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

# **Date: December 2022**

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:

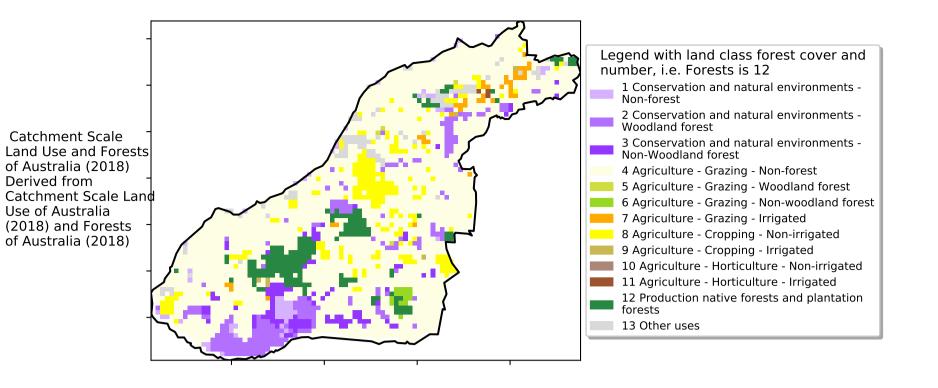
https://doi.org/10.4225/08/5848a3f19a7b3



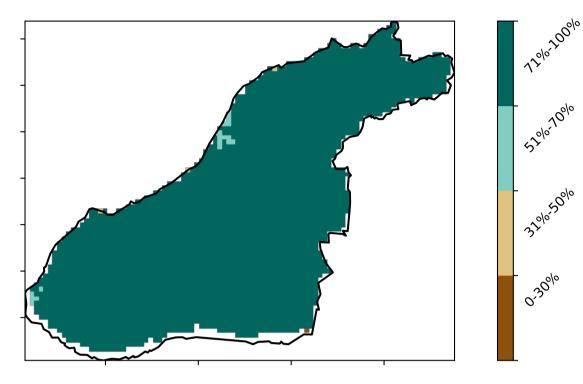
# **Vegetation Cover Dec 2022**

#### Land use and forest cover



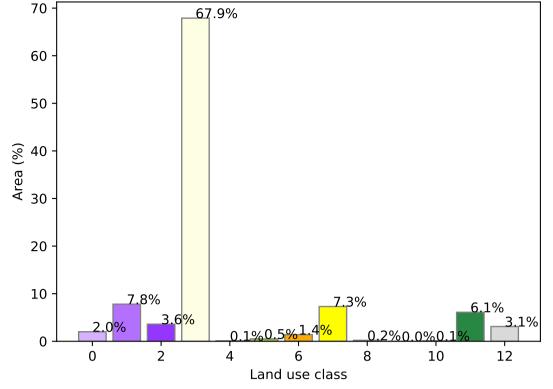


#### **Total Vegetation Cover [%]**

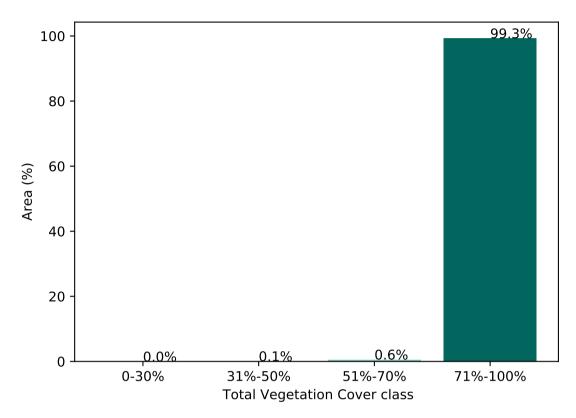


#### % Area protected from water erosion (>70%)





#### Proportion of vegetation cover class in area

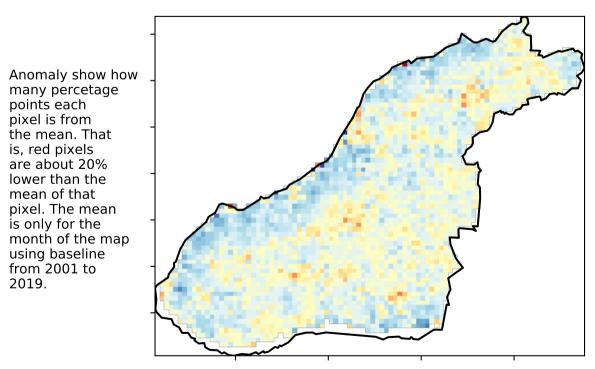


#### % Area protected from wind erosion (>50%)



**Total Vegetation Cover 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.

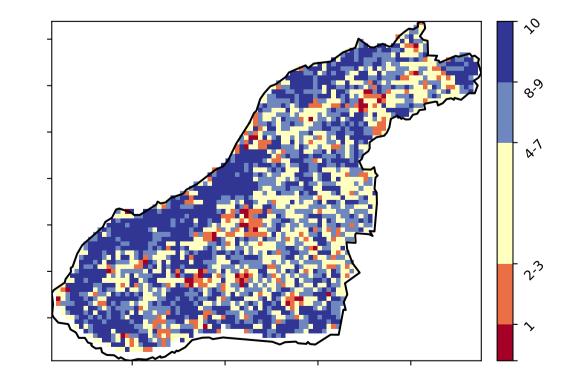
- 20

- 10

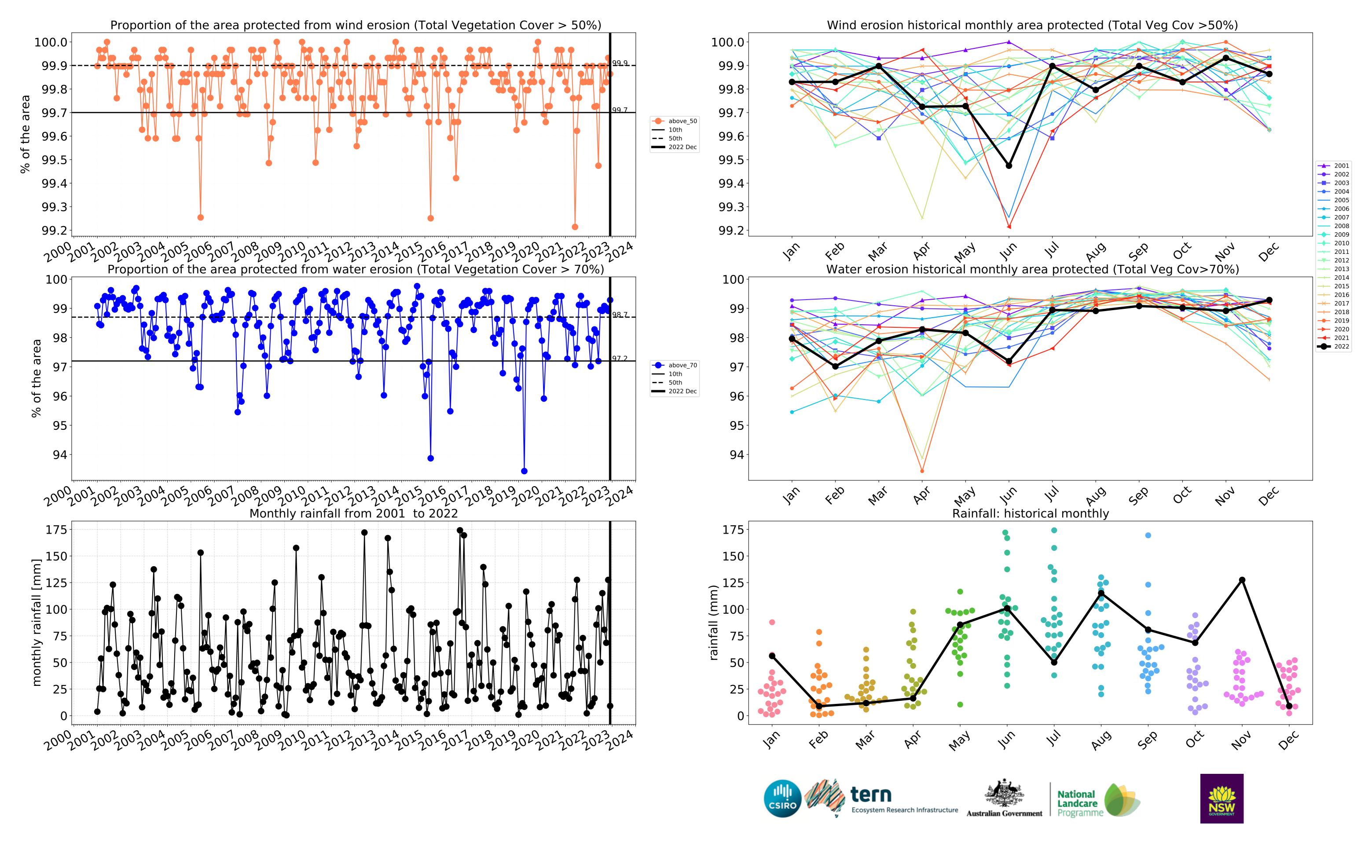
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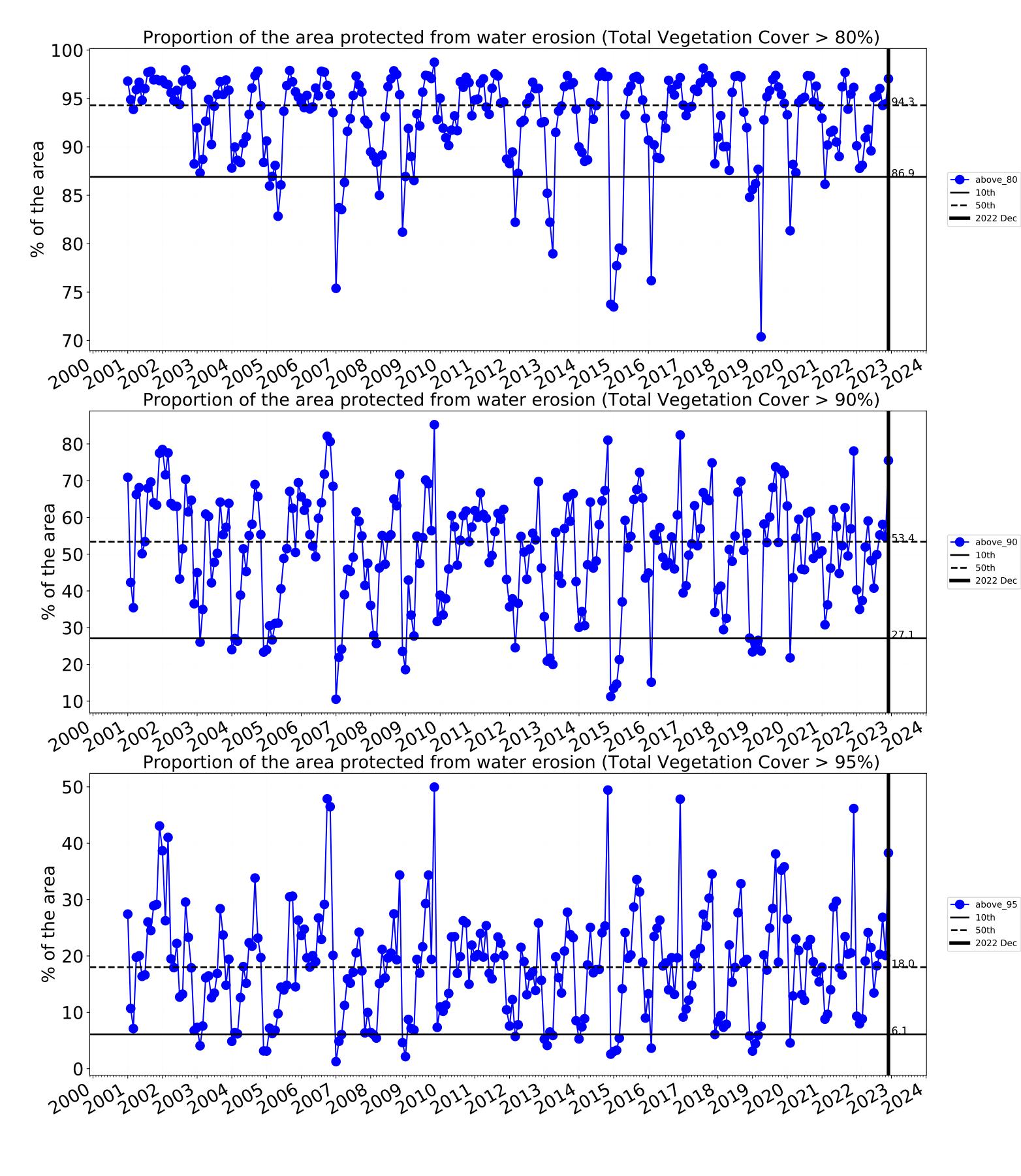
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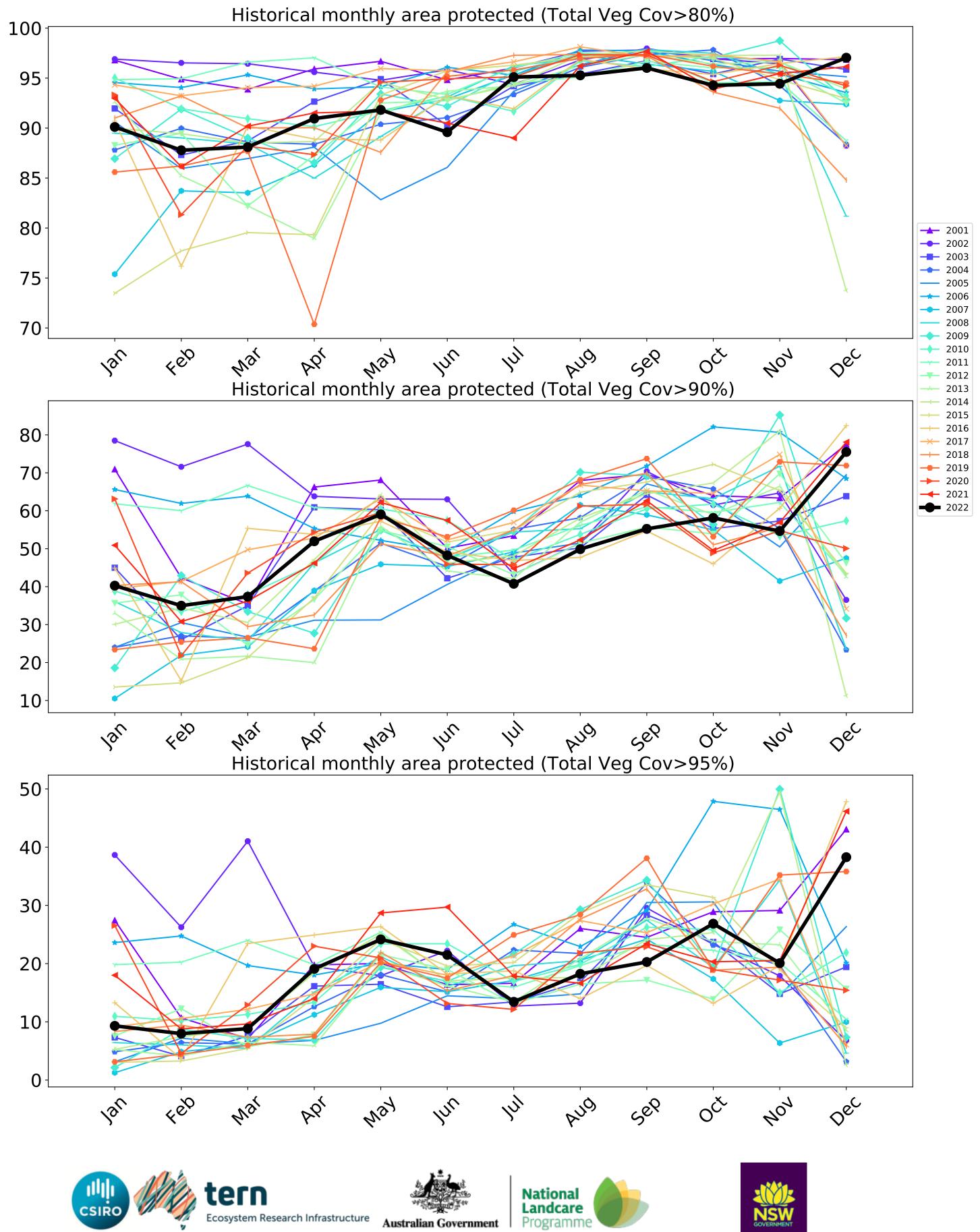
-20









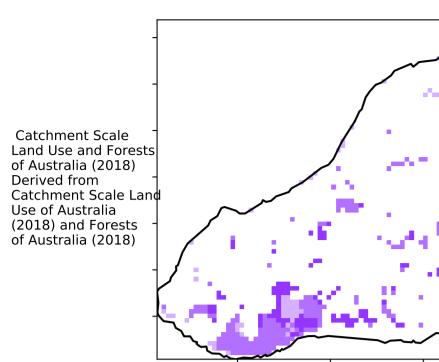


#### **Conservation and natural environments**

1 Conservation and natural environments - Non-forest

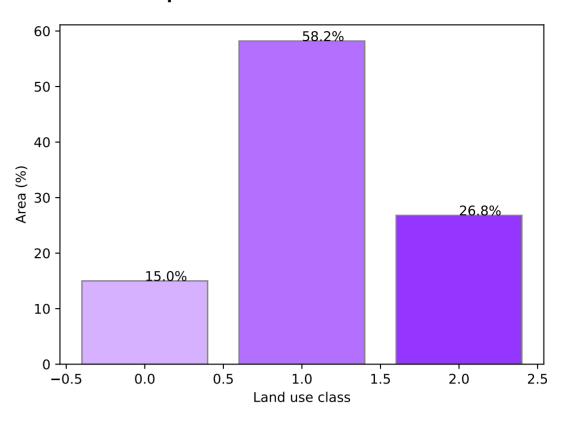
3 Conservation and natural environments - Non-woodland forest

2 Conservation and natural environments - Woodland forest

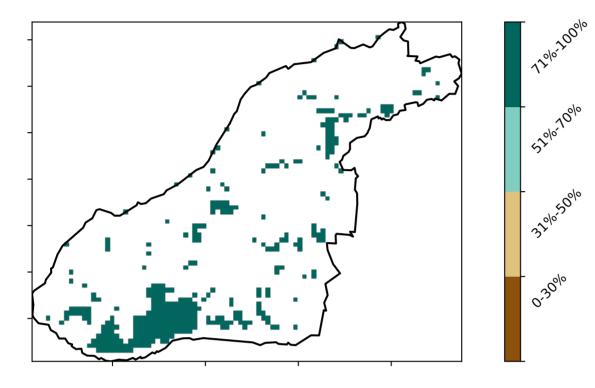


Land use and forest cover

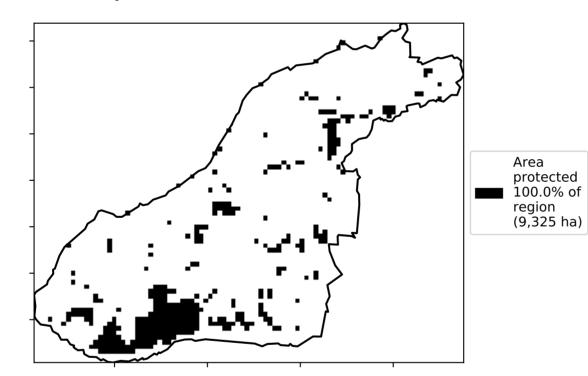
Proportion of each land class in area



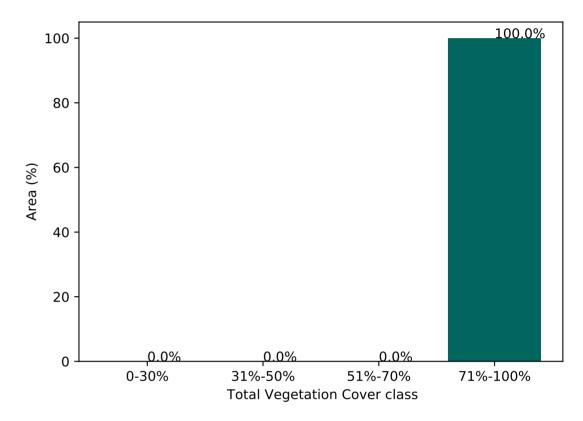
**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



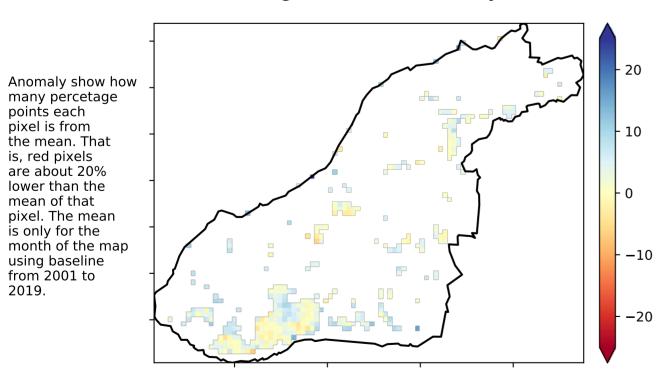
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

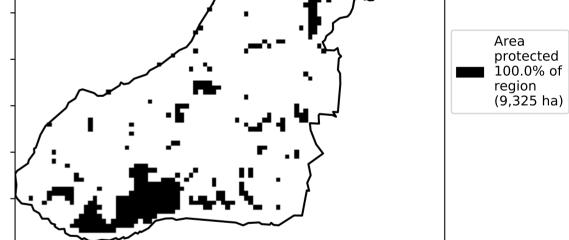


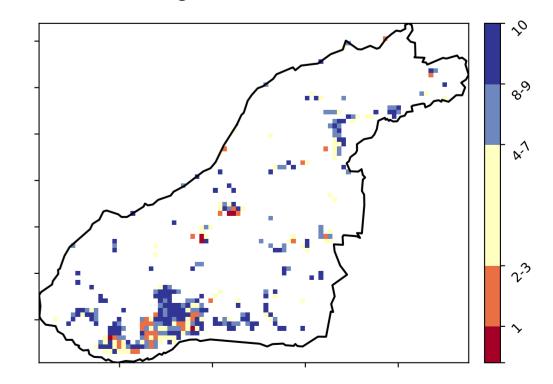
**Total Vegetation Cover Anomaly [%]** 



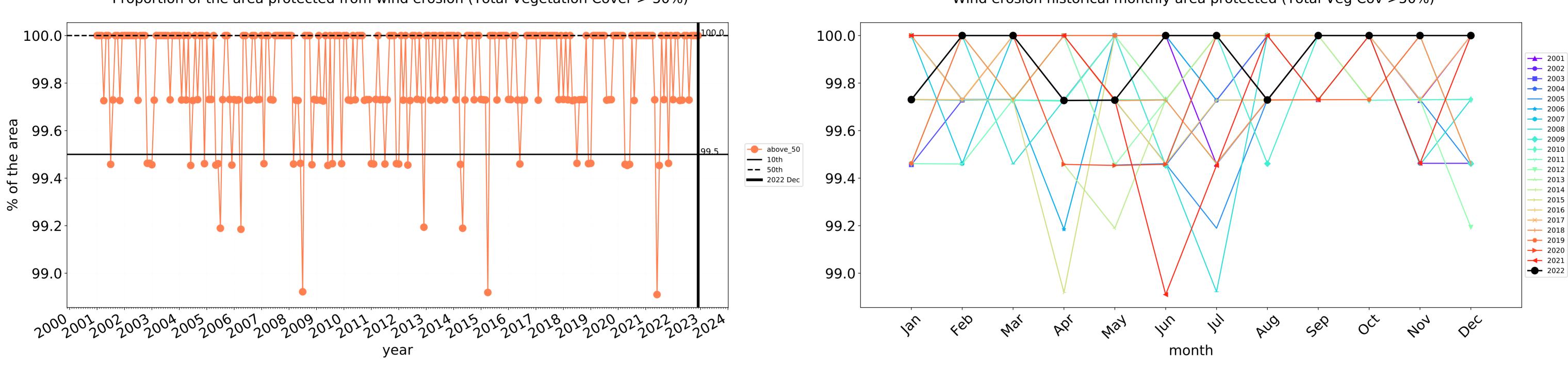
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Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

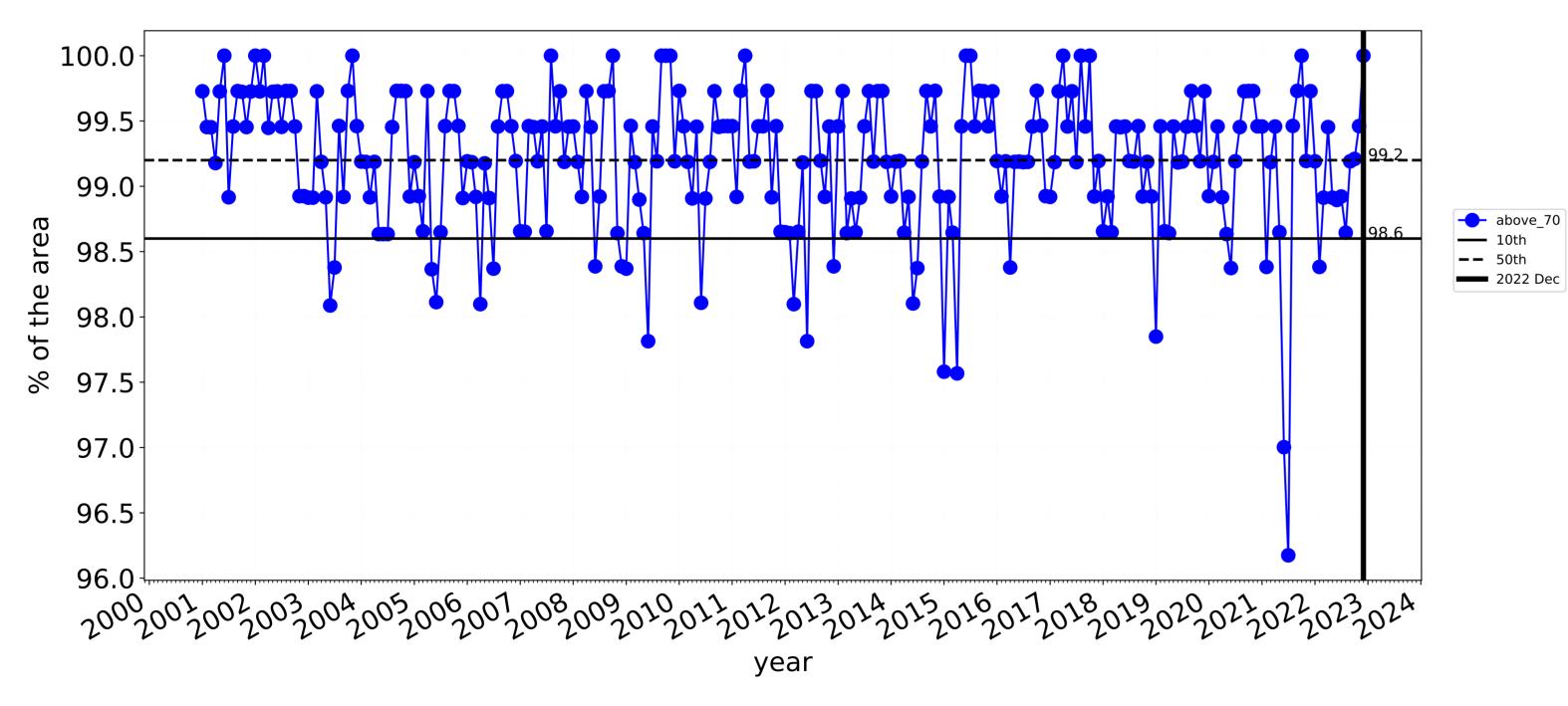


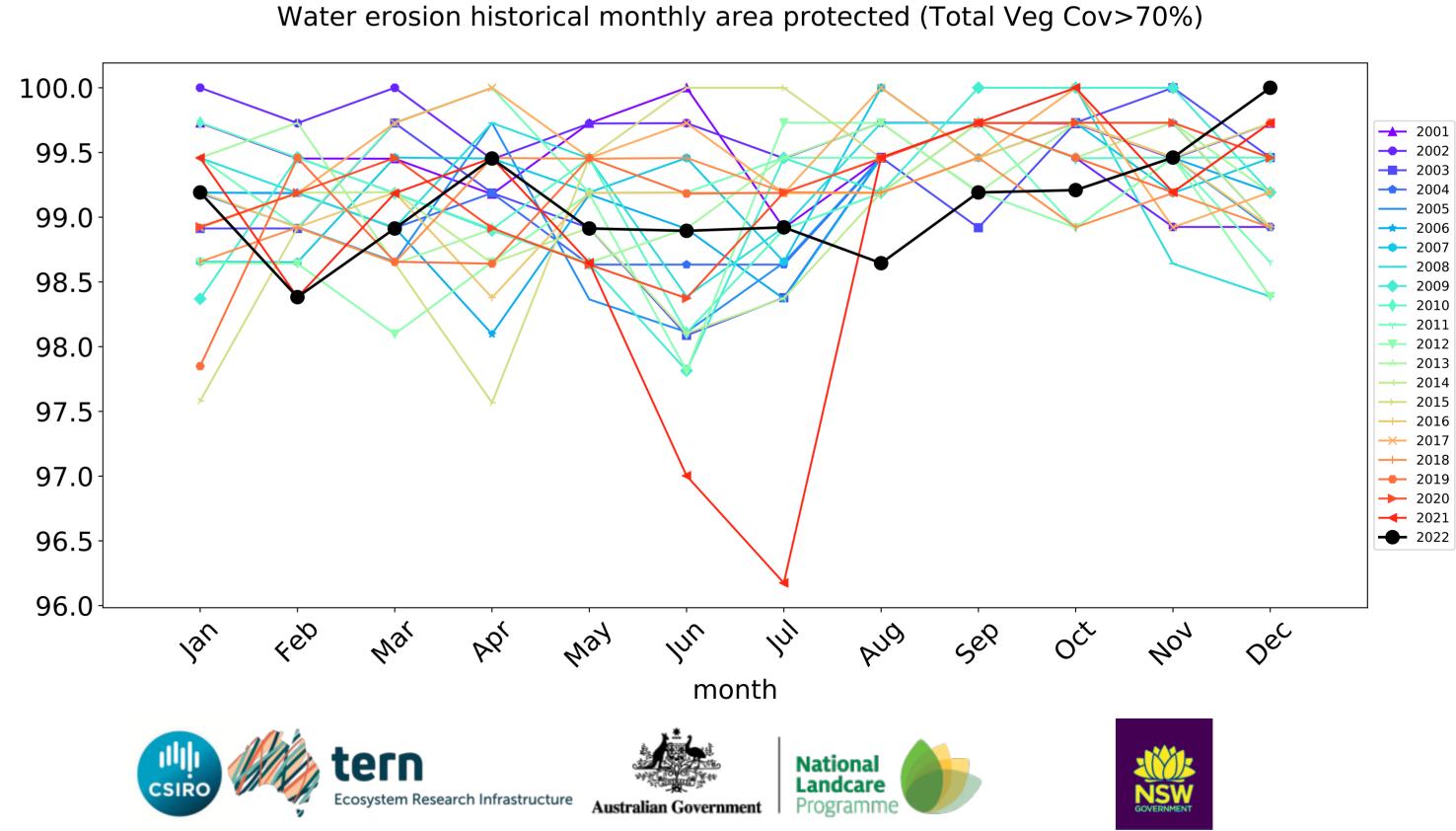






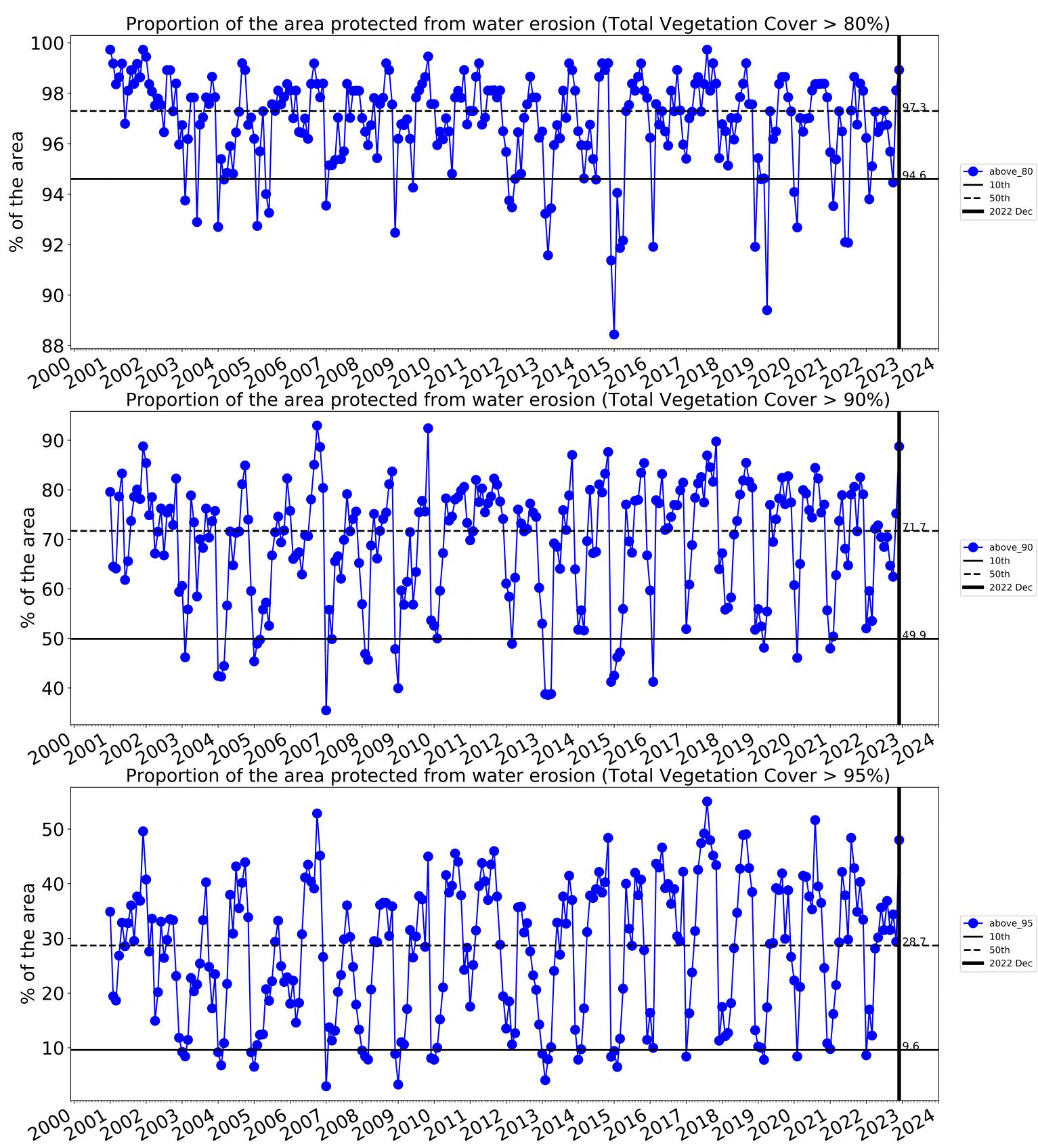
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

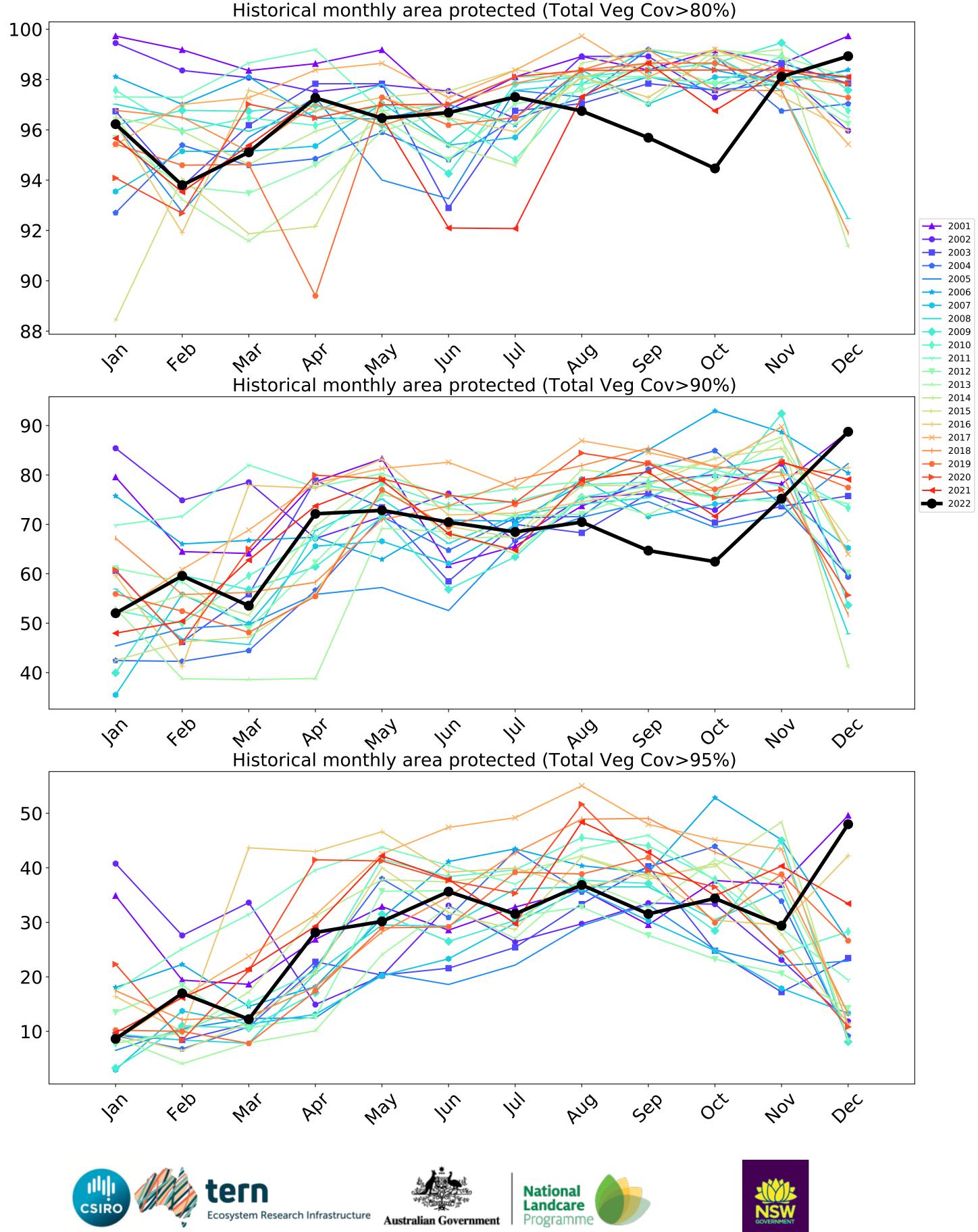




Wind erosion historical monthly area protected (Total Veg Cov >50%)

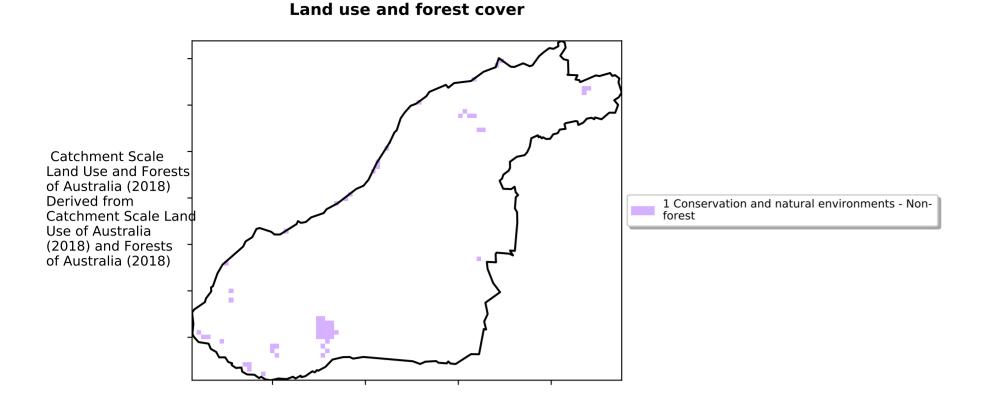
6







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



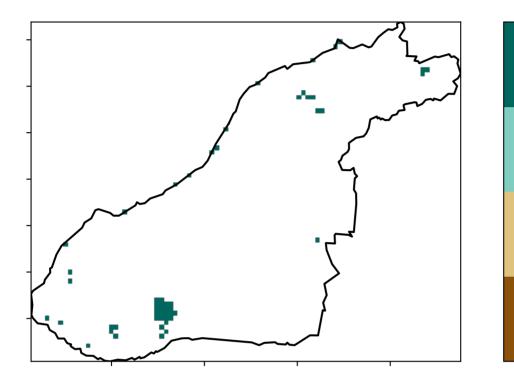
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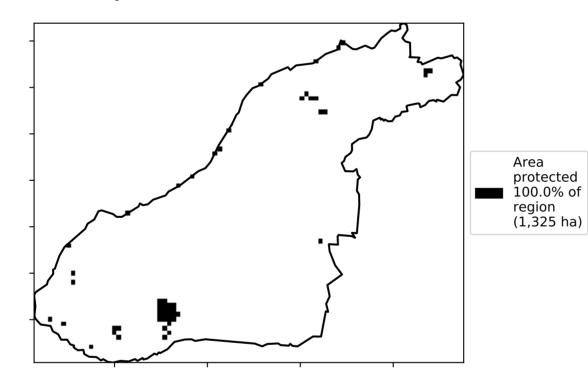
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0.30%

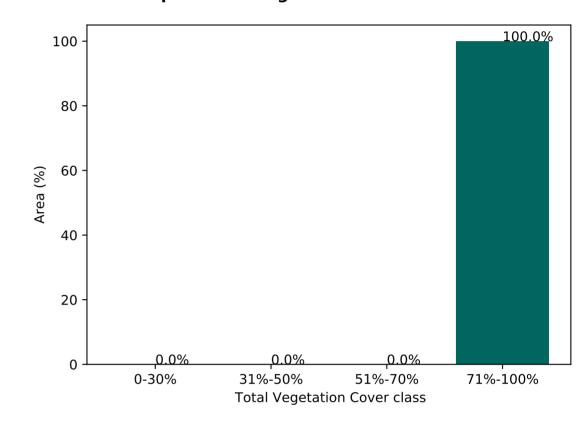
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



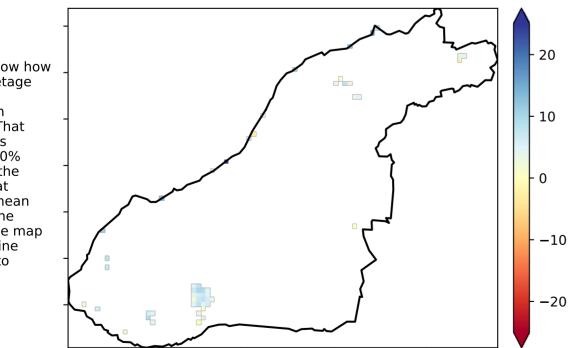
Proportion of vegetation cover class in area



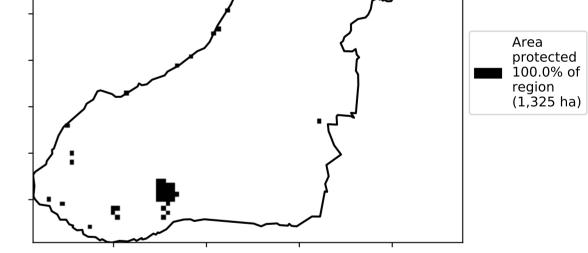
% Area protected from wind erosion (>50%)



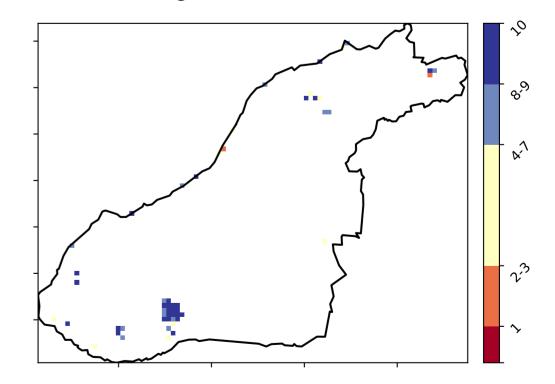
Total Vegetation Cover Anomaly [%]



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.



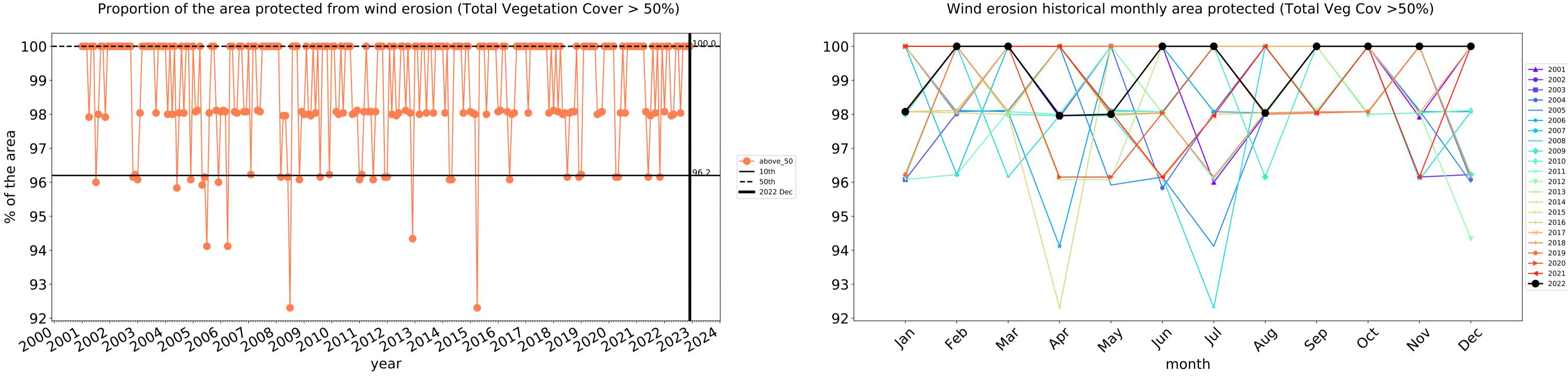
**Total Vegetation Cover Decile [%]** 

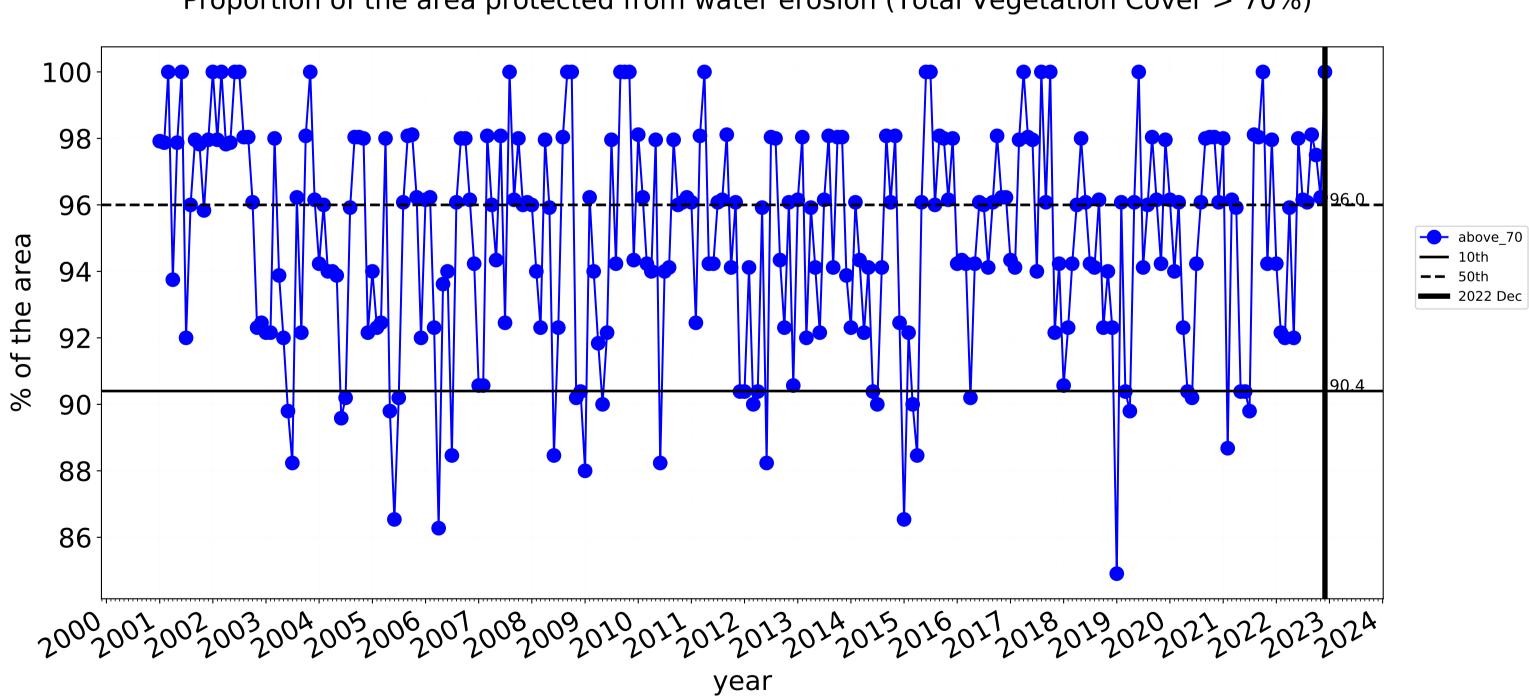




Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

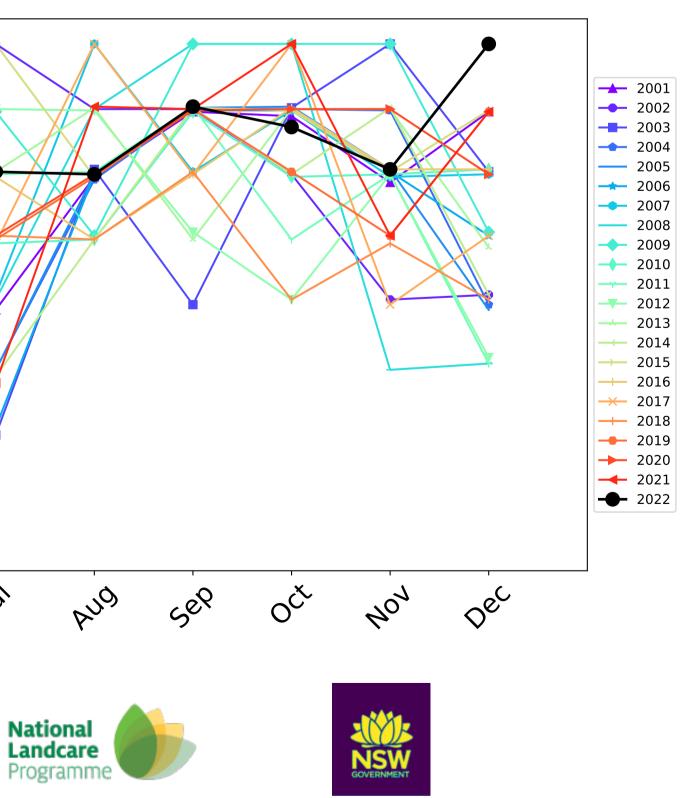


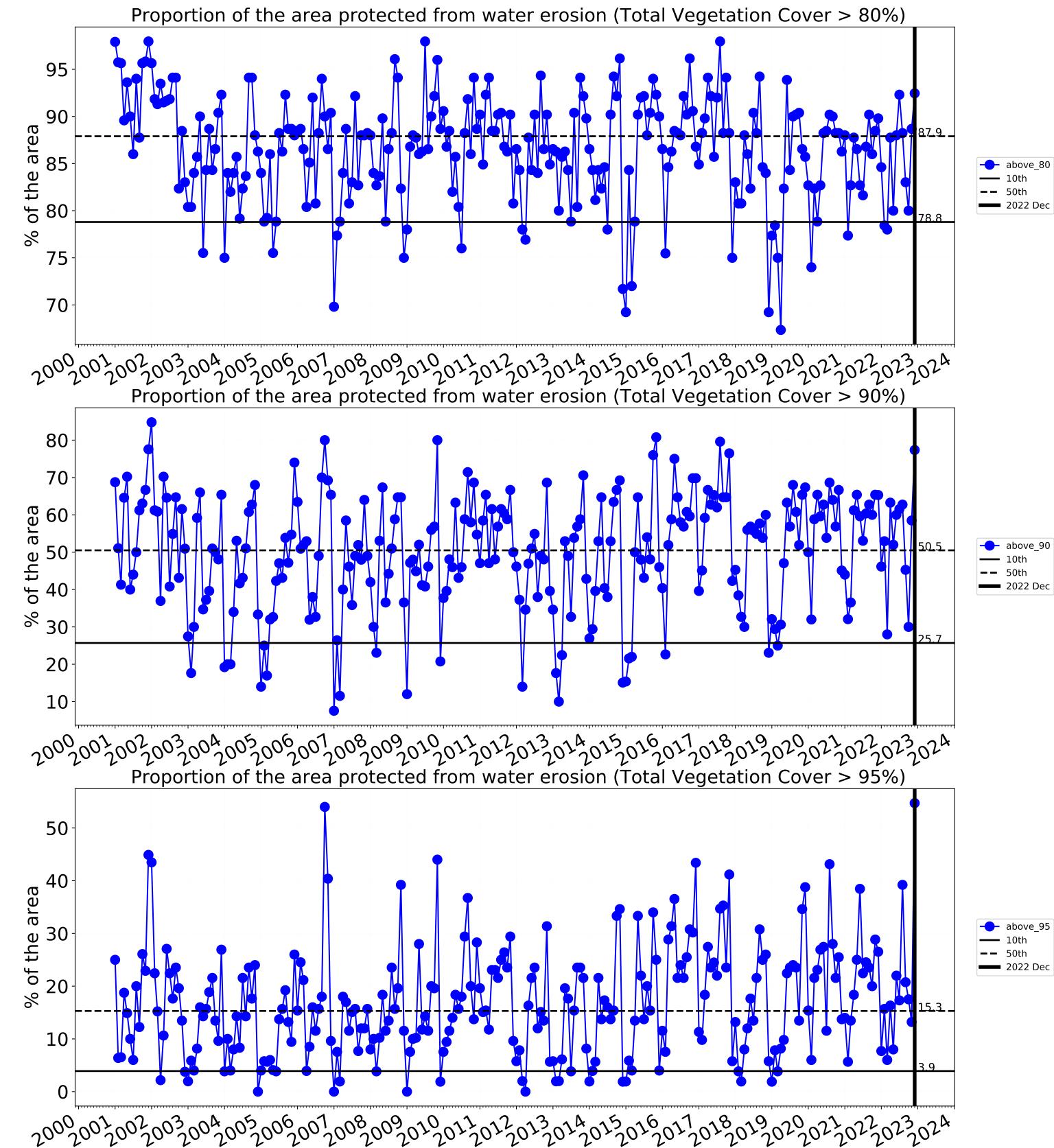


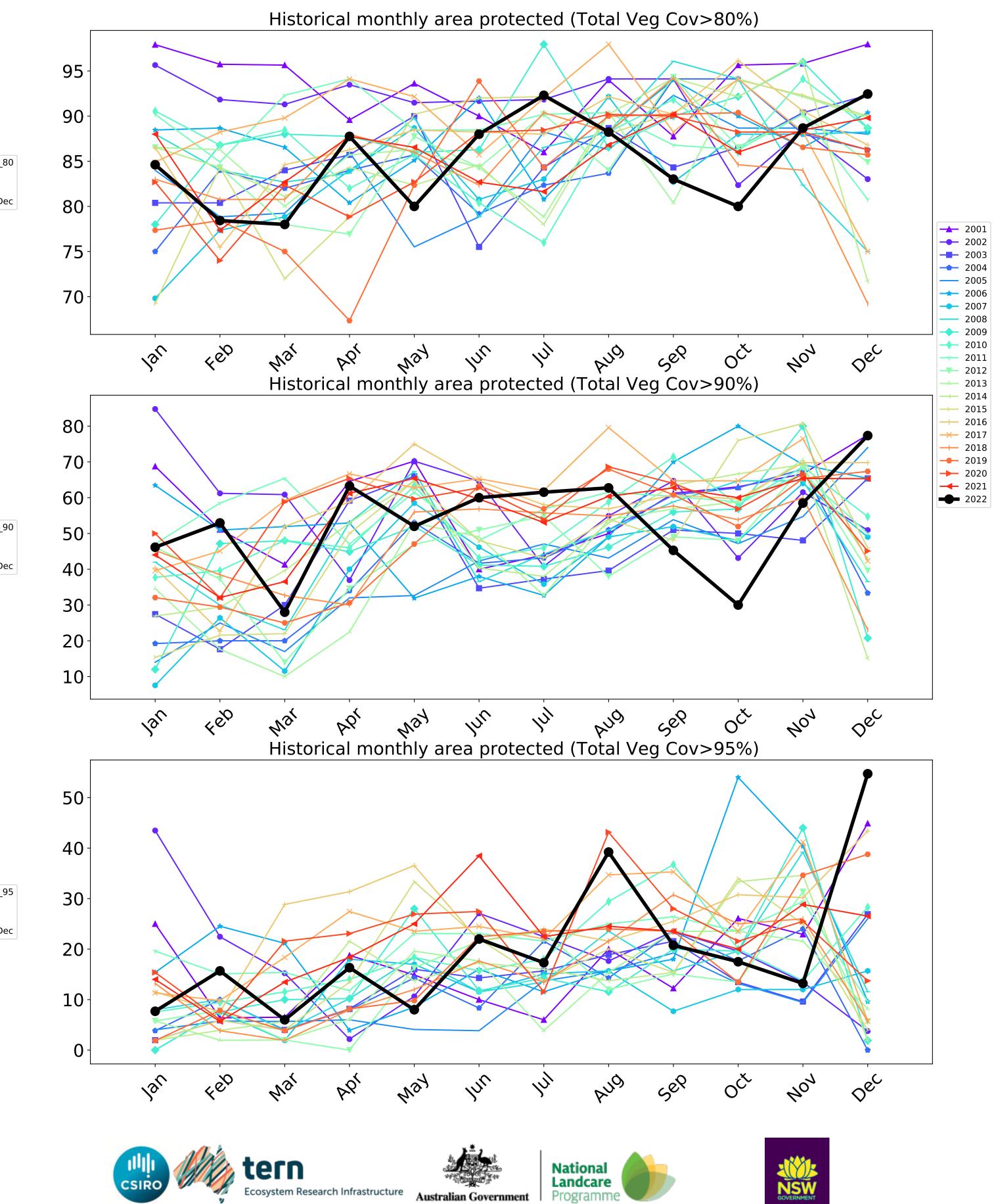


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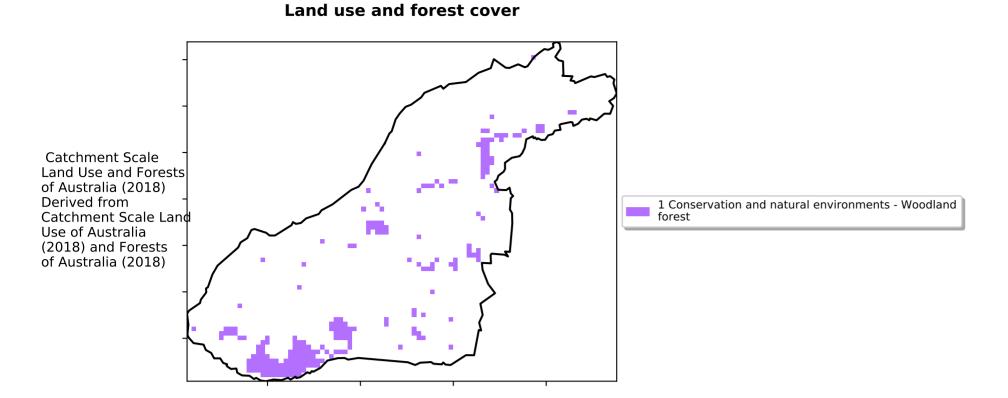
Water erosion historical monthly area protected (Total Veg Cov>70%)







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



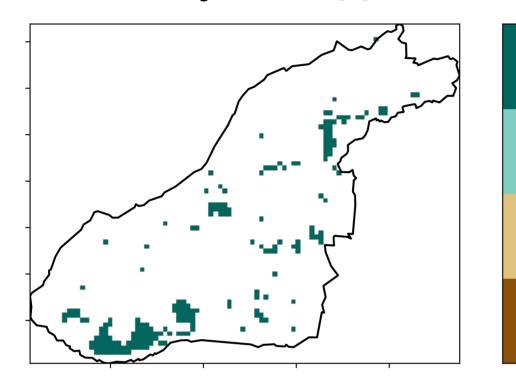
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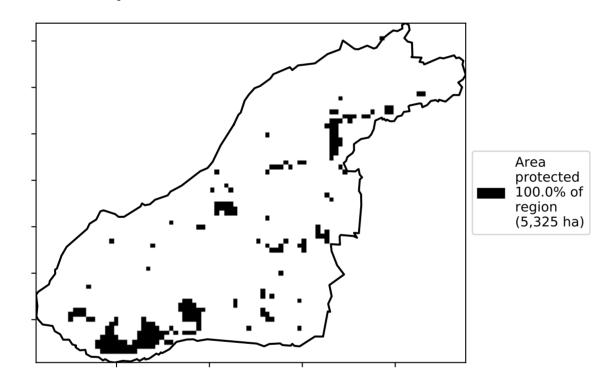
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0-30%

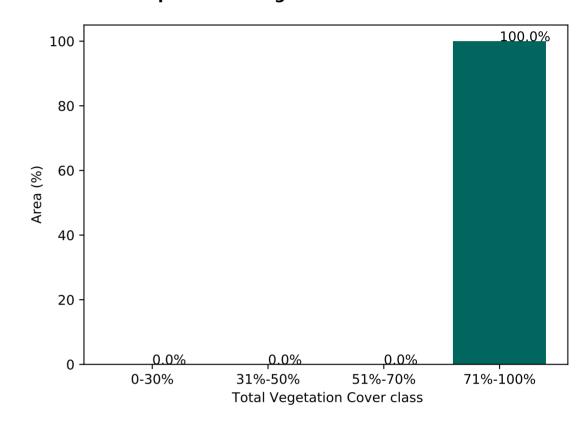
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



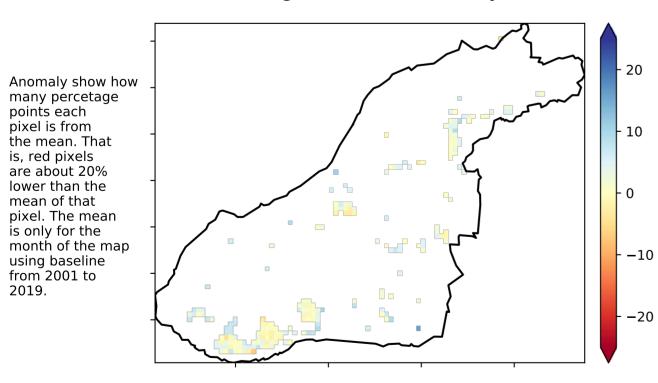
Proportion of vegetation cover class in area



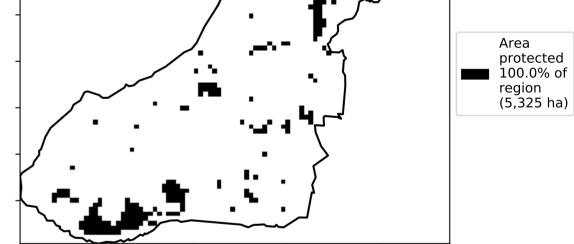
% Area protected from wind erosion (>50%)



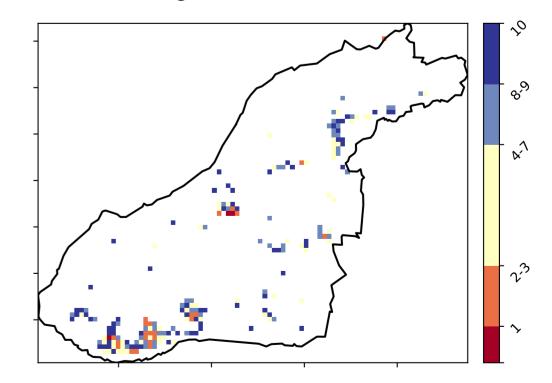
Total Vegetation Cover Anomaly [%]



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.



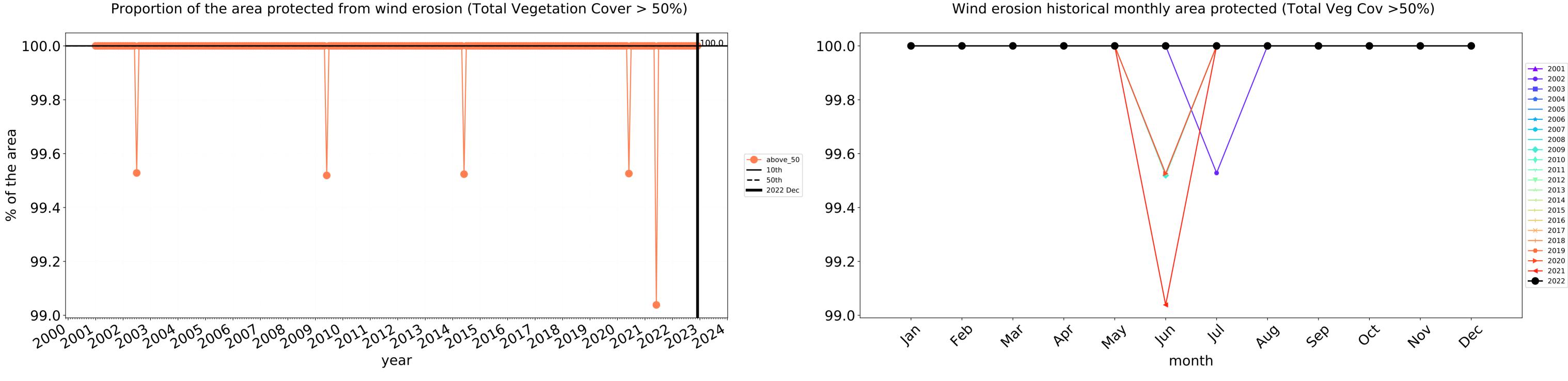
**Total Vegetation Cover Decile [%]** 

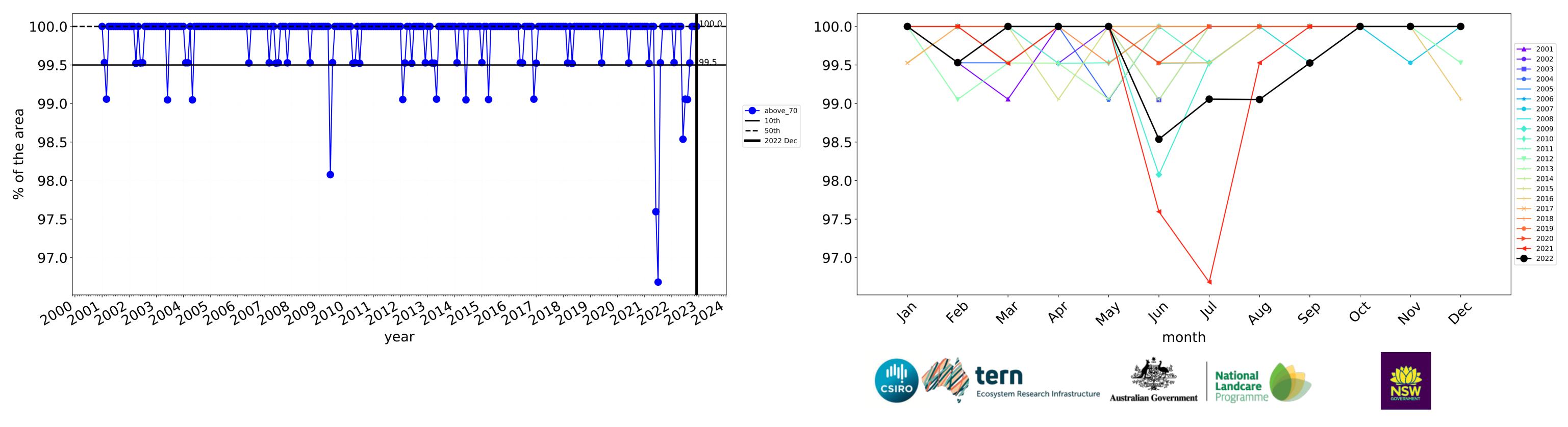




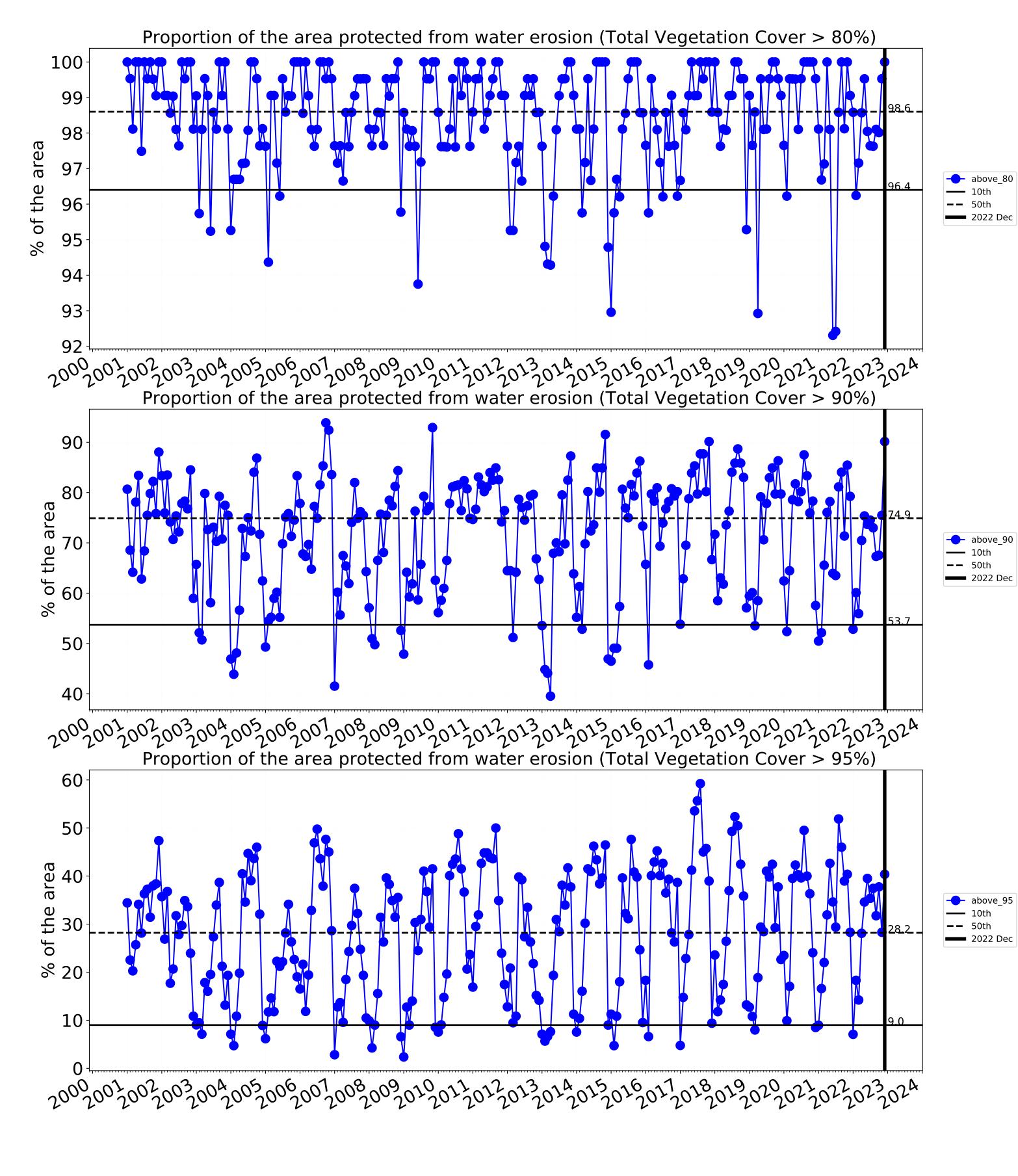
records for that the map using b from 2001 to 20

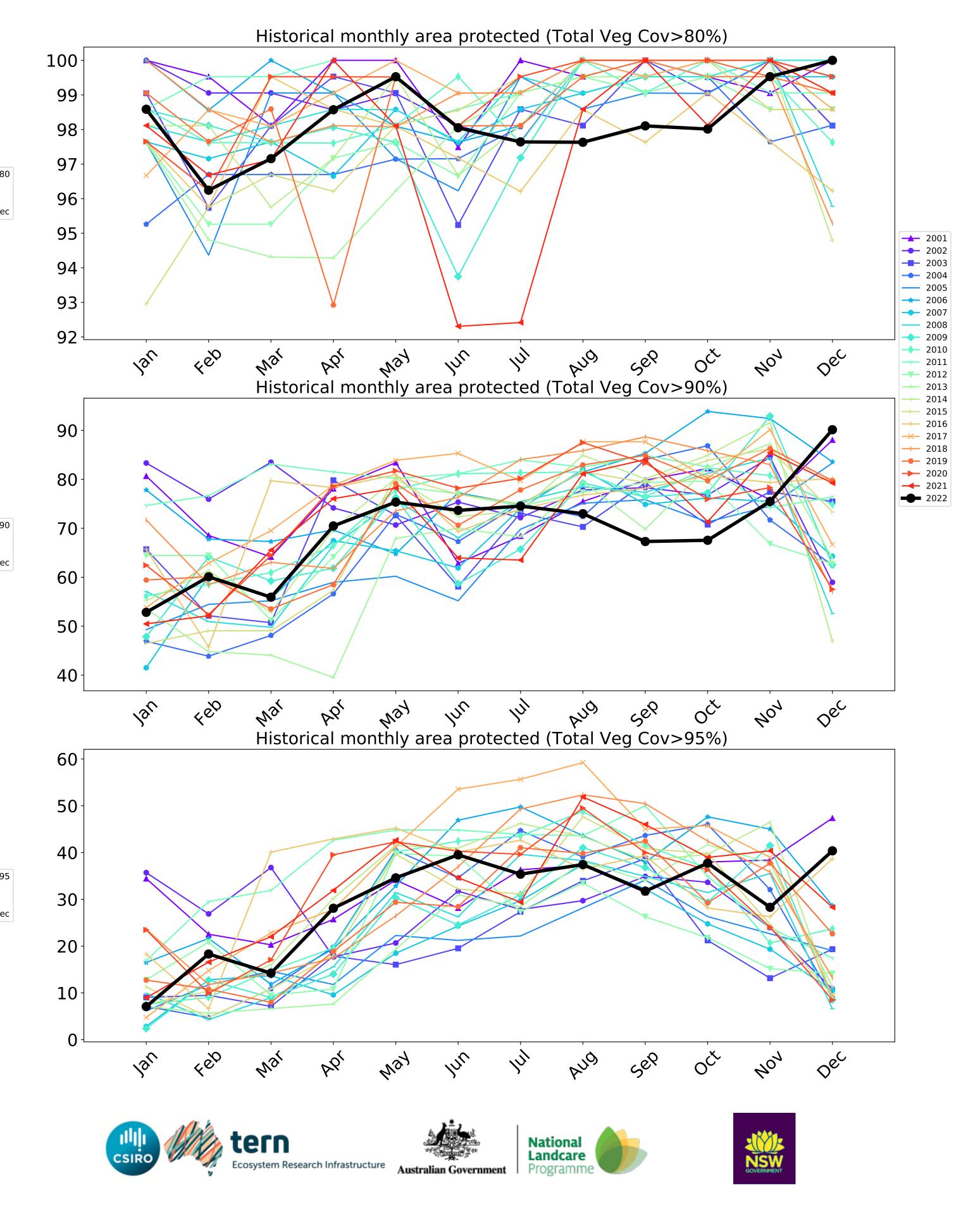
#### **Conservation and natural environments Woodland forest timeseries**





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

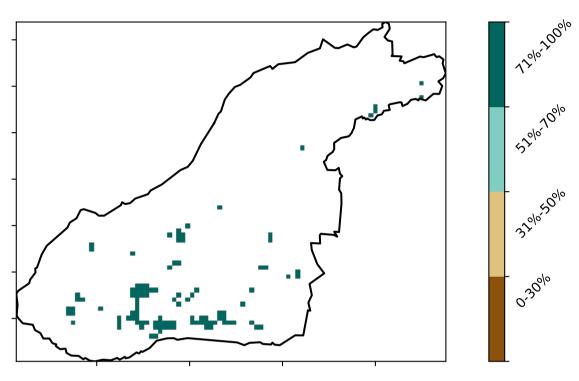




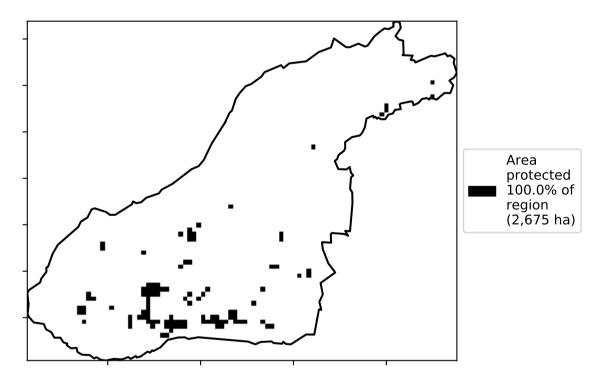
#### **Conservation and natural environments Forest (non woodland)**

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

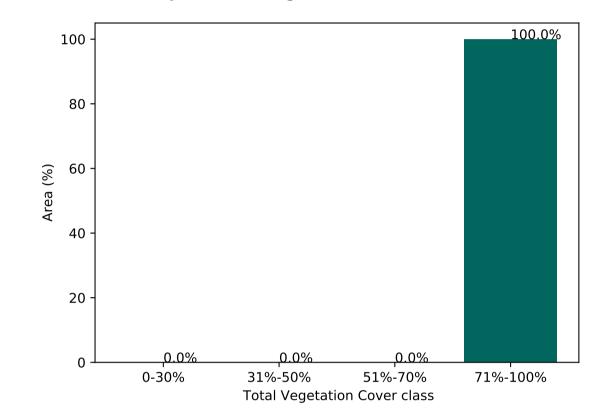
**Total Vegetation Cover [%]** 



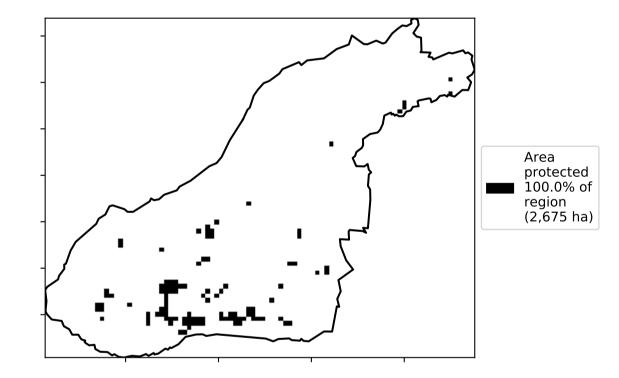
% Area protected from water erosion (>70%)



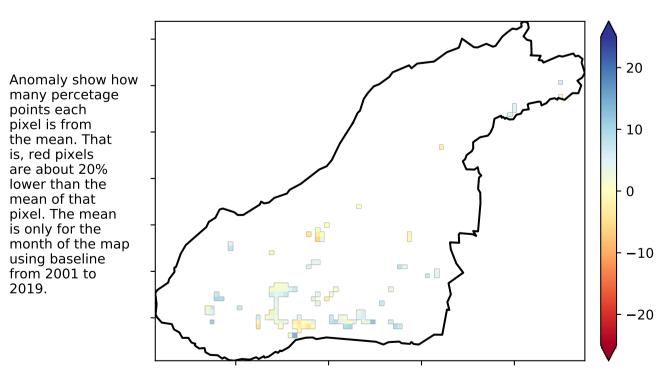
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



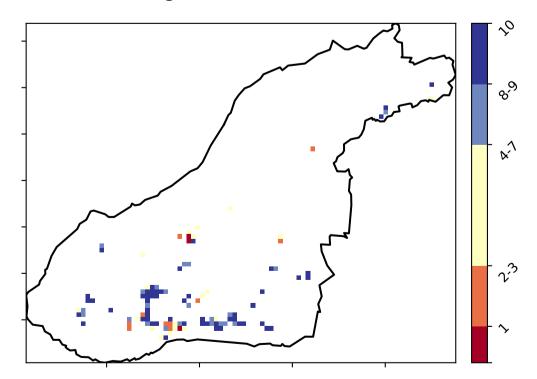
**Total Vegetation Cover Anomaly [%]** 



is, red pixels

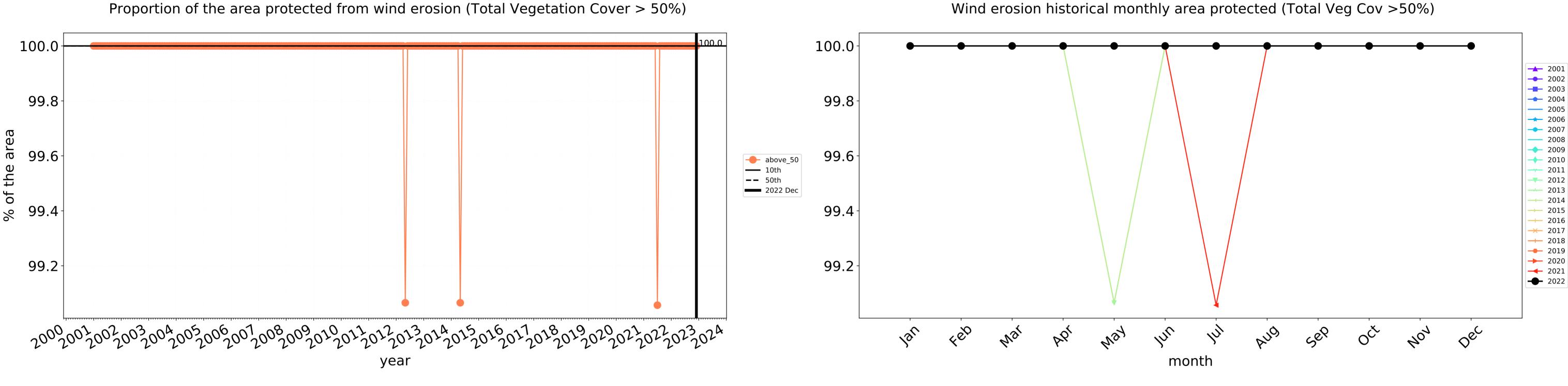
mean of that

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

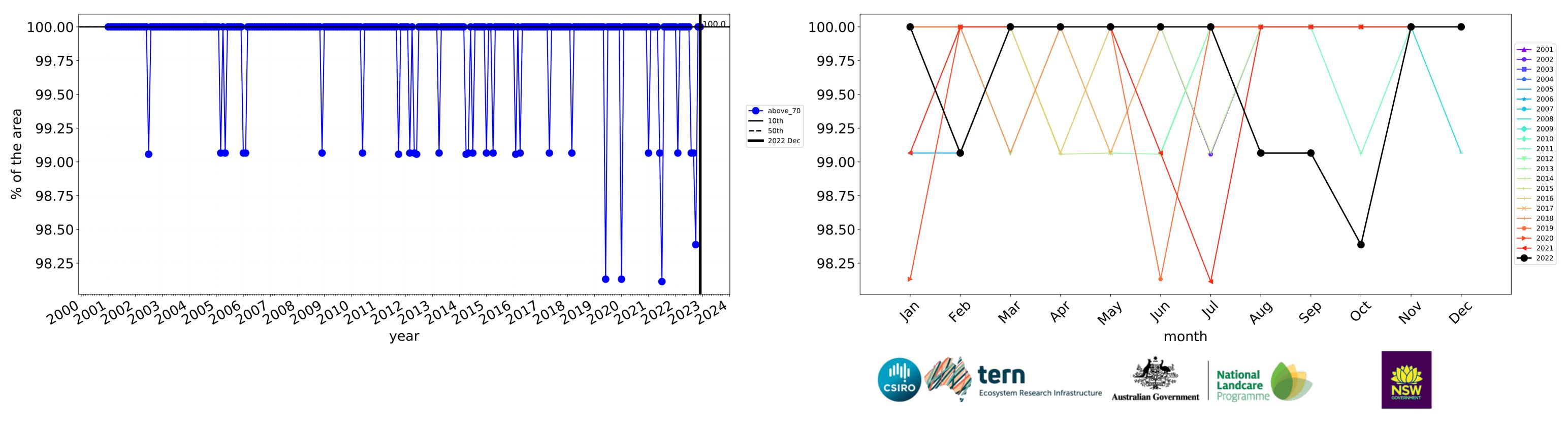




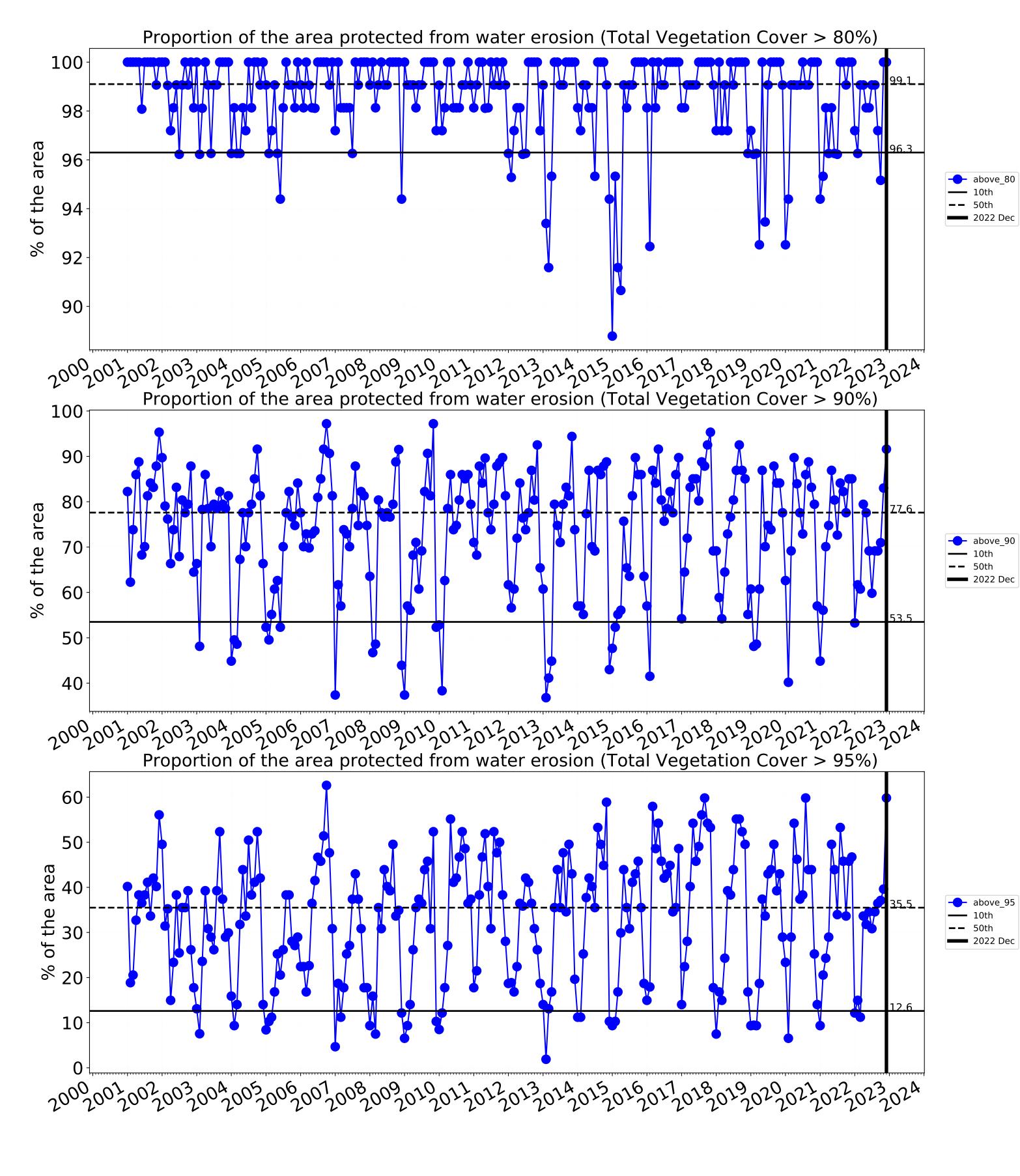
### Conservation and natural environments Forest (non woodland) timeseries

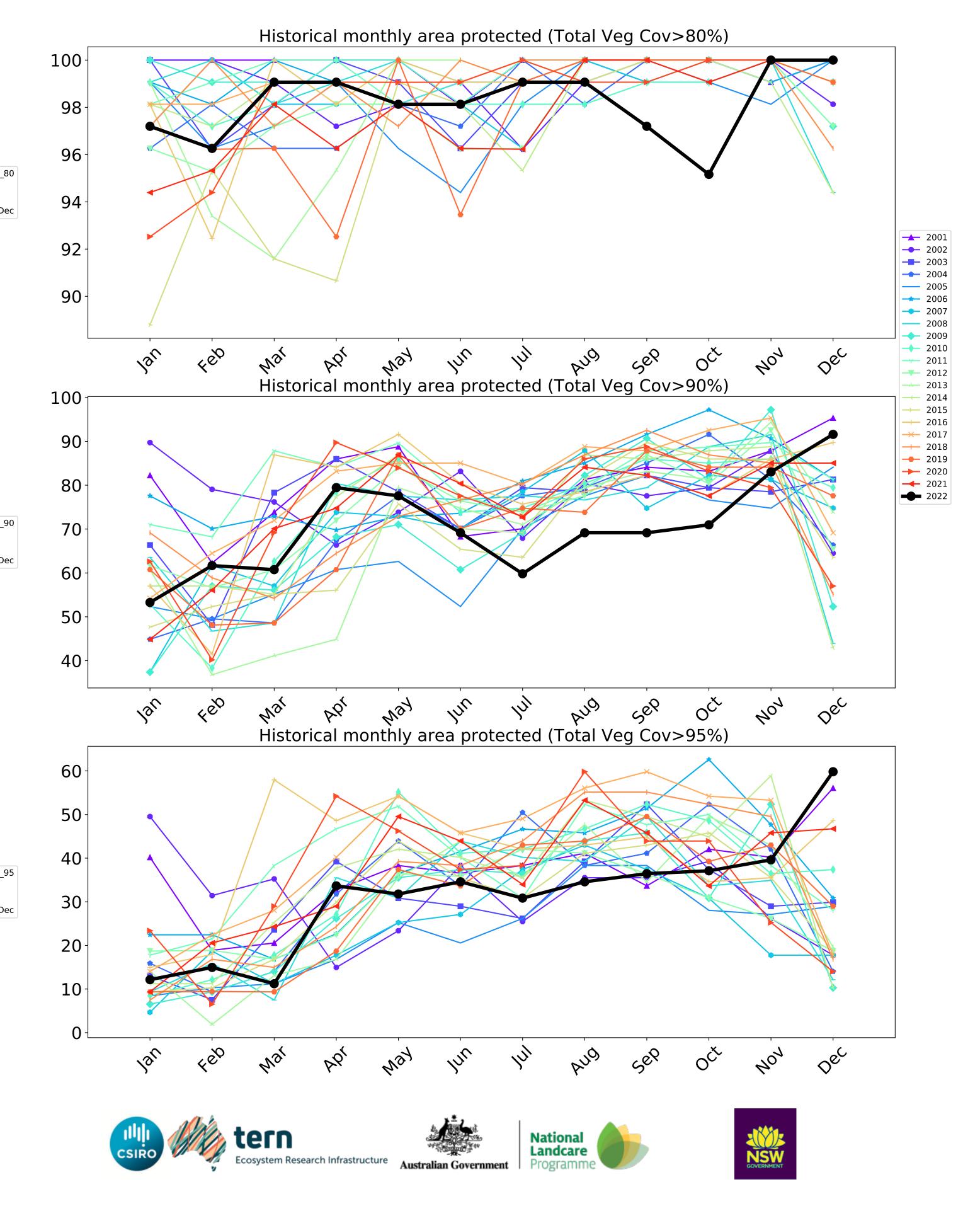


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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



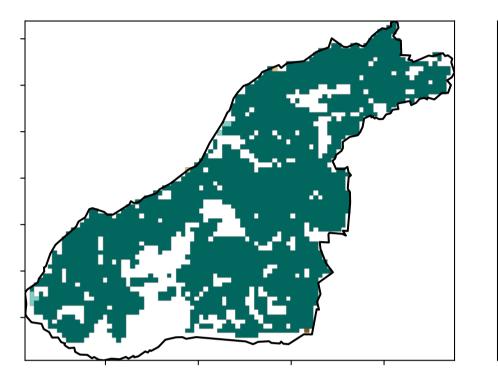


### Agriculture

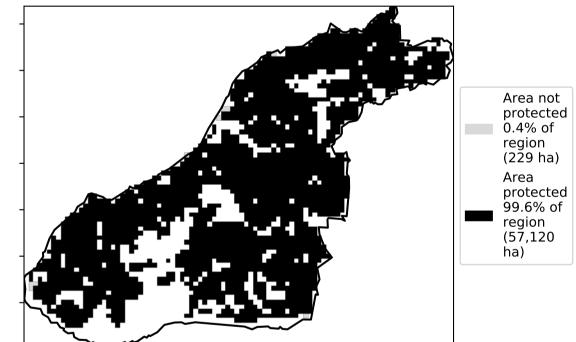
Catchment Scale Land Use and Forests of Australia (2018) 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Derived from Catchment Scale Land 4 Agriculture - Grazing - Irrigated 5 Agriculture - Cropping - Non-irrigated Use of Australia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

**Total Vegetation Cover [%]** 

Land use and forest cover



% Area protected from water erosion (>70%)



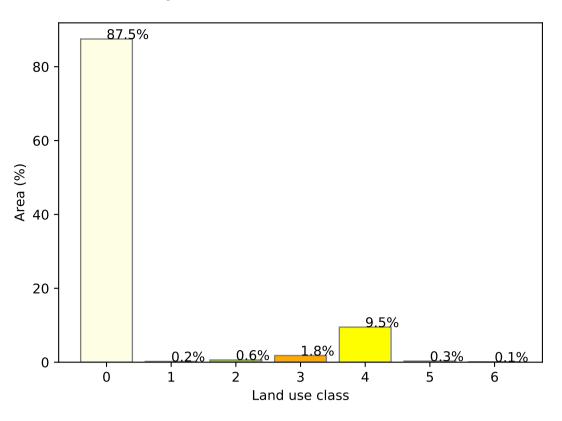
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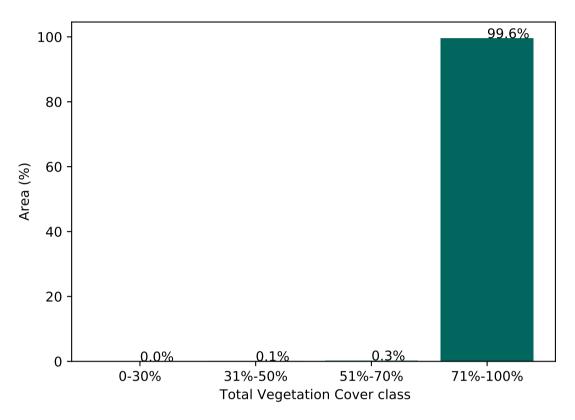
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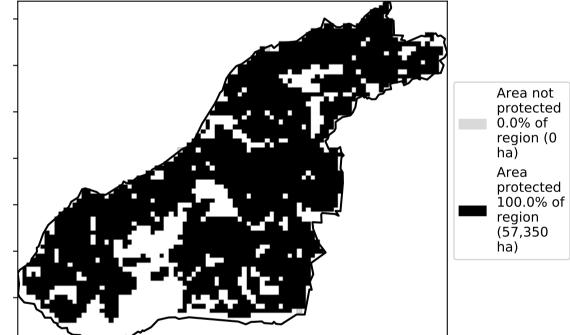




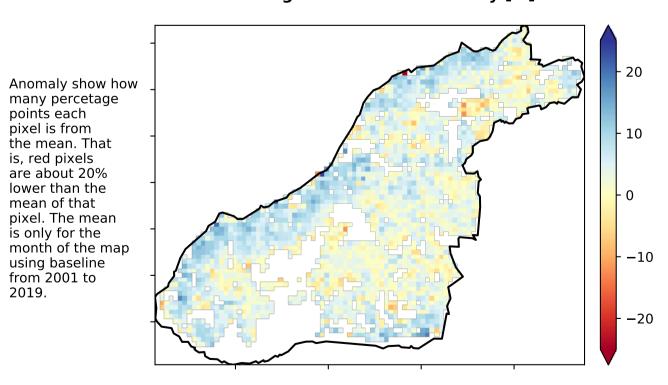
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



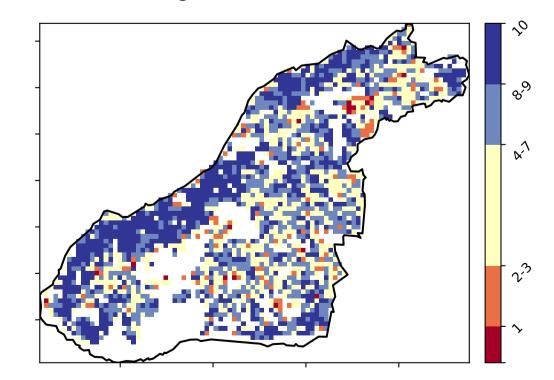
**Total Vegetation Cover Anomaly [%]** 



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

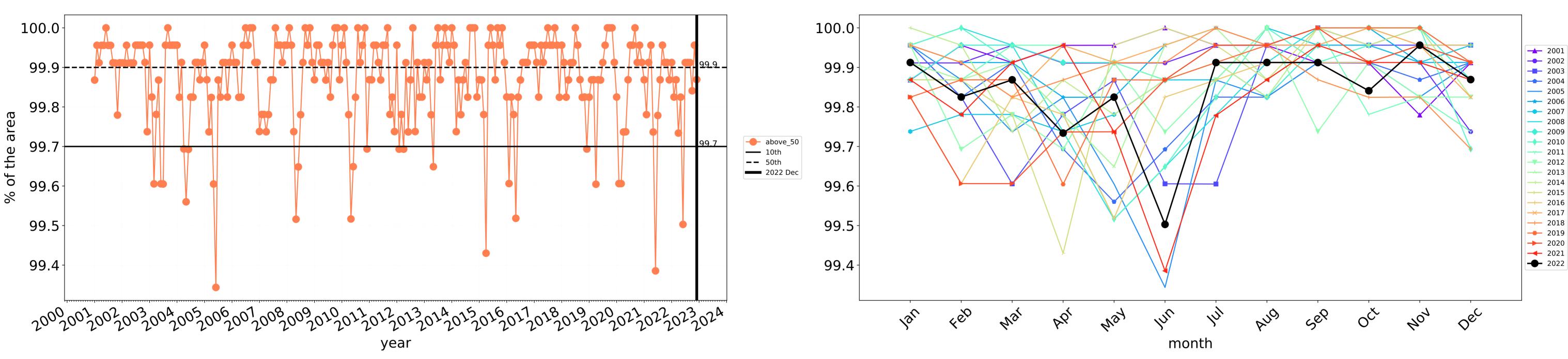
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

**Total Vegetation Cover Decile [%]** 



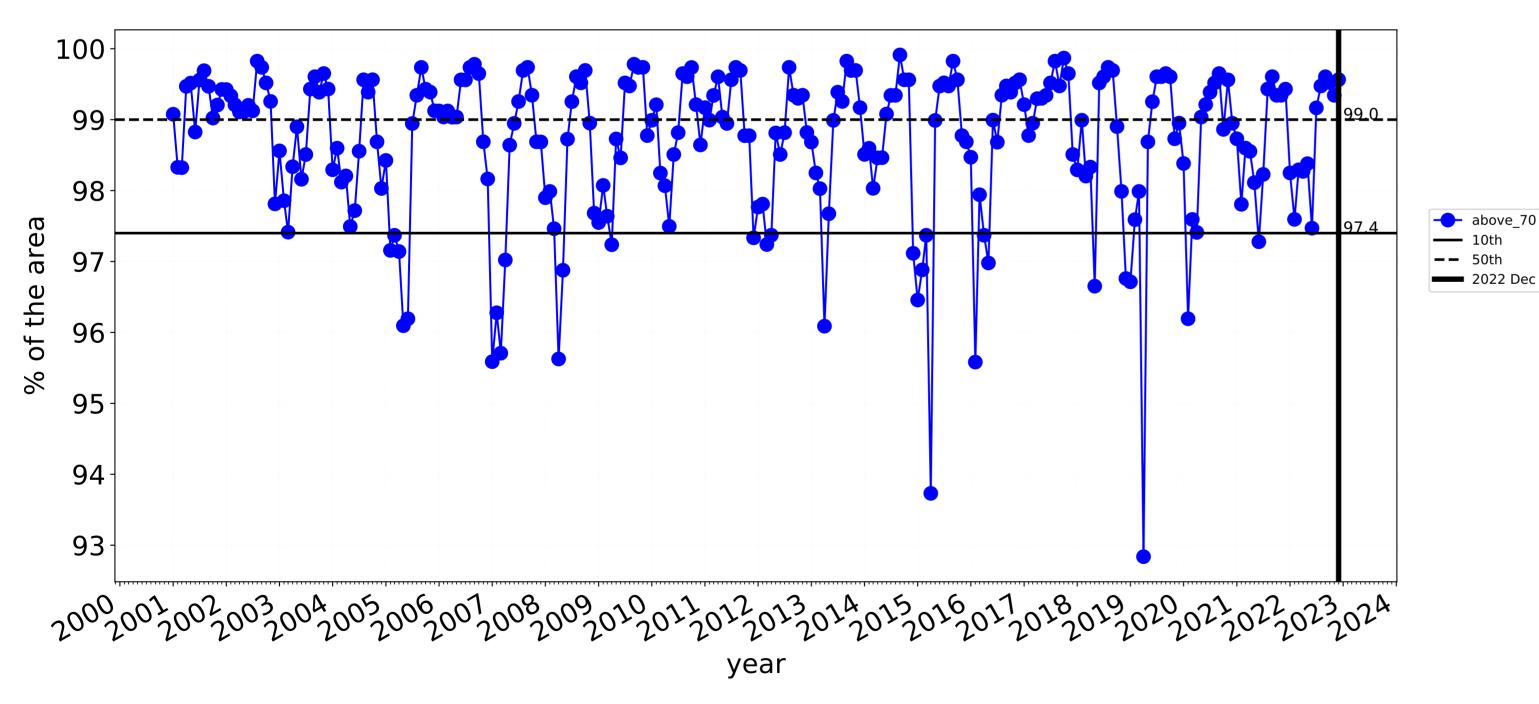


1**2** 



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

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

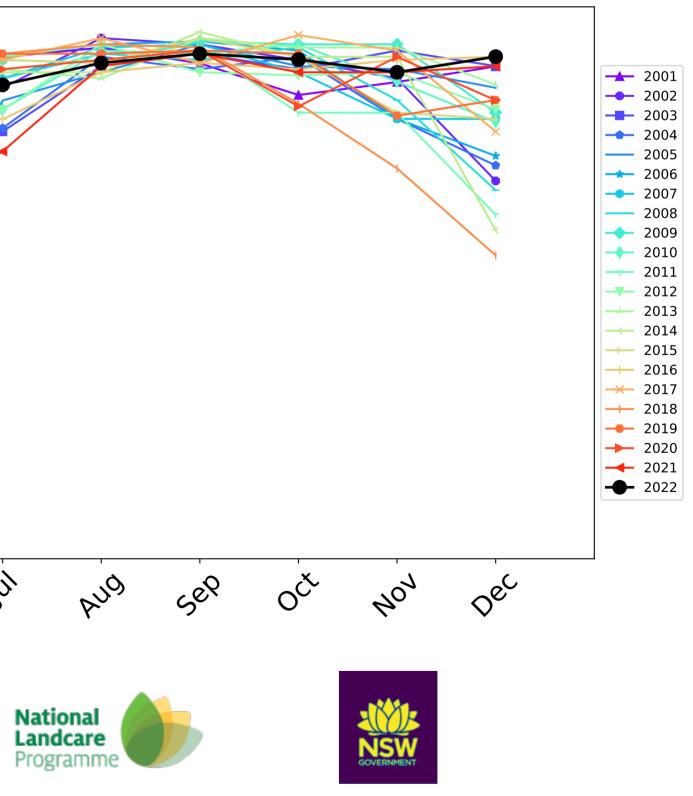


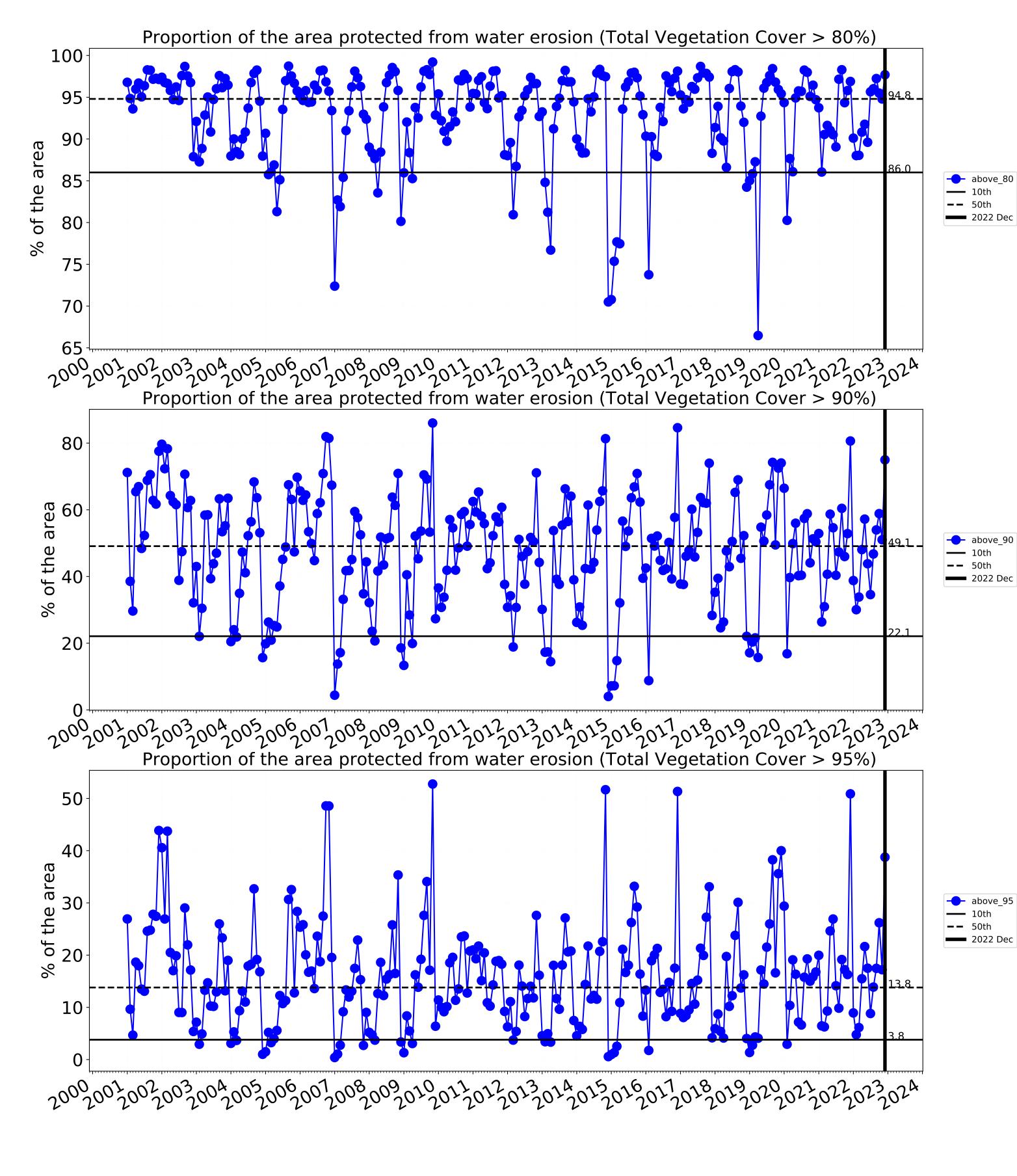
## Agriculture timeseries

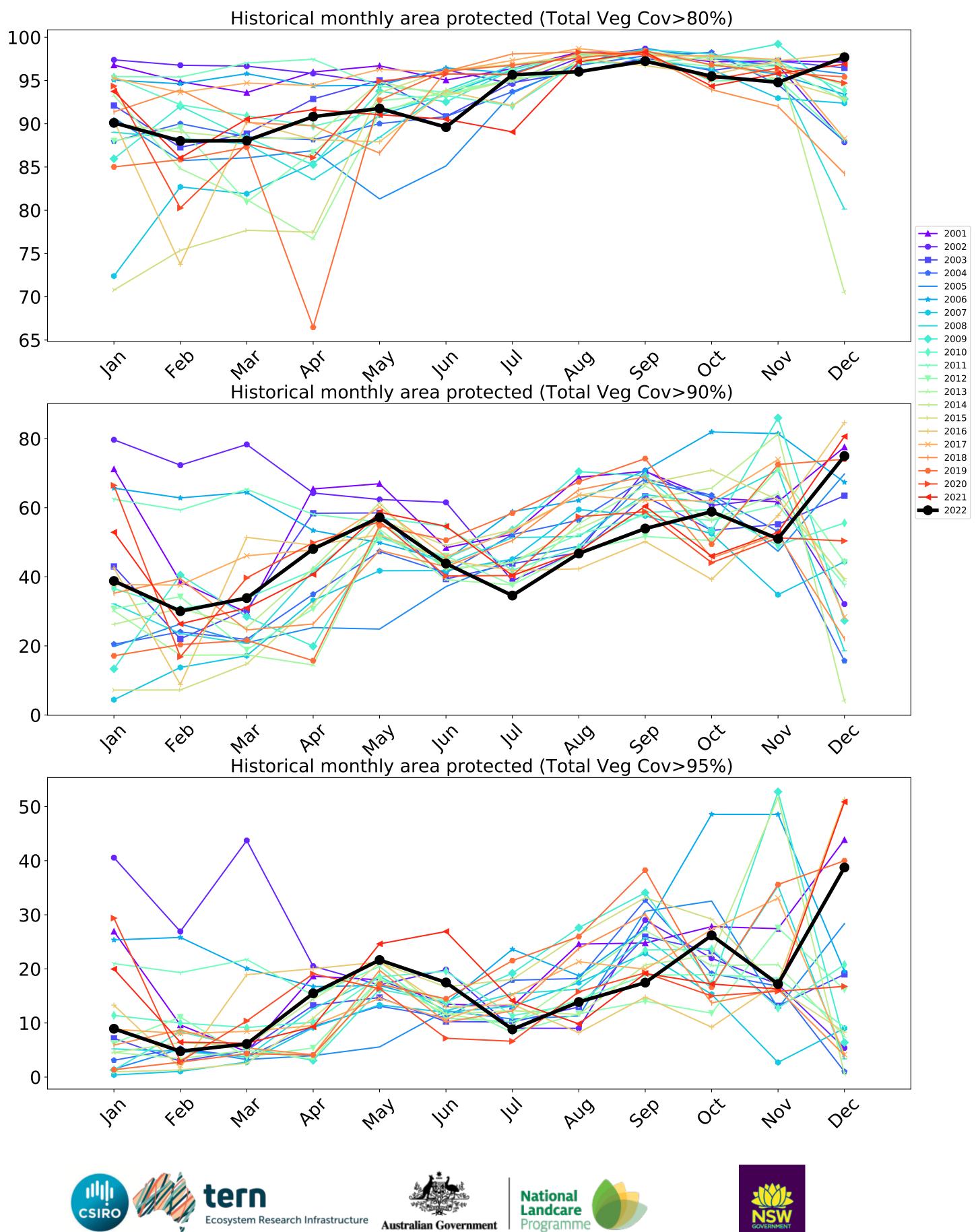
100-99 98 97 96 95<sup>-</sup> 94 93 4eb lan In Mai May 1's Þb, month tern Ecosystem Research Infrastructure Australian Government

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

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









#### Grazing

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

1 12º0010000

52°10'10°10

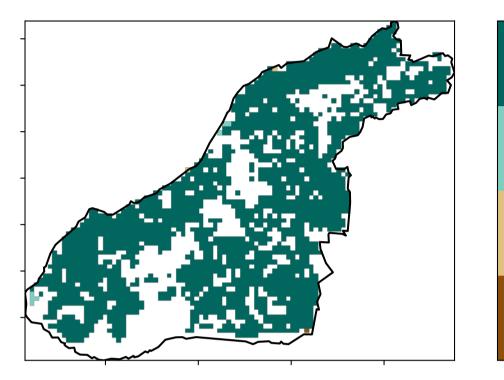
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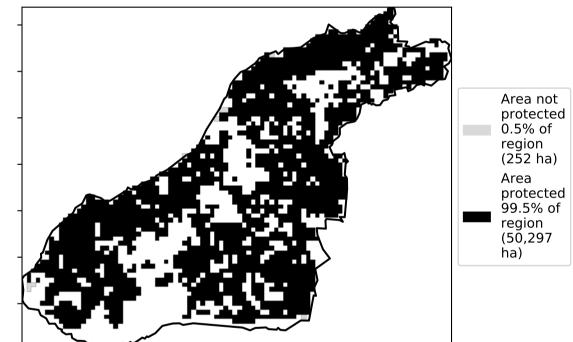
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia 3 Agriculture - Grazing - Non-woodland forest (2018) and Forests of Australia (2018)

**Total Vegetation Cover [%]** 

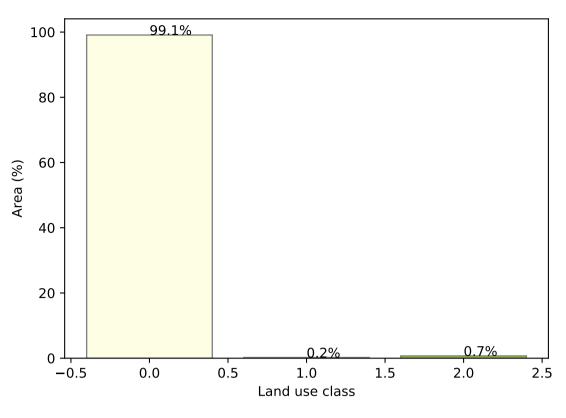
Land use and forest cover



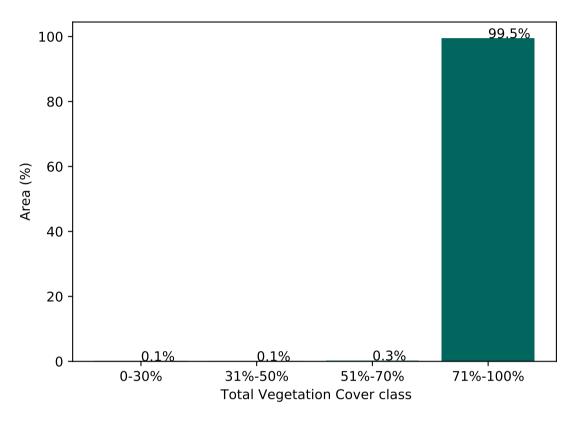
% Area protected from water erosion (>70%)



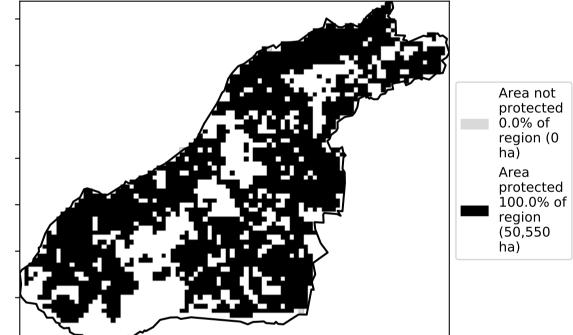




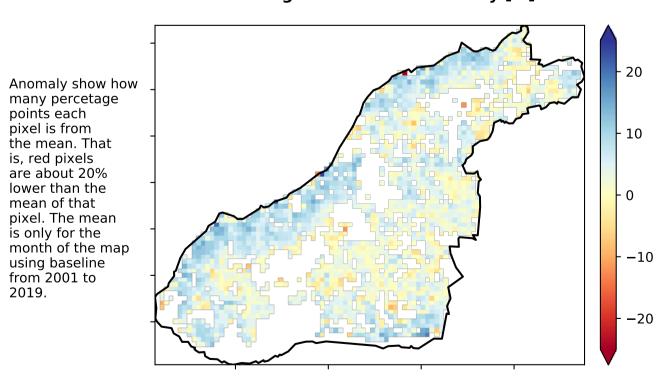
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

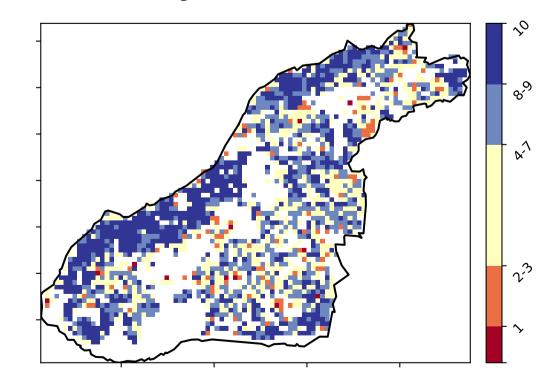


**Total Vegetation Cover Anomaly [%]** 

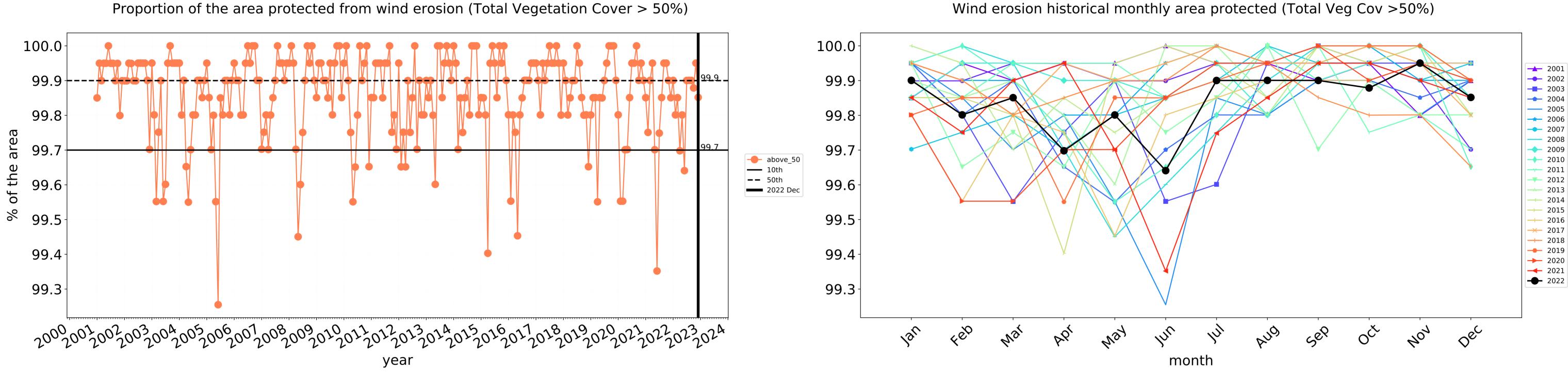


is, red pixels are about 20% lower than the mean of that

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

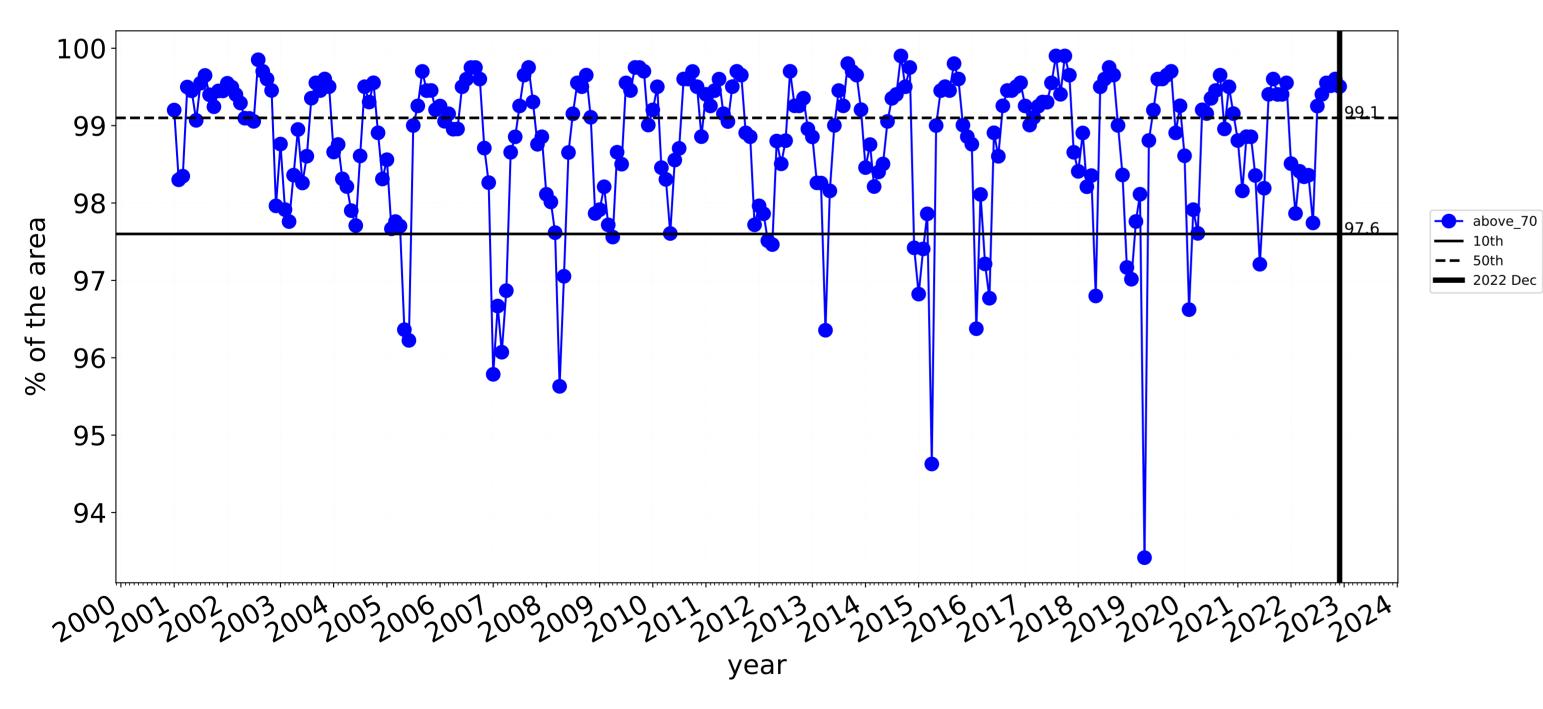






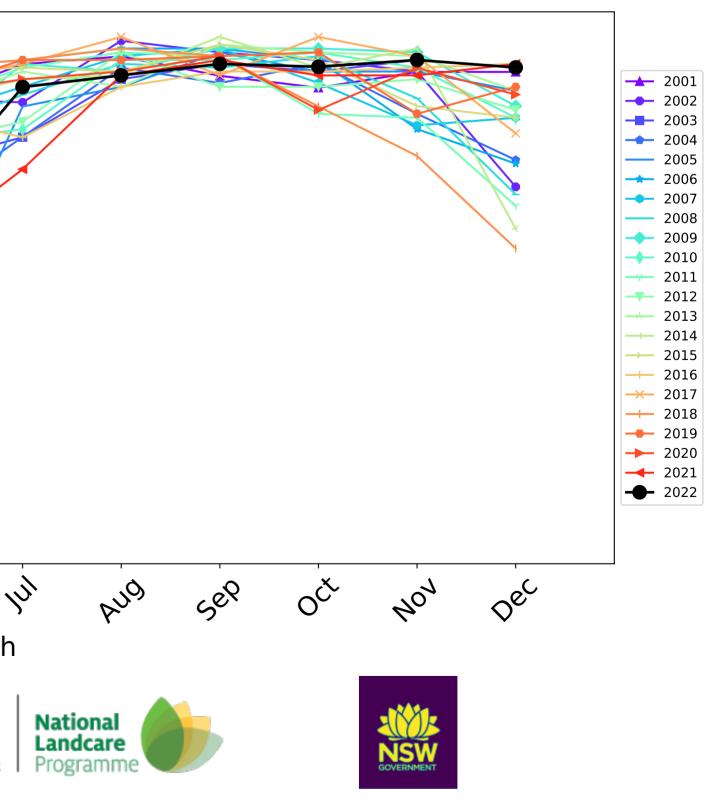
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

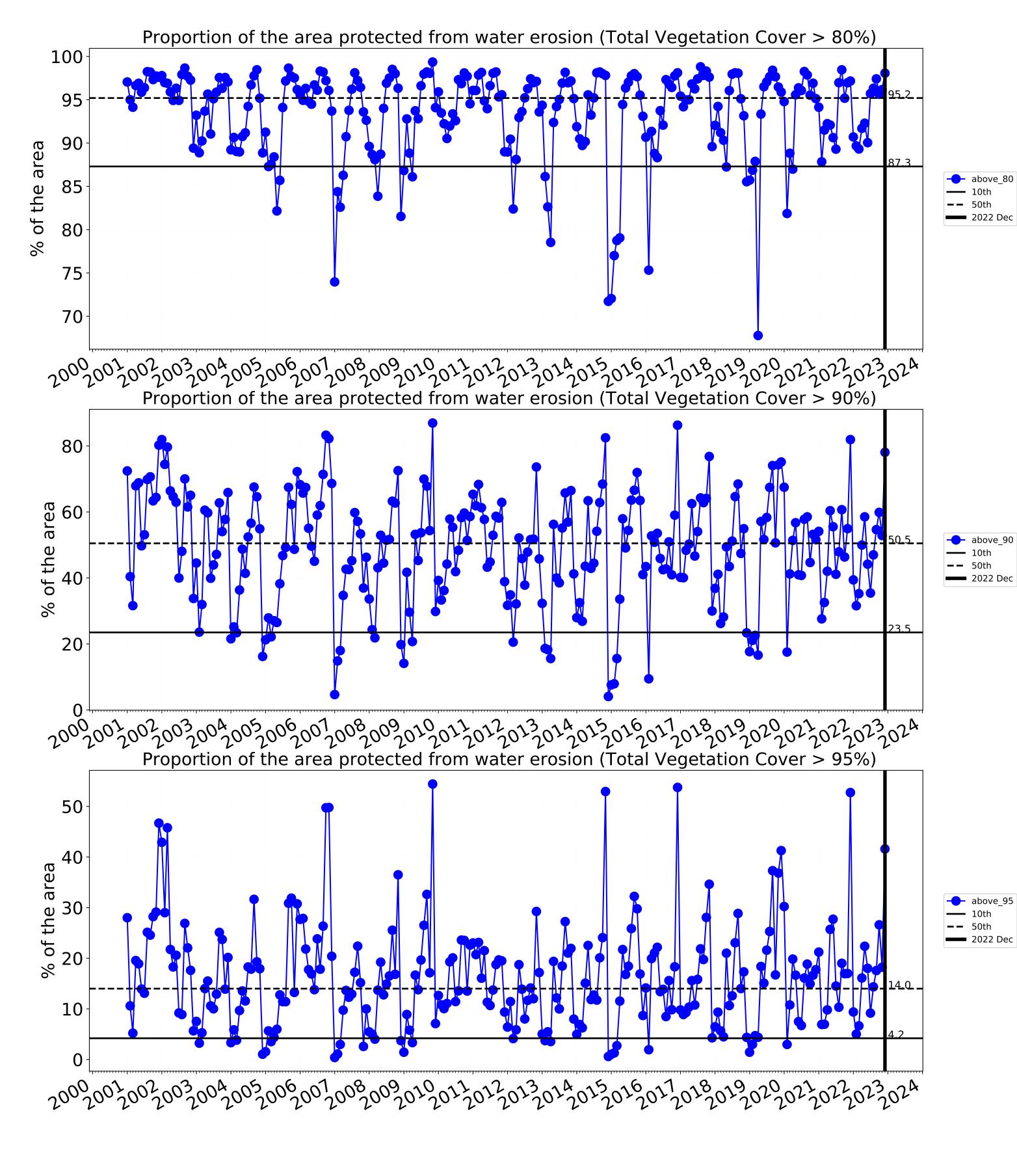
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

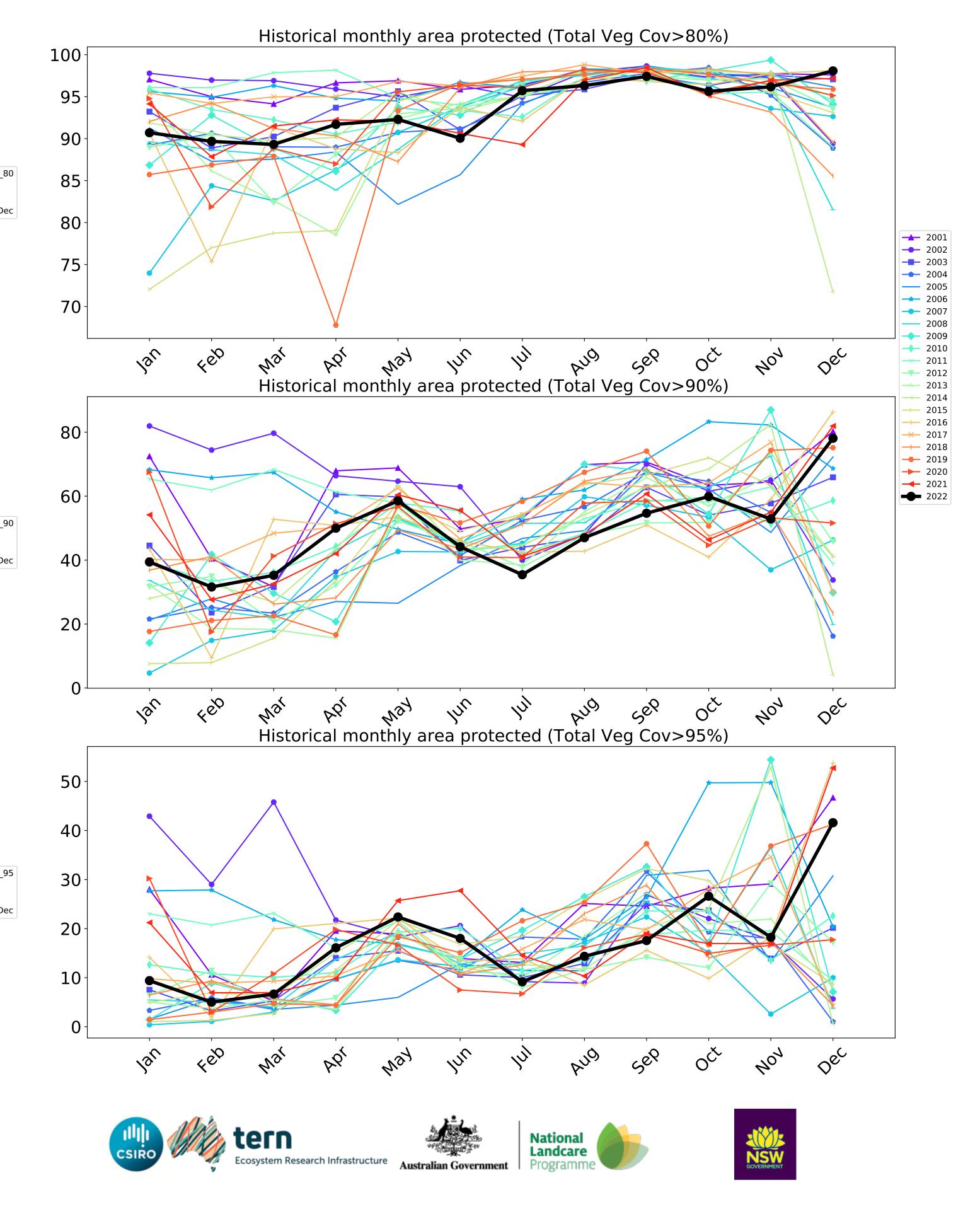


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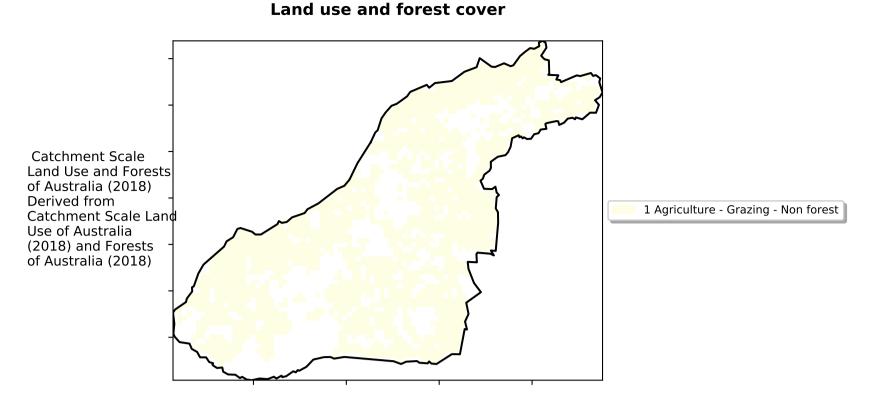
Water erosion historical monthly area protected (Total Veg Cov>70%)



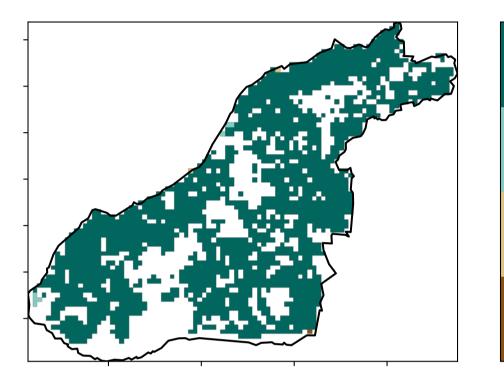




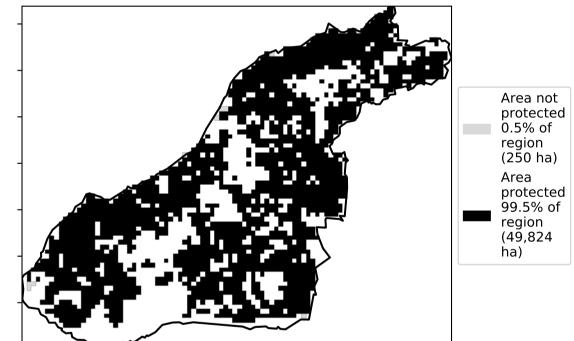
#### **Grazing non forest**



**Total Vegetation Cover [%]** 



% Area protected from water erosion (>70%)



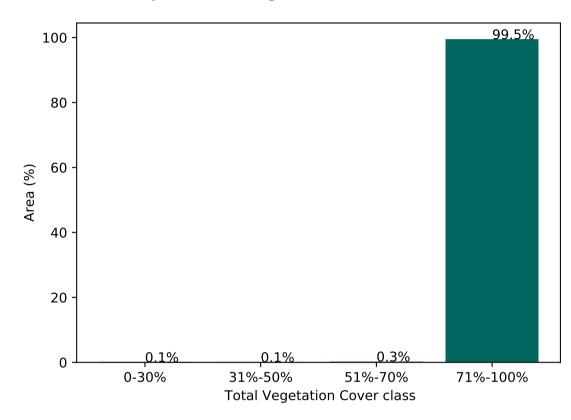
1 12º00 200%

52°10°10°10

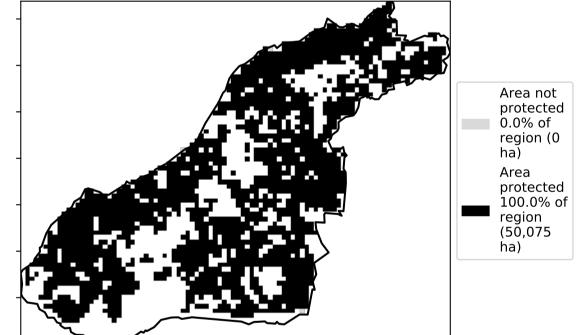
32005001

0.30%

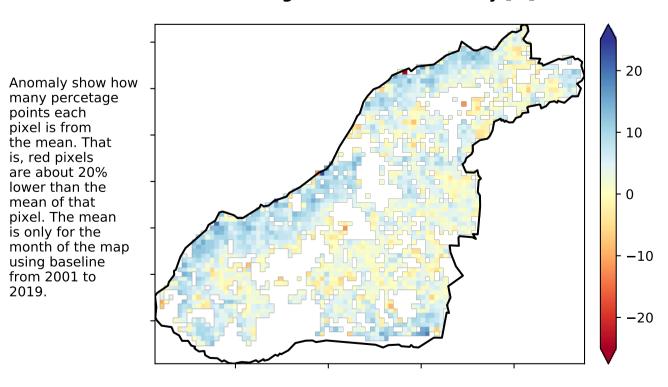




% Area protected from wind erosion (>50%)

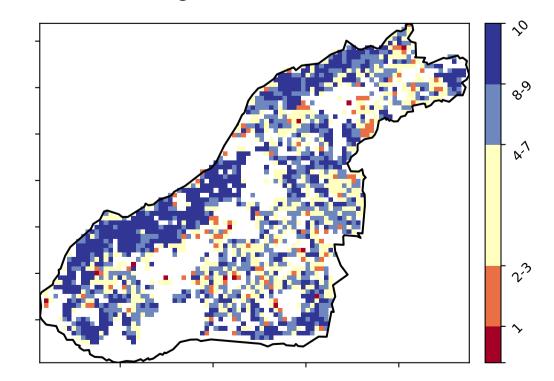


Total Vegetation Cover Anomaly [%]

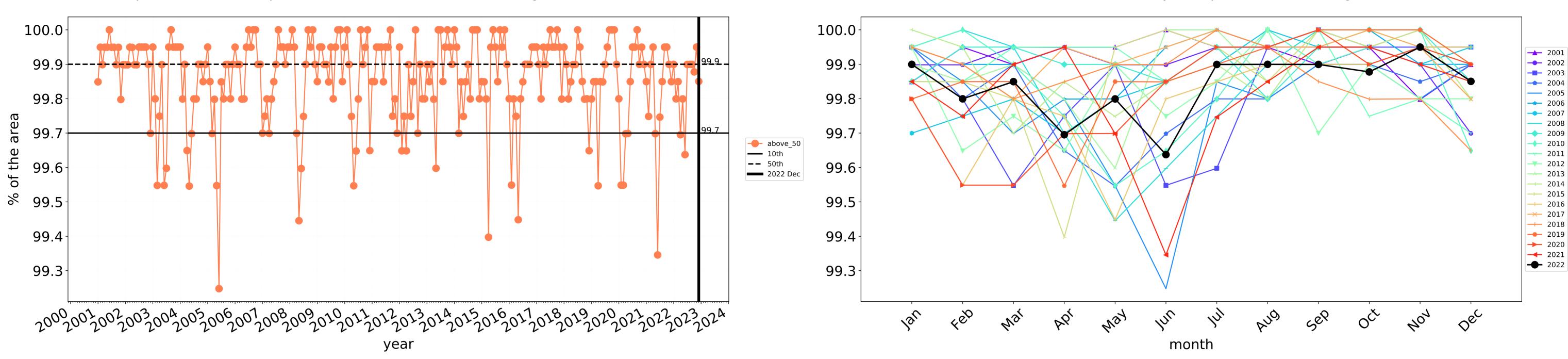


is, red pixels are about 20%

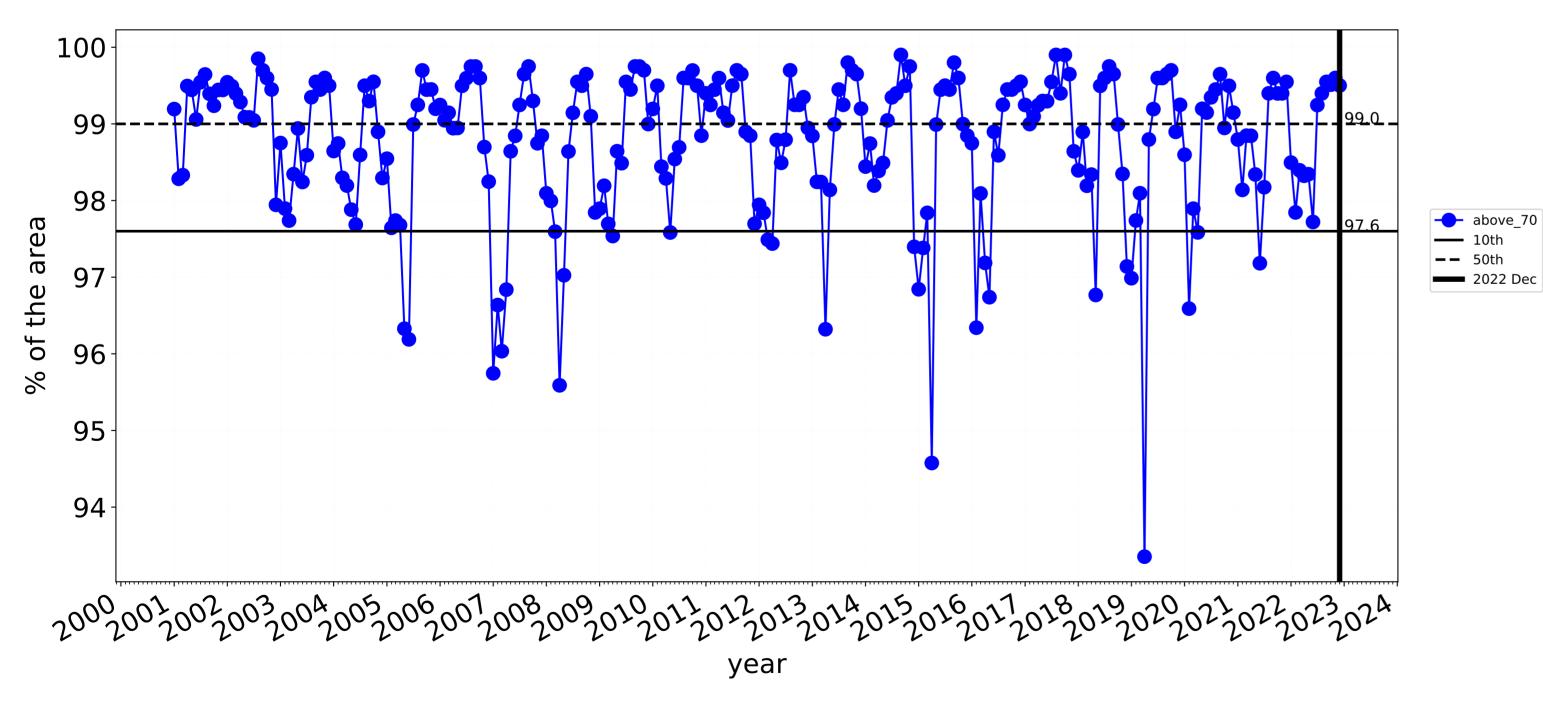
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.

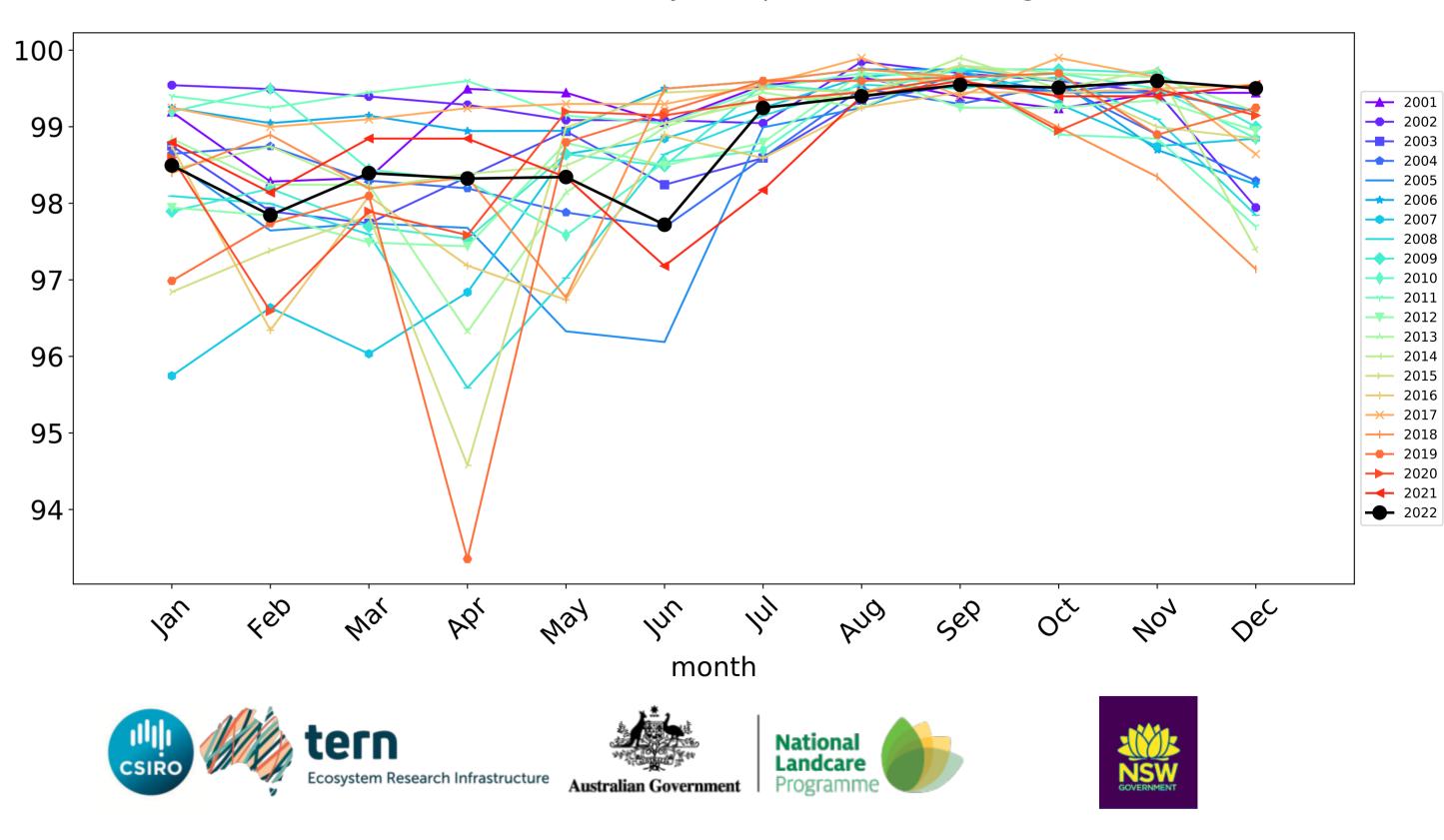






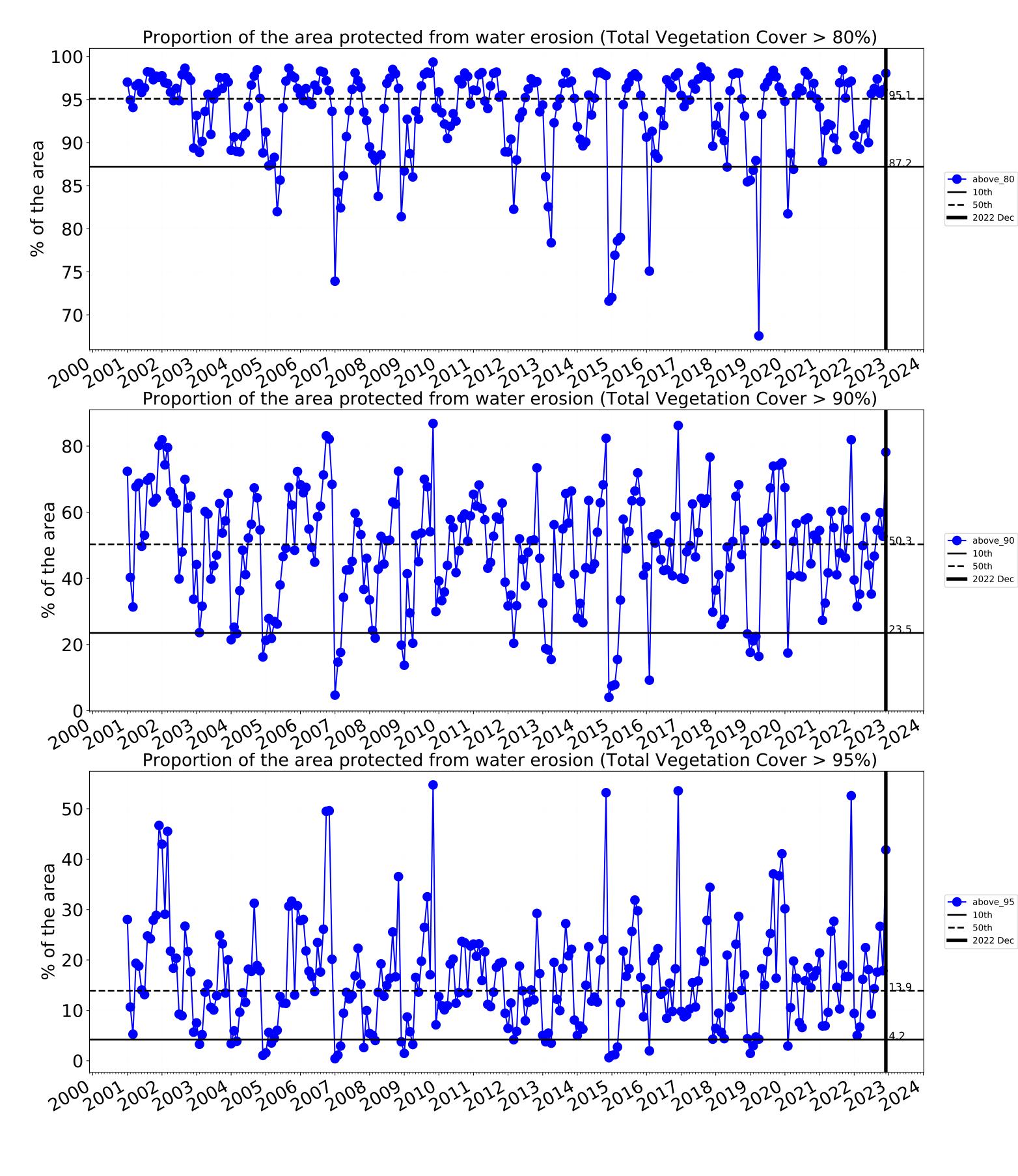
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

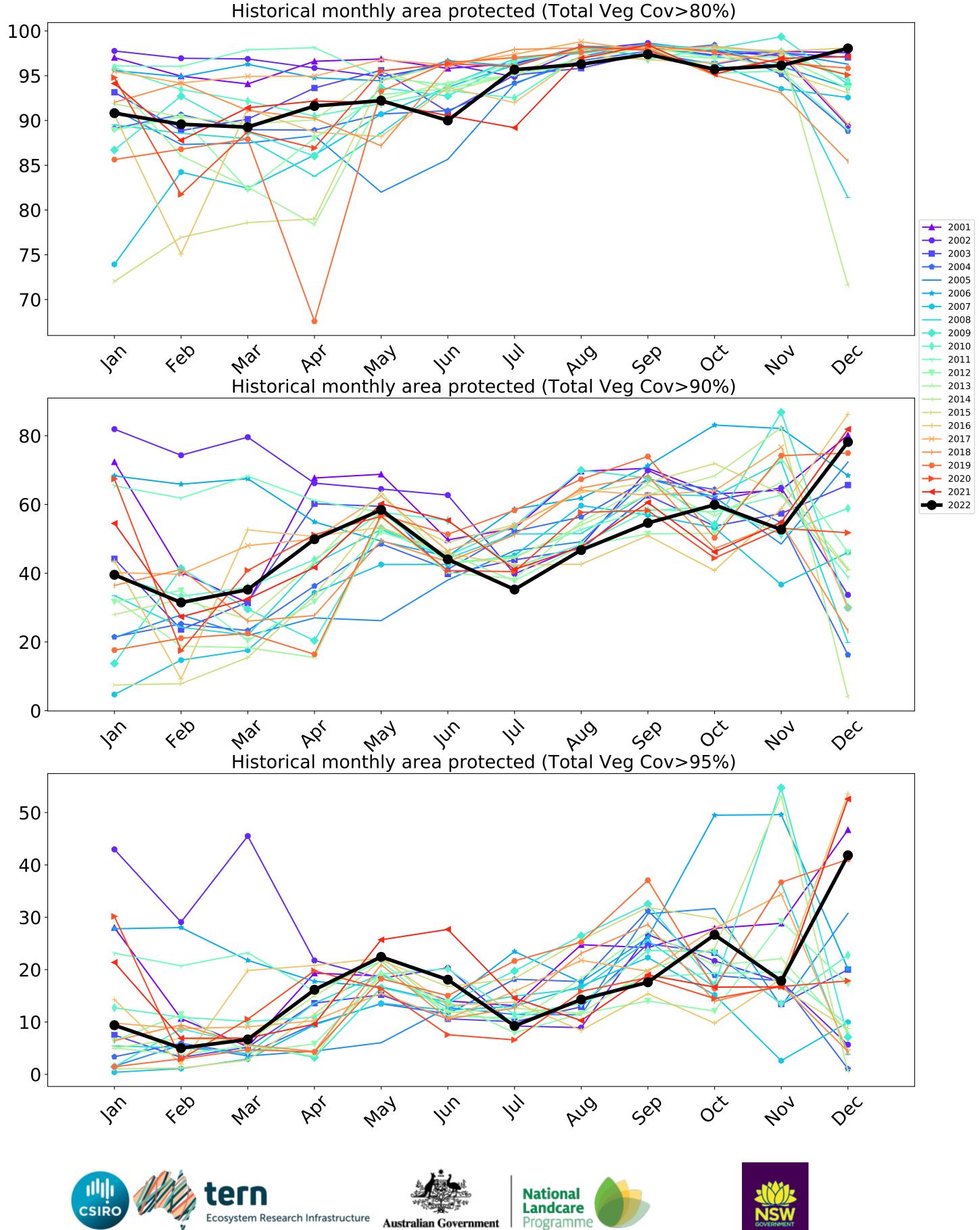




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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





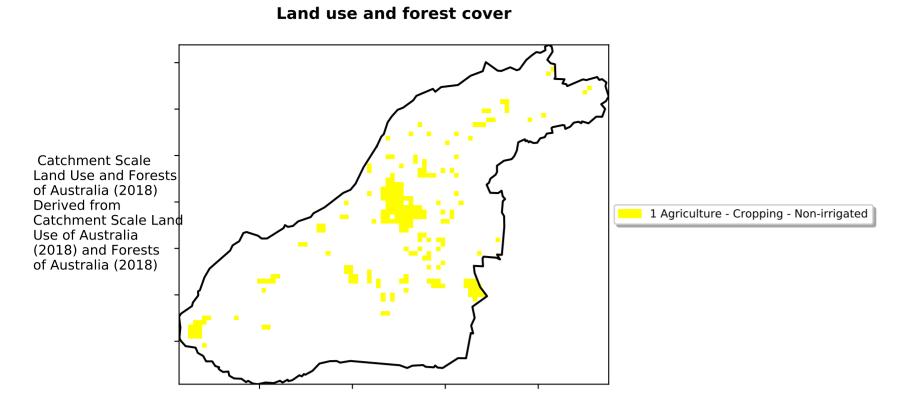
### Cropping

12% 200%

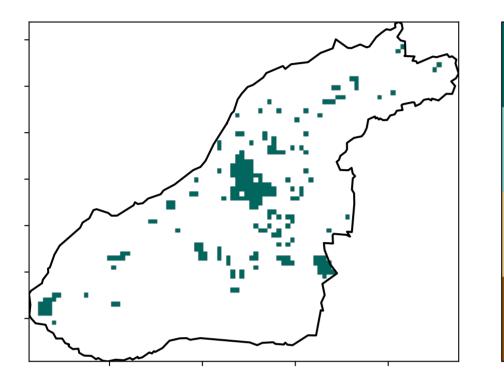
52°10°10°10

3201050010

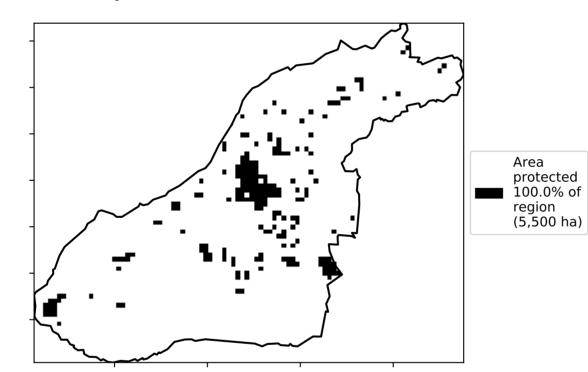
0.30%



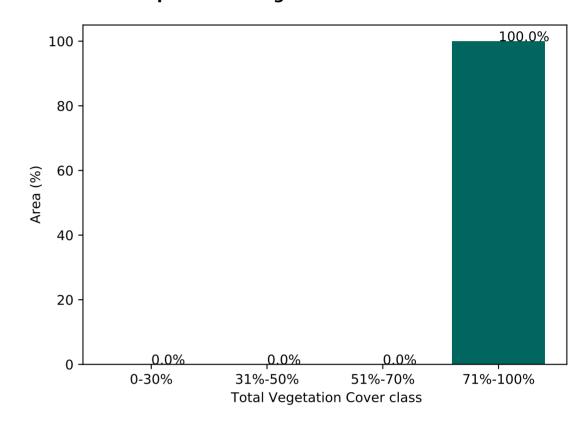
Total Vegetation Cover [%]



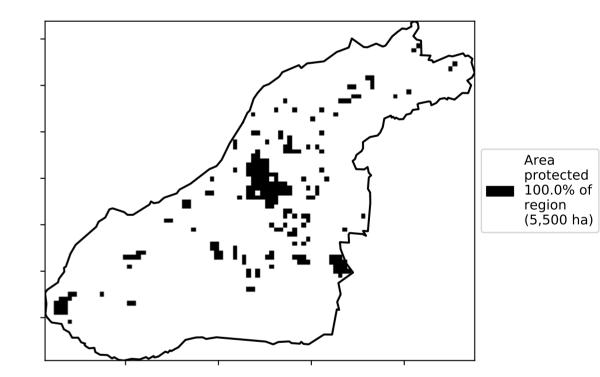
% Area protected from water erosion (>70%)



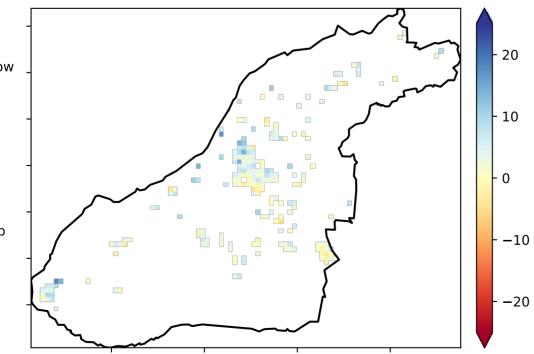
Proportion of vegetation cover class in area



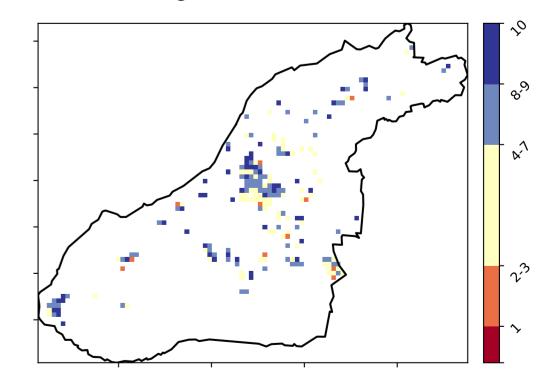
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



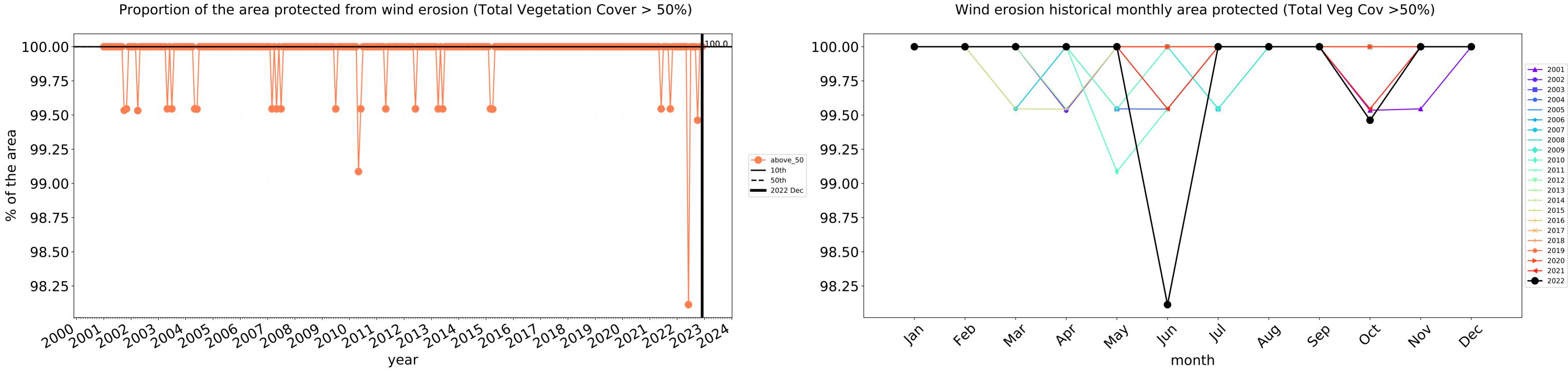
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]** 

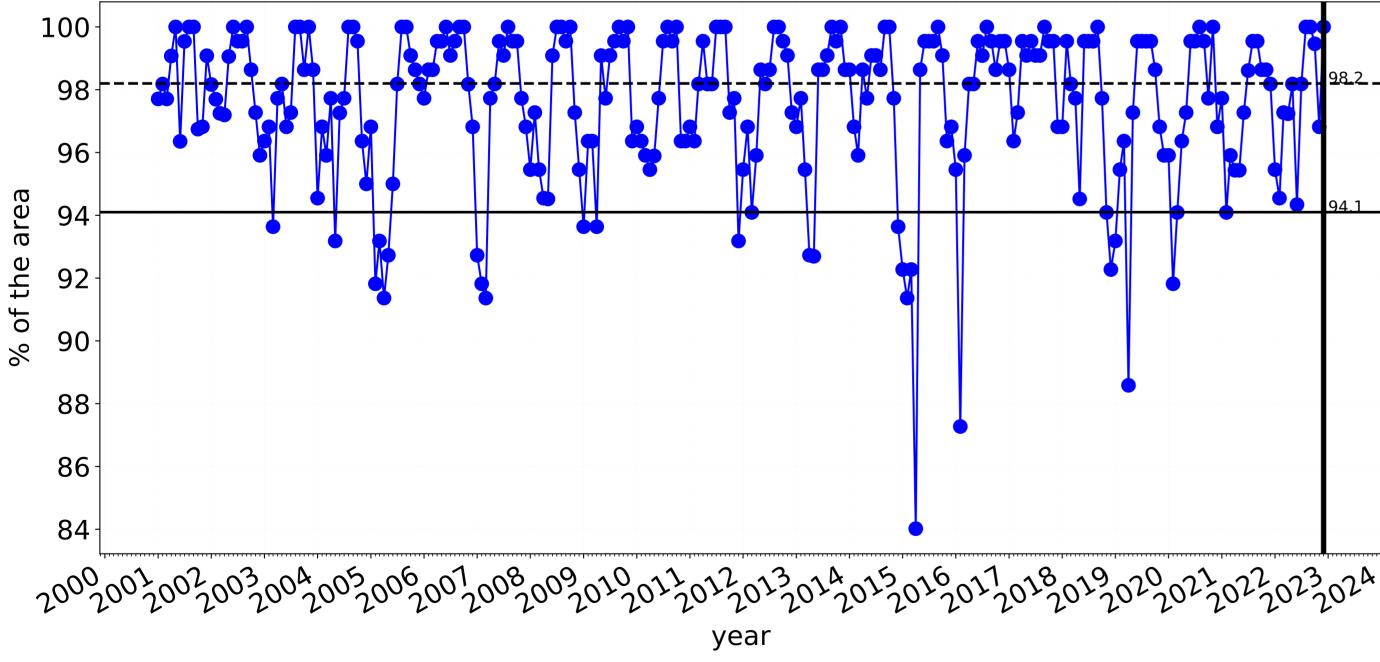




Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

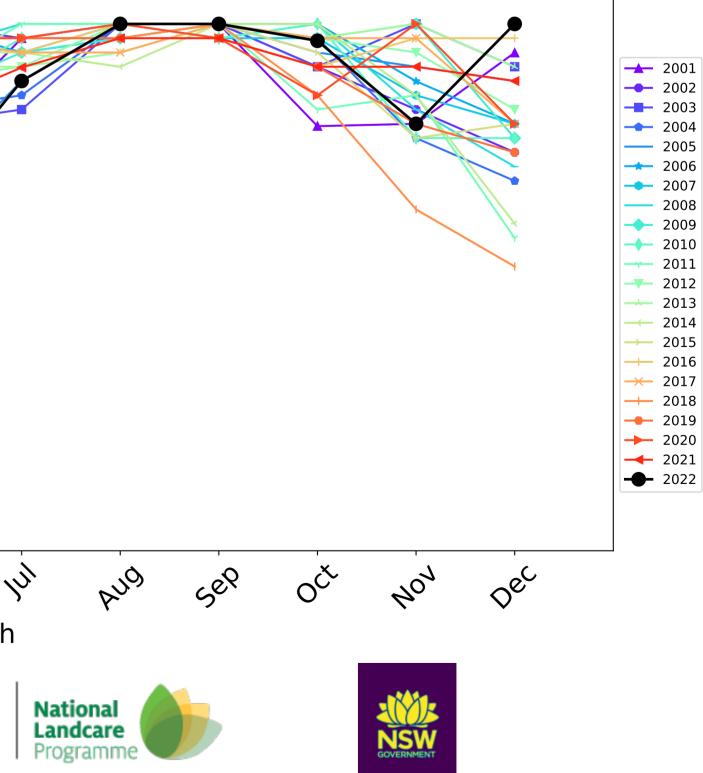


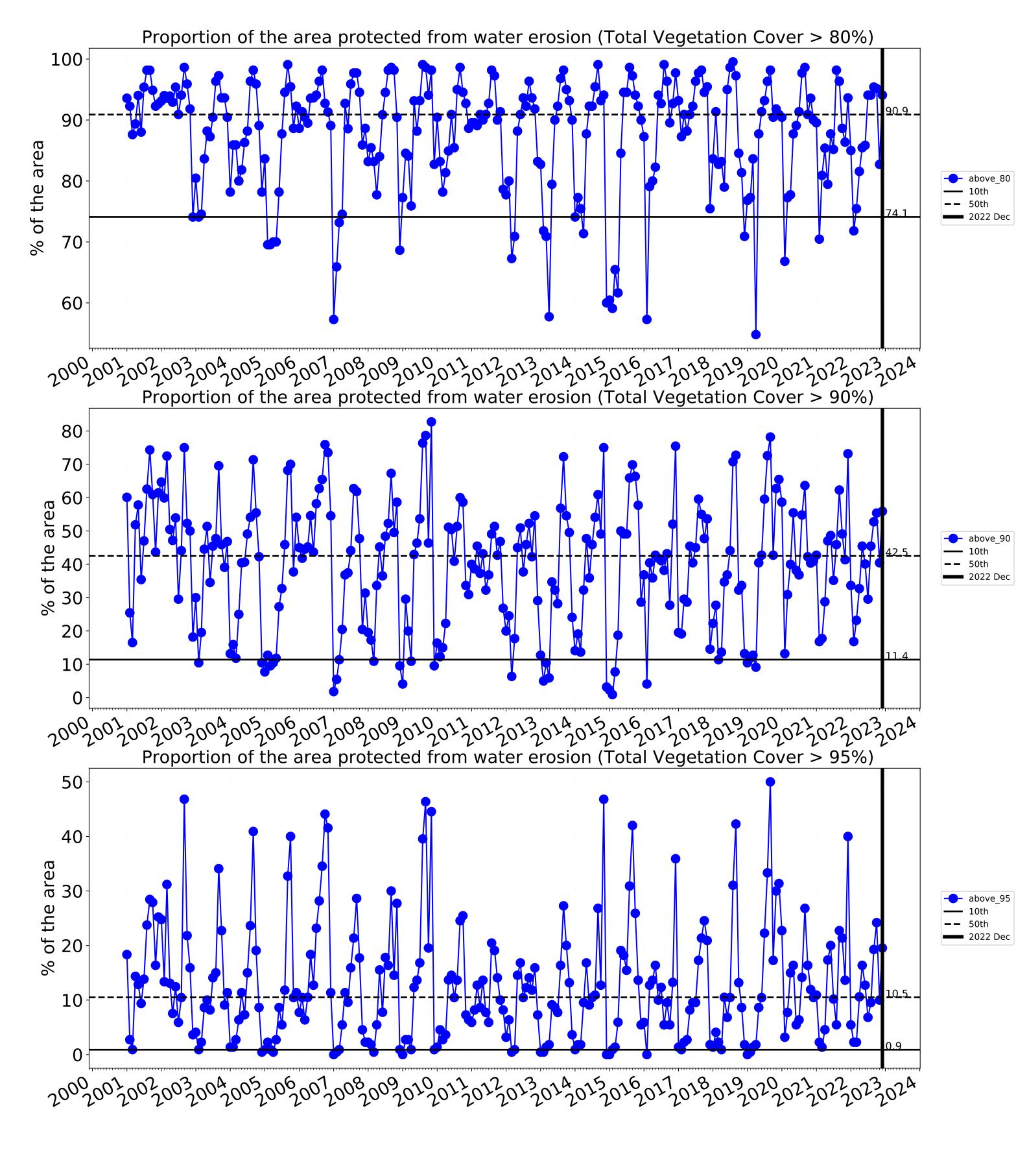


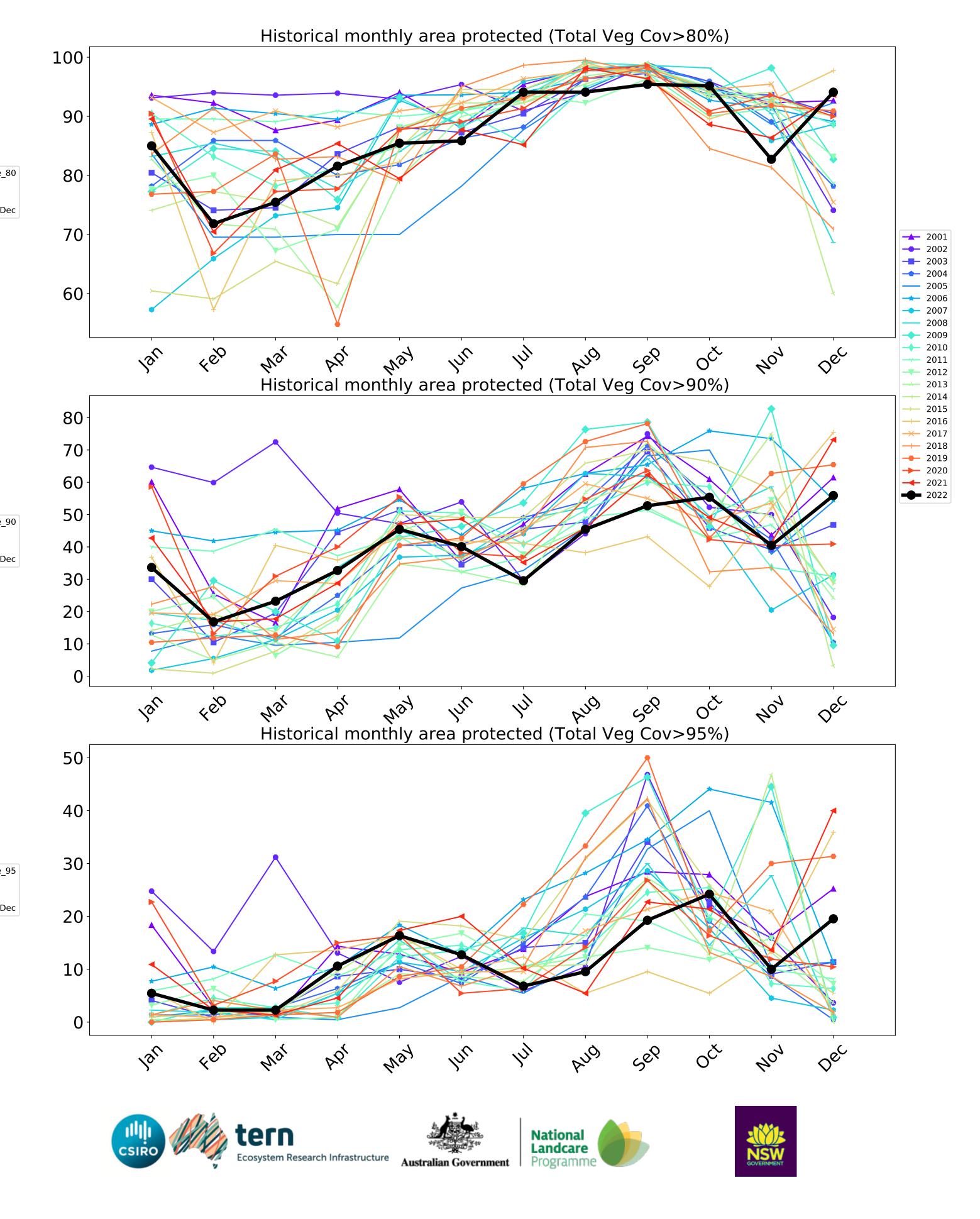


100 98 96 ---- above\_70 94 **—** 10th **——** 50th **—** 2022 Dec 92 90 88 86 84 fed Jan In POL May War month tern Ecosystem Research Infrastructure Australian Government

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





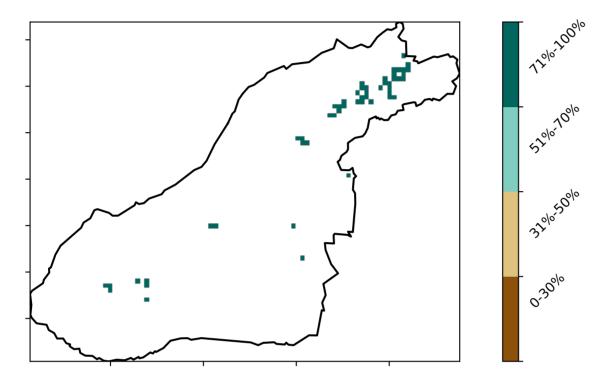


### Irrigation

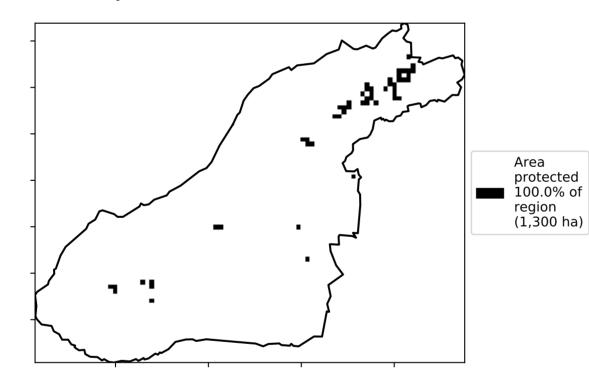
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

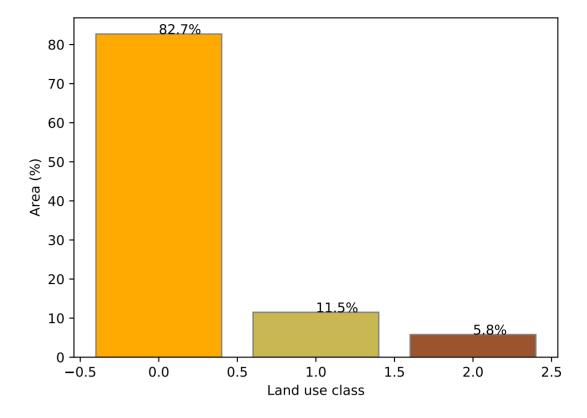
Land use and forest cover

**Total Vegetation Cover [%]** 



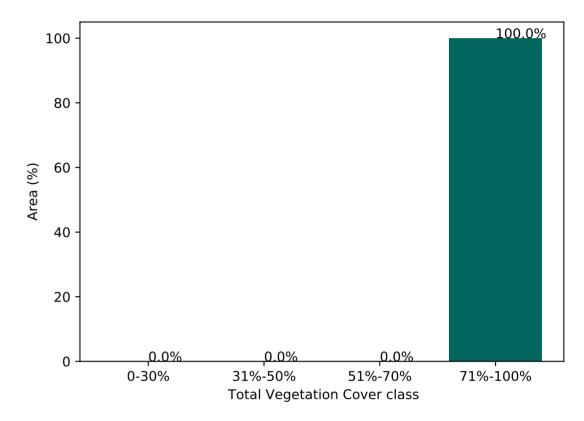
% Area protected from water erosion (>70%)





Proportion of each land class in area

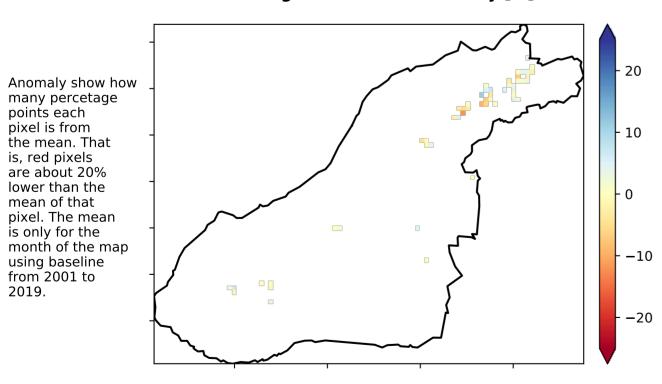
Proportion of vegetation cover class in area



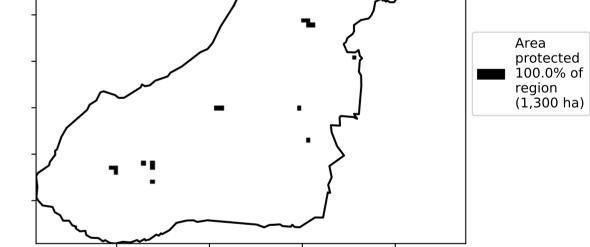
% Area protected from wind erosion (>50%)



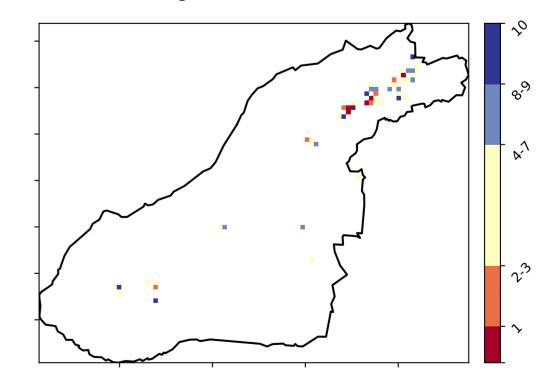
Total Vegetation Cover Anomaly [%]



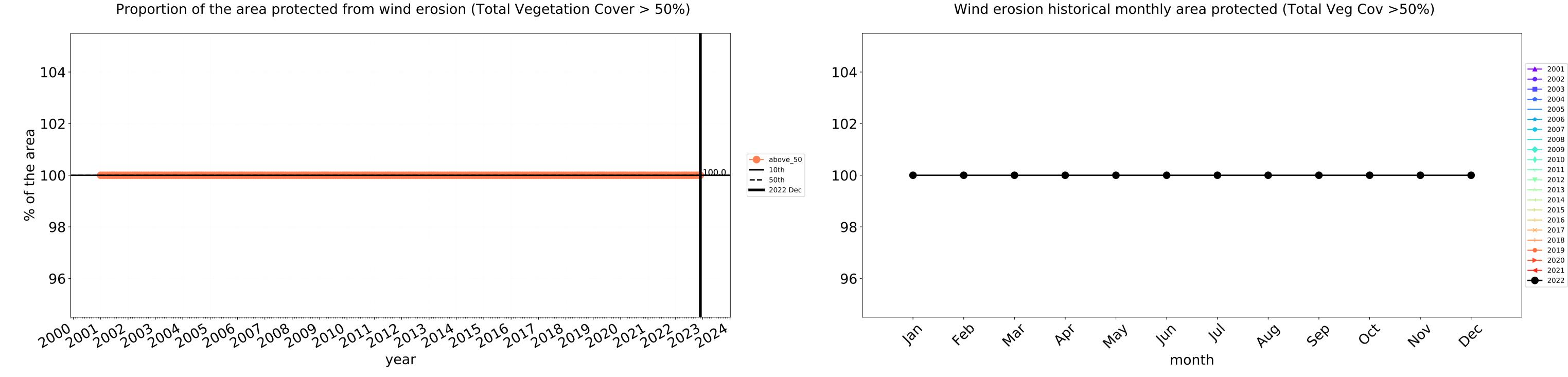
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

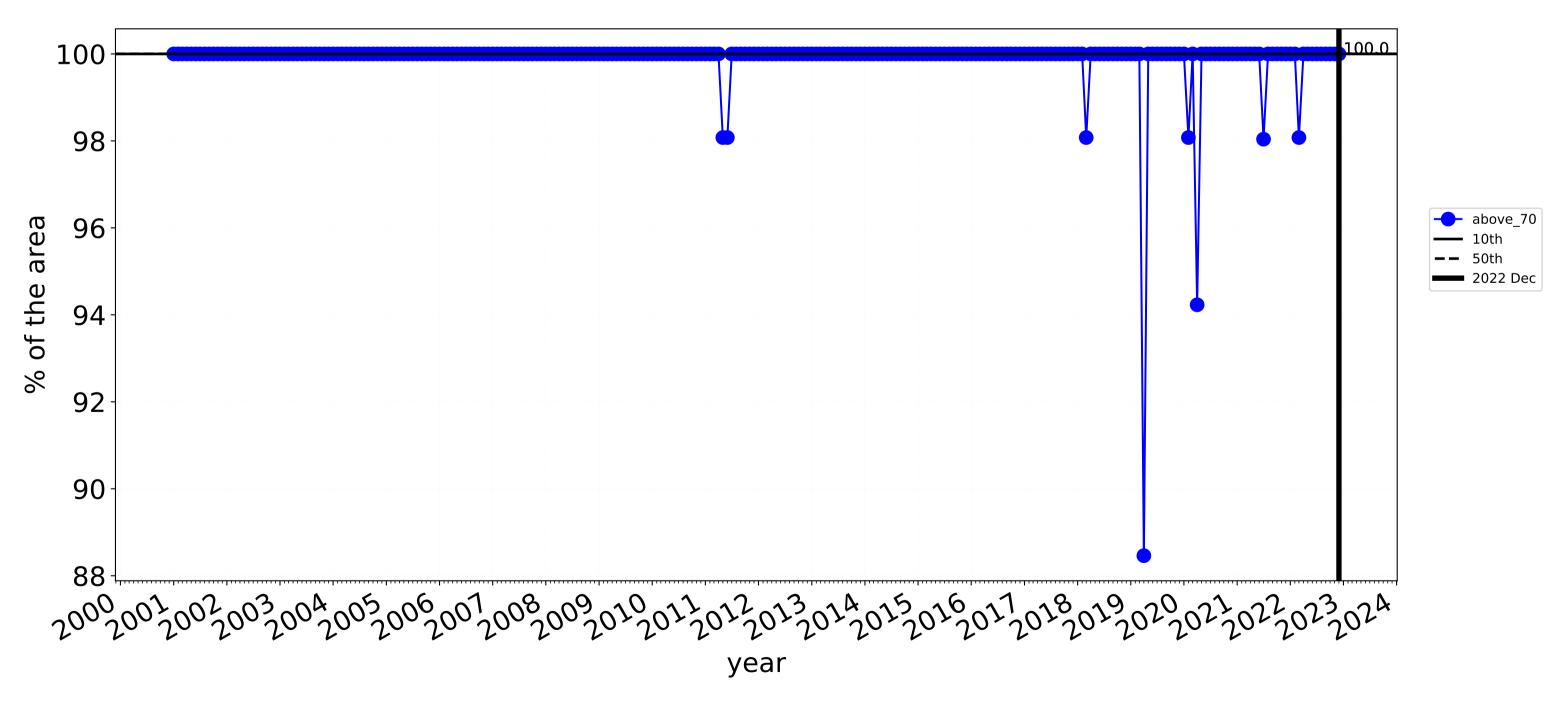


**Total Vegetation Cover Decile [%]** 



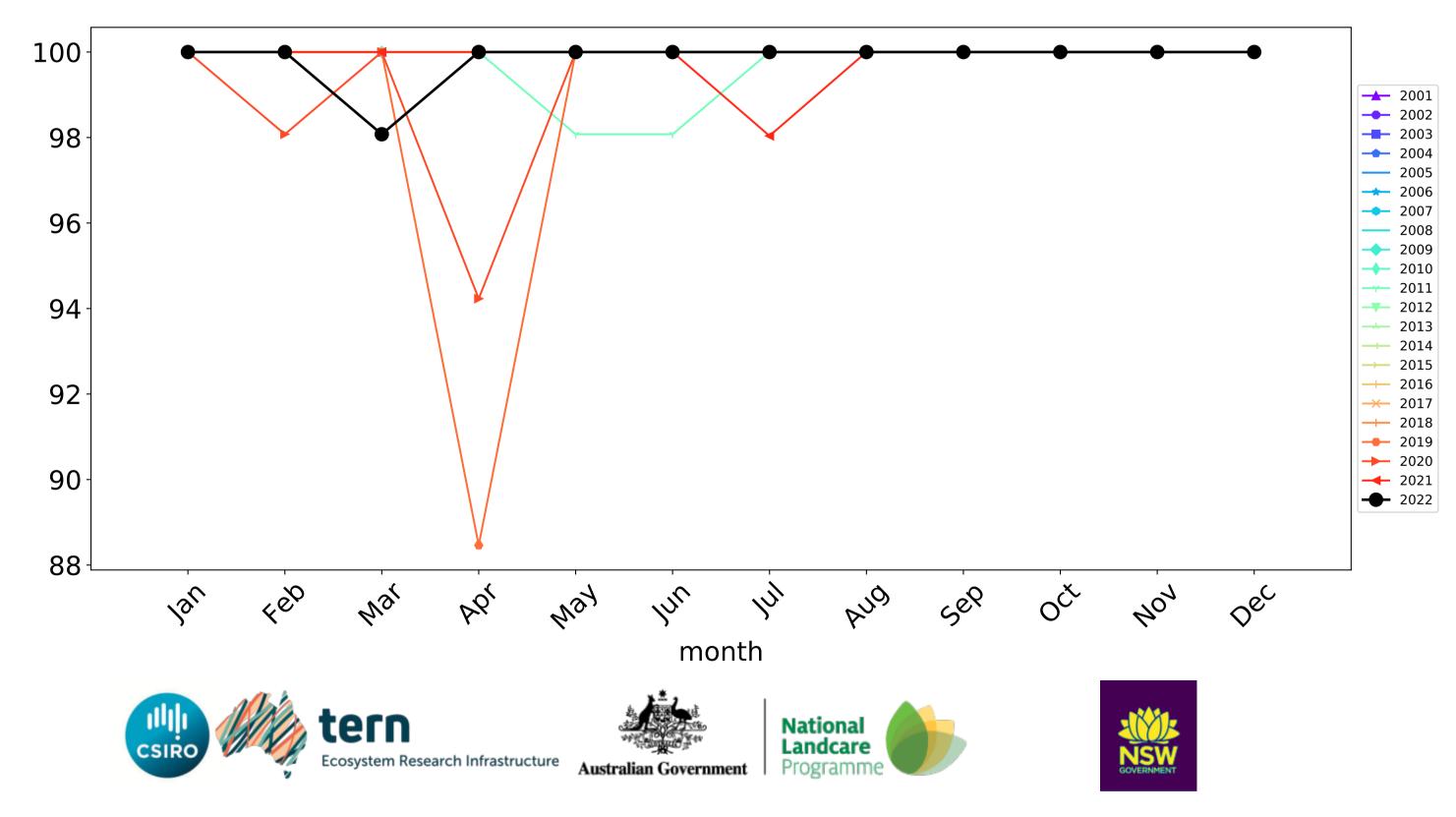


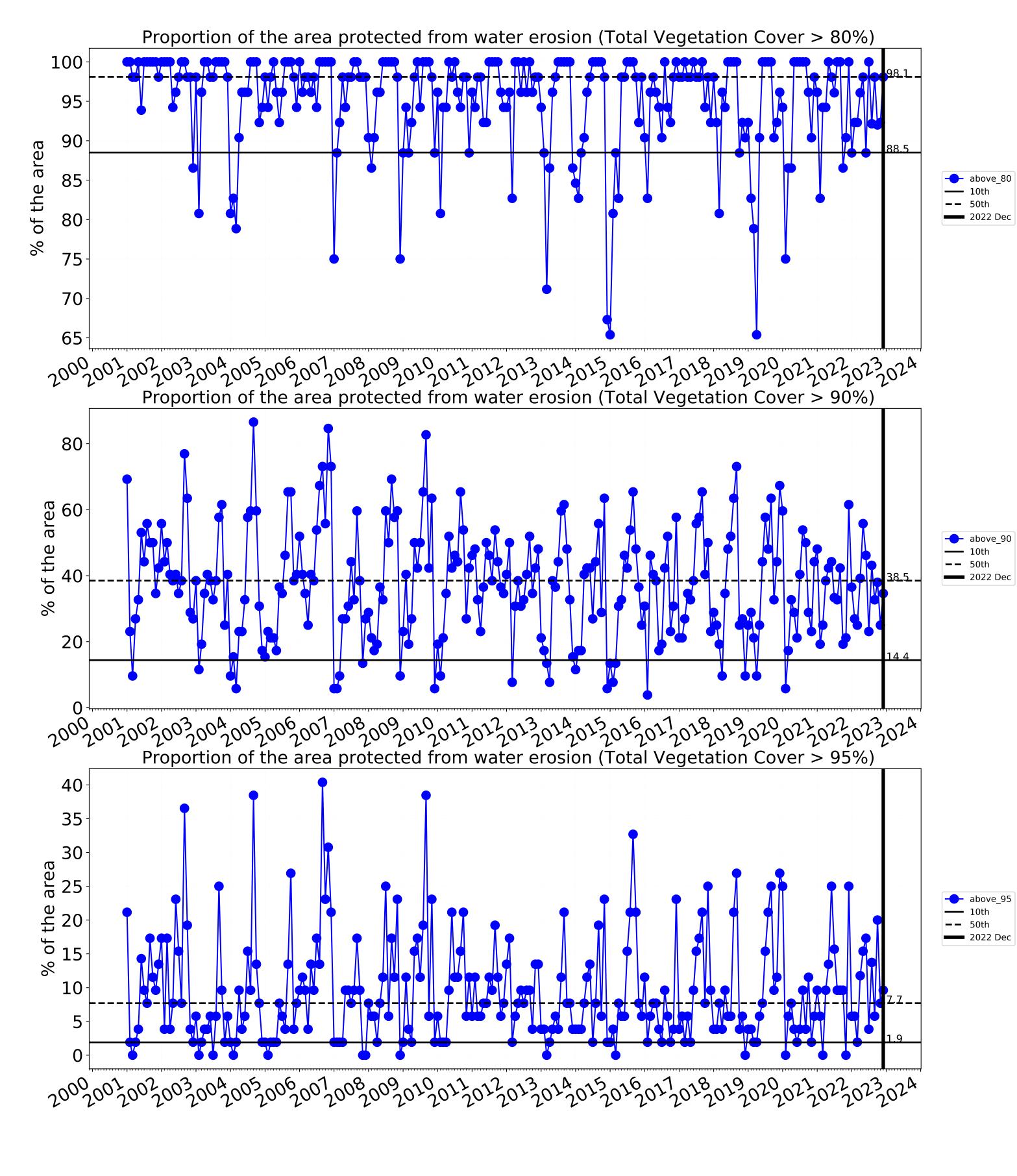




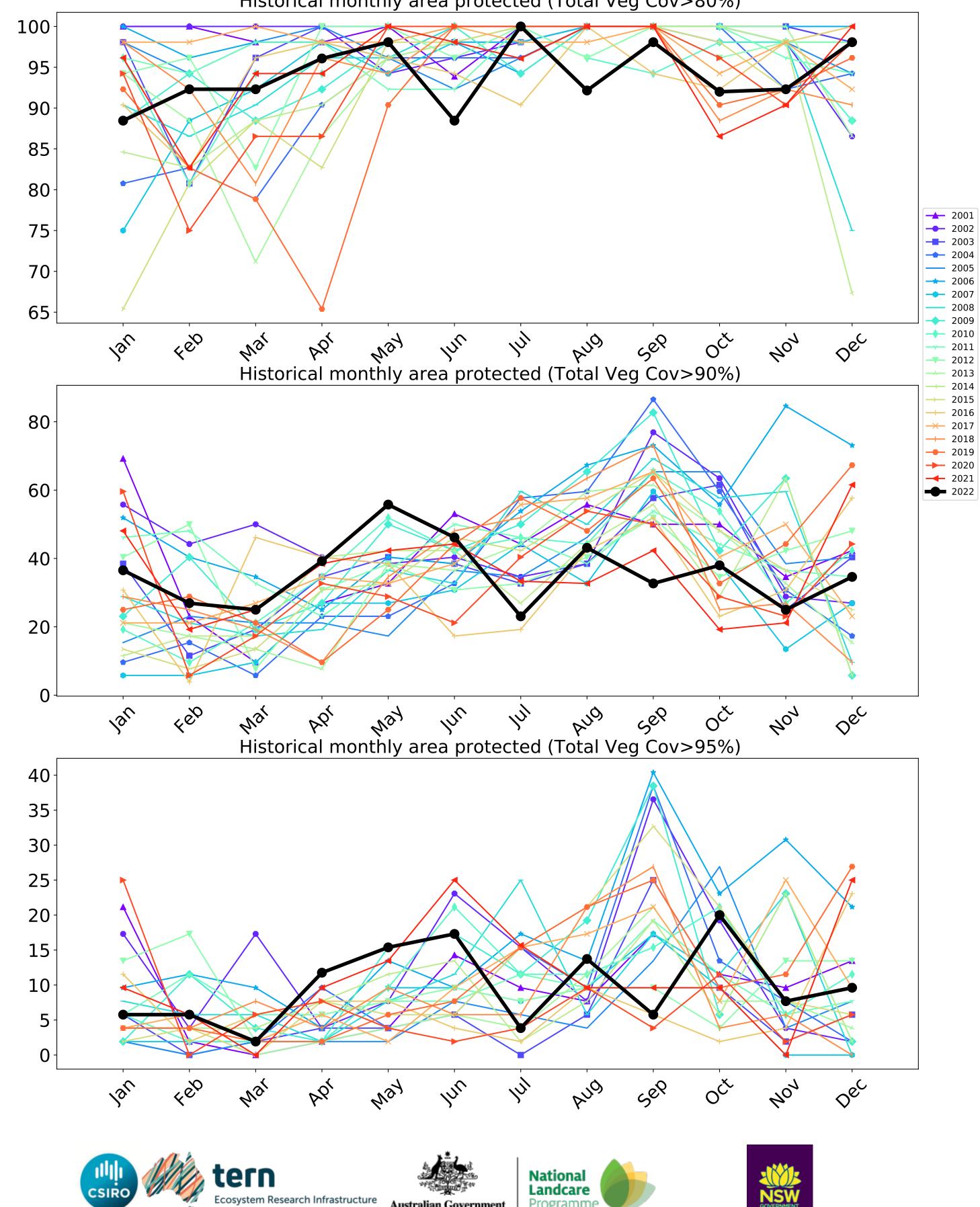
# Irrigation timeseries

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





Historical monthly area protected (Total Veg Cov>80%)

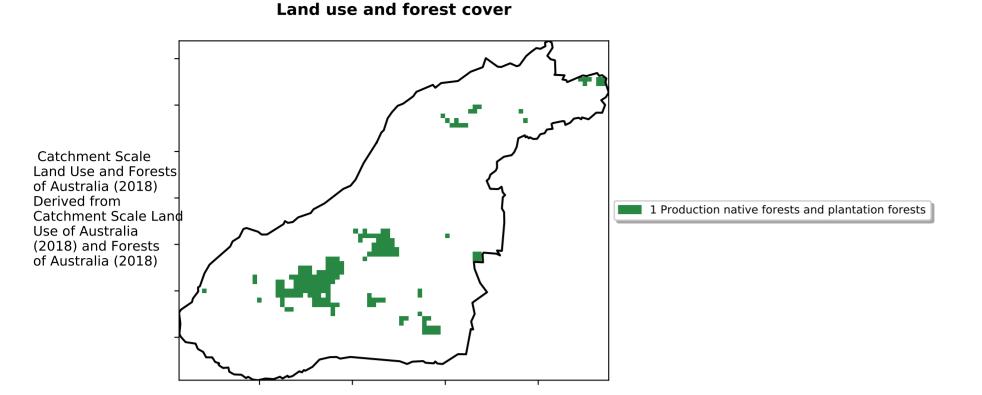


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### **Production native forests and plantation forests**



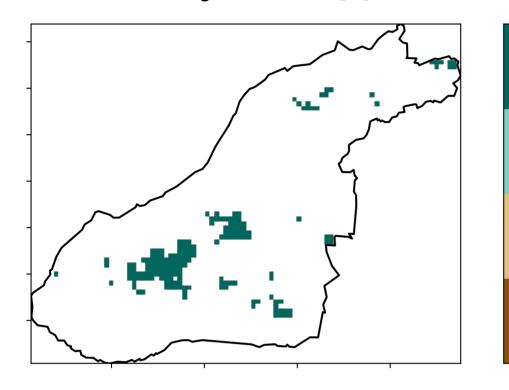
12º10-100010

· 52°10°10°10

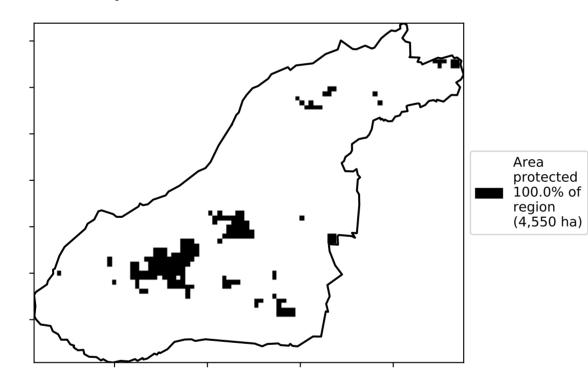
3201050010

0.30%

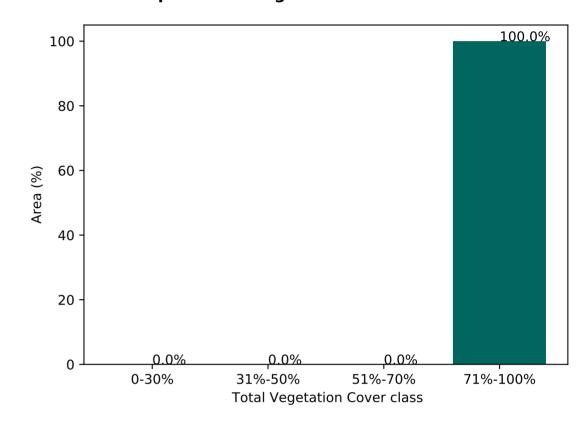
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



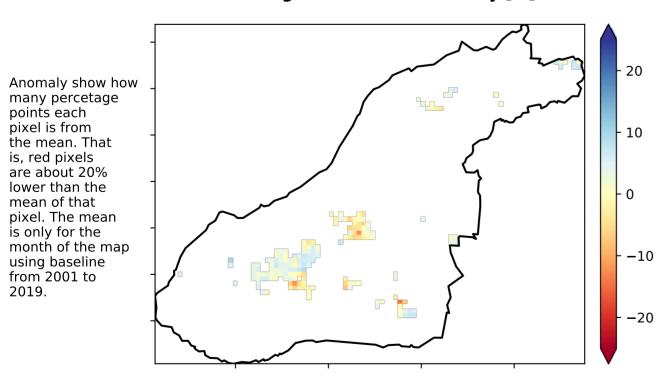
Proportion of vegetation cover class in area



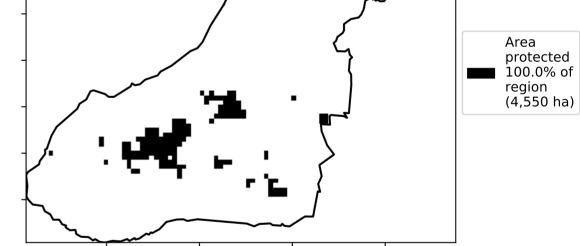
% Area protected from wind erosion (>50%)

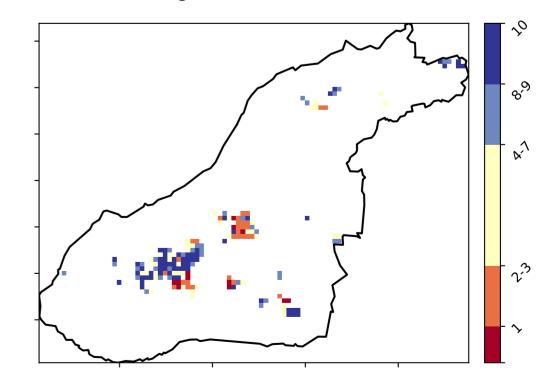


Total Vegetation Cover Anomaly [%]

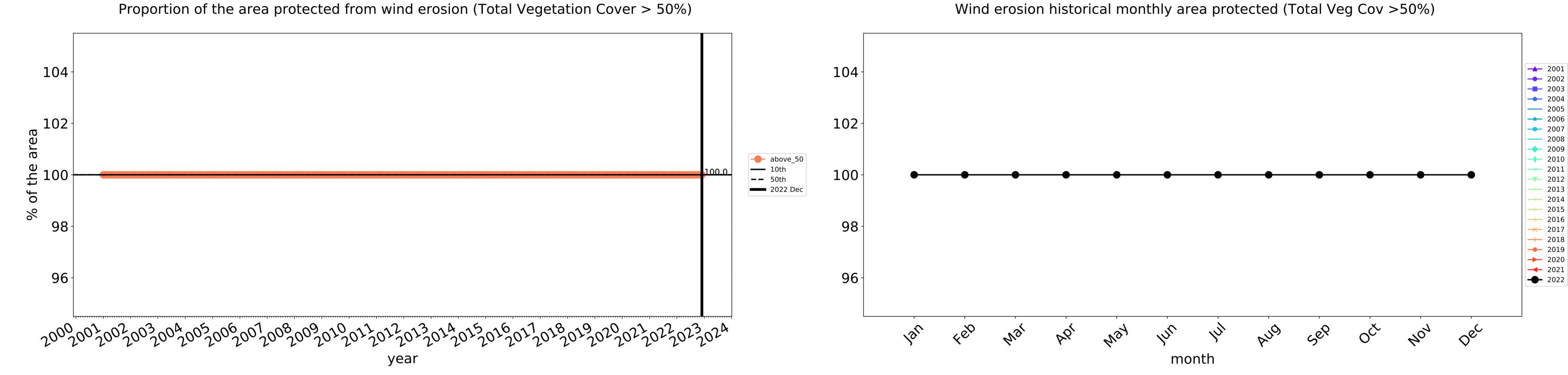


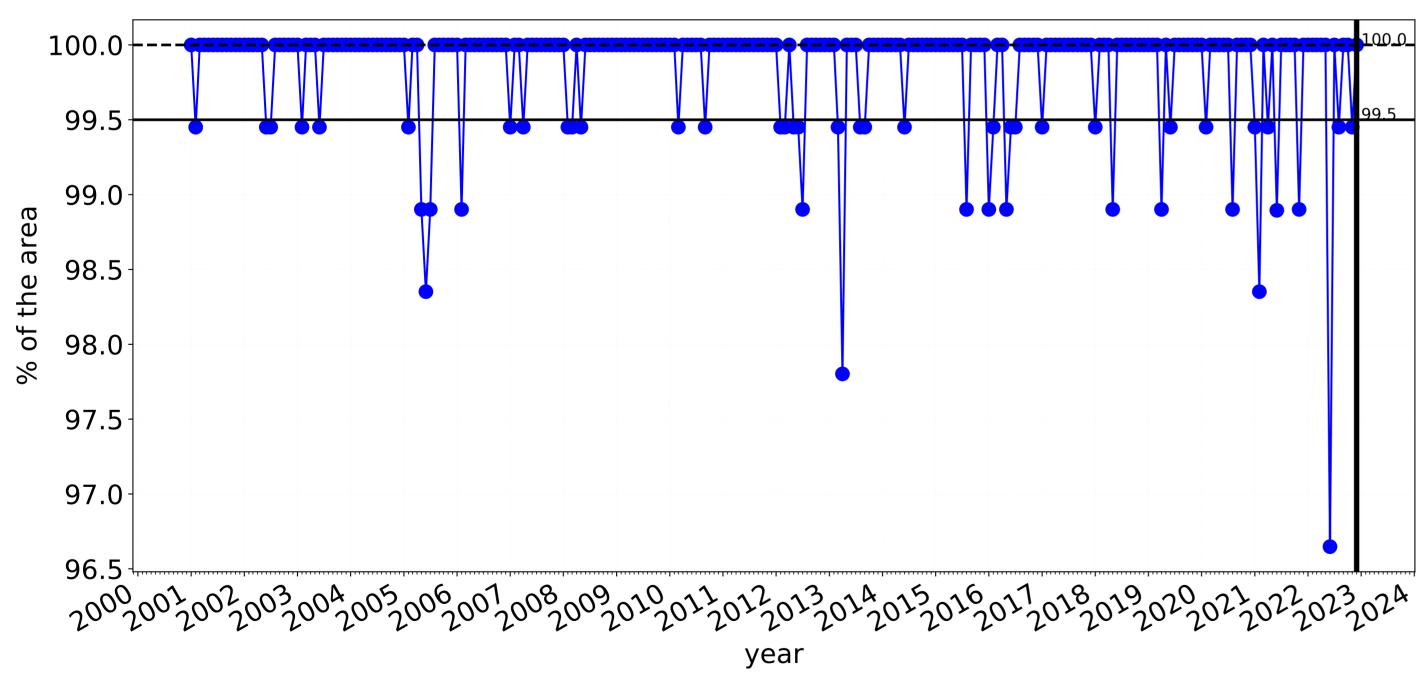
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





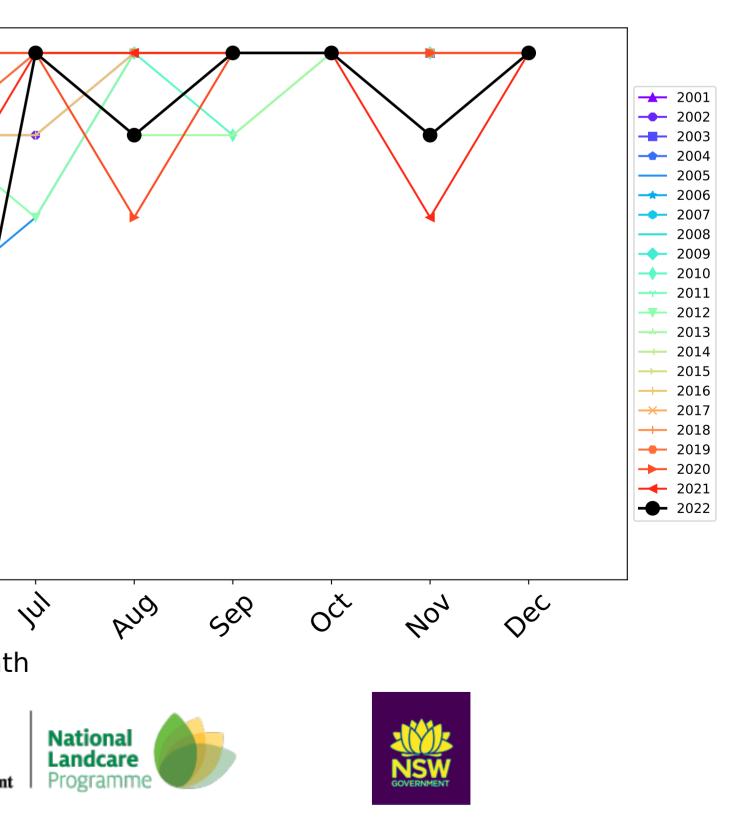


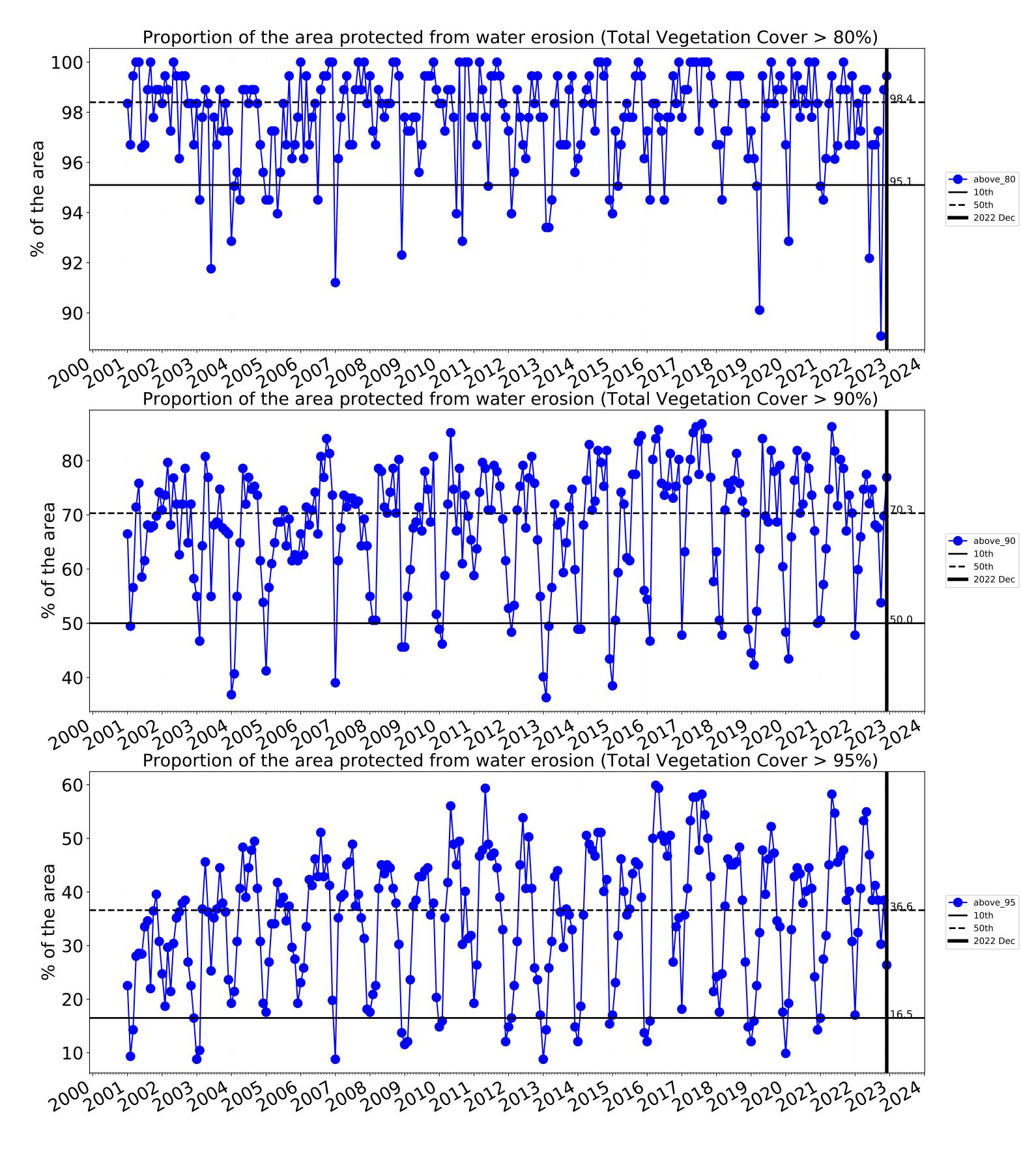


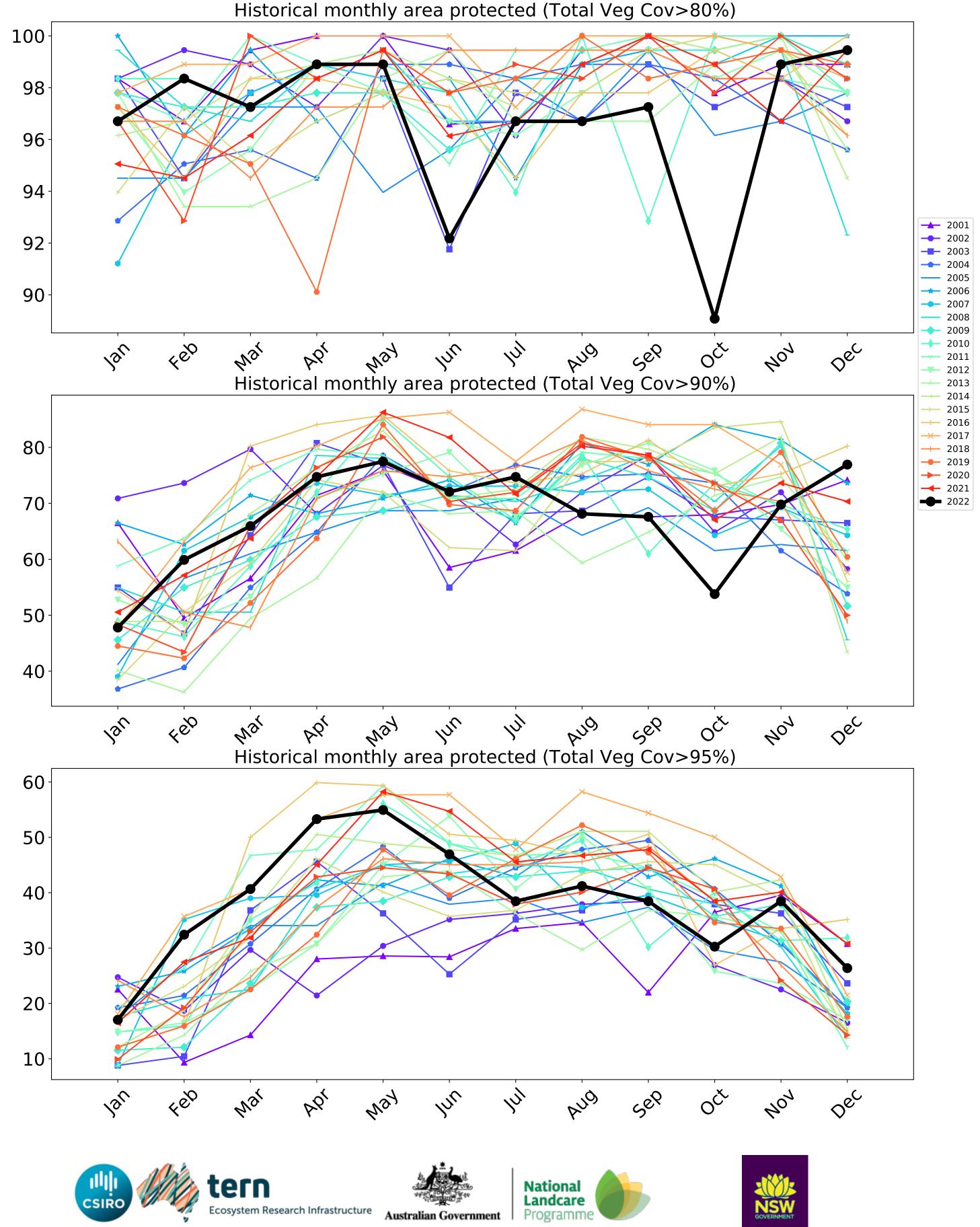


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Water erosion historical monthly area protected (Total Veg Cov>70%)









# Yankalilla\_(DC) (73,475 ha and no data 1,662 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	73,475	100.0% 73,450	99.9% 73,375	99.3% 72,950	97.0% 71,300	75.5% 55,475	38.3% 28,125
Conservation and natural environments	9,325	100.0% 9,325	100.0% 9,325	100.0% 9,325	98.9% 9,225	88.7% 8,275	48.0% 4,475
Conservation and natural environments non forest	1,325	100.0% 1,325	100.0% 1,325	100.0% 1,325	92.5% 1,225	77.4% 1,025	54.7% 725
Conservation and natural environments Woodland forest	5,325	100.0% 5,325	100.0% 5,325	100.0% 5,325	100.0% 5,325	90.1% 4,800	40.4% 2,150
Conservation and natural environments Forest (non woodland)	2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	91.6% 2,450	59.8% 1,600
Agriculture	57,350	100.0% 57,325	99.9% 57,275	99.6% 57,100	97.7% 56,025	75.0% 43,000	38.8% 22,225
Grazing	50,550	100.0% 50,525	99.9% 50,475	99.5% 50,300	98.1% 49,575	78.1% 39,475	41.6% 21,025
Grazing non forest	50,075	100.0% 50,050	99.9% 50,000	99.5% 49,825	98.1% 49,100	78.2% 39,150	41.8% 20,950
Cropping	5,500	100.0% 5,500	100.0% 5,500	100.0% 5,500	94.1% 5,175	55.9% 3,075	19.5% 1,075
Irrigation	1,300	100.0% 1,300	100.0% 1,300	100.0% 1,300	98.1% 1,275	34.6% 450	9.6% 125
Production native forests and plantation forests	4,550	100.0% 4,550	100.0% 4,550	100.0% 4,550	99.5% 4,525	76.9% 3,500	26.4% 1,200

