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

Date: February 2023

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

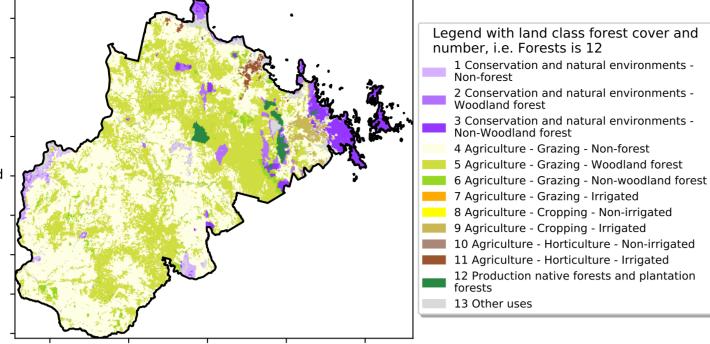


Vegetation Cover Feb 2023

Land use and forest cover

Proportion of each land class in area





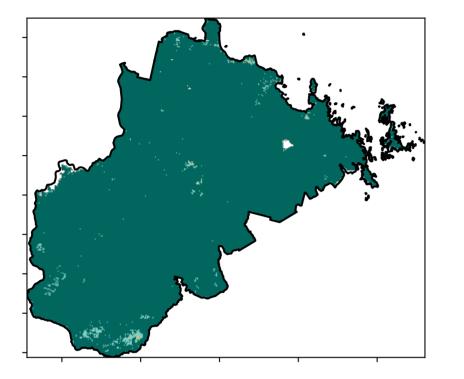
12%100%

52% 70%

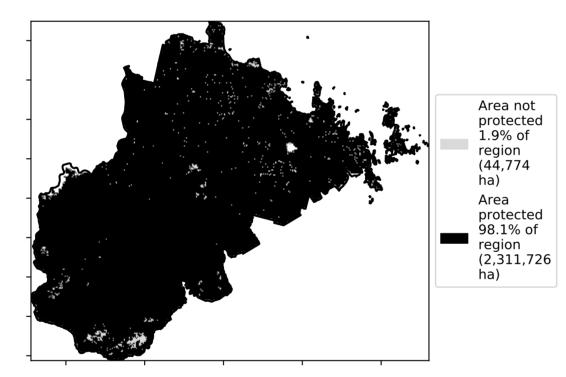
32%50%

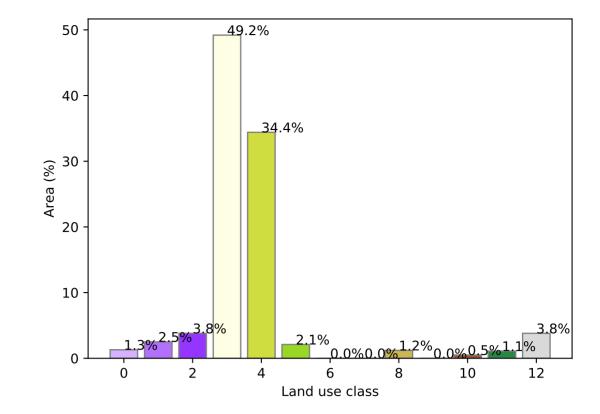
0.30%

Total Vegetation Cover [%]

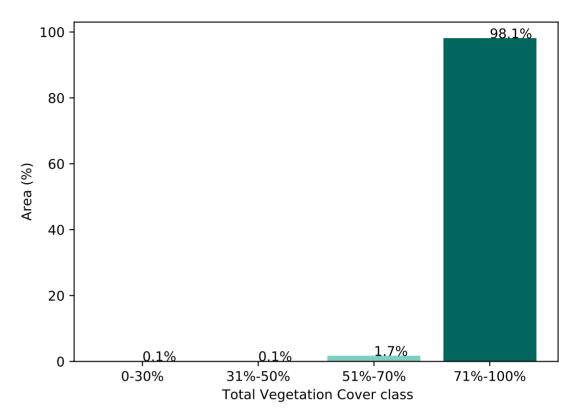


% Area protected from water erosion (>70%)

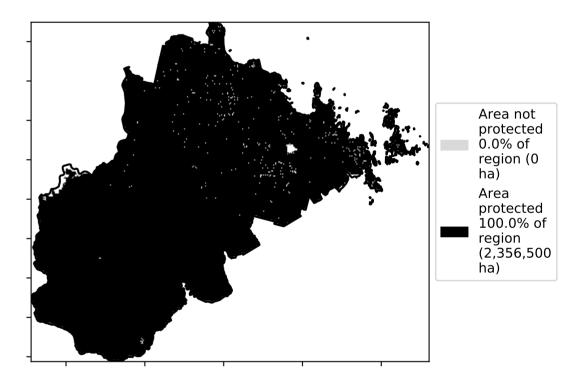




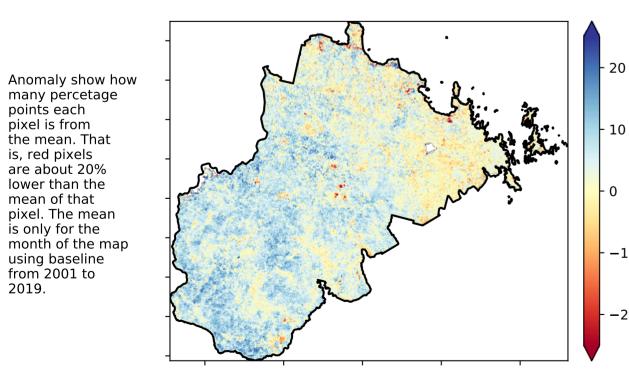
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



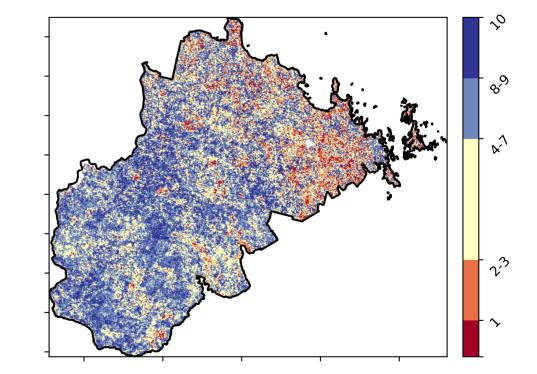
Total Vegetation Cover Anomaly [%]



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.

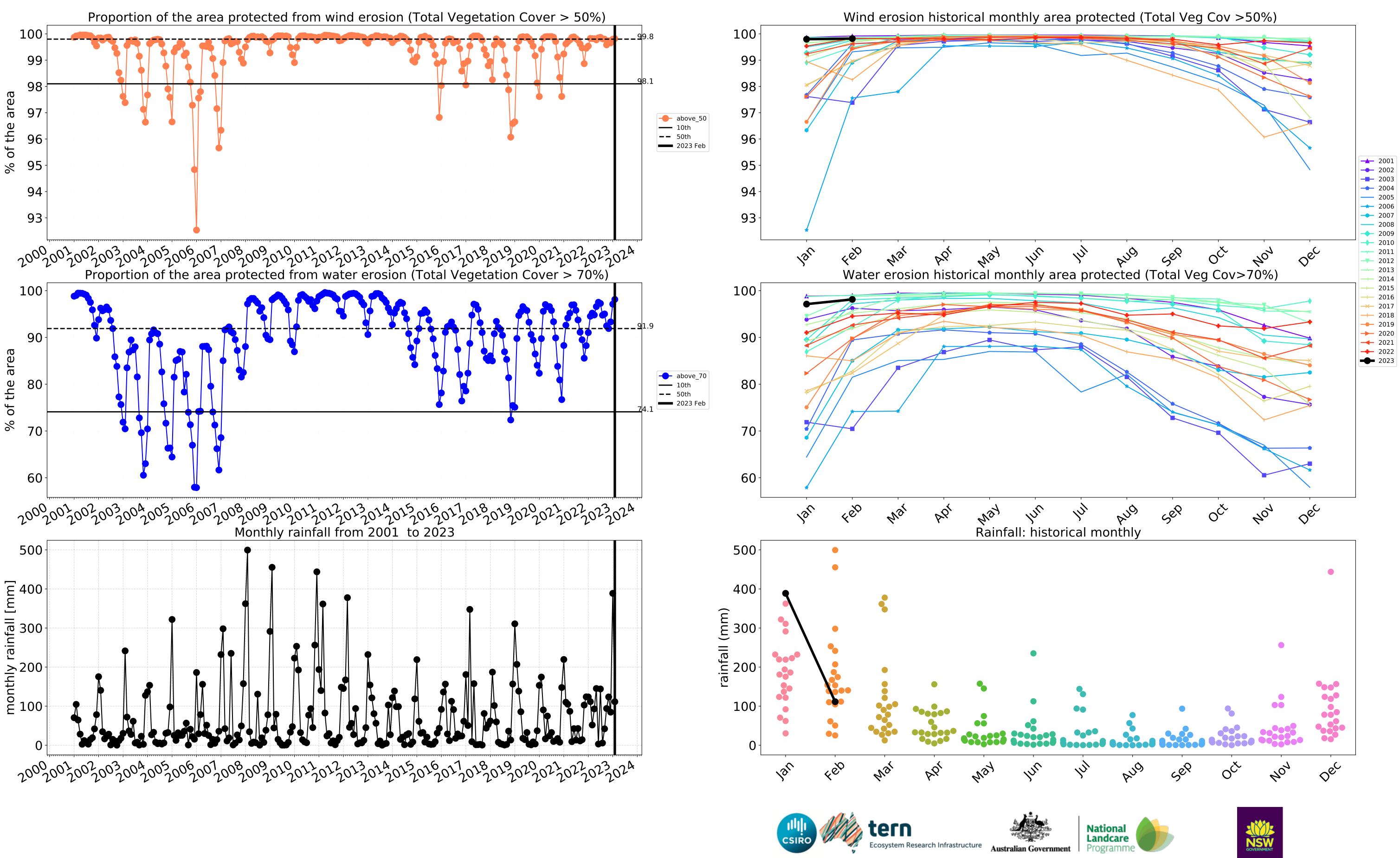
Total Vegetation Cover Decile [%]

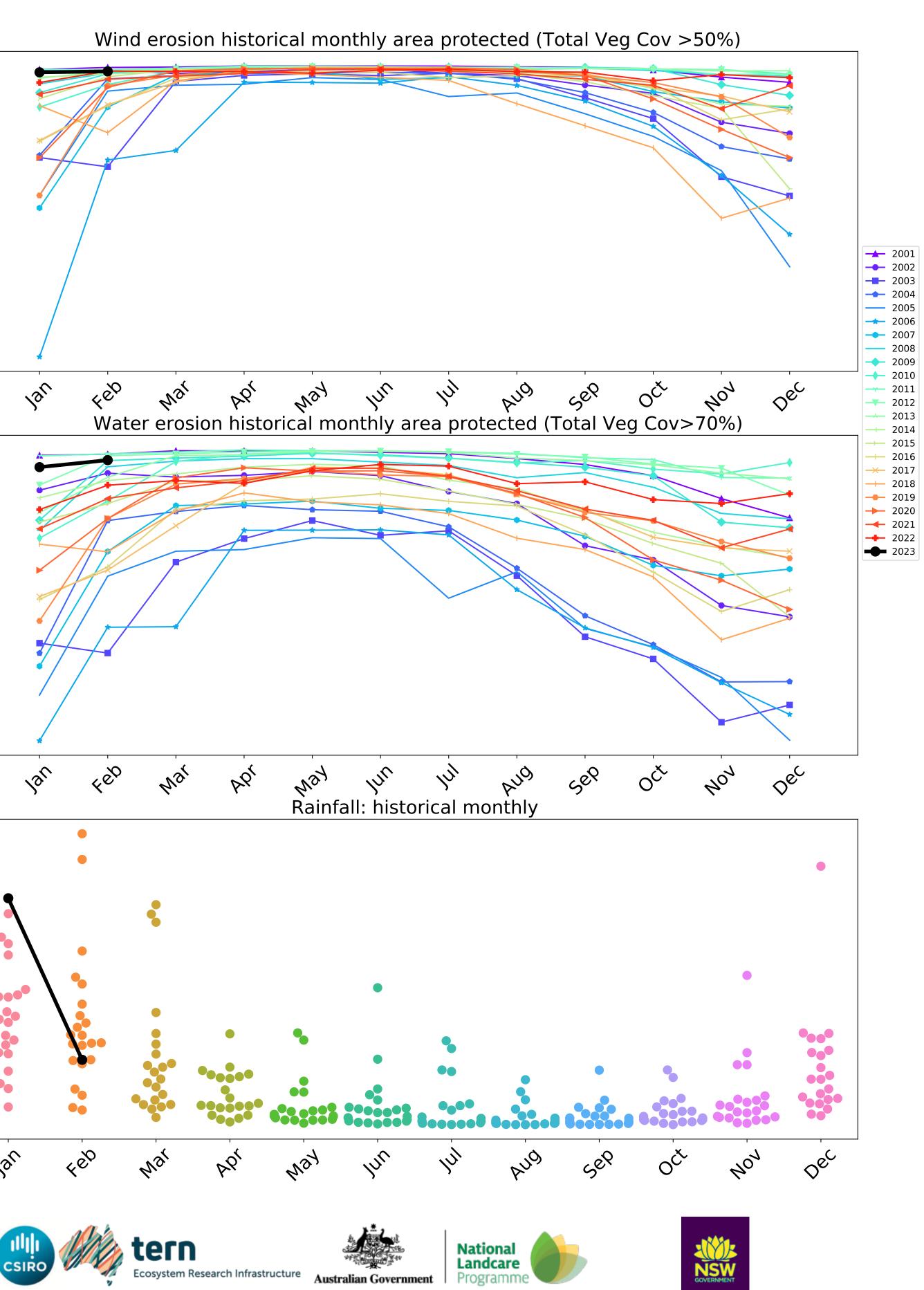


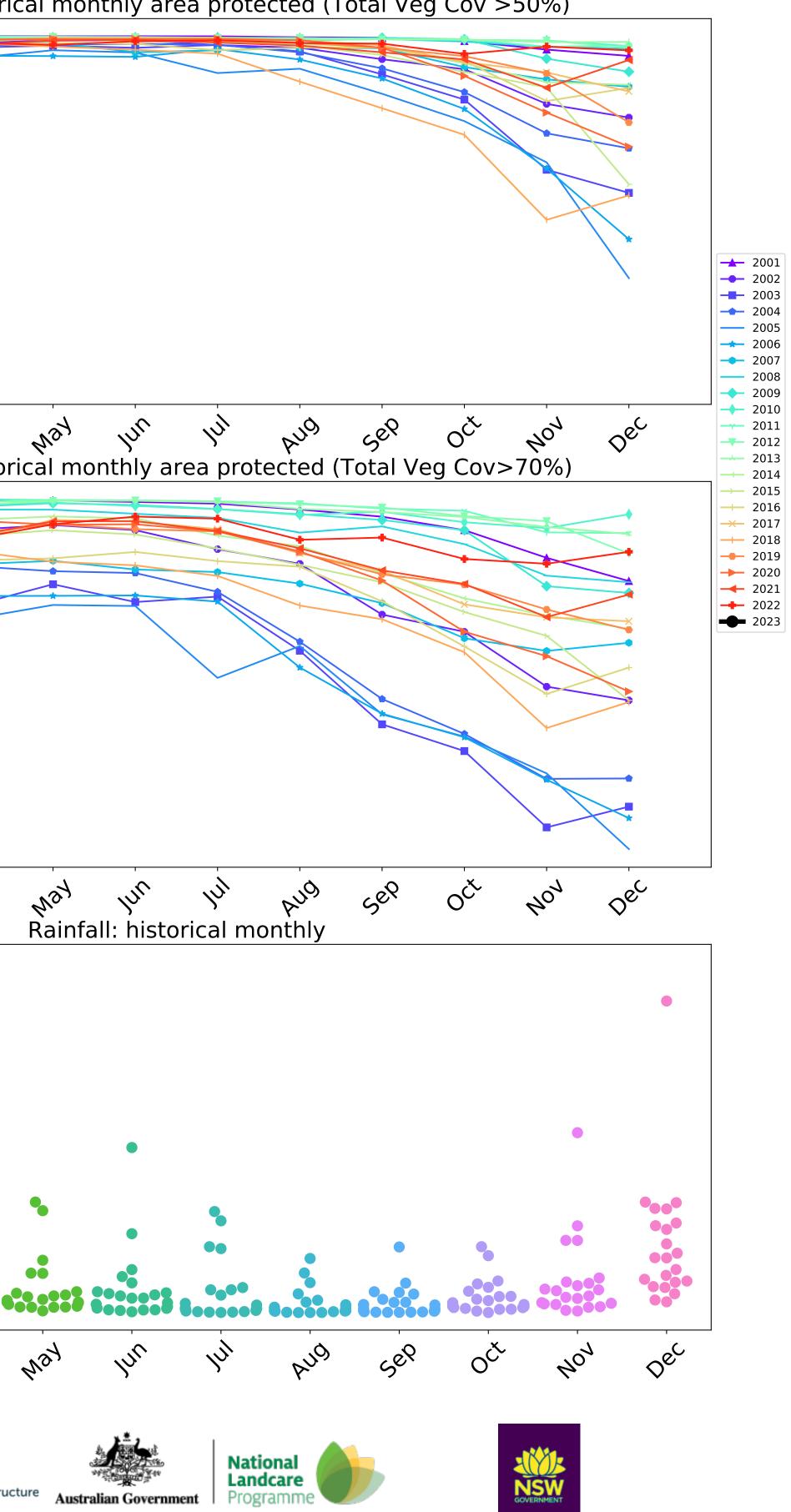


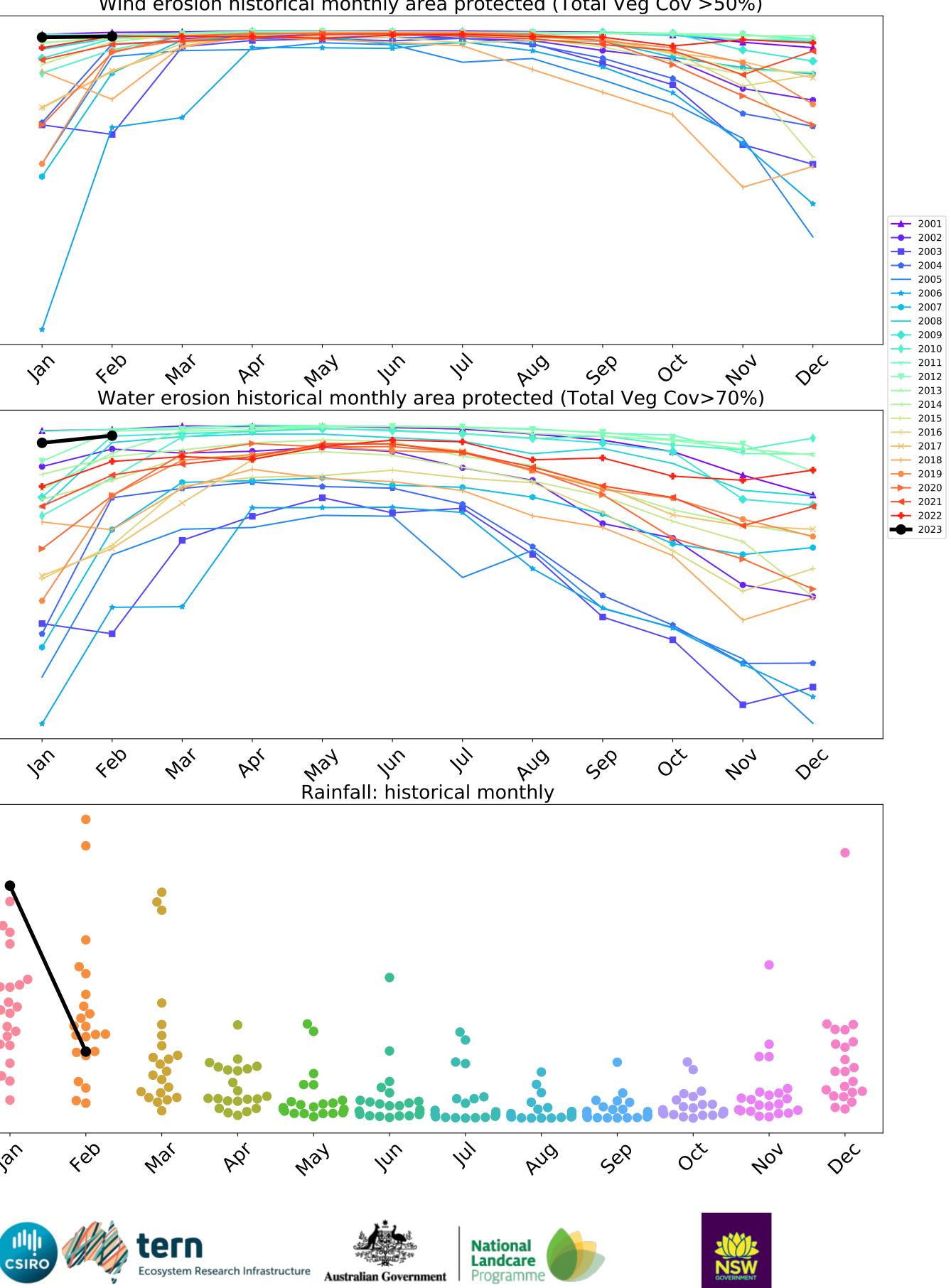
-10

-20









Conservation and natural environments

forest

forest

woodland forest

12%200%

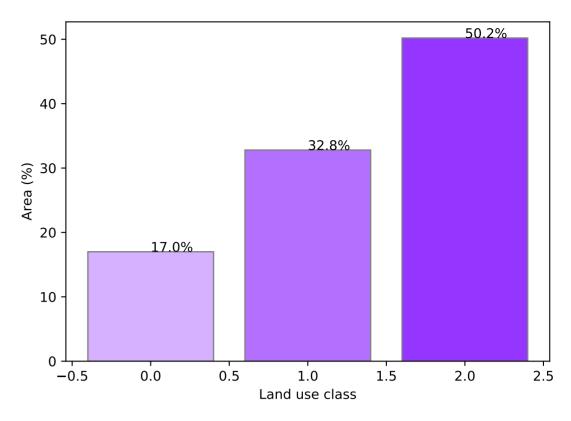
· 52°1070010

320050010

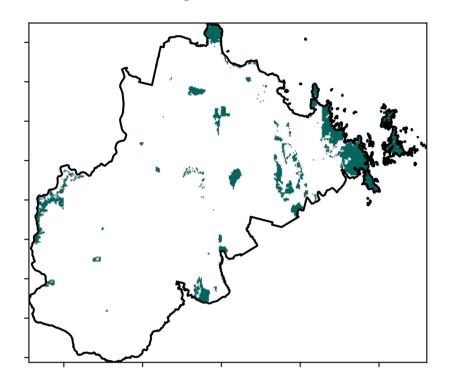
0-30%

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

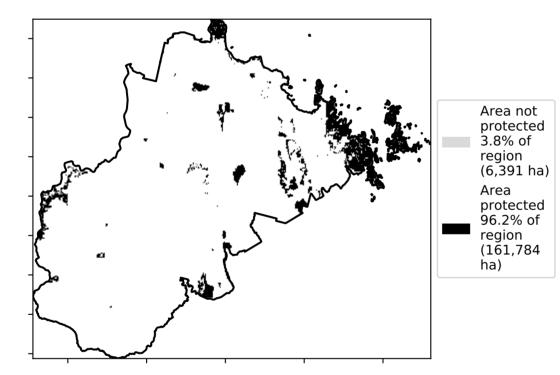
Proportion of each land class in area



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

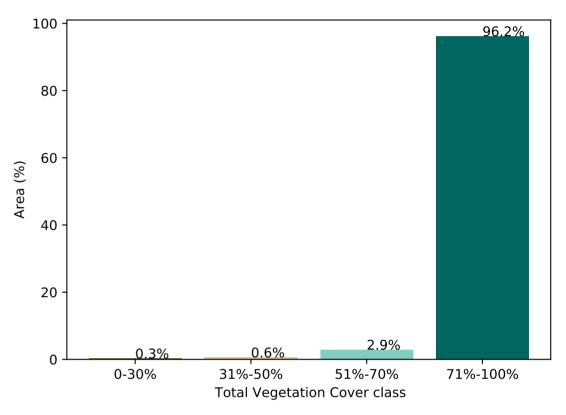


1 Conservation and natural environments - Non-

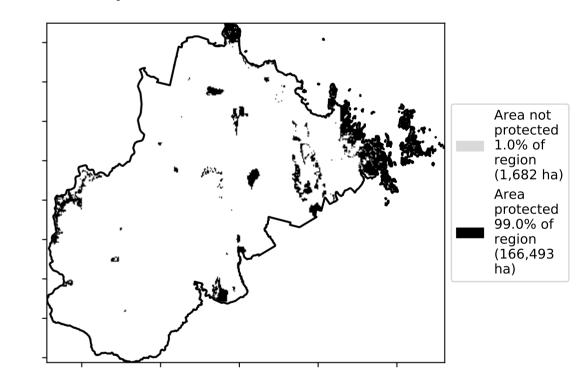
3 Conservation and natural environments - Non-

2 Conservation and natural environments - Woodland

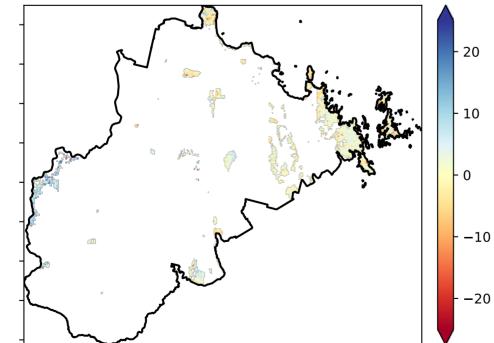
Proportion of vegetation cover class in area



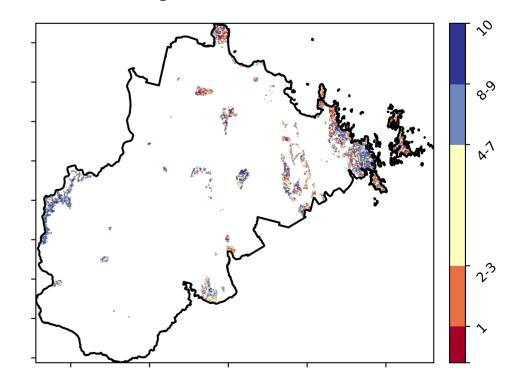
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



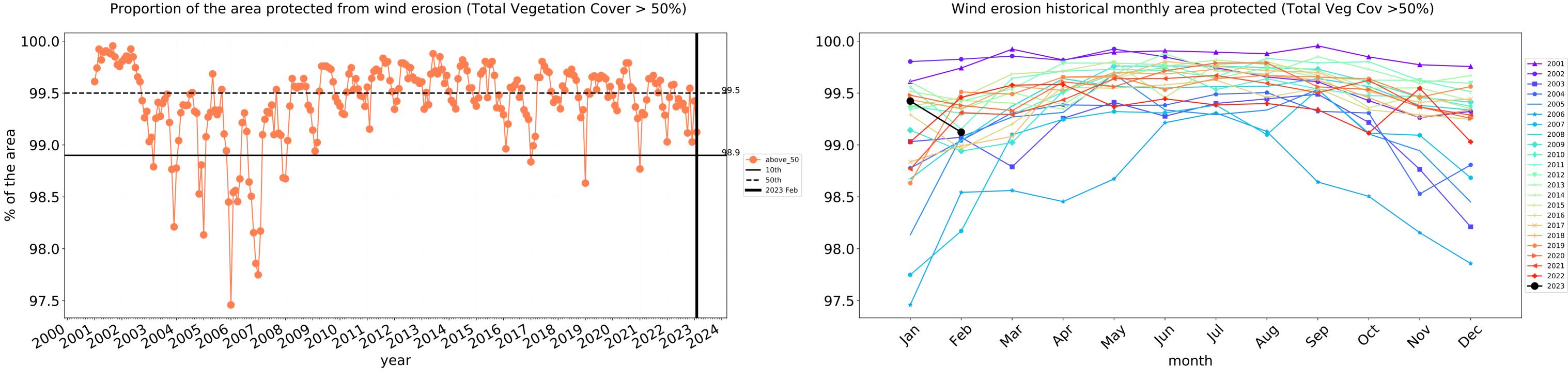
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**



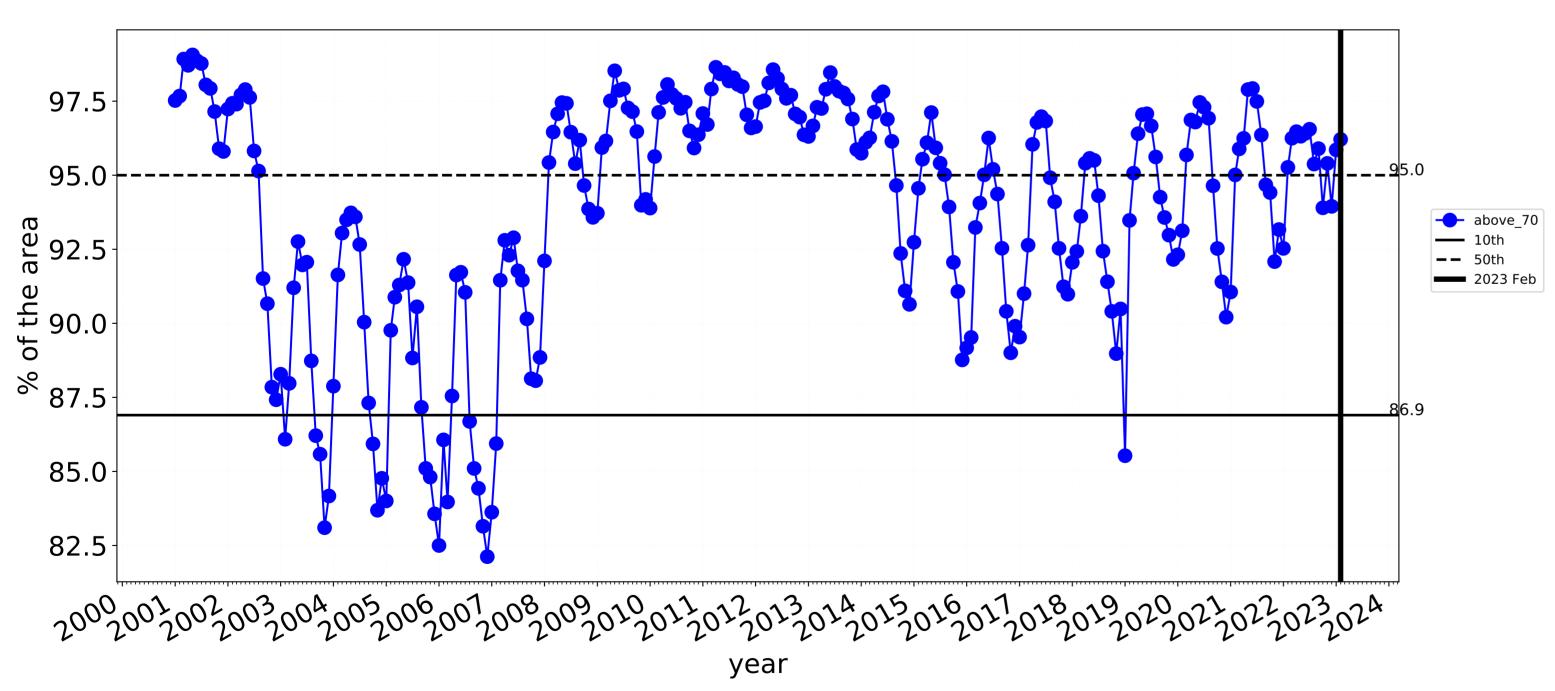


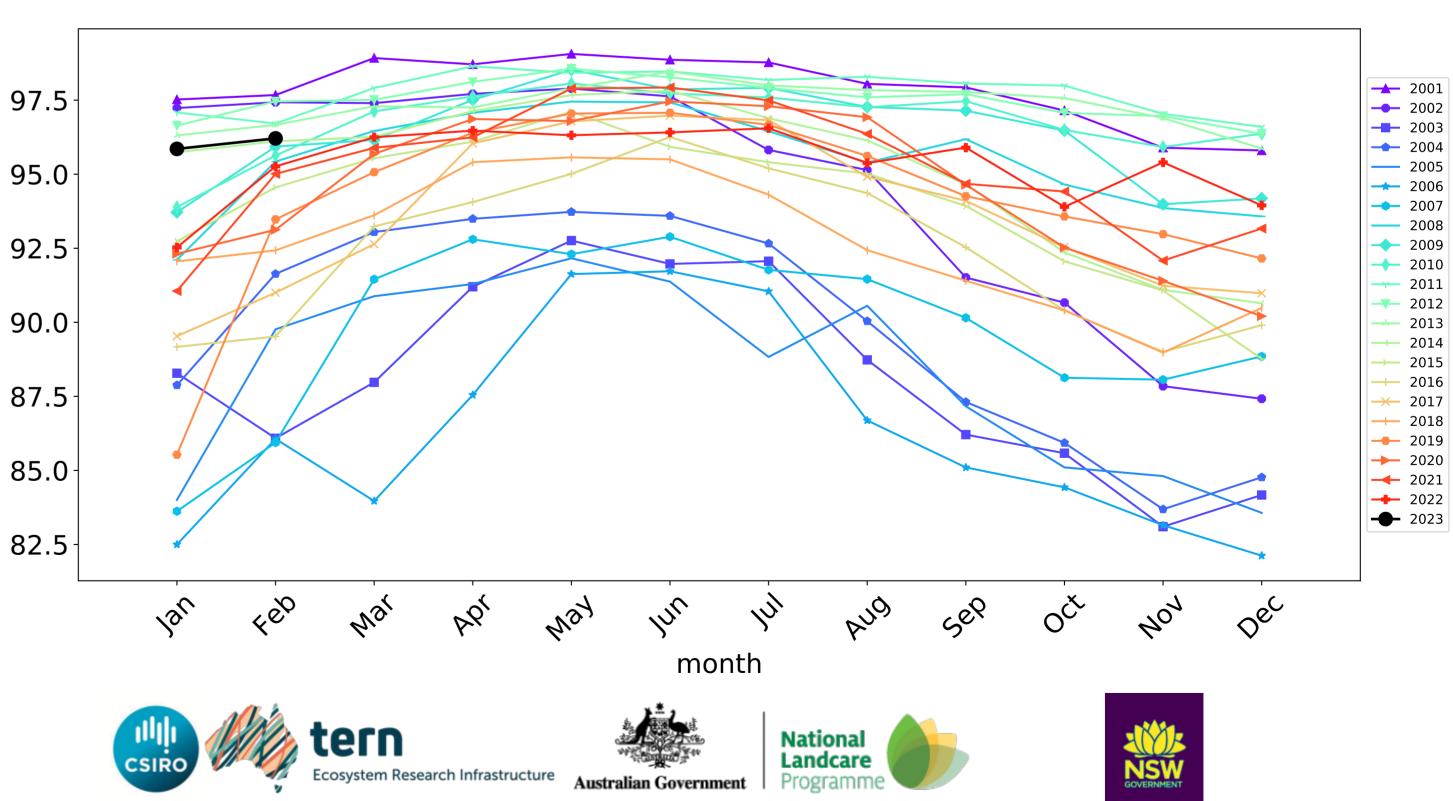
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





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





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

Conservation and natural environments non forest

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

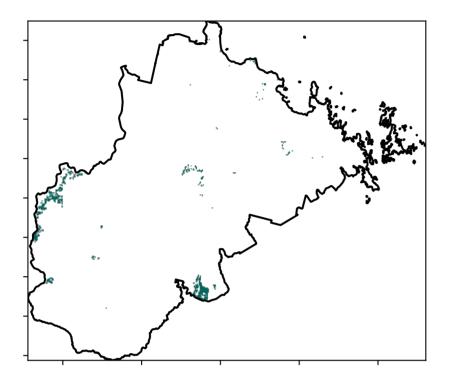
1200010001

52°1070°1

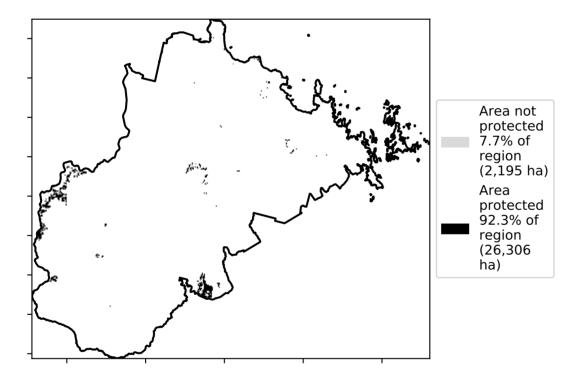
320050010

0.30%

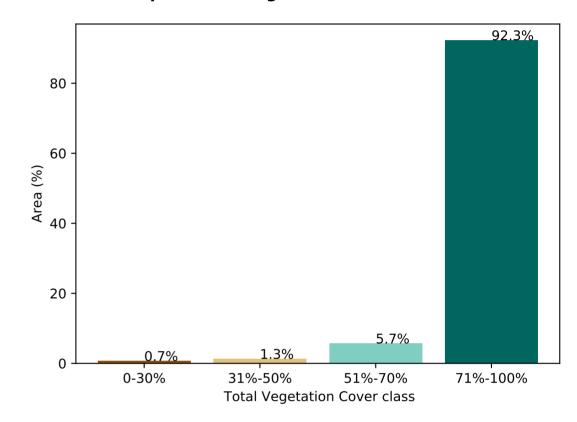
Total Vegetation Cover [%]



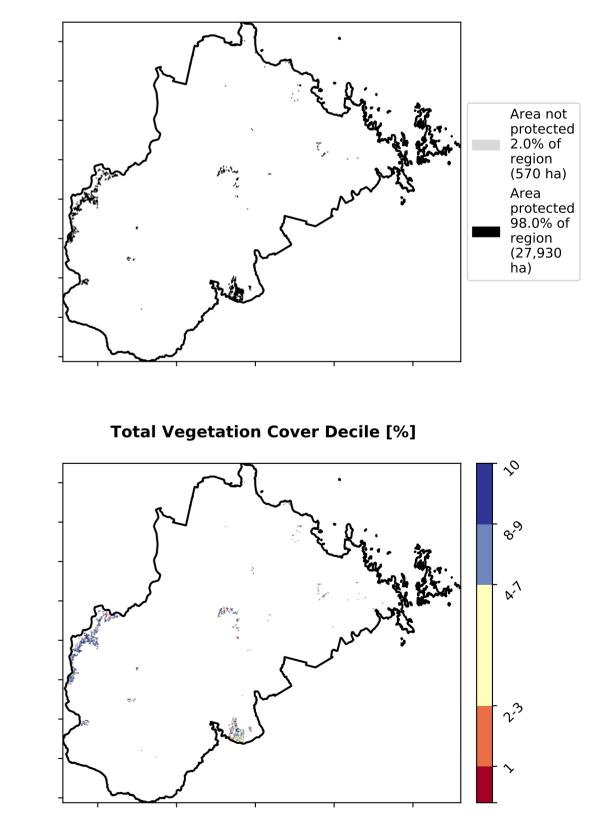
% Area protected from water erosion (>70%)



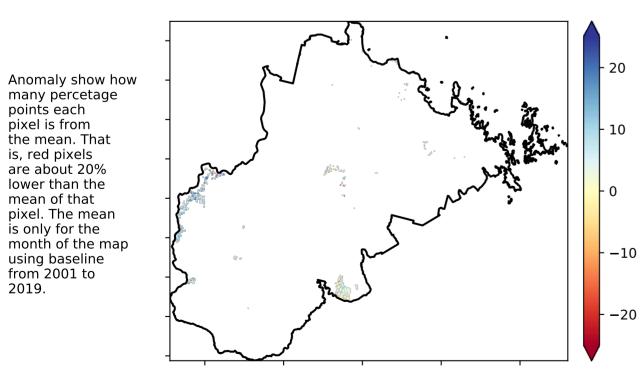
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



the mean. That

is, red pixels are about 20% lower than the

mean of that

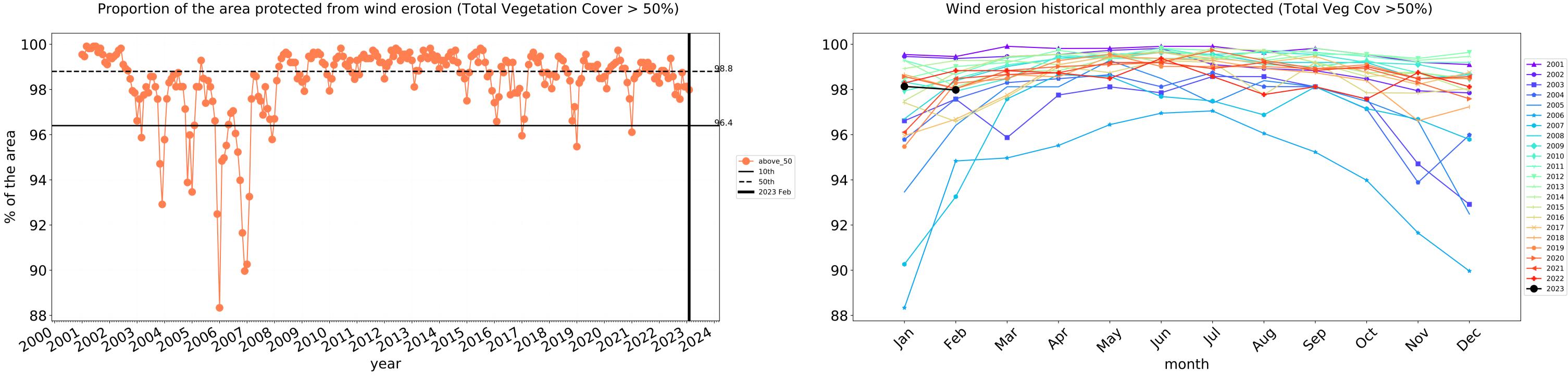
using baseline from 2001 to 2019.

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

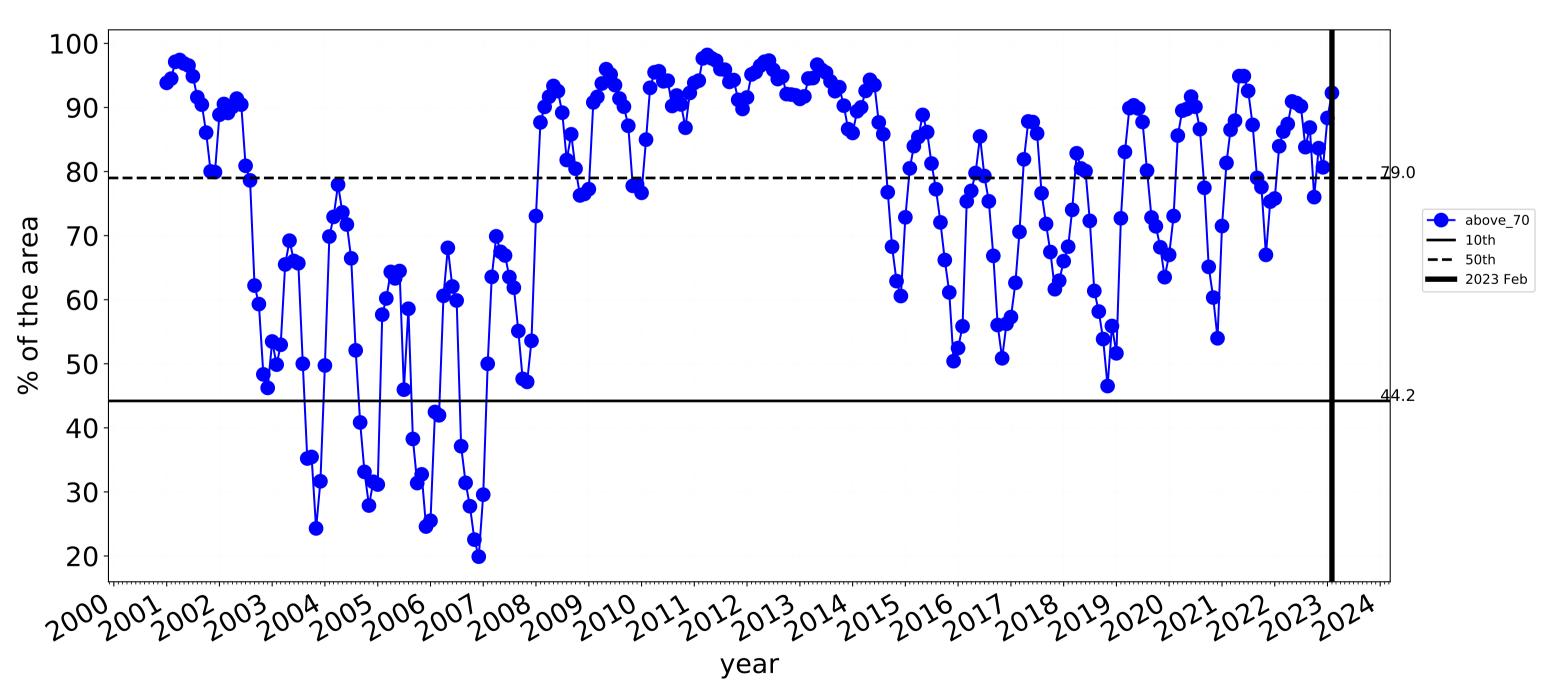


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Conservation and natural environments non forest timeseries

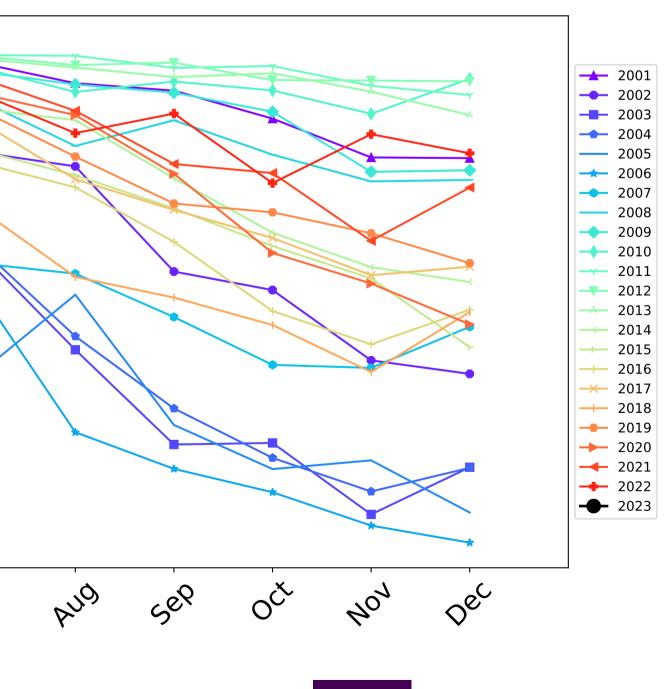


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



100-90 80-70-60 50 40 30-20-4eb lar way In War PQ1 1/2/ month tern Ecosystem Research Infrastructure Australian Government

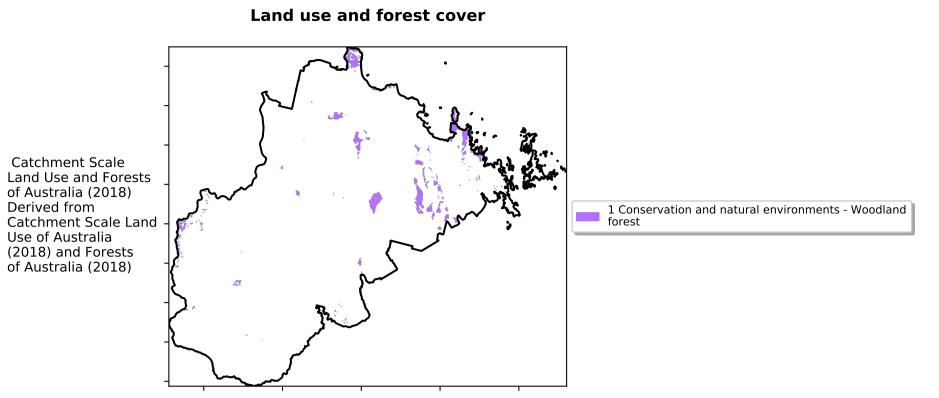
Water erosion historical monthly area protected (Total Veg Cov>70%)







Conservation and natural environments Woodland forest



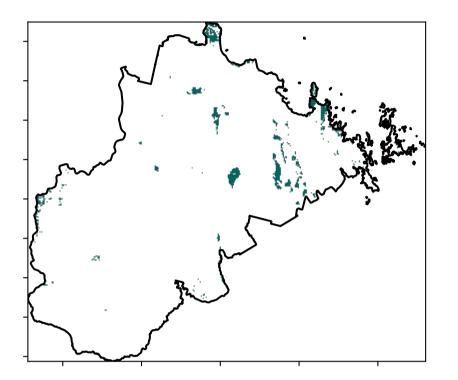
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52°1070010

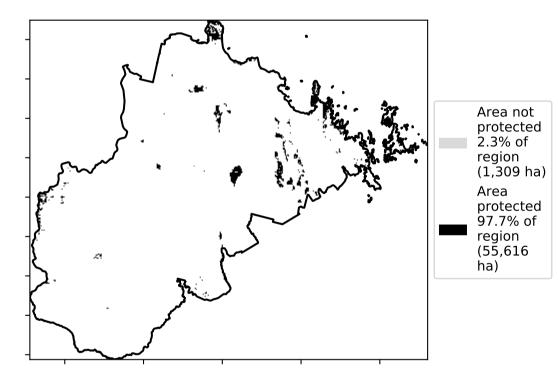
3201050010

0.30%

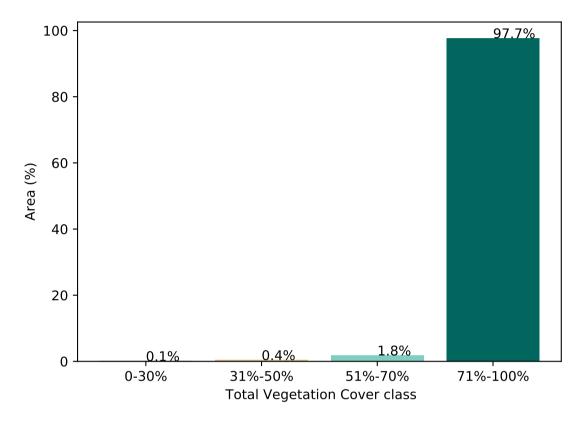
Total Vegetation Cover [%]



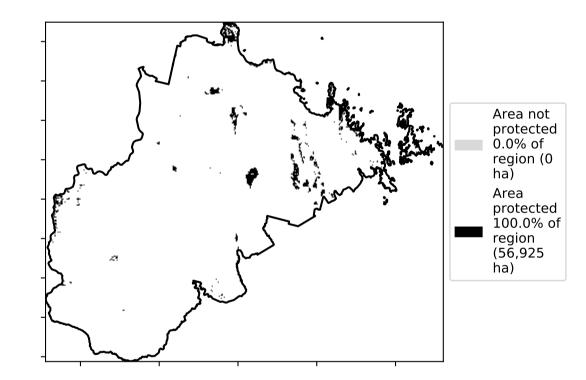
% Area protected from water erosion (>70%)



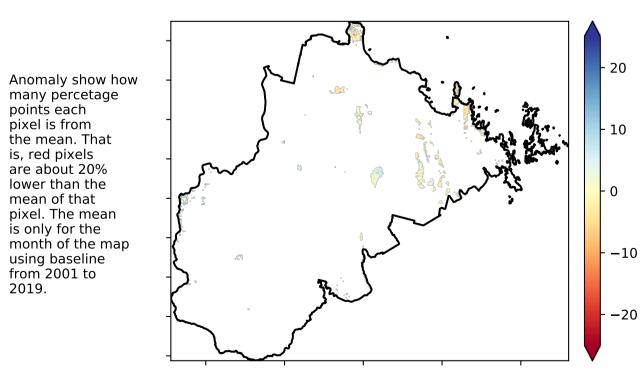
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



is, red pixels are about 20% lower than the

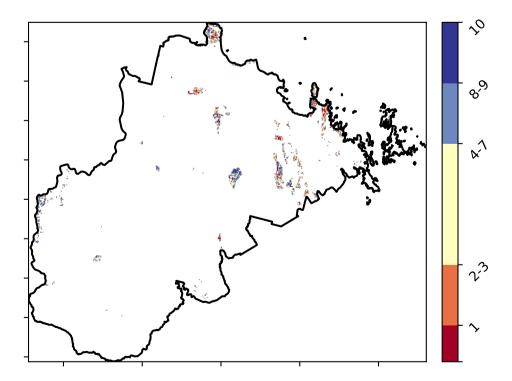
mean of that

pixel. The mean

using baseline from 2001 to 2019.

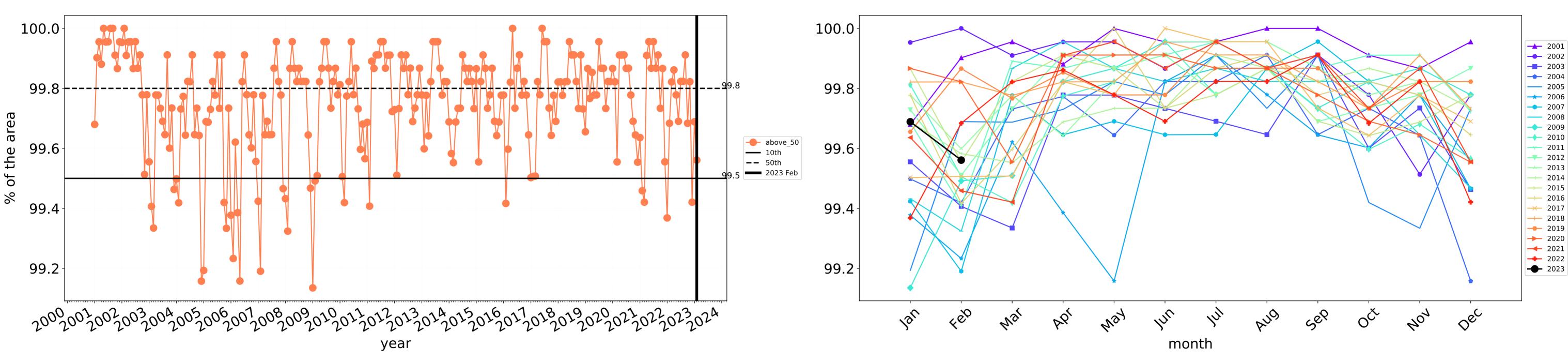
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



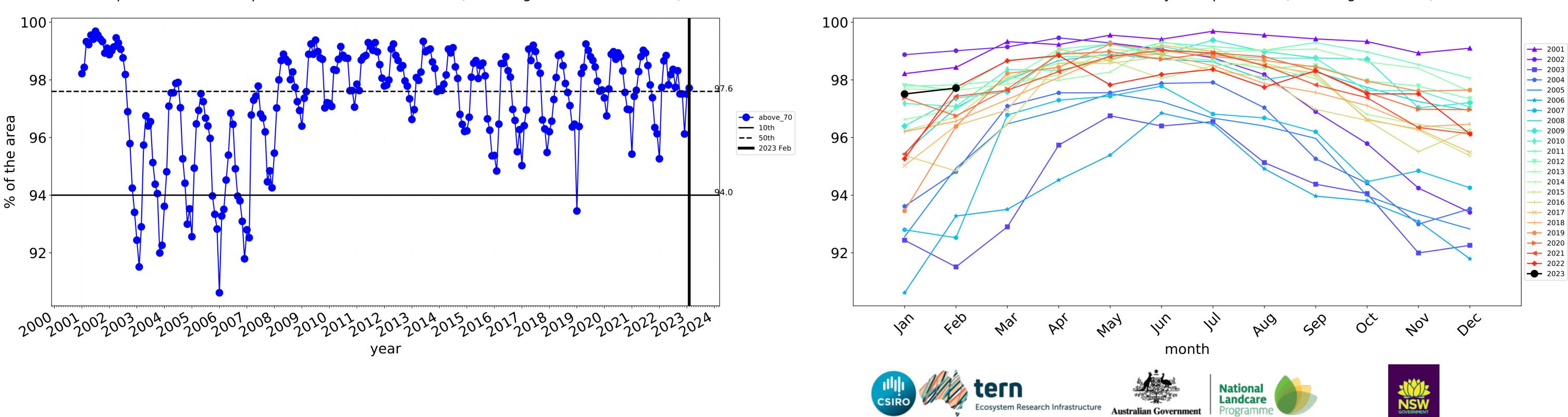


8



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

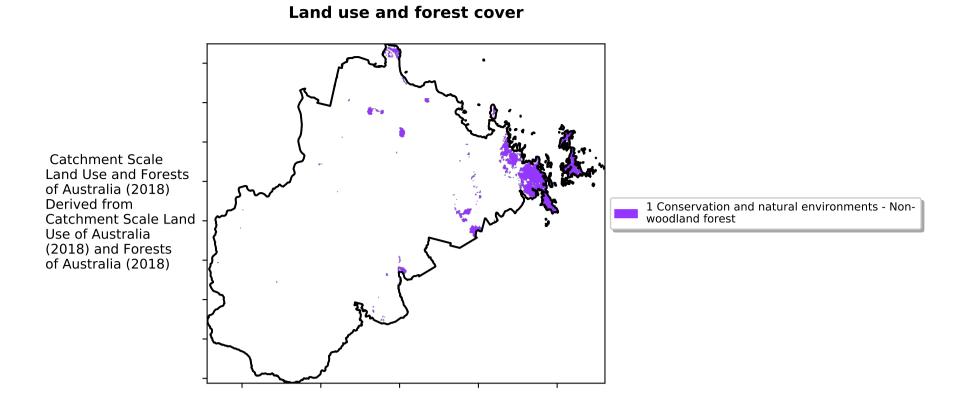




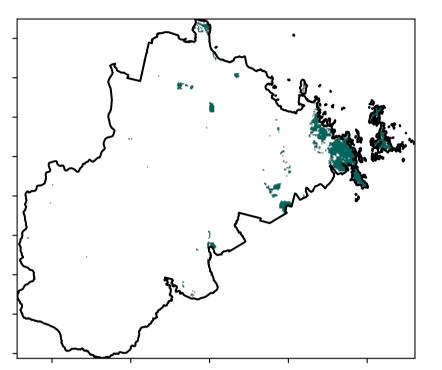
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

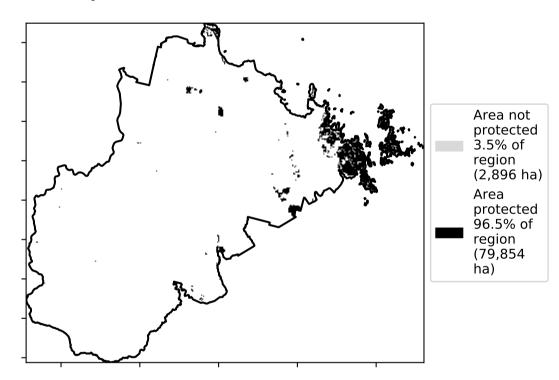
Conservation and natural environments Forest (non woodland)

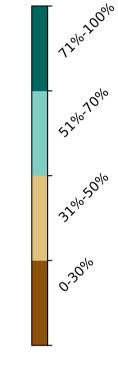


Total Vegetation Cover [%]

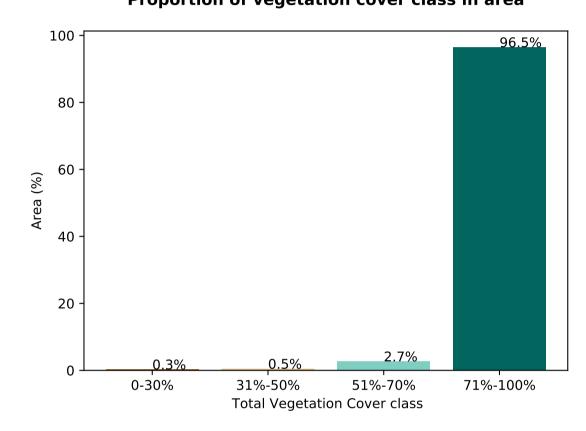


% Area protected from water erosion (>70%)

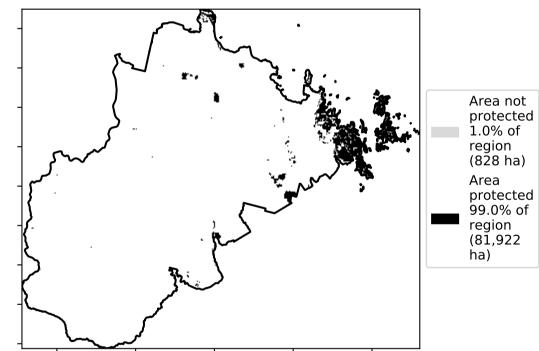




Proportion of vegetation cover class in area

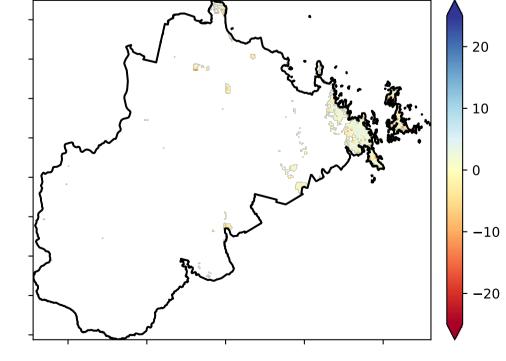


% Area protected from wind erosion (>50%)



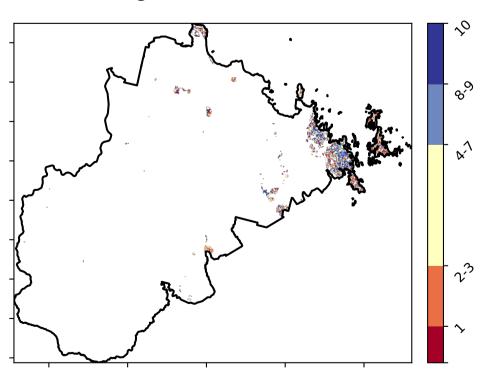
Total Vegetation Cover Anomaly [%]

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.

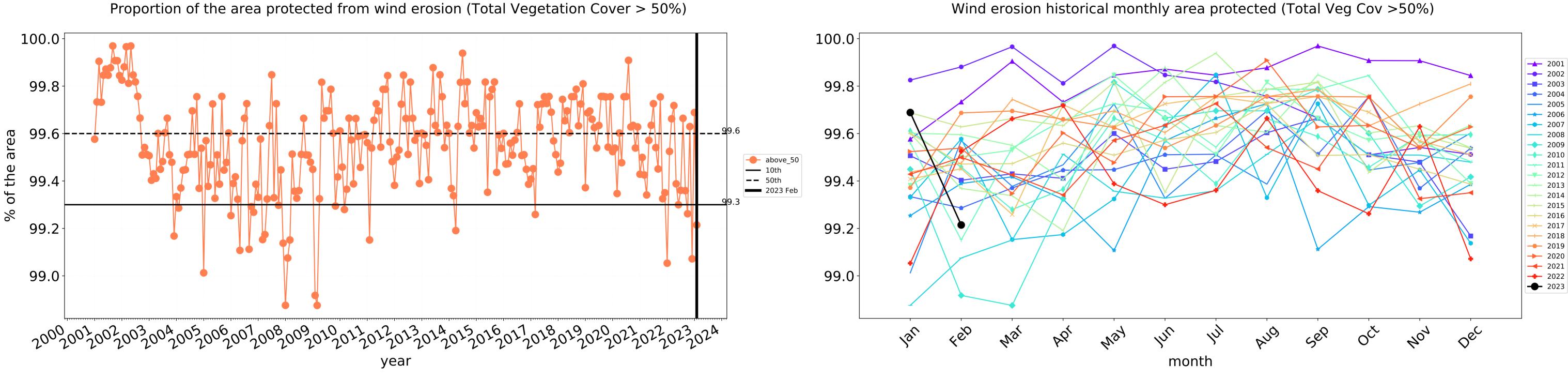


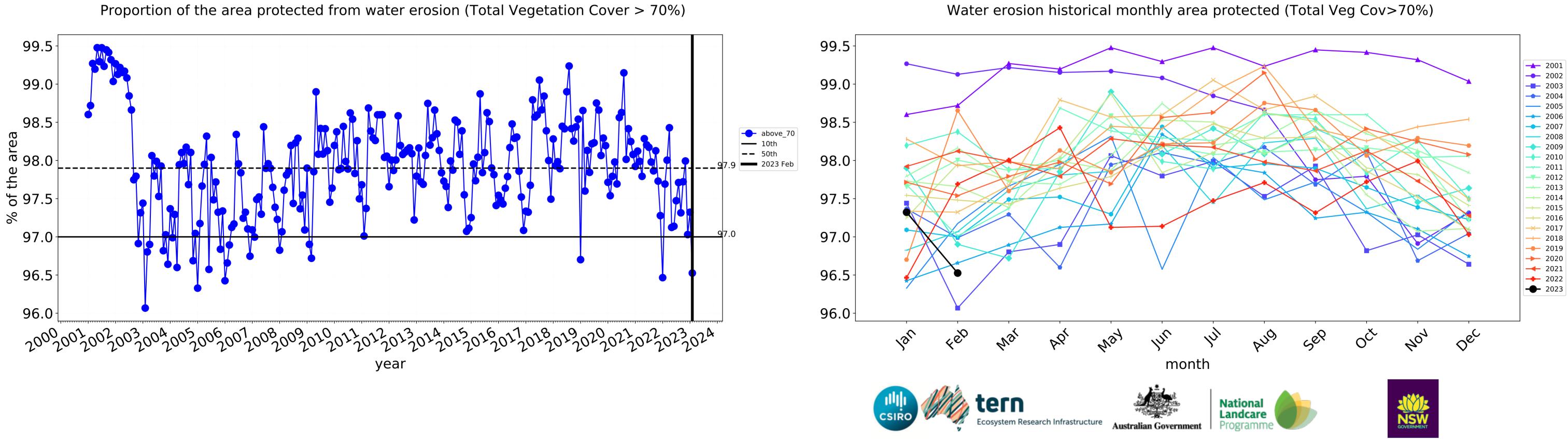
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]









Agriculture

Land use and forest cover



<u>56.</u>2%

<u>39.</u>3%

50

40

Area (%) 00.

20 -

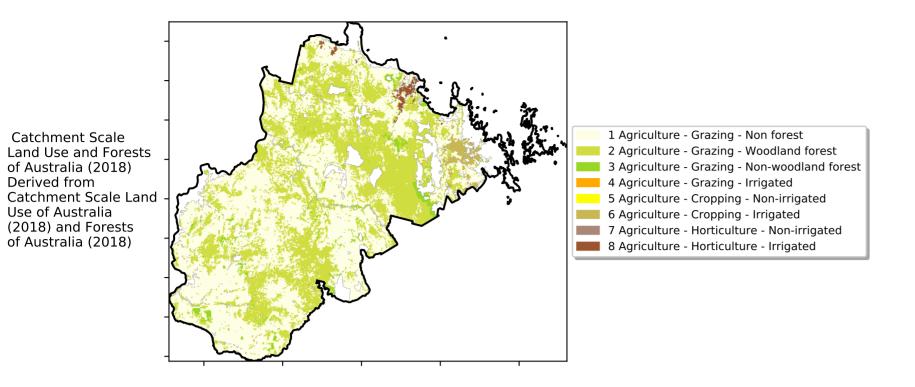
10

0

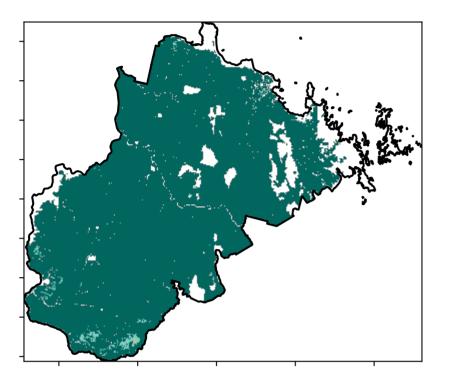
0

1

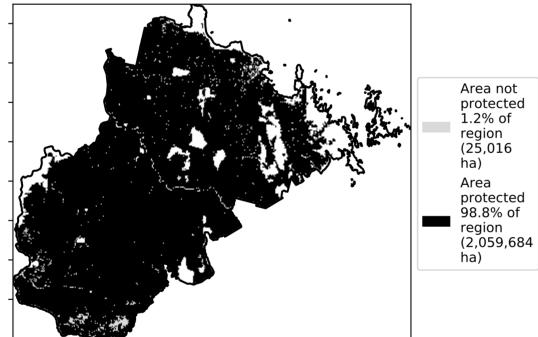
2

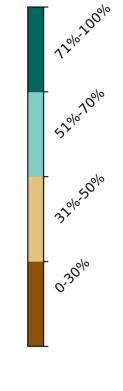


Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



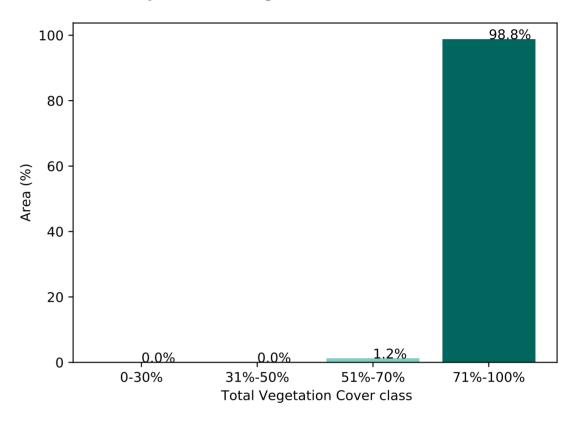




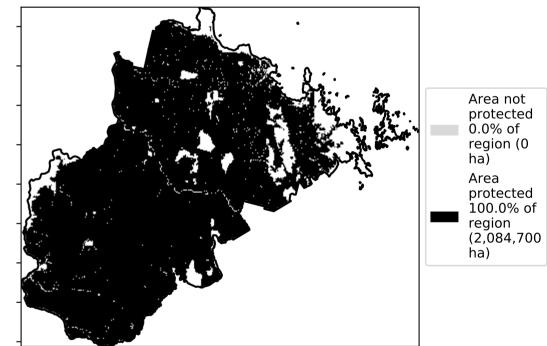


Land use class

3

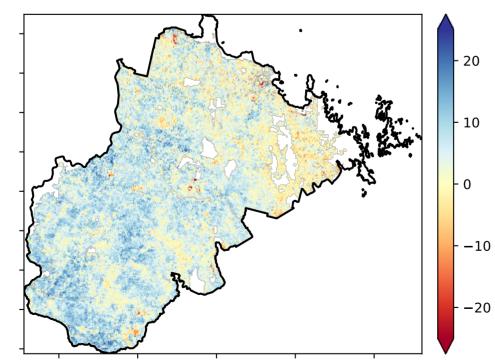


% Area protected from wind erosion (>50%)



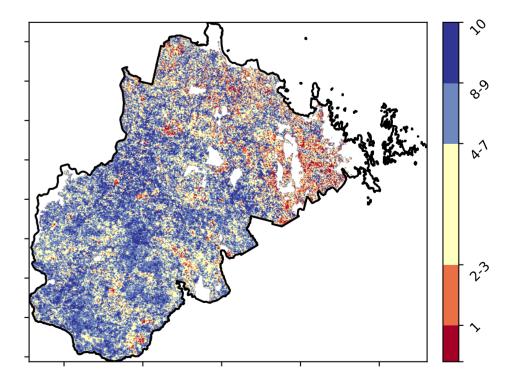
<u>0.6</u>%

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.

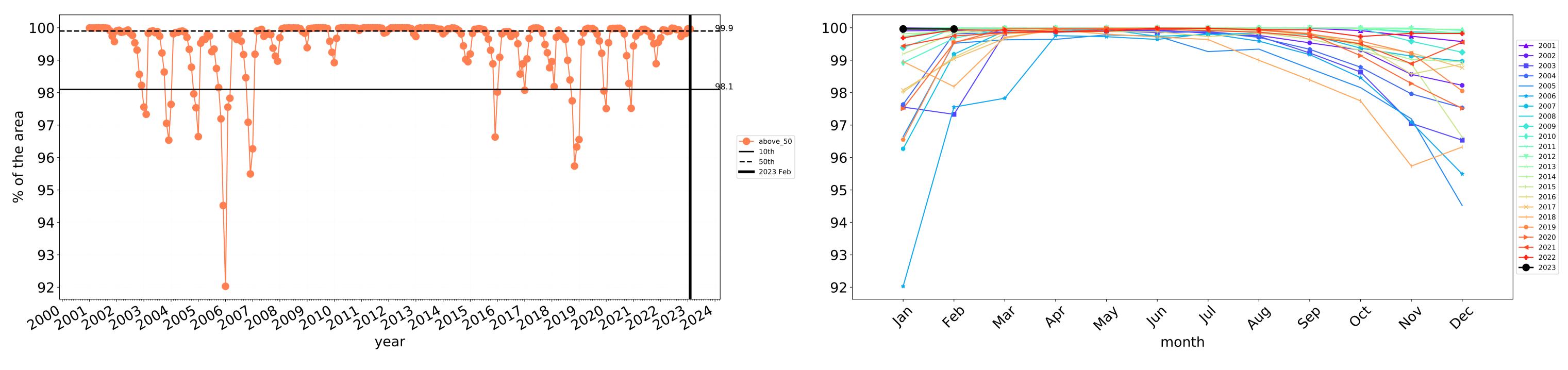
Total Vegetation Cover Decile [%]



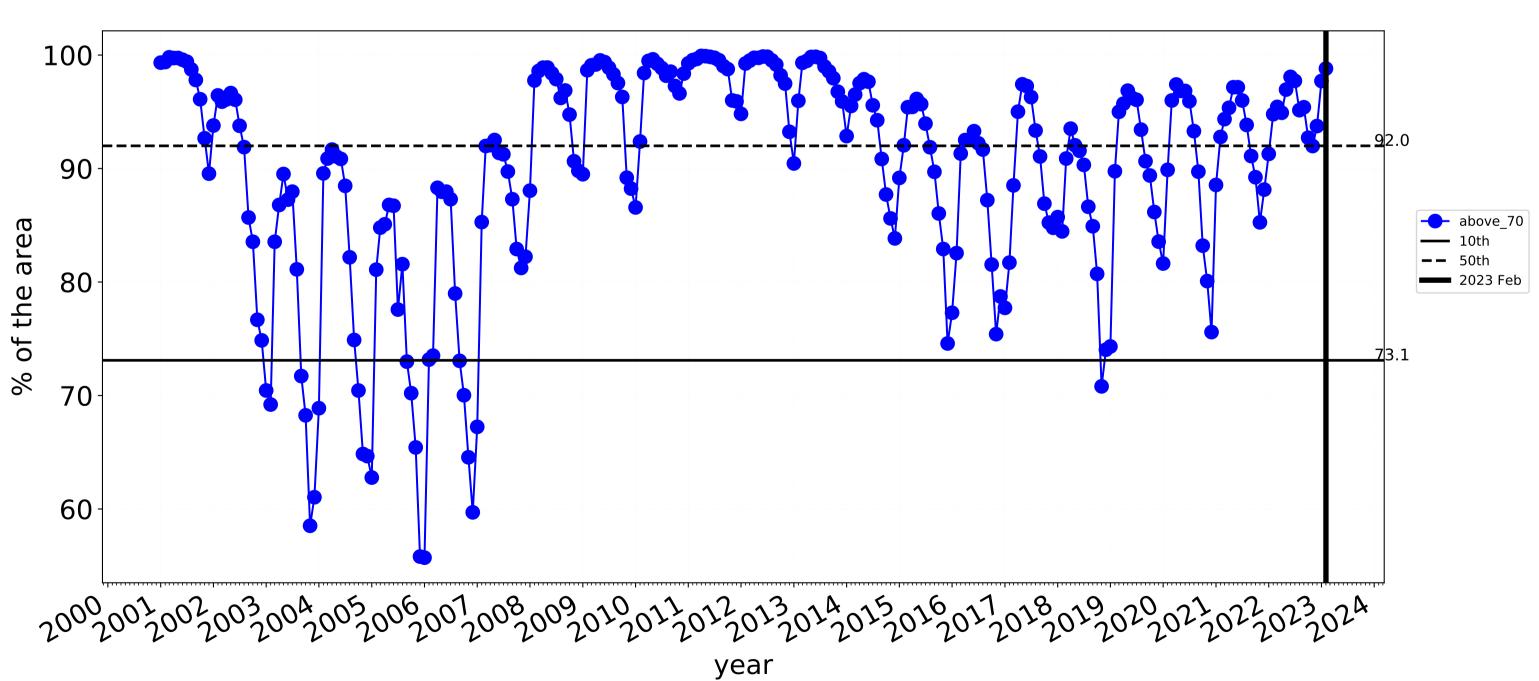


12

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 from 2001 to 2019.



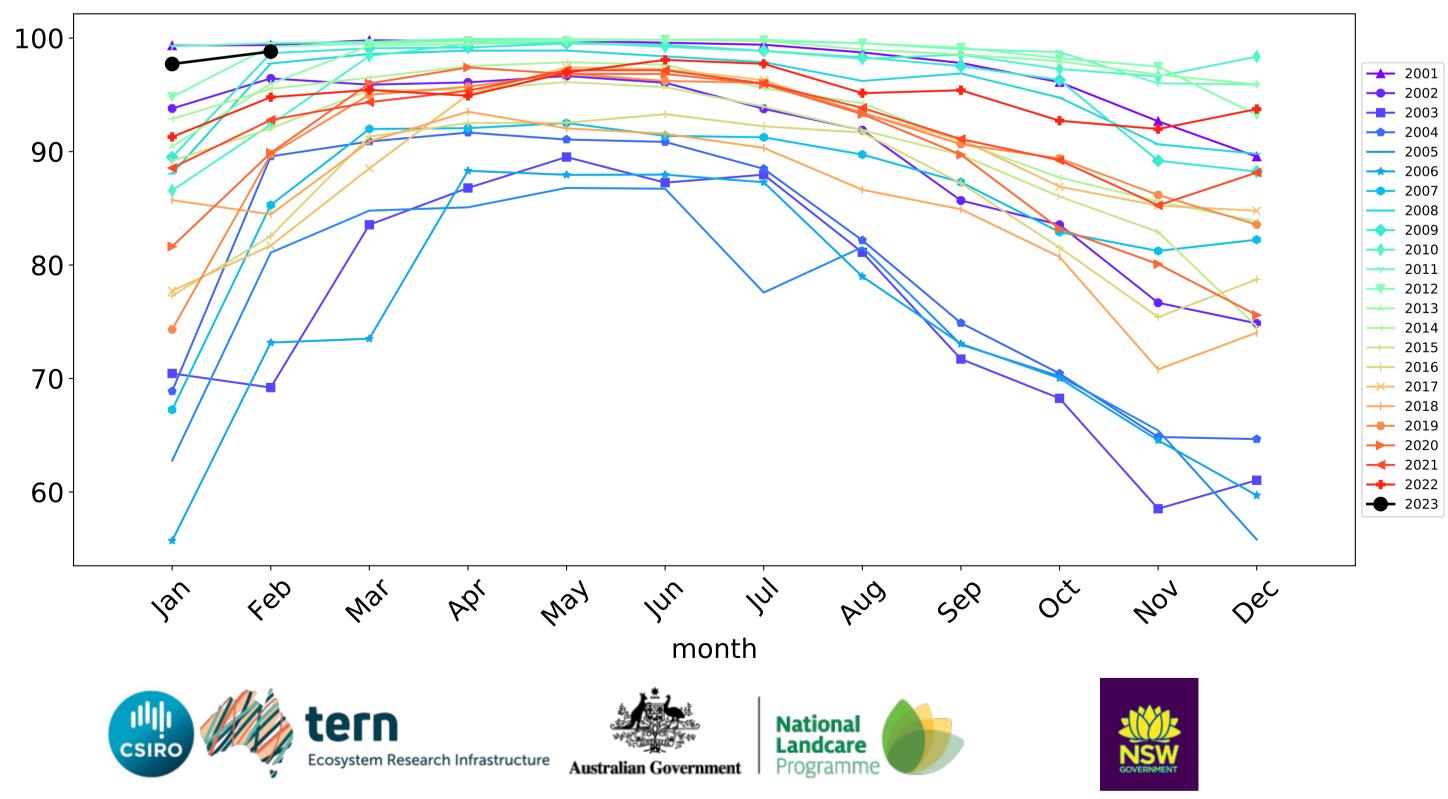
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



Agriculture timeseries



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



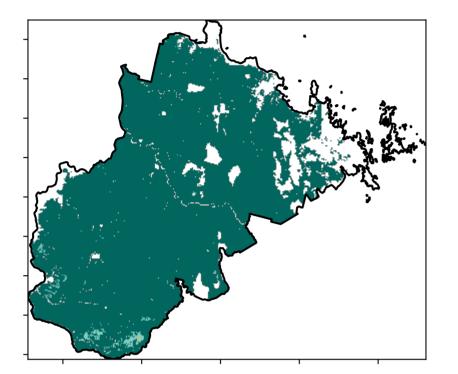
Water erosion historical monthly area protected (Total Veg Cov>70%)

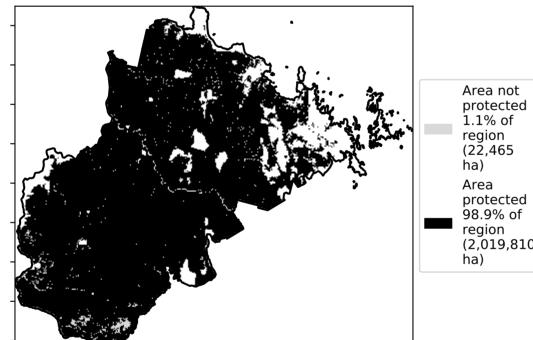
Grazing

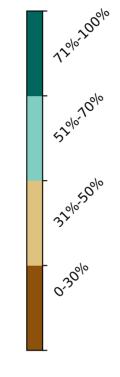
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018)

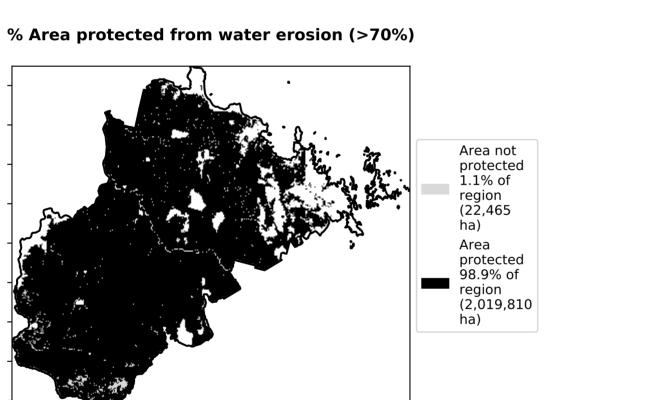
Land use and forest cover

Total Vegetation Cover [%]

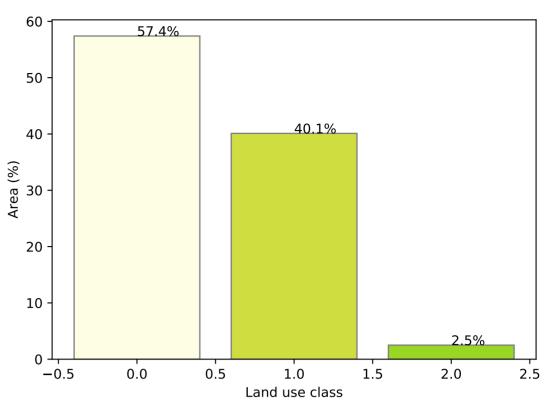




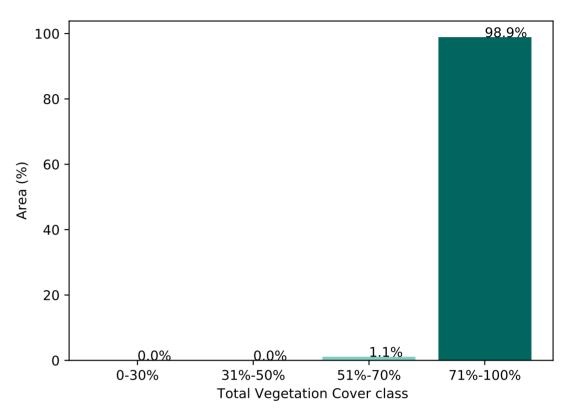




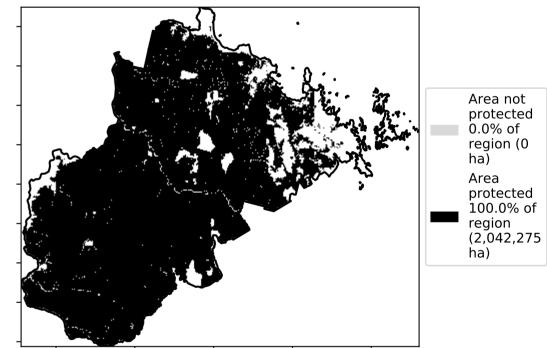
Proportion of each land class in area



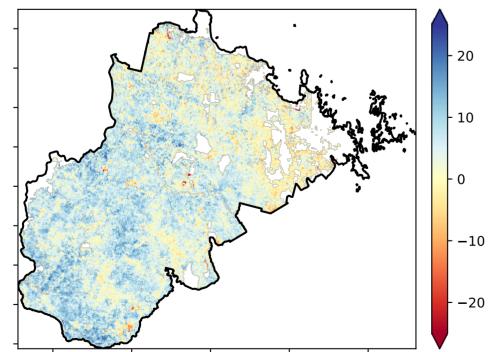
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

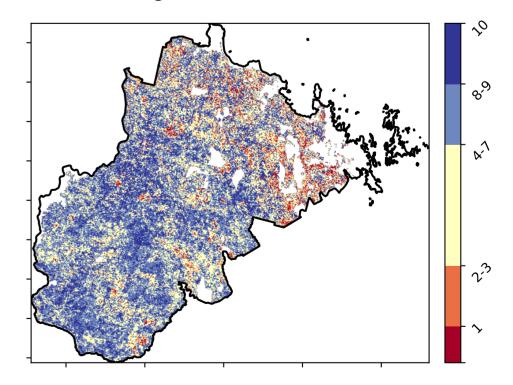


Total Vegetation Cover Anomaly [%]



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.

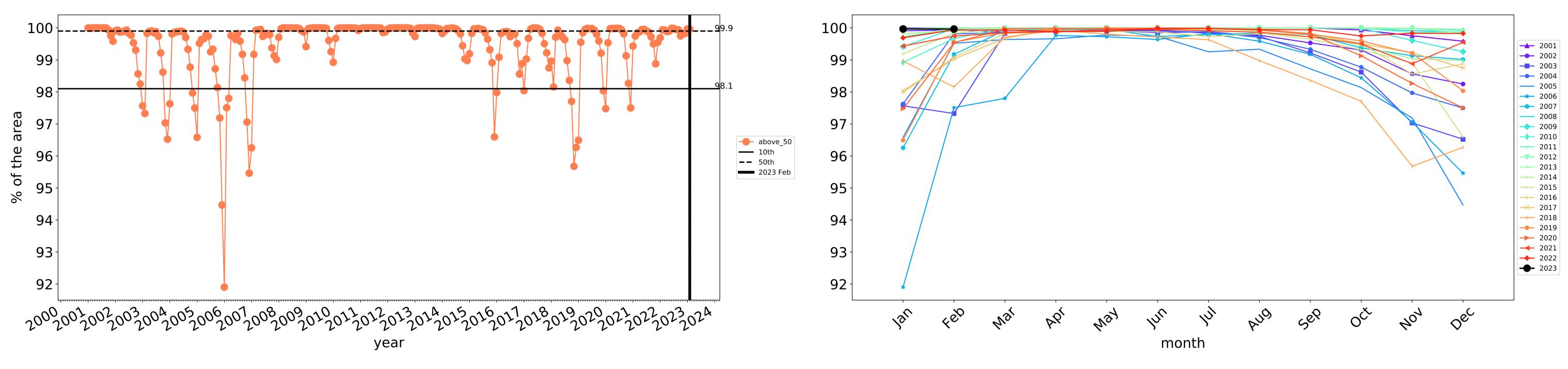
Total Vegetation Cover Decile [%]



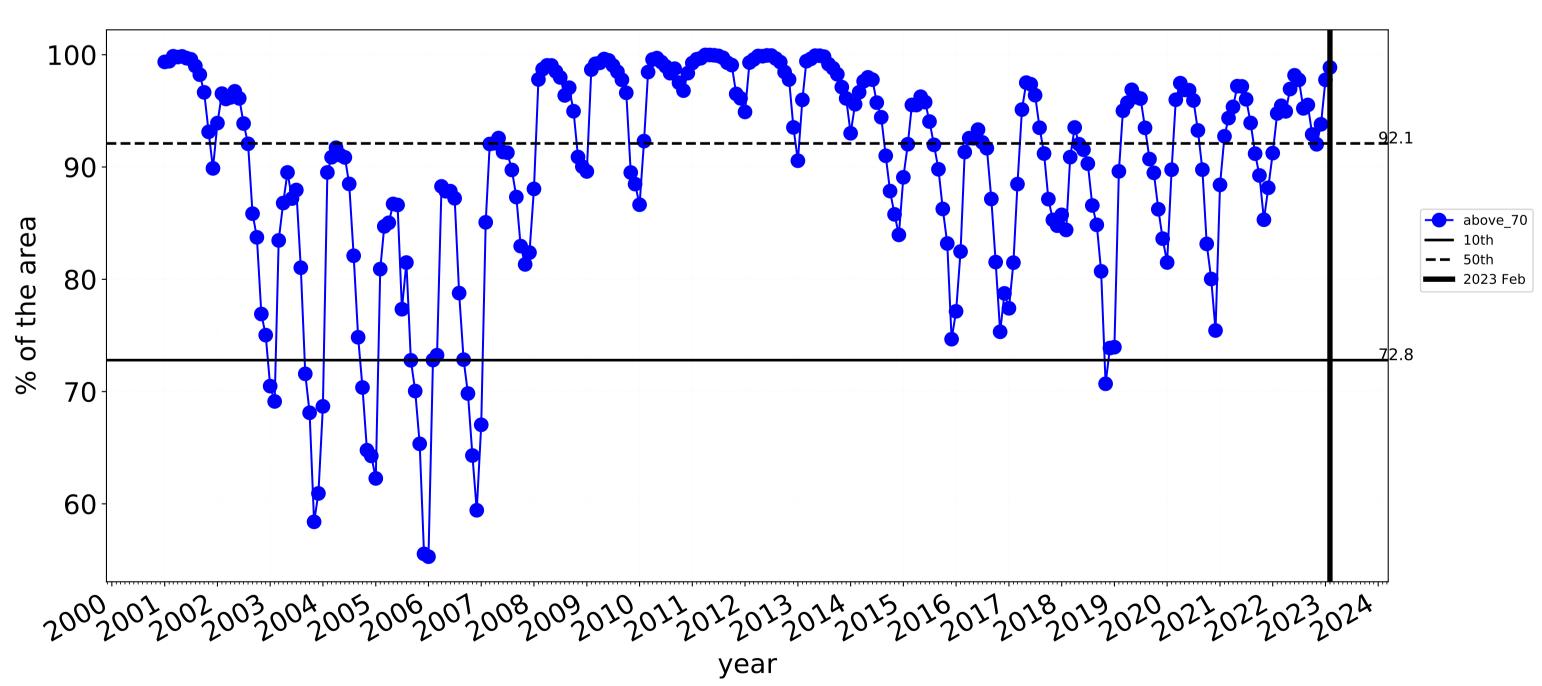


124

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 from 2001 to 2019.



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

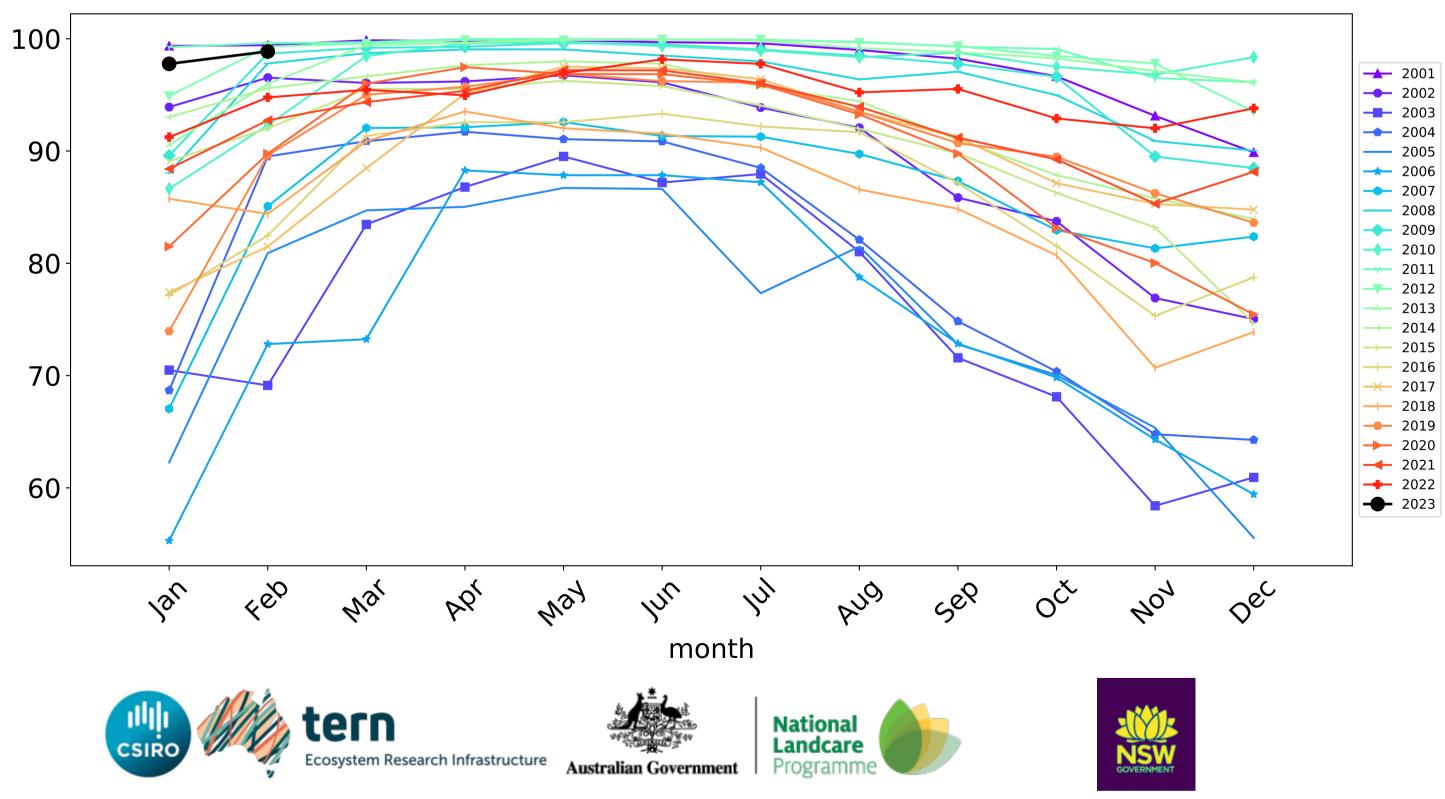


Grazing timeseries



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

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



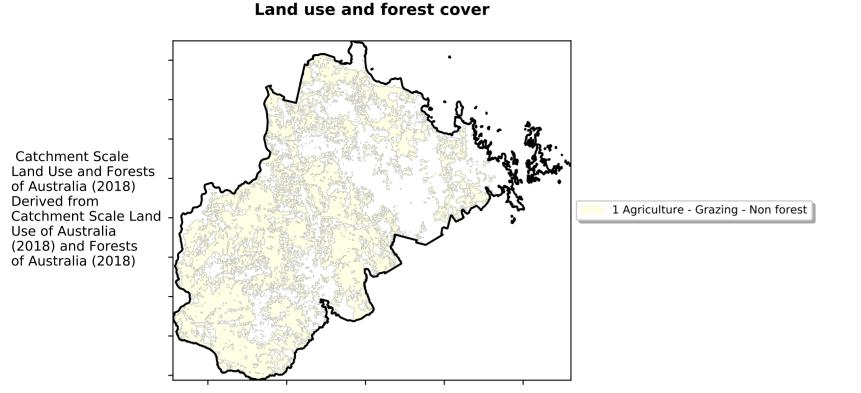
Grazing non forest

12%200%

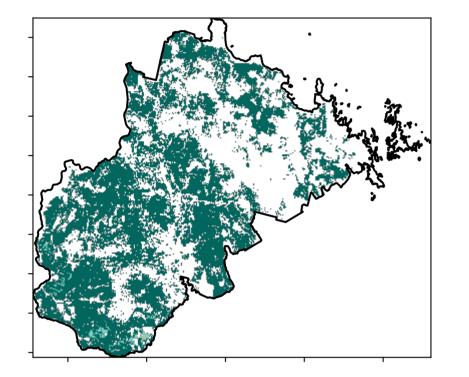
5201000

3201050010

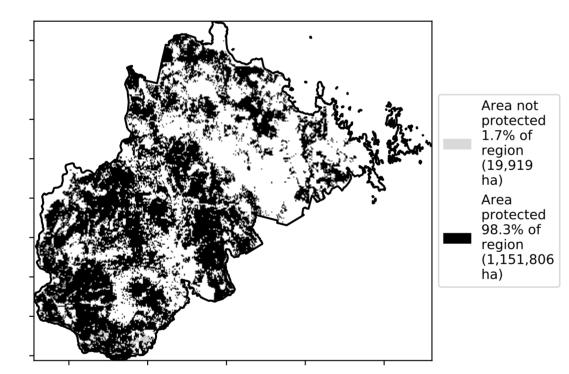
0.30%



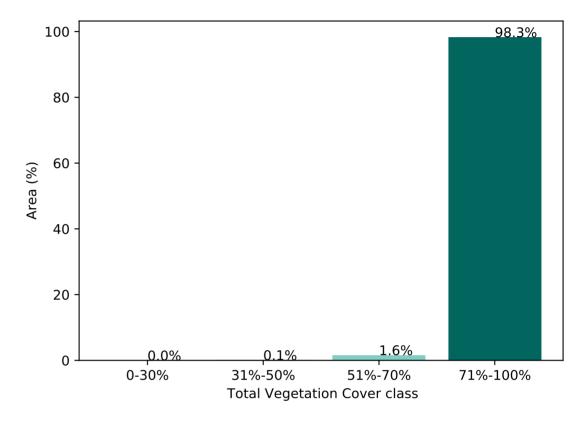
Total Vegetation Cover [%]



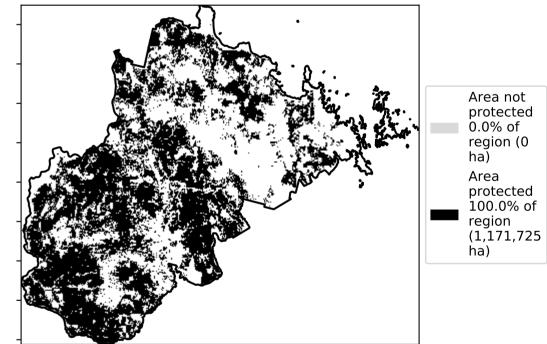
% Area protected from water erosion (>70%)



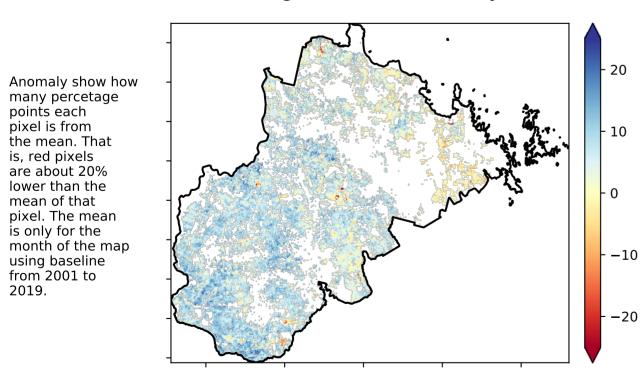
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

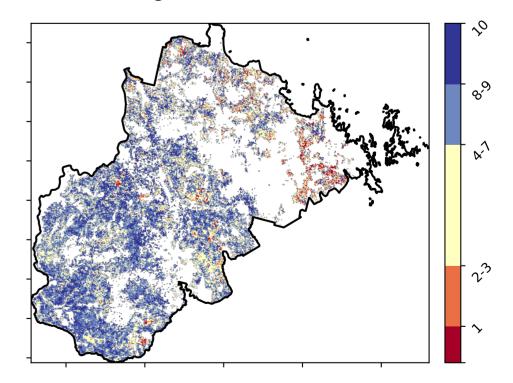


Total Vegetation Cover Anomaly [%]

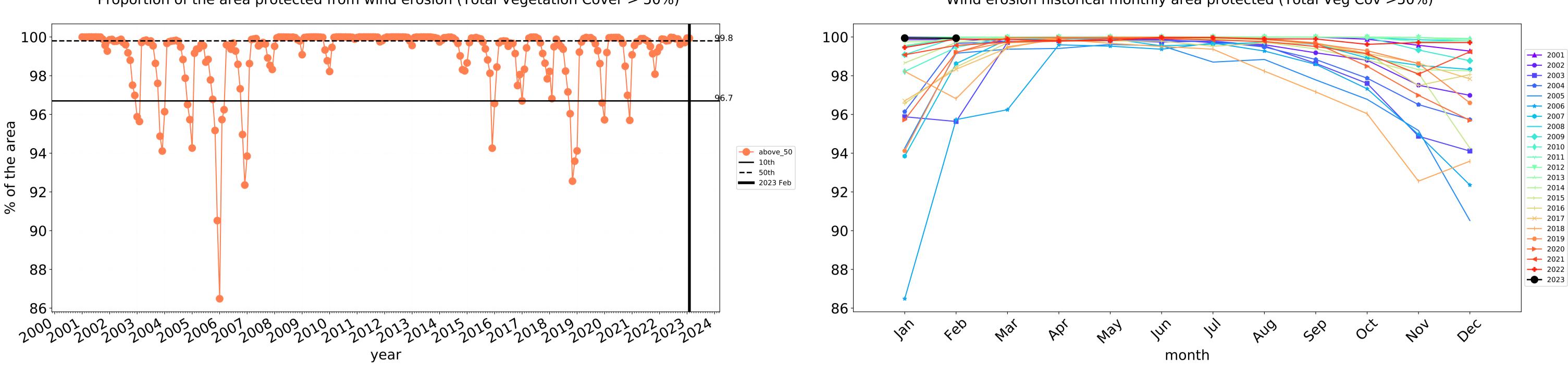


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.

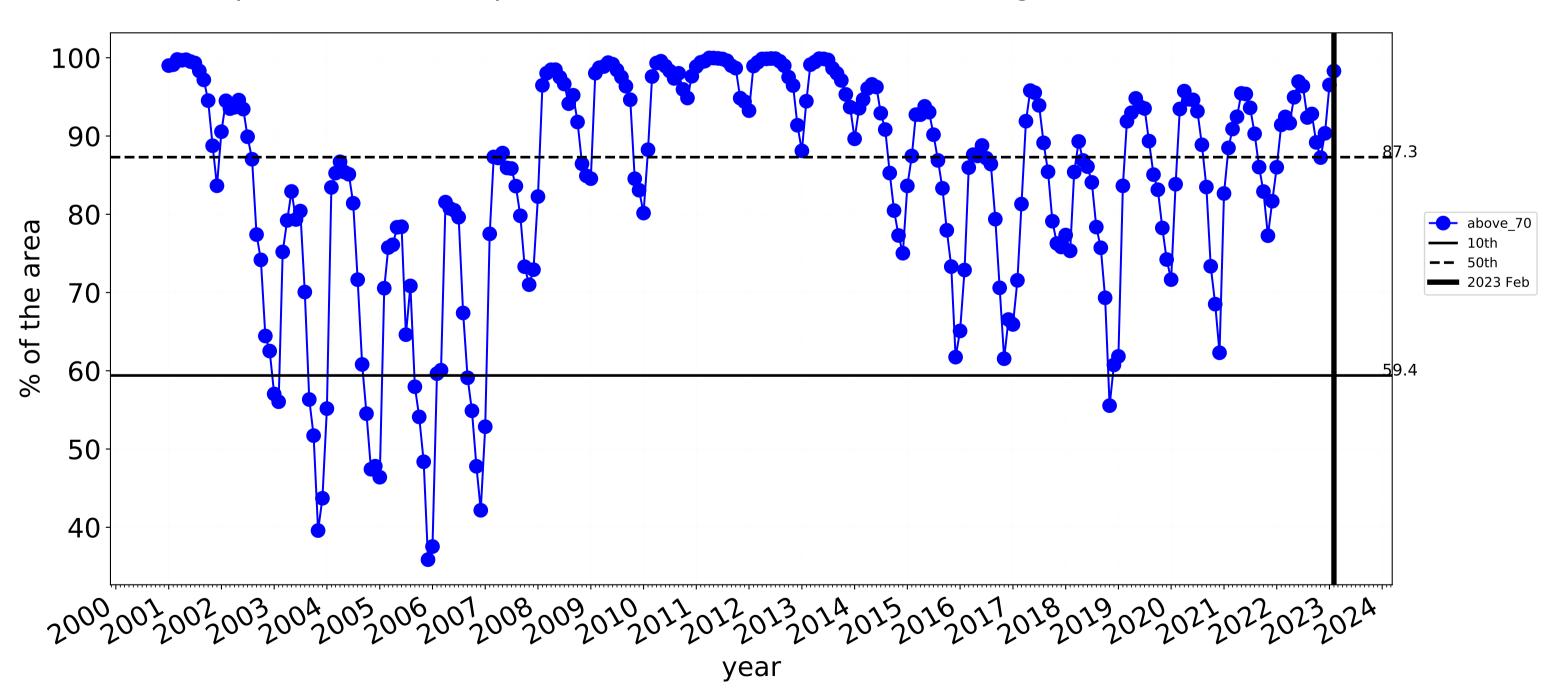
Total Vegetation Cover Decile [%]



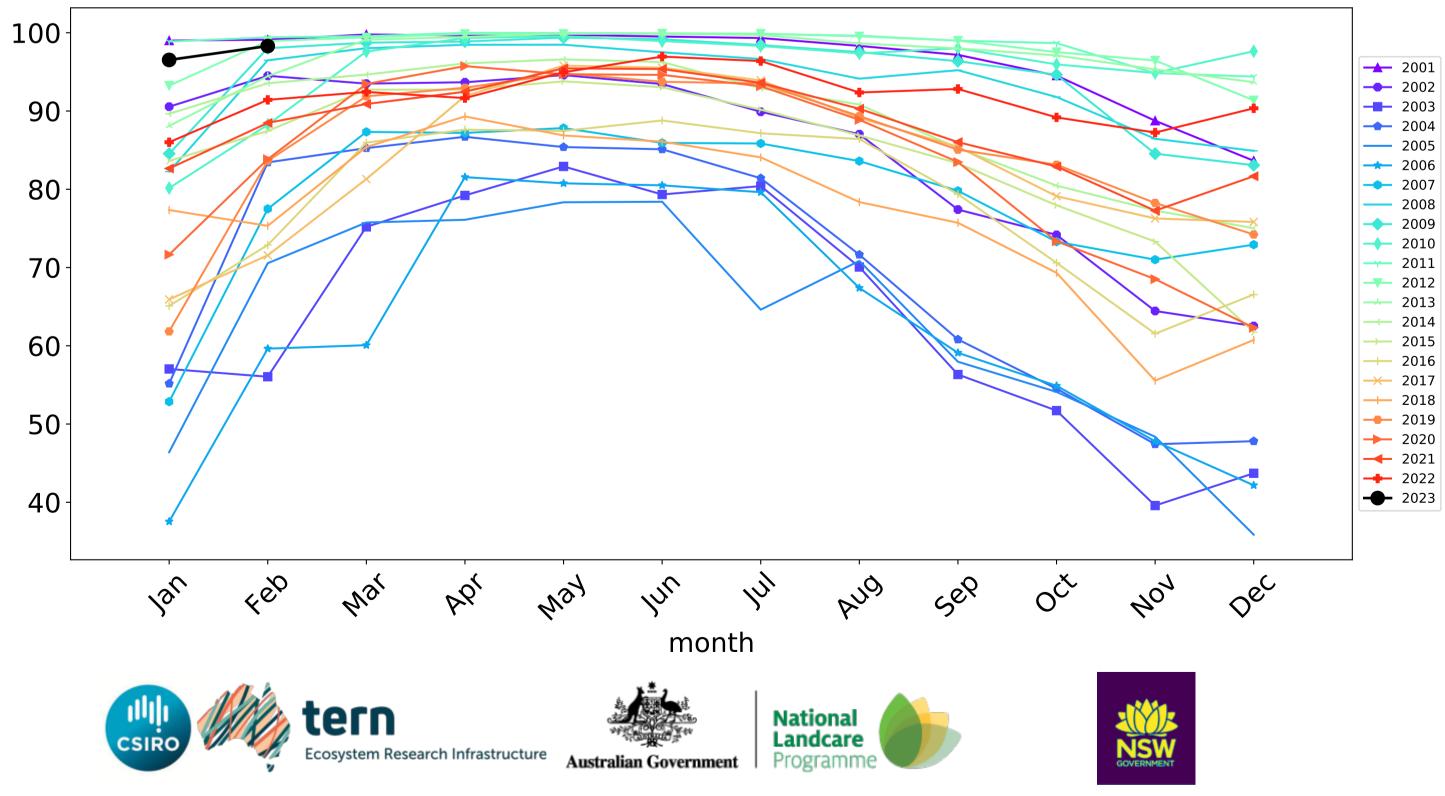




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



Grazing non forest timeseries



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

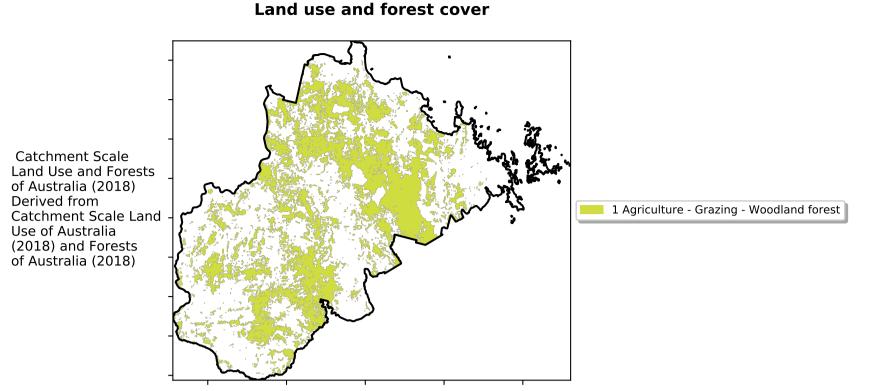
Grazing Woodland forest

· 12%-200°

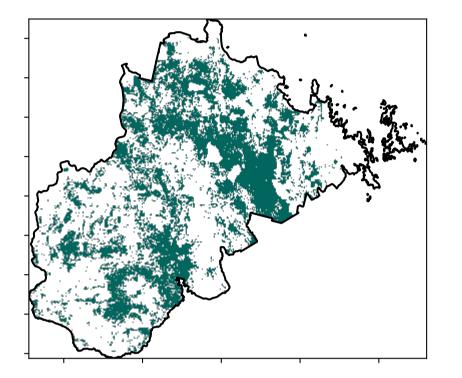
52°10'TOOL

320050010

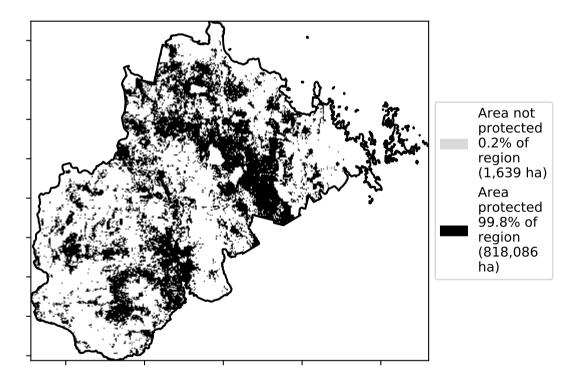
0.30%



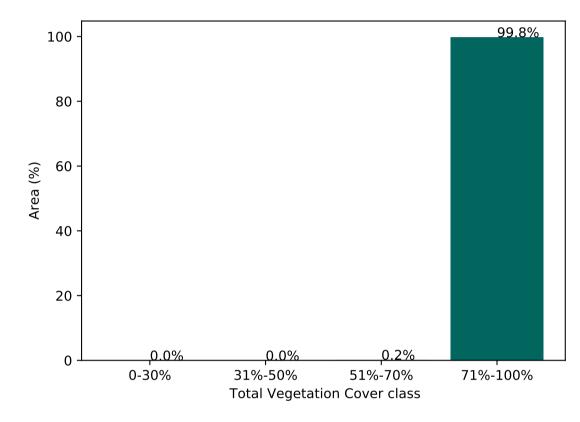
Total Vegetation Cover [%]



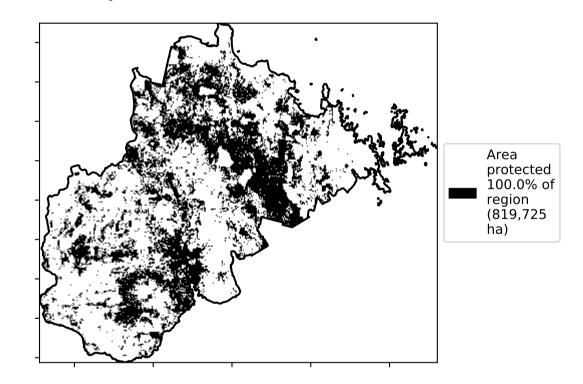
% Area protected from water erosion (>70%)



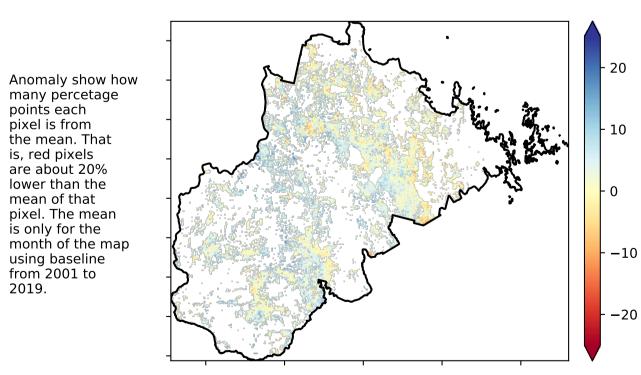
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

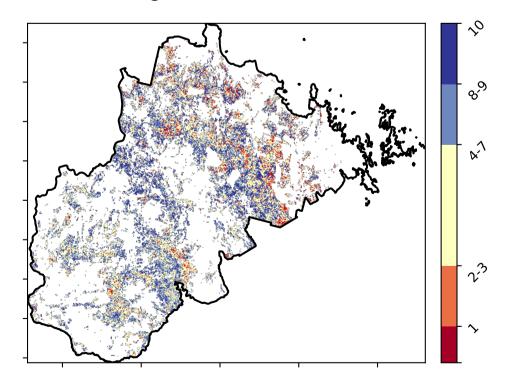


Total Vegetation Cover Anomaly [%]

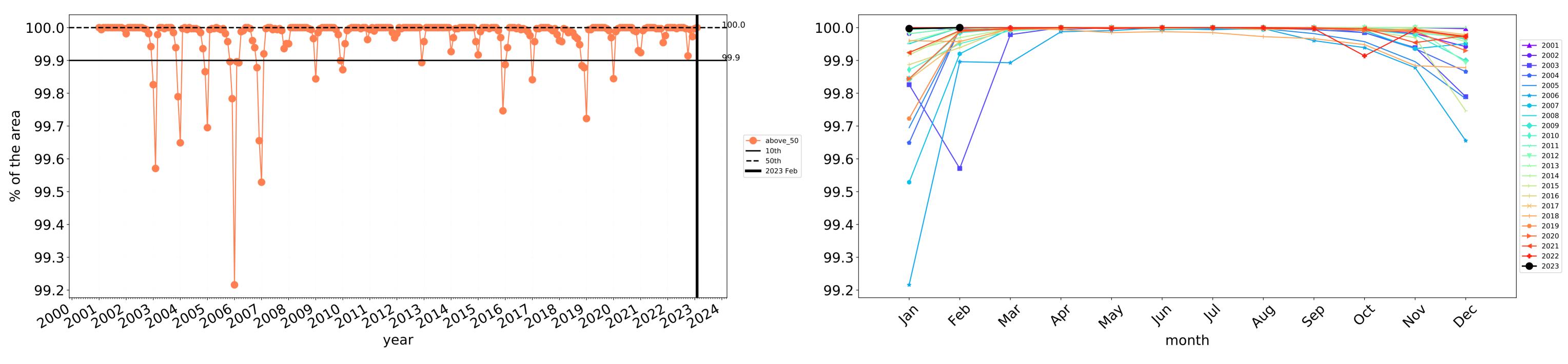


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.

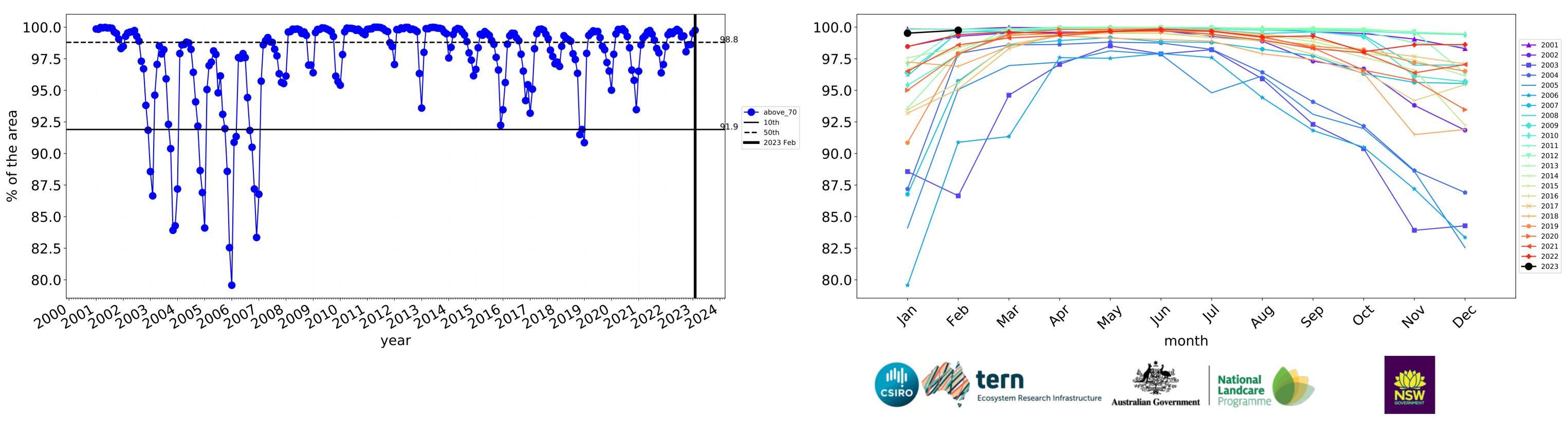
Total Vegetation Cover Decile [%]

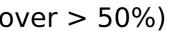






Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

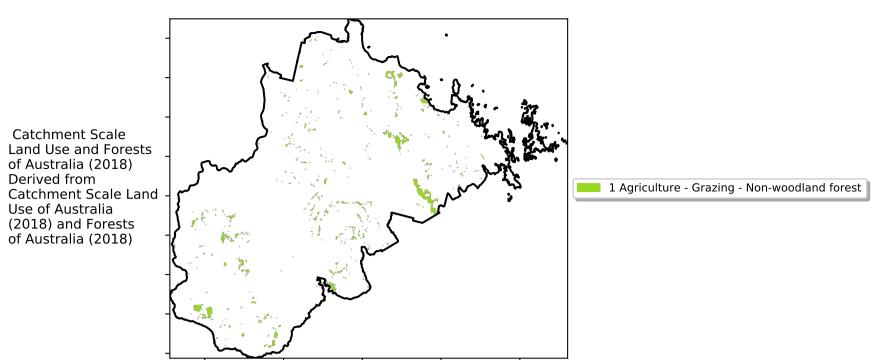




Wind erosion historical monthly area protected (Total Veg Cov >50%)

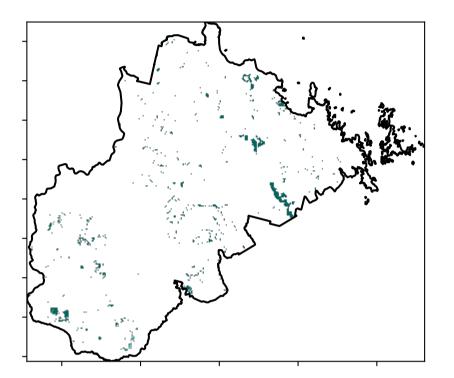
Water erosion historical monthly area protected (Total Veg Cov>70%)

Grazing - Forest (non woodland)

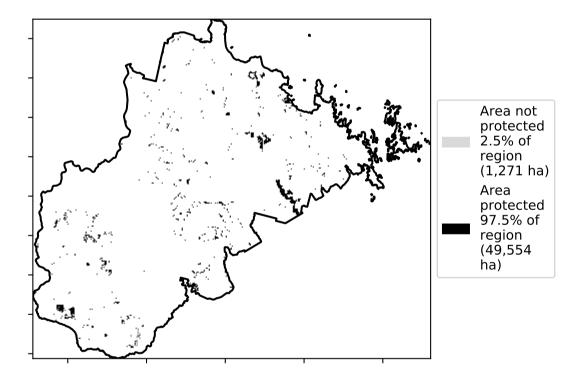


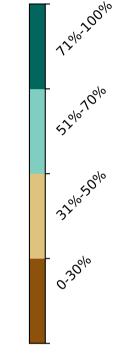
Land use and forest cover

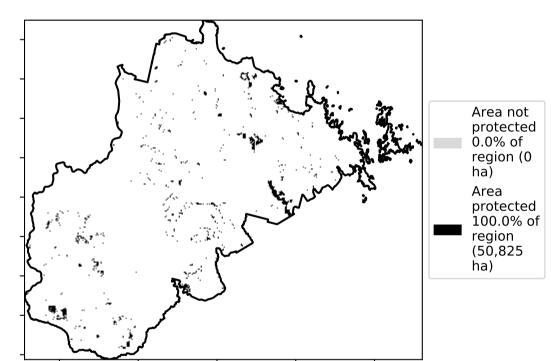
Total Vegetation Cover [%]



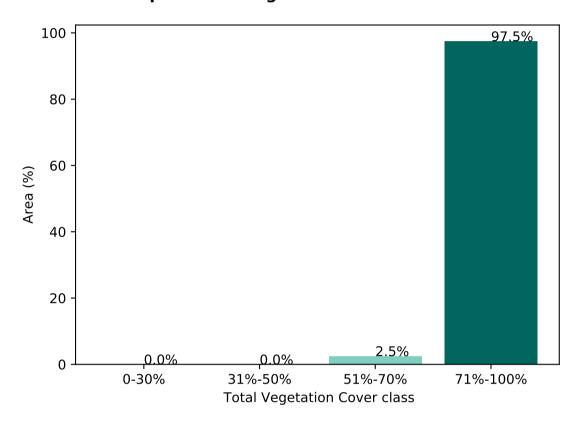
% Area protected from water erosion (>70%)





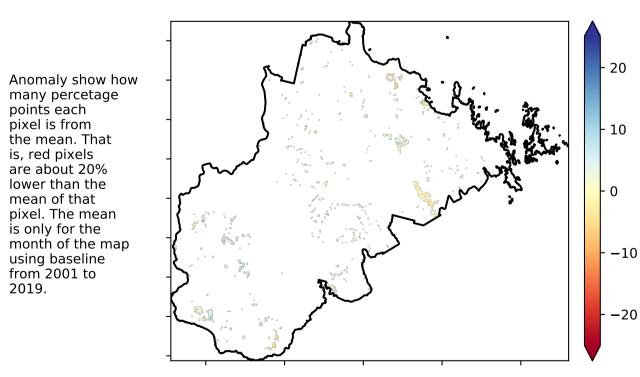


Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

Total Vegetation Cover Anomaly [%]



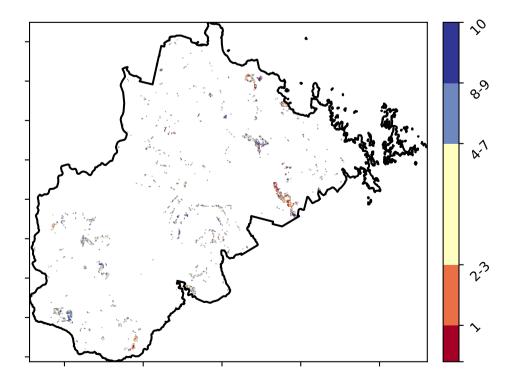
is, red pixels are about 20% lower than the

mean of that pixel. The mean

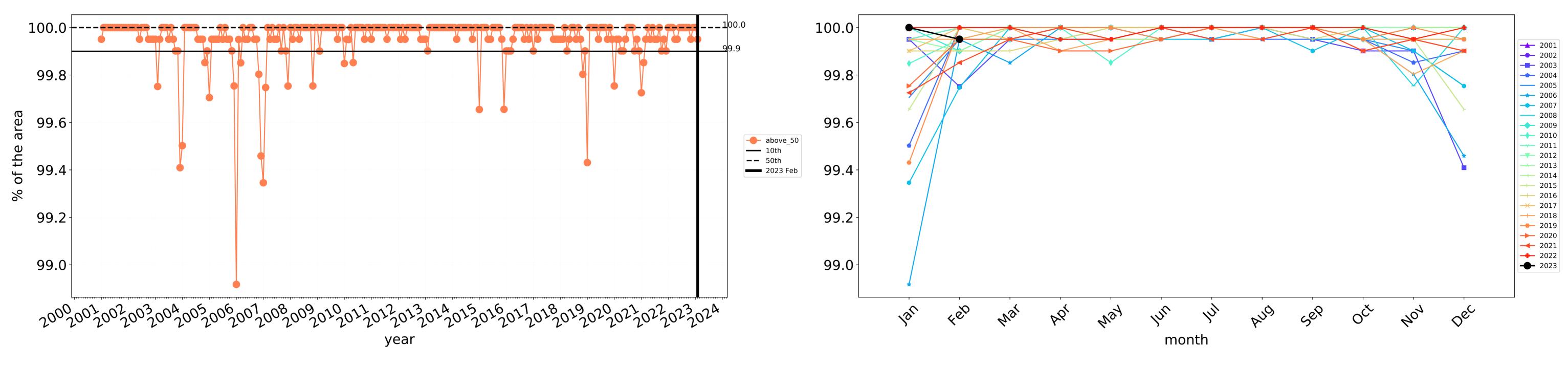
using baseline from 2001 to 2019.

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.

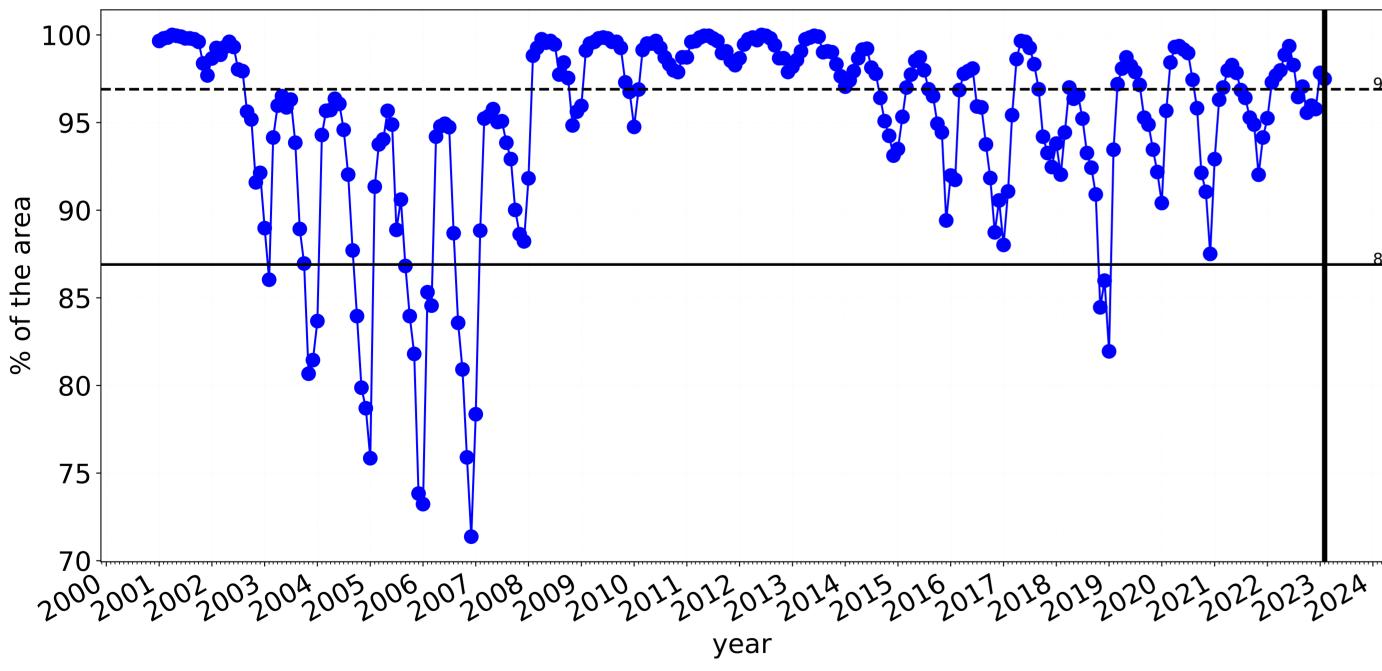
Total Vegetation Cover Decile [%]







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

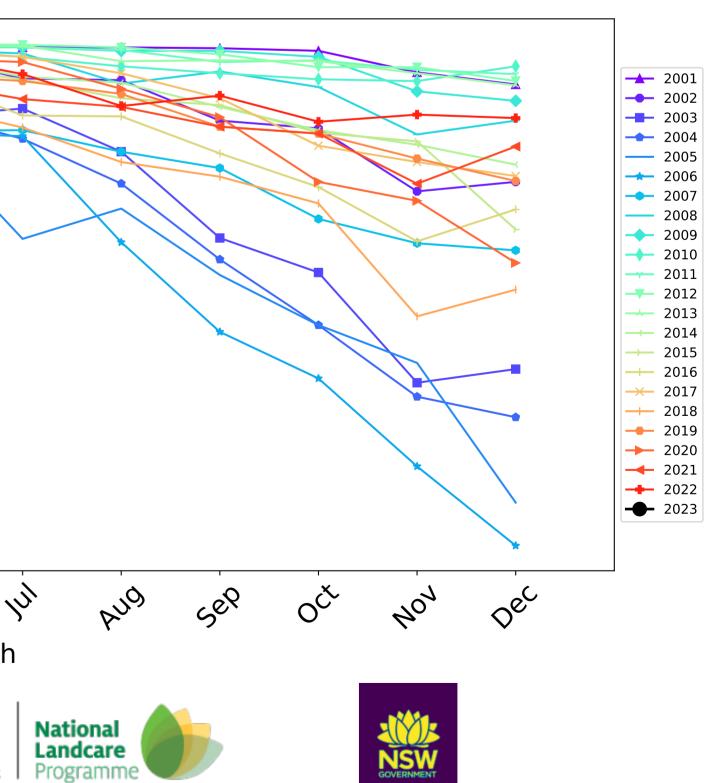


Wind erosion historical monthly area protected (Total Veg Cov >50%)

---- above_70 **——** 10th **——** 50th 9 🗕 2023 Feb

100 95 90-85 80 75 70 4eb Jar way In Mai Þb, month tern Ecosystem Research Infrastructure Australian Government

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



Irrigation

12% 100°1

52°10010

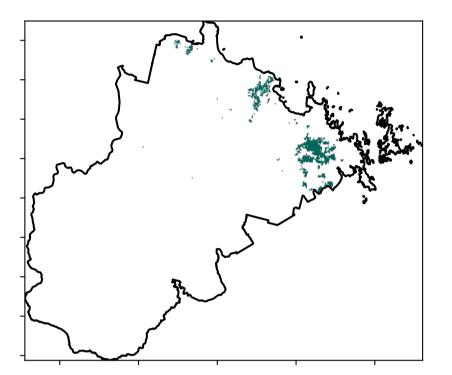
3201050010

0.30%

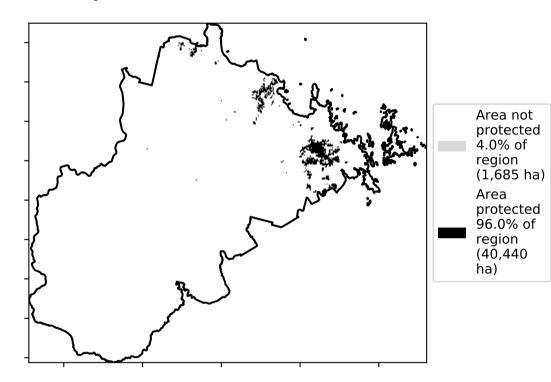
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

Total Vegetation Cover [%]

Land use and forest cover



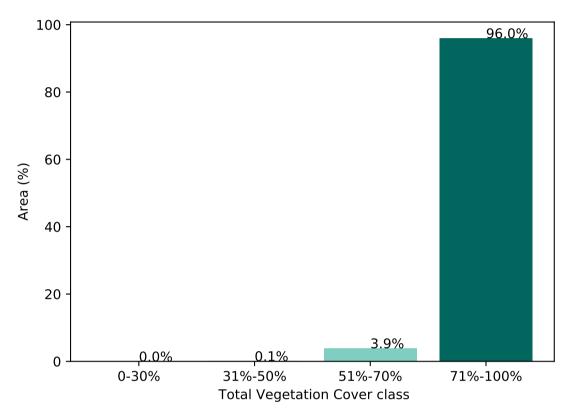
% Area protected from water erosion (>70%)



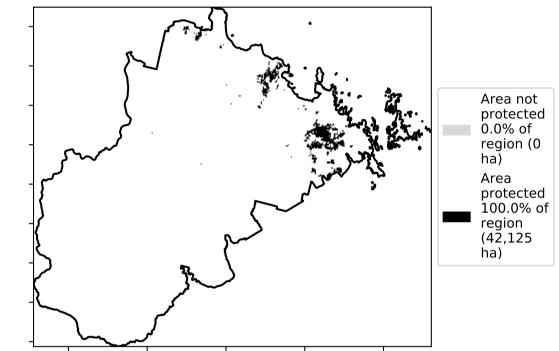
70 · 67.8% 60 50 Area (%) 05 30 30.9% 20 10 1.3% 0 1.0 1.5 2.0 2.5 0.0 0.5 -0.5 Land use class

Proportion of each land class in area

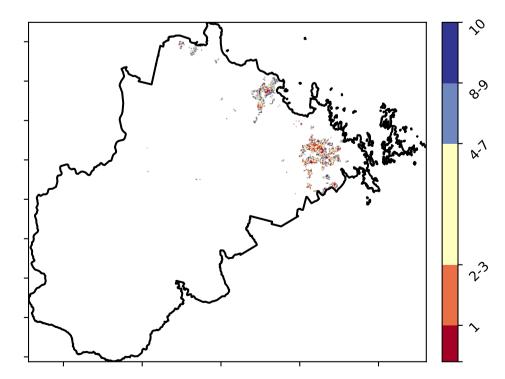
Proportion of vegetation cover class in area



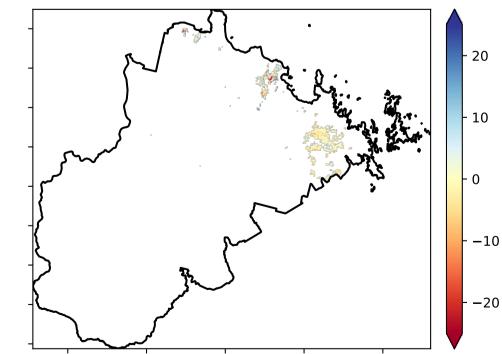
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



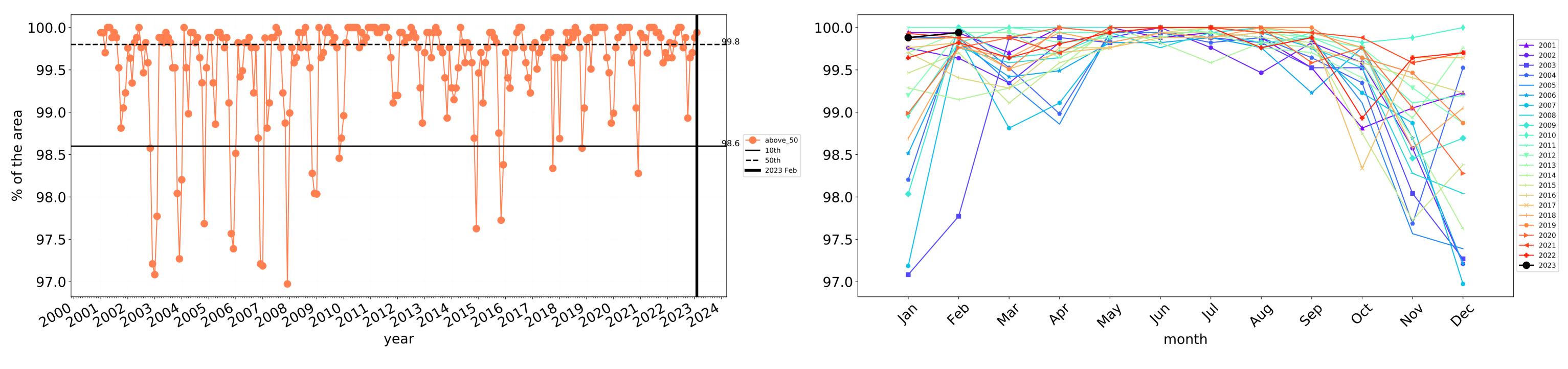
Total Vegetation Cover Anomaly [%]



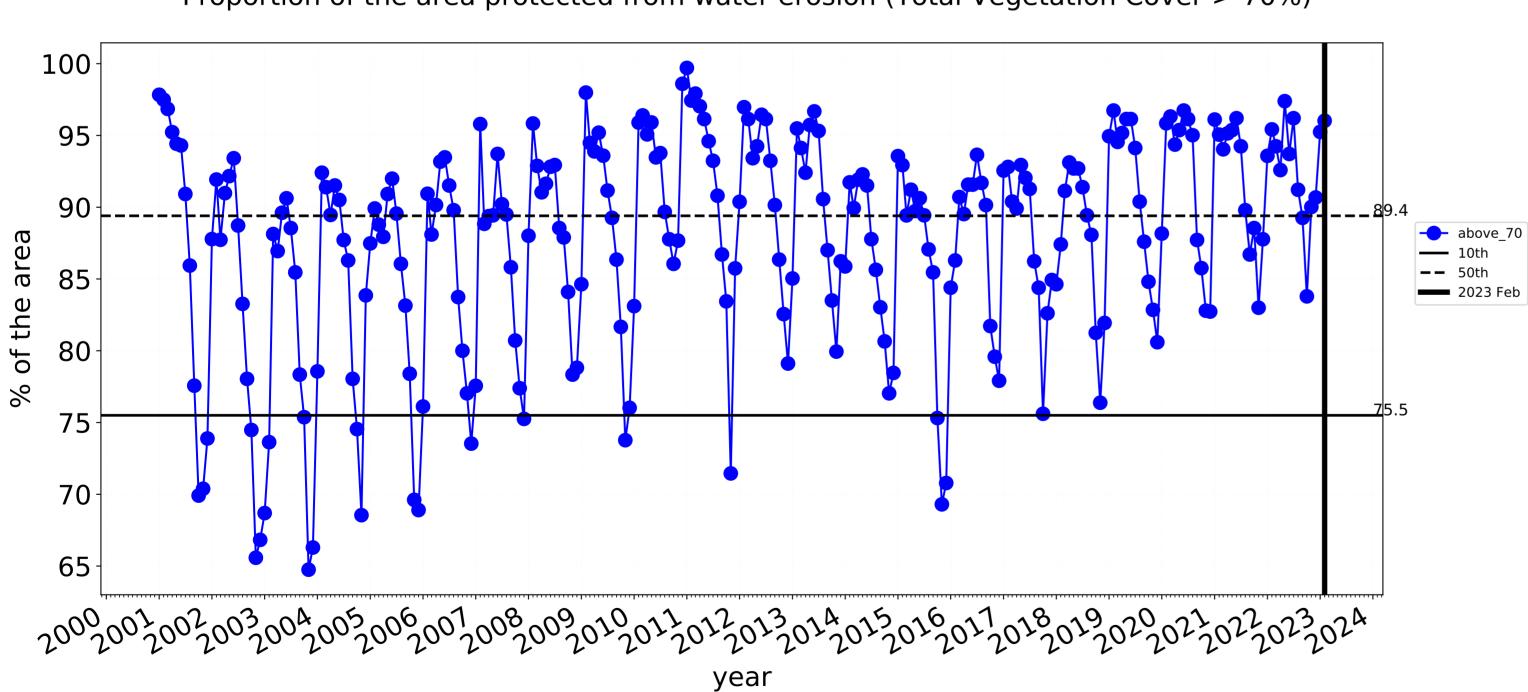
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



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 map using baseline from 2001 to 2019.



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



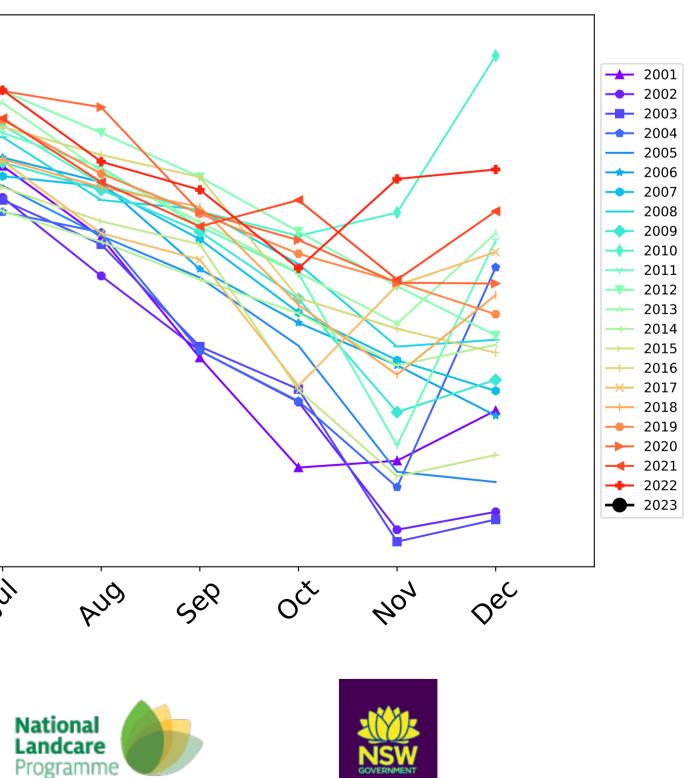
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

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

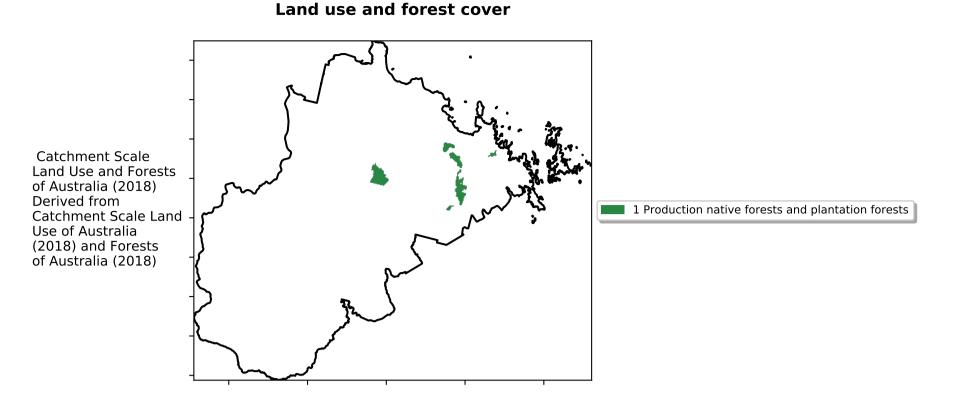
100-95 90 85 80 75 70 65 4eb Jan way Mai In 1¹/₁/ PQ1 month tern Ecosystem Research Infrastructure Australian Government

Programme

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



Production native forests and plantation forests



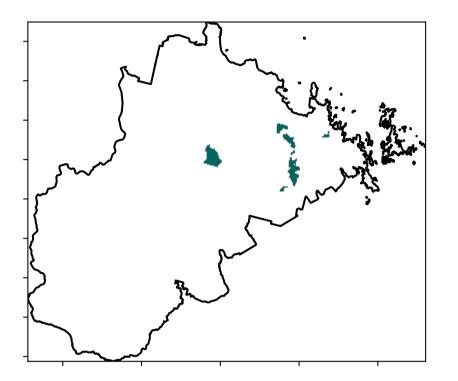
12%100%

52°1070°10

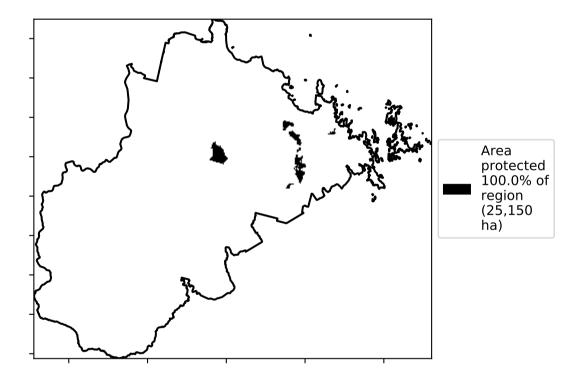
3201050010

0.30%

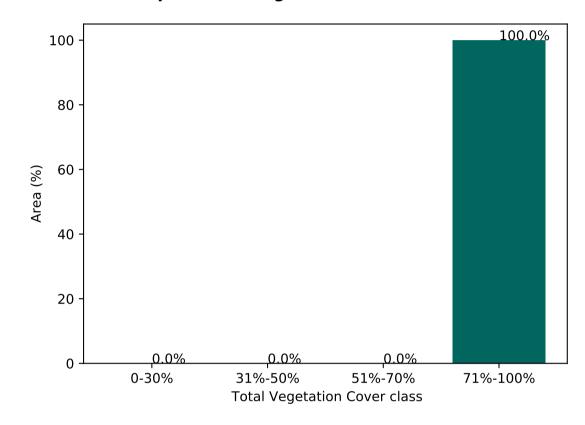
Total Vegetation Cover [%]



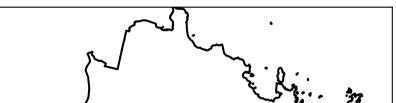
% Area protected from water erosion (>70%)



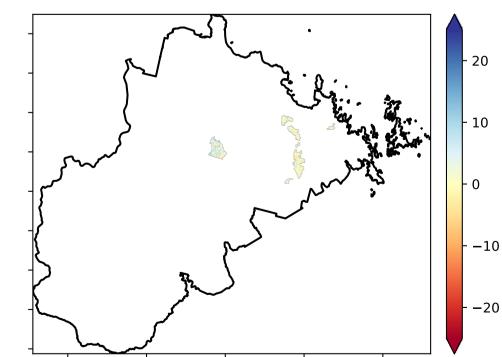
Proportion of vegetation cover class in area



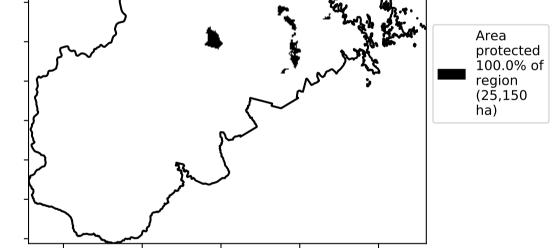
% Area protected from wind erosion (>50%)



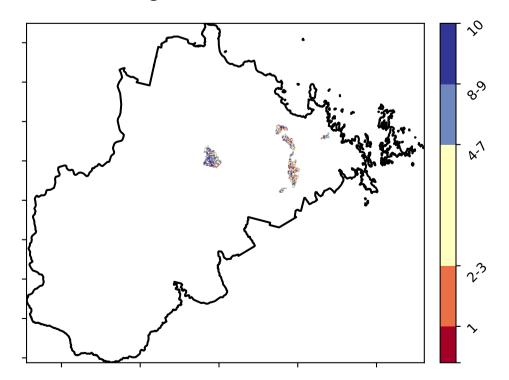
Total Vegetation Cover Anomaly [%]



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

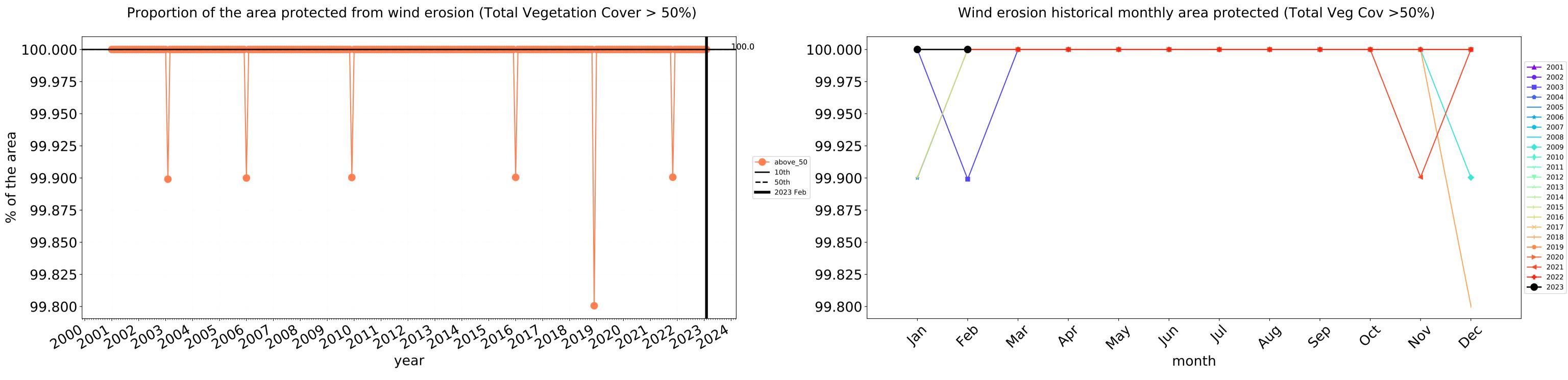


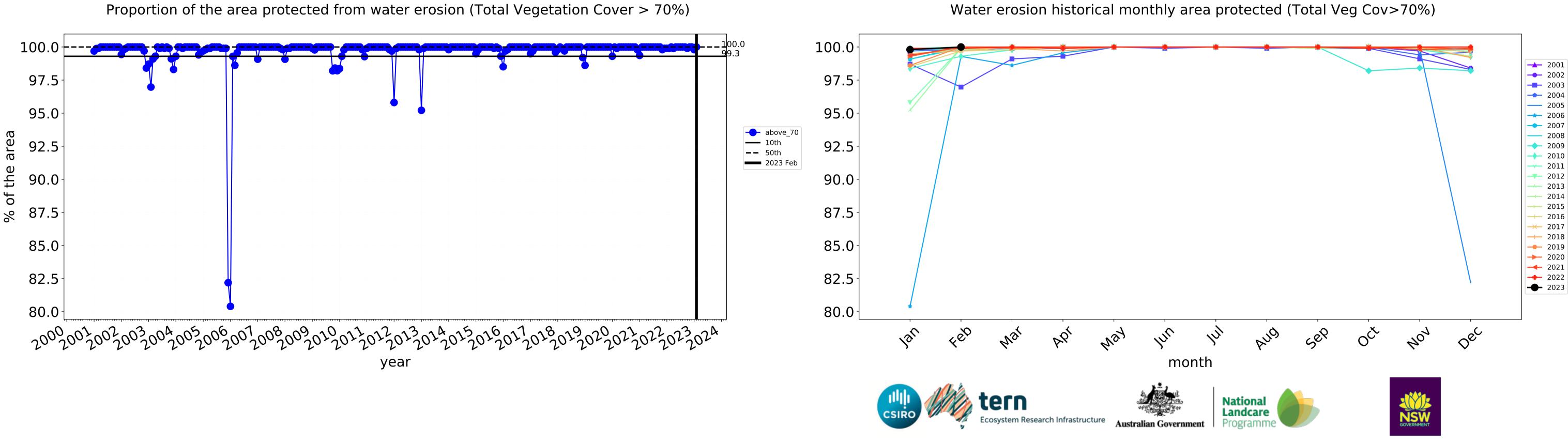
Total Vegetation Cover Decile [%]





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





Whitsunday_(R) (2,356,500 ha and no data 25,376 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	2,356,500	100.0% 2,355,725	99.8% 2,352,250	98.1% 2,312,375	90.8% 2,138,875	49.4% 1,163,800	17.8% 419,475
Conservation and natural environments	168,175	99.7% 167,725	99.1% 166,700	96.2% 161,800	88.6% 148,950	55.6% 93,425	29.2% 49,025
Conservation and natural environments non forest	28,500	99.3% 28,300	98.0% 27,925	92.3% 26,300	74.8% 21,325	18.6% 5,300	4.1% 1,175
Conservation and natural environments Woodland forest	56,925	100.0% 56,925	99.6% 56,675	97.7% 55,625	91.3% 51,975	53.8% 30,600	19.3% 11,000
Conservation and natural environments Forest (non woodland)	82,750	99.7% 82,500	99.2% 82,100	96.5% 79,875	91.4% 75,650	69.5% 57,525	44.5% 36,850
Agriculture	2,084,700	100.0% 2,084,675	100.0% 2,083,900	98.8% 2,059,900	91.9% 1,916,175	49.5% 1,031,600	17.0% 353,425
Grazing	2,042,275	100.0% 2,042,250	100.0% 2,041,500	98.9% 2,019,150	92.2% 1,882,525	50.2% 1,025,075	17.2% 351,425
Grazing non forest	1,171,725	100.0% 1,171,700	99.9% 1,170,975	98.3% 1,151,875	88.5% 1,036,900	40.9% 479,750	12.5% 146,600
Grazing Woodland forest	819,725	100.0% 819,725	100.0% 819,725	99.8% 817,725	97.4% 798,775	63.9% 523,775	24.1% 197,875
Grazing - Forest (non woodland)	50,825	100.0% 50,825	100.0% 50,800	97.5% 49,550	92.2% 46,850	42.4% 21,550	13.7% 6,950
Irrigation	42,125	100.0% 42,125	99.9% 42,100	96.0% 40,450	79.3% 33,425	15.3% 6,450	4.7% 1,975
Production native forests and plantation forests	25,150	100.0% 25,150	100.0% 25,150	100.0% 25,150	99.1% 24,925	81.2% 20,425	35.0% 8,800

