Total vegetation cover soil protection Region:LGA Byron_(A) NSW

Date: November 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 Nov 2022

Land use and forest cover

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each pixel is from

the mean. That

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using baseline from 2001 to

2019.

month of the map

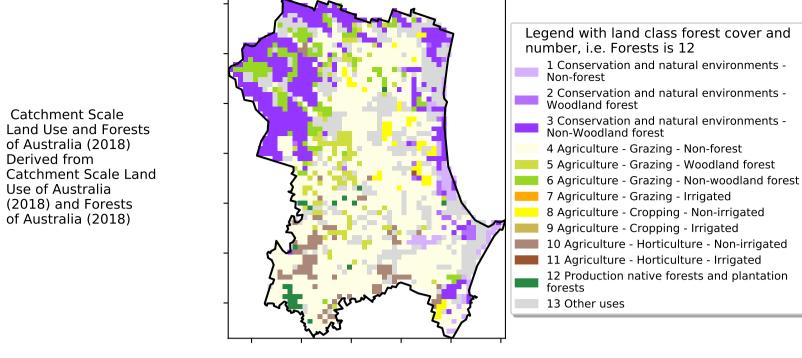
mean of that

is, red pixels are about 20%

Derived from

Use of Australia

Proportion of each land class in area



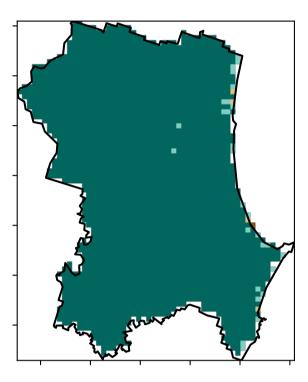
720/070001

52% 70%

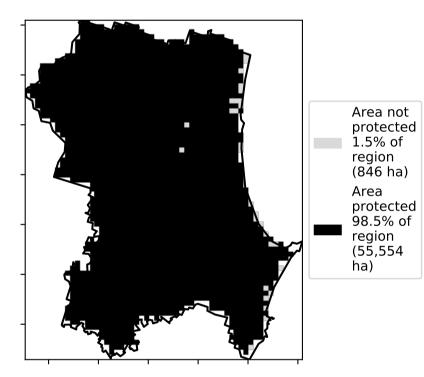
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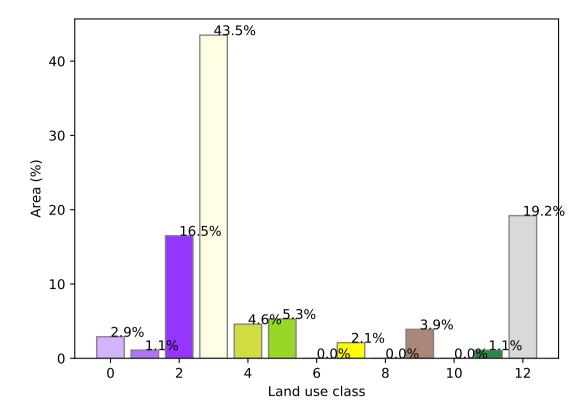
0.30%

Total Vegetation Cover [%]

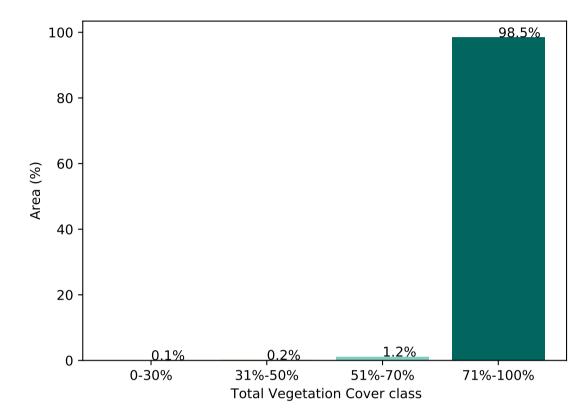


% Area protected from water erosion (>70%)

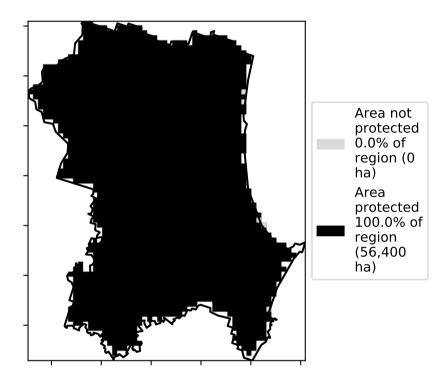




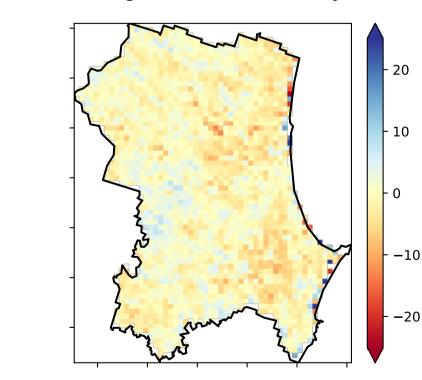
Proportion of vegetation cover class in area



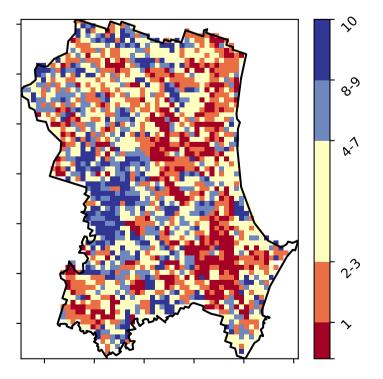
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



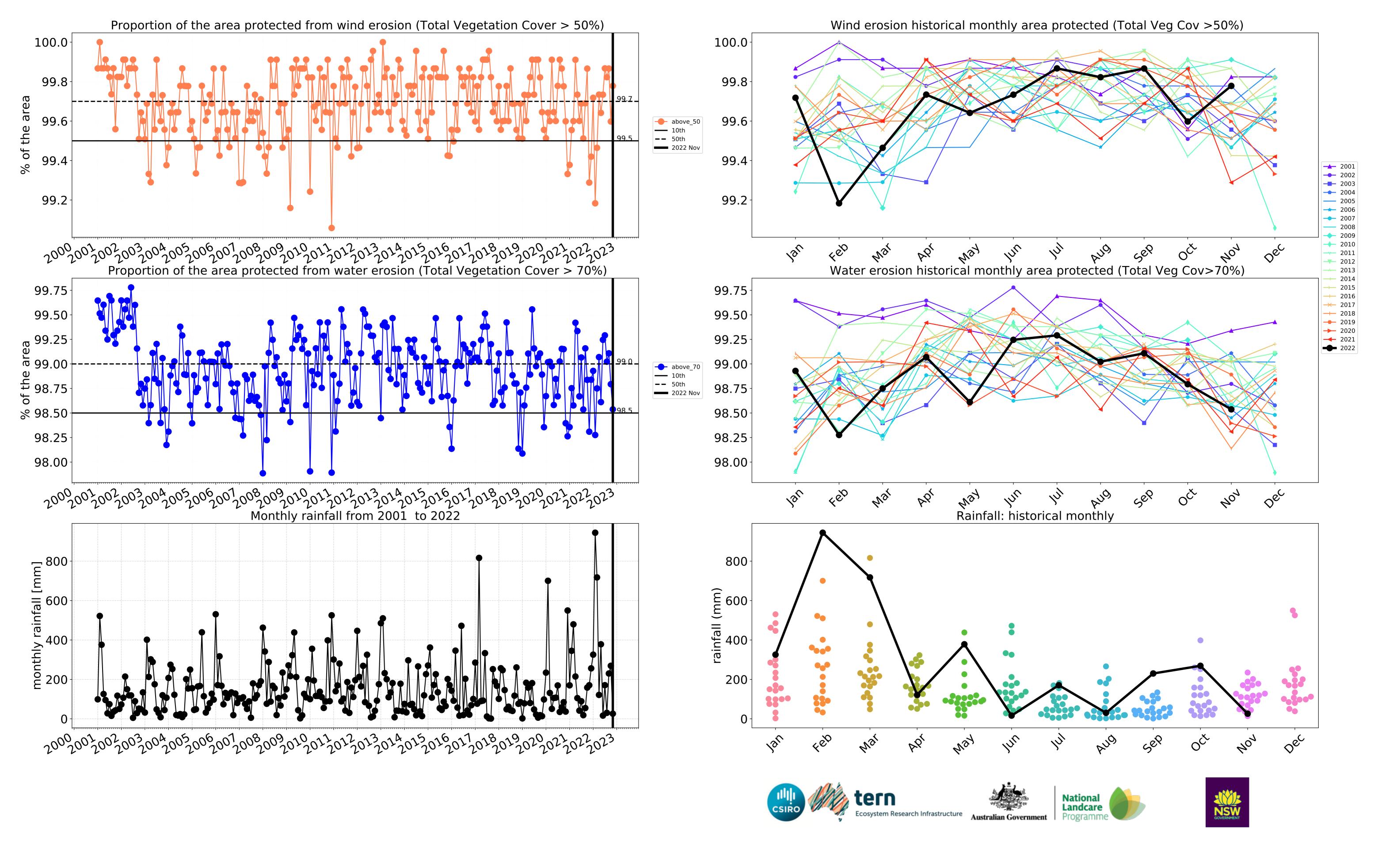
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

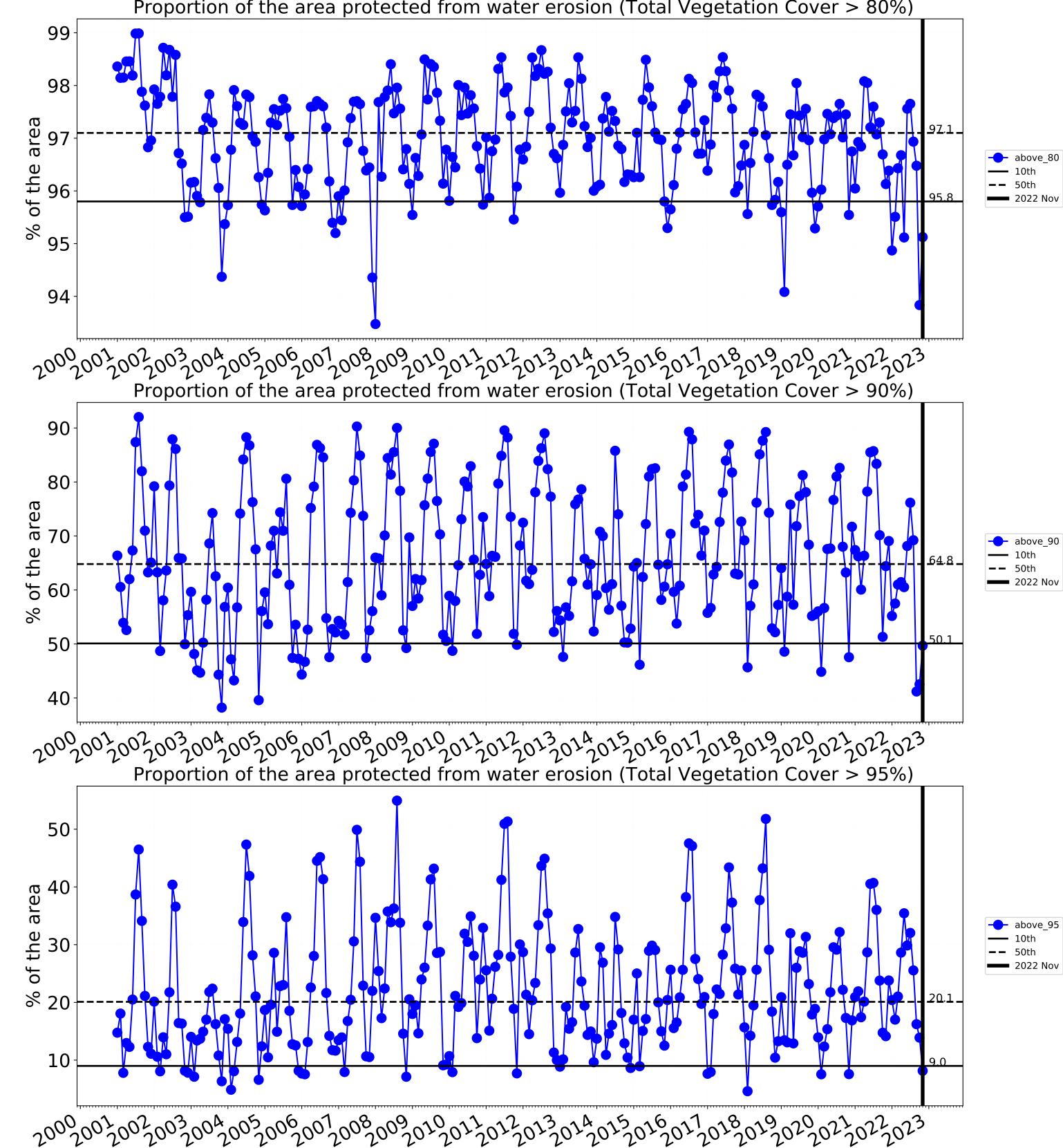




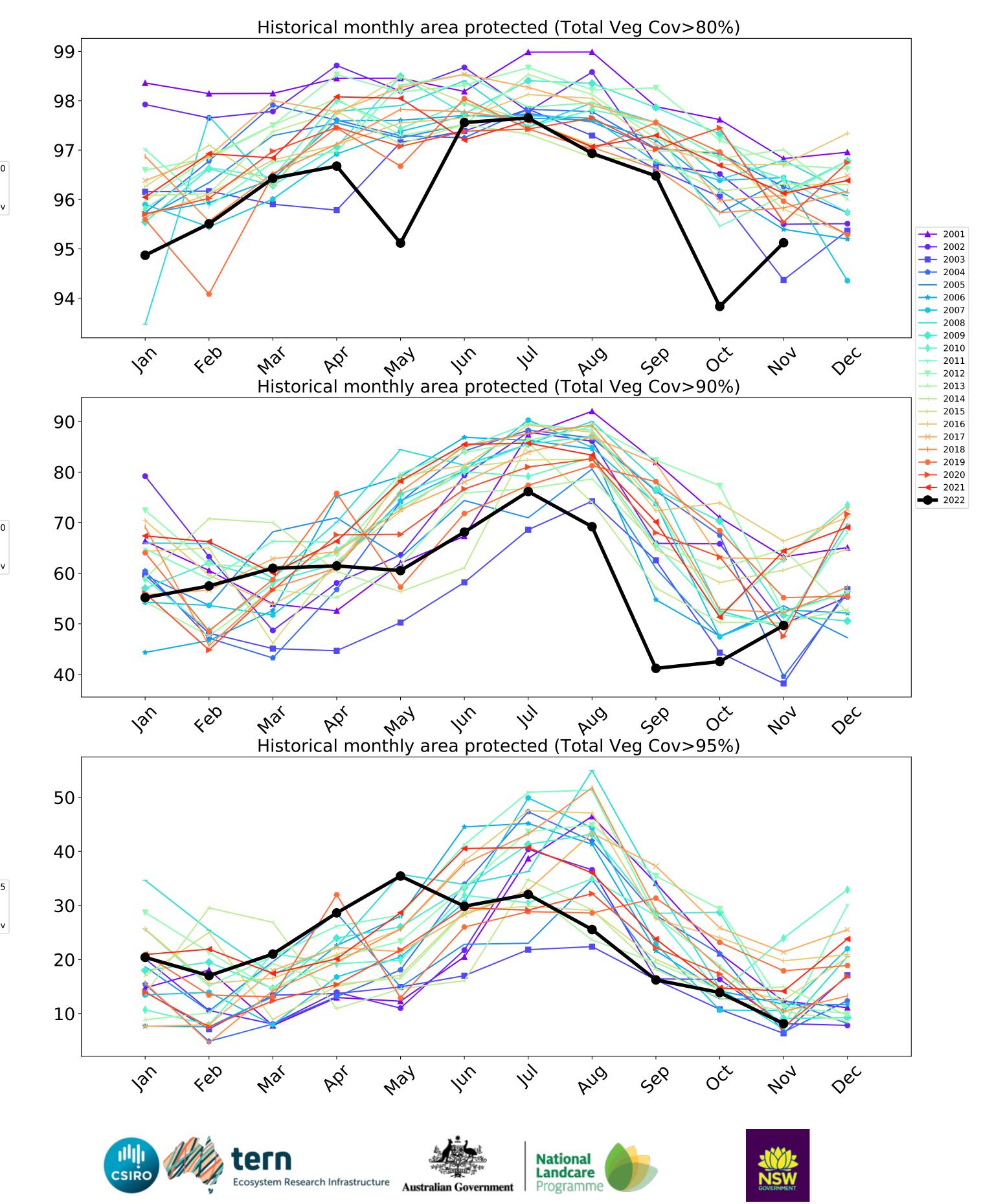






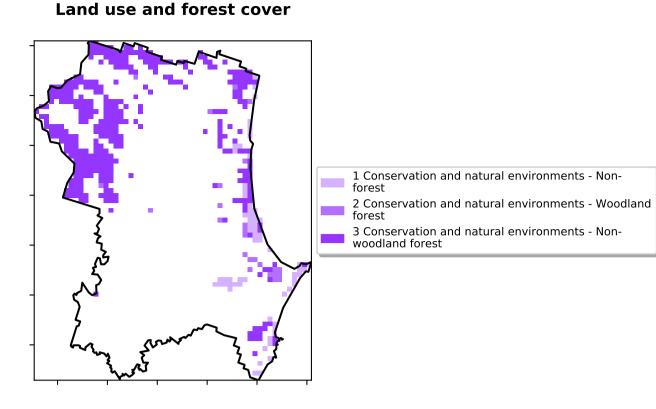


Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)

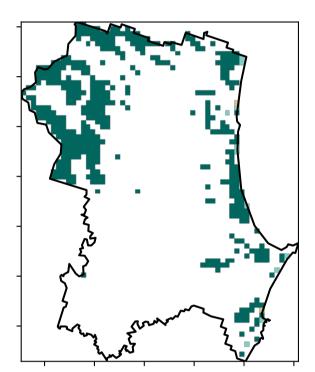


Conservation and natural environments

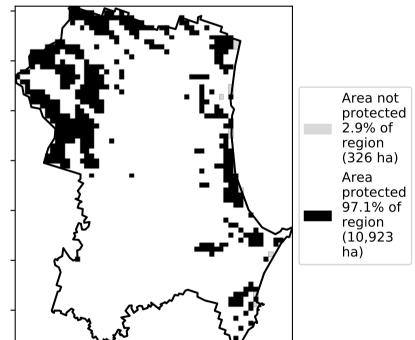
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

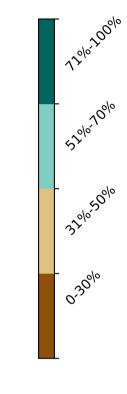


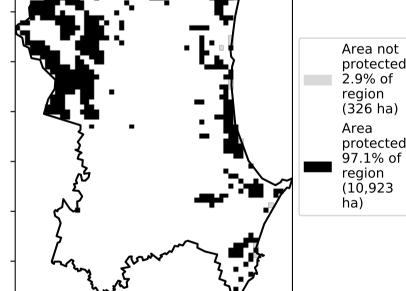
Total Vegetation Cover [%]



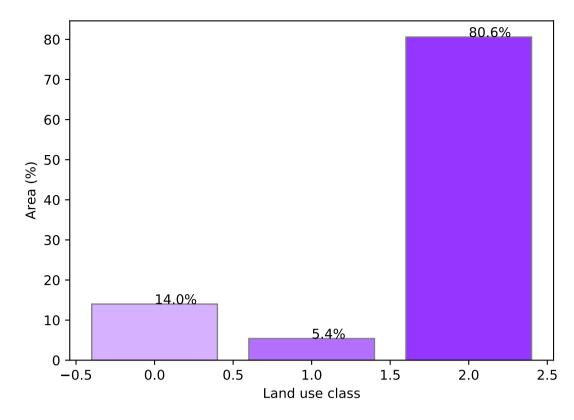
% Area protected from water erosion (>70%)



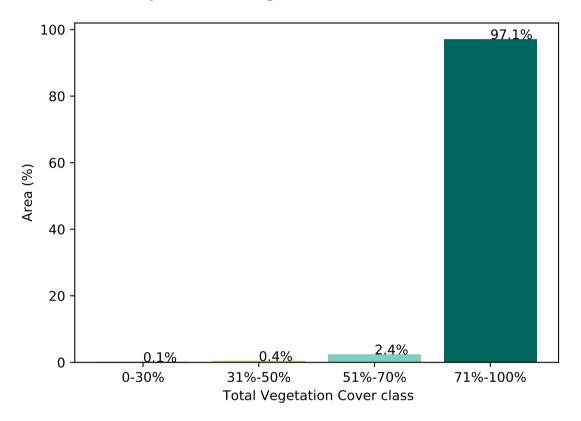




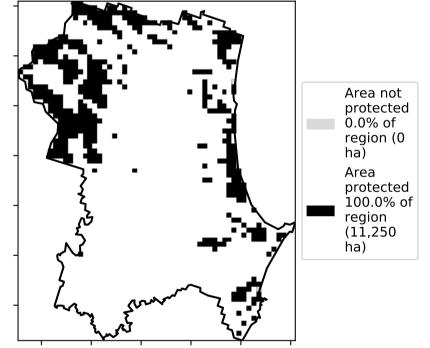
Proportion of each land class in area



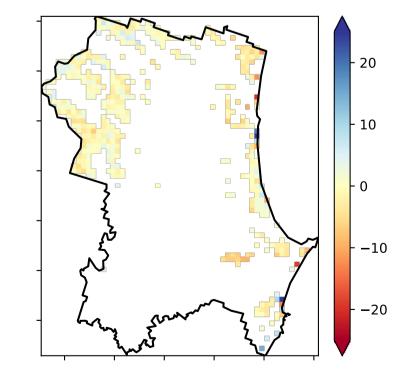
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

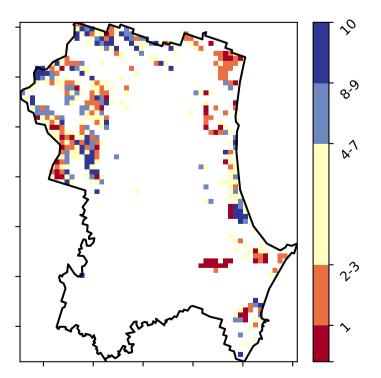


Total Vegetation Cover Anomaly [%]



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.

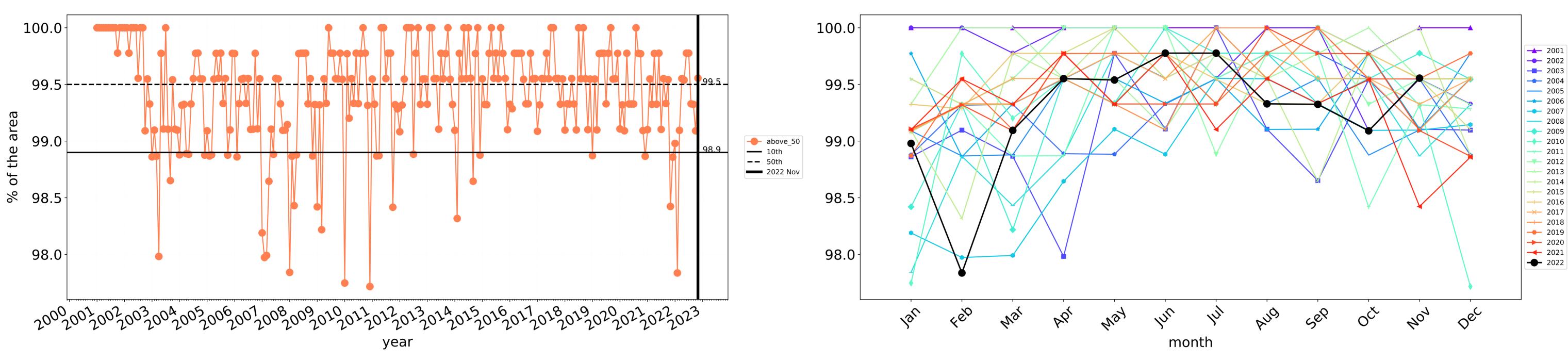
Total Vegetation Cover Decile [%]



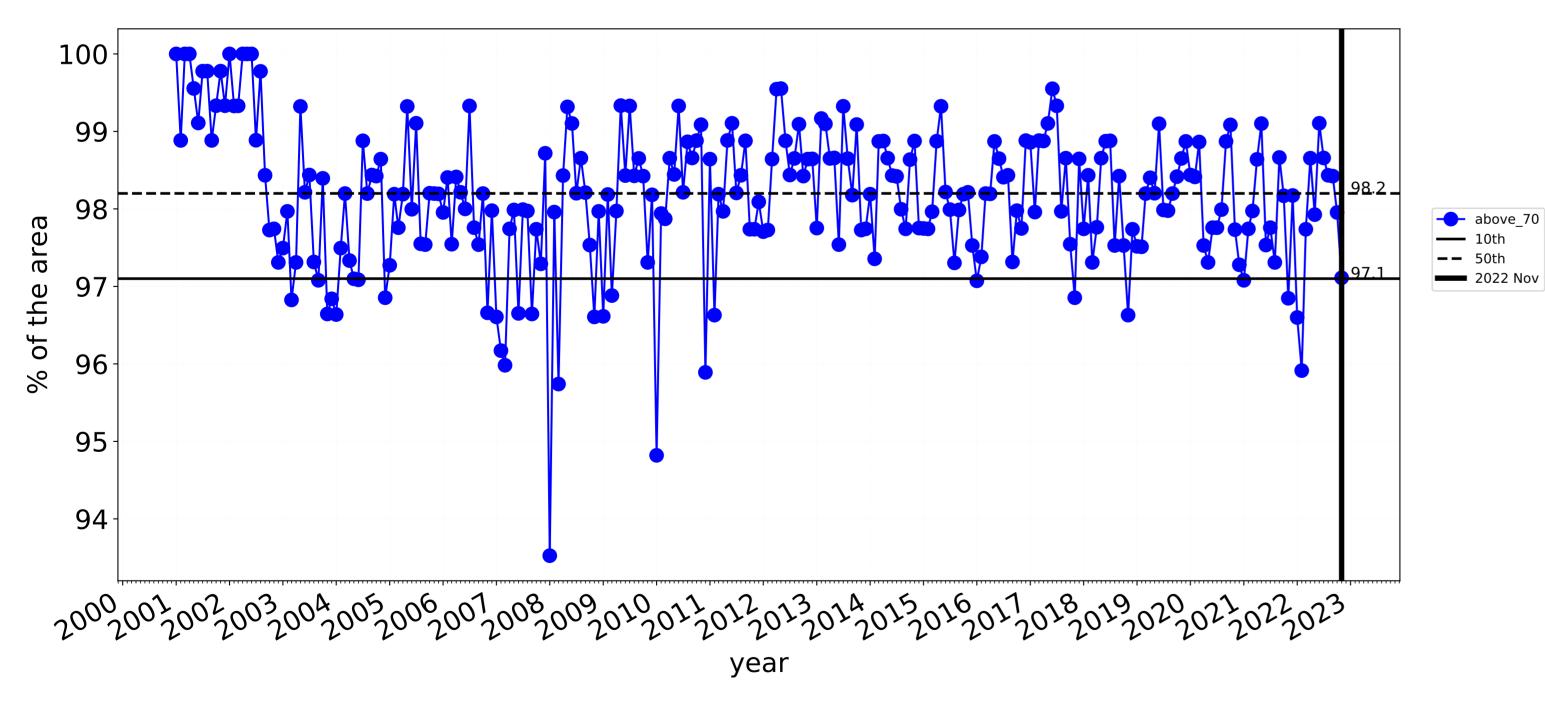


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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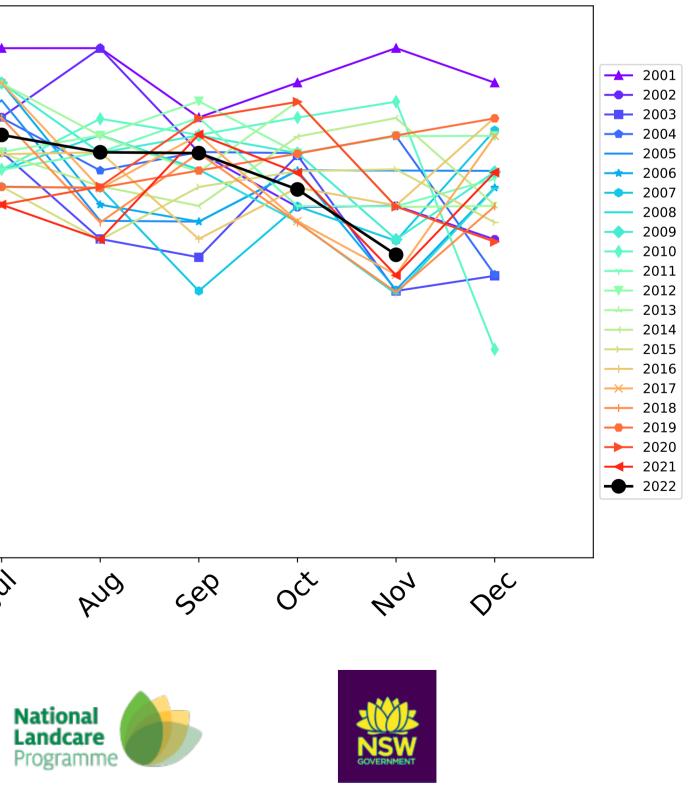
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

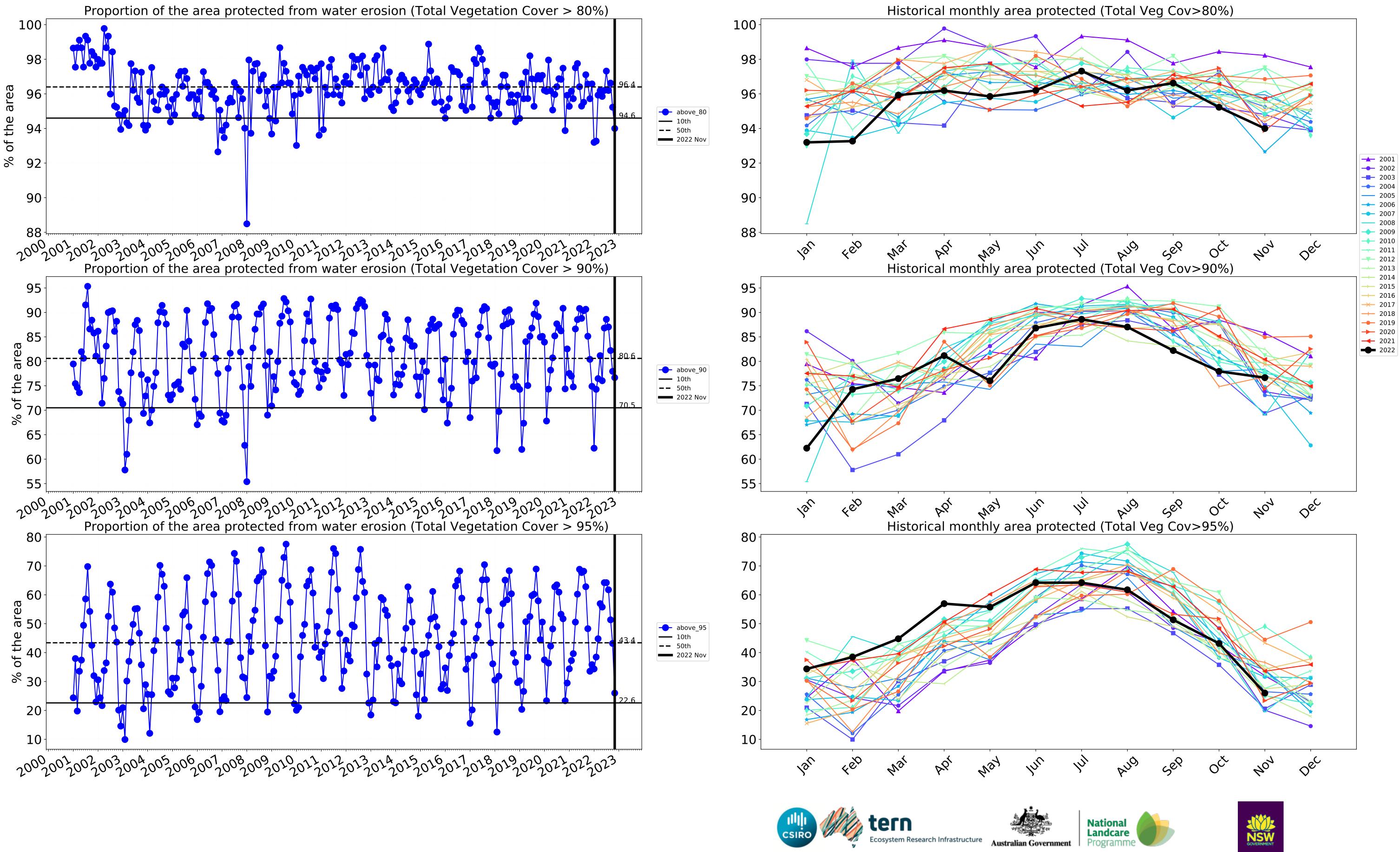


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Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

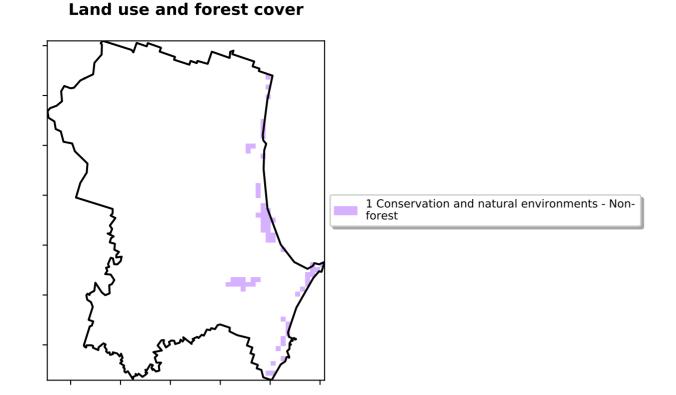




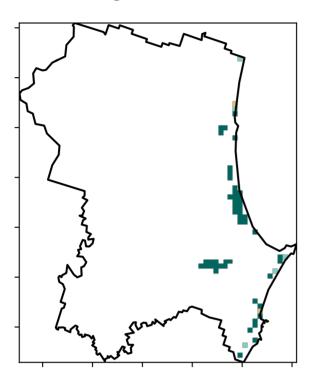


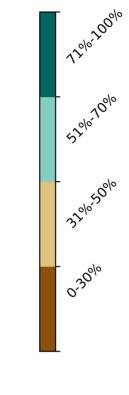
Conservation and natural environments non forest

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

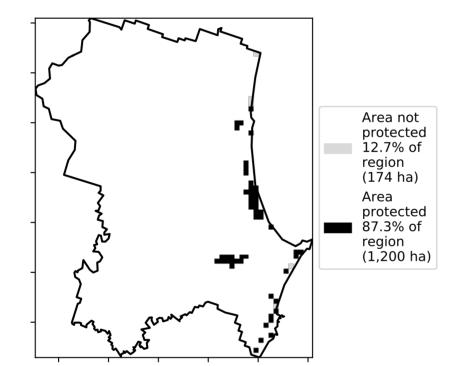


Total Vegetation Cover [%]

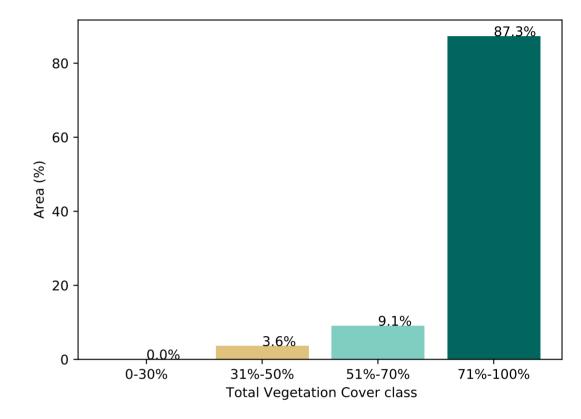




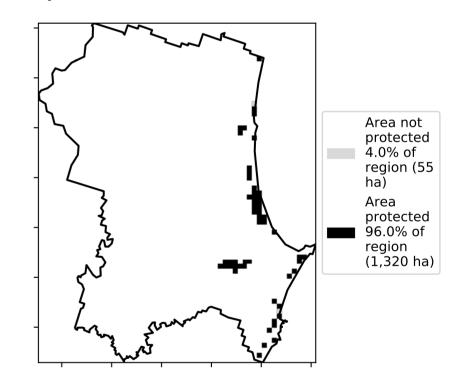
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

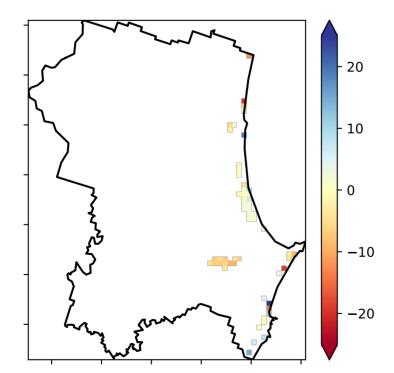


% Area protected from wind erosion (>50%)

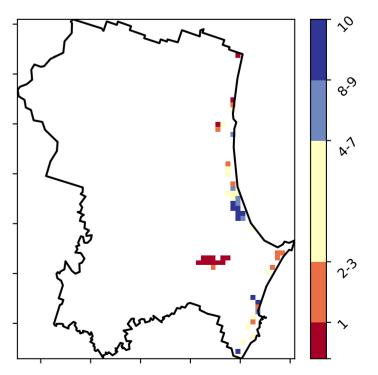


Total Vegetation Cover Anomaly [%]

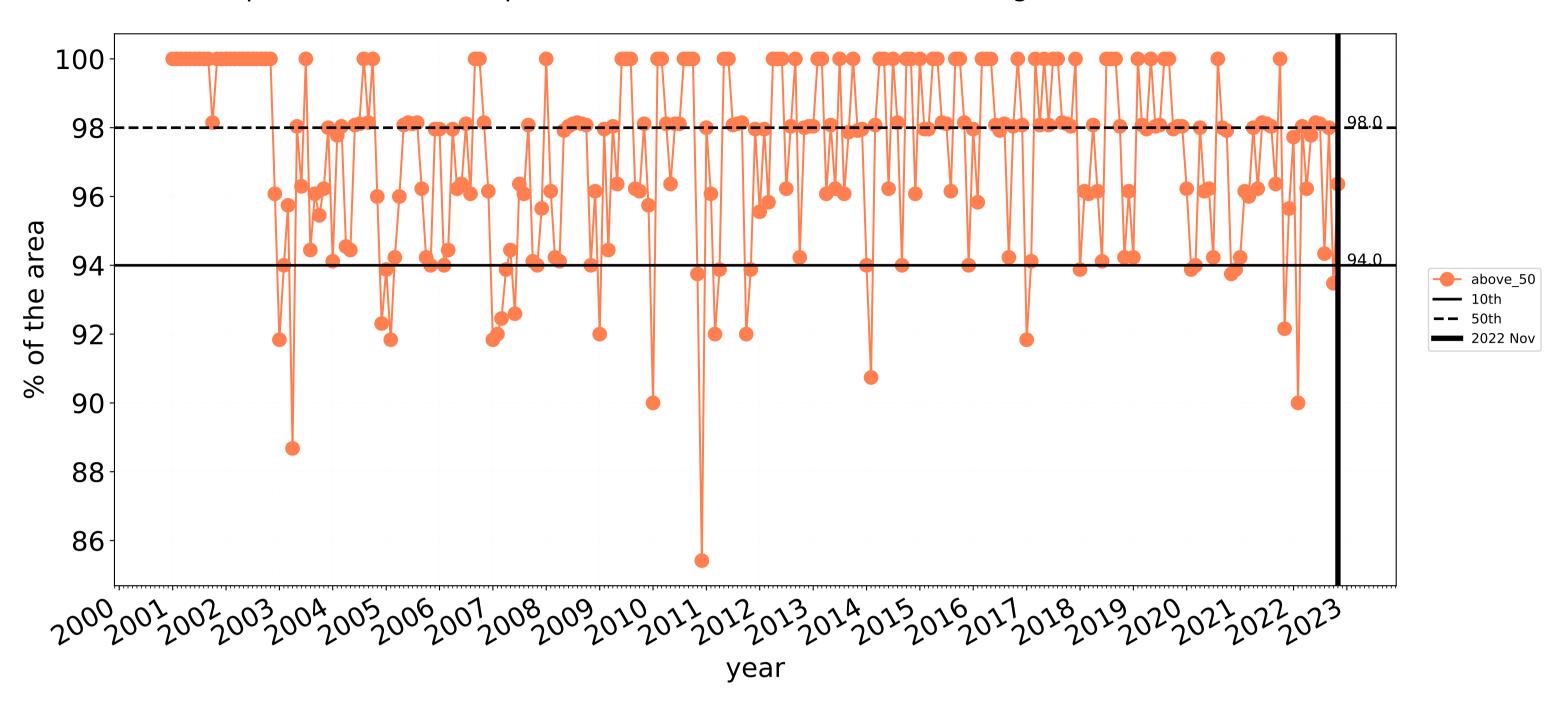
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



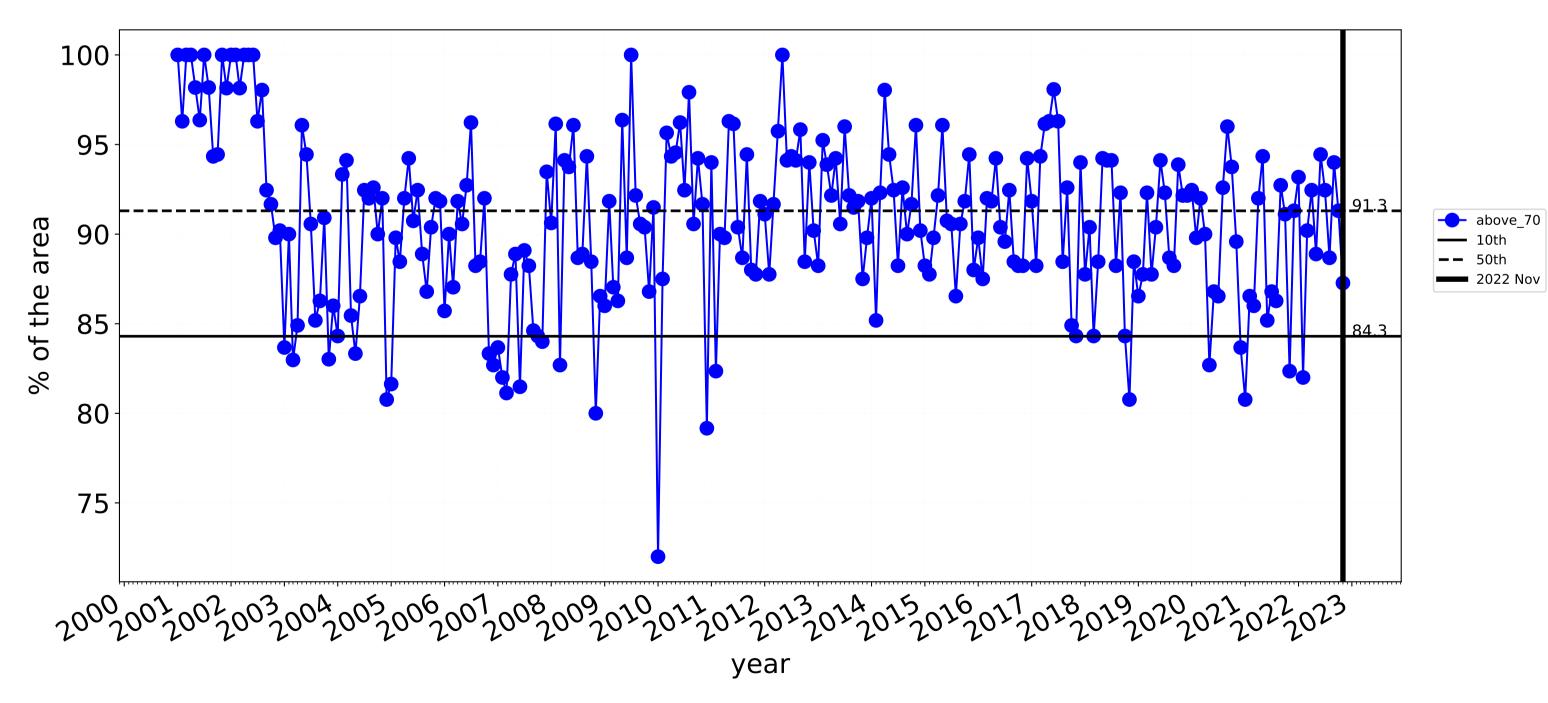
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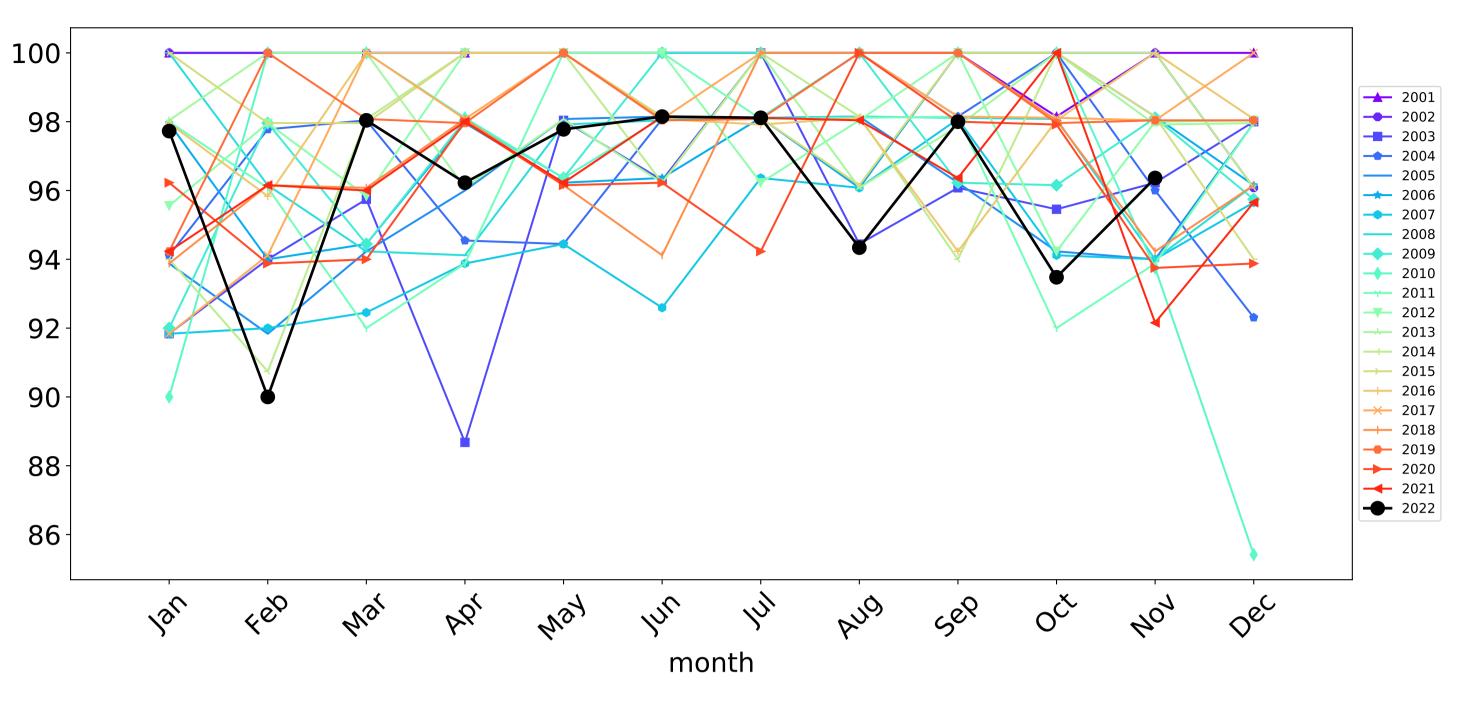


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



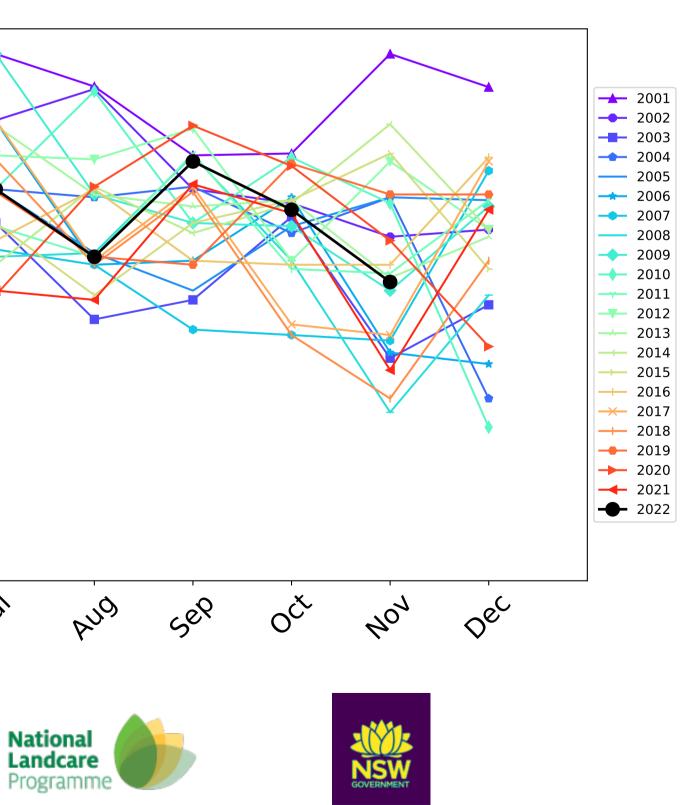


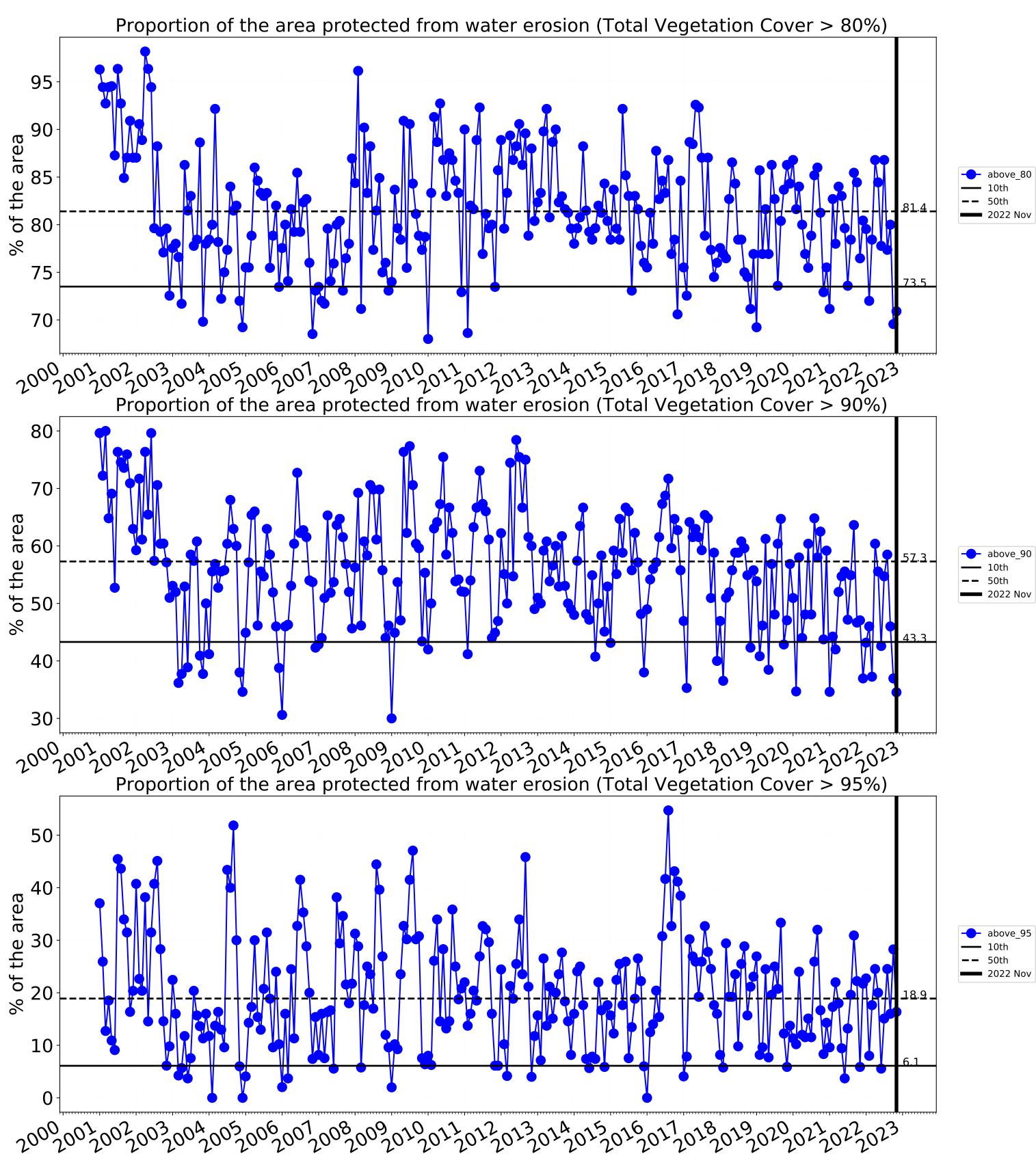
Wind erosion historical monthly area protected (Total Veg Cov >50%)

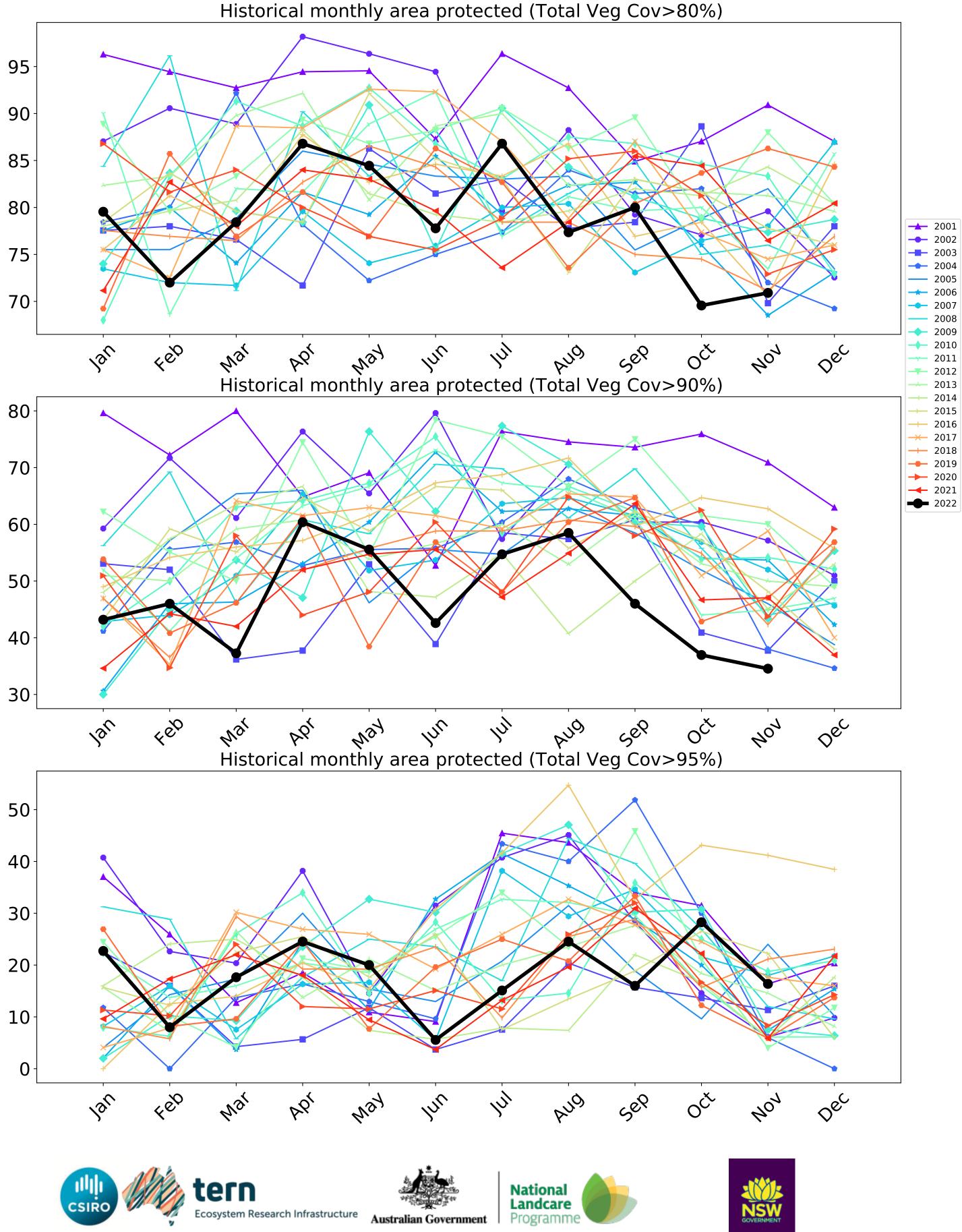


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Water erosion historical monthly area protected (Total Veg Cov>70%)



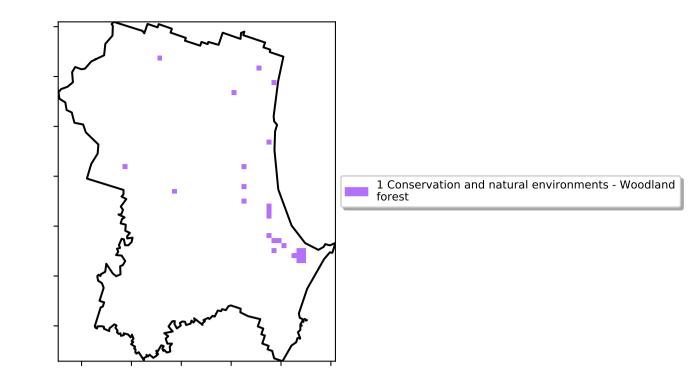




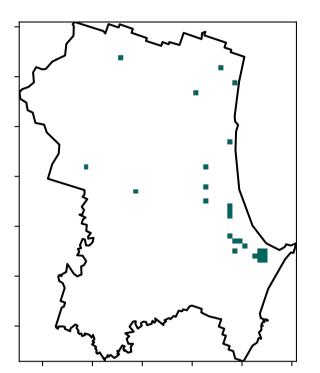


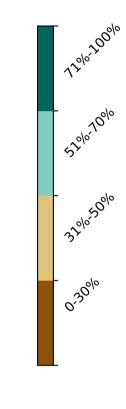
Conservation and natural environments Woodland forest

Land use and forest cover

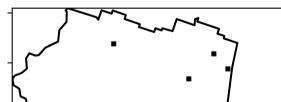


Total Vegetation Cover [%]

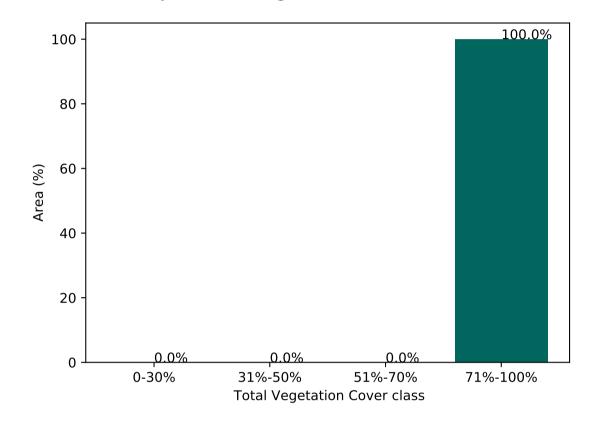




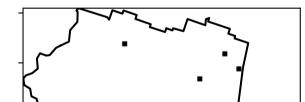
% Area protected from water erosion (>70%)



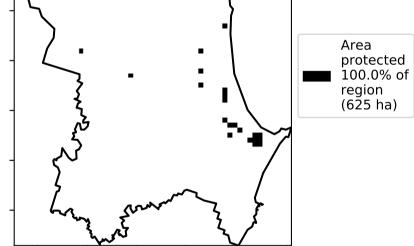
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

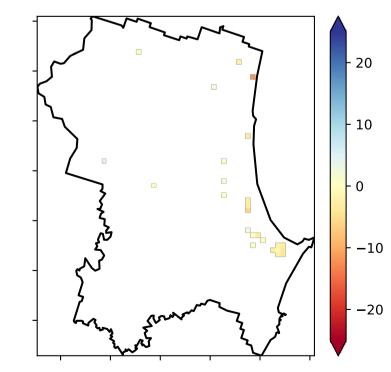




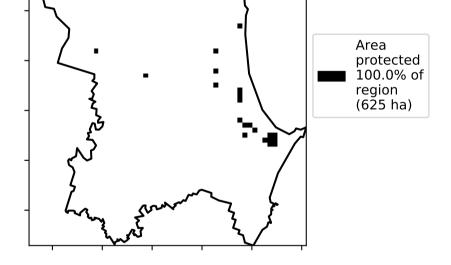


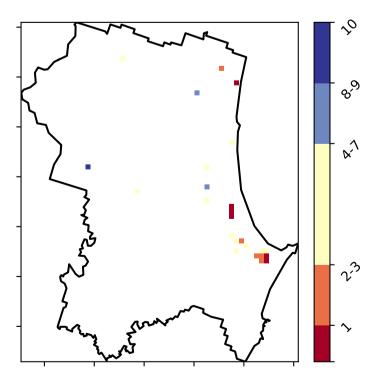
Total Vegetation Cover Anomaly [%]

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.

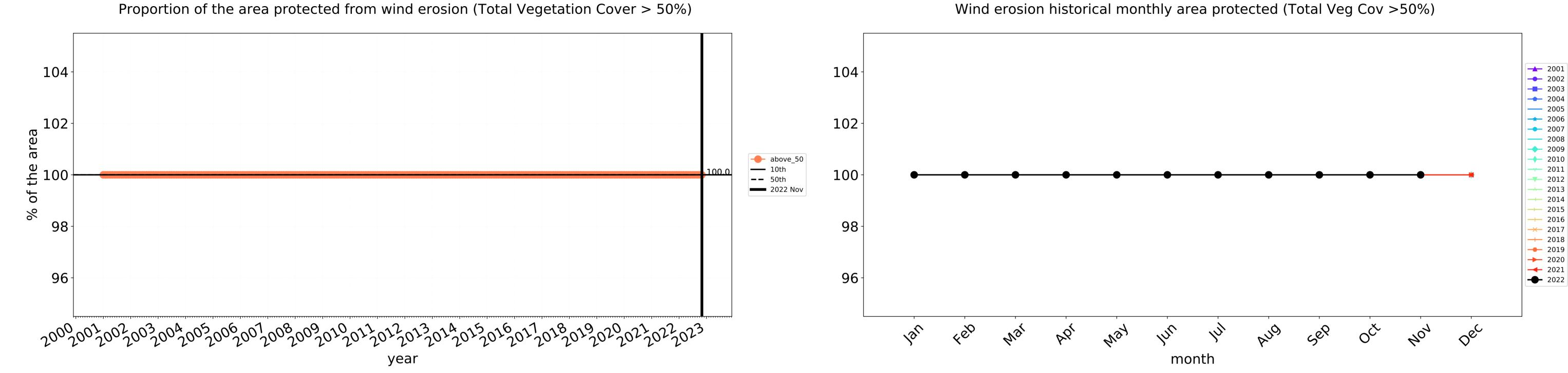


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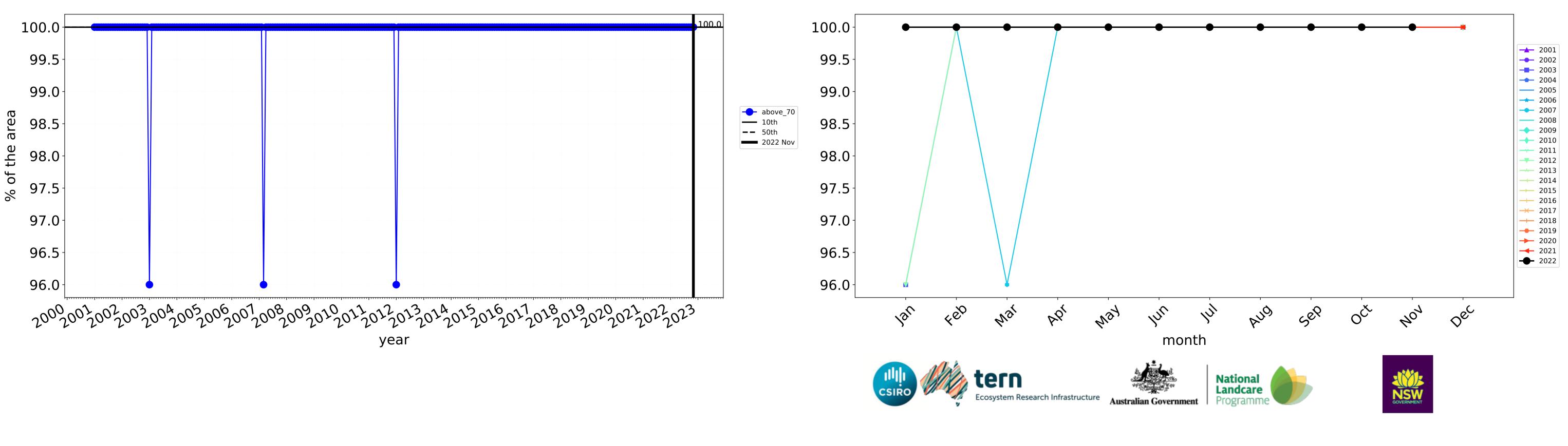




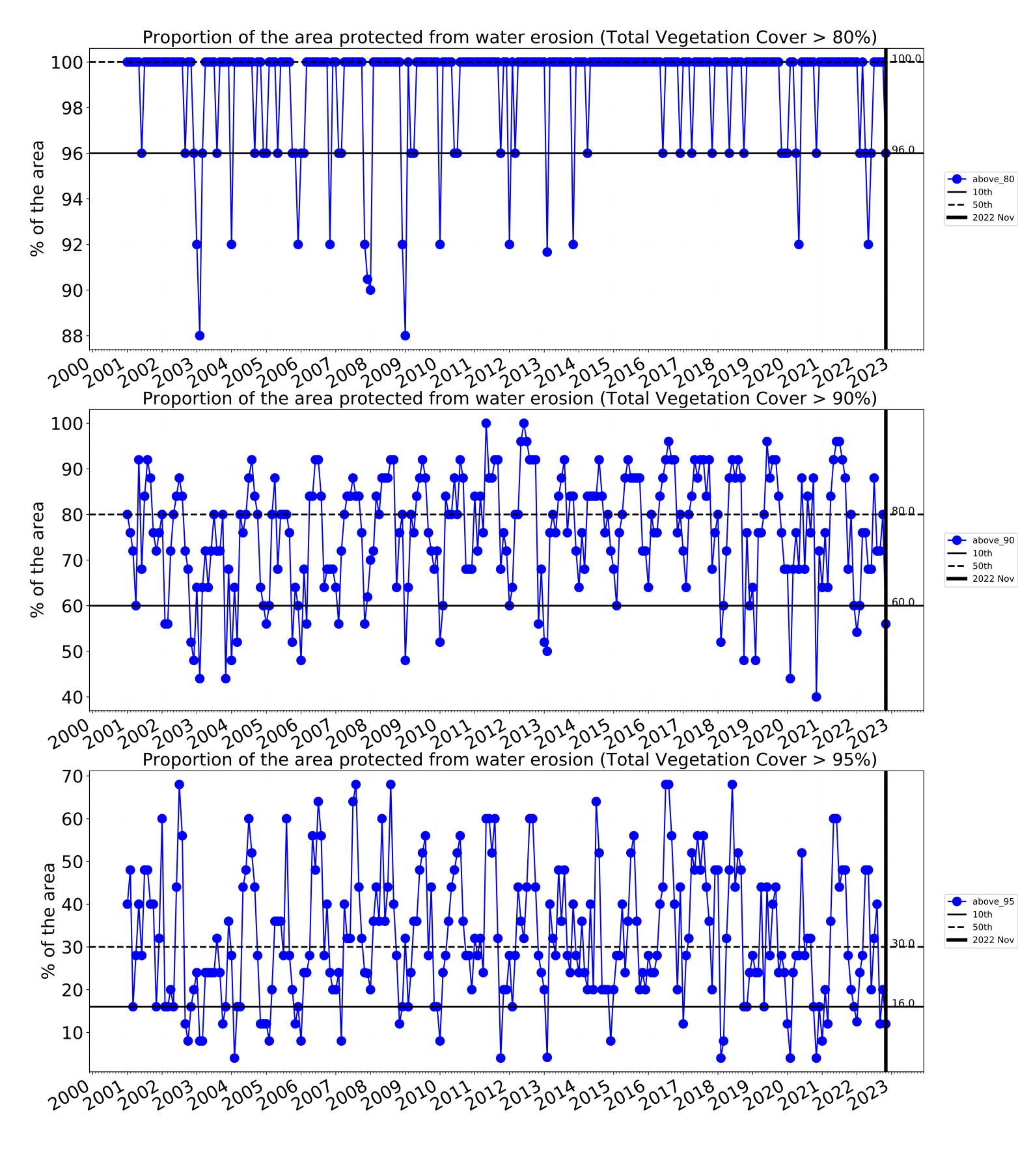


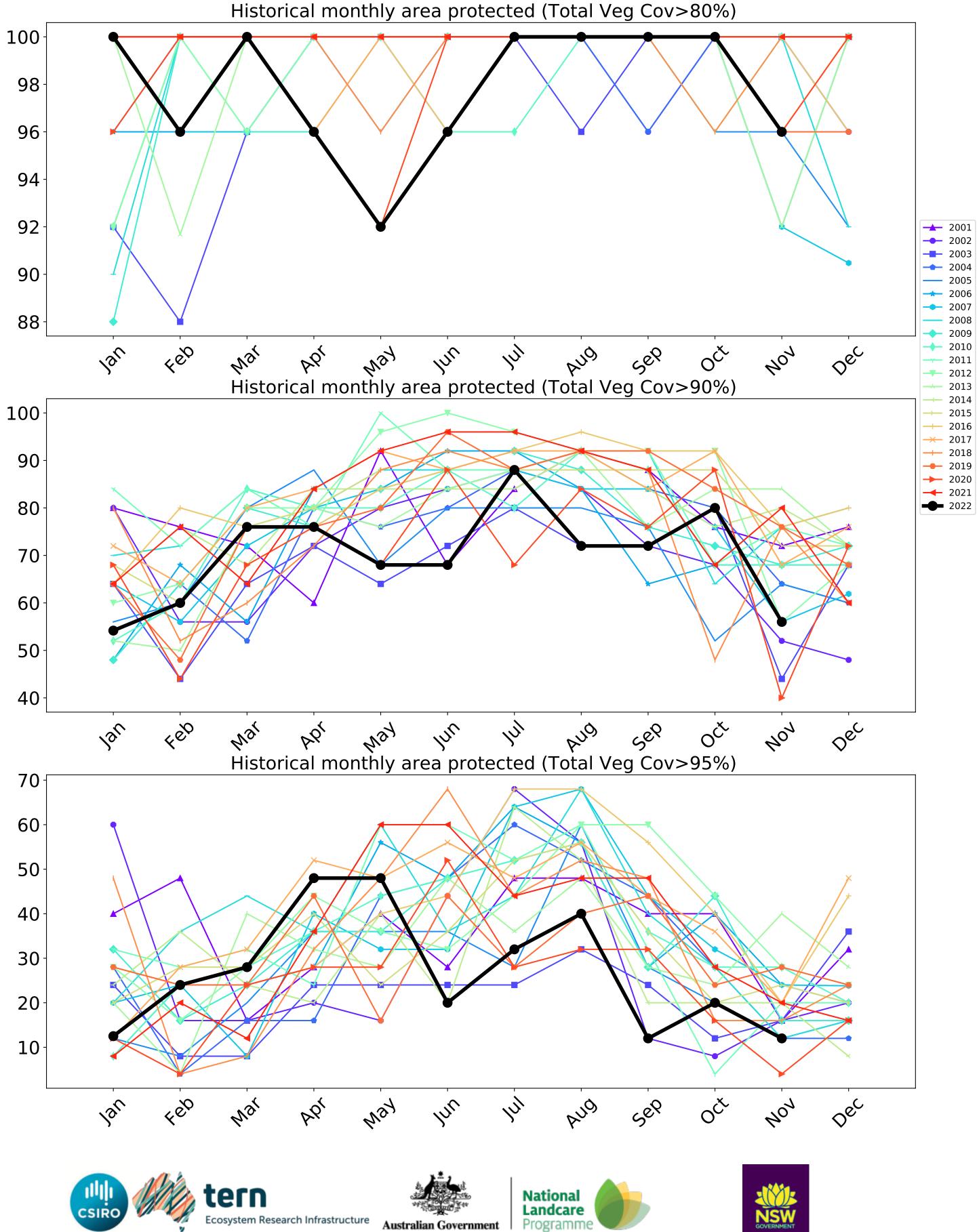






Water erosion historical monthly area protected (Total Veg Cov>70%)

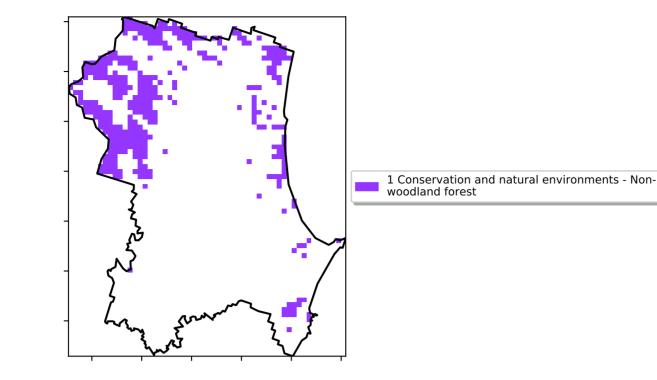




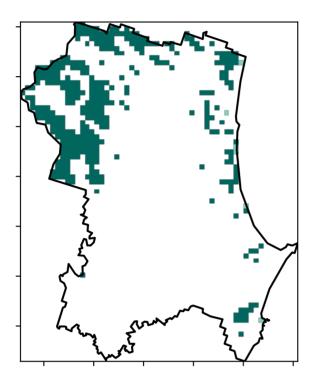


Conservation and natural environments Forest (non woodland)

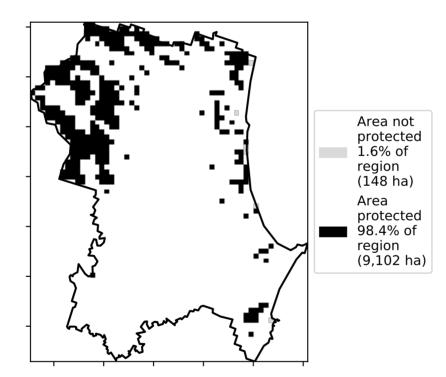
Land use and forest cover

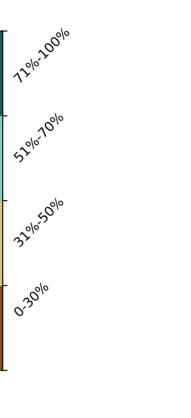


Total Vegetation Cover [%]

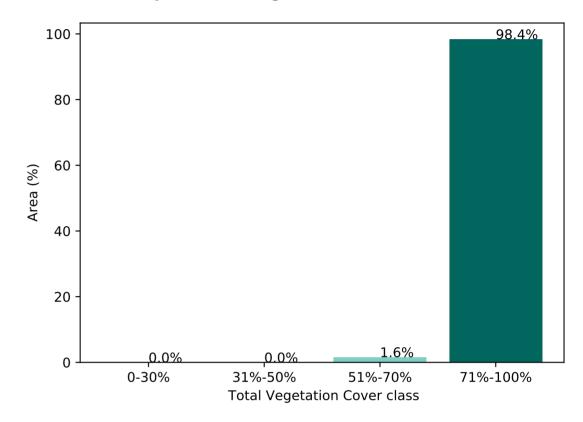


% Area protected from water erosion (>70%)





Proportion of vegetation cover class in area



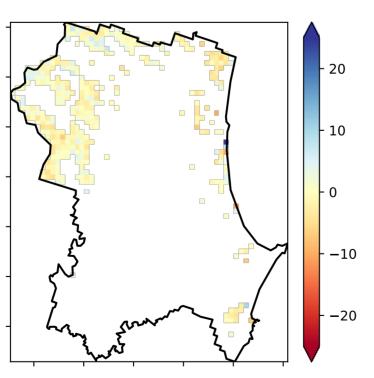
% Area protected from wind erosion (>50%)



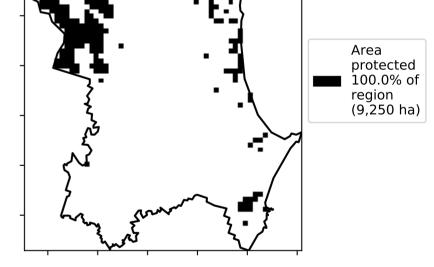
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

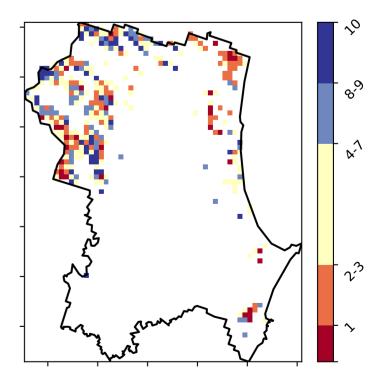
Total Vegetation Cover Anomaly [%]

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.

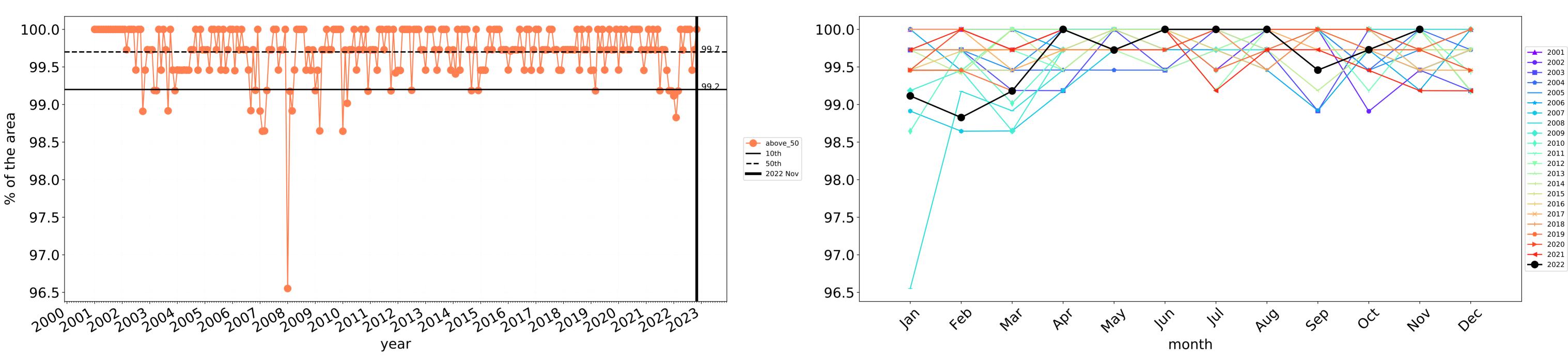


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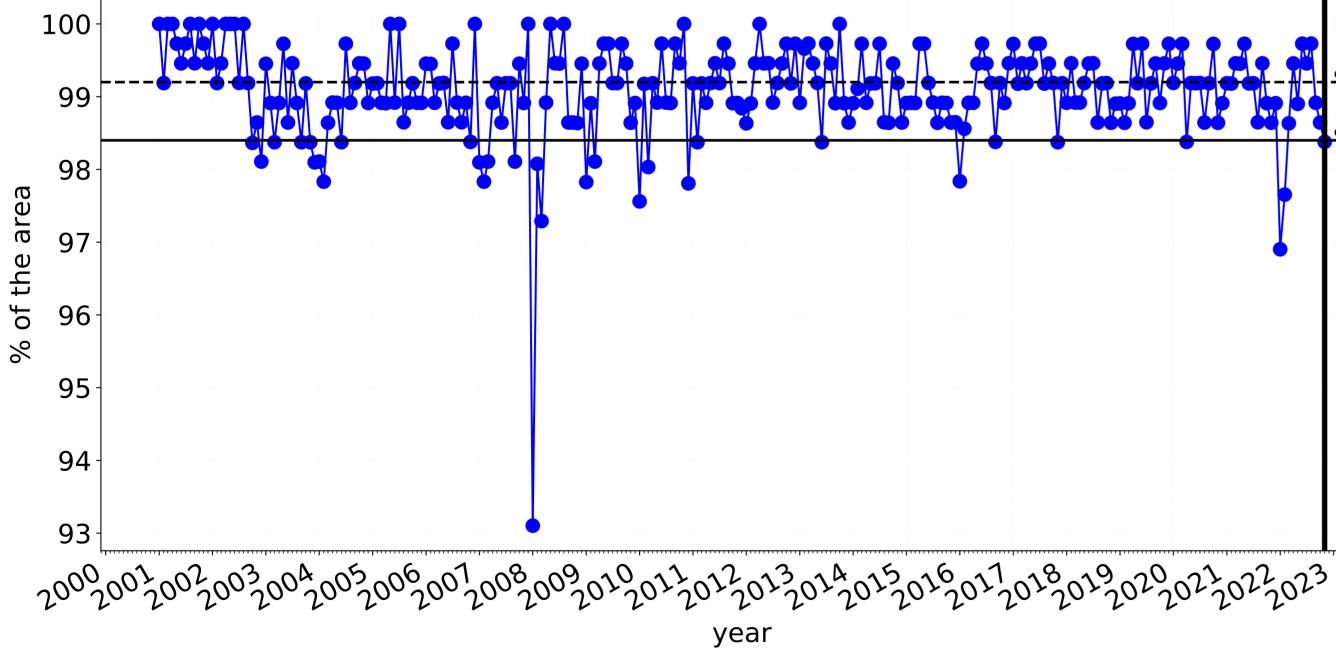








Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

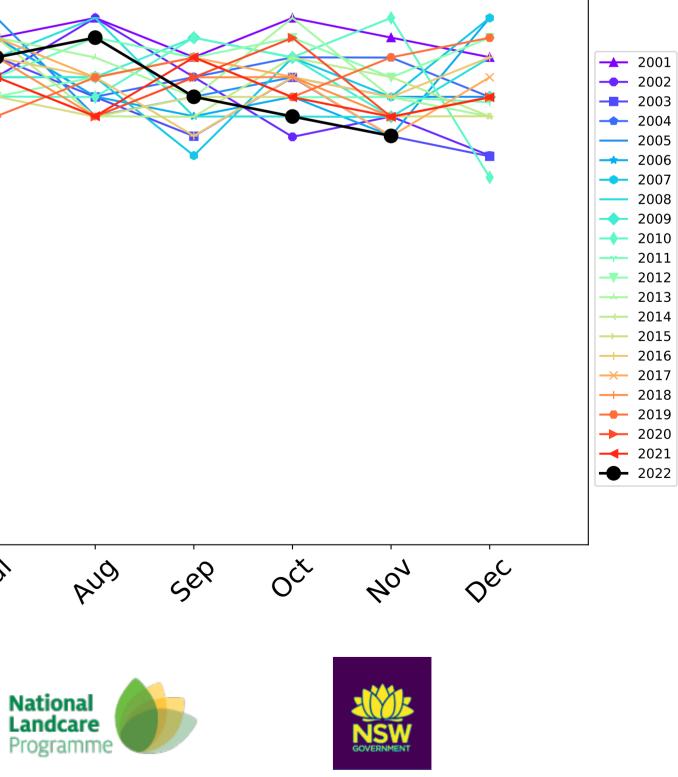


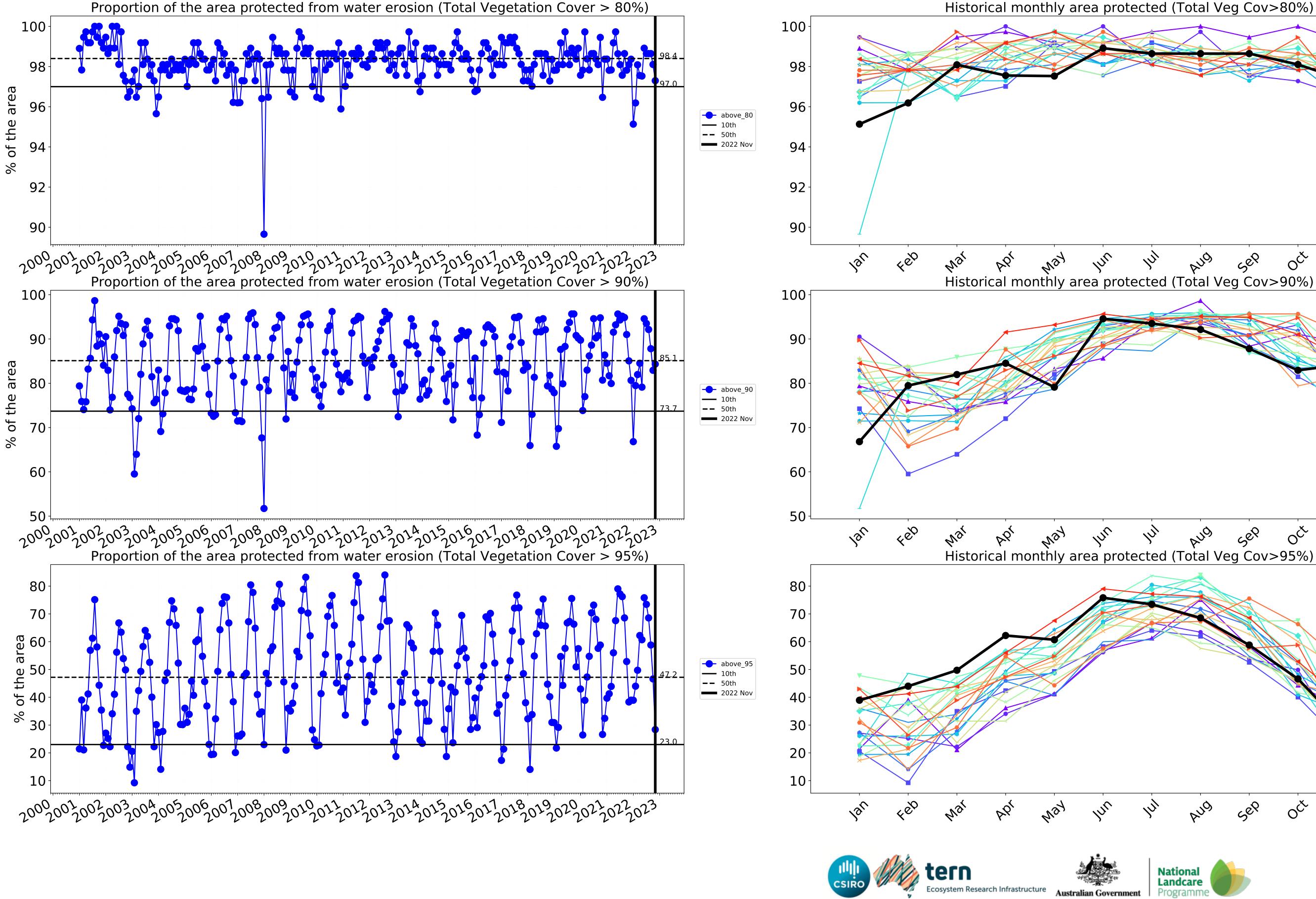
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100 99 98 ---- above_70 **——** 10th **——** 50th 97 **—** 2022 Nov 96 95· 94 93 4eb Jan In way Mai Þ6, 1/2/ month tern Ecosystem Research Infrastructure Australian Government

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

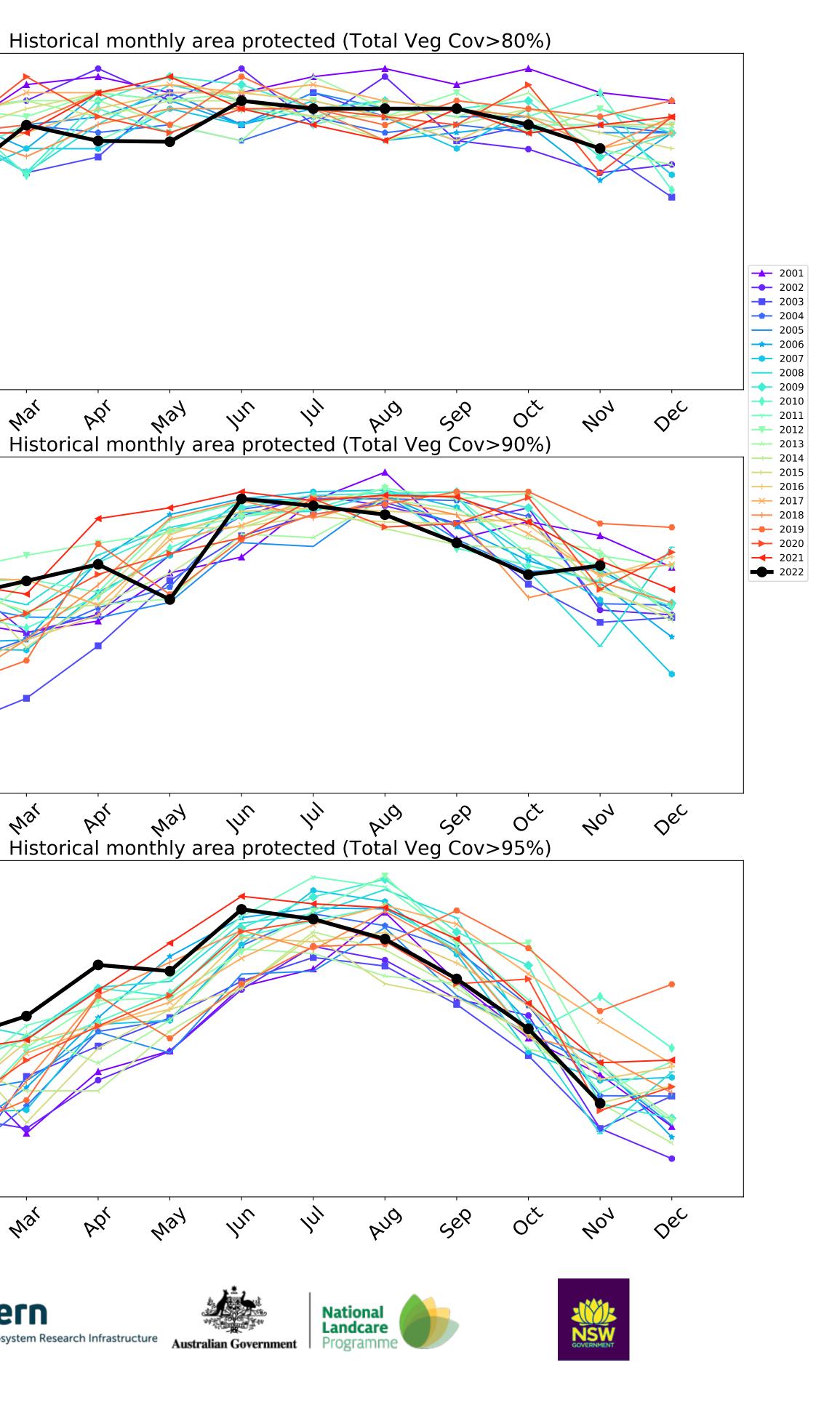
Water erosion historical monthly area protected (Total Veg Cov>70%)





Australian Government

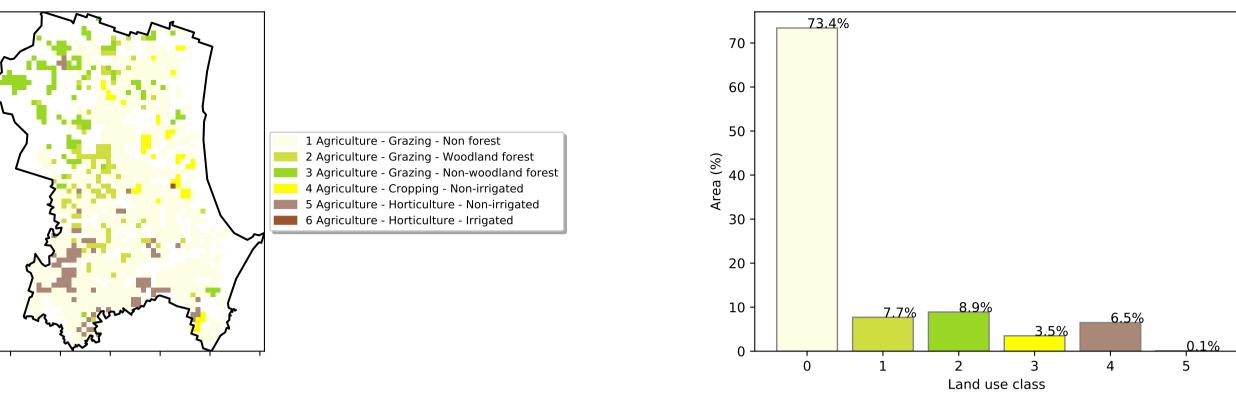
1**6**



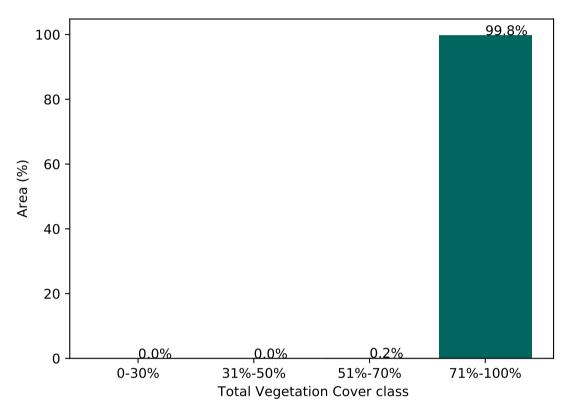
Agriculture

Land use and forest cover

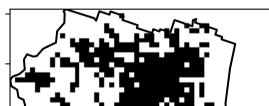
Proportion of each land class in area



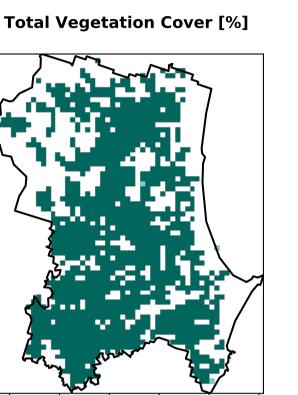
Proportion of vegetation cover class in area



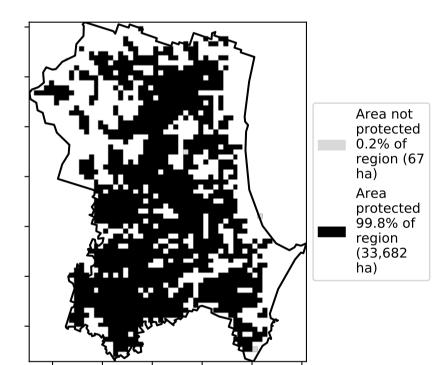
% Area protected from wind erosion (>50%)

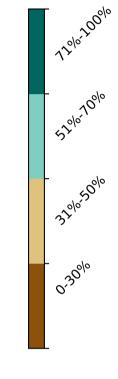


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

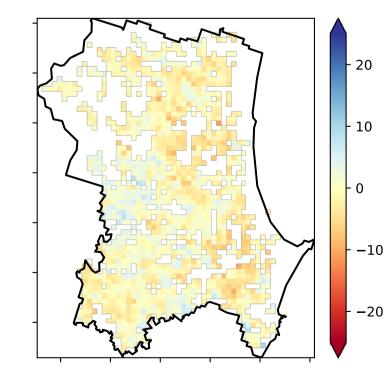


% Area protected from water erosion (>70%)

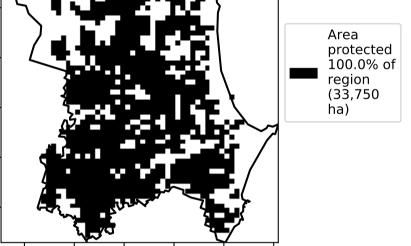




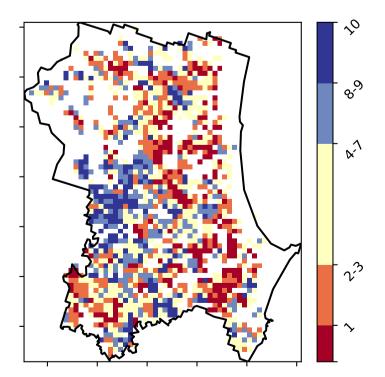
Total Vegetation Cover Anomaly [%]



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.

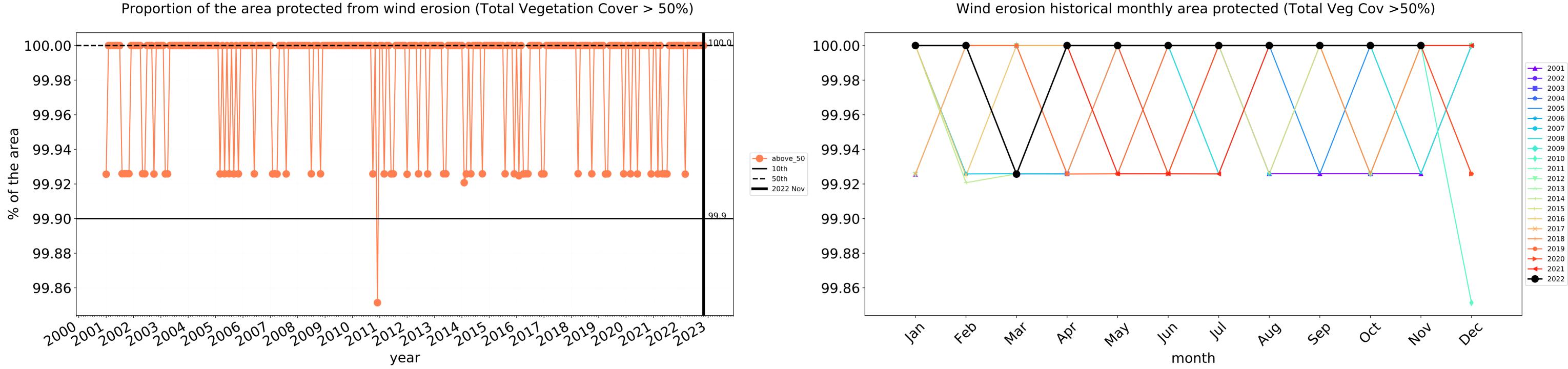


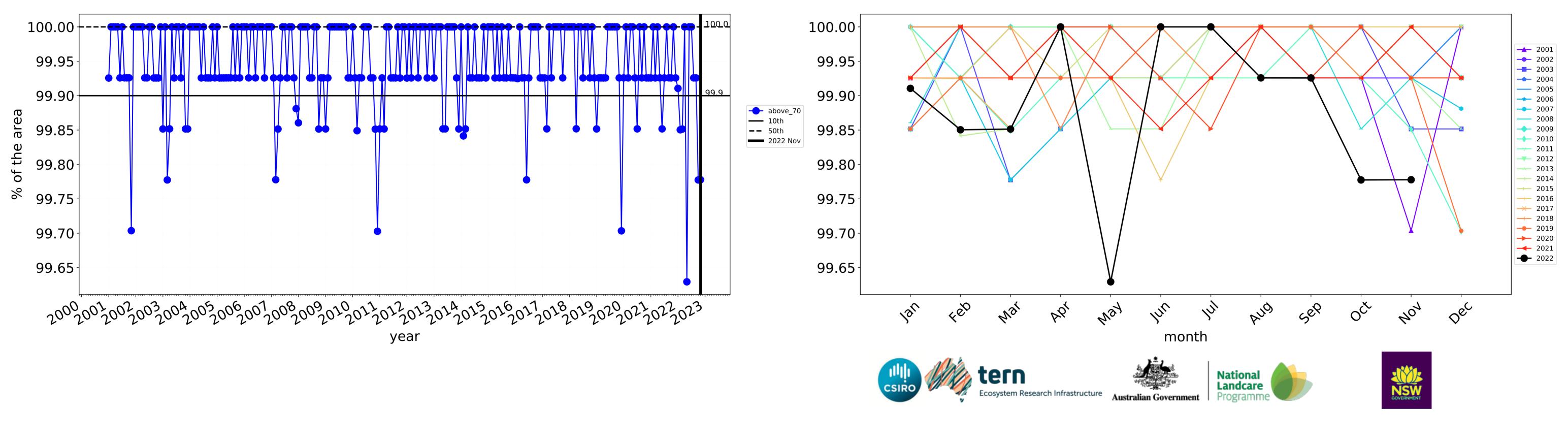
Total Vegetation Cover Decile [%]



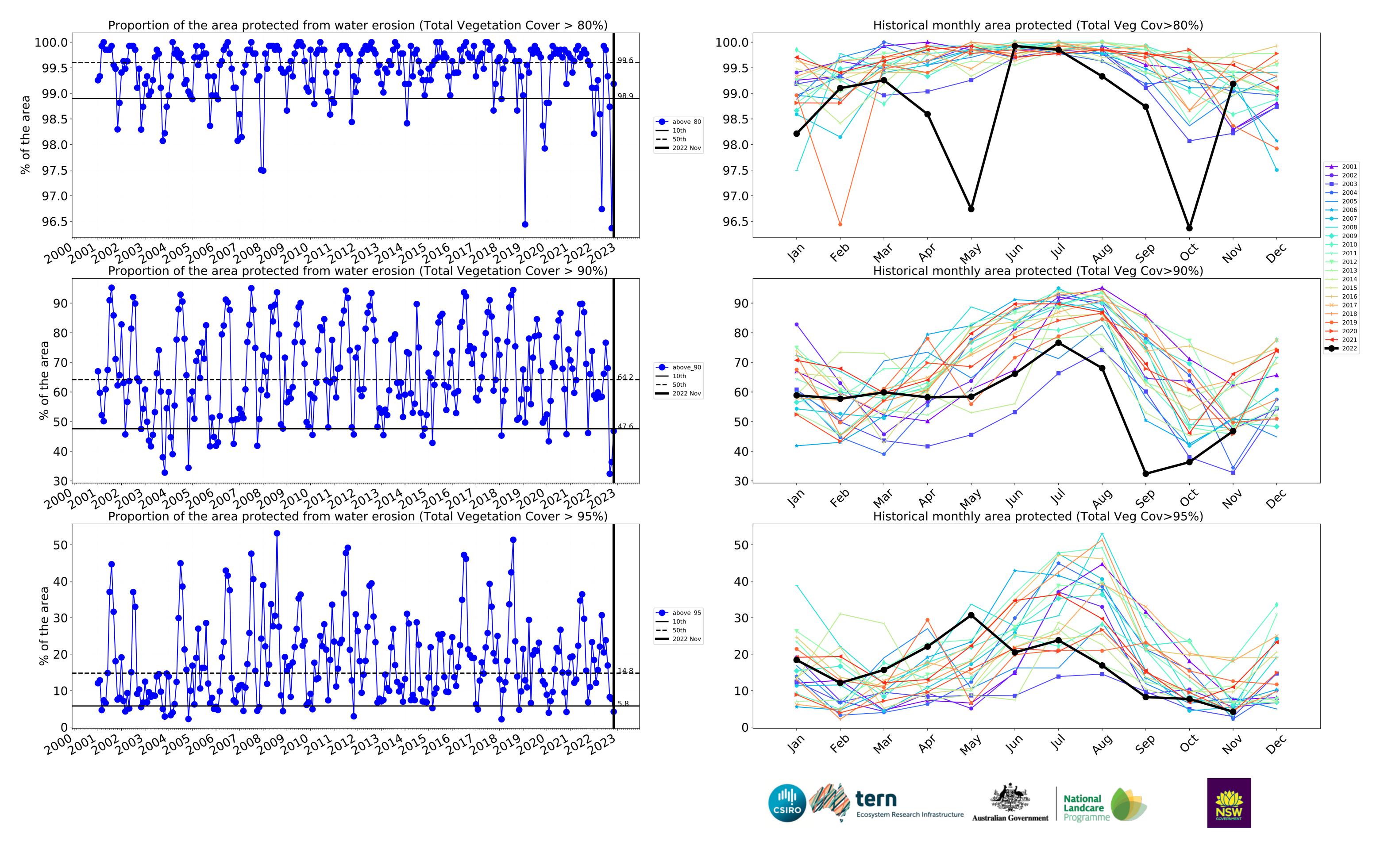


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





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



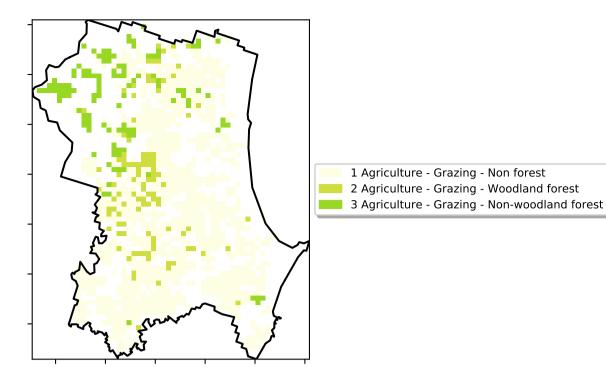
Grazing

0

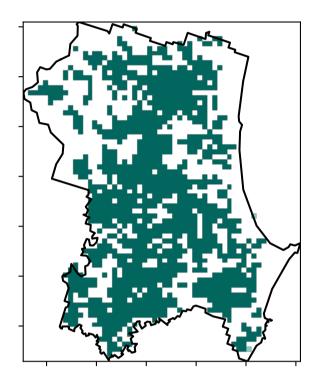
-0.5

0.0

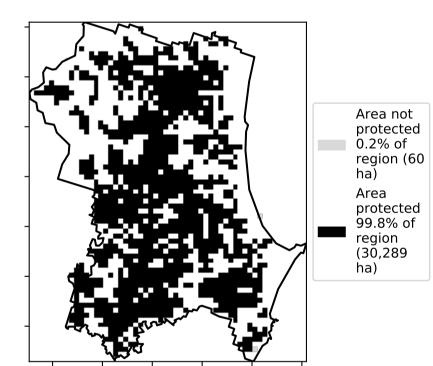
Land use and forest cover

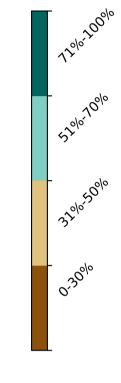


Total Vegetation Cover [%]

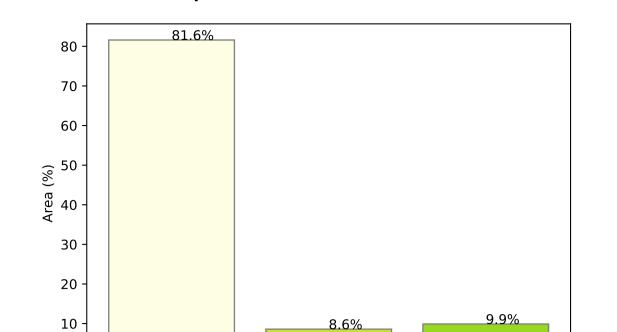


% Area protected from water erosion (>70%)





1 Agriculture - Grazing - Non forest



Proportion of each land class in area

Proportion of vegetation cover class in area

1.0

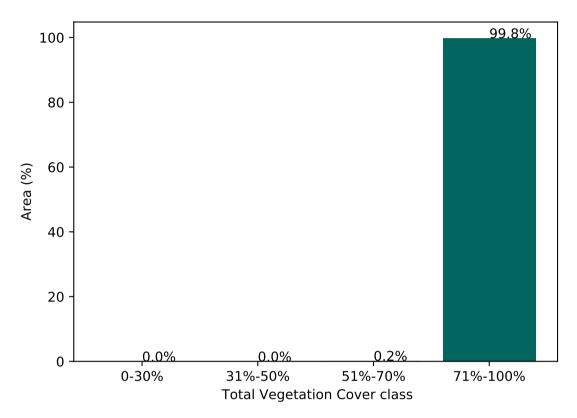
Land use class

1.5

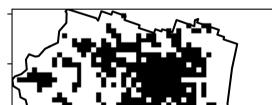
2.0

2.5

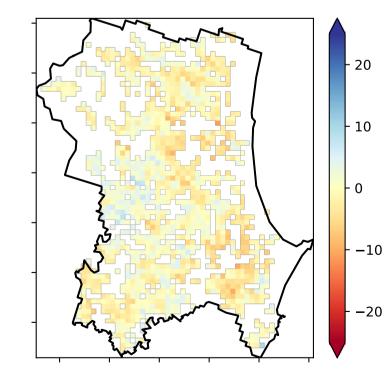
0.5



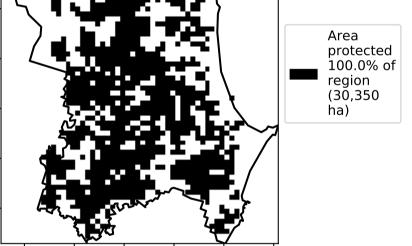
% Area protected from wind erosion (>50%)



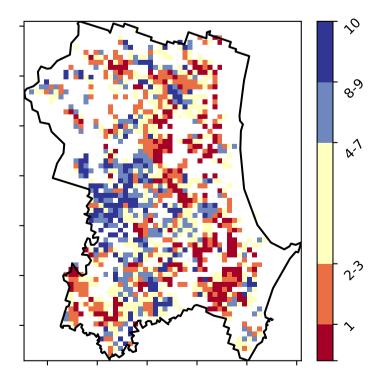
Total Vegetation Cover Anomaly [%]



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.

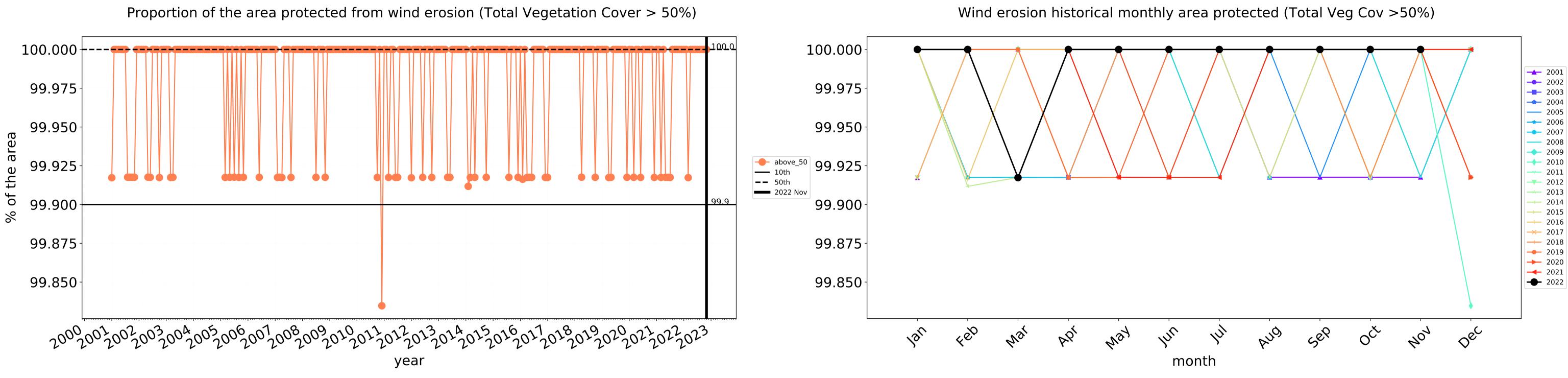
Catchment Scale Land Use and Forests of Australia (2018)

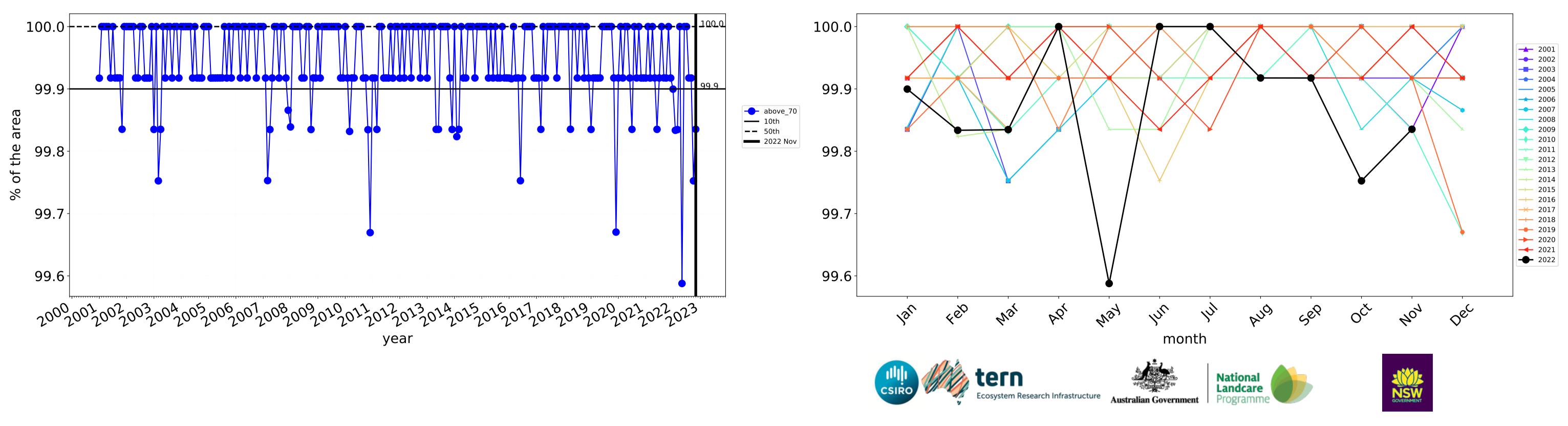
Catchment Scale Land

Derived from

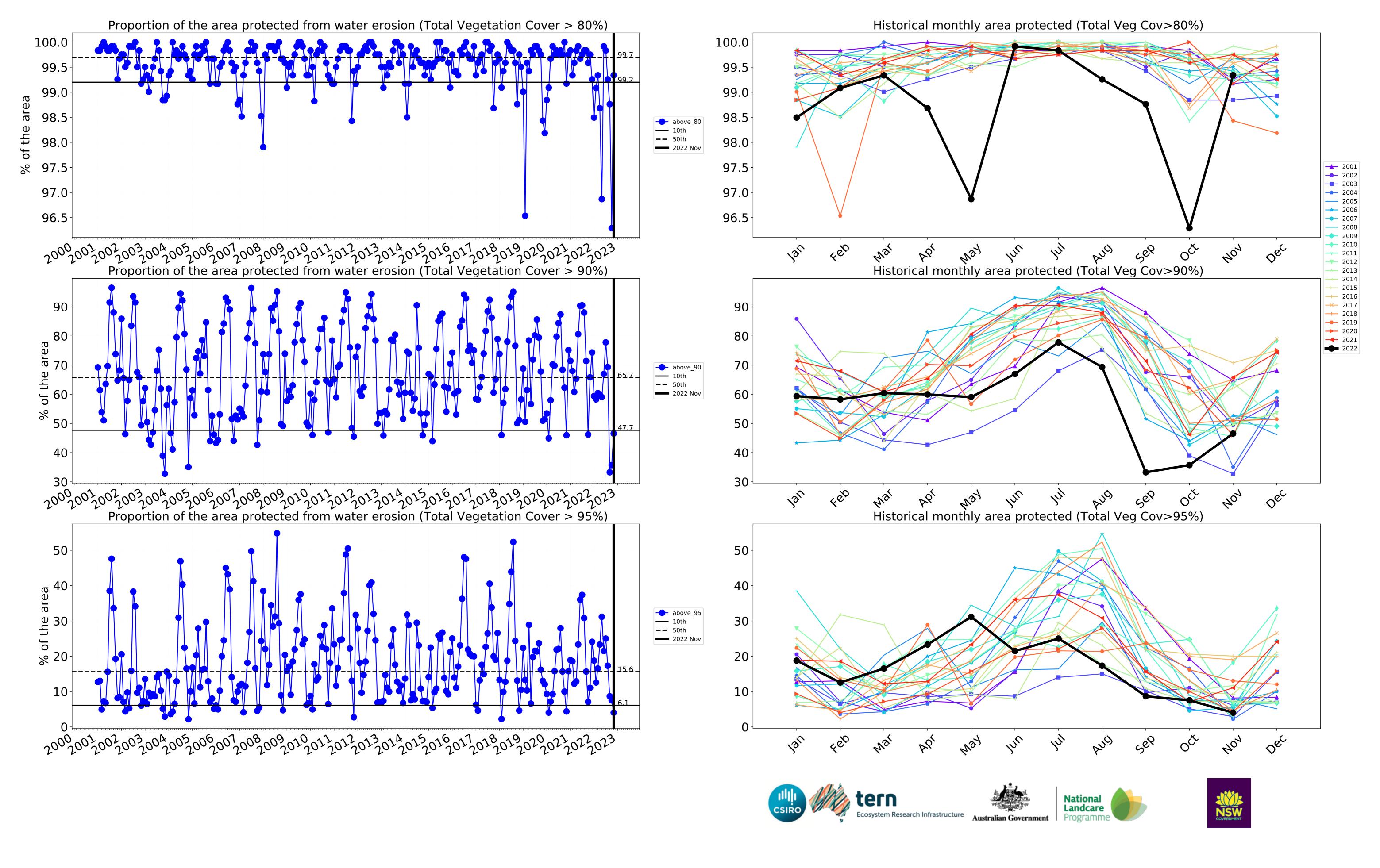
Use of Australia (2018) and Forests of Australia (2018)

2**0**



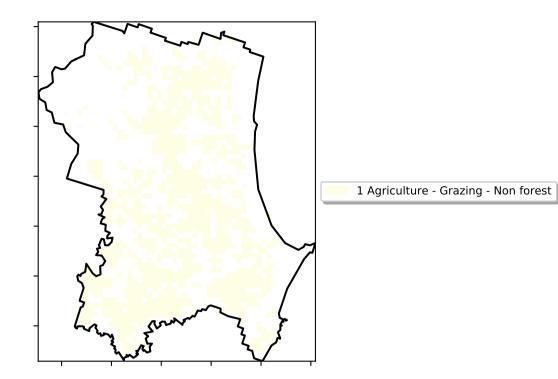


Water erosion historical monthly area protected (Total Veg Cov>70%)

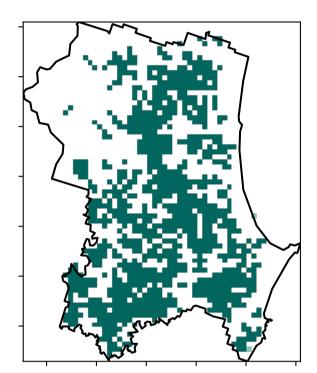


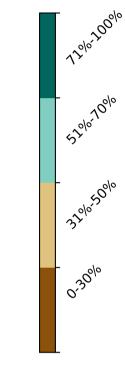
Grazing non forest

Land use and forest cover

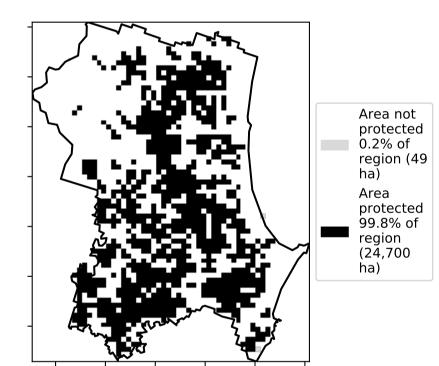


Total Vegetation Cover [%]

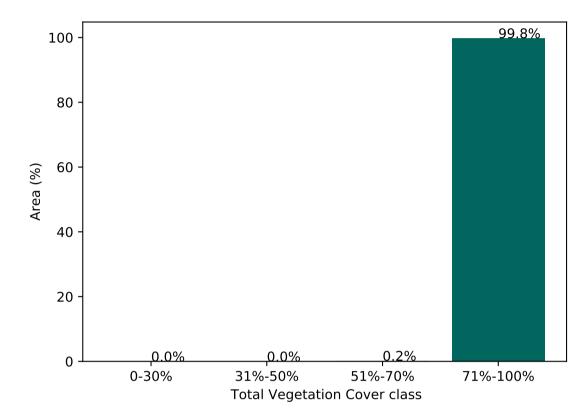




% Area protected from water erosion (>70%)





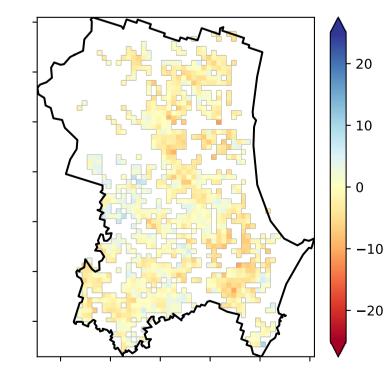


% Area protected from wind erosion (>50%)

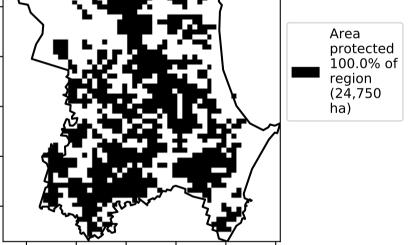




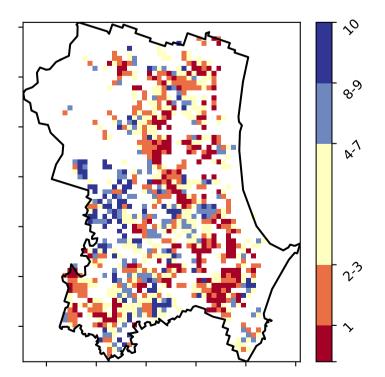
Total Vegetation Cover Anomaly [%]



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

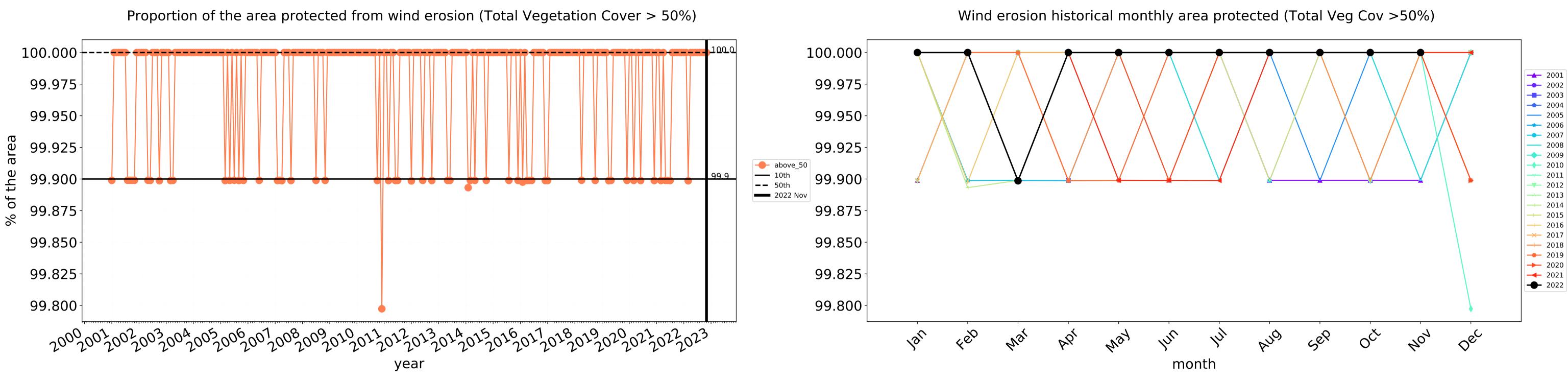


Total Vegetation Cover Decile [%]

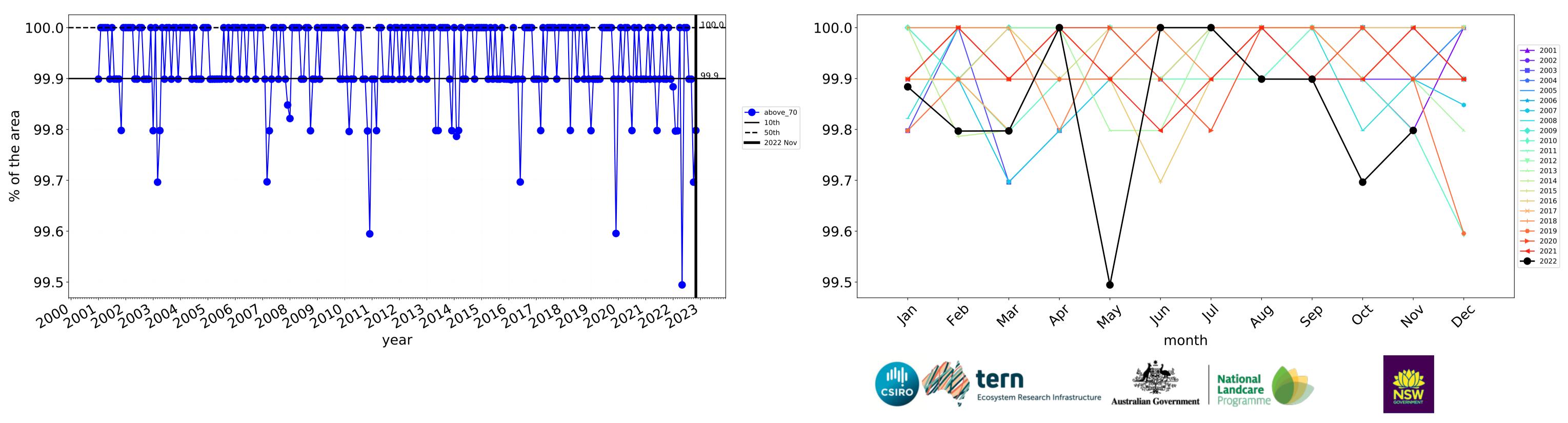




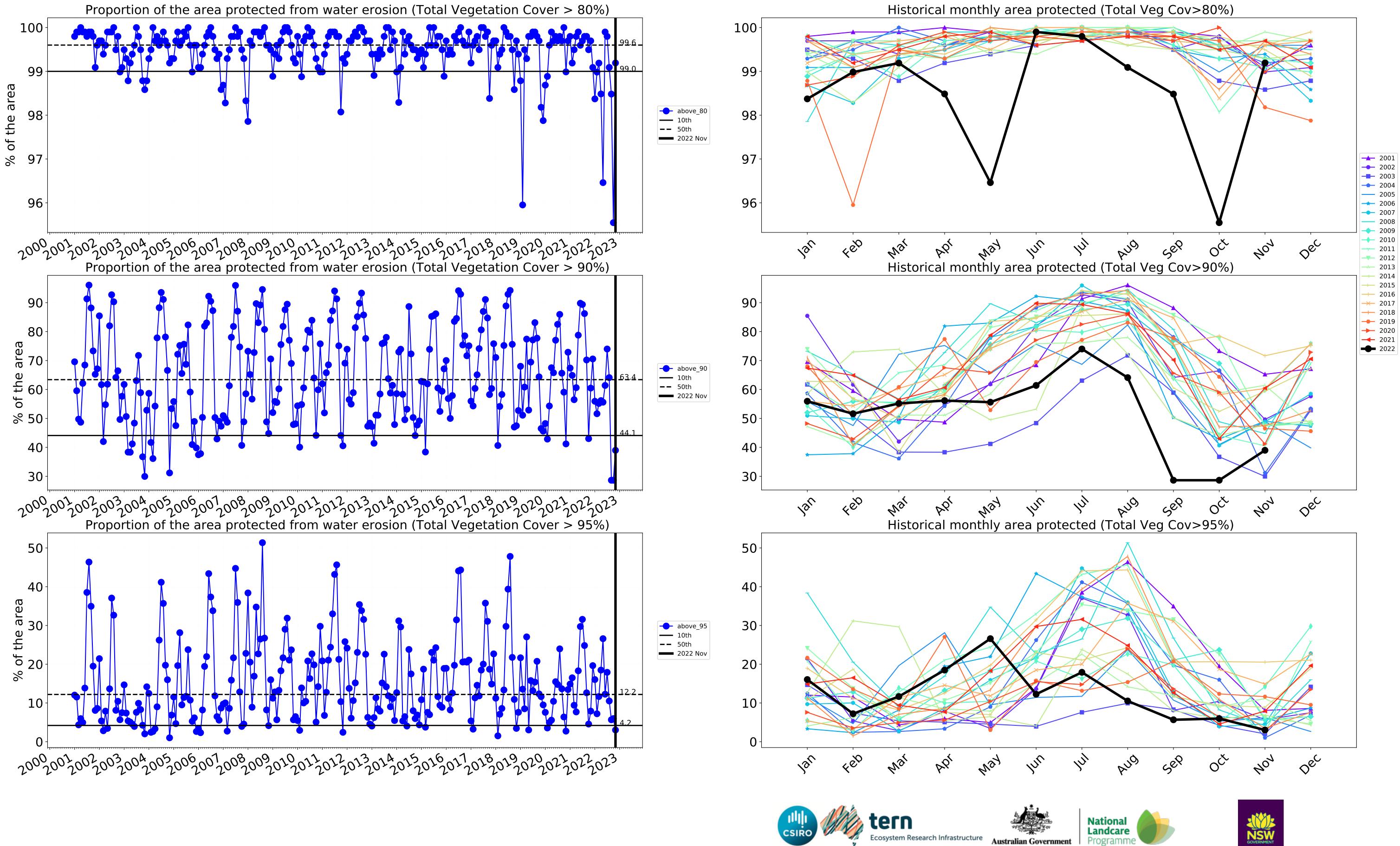
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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

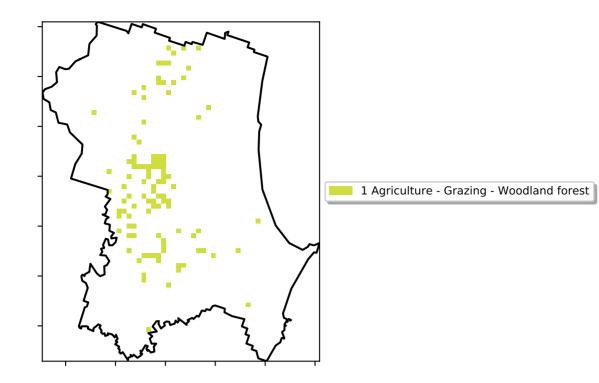




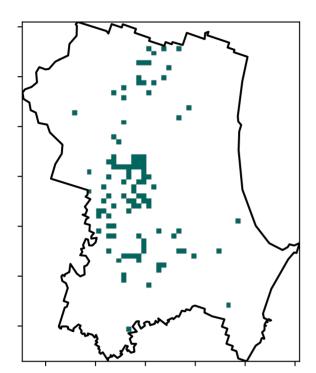


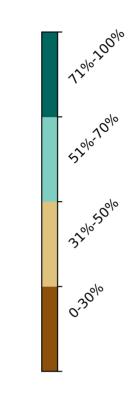
Grazing Woodland forest

Land use and forest cover

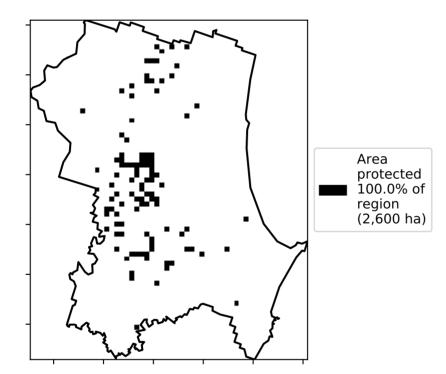


Total Vegetation Cover [%]

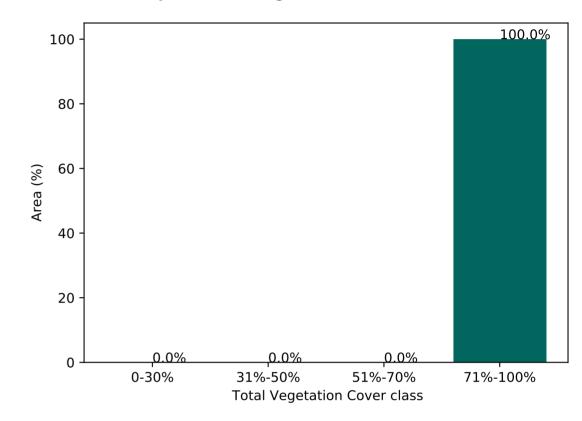




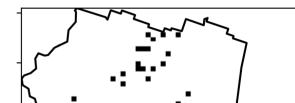
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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

mean of that

pixel. The mean

using baseline

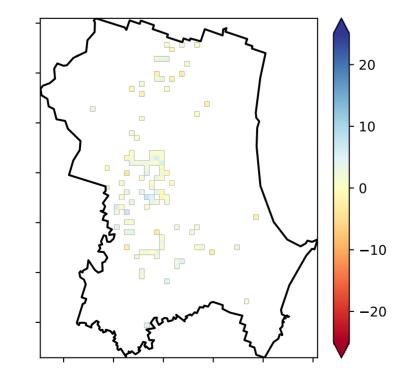
from 2001 to 2019.

is only for the month of the map

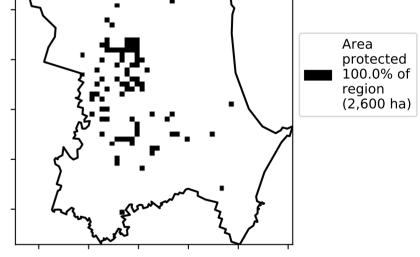
are about 20% lower than the

the mean. That

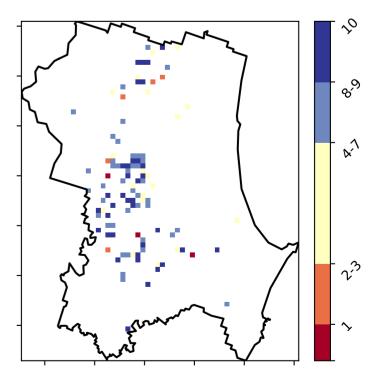
Total Vegetation Cover Anomaly [%]



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.



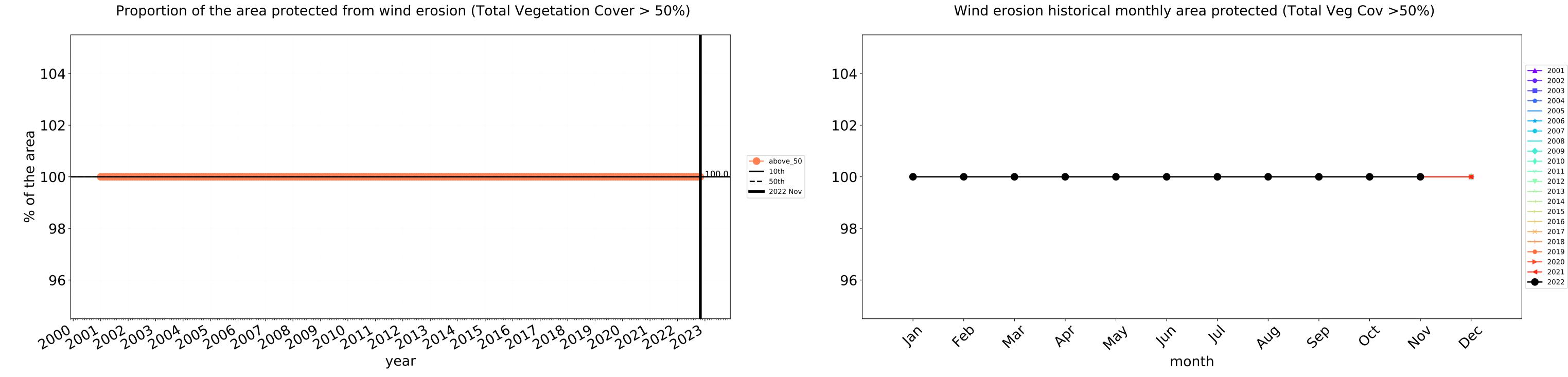
Total Vegetation Cover Decile [%]



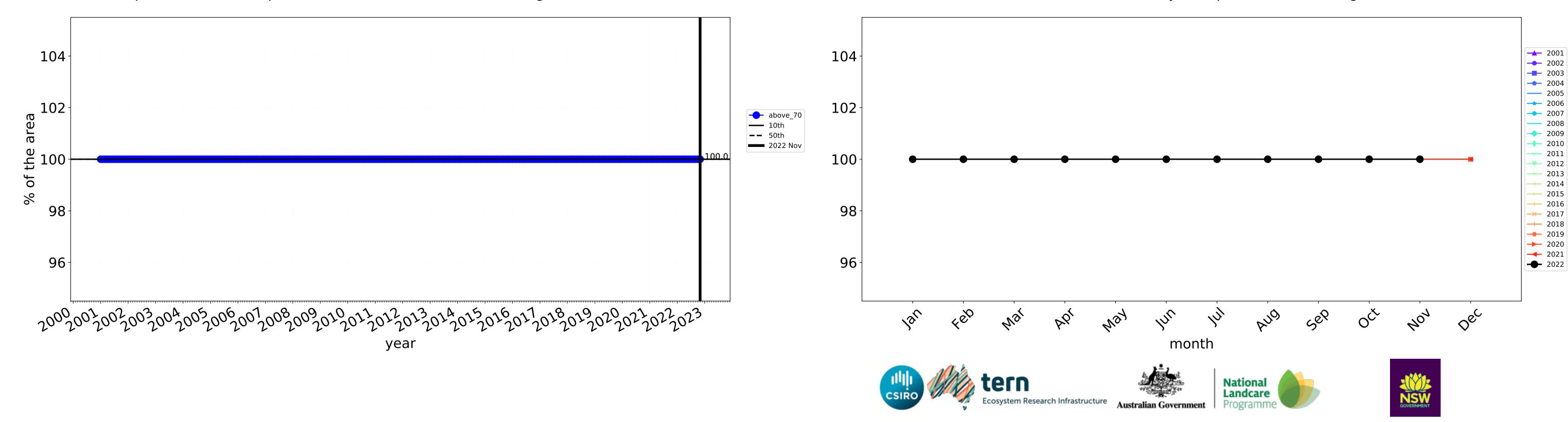


20

Grazing Woodland forest timeseries

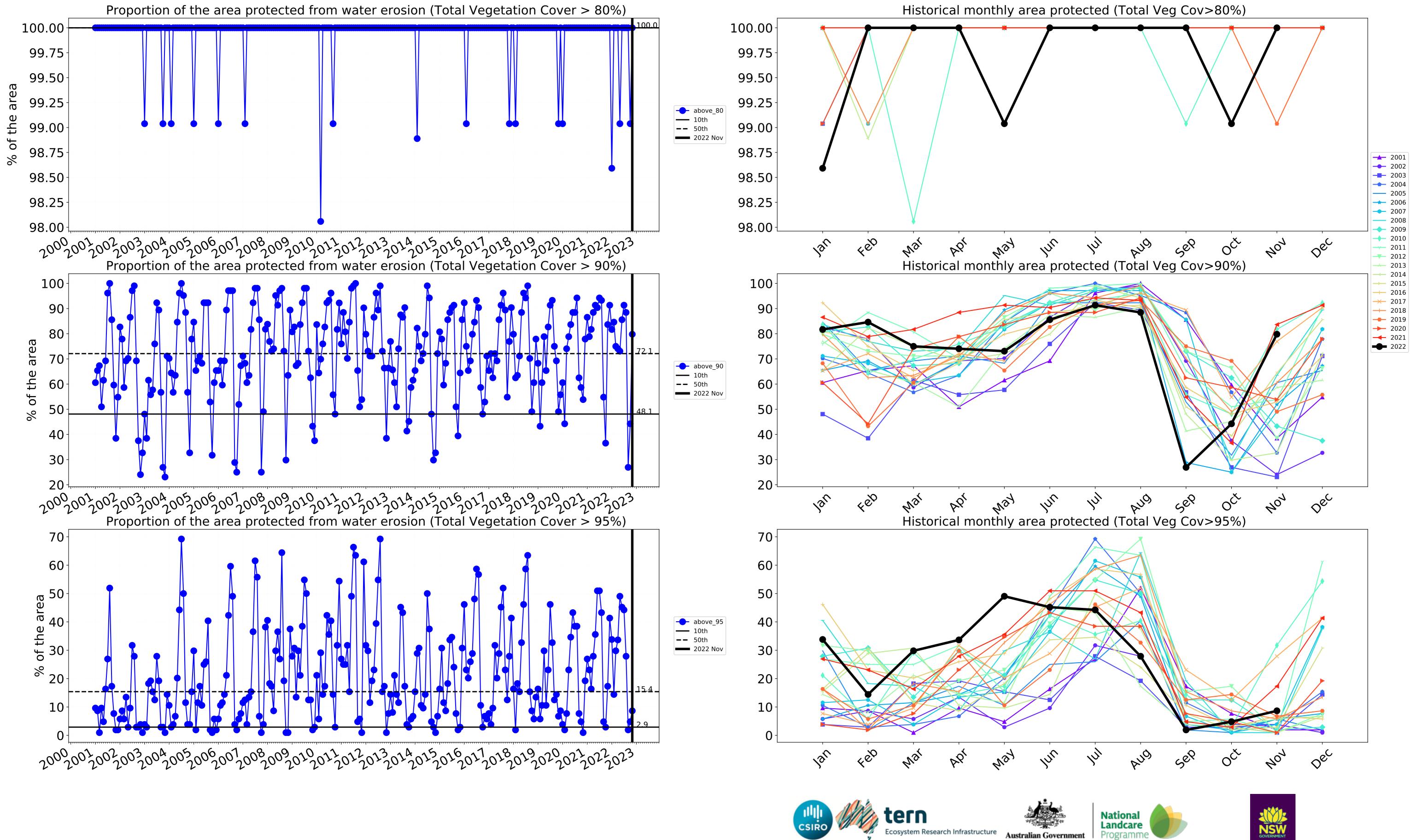


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



23

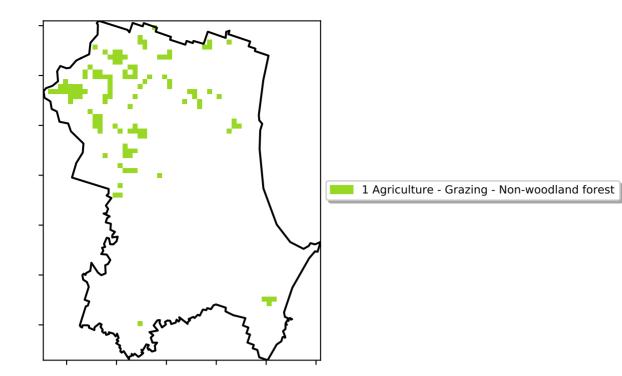
Water erosion historical monthly area protected (Total Veg Cov>70%)



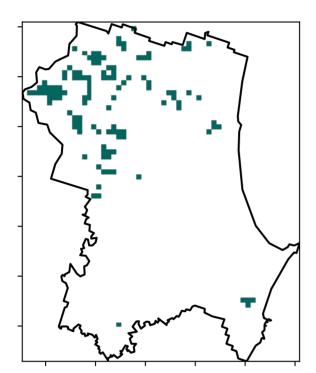
Australian Government

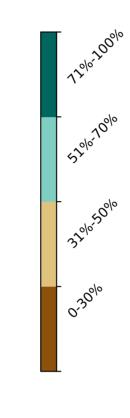
Grazing - Forest (non woodland)

Land use and forest cover

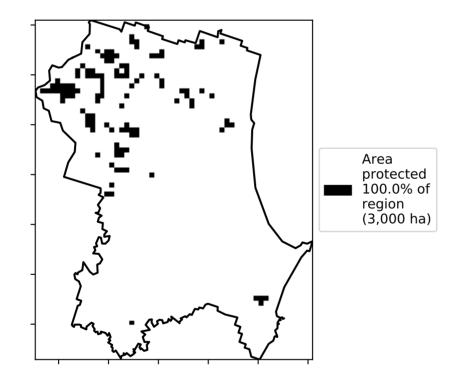


Total Vegetation Cover [%]

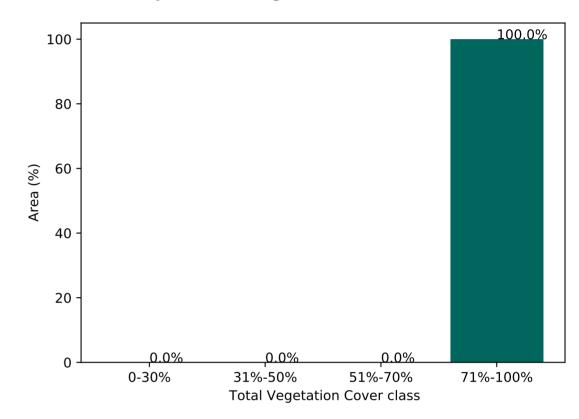




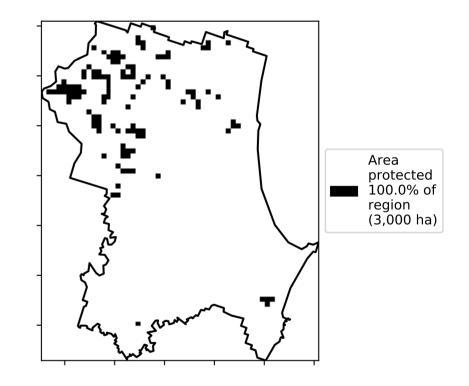
% Area protected from water erosion (>70%)





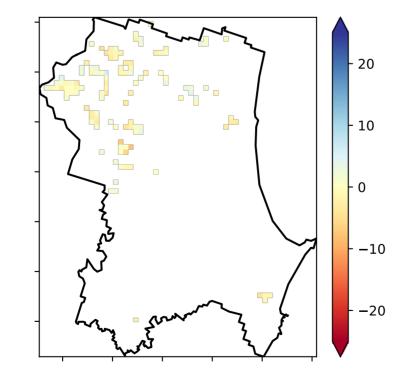


% Area protected from wind erosion (>50%)



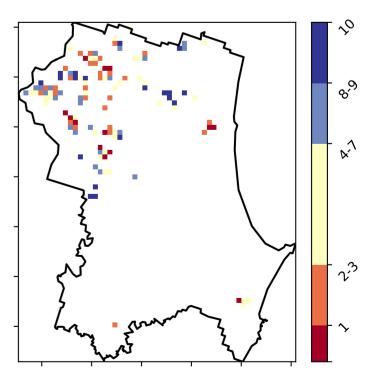
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]



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.

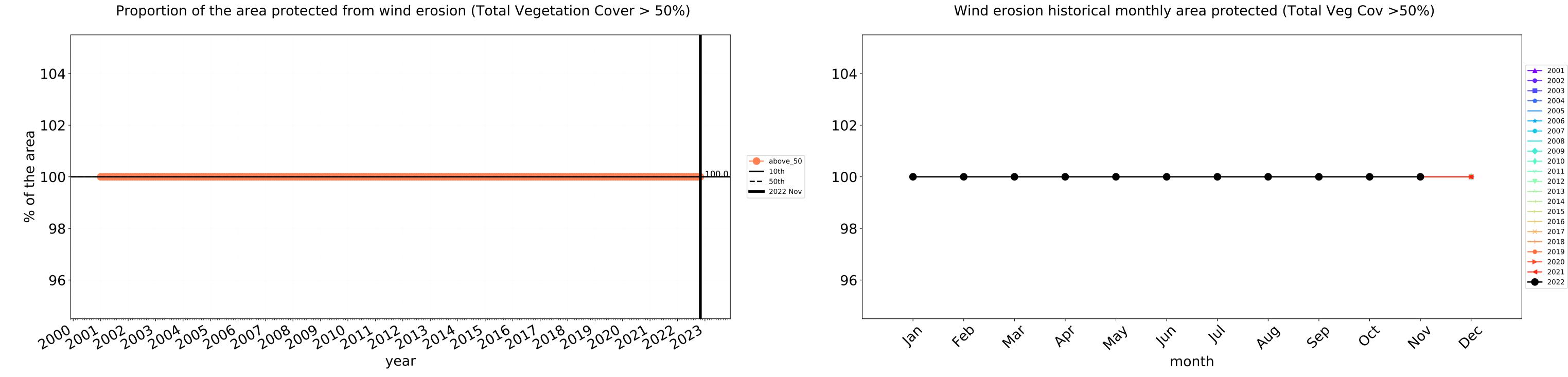
Total Vegetation Cover Decile [%]

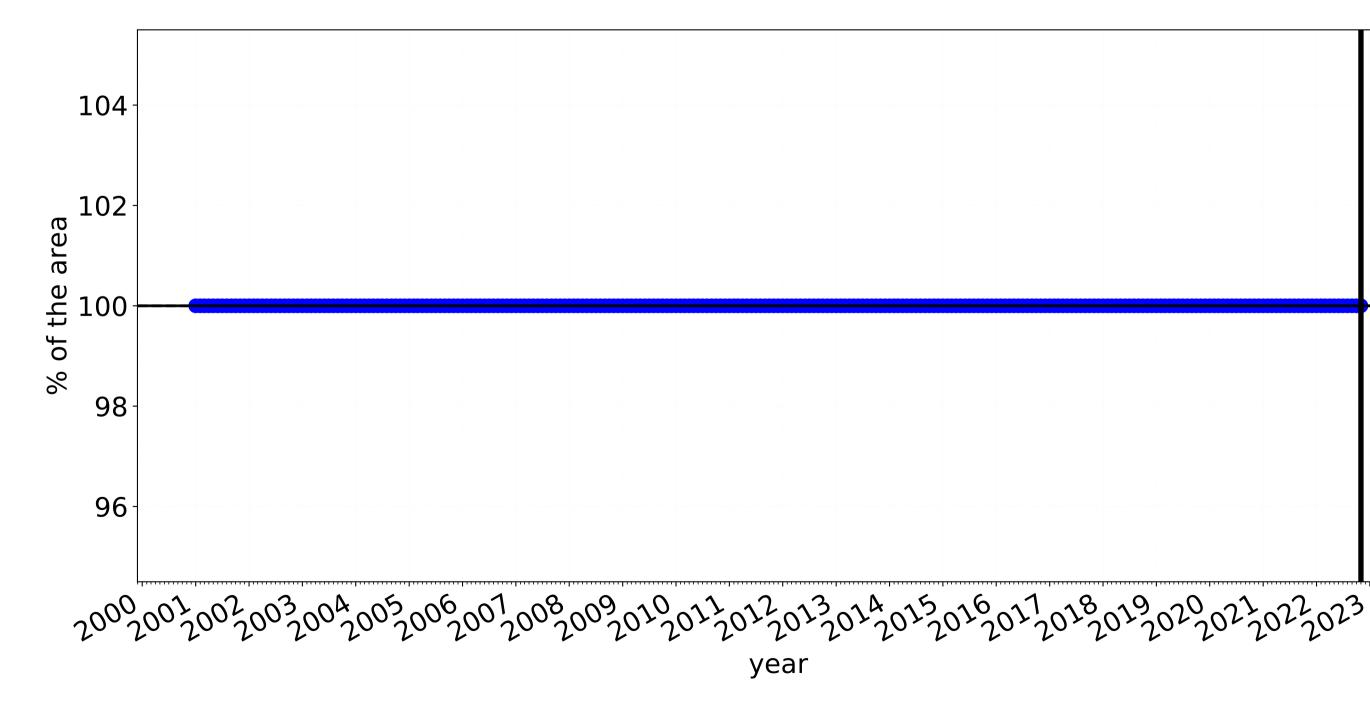




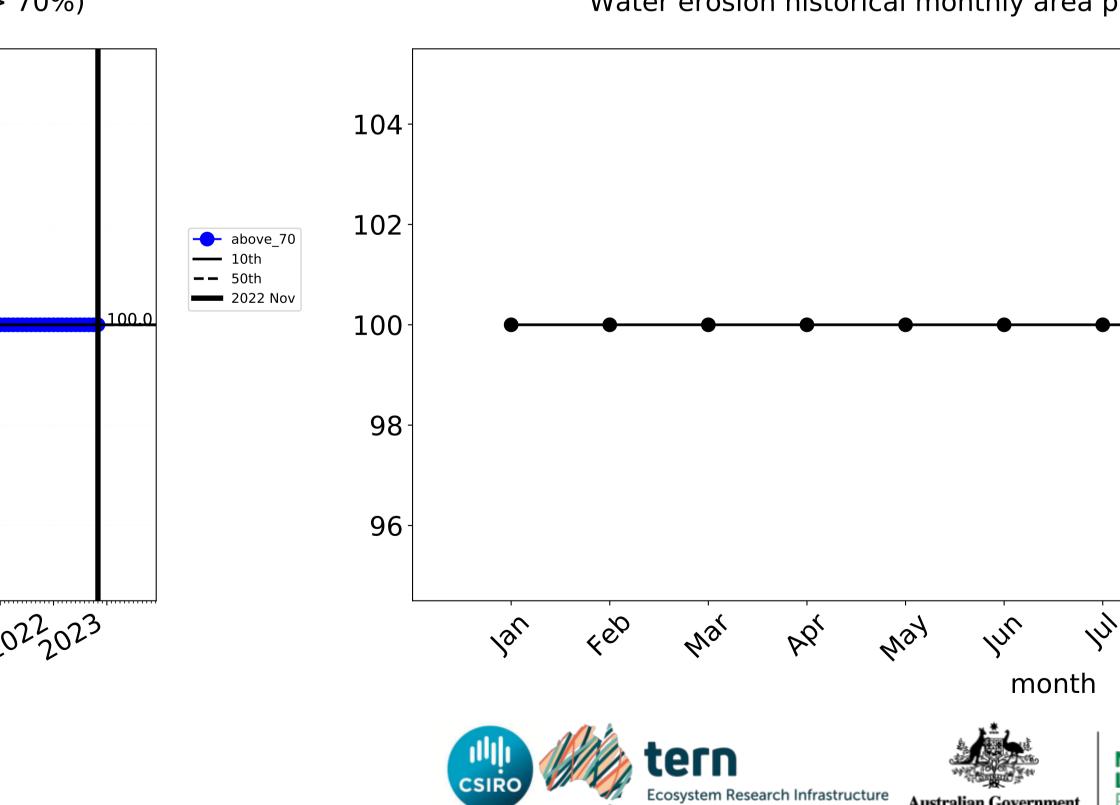
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.







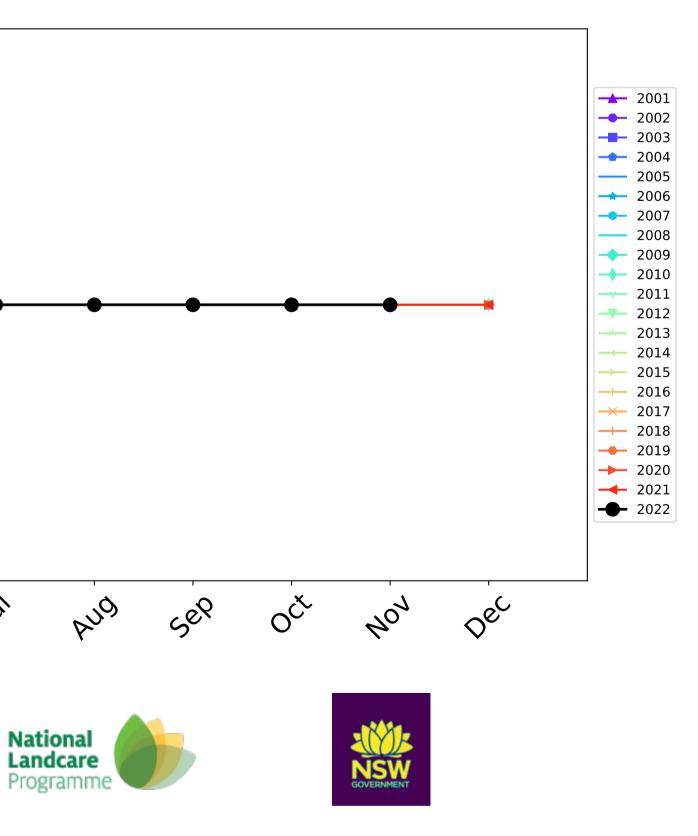
Grazing - Forest (non woodland) timeseries

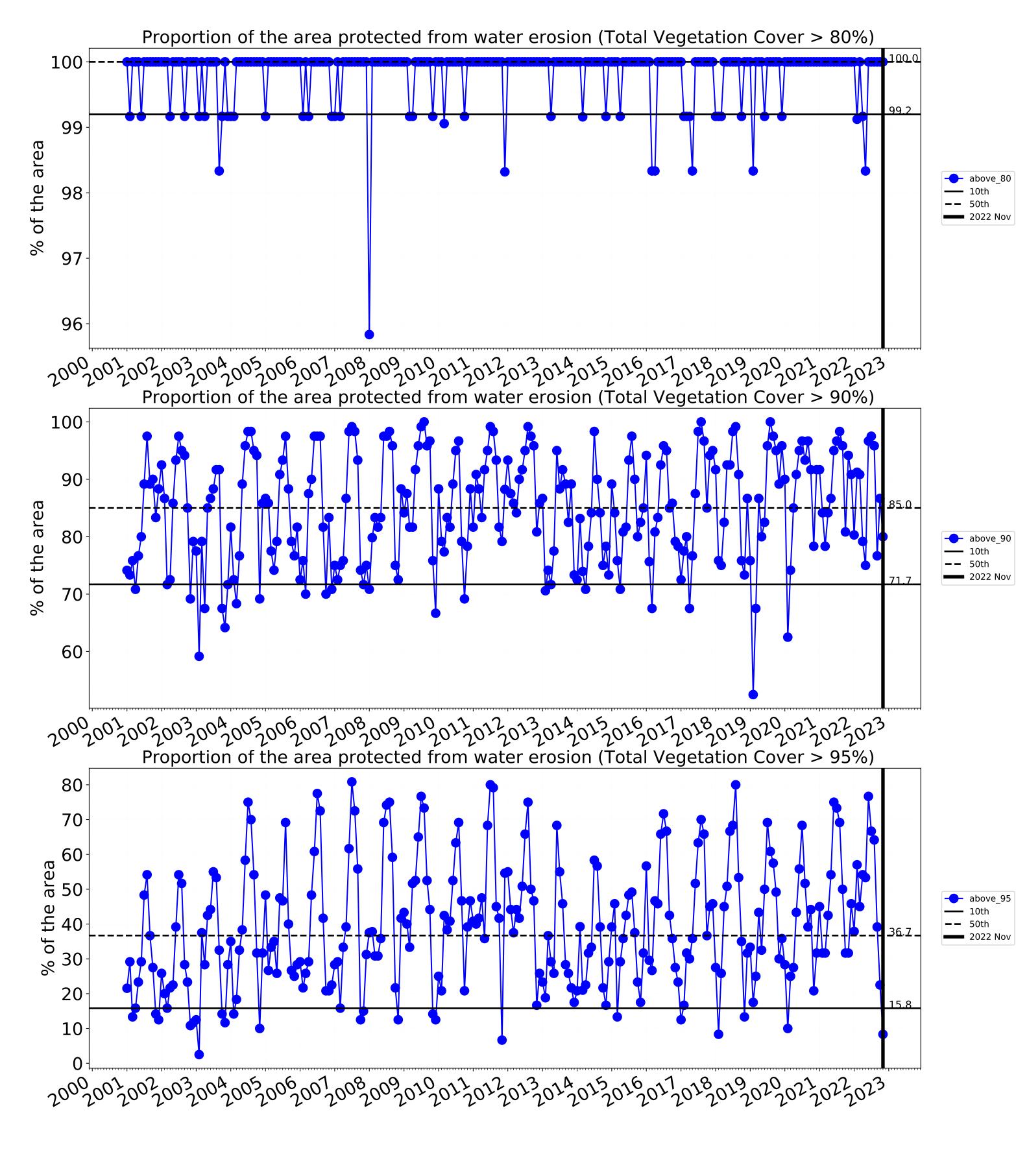


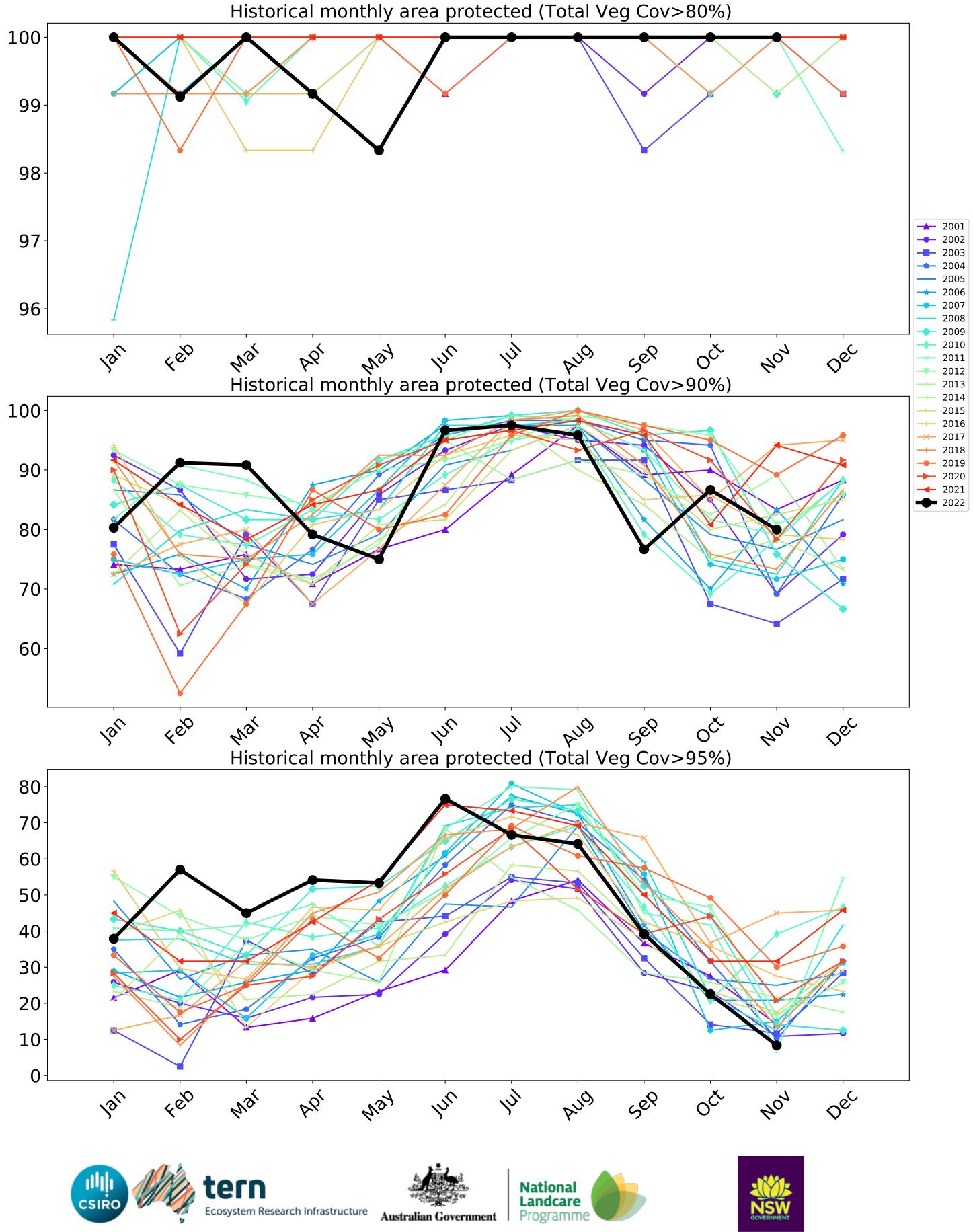
30

Australian Government

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



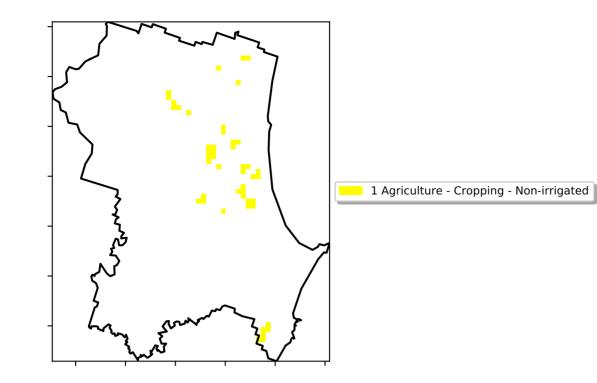




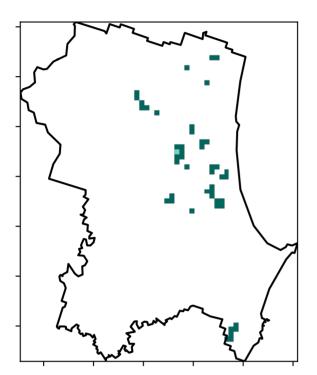


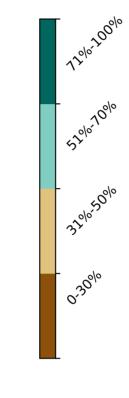
Cropping

Land use and forest cover

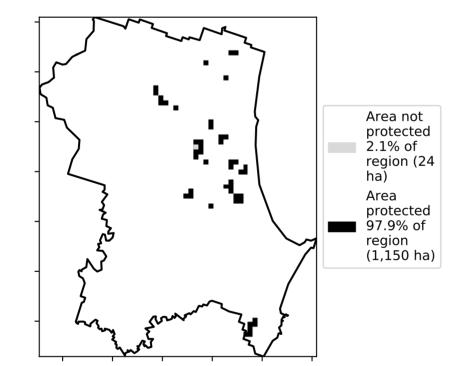


Total Vegetation Cover [%]

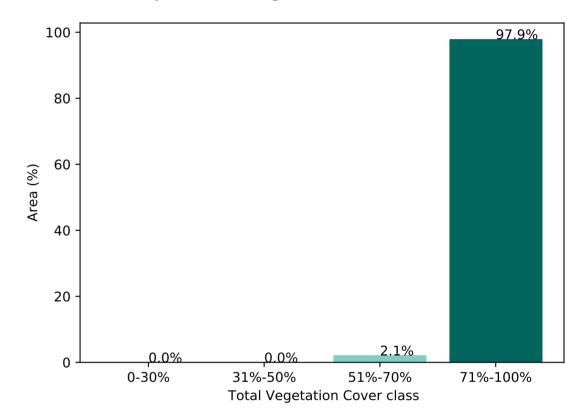




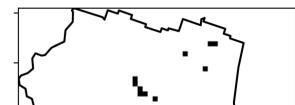
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



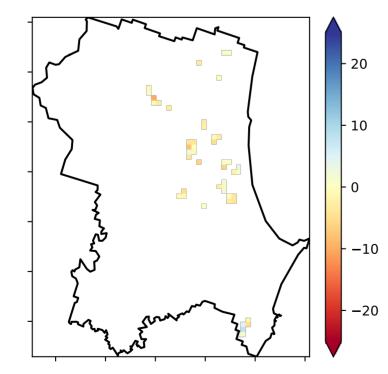
% Area protected from wind erosion (>50%)



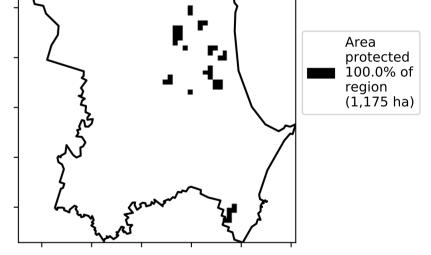


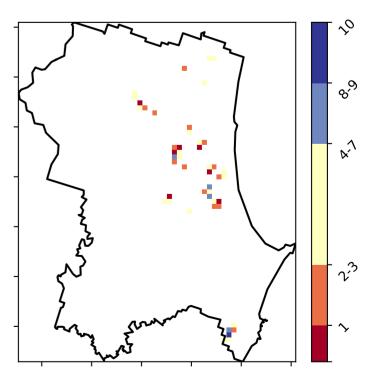
Total Vegetation Cover Anomaly [%]

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

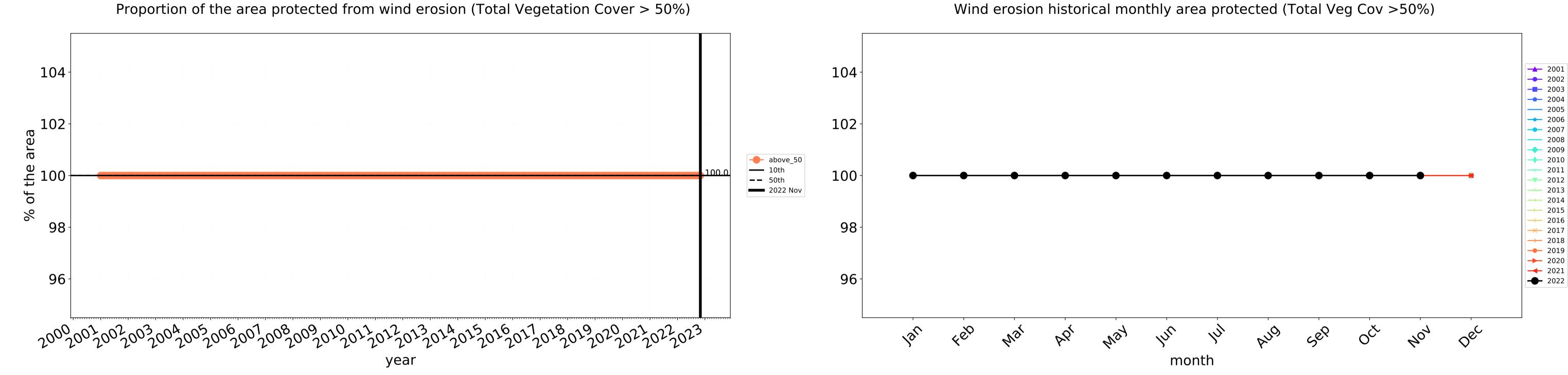


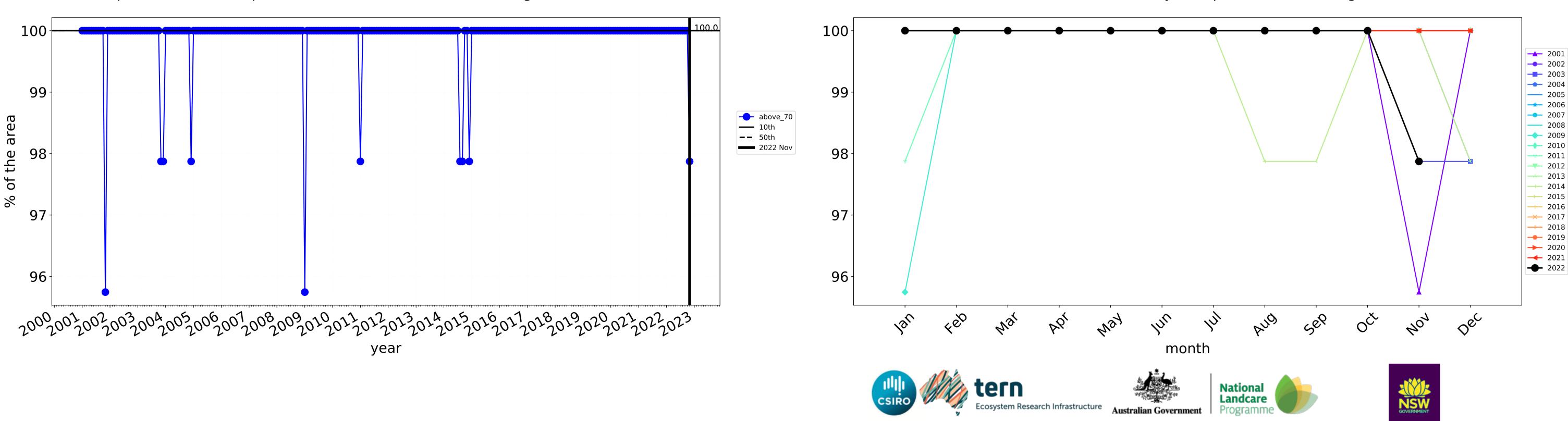
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







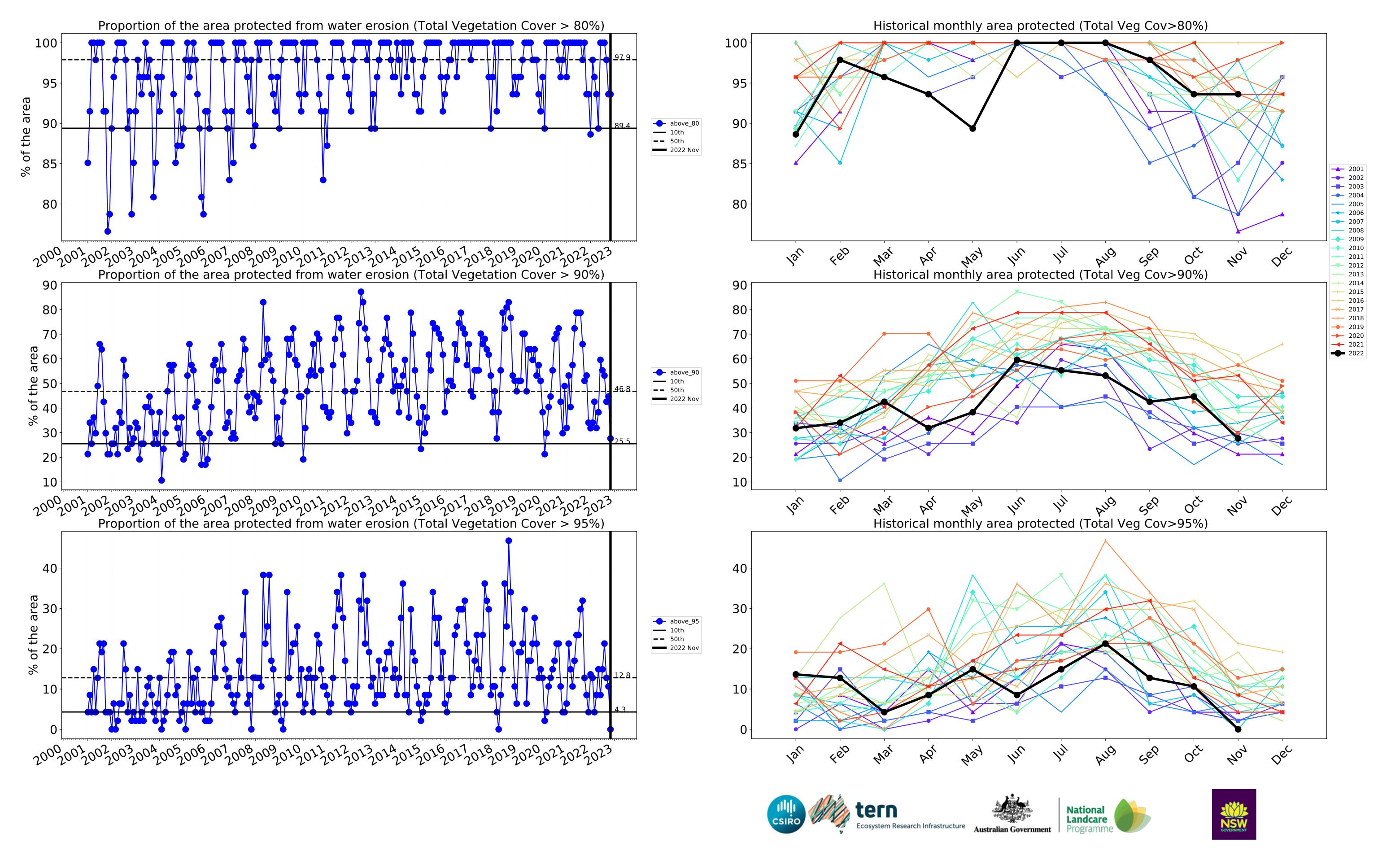




Cropping timeseries

33

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



Horticulture

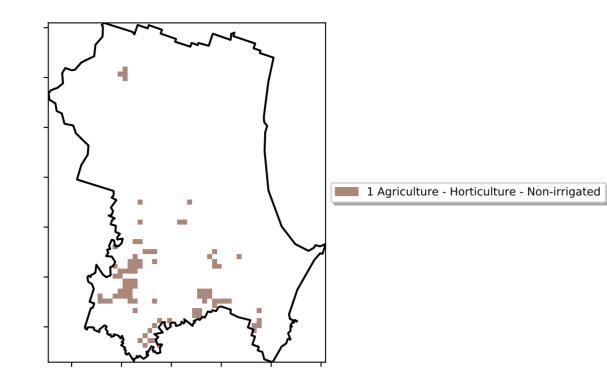
12º1010010

· 52% 70%

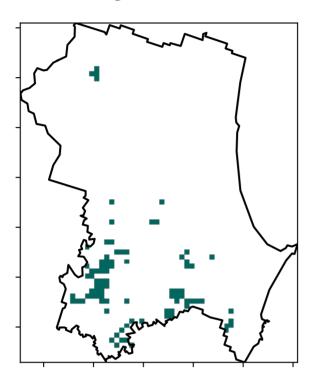
32%50%

0.30%

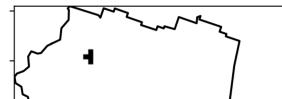
Land use and forest cover



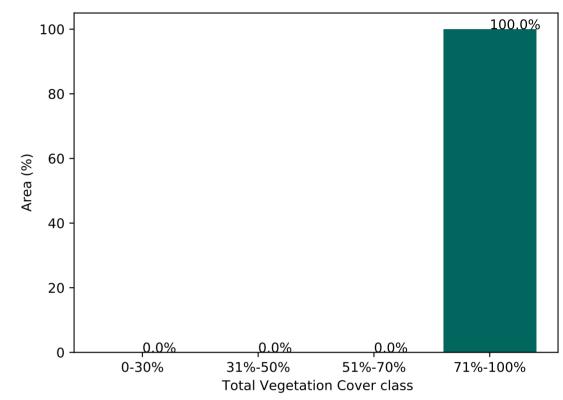
Total Vegetation Cover [%]



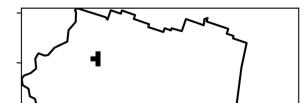
% Area protected from water erosion (>70%)



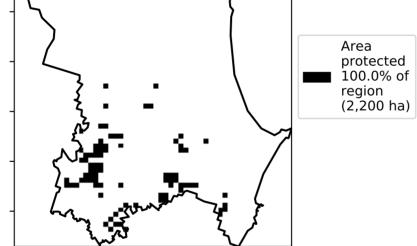




% Area protected from wind erosion (>50%)

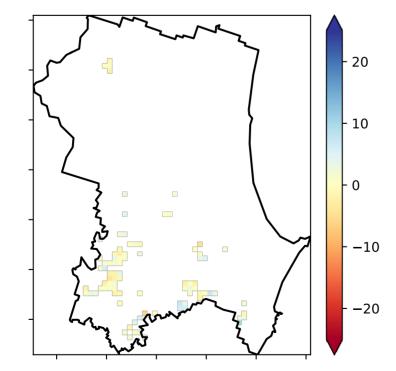


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

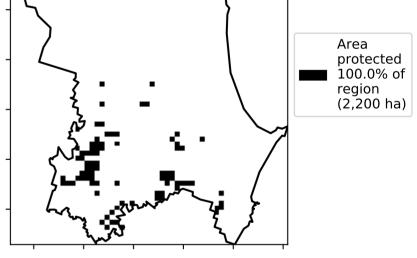


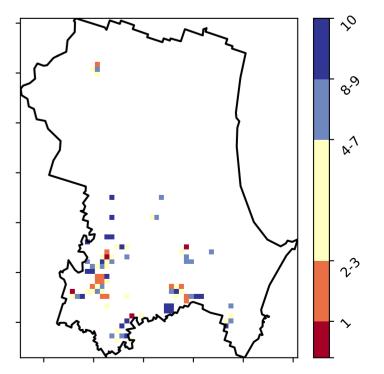
Total Vegetation Cover Anomaly [%]

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

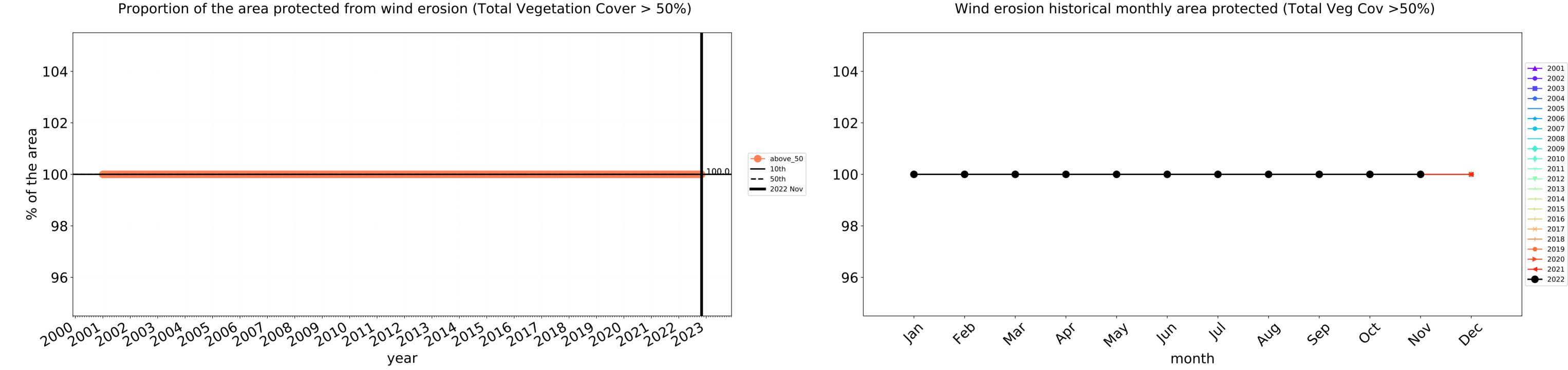


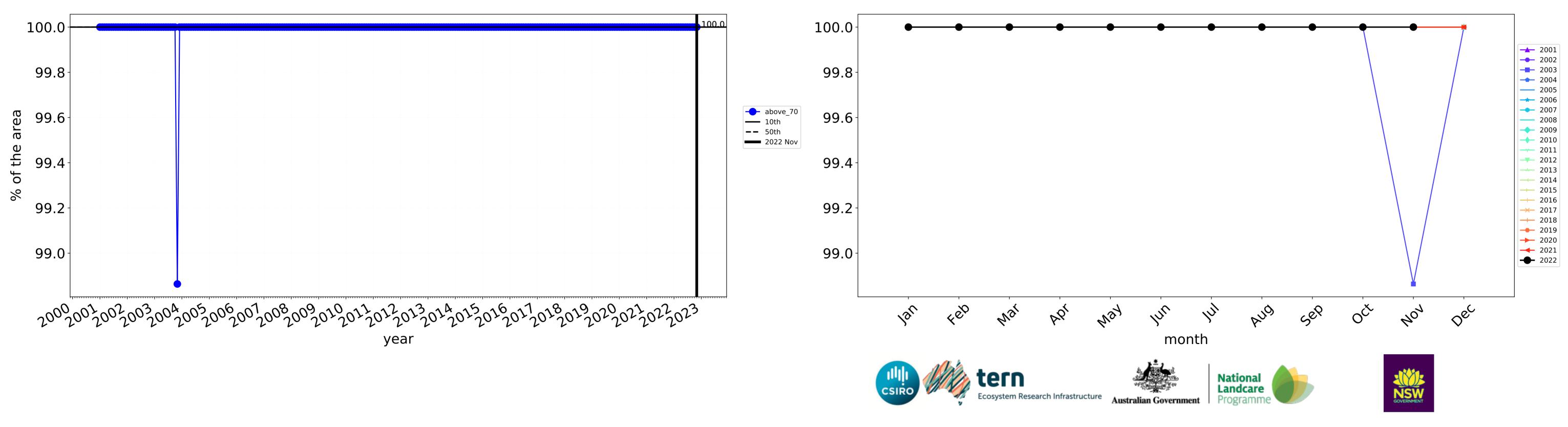
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





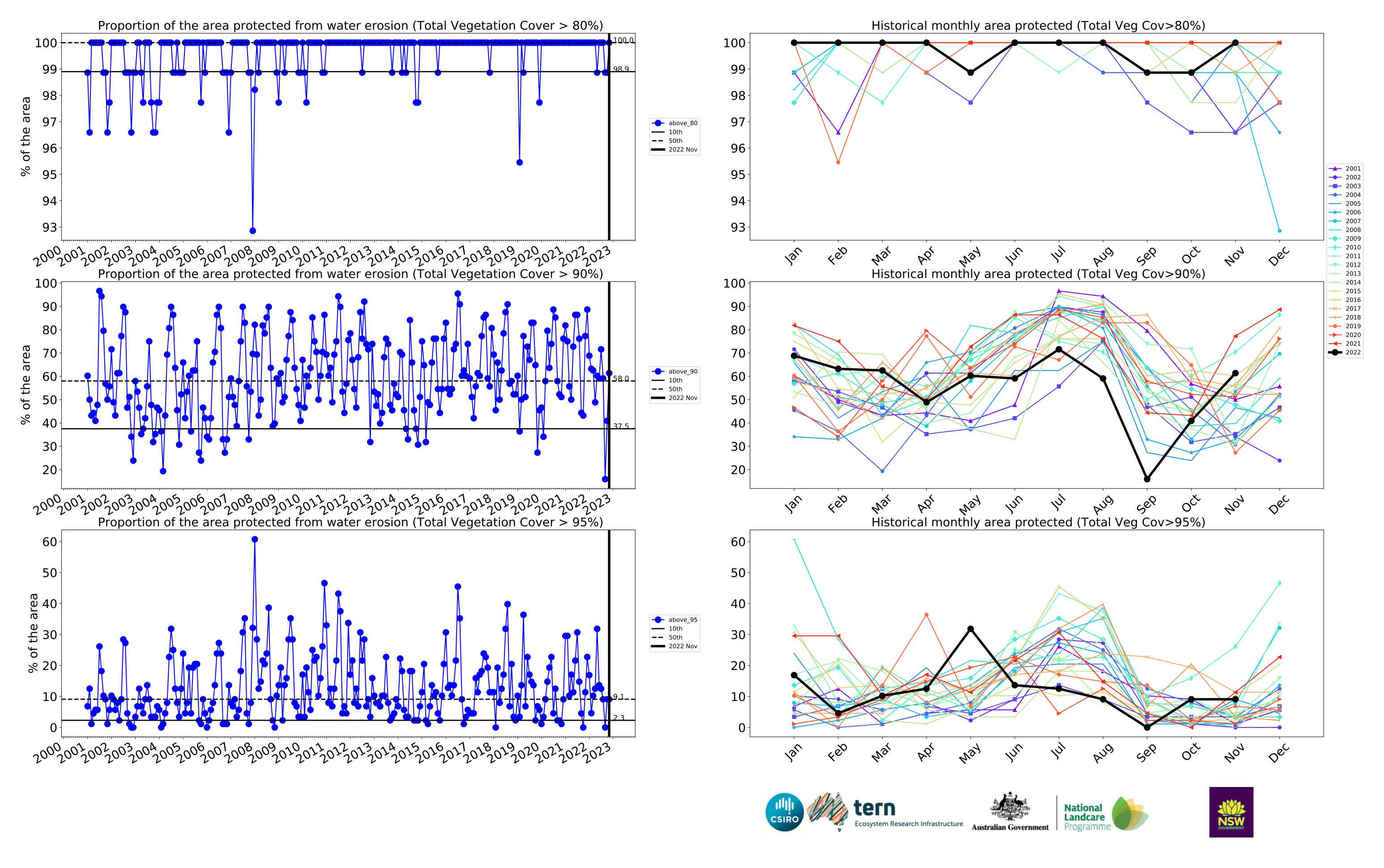






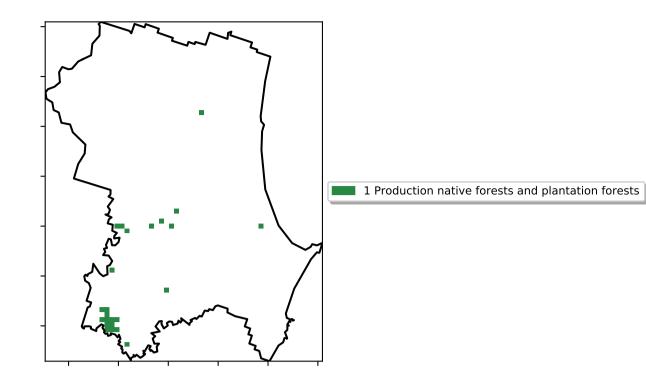
Horticulture timeseries

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

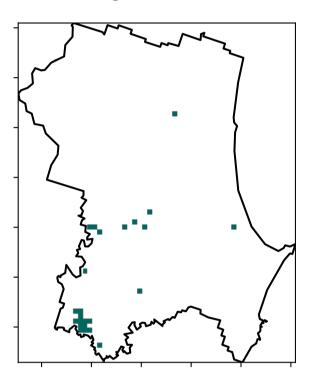


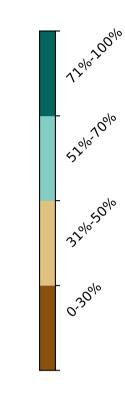
Production native forests and plantation forests

Land use and forest cover

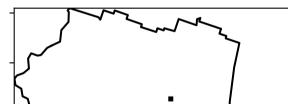


Total Vegetation Cover [%]

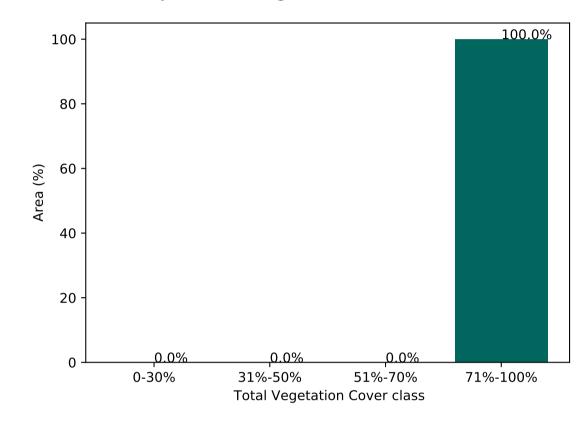




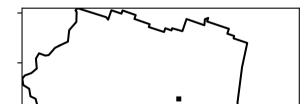
% Area protected from water erosion (>70%)



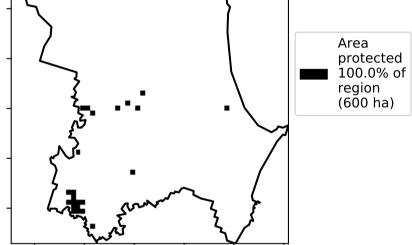
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

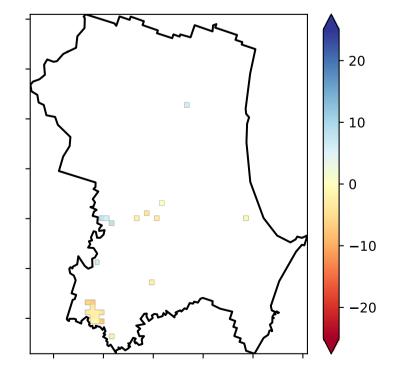




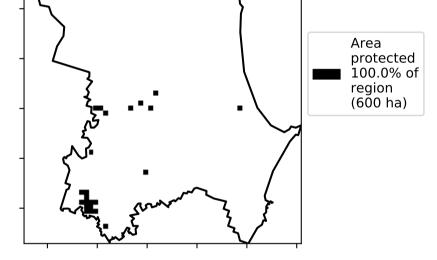


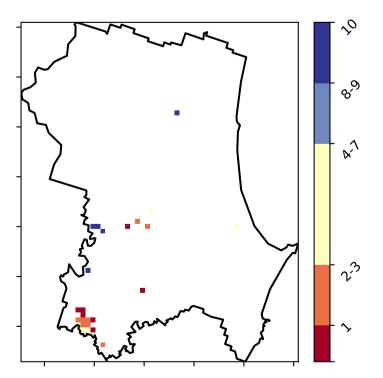
Total Vegetation Cover Anomaly [%]

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

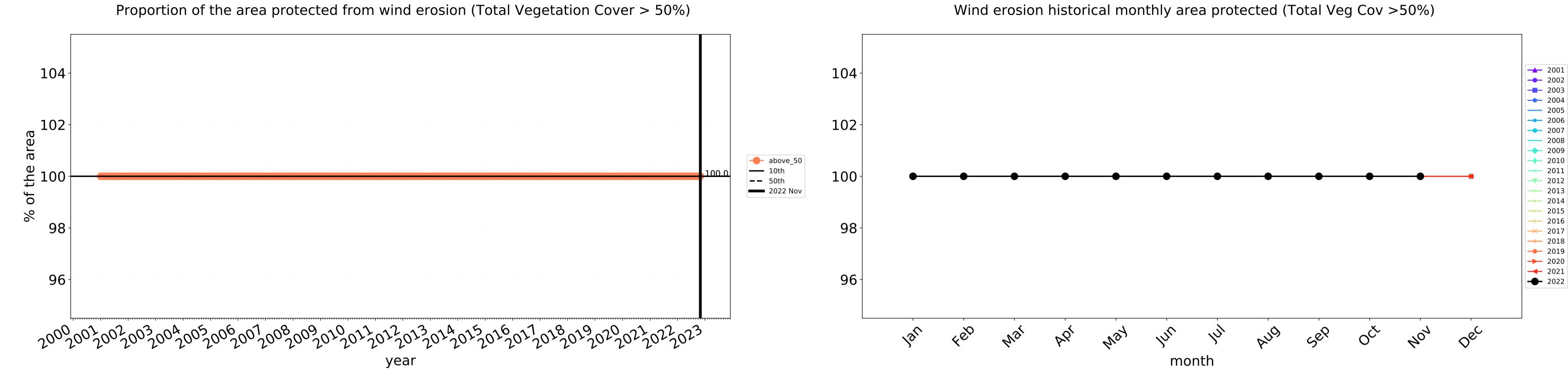


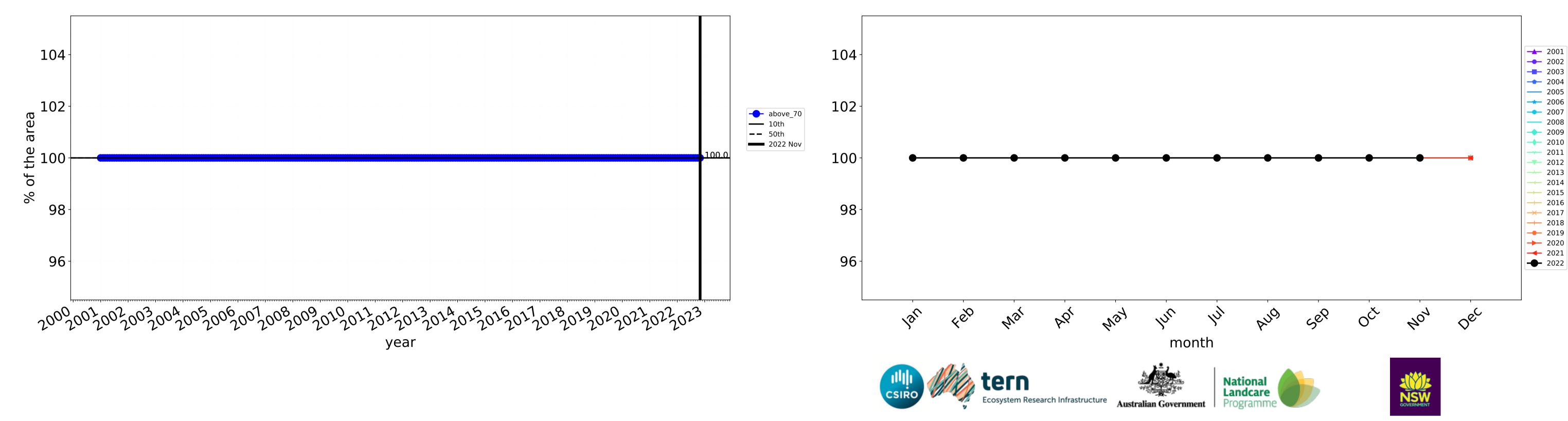
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





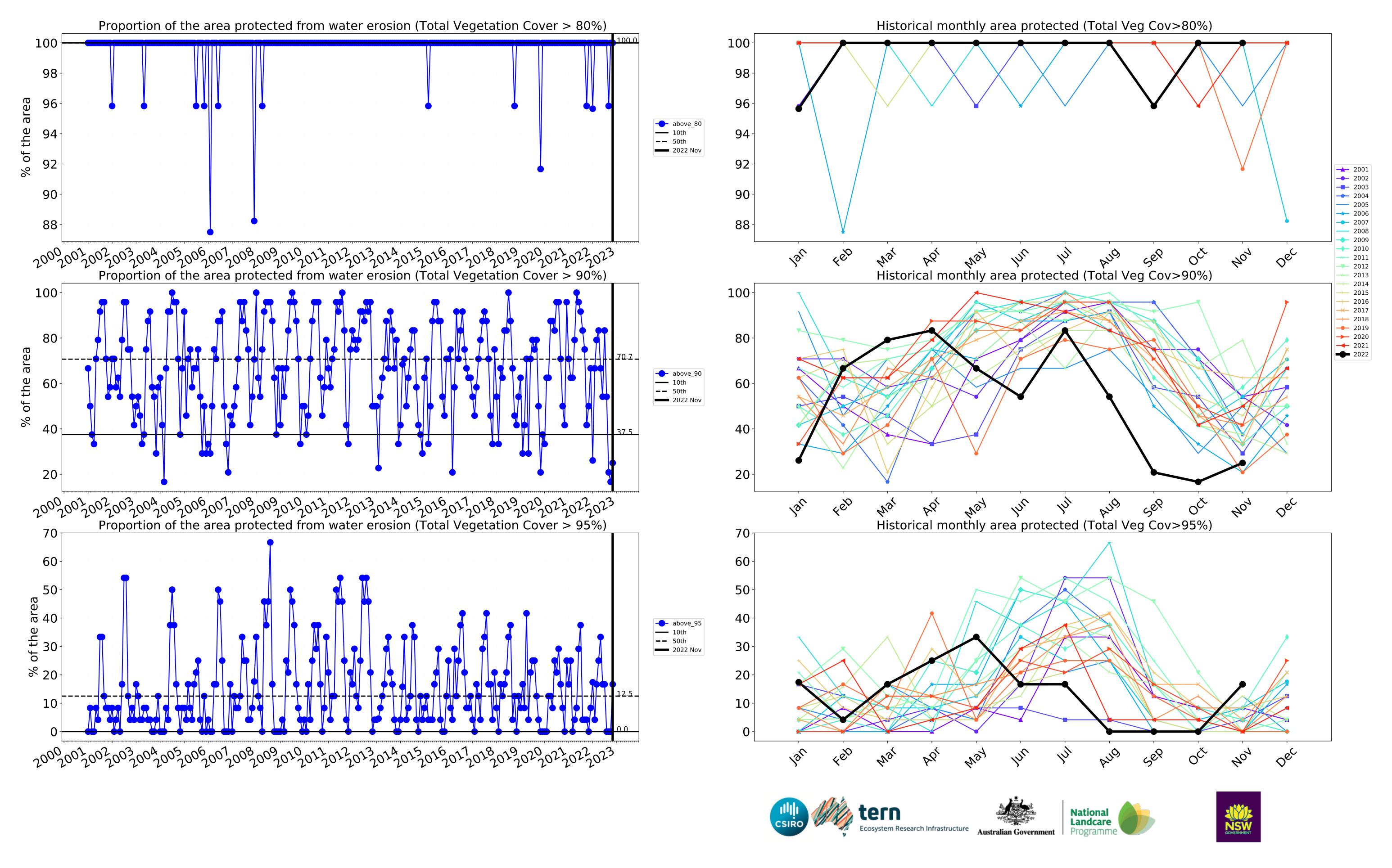






3**9**

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



Byron_(A) (56,400 ha and no data 295 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	56,400	100.0% 56,375	99.8% 56,275	98.5% 55,575	95.1% 53,650	49.7% 28,025	8.2% 4,600
Conservation and natural environments	11,250	100.0% 11,250	99.6% 11,200	97.1% 10,925	94.0% 10,575	76.7% 8,625	26.0% 2,925
Conservation and natural environments non forest	1,375	100.0% 1,375	96.4% 1,325	87.3% 1,200	70.9% 975	34.5% 475	16.4% 225
Conservation and natural environments Woodland forest	625	100.0% 625	100.0% 625	100.0% 625	96.0% 600	56.0% 350	12.0% 75
Conservation and natural							
environments Forest (non woodland)	9,250	100.0% 9,250	100.0% 9,250	98.4% 9,100	97.3% 9,000	84.3% 7,800	28.4% 2,625
Agriculture	33,750	100.0% 33,750	100.0% 33,750	99.8% 33,675	99.2% 33,475	46.8% 15,800	4.2% 1,425
Grazing	30,350	100.0% 30,350	100.0% 30,350	99.8% 30,300	99.3% 30,150	46.5% 14,125	4.0% 1,225
Grazing non forest	24,750	100.0% 24,750	100.0% 24,750	99.8% 24,700	99.2% 24,550	39.0% 9,650	3.0% 750
Grazing Woodland forest	2,600	100.0% 2,600	100.0% 2,600	100.0% 2,600	100.0% 2,600	79.8% 2,075	8.7% 225
Grazing - Forest (non woodland)	3,000	100.0% 3,000	100.0% 3,000	100.0% 3,000	100.0% 3,000	80.0% 2,400	8.3% 250
Cropping	1,175	100.0% 1,175	100.0% 1,175	97.9% 1,150	93.6% 1,100	27.7% 325	0.0%
Horticulture	2,200	100.0% 2,200	100.0% 2,200	100.0% 2,200	100.0% 2,200	61.4% 1,350	9.1% 200
Production native forests and plantation forests	600	100.0% 600	100.0% 600	100.0% 600	100.0% 600	25.0% 150	16.7% 100

