# Total vegetation cover soil protection Region:NRM Wimmera VIC

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: August 2009

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

## **Erosion protection**

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

## Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data.

Water erosion protection for higher rainfall and steeper slopes:

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

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

## **Acknowledgment of data:**

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

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













## **Vegetation Cover Aug 2009**

## **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

the mean. That

is, red pixels are about 20%

lower than the mean of that

pixel. The mean is only for the

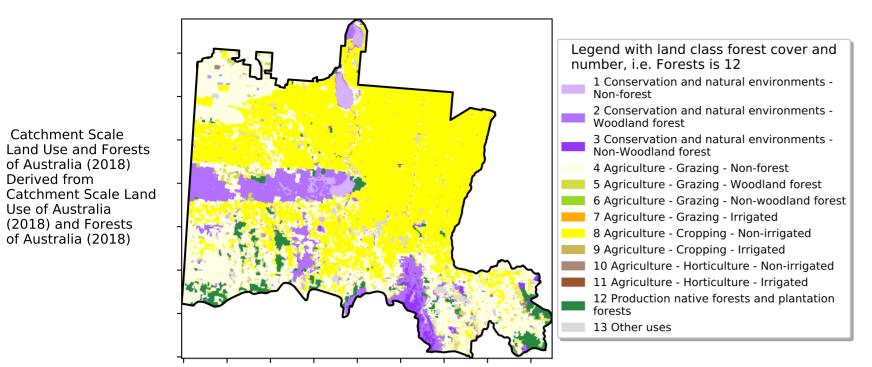
using baseline from 2001 to

2019.

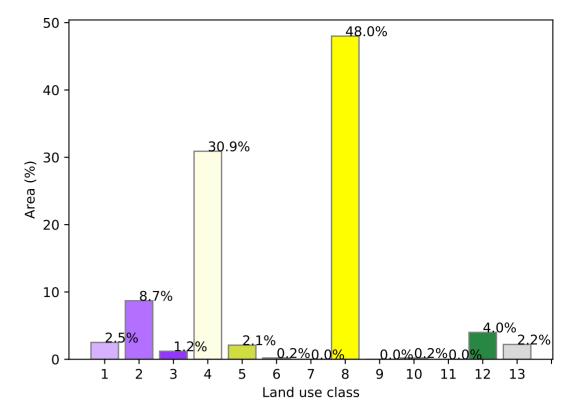
month of the map

Derived from

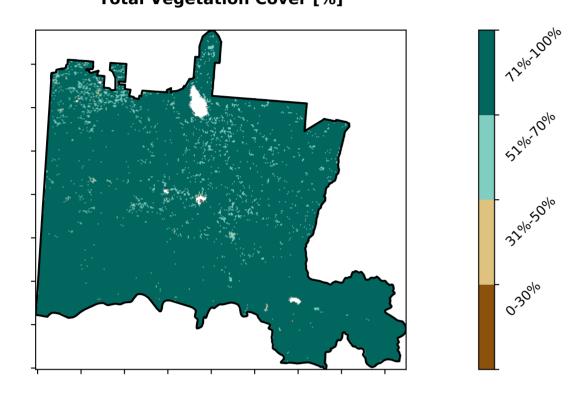
Use of Australia



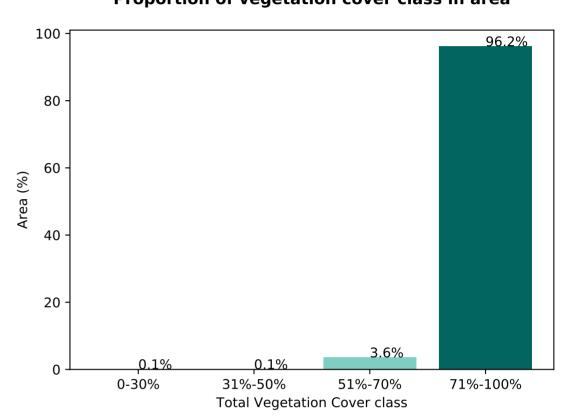
## Proportion of each land class in area

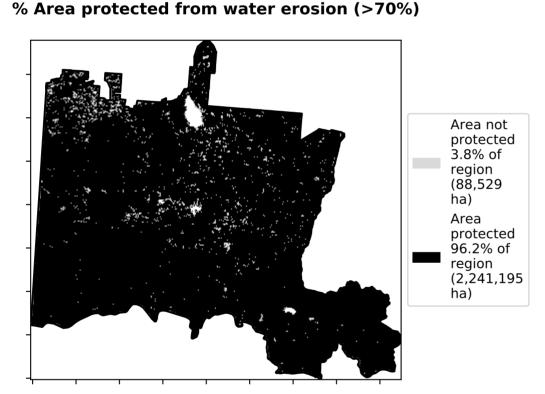


## **Total Vegetation Cover [%]**

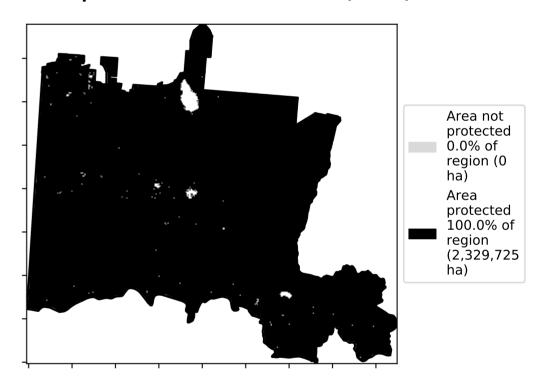


Proportion of vegetation cover class in area

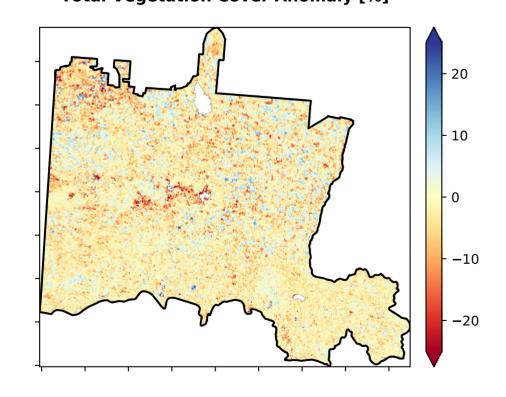




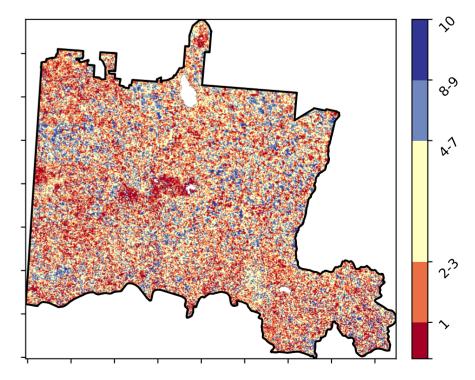
% Area protected from wind erosion (>50%)



## **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.





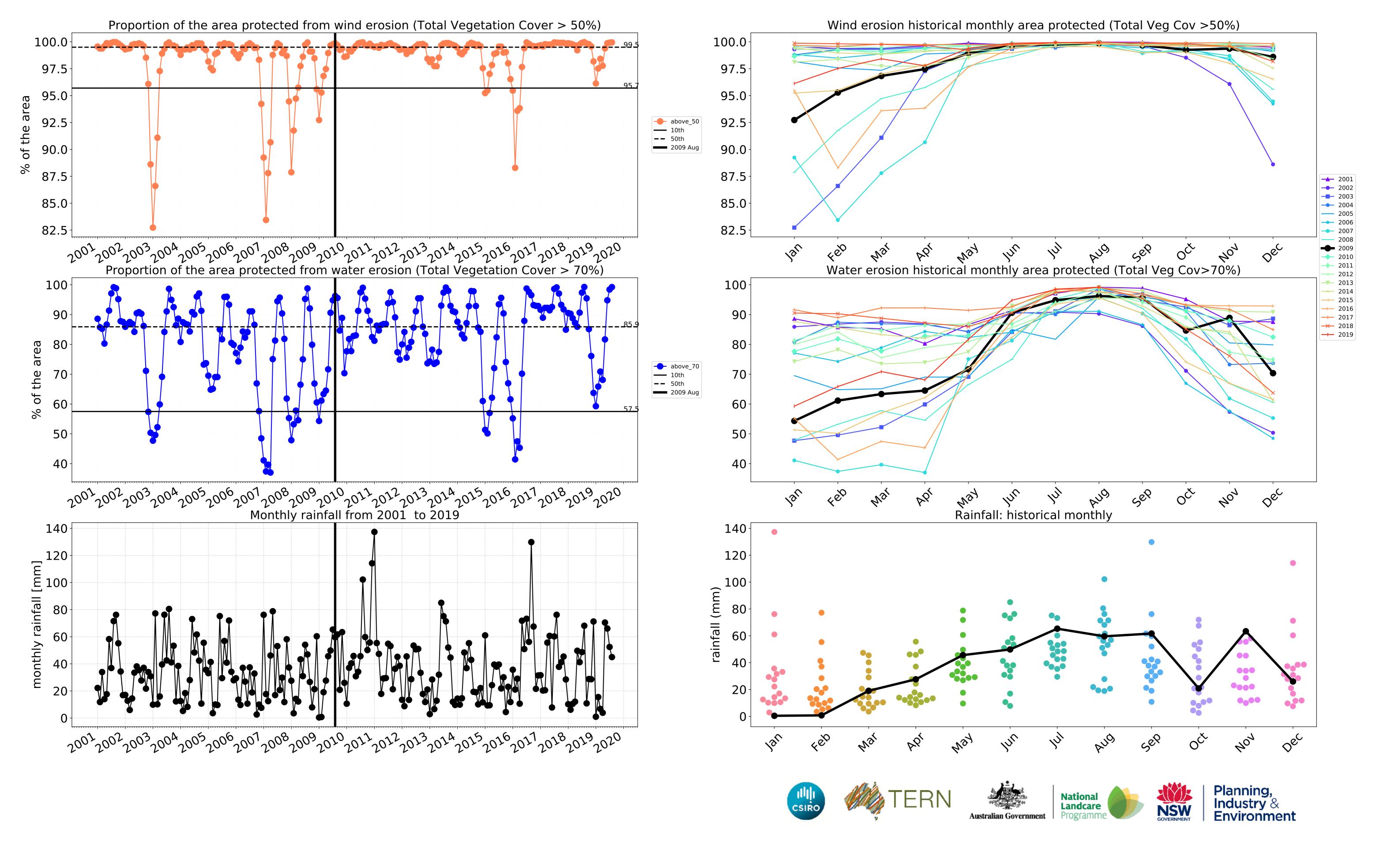








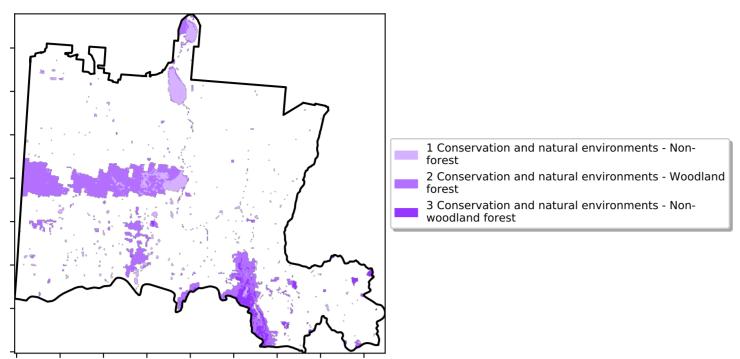




## **Conservation and natural environments**

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

of Australia (2018)

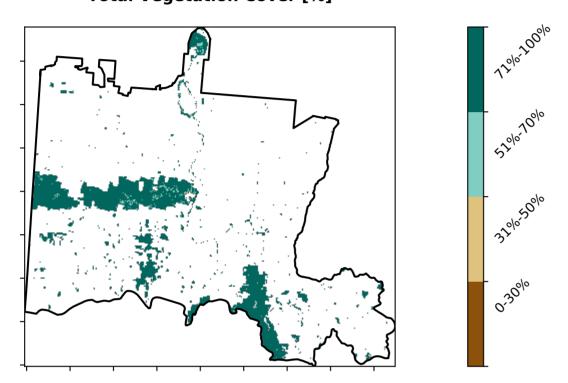


# 70 - 70.0% - 60 - 50 - 50 - 20.5% - 20 - 20.5% - 9.5% - 9.5% - 9.5% - 3

Proportion of each land class in area

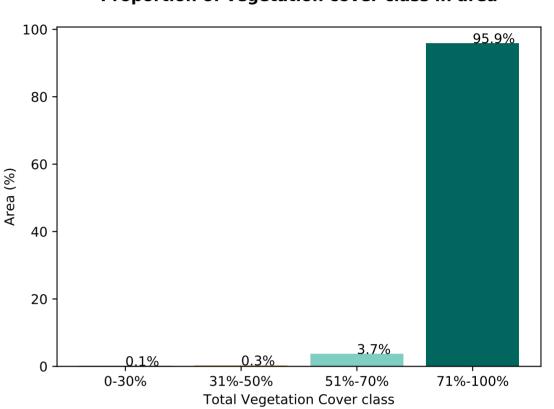
## **Total Vegetation Cover [%]**

**Land use and forest cover** 

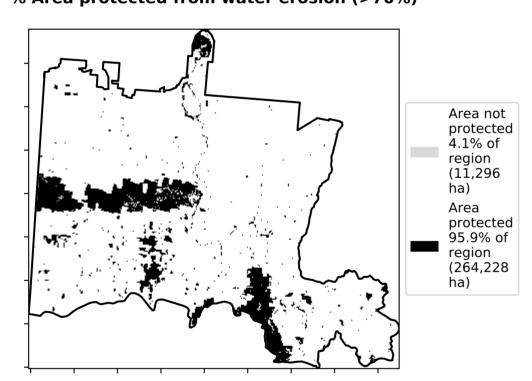


Proportion of vegetation cover class in area

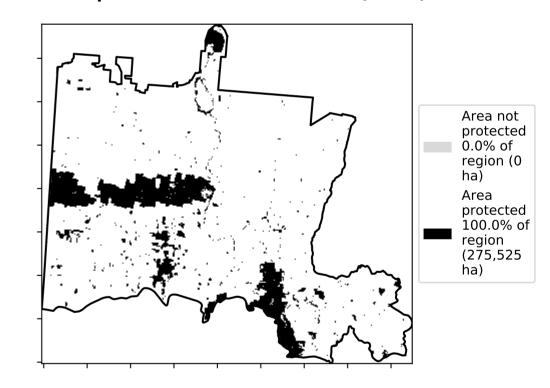
Land use class



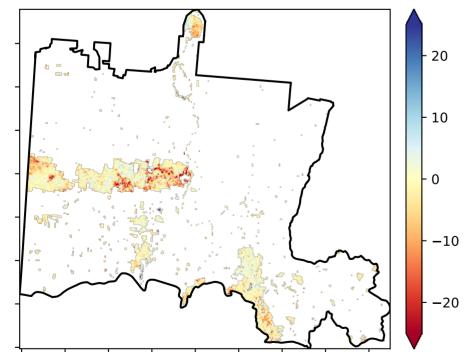
## % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

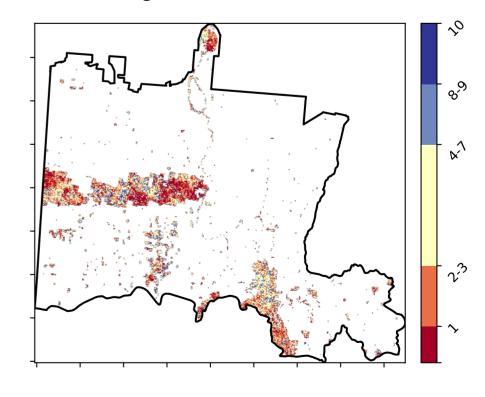


## **Total Vegetation Cover Anomaly [%]**



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

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



using baseline from 2001 to 2019.

Anomaly show how many percetage points each

pixel is from

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

the mean. That

pixel. The mean

is only for the month of the map



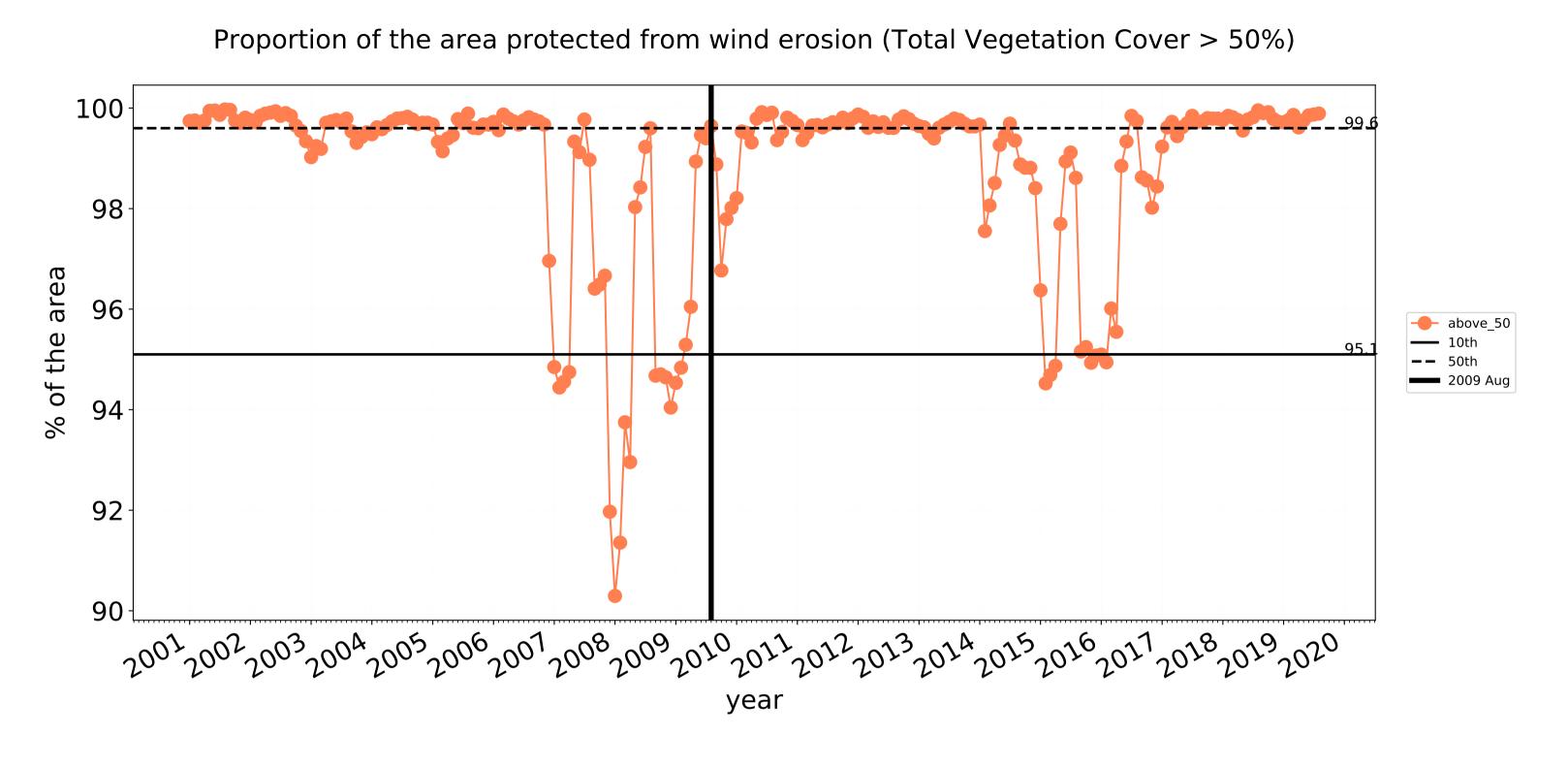


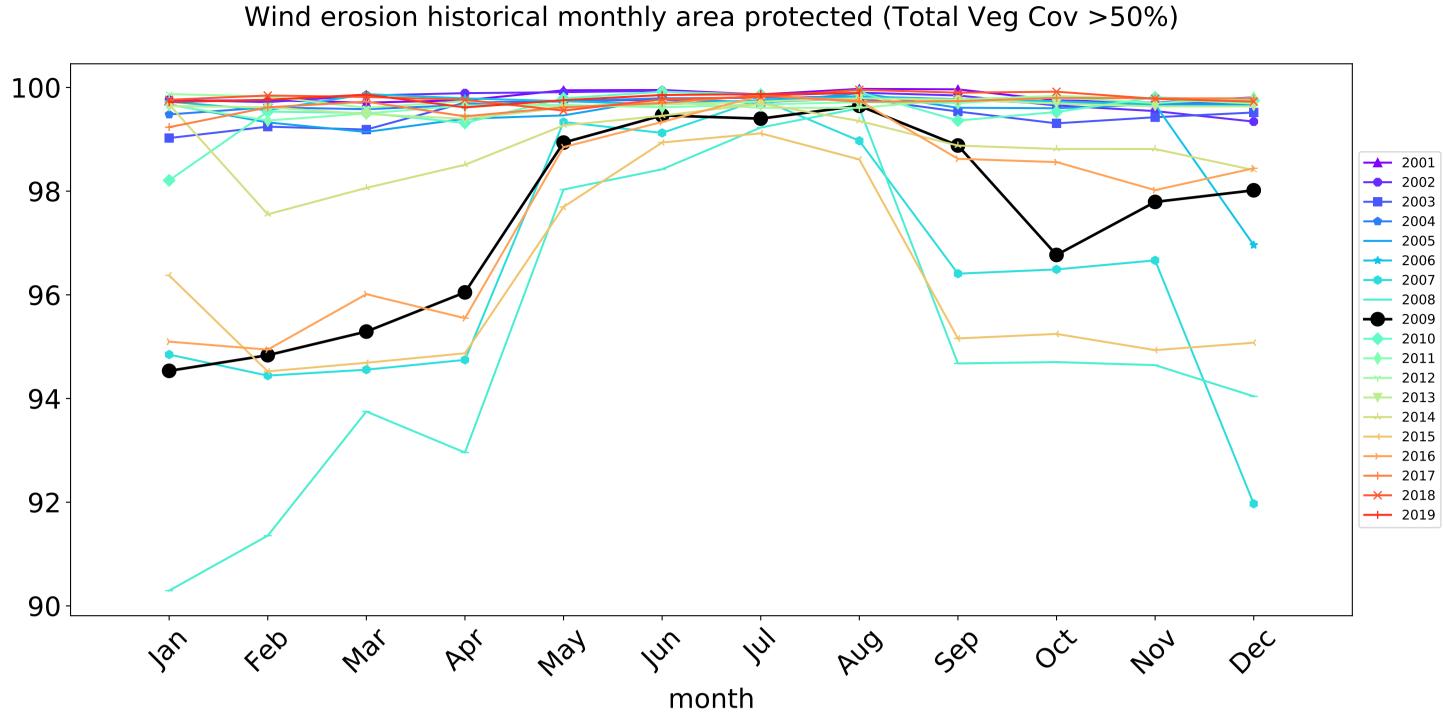


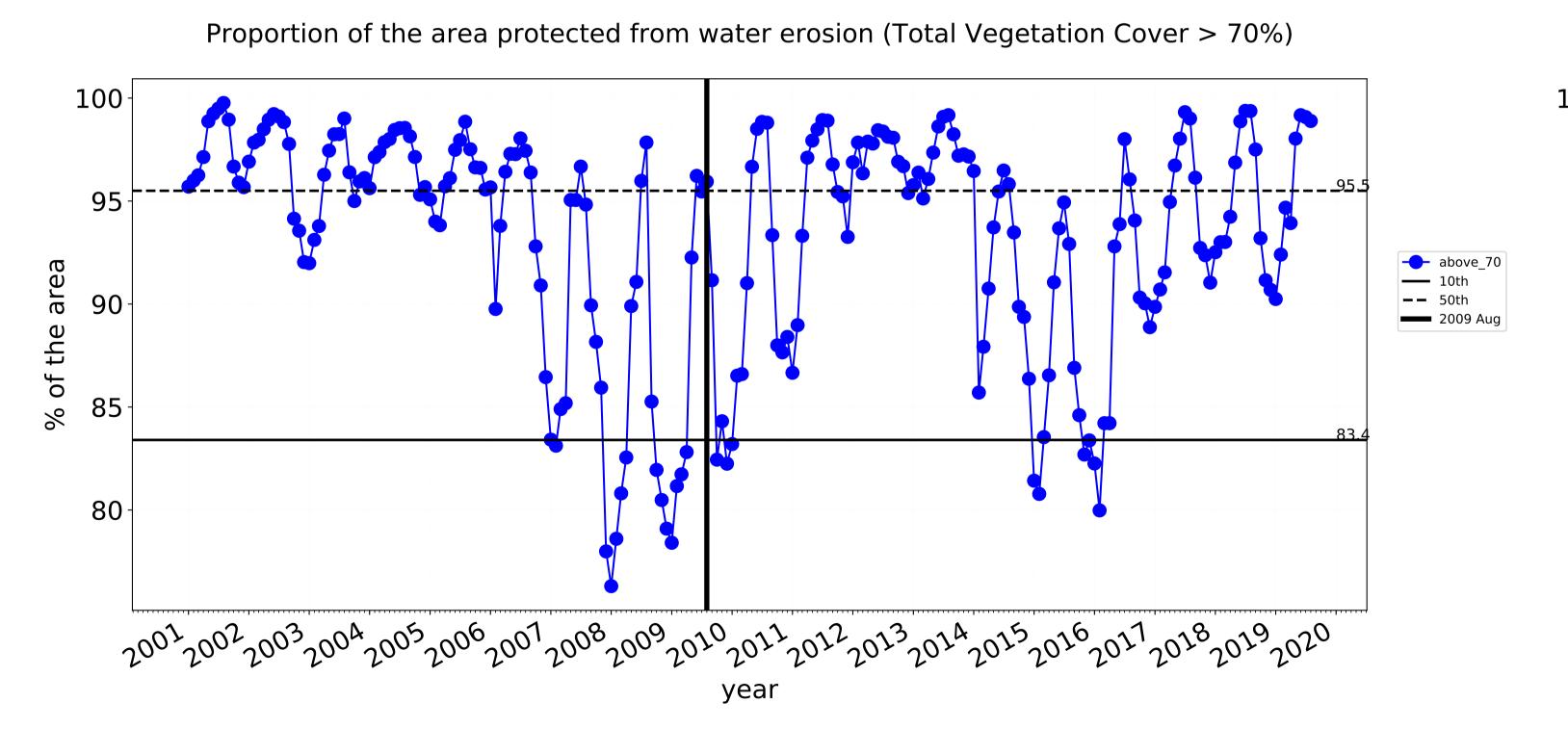


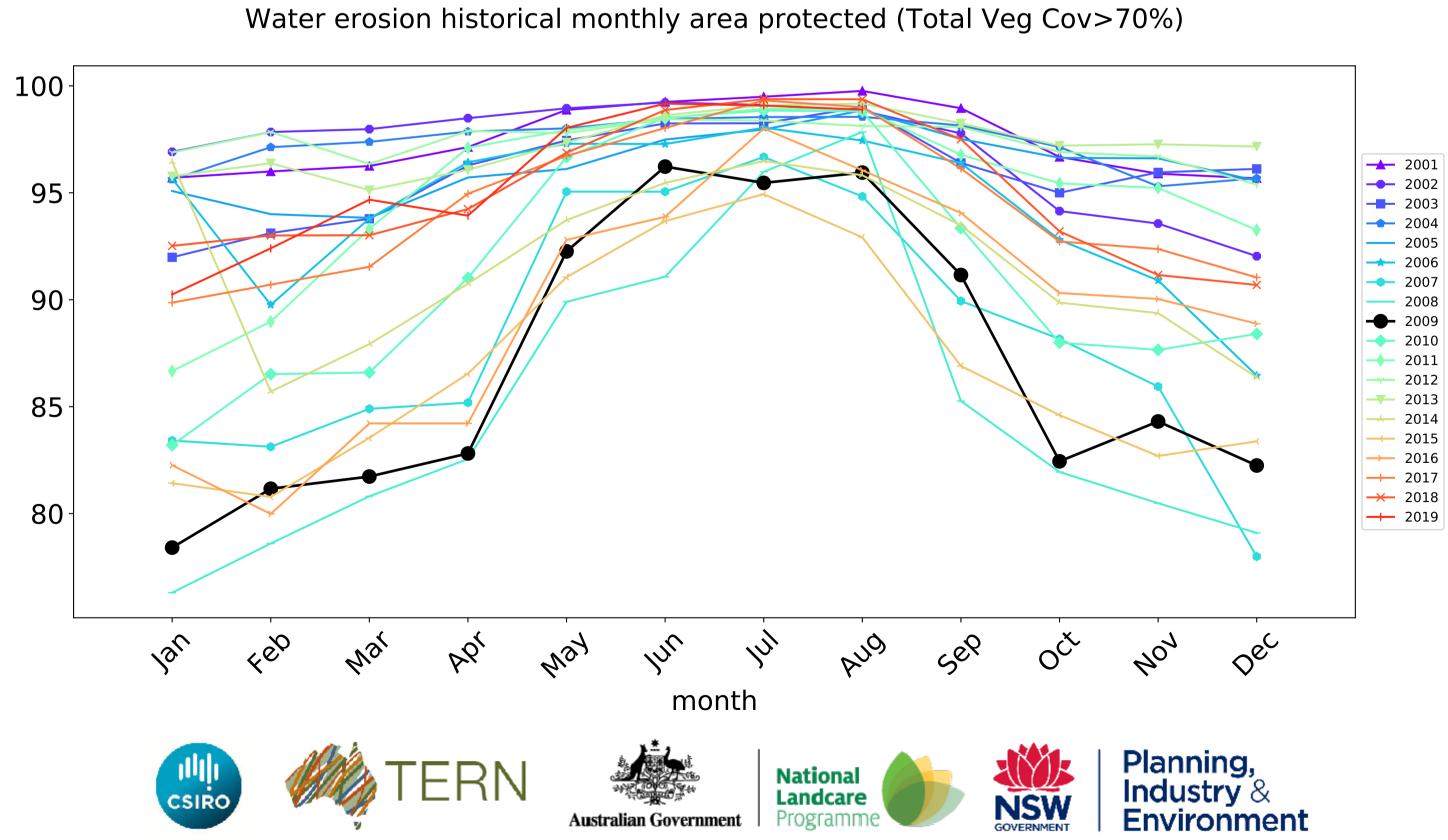


## **Conservation and natural environments timeseries**









## **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)

Anomaly show how many percetage points each

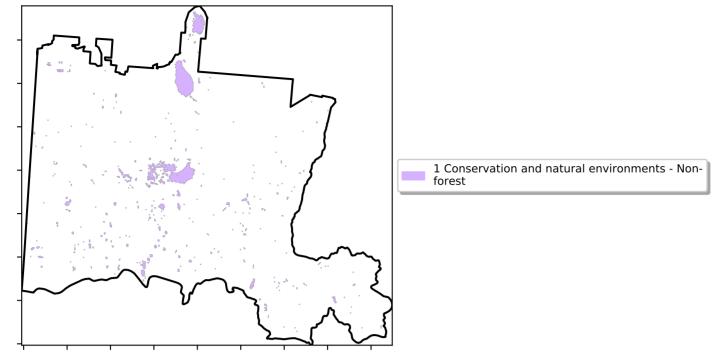
pixel is from

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

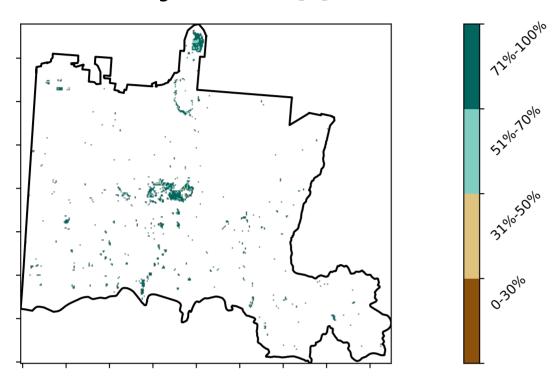
the mean. That

is only for the month of the map

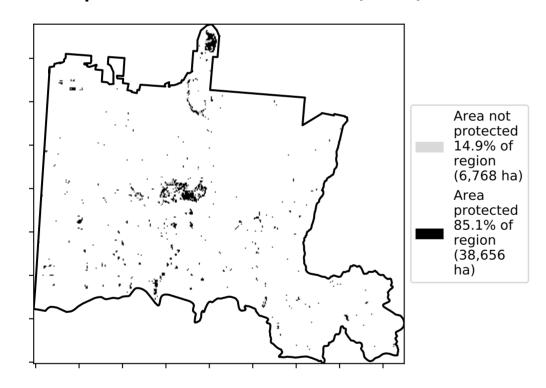
using baseline from 2001 to 2019.



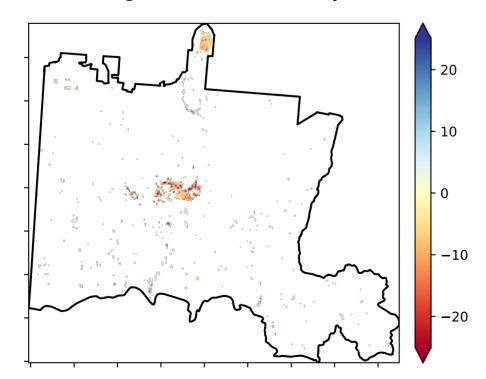
## **Total Vegetation Cover [%]**



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

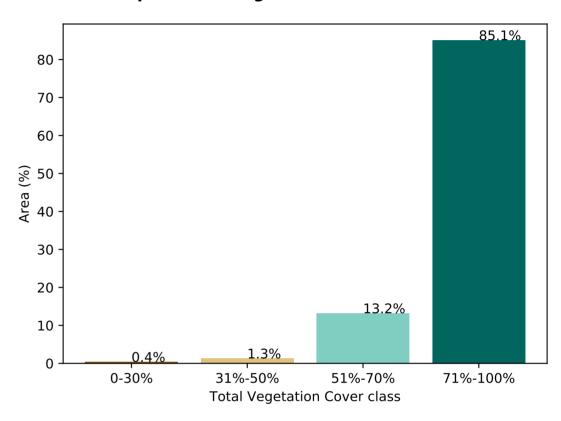


## Total Vegetation Cover Anomaly [%]

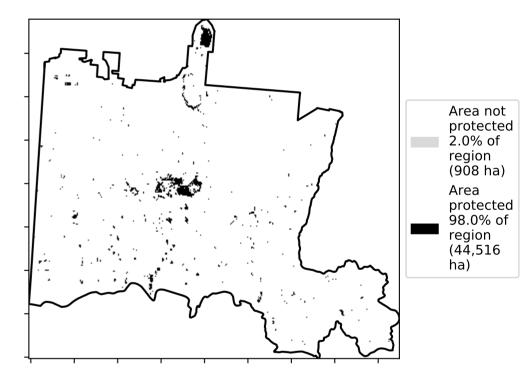


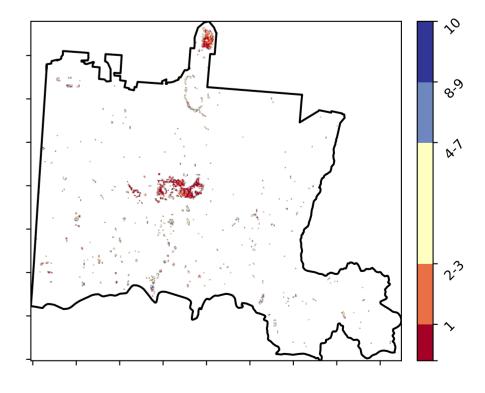
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

## Proportion of vegetation cover class in area



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









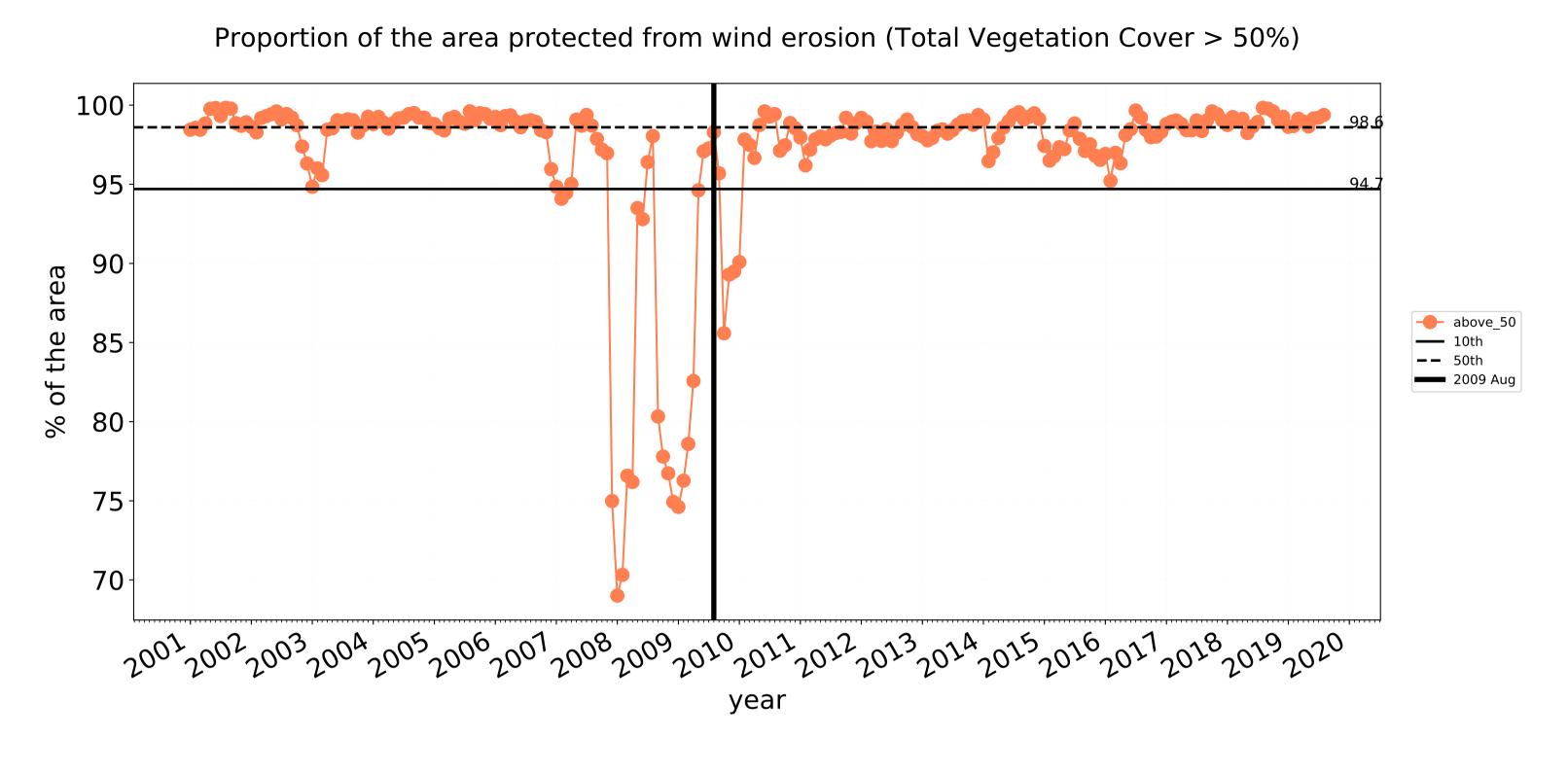


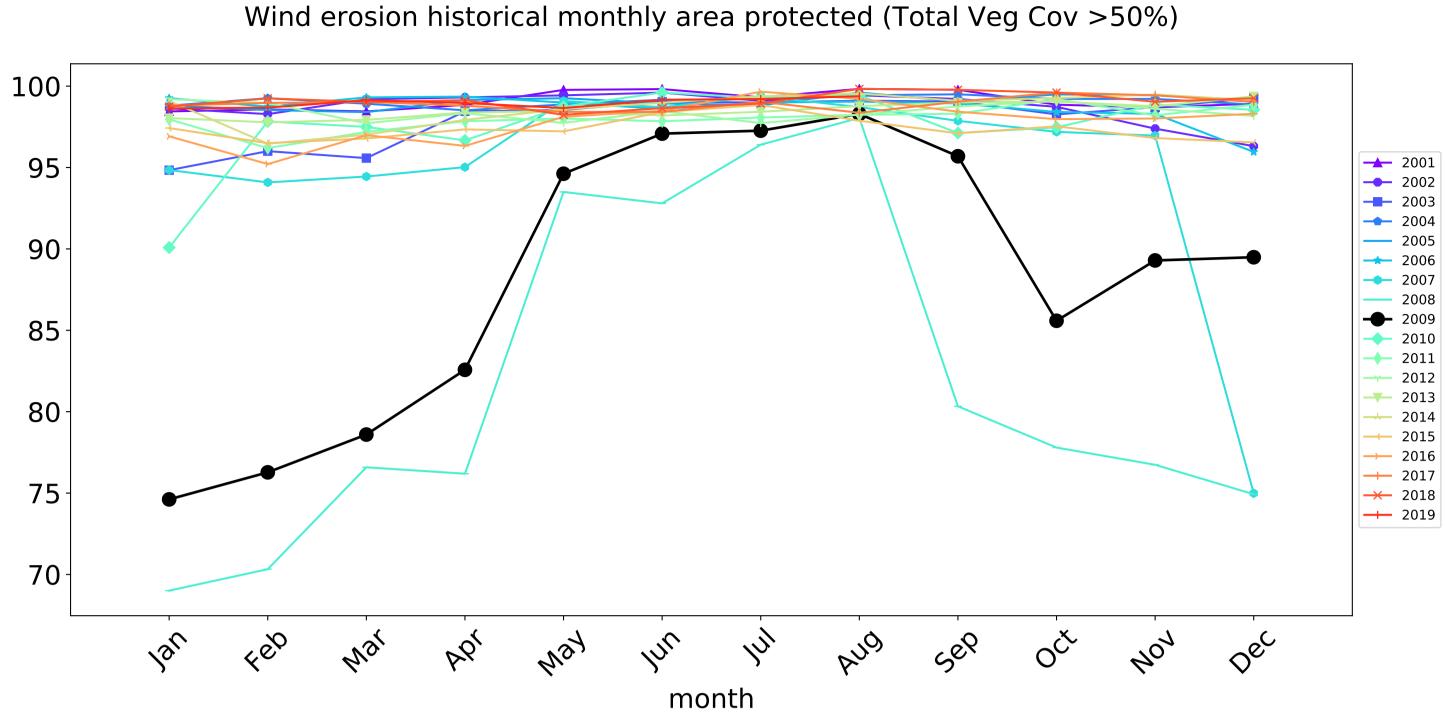


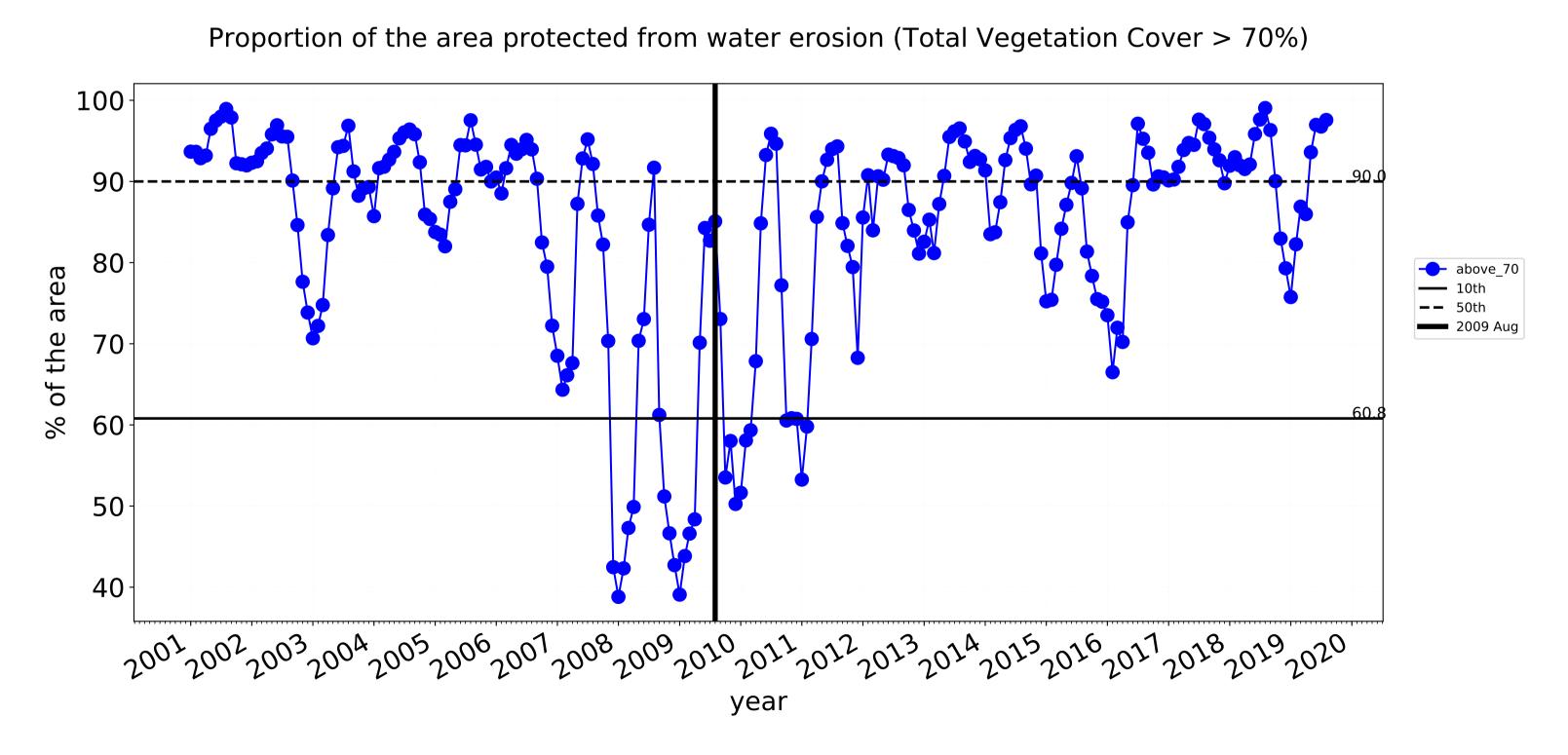


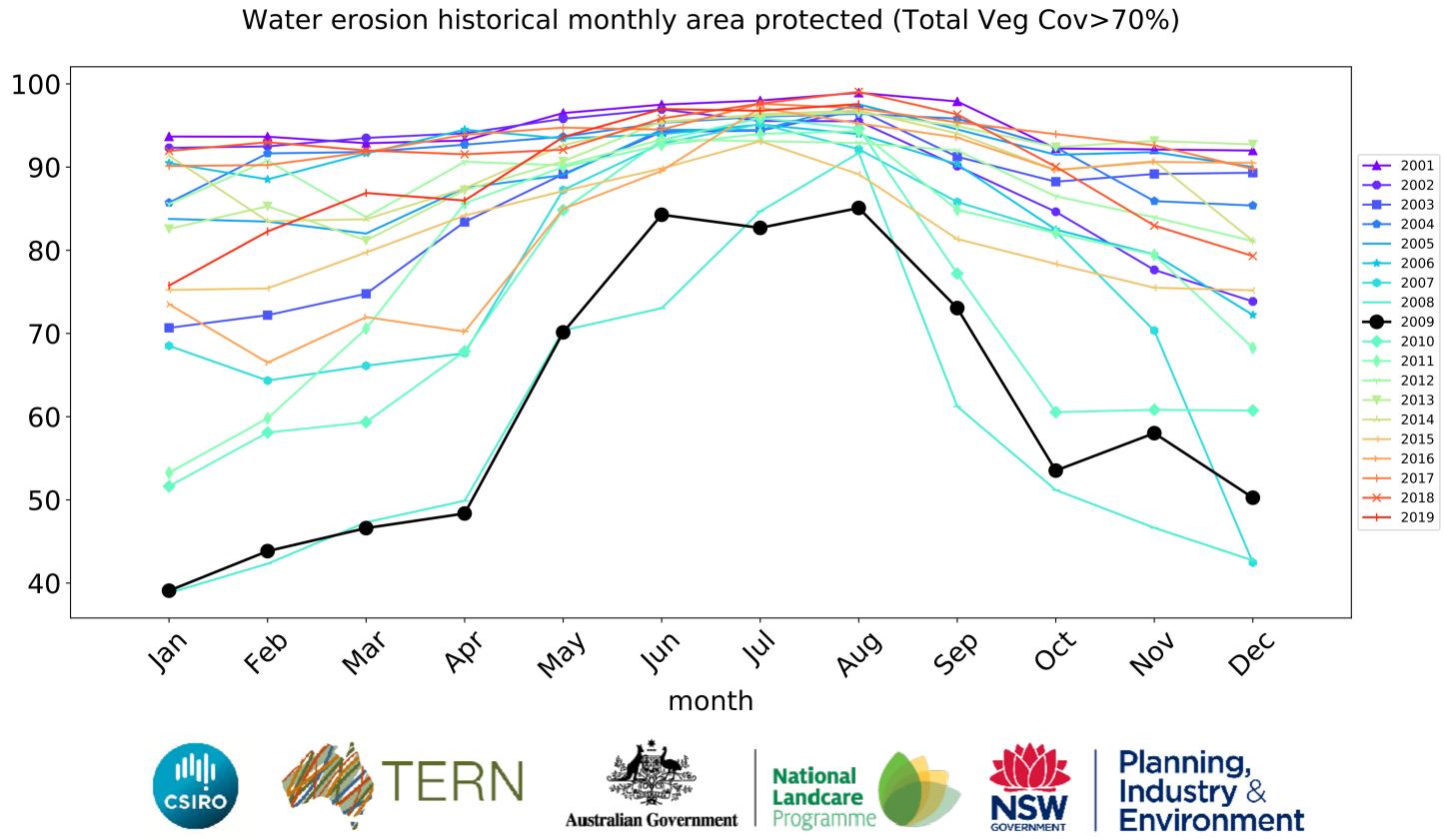


## **Conservation and natural environments non forest timeseries**









## **Conservation and natural environments Woodland 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

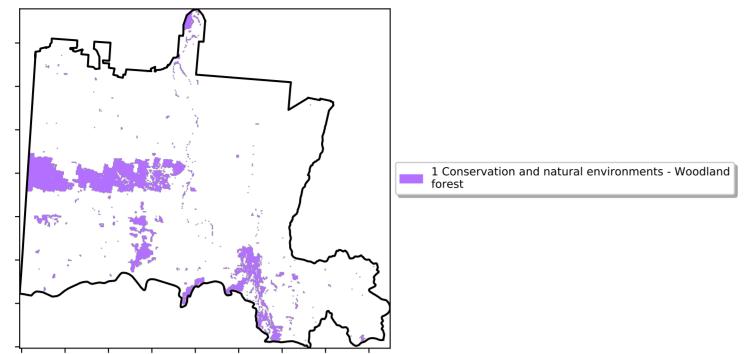
pixel is from

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

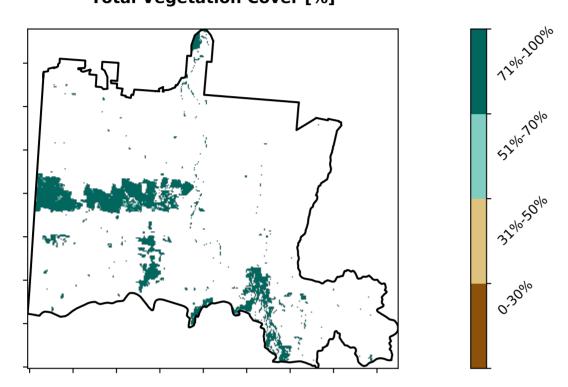
the mean. That

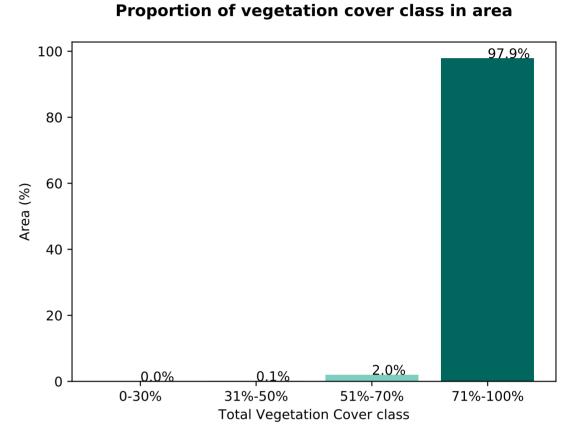
is only for the month of the map

using baseline from 2001 to 2019.

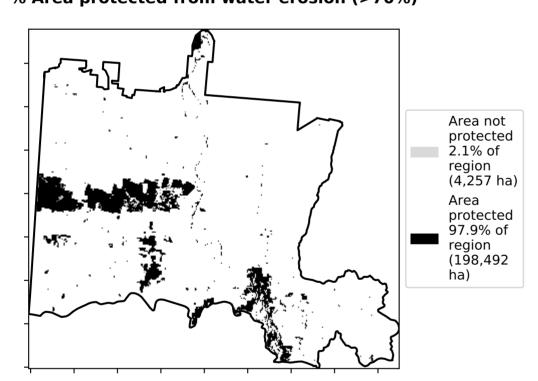


## **Total Vegetation Cover [%]**

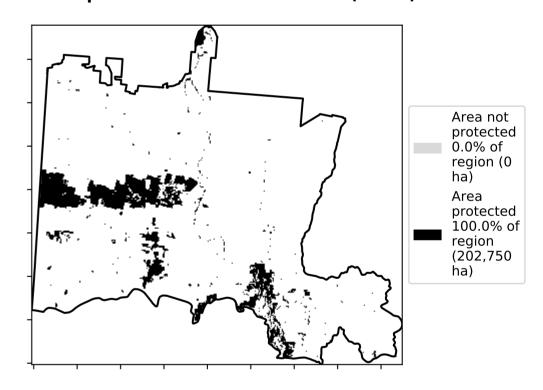




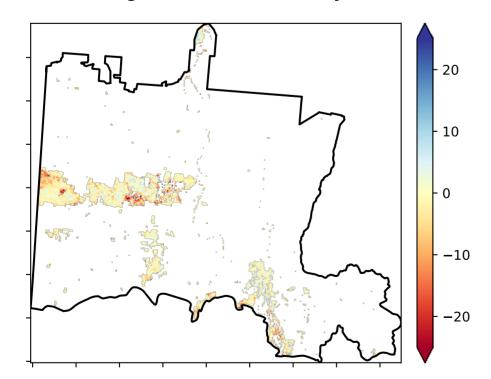
## % Area protected from water erosion (>70%)



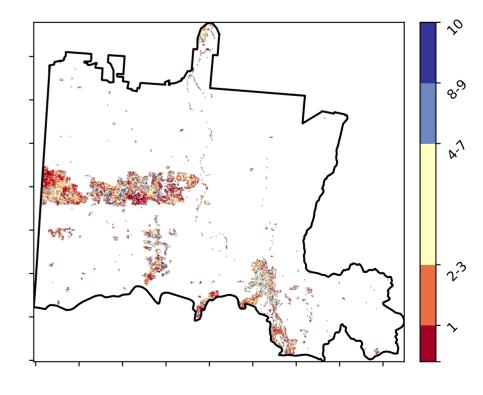
% Area protected from wind erosion (>50%)



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



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





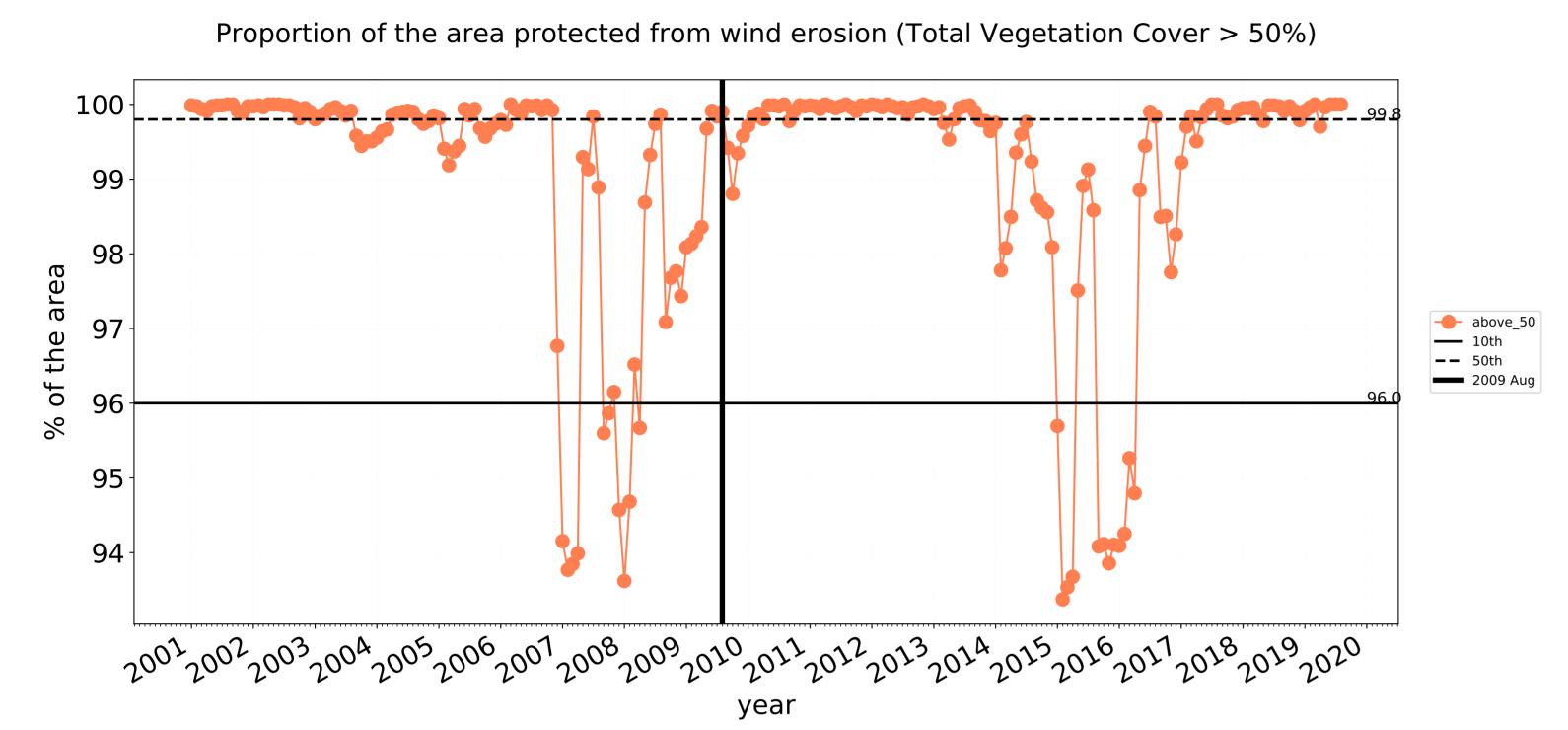


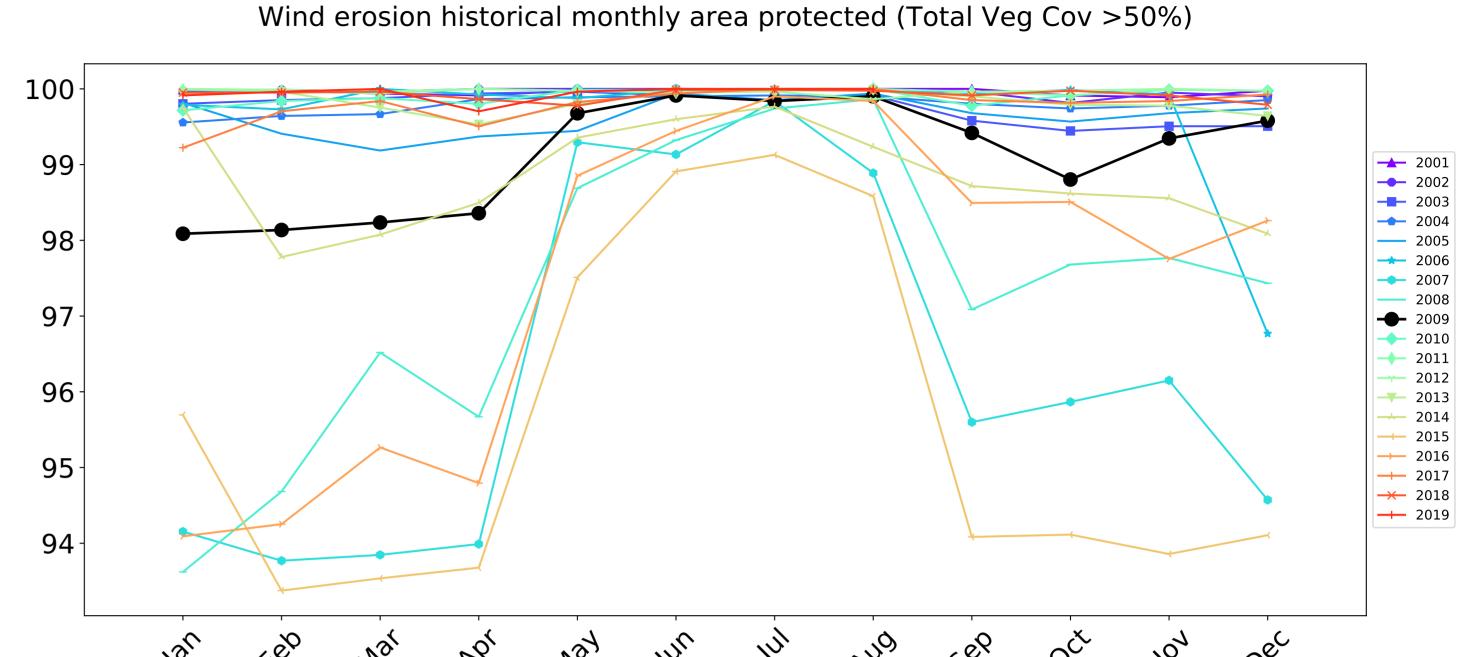


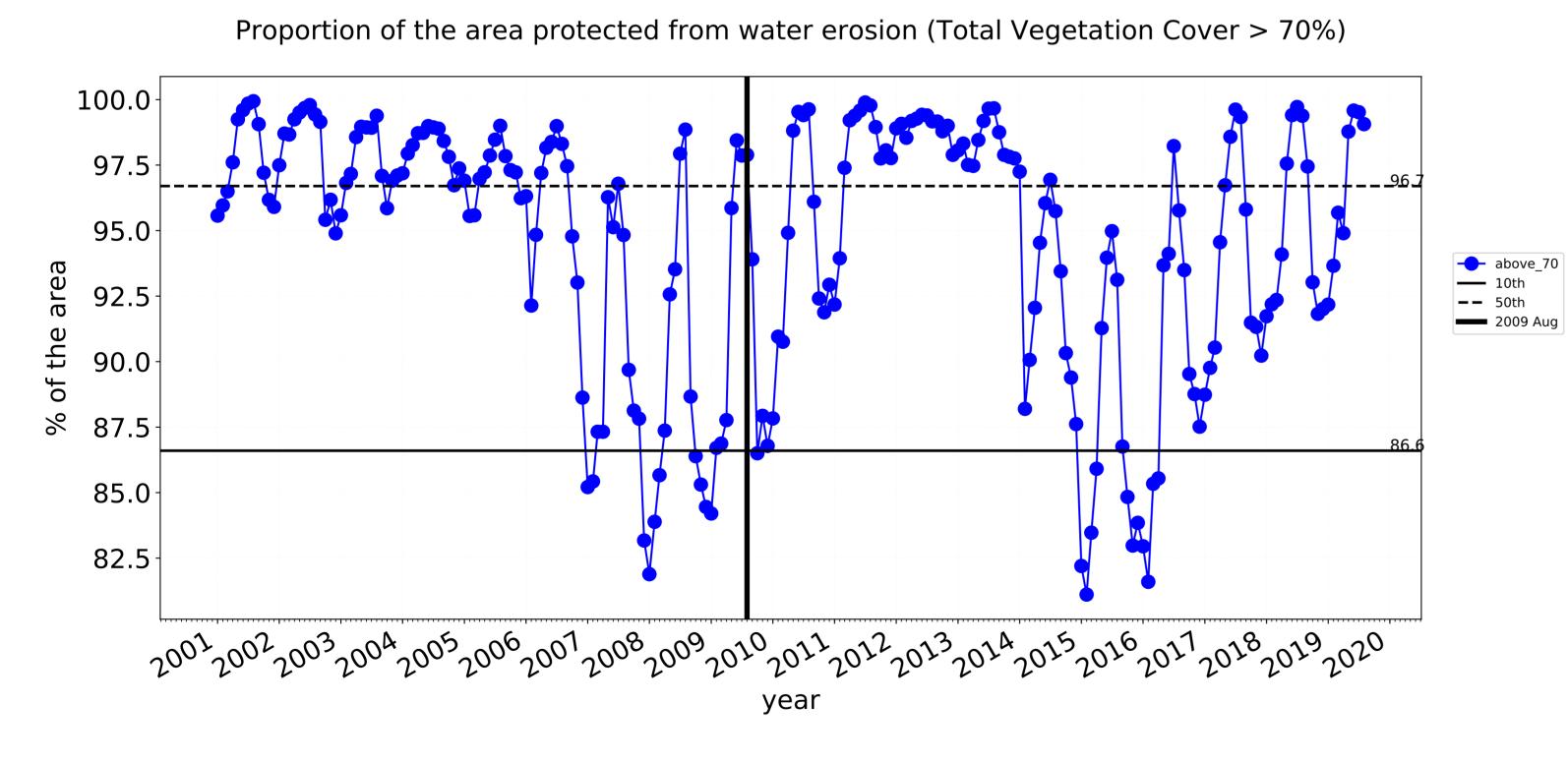


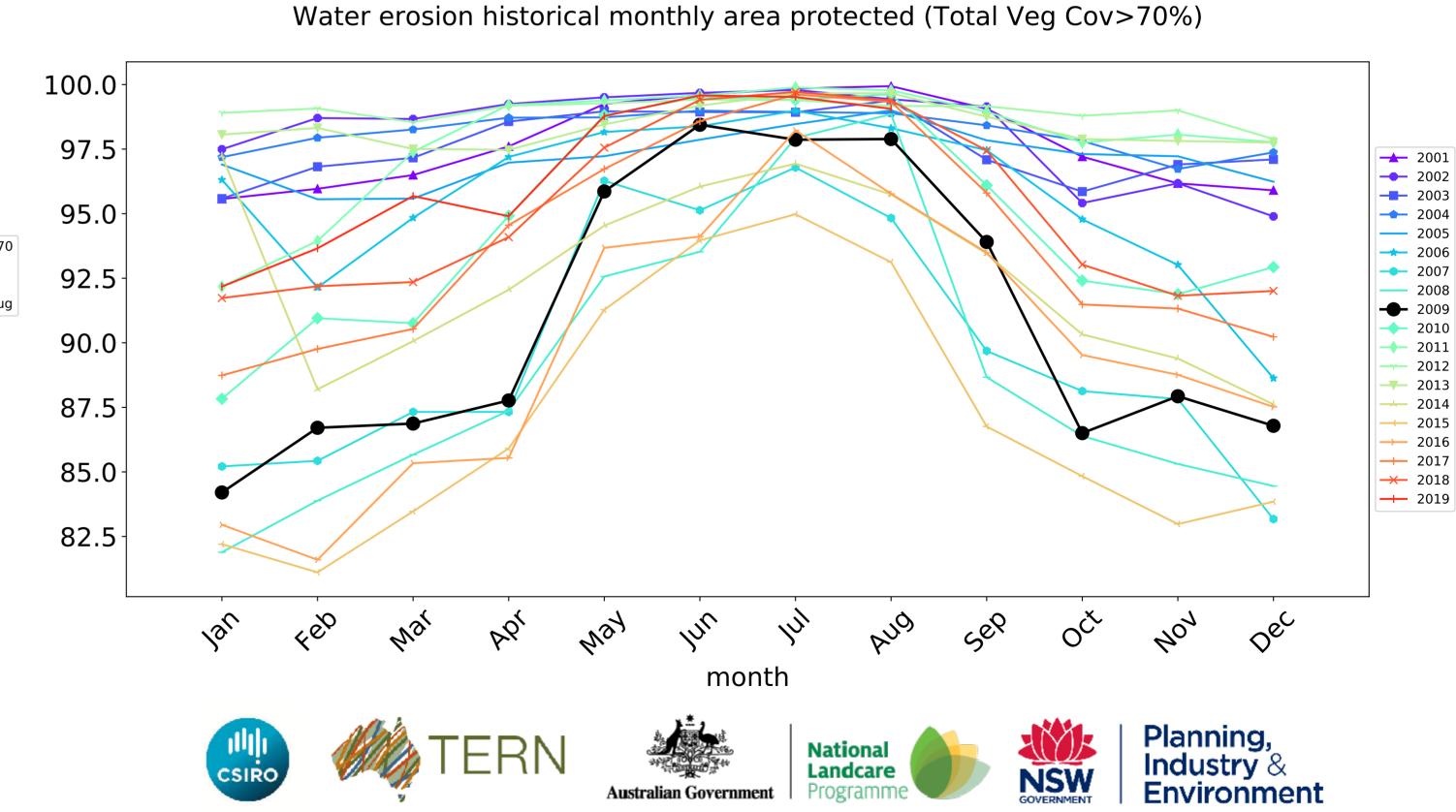












## **Conservation and natural environments Forest (non woodland)**

## Land use and forest cover

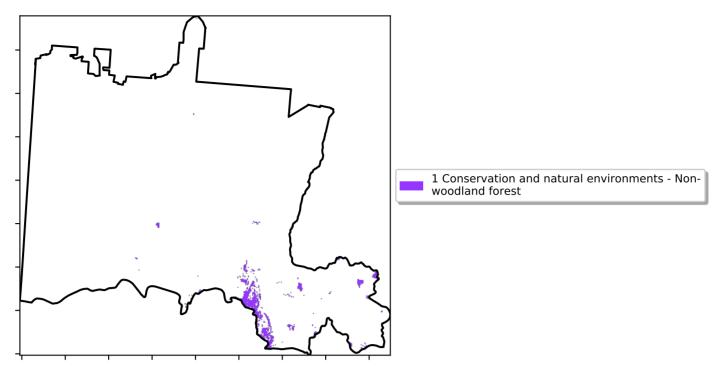
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

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

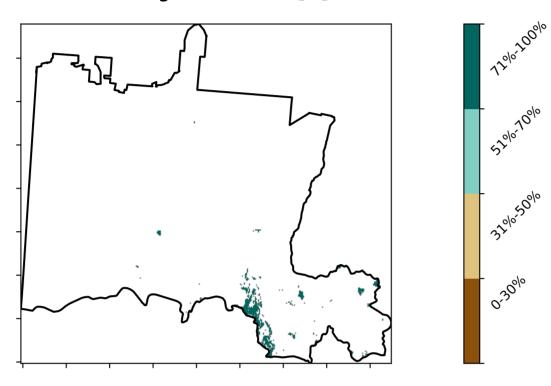
is, red pixels are about 20% lower than the mean of that

pixel. The mean

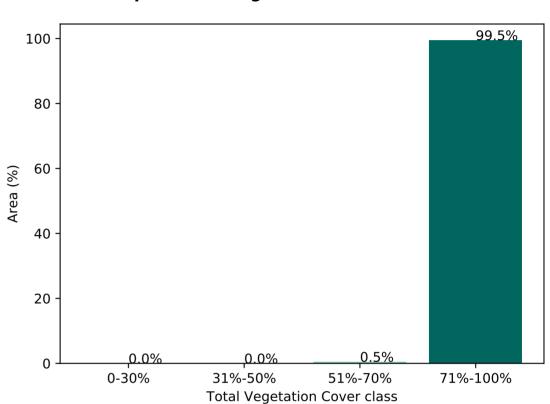
is only for the month of the map using baseline from 2001 to 2019.



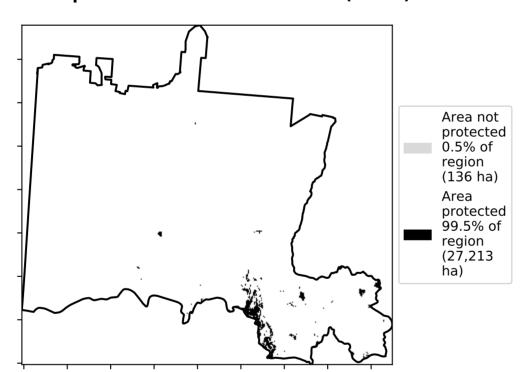
## **Total Vegetation Cover [%]**



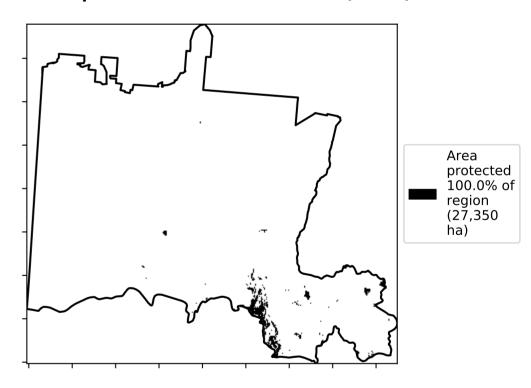
## Proportion of vegetation cover class in area



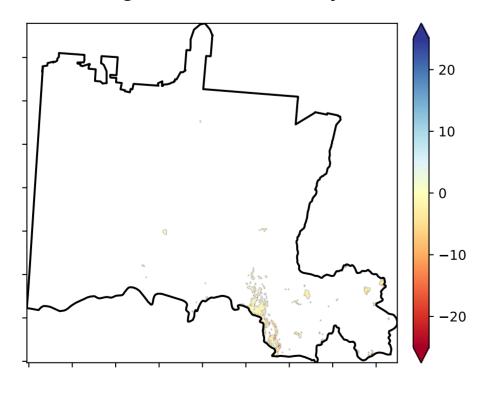
## % Area protected from water erosion (>70%)



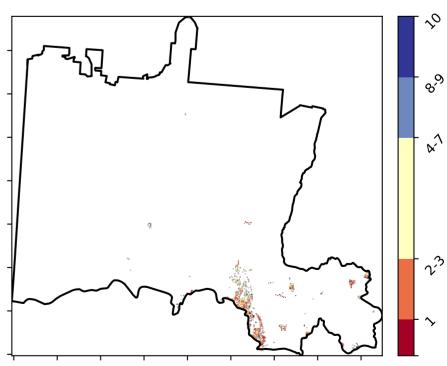
% Area protected from wind erosion (>50%)



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



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





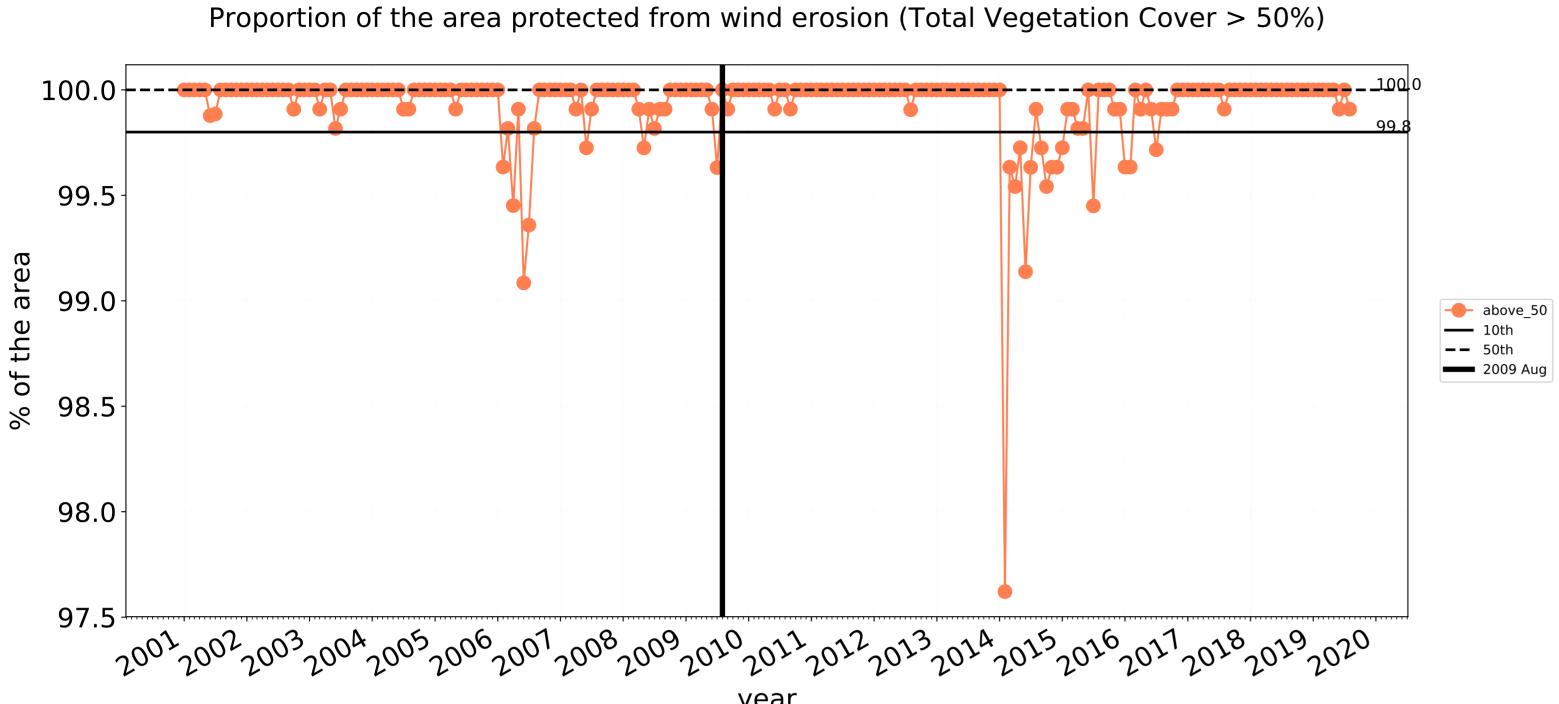


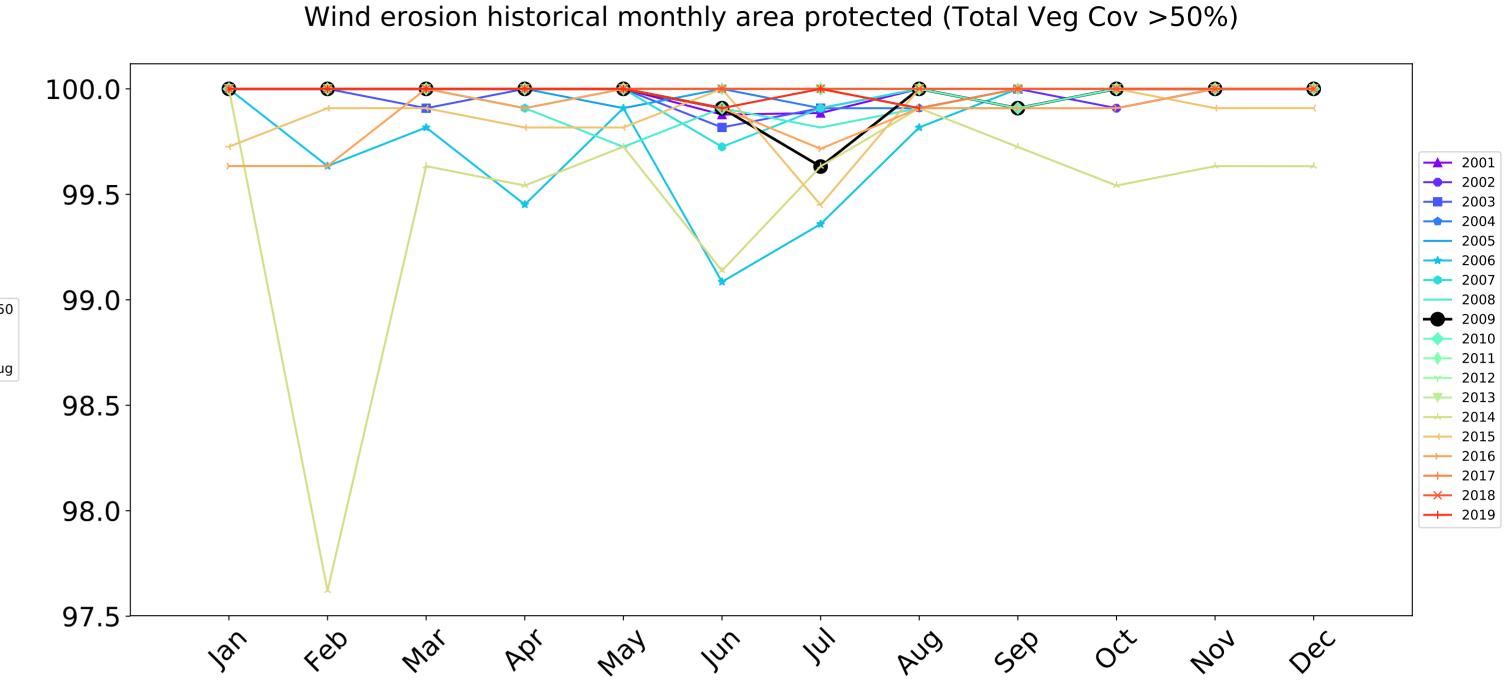


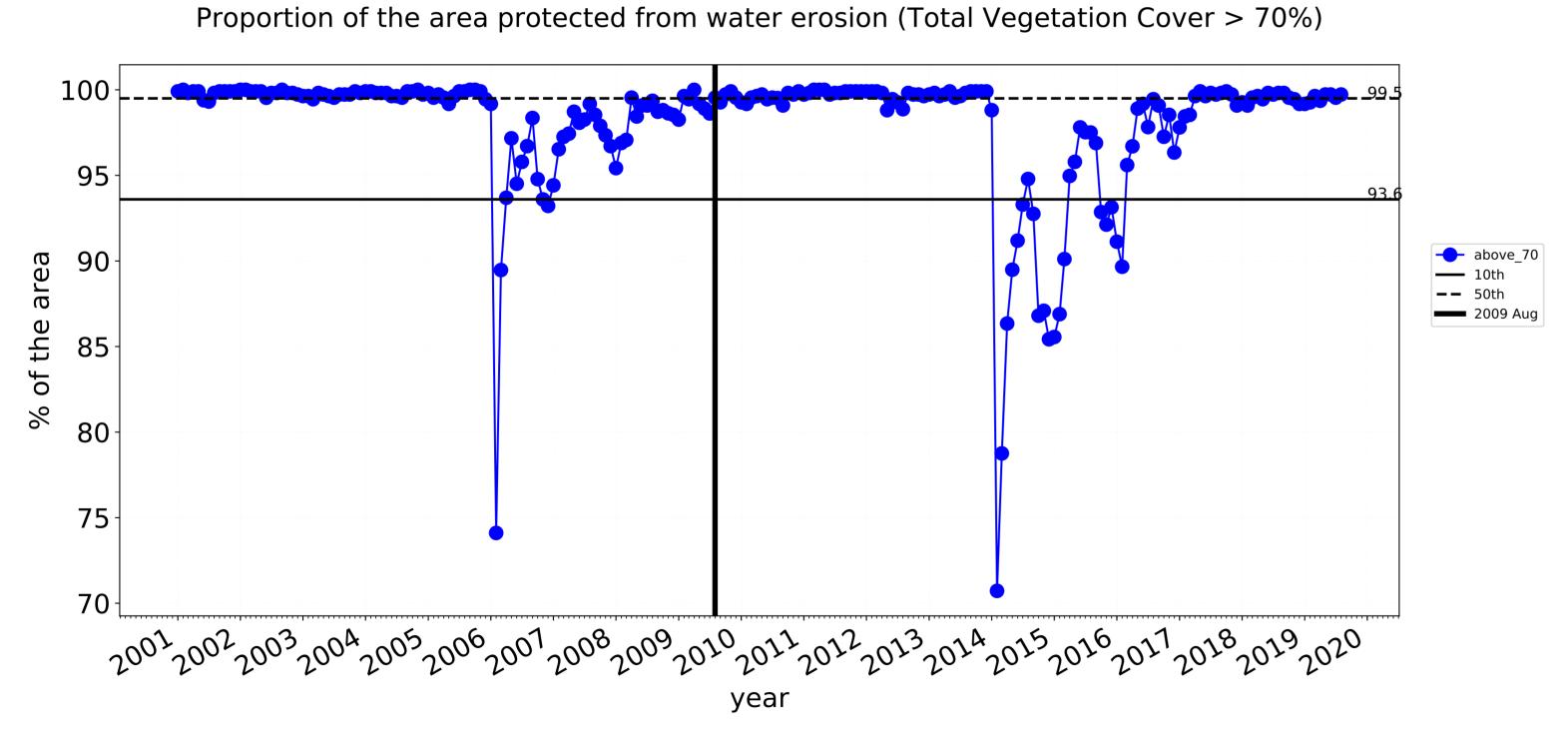


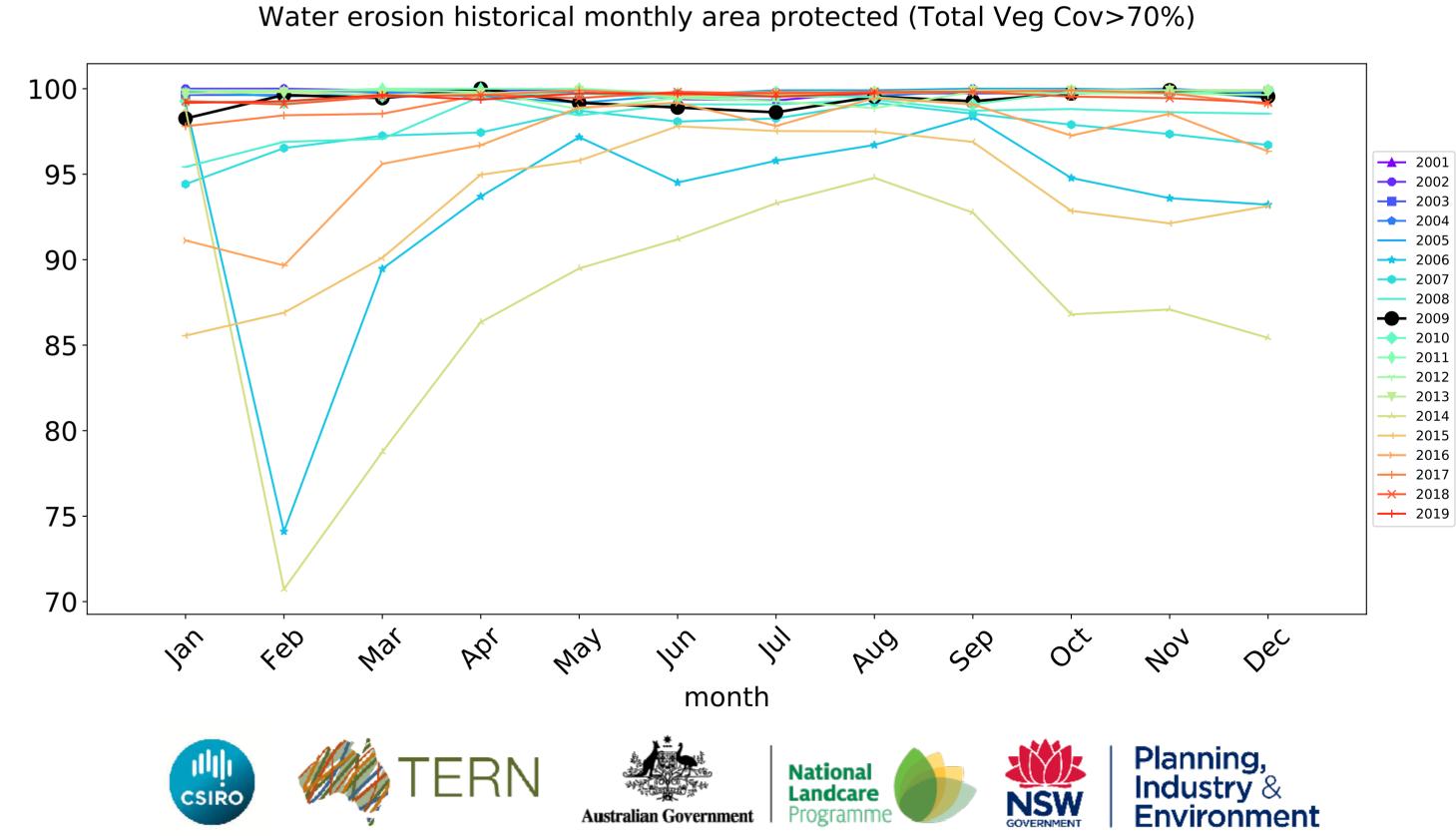












## **Agriculture**

## Land use and forest cover

Derived from

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

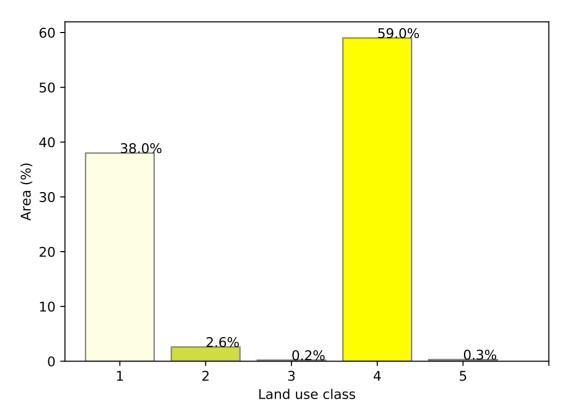
using baseline from 2001 to 2019.

the mean. That

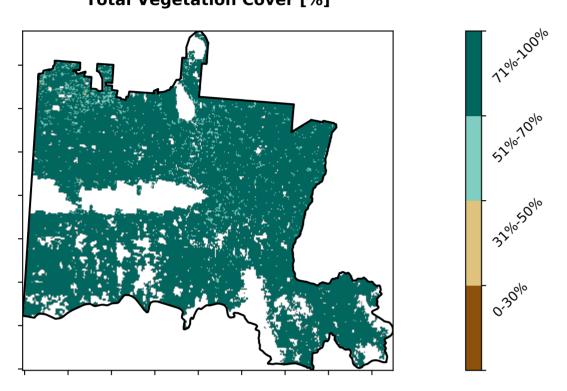
Use of Australia

## Catchment Scale Land Use and Forests 1 Agriculture - Grazing - Non forest of Australia (2018) 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Catchment Scale Land 4 Agriculture - Cropping - Non-irrigated (2018) and Forests of Australia (2018) 5 Agriculture - Horticulture - Non-irrigated

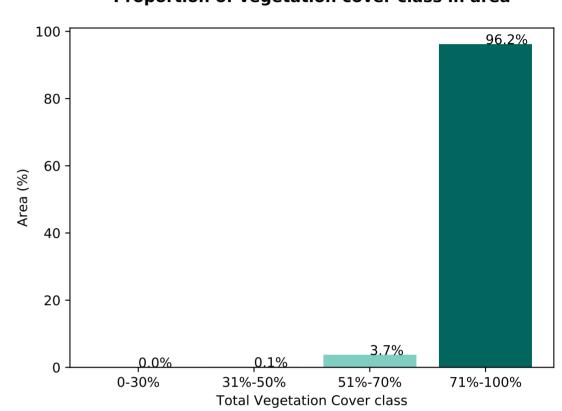
## **Proportion of each land class in area**



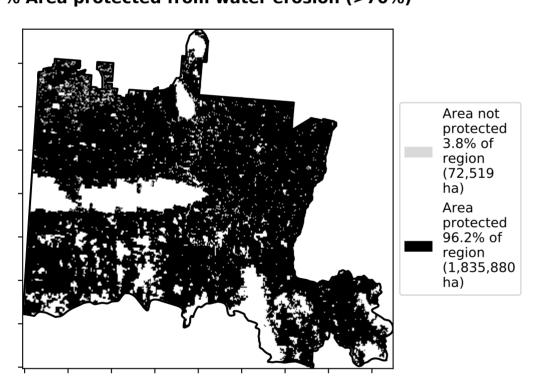
## **Total Vegetation Cover [%]**



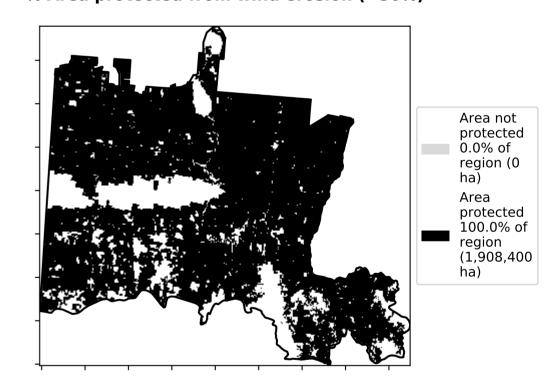
Proportion of vegetation cover class in area



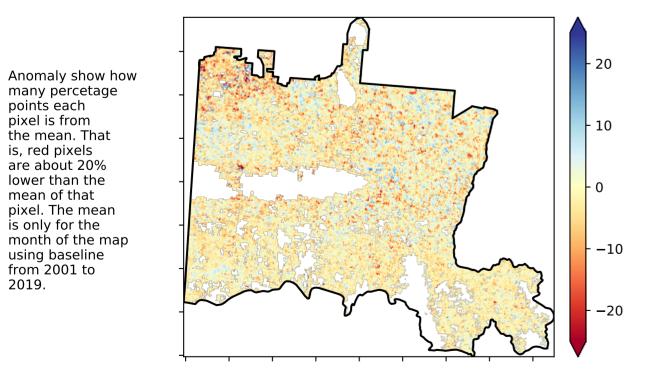
## % Area protected from water erosion (>70%)



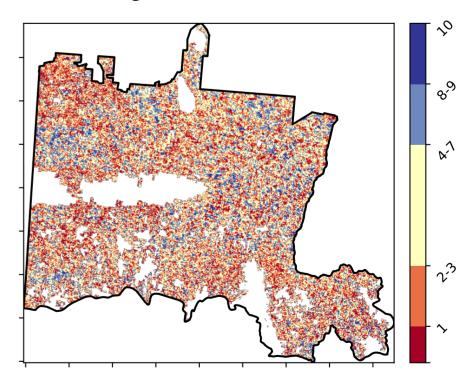
% Area protected from wind erosion (>50%)



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



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







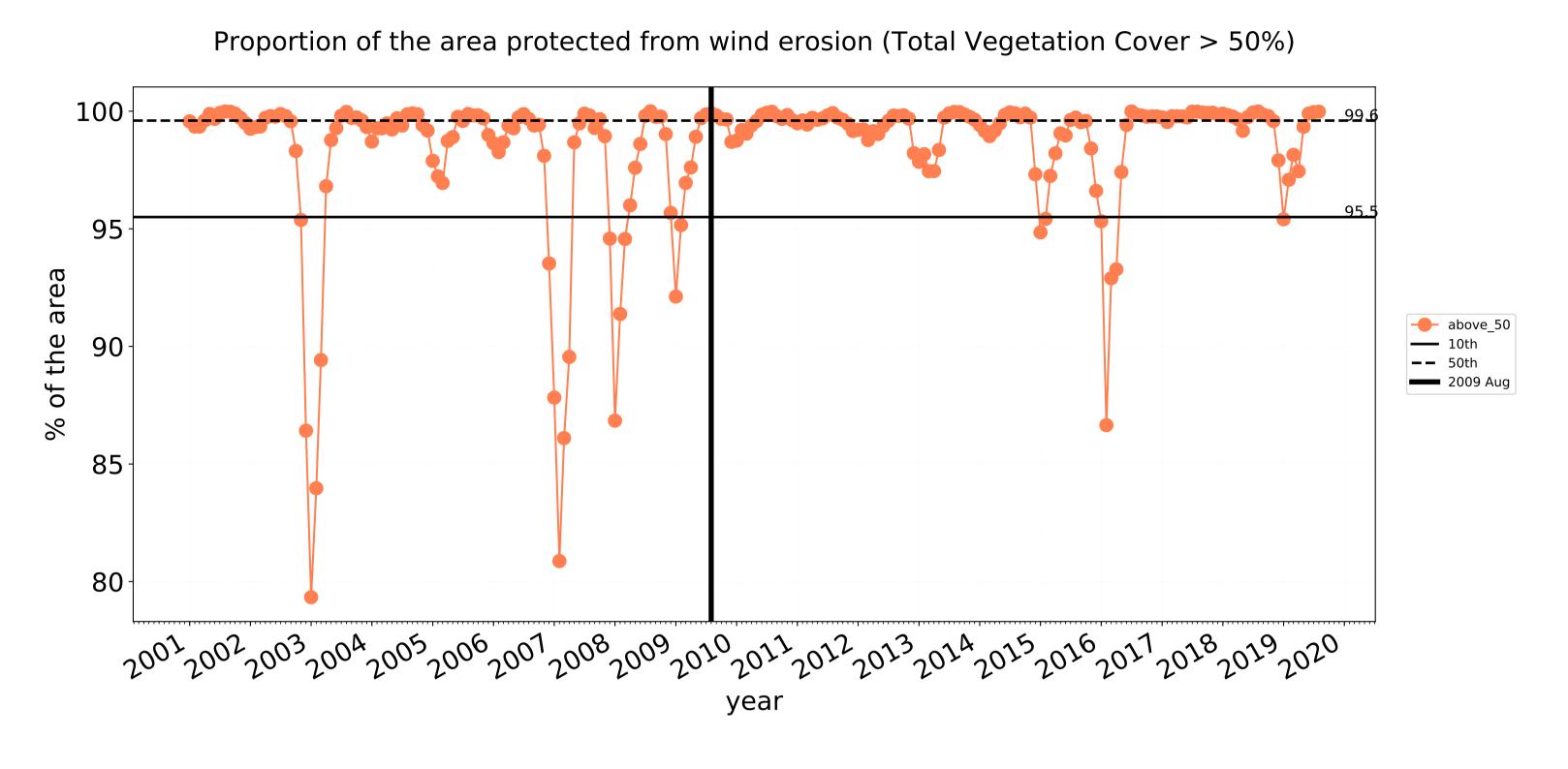


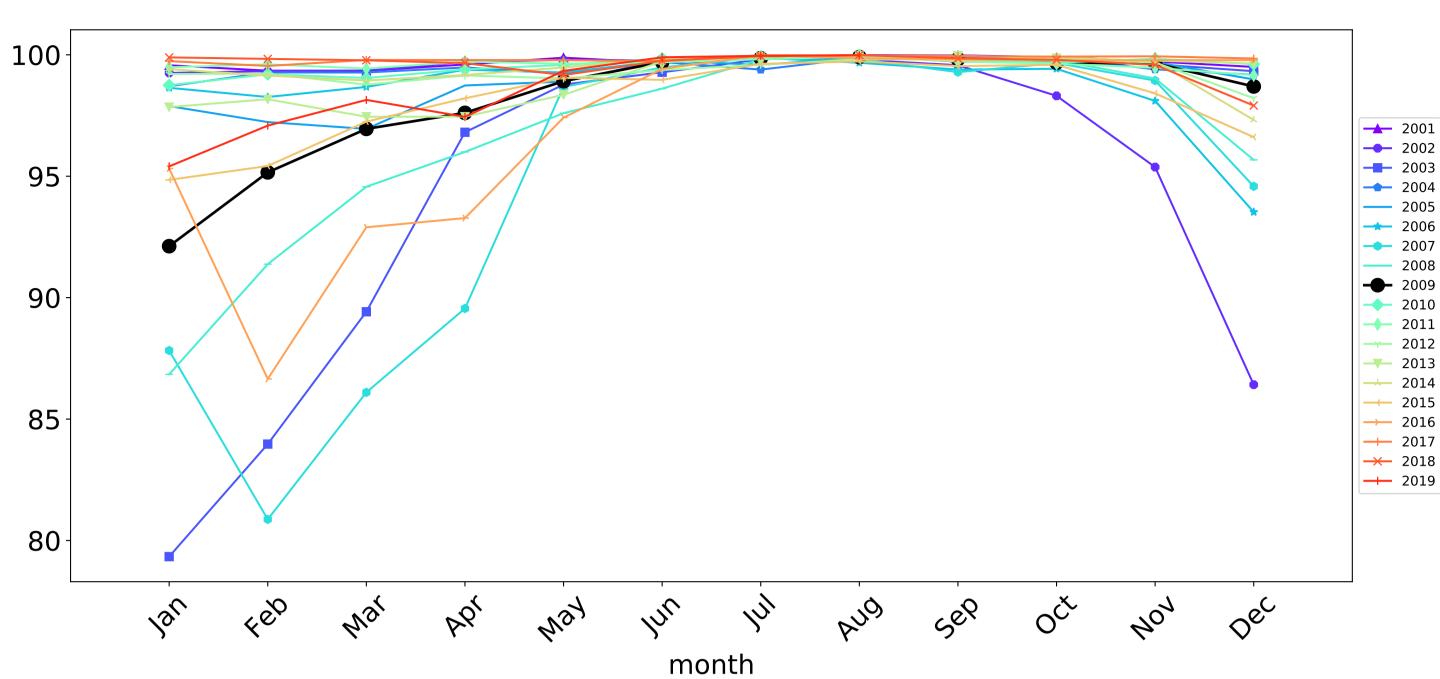




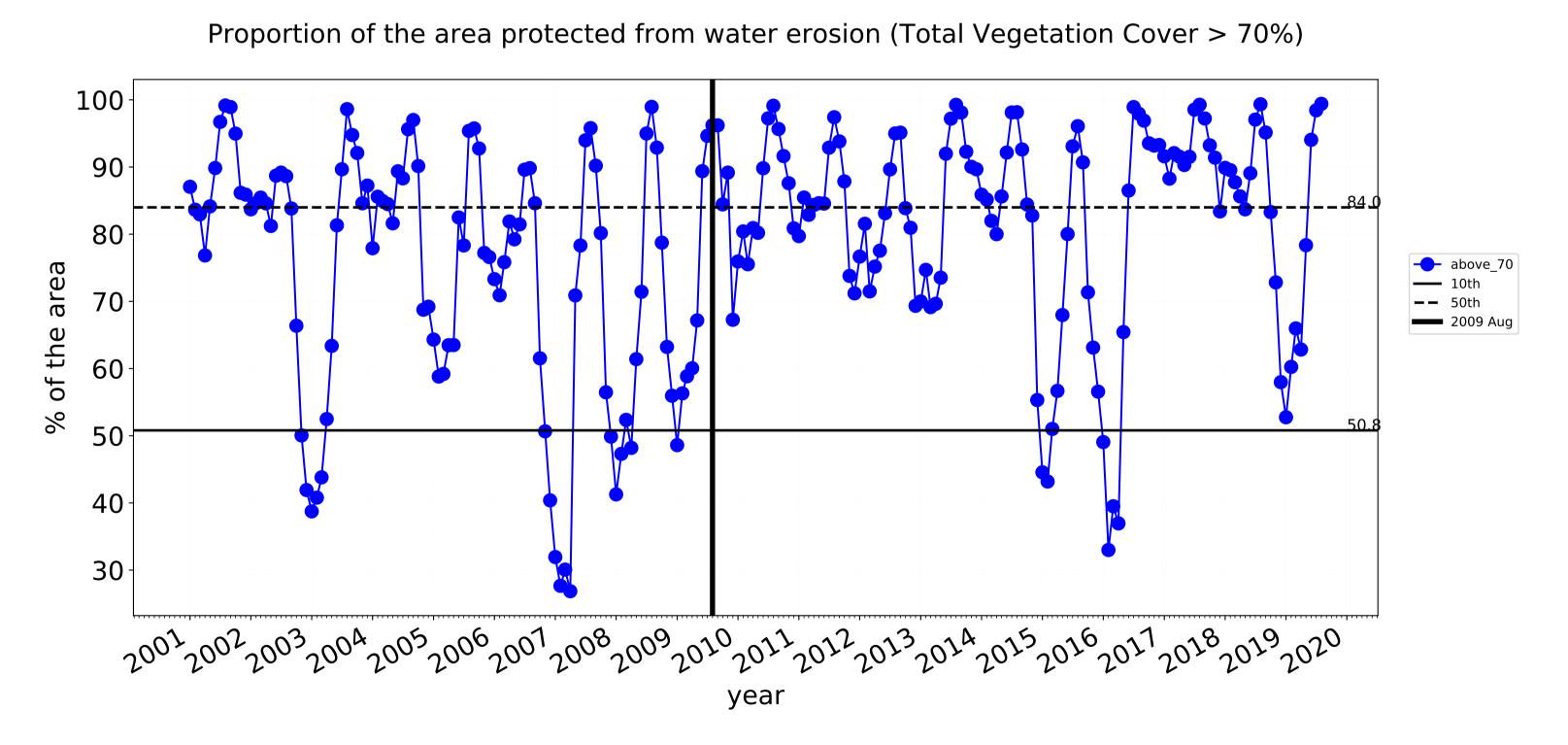


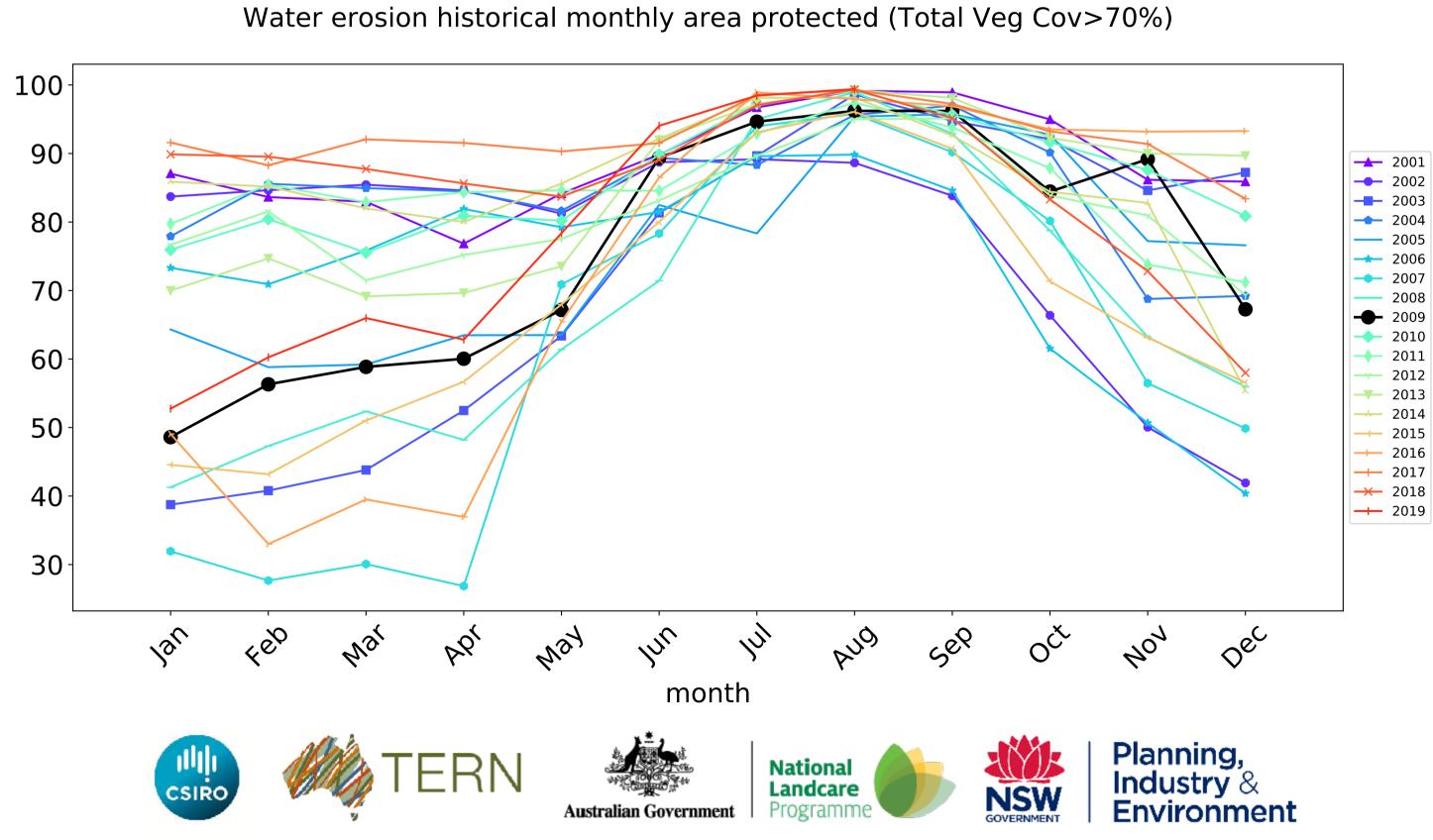
## **Agriculture timeseries**





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



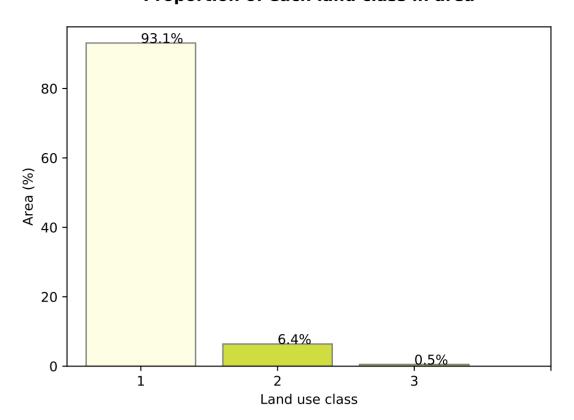


## Grazing

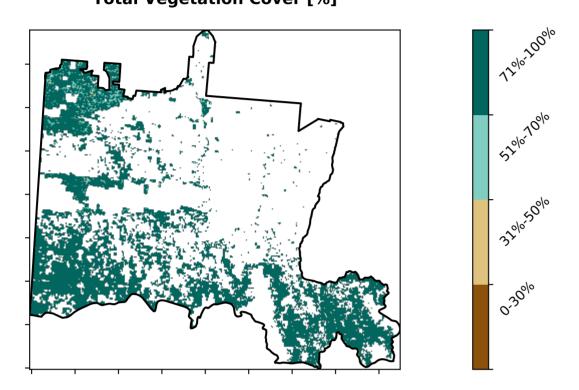
## Land use and forest cover

# 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 - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest of Australia (2018)

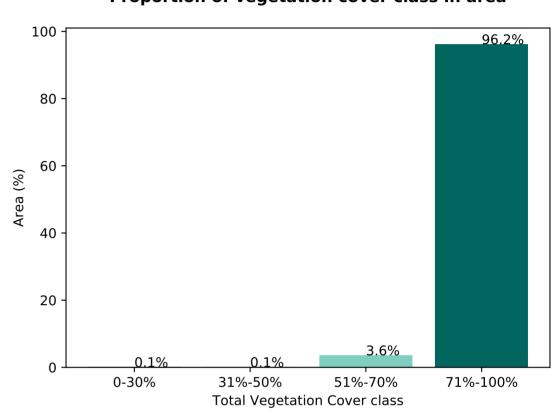
## Proportion of each land class in area



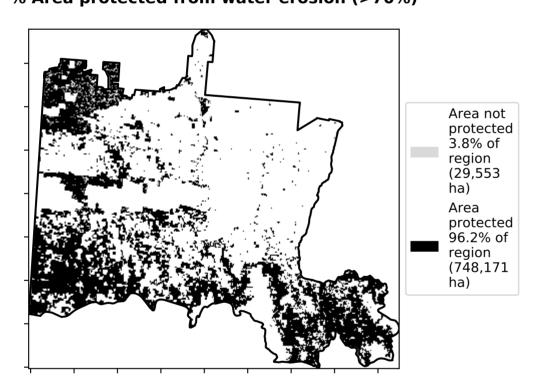
## Total Vegetation Cover [%]



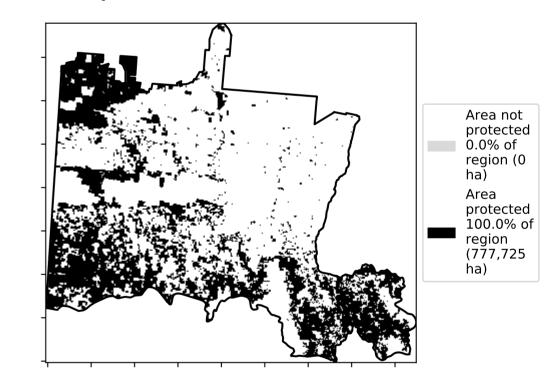
Proportion of vegetation cover class in area



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



% Area protected from wind erosion (>50%)



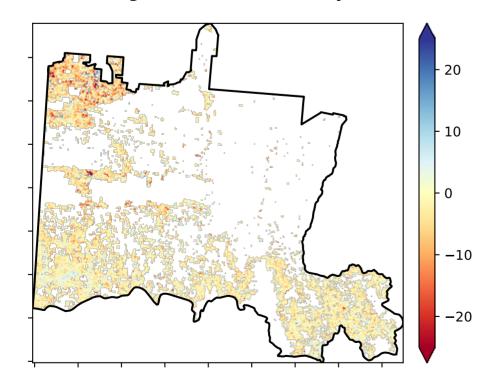
## **Total Vegetation Cover Anomaly [%]**

Anomaly show how many percetage points each

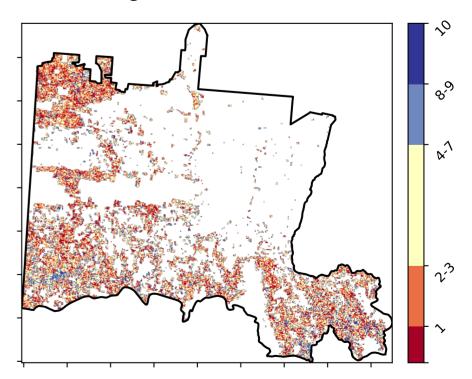
pixel is from the mean. That

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



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







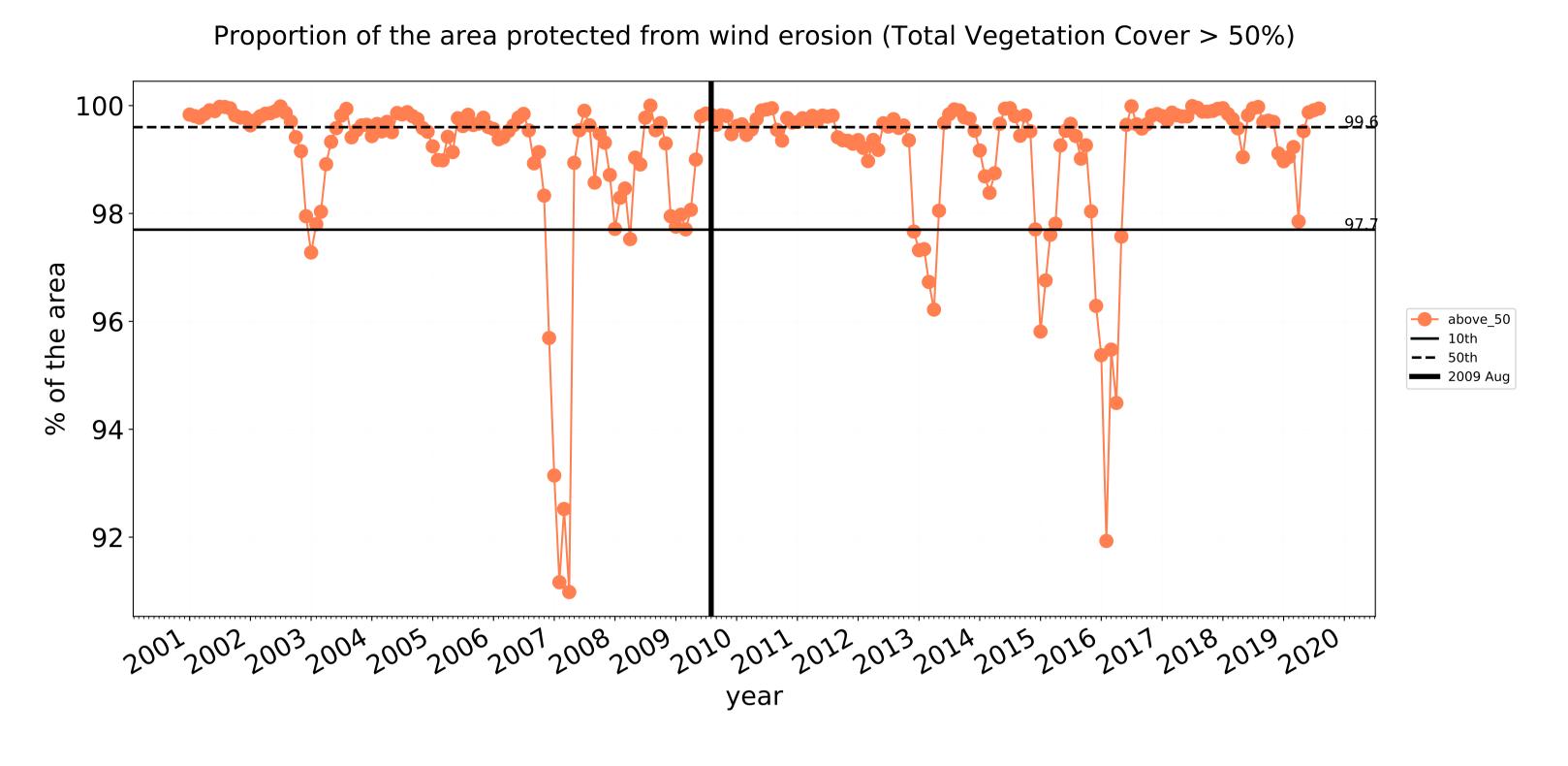


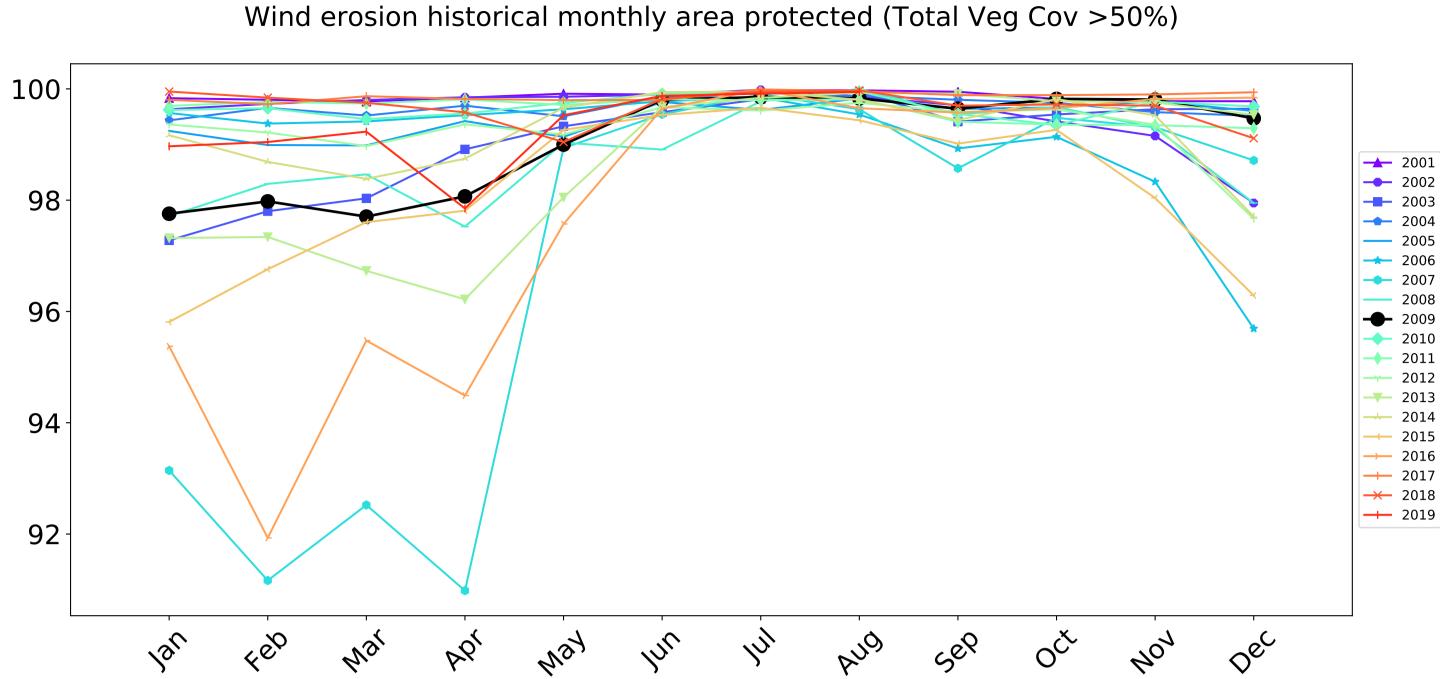


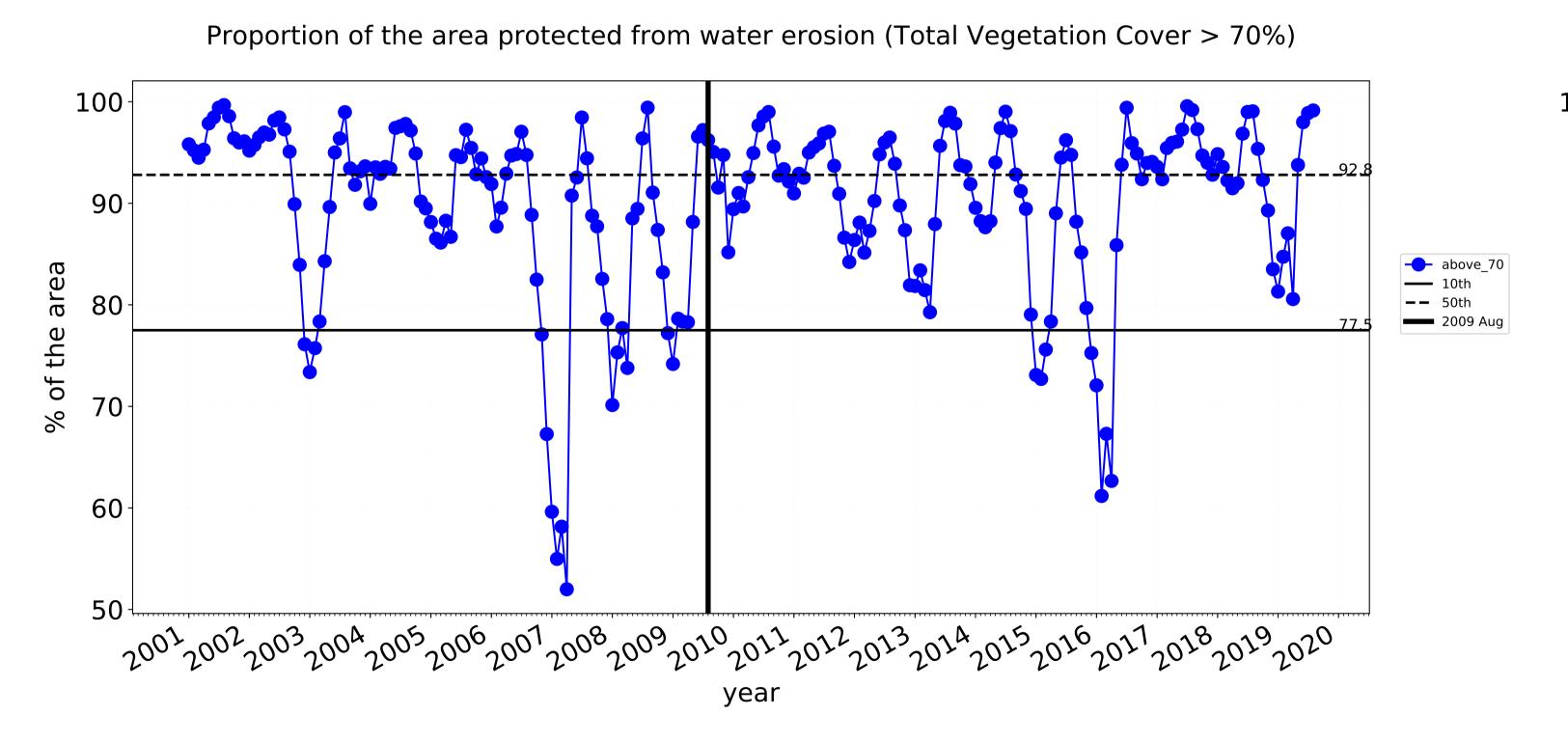


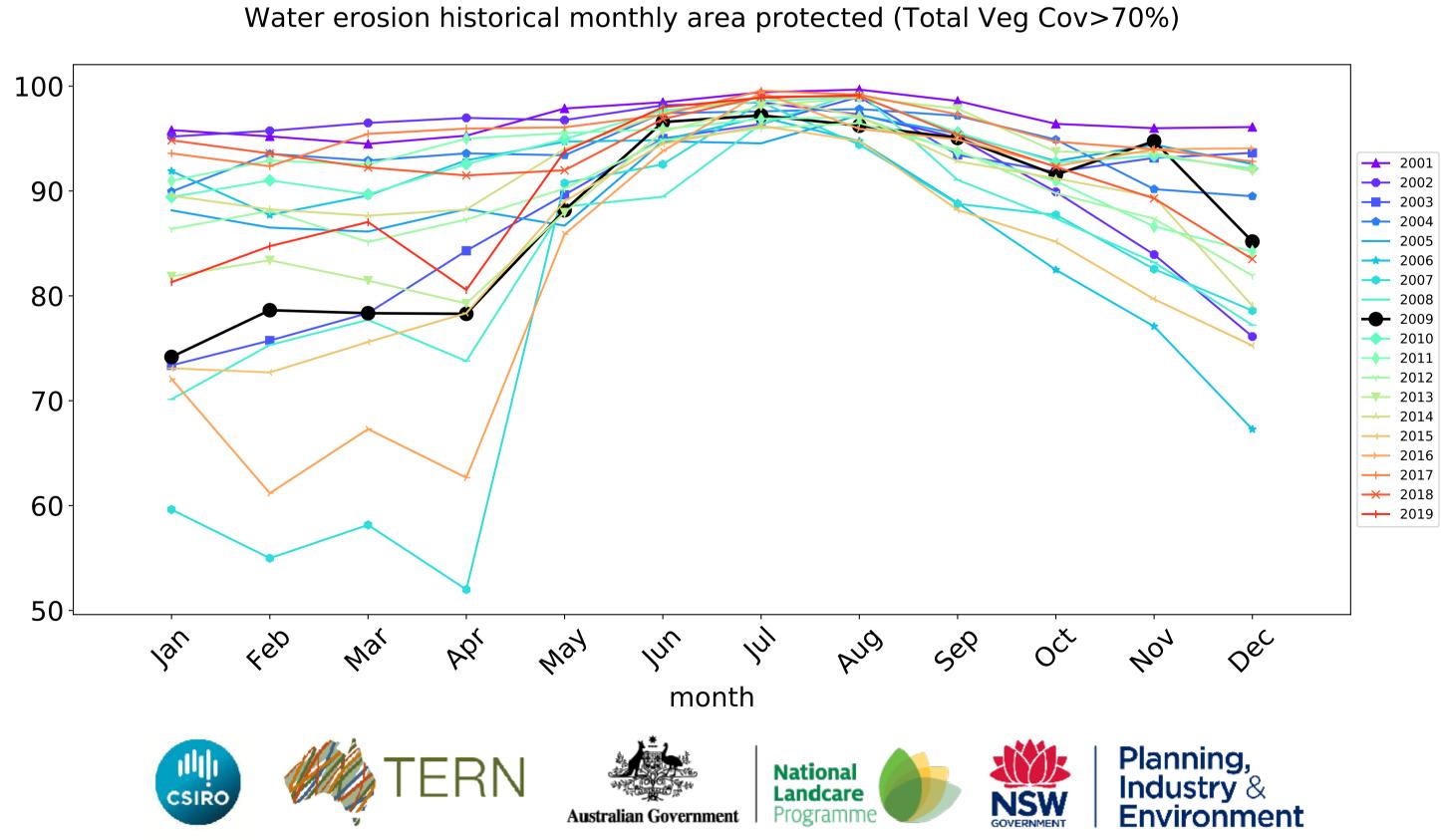


## **Grazing timeseries**









## **Grazing non forest**

## Land use and forest cover

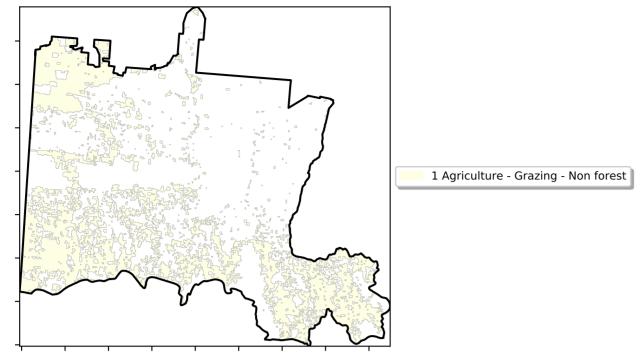
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

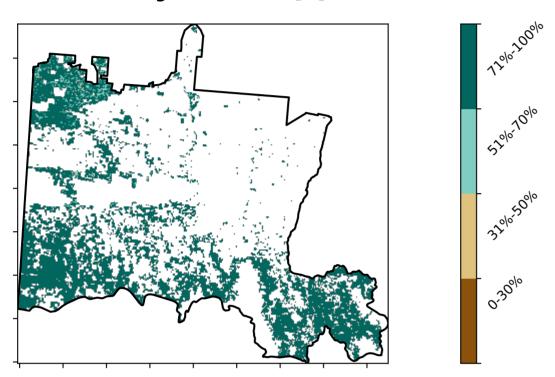
pixel is from the mean. That

is only for the month of the map using baseline from 2001 to 2019.

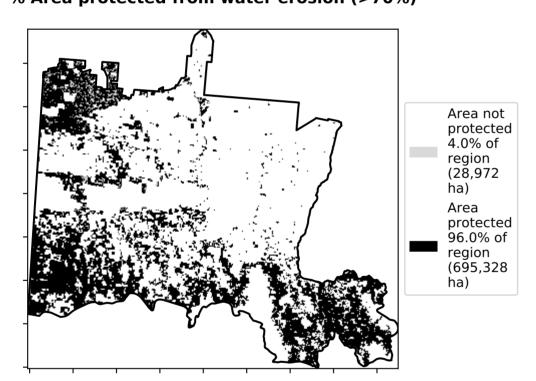
is, red pixels are about 20% lower than the mean of that pixel. The mean



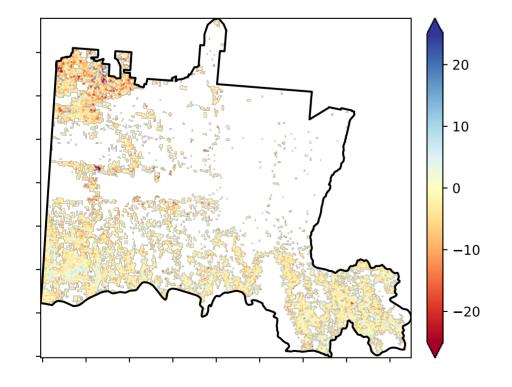
## **Total Vegetation Cover [%]**



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

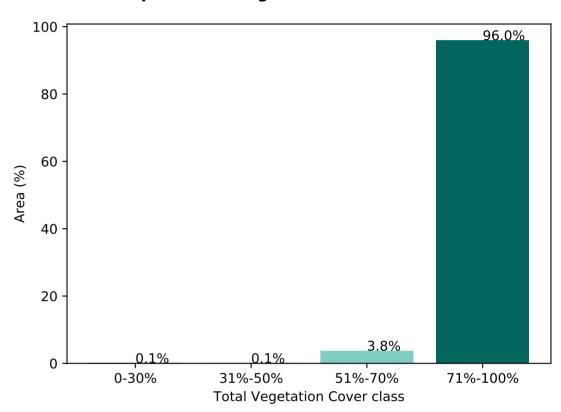


## **Total Vegetation Cover Anomaly [%]**

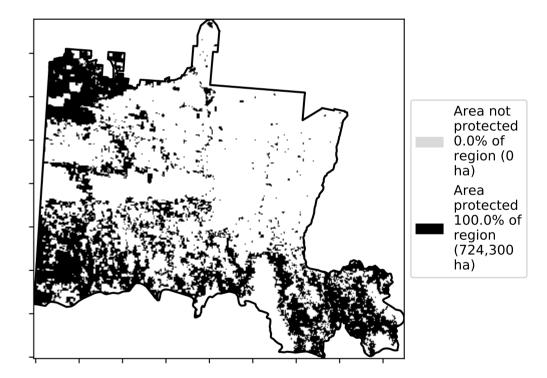


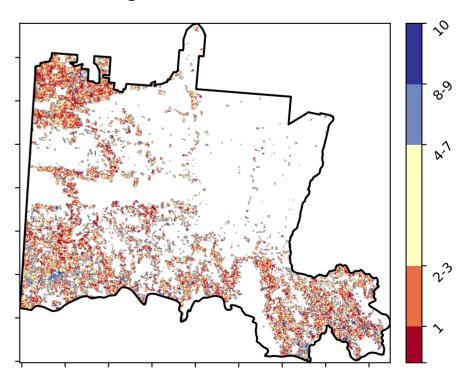
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

## Proportion of vegetation cover class in area



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









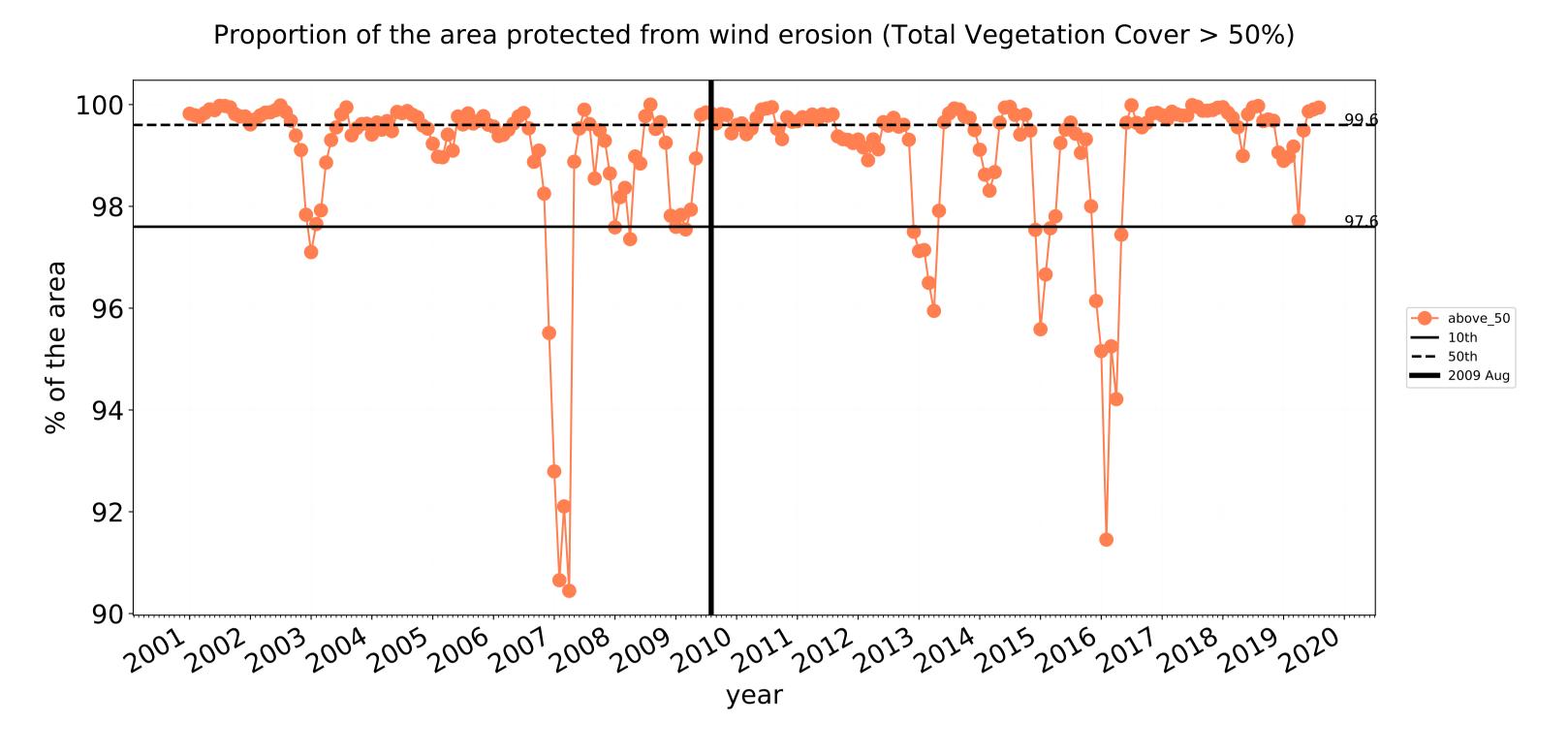


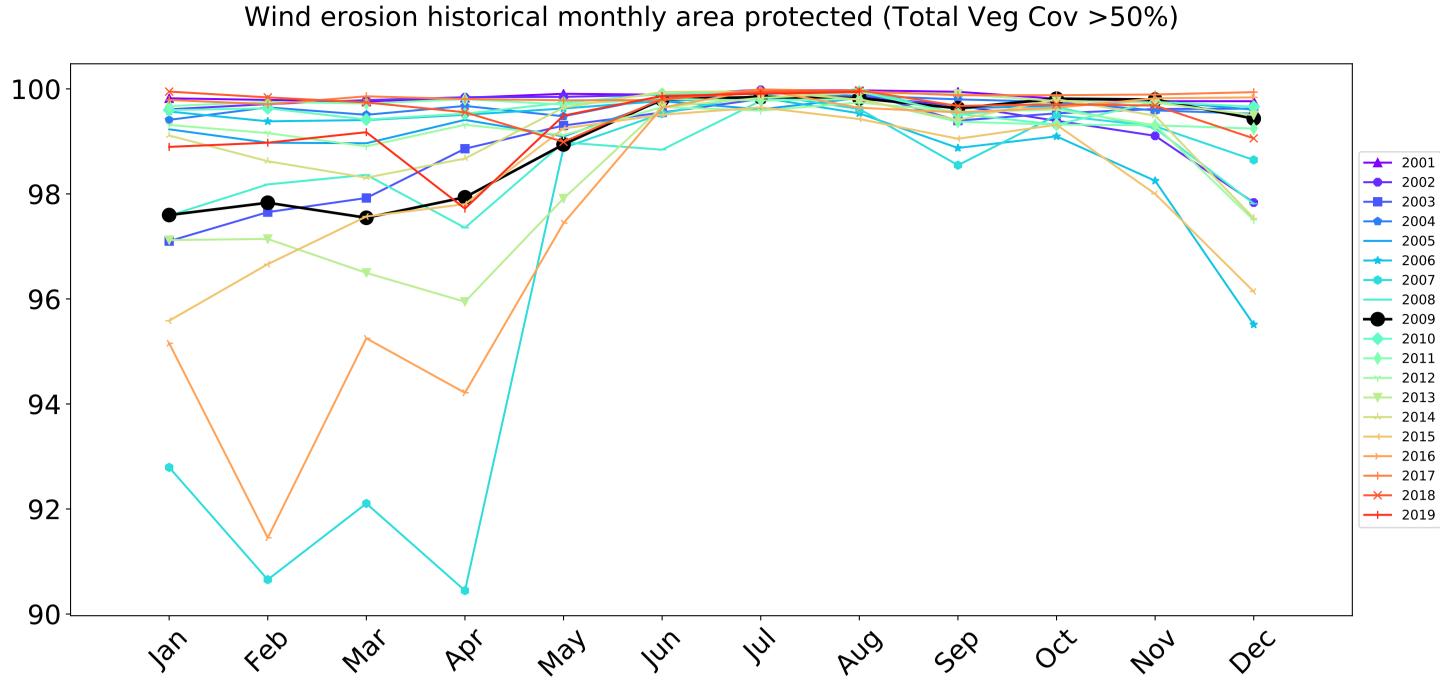


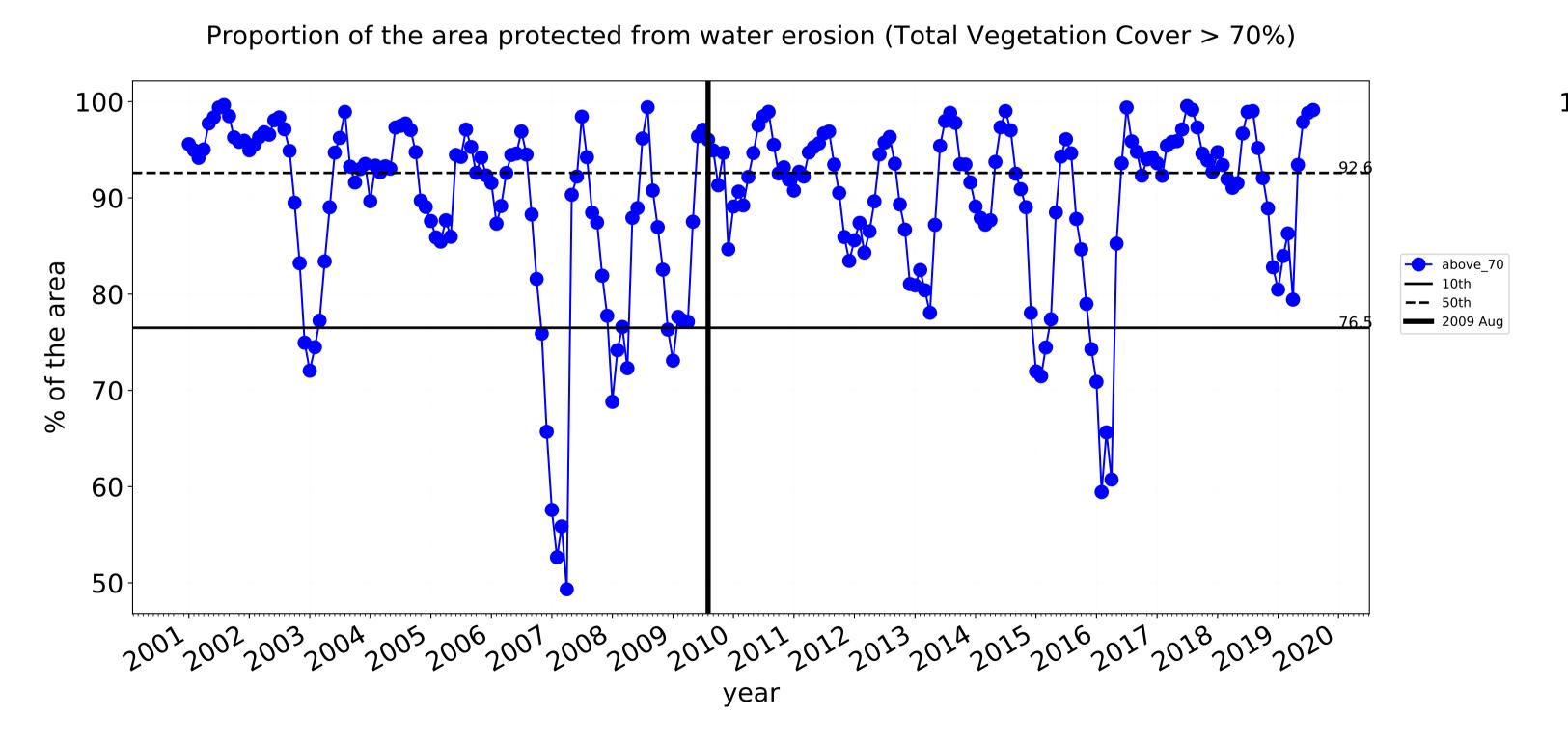


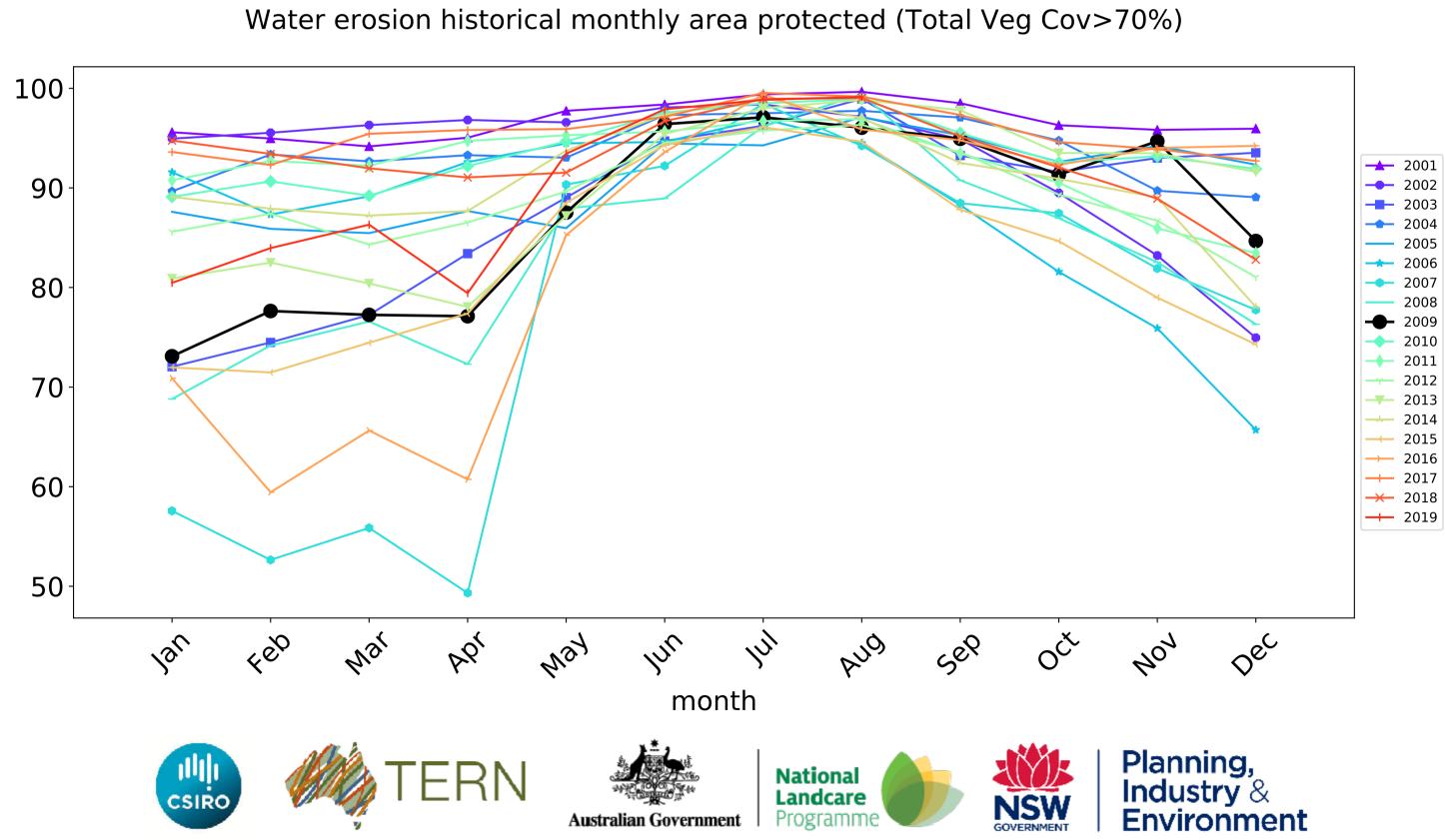


## **Grazing non forest timeseries**









## **Grazing Woodland 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

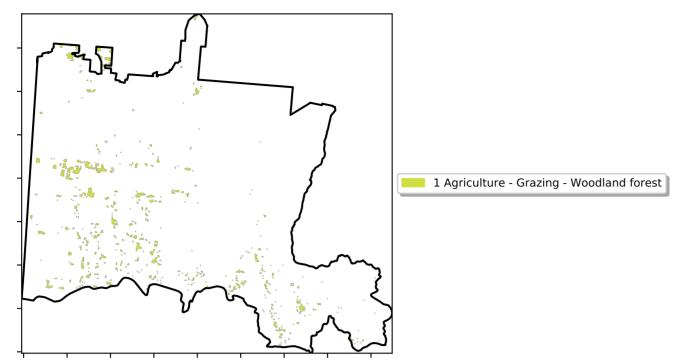
pixel is from

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

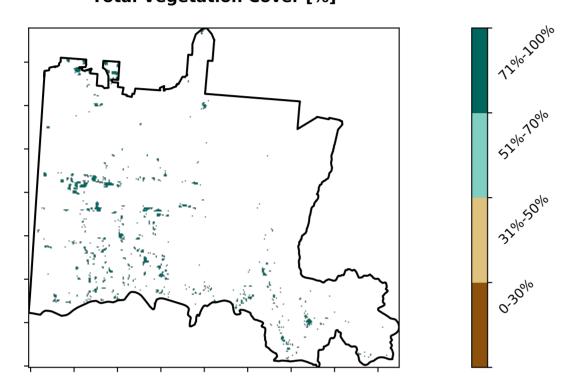
the mean. That

is only for the month of the map

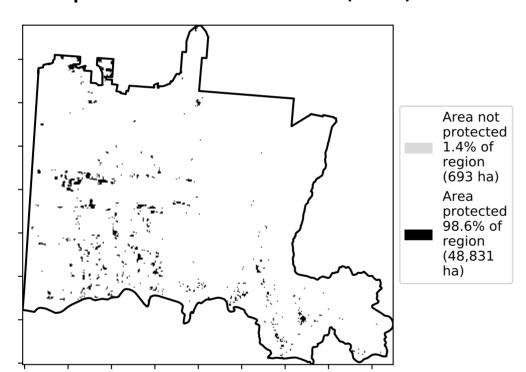
using baseline from 2001 to 2019.



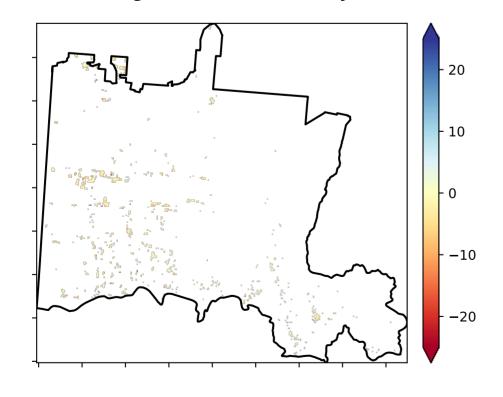
## **Total Vegetation Cover [%]**



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

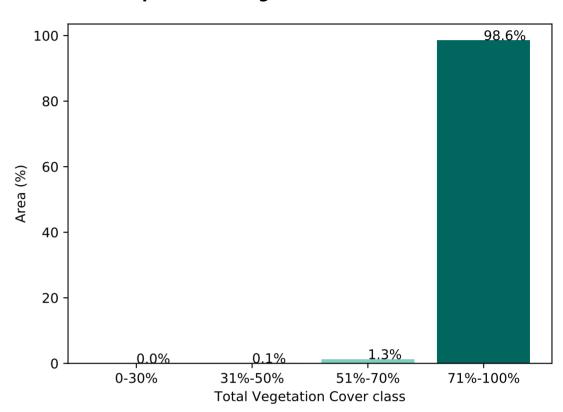


## **Total Vegetation Cover Anomaly [%]**

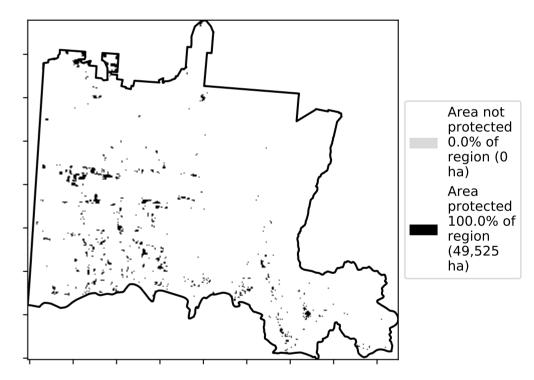


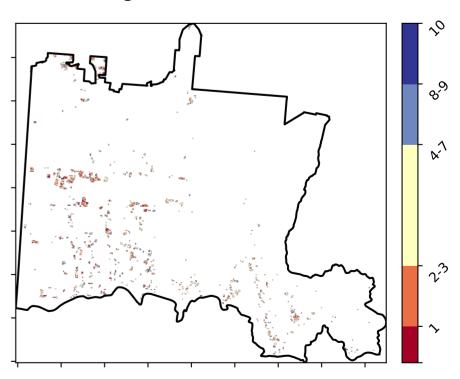
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

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



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









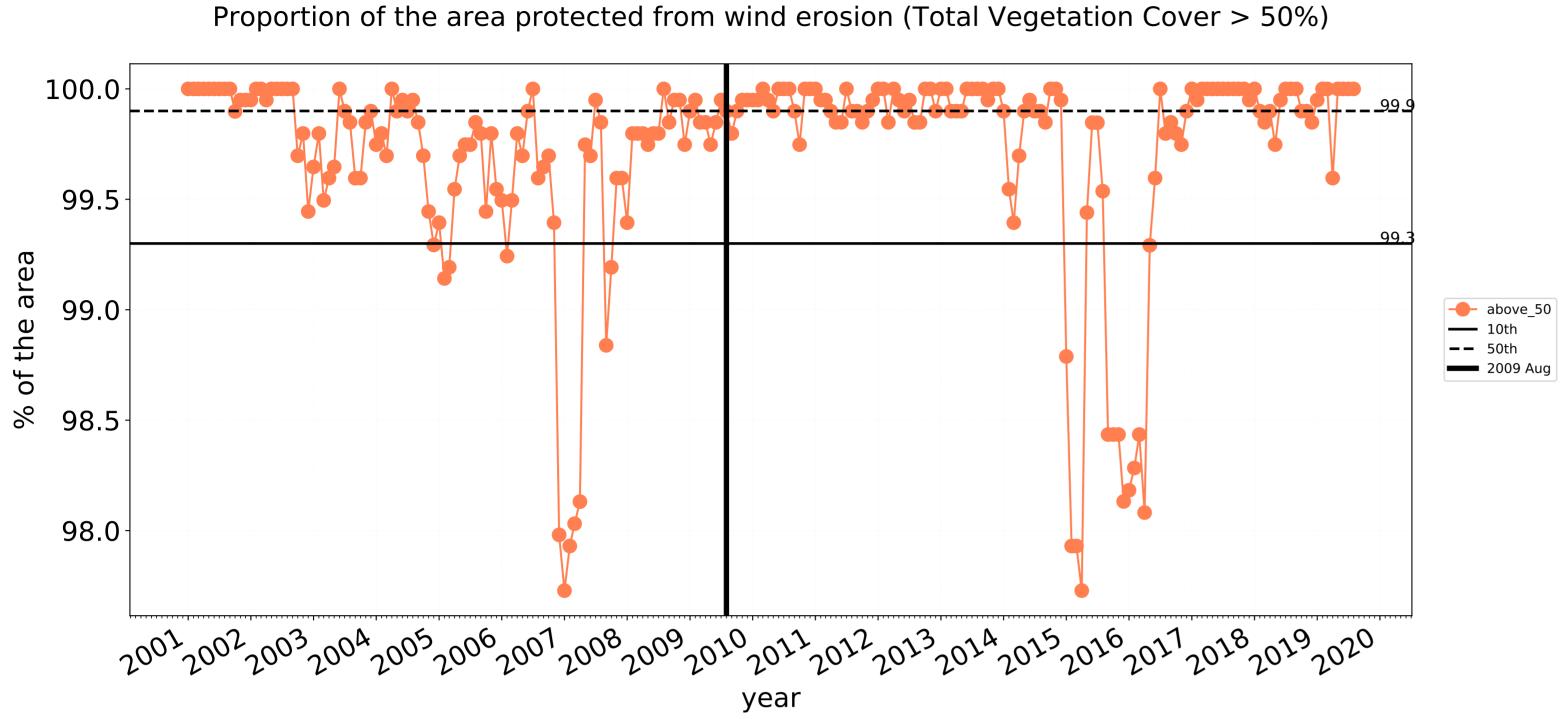


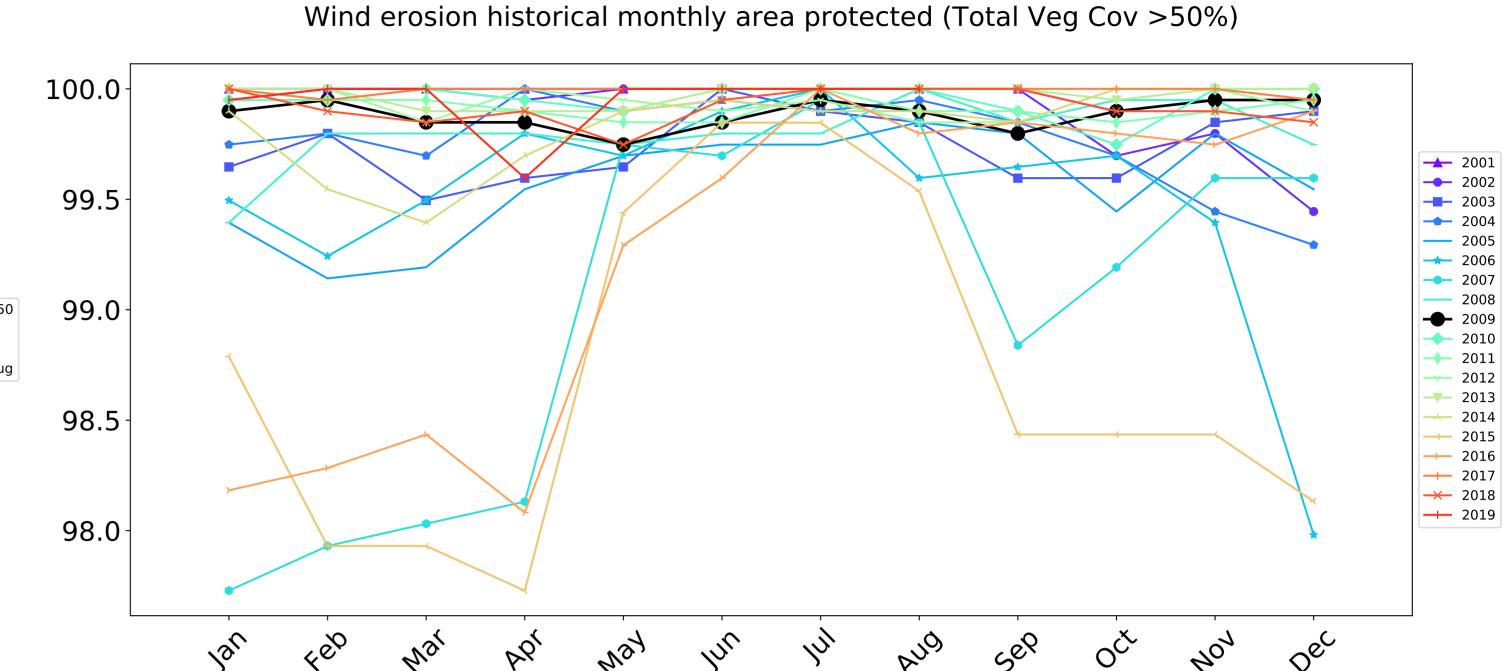


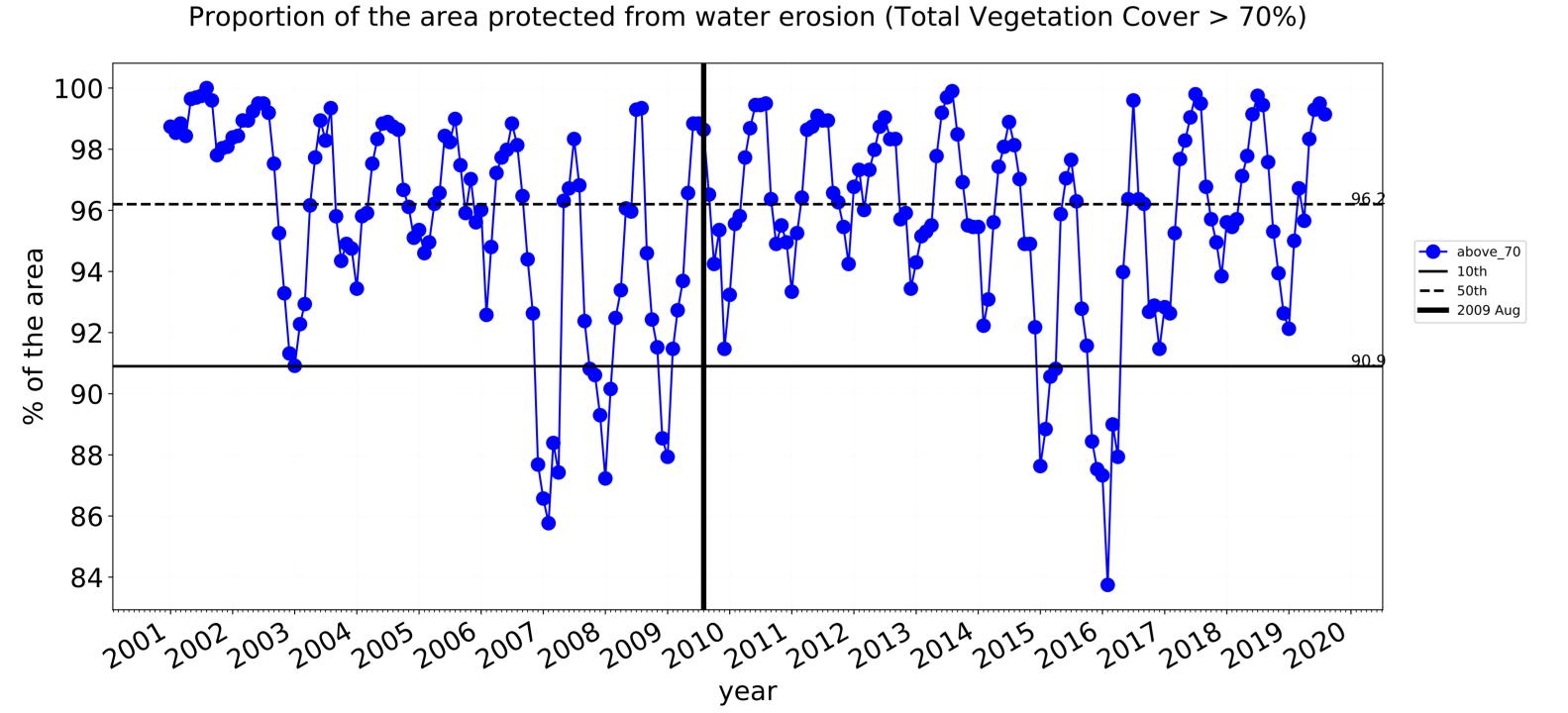


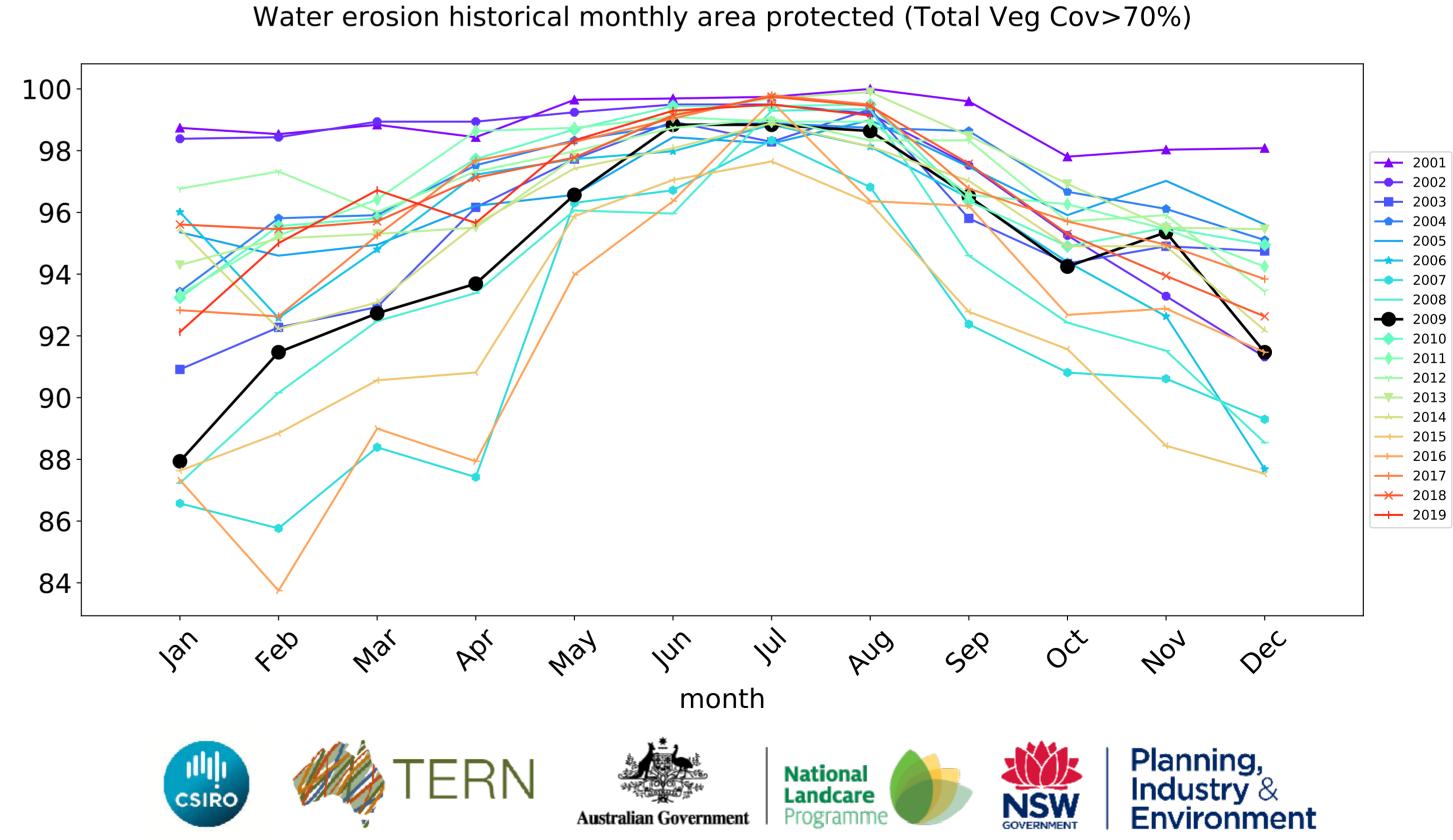


## **Grazing Woodland forest timeseries**









## **Cropping**

## 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

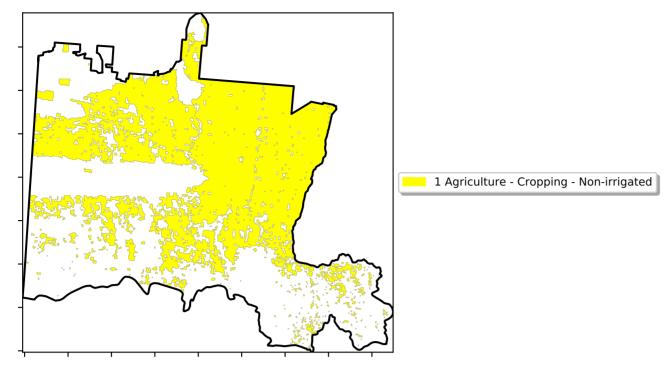
pixel is from

is, red pixels are about 20% lower than the

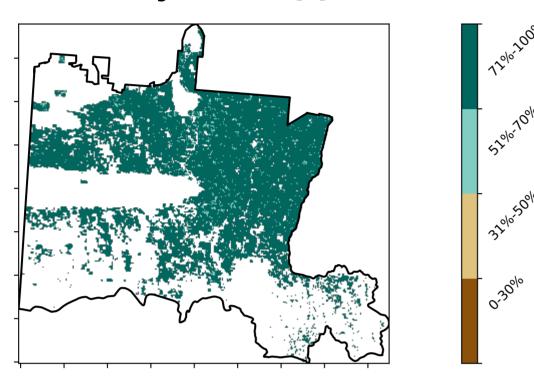
mean of that pixel. The mean is only for the month of the map

using baseline from 2001 to 2019.

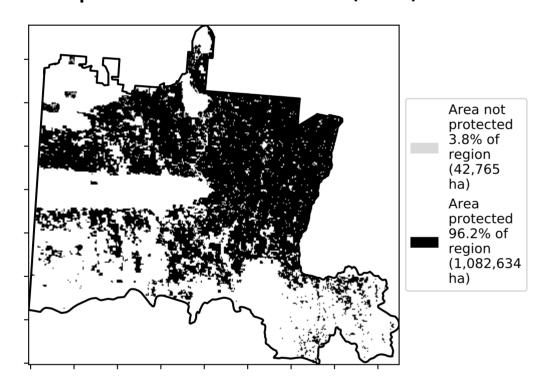
the mean. That



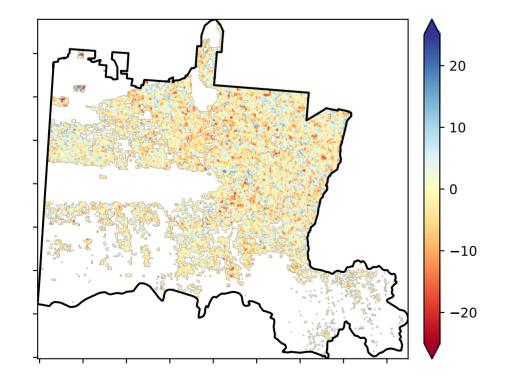
## **Total Vegetation Cover [%]**



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

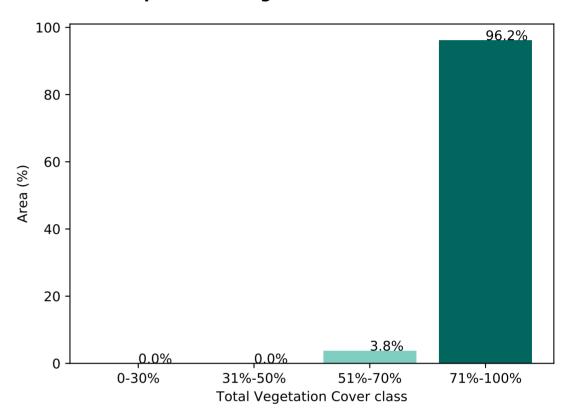


## Total Vegetation Cover Anomaly [%]

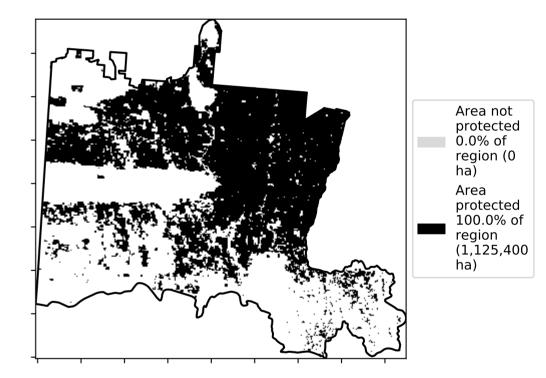


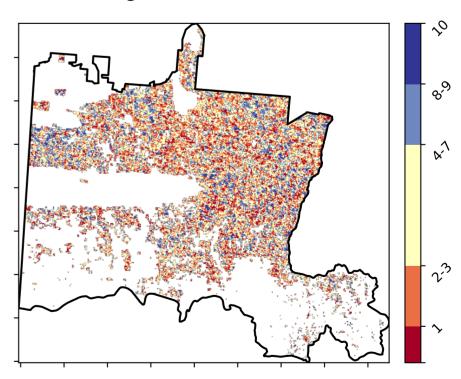
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

## Proportion of vegetation cover class in area



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









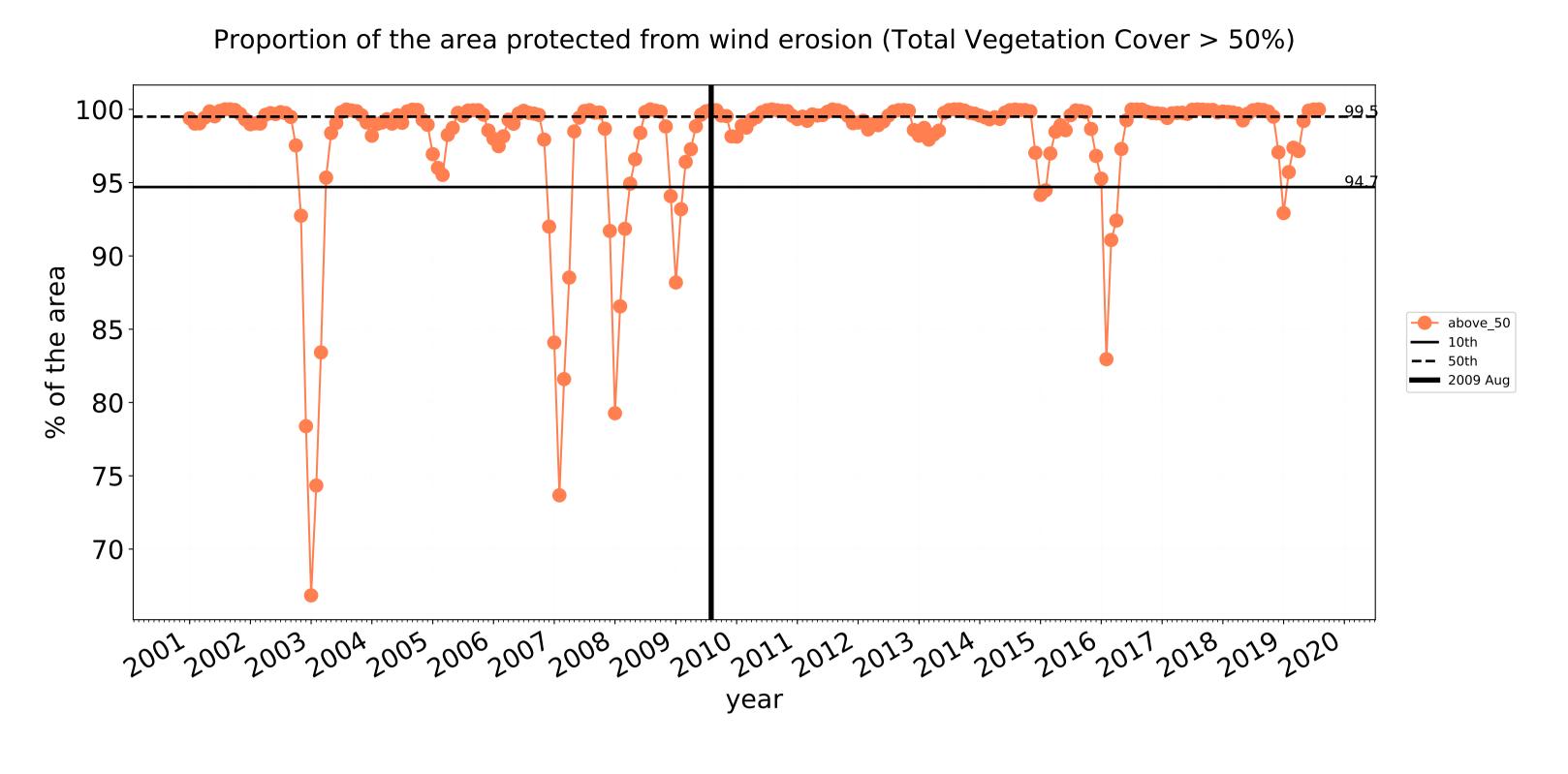


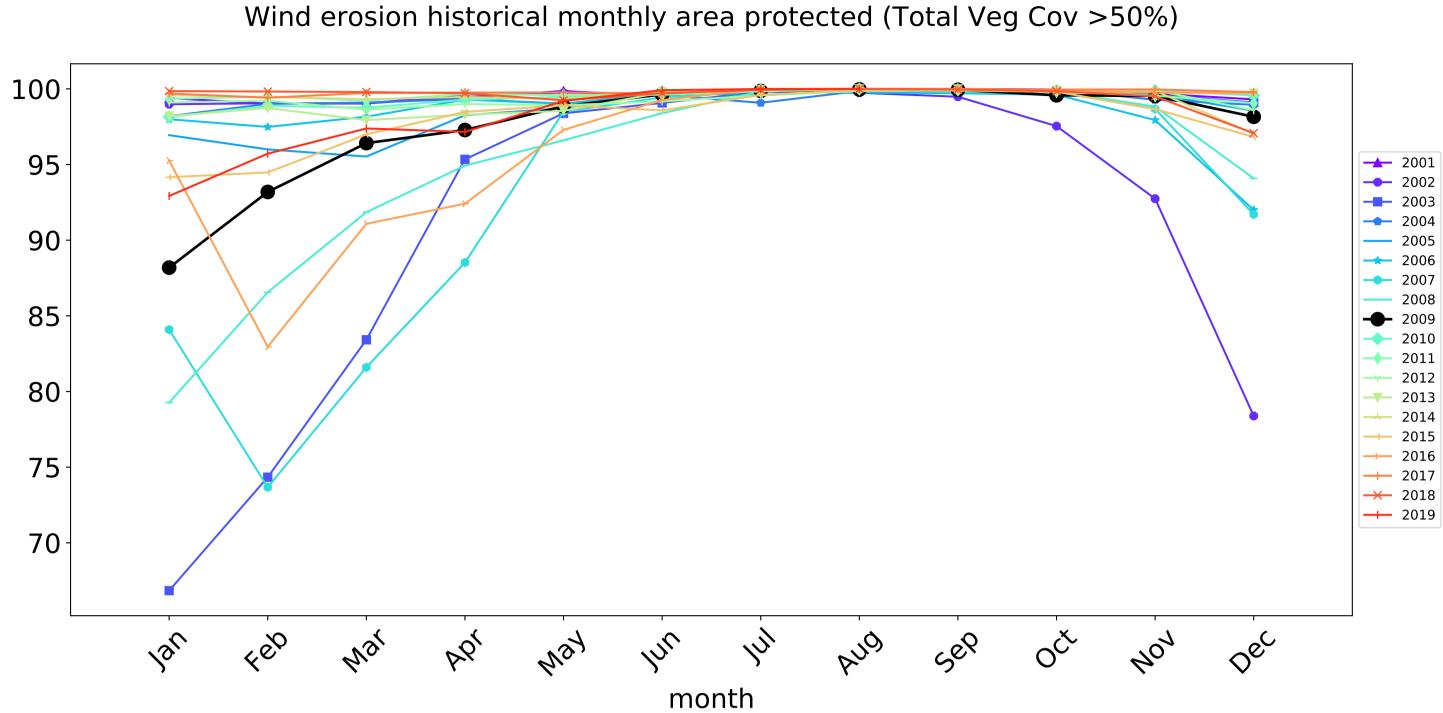


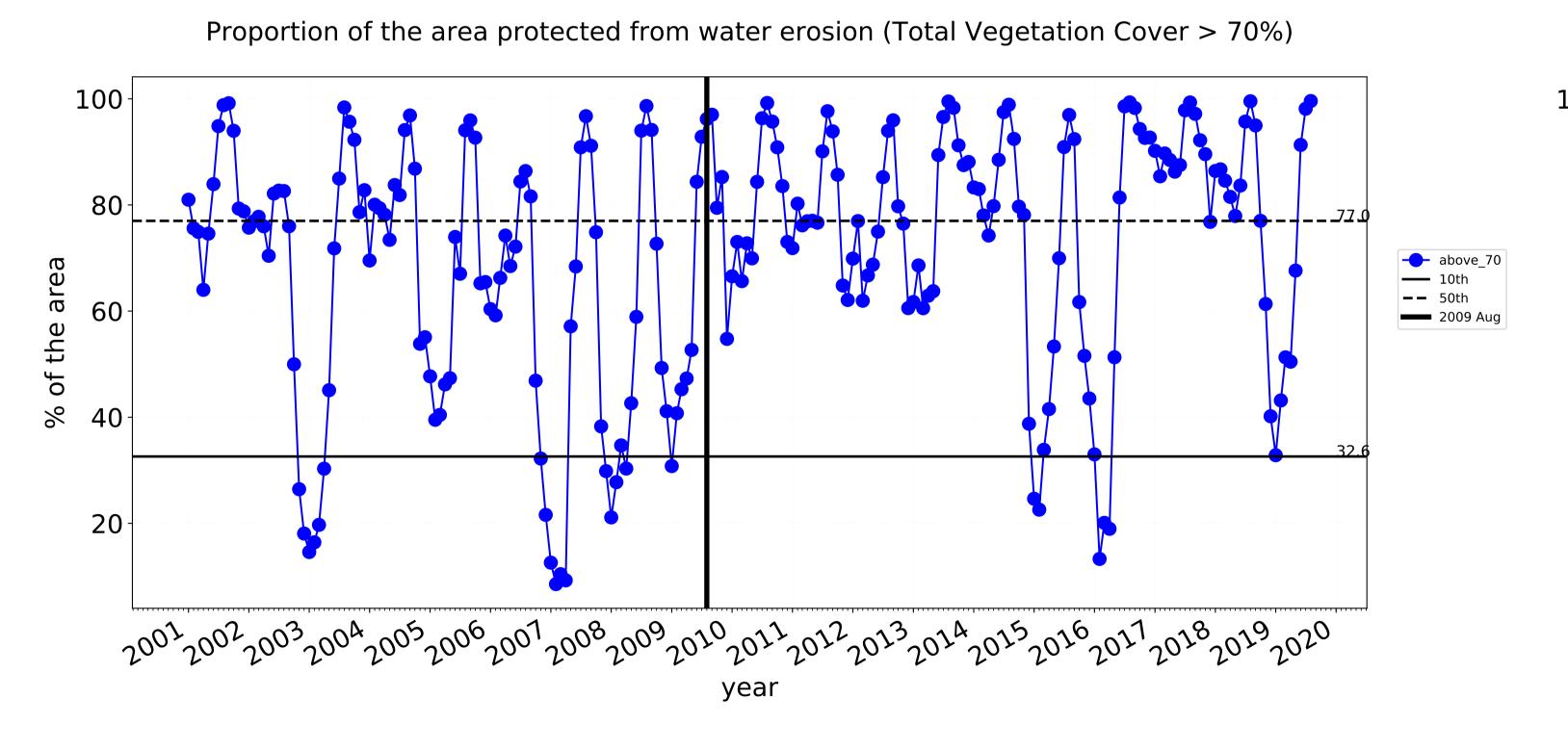


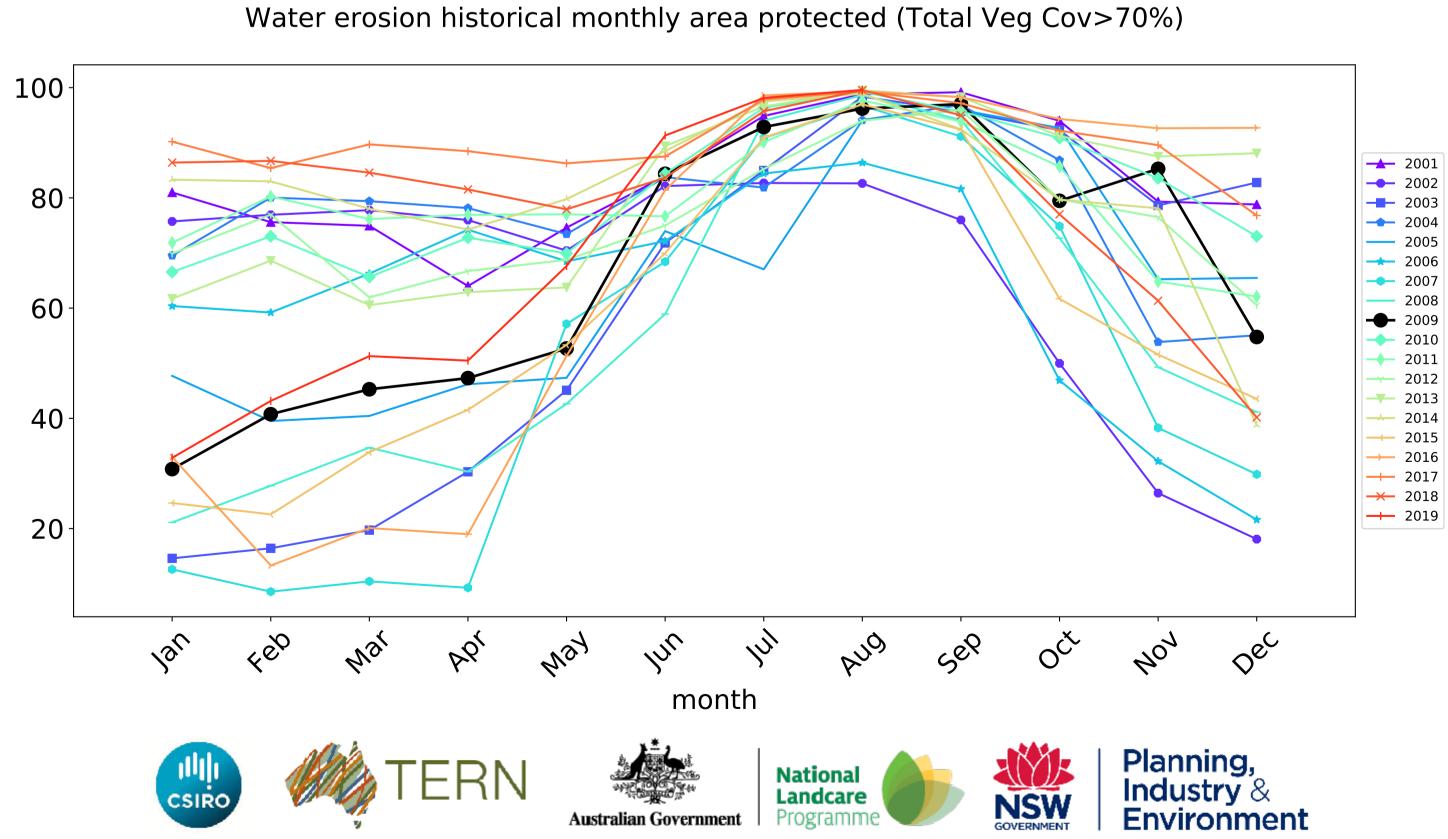


## **Cropping timeseries**









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

## 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

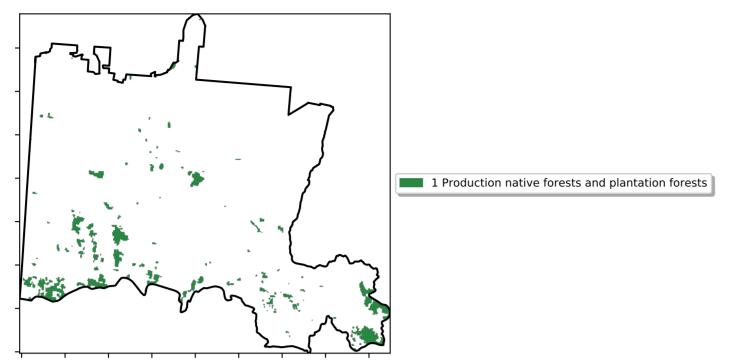
pixel is from

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

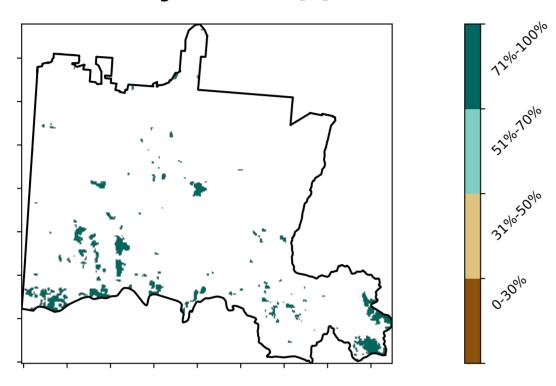
the mean. That

is only for the month of the map

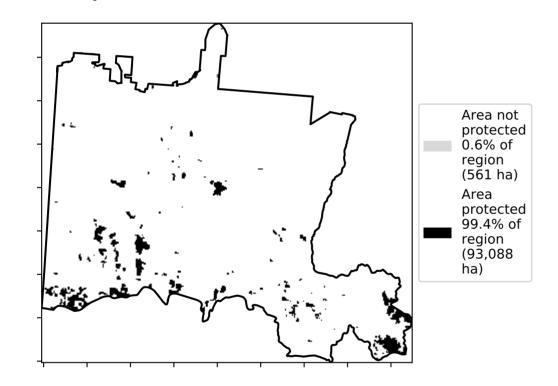
using baseline from 2001 to 2019.



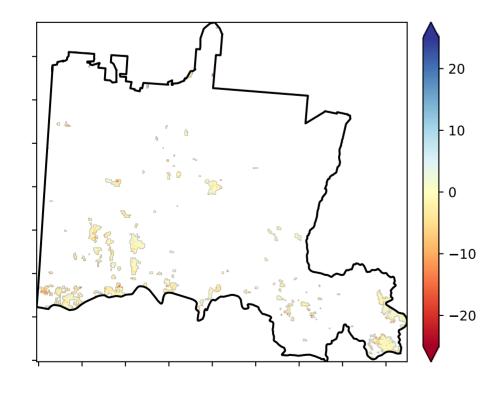
## **Total Vegetation Cover [%]**



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

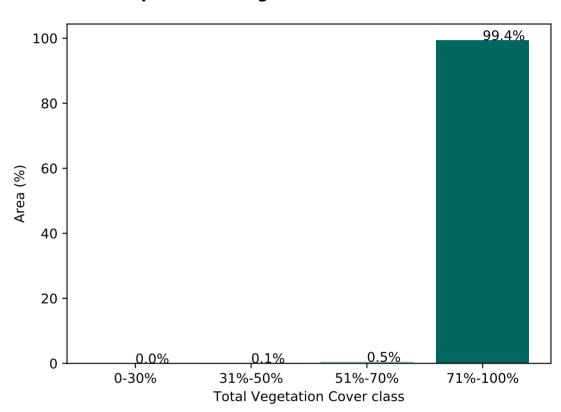


## Total Vegetation Cover Anomaly [%]

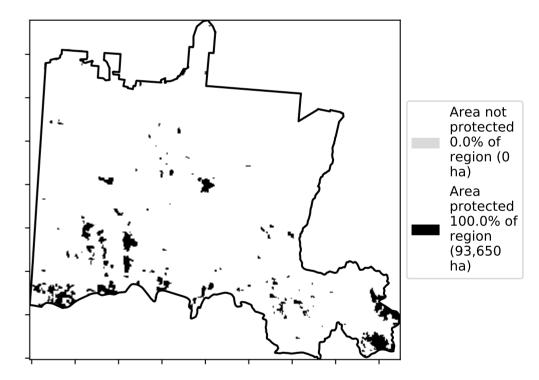


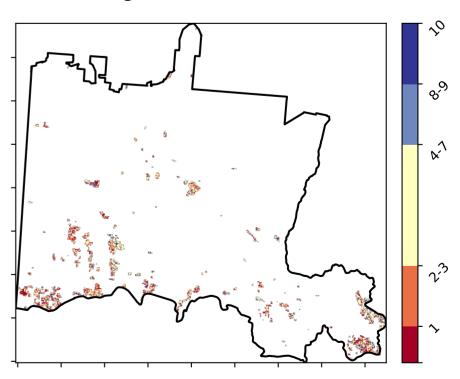
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

## Proportion of vegetation cover class in area



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









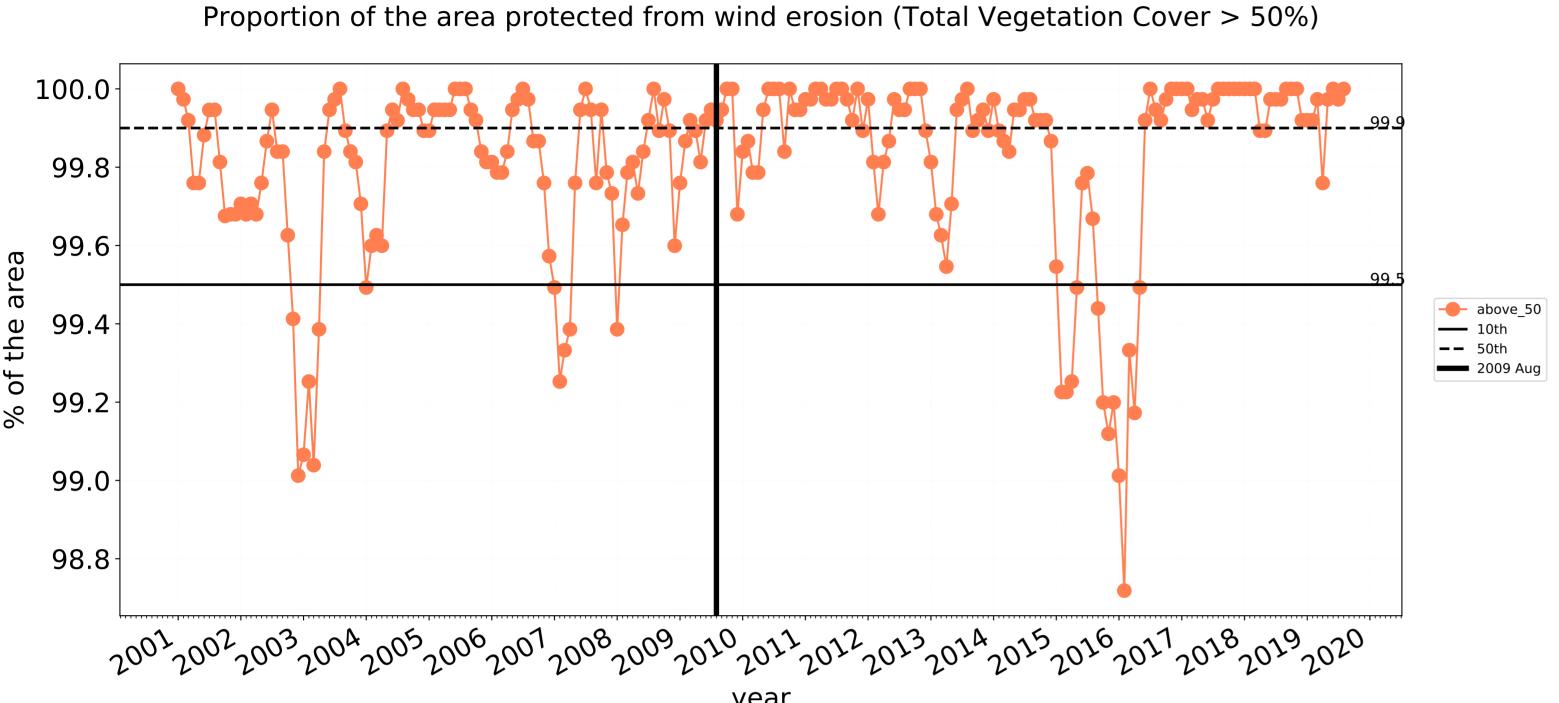


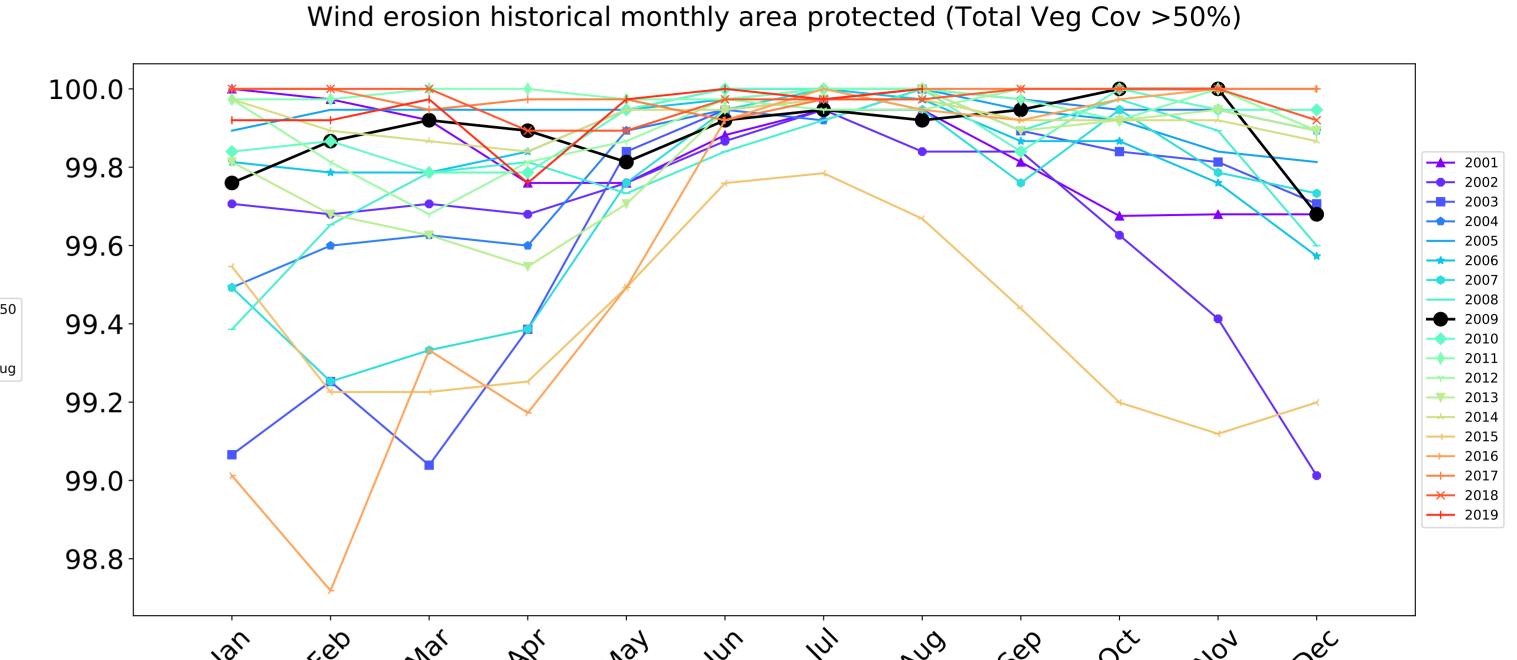


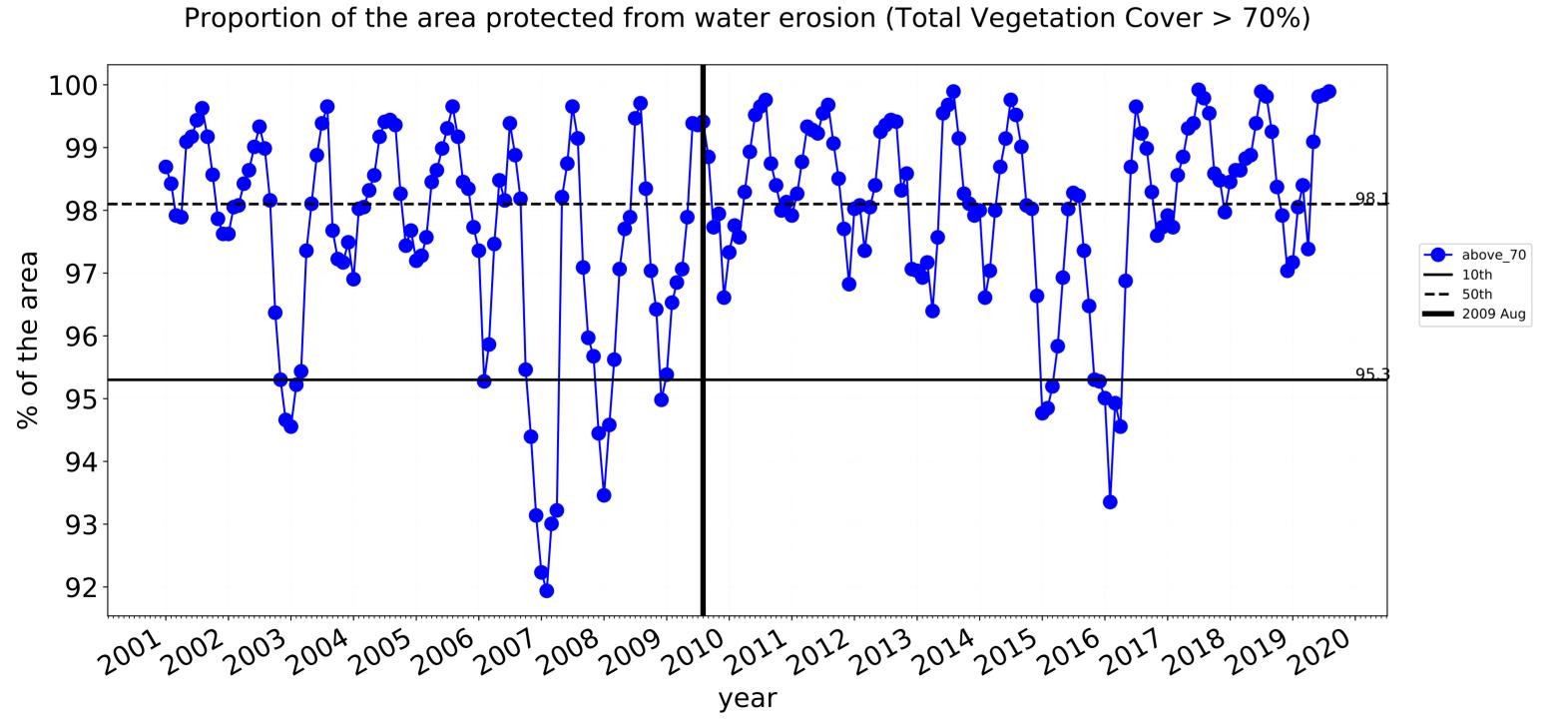


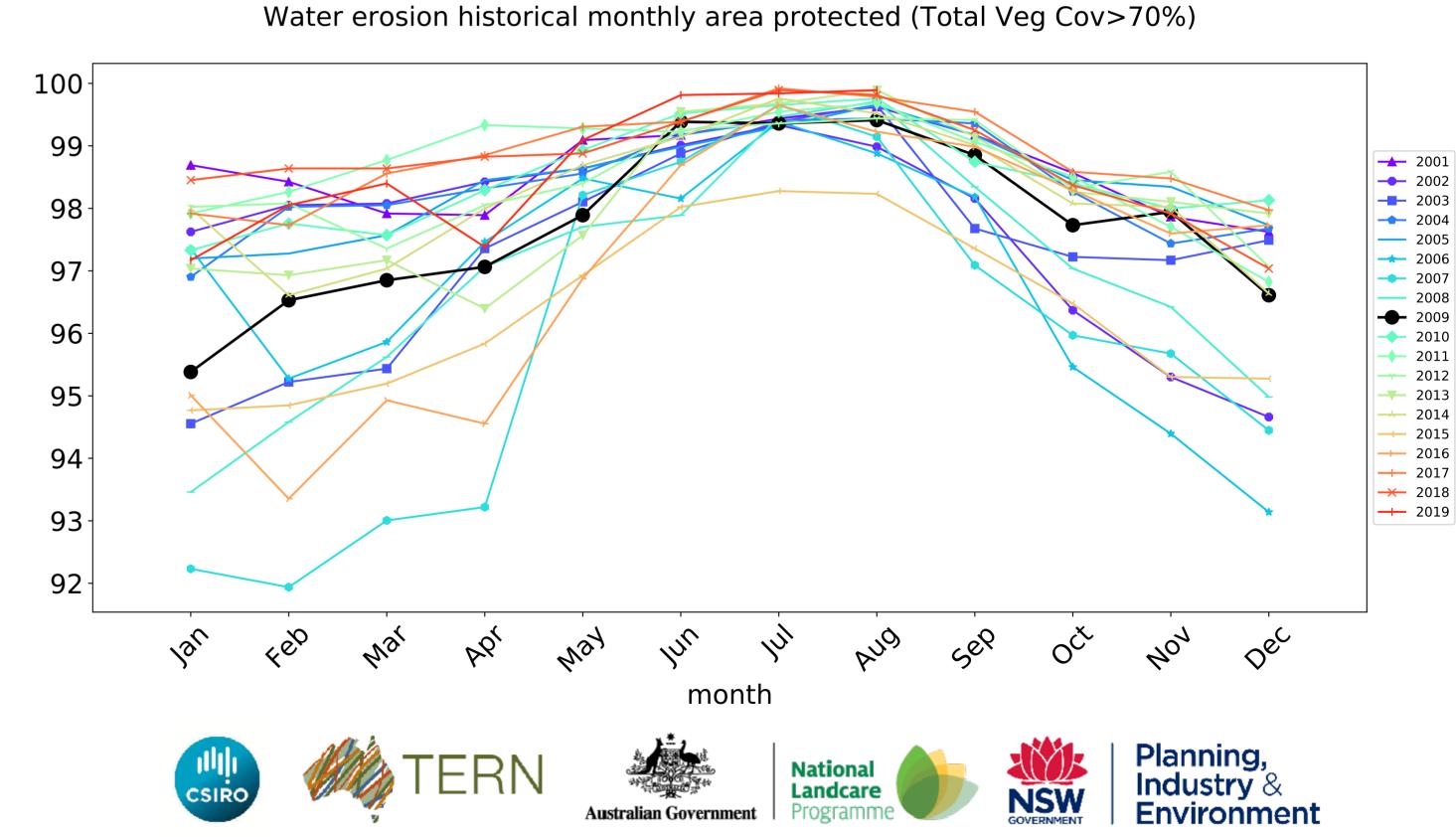


## **Production native forests and plantation forests timeseries**









# Wimmera (2,329,725 ha and no data 15,787 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	2,329,725	100.0% 2,329,174	99.9% 2,326,572	96.2% 2,242,028	75.4% 1,756,207	20.1% 468,632	4.2% 98,780
Conservation and natural environments	275,525	99.9% 275,300	99.6% 274,550	95.9% 264,350	82.5% 227,375	29.1% 80,150	6.8% 18,825
Conservation and natural environments non forest	45,425	99.6% 45,225	98.3% 44,650	85.1% 38,650	54.9% 24,950	16.1% 7,325	6.1% 2,775
Conservation and natural environments Woodland forest	202,750	100.0% 202,725	99.9% 202,550	97.9% 198,475	86.9% 176,175	27.9% 56,500	5.6% 11,300
Conservation and natural environments Forest (non woodland)	27,350	100.0% 27,350	100.0% 27,350	99.5% 27,225	96.0% 26,250	59.7% 16,325	17.4% 4,750
Agriculture	1,908,400	100.0% 1,908,175	99.9% 1,906,675	96.2% 1,836,275	73.5% 1,402,375	17.3% 329,625	3.2% 61,925
Grazing	777,725	100.0% 777,500	99.8% 776,400	96.2% 748,375	81.2% 631,825	26.6% 207,000	5.6% 43,525
Grazing non forest	724,300	100.0% 724,075	99.8% 723,025	96.0% 695,650	80.7% 584,625	25.9% 187,850	5.5% 39,975
Grazing Woodland forest	49,525	100.0% 49,525	99.9% 49,475	98.6% 48,850	87.5% 43,350	33.3% 16,475	5.1% 2,550
Cropping	1,125,400	100.0% 1,125,400	100.0% 1,125,000	96.2% 1,082,650	68.1% 765,975	10.7% 120,800	1.6% 17,850
Production native forests and plantation forests	93,650	100.0% 93,650	99.9% 93,575	99.4% 93,100	95.0% 88,925	49.9% 46,750	16.7% 15,625











