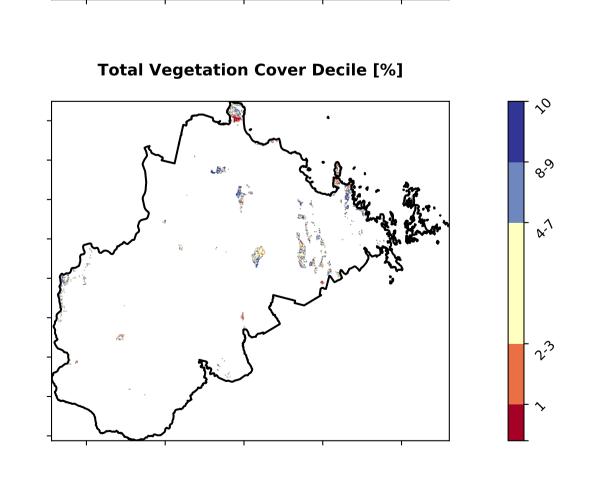


# Area not protected 2.6% of region (1,482 ha) Area protected 97.4% of region (55,518 ha)



# 100 - 97.4% 80 - 60 - 20 - 0.0% 0.2% 2.4% 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



Area not protected 0.0% of

region (0 ha)

protected 100.0% of

region (57,000

Area

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

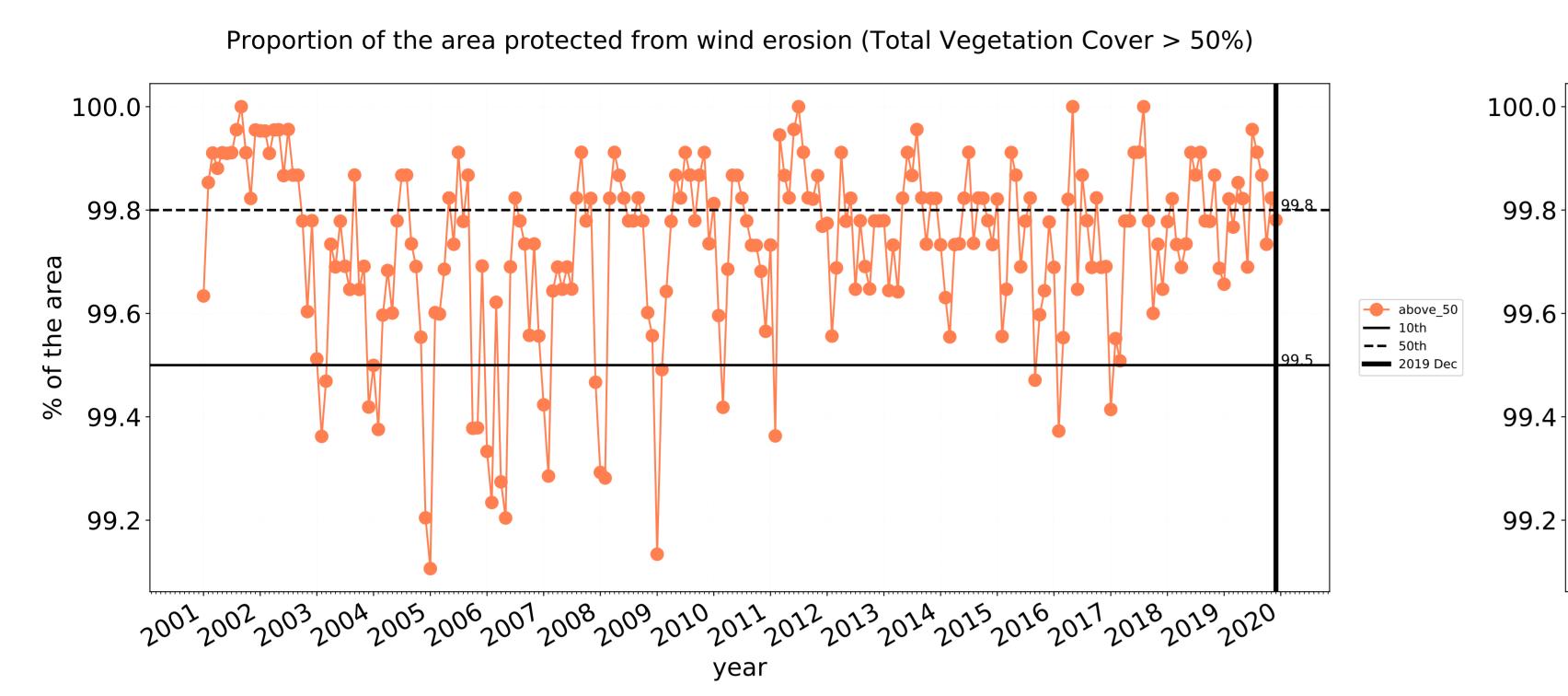
records for that month of

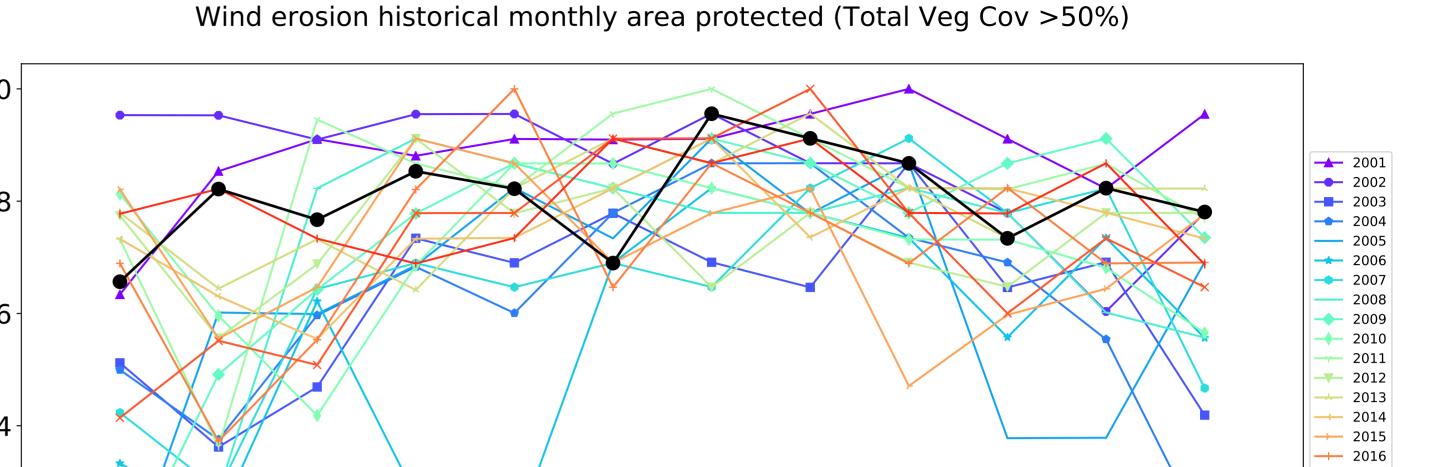
the map using baseline from 2001 to 2019.



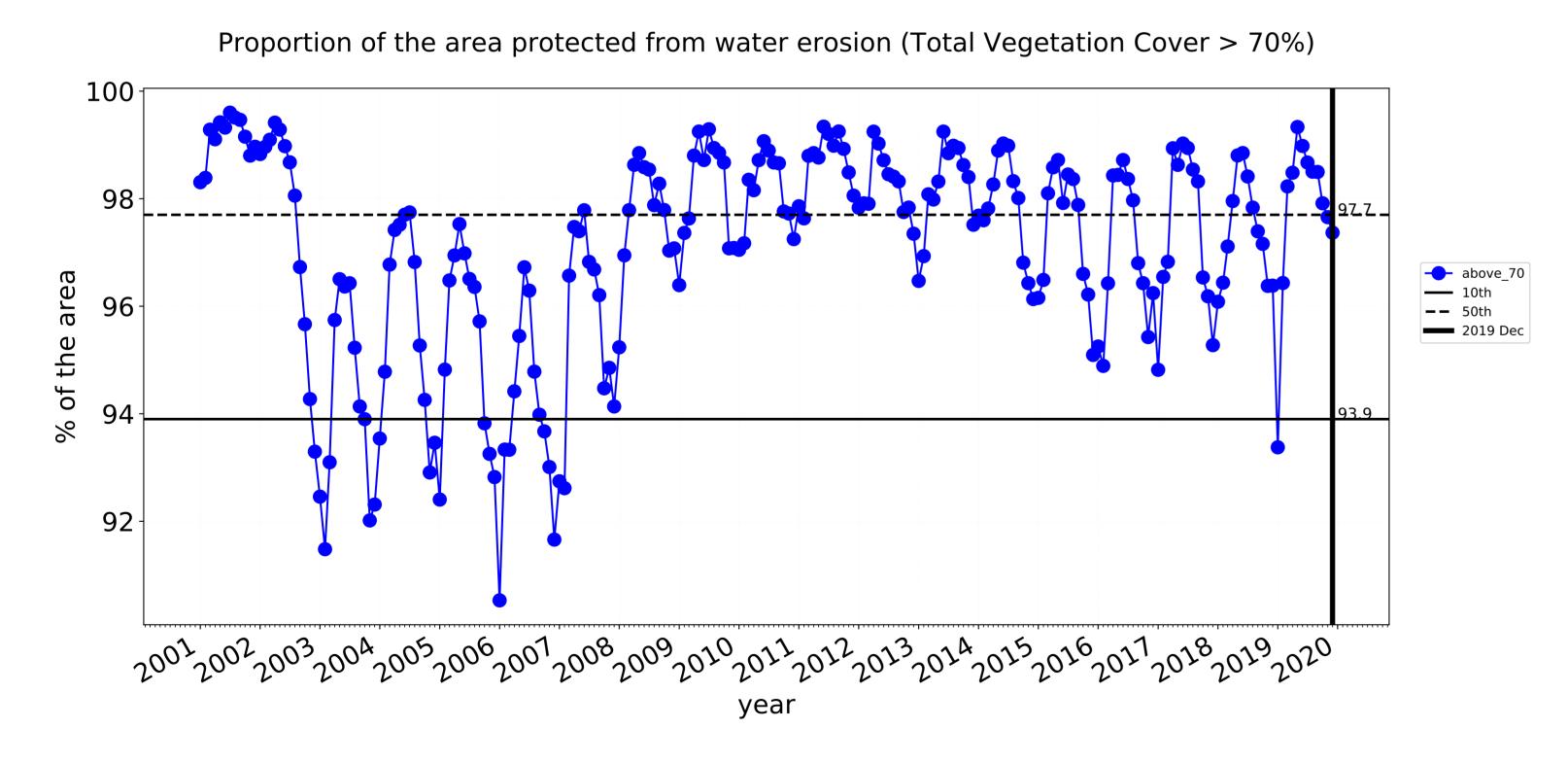


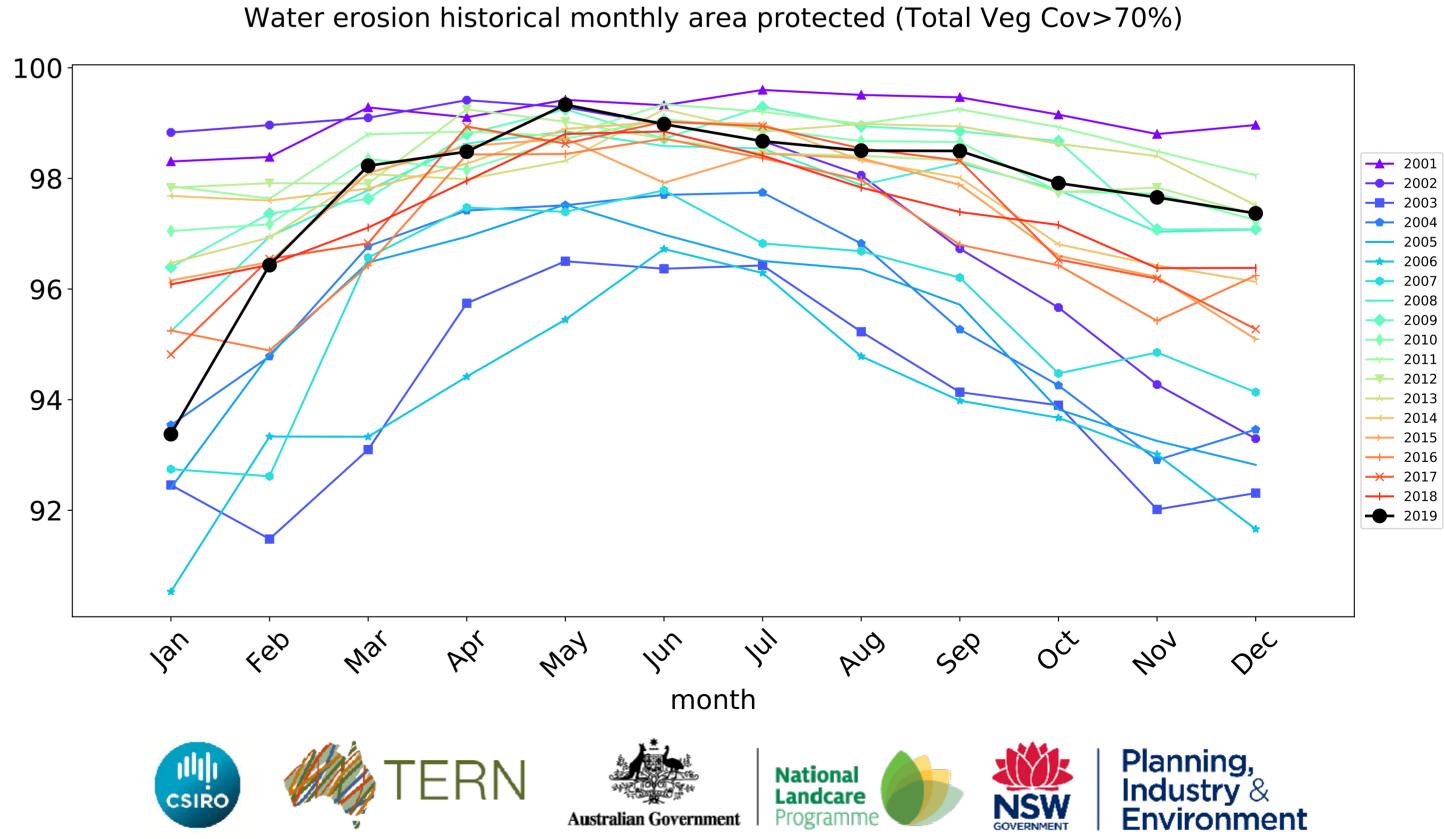






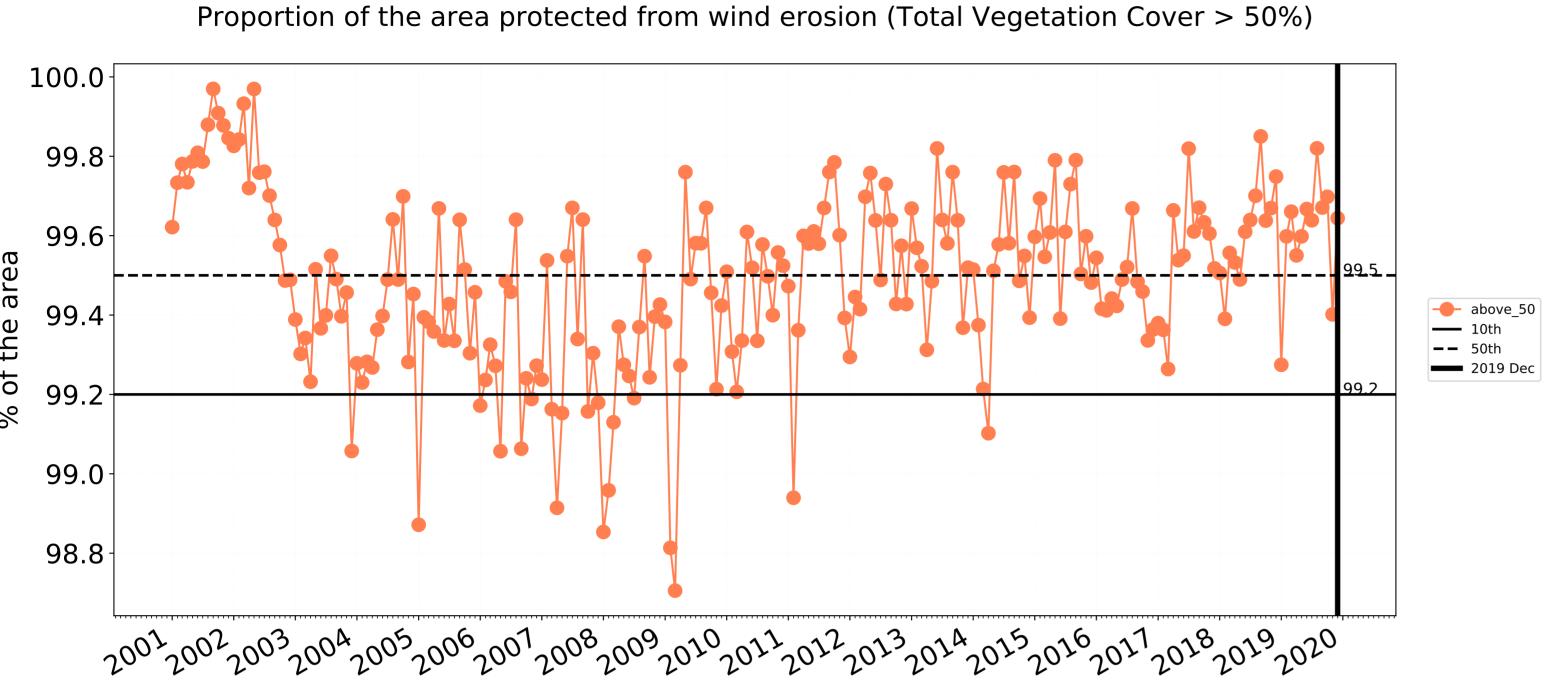
2017 --- 2018 --- 2019

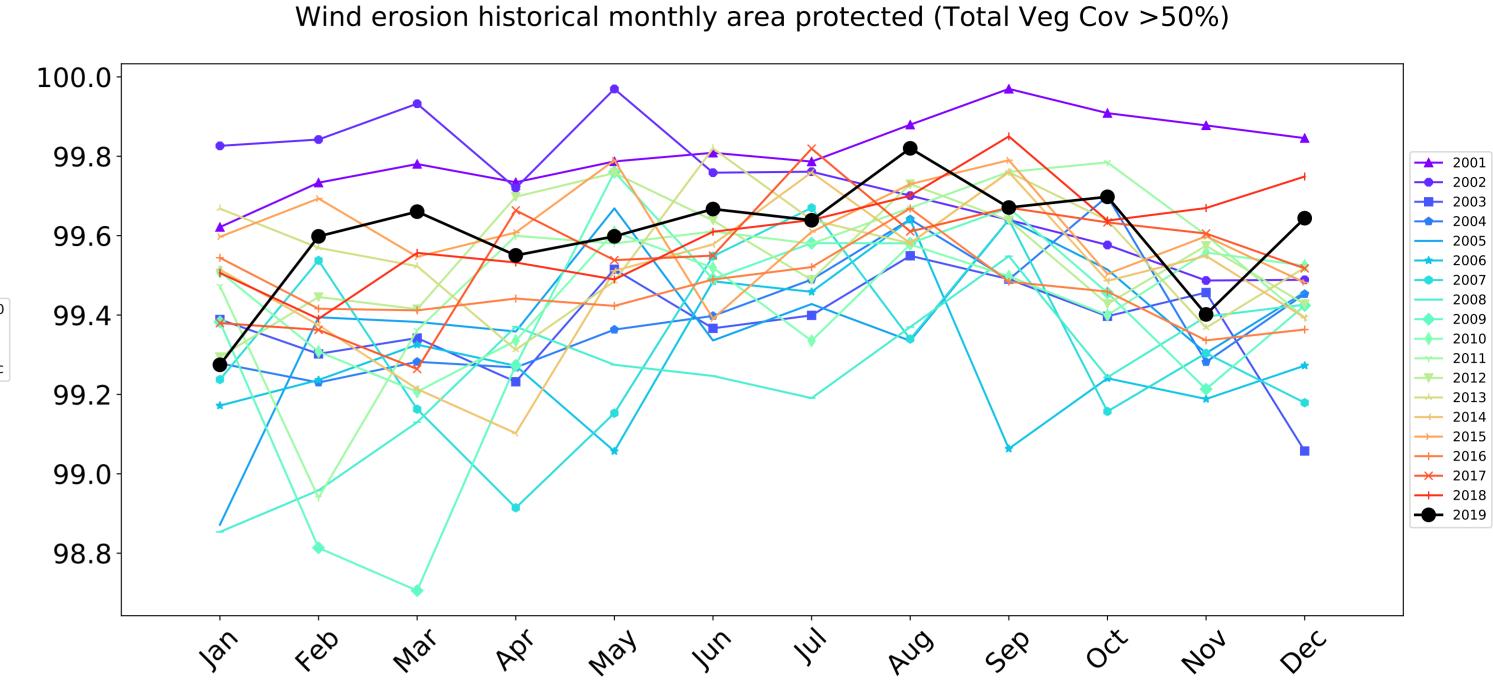




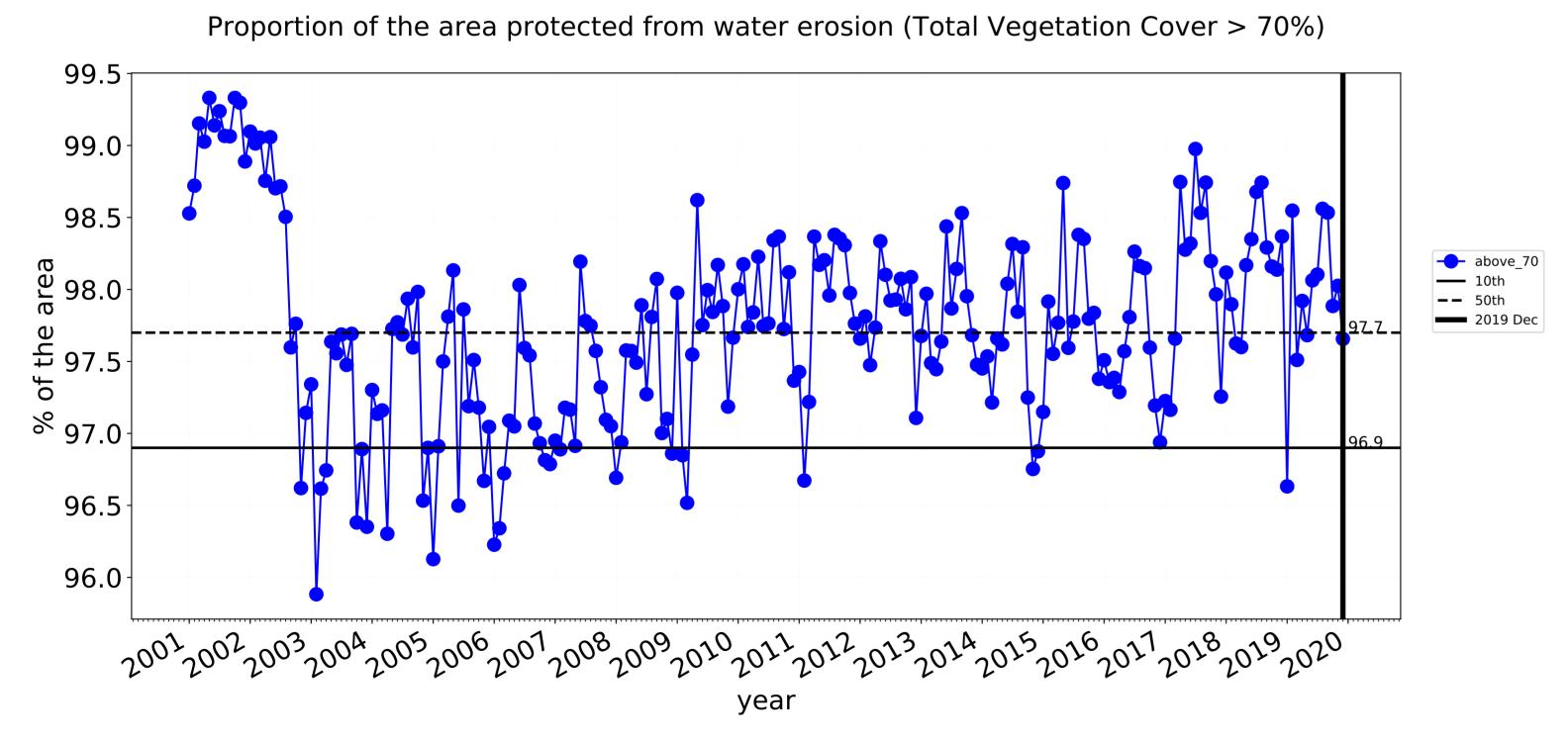
month

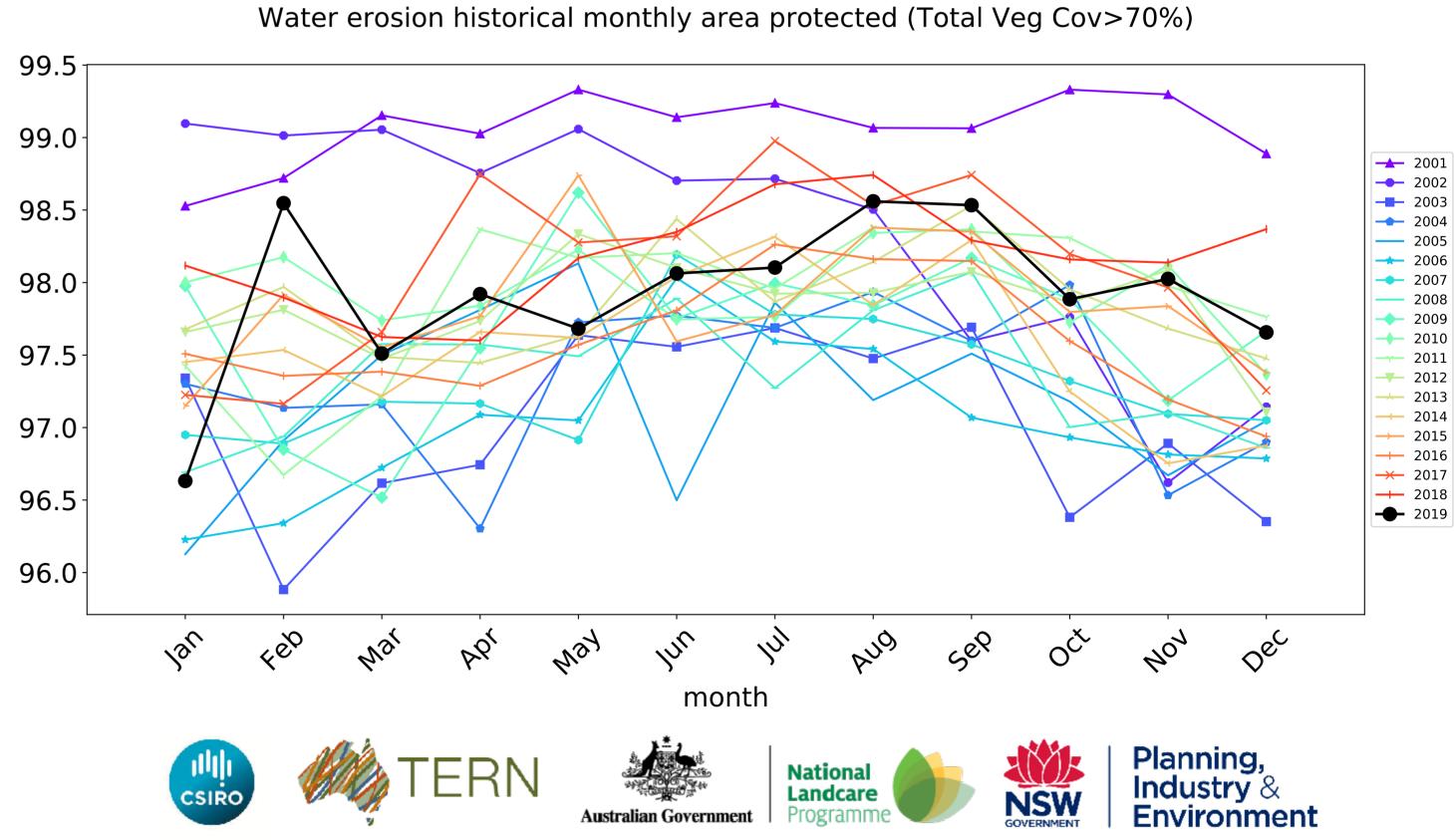
### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Non-Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) **Total Vegetation Cover [%] Proportion of vegetation cover class in area** 100 97.7% 80 60 20 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class** % Area protected from water erosion (>70%) % Area protected from wind erosion (>50%) Area not protected 2.3% of Area not protected 0.0% of region (1,938 ha) region (0 ha) Area Area protected 100.0% of protected 97.7% of region (82,336 region (84,275 ha) ha) **Total Vegetation Cover Anomaly [%] Total Vegetation Cover Decile [%]** - 20 Anomaly show how many percetage points each pixel is from the mean. That 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 - 10 is, red pixels are about 20% lower than the mean of that pixel. The mean records for that month of is only for the month of the map the map using baseline from 2001 to 2019. using baseline from 2001 to 2019. -10**-**20 Planning, Industry & Environment National Landcare Programme Australian Government





month

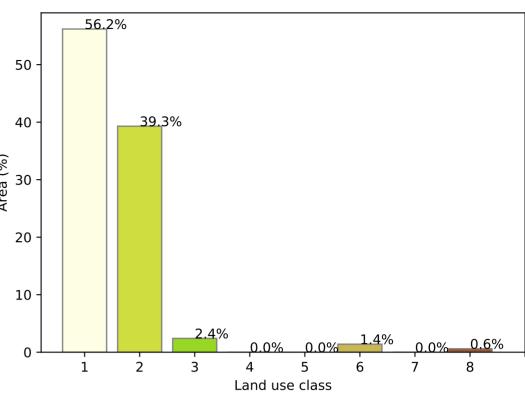




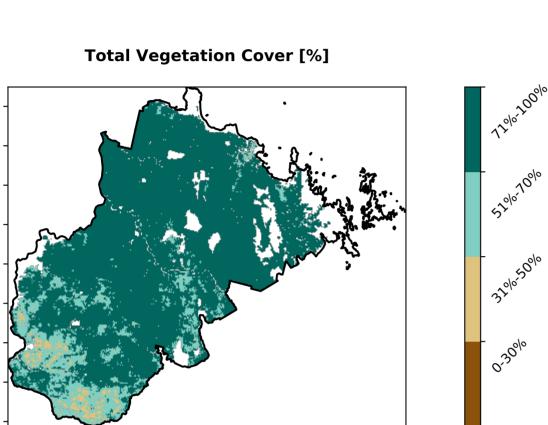
### **Agriculture**

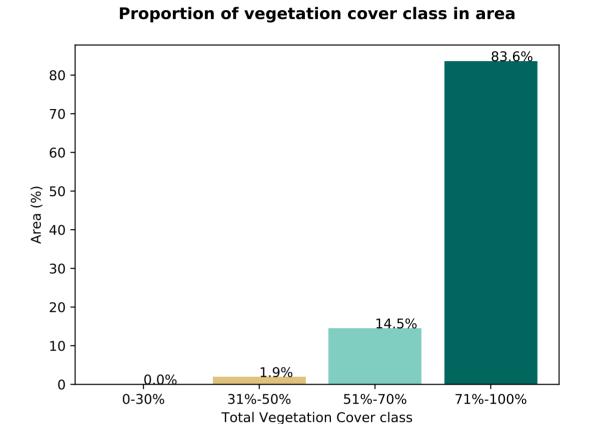
### Land use and forest cover 1 Agriculture - Grazing - Non forest Catchment Scale 2 Agriculture - Grazing - Woodland forest Land Use and Forests of Australia (2018) 3 Agriculture - Grazing - Non-woodland forest Derived from 4 Agriculture - Grazing - Irrigated Catchment Scale Land 5 Agriculture - Cropping - Non-irrigated Use of Australia 6 Agriculture - Cropping - Irrigated (2018) and Forests of Australia (2018) 7 Agriculture - Horticulture - Non-irrigated 8 Agriculture - Horticulture - Irrigated

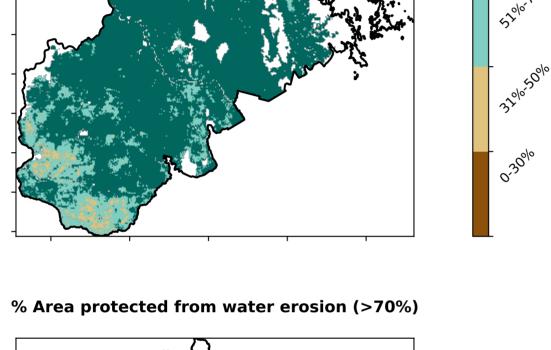
### 56.2% 50 39.3% 40 Area (%) 20 10



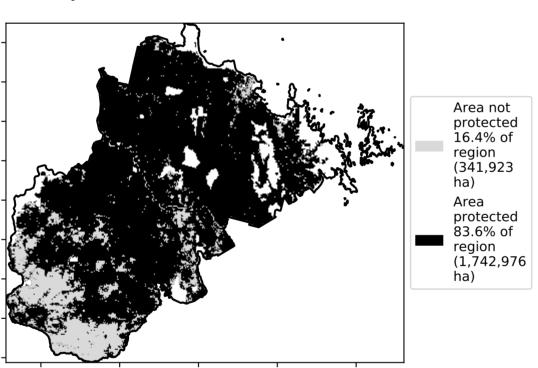
Proportion of each land class in area

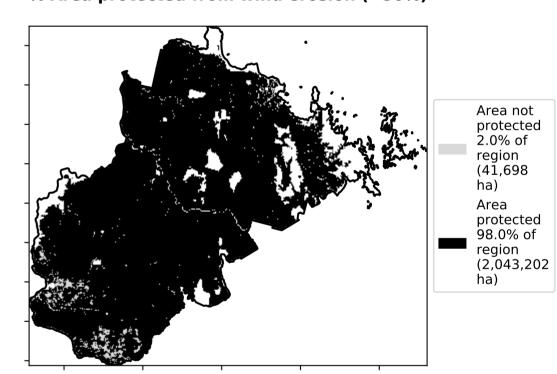












### **Total Vegetation Cover Anomaly [%]**

Anomaly show how many percetage points each pixel is from

the mean. That

pixel. The mean

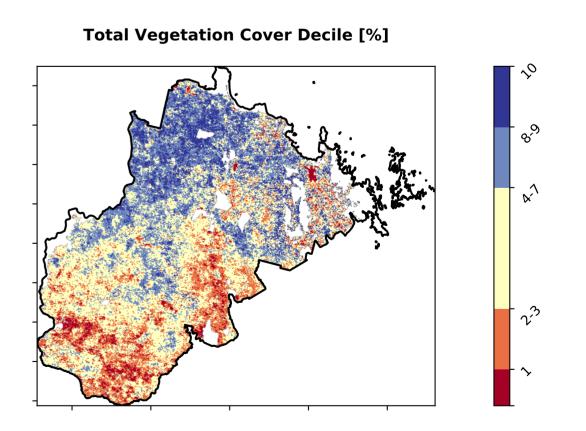
using baseline from 2001 to 2019.

is only for the month of the map

is, red pixels are about 20% lower than the mean of that

20 10 -10 -20

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







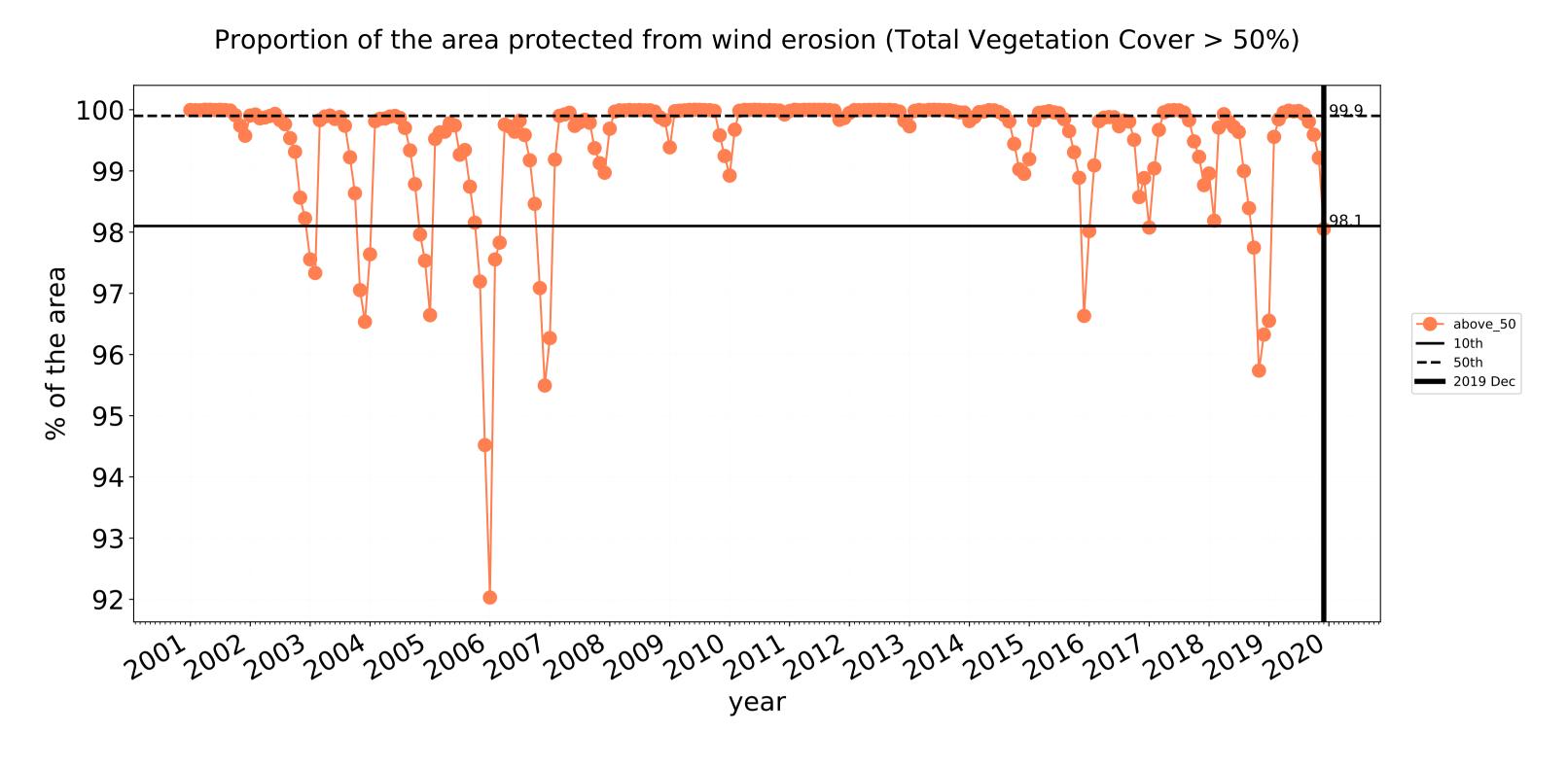


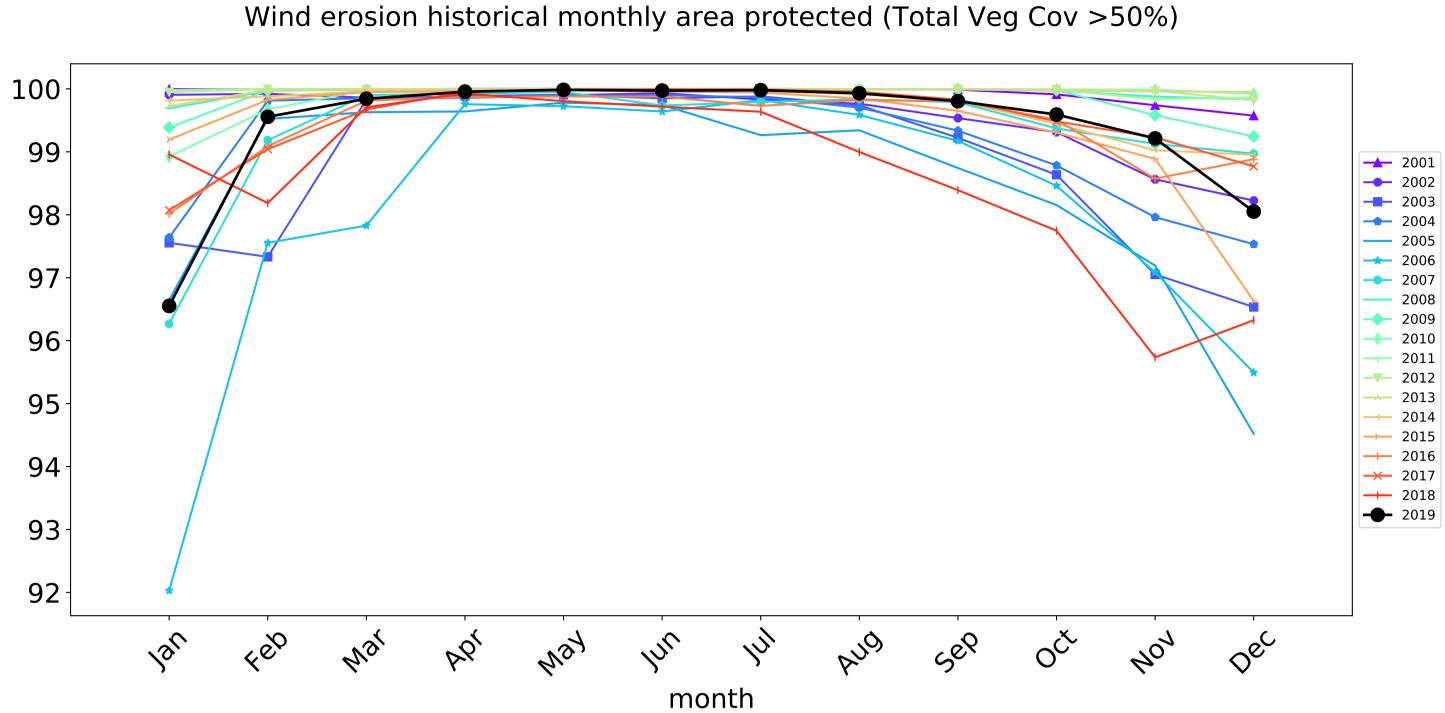


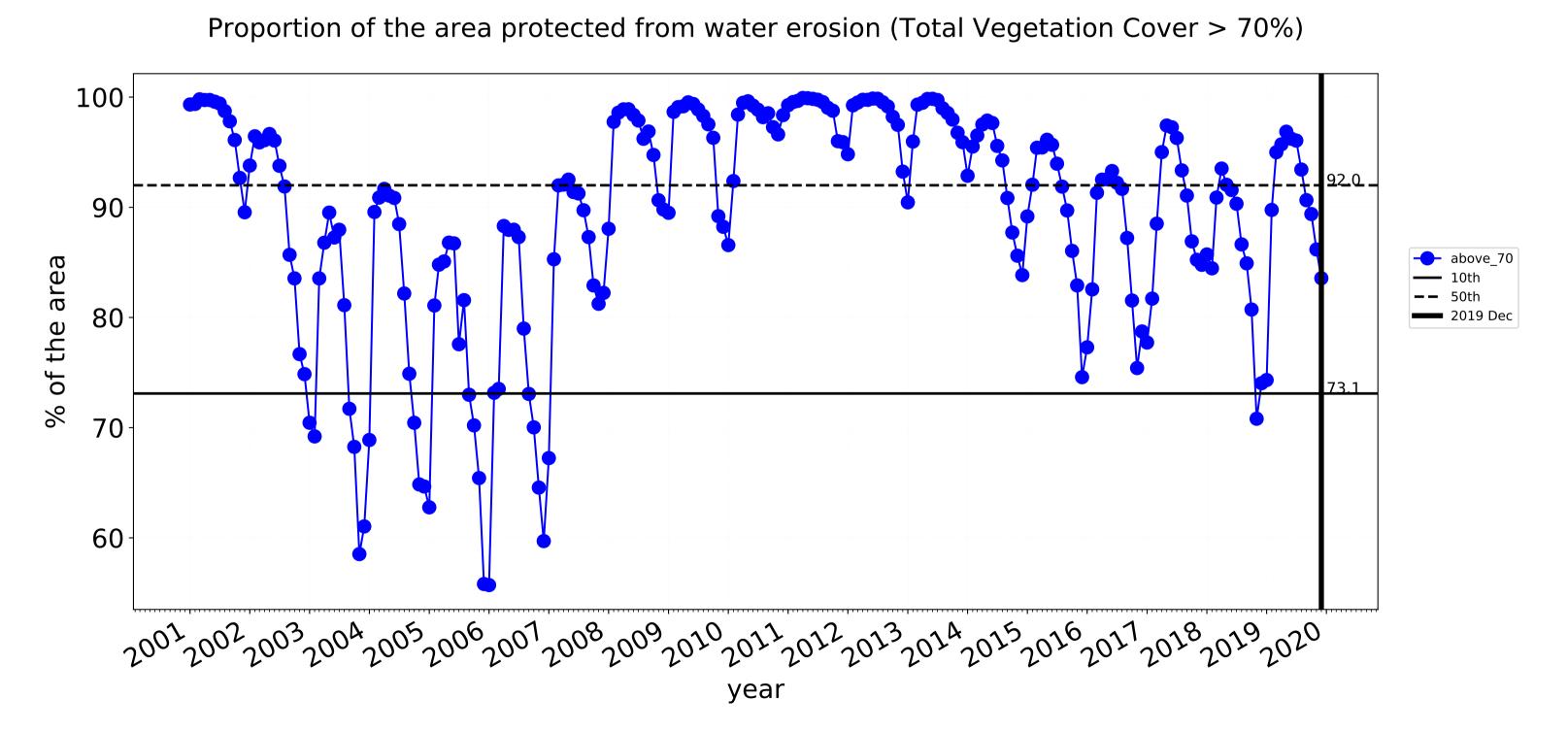


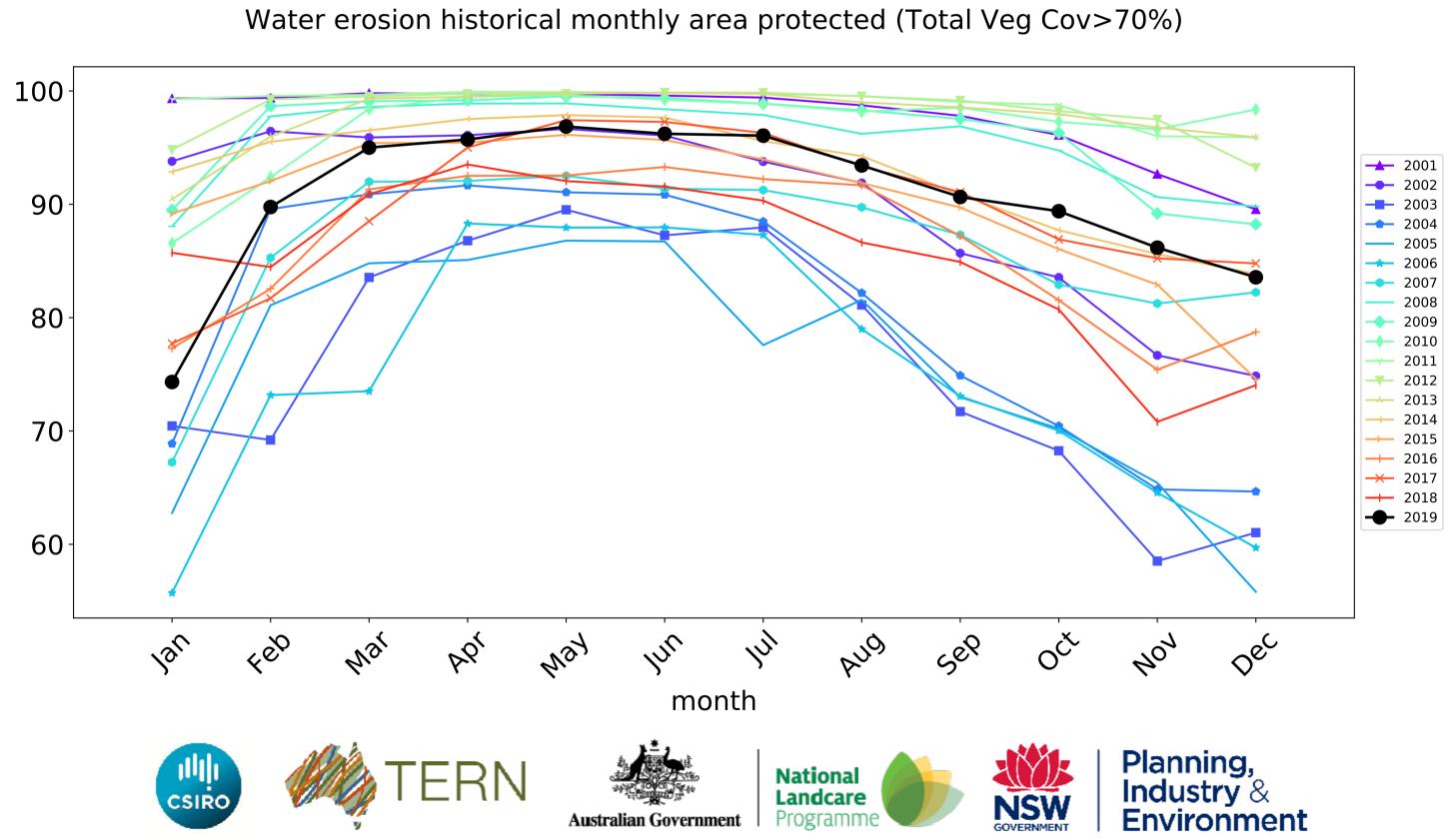


### **Agriculture timeseries**









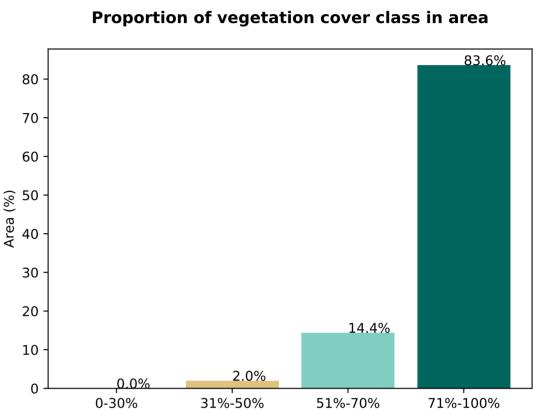
### **Grazing**

### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest Catchment Scale Land 3 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018)

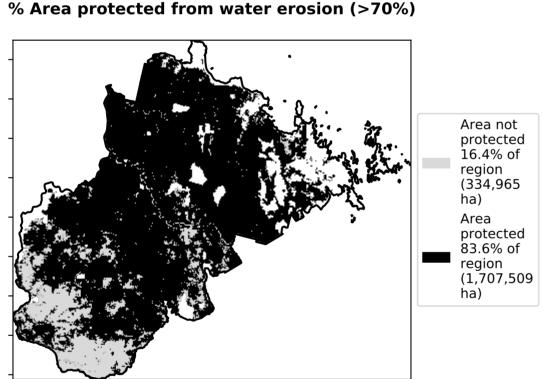
### 60 -57.4% 50 40.1% 40 Area (%) 20 10 2.5% 2 Land use class

Proportion of each land class in area

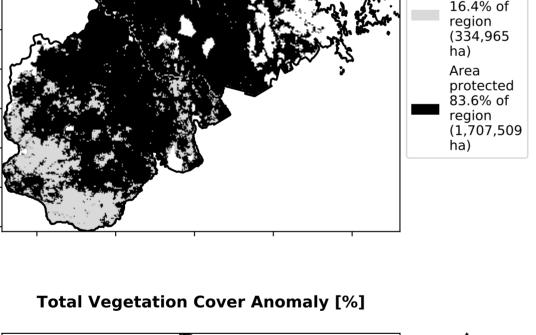
# **Total Vegetation Cover [%]**



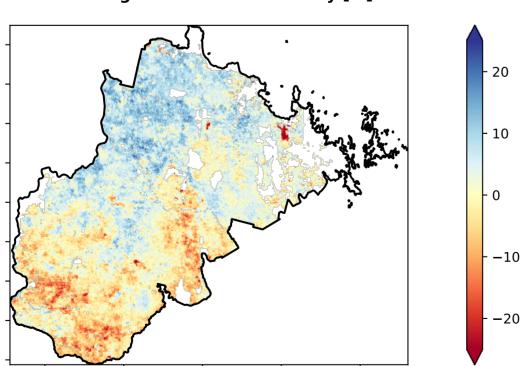
**Total Vegetation Cover class** 

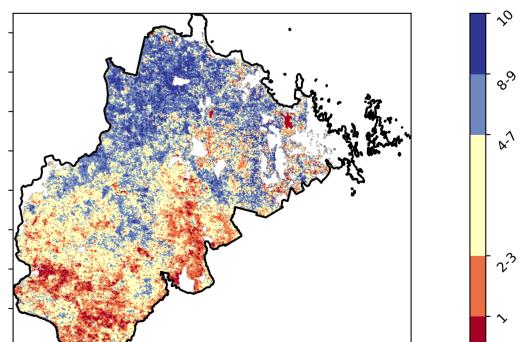


% Area protected from wind erosion (>50%) Area not protected 2.0% of region (40,849 ha) Area protected 98.0% of region (2,001,625 ha)



**Total Vegetation Cover Decile [%]** 







Deciles show where the

pixel value lies in the

record, from highest to lowest, for that month. That is, red pixels are

records for that month of

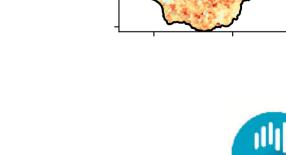
the map using baseline from 2001 to 2019.

in the lowest 10% of









Anomaly show how many percetage points each pixel is from the mean. That

is, red pixels are about 20% lower than the mean of that

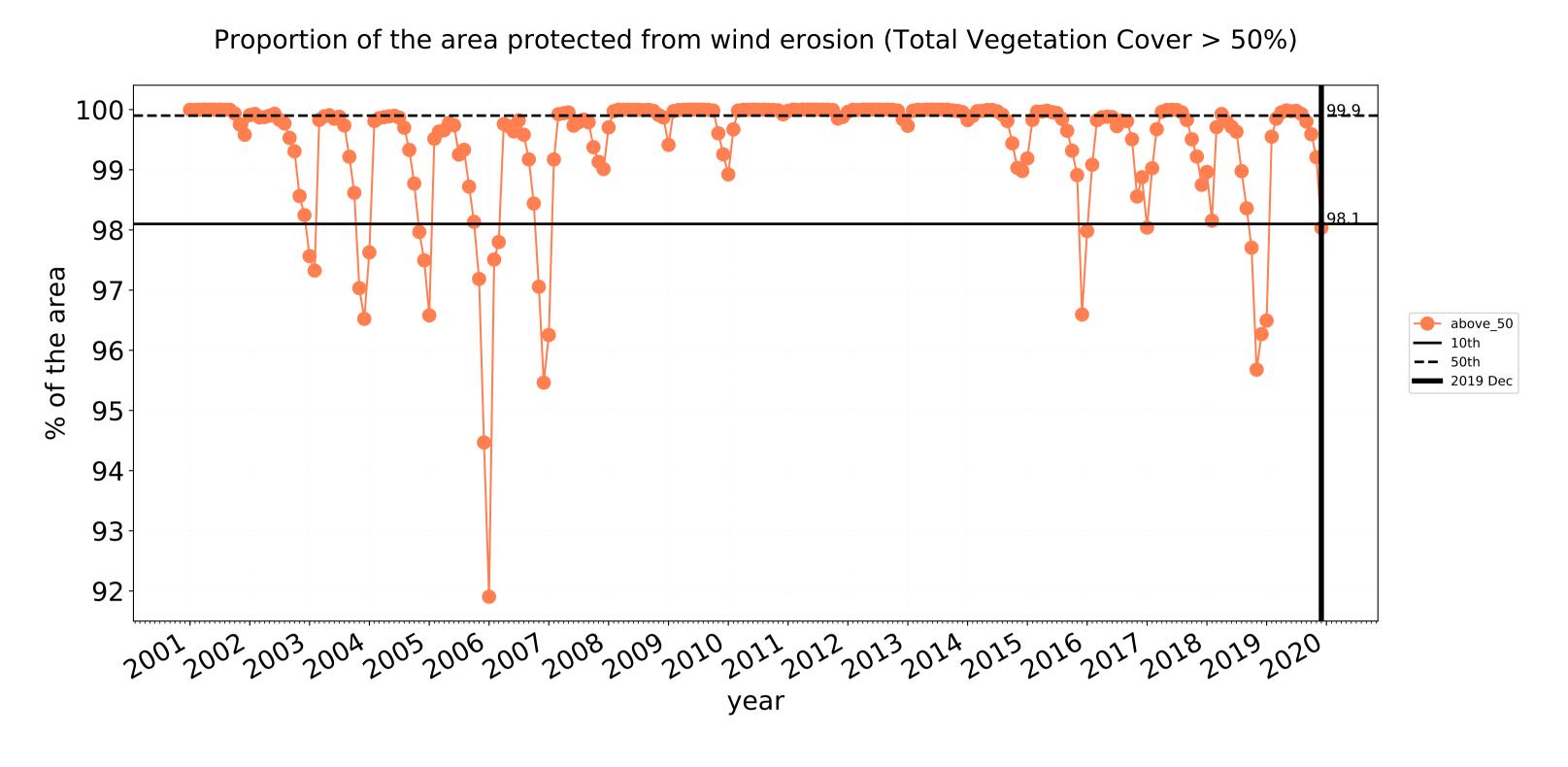
pixel. The mean

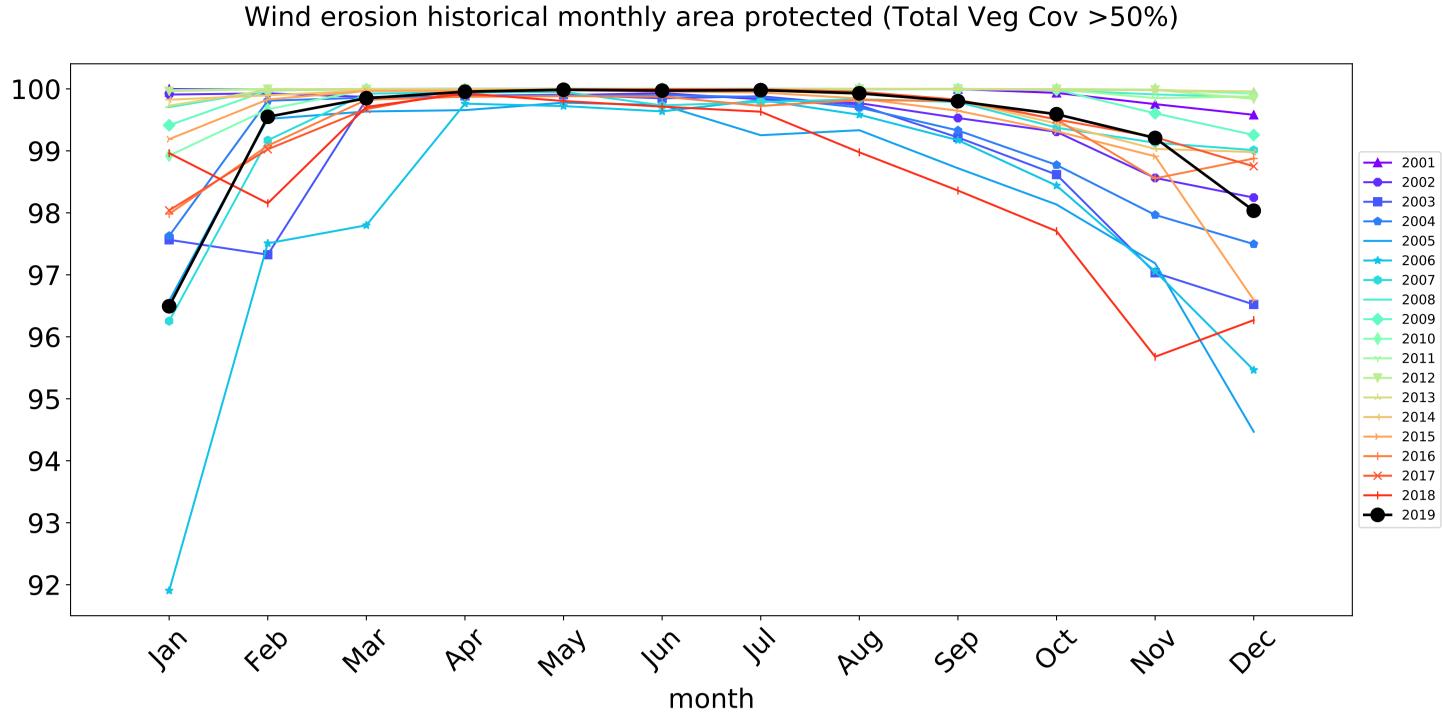
using baseline from 2001 to 2019.

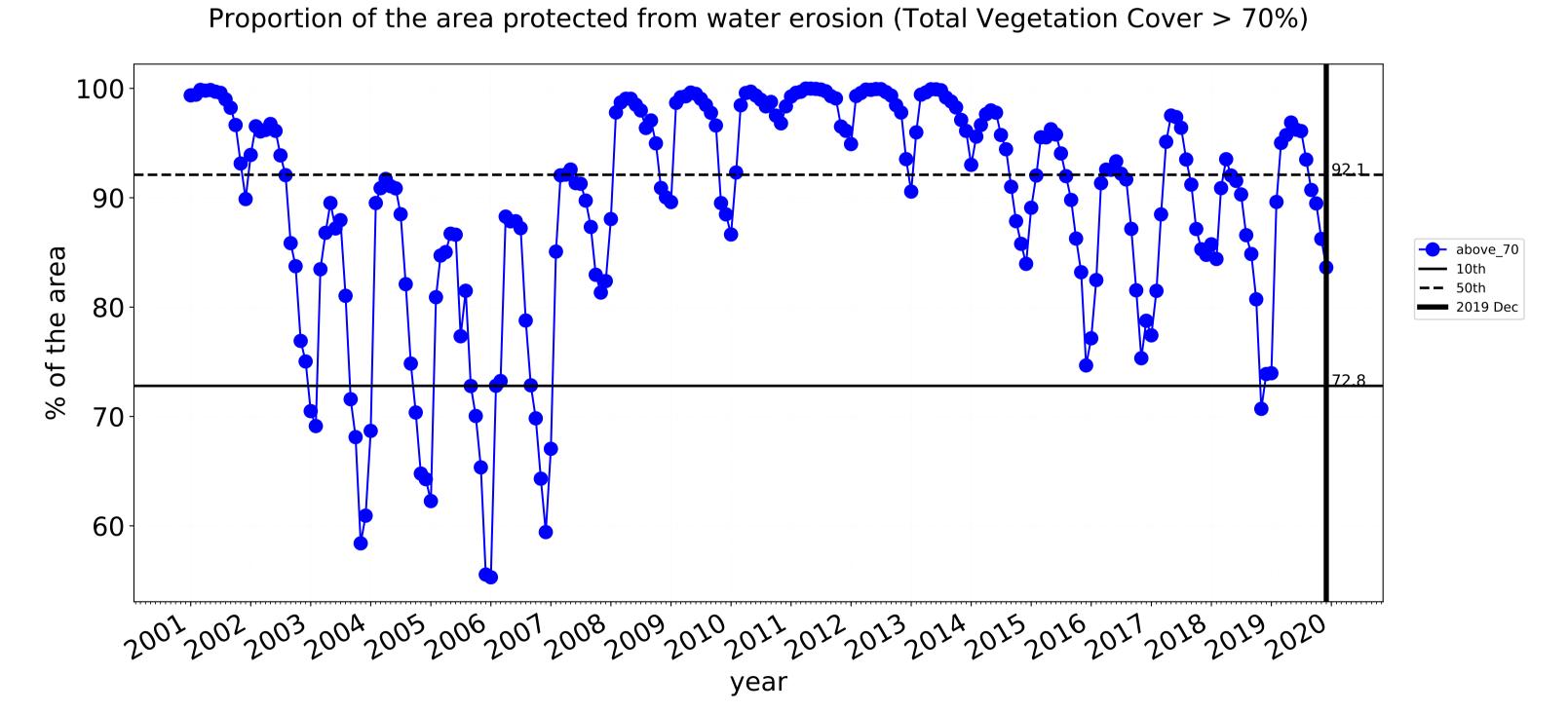
is only for the month of the map

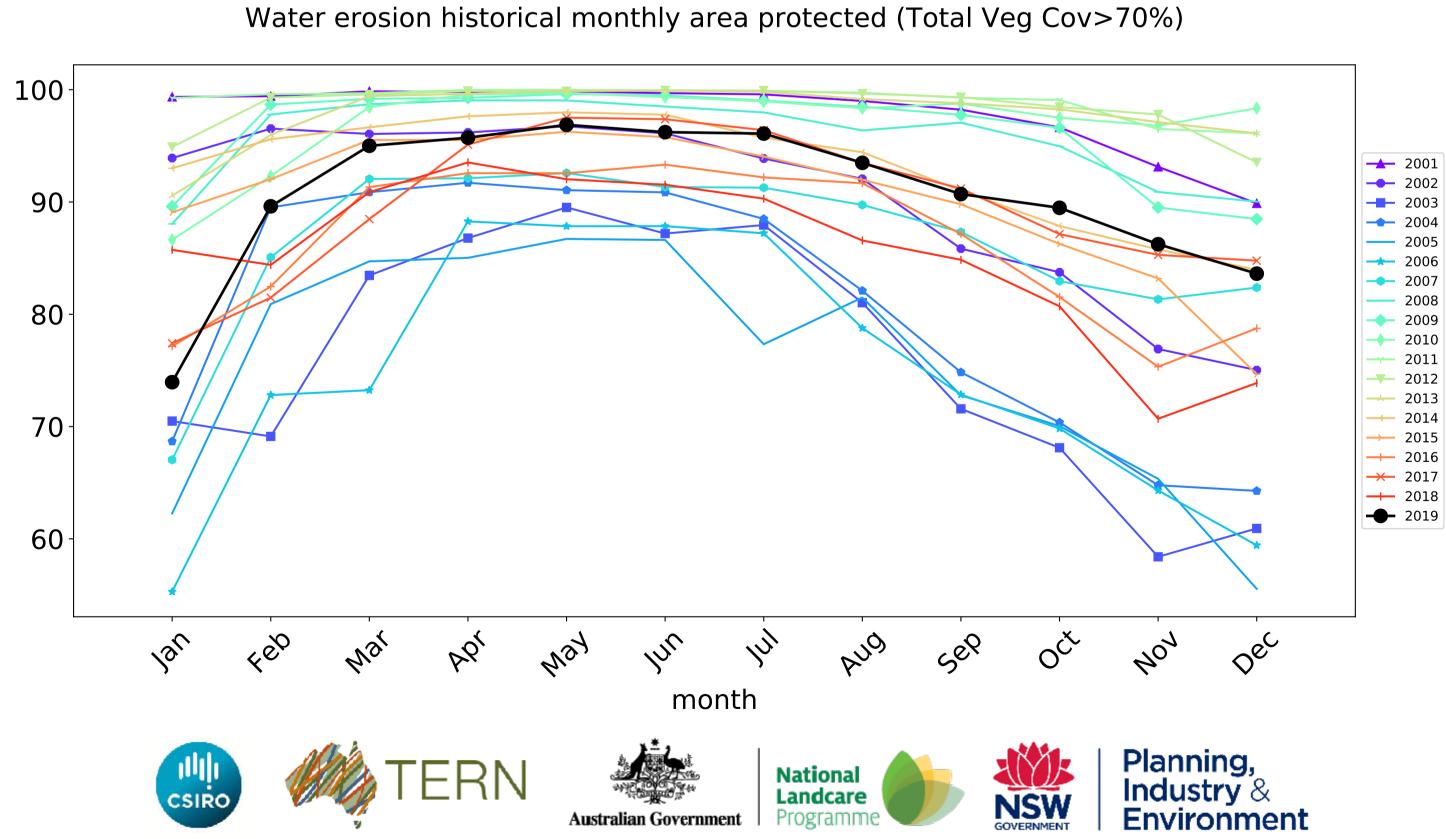


### **Grazing timeseries**









### **Grazing non forest**

### Land use and forest cover

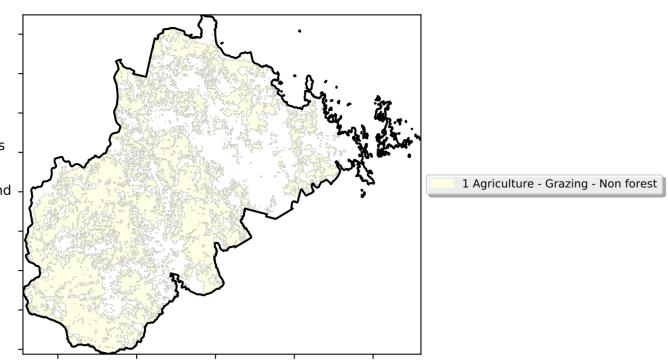
Catchment Scale
Land Use and Forests
of Australia (2018)
Derived from
Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each pixel is from the mean. That

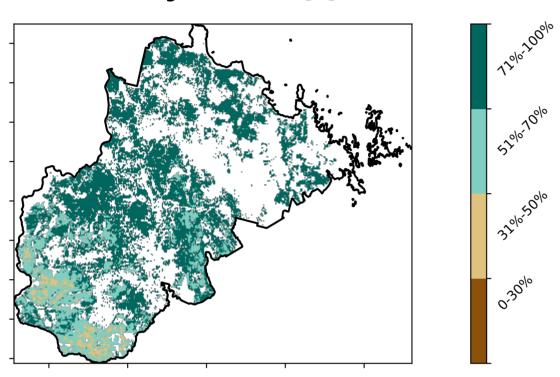
is only for the month of the map

using baseline from 2001 to 2019.

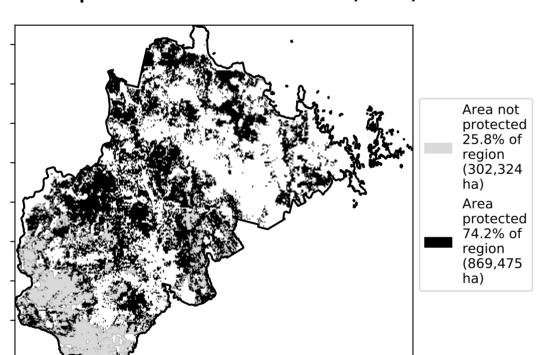
is, red pixels are about 20% lower than the mean of that pixel. The mean



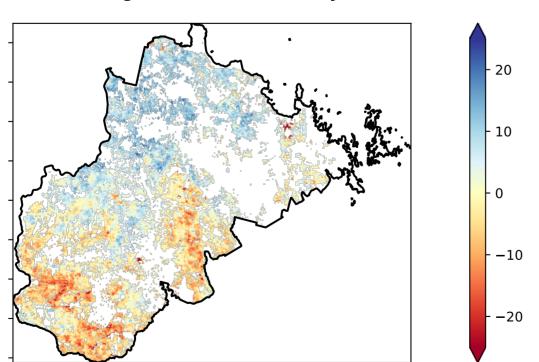
### **Total Vegetation Cover [%]**



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

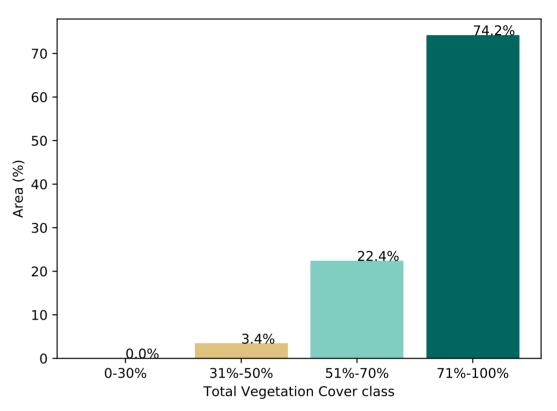


### **Total Vegetation Cover Anomaly [%]**

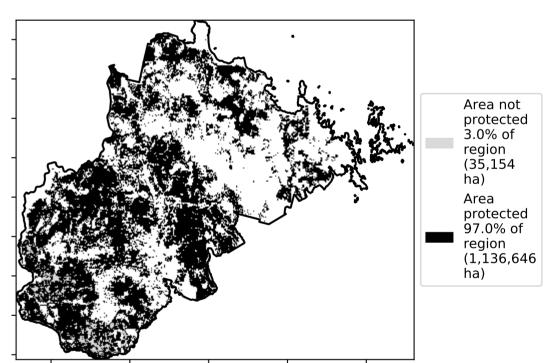


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of records for that month of the map using baseline from 2001 to 2019.

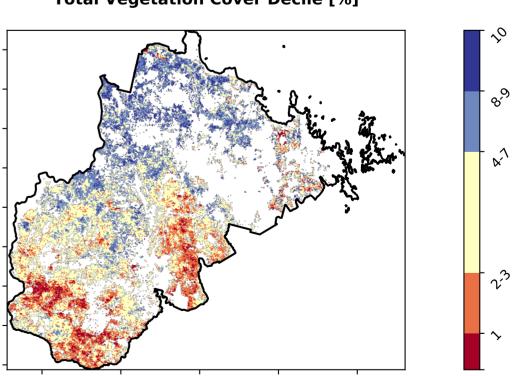
### **Proportion of vegetation cover class in area**



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



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







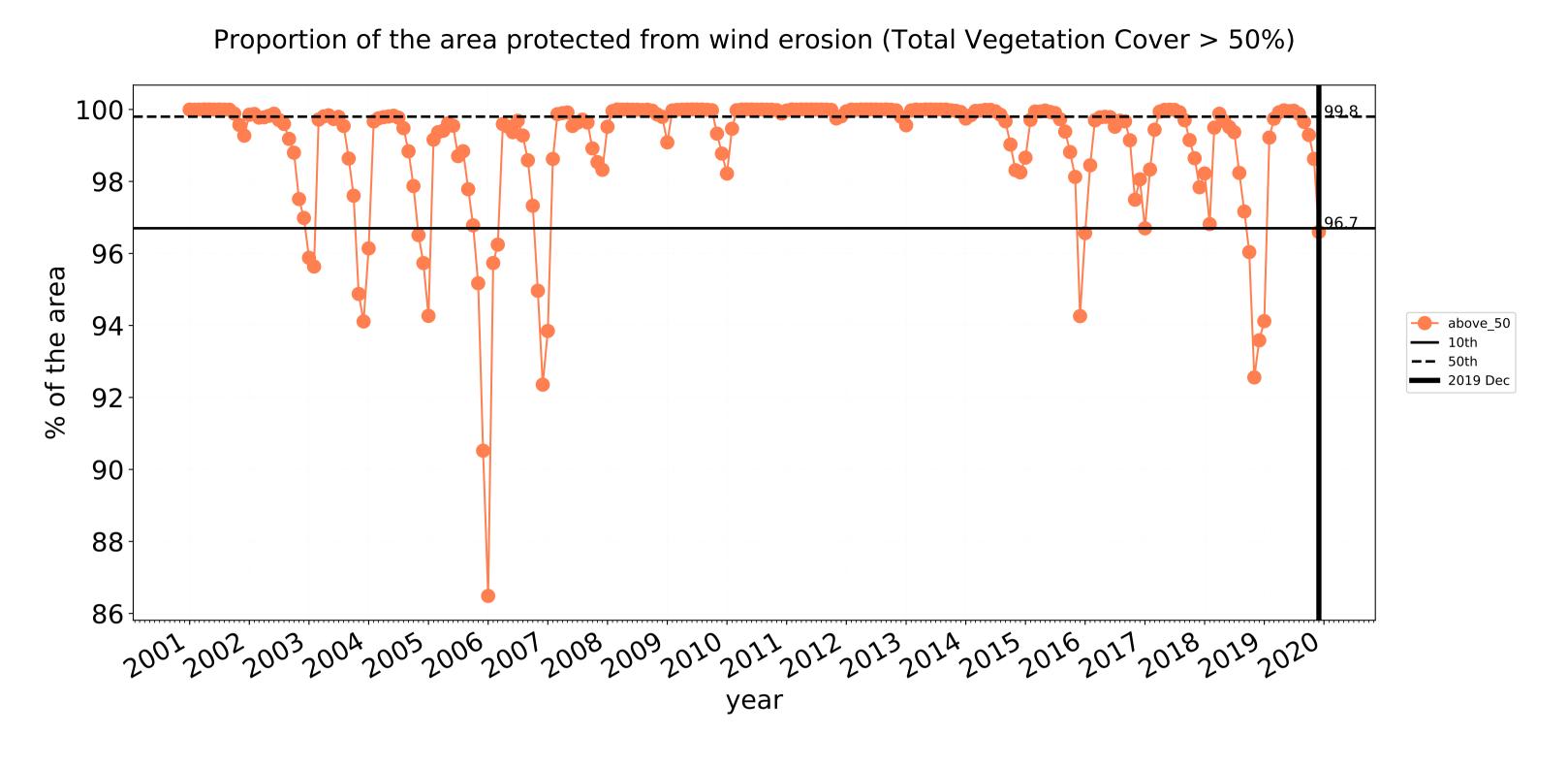


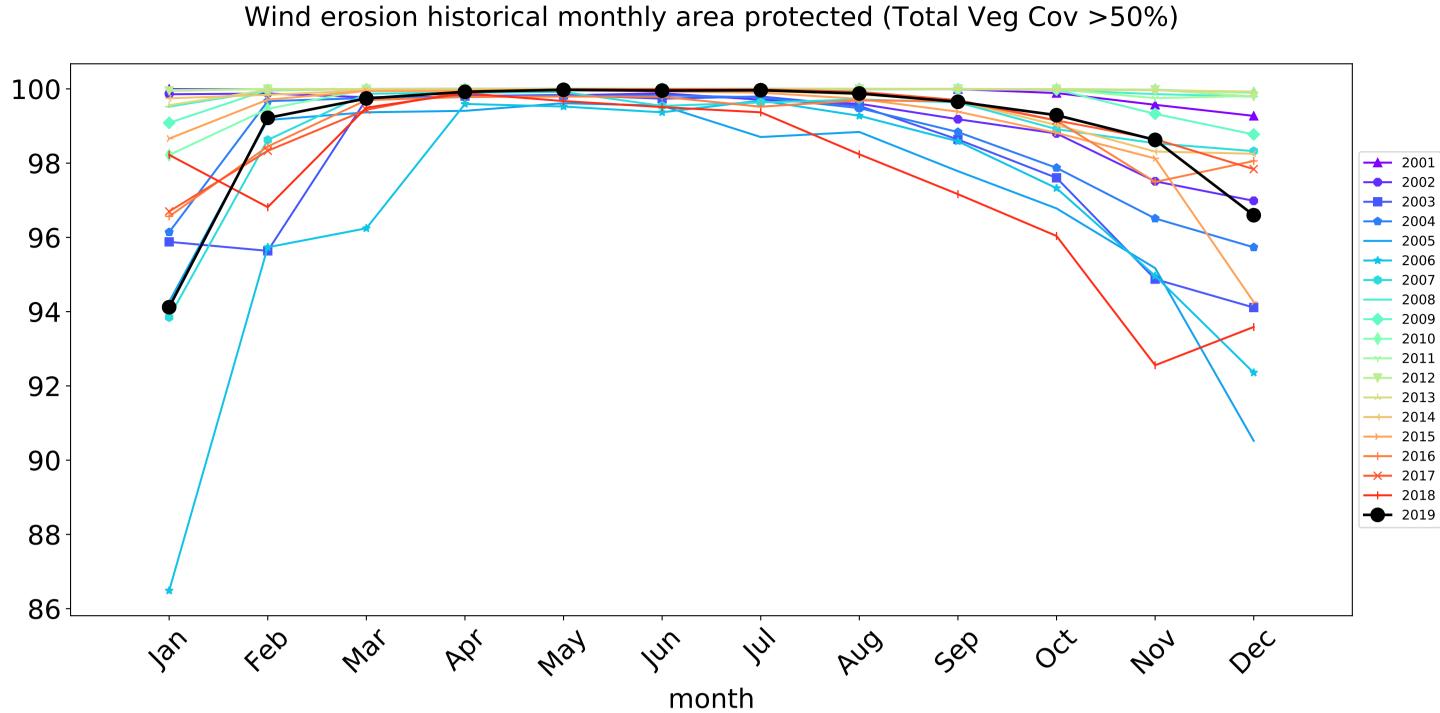


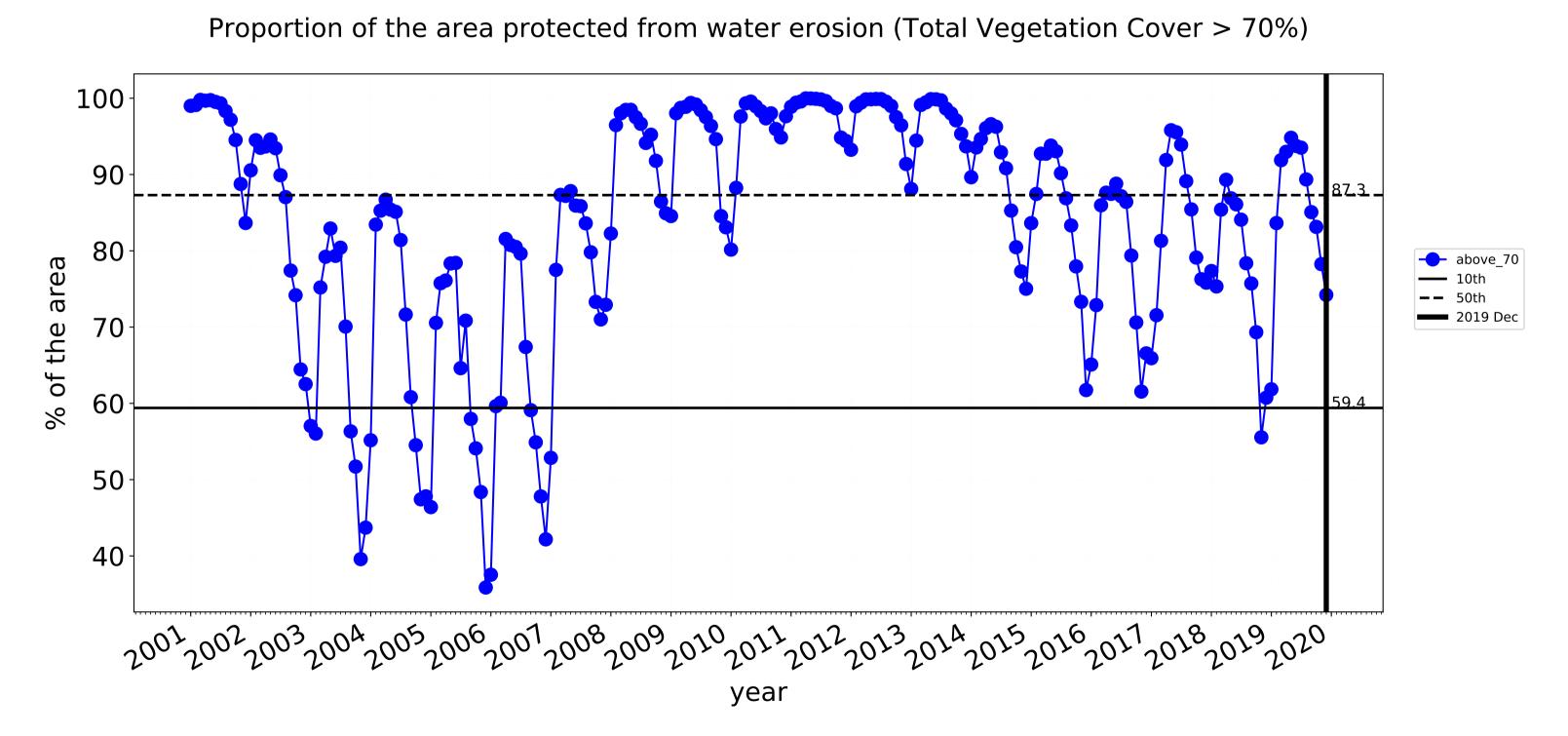


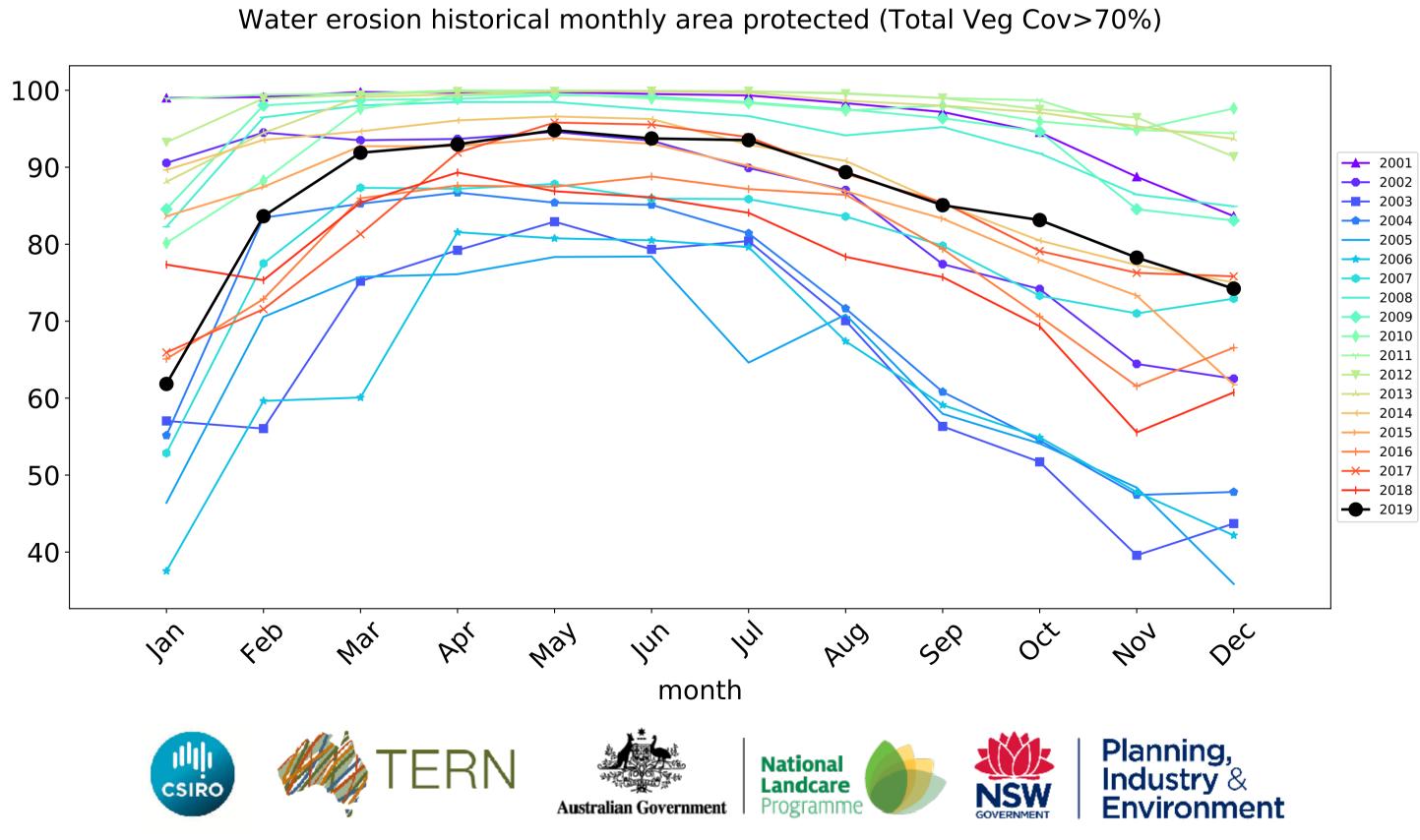


### **Grazing non forest timeseries**





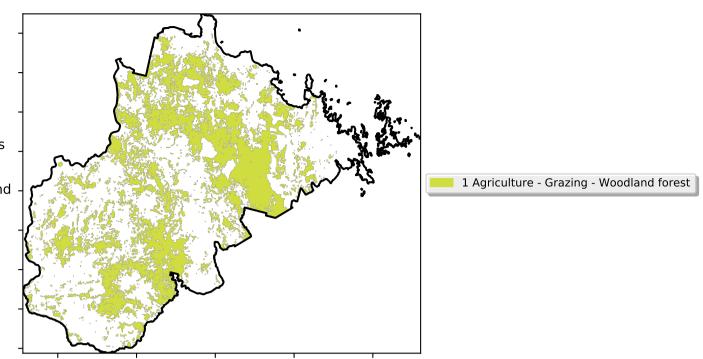




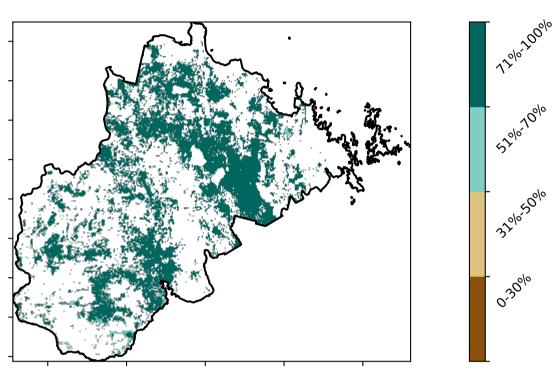
### **Grazing Woodland forest**

### Land use and forest cover

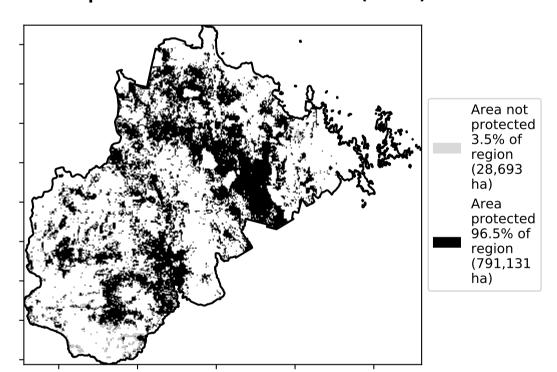




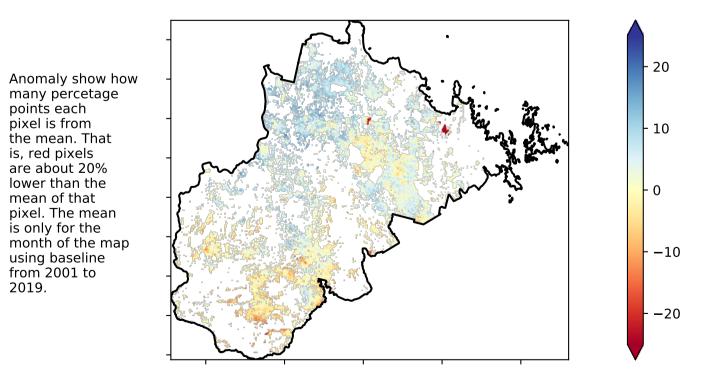
### **Total Vegetation Cover [%]**



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

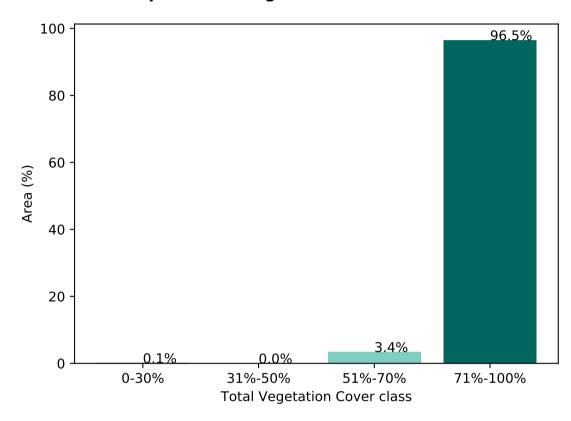


### **Total Vegetation Cover Anomaly [%]**

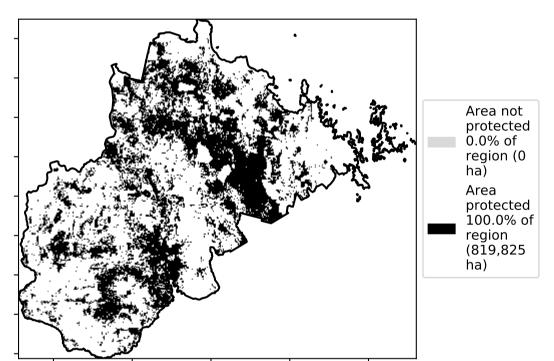


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

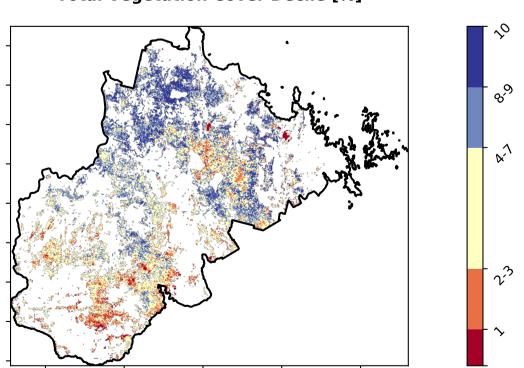
### Proportion of vegetation cover class in area



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



### Total Vegetation Cover Decile [%]







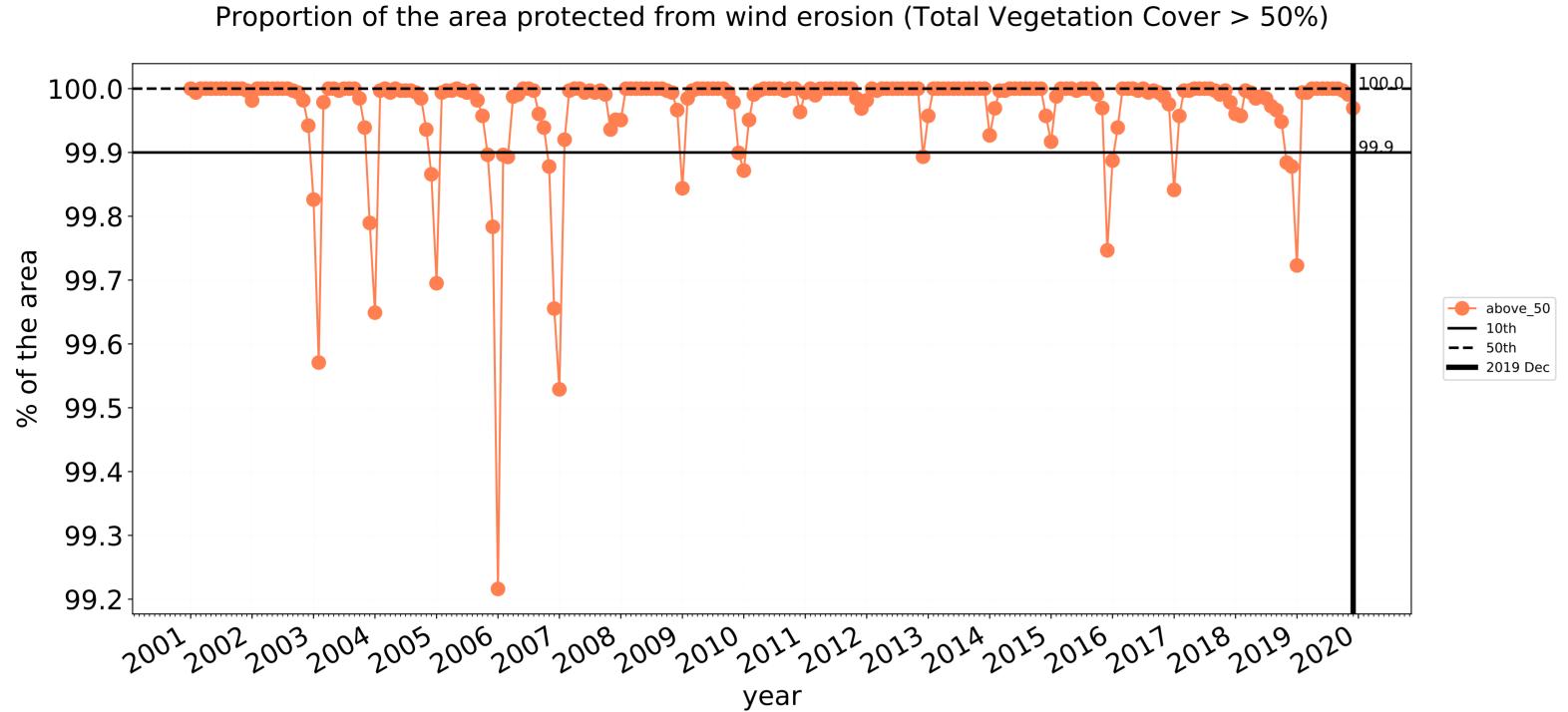


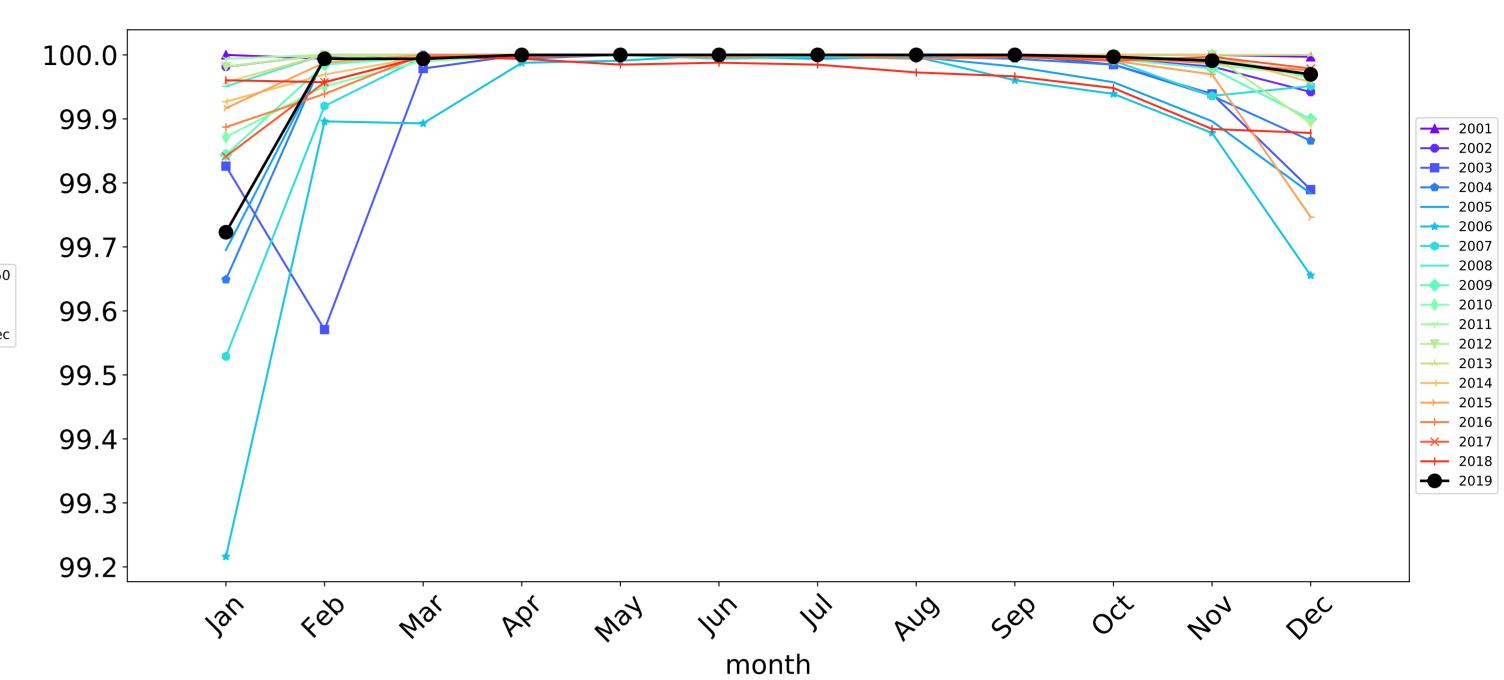




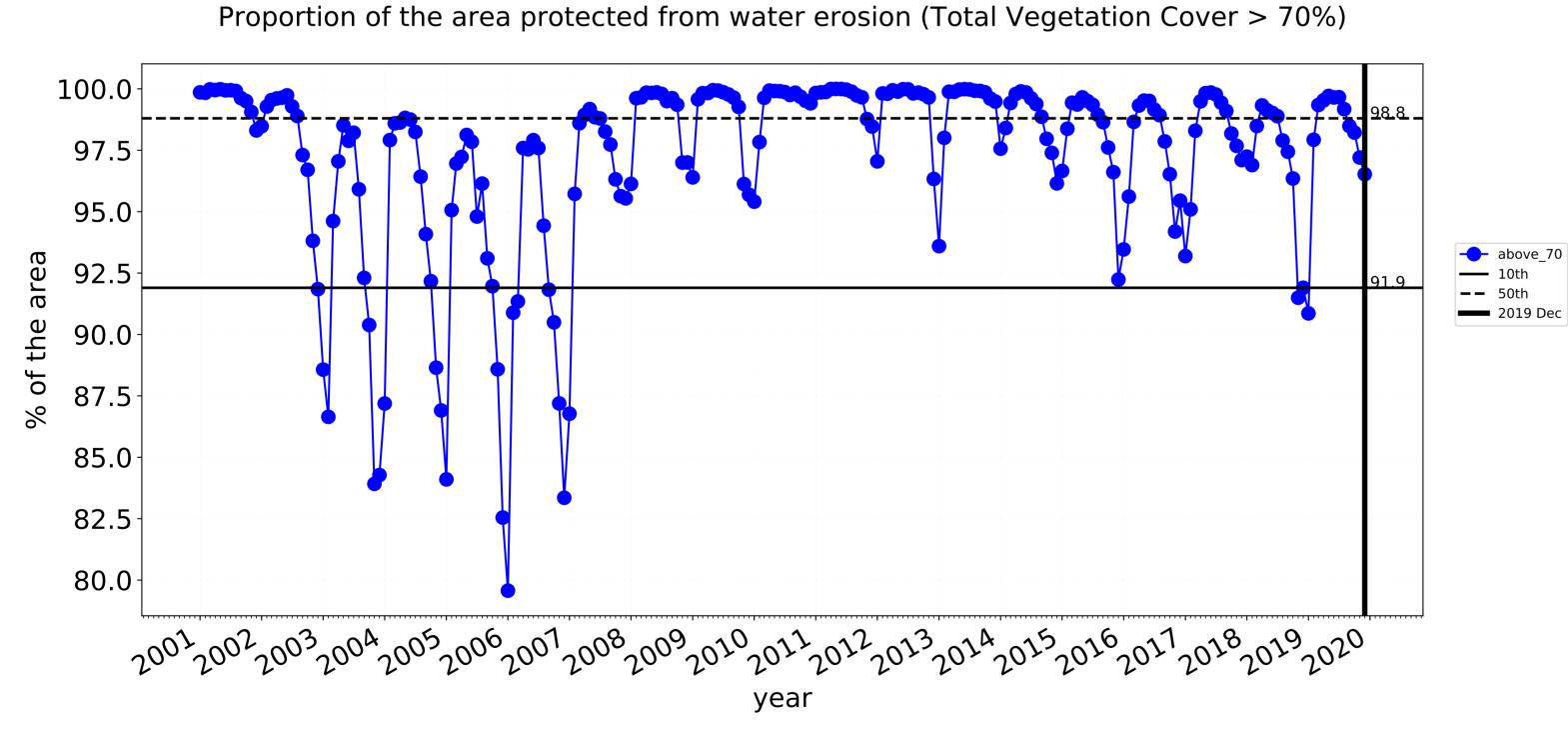


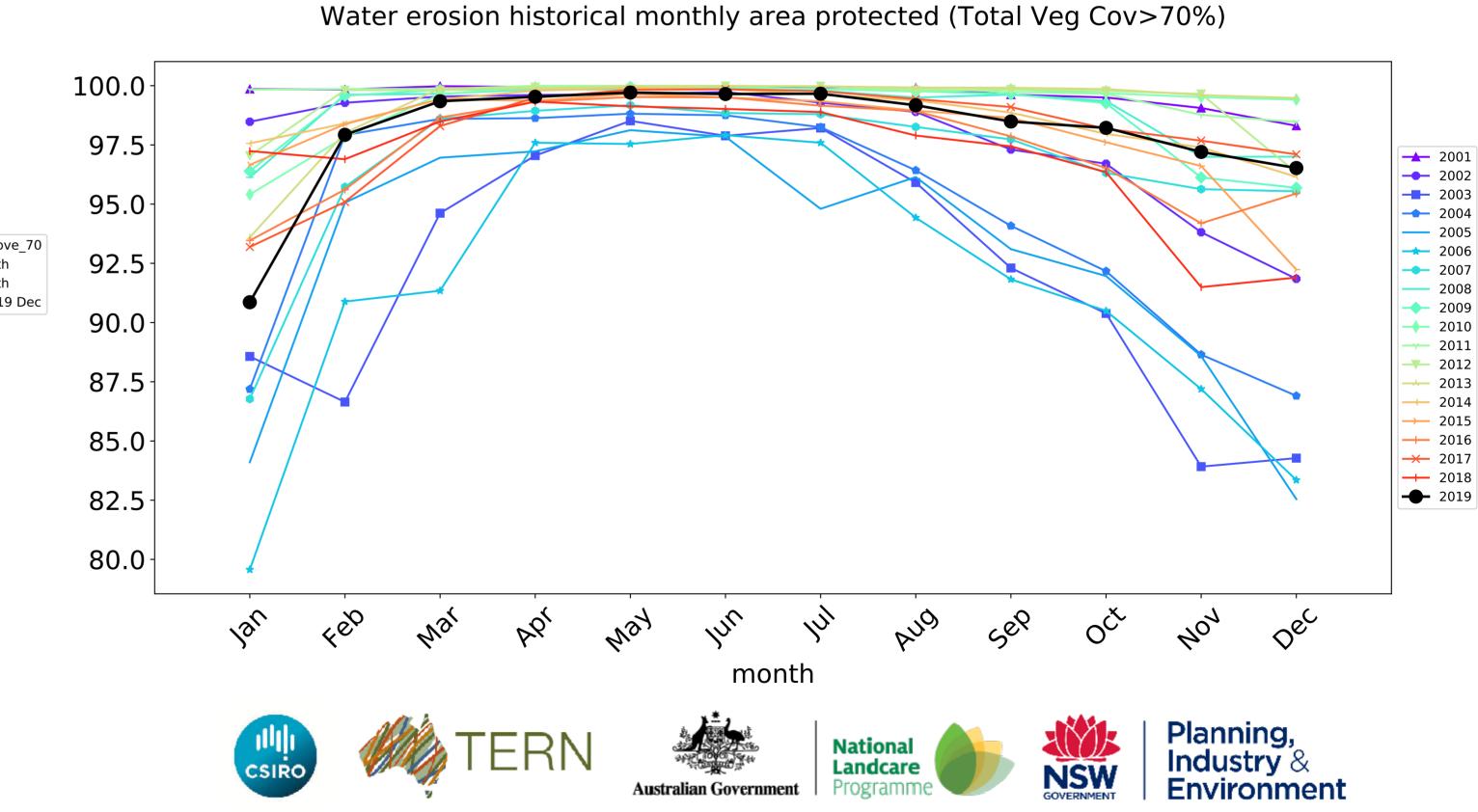
### **Grazing Woodland forest timeseries**





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



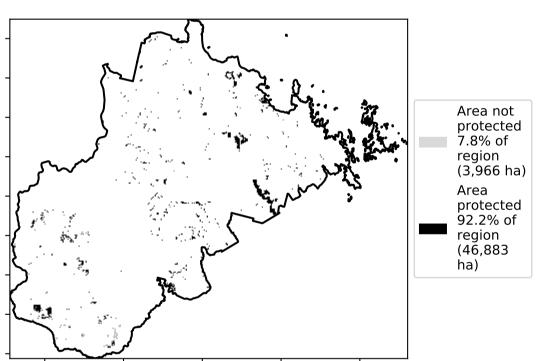


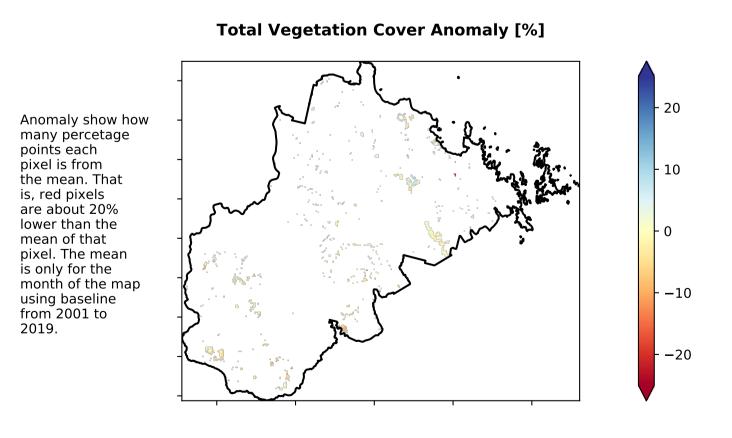
### **Grazing - Forest (non woodland)**

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

# **Total Vegetation Cover [%]**

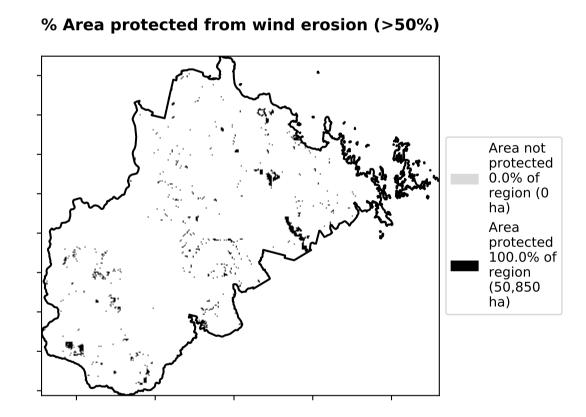
### % Area protected from water erosion (>70%)

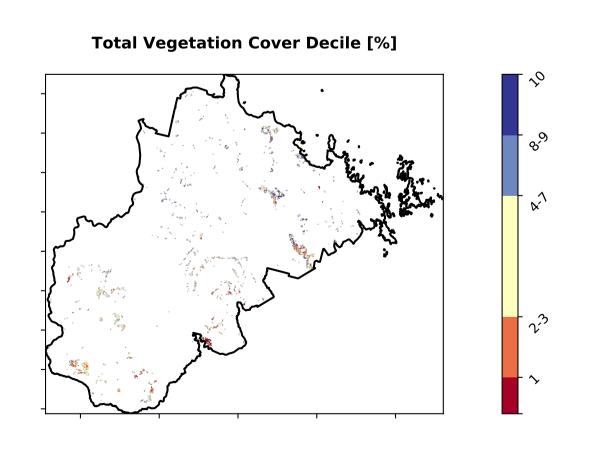




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area 92.2% 80 60 20 7.8% 0.0% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**







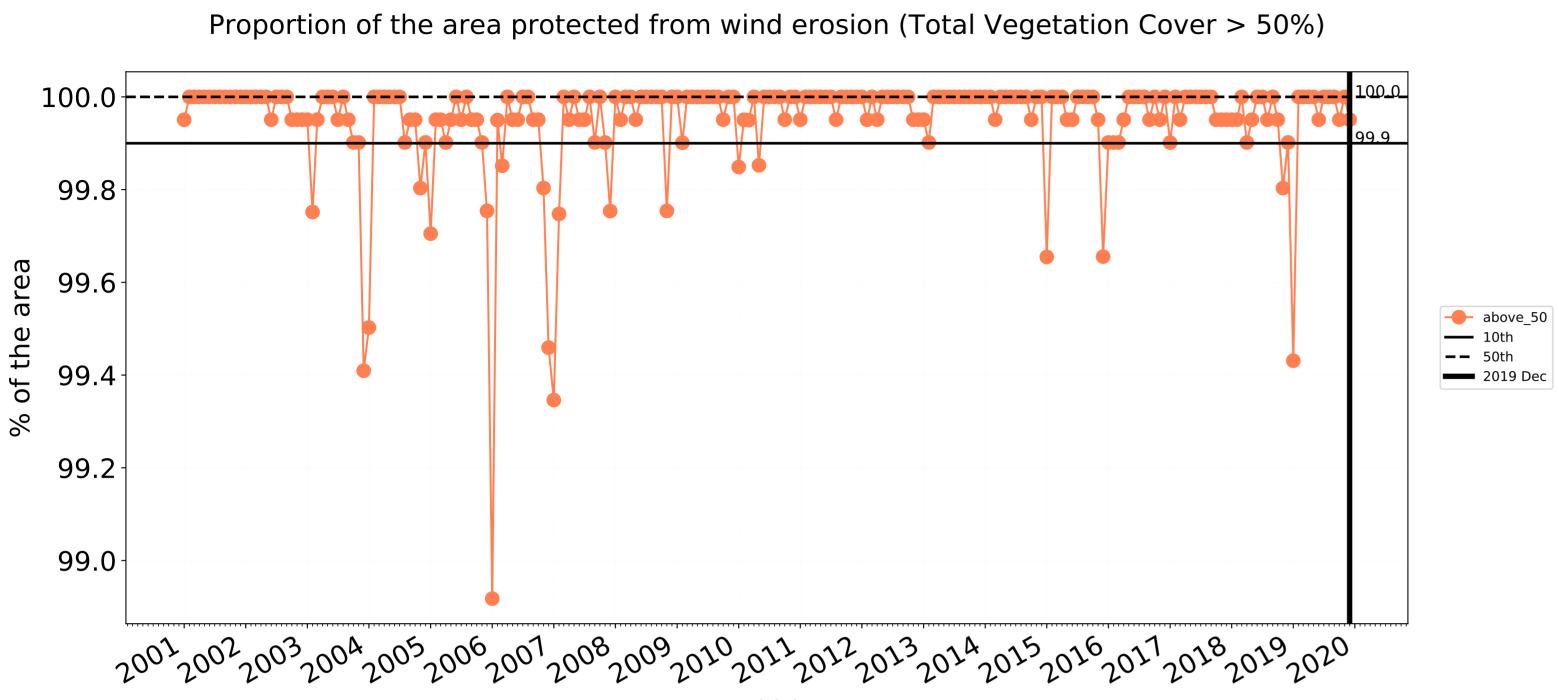


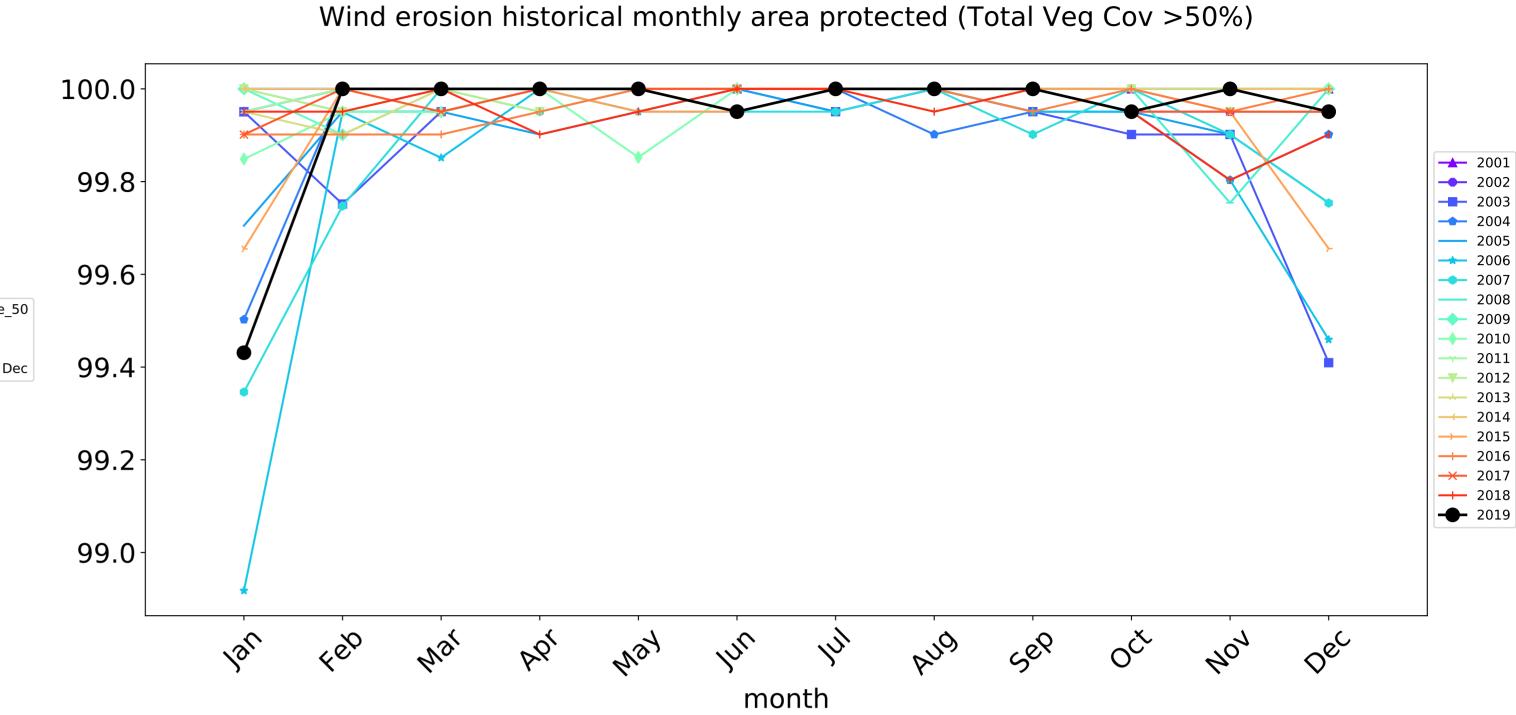


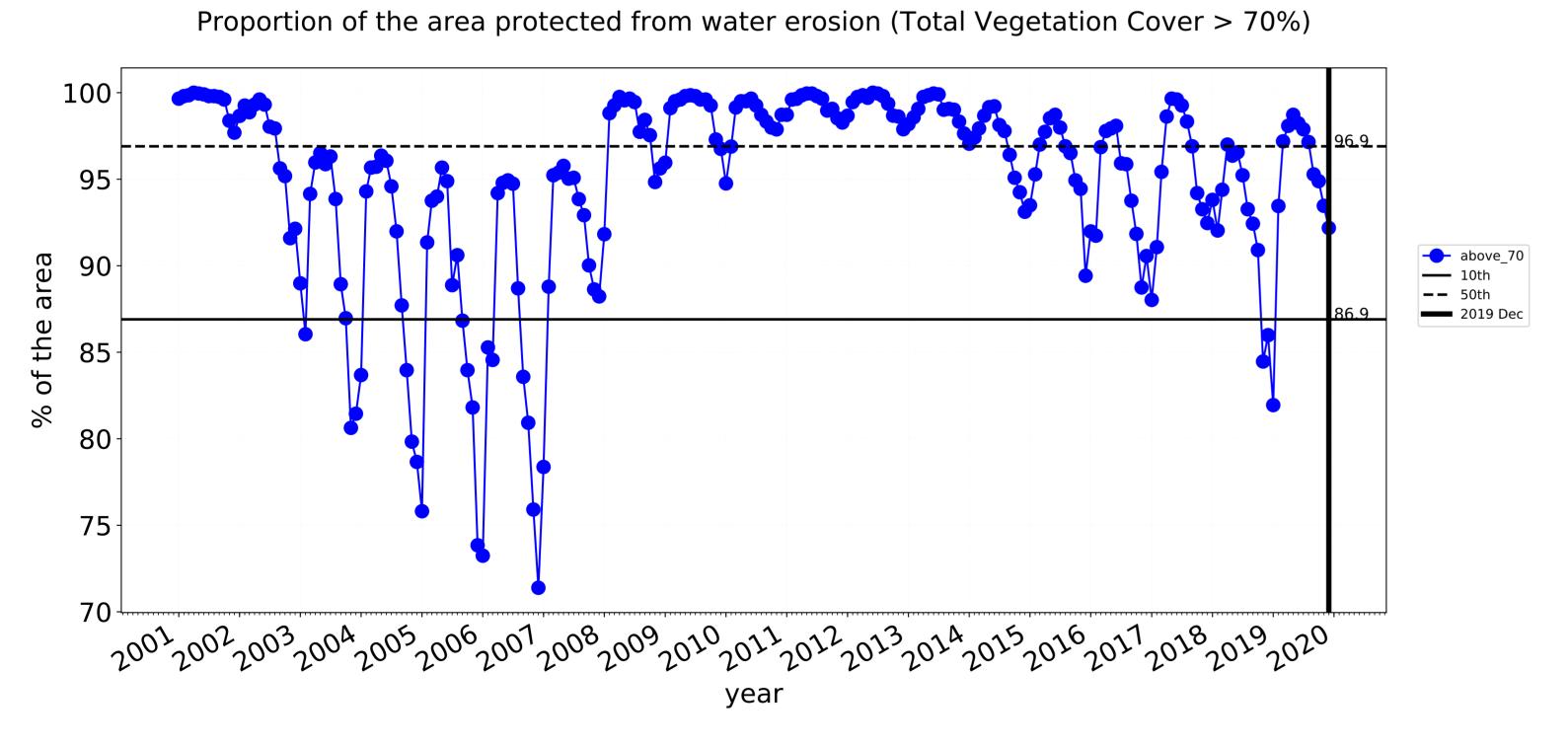


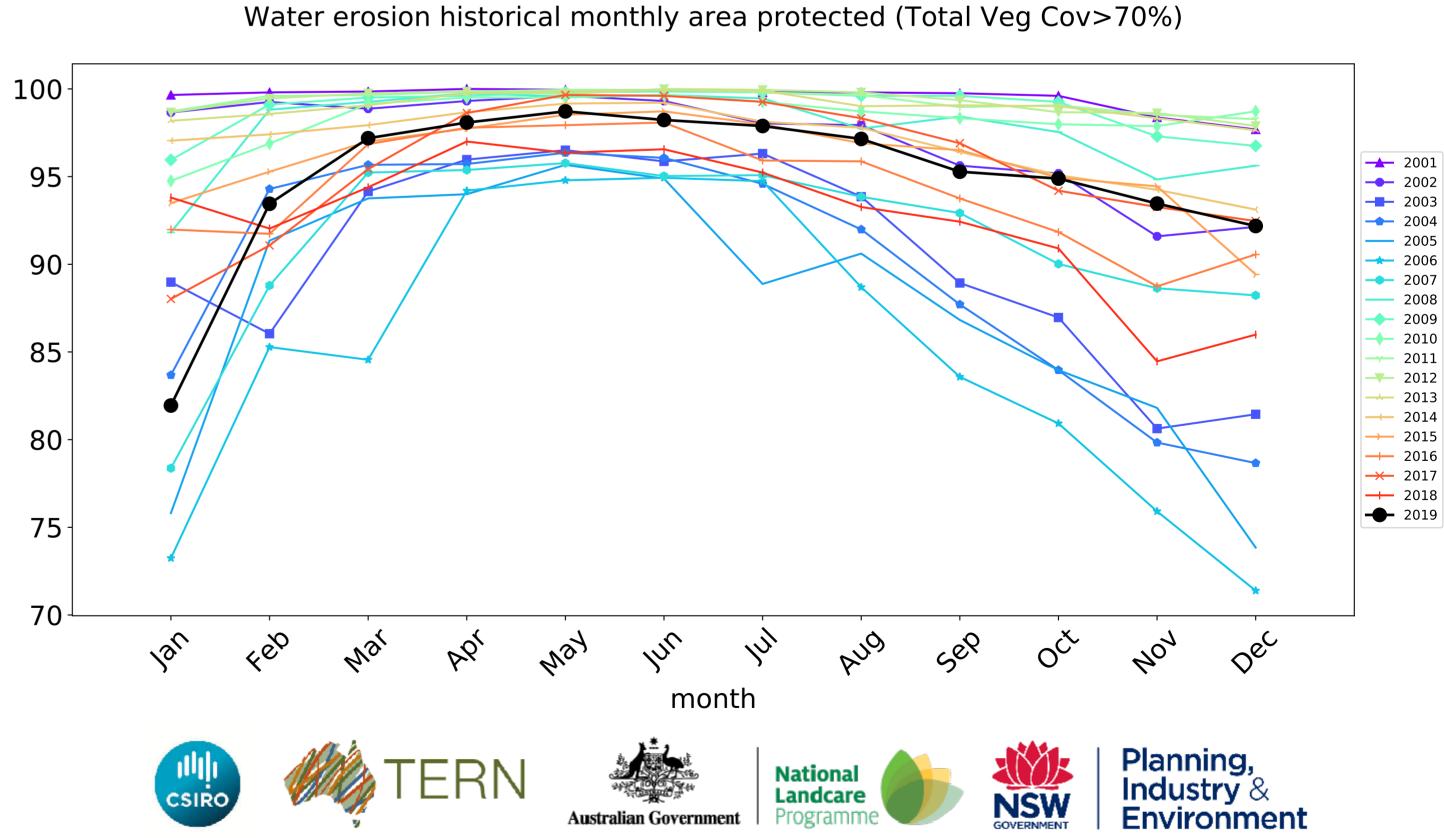






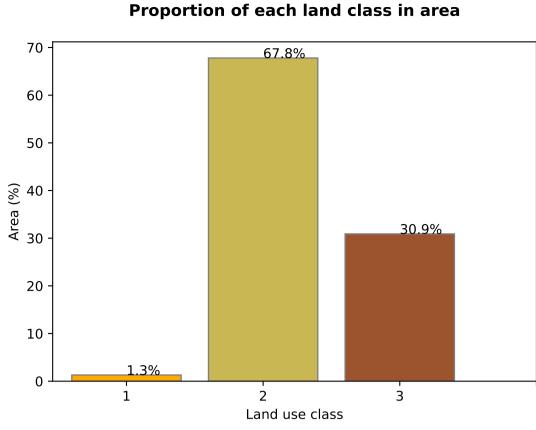


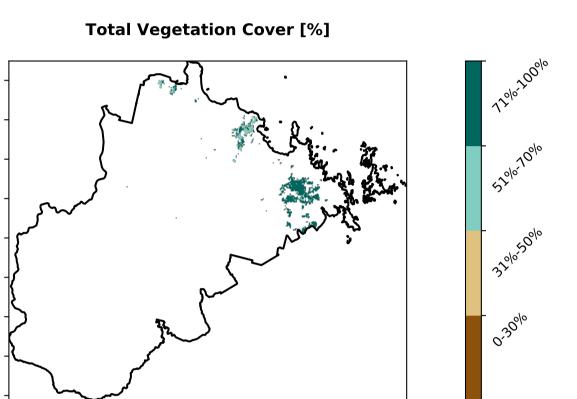


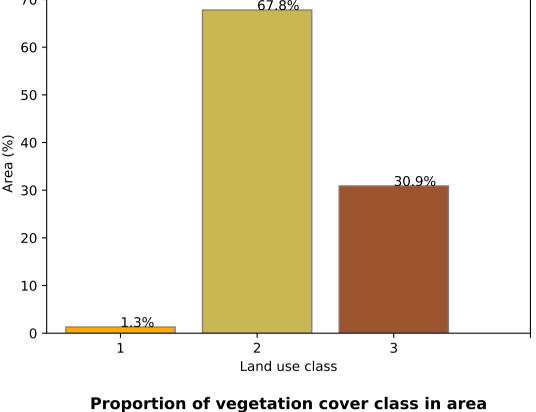


### Irrigation

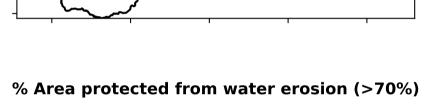
### Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

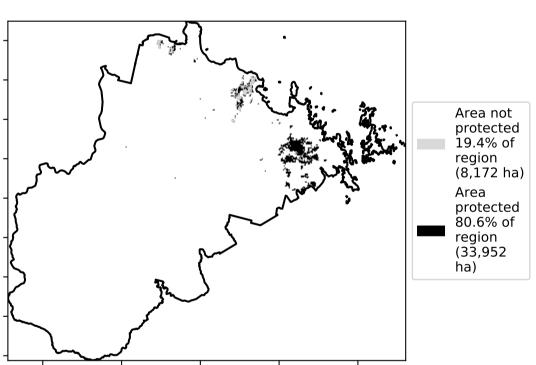




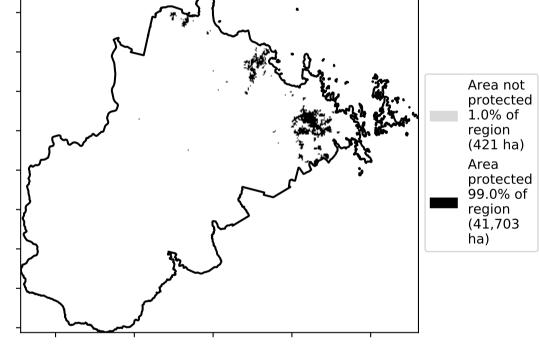


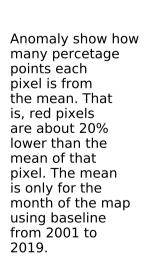
### 80.6% 80 70 60 (%) (%) Area -30 20 18.3% 10 1.1% 0 31%-50% 51%-70% 0-30% 71%-100% **Total Vegetation Cover class**

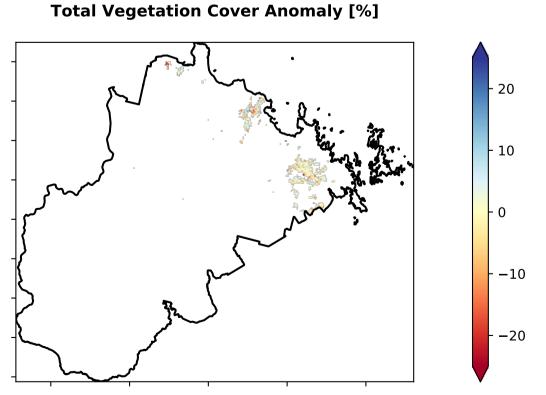




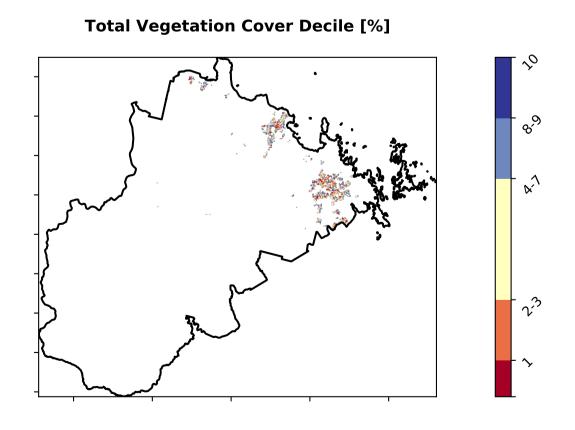
% Area protected from wind erosion (>50%)







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.







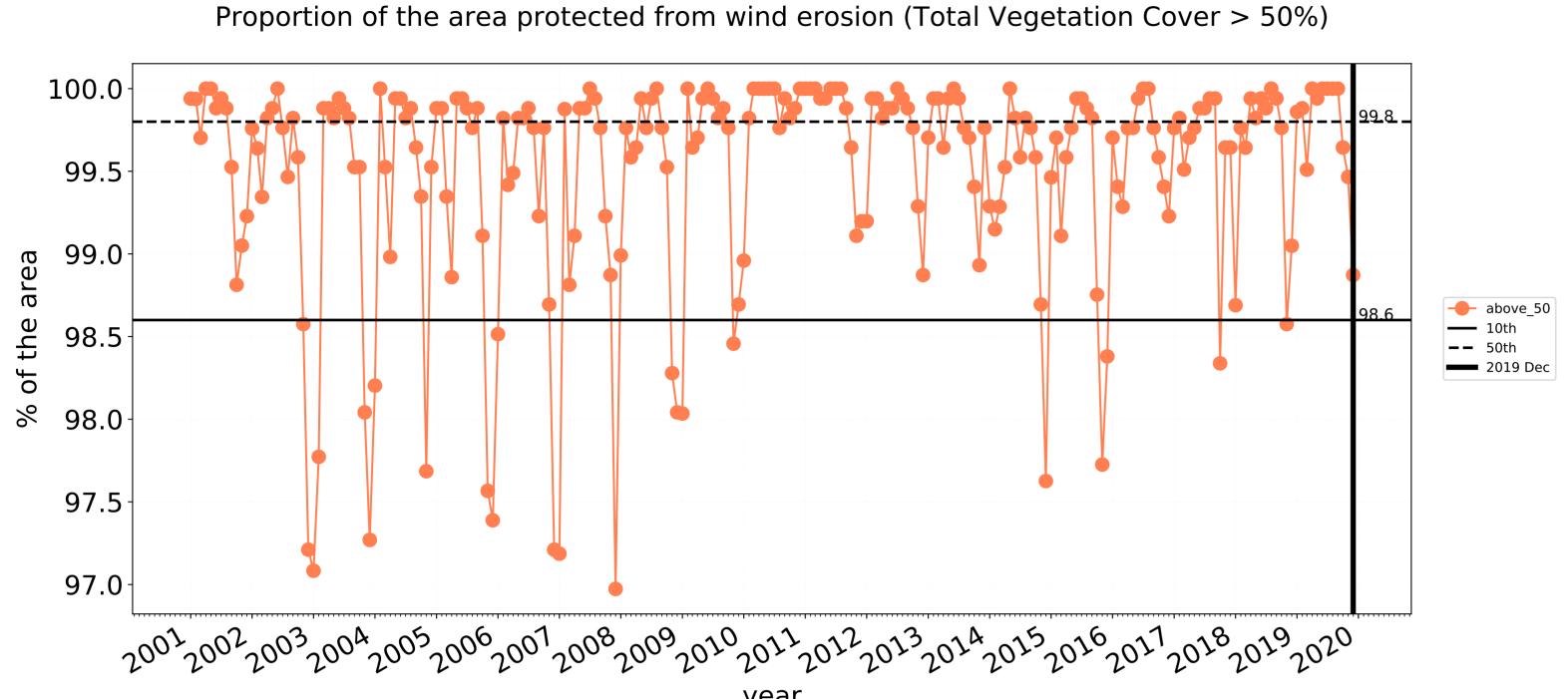


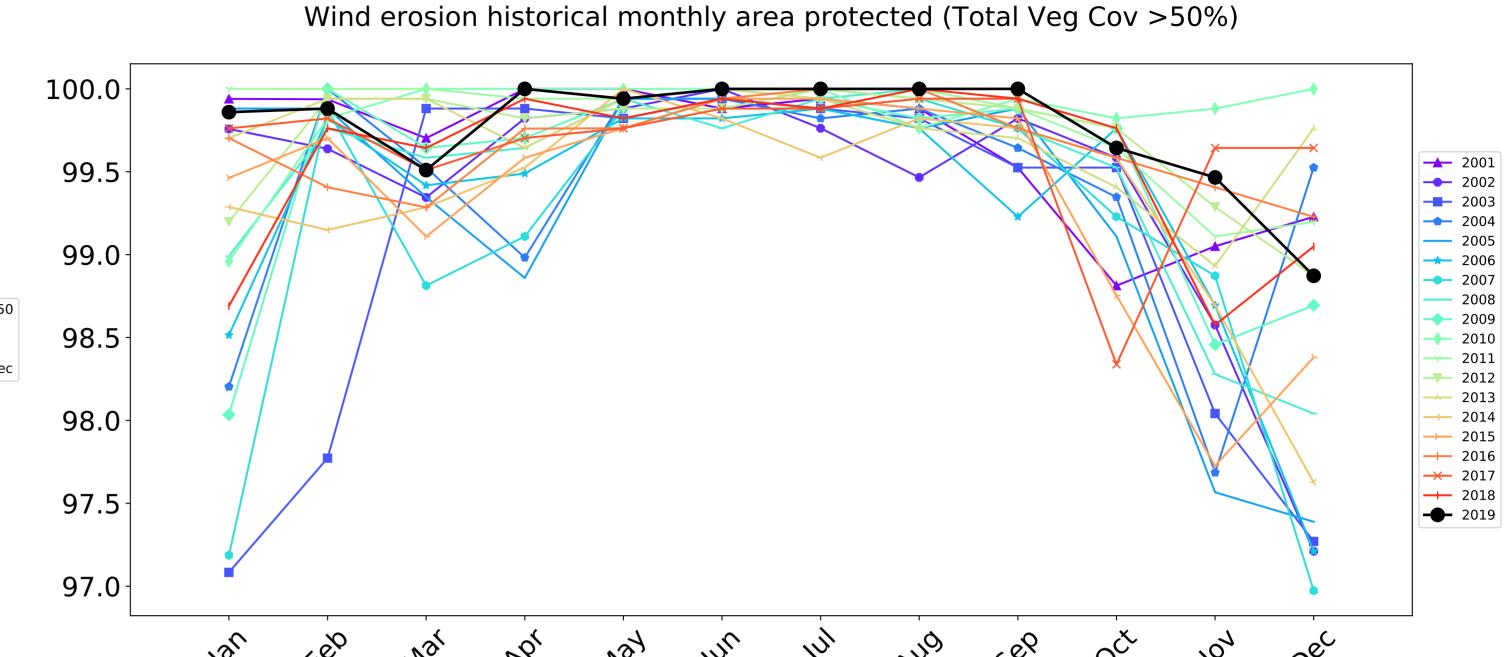




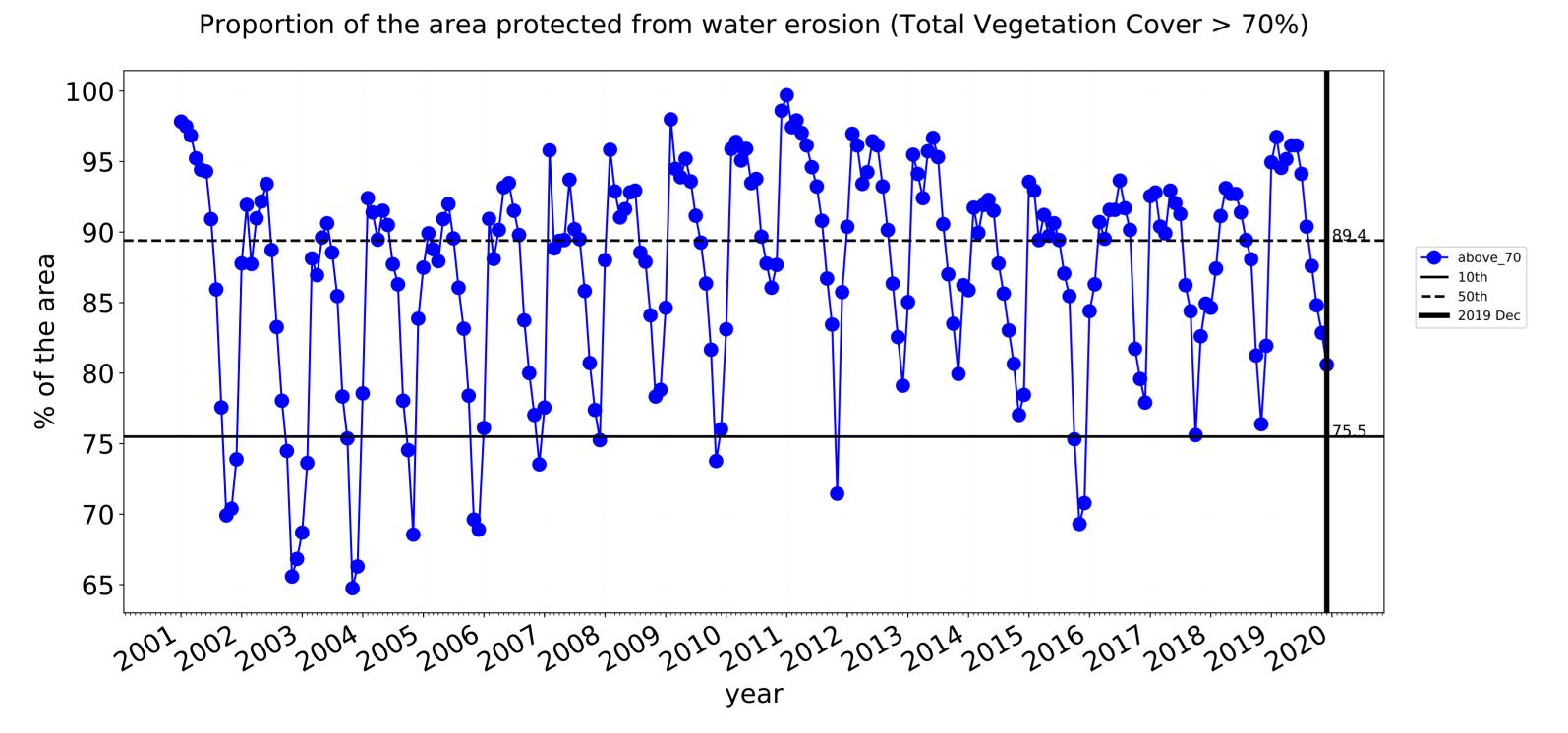


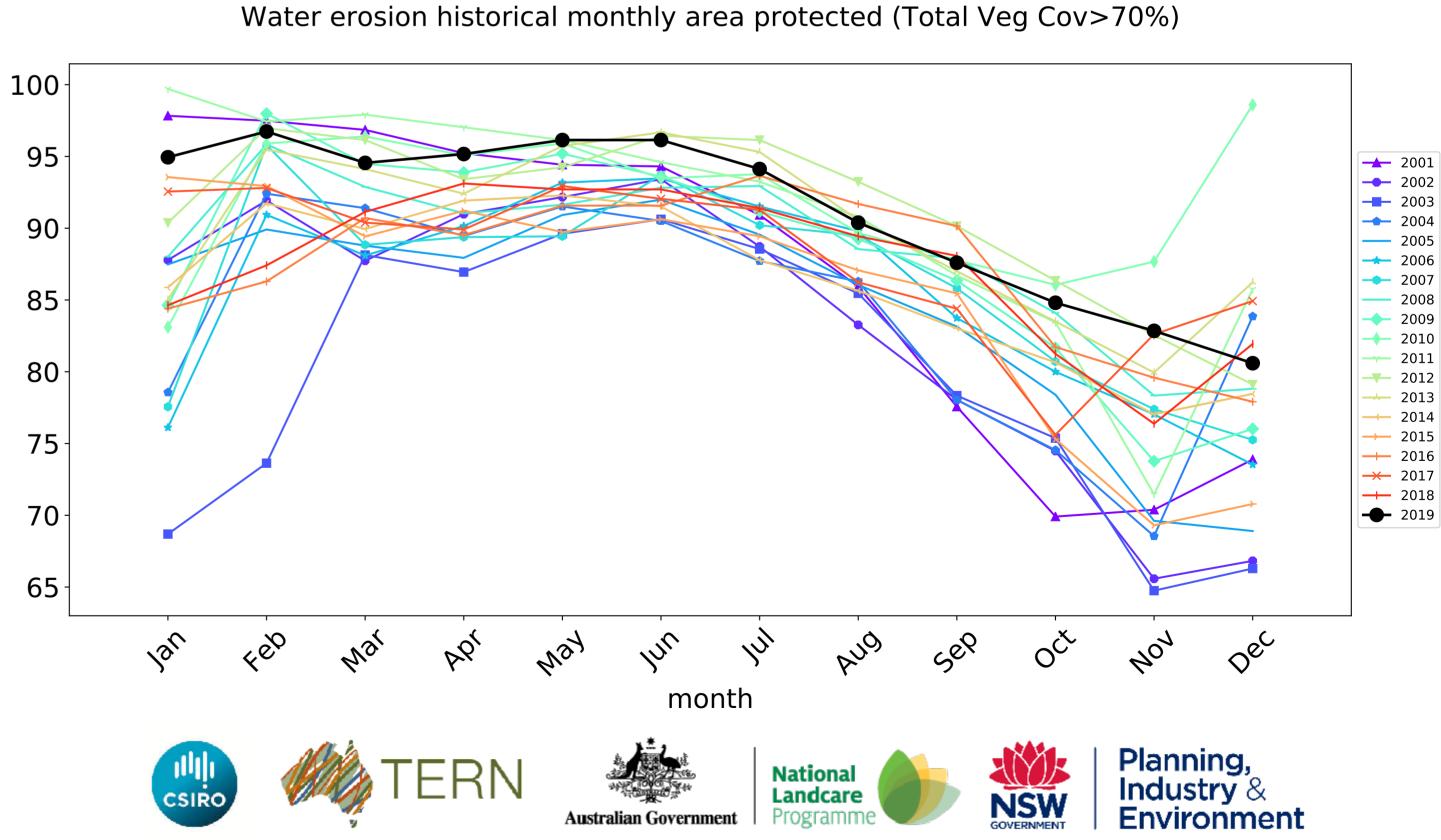
### Irrigation timeseries





month



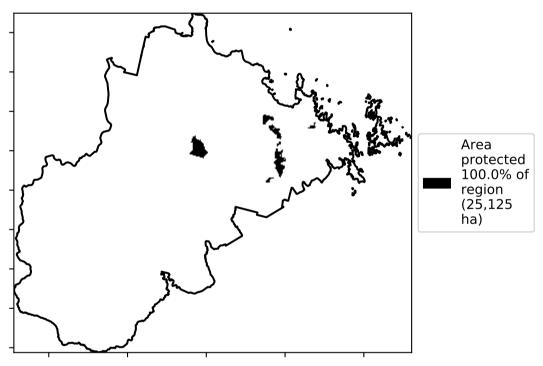


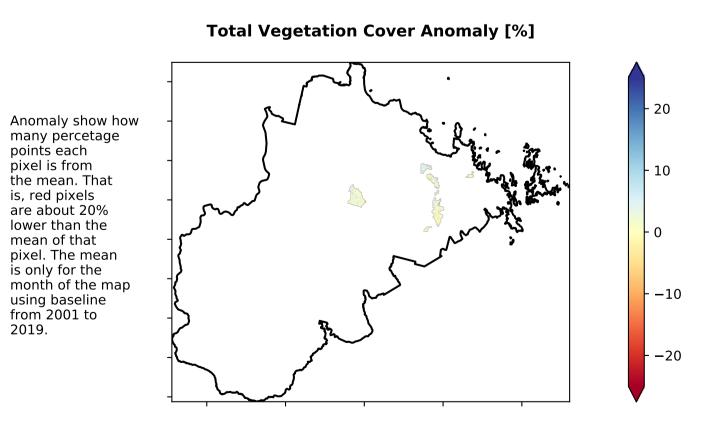
### **Production native forests and plantation forests**

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

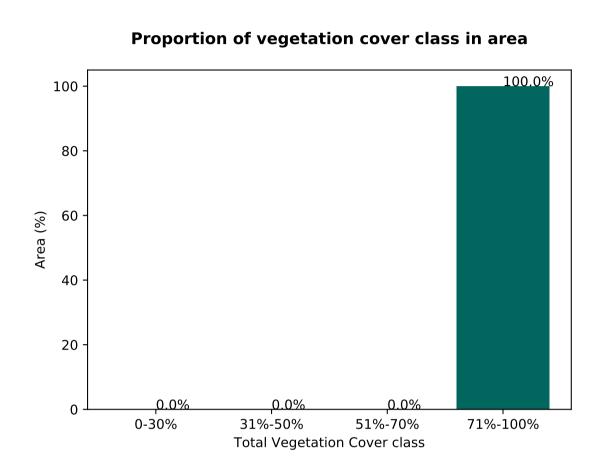
# Total Vegetation Cover [%]

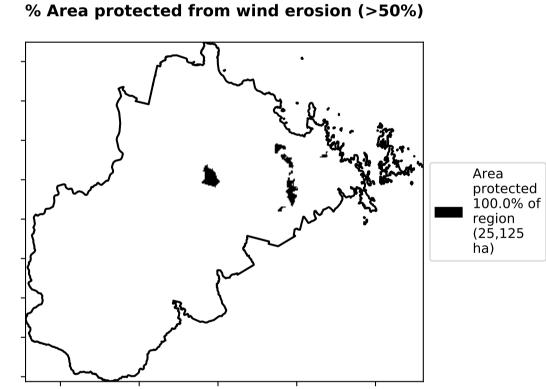
### % Area protected from water erosion (>70%)

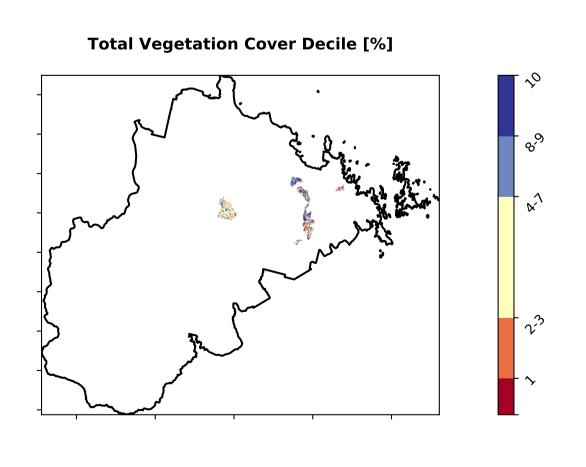




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.











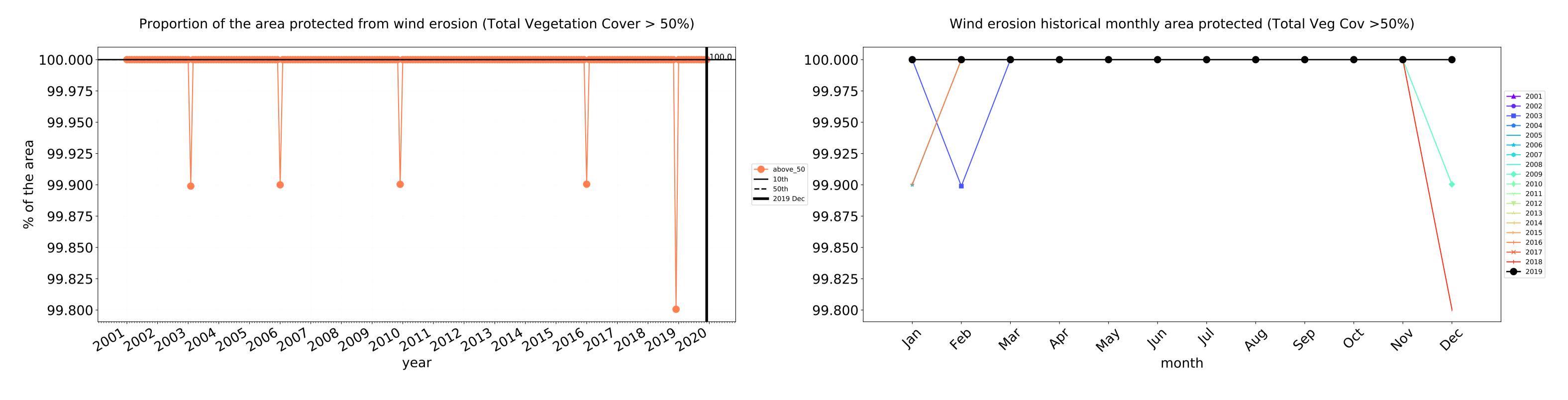


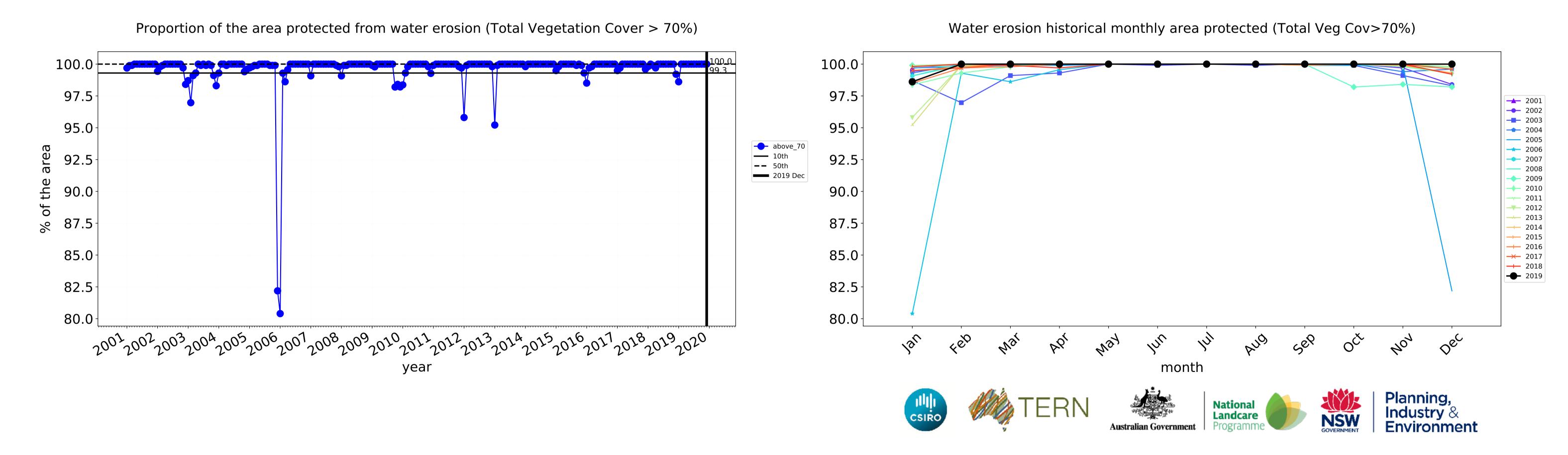






### **Production native forests and plantation forests timeseries**





### Whitsunday\_(R) (2,357,425 ha and no data 24,451 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	2,357,425	100.0% 2,356,825	98.1% 2,313,400	84.0% 1,981,325	64.0% 1,508,850	33.8% 795,825	14.5% 341,825
Conservation and natural environments	169,600	99.9% 169,450	99.5% 168,700	91.9% 155,800	79.2% 134,350	57.8% 98,000	27.3% 46,250
Conservation and natural environments non forest	28,325	99.9% 28,300	98.3% 27,850	63.5% 18,000	18.6% 5,275	4.1% 1,150	1.5% 425
Conservation and natural environments Woodland forest	57,000	100.0% 57,000	99.8% 56,875	97.4% 55,500	88.4% 50,375	63.3% 36,075	33.7% 19,225
natural environments Forest (non woodland)	84,275	99.9% 84,150	99.6% 83,975	97.7% 82,300	93.4% 78,700	72.1% 60,775	31.6% 26,600
Agriculture	2,084,900	100.0% 2,084,750	98.1% 2,044,275	83.6% 1,742,175	62.9% 1,312,425	31.9% 665,450	13.5% 280,875
Grazing	2,042,475	100.0% 2,042,325	98.0% 2,002,325	83.6% 1,707,950	63.2% 1,291,300	32.4% 660,750	13.7% 279,550
Grazing non forest	1,171,800	100.0% 1,171,650	96.6% 1,131,925	74.2% 869,750	48.0% 562,150	19.7% 230,650	6.4% 75,075
Grazing Woodland forest	819,825	100.0% 819,825	100.0% 819,575	96.5% 791,325	84.7% 694,175	50.3% 412,550	23.9% 196,075
Grazing - Forest (non woodland)	50,850	100.0% 50,850	100.0% 50,825	92.2% 46,875	68.8% 34,975	34.5% 17,550	16.5% 8,400
Irrigation	42,125	100.0% 42,125	98.9% 41,650	80.6% 33,950	49.7% 20,950	11.0% 4,625	3.1% 1,300
Production native forests and plantation forests	25,125	100.0% 25,125	100.0% 25,125	100.0% 25,125	99.9% 25,100	78.2% 19,650	36.5% 9,175











