# Total vegetation cover soil protection Region:LGA Livingstone (S) QLD

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps.

Land use forest cover:

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

# **Erosion protection**

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

# Rainfall

• Millimetres rainfall each month (black line).

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

Water erosion protection for higher rainfall and steeper slopes:

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

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

# **Acknowledgment of data:**

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

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









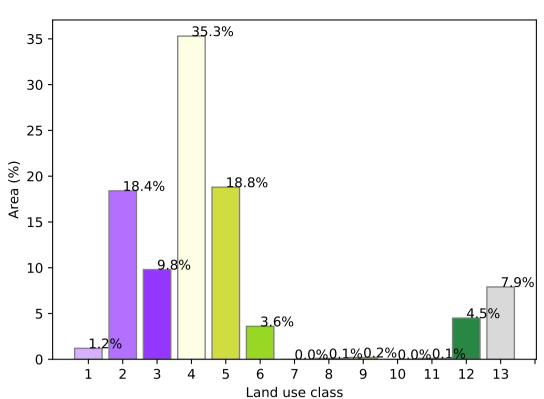
**Date: September 2021** 

# **Vegetation Cover Sep 2021**

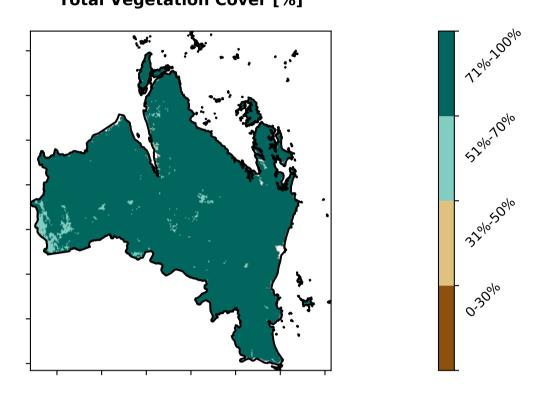
#### Land use and forest cover

# 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 - Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Non-woodland forest 6 Agriculture - Grazing - Irrigated 7 Agriculture - Grazing - Irrigated 8 Agriculture - Grazing - Irrigated 9 Agriculture - Cropping - Non-irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation forests 13 Other uses

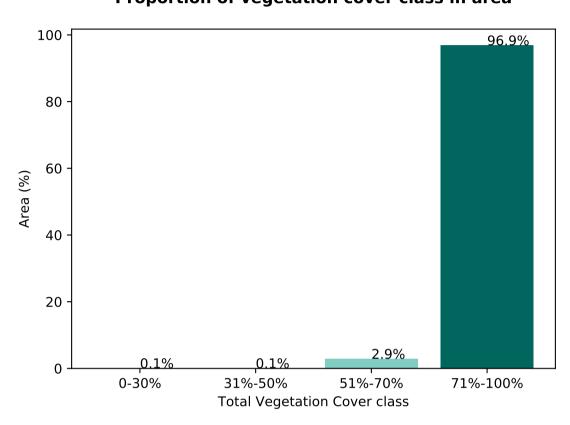
# Proportion of each land class in area



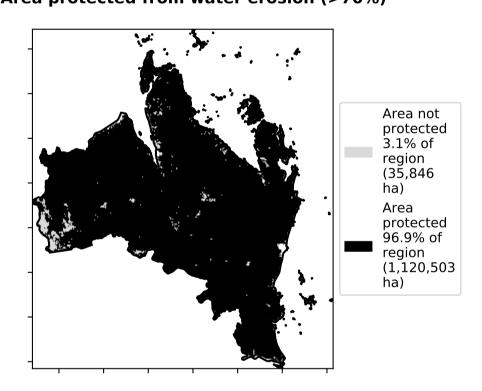
# **Total Vegetation Cover [%]**



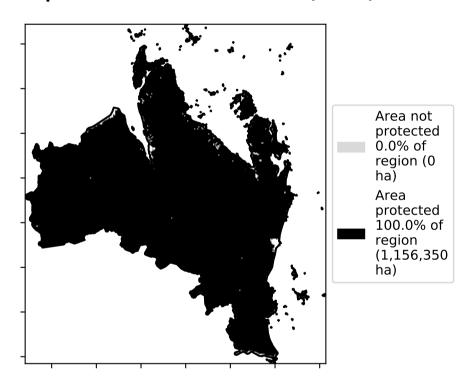
Proportion of vegetation cover class in area



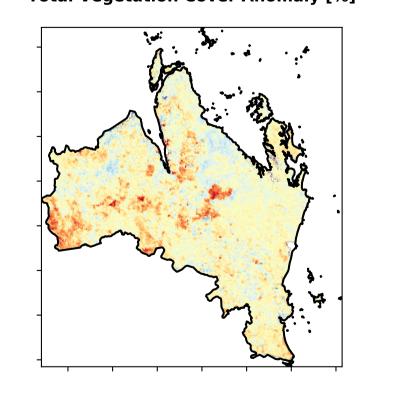
# % Area protected from water erosion (>70%)

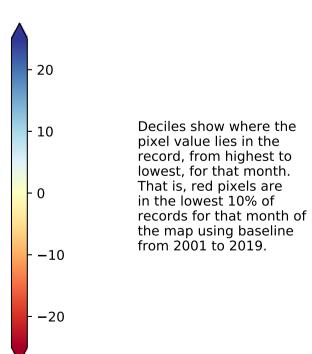


% Area protected from wind erosion (>50%)

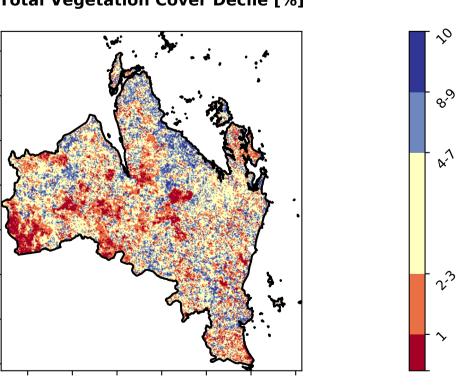


# Total Vegetation Cover Anomaly [%]





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.

Catchment Scale

Derived from

Use of Australia

(2018) and Forests

of Australia (2018)

Land Use and Forests of Australia (2018)

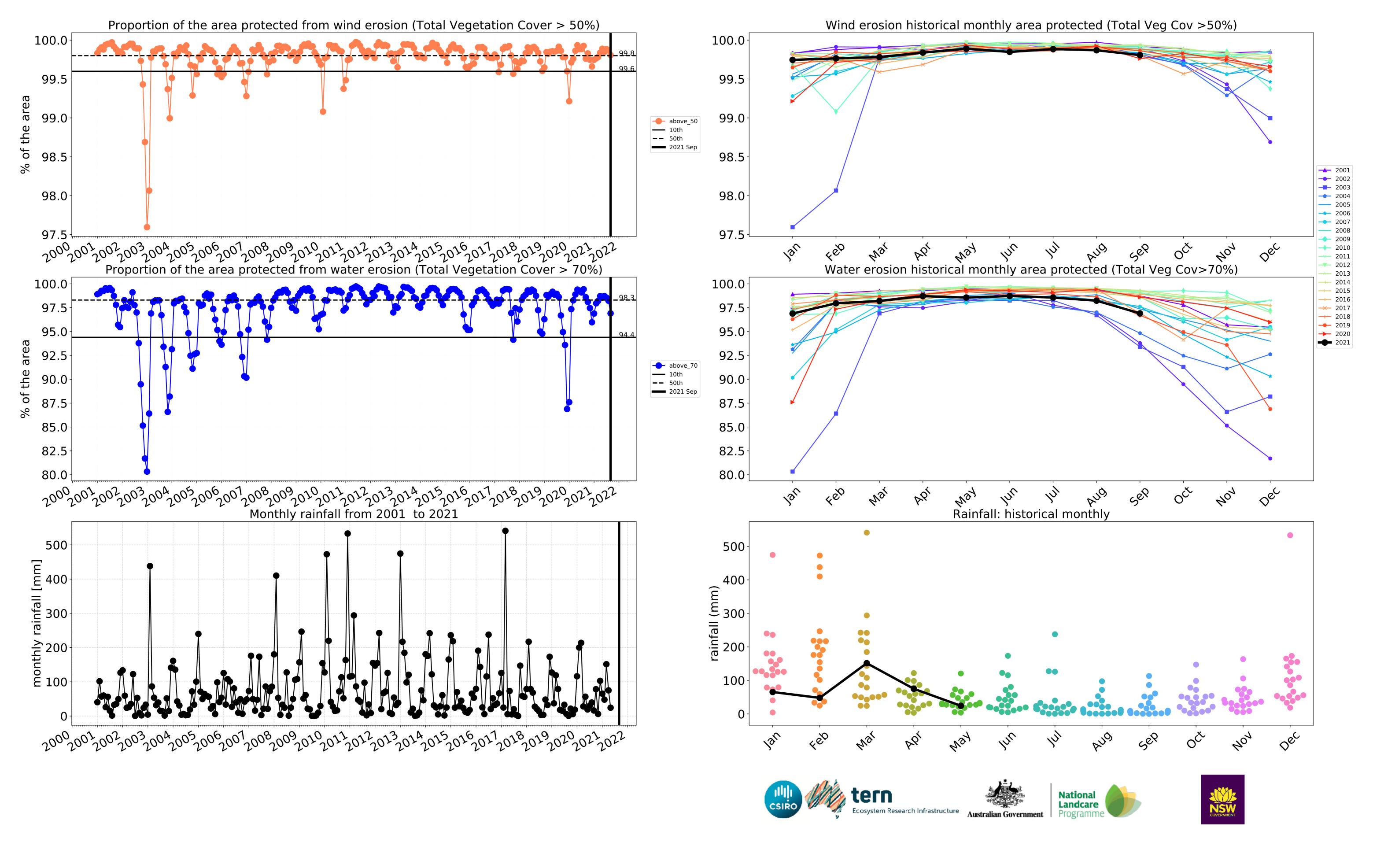
Catchment Scale Land

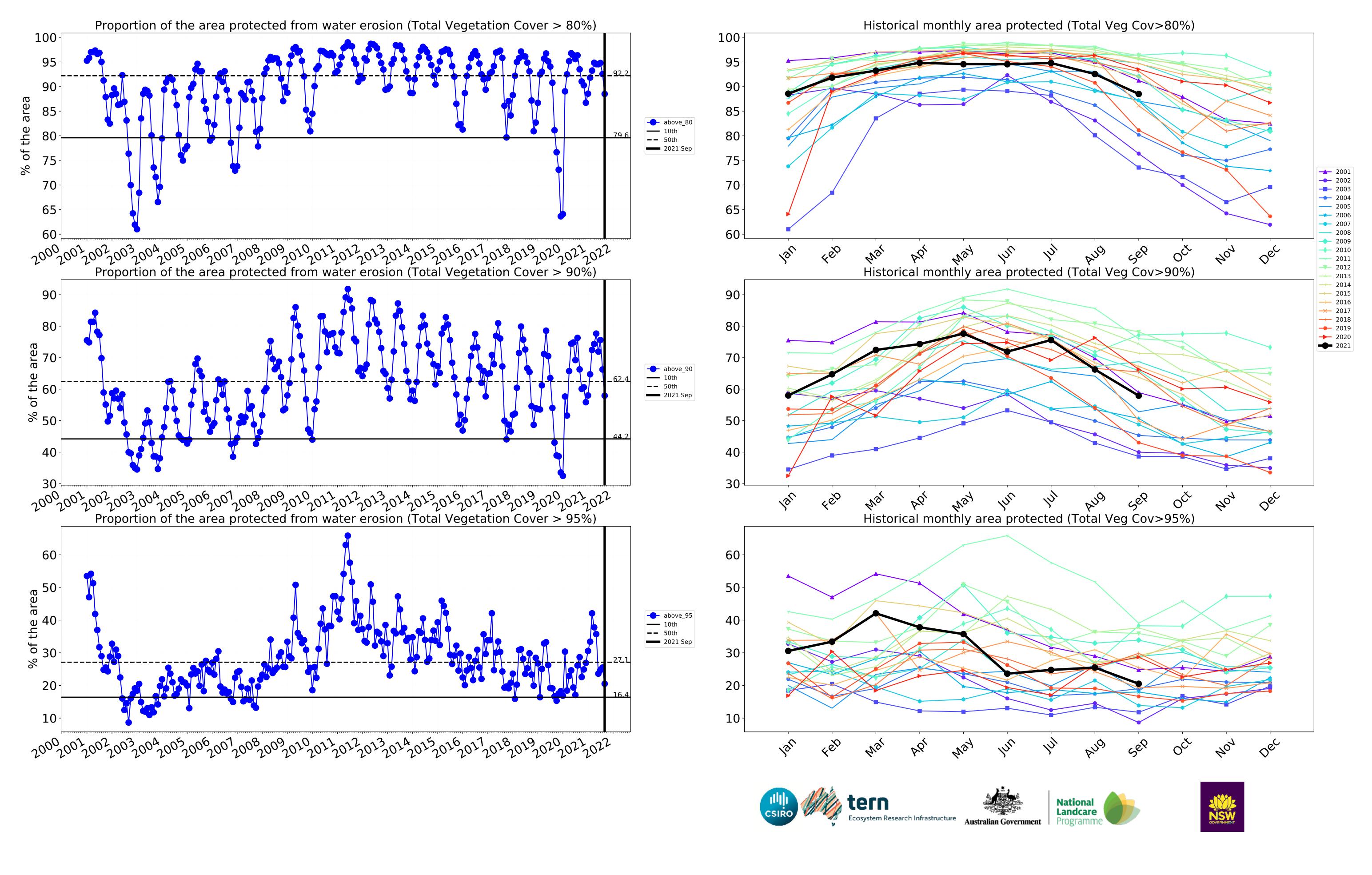












# **Conservation and natural environments**

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

Anomaly show how many percetage points each

pixel is from

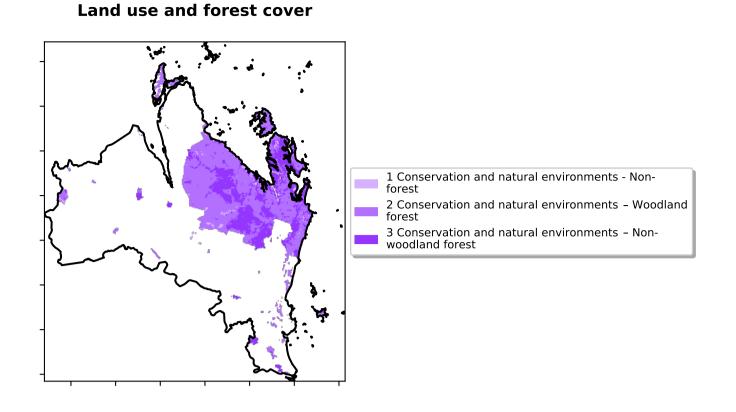
is, red pixels are about 20% lower than the mean of that

the mean. That

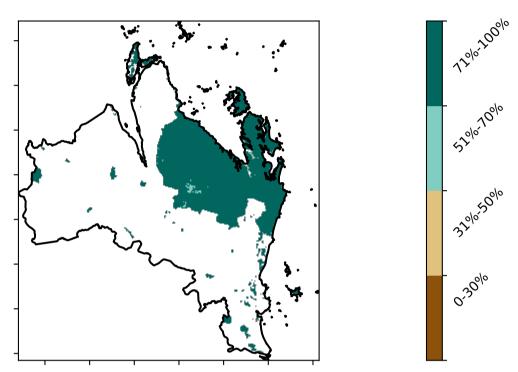
pixel. The mean

using baseline from 2001 to 2019.

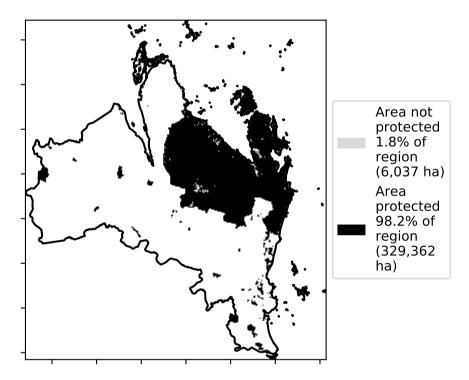
is only for the month of the map



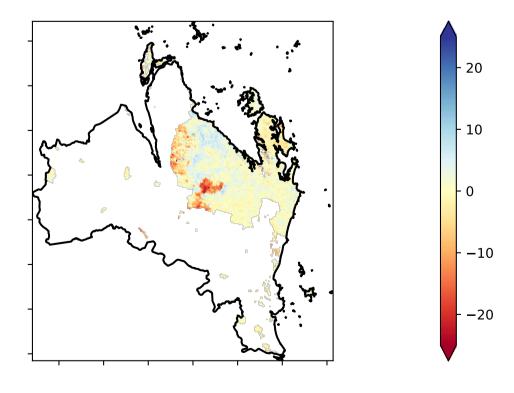
# **Total Vegetation Cover [%]**



% Area protected from water erosion (>70%)

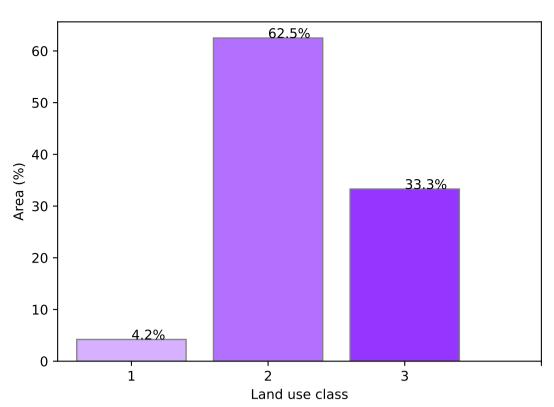


Total Vegetation Cover Anomaly [%]

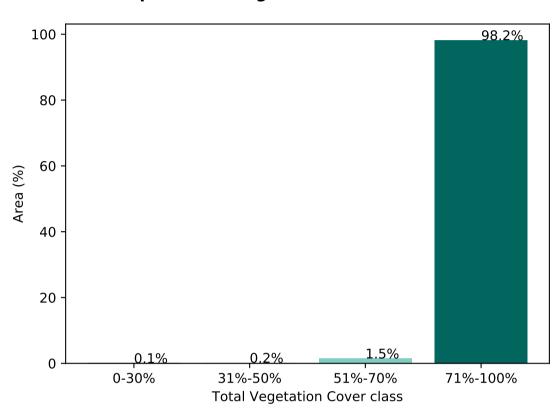


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

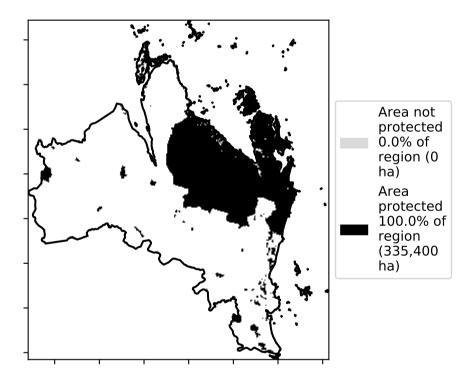
# Proportion of each land class in area

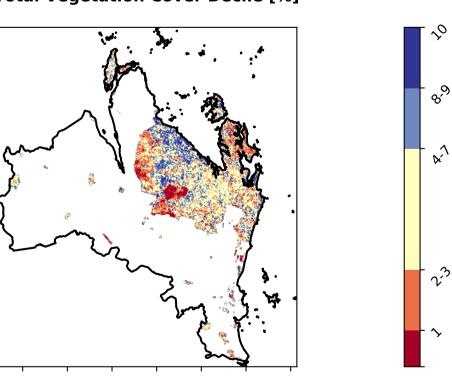


# Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









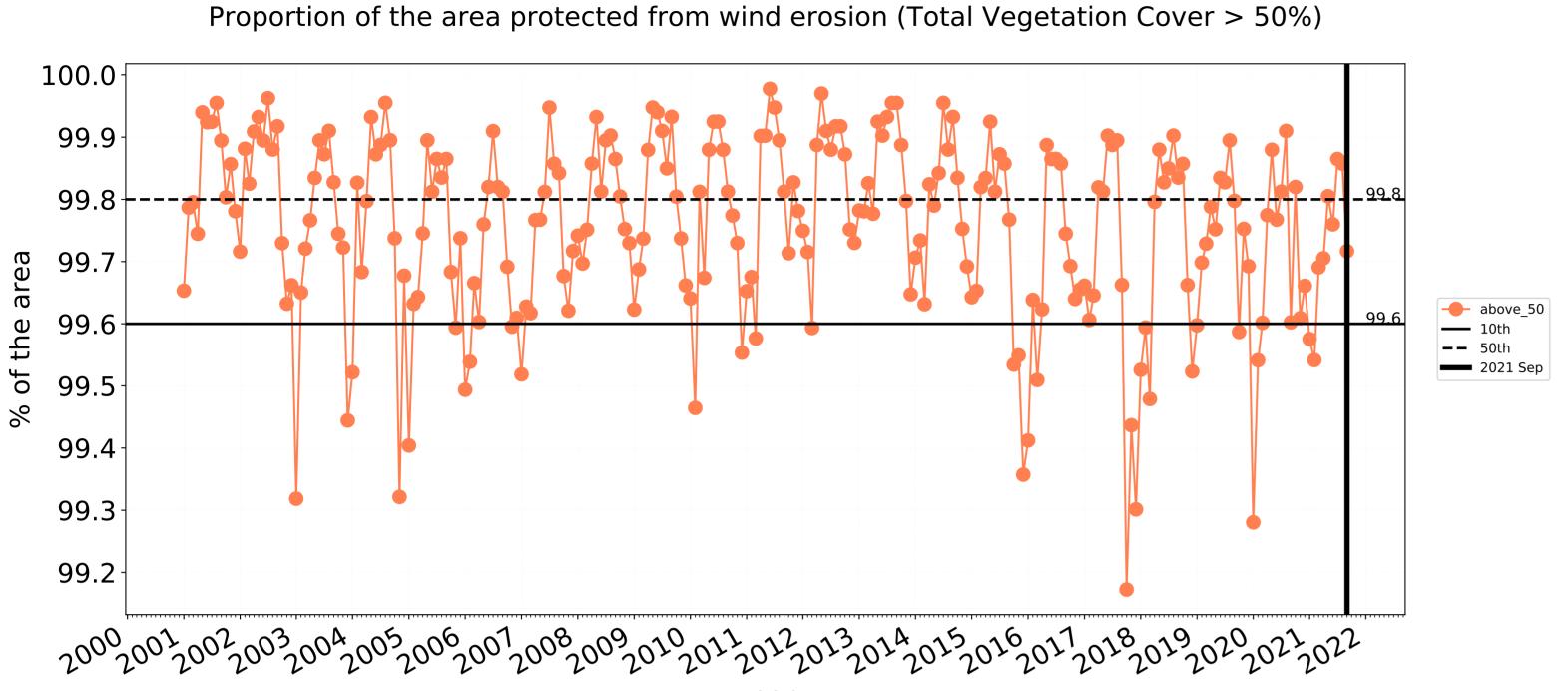


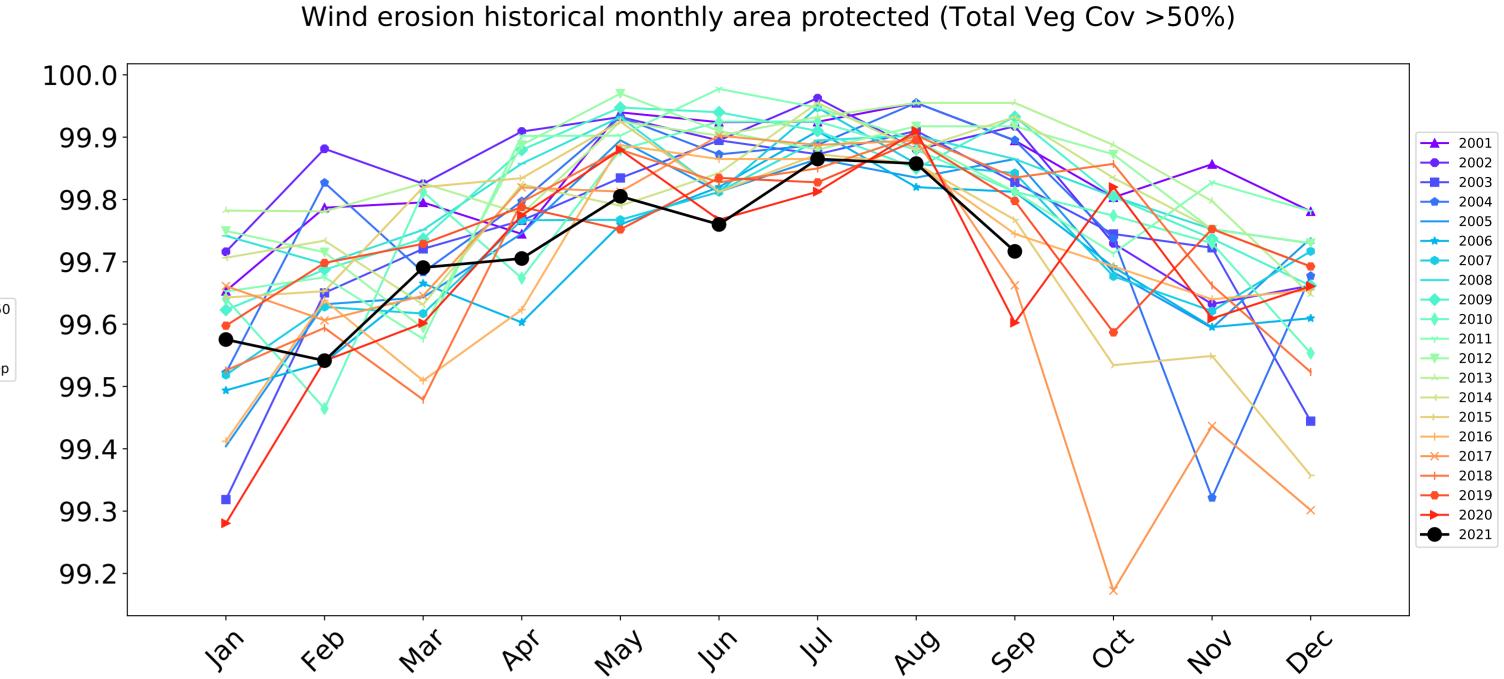


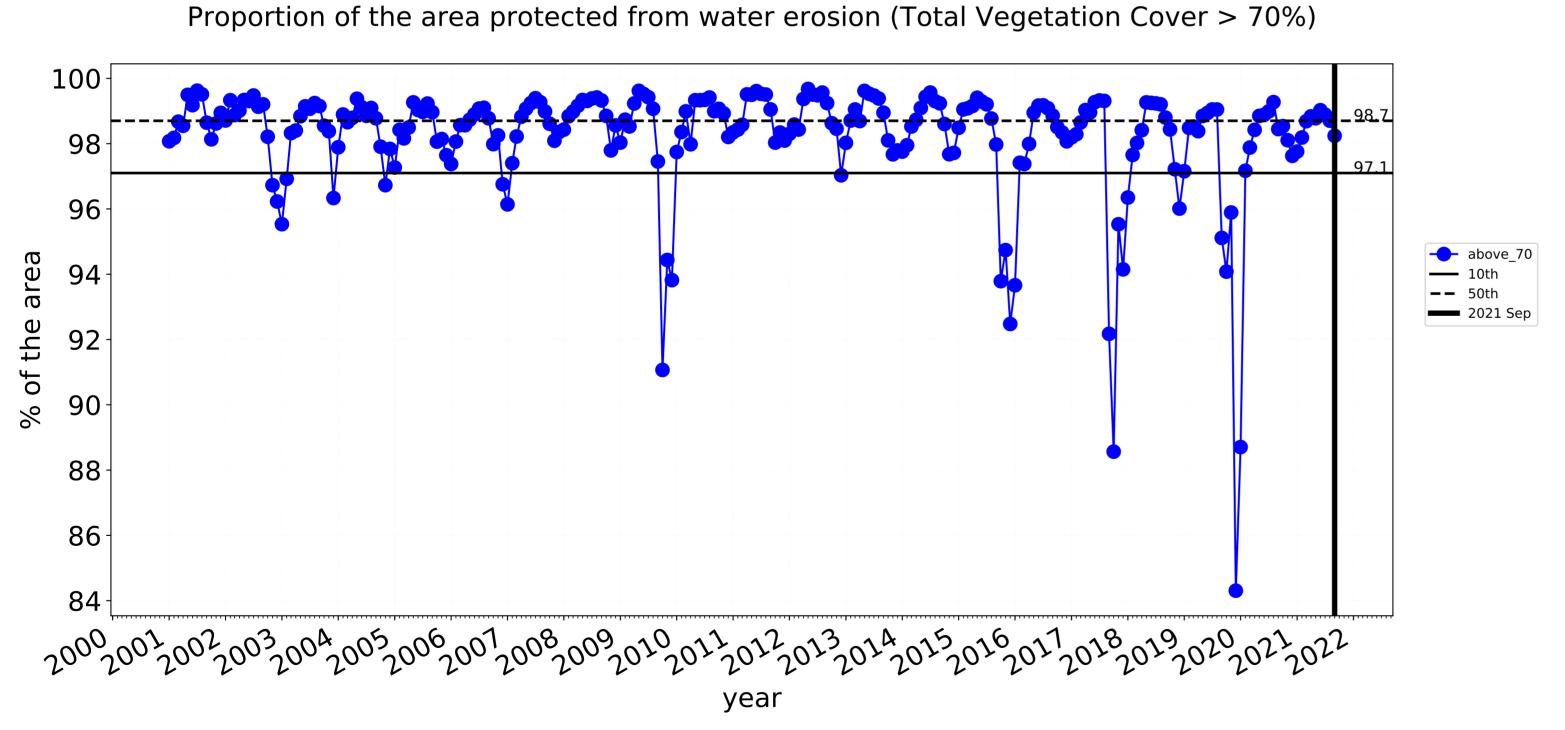


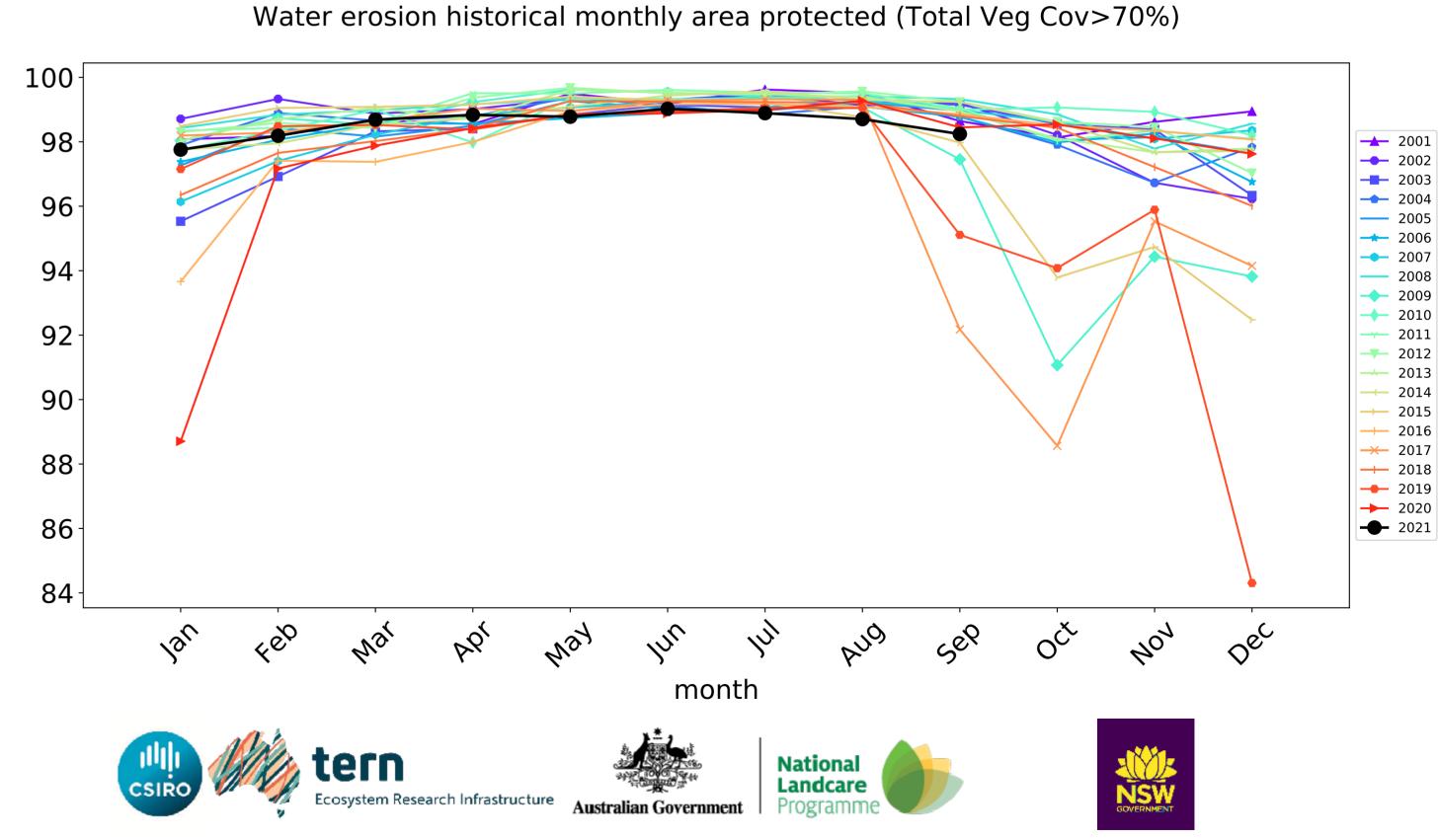


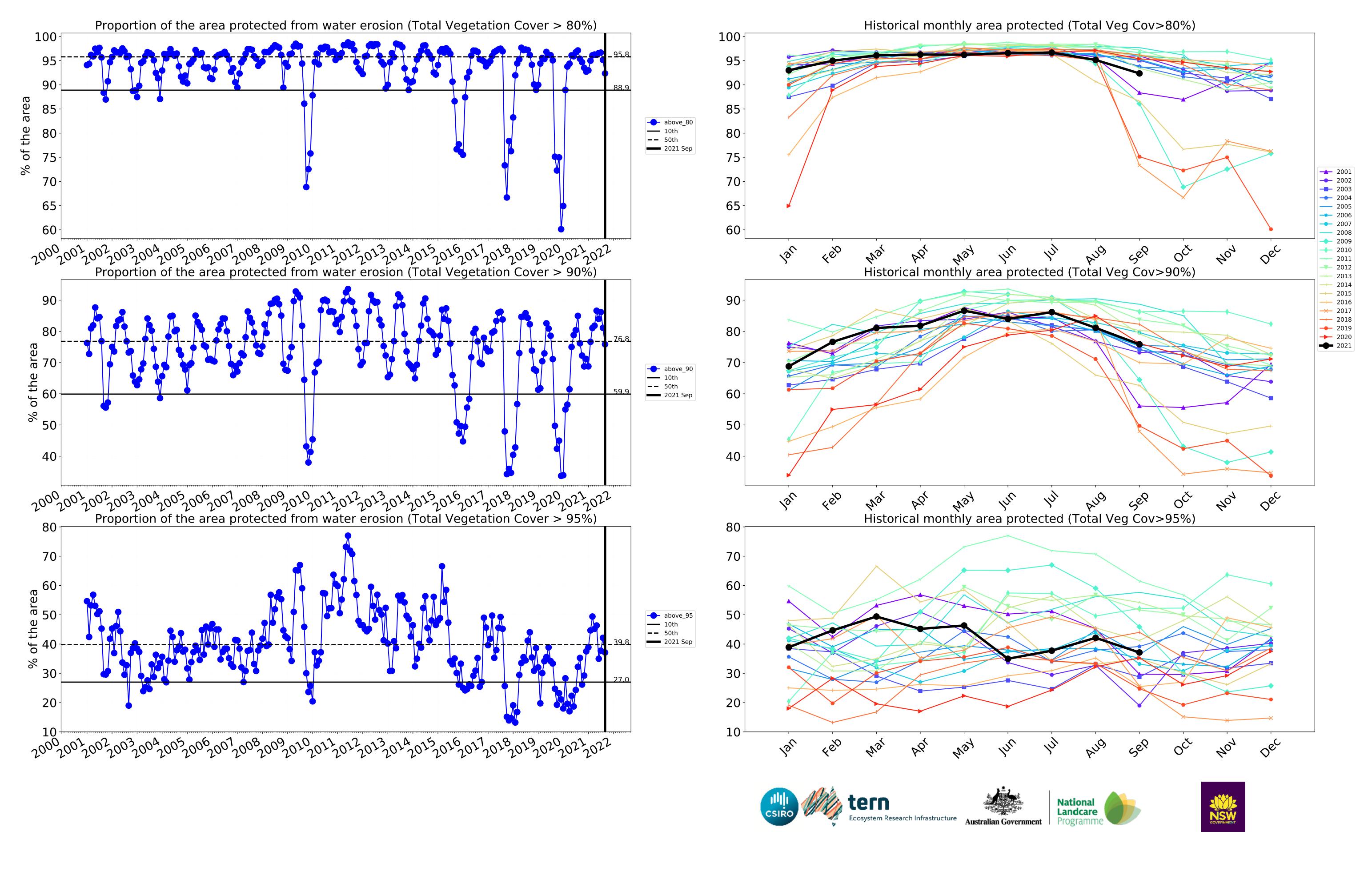
# **Conservation and natural environments timeseries**











# **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

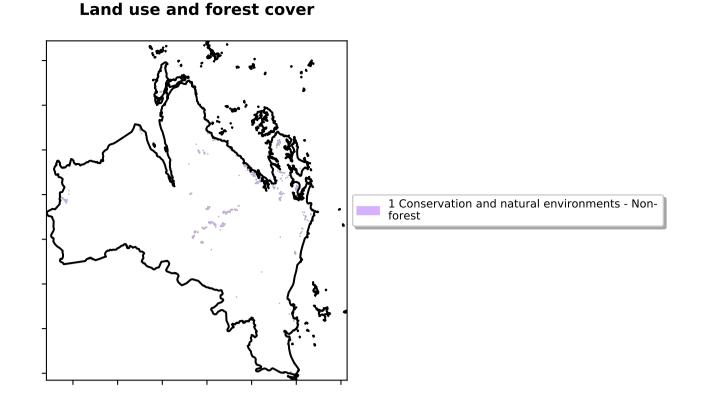
of Australia (2018)

Anomaly show how many percetage points each

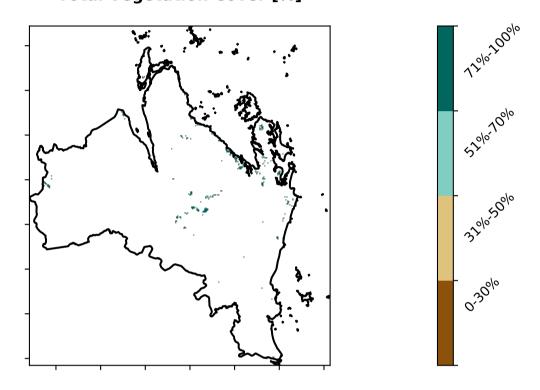
pixel is from the mean. That

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

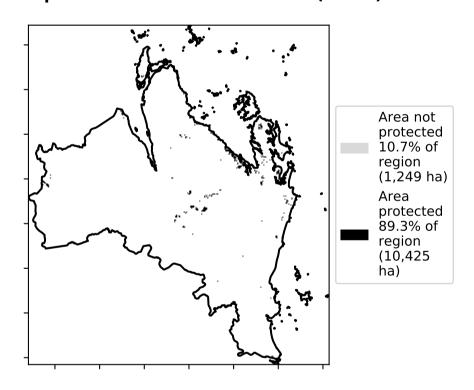
is, red pixels are about 20% lower than the mean of that



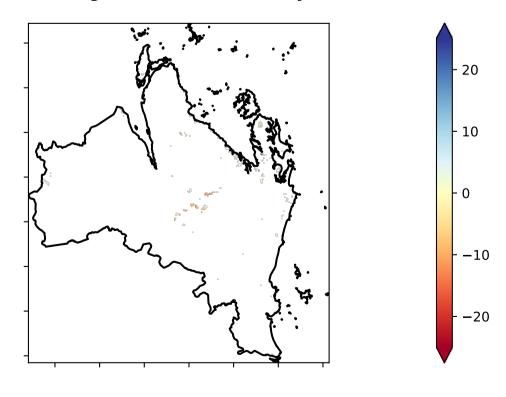
# **Total Vegetation Cover [%]**



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

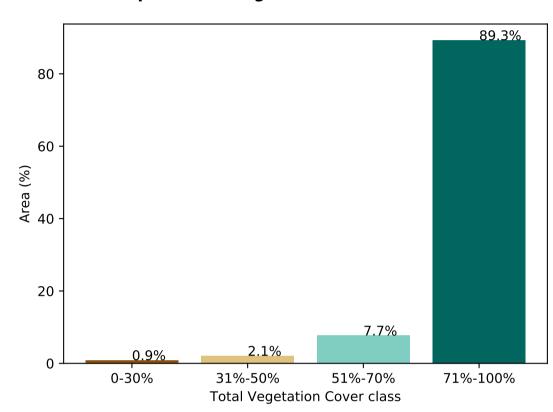


# **Total Vegetation Cover Anomaly [%]**

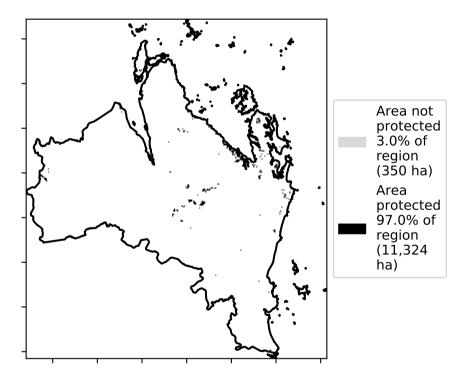


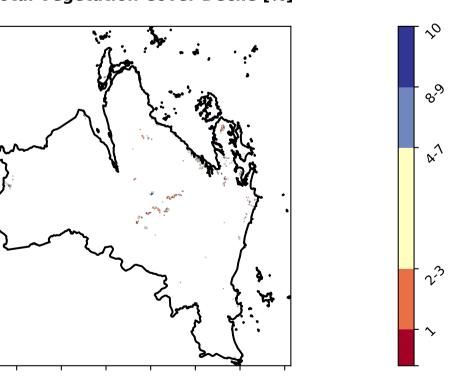
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

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



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











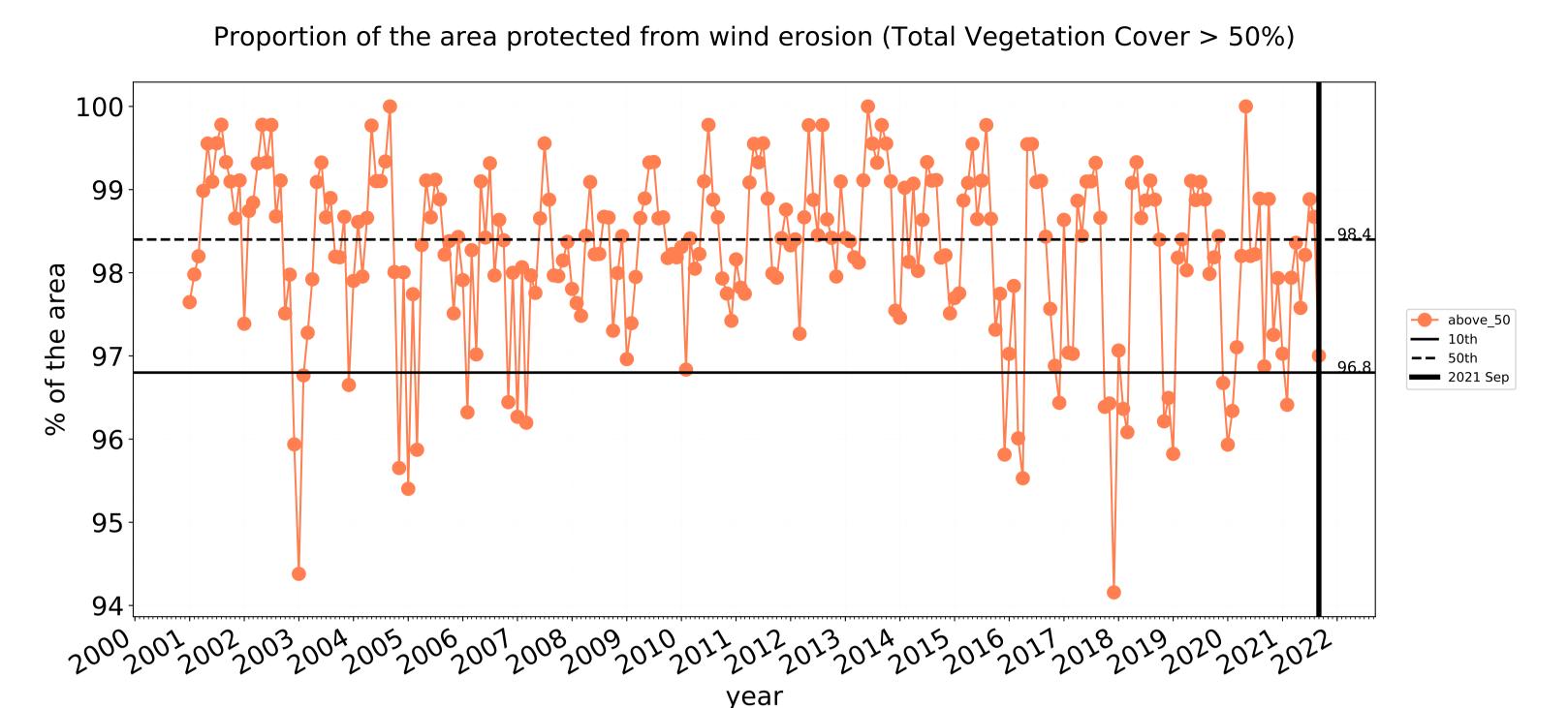


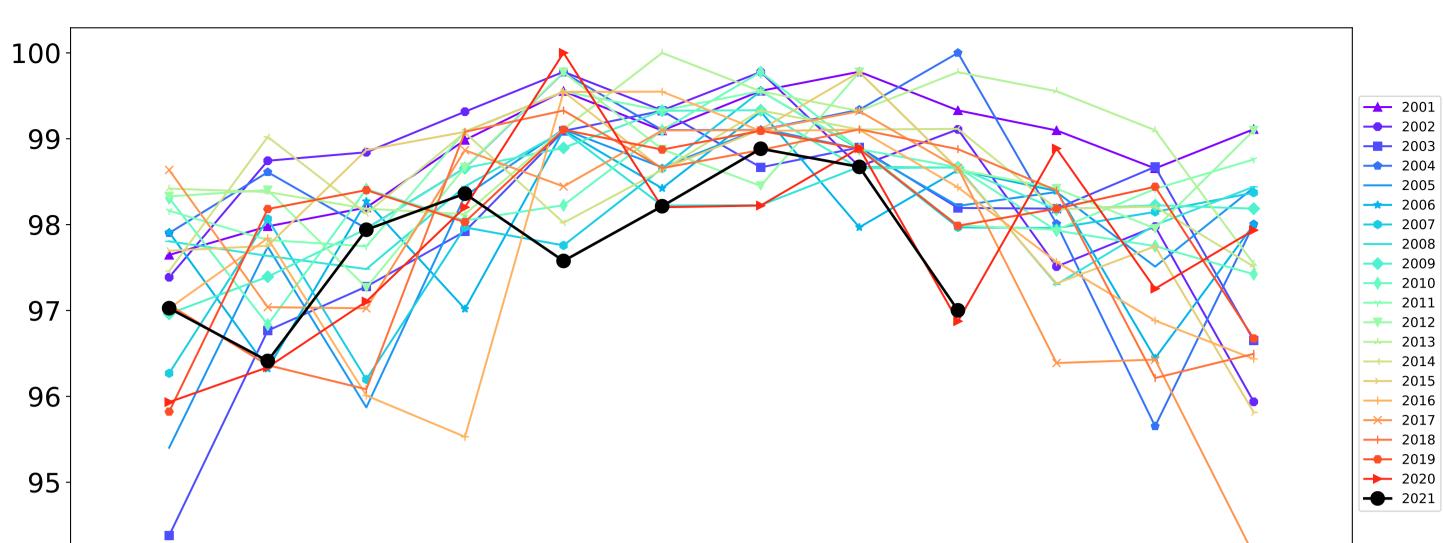




# **Conservation and natural environments non forest timeseries**

94

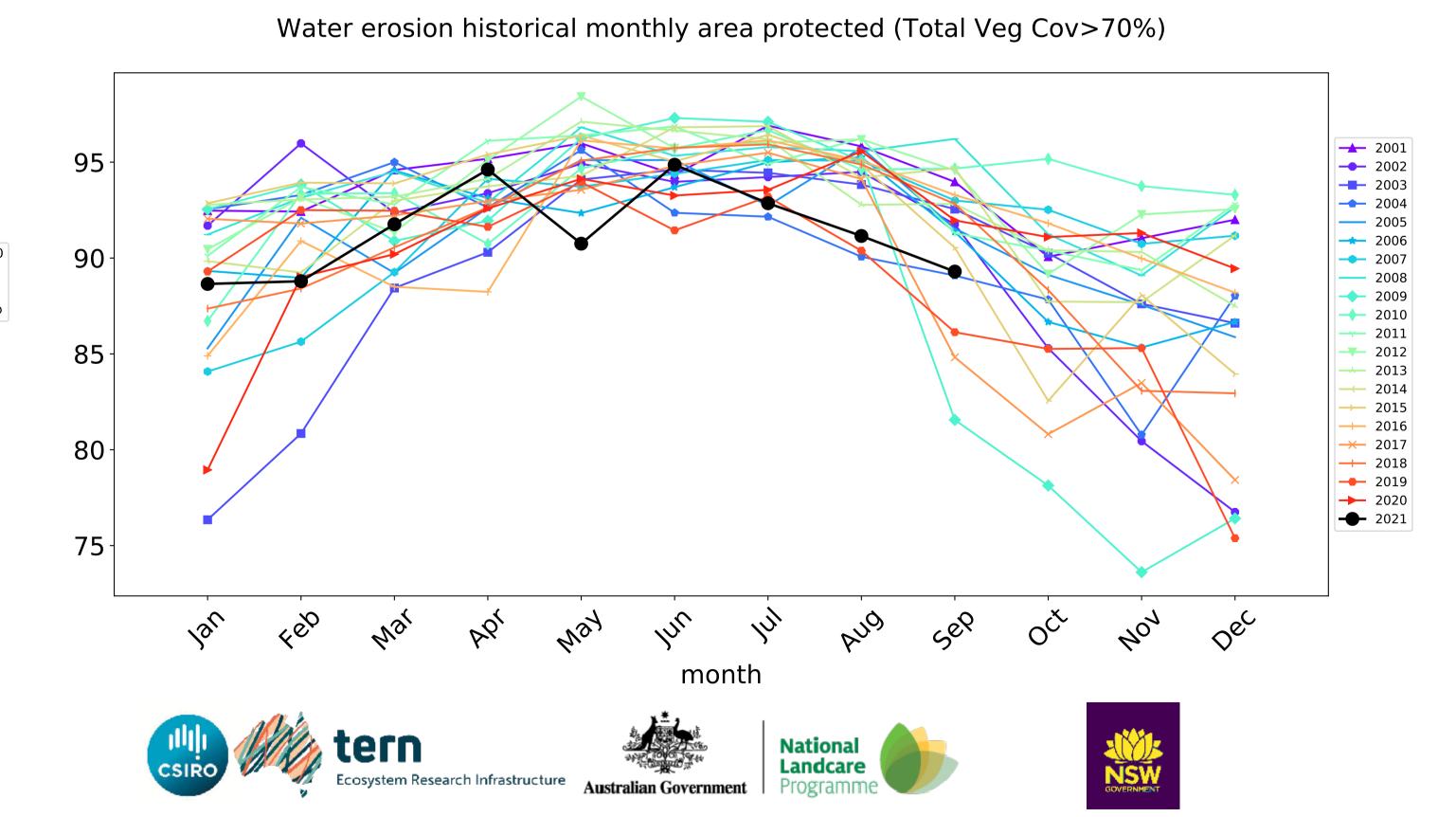


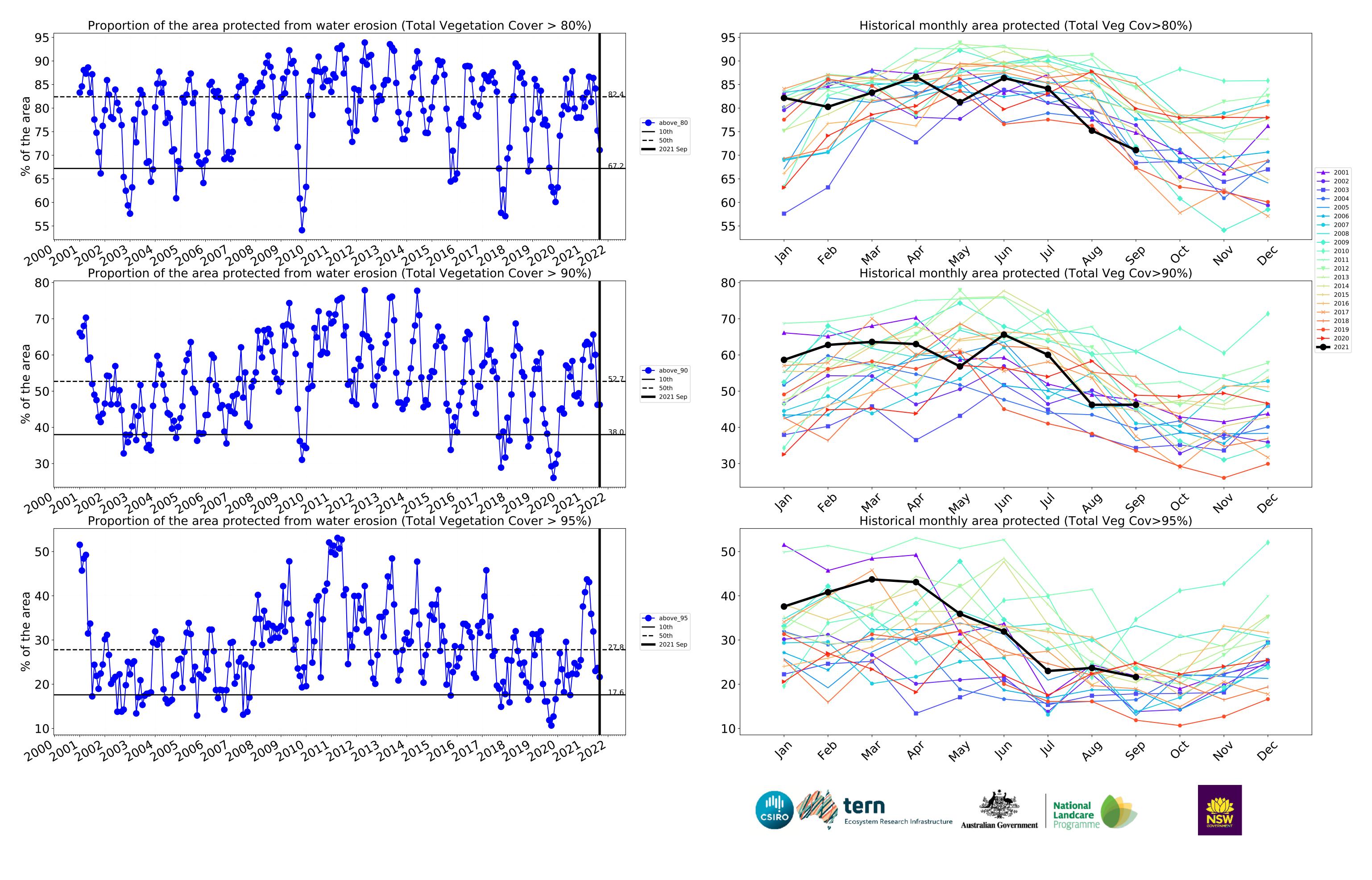


month

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

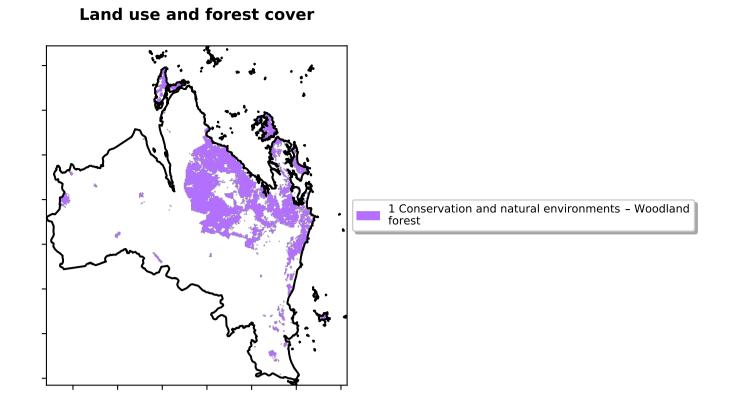
# Proportion of the area protected from water erosion (Total Vegetation Cover > 70%) $\begin{array}{c} 95 \\ 90 \\ 80 \\ 75 \\ 200^2 200^2 200^3 200^3 200^3 200^5 200^5 200^5 200^5 200^5 201^3 20$



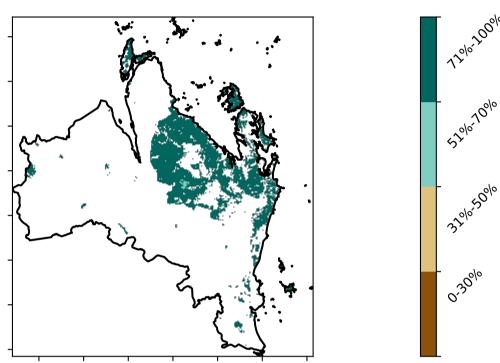


# **Conservation and natural environments Woodland forest**

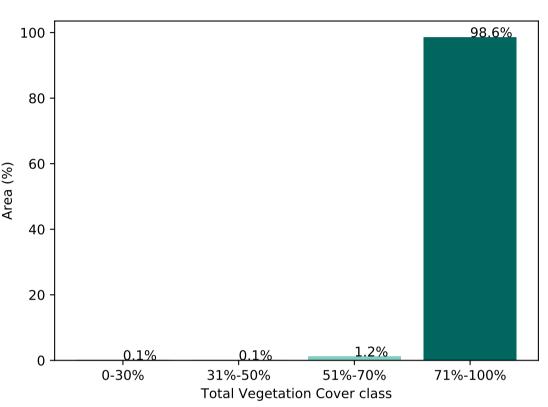
# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



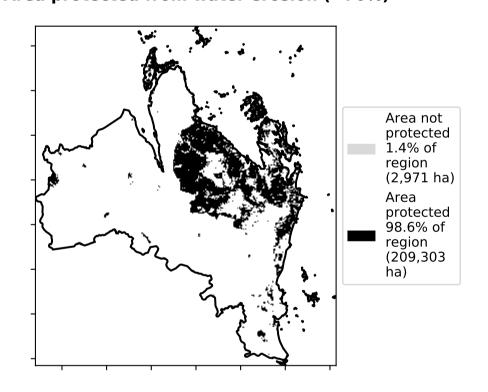
# **Total Vegetation Cover [%]**



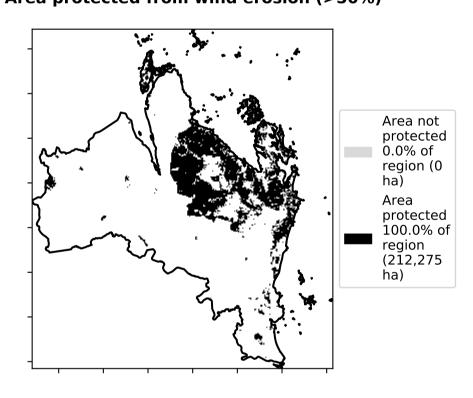
# **Proportion of vegetation cover class in area**



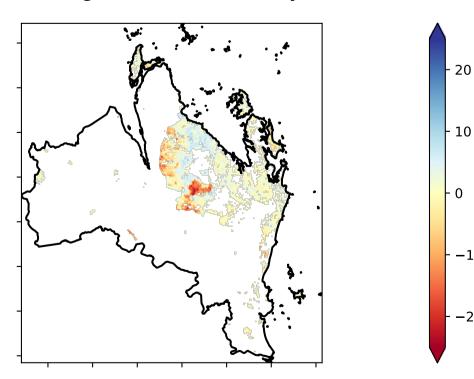
# % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

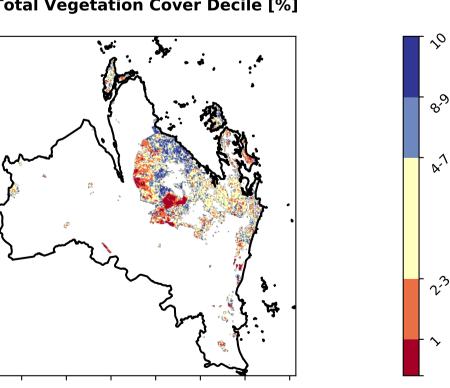


# **Total Vegetation Cover Anomaly [%]**



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 man using baseline. 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.







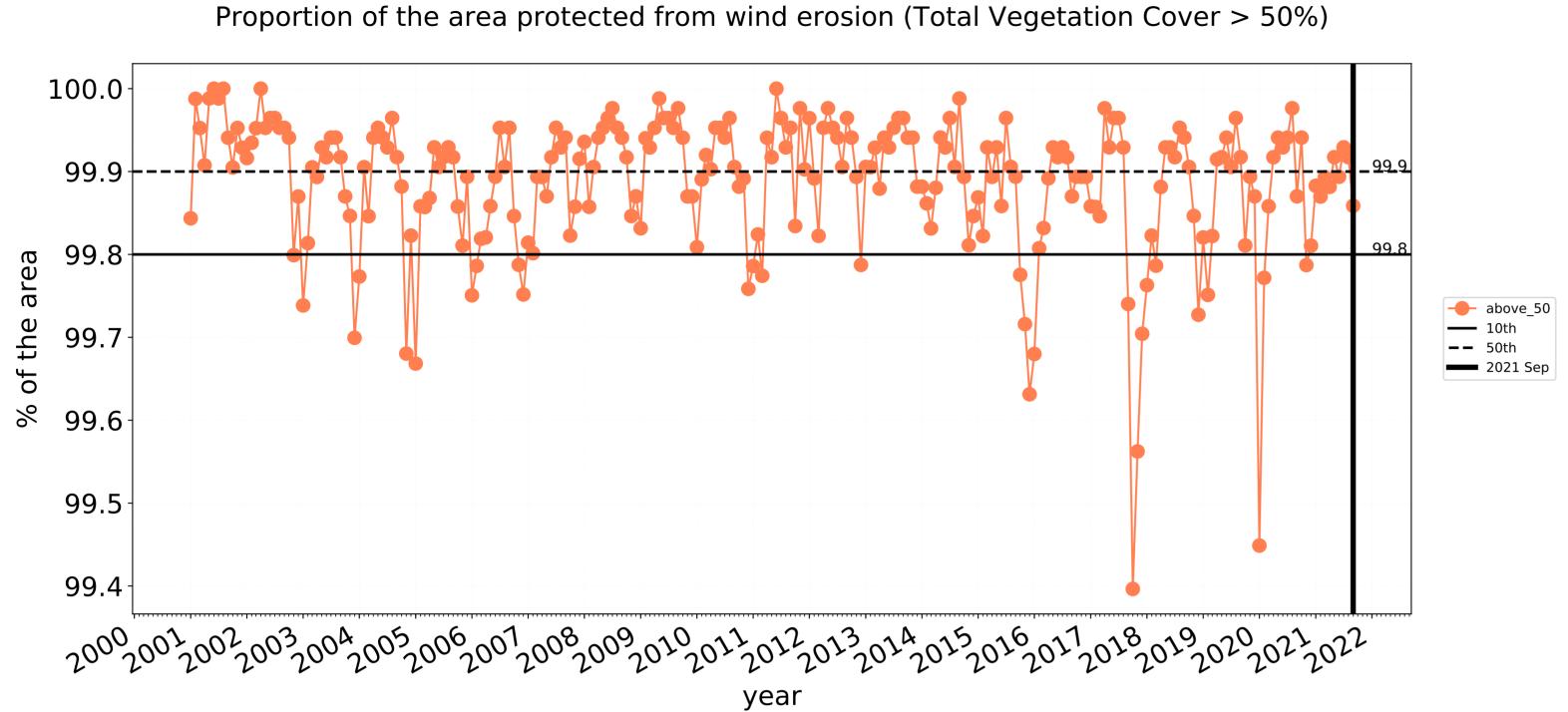


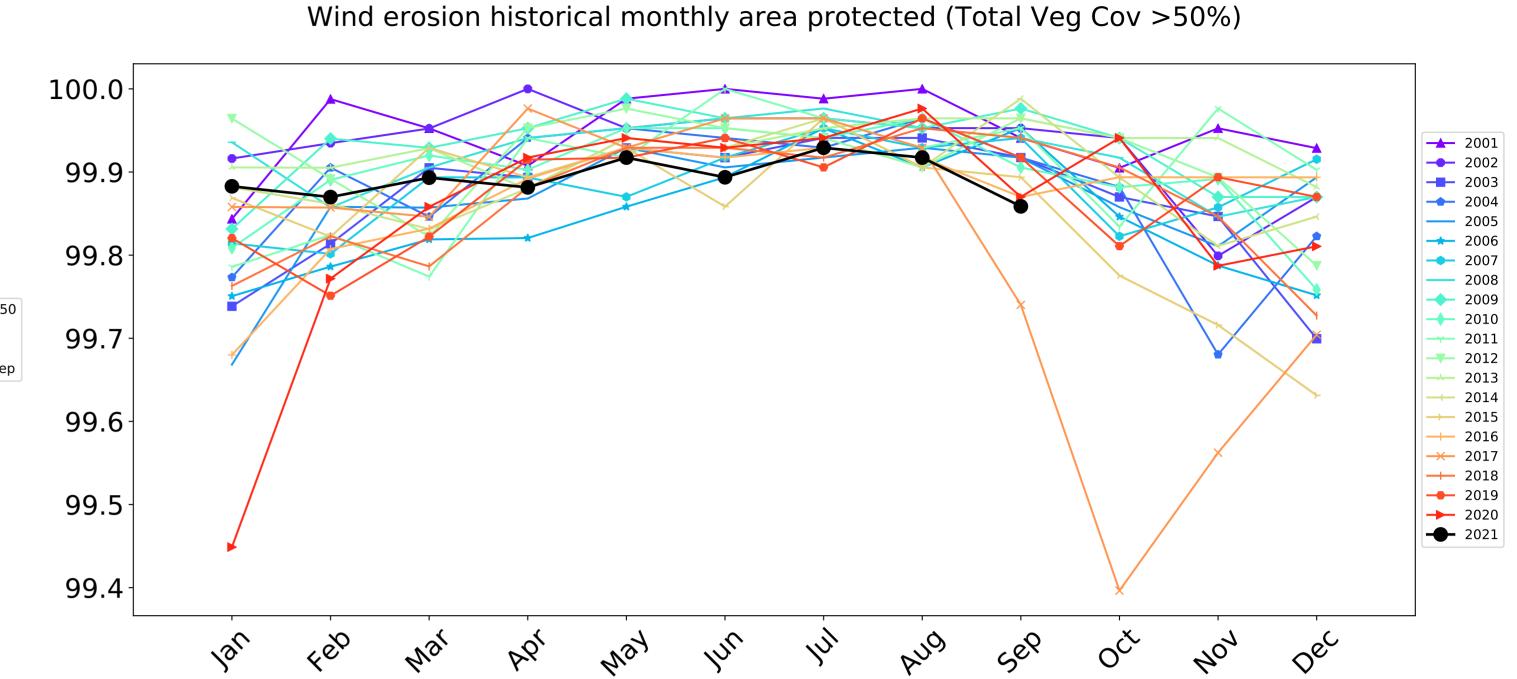
- 10

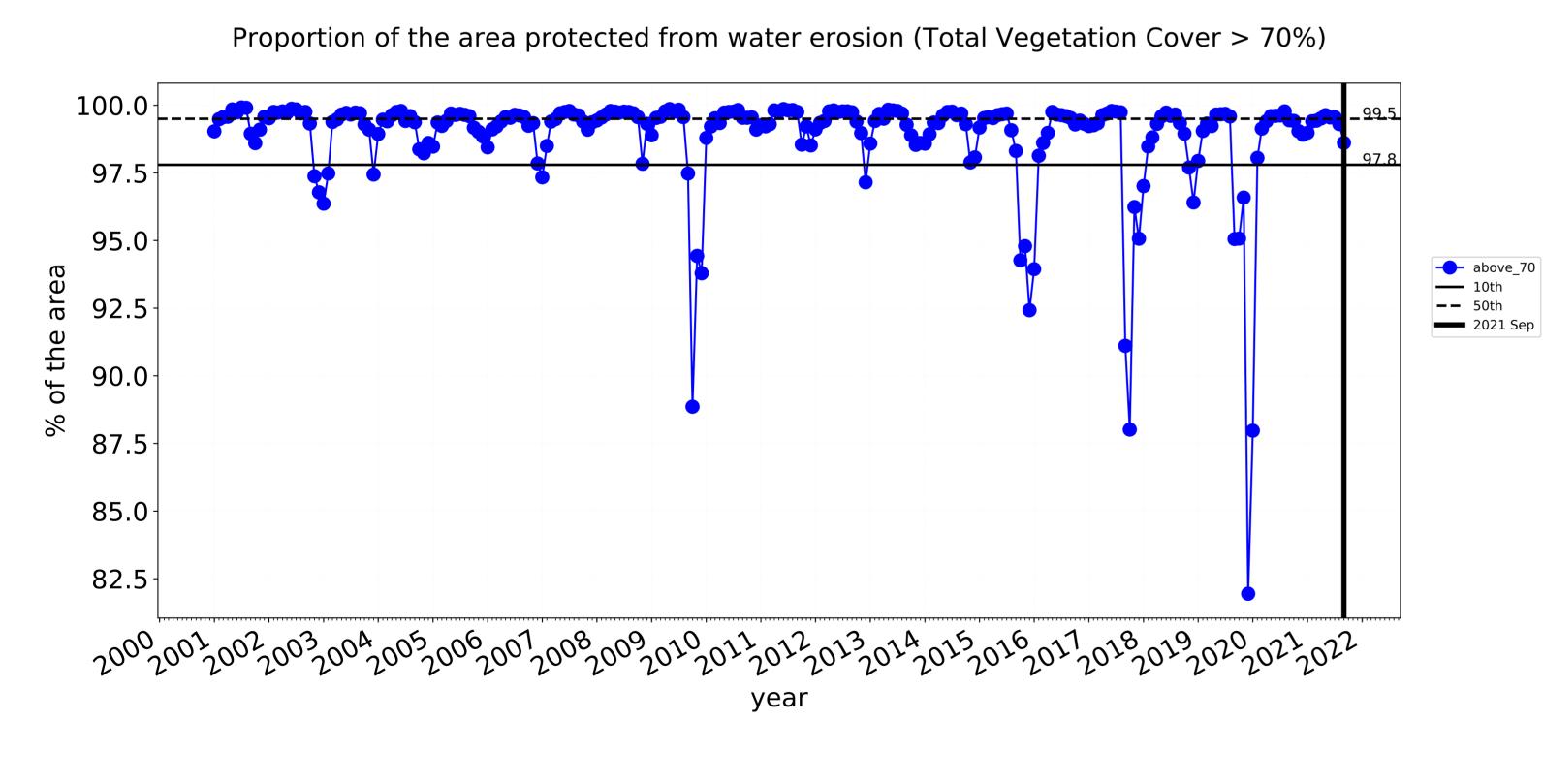
-10

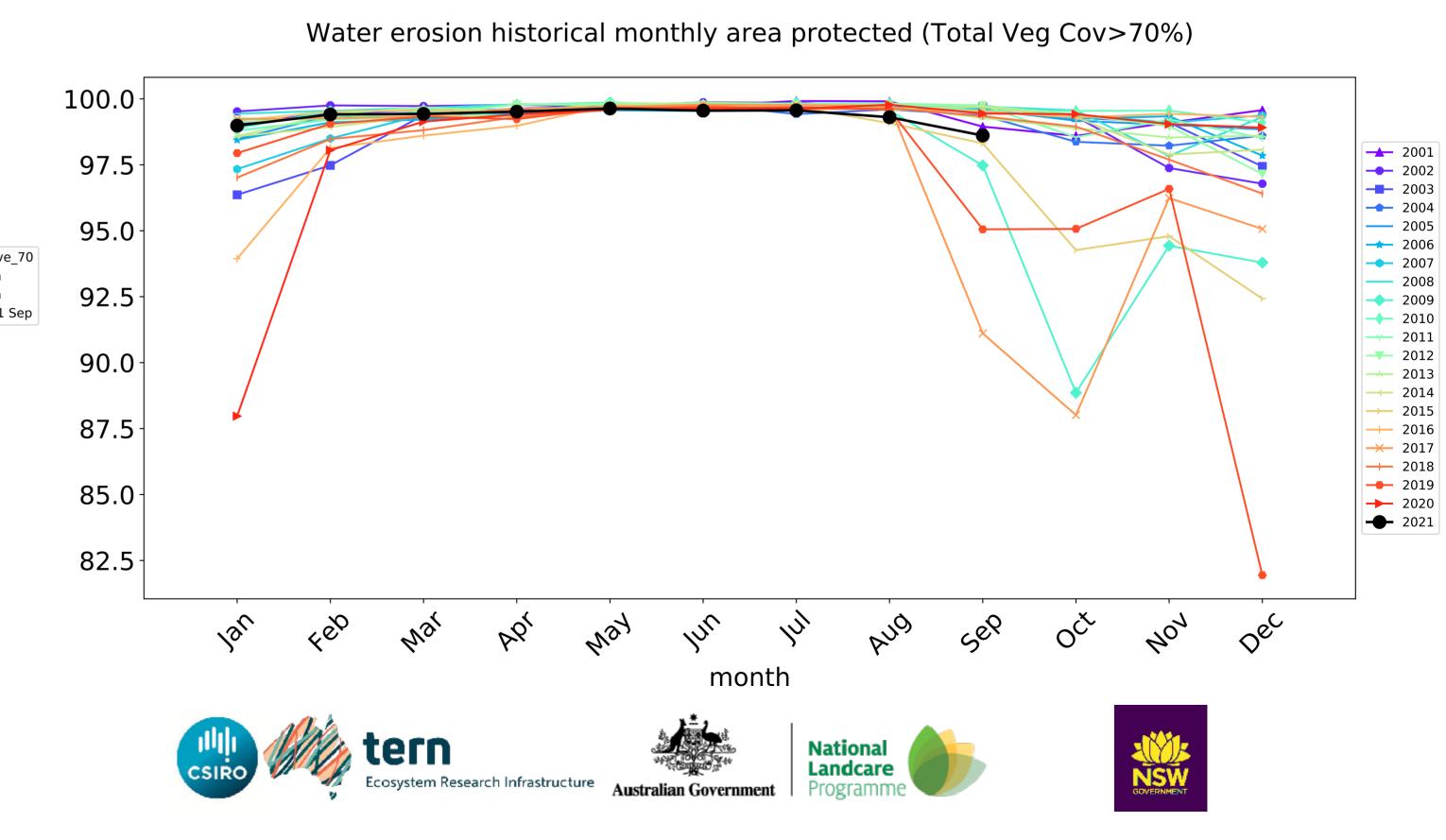
**-**20

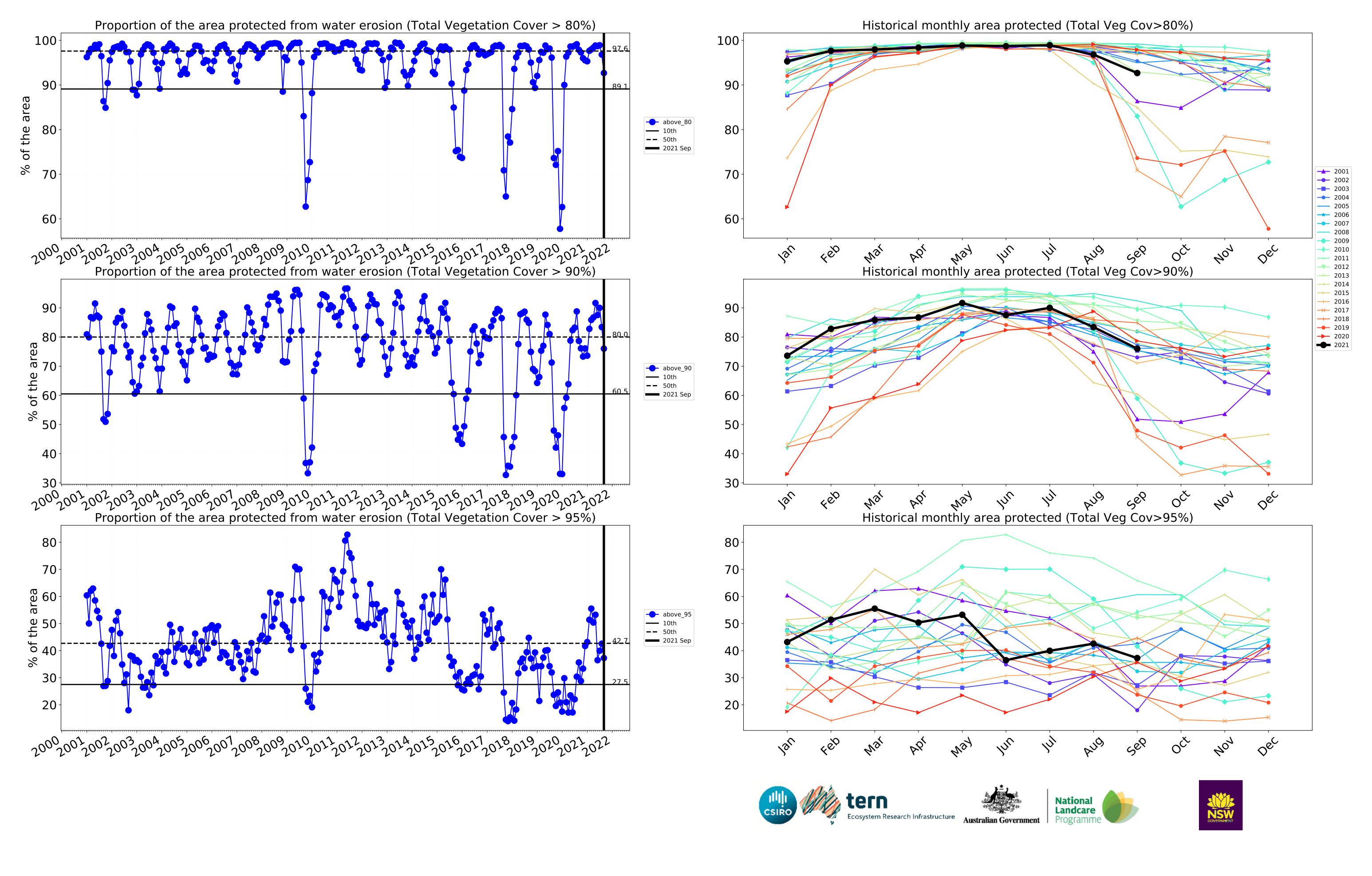
# **Conservation and natural environments Woodland forest timeseries**







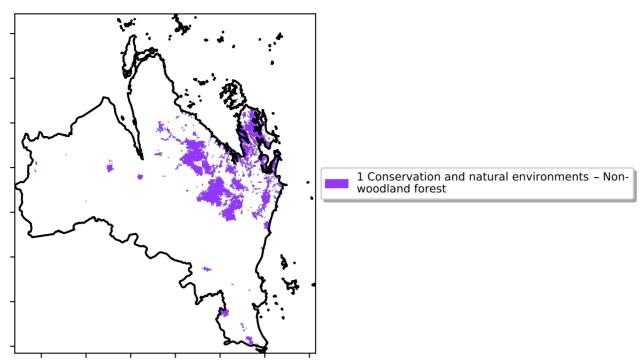




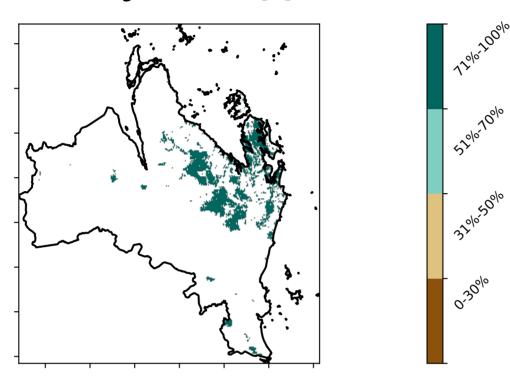
# **Conservation and natural environments Forest (non woodland)**

# Land use and forest cover

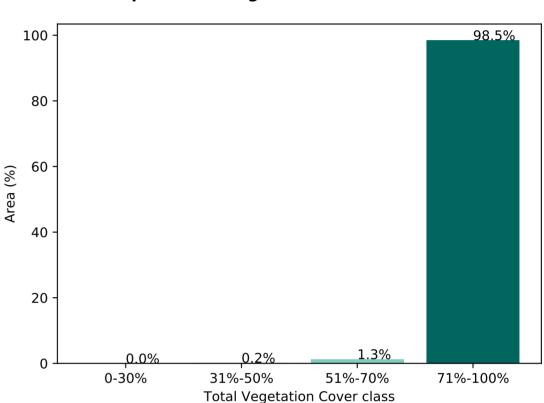
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



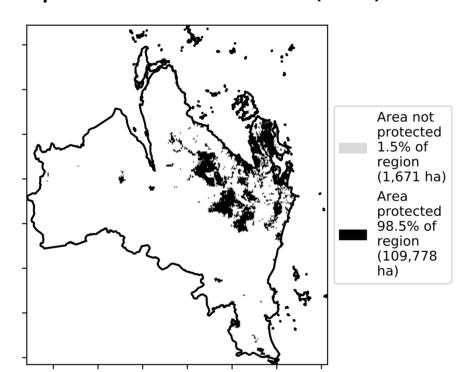
## **Total Vegetation Cover [%]**



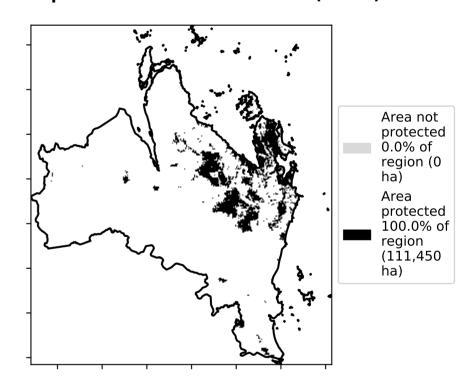
# Proportion of vegetation cover class in area



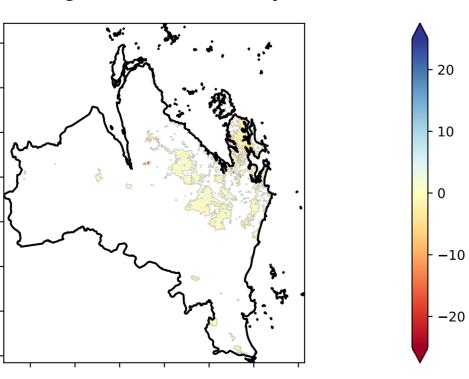
# % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

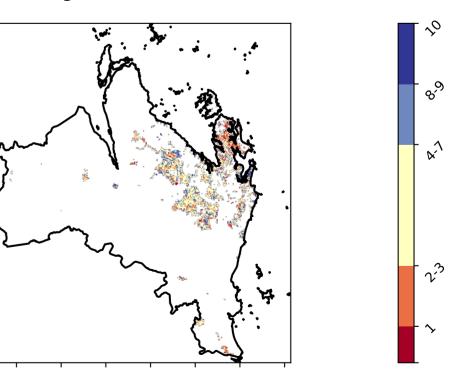


# **Total Vegetation Cover Anomaly [%]**



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 [%]



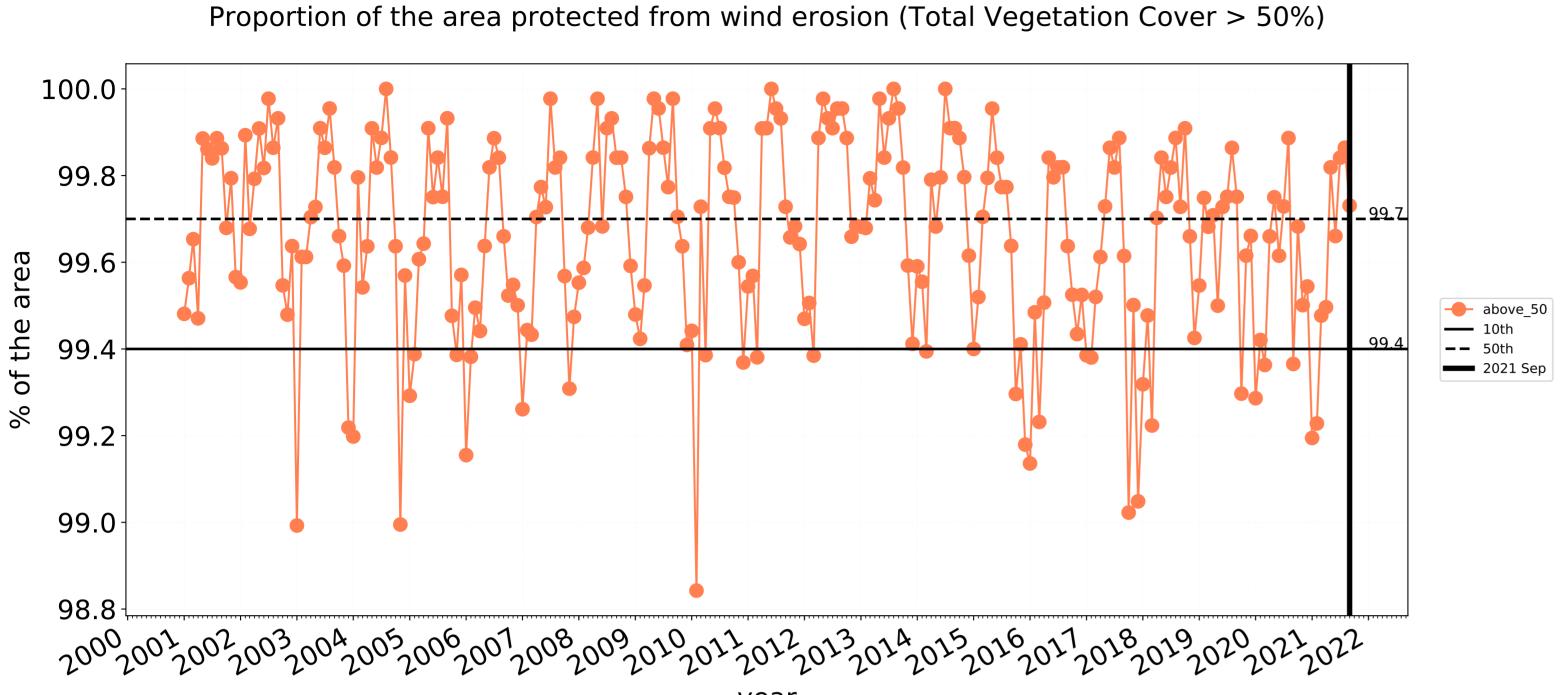
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

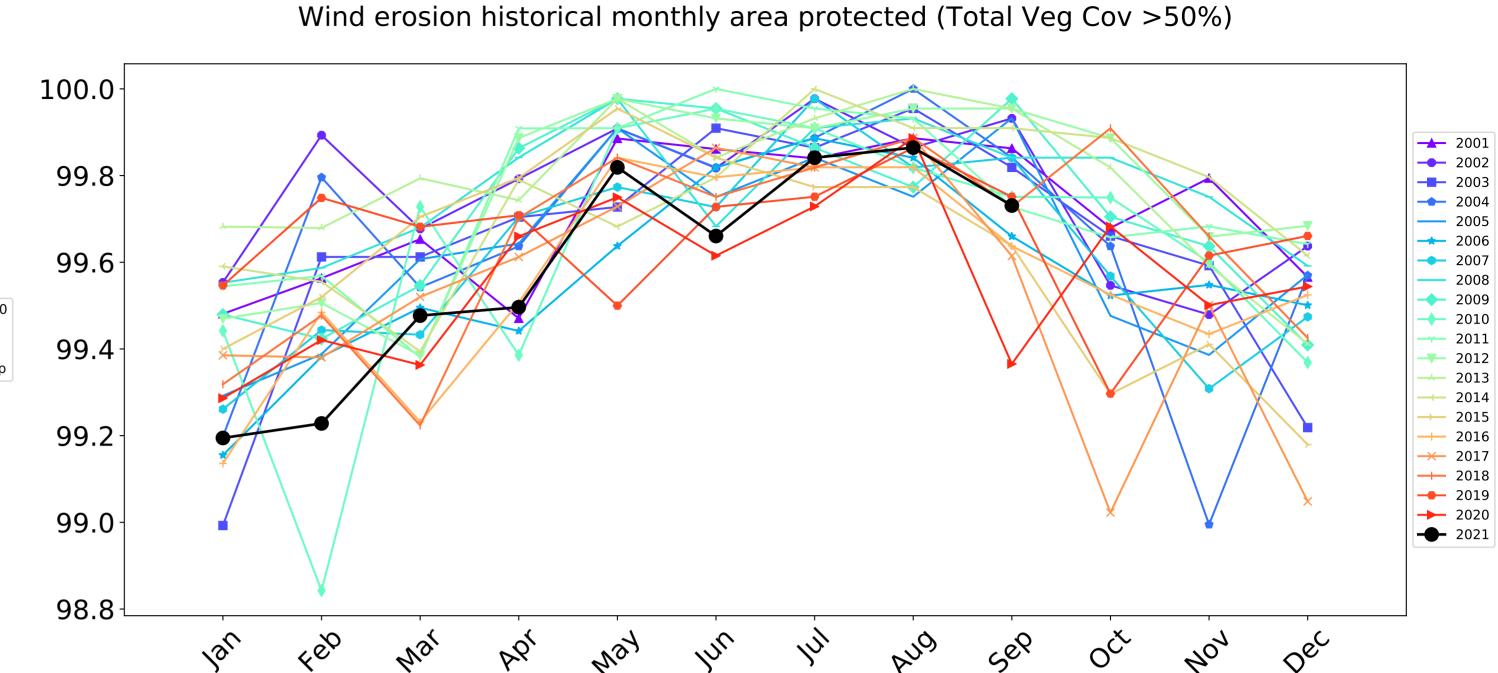


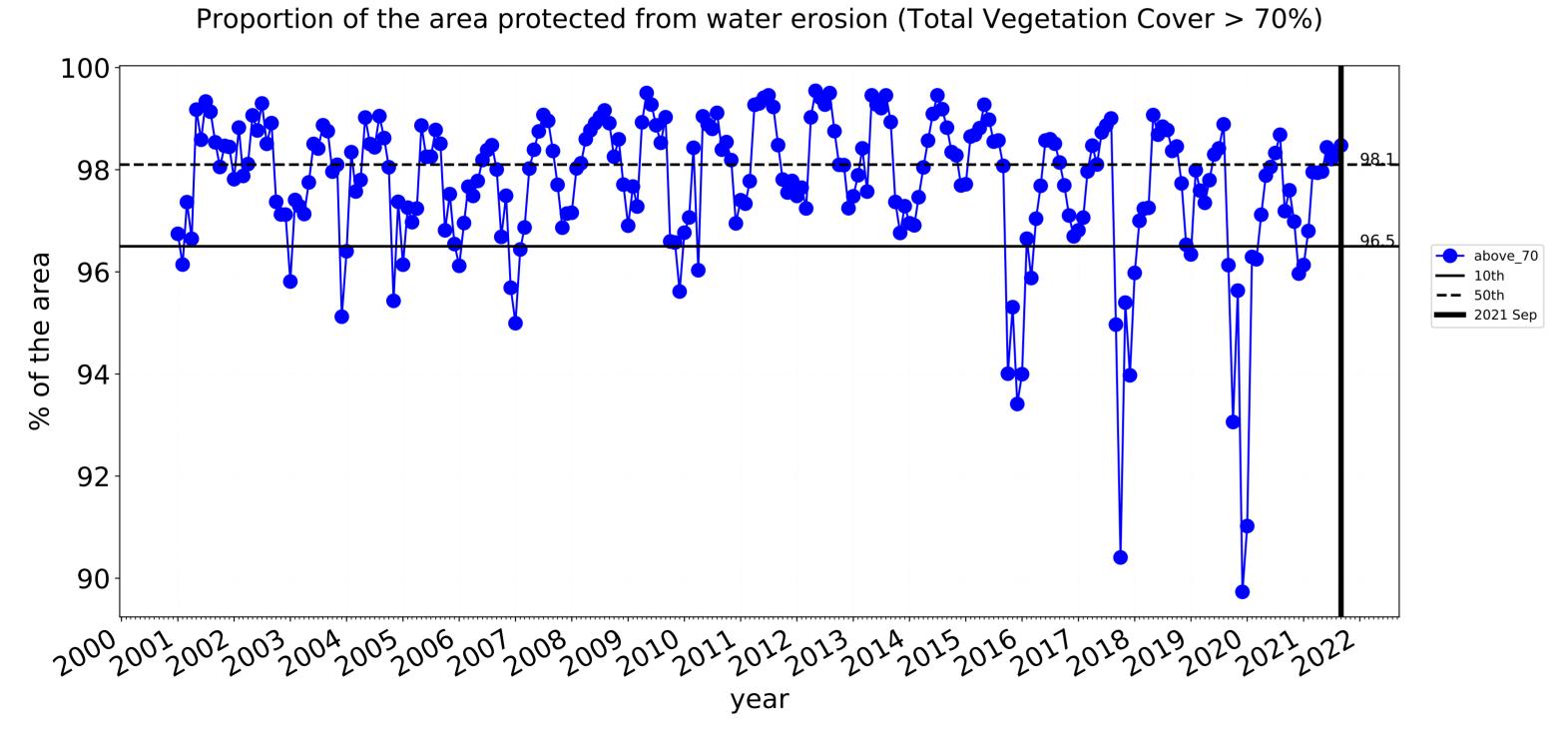


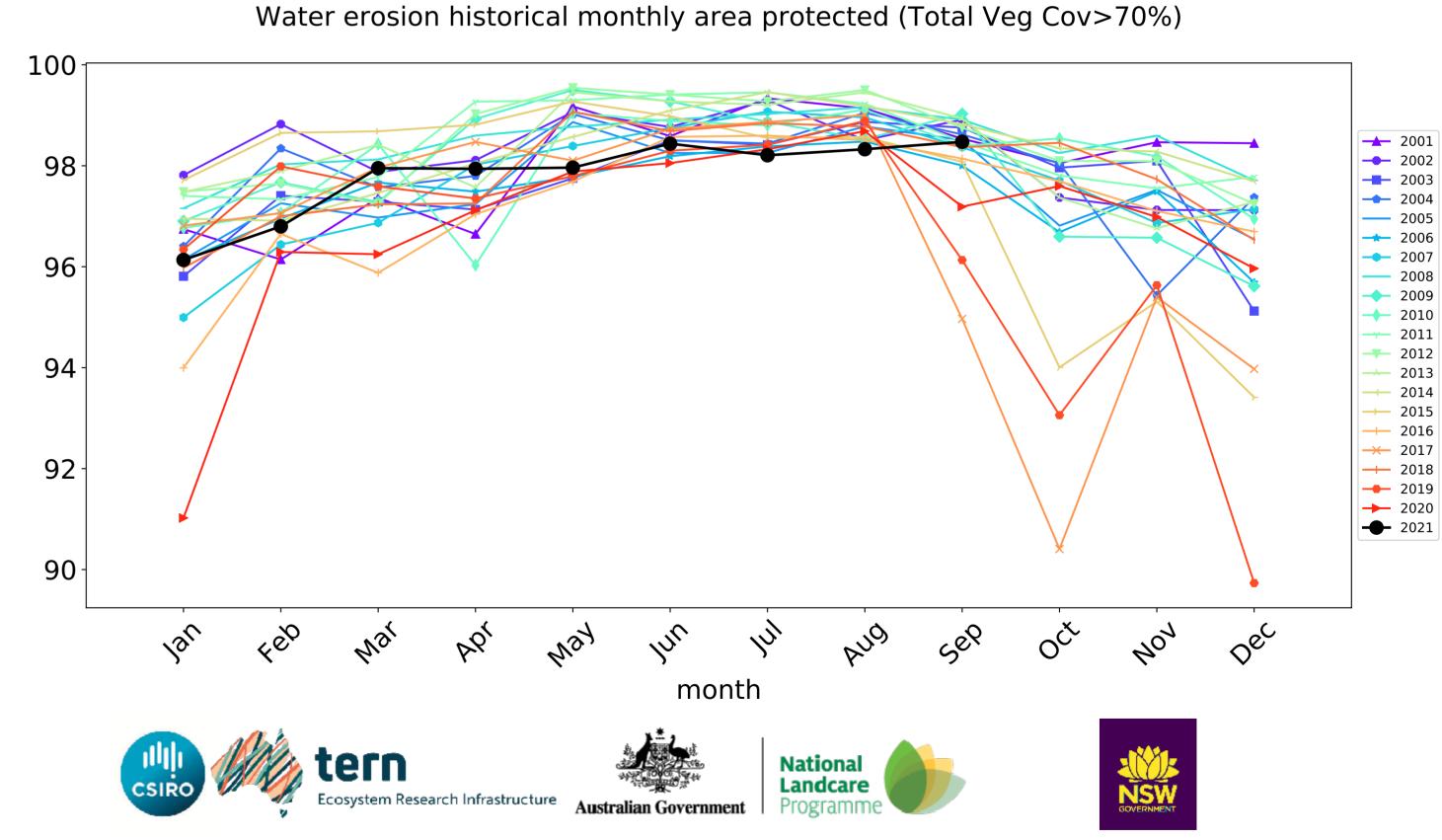


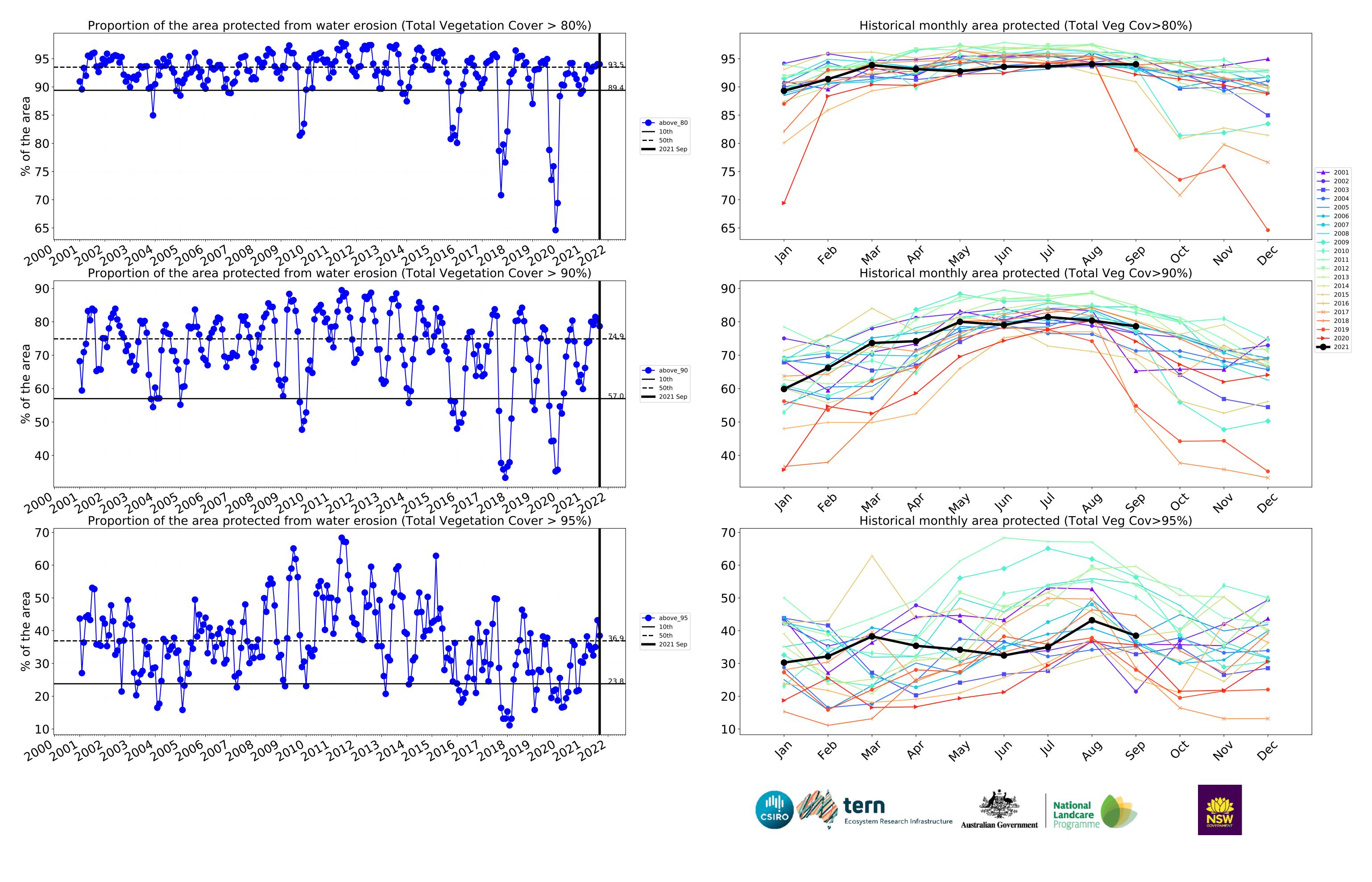












# **Agriculture**

# 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

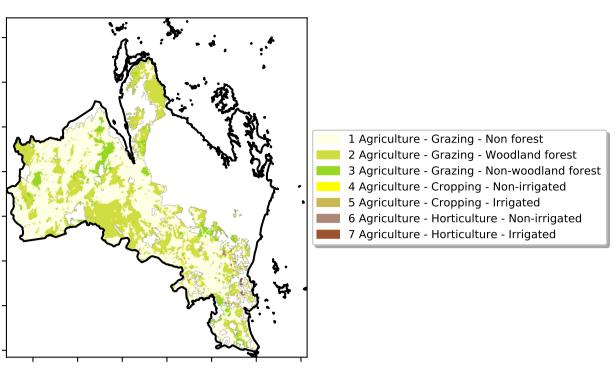
is, red pixels are about 20% lower than the mean of that

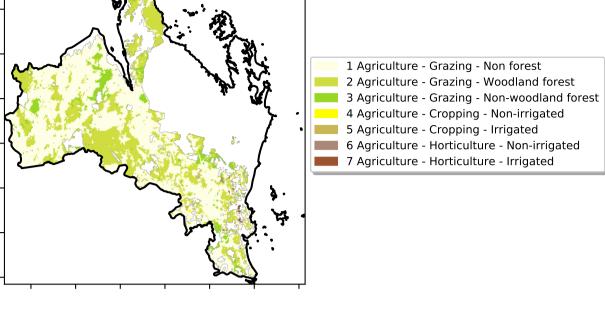
the mean. That

pixel. The mean

using baseline from 2001 to 2019.

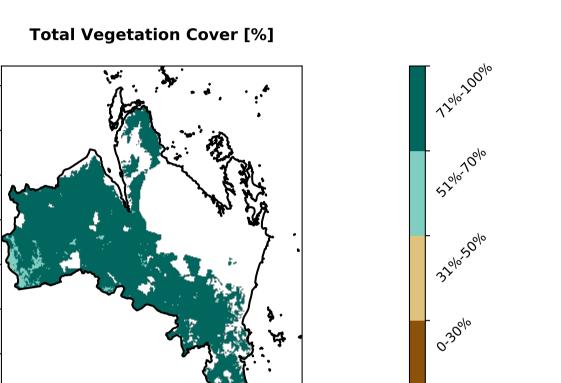
is only for the month of the map

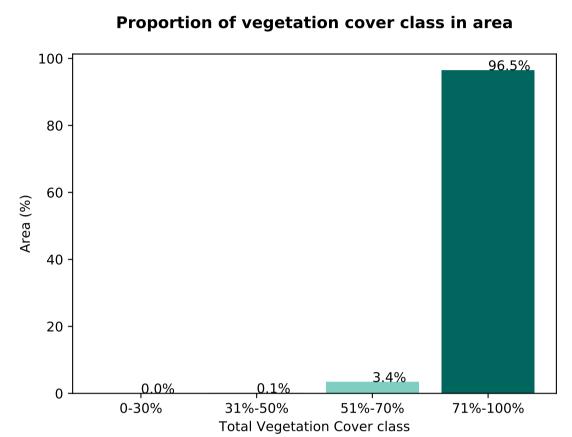




# 60.7% 60 50 40 Area (%) 32.3% 20 10 Land use class

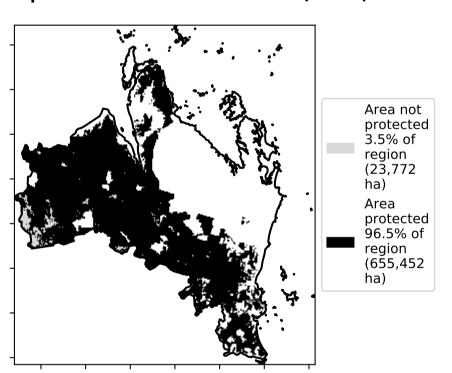
Proportion of each land class in area



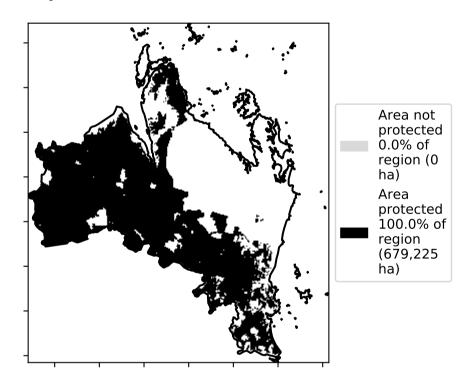




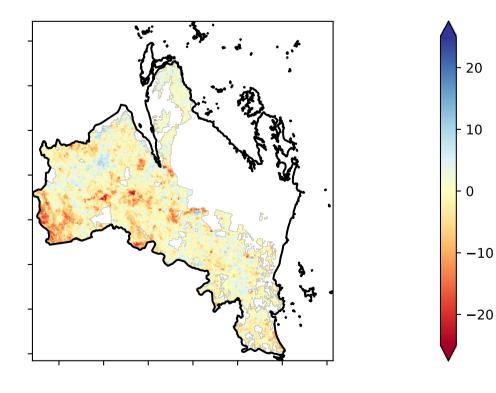
Land use and forest cover

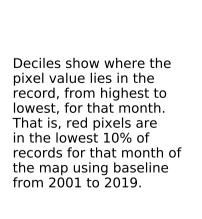


% Area protected from wind erosion (>50%)

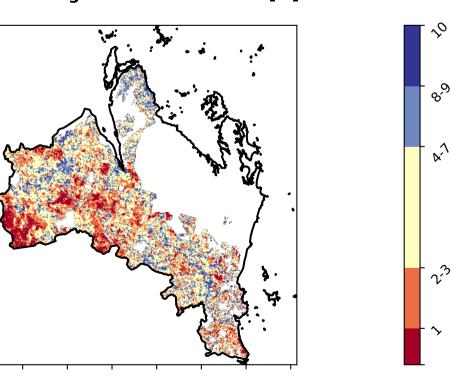


# **Total Vegetation Cover Anomaly [%]**





**Total Vegetation Cover Decile [%]** 



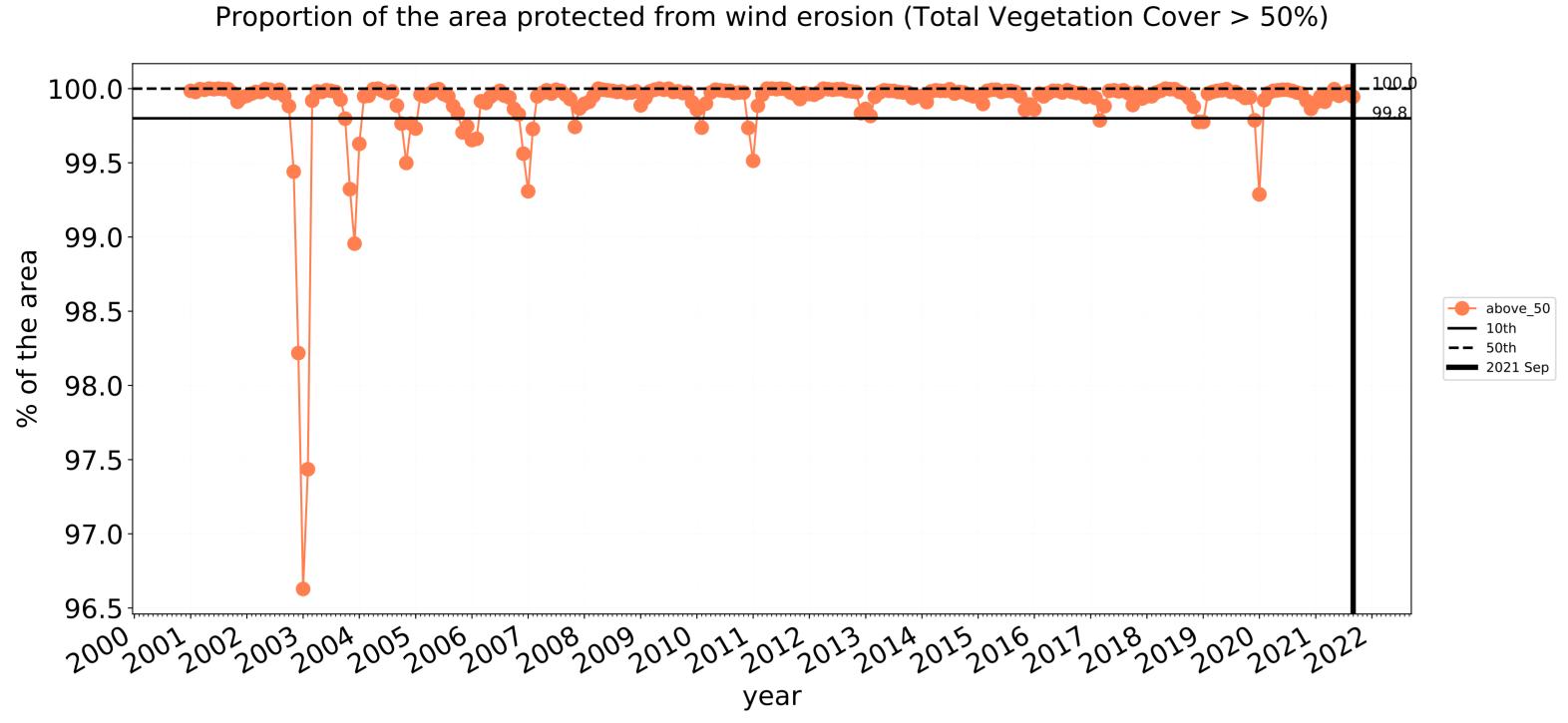


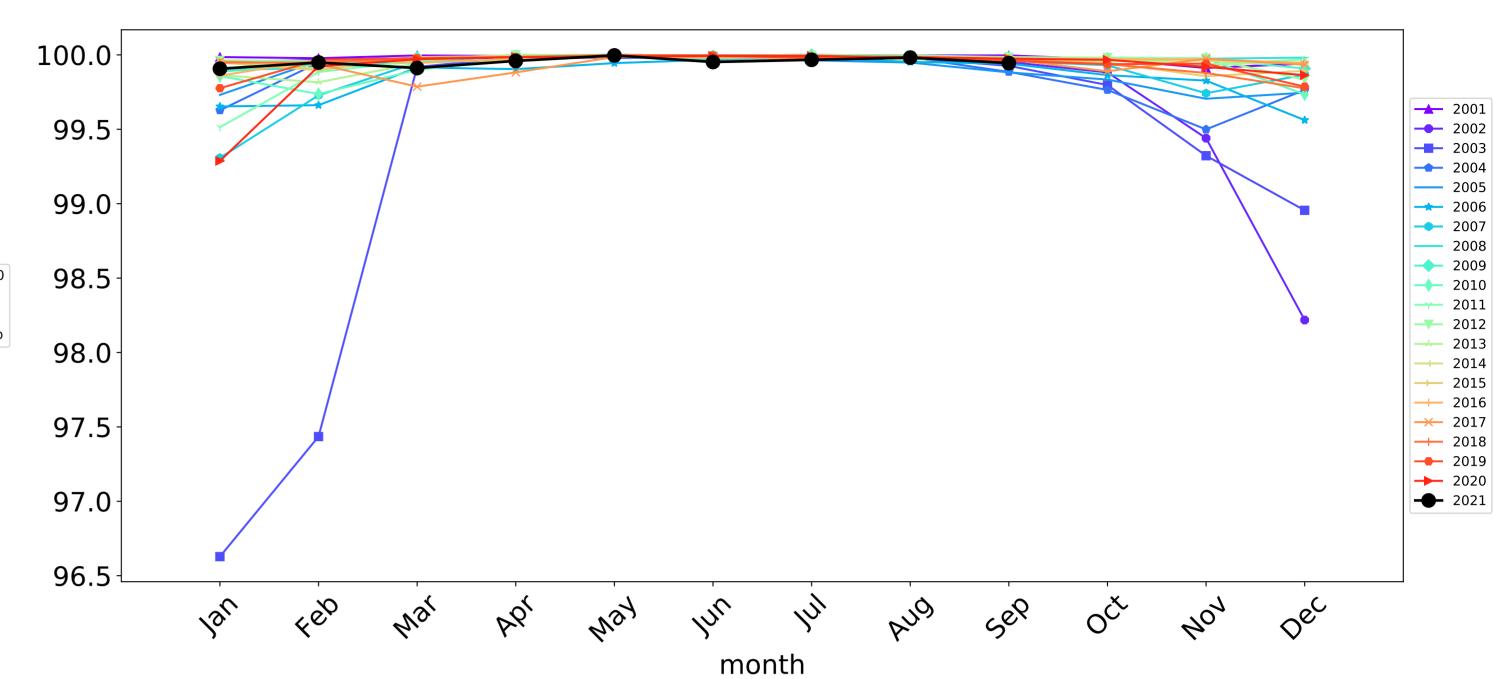




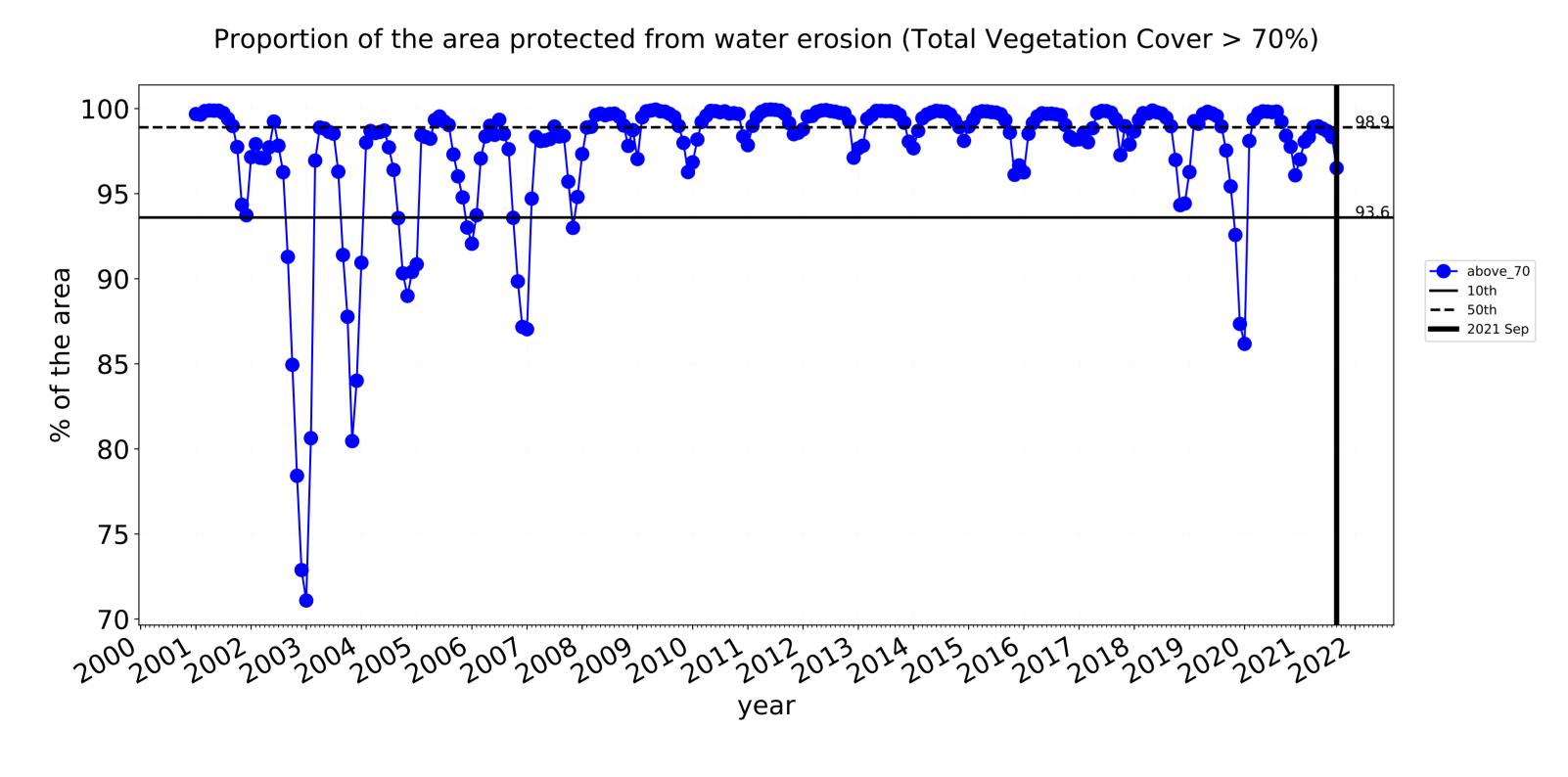


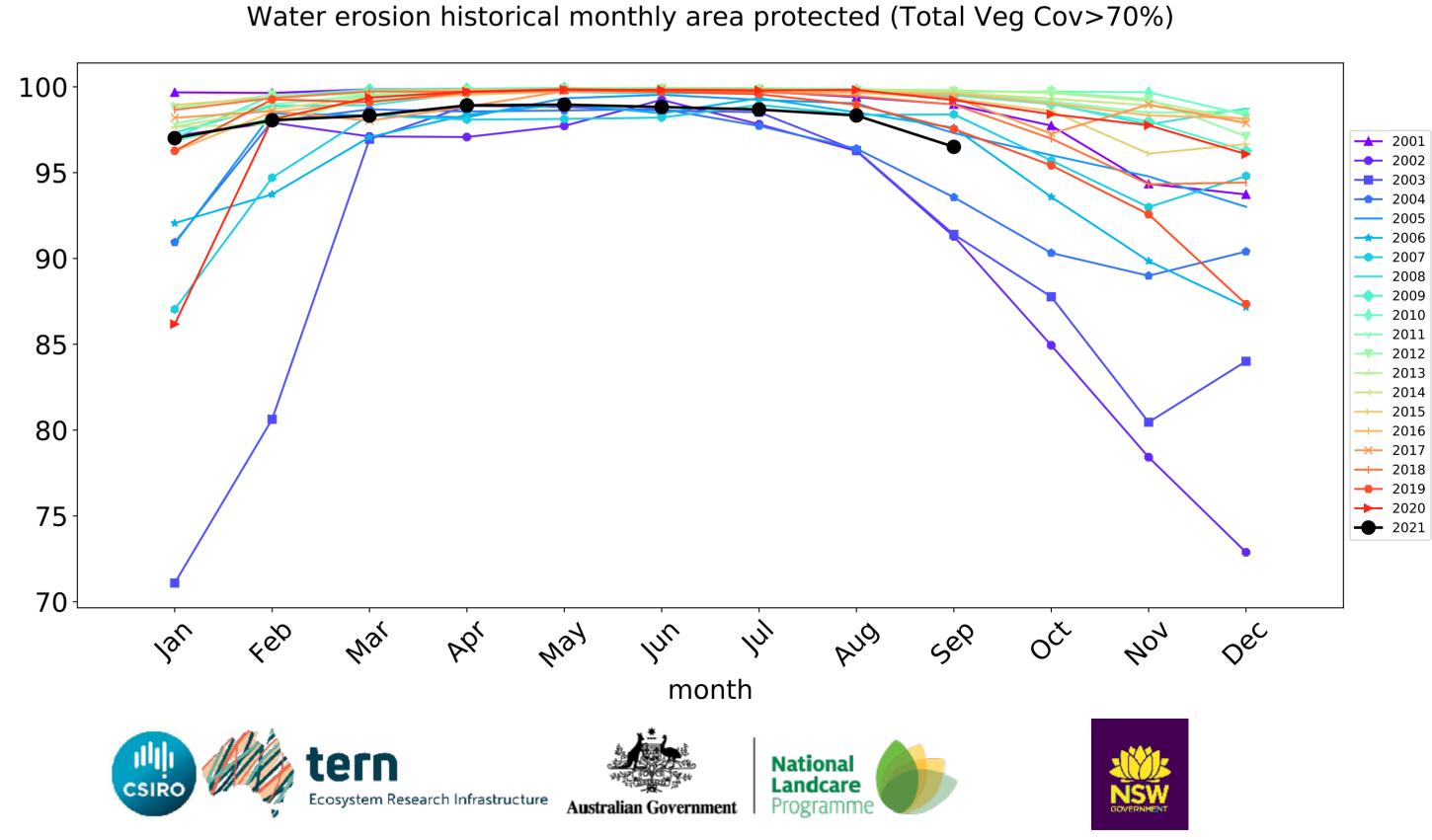
# **Agriculture timeseries**

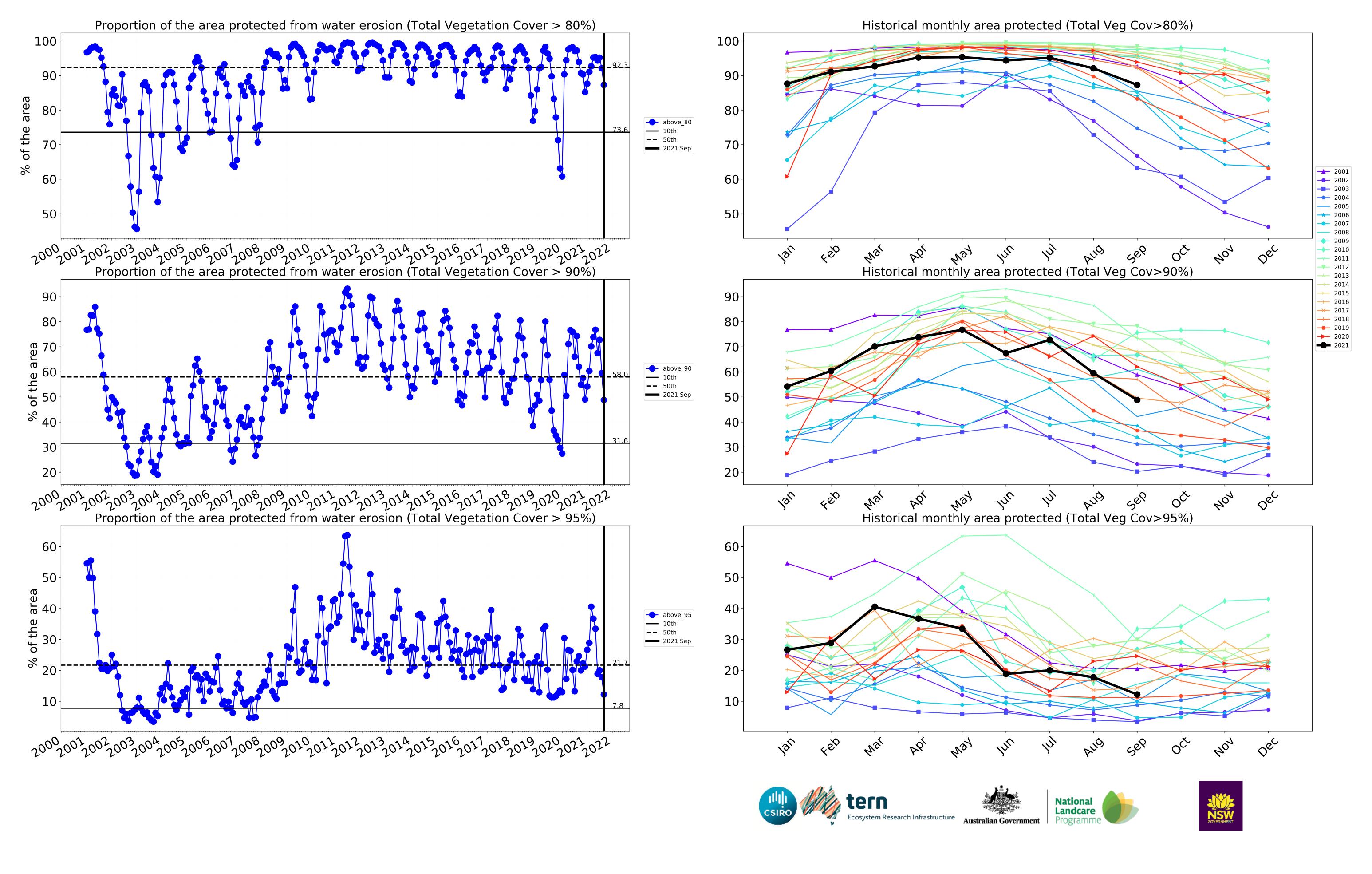




Wind erosion historical monthly area protected (Total Veg Cov >50%)







# **Grazing**

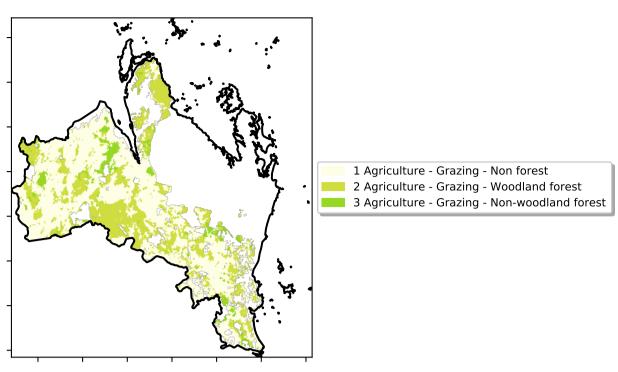
# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

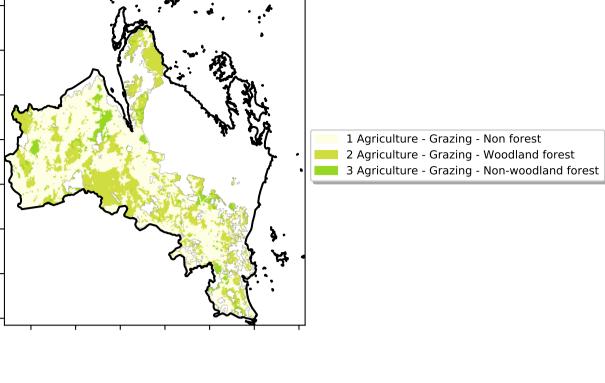
pixel is from the mean. That

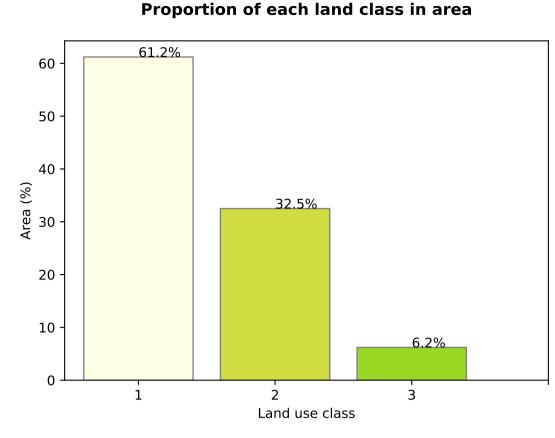
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

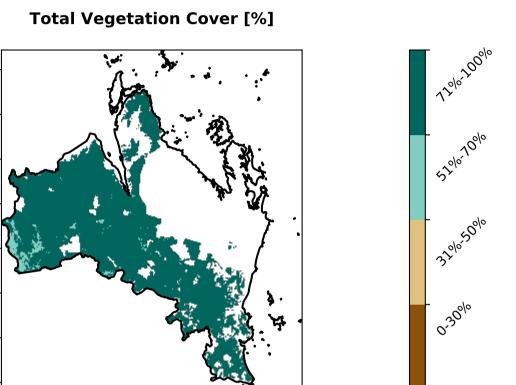
is, red pixels are about 20% lower than the mean of that

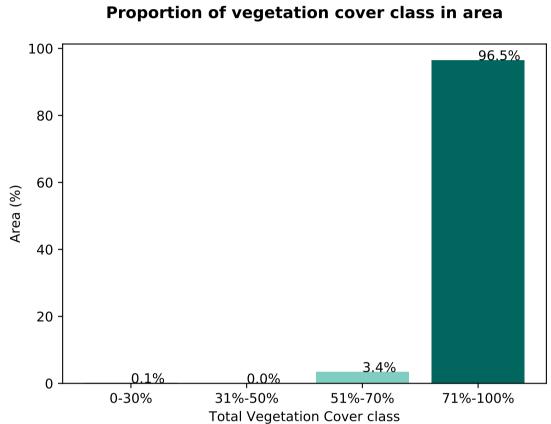


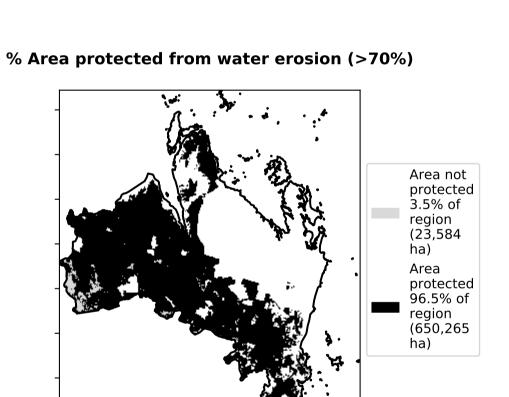
**Land use and forest cover** 



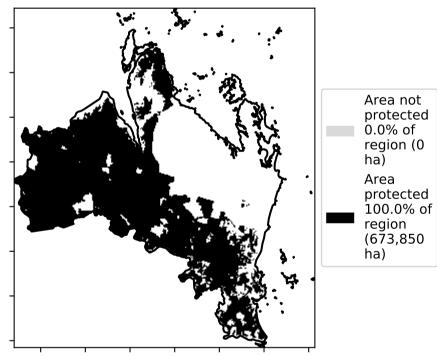




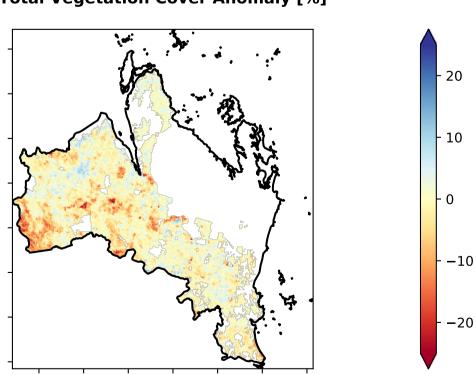




% Area protected from wind erosion (>50%)







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

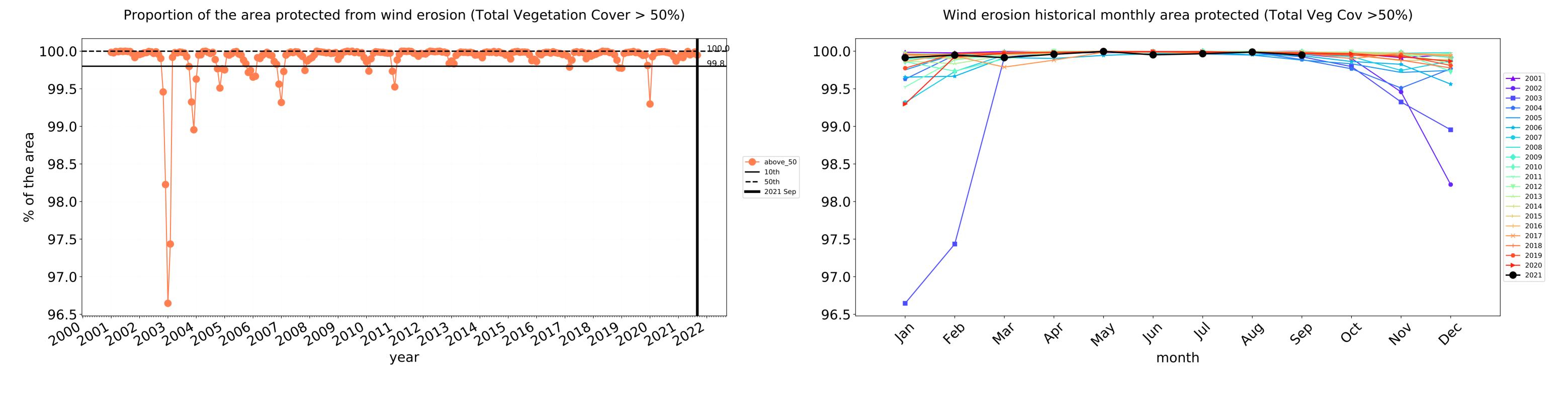


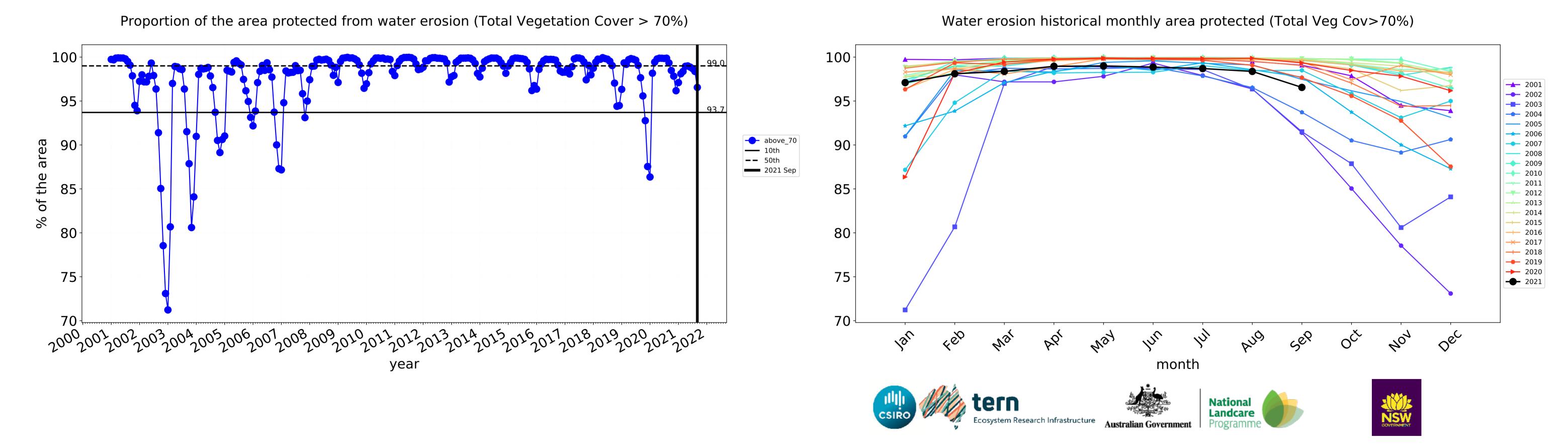


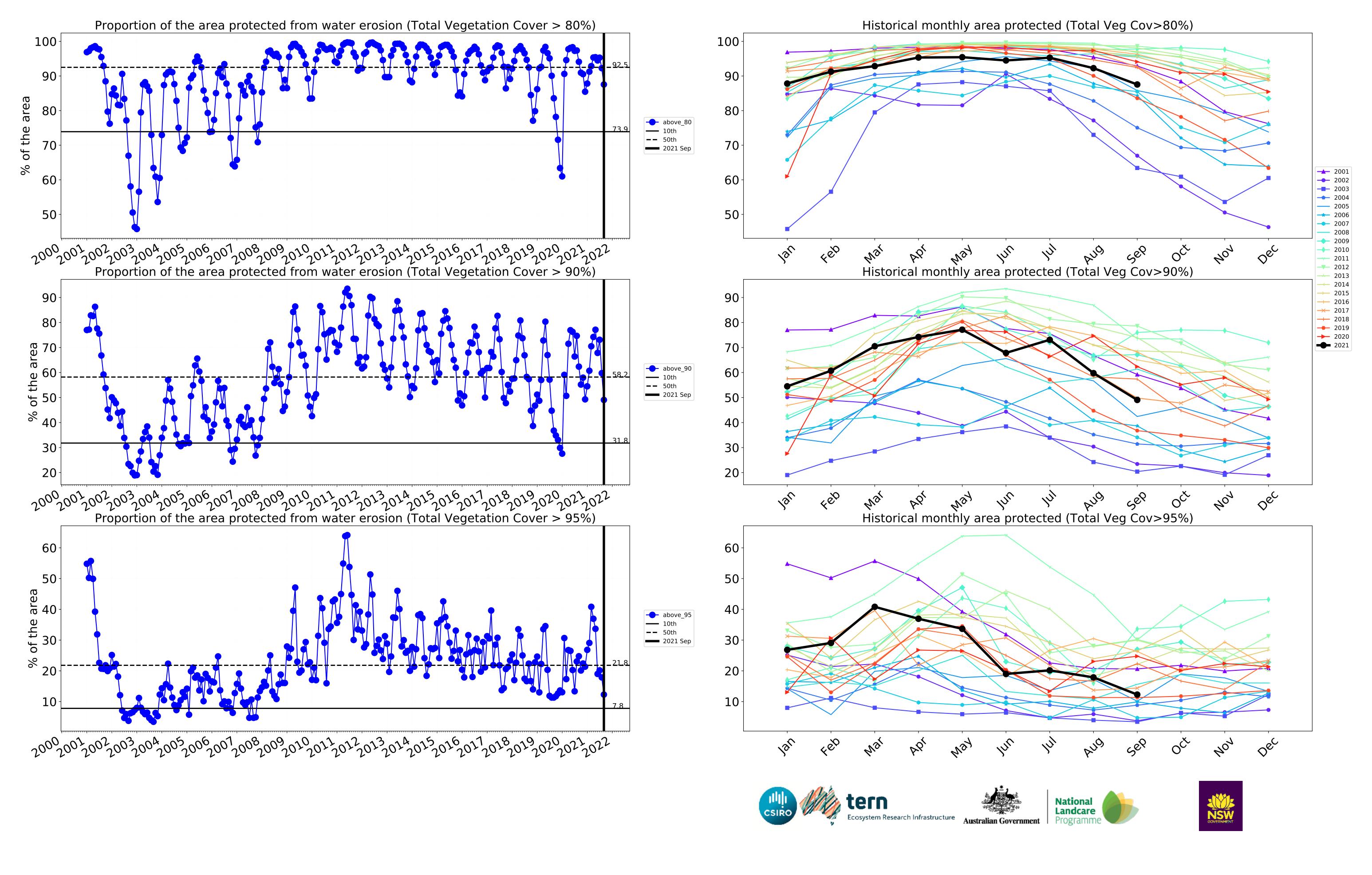




# **Grazing timeseries**







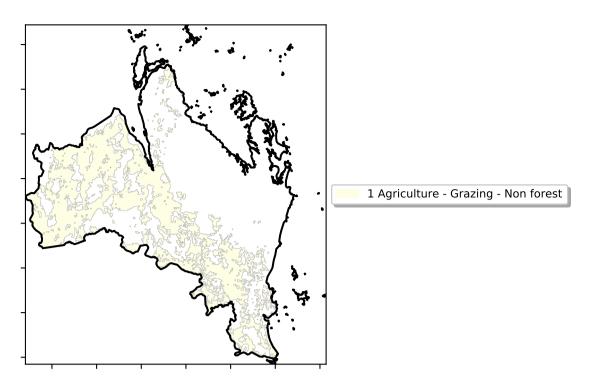
# **Grazing non forest**

#### Land use and forest cover

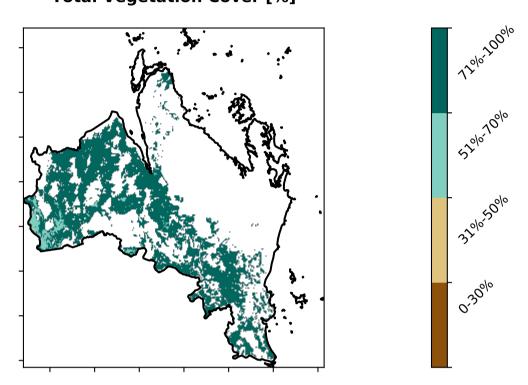
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

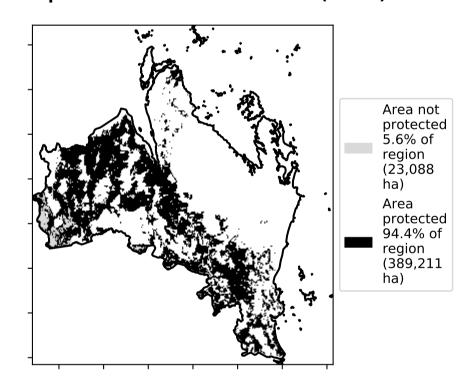
points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



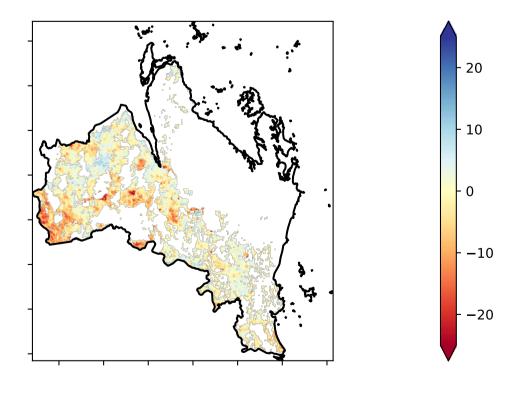
# **Total Vegetation Cover [%]**



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

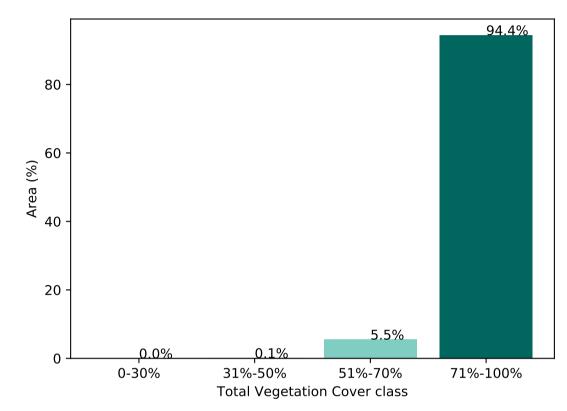


# **Total Vegetation Cover Anomaly [%]**

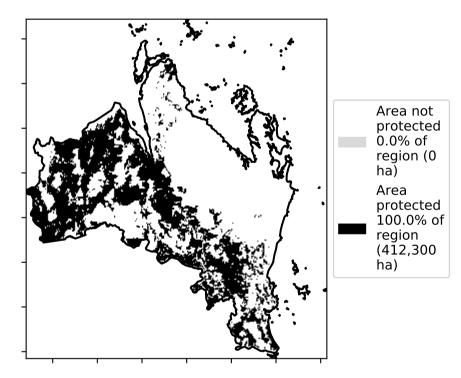


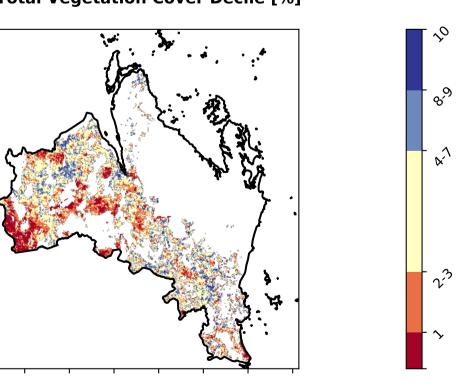
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

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



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





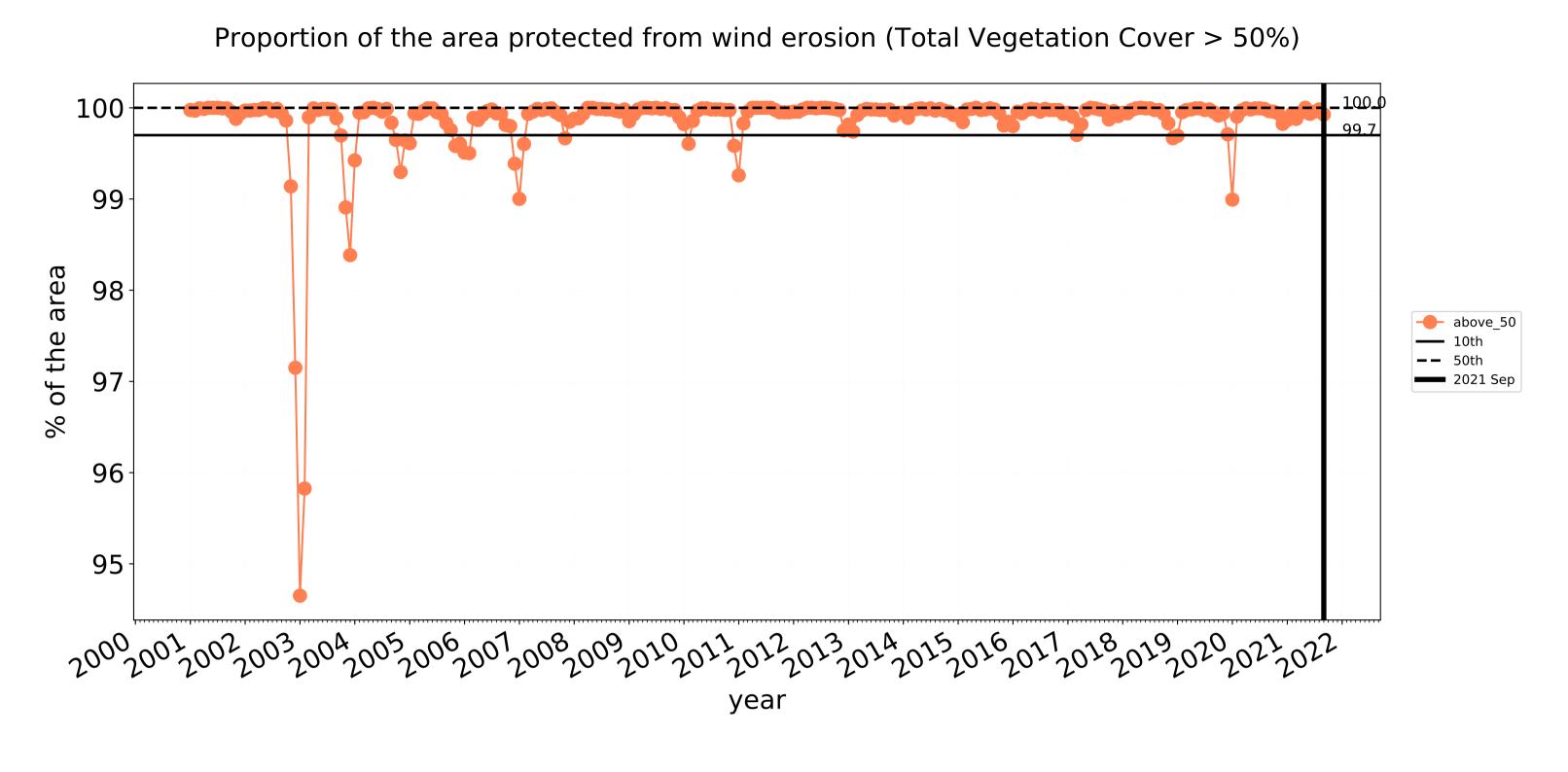


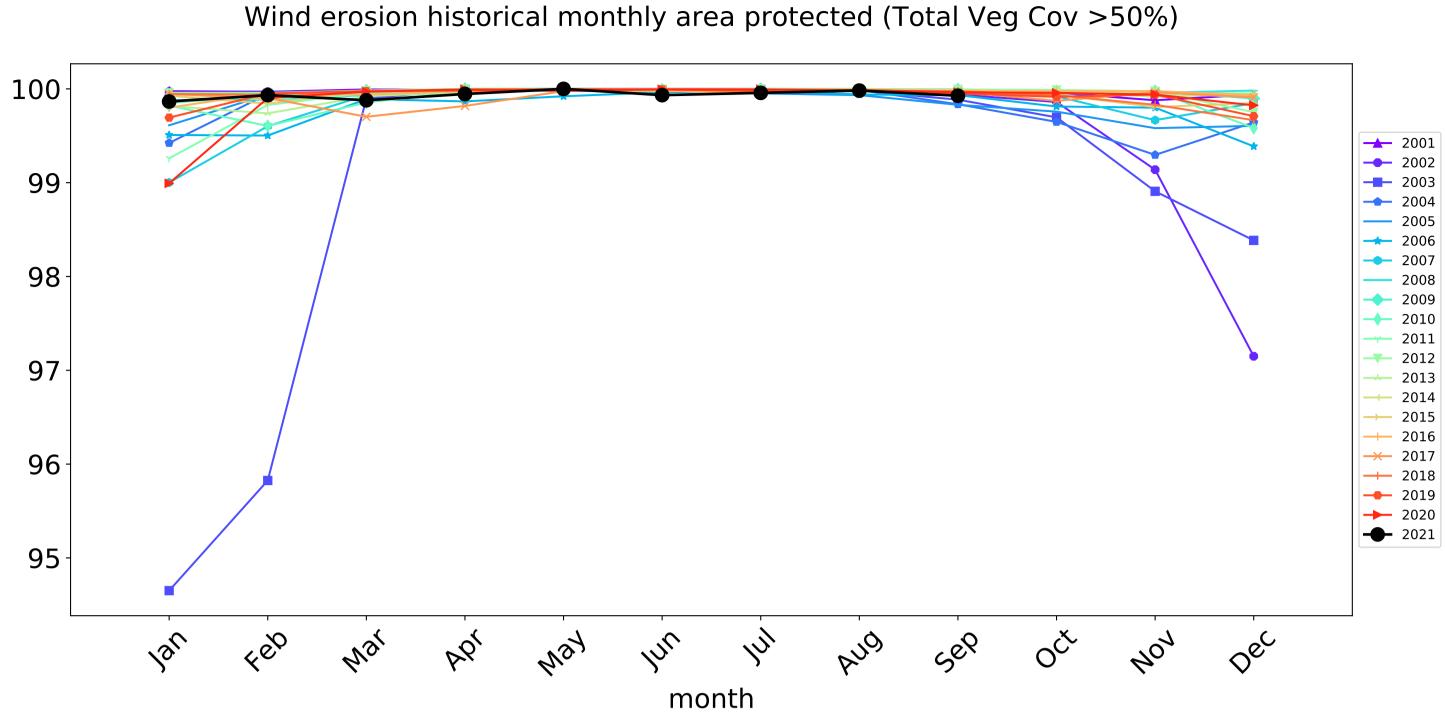


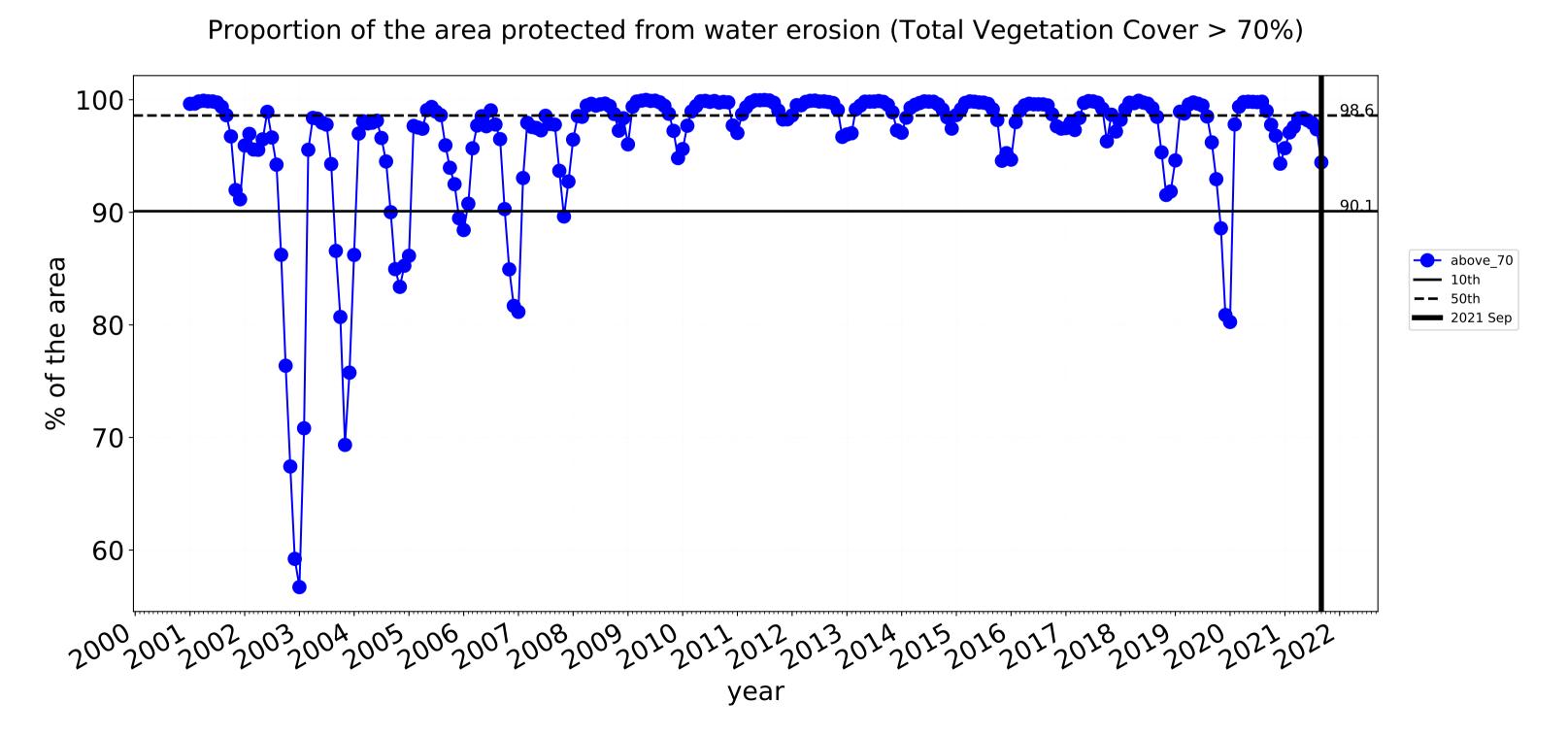


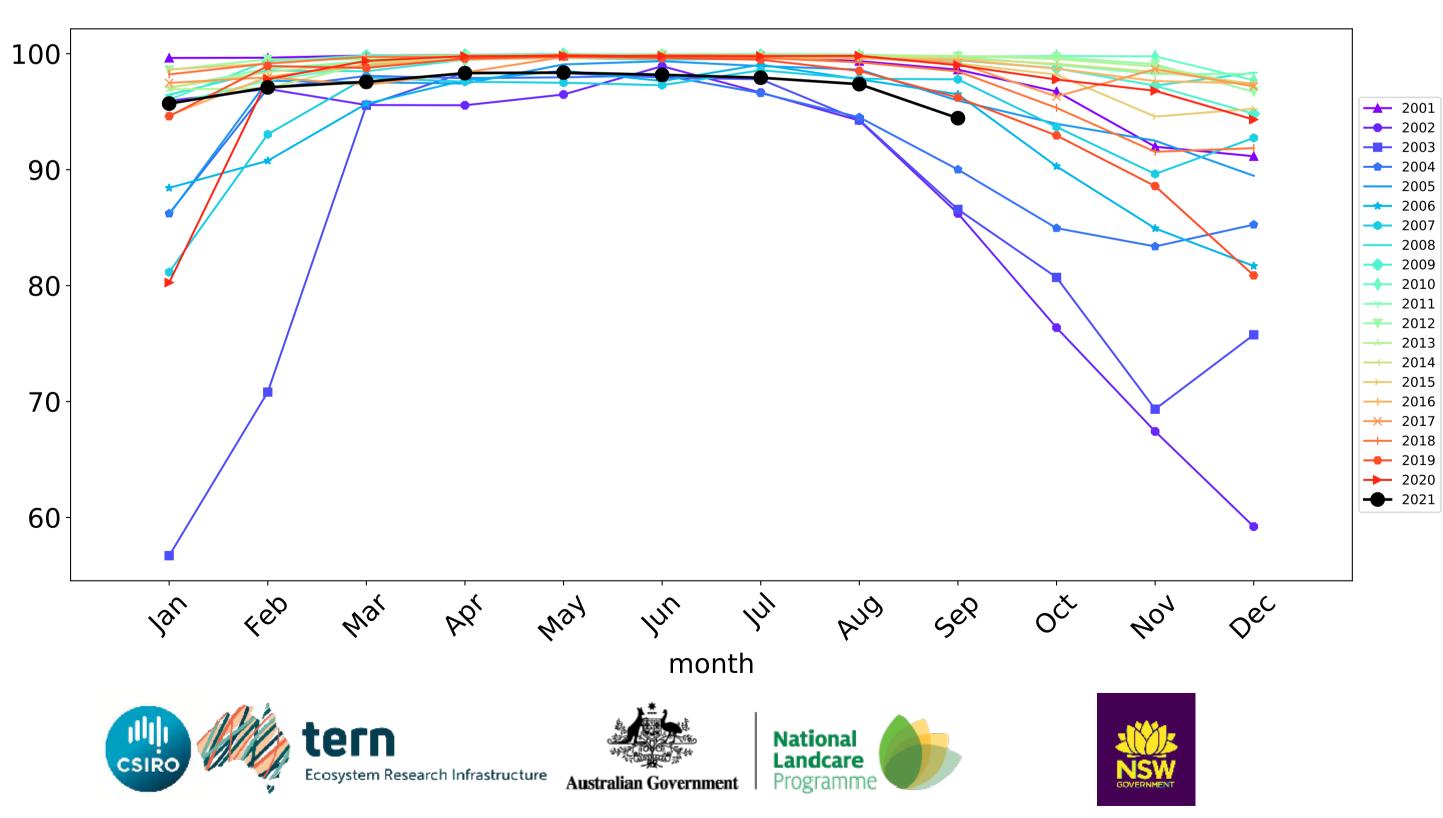


# **Grazing non forest timeseries**

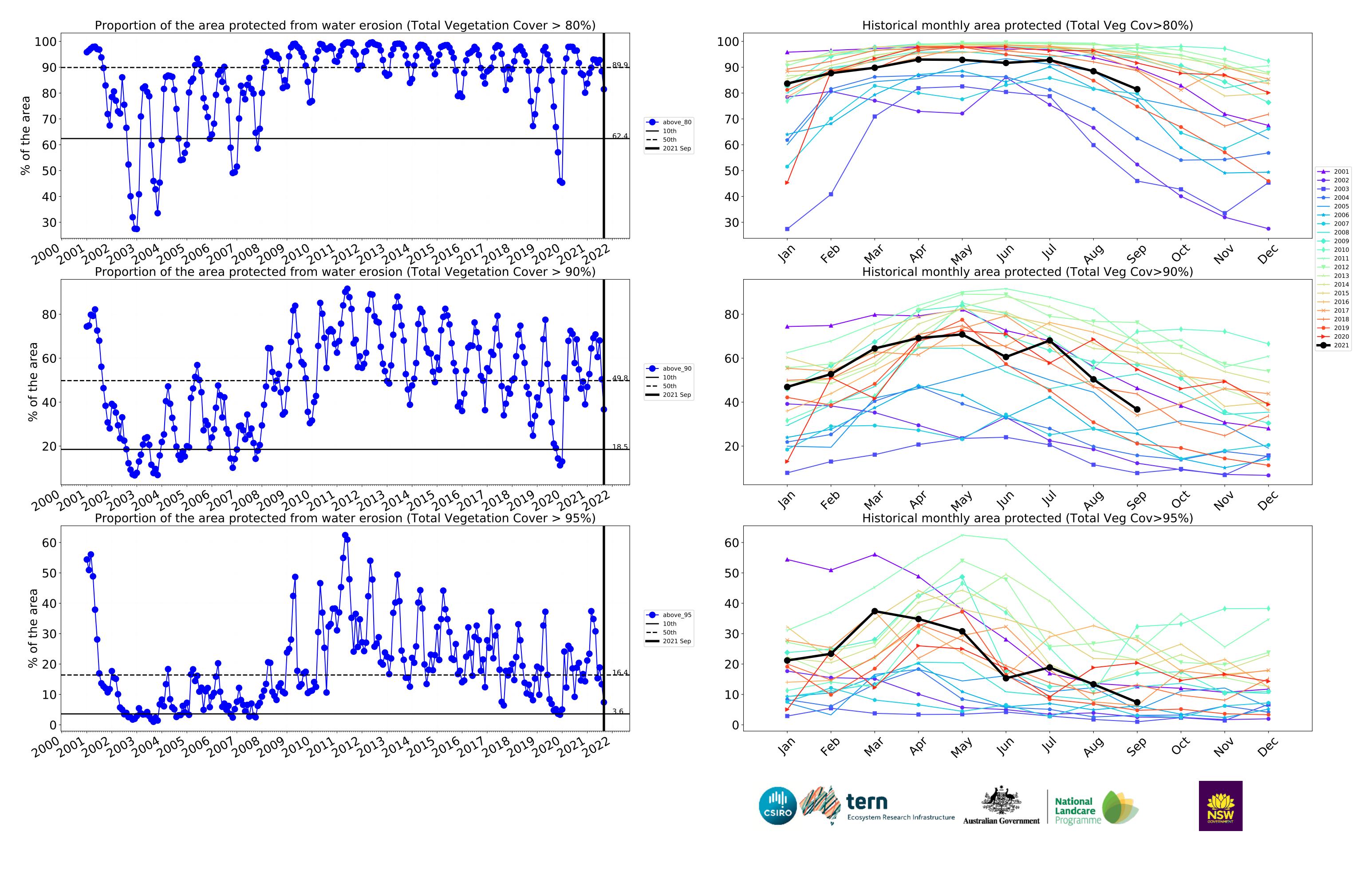








Water erosion historical monthly area protected (Total Veg Cov>70%)



# **Grazing Woodland forest**

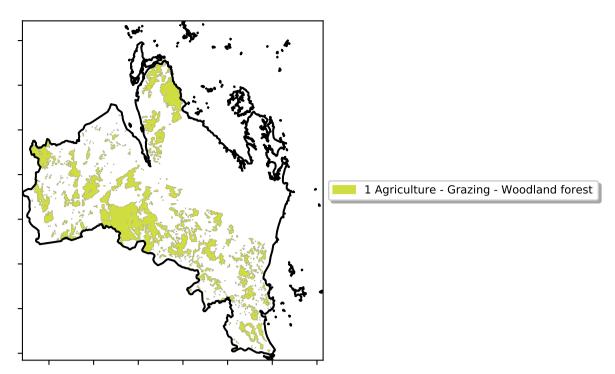
# Land use and forest cover

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

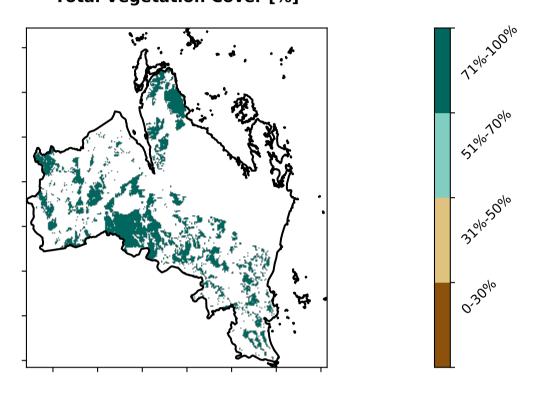
Anomaly show how many percetage points each

pinel is from the mean. That is, red pixels are about 20% lower than the mean of that

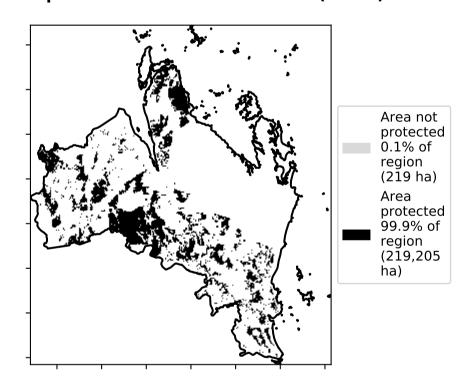
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



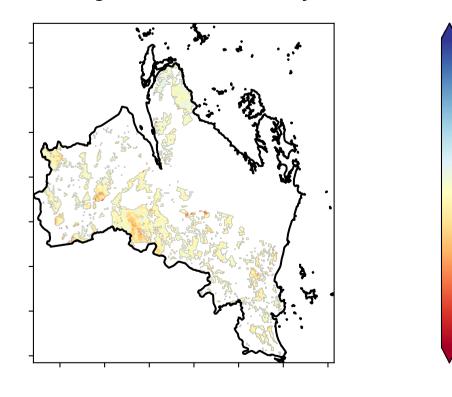
# **Total Vegetation Cover [%]**



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

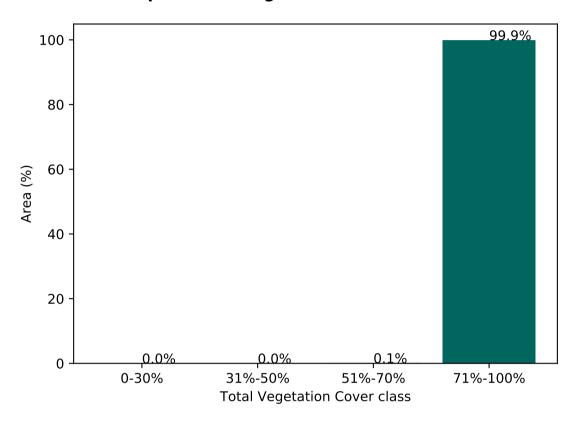


**Total Vegetation Cover Anomaly [%]** 

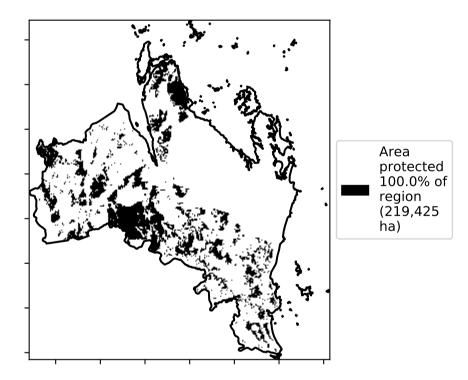


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

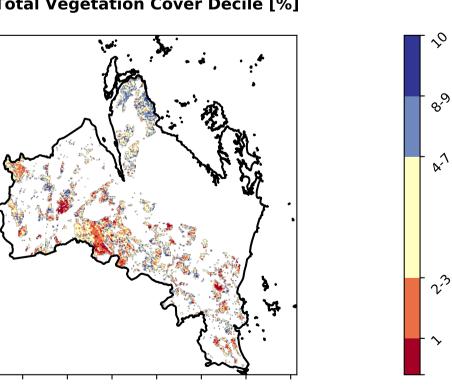
# **Proportion of vegetation cover class in area**



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



# Total Vegetation Cover Decile [%]











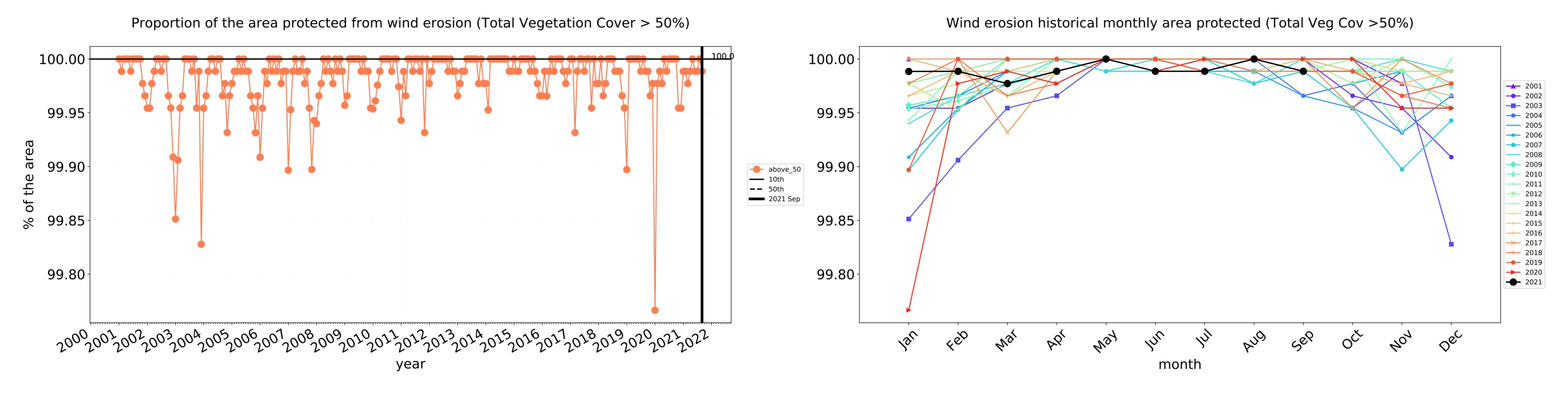
- 20

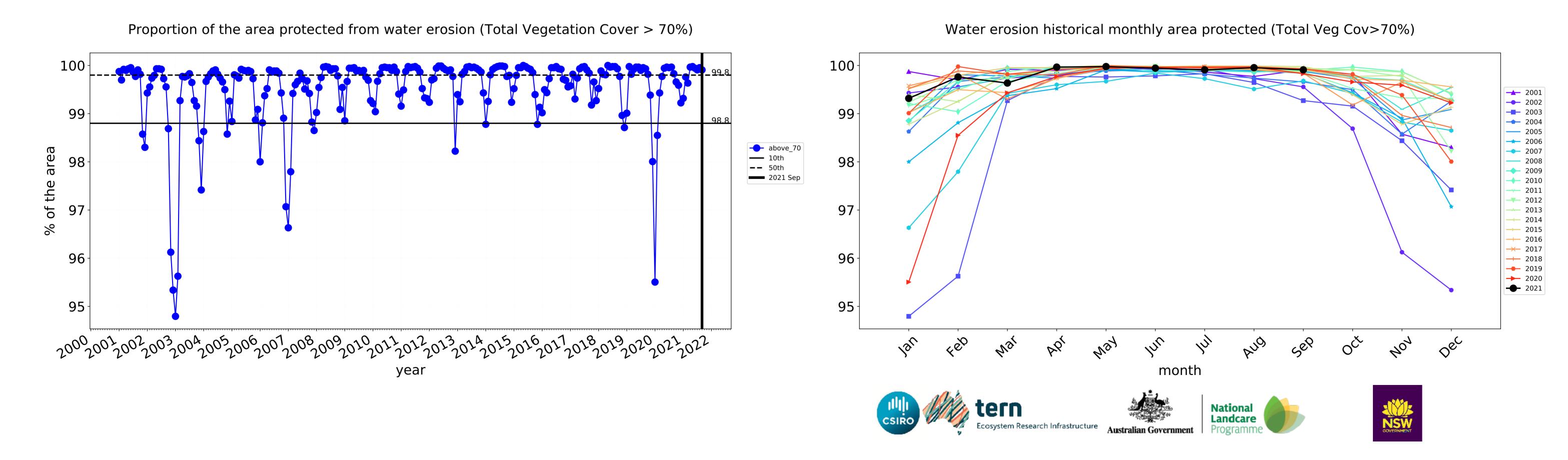
- 10

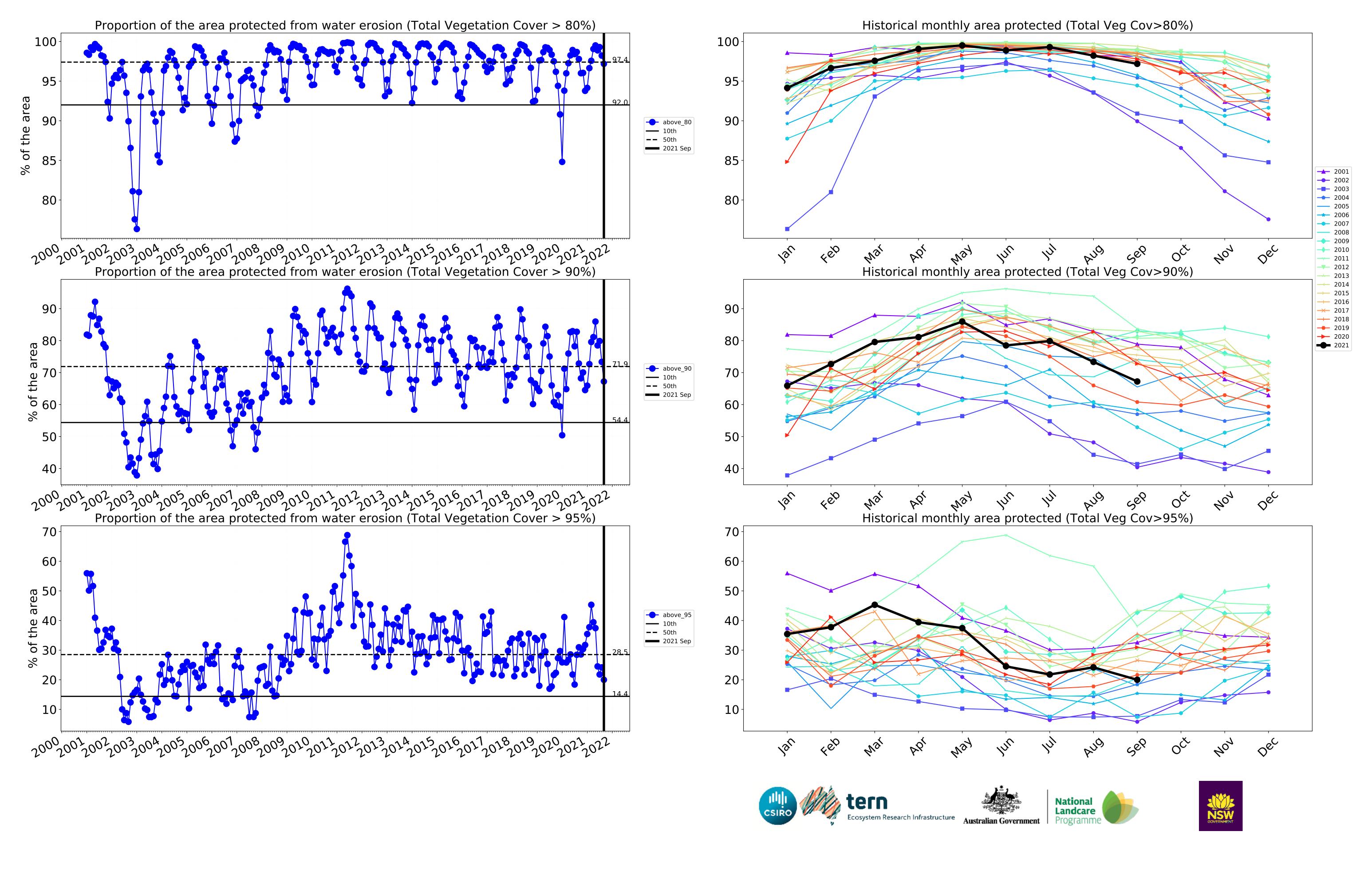
-10

**-**20

# **Grazing Woodland forest timeseries**







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

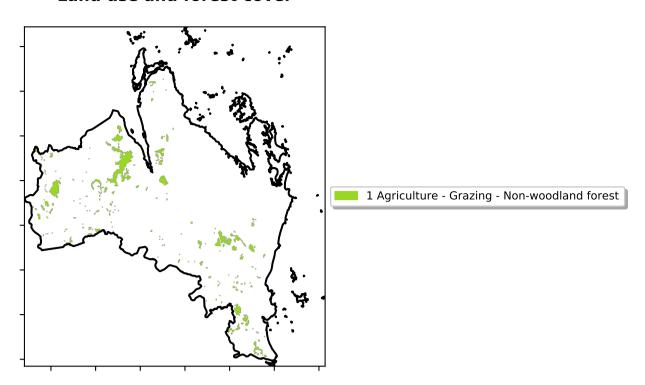
# Land use and forest cover

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

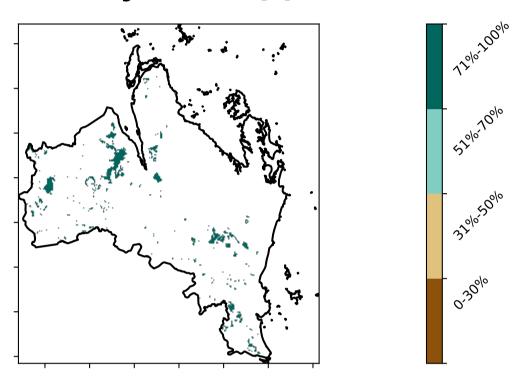
Anomaly show how many percetage points each

pinel is from the mean. That is, red pixels are about 20% lower than the mean of that

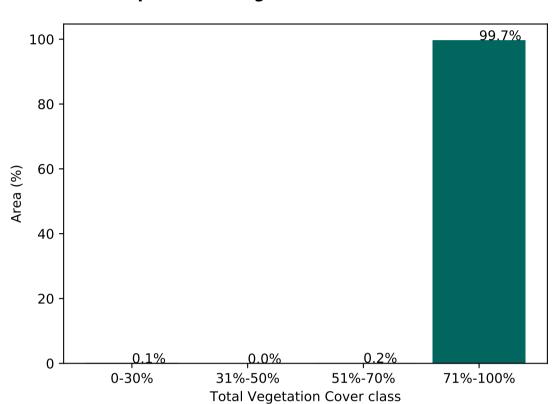
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



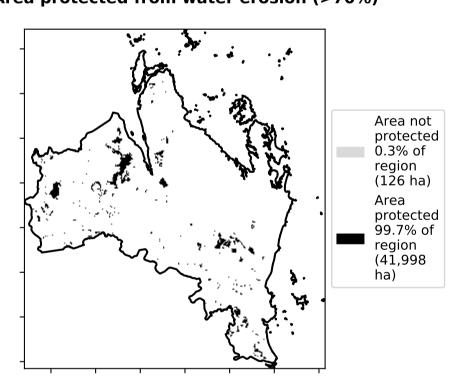
# **Total Vegetation Cover [%]**



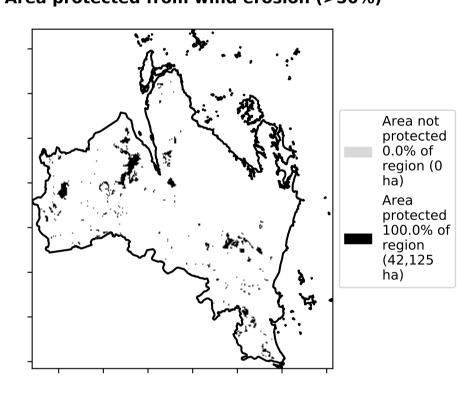
# Proportion of vegetation cover class in area



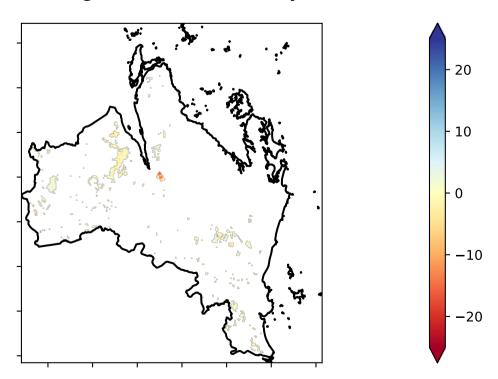
# % Area protected from water erosion (>70%)



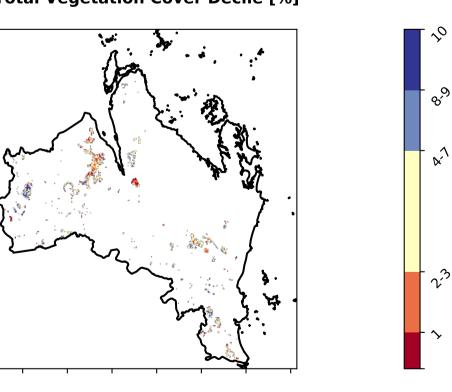
% Area protected from wind erosion (>50%)



# **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.



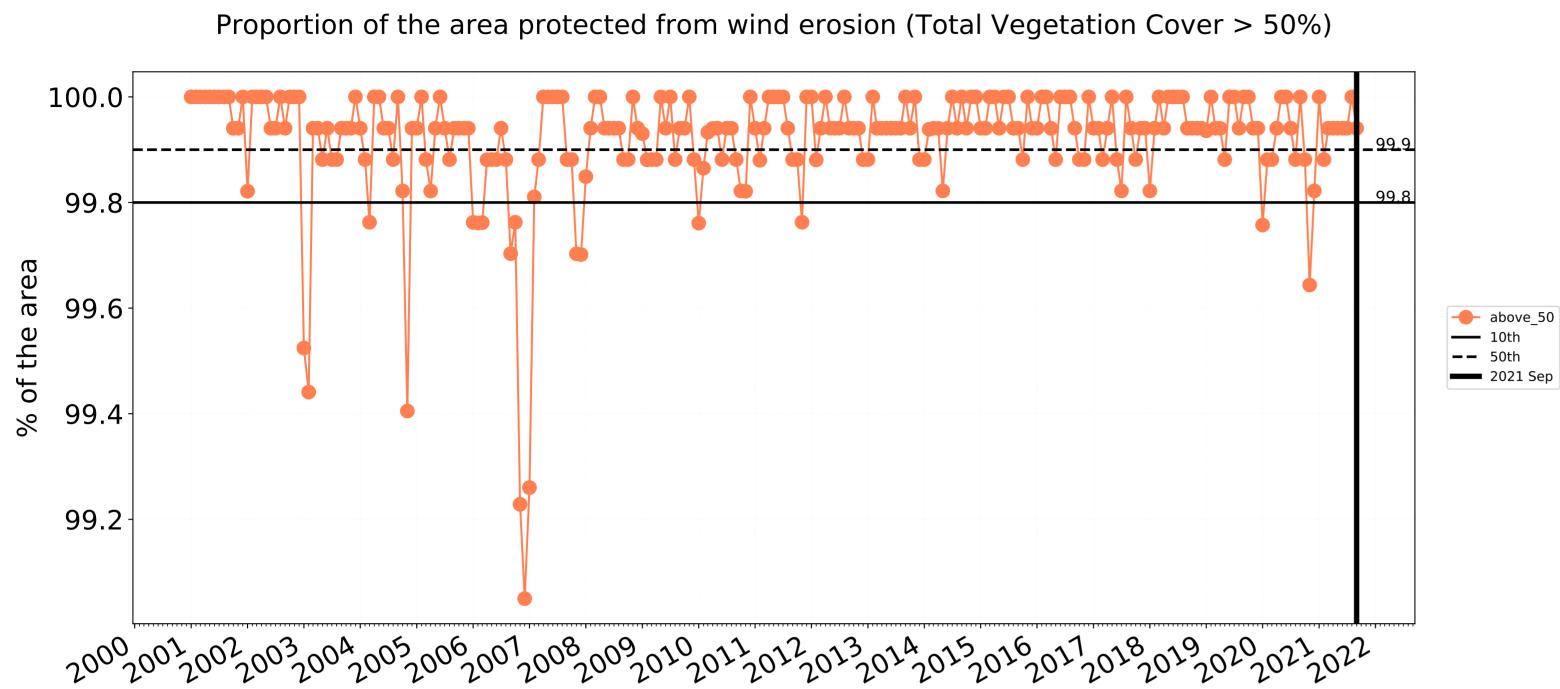


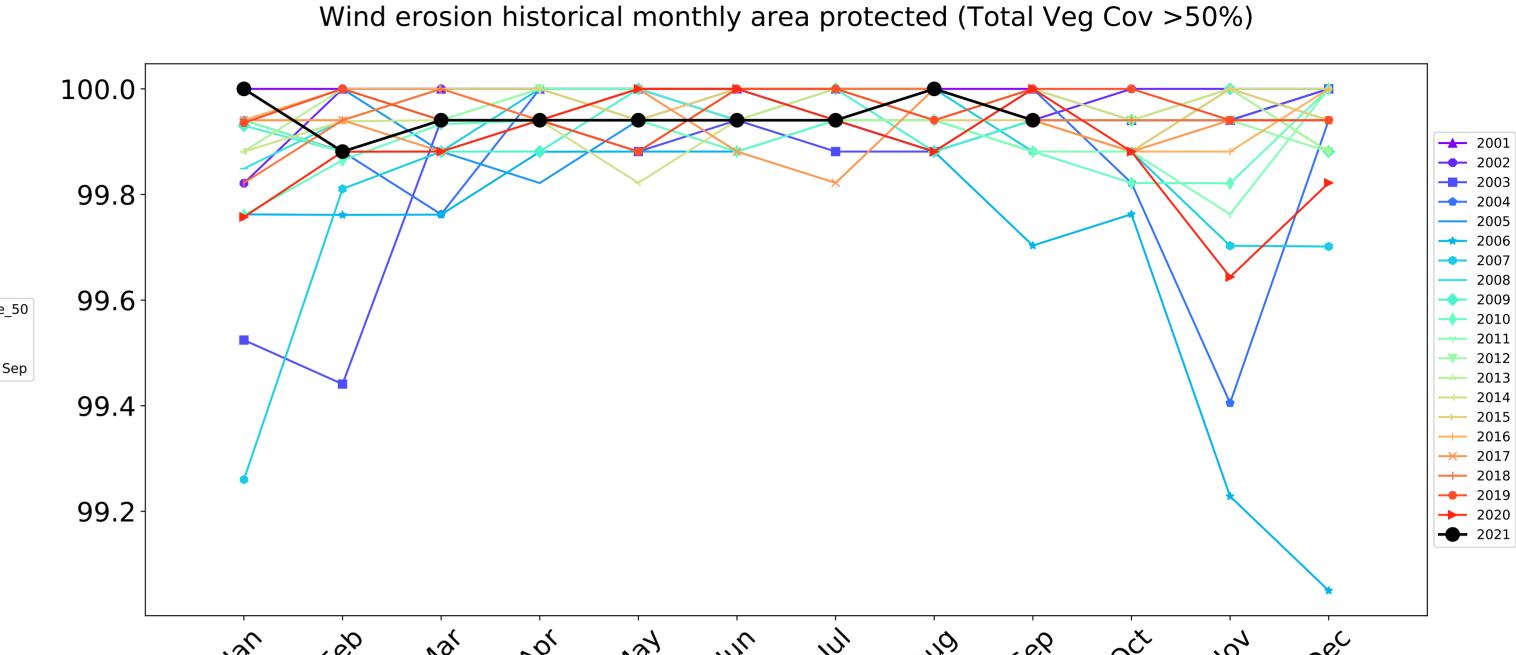


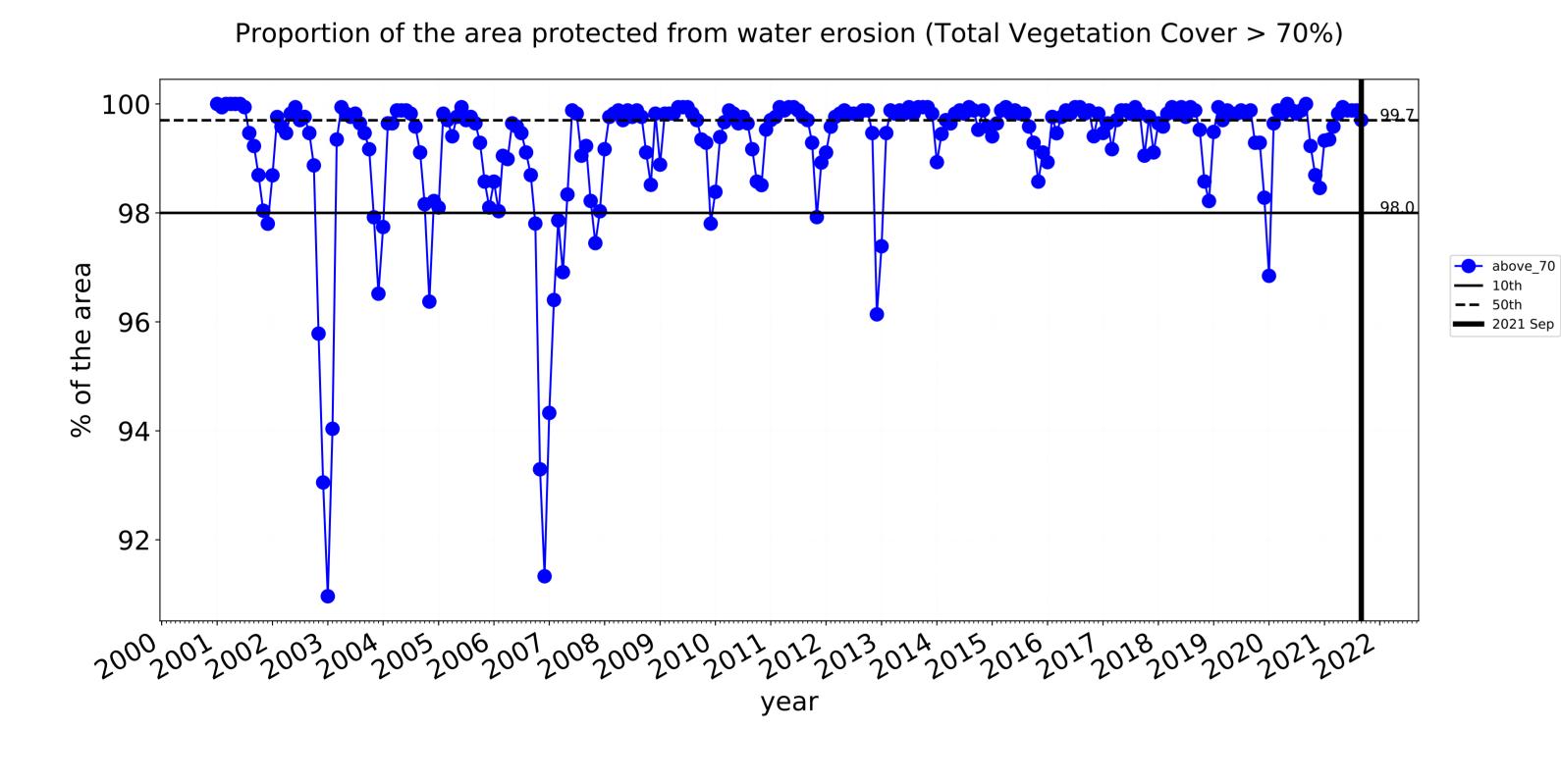


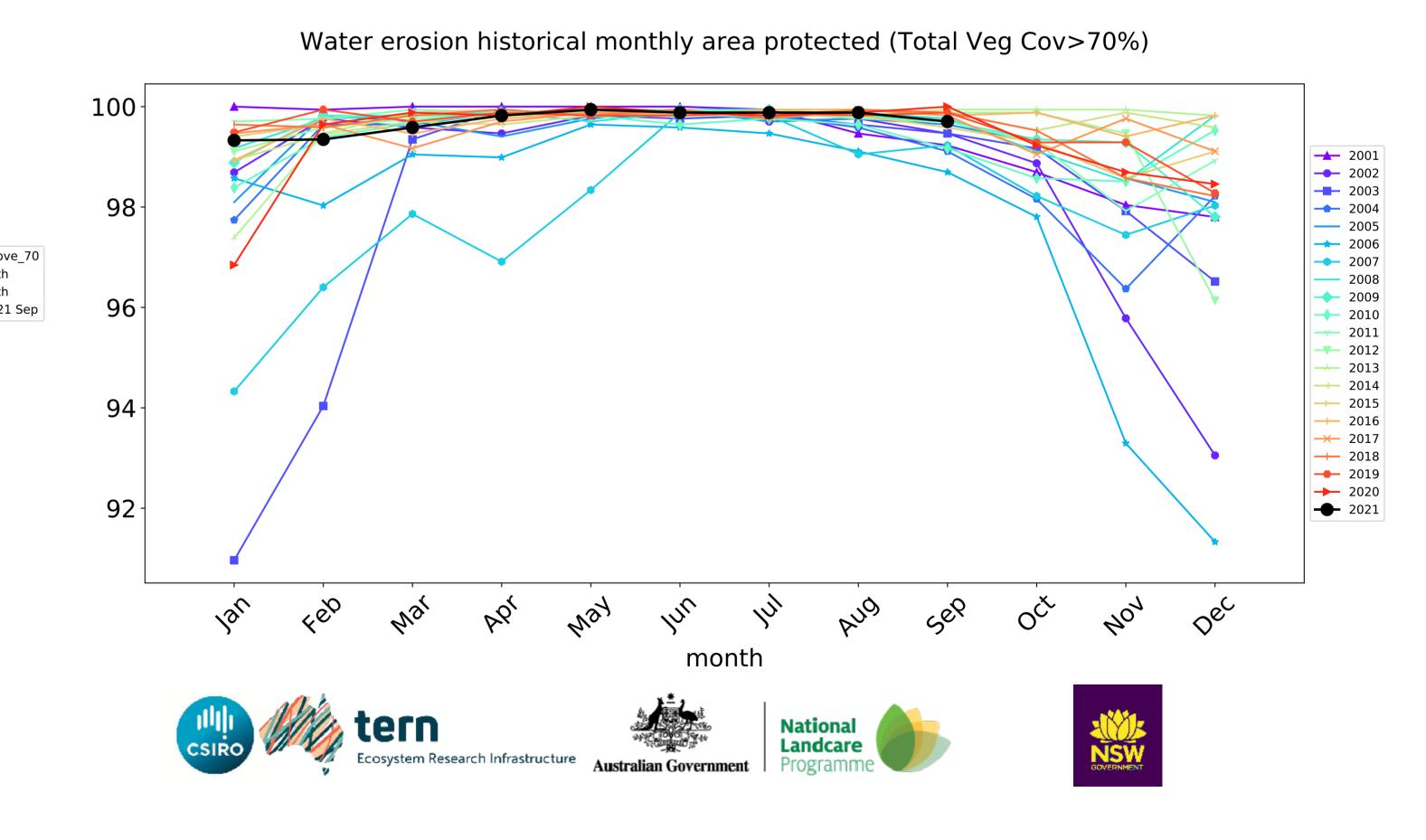


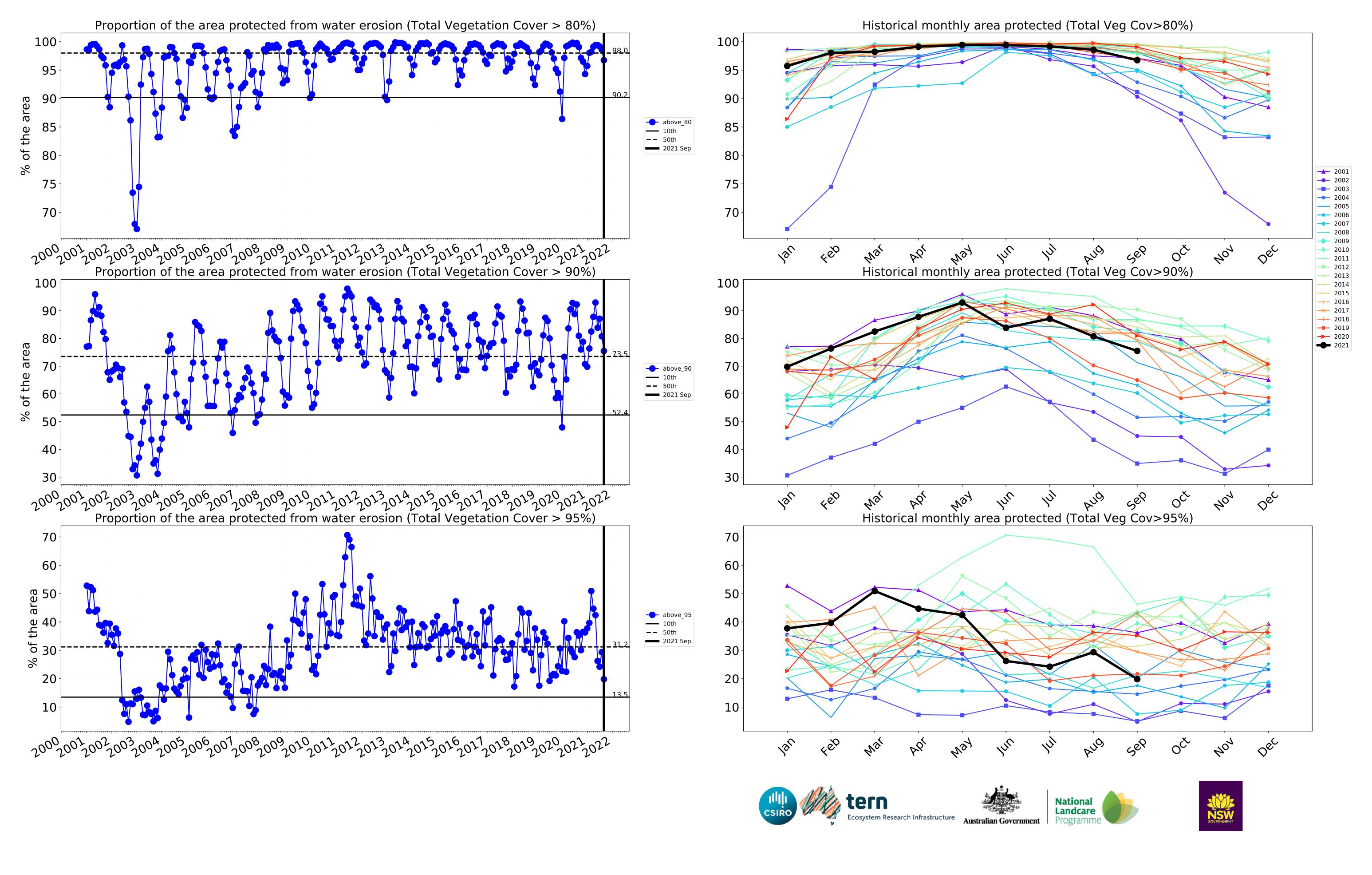












# **Production native forests and plantation forests**

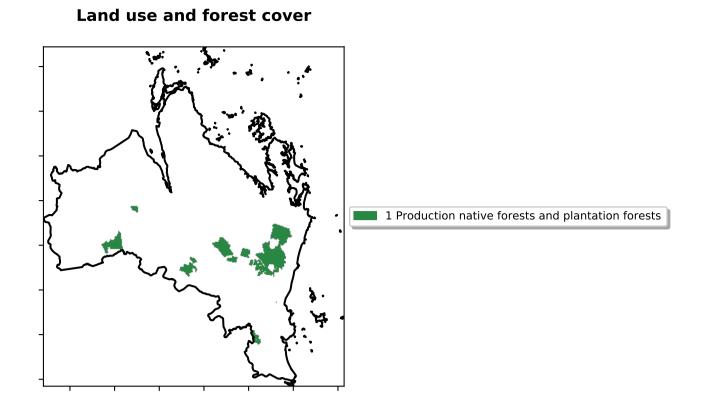
## Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

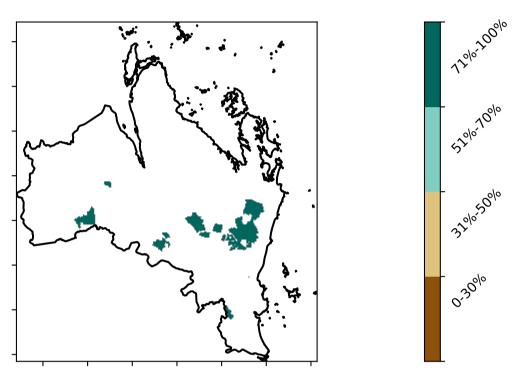
pixel is from the mean. That

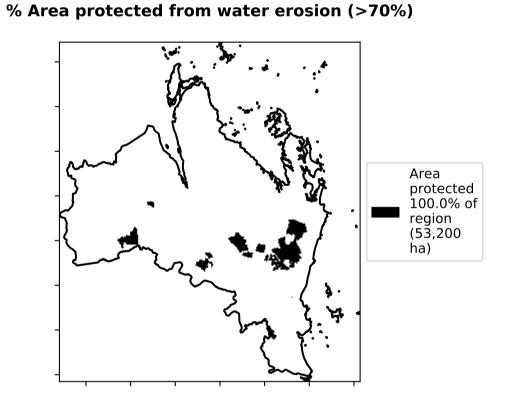
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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

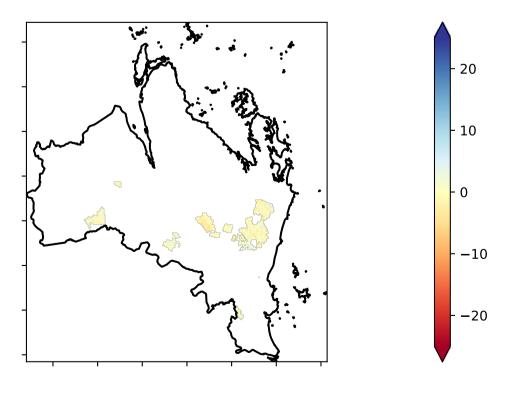


# **Total Vegetation Cover [%]**



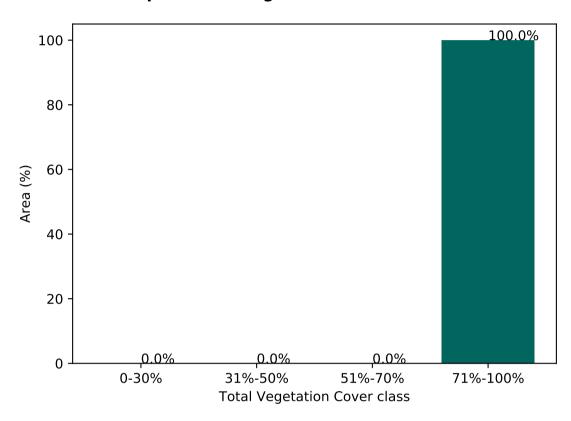


Total Vegetation Cover Anomaly [%]

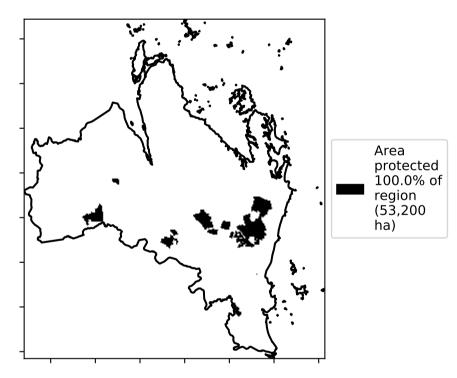


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

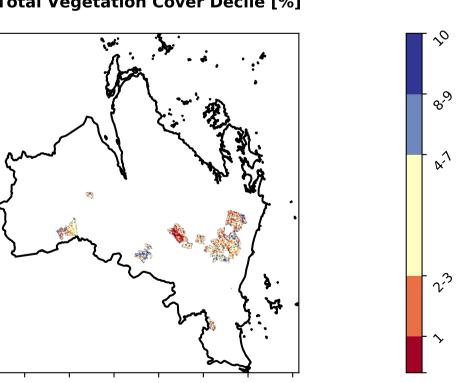
# **Proportion of vegetation cover class in area**



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



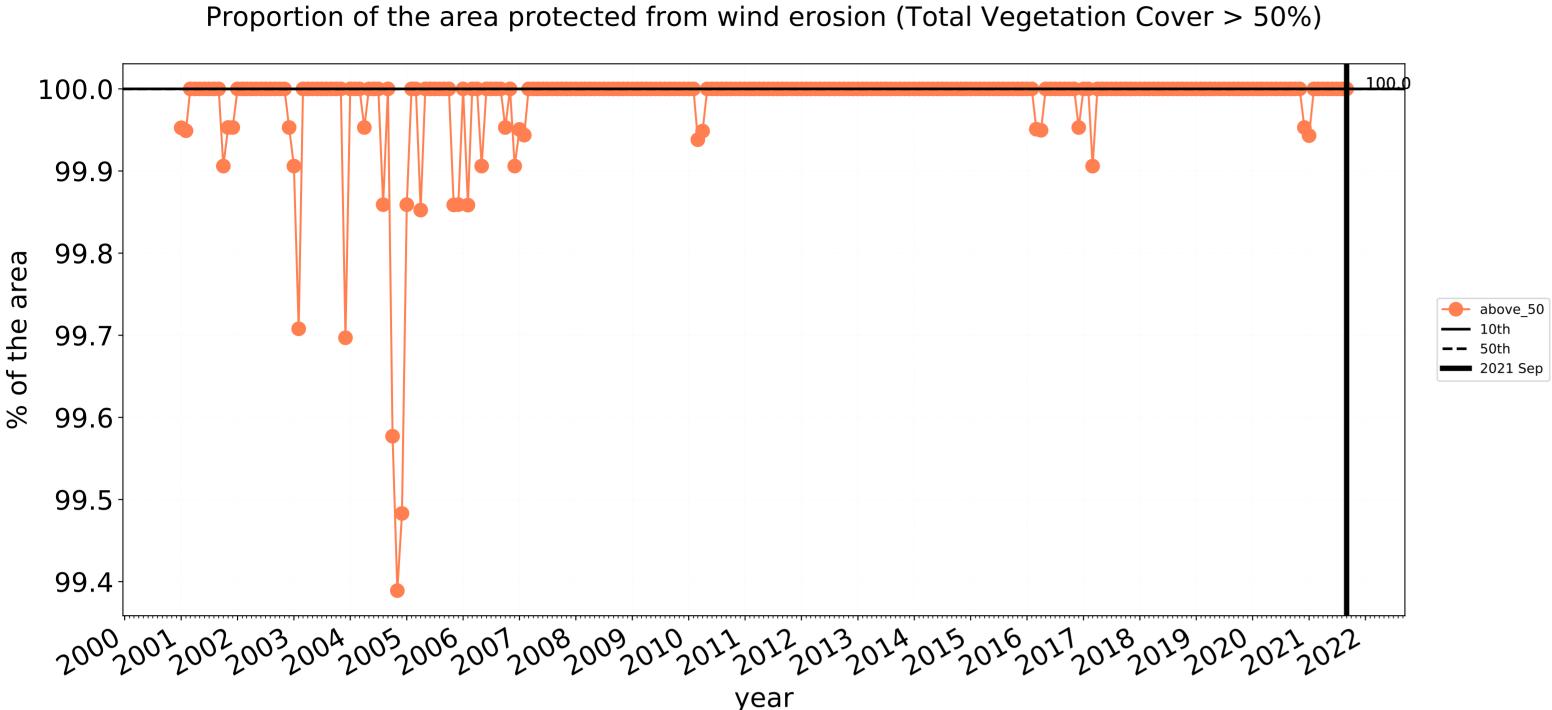


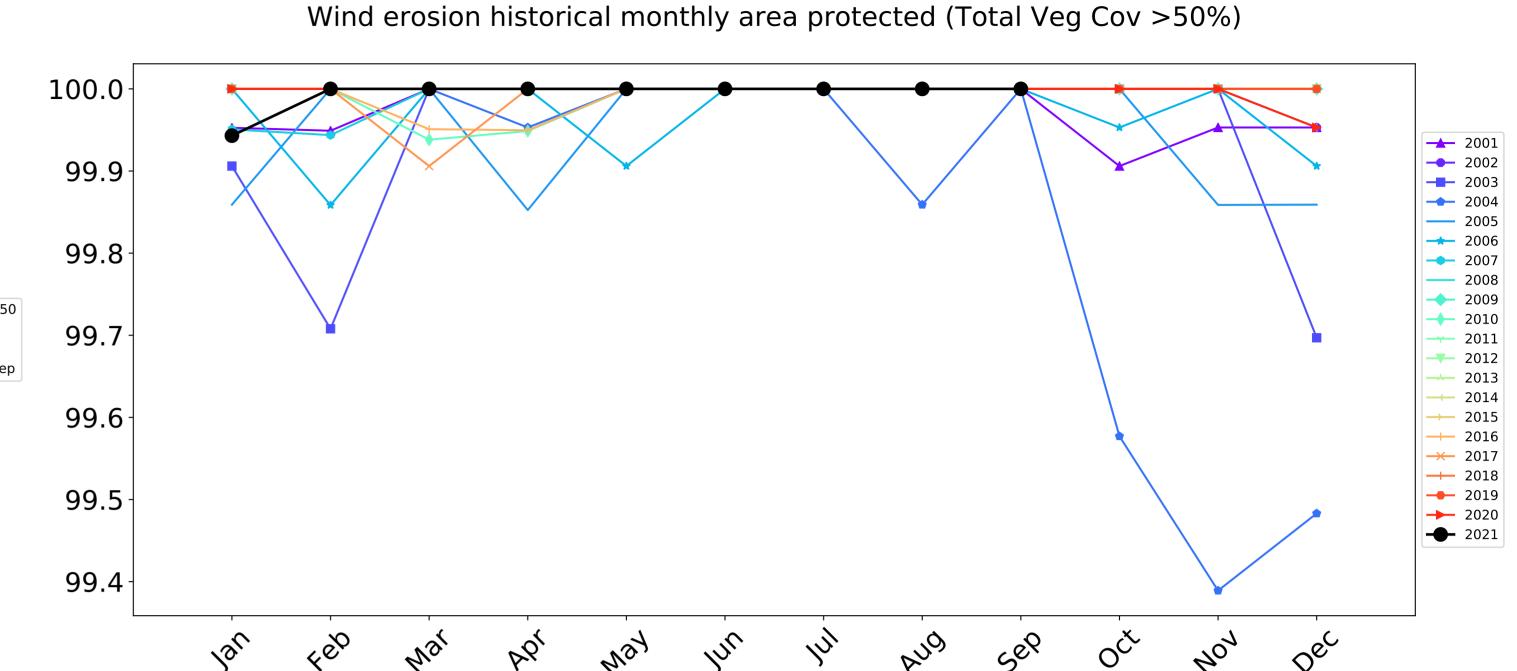


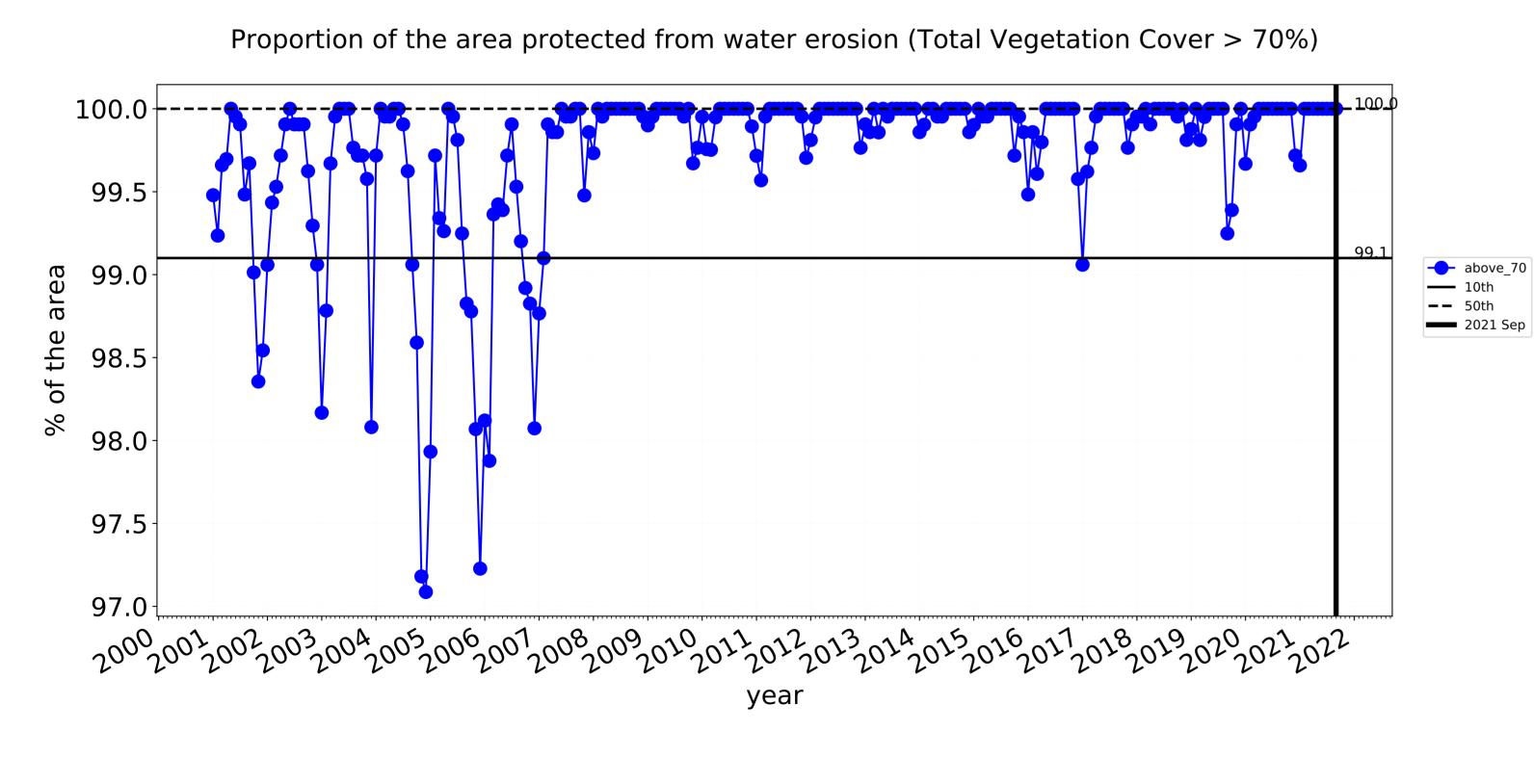


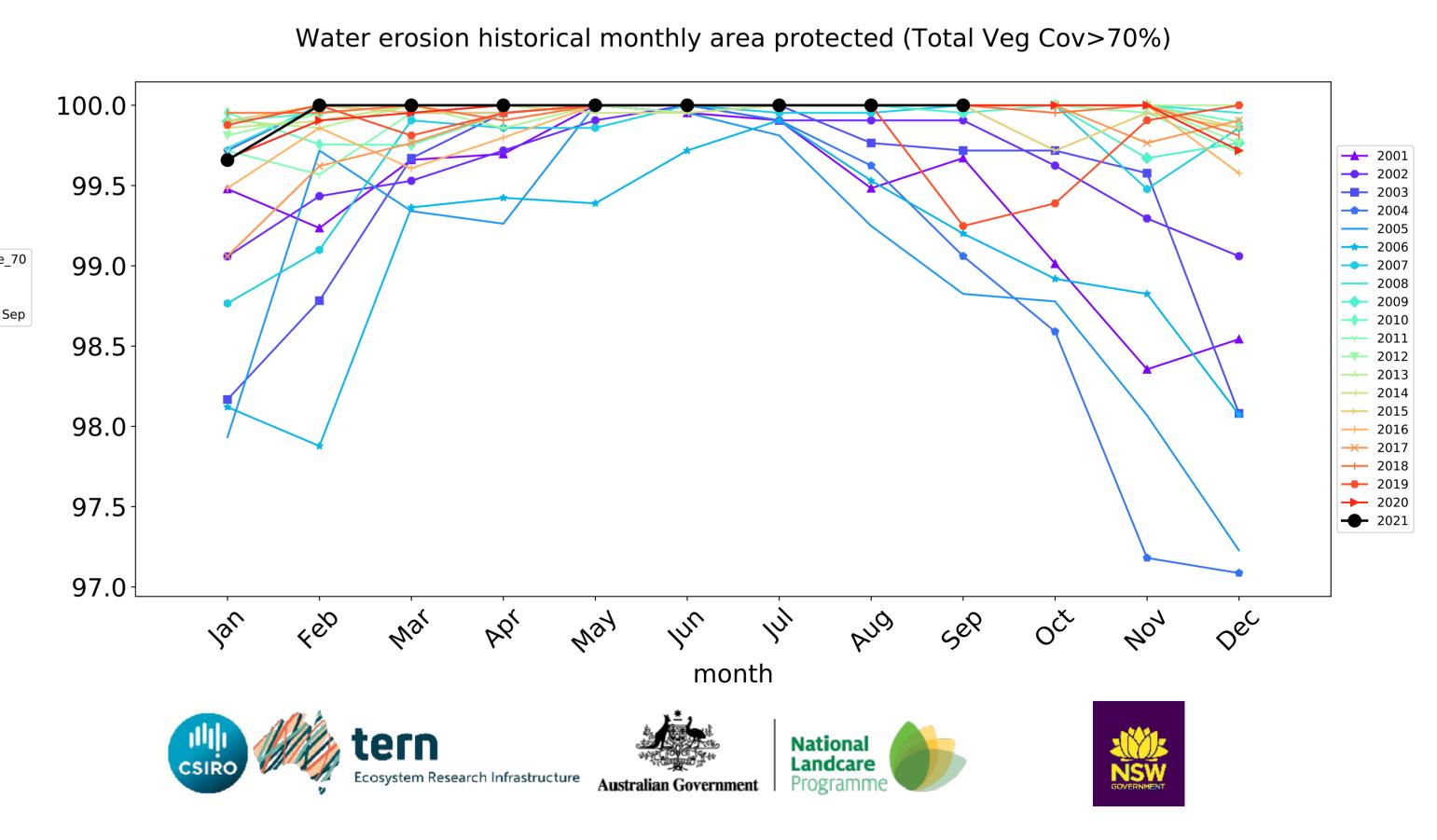


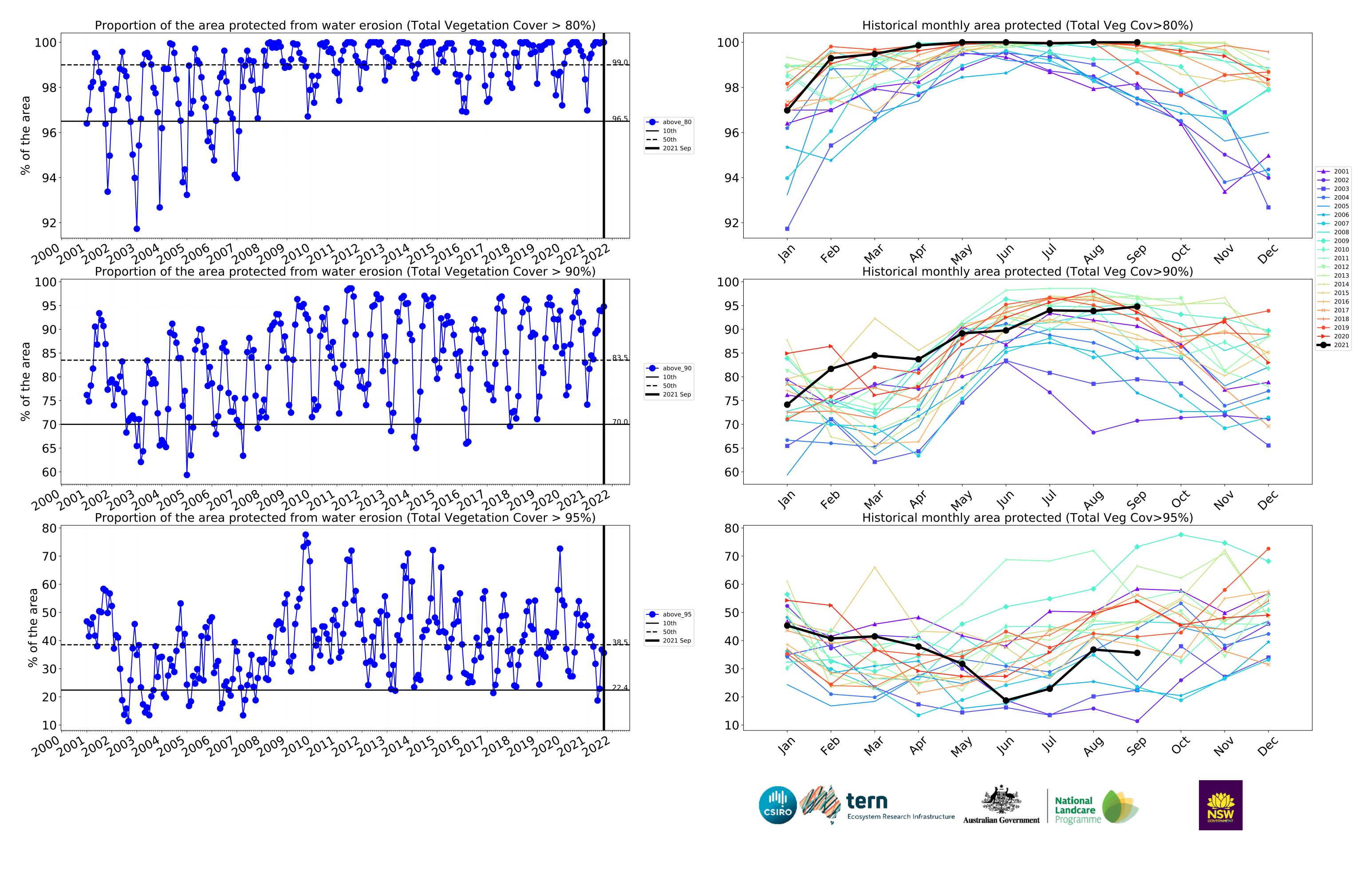
# **Production native forests and plantation forests timeseries**











# Livingstone\_(S) (1,156,350 ha and no data 19,110 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	1,156,350	100.0% 1,155,850	99.8% 1,154,125	96.9% 1,120,575	88.5% 1,023,375	57.9% 669,750	20.5% 237,250
Conservation and natural environments	335,400	100.0% 335,250	99.7% 334,450	98.2% 329,500	92.4% 309,800	75.9% 254,425	37.1% 124,500
Conservation and natural environments non forest	11,675	99.1% 11,575	97.0% 11,325	89.3% 10,425	71.1% 8,300	46.3% 5,400	21.6% 2,525
Conservation and natural environments Woodland forest	212,275	100.0% 212,250	99.9% 211,975	98.6% 209,325	92.7% 196,725	76.0% 161,350	37.3% 79,100
Conservation and natural environments Forest (non woodland)	111,450	100.0% 111,425	99.7% 111,150	98.5% 109,750	94.0% 104,775	78.7% 87,675	38.5% 42,875
Agriculture	679,225	100.0% 679,200	99.9% 678,850	96.5% 655,475	87.3% 593,000	48.8% 331,450	12.2% 82,950
Grazing	673,850	100.0% 673,825	99.9% 673,500	96.5% 650,600	87.5% 589,925	49.1% 330,525	12.3% 82,775
Grazing non forest	412,300	100.0% 412,300	99.9% 412,000	94.4% 389,375	81.5% 335,925	36.7% 151,200	7.4% 30,550
Grazing Woodland forest	219,425	100.0% 219,425	100.0% 219,400	99.9% 219,225	97.2% 213,250	67.2% 147,525	20.0% 43,875
Grazing - Forest (non woodland)	42,125	99.9% 42,100	99.9% 42,100	99.7% 42,000	96.7% 40,750	75.5% 31,800	19.8% 8,350
Production native forests and plantation forests	53,200	100.0% 53,200	100.0% 53,200	100.0% 53,200	100.0% 53,200	94.8% 50,425	35.6% 18,950







