### Total vegetation cover soil protection Region:LGA Manjimup (S) WA

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.

**Date: November 2023** 

Land use forest cover:

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

#### **Erosion protection**

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

#### Rainfall

• Millimetres rainfall each month (black line).

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

Water erosion protection for higher rainfall and steeper slopes:

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

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

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

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

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









#### **Vegetation Cover Nov 2023**

#### 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

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

using baseline from 2001 to 2019.

the mean. That is, red pixels are about 20% lower than the

Derived from

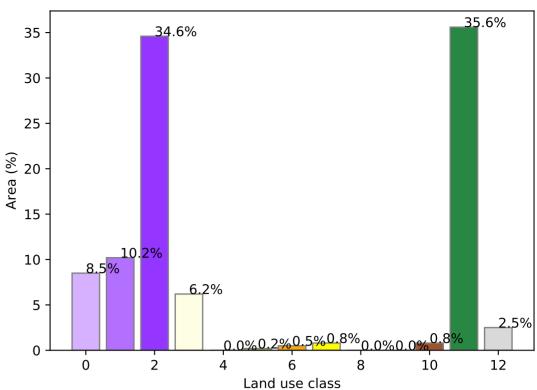
Use of Australia

Land Use and Forests

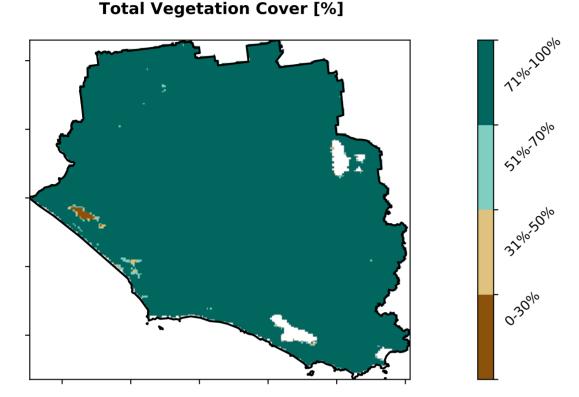
Catchment Scale Land

#### 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 -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 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 13 Other uses

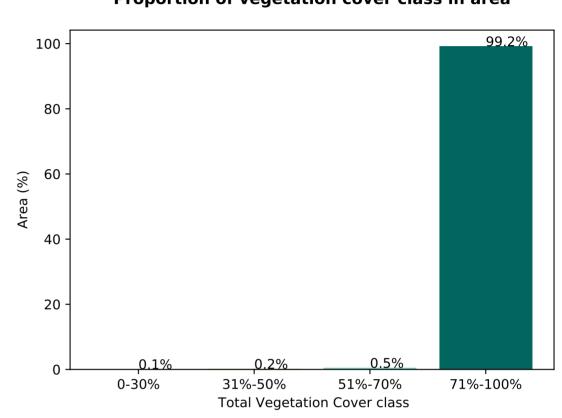
#### Proportion of each land class in area



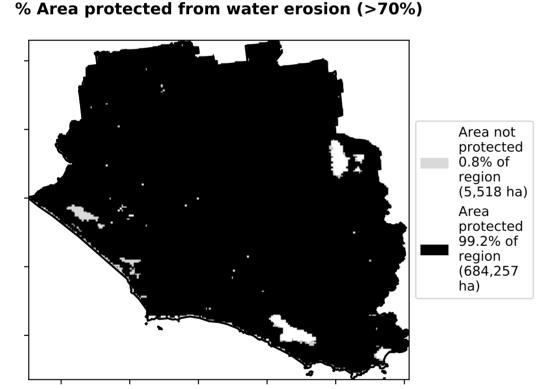
#### Total Vagatation Cover [9/1



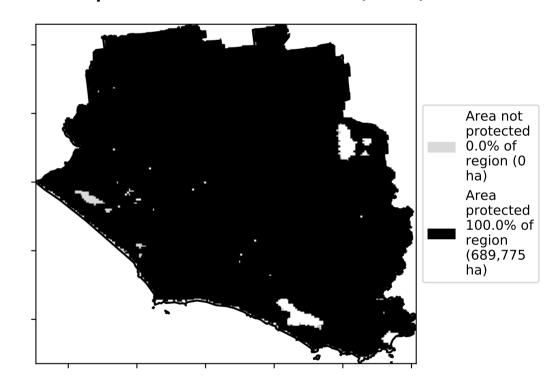
Proportion of vegetation cover class in area



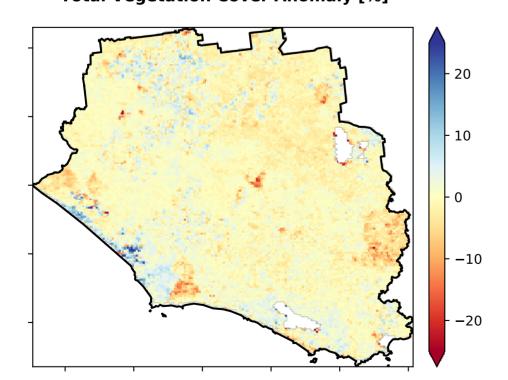
#### 0/ Aven pretected from water evenier (> 700/)



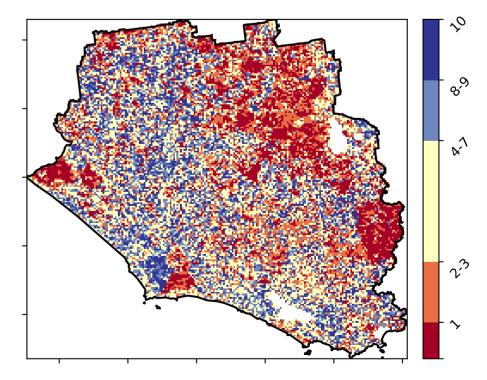
% Area protected from wind erosion (>50%)



#### 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.

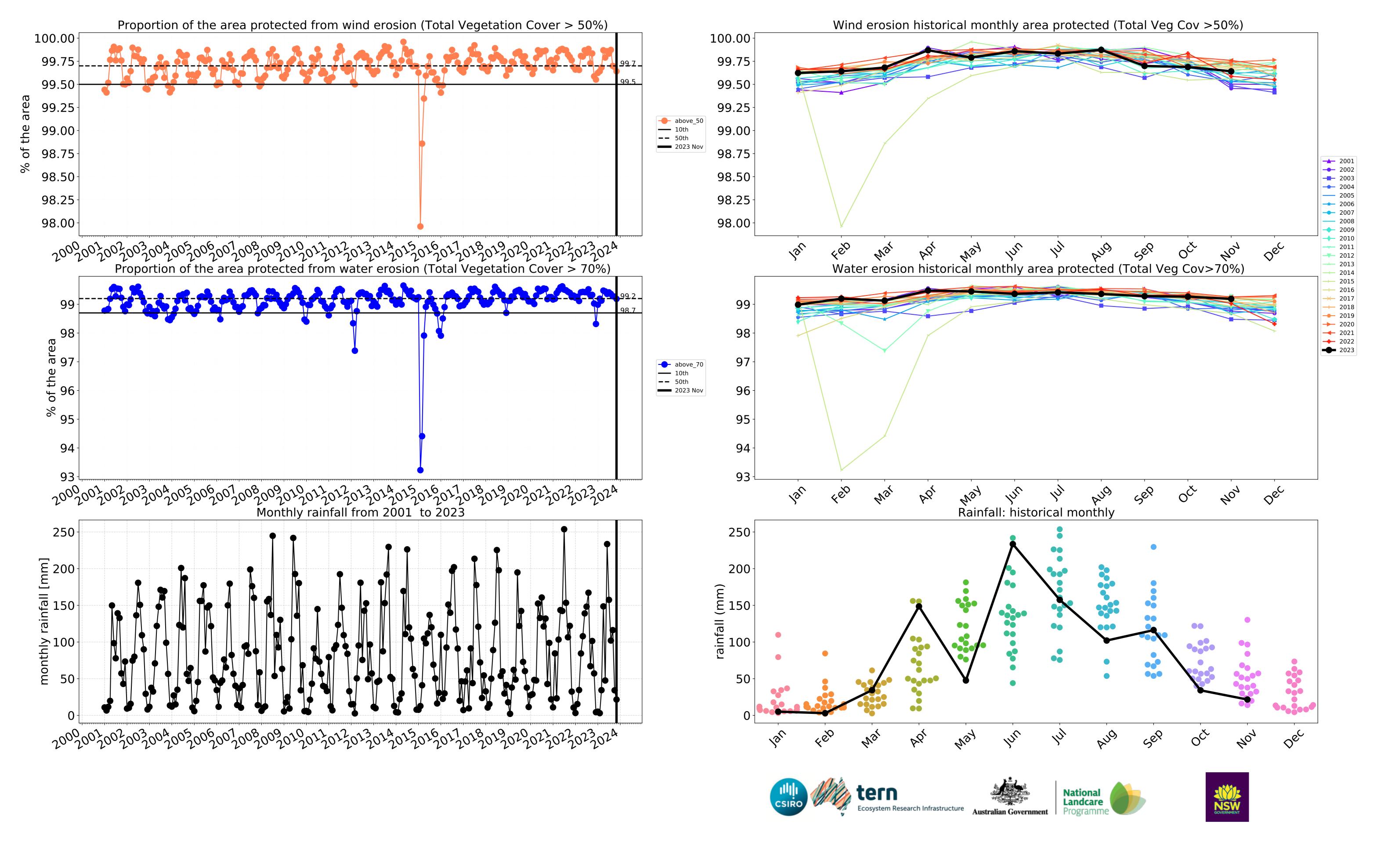


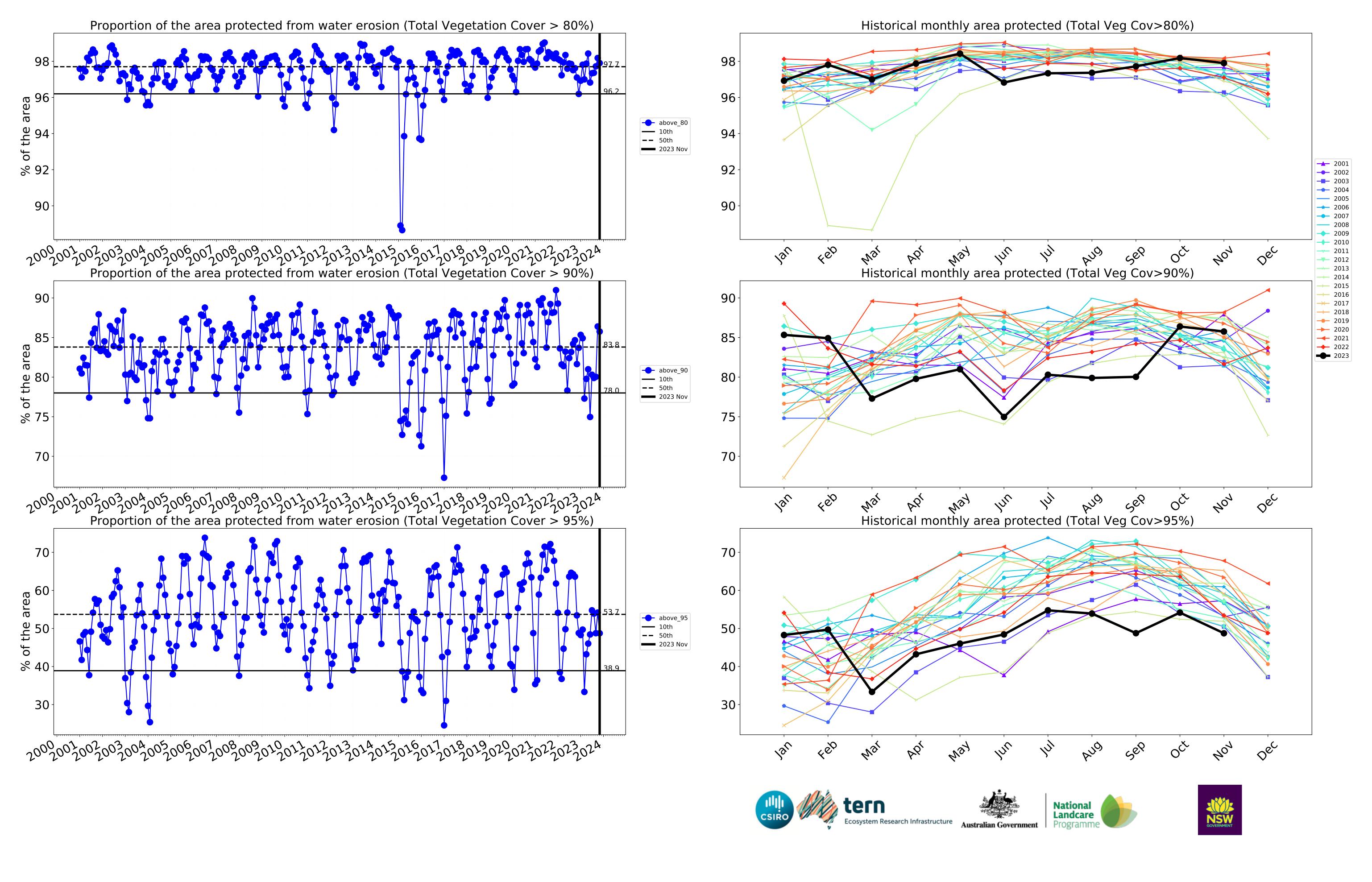












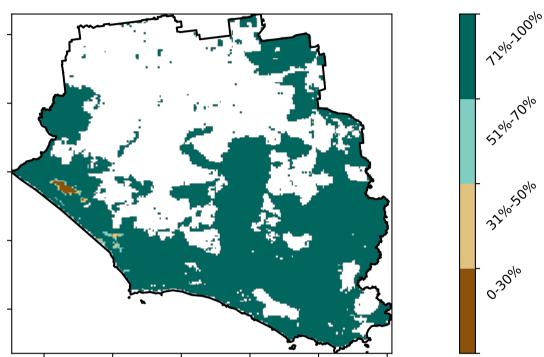
#### **Conservation and natural environments**

# Catchment Scale Land Use and Forests of Australia (2018) Catchment Scale Land Use of Australia (2018) Catchment Scale Land Use of Australia (2018) The conservation and natural environments - Nonforest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Nonwoodland forest The conservation and natural environments - Nonwoodland forest The conservation and natural environments - Nonwoodland forest The conservation and natural environments - Nonwoodland forest

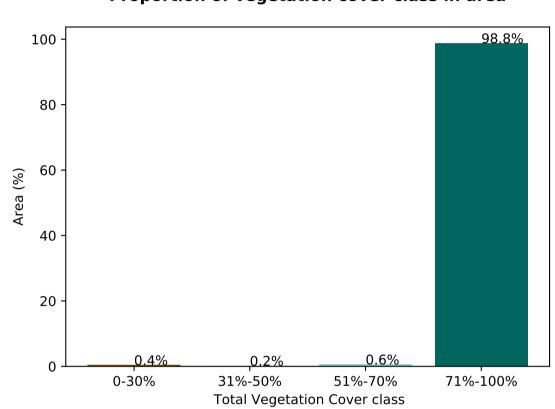
#### 64.9% 60 50 Area (%) 00 01 19.2% 20 15.9% 10 -1.0 -0.50.5 1.5 2.0 2.5 0.0 Land use class

**Proportion of each land class in area** 

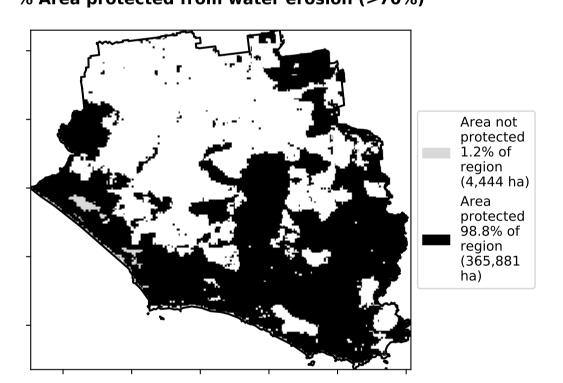
#### Total Vegetation Cover [%]



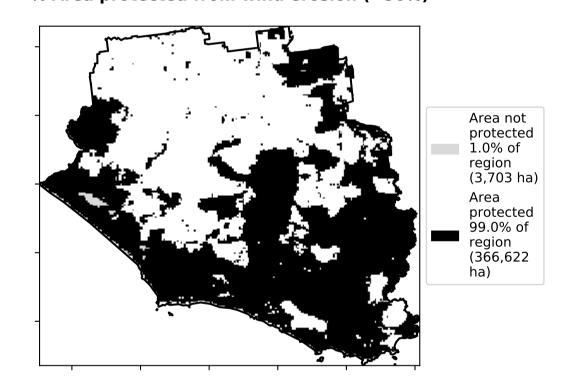
Proportion of vegetation cover class in area



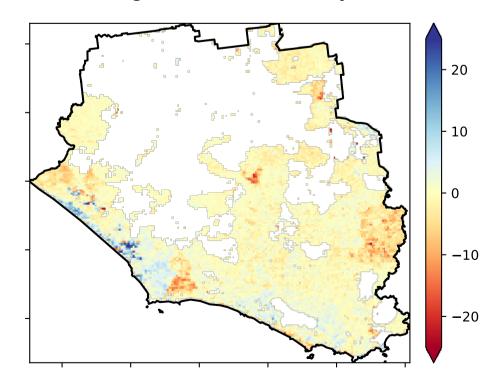
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

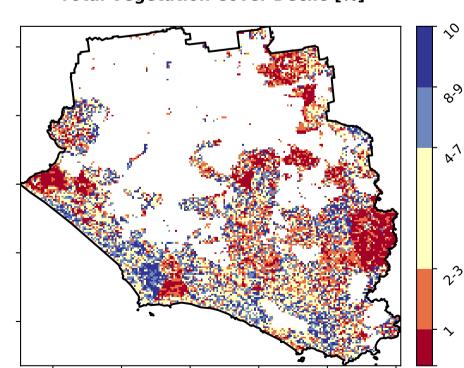


#### Total Vegetation Cover Anomaly [%]



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.

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.

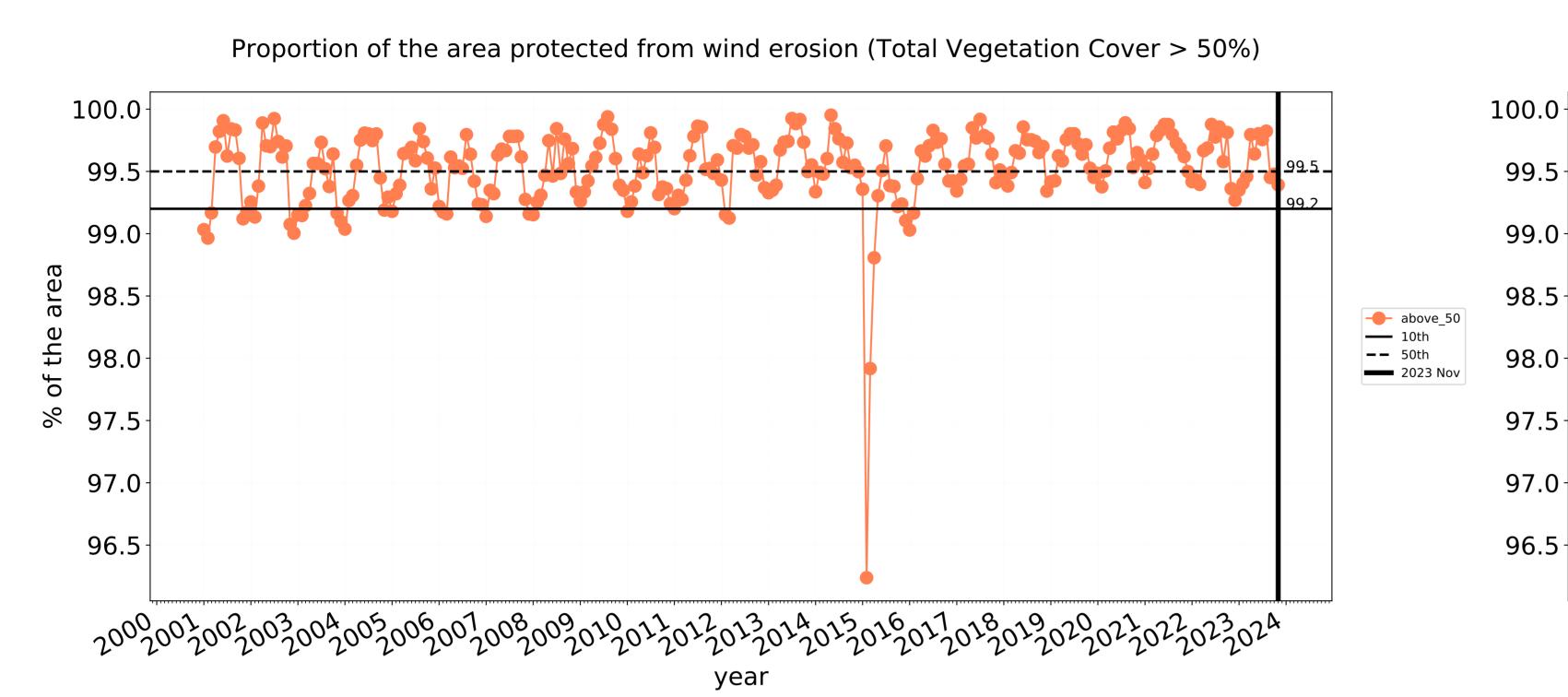


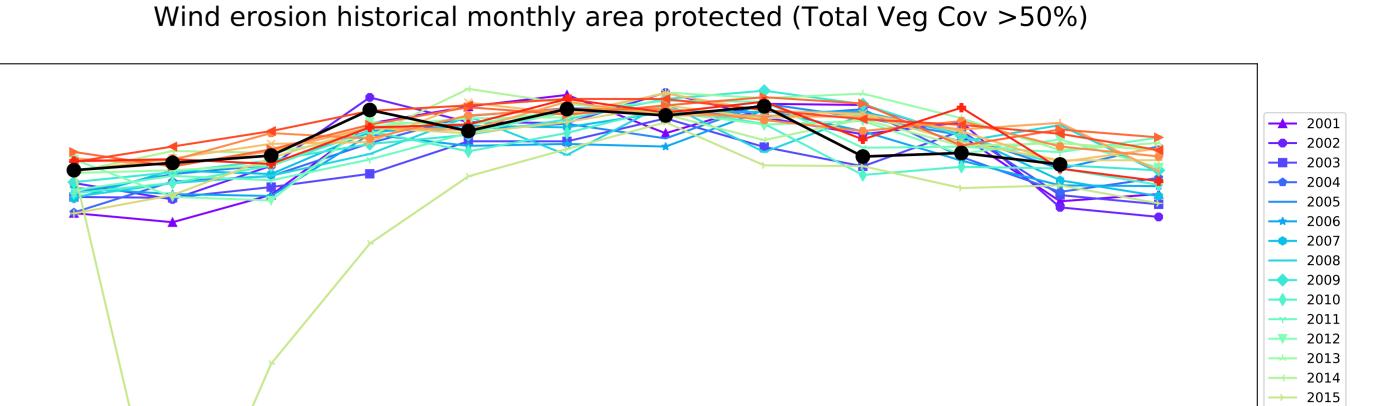






#### **Conservation and natural environments timeseries**

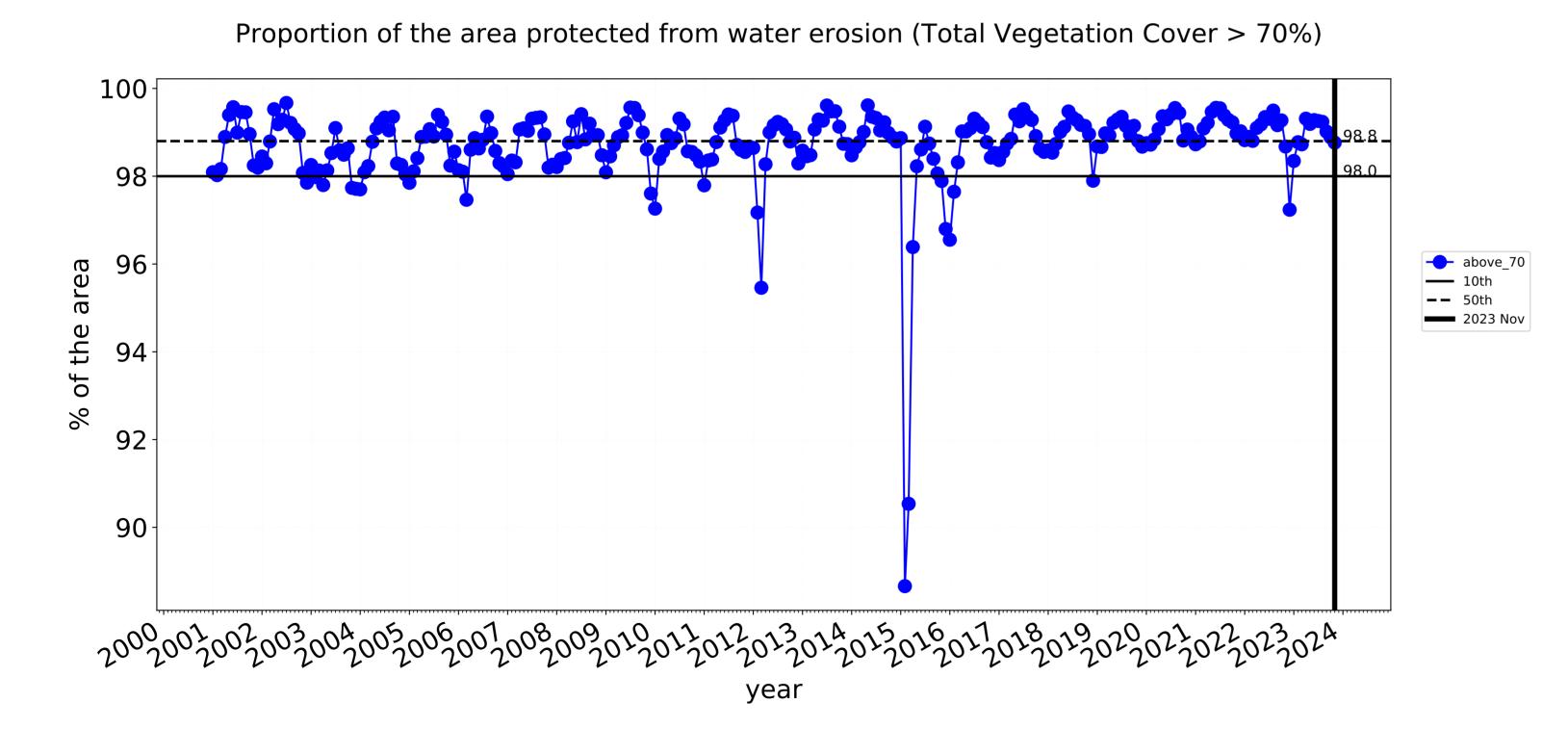


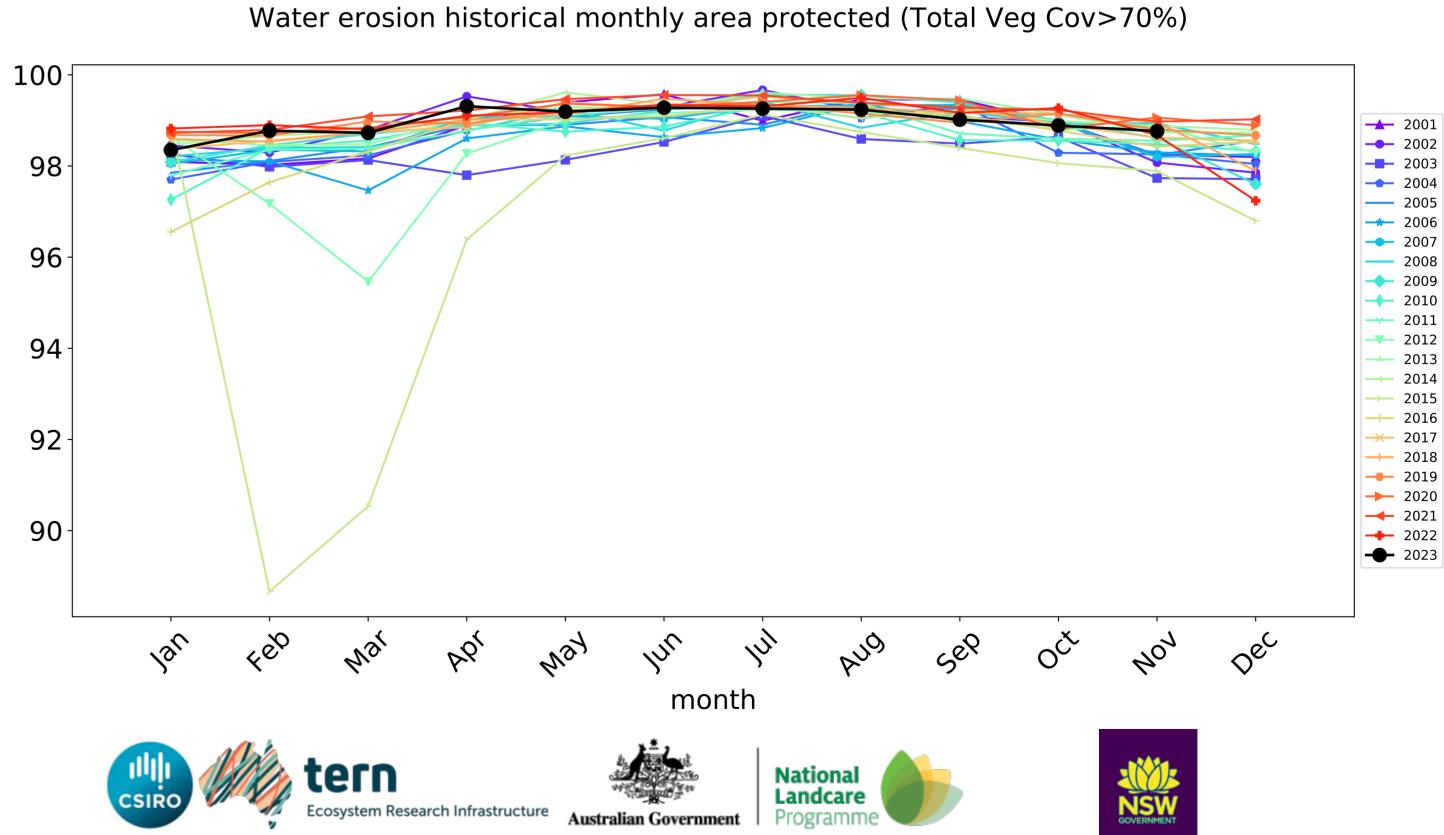


2016
2017
2018
2019

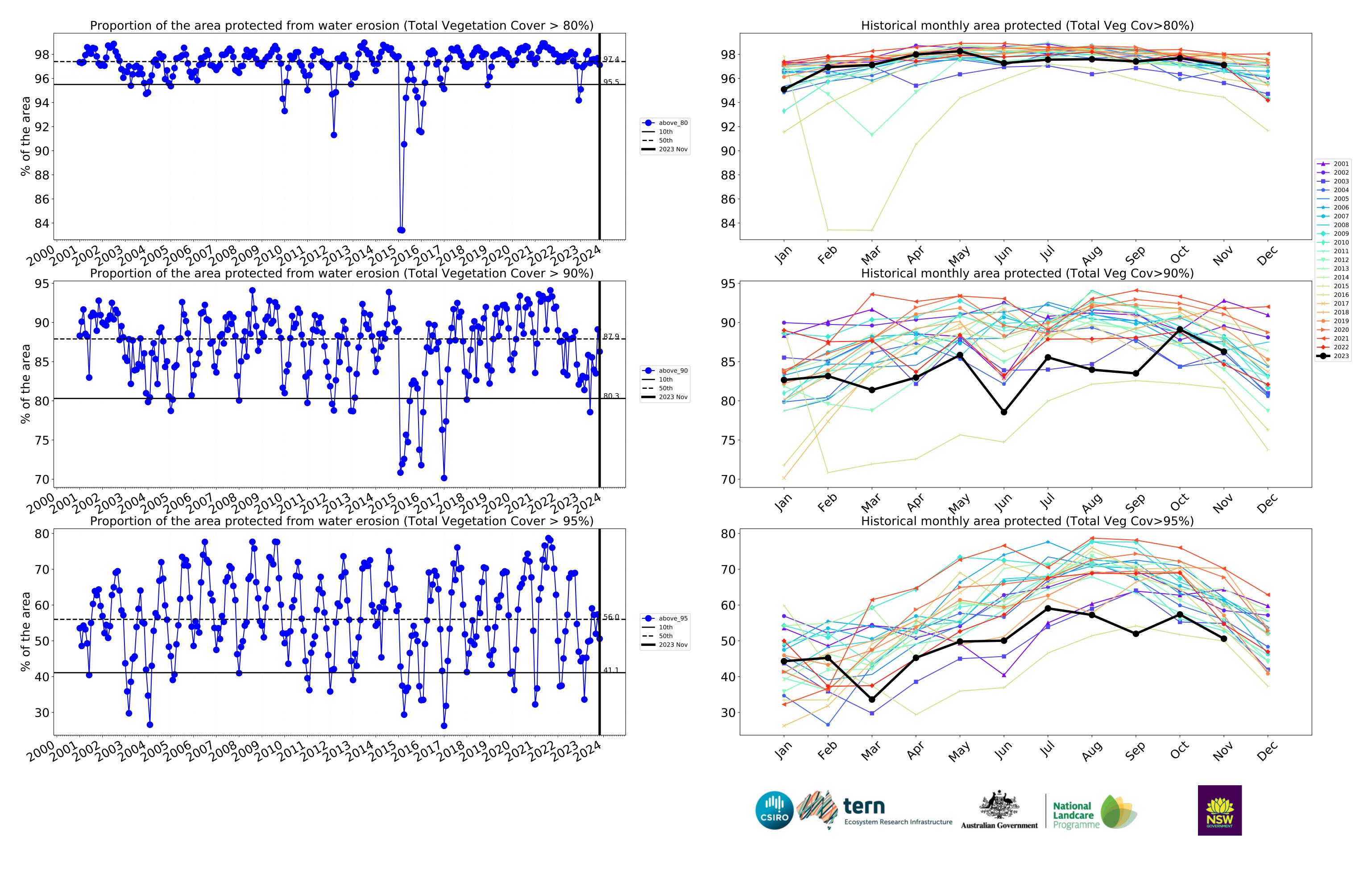
2020 2021 2022

**---** 2023





month

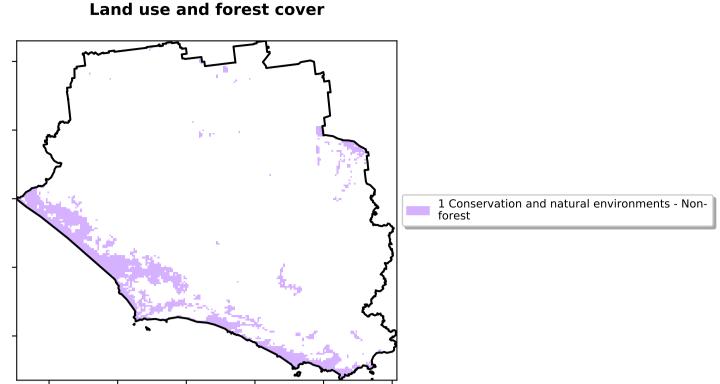


#### **Conservation and natural environments non forest**

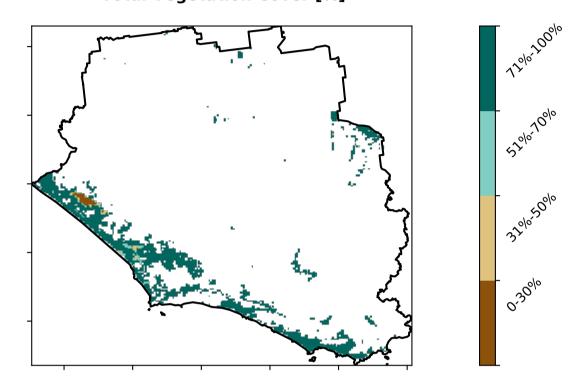
#### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

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

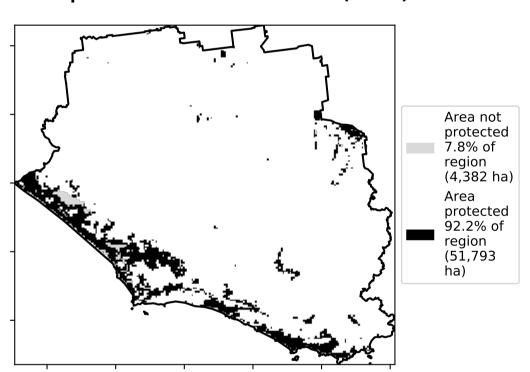
using baseline from 2001 to 2019.



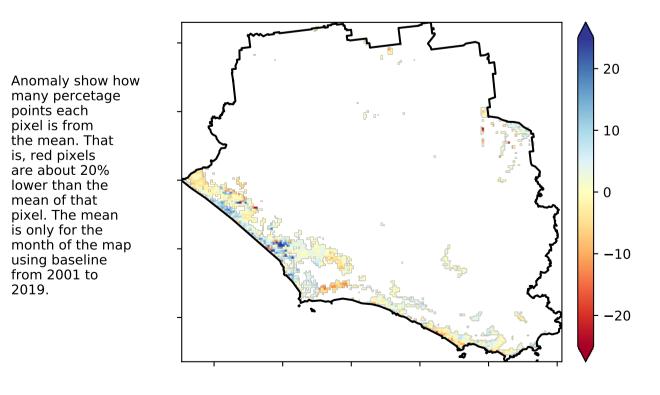
#### **Total Vegetation Cover [%]**



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

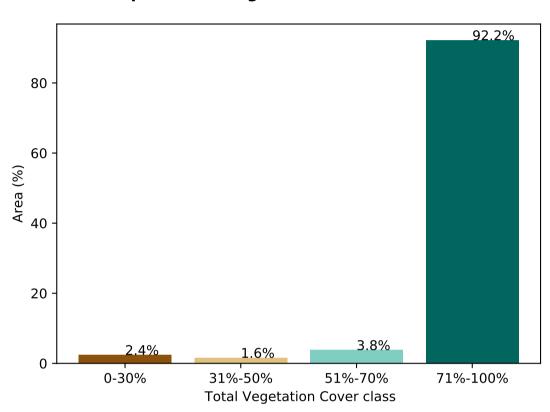


#### **Total Vegetation Cover Anomaly [%]**

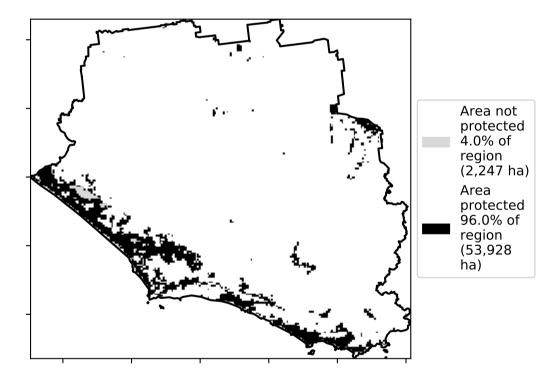


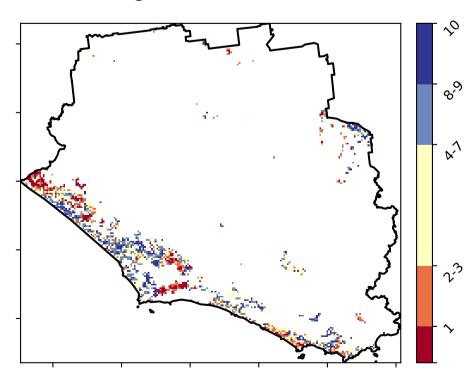
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

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



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





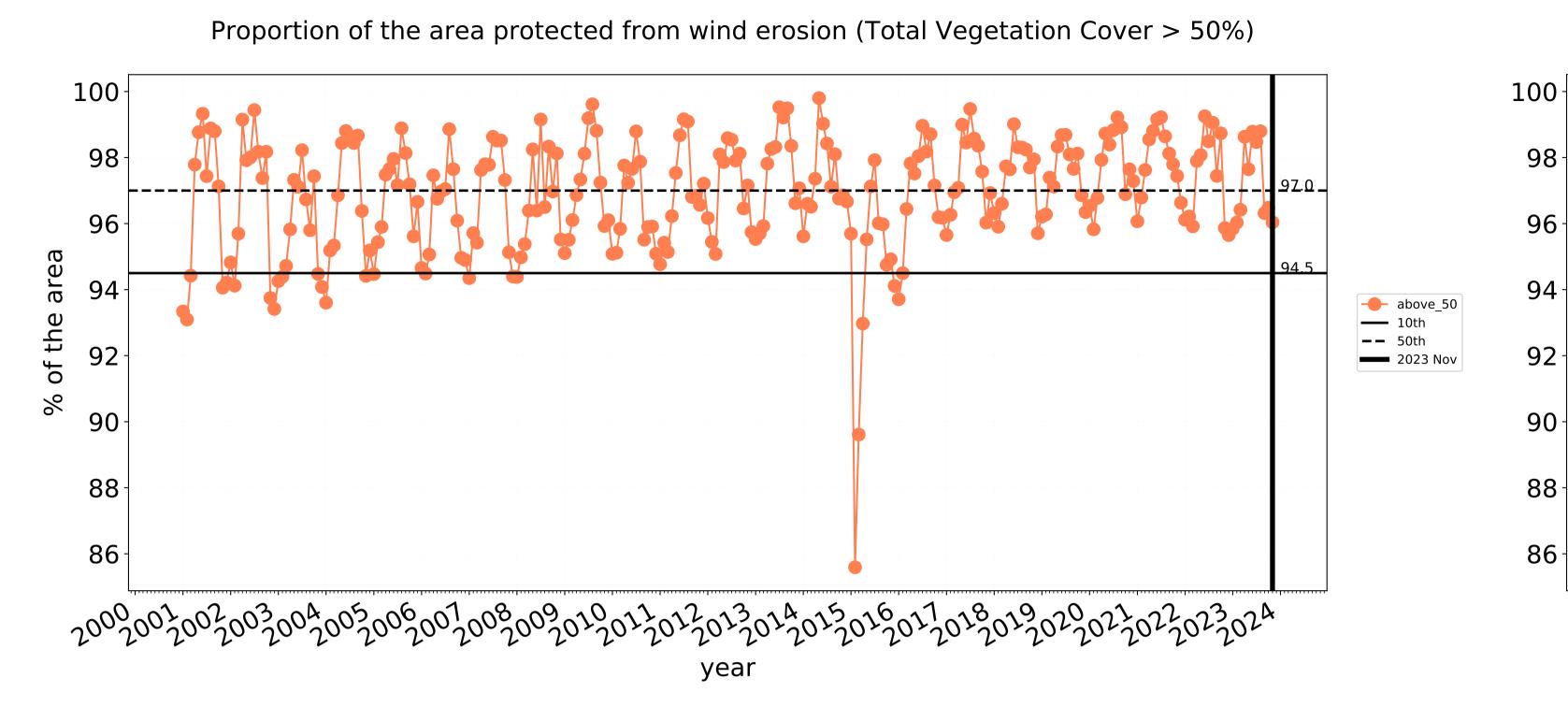








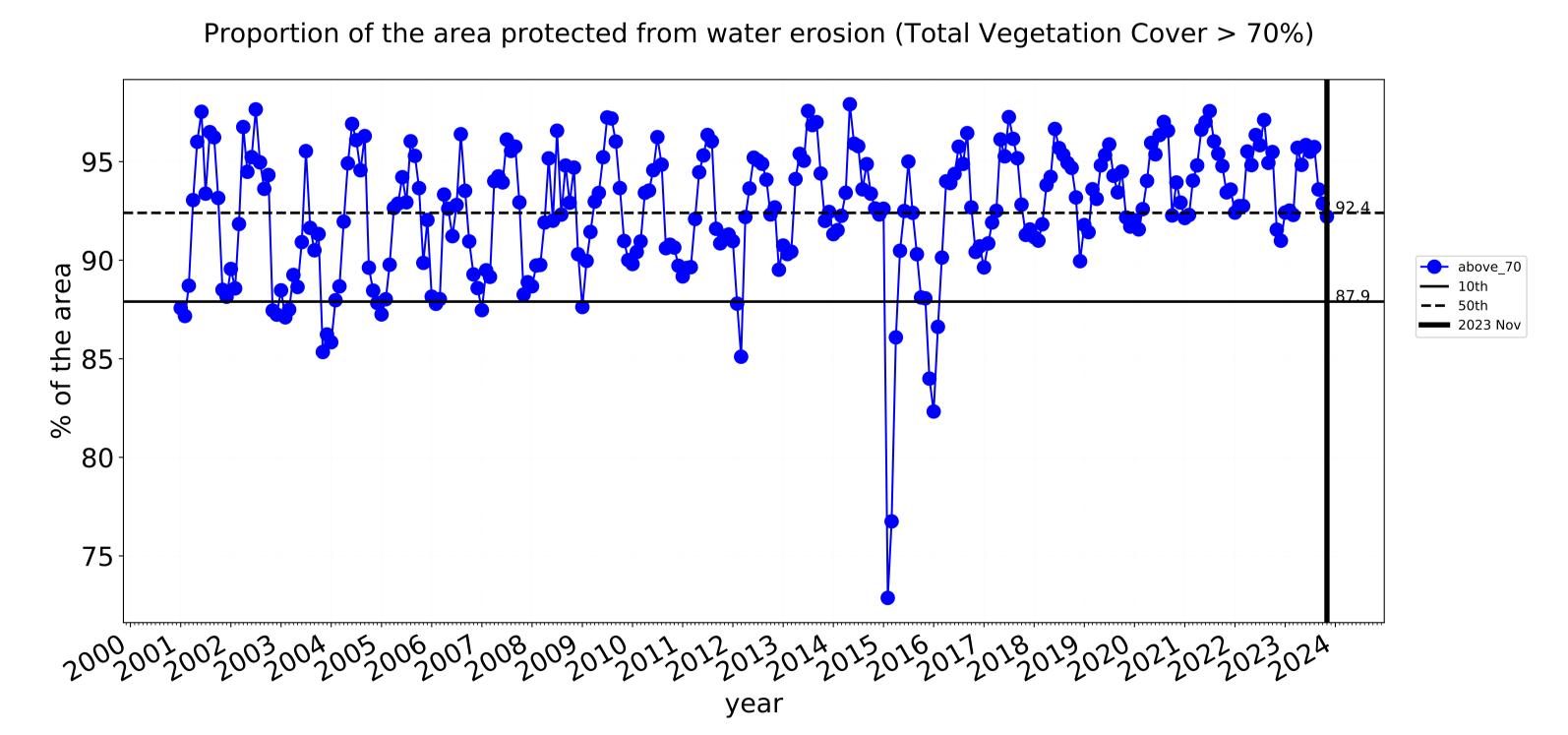
#### **Conservation and natural environments non forest timeseries**

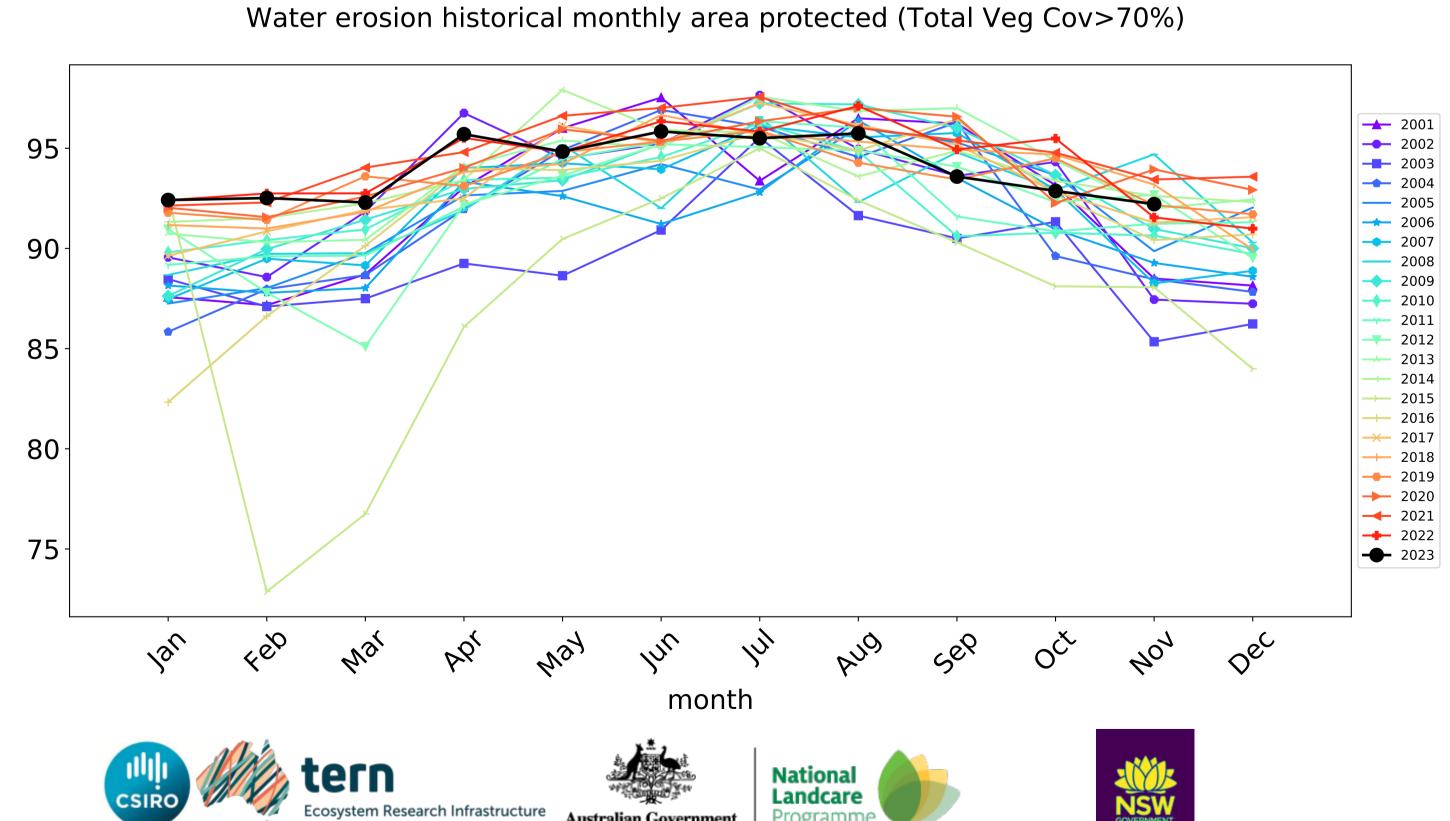


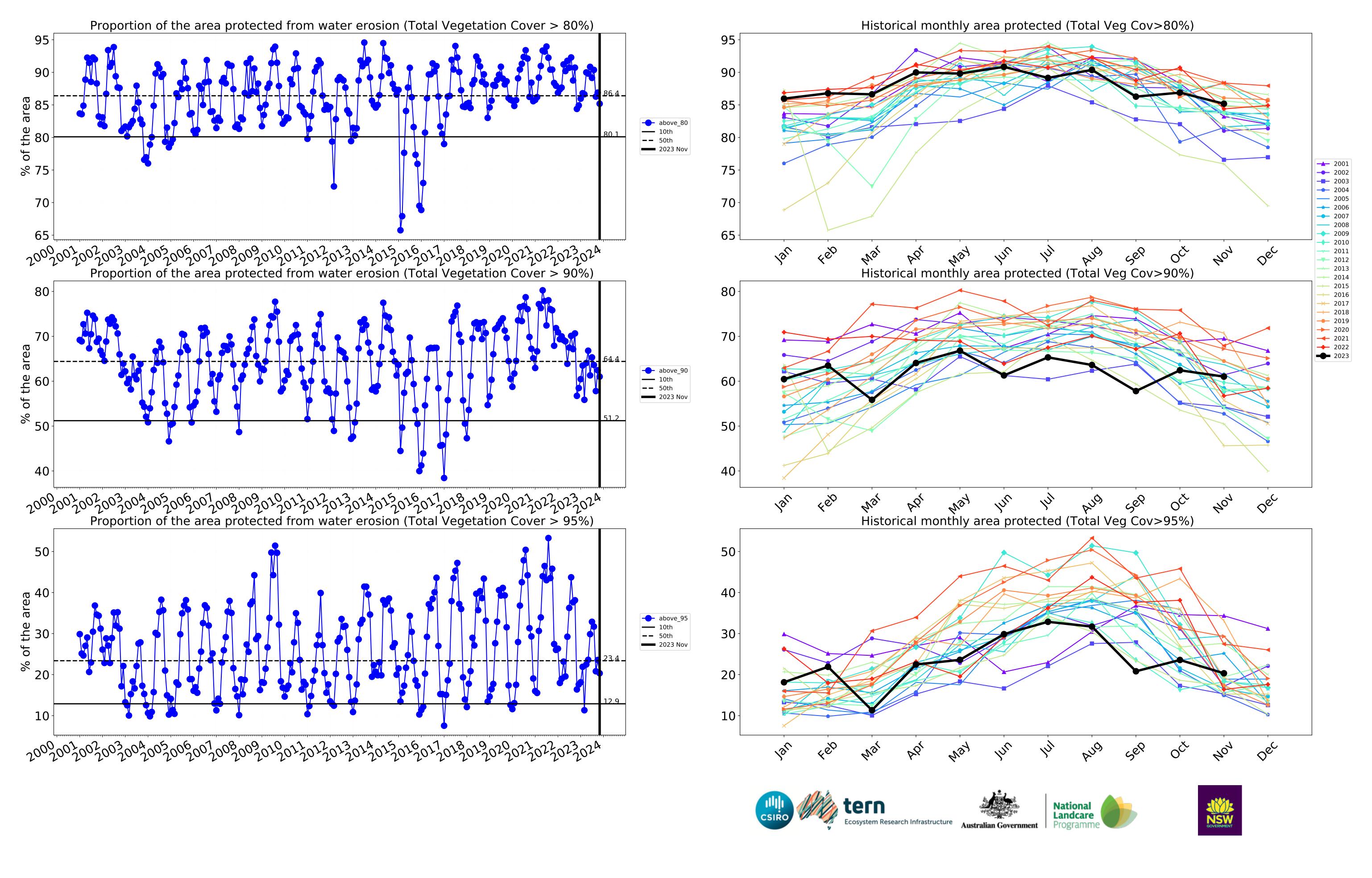
#### Wind erosion historical monthly area protected (Total Veg Cov >50%) → 2001 **—** 2002 → 2010 2011 2013 **←** 2014 <del>→</del> 2015 <del>×</del> 2017 → 2020 **→** 2021 **---** 2022

month

**---** 2023

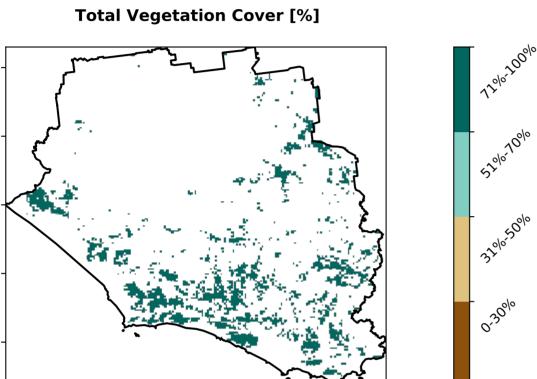




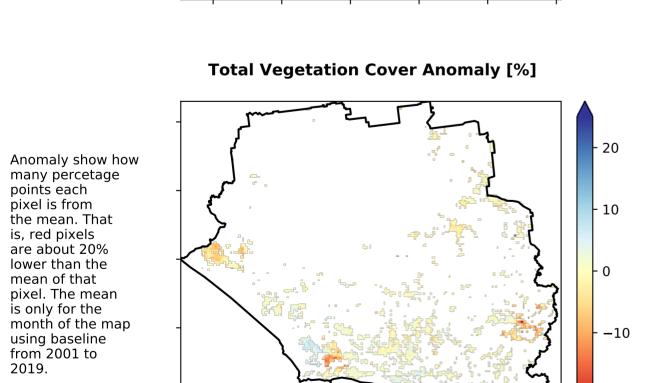


#### **Conservation and natural environments Woodland forest**

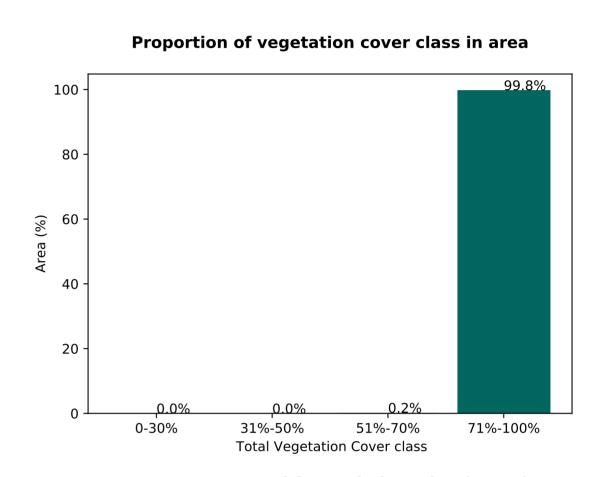
# Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 1 Conservation and natural environments - Woodland

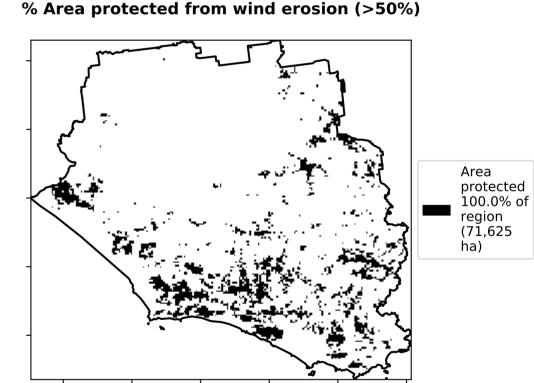


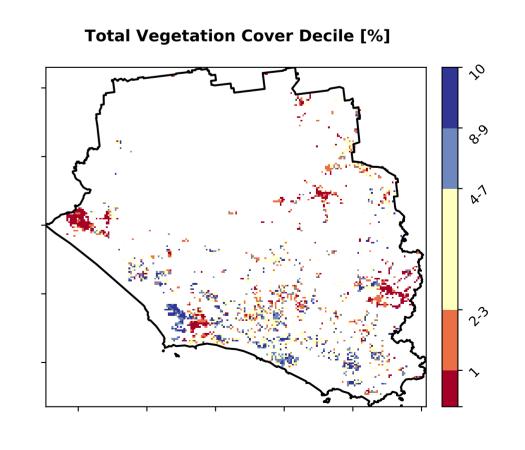
### % Area protected from water erosion (>70%) Area not protected 0.2% of region (143 ha) Area protected 99.8% of region (71,482 ha)



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









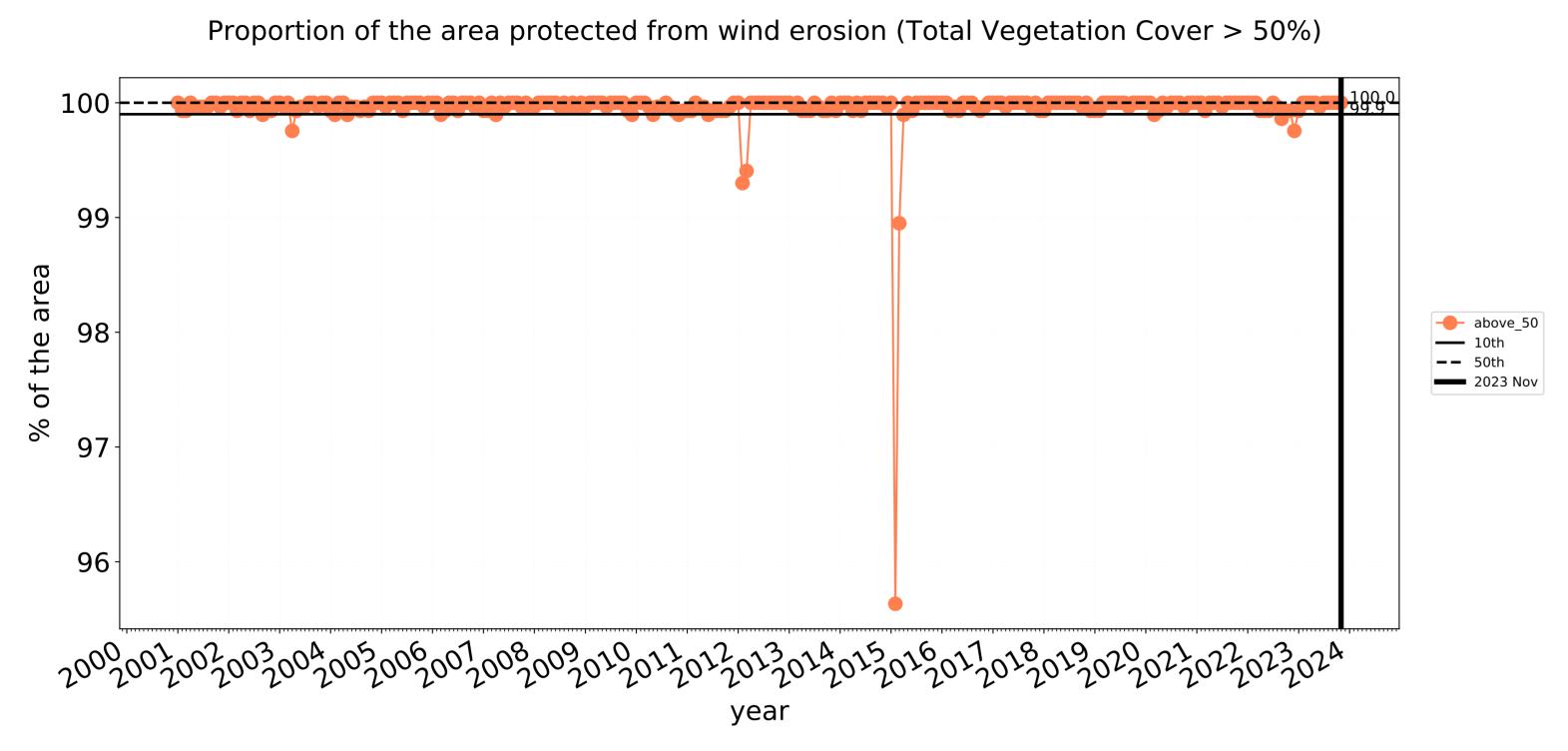


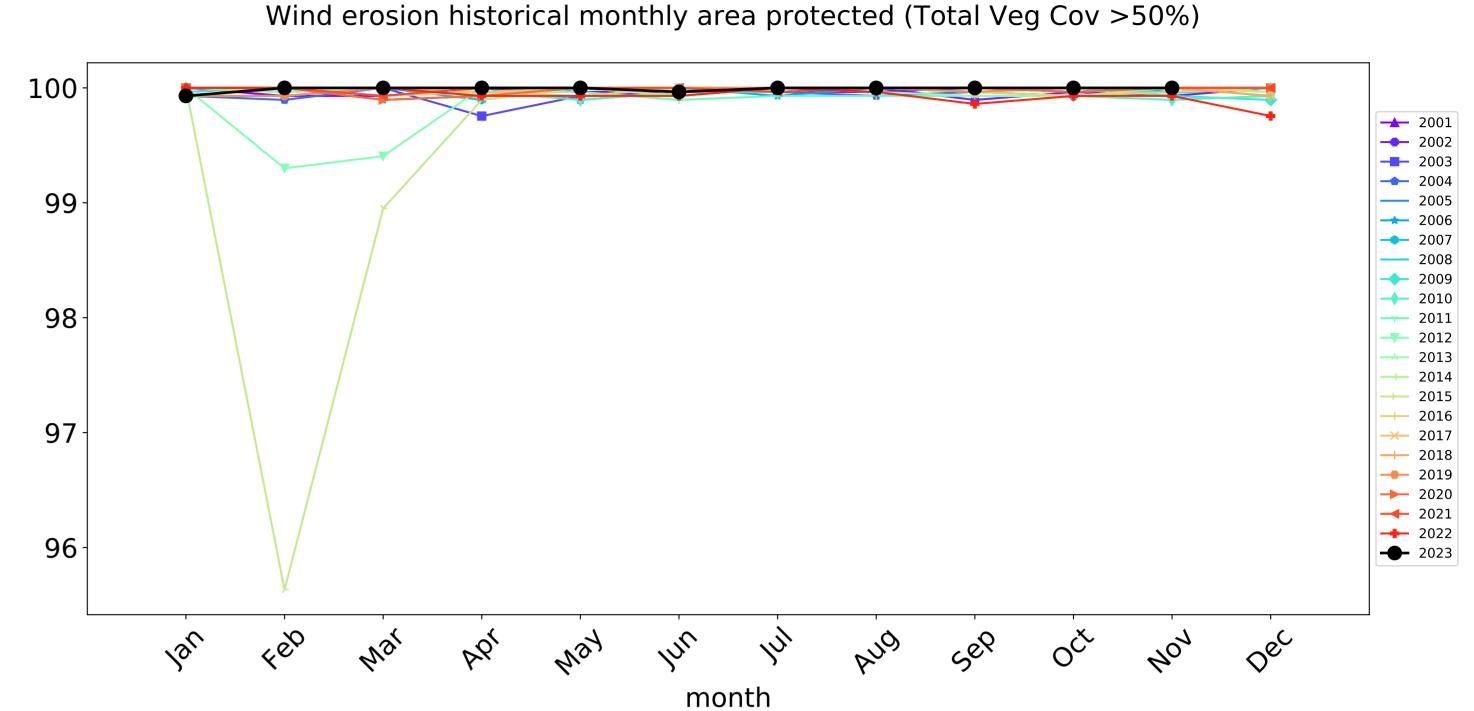


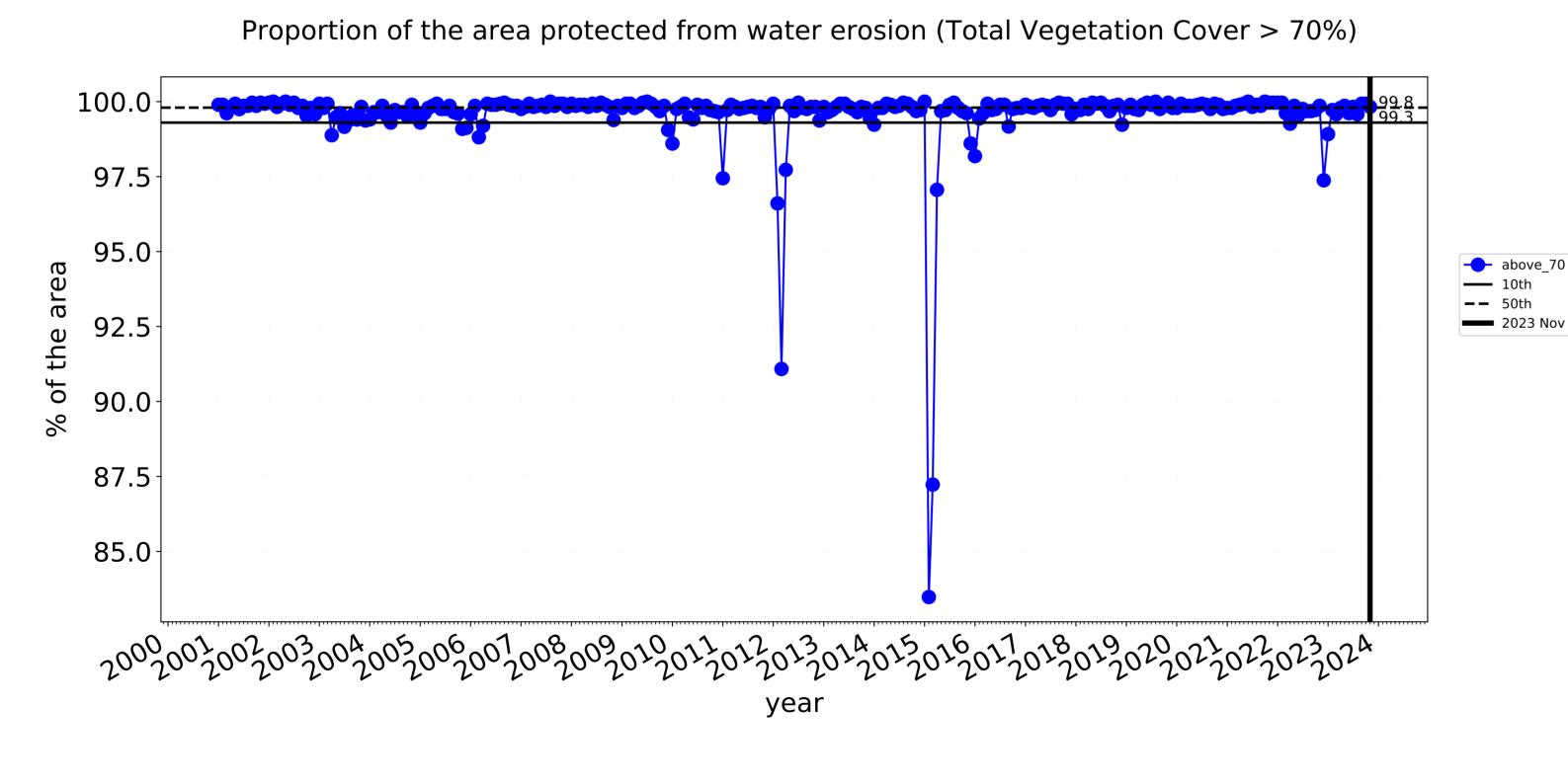


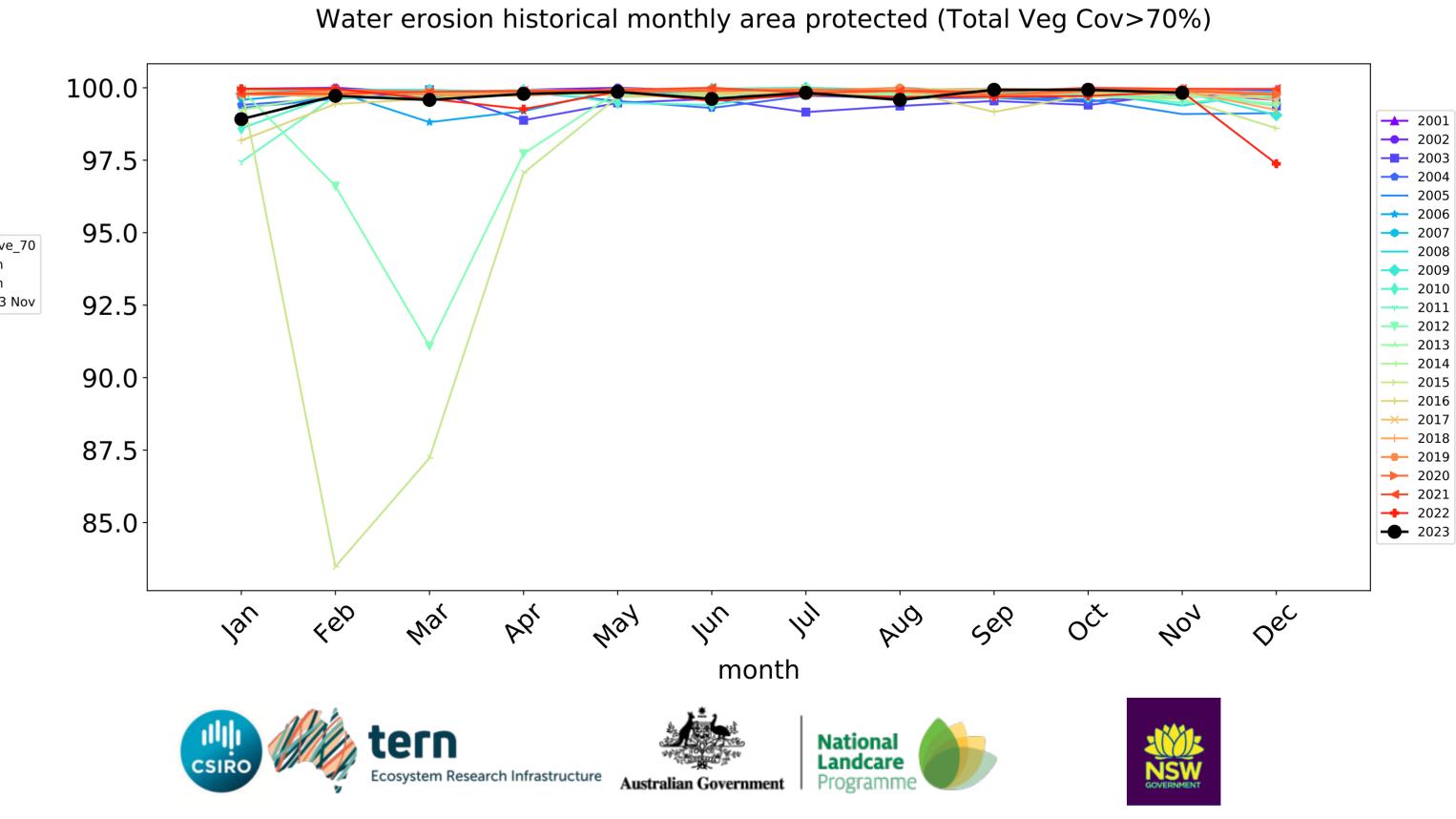
<del>-</del>20

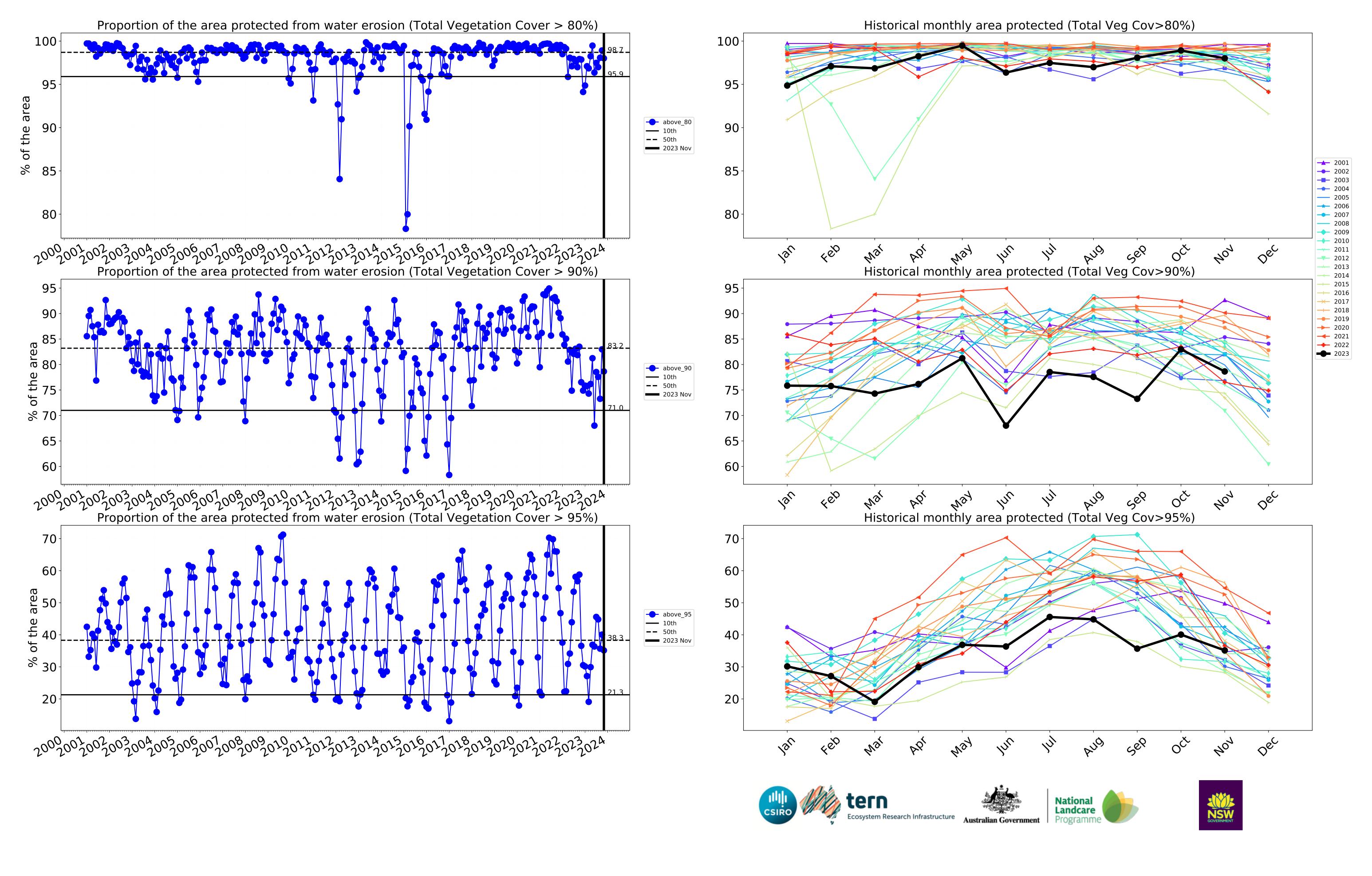
#### **Conservation and natural environments Woodland forest timeseries**



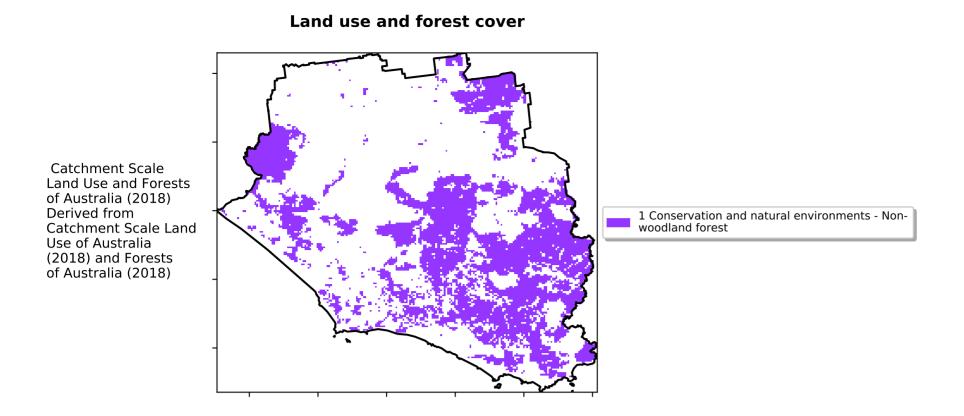


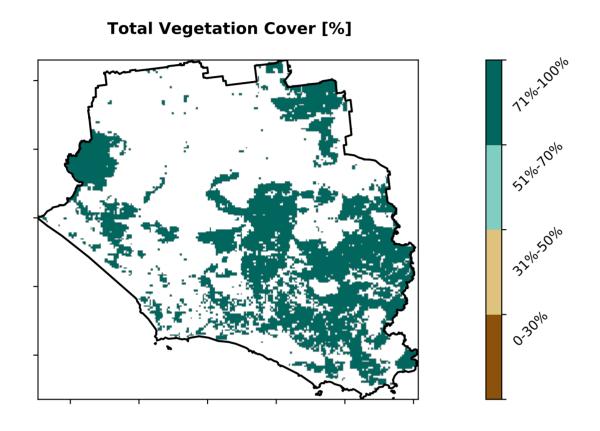






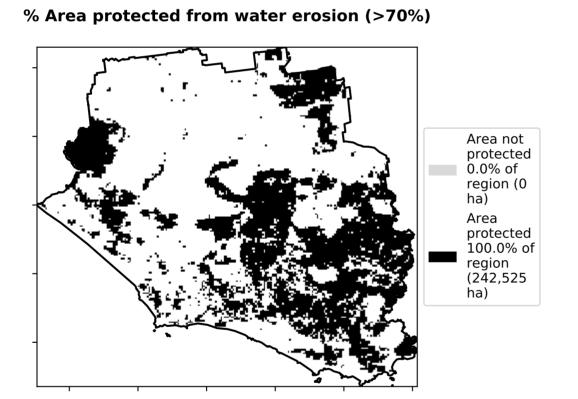
#### **Conservation and natural environments Forest (non woodland)**

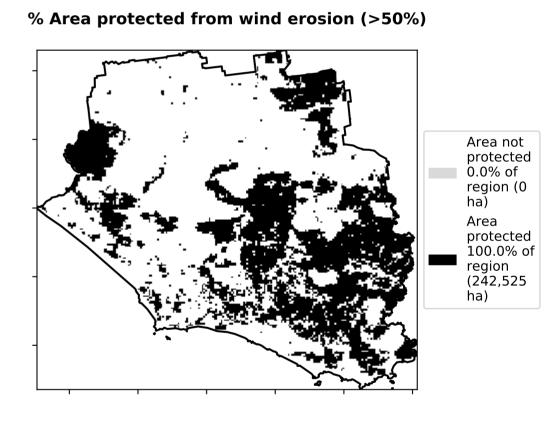


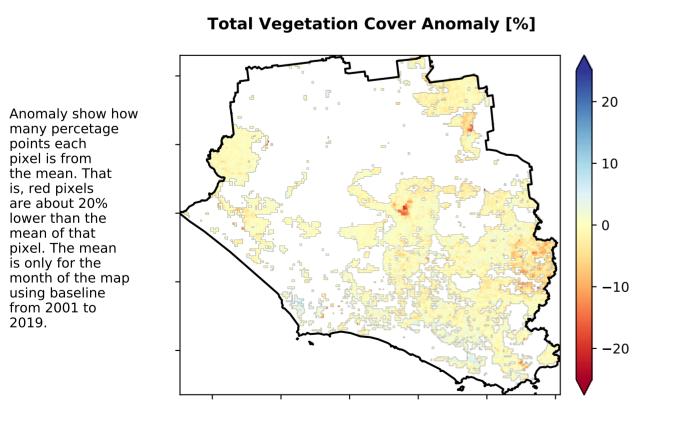


# 100 - 100.0% 80 - 20 - 20 - 0.0% 0.0% 0.0% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class

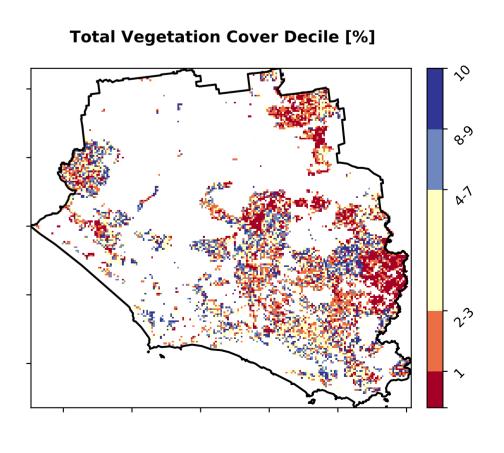
Proportion of vegetation cover class in area







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

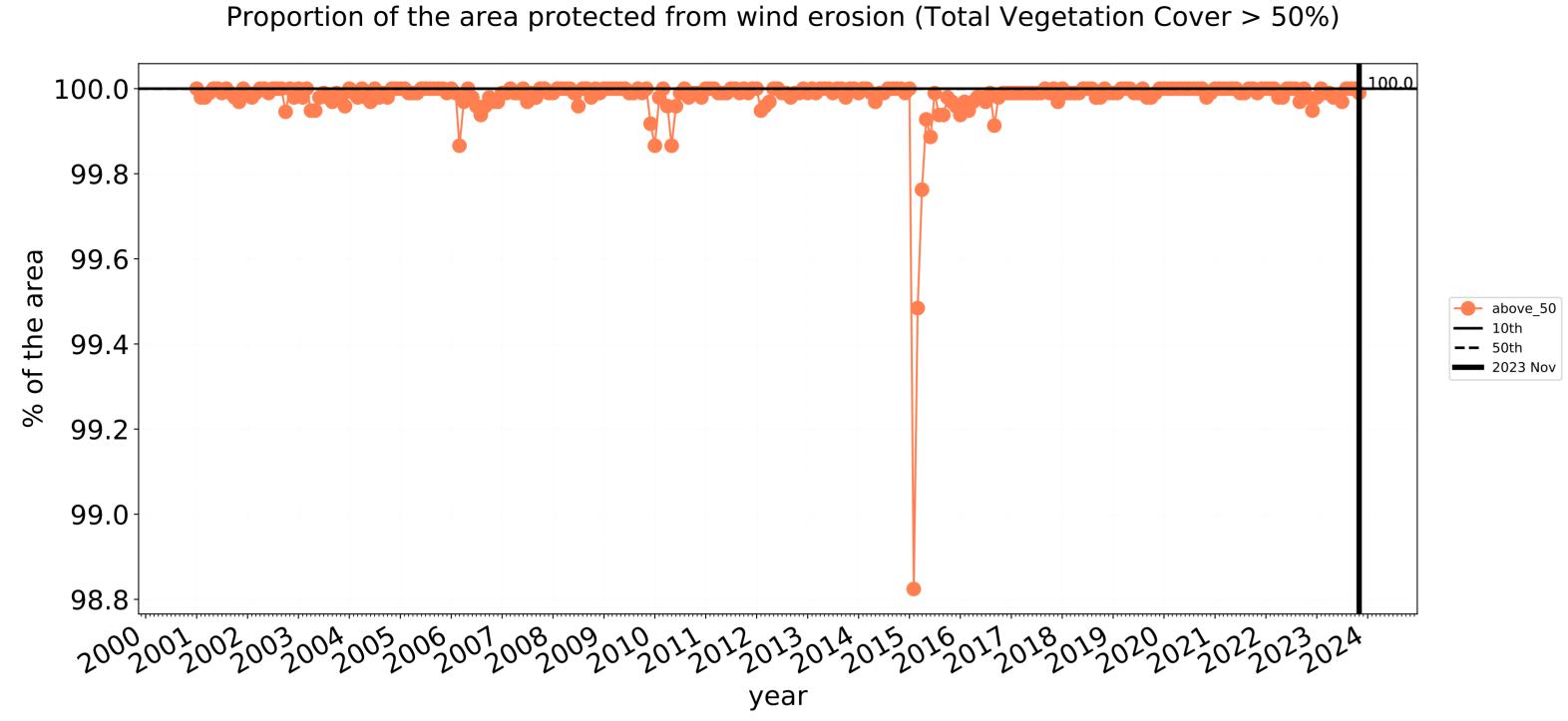


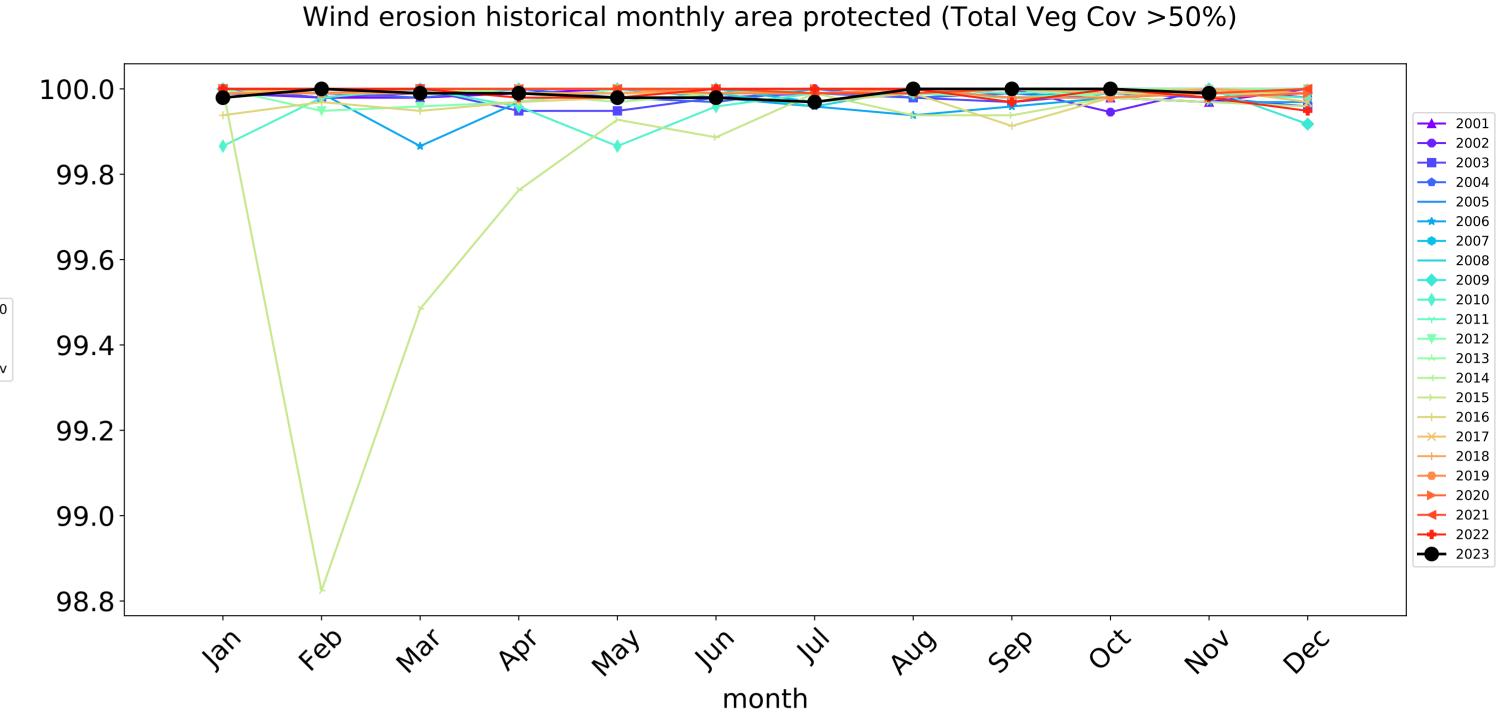


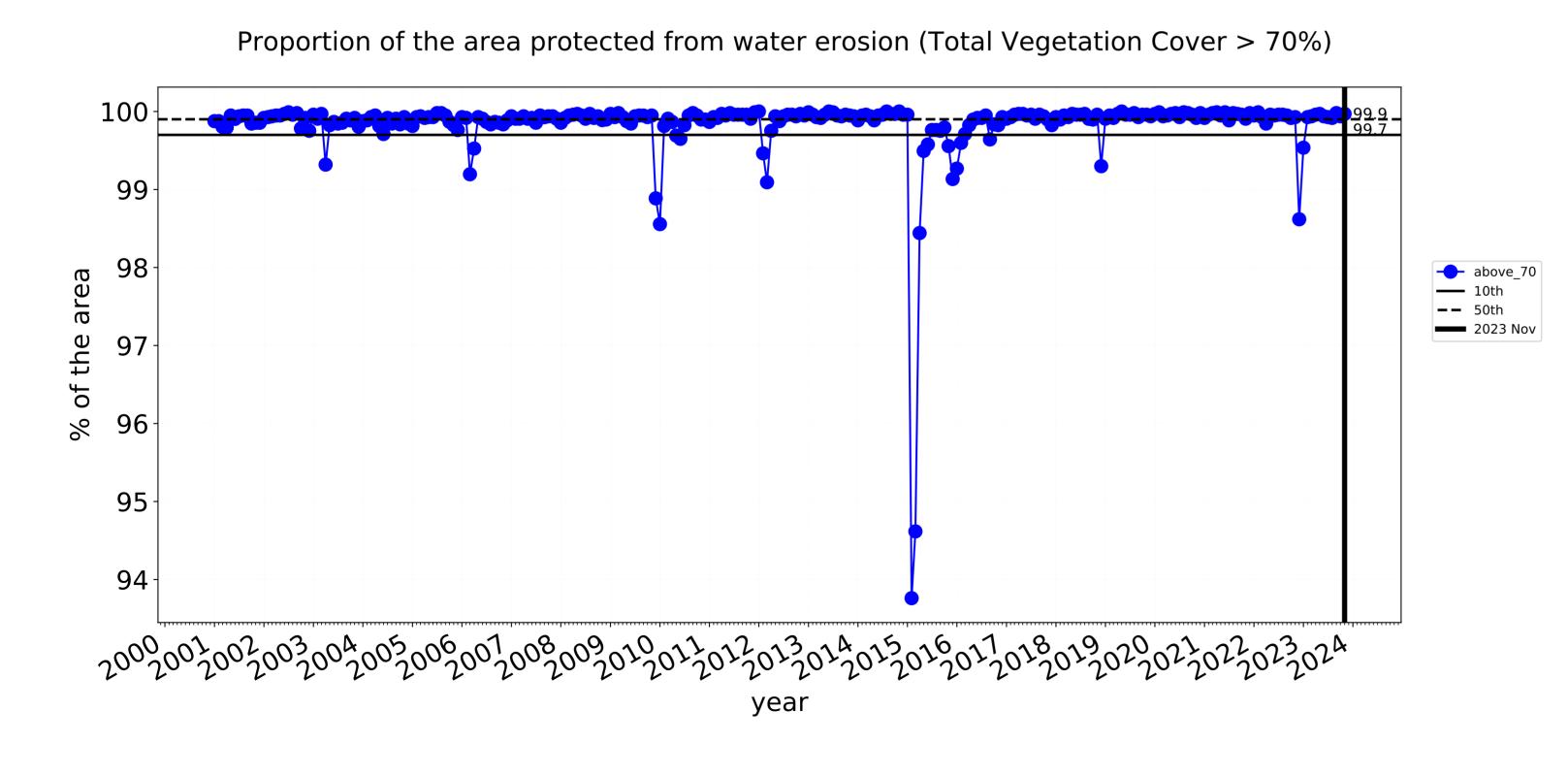


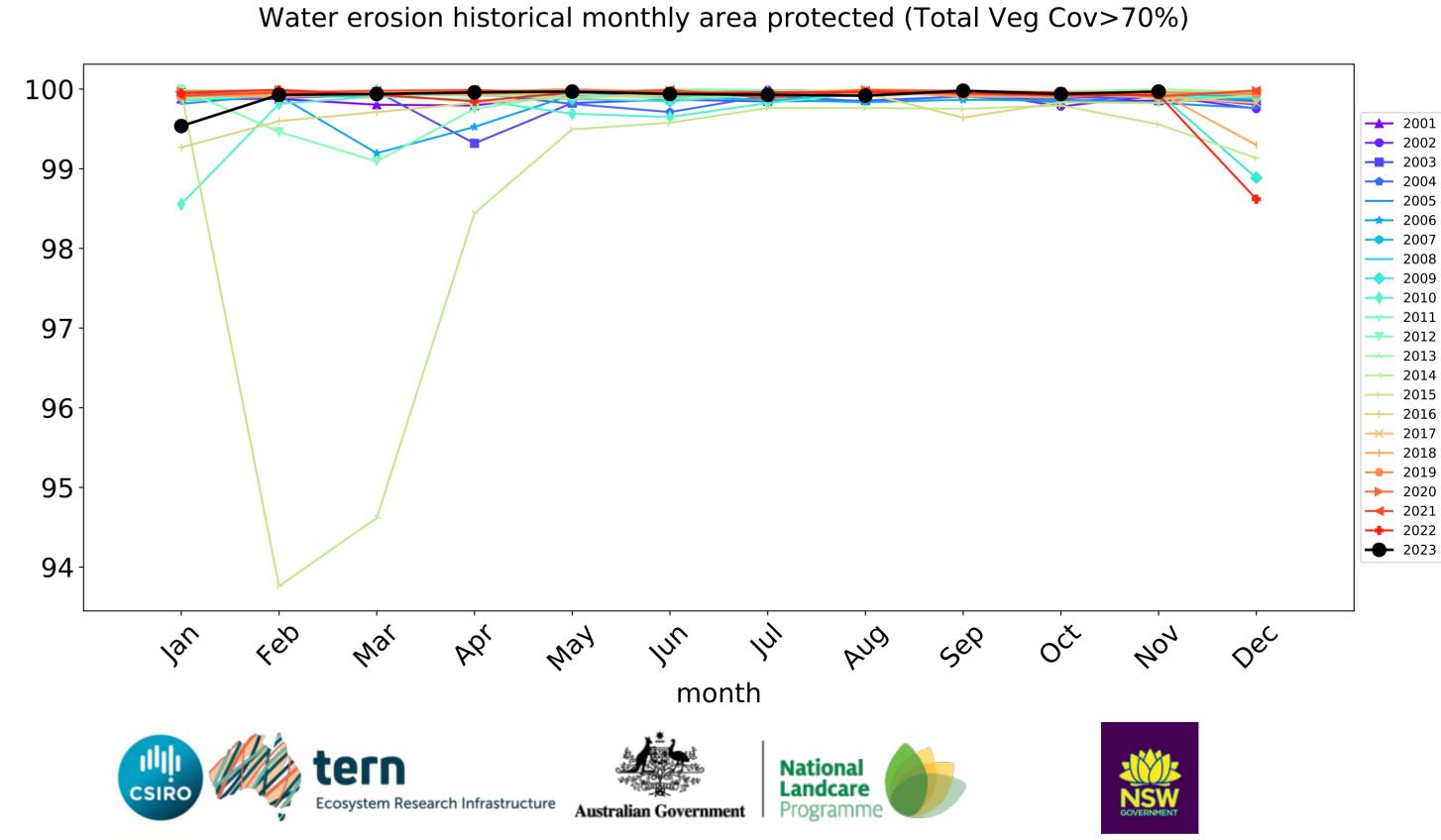


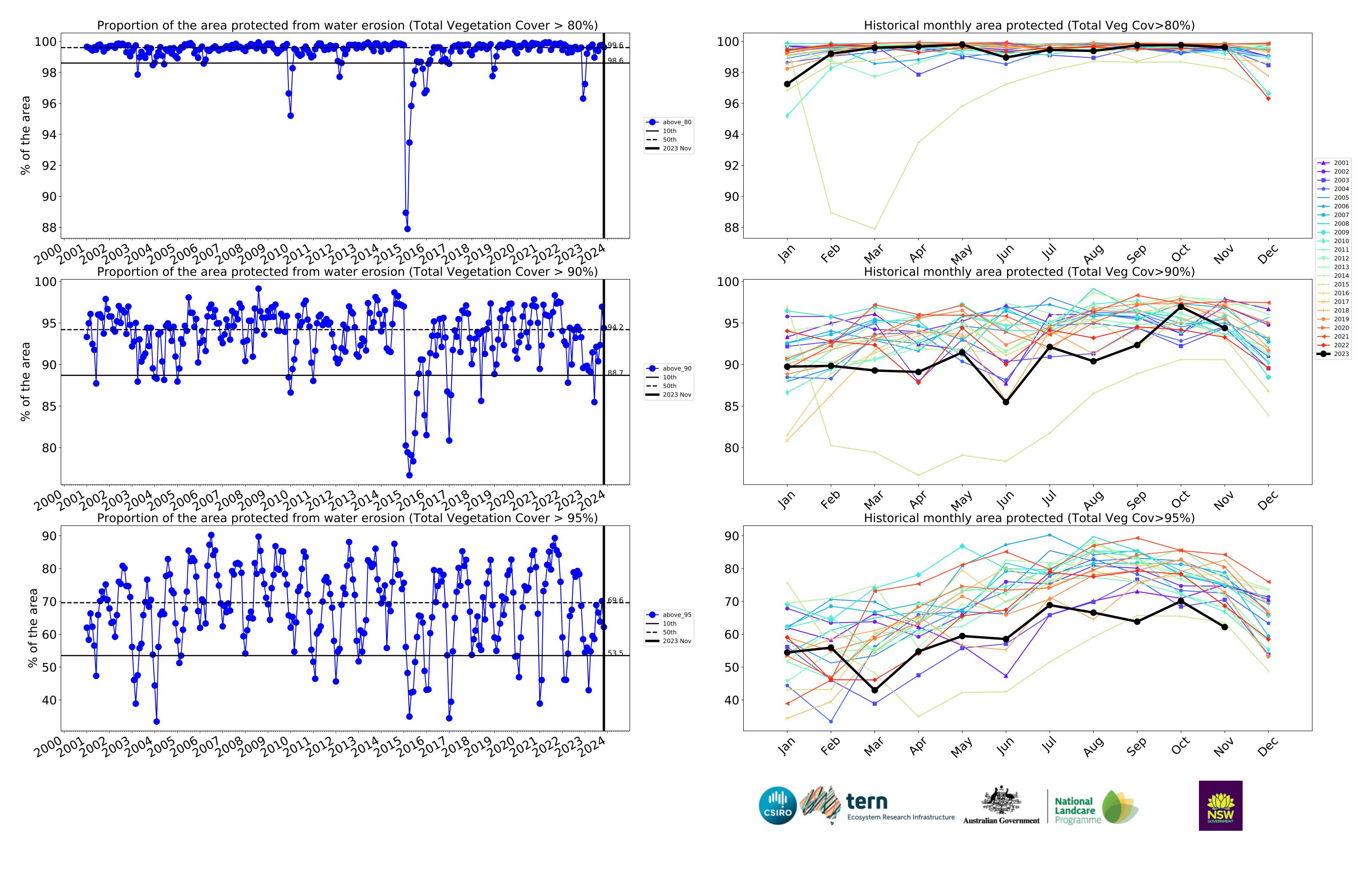






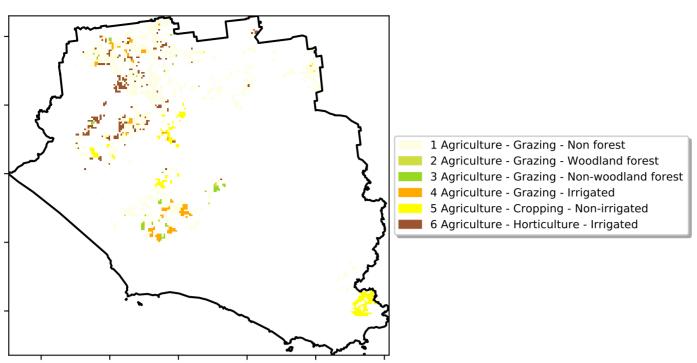






#### **Agriculture**

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

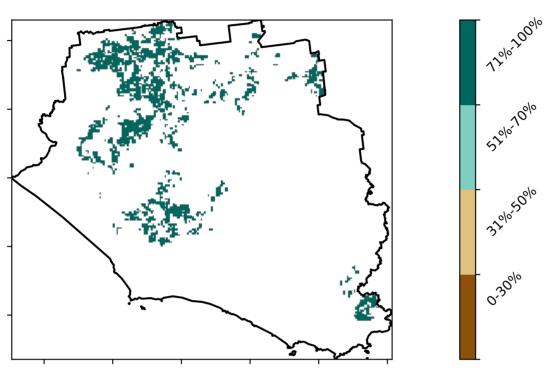


#### 72.5% 70 60 50 Area (%) 30 20 9.6% 10 Land use class

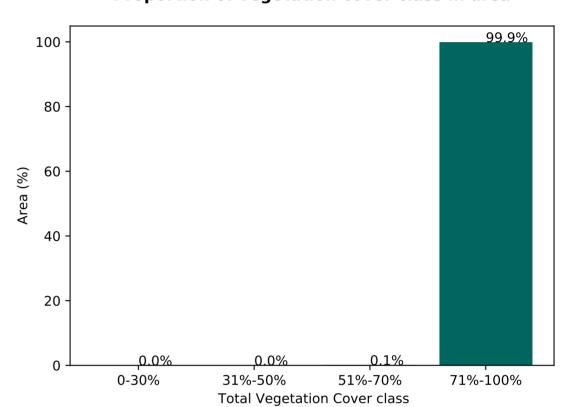
Proportion of each land class in area

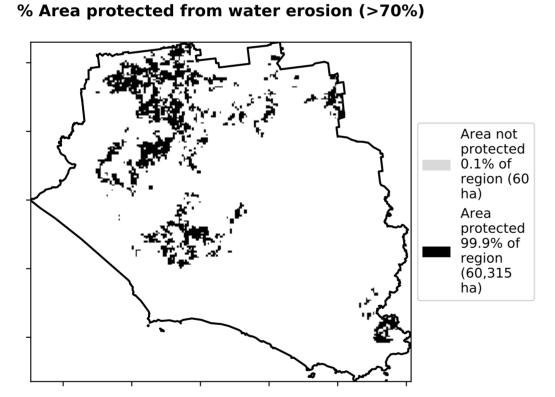


Land use and forest cover

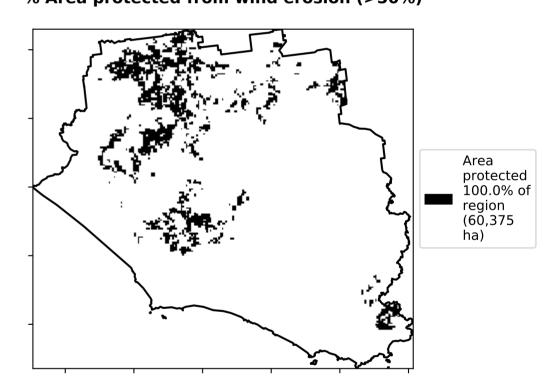


Proportion of vegetation cover class in area

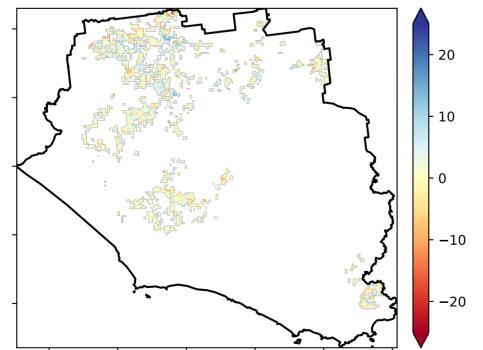




% Area protected from wind erosion (>50%)

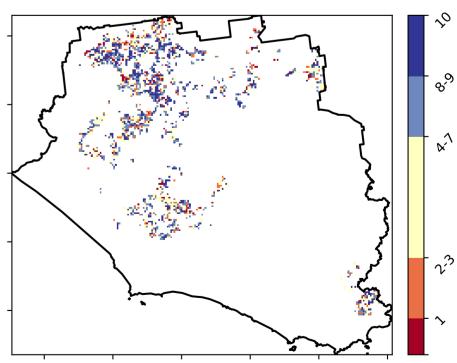


#### **Total Vegetation Cover Anomaly [%]**



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 [%]**



# using baseline from 2001 to 2019.

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

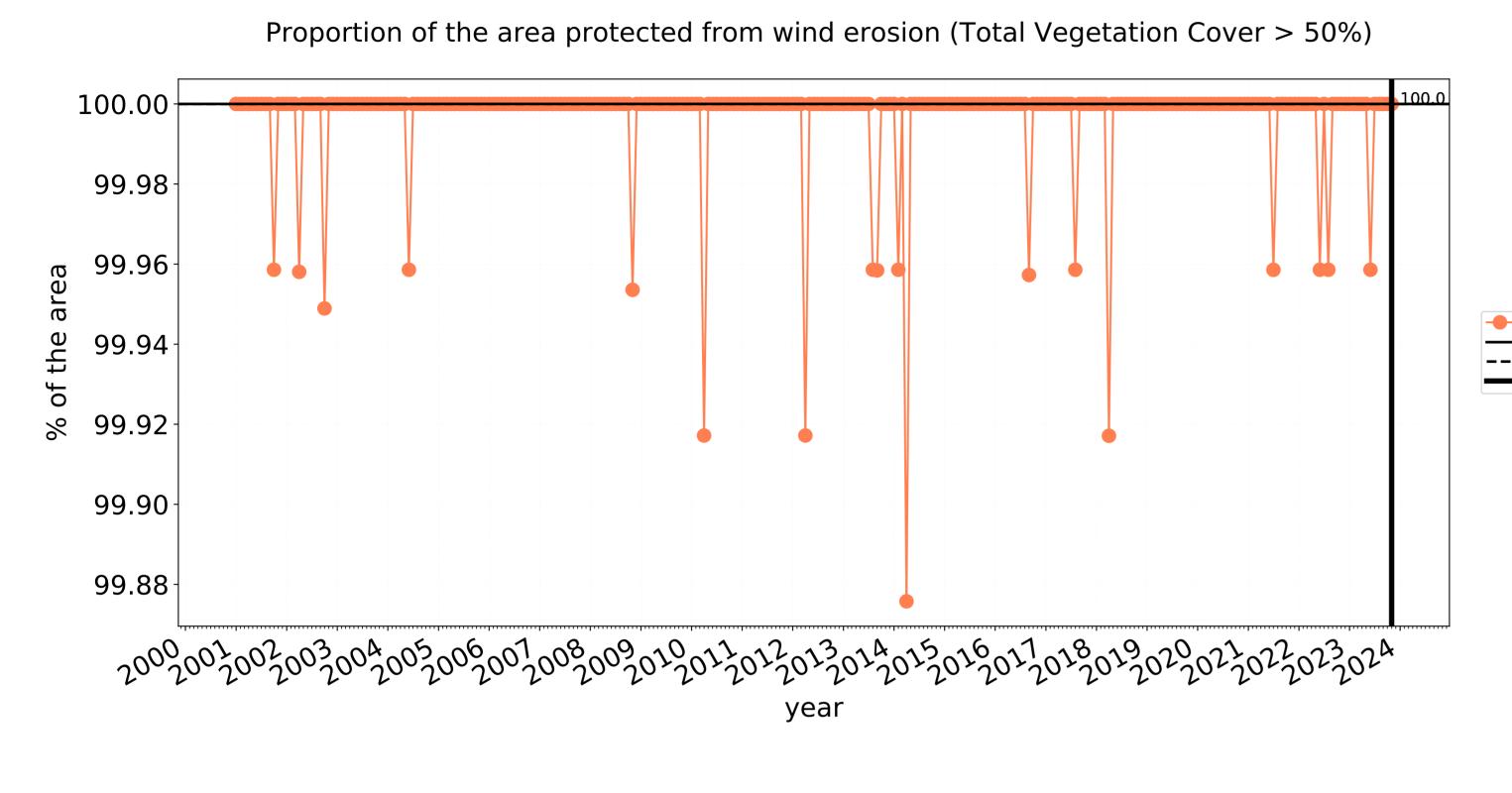


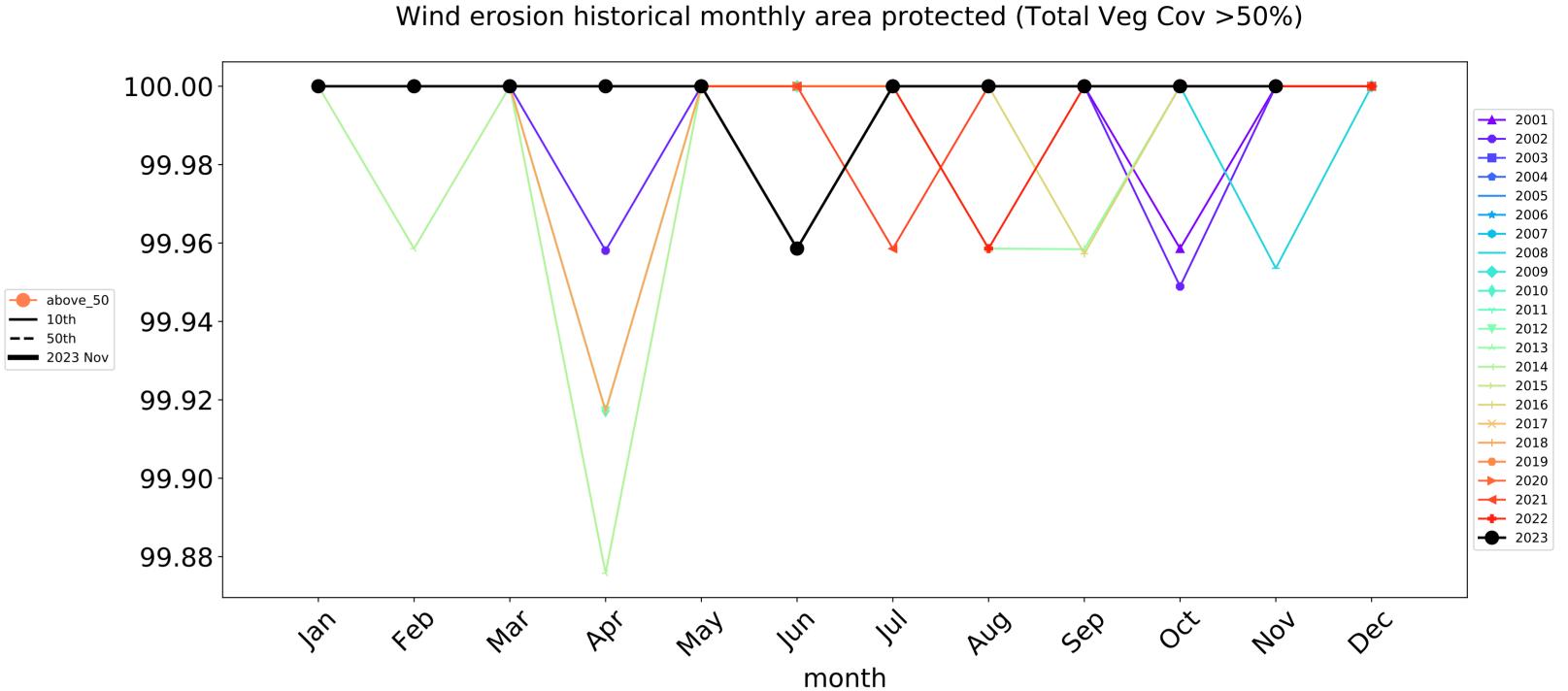


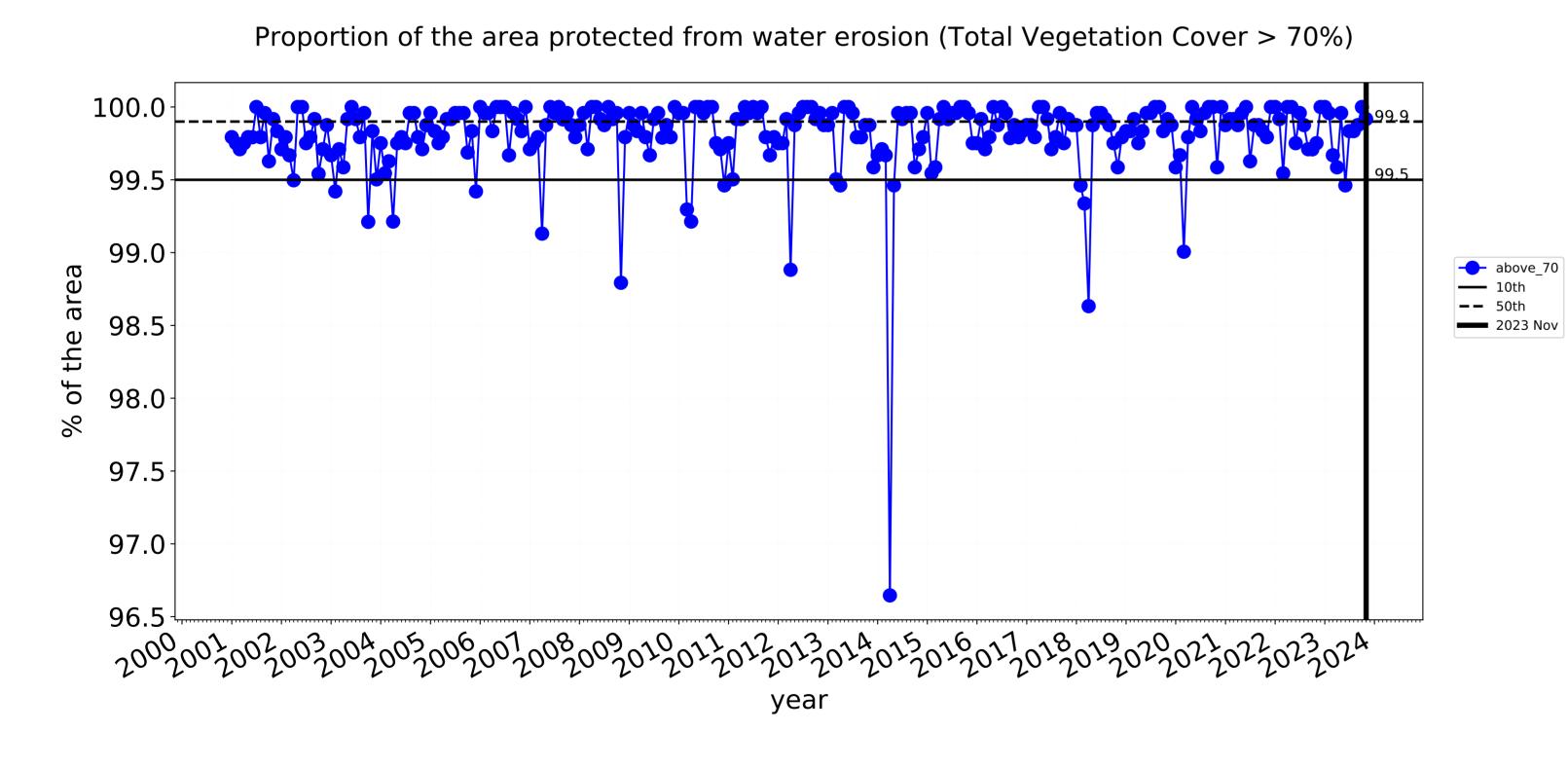


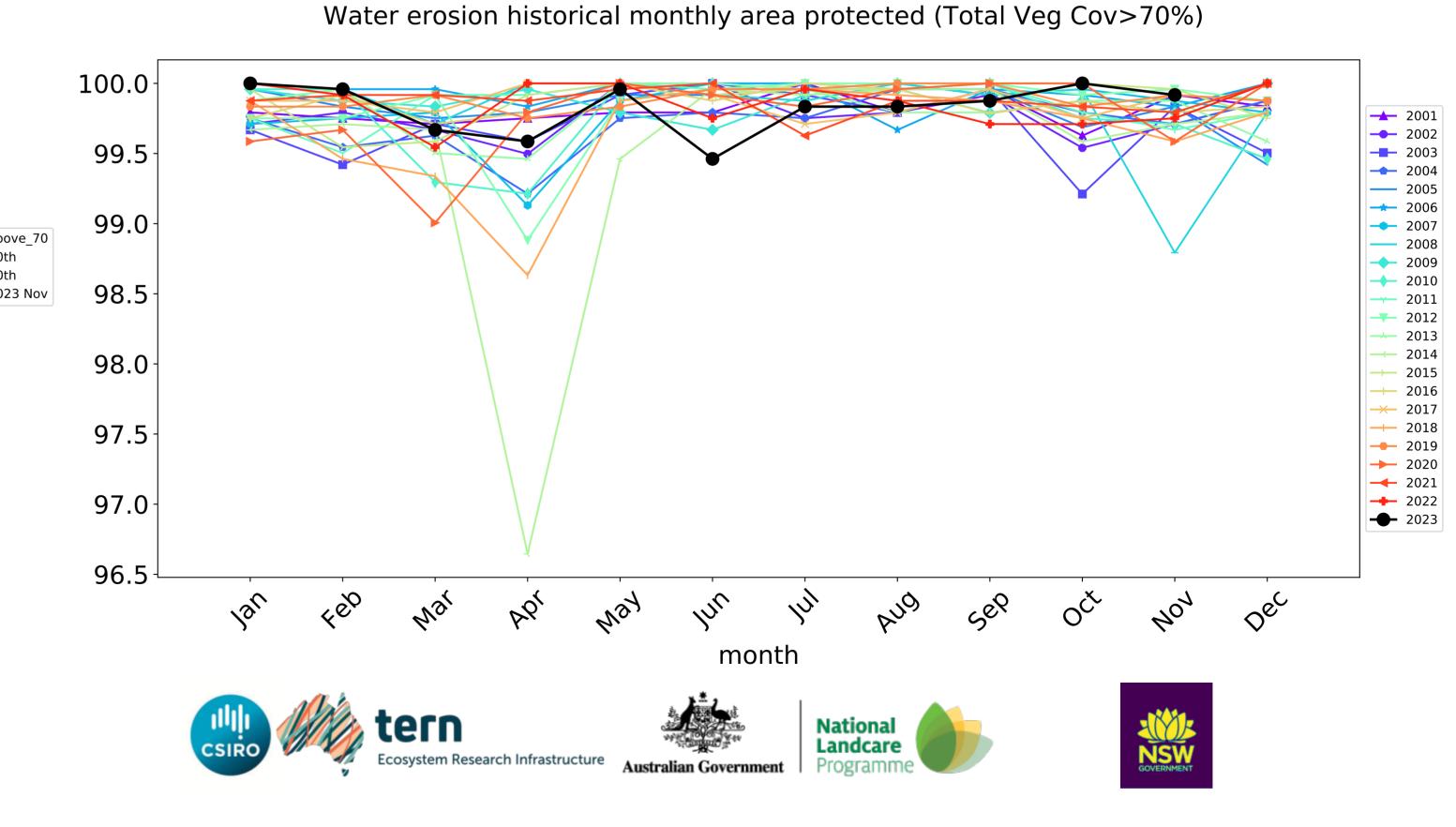


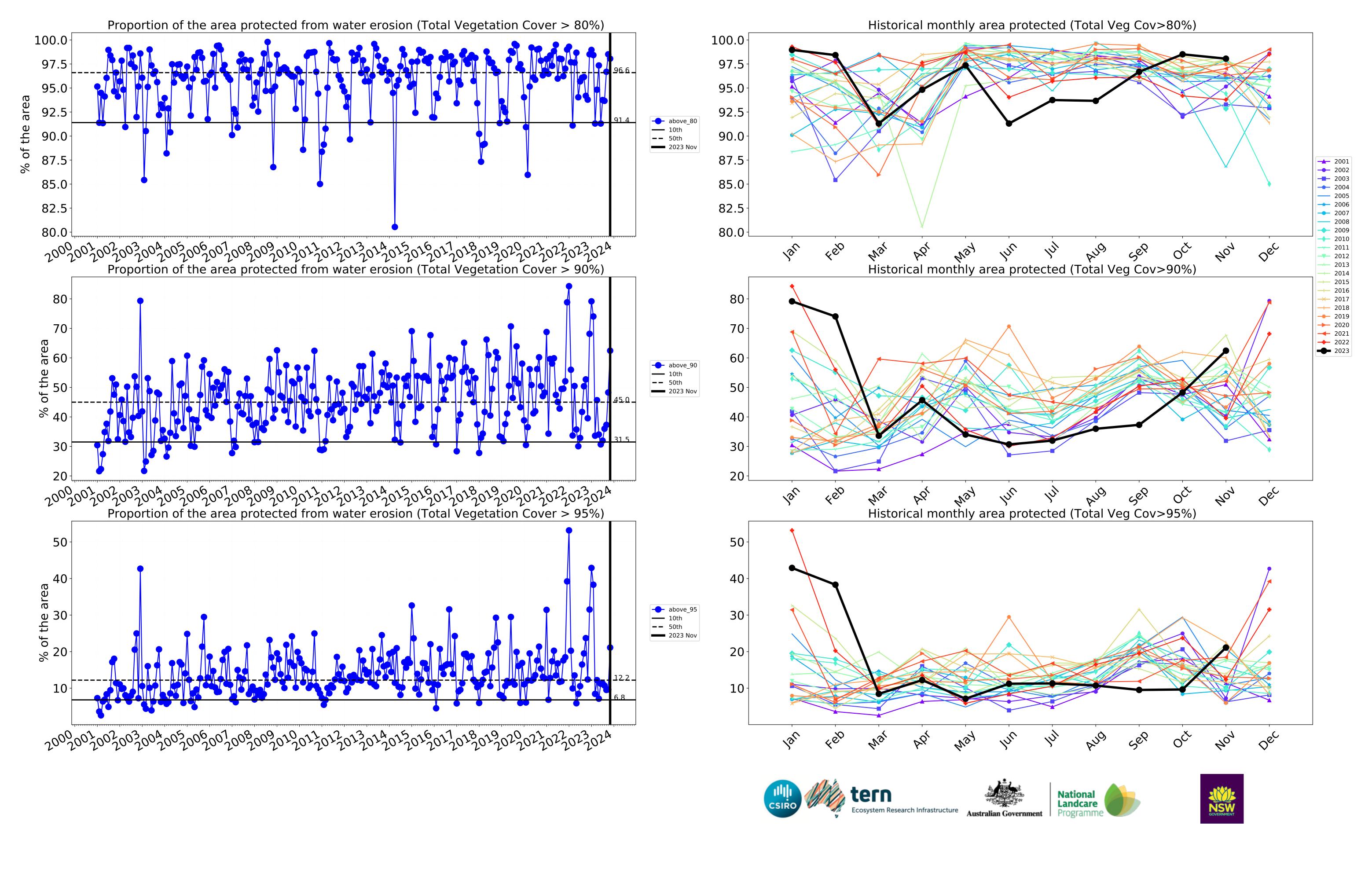
#### **Agriculture timeseries**





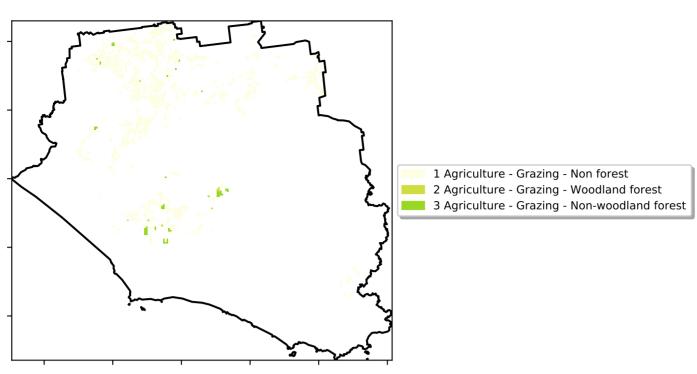






#### Grazing

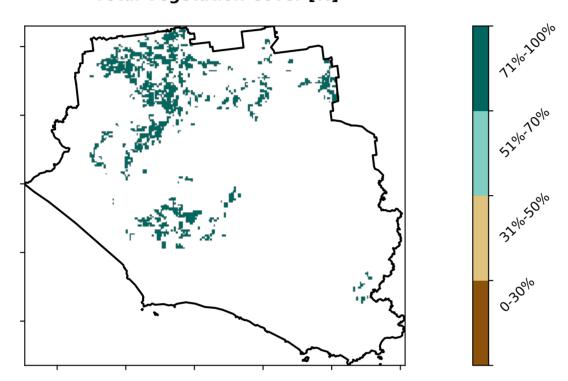
#### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



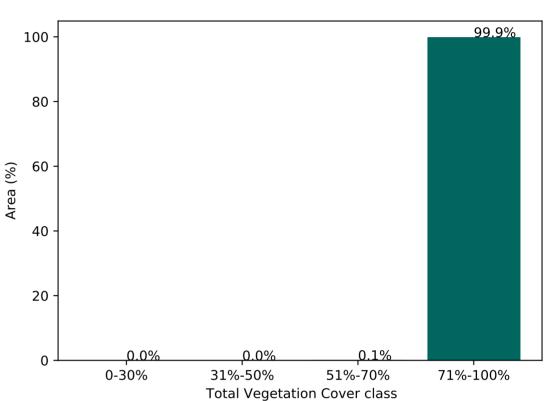
#### 



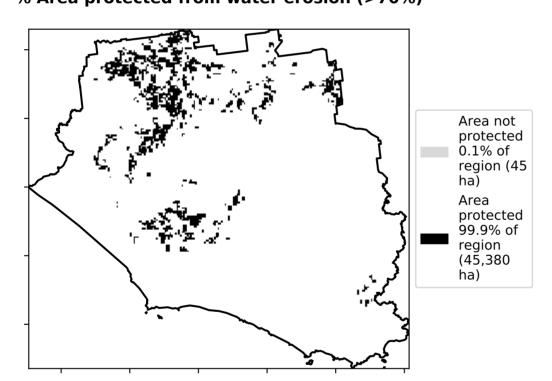
Land use and forest cover



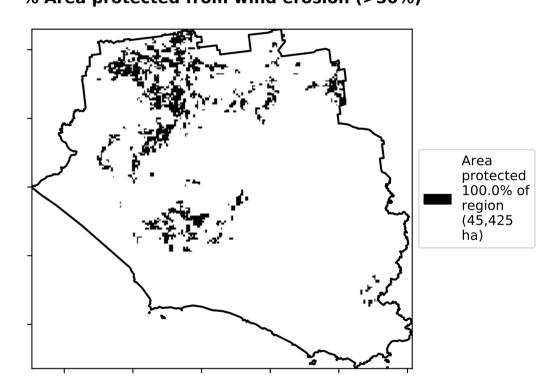




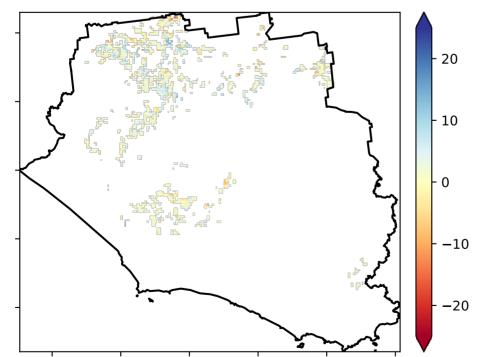
#### % Area protected from water erosion (>70%)



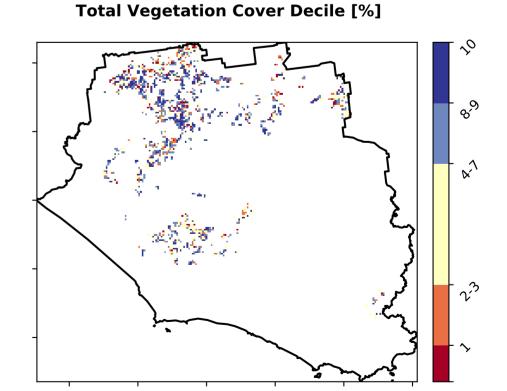
% Area protected from wind erosion (>50%)



#### 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.



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

the mean. That

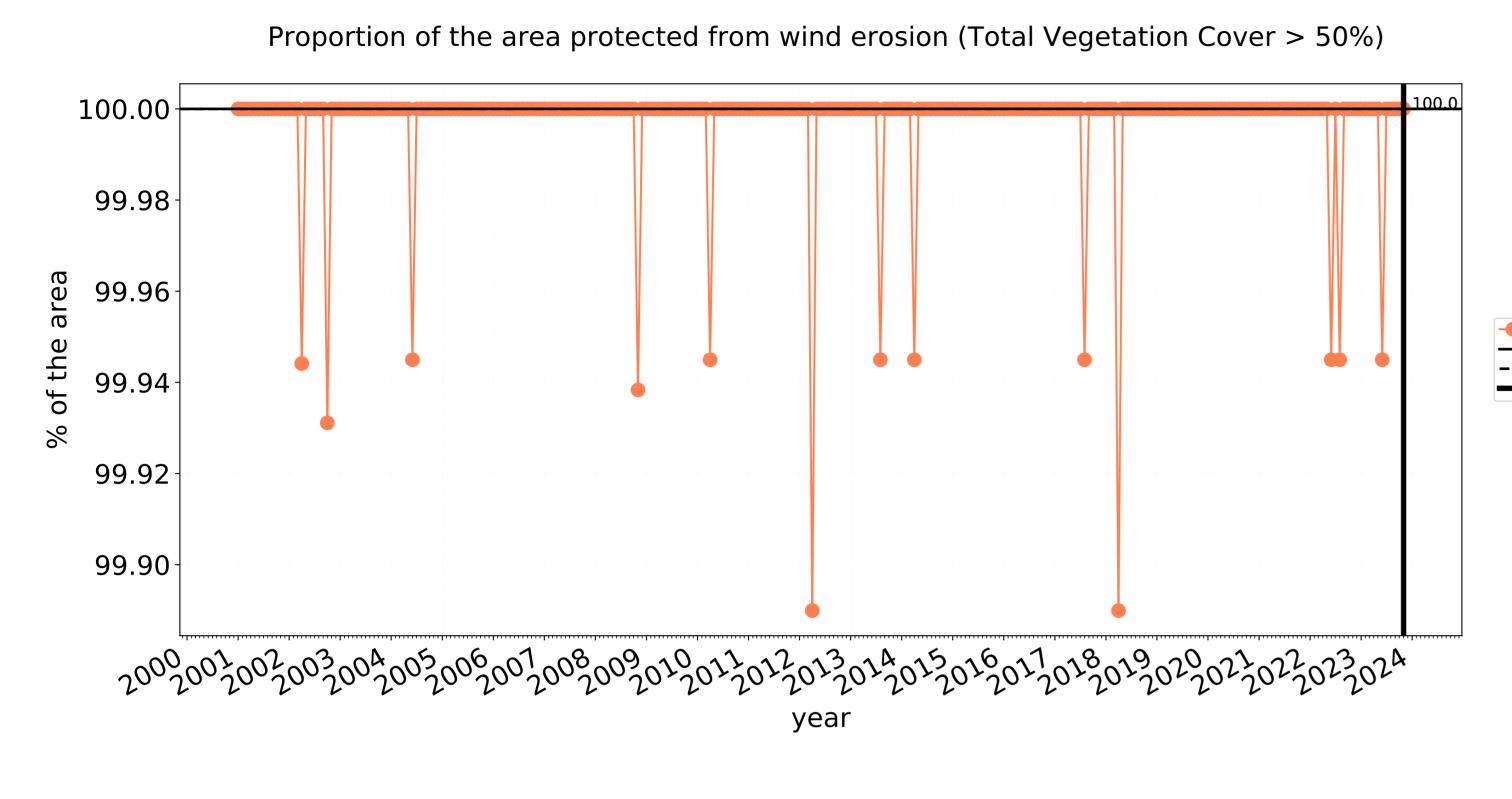


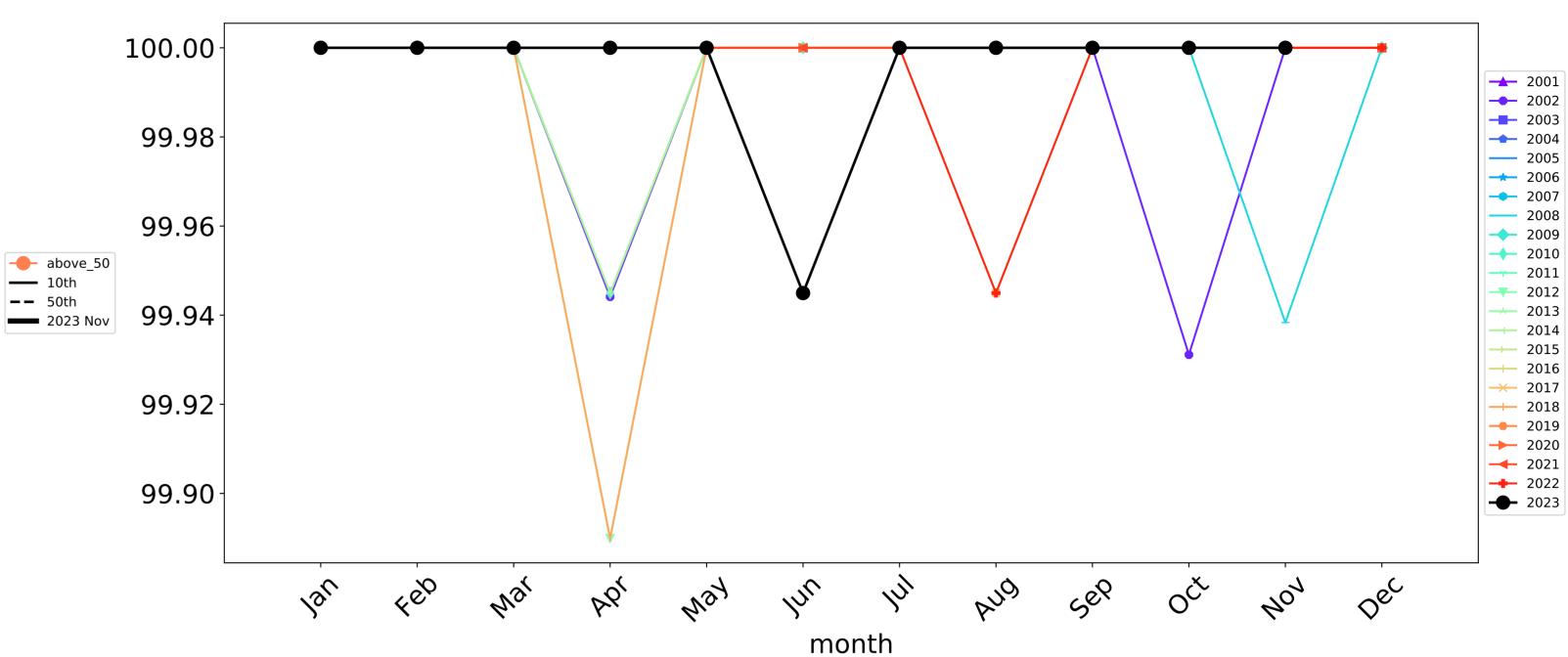




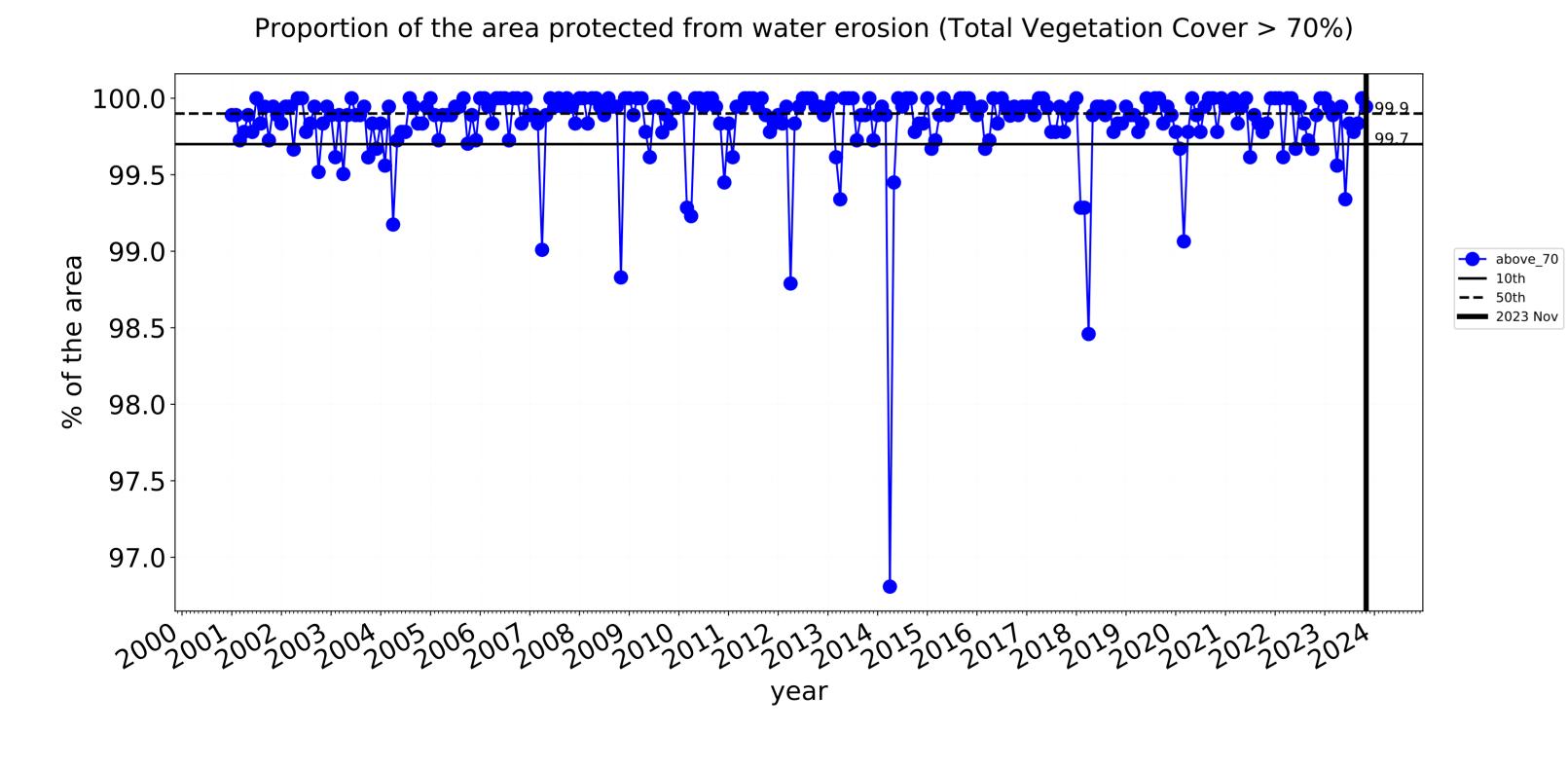


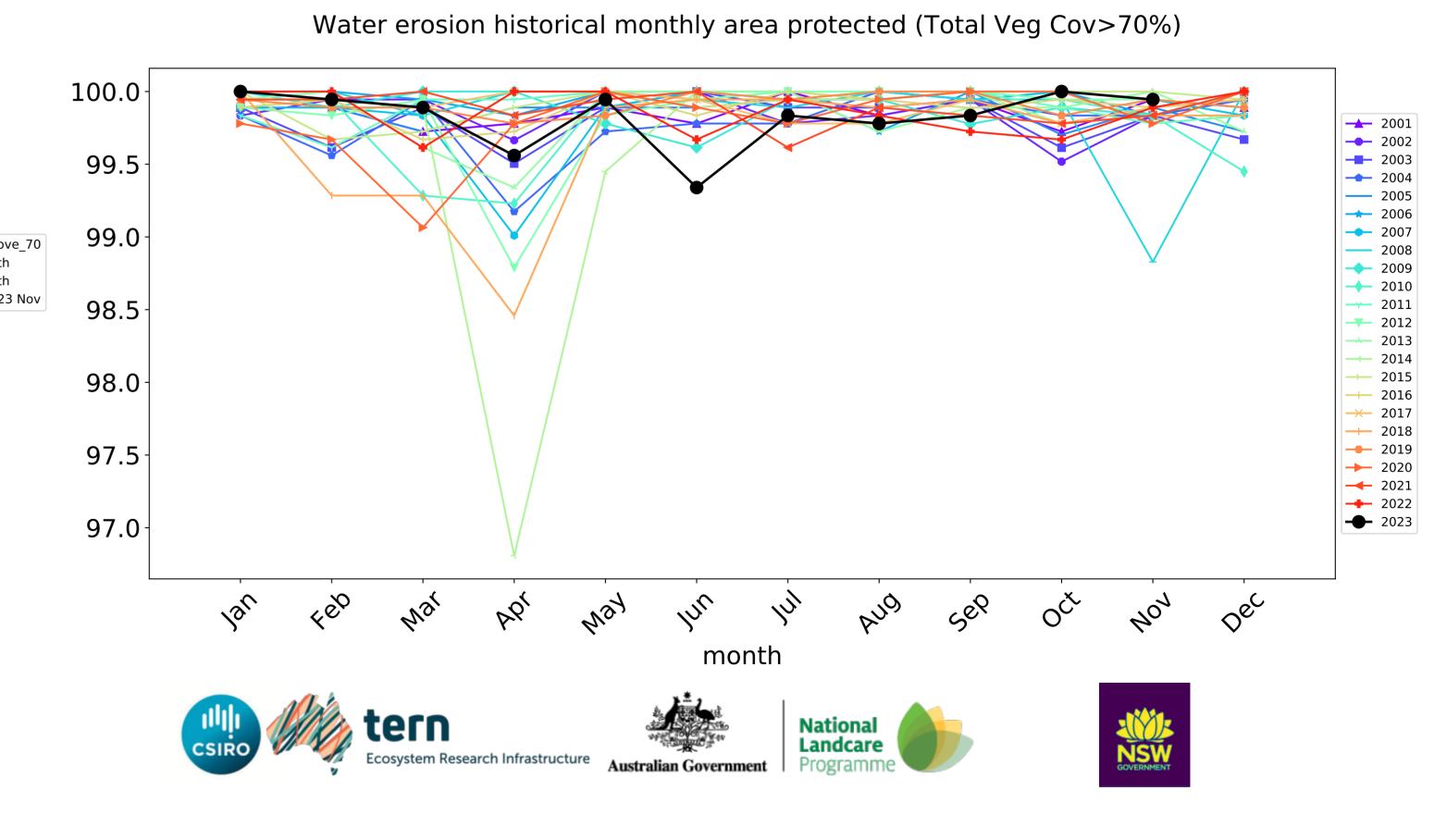
#### **Grazing timeseries**

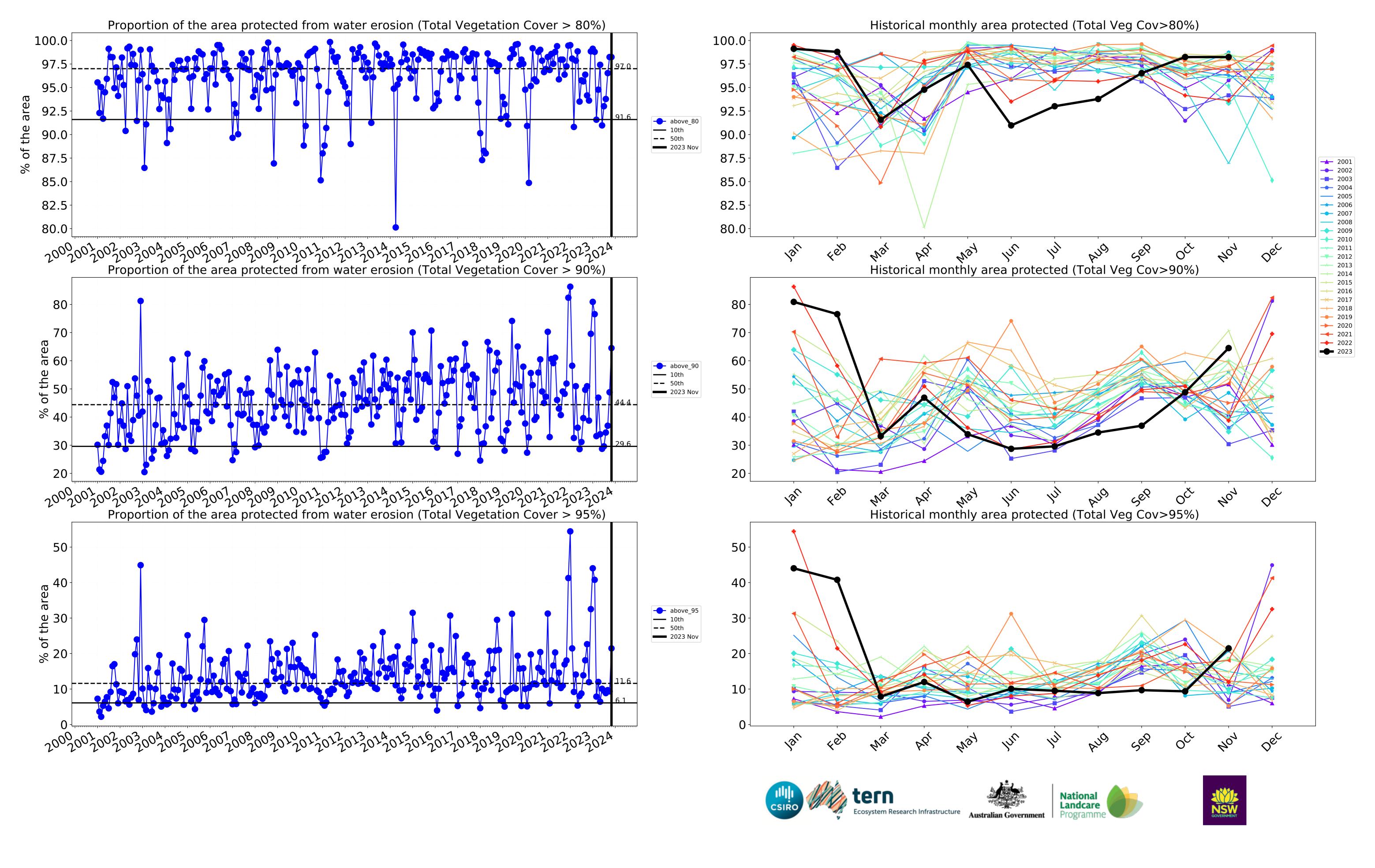




Wind erosion historical monthly area protected (Total Veg Cov >50%)







#### **Grazing non forest**

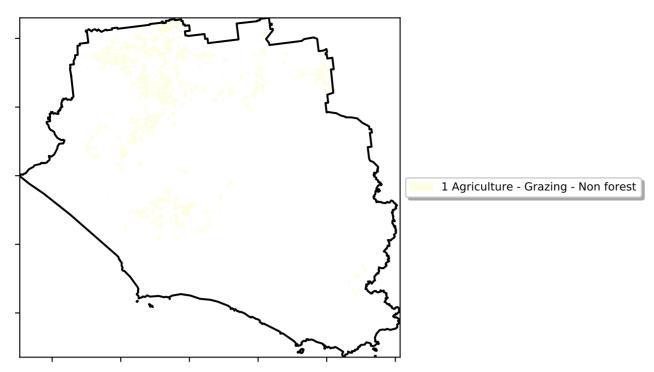
#### Land use and forest cover

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

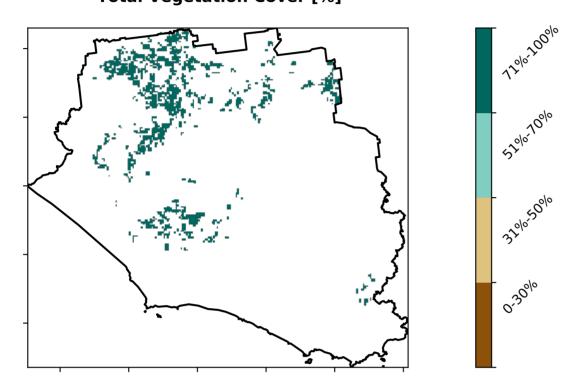
pixel is from the mean. That

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

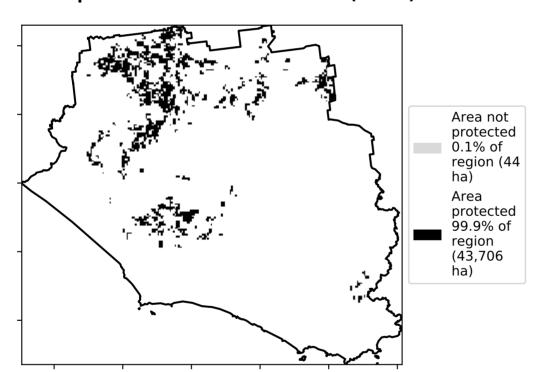
is, red pixels are about 20% lower than the mean of that pixel. The mean



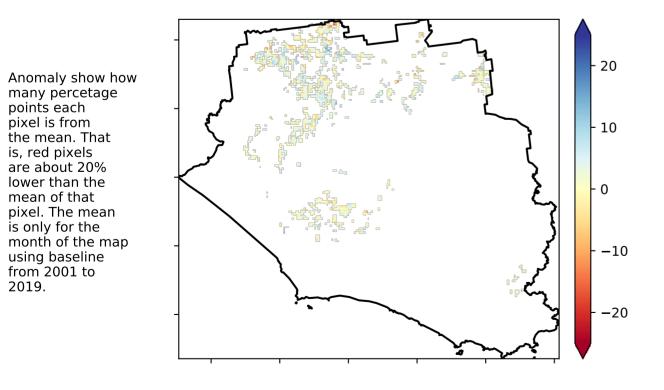
#### **Total Vegetation Cover [%]**



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

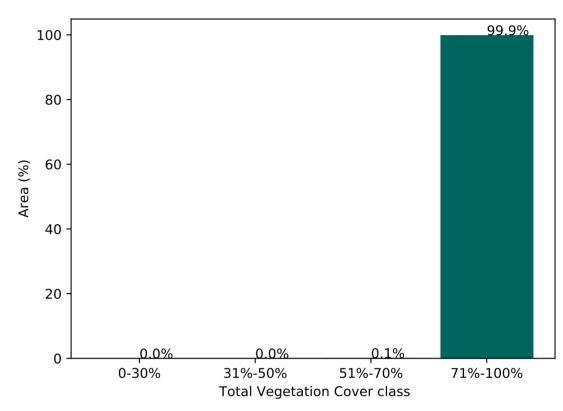


#### **Total Vegetation Cover Anomaly [%]**

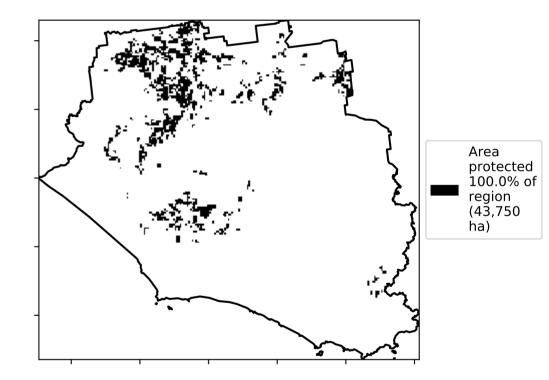


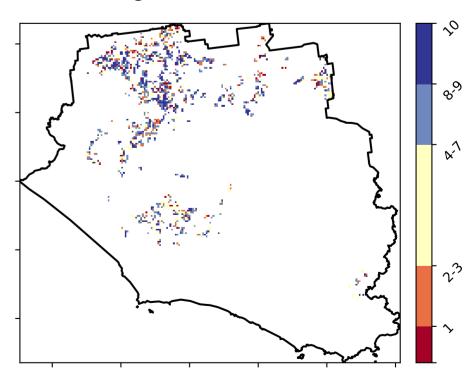
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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





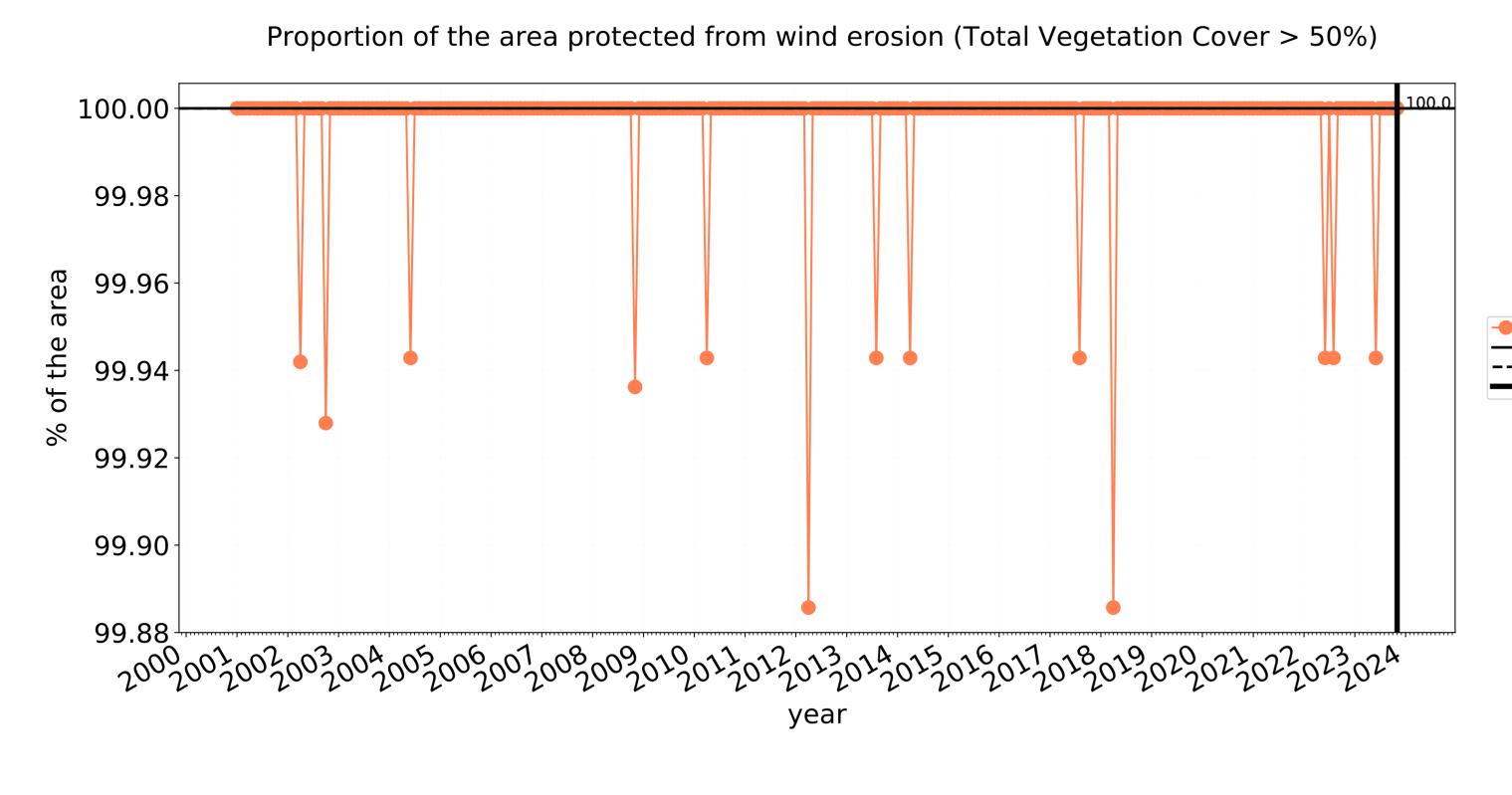


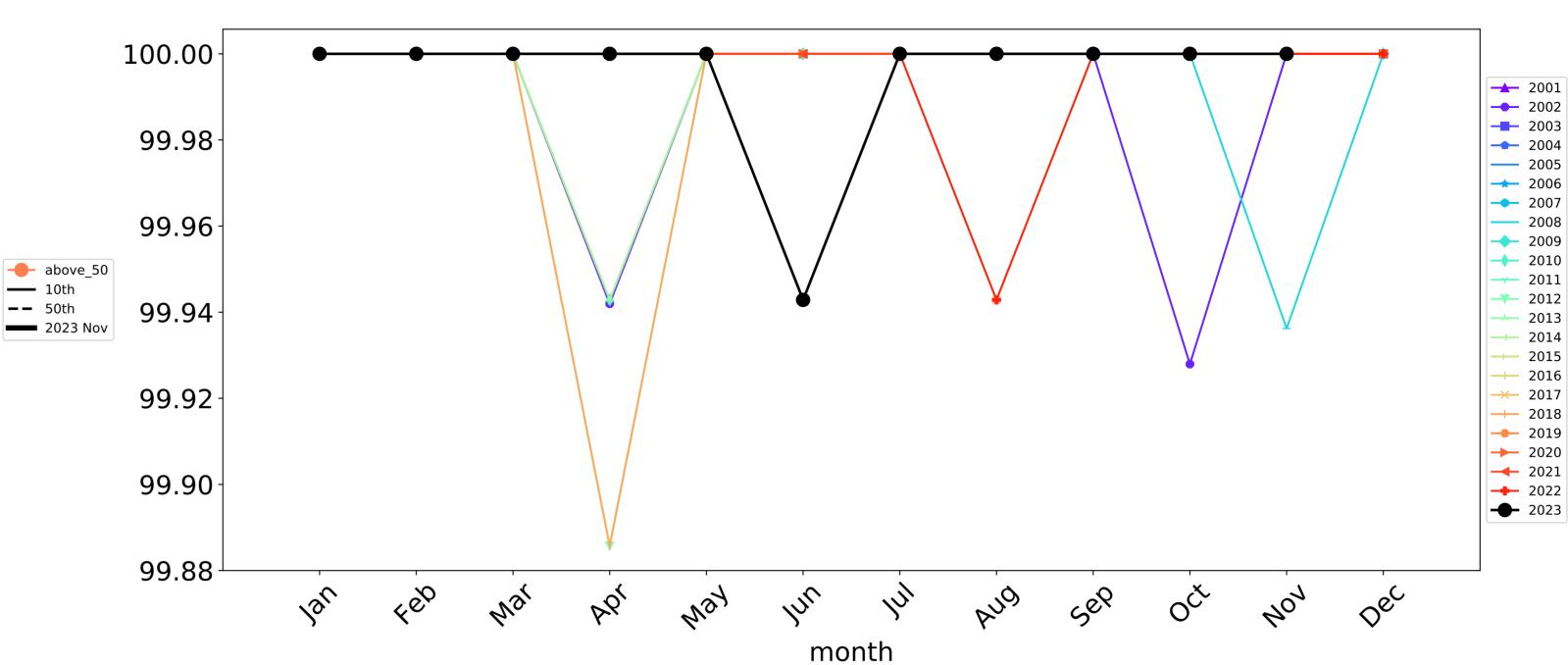




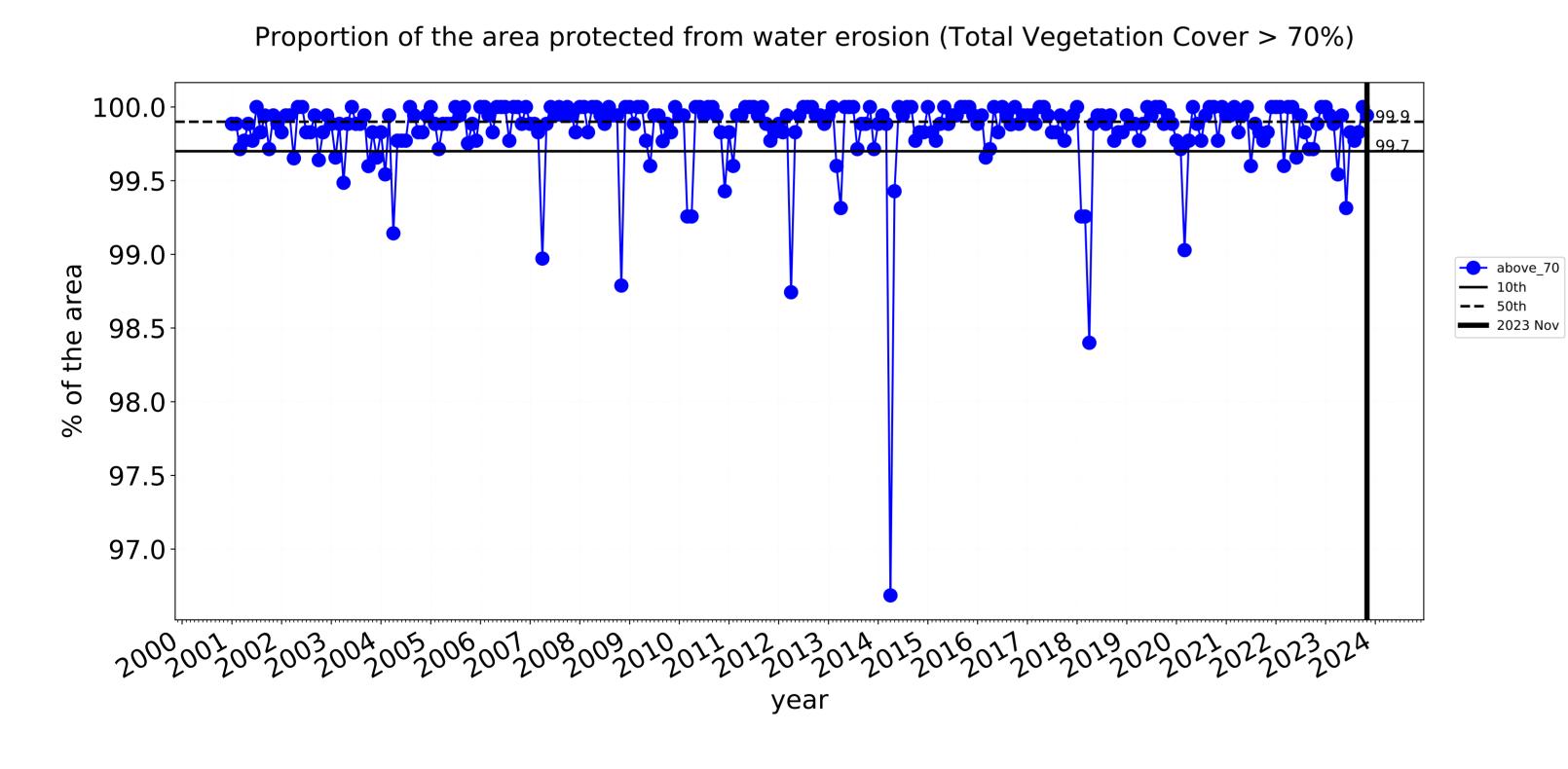


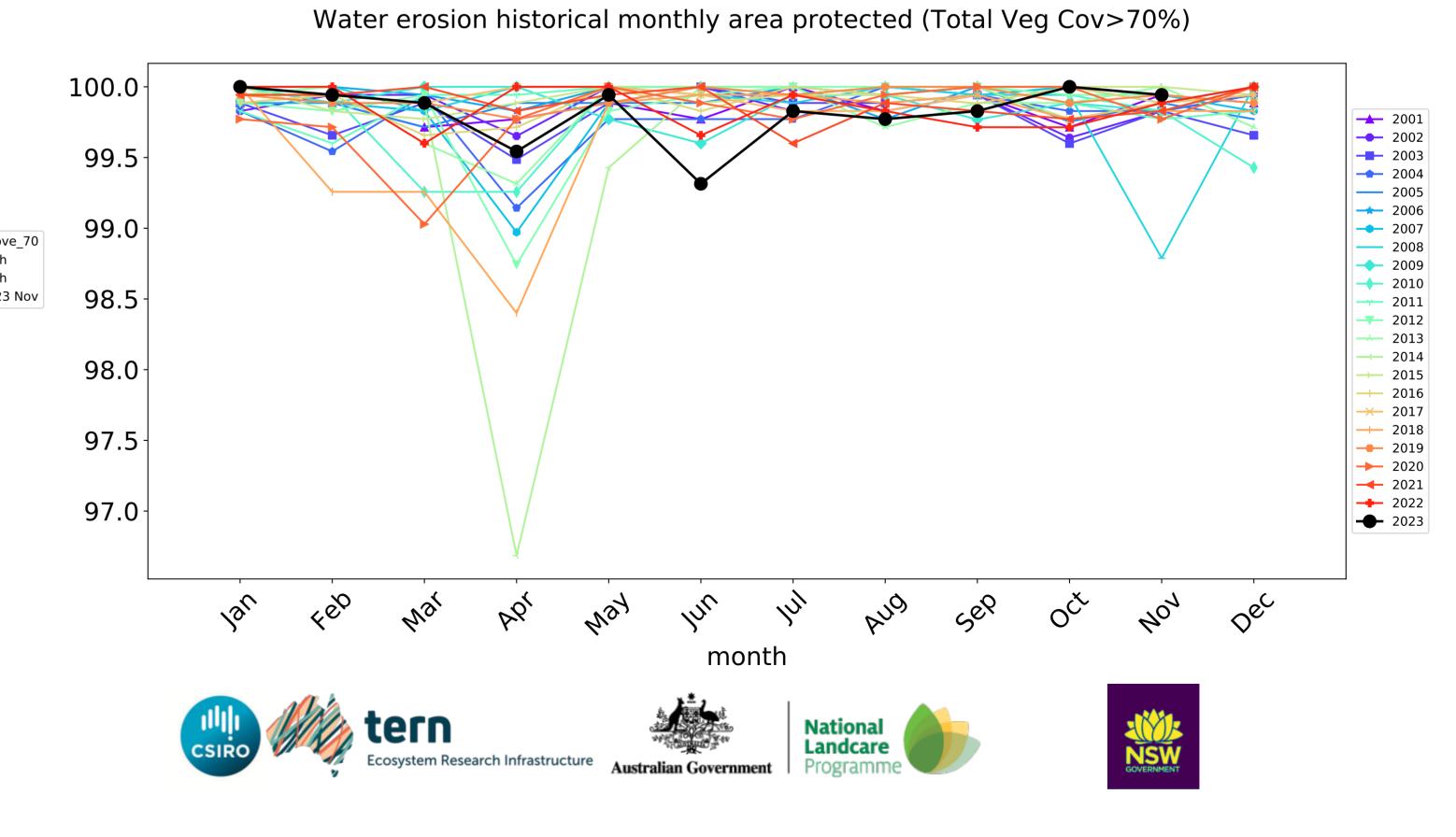
#### **Grazing non forest timeseries**

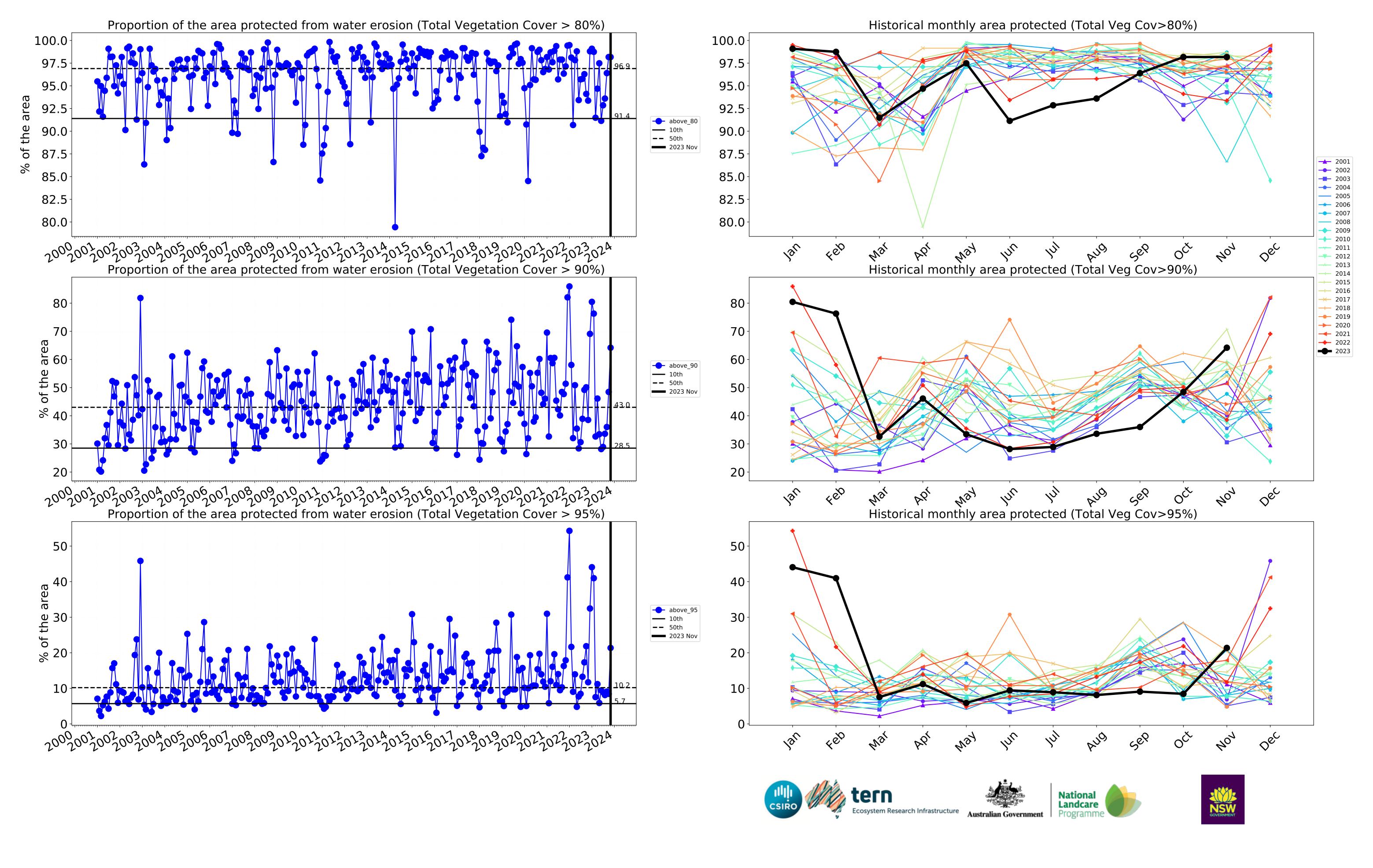




Wind erosion historical monthly area protected (Total Veg Cov >50%)







#### Irrigation

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

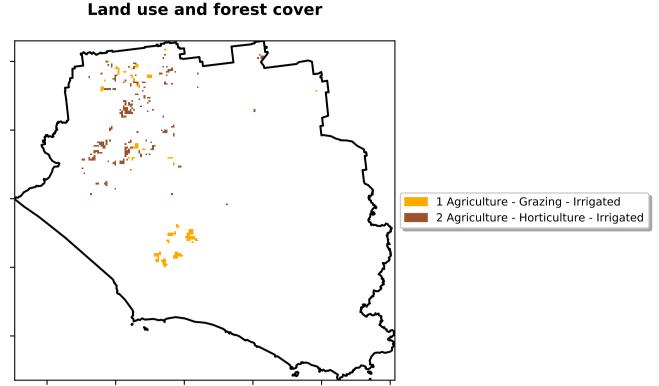
Anomaly show how many percetage points each

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.

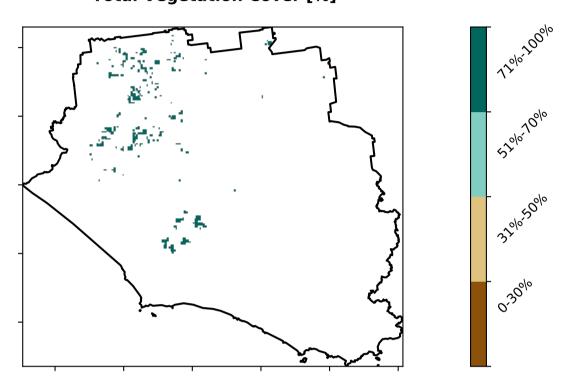
the mean. That



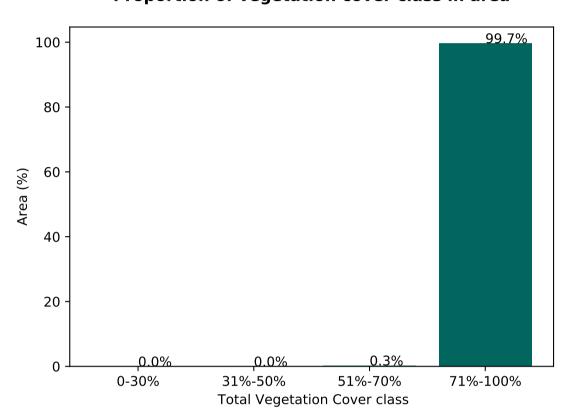
#### 62.0% 60 50 40 38.0% Area (%) 20 10 0.50 0.75 1.00 1.25 -0.25 0.00 0.25 Land use class

**Proportion of each land class in area** 

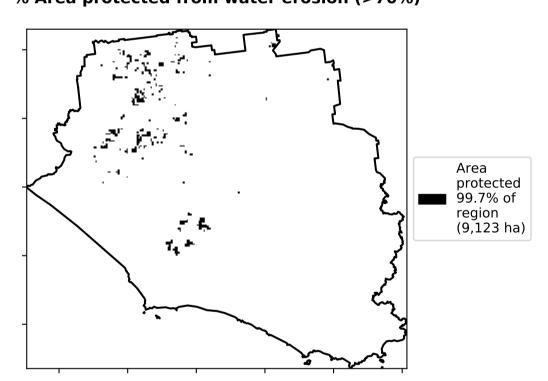
#### **Total Vegetation Cover [%]**



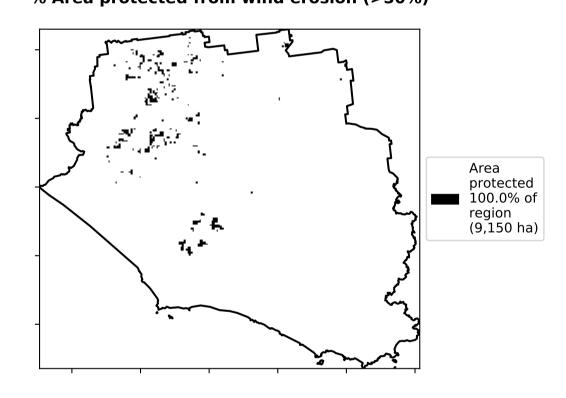
Proportion of vegetation cover class in area



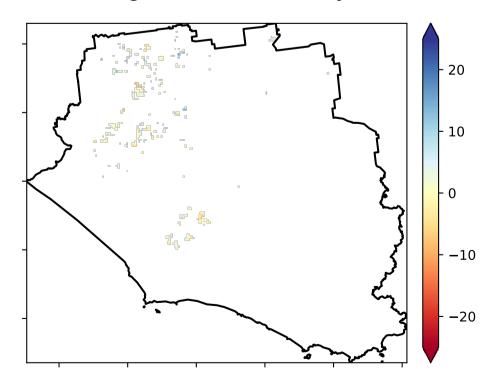
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

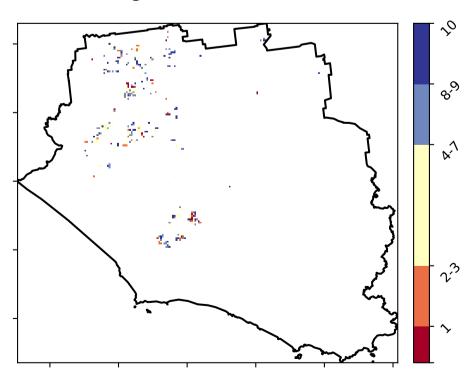


#### Total Vegetation Cover Anomaly [%]



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.

Total Vegetation Cover Decile [%]





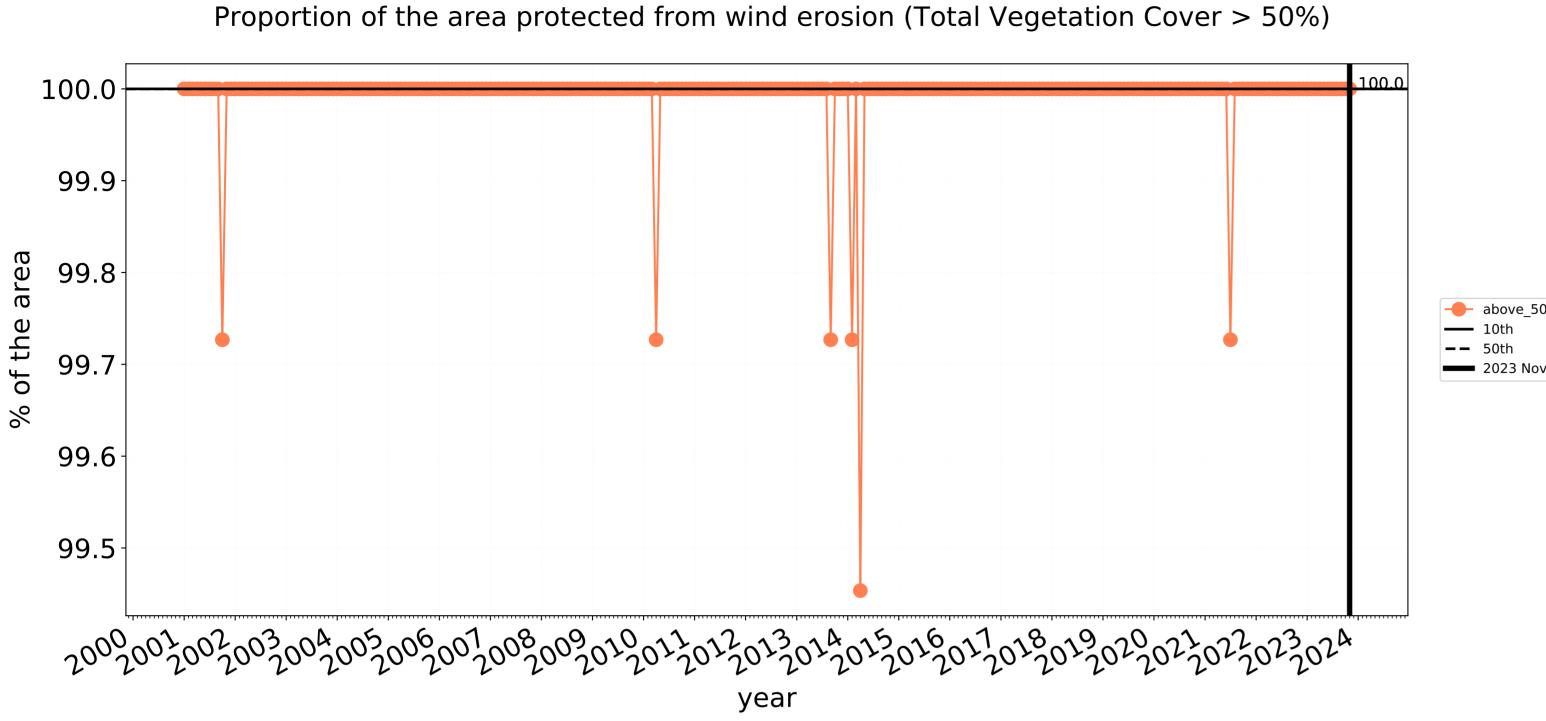


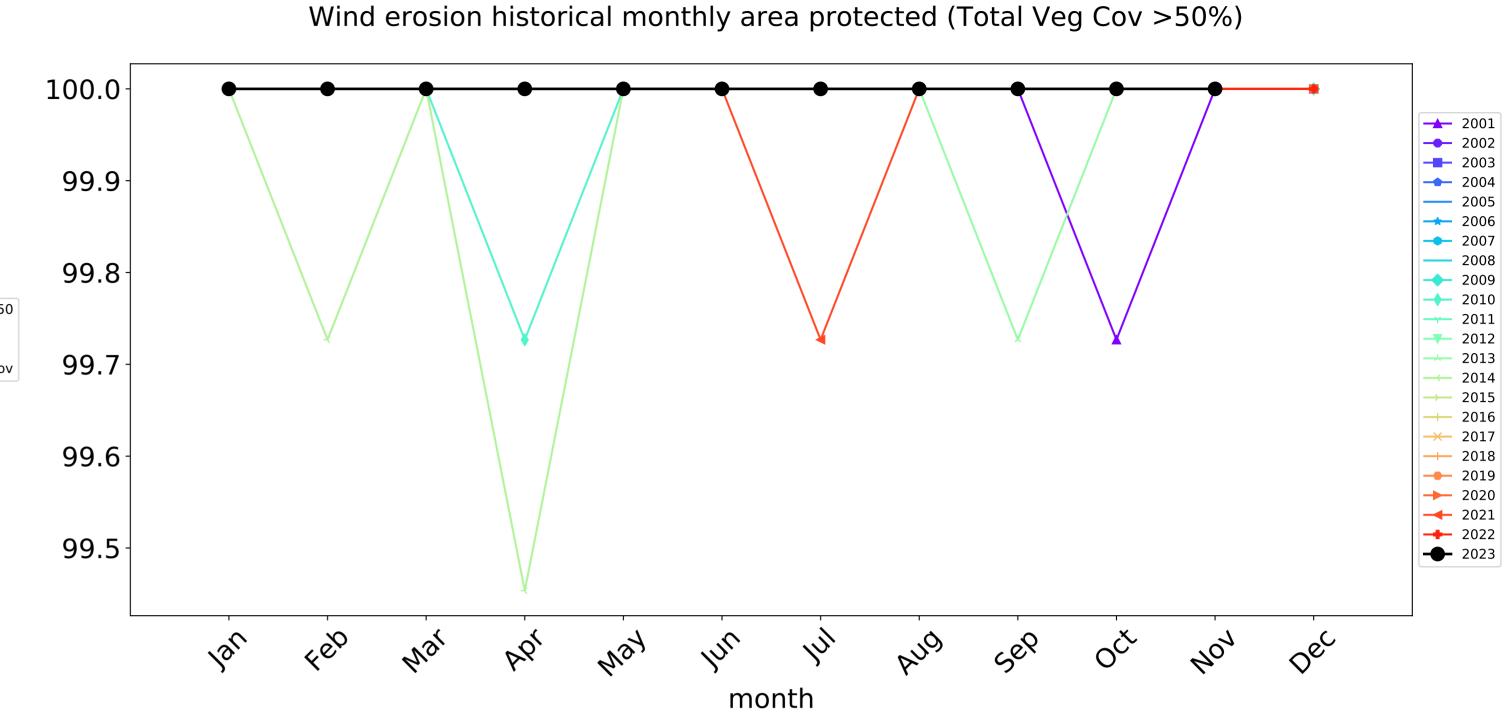


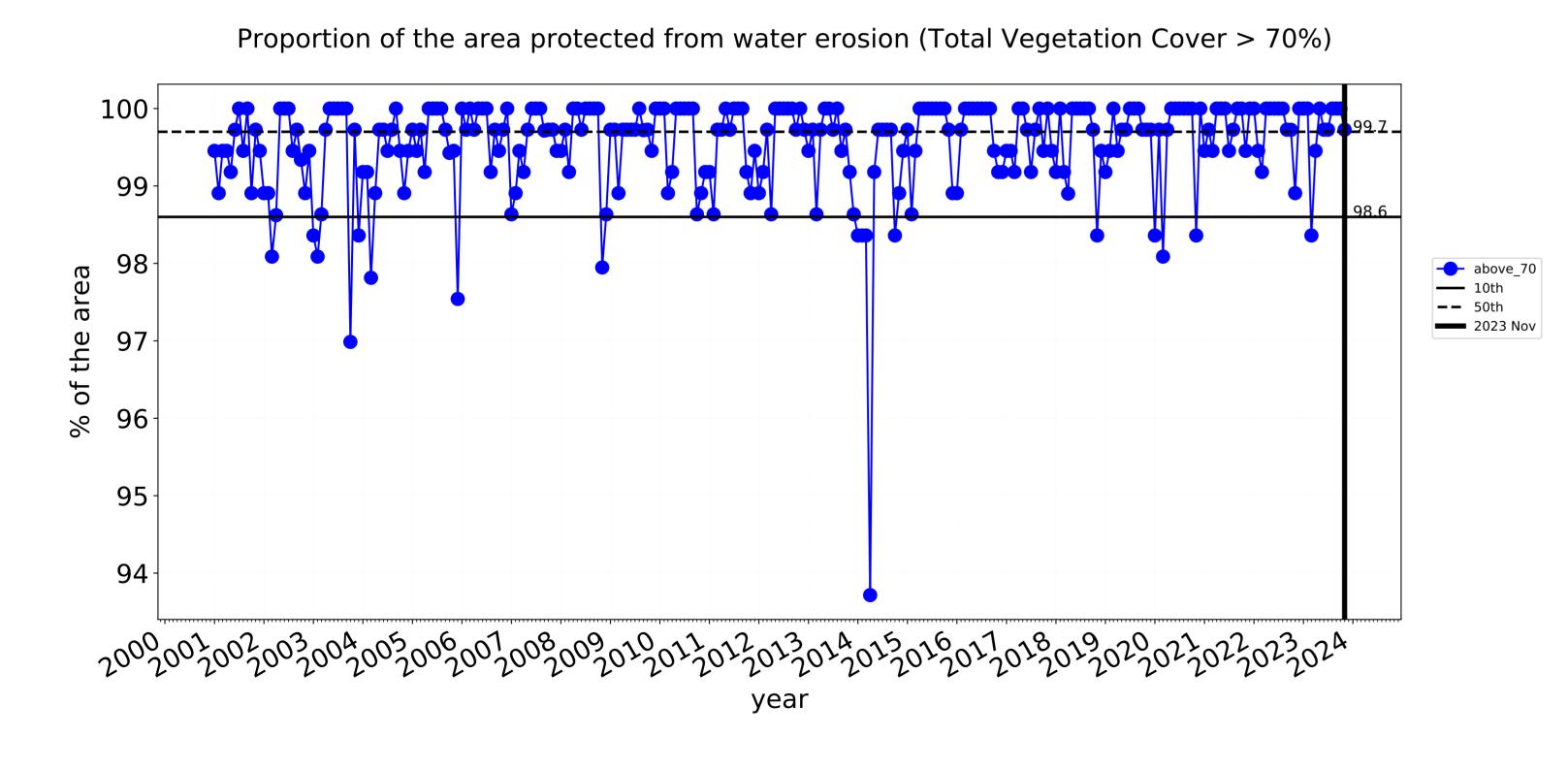


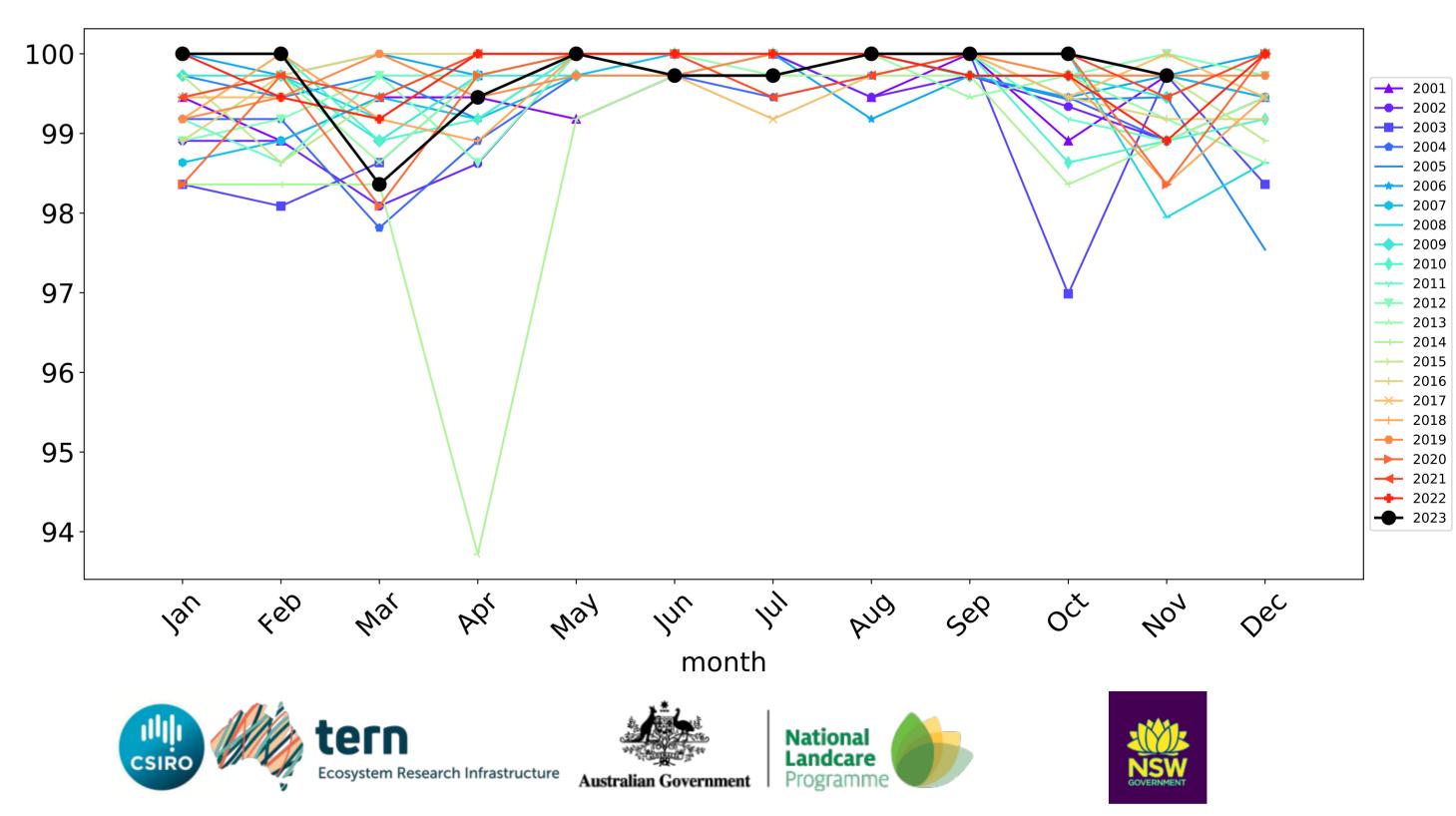


#### Irrigation timeseries

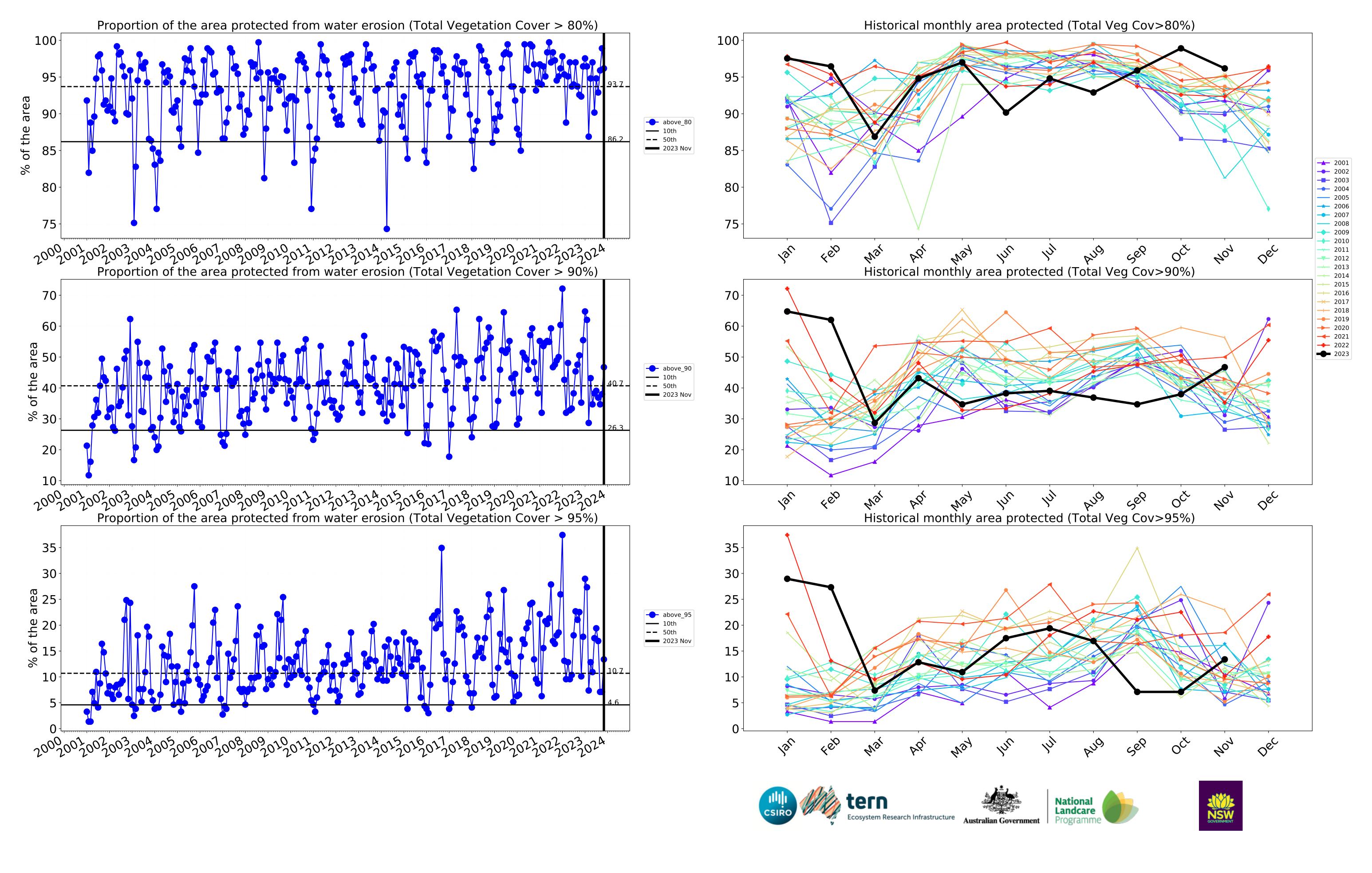








Water erosion historical monthly area protected (Total Veg Cov>70%)



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

#### Land use and forest cover

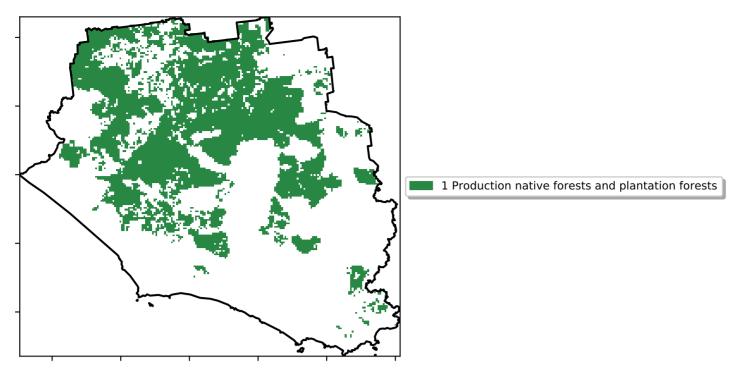
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

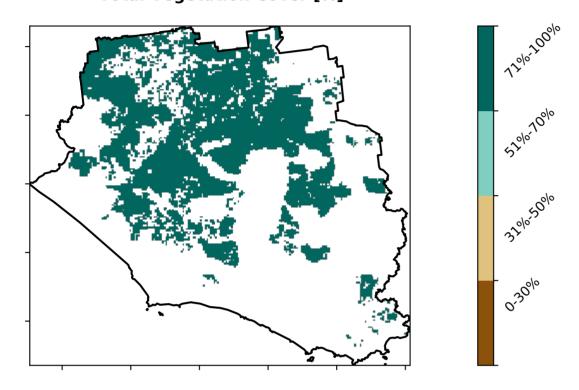
pixel is from the mean. That

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

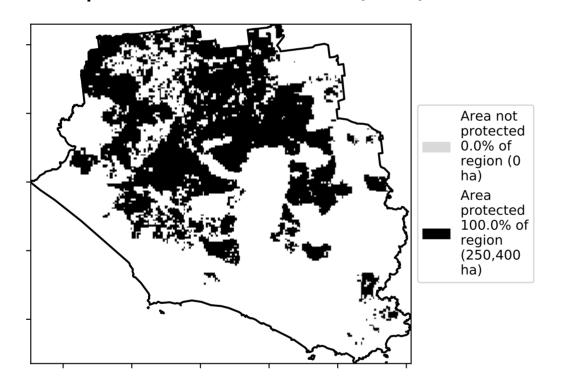
using baseline from 2001 to 2019.



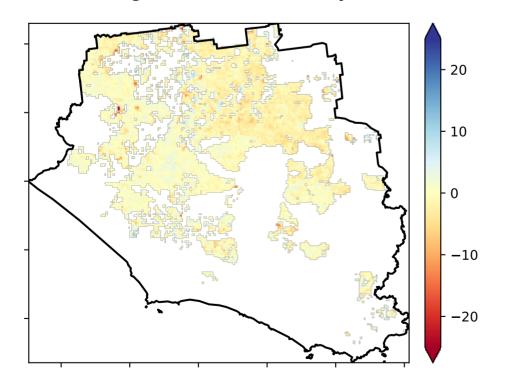
#### **Total Vegetation Cover [%]**



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

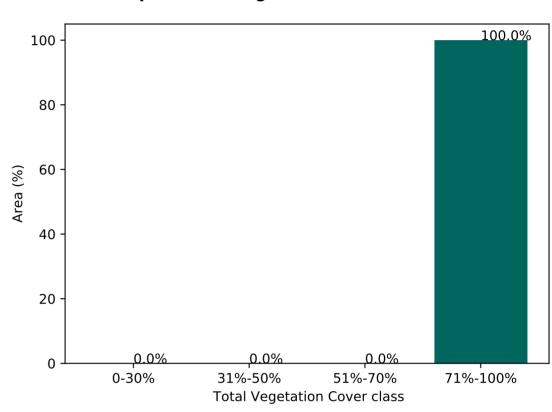


#### Total Vegetation Cover Anomaly [%]

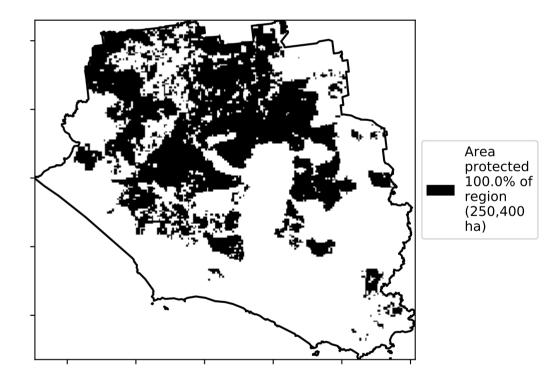


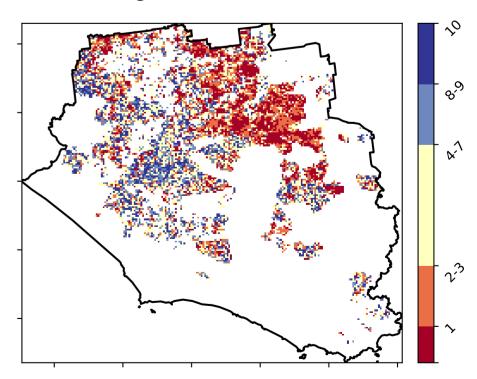
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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





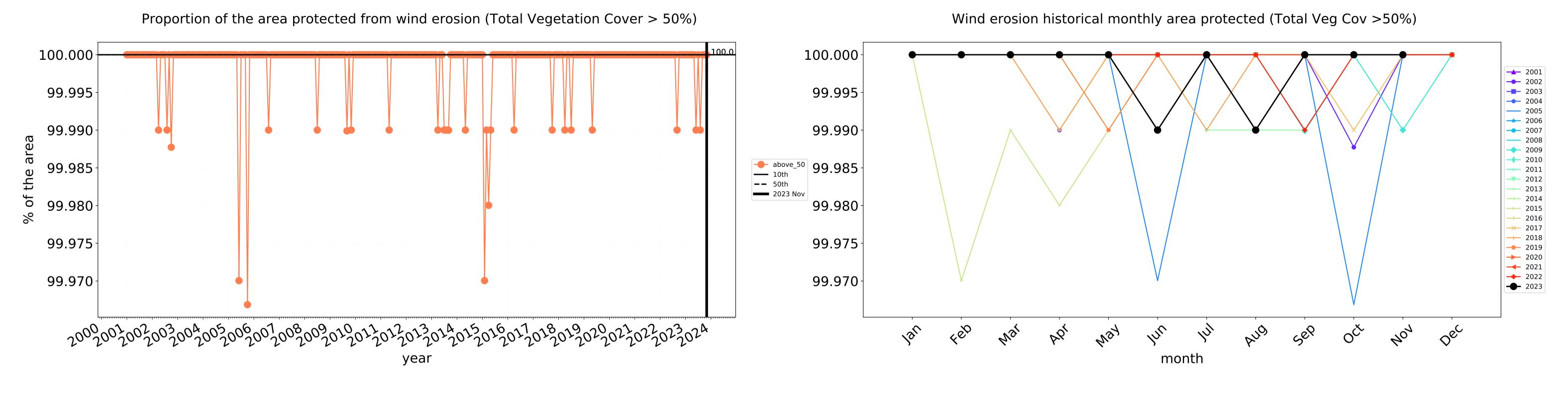


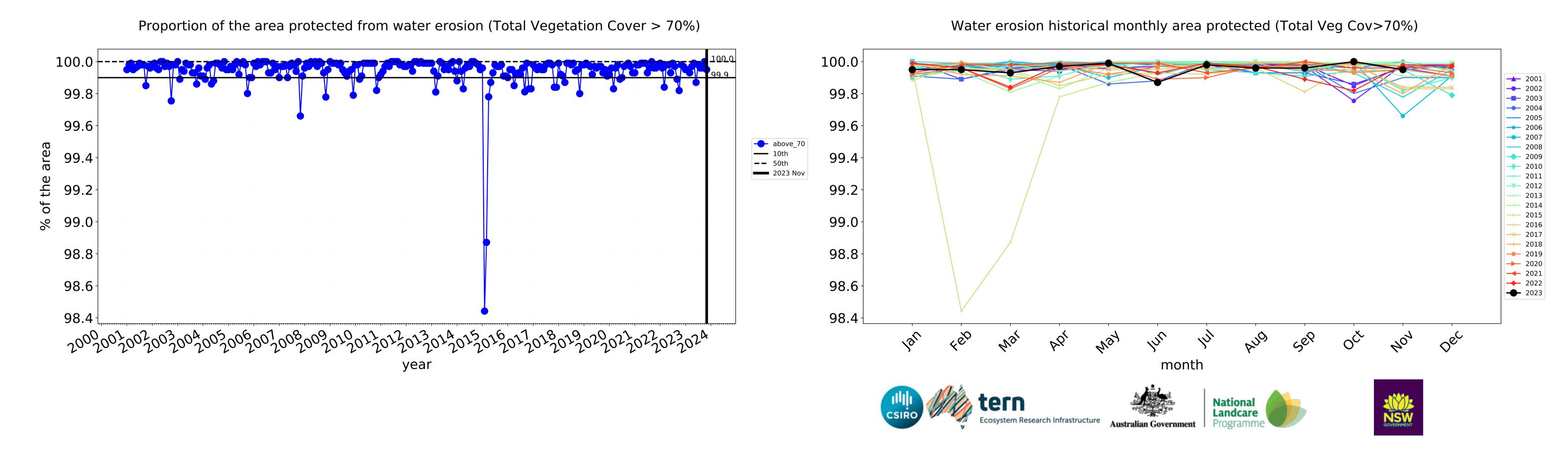


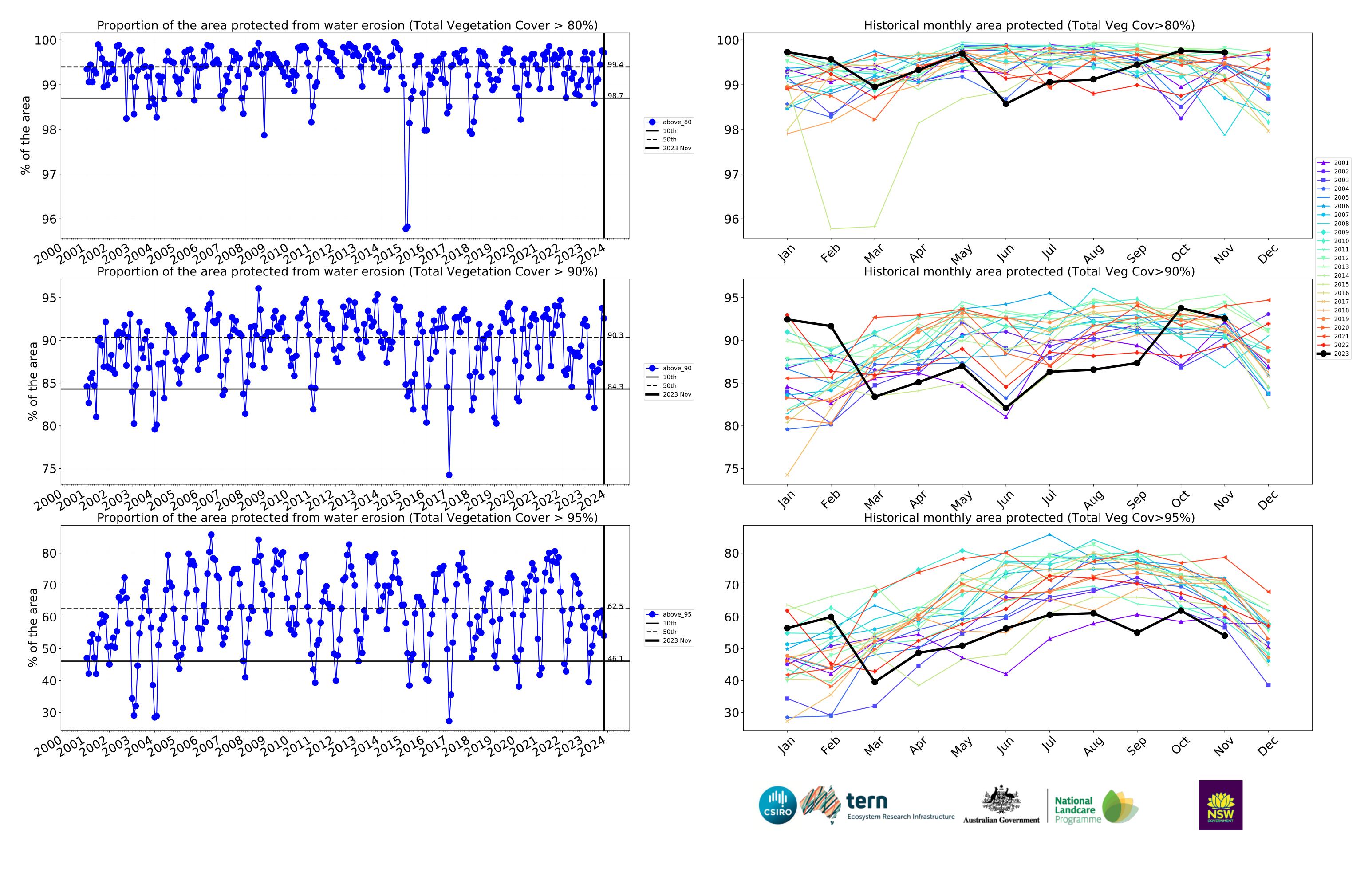




#### **Production native forests and plantation forests timeseries**







## Manjimup\_(S) (689,775 ha and no data 13,318 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	689,775	99.8% 688,400	99.6% 687,300	99.2% 684,175	97.9% 675,300	85.8% 591,550	48.7% 336,175
Conservation and natural environments	370,325	99.6% 368,975	99.4% 368,075	98.8% 365,750	97.1% 359,650	86.3% 319,525	50.6% 187,375
Conservation and natural environments non forest	56,175	97.6% 54,850	96.0% 53,950	92.2% 51,800	85.2% 47,850	61.0% 34,275	20.3% 11,425
Conservation and natural environments Woodland forest	71,625	100.0% 71,625	100.0% 71,625	99.8% 71,500	98.0% 70,200	78.6% 56,325	35.1% 25,175
Conservation and natural environments Forest (non woodland)	242,525	100.0% 242,500	100.0% 242,500	100.0% 242,450	99.6% 241,600	94.4% 228,925	62.2% 150,775
Agriculture	60,375	100.0% 60,375	100.0% 60,375	99.9% 60,325	98.1% 59,200	62.4% 37,700	21.1% 12,750
Grazing	45,425	100.0% 45,425	100.0% 45,425	99.9% 45,400	98.2% 44,625	64.5% 29,300	21.5% 9,750
Grazing non forest	43,750	100.0% 43,750	100.0% 43,750	99.9% 43,725	98.2% 42,950	64.2% 28,075	21.4% 9,350
Irrigation	9,150	100.0% 9,150	100.0% 9,150	99.7% 9,125	96.2% 8,800	46.7% 4,275	13.4% 1,225
Production native forests and plantation forests	250,400	100.0% 250,400	100.0% 250,400	100.0% 250,275	99.7% 249,700	92.6% 231,775	54.1% 135,400







