Total vegetation cover soil protection Region:LGA Gladstone_(R) QLD

Date: March 2024

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



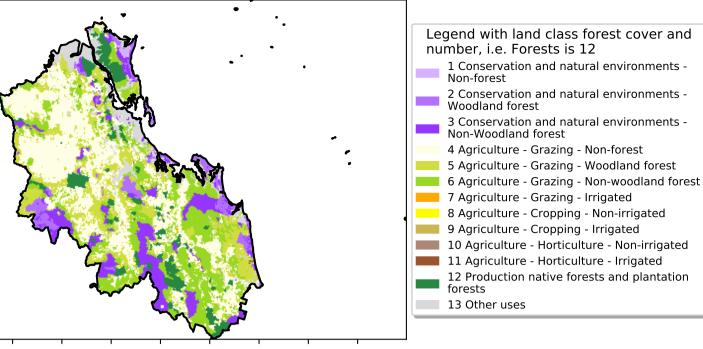
Vegetation Cover Mar 2024

Land use and forest cover

Proportion of each land class in area



2019.



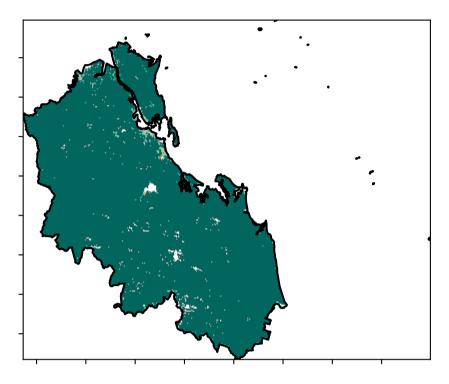
12%200%

52% 70%

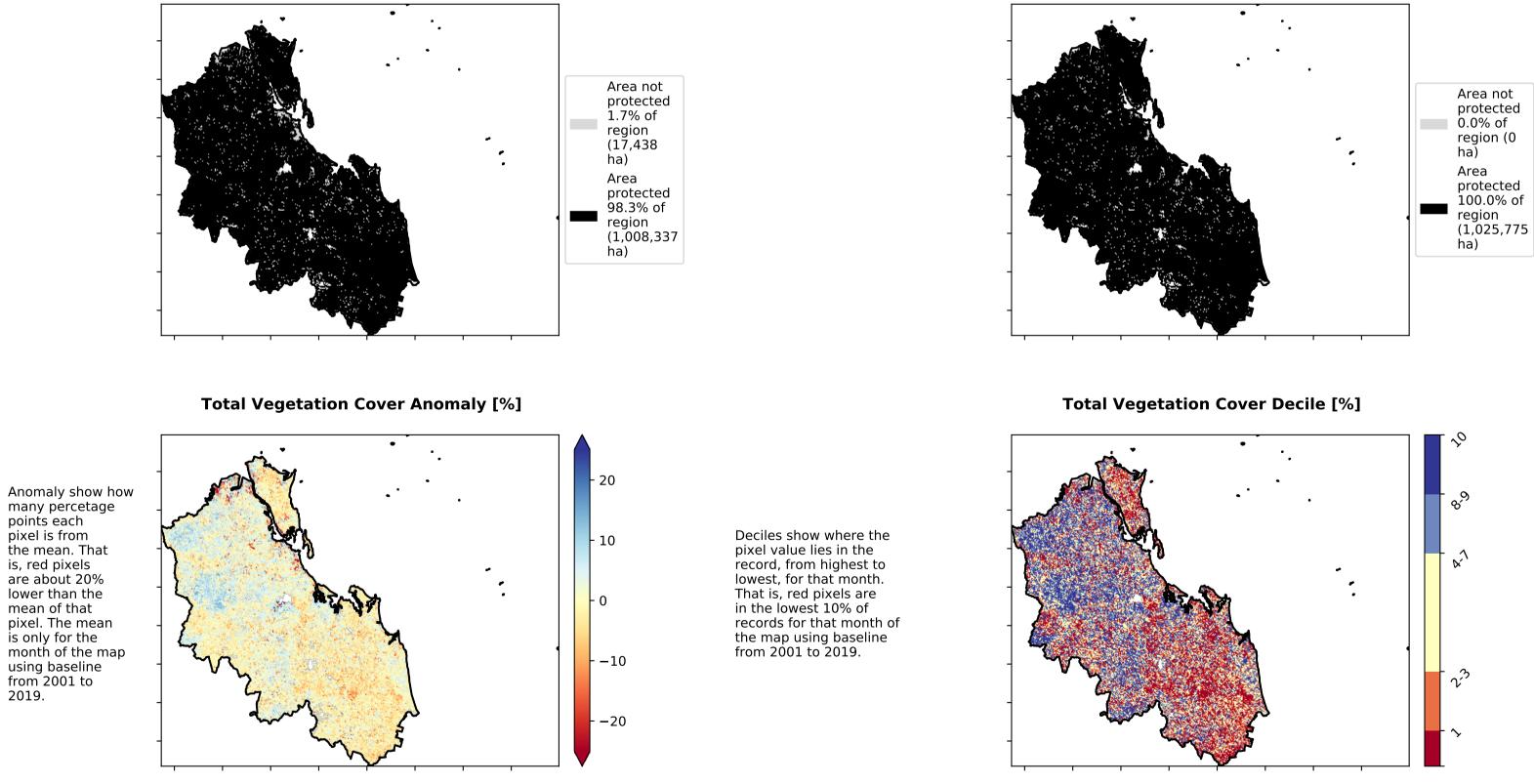
32010-50010

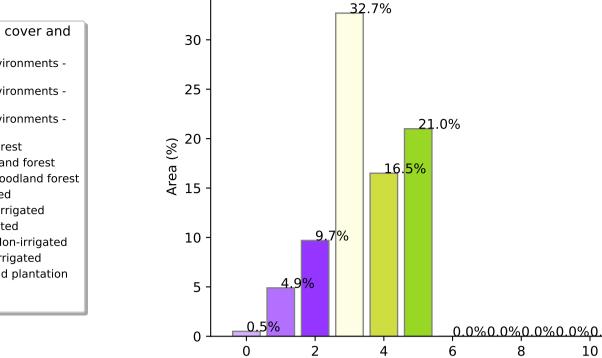
0-30%

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





Proportion of vegetation cover class in area

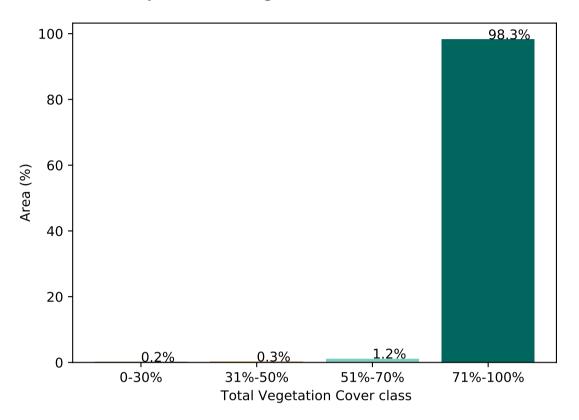
Land use class

6.9%^{7.8%}

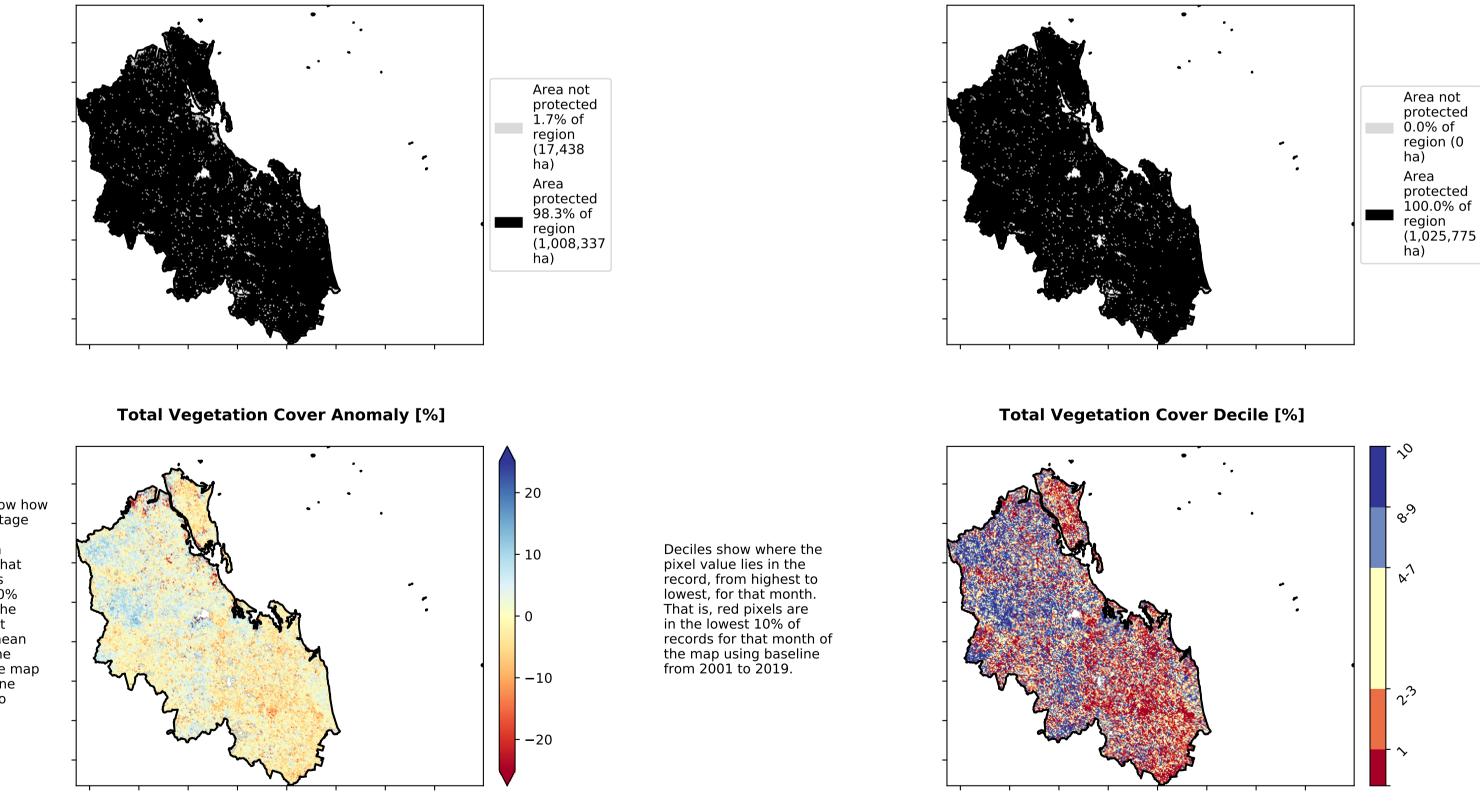
12

10

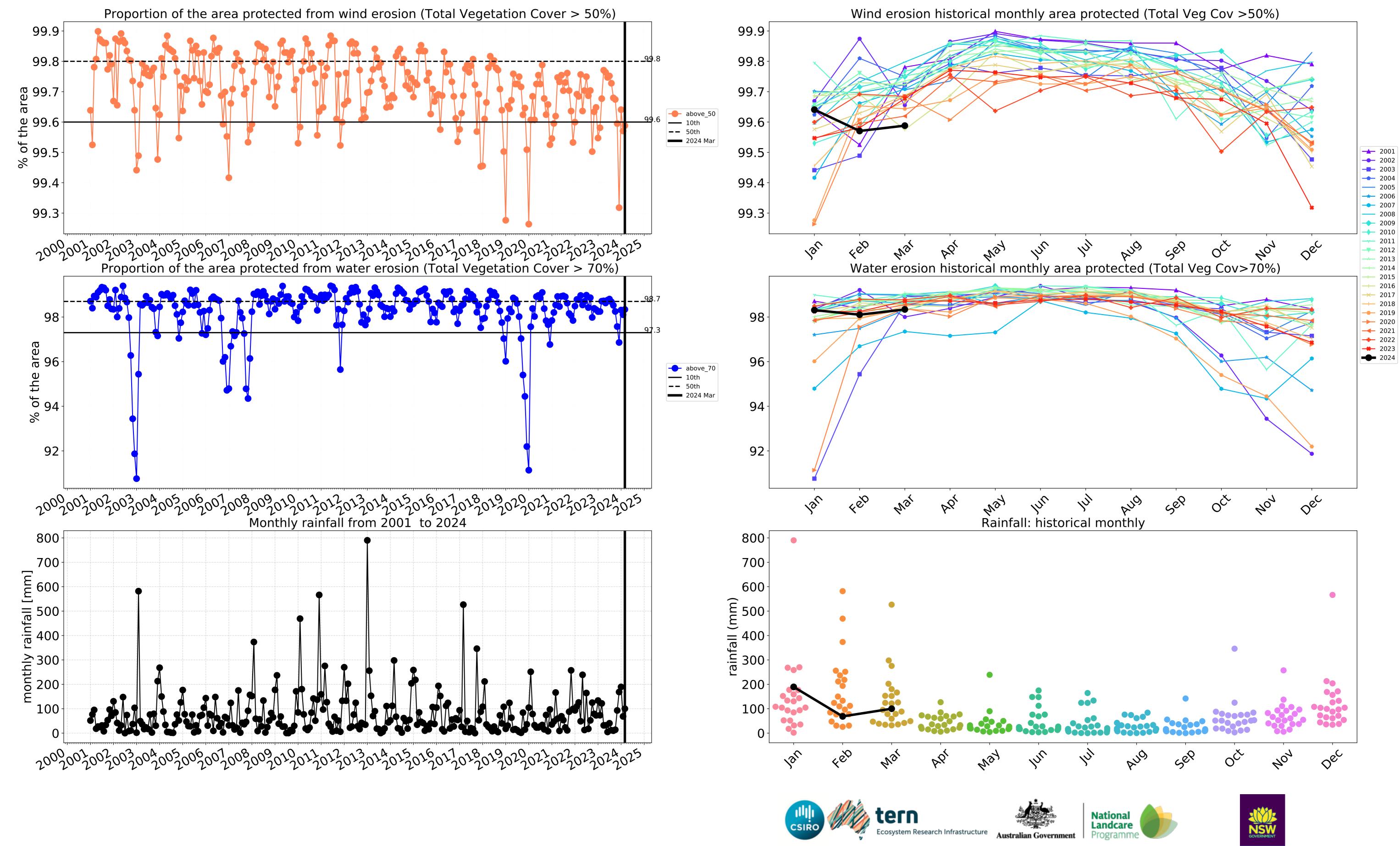
8

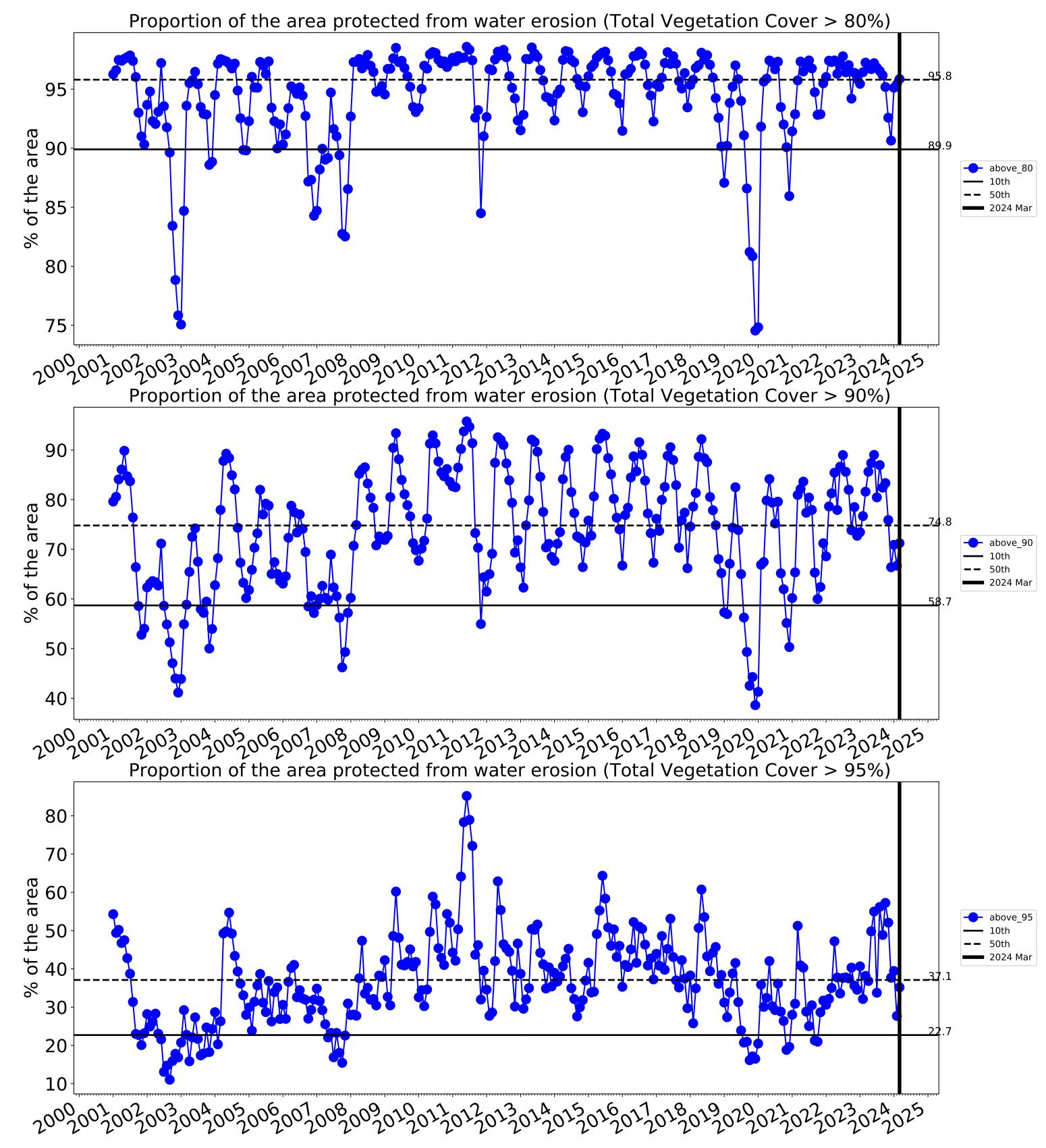


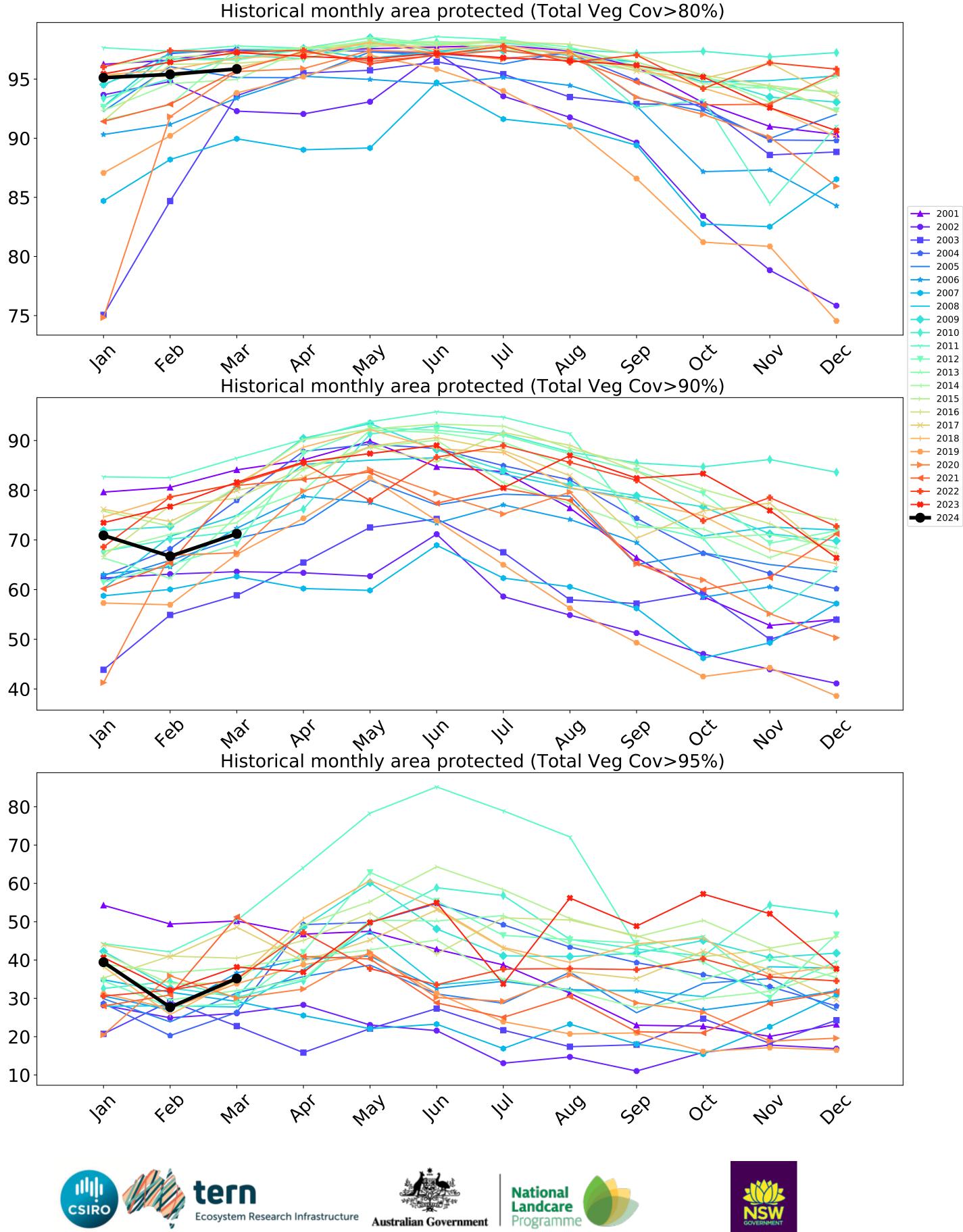
% Area protected from wind erosion (>50%)













Conservation and natural environments

Land use and forest cover

1 Conservation and natural environments - Nonforest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Non-woodland forest

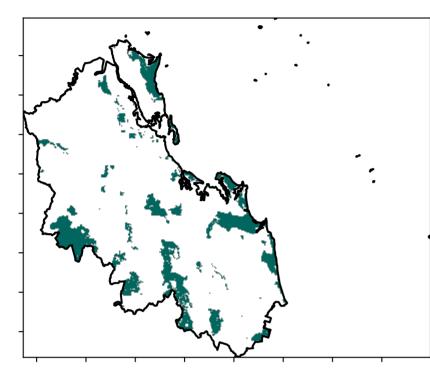
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

is, red pixels are about 20% lower than the

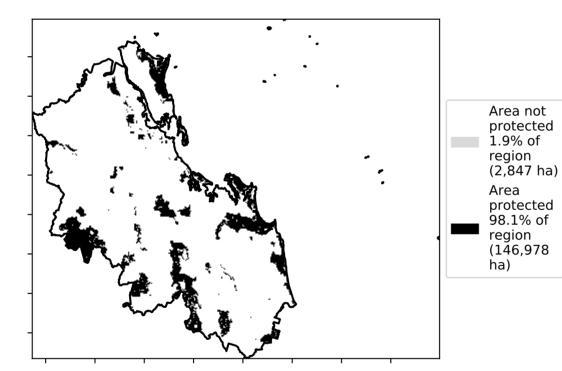
mean of that pixel. The mean

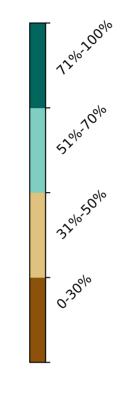
using baseline from 2001 to 2019.

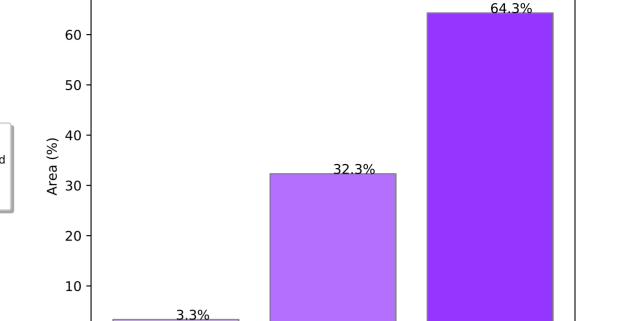




% Area protected from water erosion (>70%)







Proportion of each land class in area

Proportion of vegetation cover class in area

1.0

Land use class

1.5

2.0

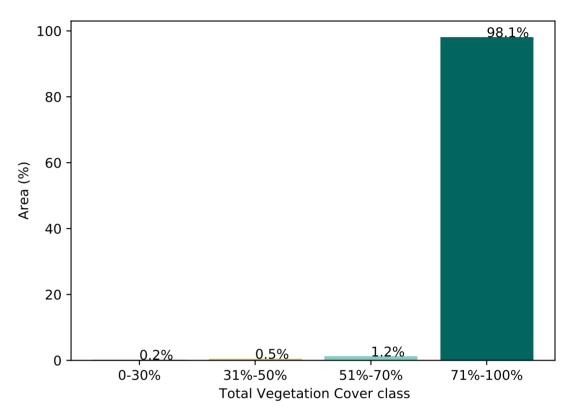
2.5

0.5

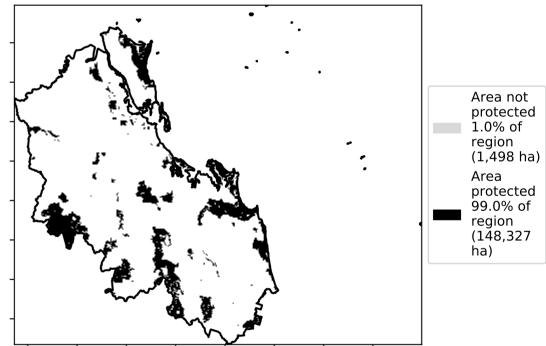
0.0

0

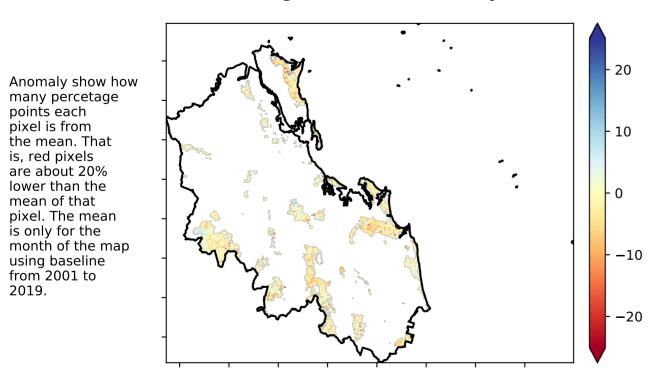
-0.5



% Area protected from wind erosion (>50%)

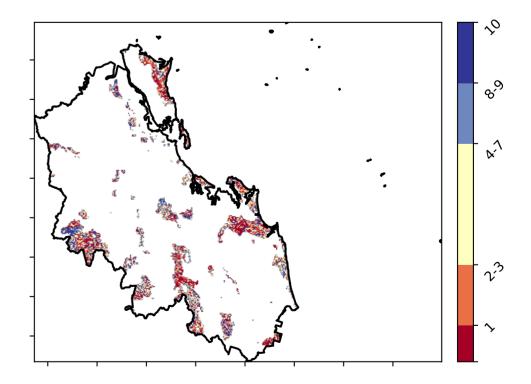


Total Vegetation Cover Anomaly [%]

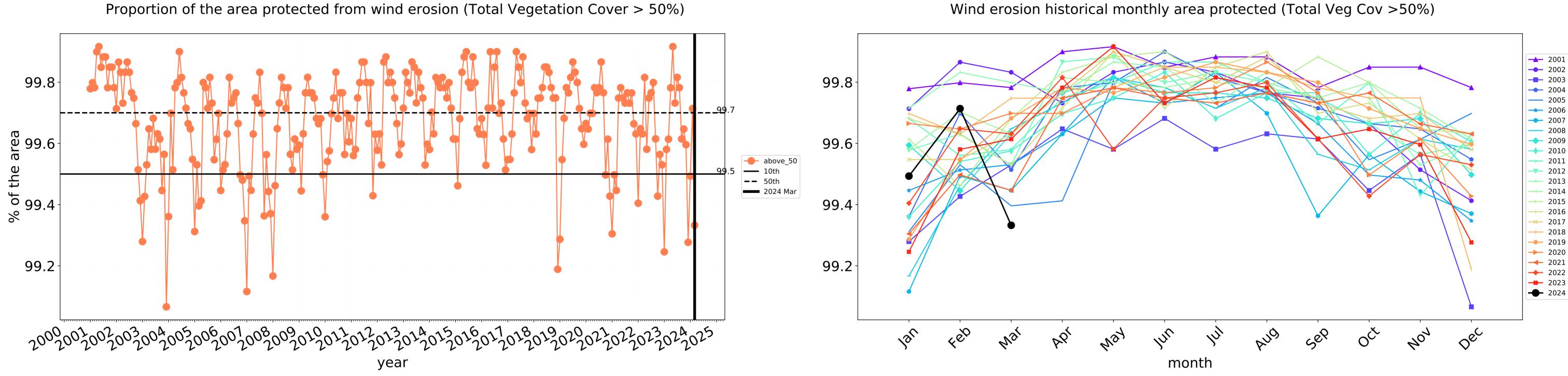


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

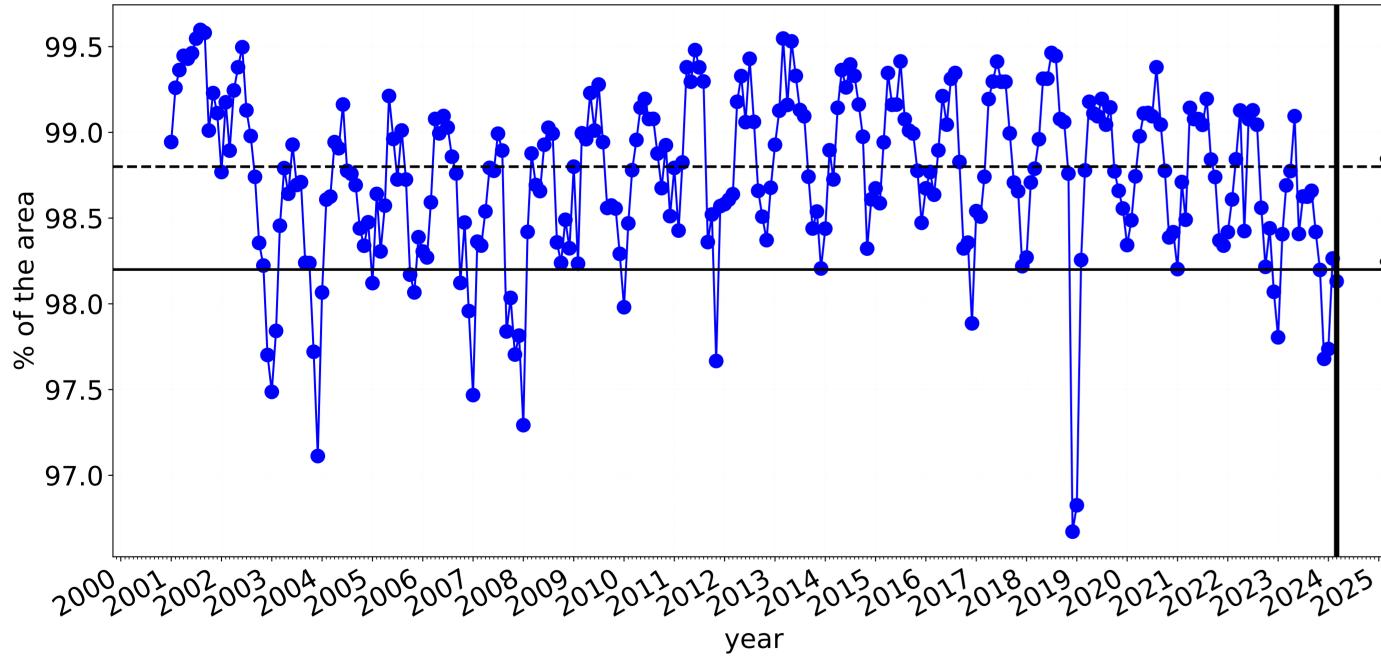
Total Vegetation Cover Decile [%]







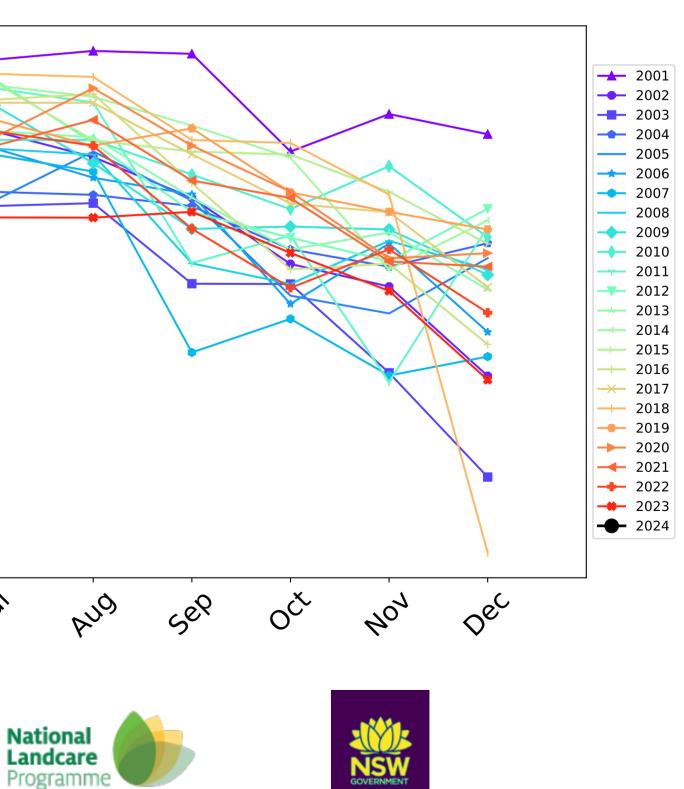
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

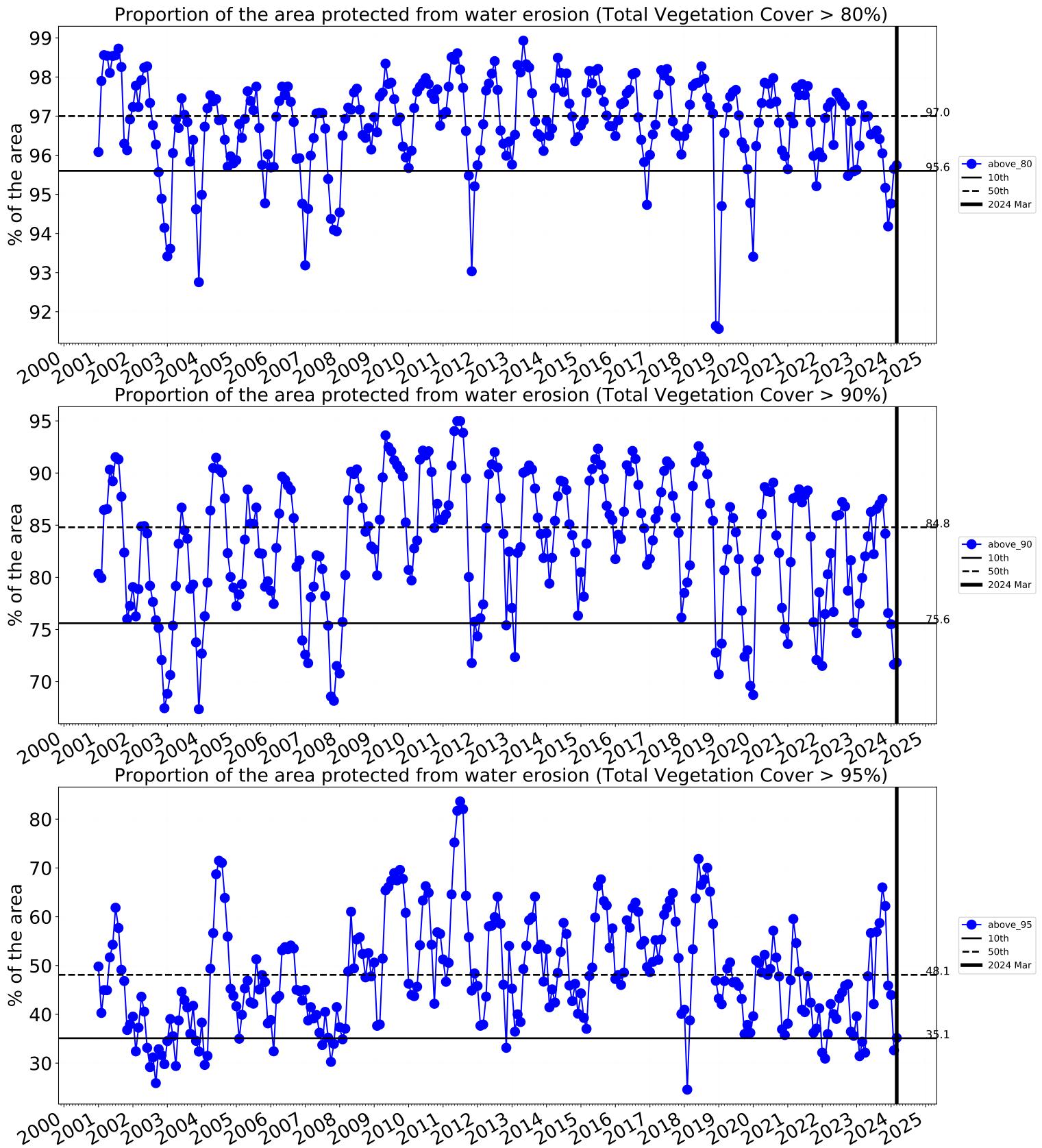


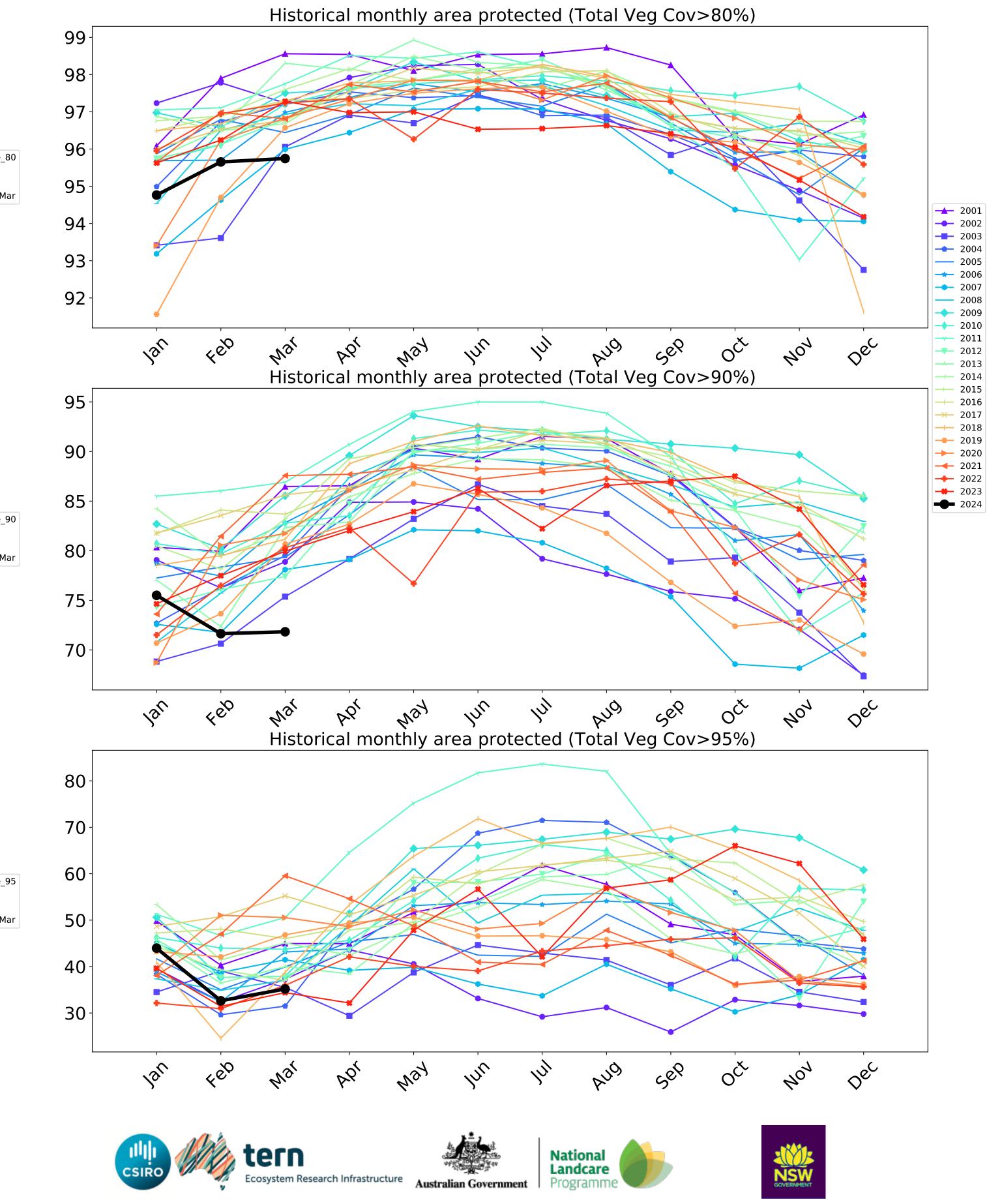
---- above_70 **—** 10th **——** 50th **—** 2024 Mar

99.5 99.0 98.5 98.0 97.5 97.0 4eb Jan War May In PQ1 1/2/ month tern Ecosystem Research Infrastructure Australian Government

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

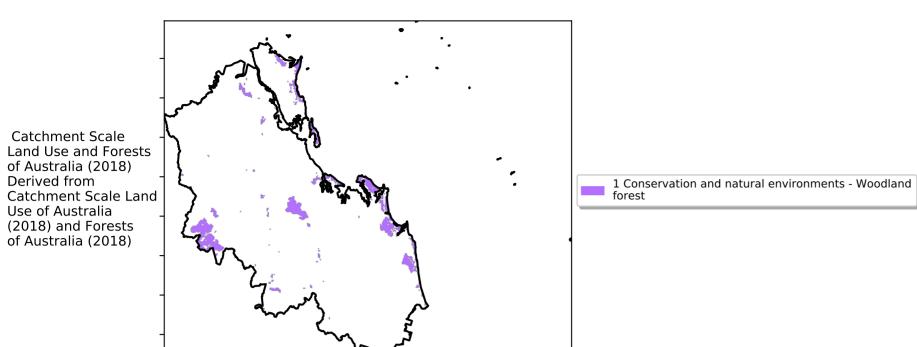




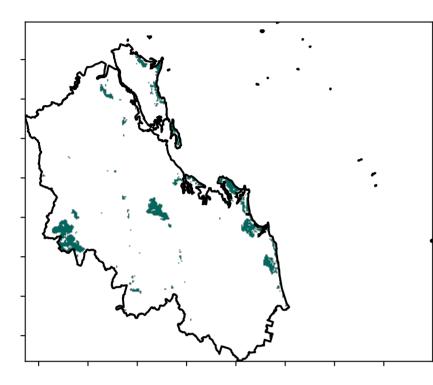


Conservation and natural environments Woodland forest

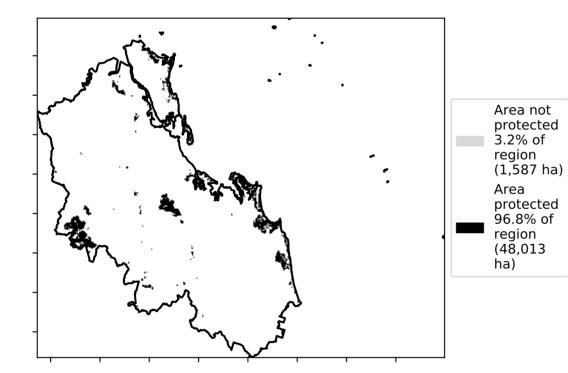
Land use and forest cover

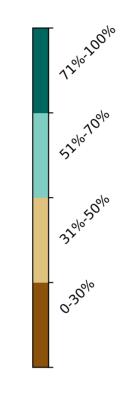


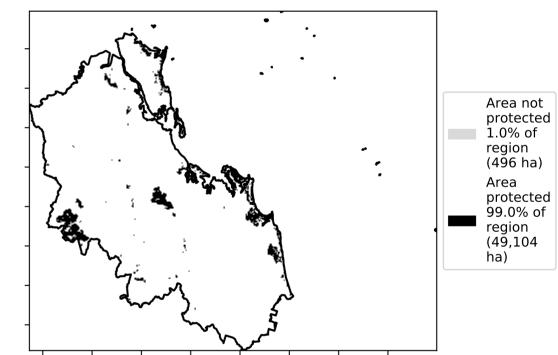
Total Vegetation Cover [%]



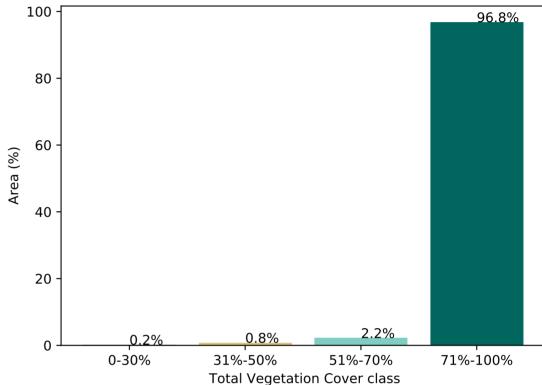
% Area protected from water erosion (>70%)







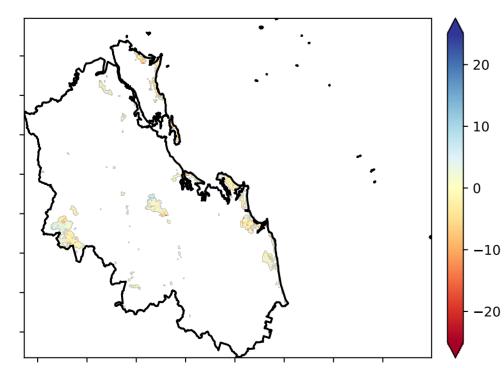
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

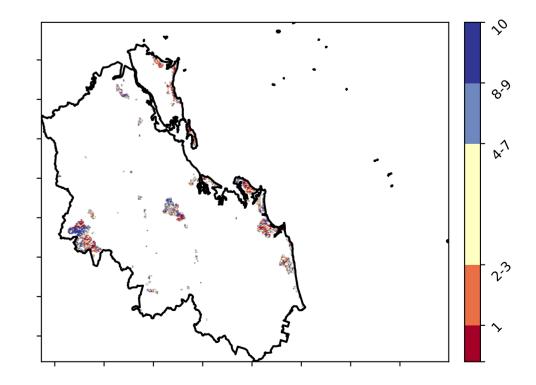


Total Vegetation Cover Anomaly [%]



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.

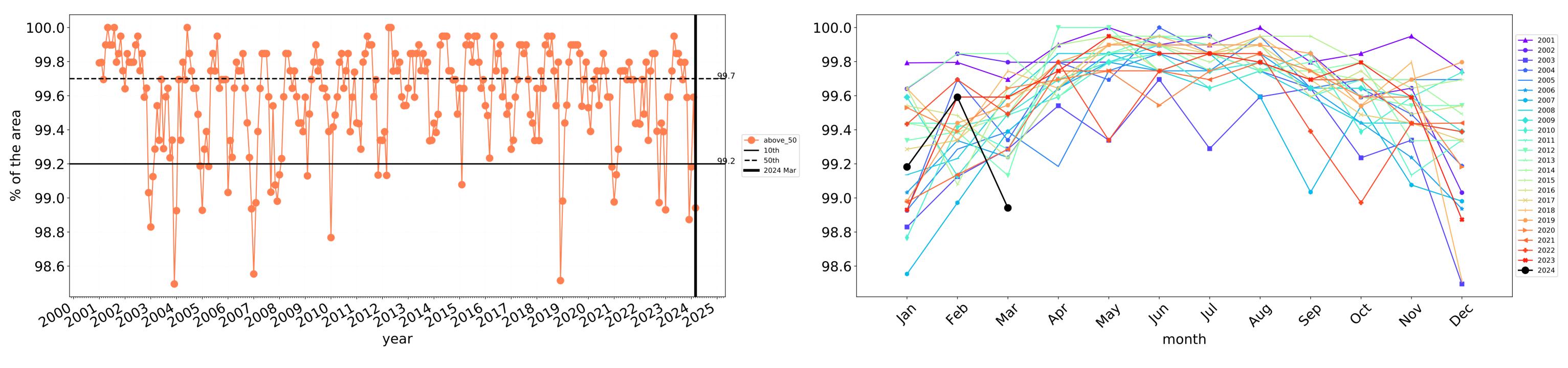
Total Vegetation Cover Decile [%]





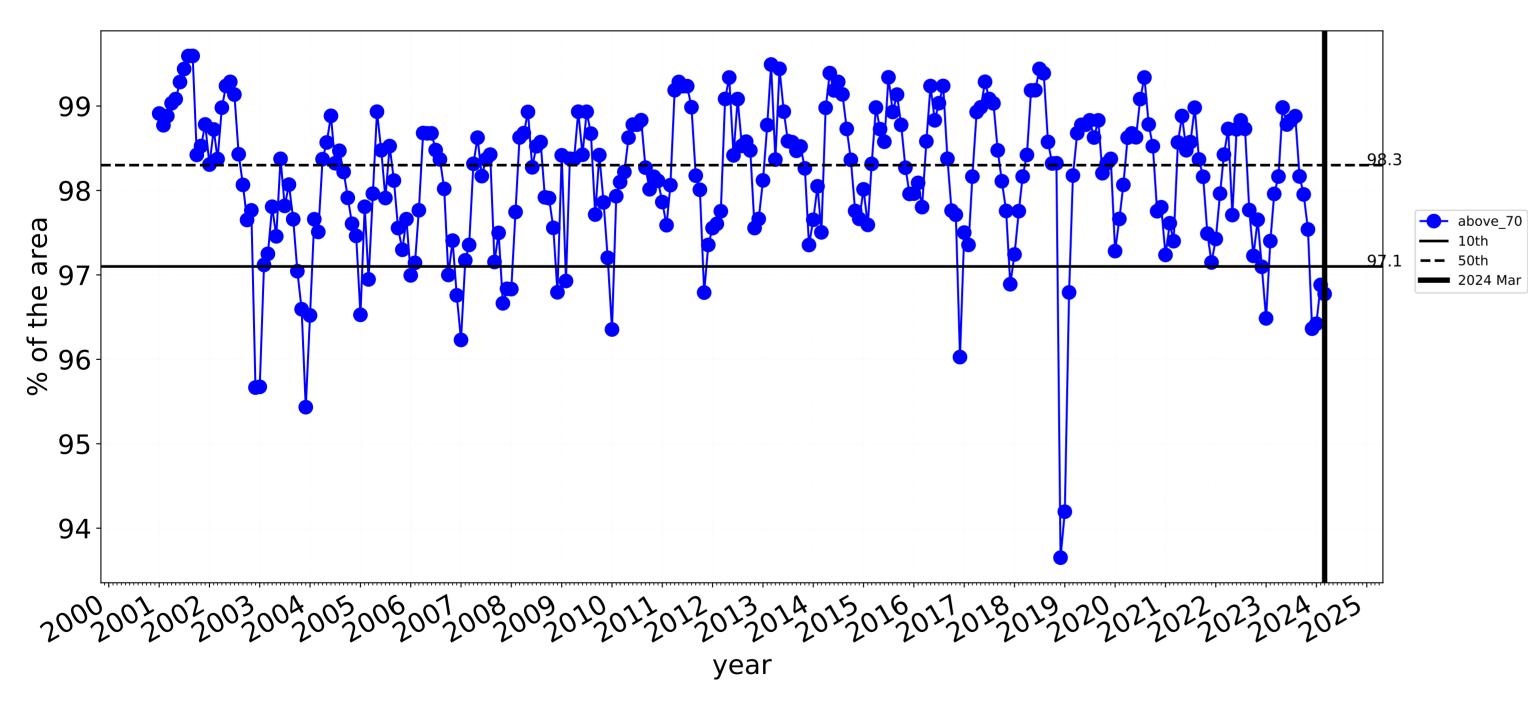
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

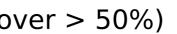




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

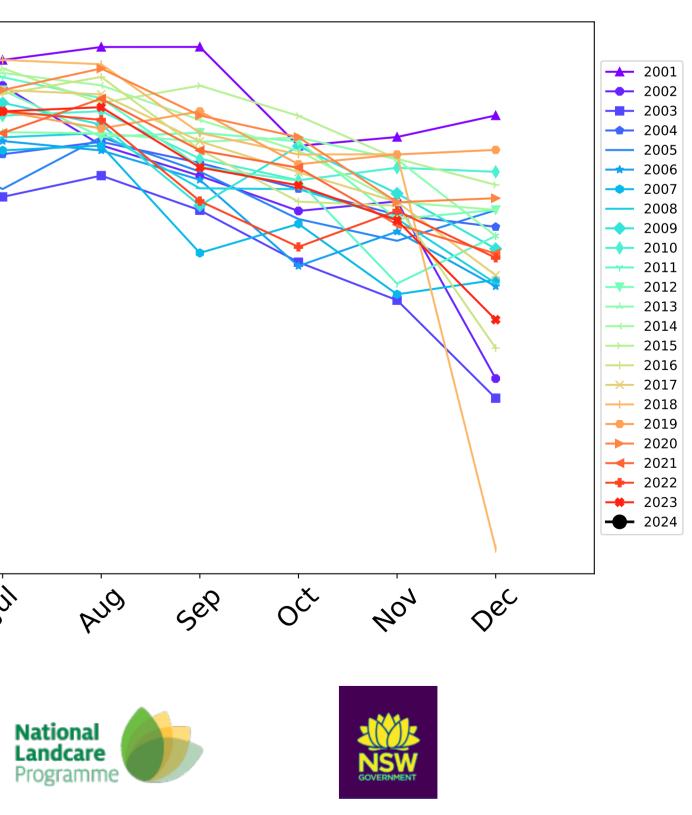


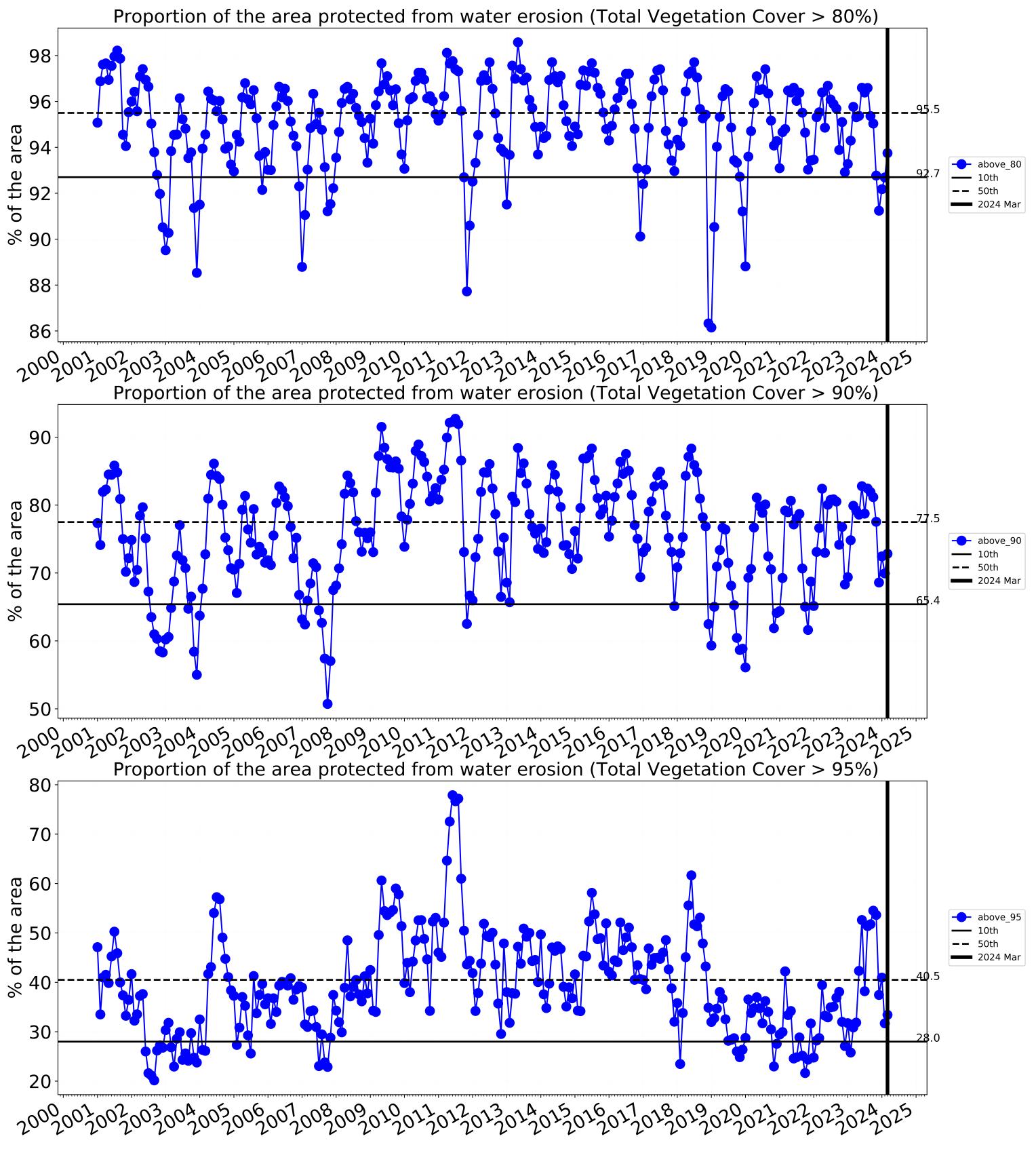


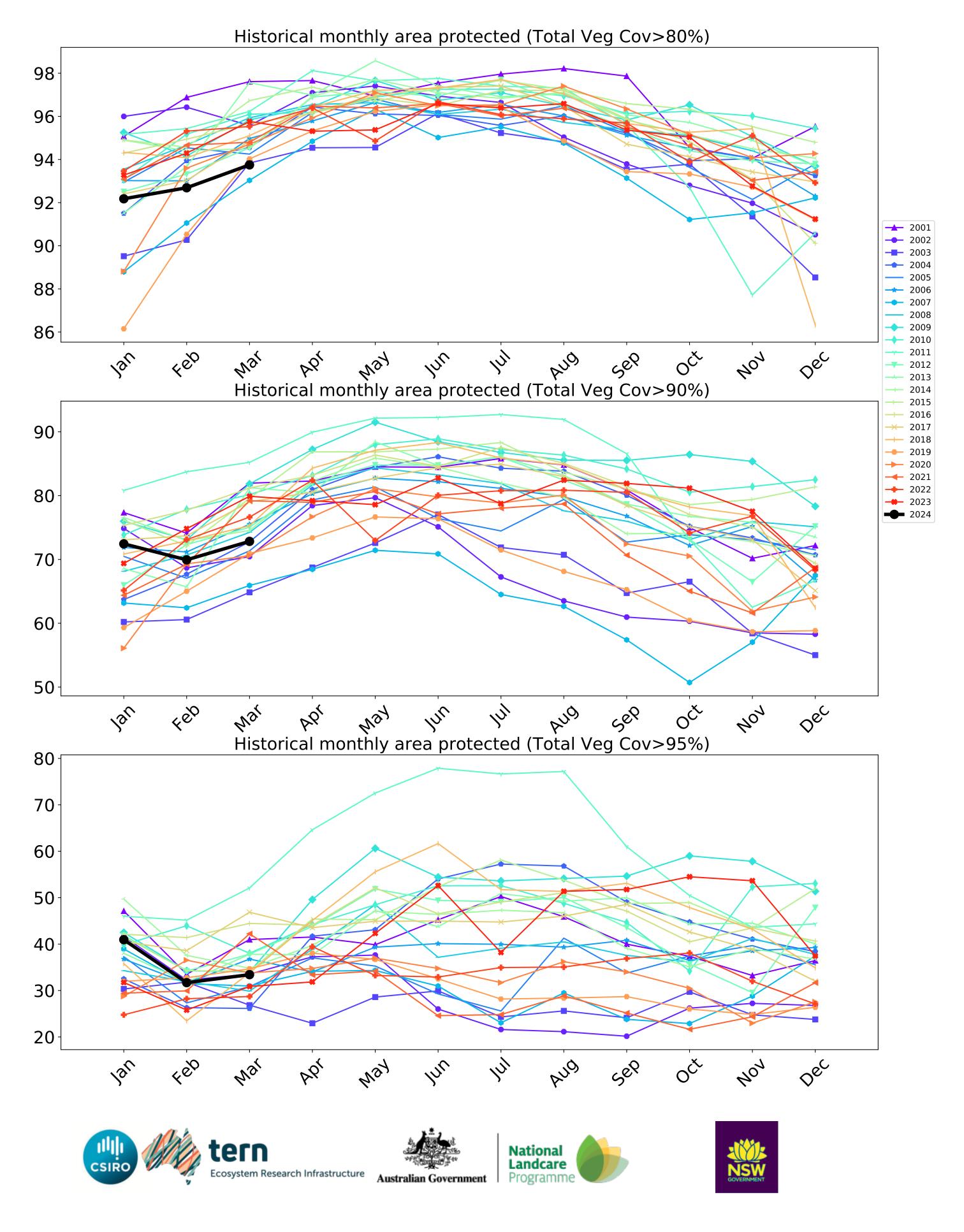
Wind erosion historical monthly area protected (Total Veg Cov >50%)

99 98-97 96 95⁻ 94 Par feb Inu 291 Mai Way month tern Ecosystem Research Infrastructure Australian Government

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

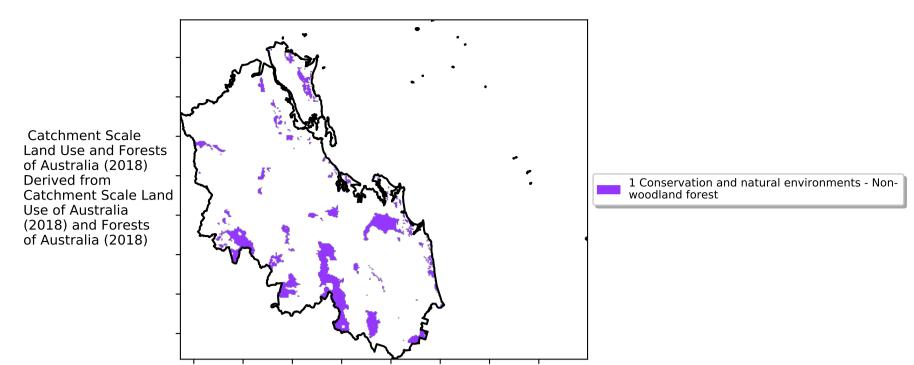




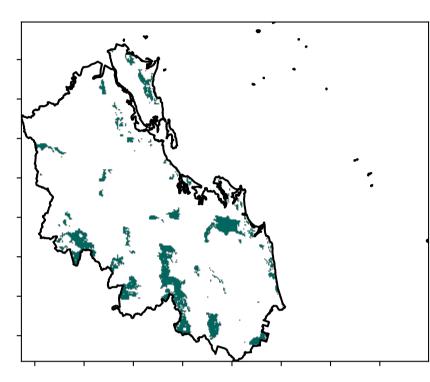


Conservation and natural environments Forest (non woodland)

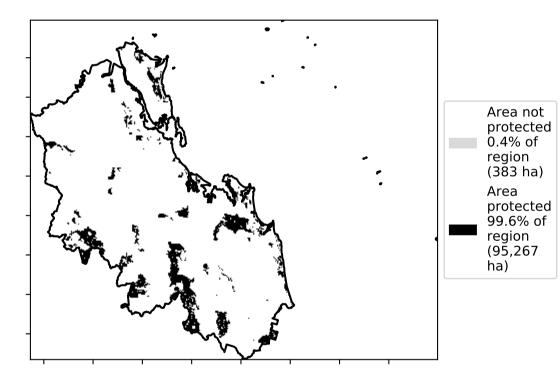
Land use and forest cover

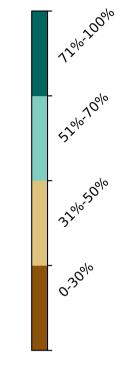


Total Vegetation Cover [%]



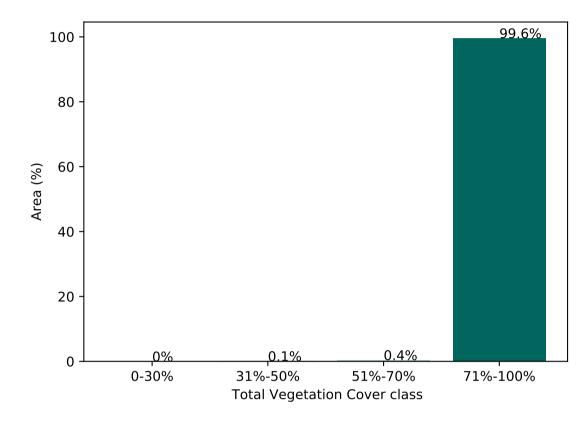
% Area protected from water erosion (>70%)



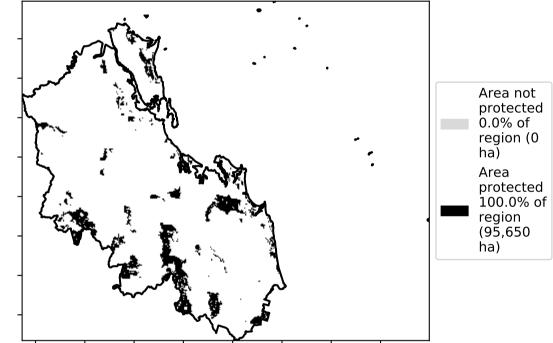




Proportion of vegetation cover class in area

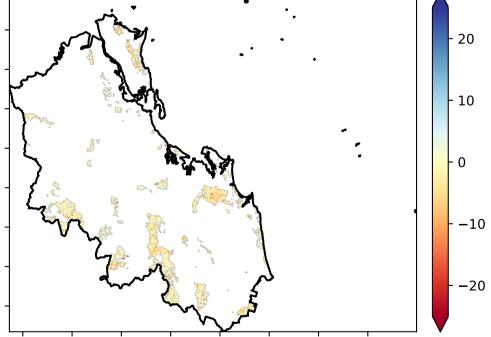


% Area protected from wind erosion (>50%)



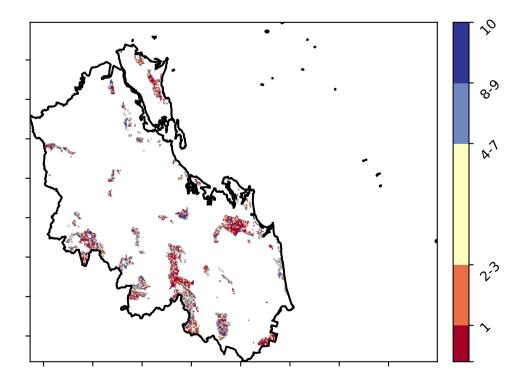
Total Vegetation Cover Anomaly [%]

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.

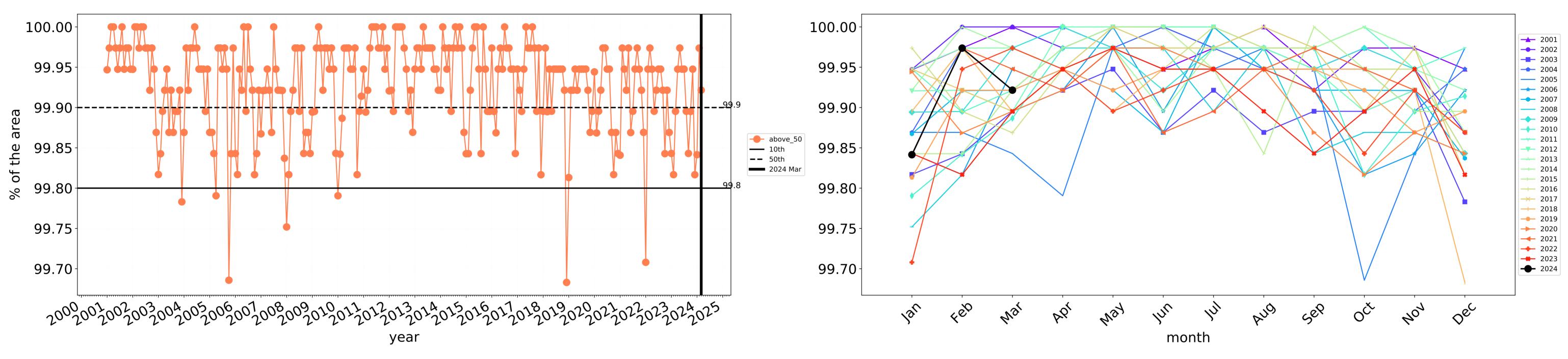


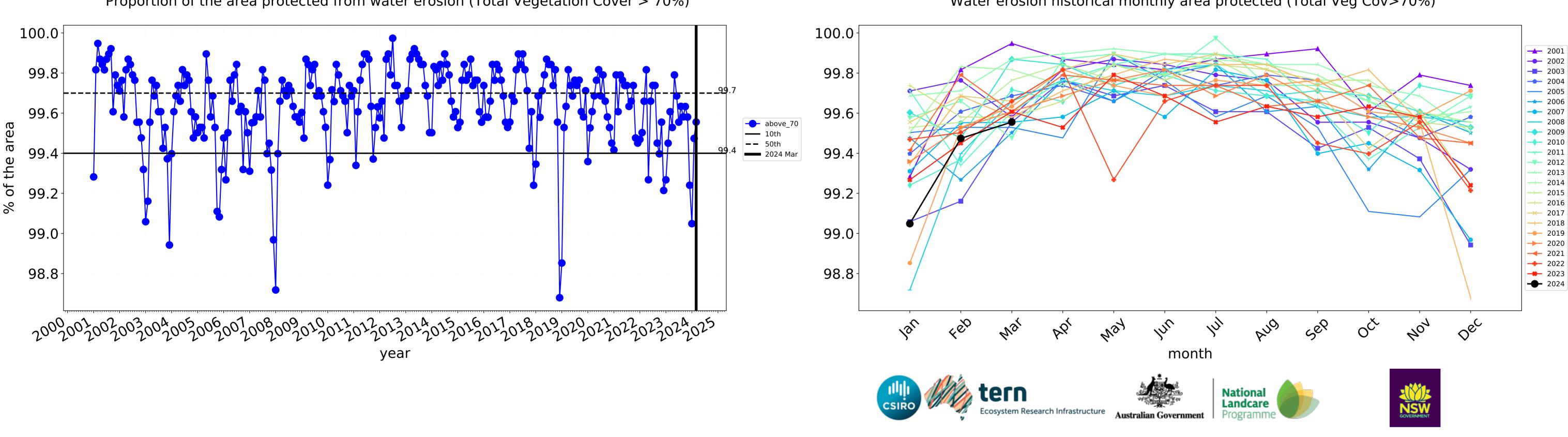
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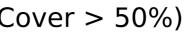
Total Vegetation Cover Decile [%]





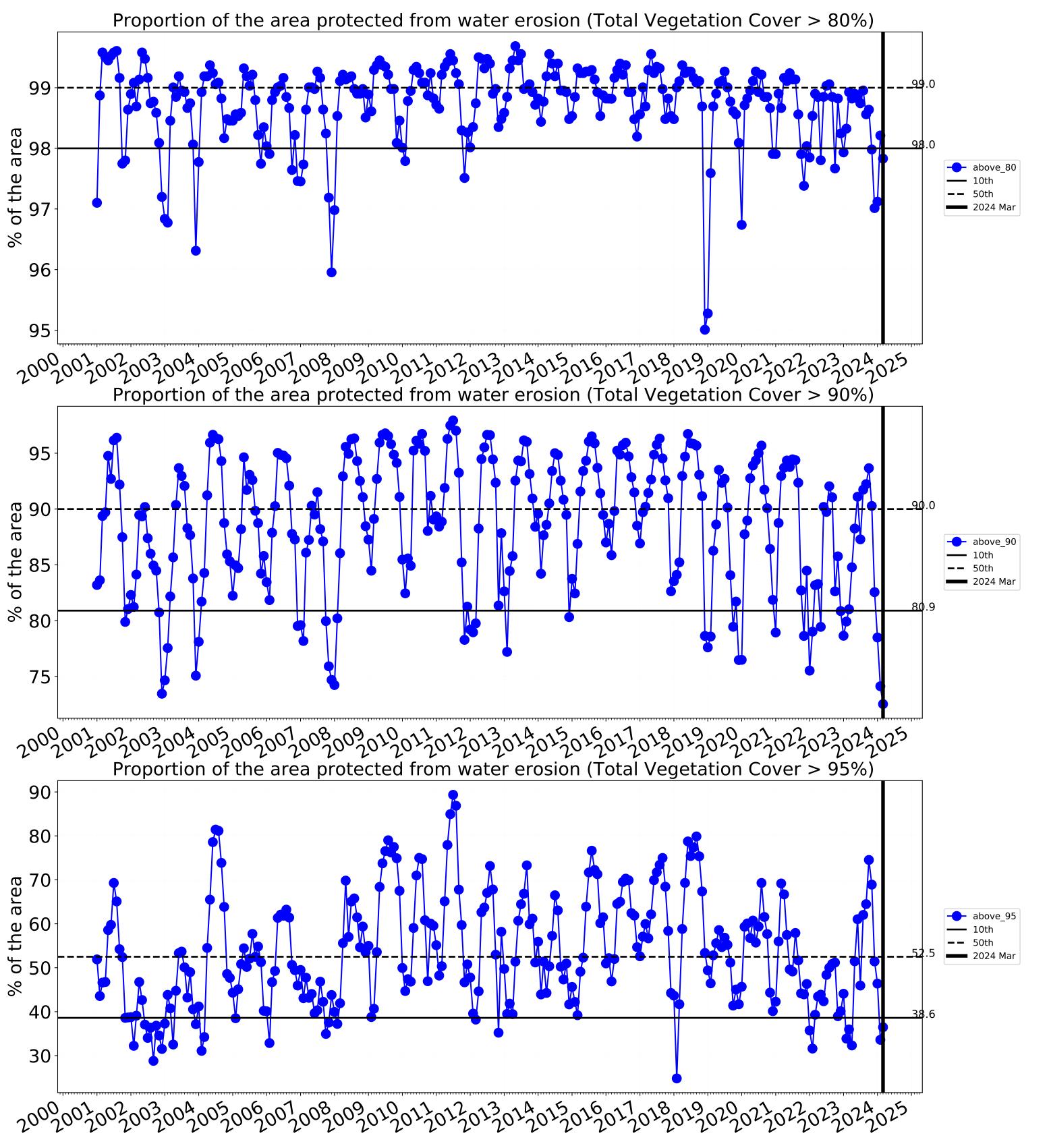


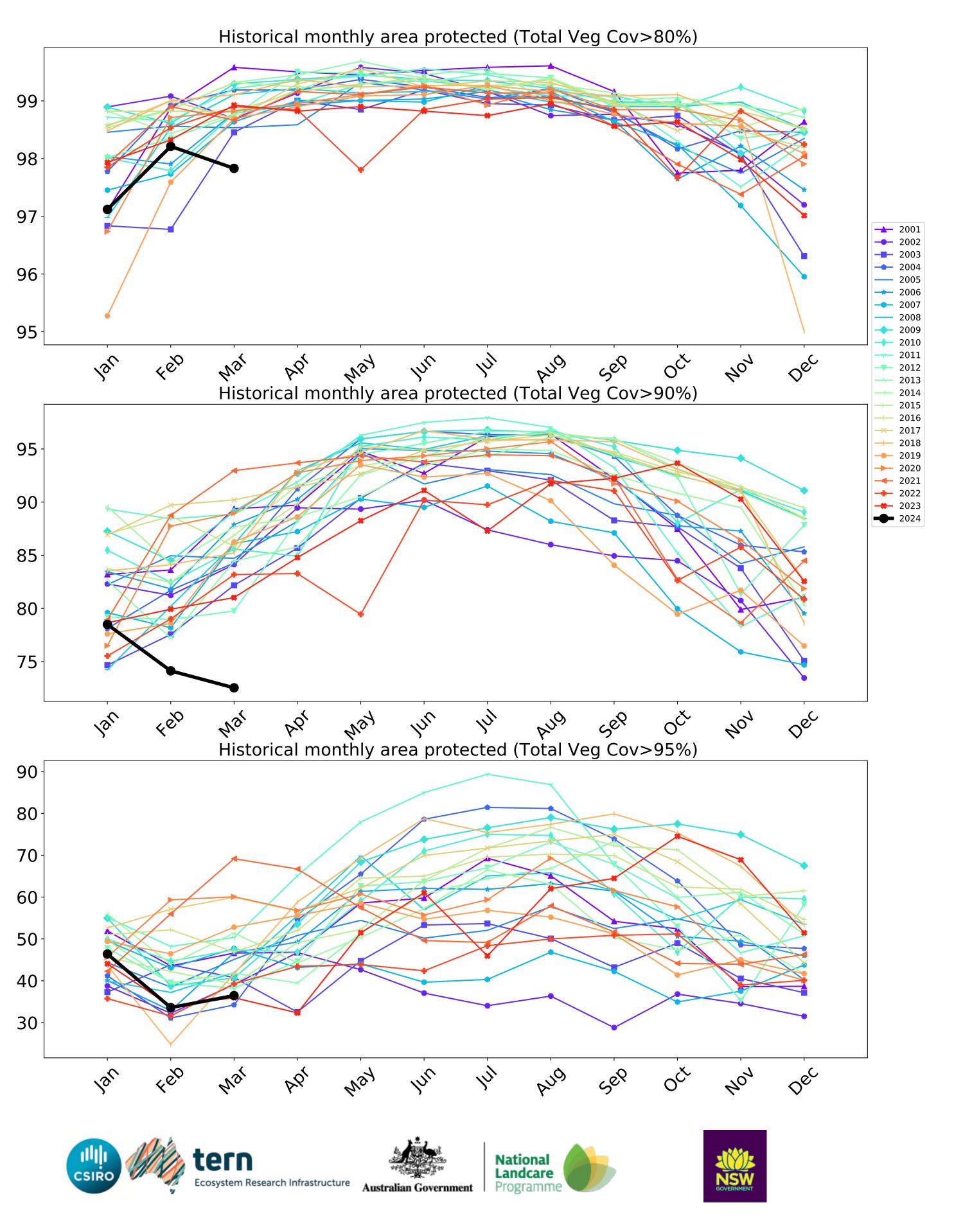




Wind erosion historical monthly area protected (Total Veg Cov >50%)

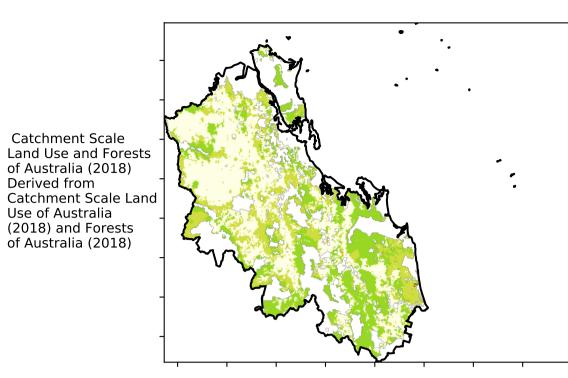
Water erosion historical monthly area protected (Total Veg Cov>70%)



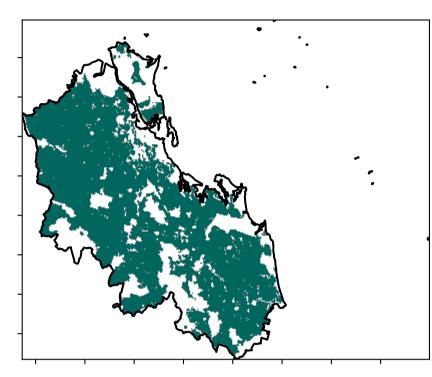


Agriculture

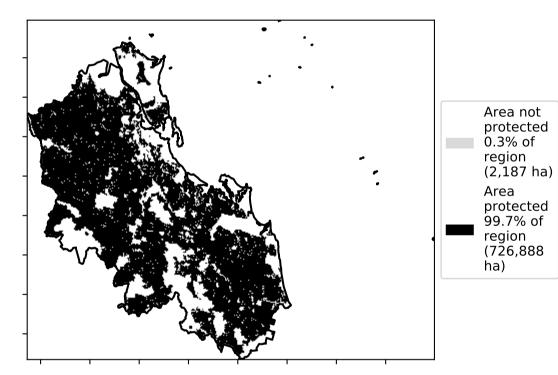
Land use and forest cover

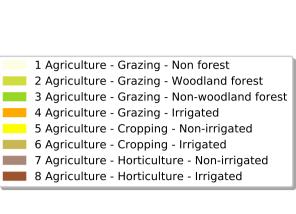


Total Vegetation Cover [%]

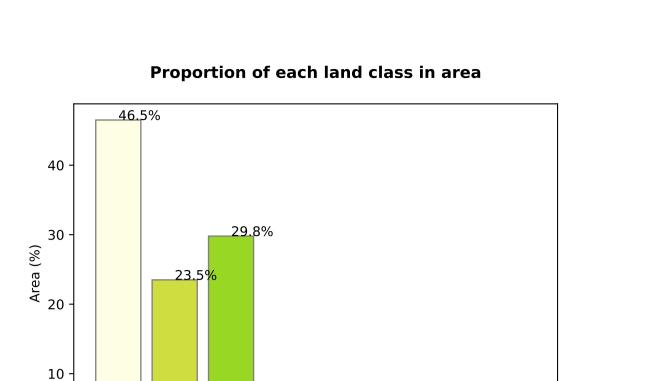


% Area protected from water erosion (>70%)





7200-200010 52% 70% 3201050010 0-30%



Proportion of vegetation cover class in area

Land use class

0.0%

3

0

0

1

2

0.0%

4

0.0%

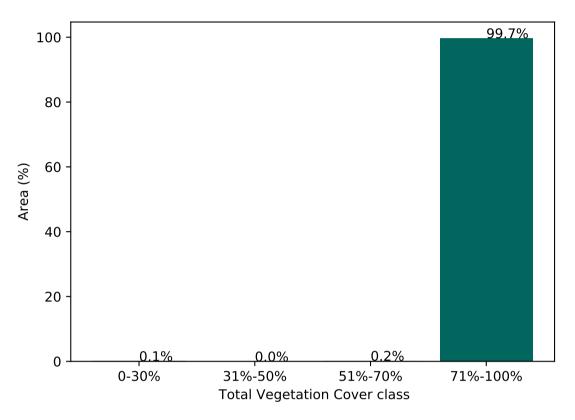
5

0.1%

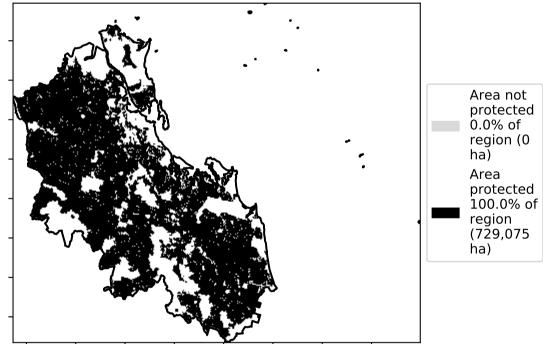
6

0.1%

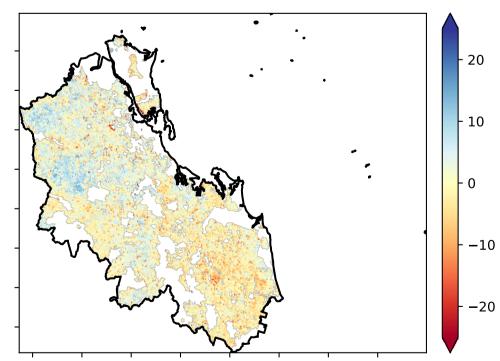
7



% Area protected from wind erosion (>50%)

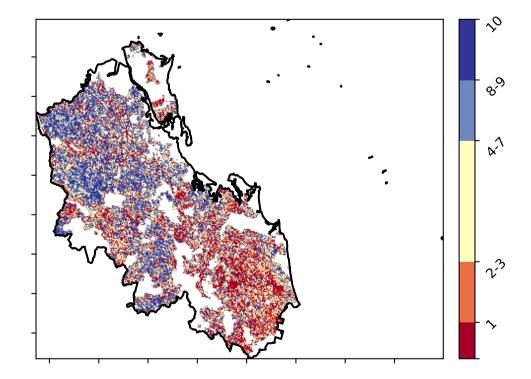


Total Vegetation Cover Anomaly [%]



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 [%]

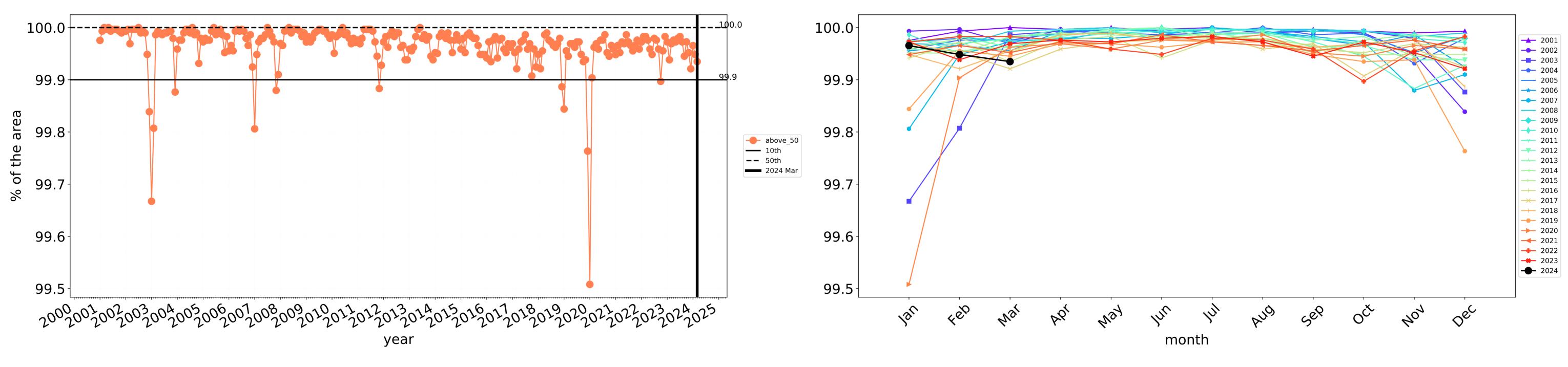




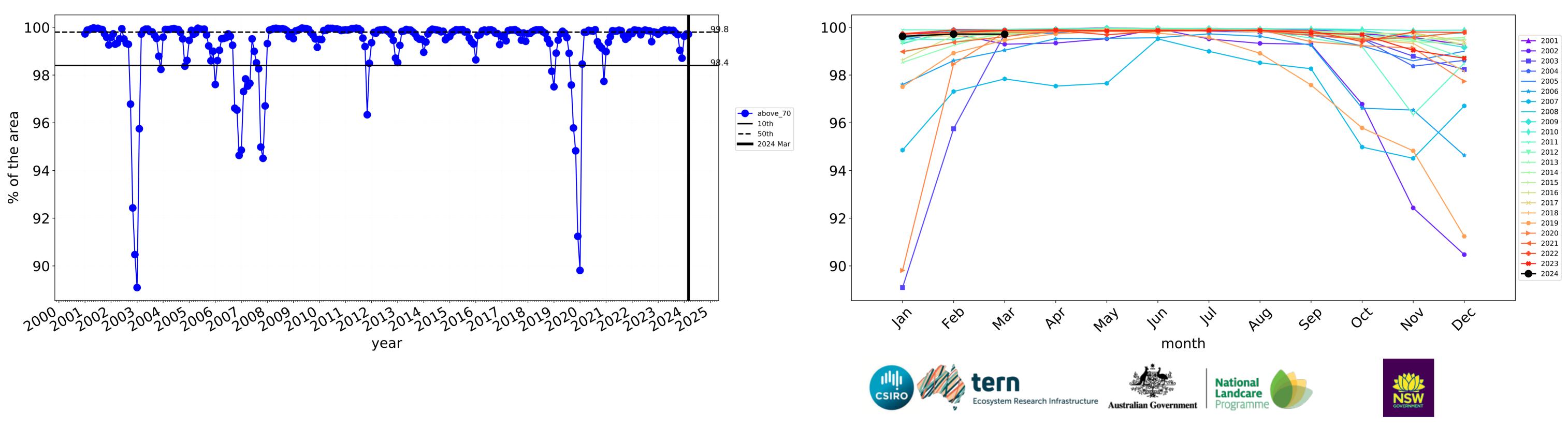
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



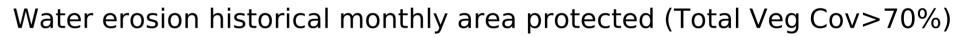
124

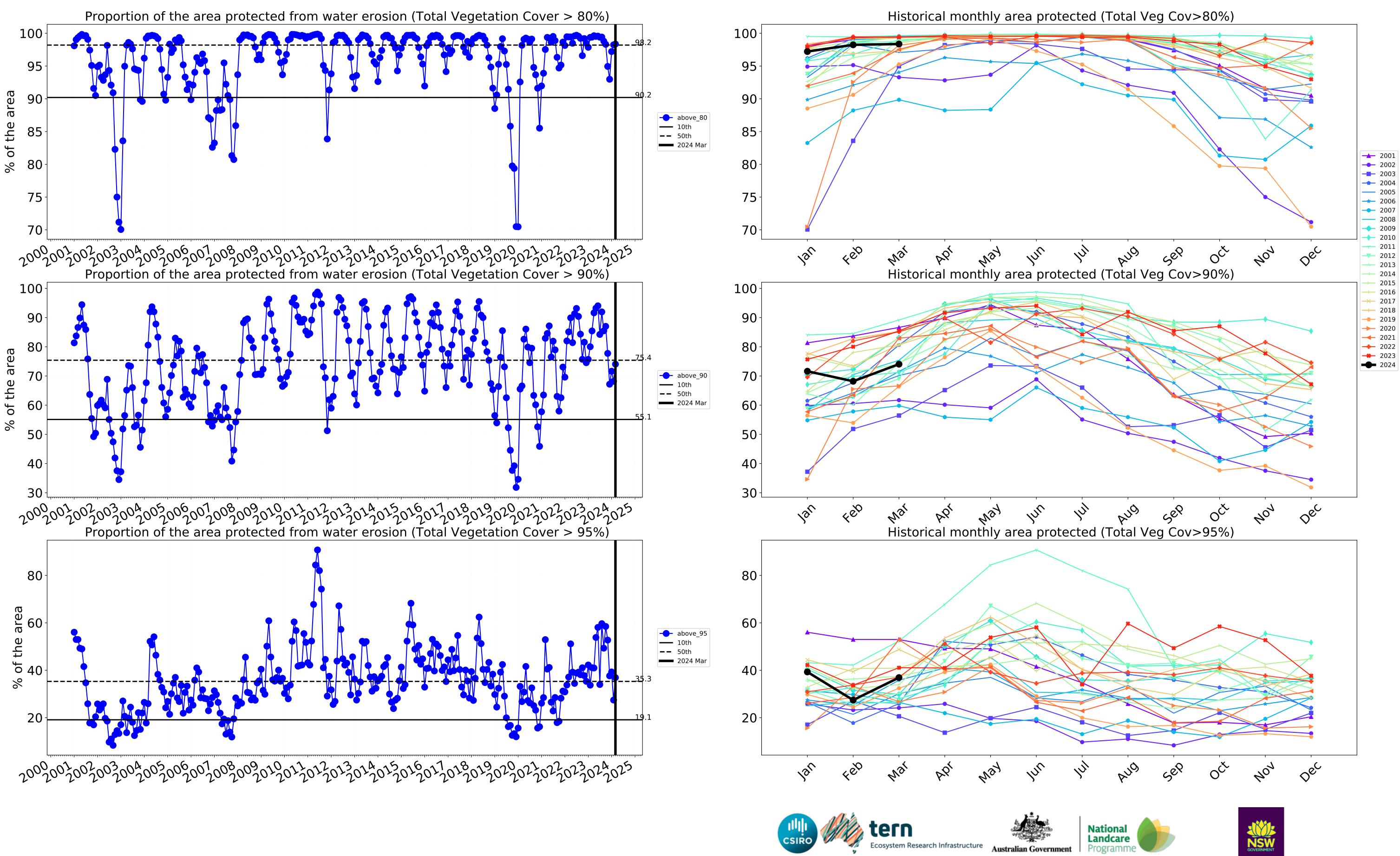


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



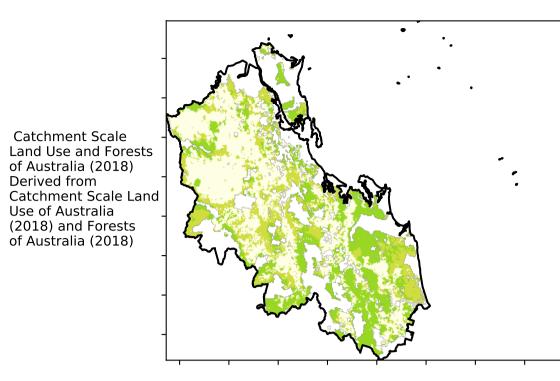
Wind erosion historical monthly area protected (Total Veg Cov >50%)



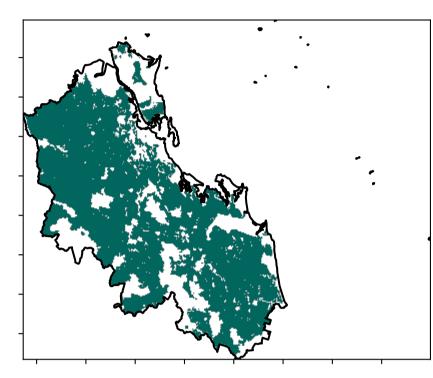


Grazing

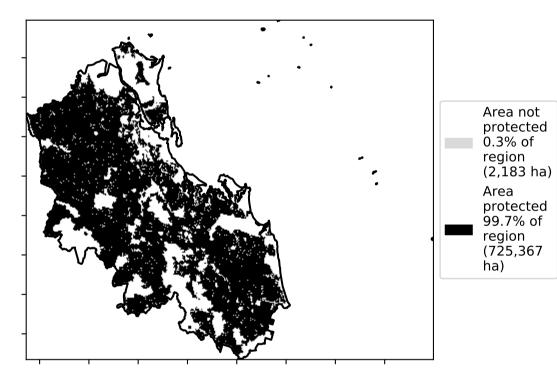
Land use and forest cover

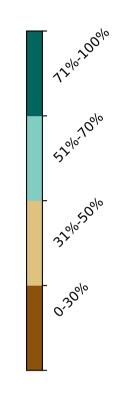


Total Vegetation Cover [%]

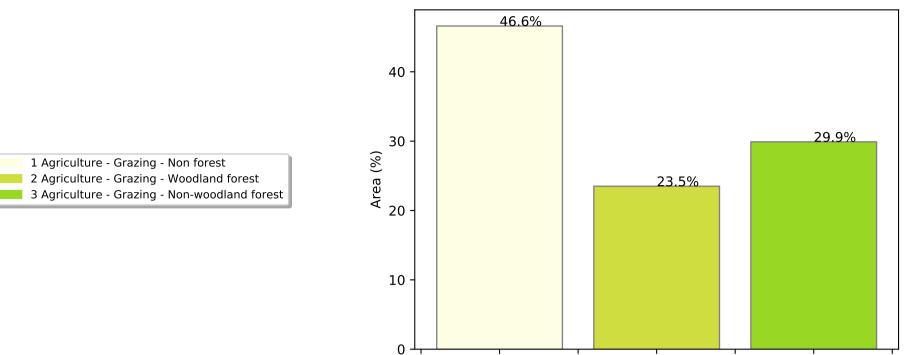


% Area protected from water erosion (>70%)





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



0.5

0.0

-0.5

Proportion of each land class in area

Proportion of vegetation cover class in area

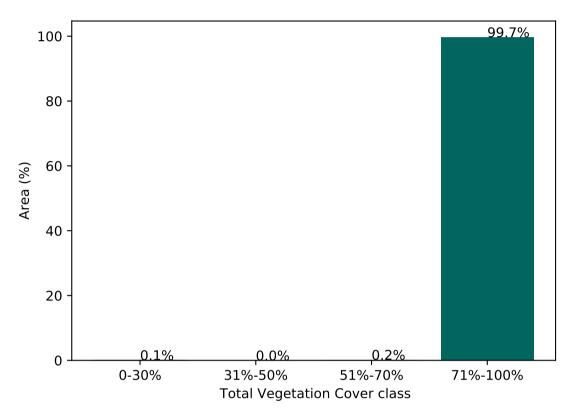
1.0

Land use class

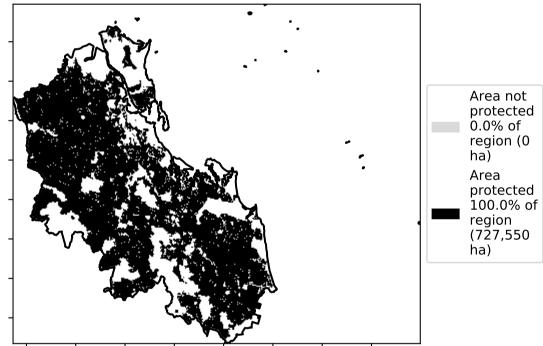
1.5

2.0

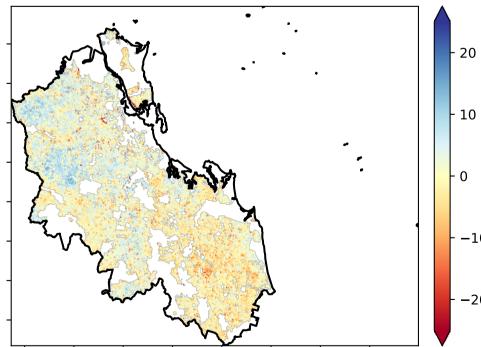
2.5



% Area protected from wind erosion (>50%)

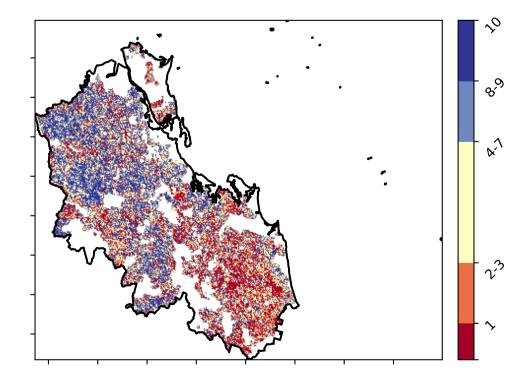


Total Vegetation Cover Anomaly [%]



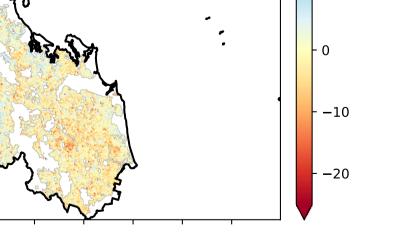
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

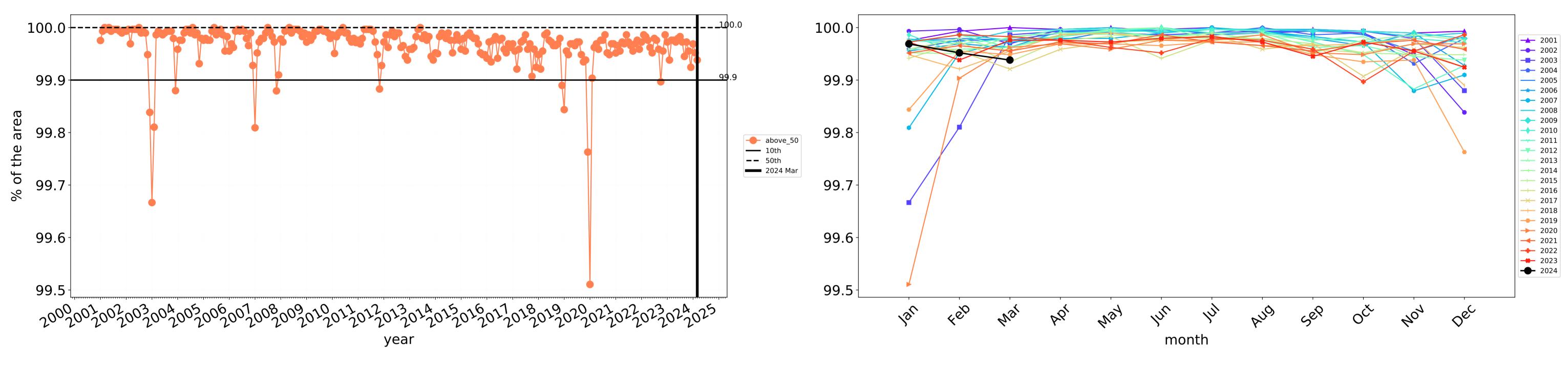
Total Vegetation Cover Decile [%]



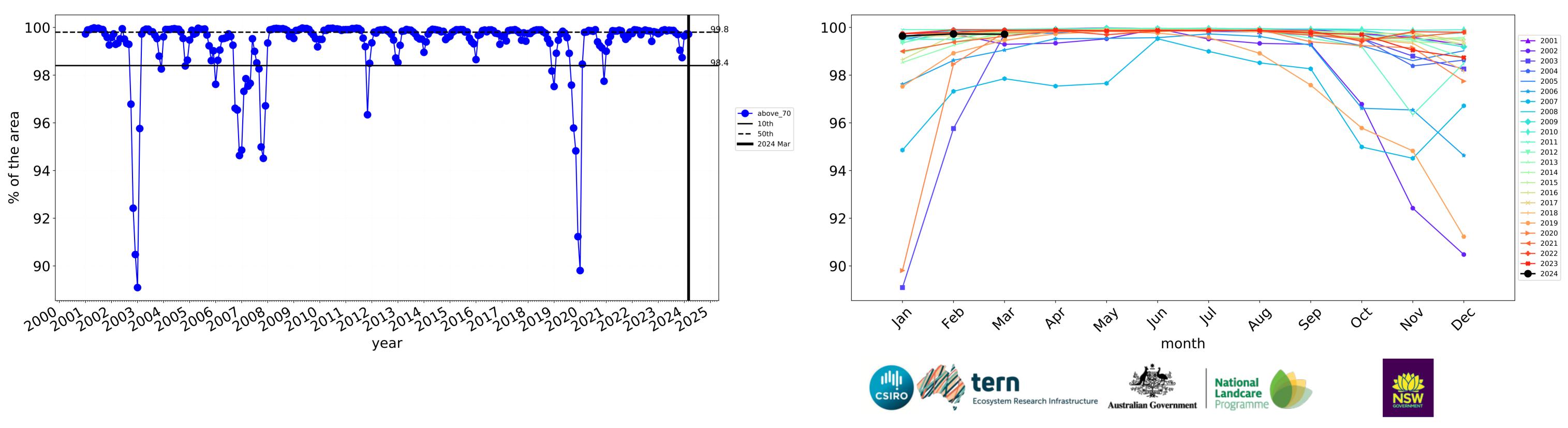


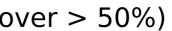
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





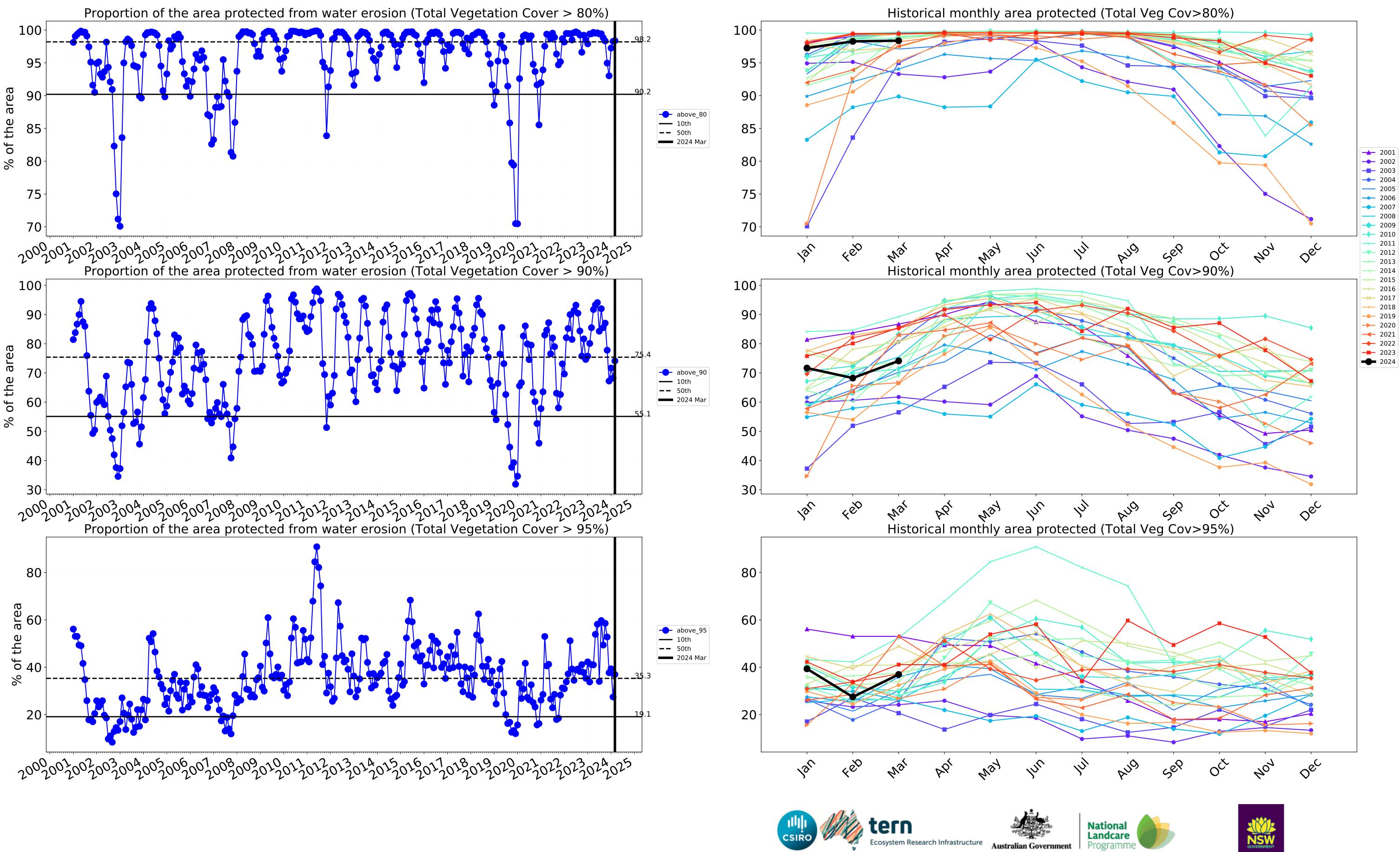
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





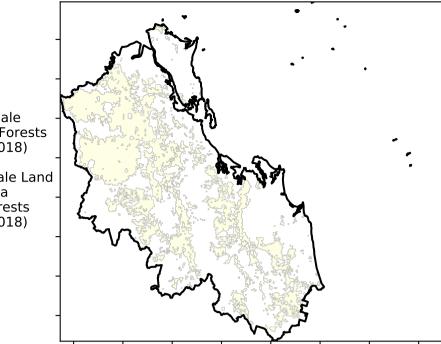
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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



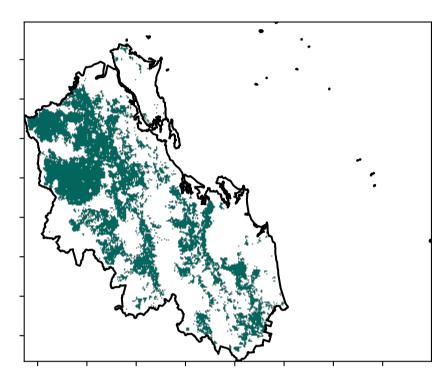
Grazing non forest

Land use and forest cover

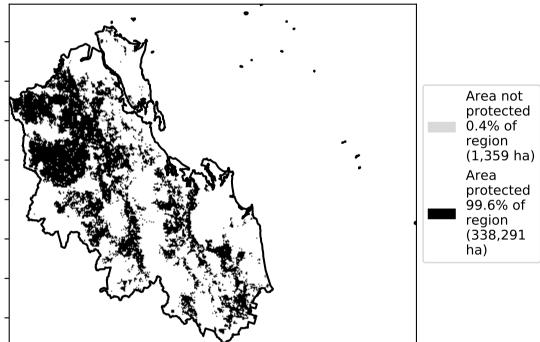


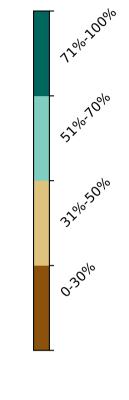
1 Agriculture - Grazing - Non forest

Total Vegetation Cover [%]



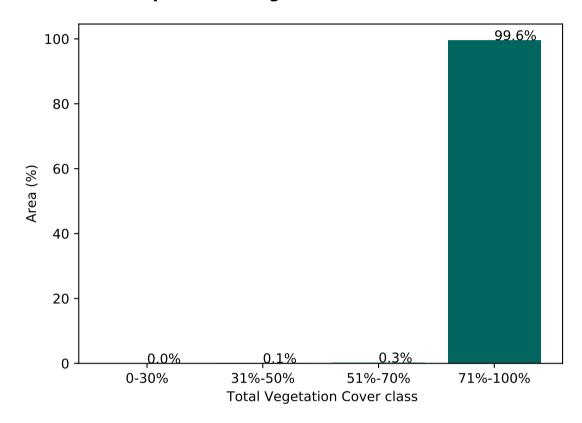
% Area protected from water erosion (>70%)



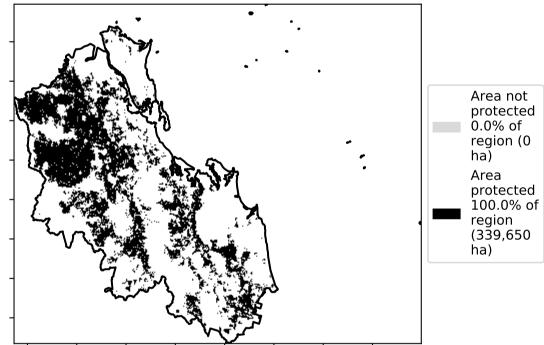




Proportion of vegetation cover class in area

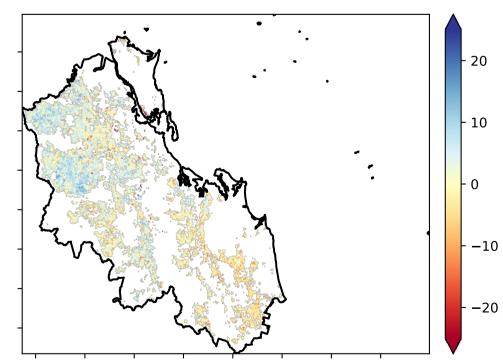


% Area protected from wind erosion (>50%)



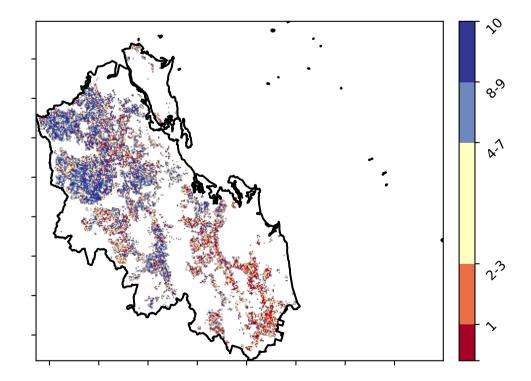
Catchment Scale -Land Use and Forests of Australia (2018) Derived from -Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]



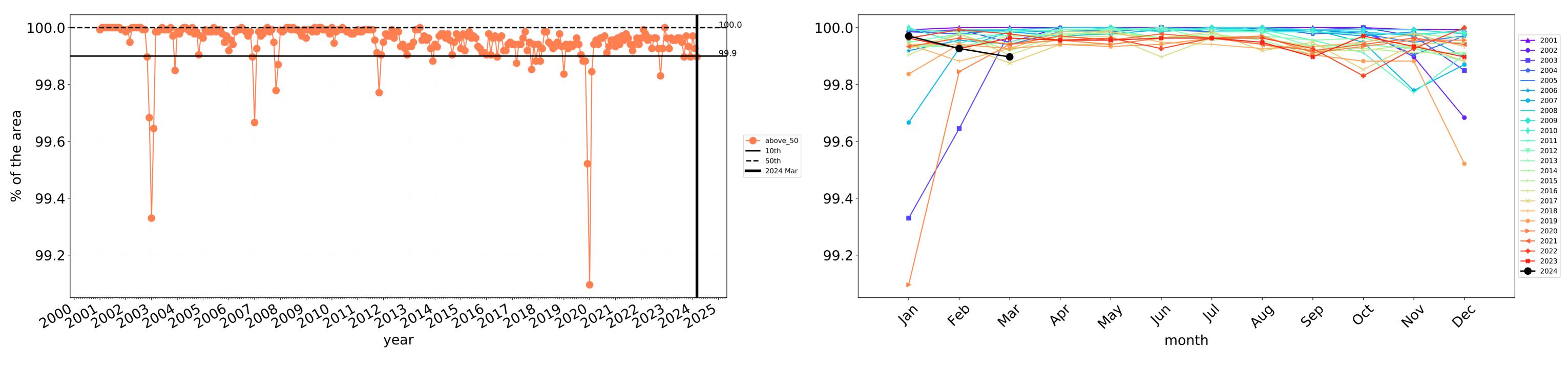
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

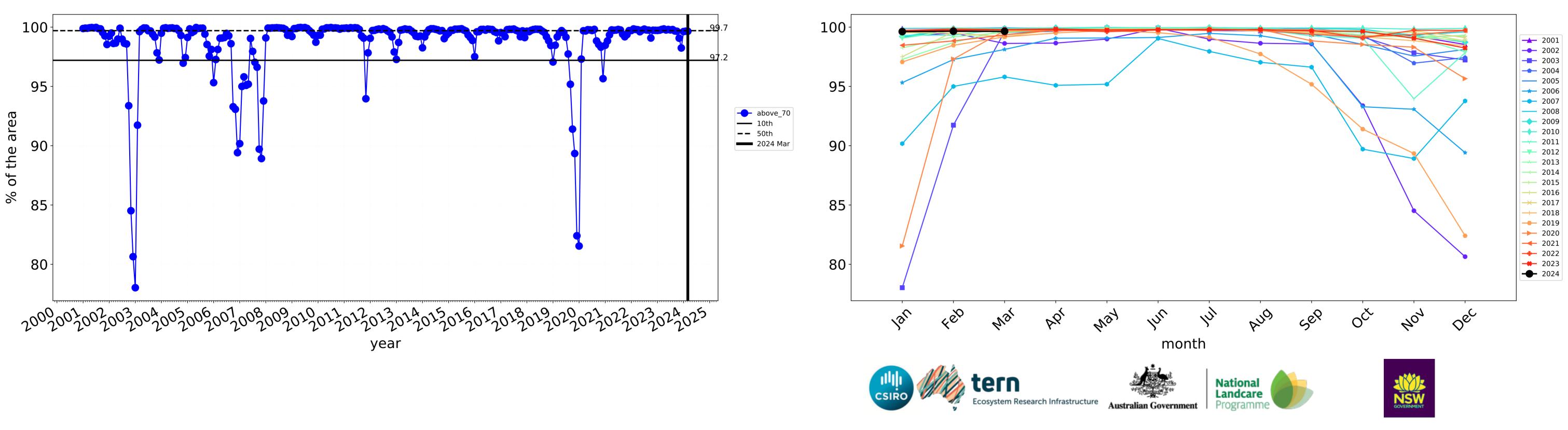
Total Vegetation Cover Decile [%]

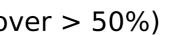




Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the lower than the lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

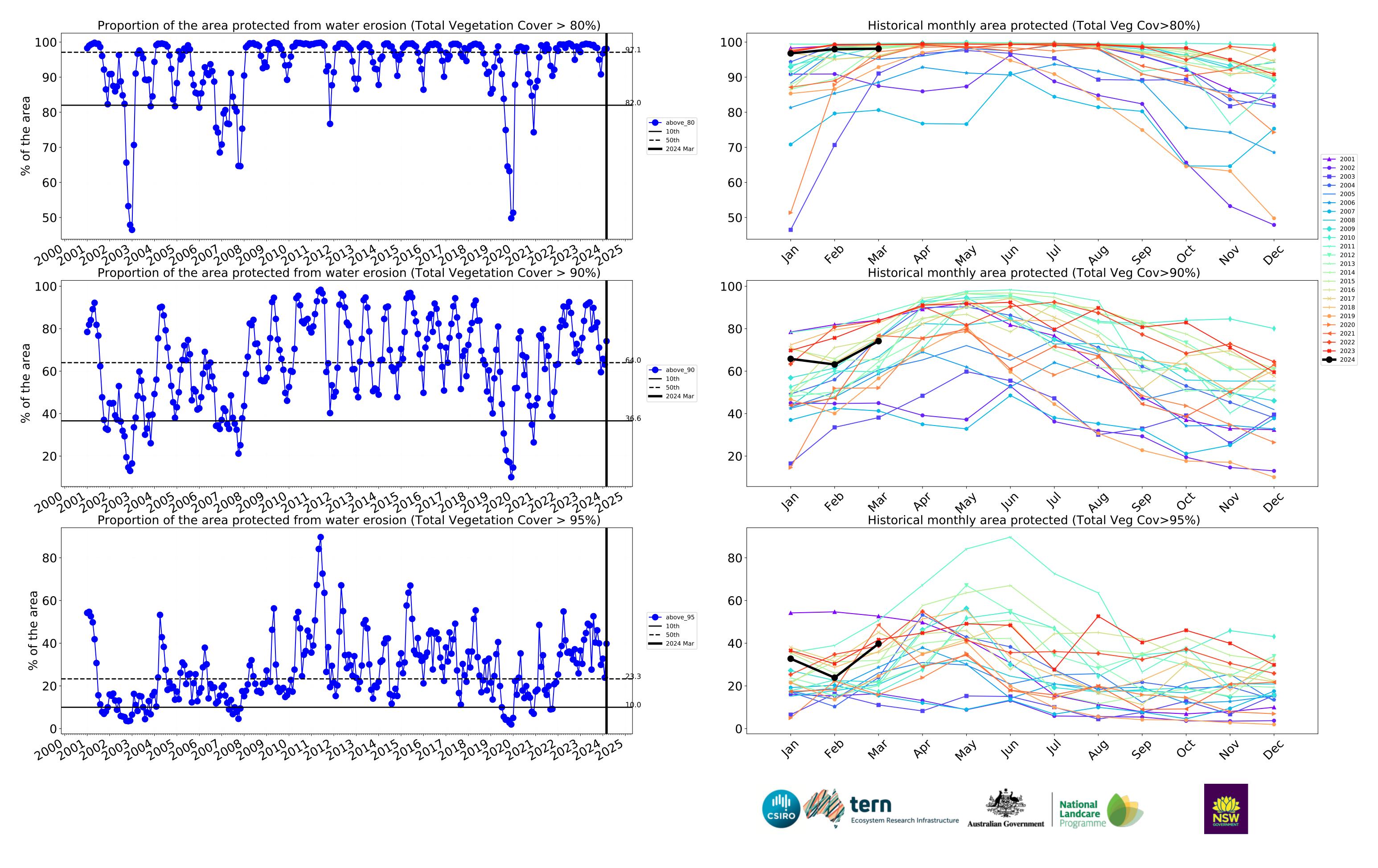






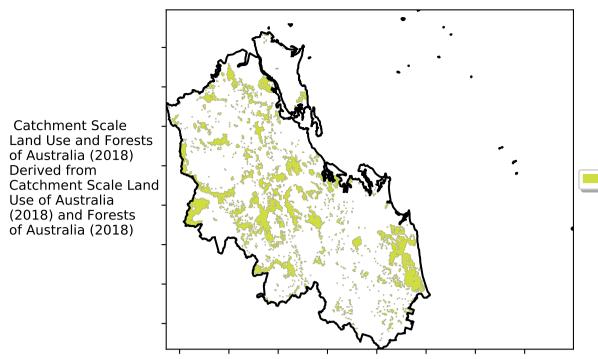
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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



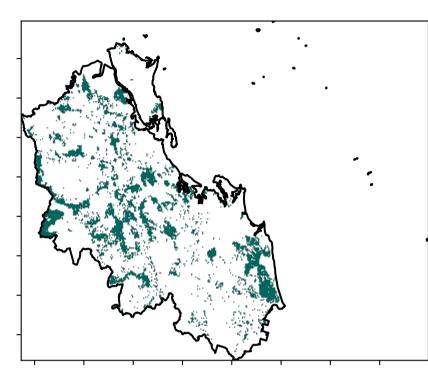
Grazing Woodland forest

Land use and forest cover

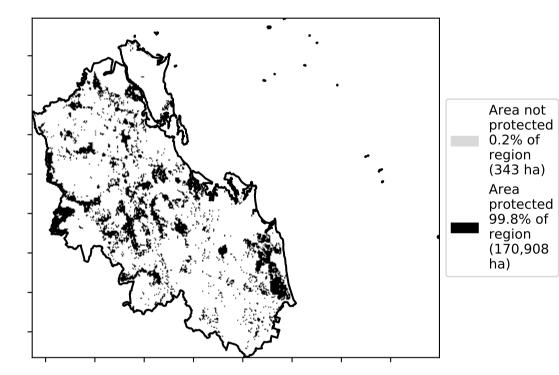


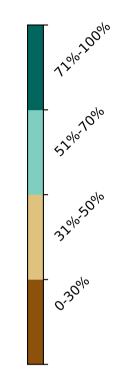
1 Agriculture - Grazing - Woodland forest

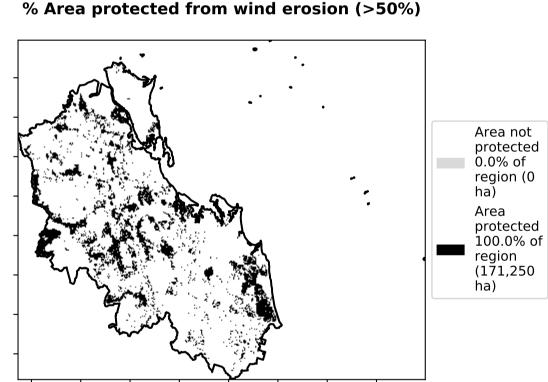
Total Vegetation Cover [%]



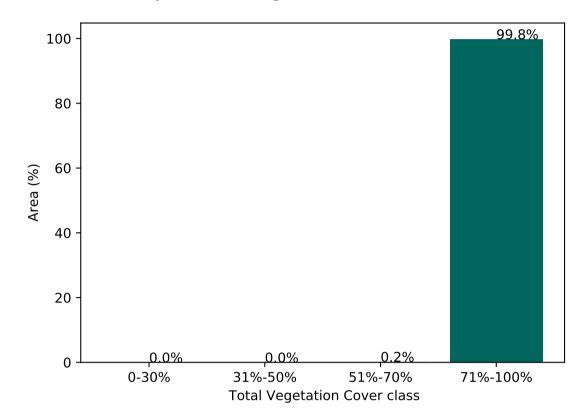
% Area protected from water erosion (>70%)

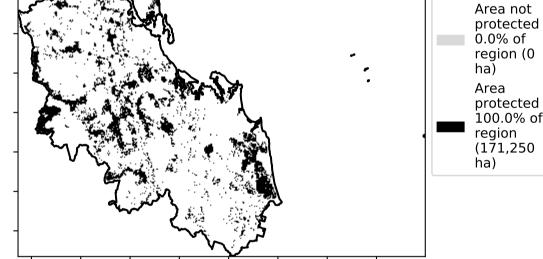




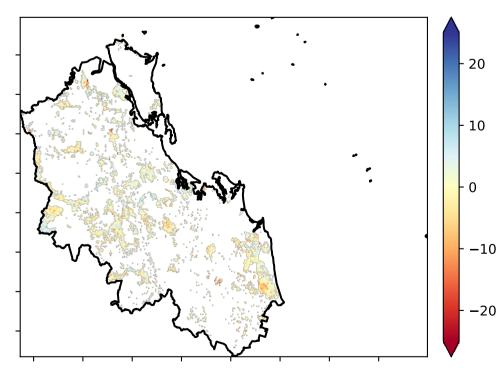


Proportion of vegetation cover class in area



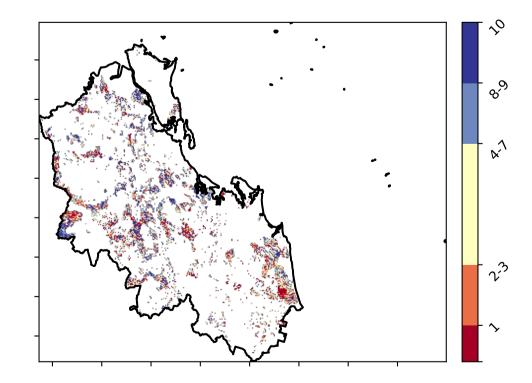


Total Vegetation Cover Anomaly [%]



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.

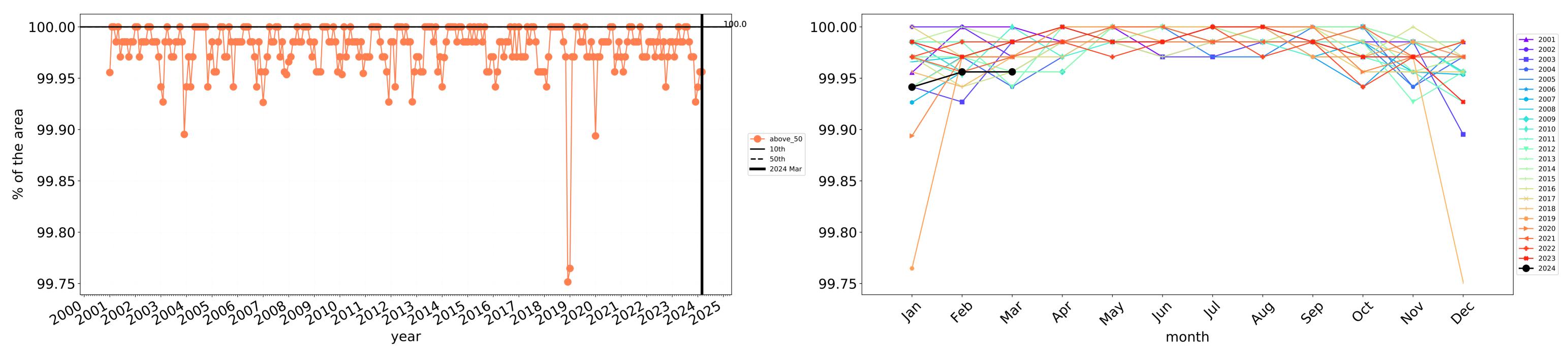
Total Vegetation Cover Decile [%]



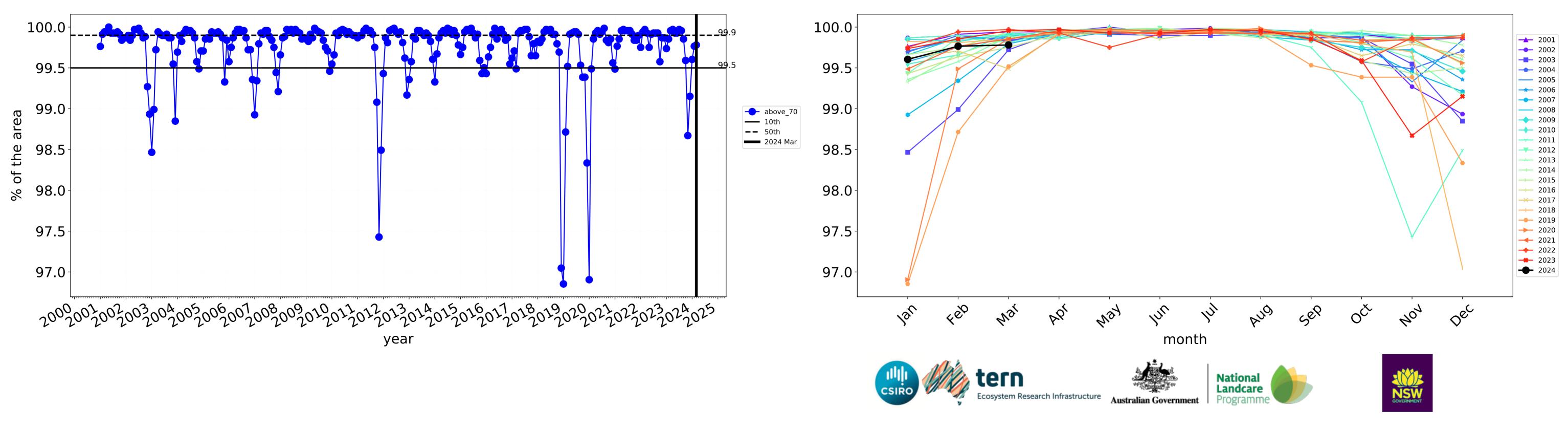


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the lower than the lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



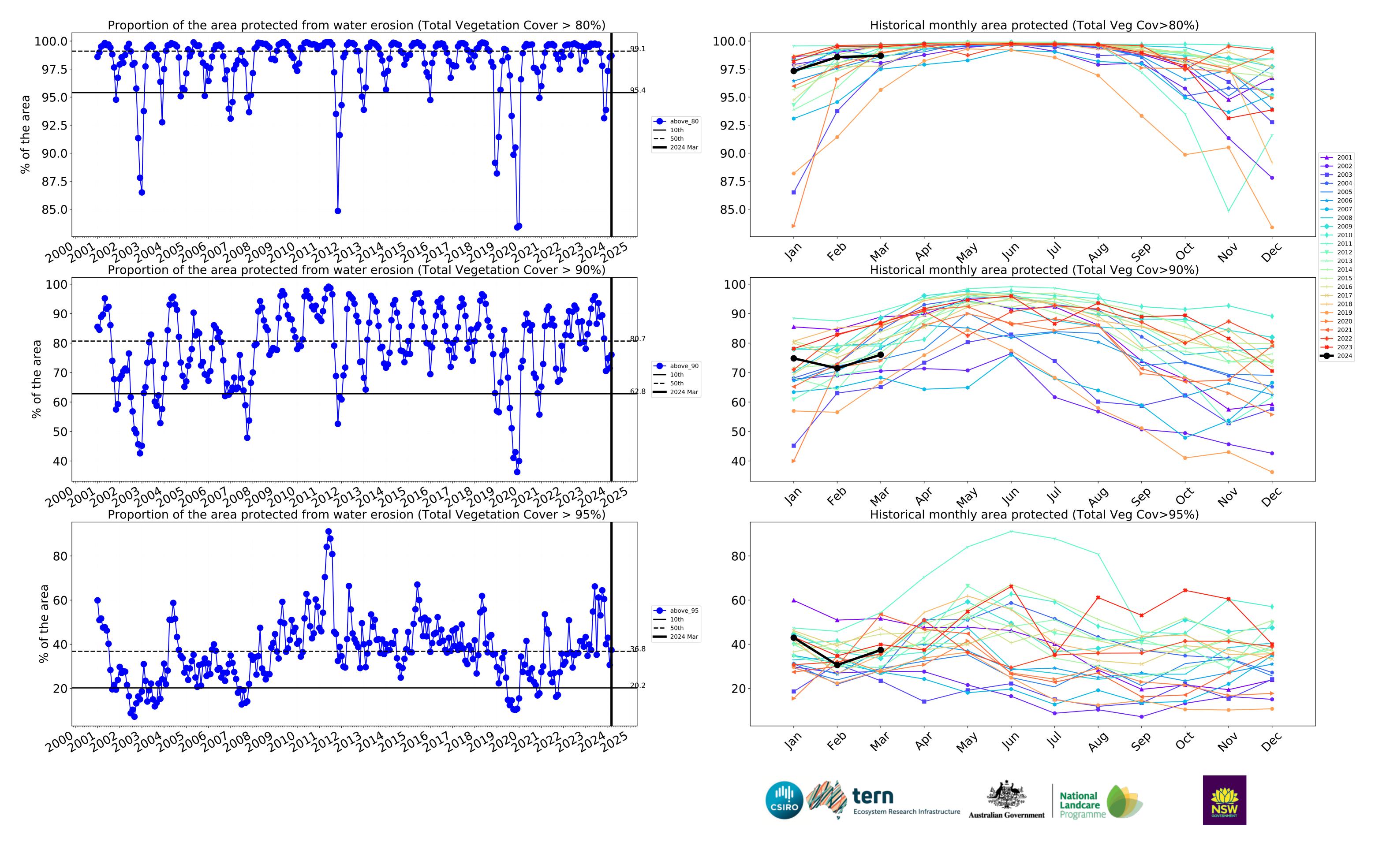


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

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



Grazing - Forest (non woodland)

7200-200010

52% 70%

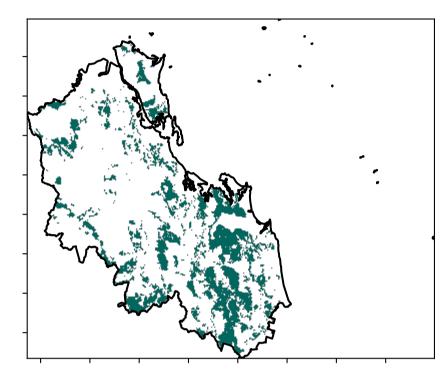
32%50%

0.30%

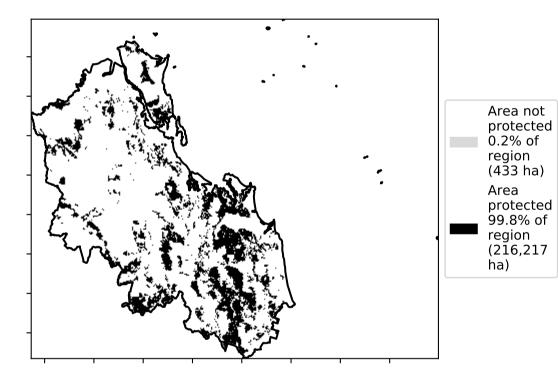
Catchment Scale -Land Use and Forests of Australia (2018) Derived from -Catchment Scale Land 1 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]

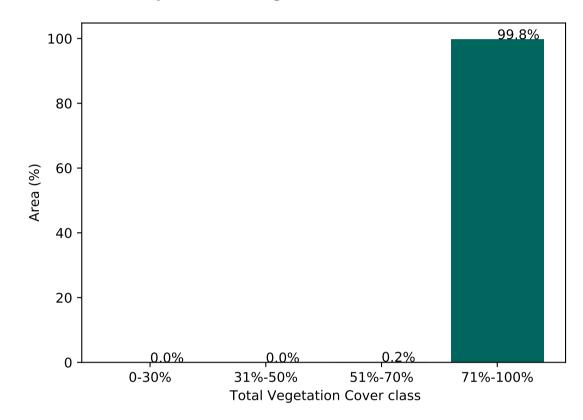
Land use and forest cover



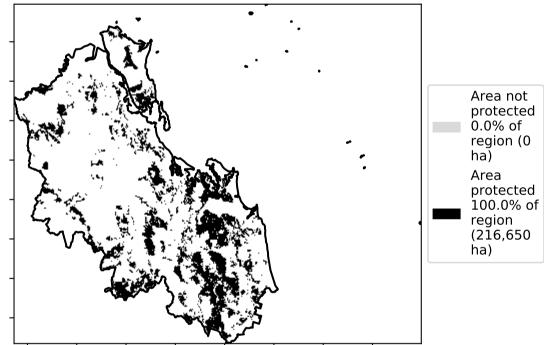
% Area protected from water erosion (>70%)



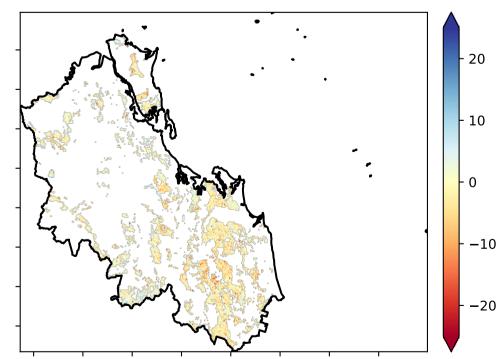




% Area protected from wind erosion (>50%)

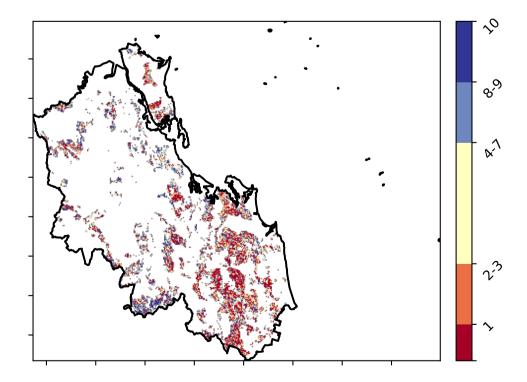


Total Vegetation Cover Anomaly [%]



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

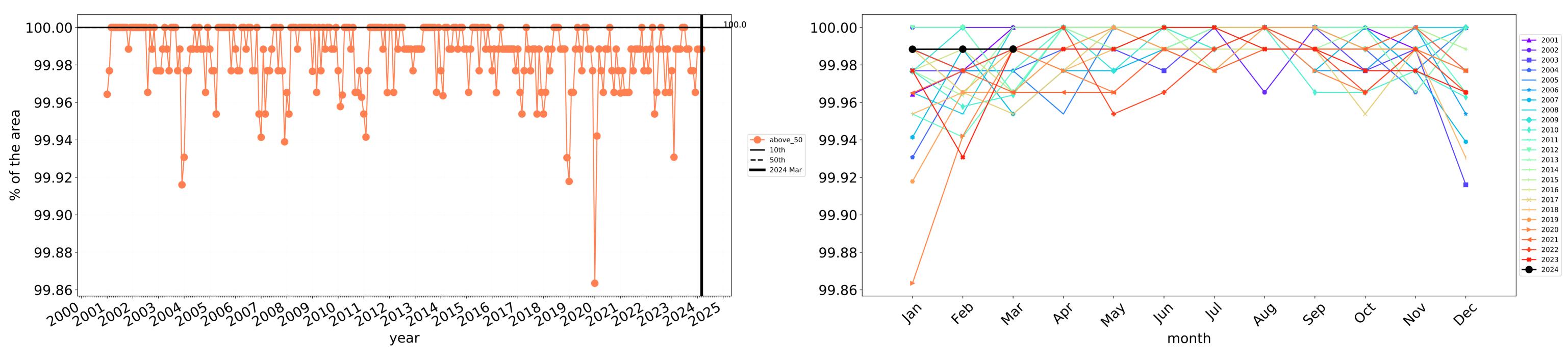
Total Vegetation Cover Decile [%]



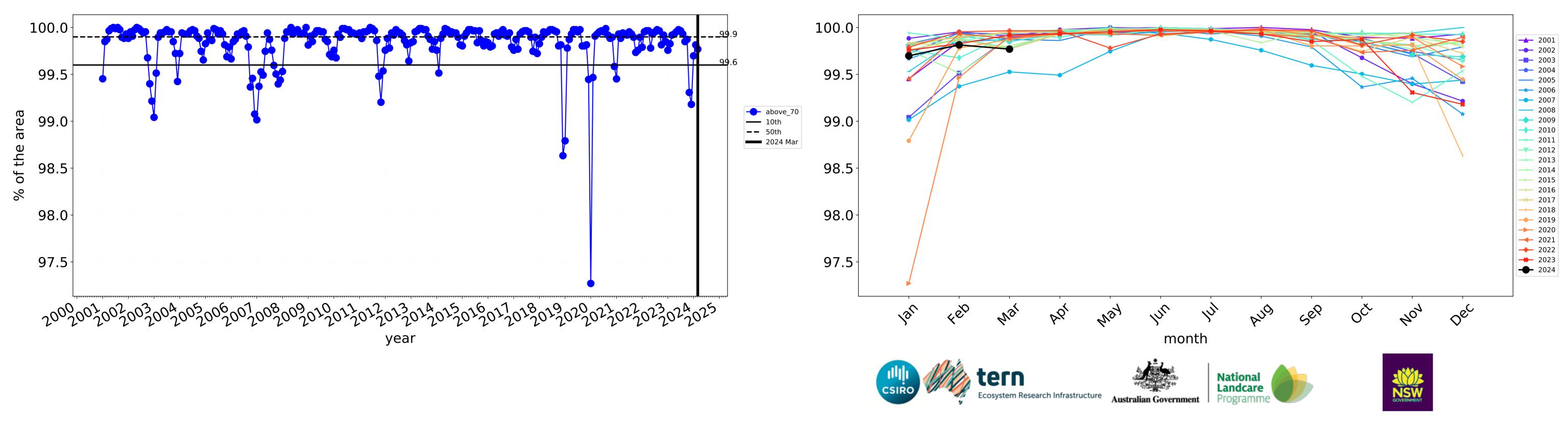


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the lower than the lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



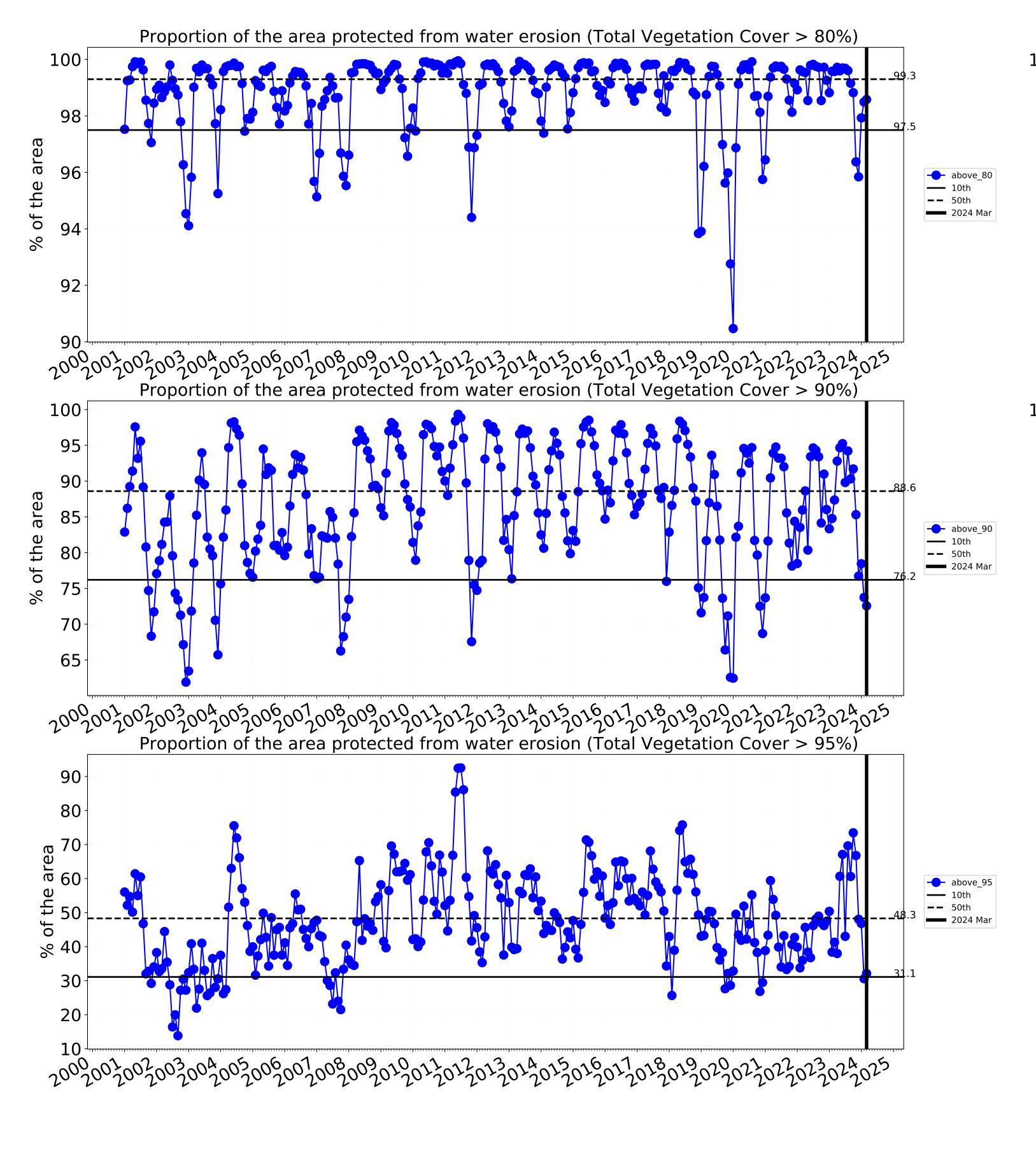


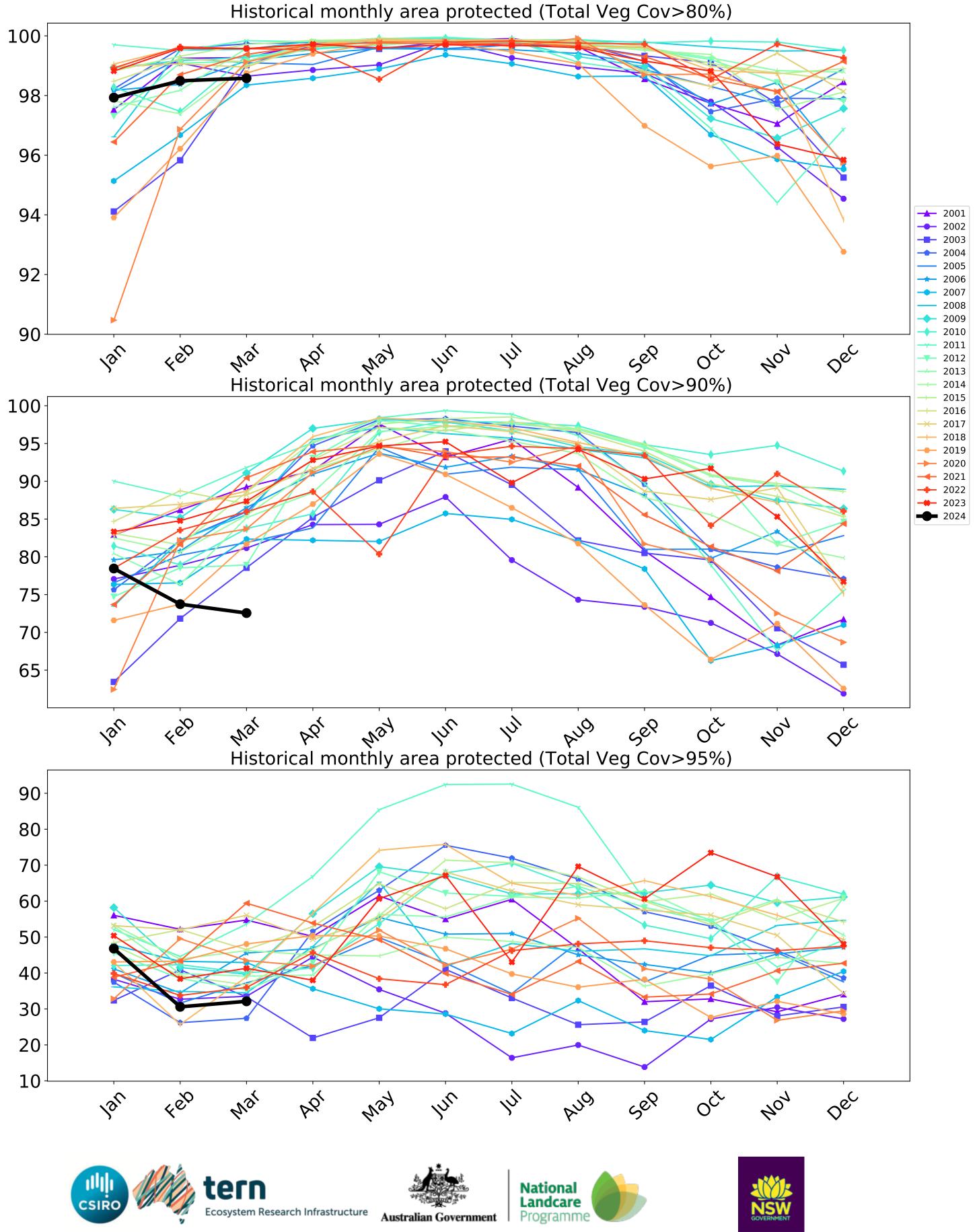
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

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





Production native forests and plantation forests

1 Production native forests and plantation forests

12%200%

52% 70%

3201050010

0.30%

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

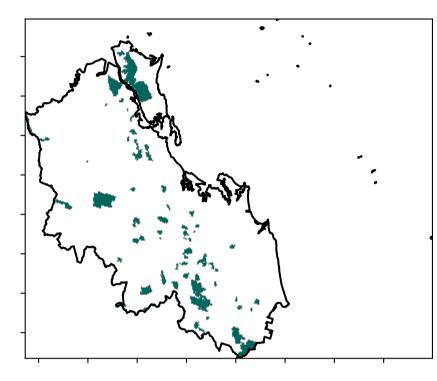
are about 20% lower than the

mean of that

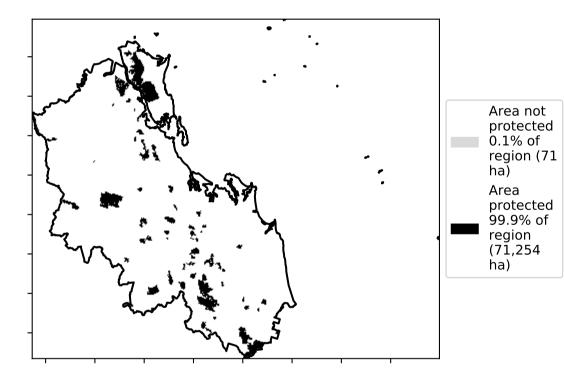
pixel. The mean

Total Vegetation Cover [%]

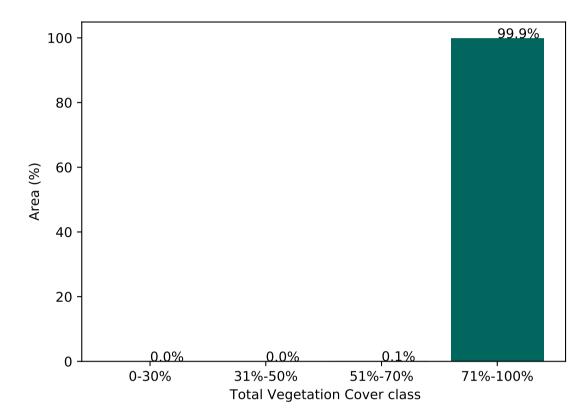
Land use and forest cover



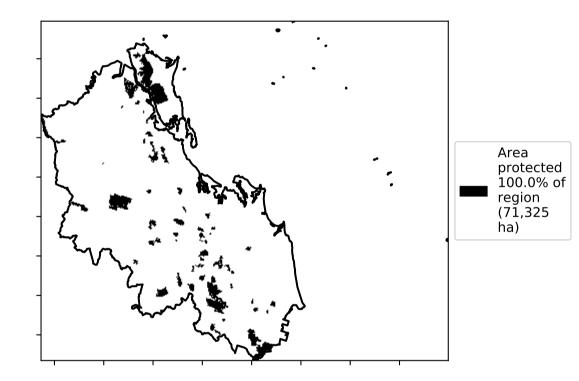
% Area protected from water erosion (>70%)



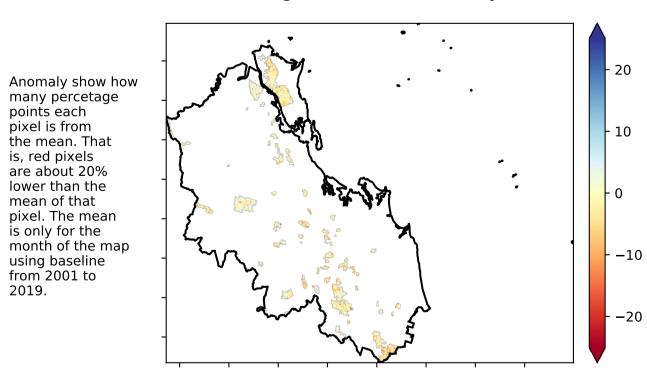




% Area protected from wind erosion (>50%)

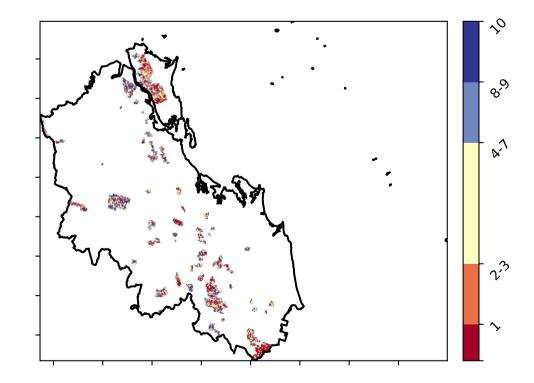


Total Vegetation Cover Anomaly [%]



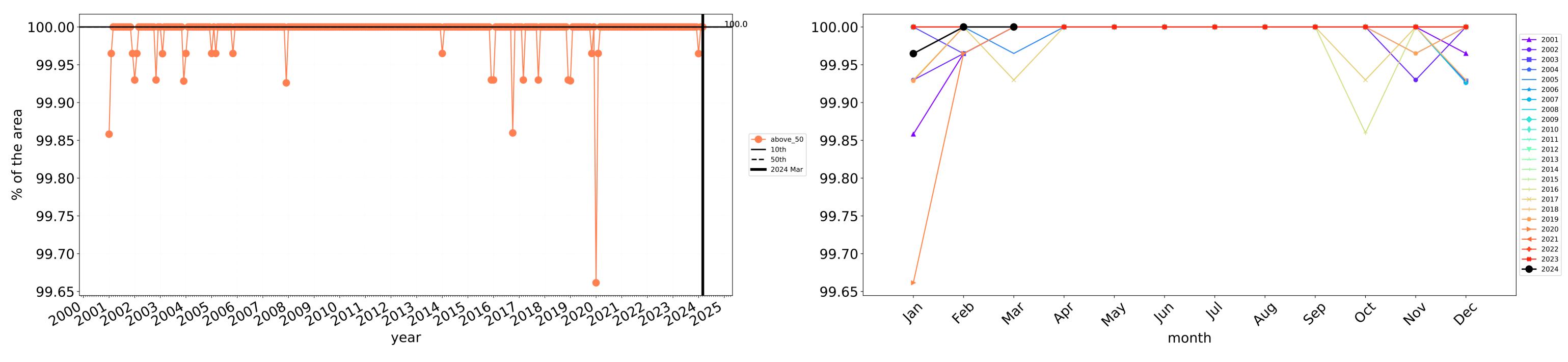
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

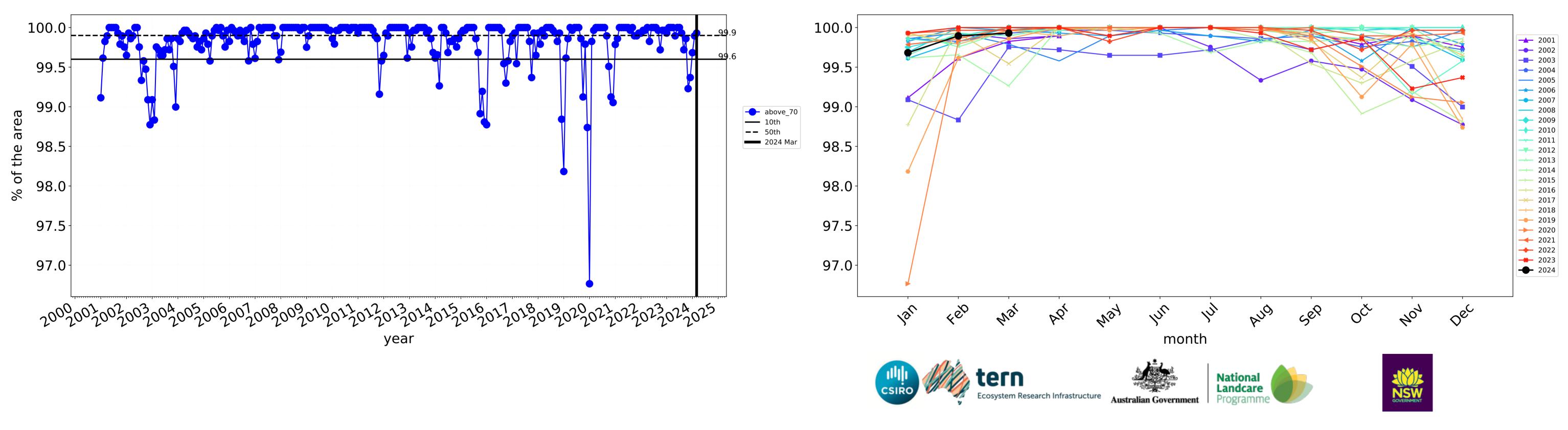


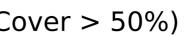


Production native forests and plantation forests timeseries



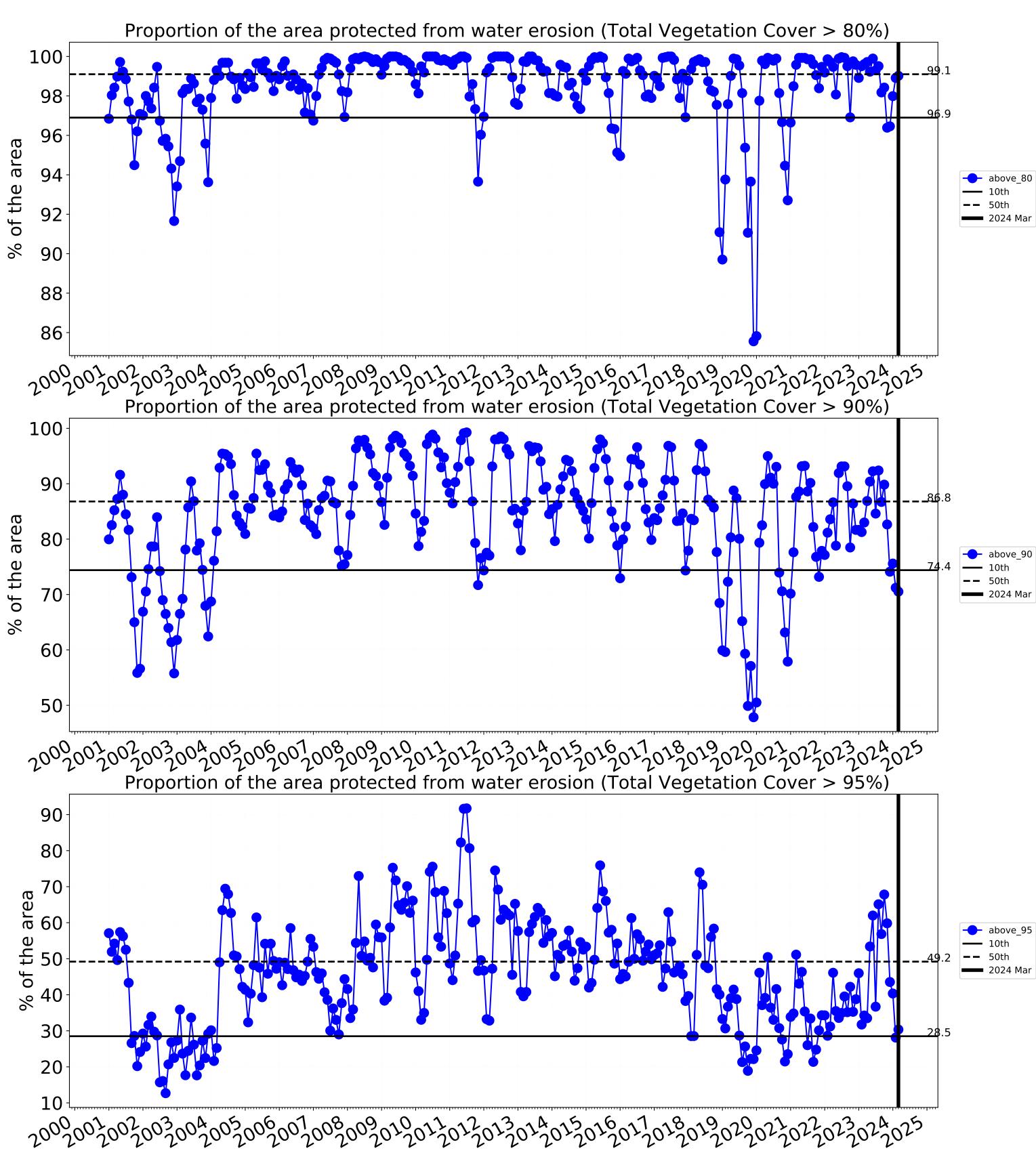
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

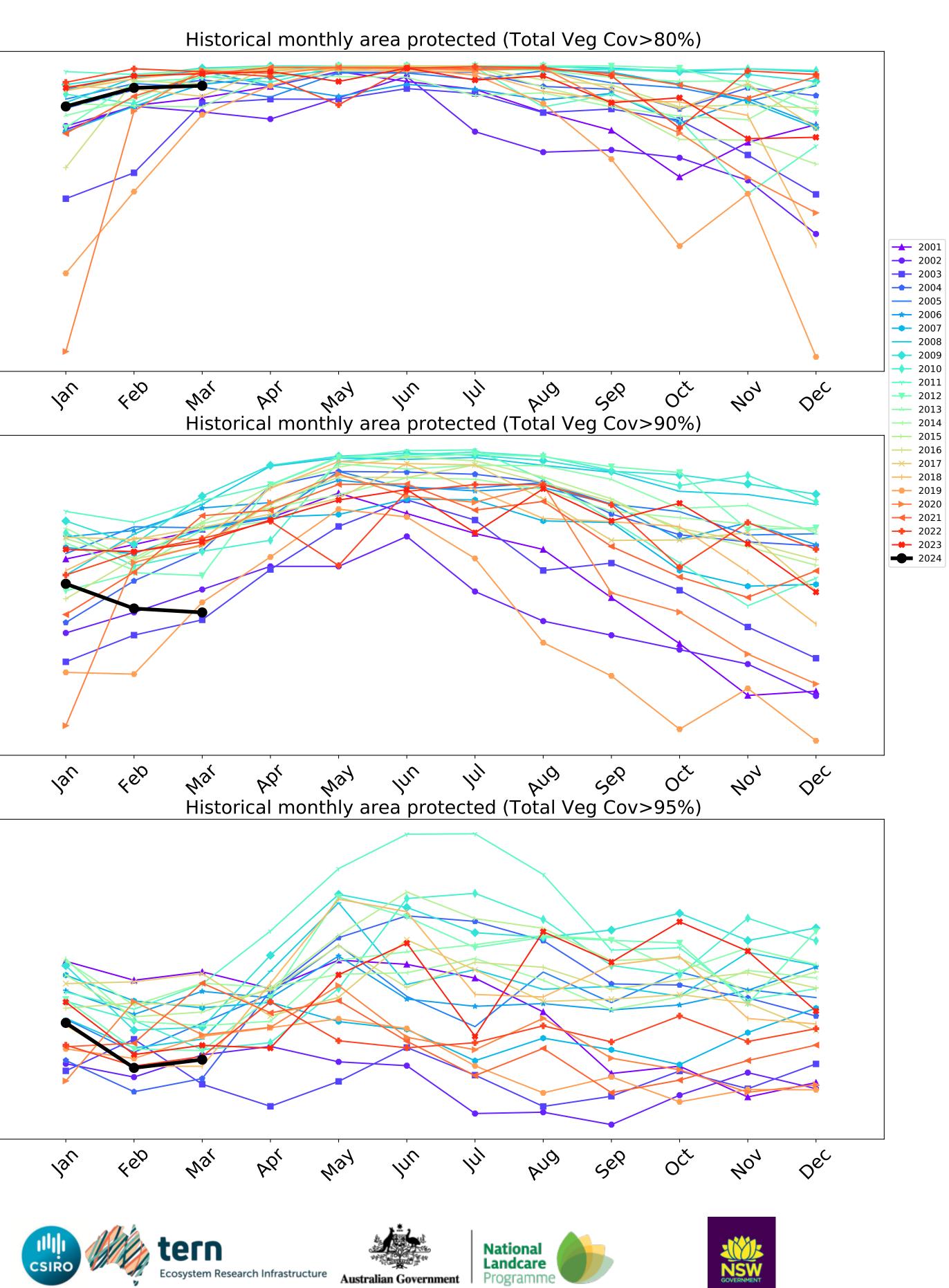




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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





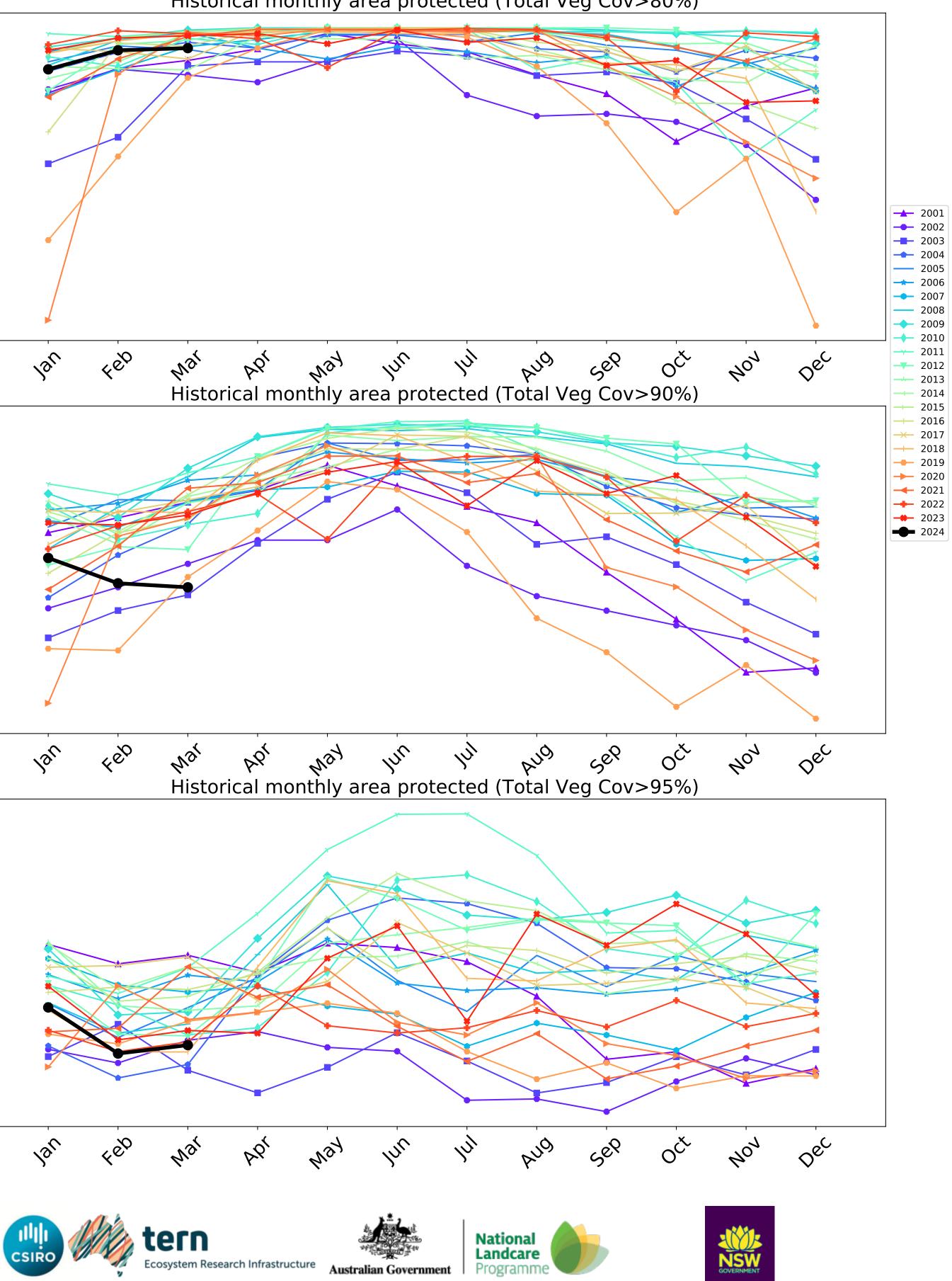
90-

70-

60-

20-

10-



Gladstone_(R) (1,025,775 ha and no data 22,479 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	1,025,775	99.9% 1,024,650	99.6% 1,021,550	98.3% 1,008,750	95.9% 983,300	71.2% 730,775	35.2% 360,950
Conservation and natural environments	149,825	99.8% 149,525	99.3% 148,825	98.1% 147,025	95.7% 143,450	71.8% 107,625	35.2% 52,700
Conservation and natural environments Woodland forest	49,600	99.7% 49,450	98.9% 49,075	96.8% 48,000	93.8% 46,500	72.8% 36,125	33.4% 16,575
Conservation and natural environments Forest (non woodland)	95,650	100.0% 95,625	99.9% 95,575	99.6% 95,225	97.8% 93,575	72.5% 69,375	36.5% 34,875
Agriculture	729,075	100.0% 728,950	99.9% 728,600	99.7% 726,975	98.4% 717,125	74.0% 539,875	36.9% 269,000
Grazing	727,550	100.0% 727,425	99.9% 727,100	99.7% 725,475	98.4% 715,775	74.1% 539,275	36.9% 268,700
Grazing non forest	339,650	100.0% 339,575	99.9% 339,300	99.6% 338,450	98.1% 333,200	74.1% 251,825	39.8% 135,075
Grazing Woodland forest	171,250	100.0% 171,200	100.0% 171,175	99.8% 170,875	98.7% 169,000	76.1% 130,250	37.4% 64,025
Grazing - Forest (non woodland)	216,650	100.0% 216,650	100.0% 216,625	99.8% 216,150	98.6% 213,575	72.6% 157,200	32.1% 69,600
Production native forests and plantation forests	71,325	100.0% 71,325	100.0% 71,325	99.9% 71,275	99.0% 70,625	70.5% 50,300	30.4% 21,650

