# Total vegetation cover soil protection Region:LGA Tatiara\_(DC) SA

# **Date: December 2023**

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 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 Dec 2023**

#### Land use and forest cover

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

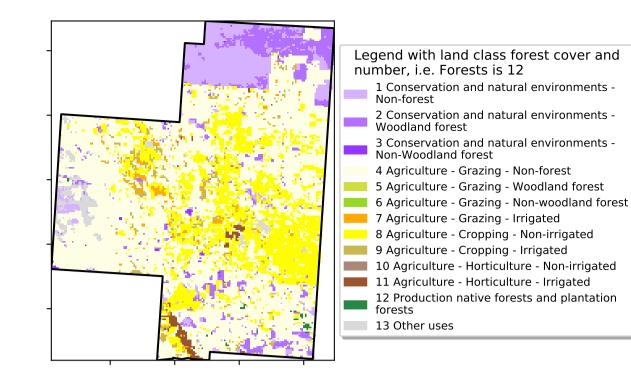
Derived from

Use of Australia

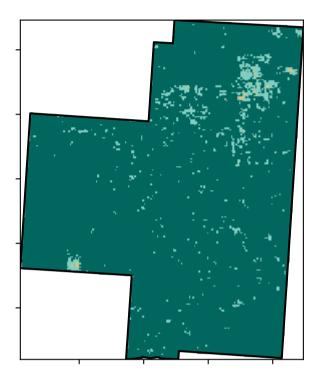
Land Use and Forests

Catchment Scale Land

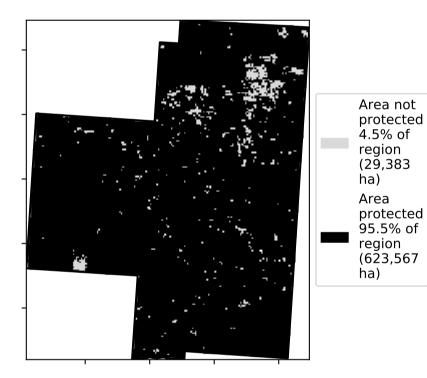
#### Proportion of each land class in area

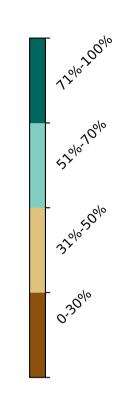


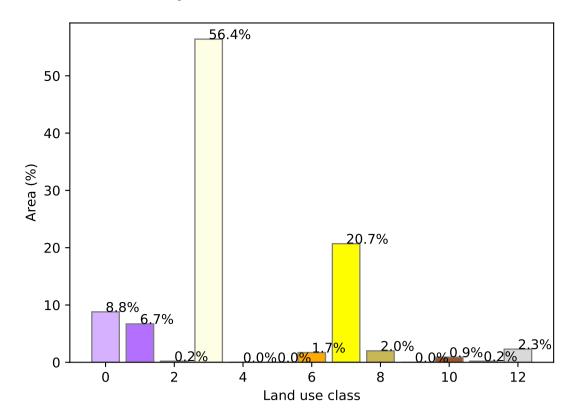
### **Total Vegetation Cover [%]**



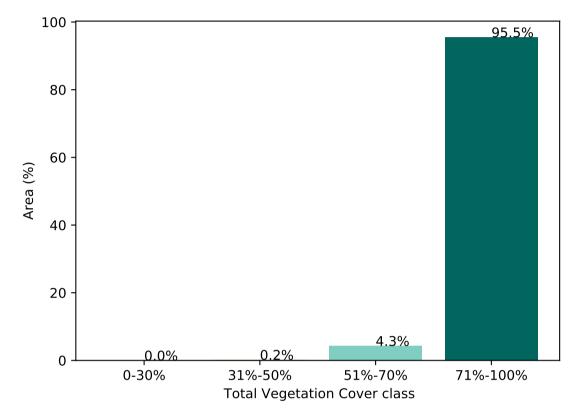
### % Area protected from water erosion (>70%)



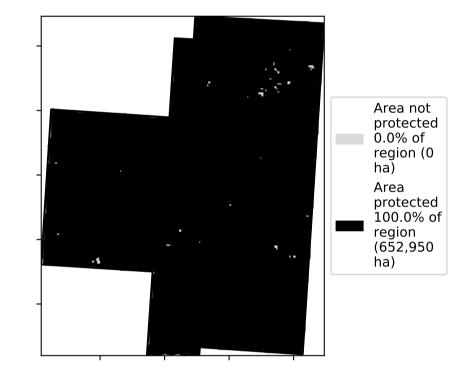




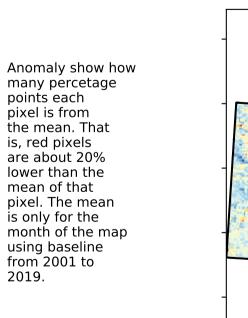
### Proportion of vegetation cover class in area

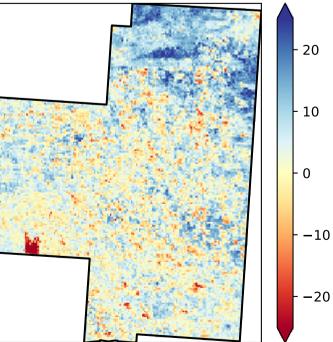


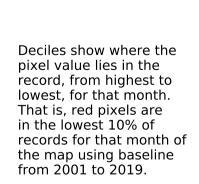
#### % Area protected from wind erosion (>50%)



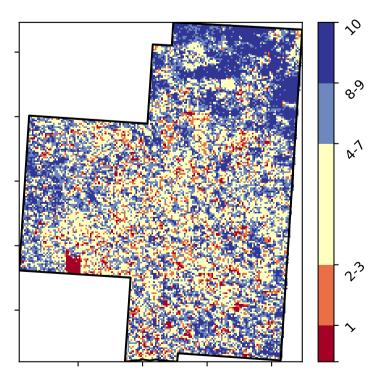
**Total Vegetation Cover Anomaly [%]** 





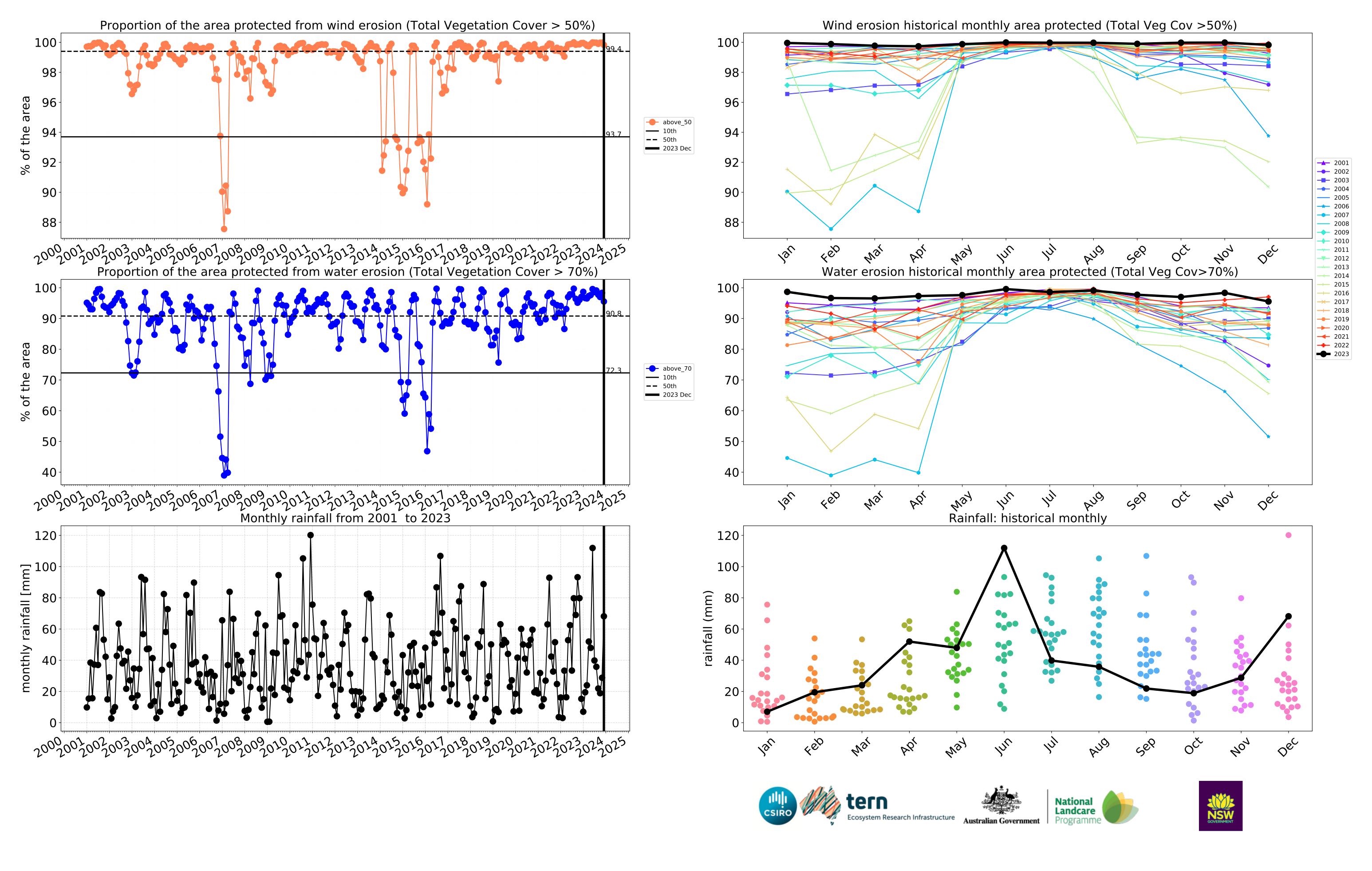


**Total Vegetation Cover Decile [%]** 



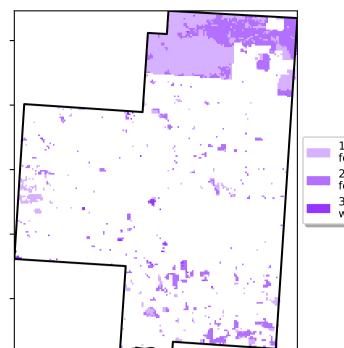






### **Conservation and natural environments**

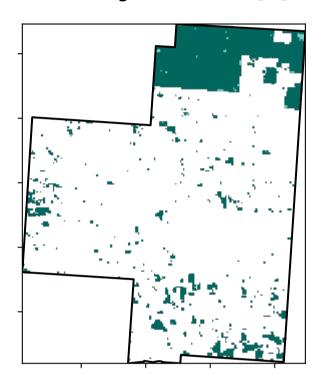
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



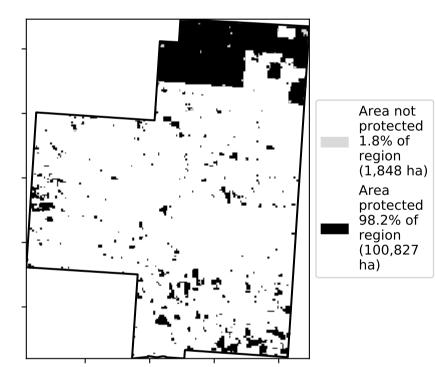
Land use and forest cover

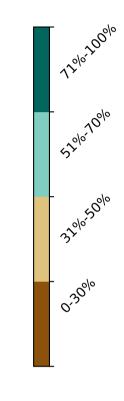
 Conservation and natural environments - Nonforest
 Conservation and natural environments - Woodland forest
 Conservation and natural environments - Nonwoodland forest

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

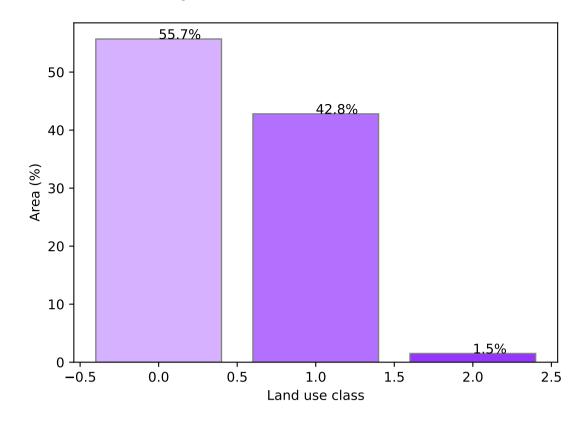




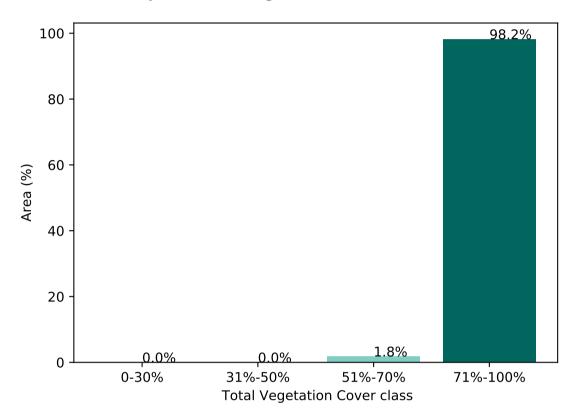




### Proportion of each land class in area



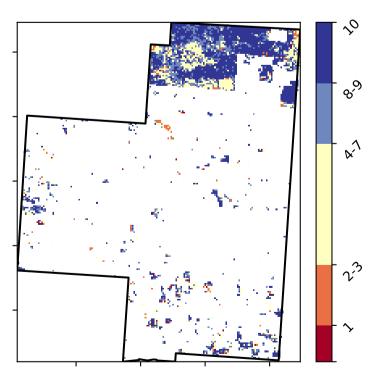
### Proportion of vegetation cover class in area



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



**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

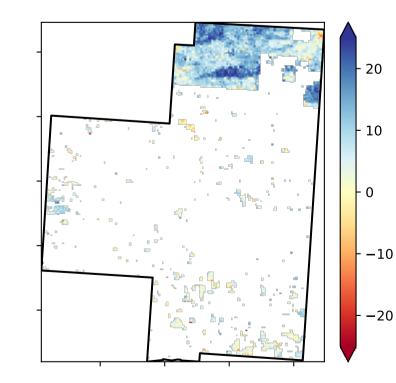
records for that month of

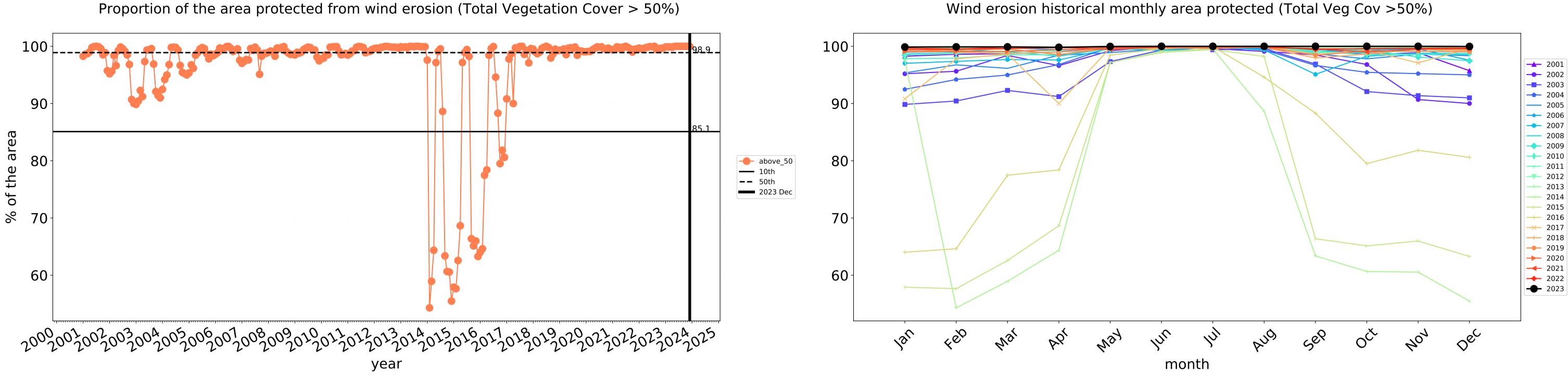
the map using baseline from 2001 to 2019.

in the lowest 10% of



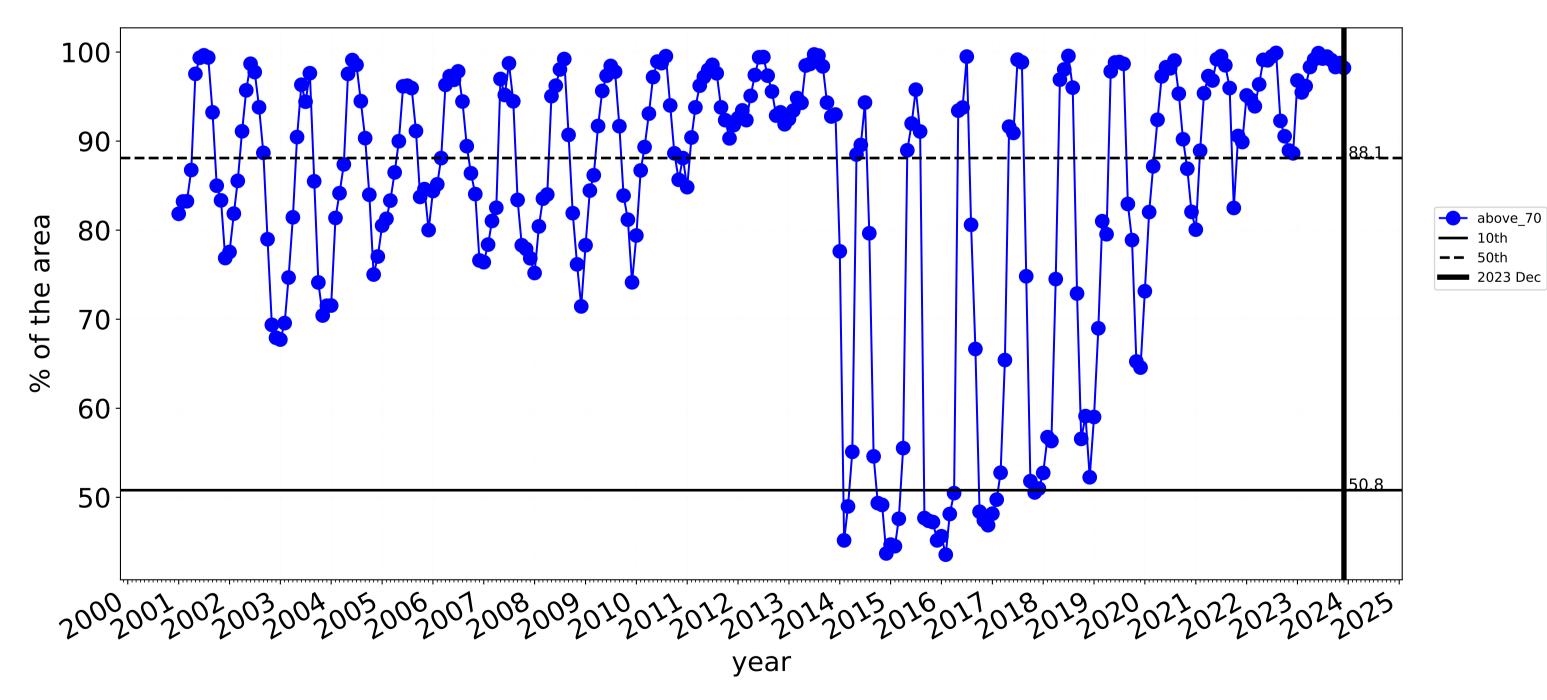
**Total Vegetation Cover Anomaly [%]** 





Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



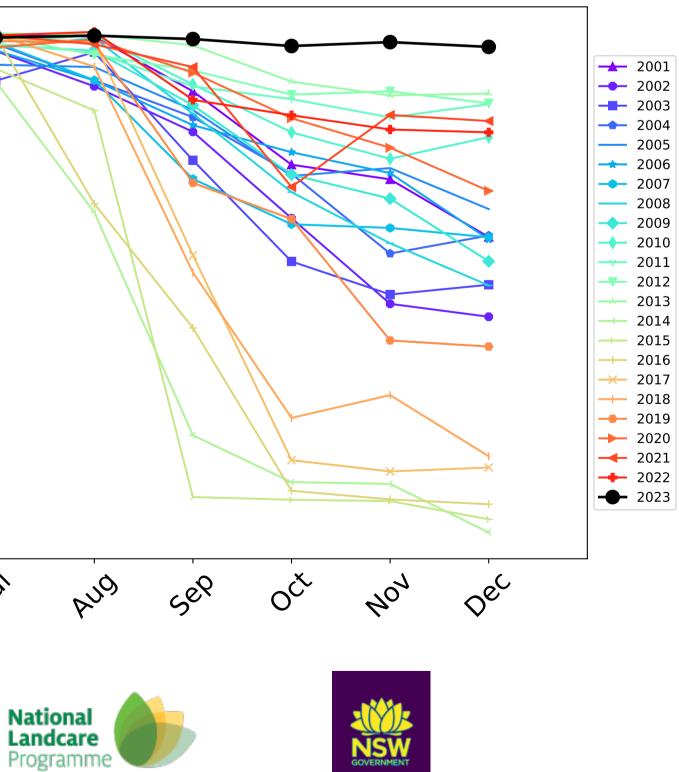


100 90-80 70-60-50-Jan 4eb way In War, 1/2/ 291

> Ecosystem Research Infrastructure Australian Government

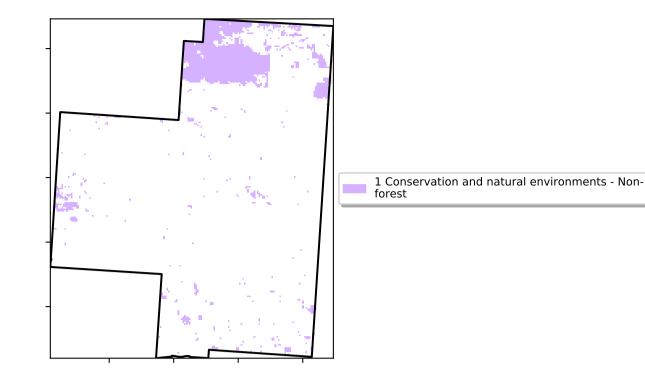
month

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



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

Land use and forest cover



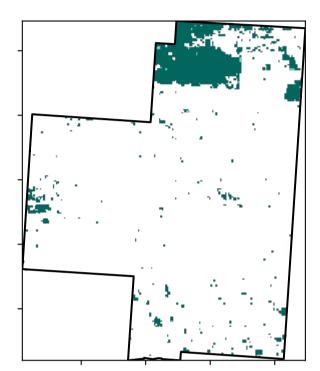
12% 10°10°%

52% 70%

32%50%

· 0.30%

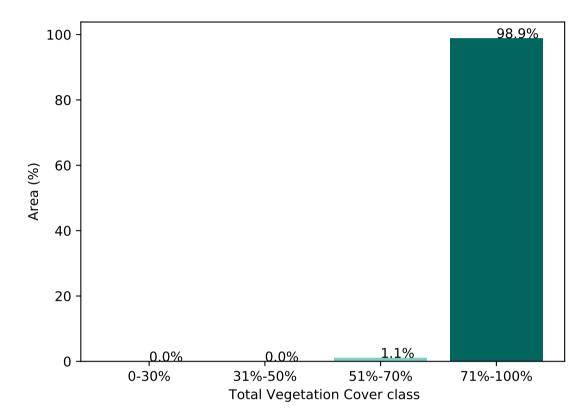
### **Total Vegetation Cover [%]**



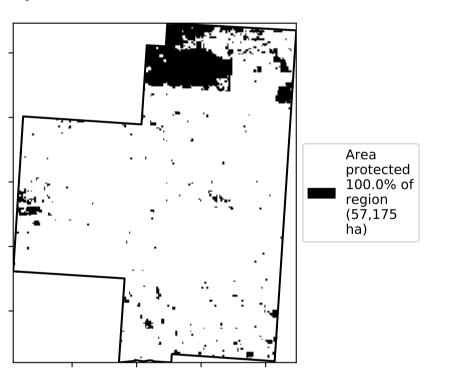






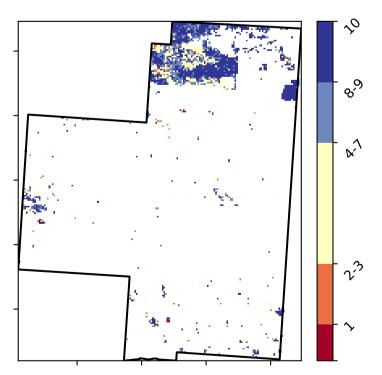


#### % Area protected from wind erosion (>50%)



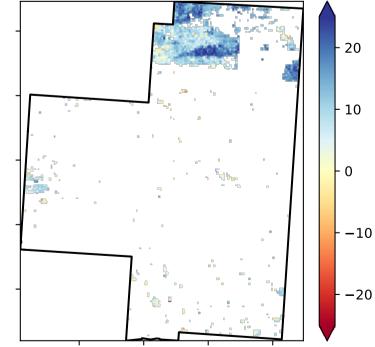
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

**Total Vegetation Cover Decile [%]** 





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.





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 Anomaly [%]** 20

1.1% of

Area

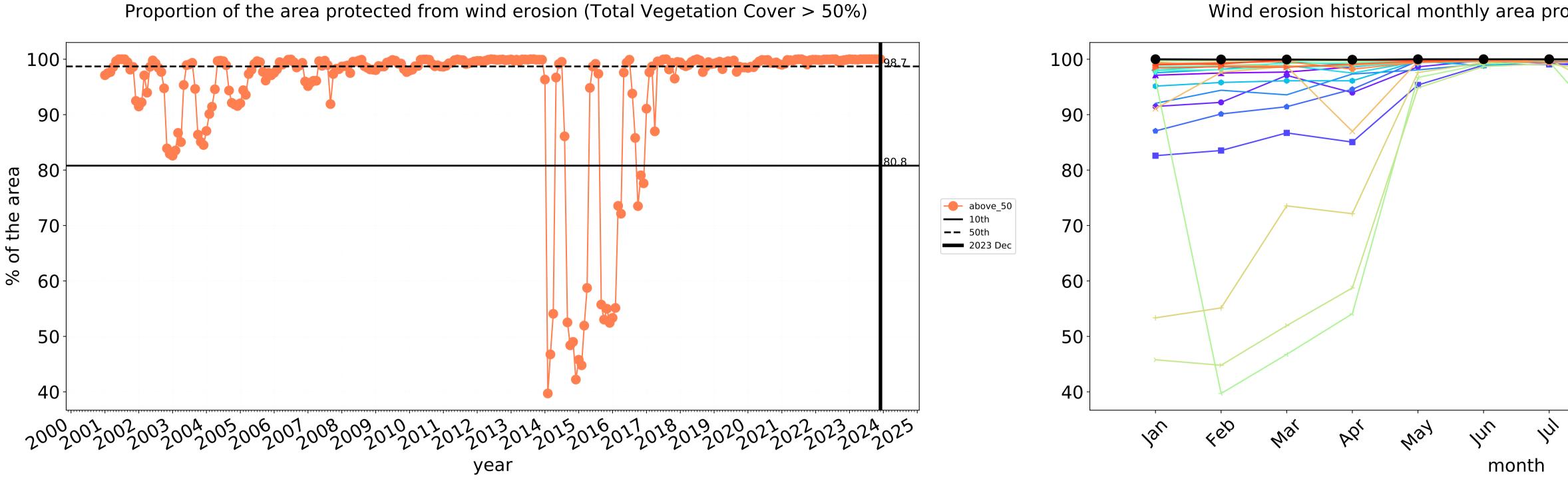
region (629 ha)

protected . 98.9% of

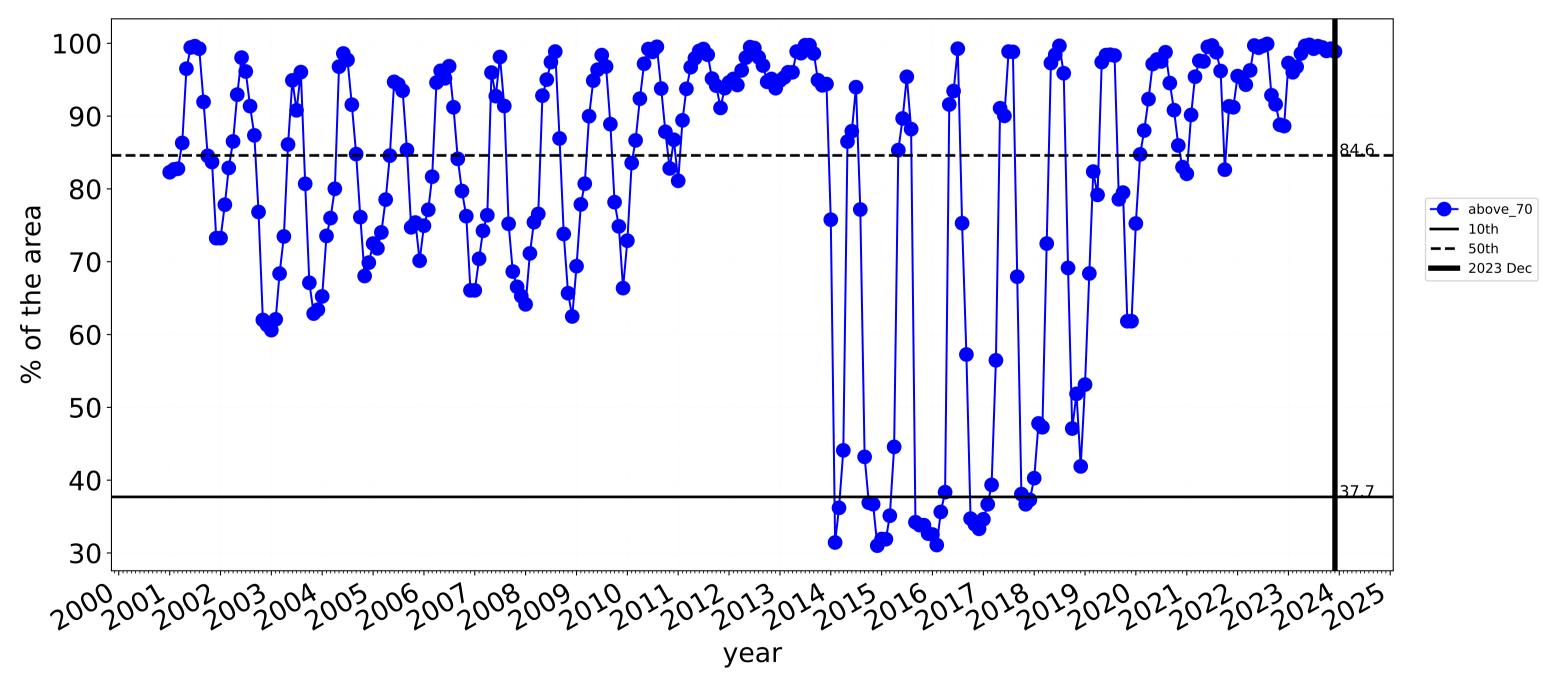
region (56,546

ha)

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





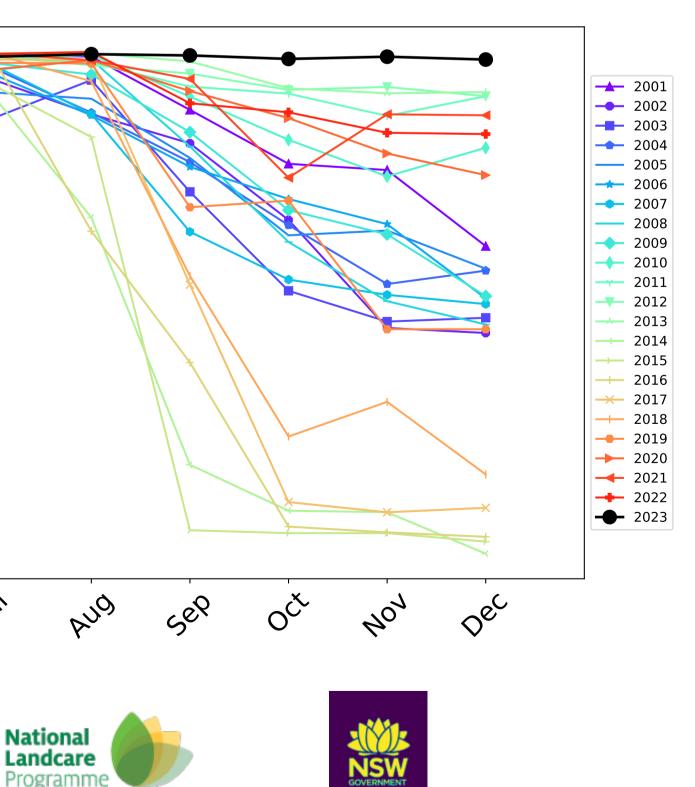


100 90-80-70-60 50-40-30-Jan 4eb way In 1<sup>1</sup>1 Wai Þb, month tern Ecosystem Research Infrastructure Programm Australian Government

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

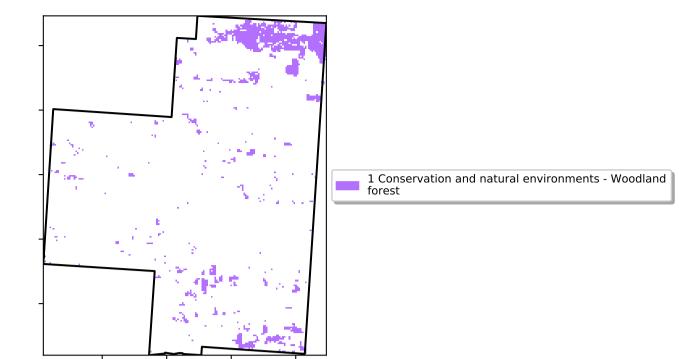
**\_\_\_** 2001 --- 2002 ---- 2003 **---** 2004 \_\_\_\_ 2005 **\_\_\_** 2006 --- 2007 2008 ---- 2009 **—** 2010 2011 --- 2013 --- 2014 → 2015 - 2016 <mark>→</mark> 2017 <mark>→</mark> 2018 ---- 2019 → 2020 → 2021
→ 2022 ---- 2023 AUG Sel 404 Dec OČ

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



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

Land use and forest cover



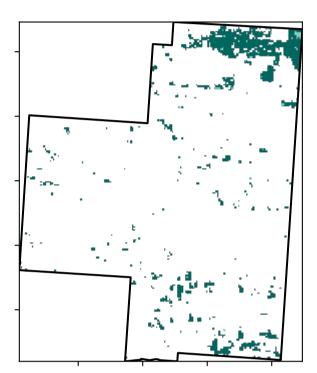
12%100%

52% 70%

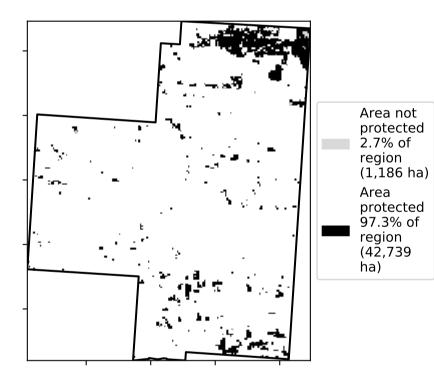
32%5001

0-30%

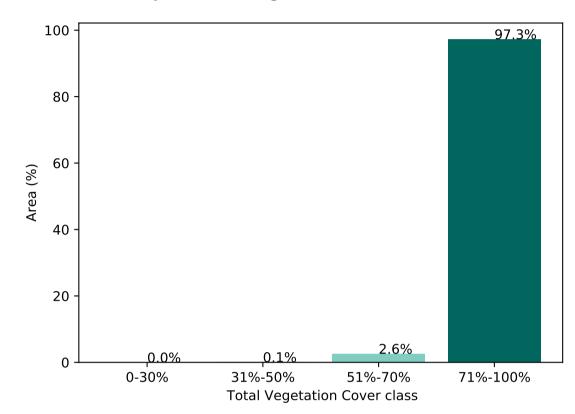
### **Total Vegetation Cover [%]**



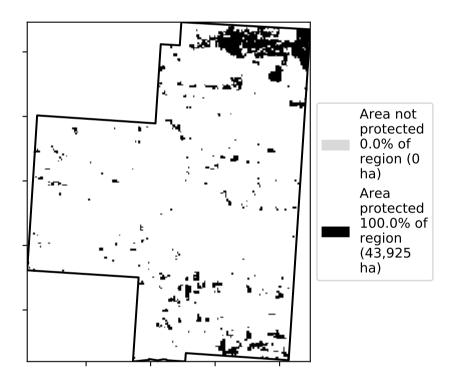








#### % Area protected from wind erosion (>50%)



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

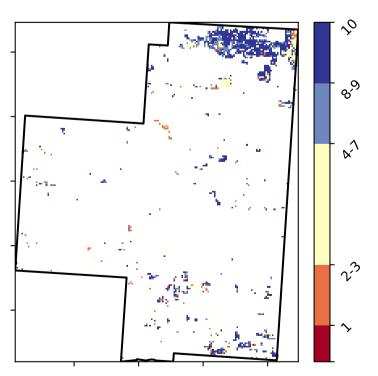
pixel. The mean is only for the month of the map

using baseline

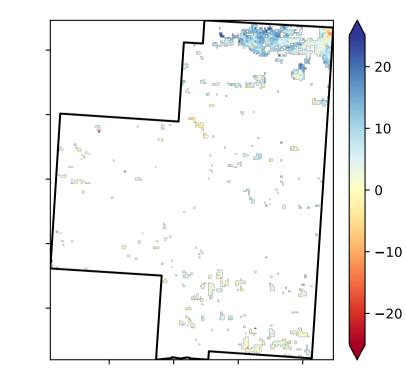
from 2001 to 2019.

the mean. That

**Total Vegetation Cover Decile [%]** 



**Total Vegetation Cover Anomaly [%]** 



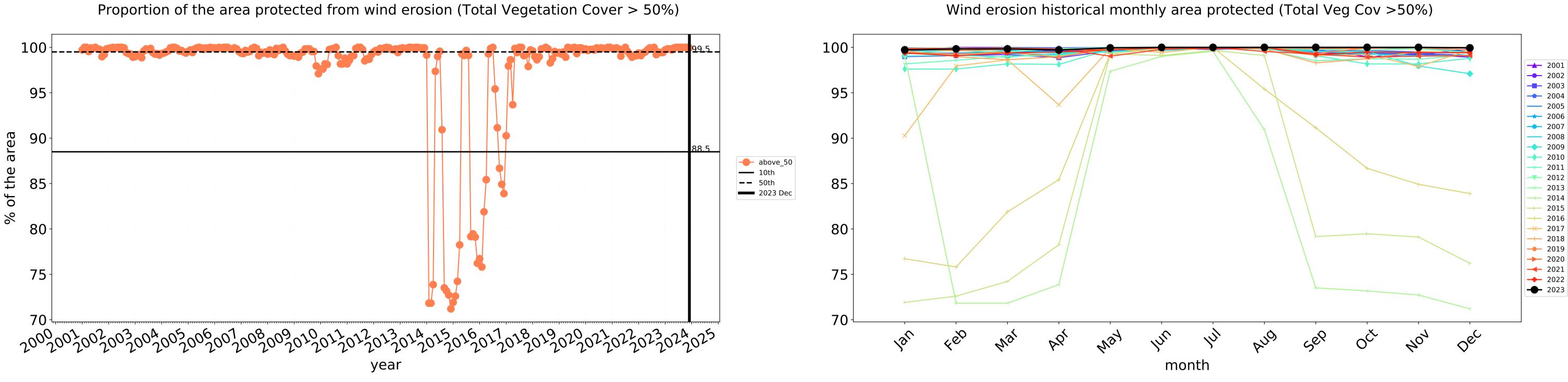
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

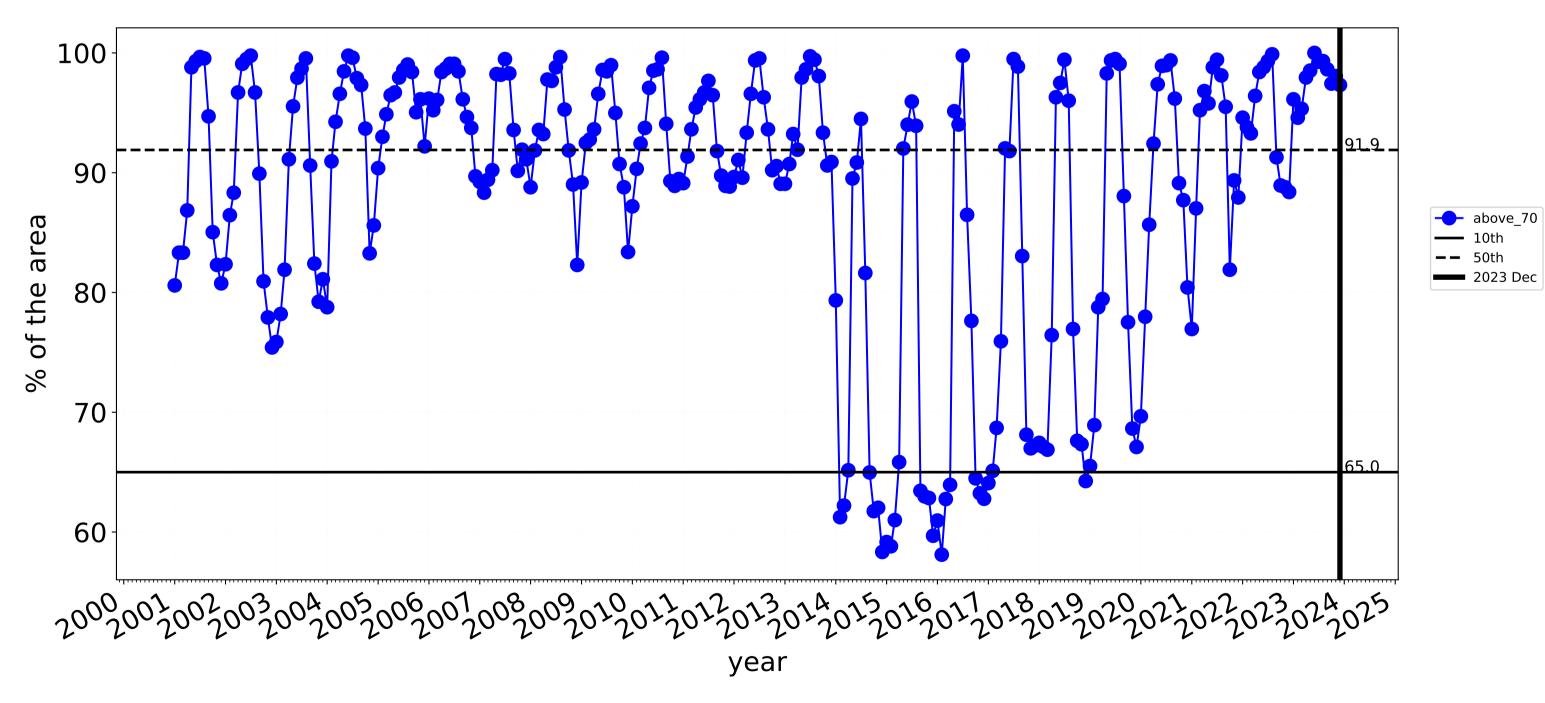




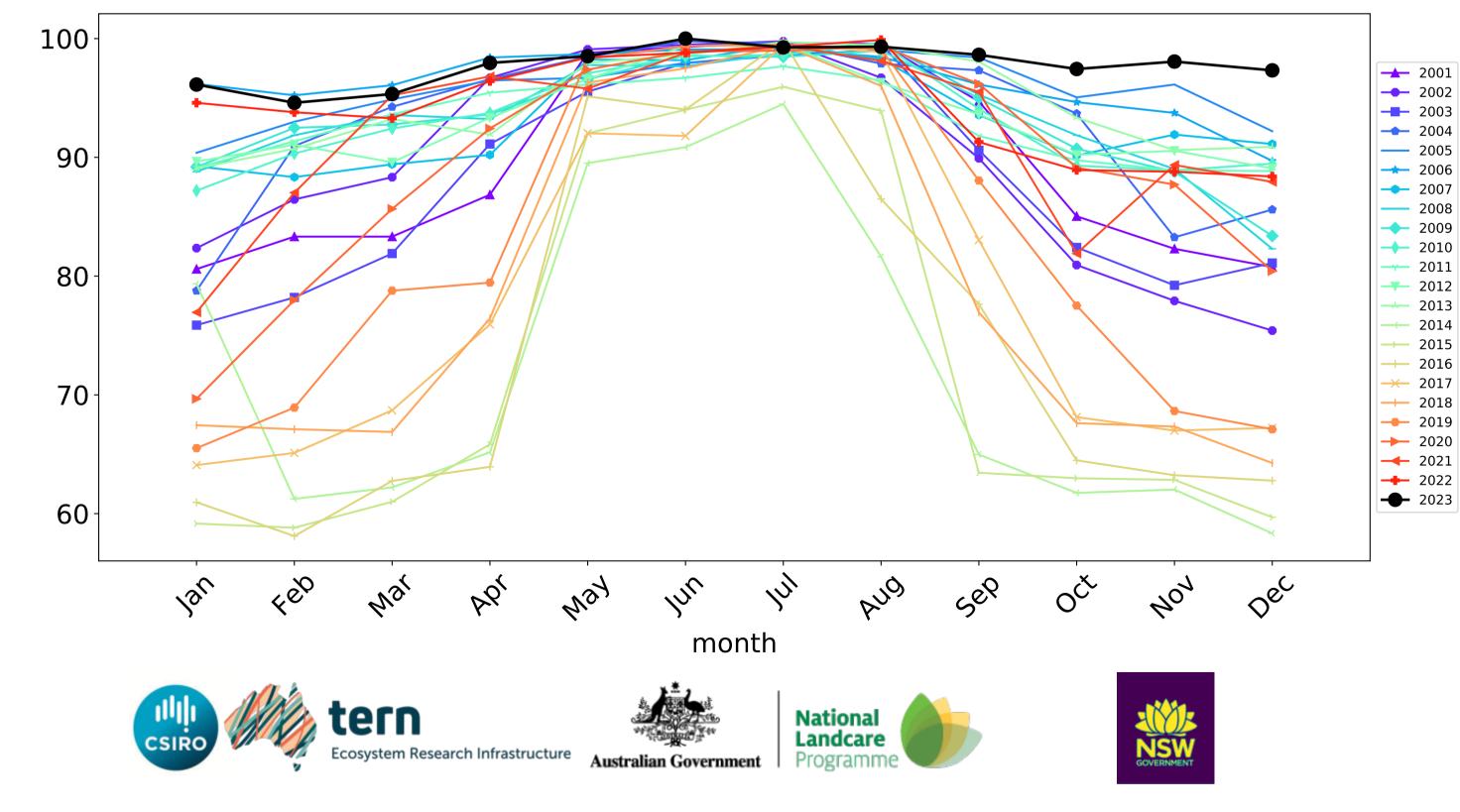
×.\*.

an Oo





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



### Agriculture

1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest

4 Agriculture - Cropping - Non-irrigated

12%200%

52% TO"

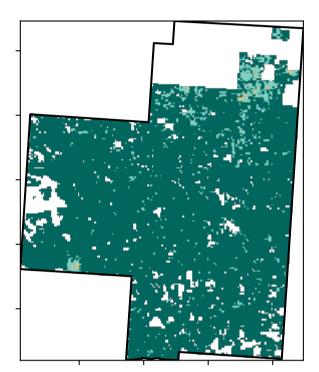
32%50%

0-30%

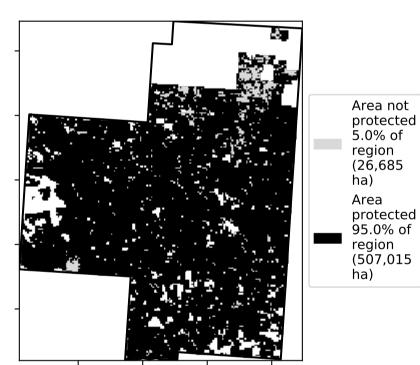
3 Agriculture - Grazing - Irrigated 5 Agriculture - Cropping - Irrigated 6 Agriculture - Horticulture - Non-irrigated 7 Agriculture - Horticulture - Irrigated

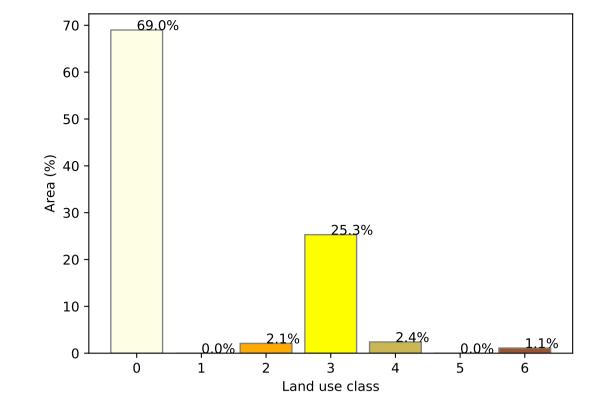
Land use and forest cover

**Total Vegetation Cover [%]** 



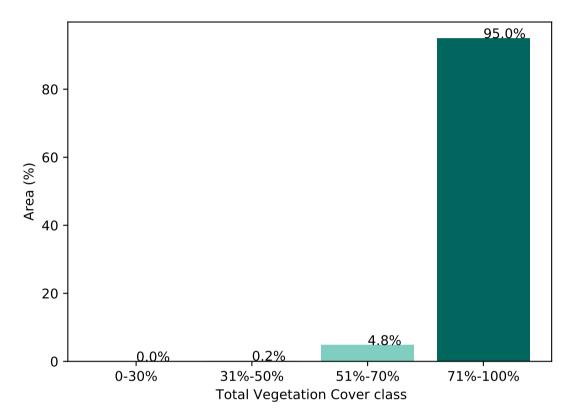
% Area protected from water erosion (>70%)





### Proportion of each land class in area

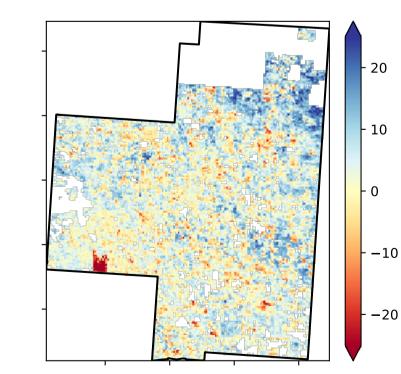
Proportion of vegetation cover class in area



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

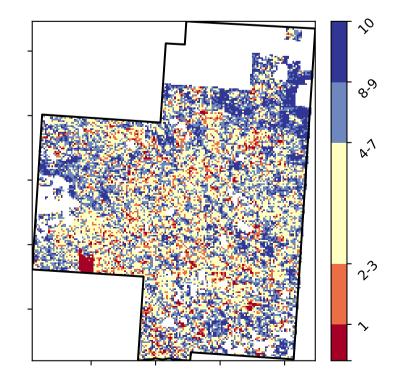


**Total Vegetation Cover Anomaly [%]** 



Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (533,700 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 is only for the month of the map using baseline from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

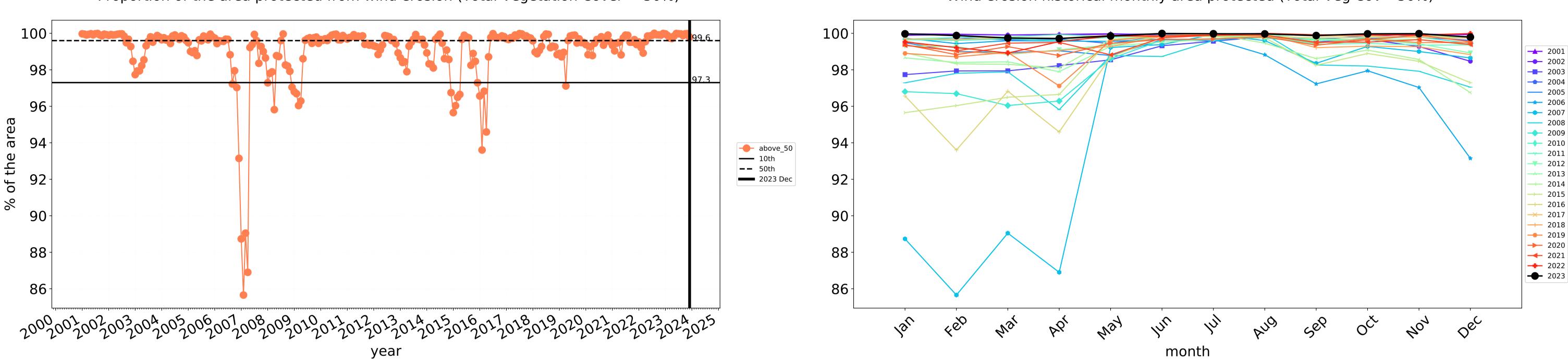
Catchment Scale Land

Derived from

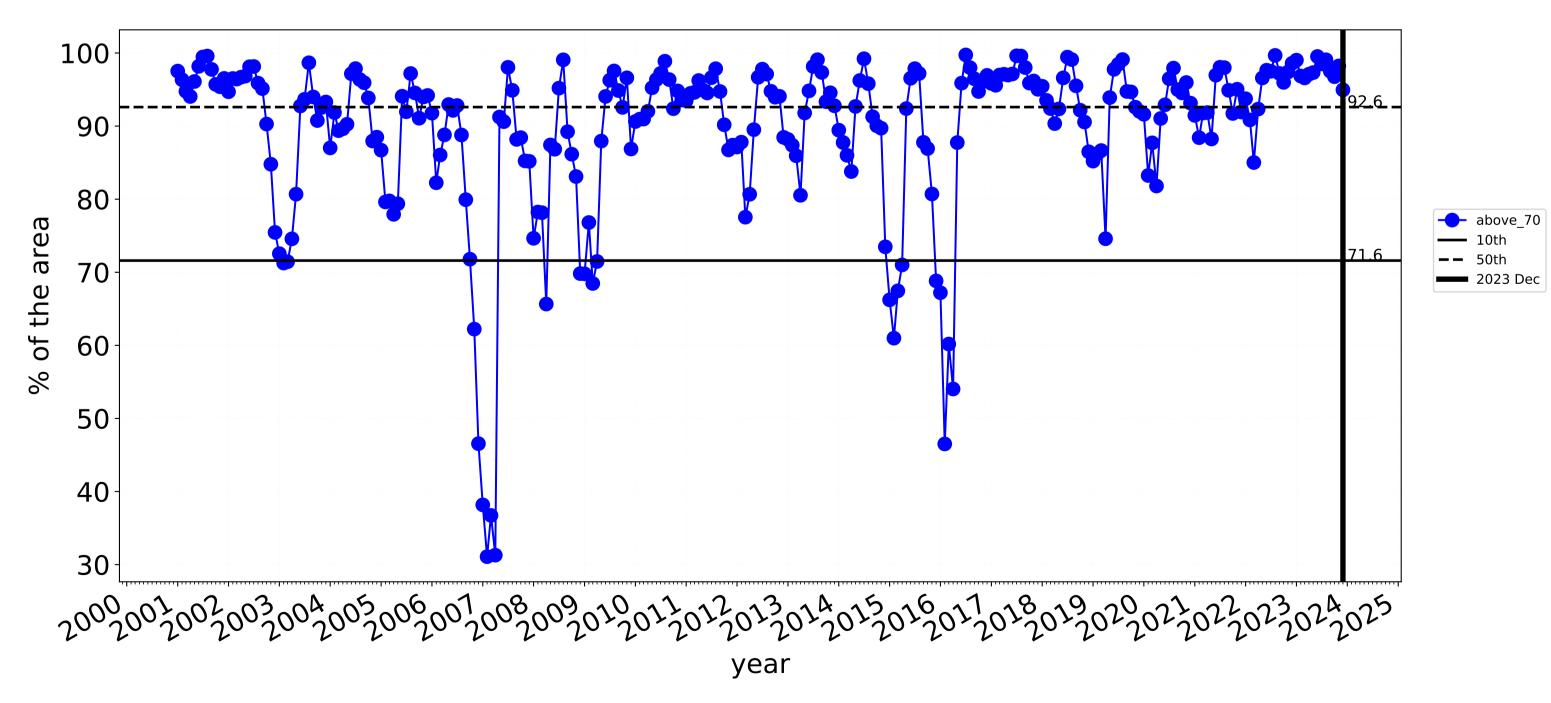
Use of Australia

(2018) and Forests

of Australia (2018)



Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

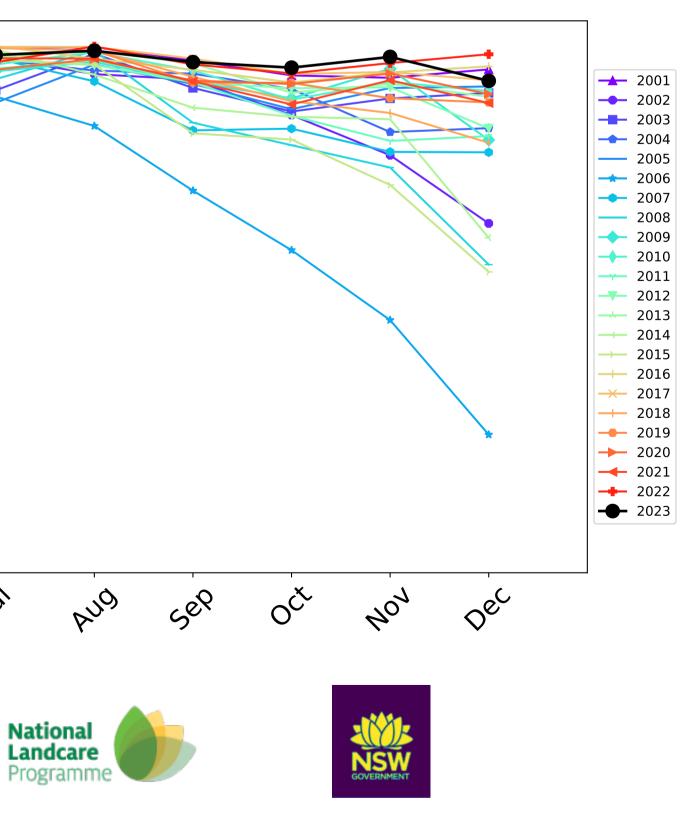


# **Agriculture timeseries**

100 90 80-70-60 50-40 30-4eb Jan way In 1st Wal 26, month tern Ecosystem Research Infrastructure Australian Government

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

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



### Grazing

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

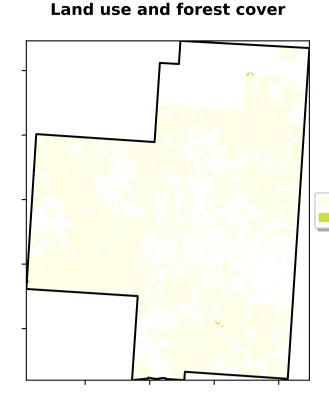
pixel is from

the mean. That

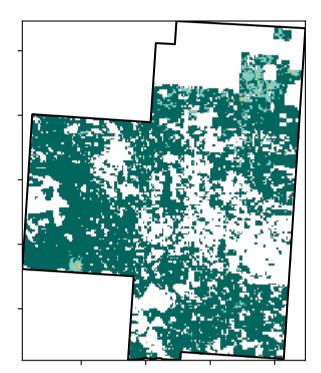
is, red pixels are about 20% lower than the

mean of that

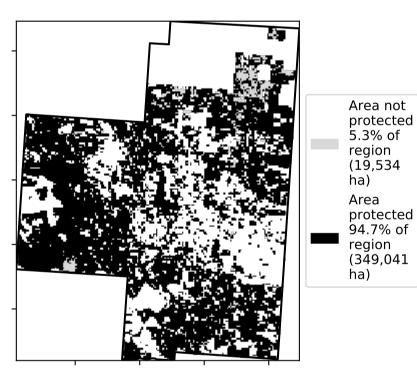
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



**Total Vegetation Cover [%]** 

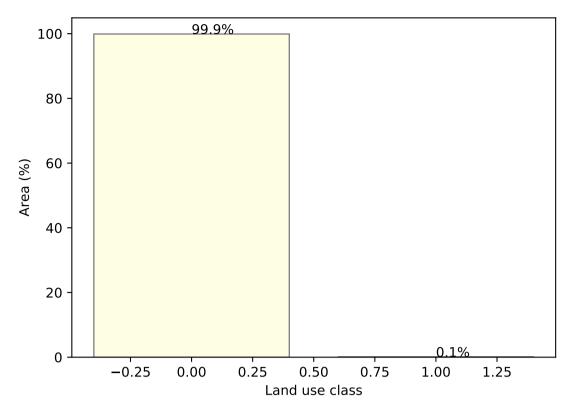


% Area protected from water erosion (>70%)

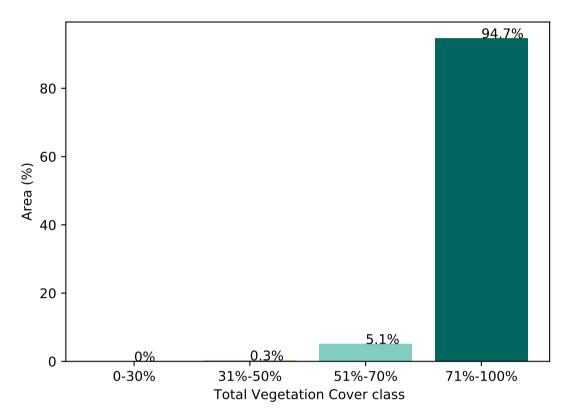




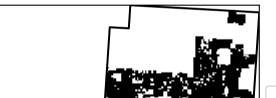
Proportion of each land class in area

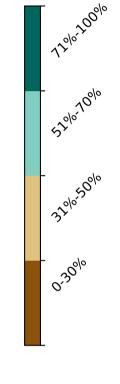


Proportion of vegetation cover class in area

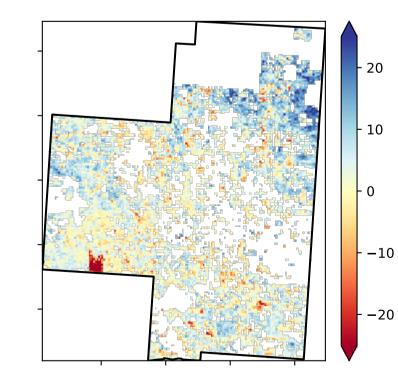


% Area protected from wind erosion (>50%)



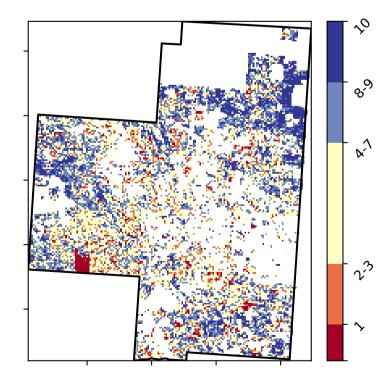


**Total Vegetation Cover Anomaly [%]** 



Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (368,575 ha)

**Total Vegetation Cover Decile [%]** 





Deciles show where the

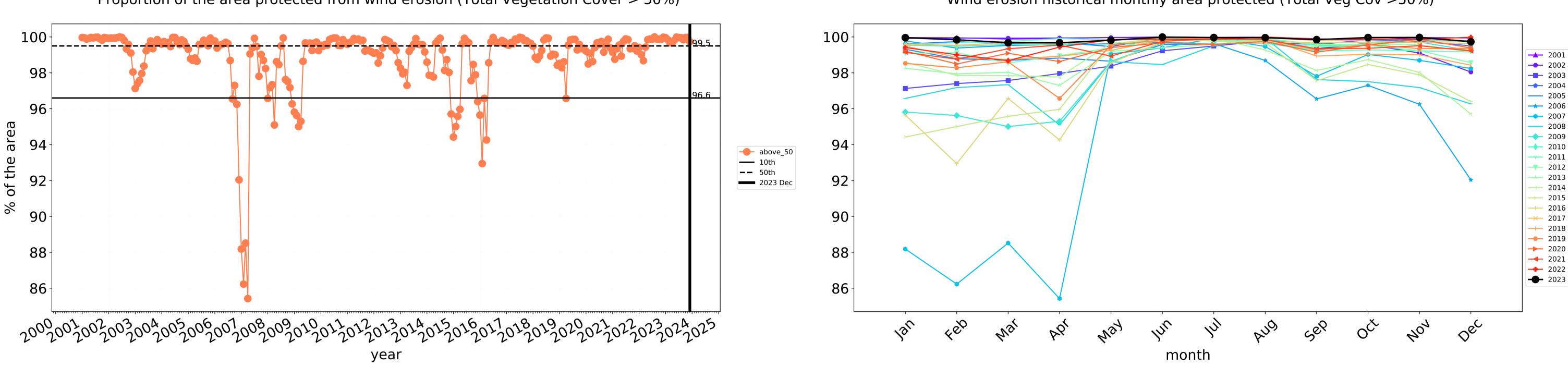
pixel value lies in the

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

in the lowest 10% of records for that month of

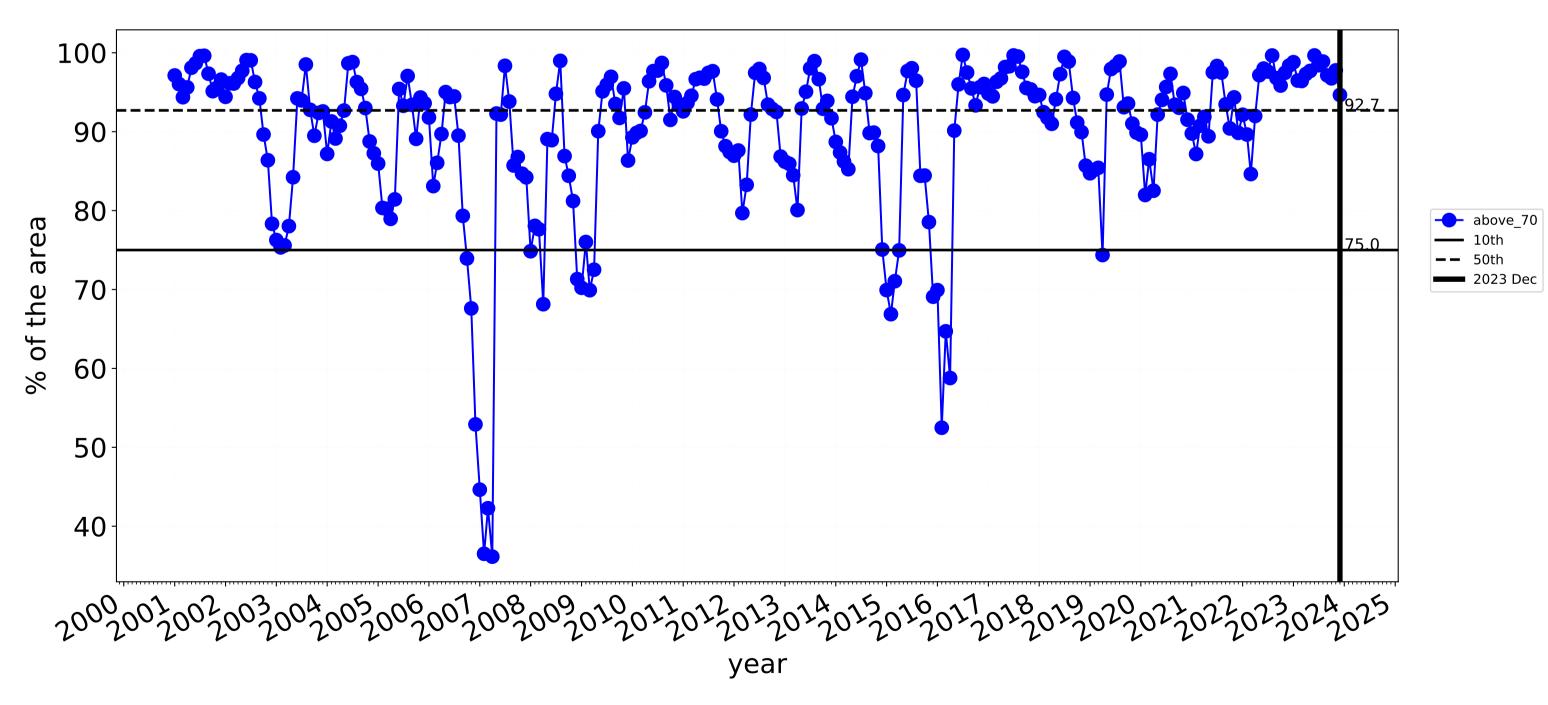
the map using baseline from 2001 to 2019.

12



Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

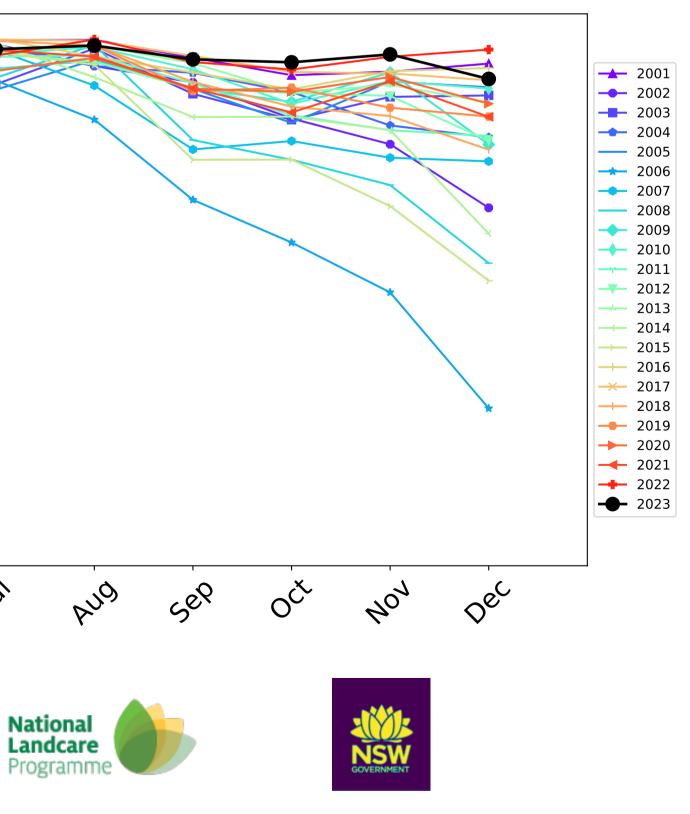


## Grazing timeseries

100-90-80-70-60 50-40 4eb lar In way 1st Wal 26, month Ecosystem Research Infrastructure Australian Government

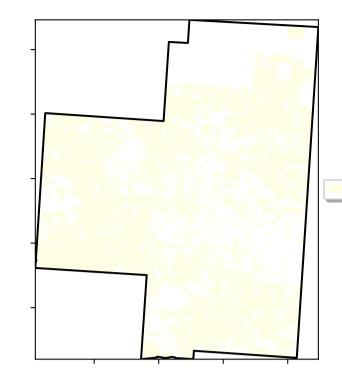
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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



### **Grazing non forest**

Land use and forest cover



1 Agriculture - Grazing - Non forest

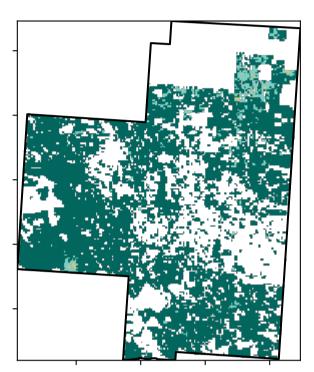
12%200%

52% 70%

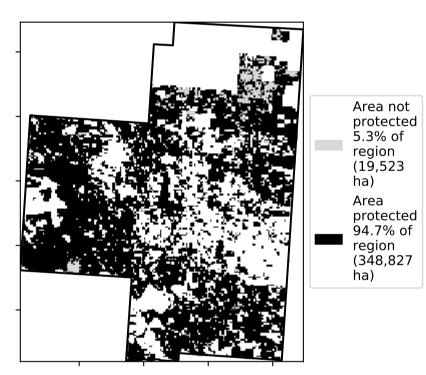
32005001

· 0.30%

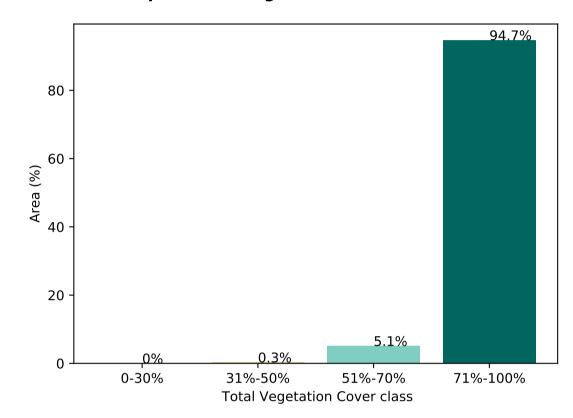
**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

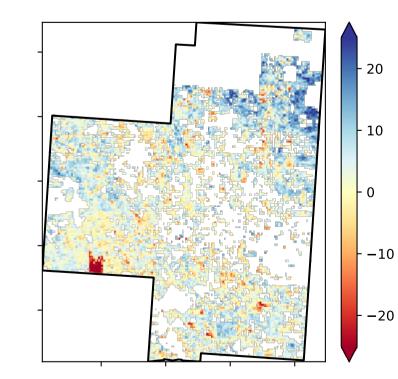


#### % Area protected from wind erosion (>50%)



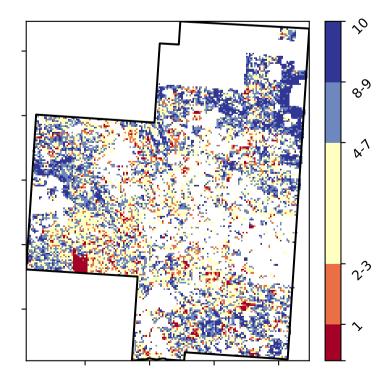
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

**Total Vegetation Cover Anomaly [%]** 



Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (368,350 ha)

**Total Vegetation Cover Decile [%]** 





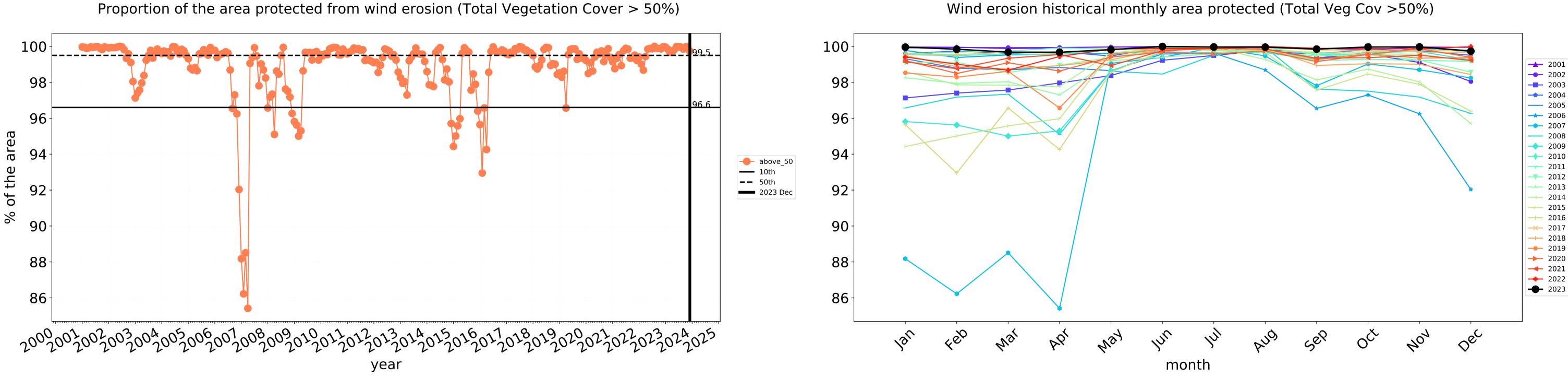
Deciles show where the

pixel value lies in the

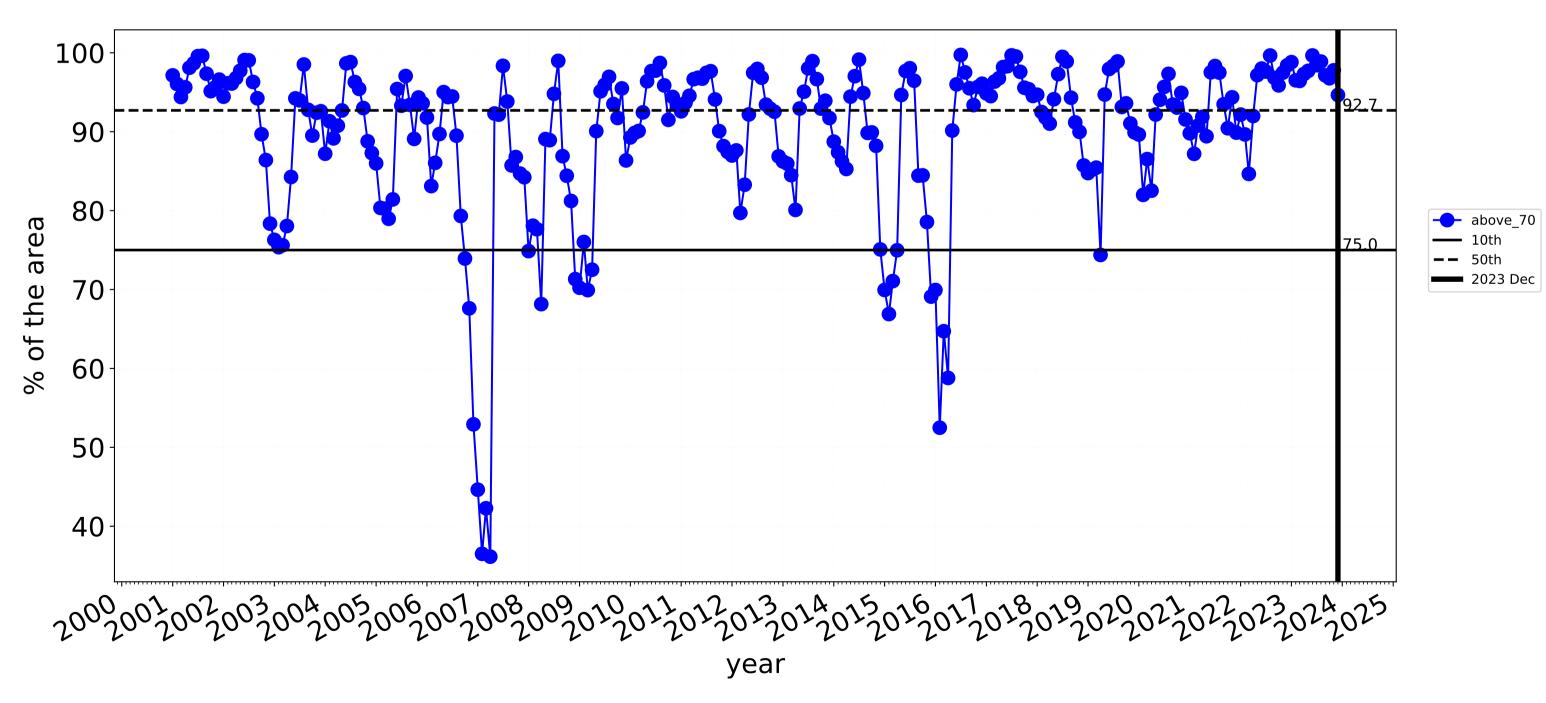
record, from highest to lowest, for that month. That is, red pixels are

in the lowest 10% of records for that month of

the map using baseline from 2001 to 2019.



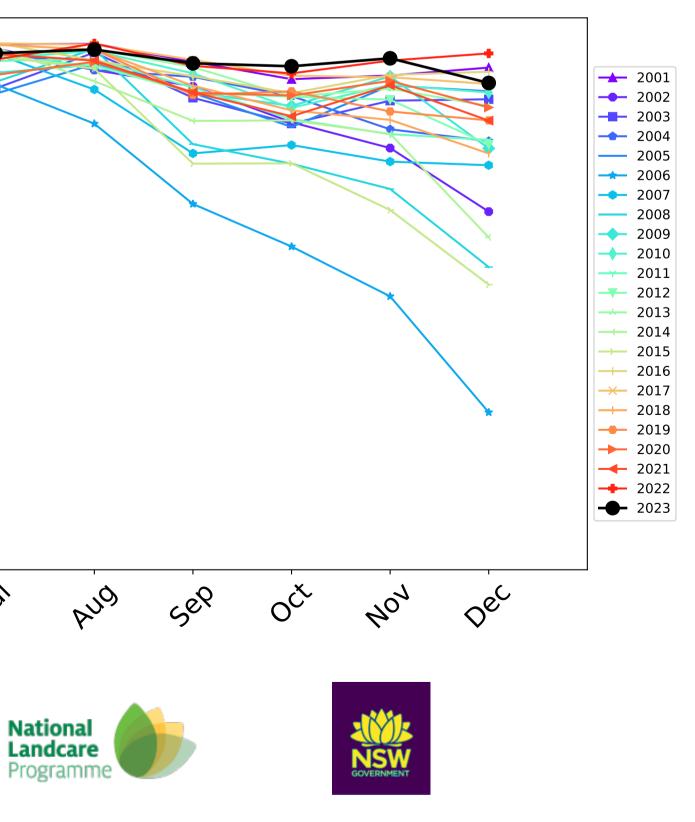
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



# Grazing non forest timeseries

100-90-80-70-60 50-40 4eb lar In way 1st Wal 26, month Ecosystem Research Infrastructure Australian Government

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



### Cropping

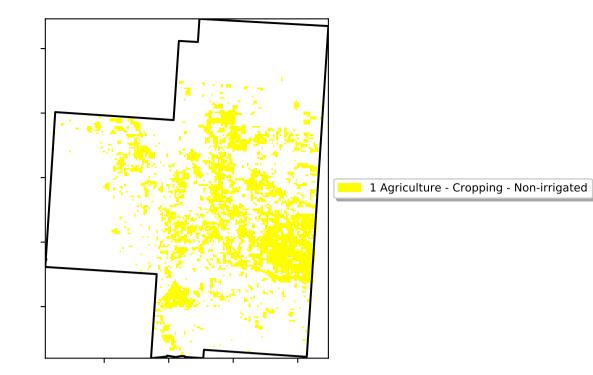
12%100%

· 52% 70%

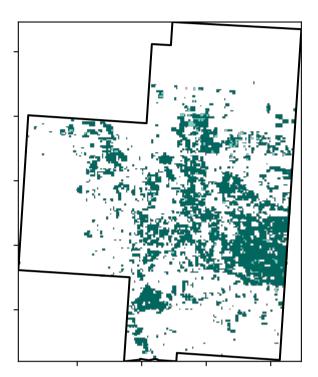
32005001

· 0.30%

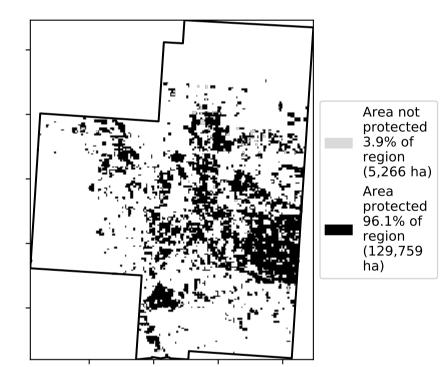
### Land use and forest cover



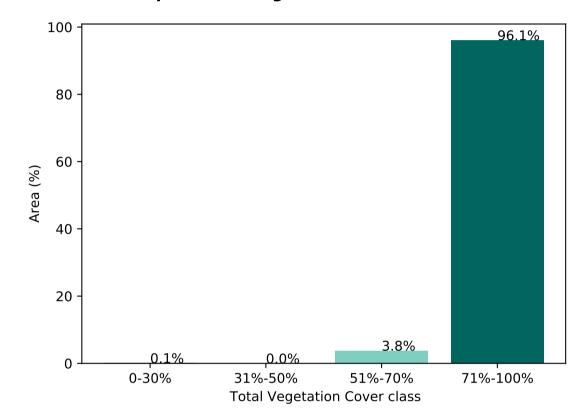
**Total Vegetation Cover [%]** 







Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





**Total Vegetation Cover Anomaly [%]** 

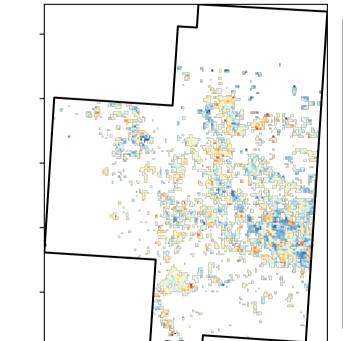
20

10

0

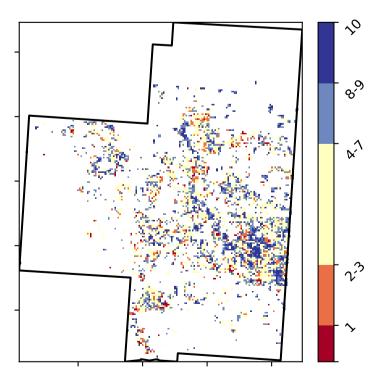
-10

-20

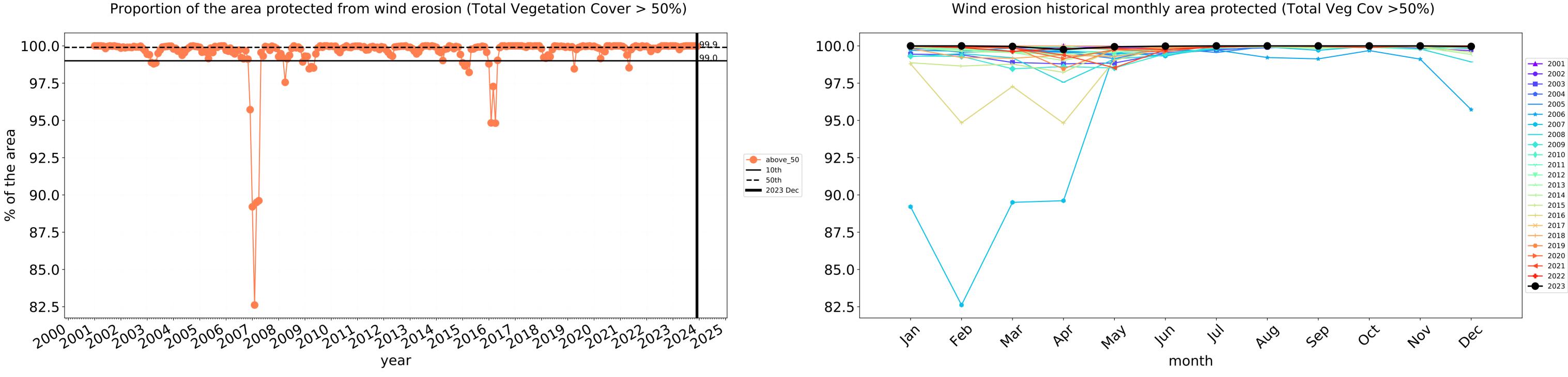


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (135,025 ha)

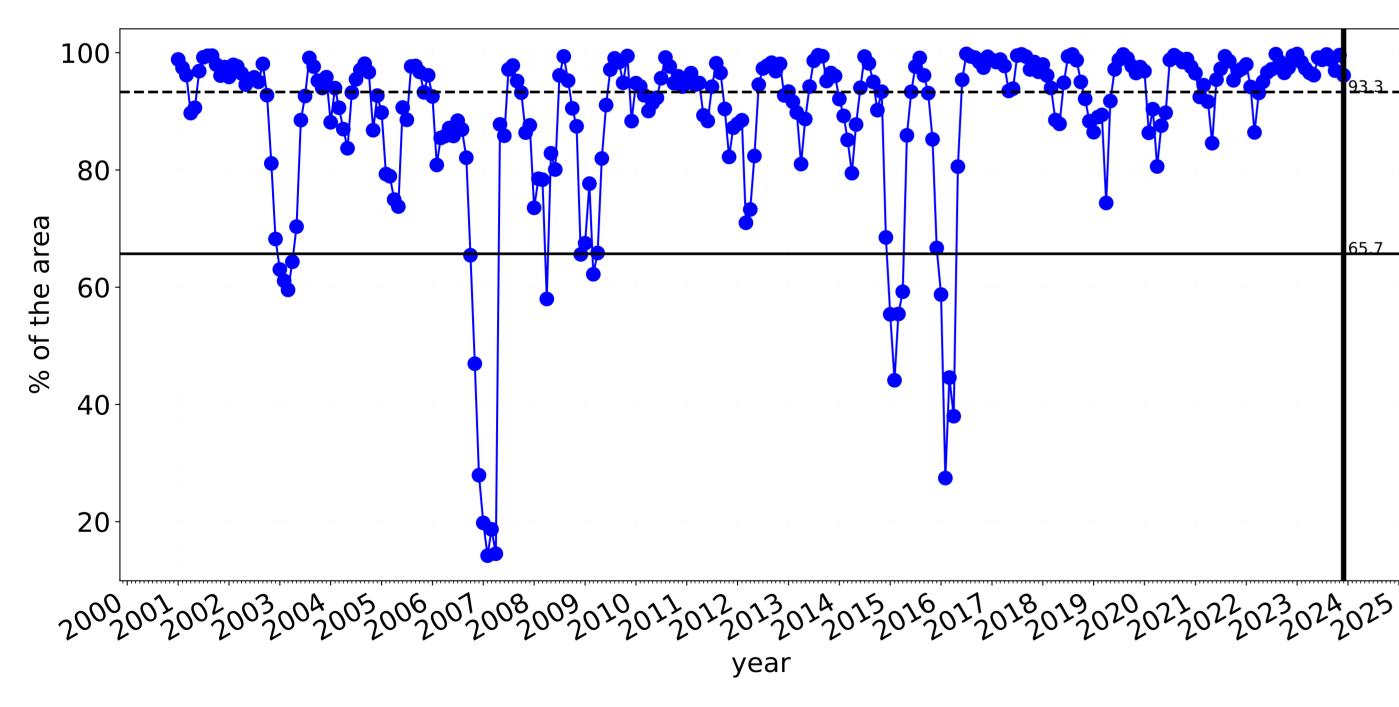
**Total Vegetation Cover Decile [%]** 



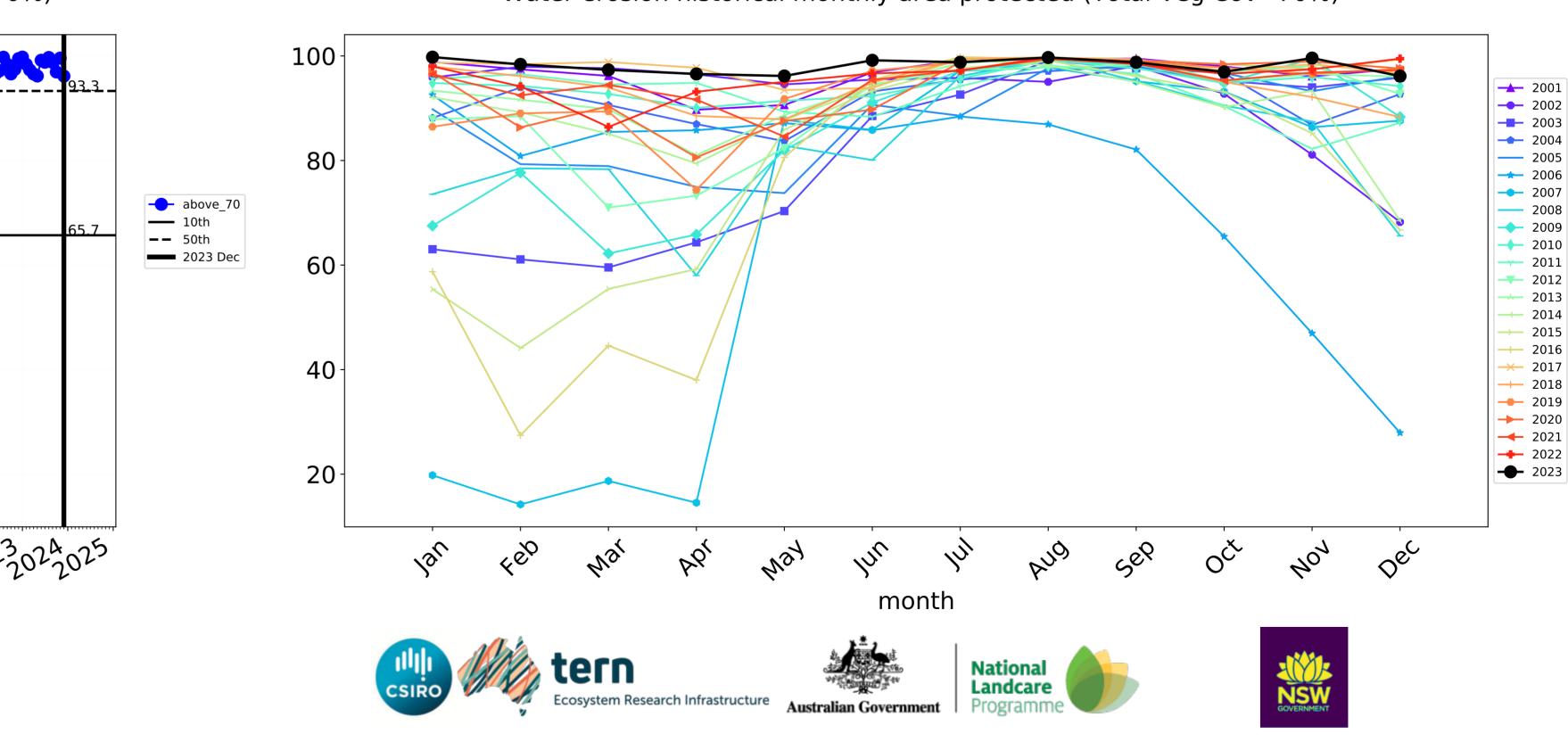




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



# **Cropping timeseries**



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

### Irrigation

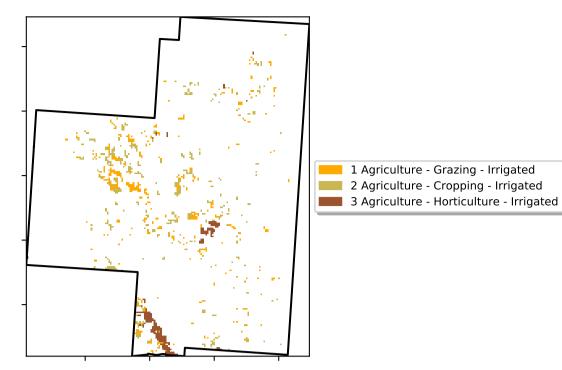
12% 100%

52% 70%

32%5001

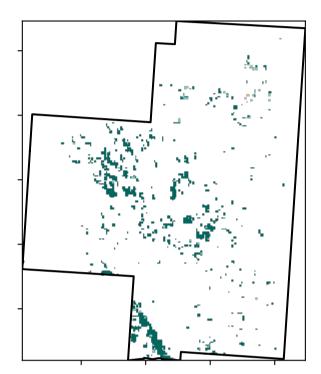
· 0.30%

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

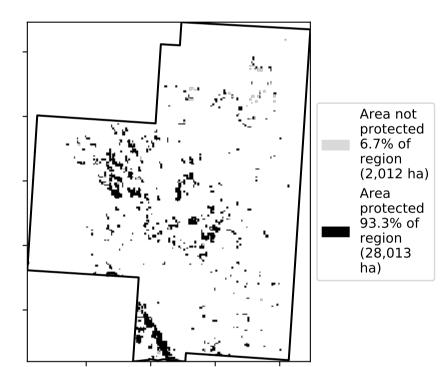


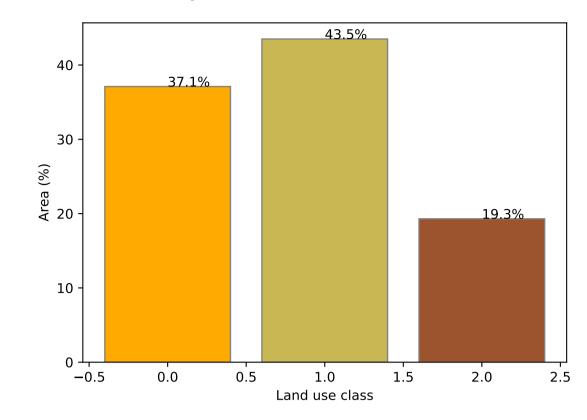
Land use and forest cover

**Total Vegetation Cover [%]** 



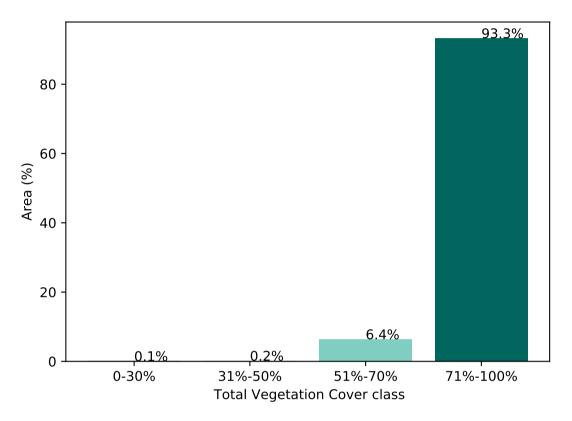
% Area protected from water erosion (>70%)





Proportion of each land class in area

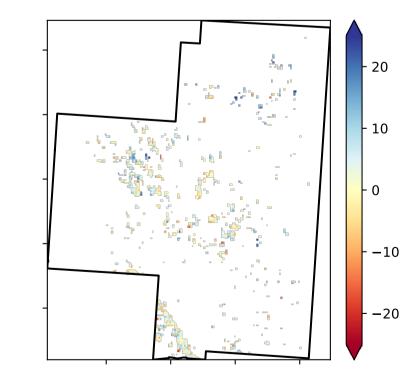
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

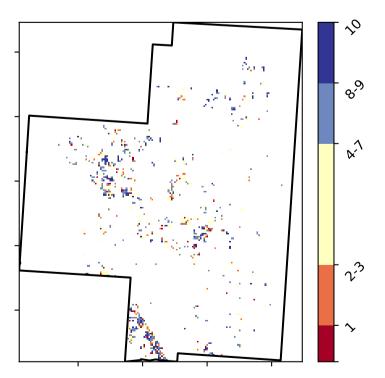


**Total Vegetation Cover Anomaly [%]** 



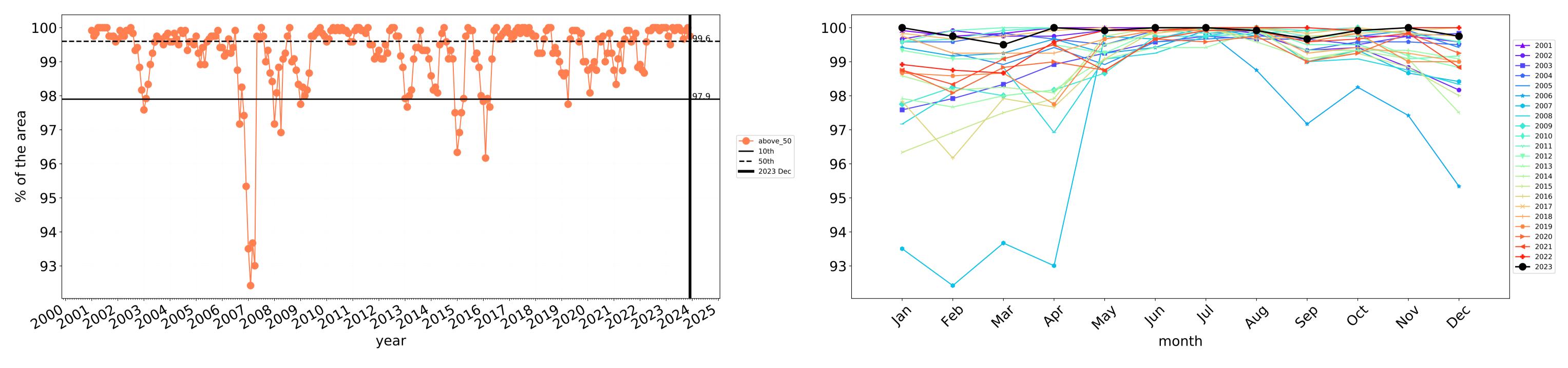
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (30,025 ha)

**Total Vegetation Cover Decile [%]** 

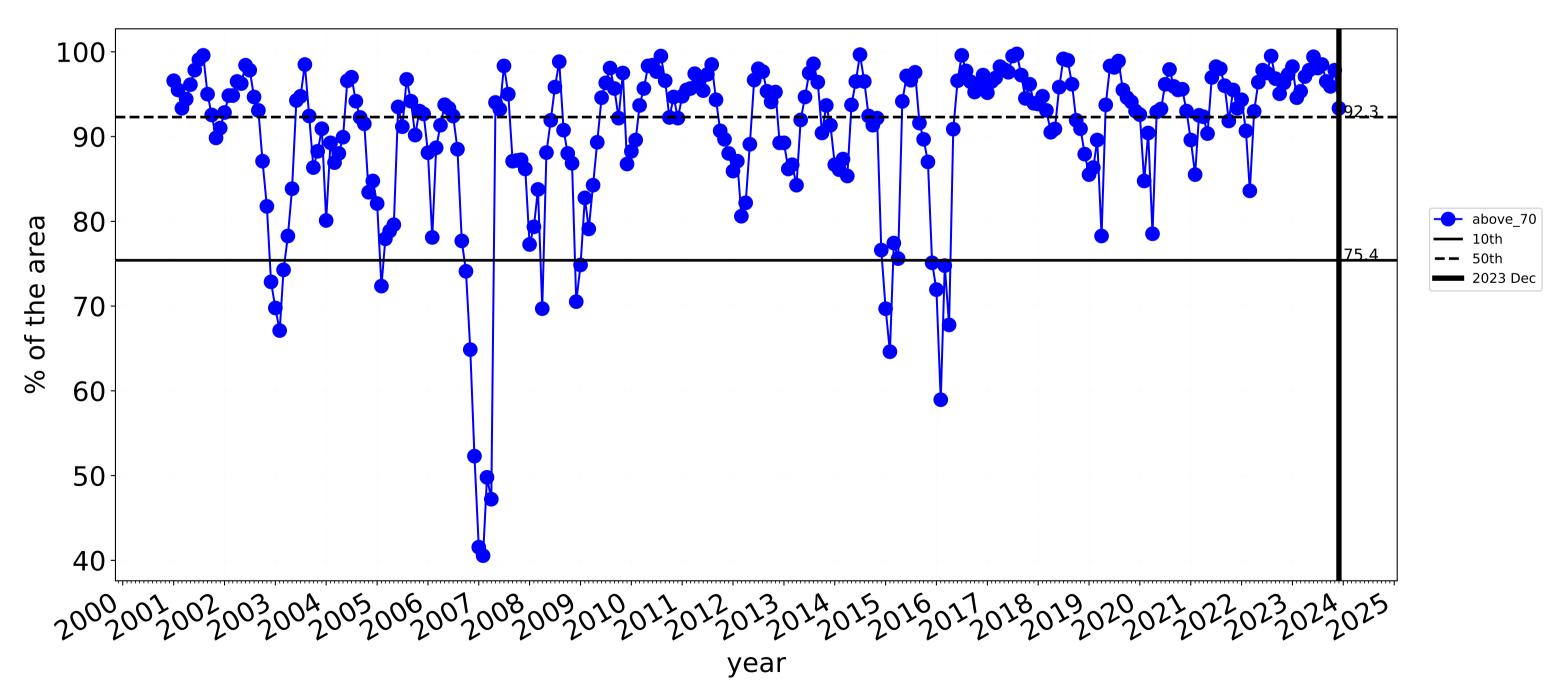








Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

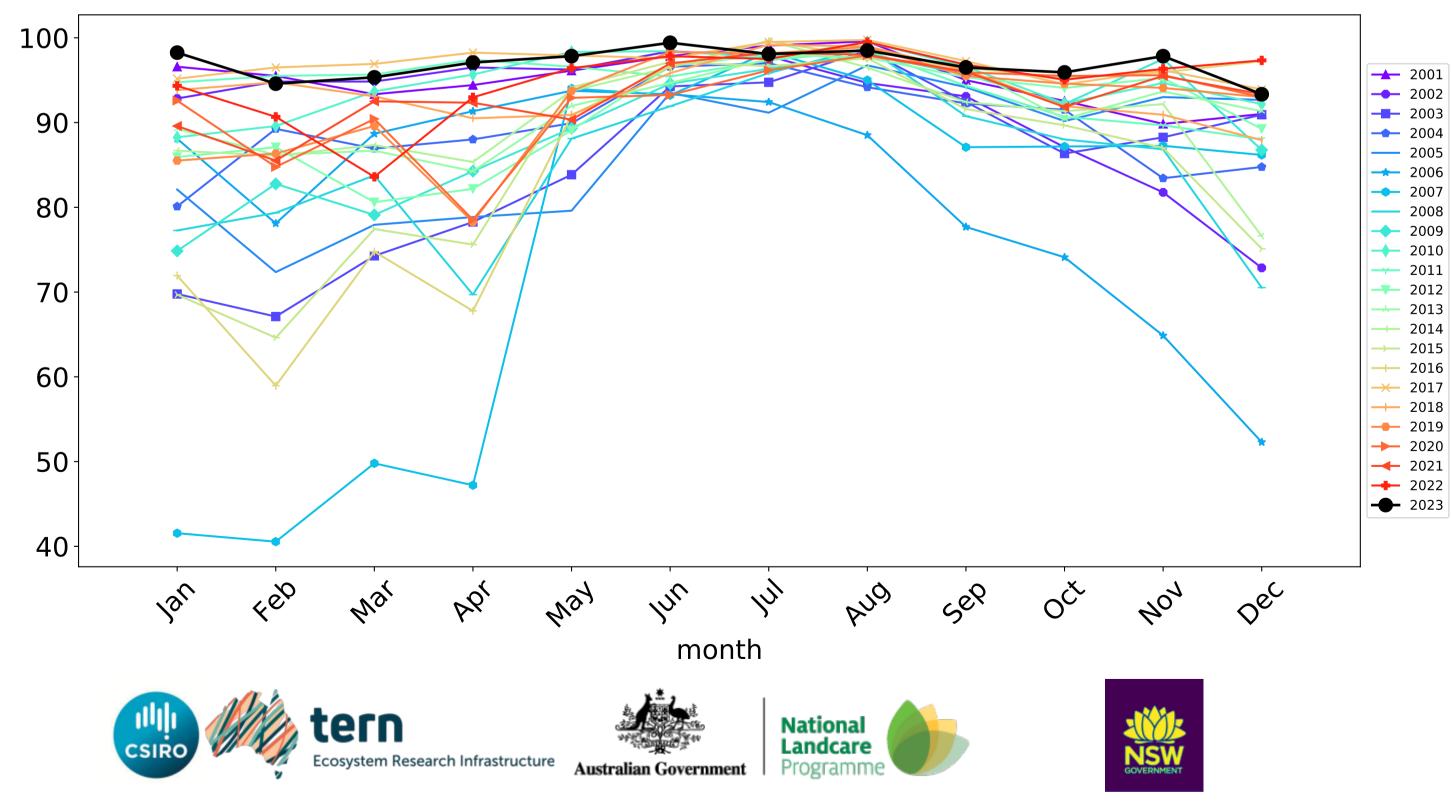


# Irrigation timeseries



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

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



# Tatiara\_(DC) (total 652,950 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	652,950	100.0% 652,950	99.8% 651,825	95.5% 623,825	76.2% 497,225	27.3% 178,050	8.7% 56,675
Conservation and natural environments	102,675	100.0% 102,675	100.0% 102,650	98.2% 100,850	79.0% 81,100	16.5% 16,975	3.1% 3,175
Conservation and natural environments non forest	57,175	100.0% 57,175	100.0% 57,175	98.9% 56,525	81.4% 46,525	11.8% 6,775	2.3% 1,325
Conservation and natural environments Woodland forest	43,925	100.0% 43,925	99.9% 43,900	97.3% 42,750	75.2% 33,025	21.0% 9,225	3.4% 1,475
Agriculture	533,700	100.0% 533,700	99.8% 532,600	95.0% 506,800	75.4% 402,250	29.3% 156,300	9.8% 52,050
Grazing	368,575	100.0% 368,575	99.7% 367,600	94.7% 348,875	77.0% 283,750	31.4% 115,800	9.6% 35,525
Grazing non forest	368,350	100.0% 368,350	99.7% 367,375	94.7% 348,650	77.0% 283,650	31.4% 115,750	9.6% 35,500
Cropping	135,025	100.0% 135,025	100.0% 134,975	96.1% 129,825	73.7% 99,575	26.6% 35,975	11.3% 15,225
Irrigation	30,025	100.0% 30,025	99.8% 29,950	93.3% 28,025	62.9% 18,875	15.1% 4,525	4.3% 1,300

