Total vegetation cover soil protection Region:NRM Riverina NSW

Date: July 2008

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:

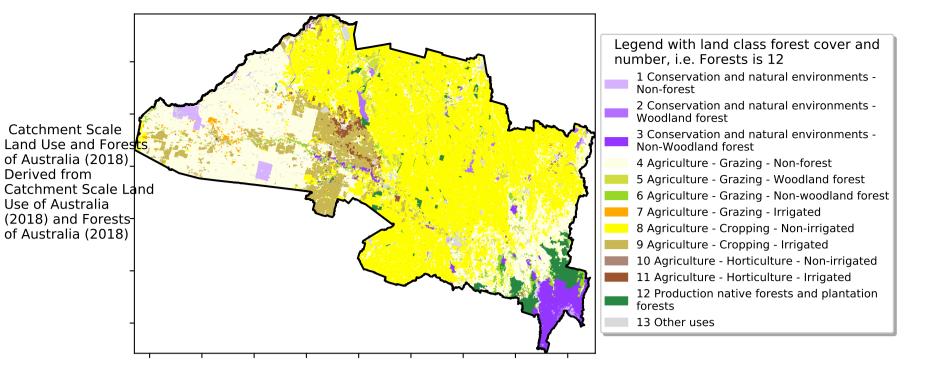
https://doi.org/10.4225/08/5848a3f19a7b3



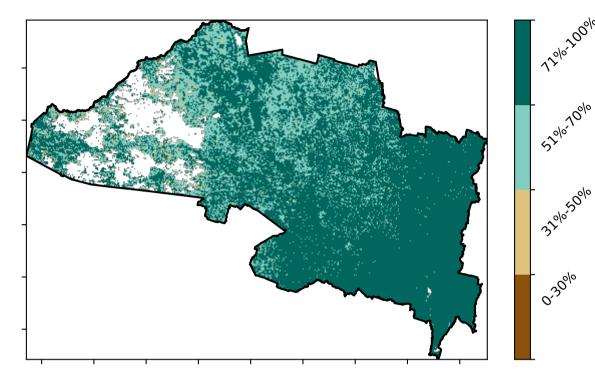
Vegetation Cover Jul 2008

Land use and forest cover

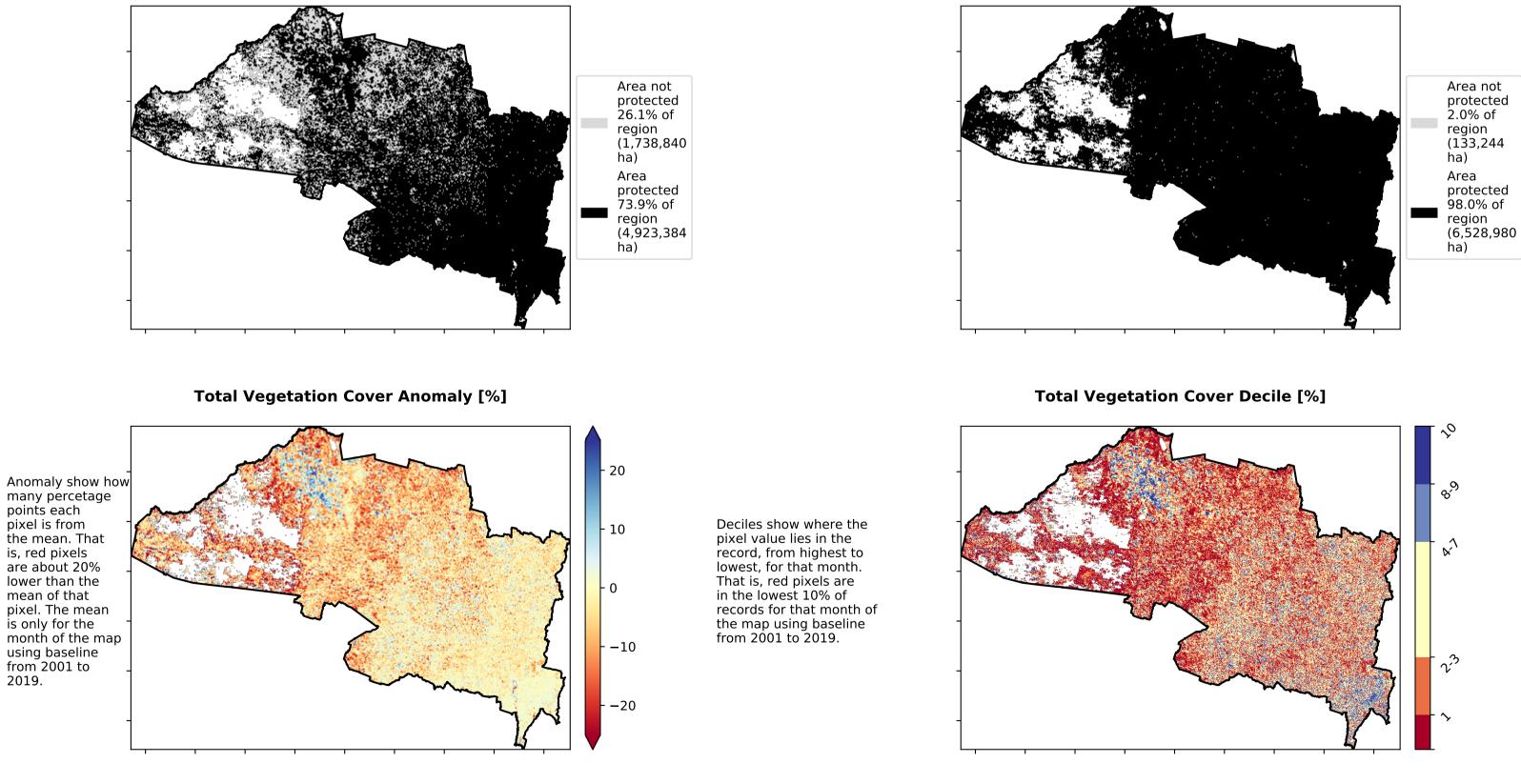
Proportion of each land class in area

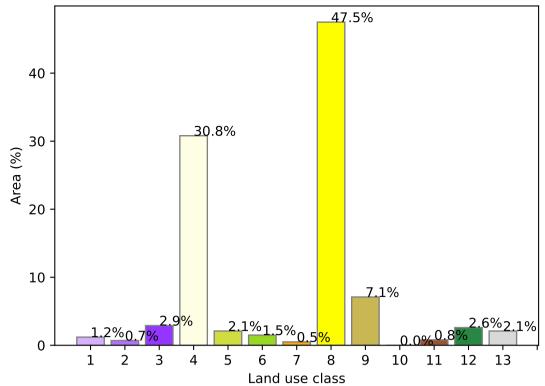


Total Vegetation Cover [%]

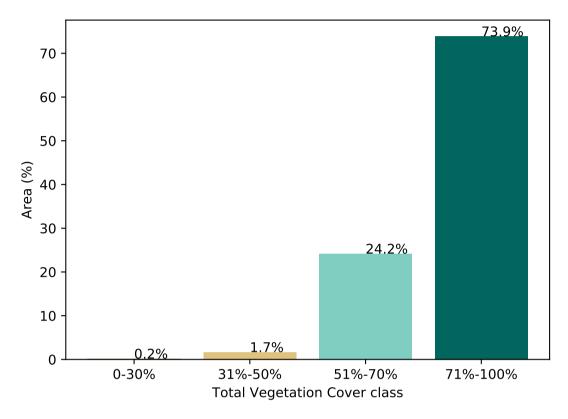


% Area protected from water erosion (>70%)

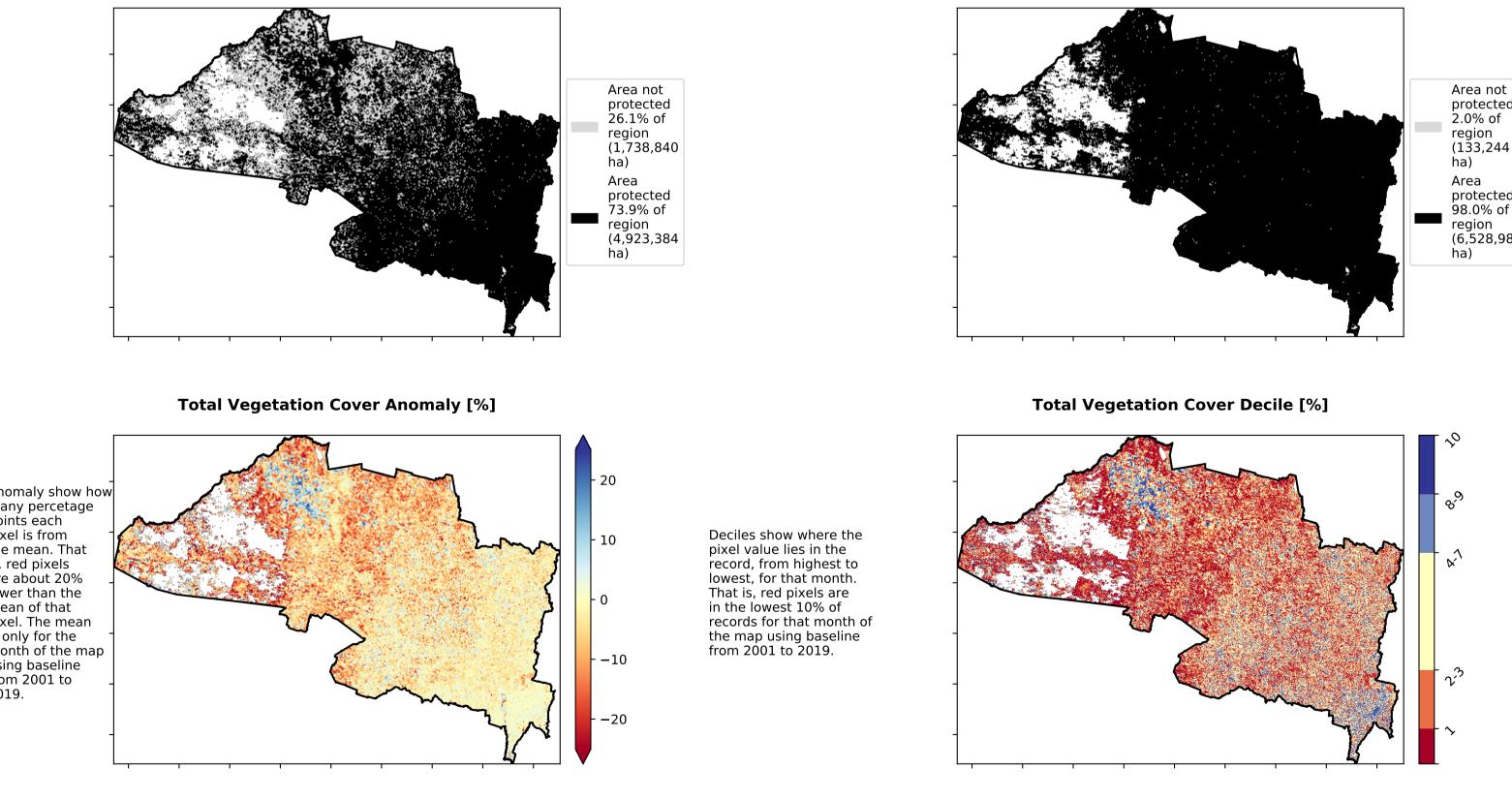




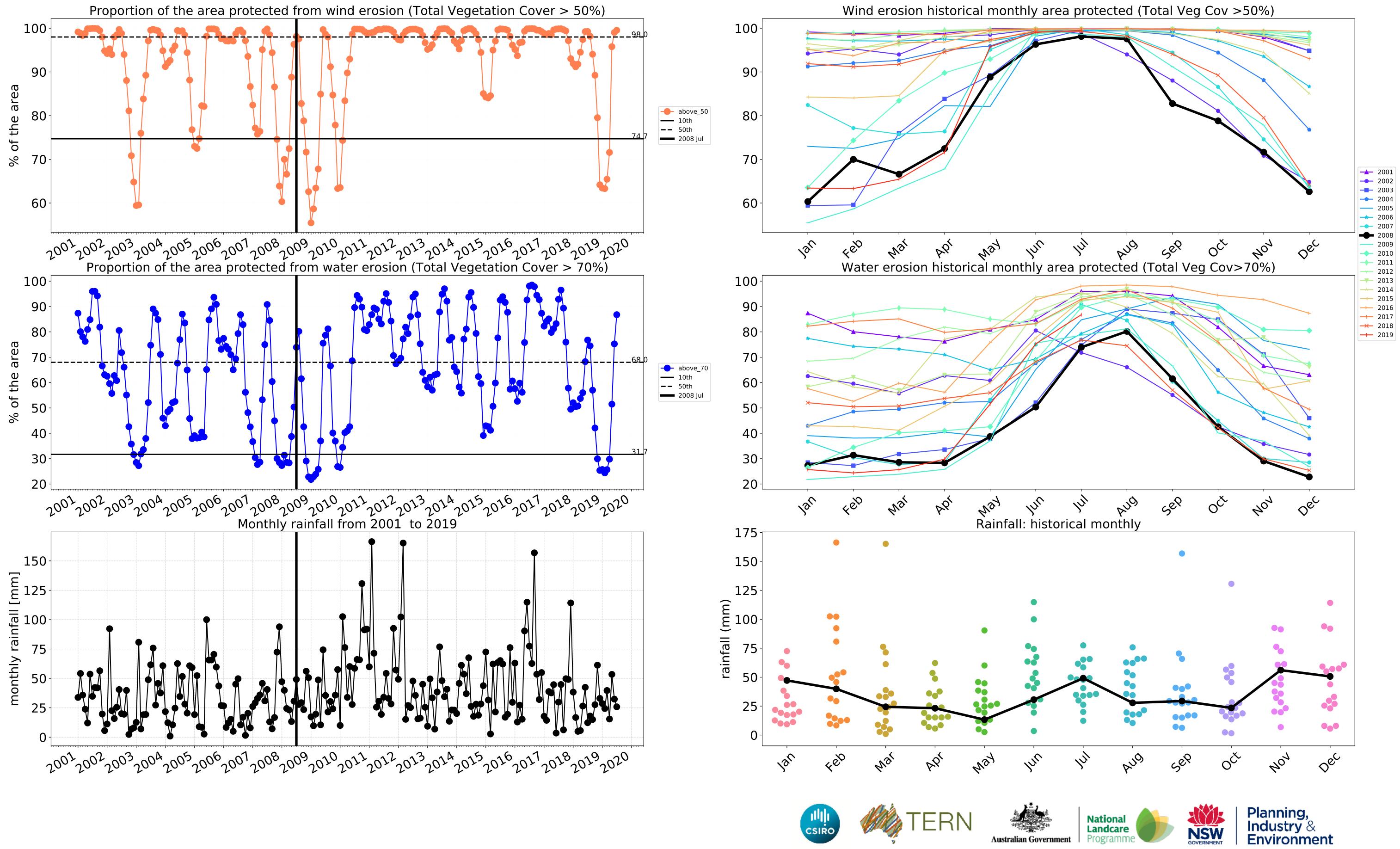
Proportion of vegetation cover class in area



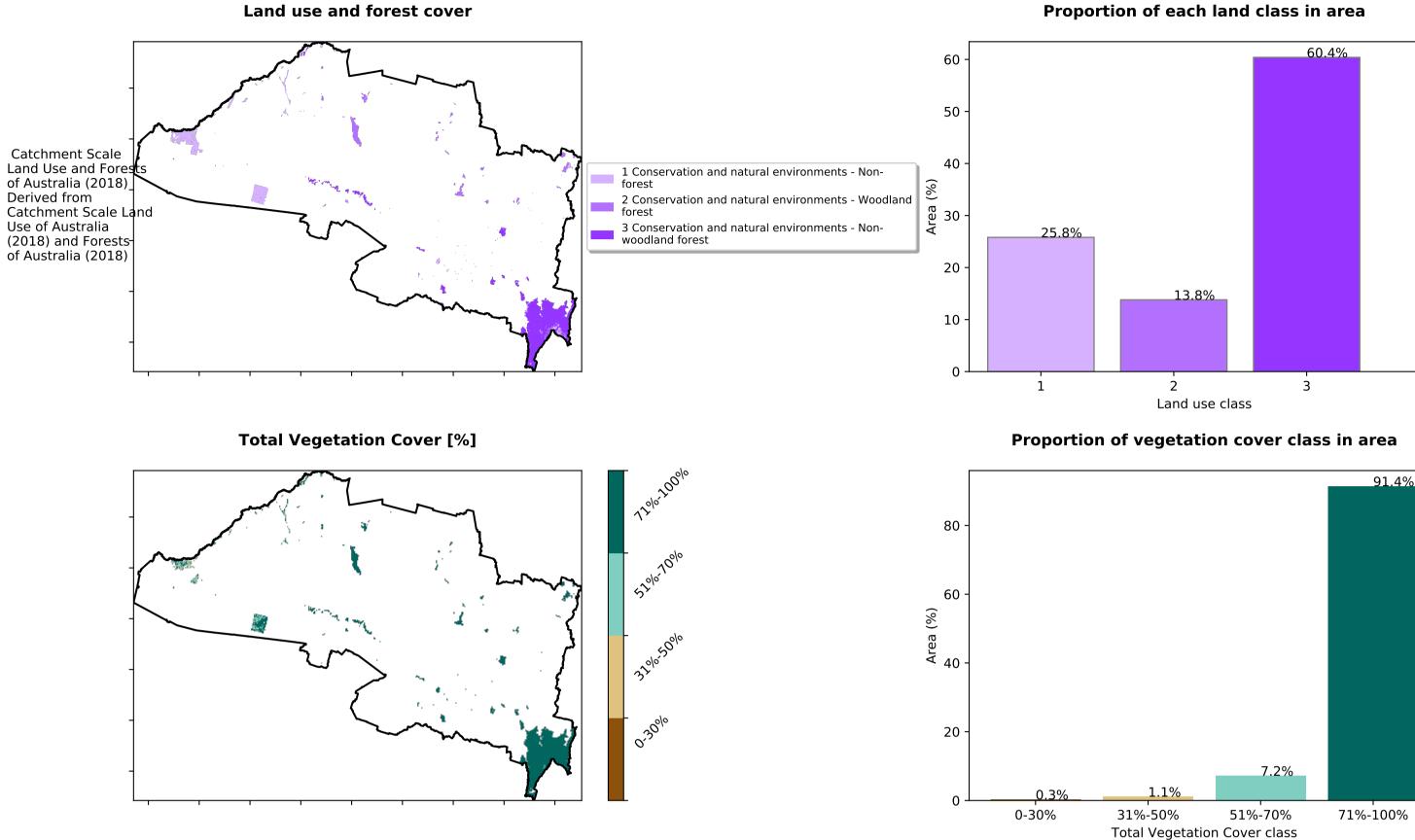
% Area protected from wind erosion (>50%)



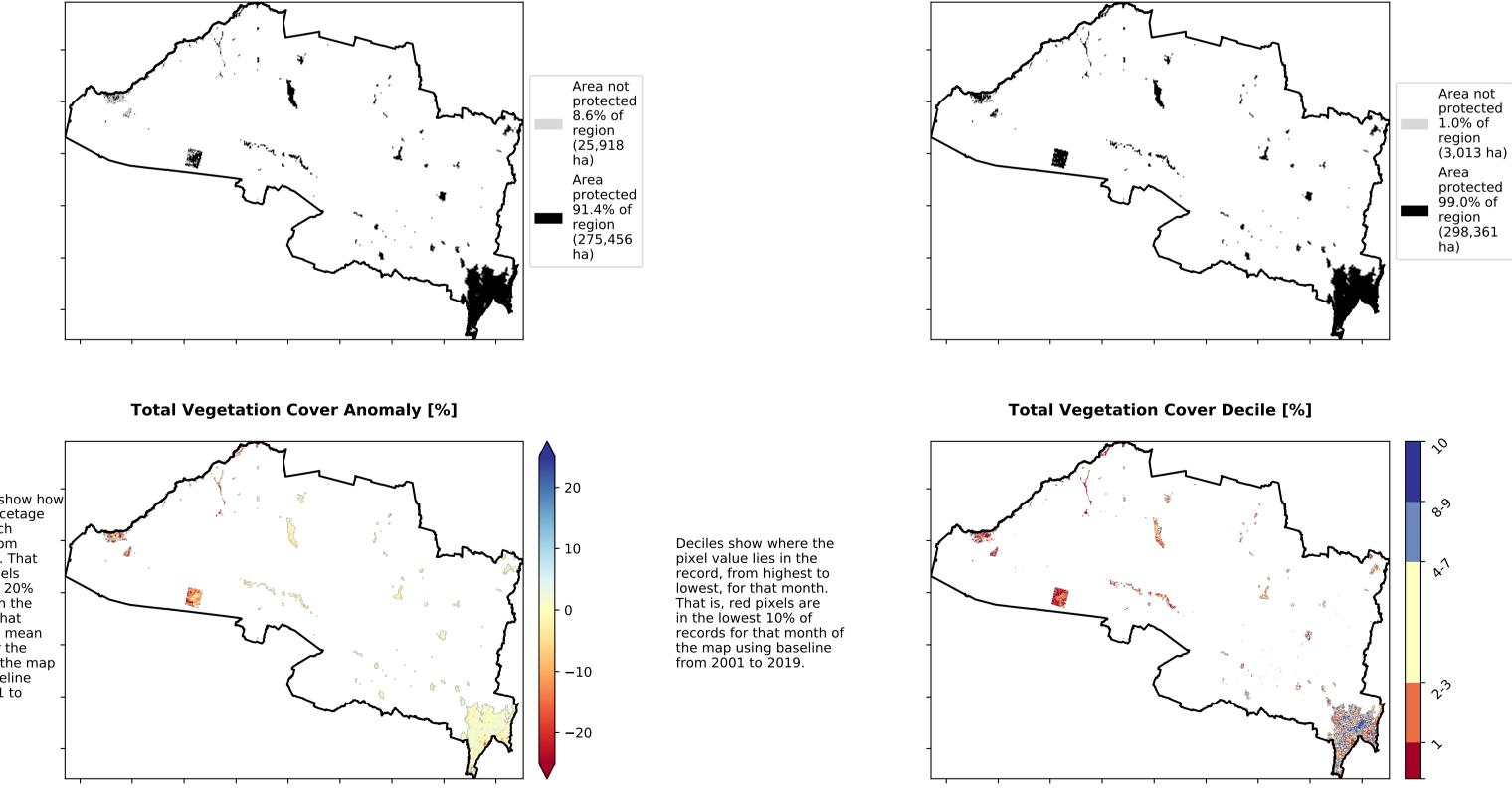


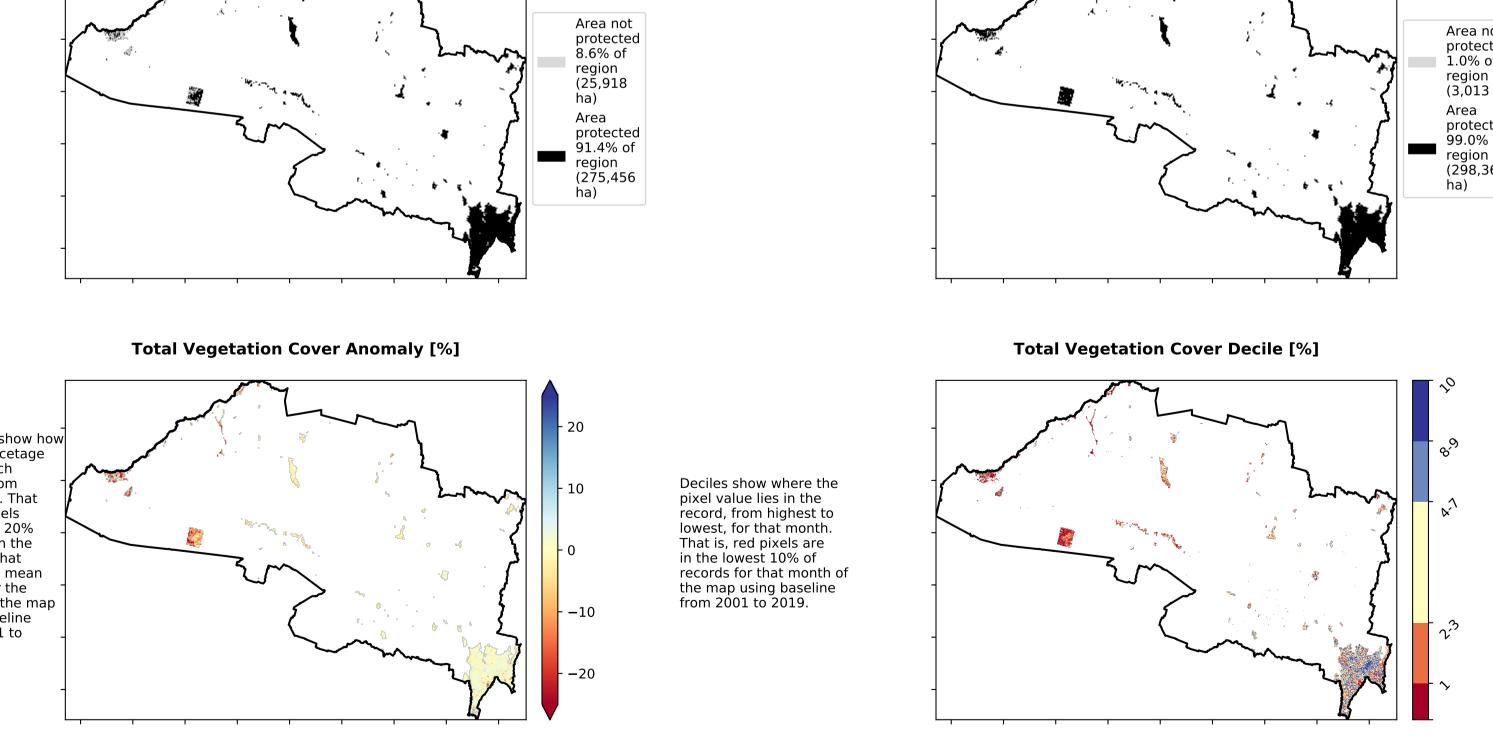


Conservation and natural environments



% Area protected from water erosion (>70%)



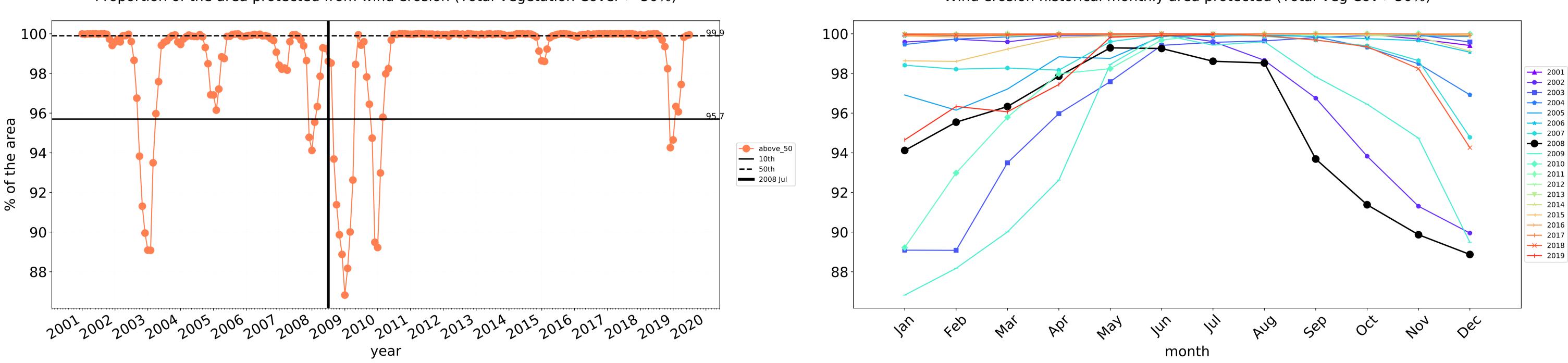


% Area protected from wind erosion (>50%)



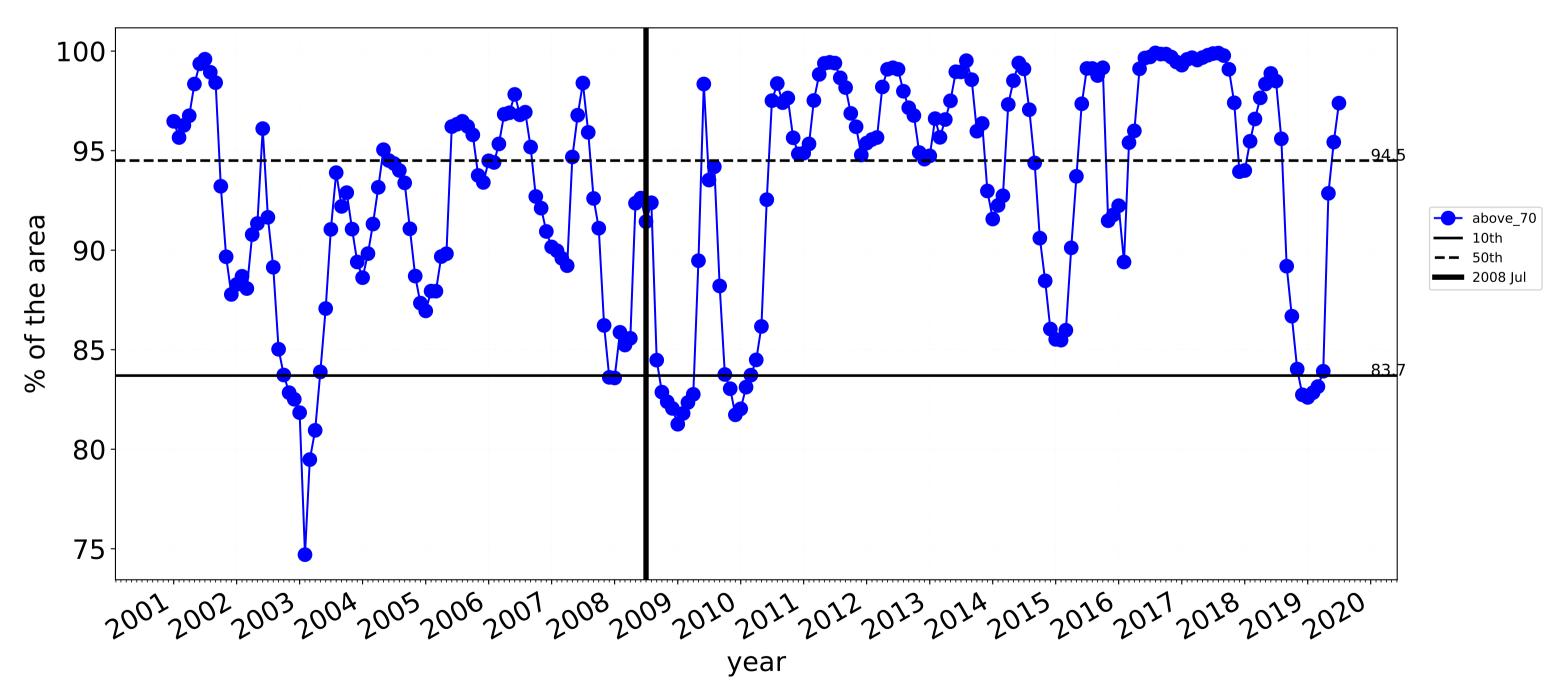


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

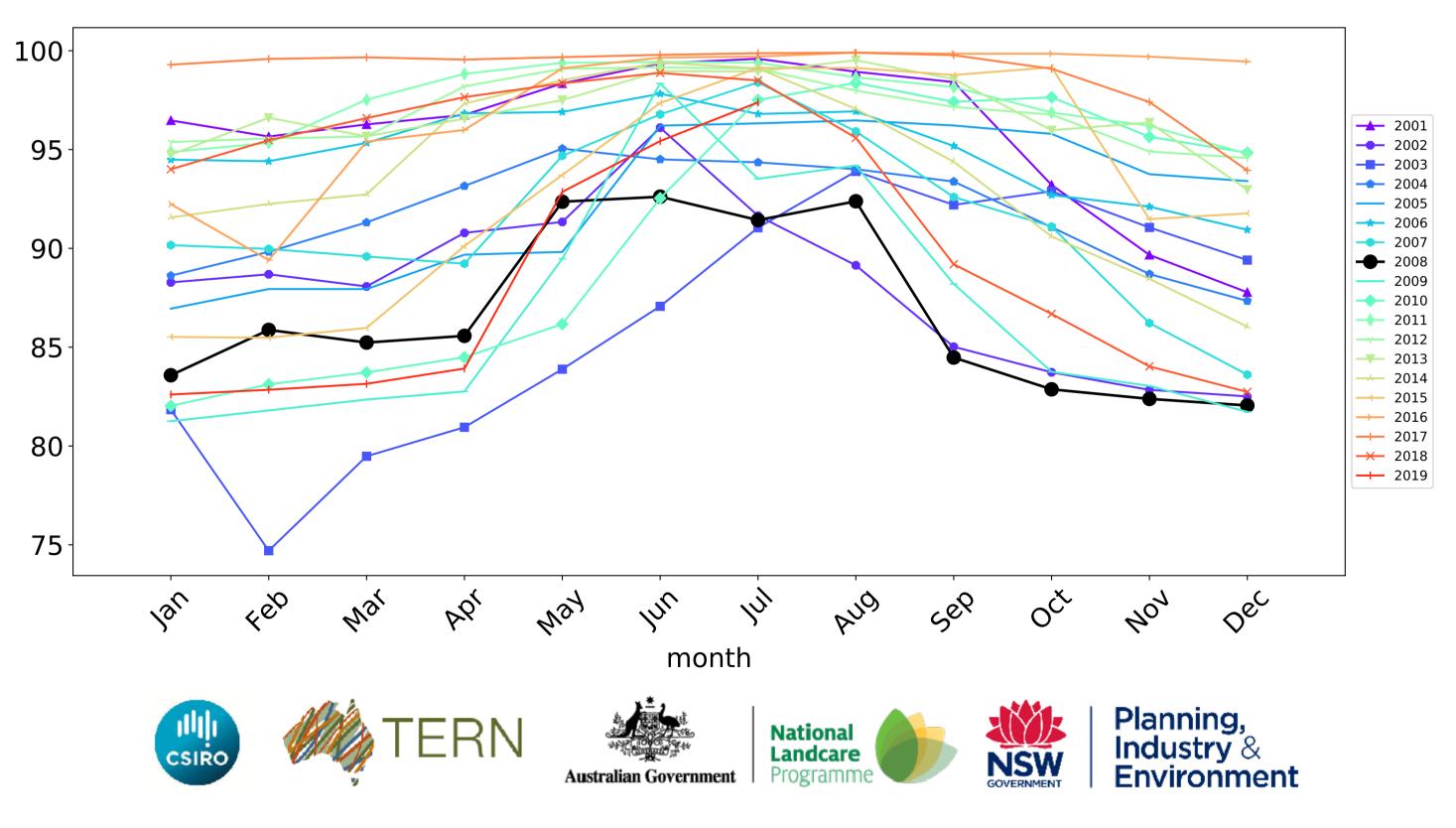


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

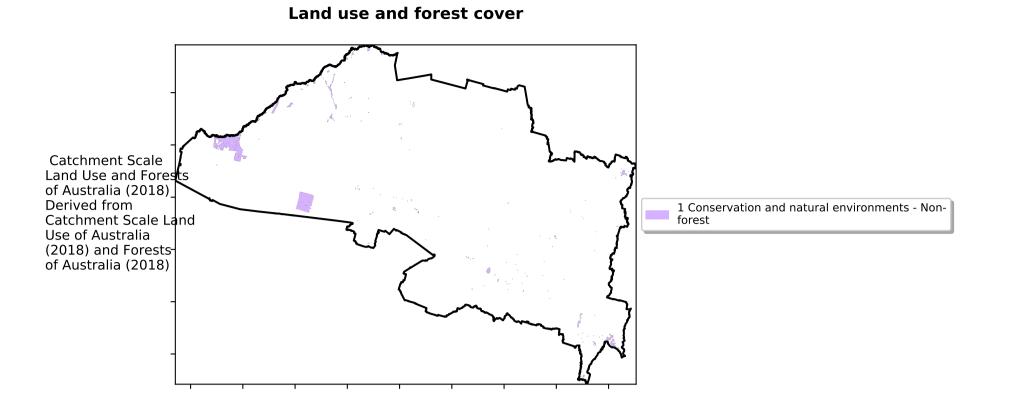




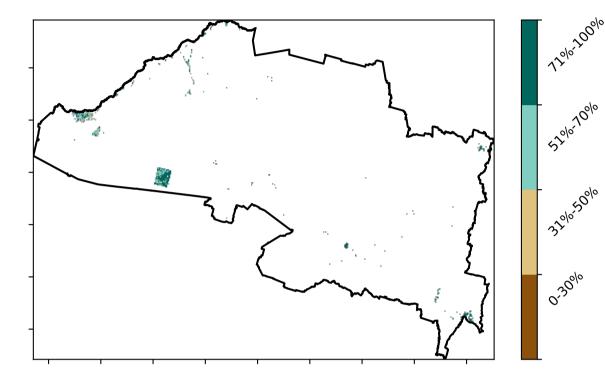
Water erosion historical monthly area protected (Total Veg Cov>70%)



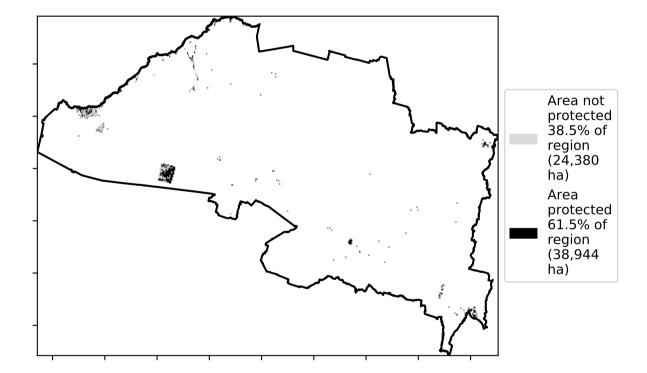
Conservation and natural environments non forest



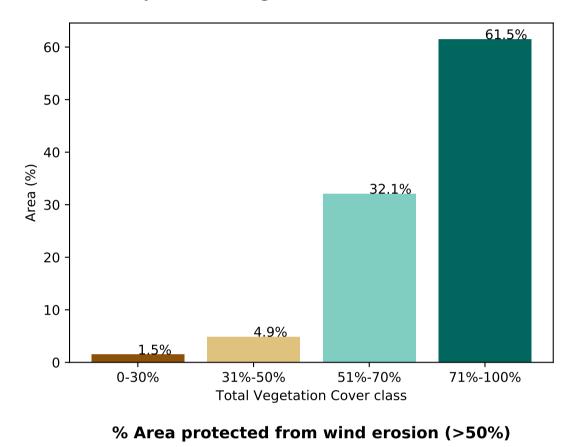
Total Vegetation Cover [%]

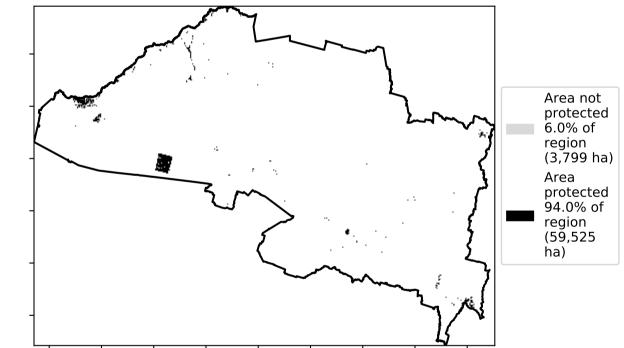


% Area protected from water erosion (>70%)

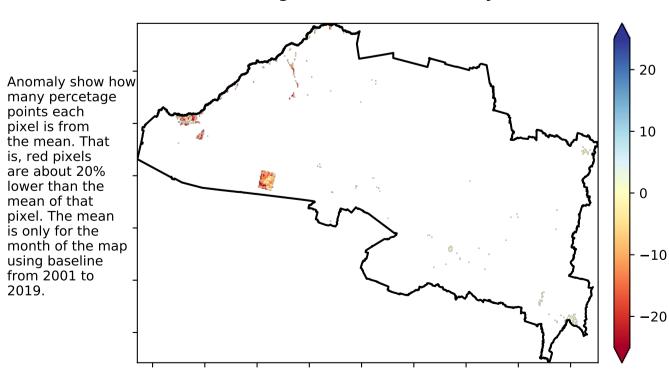




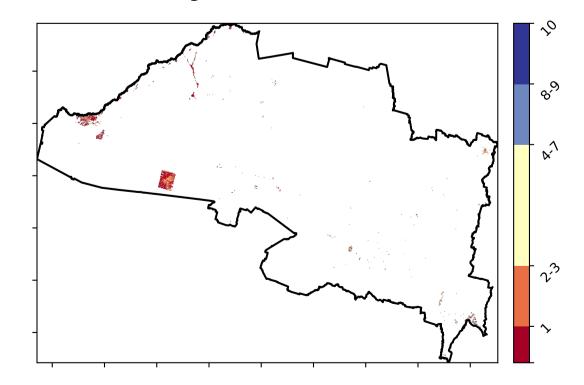




Total Vegetation Cover Anomaly [%]

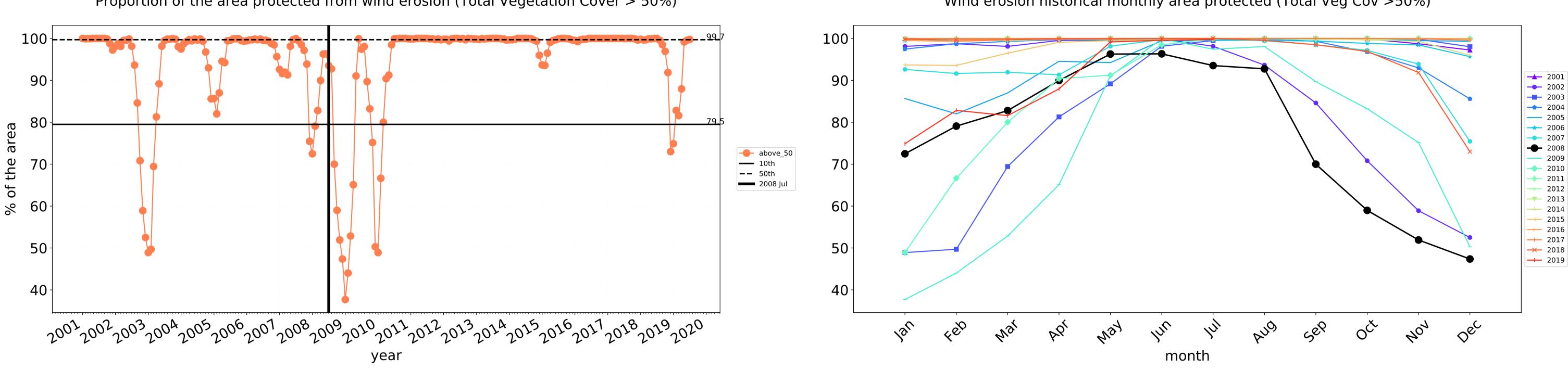


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



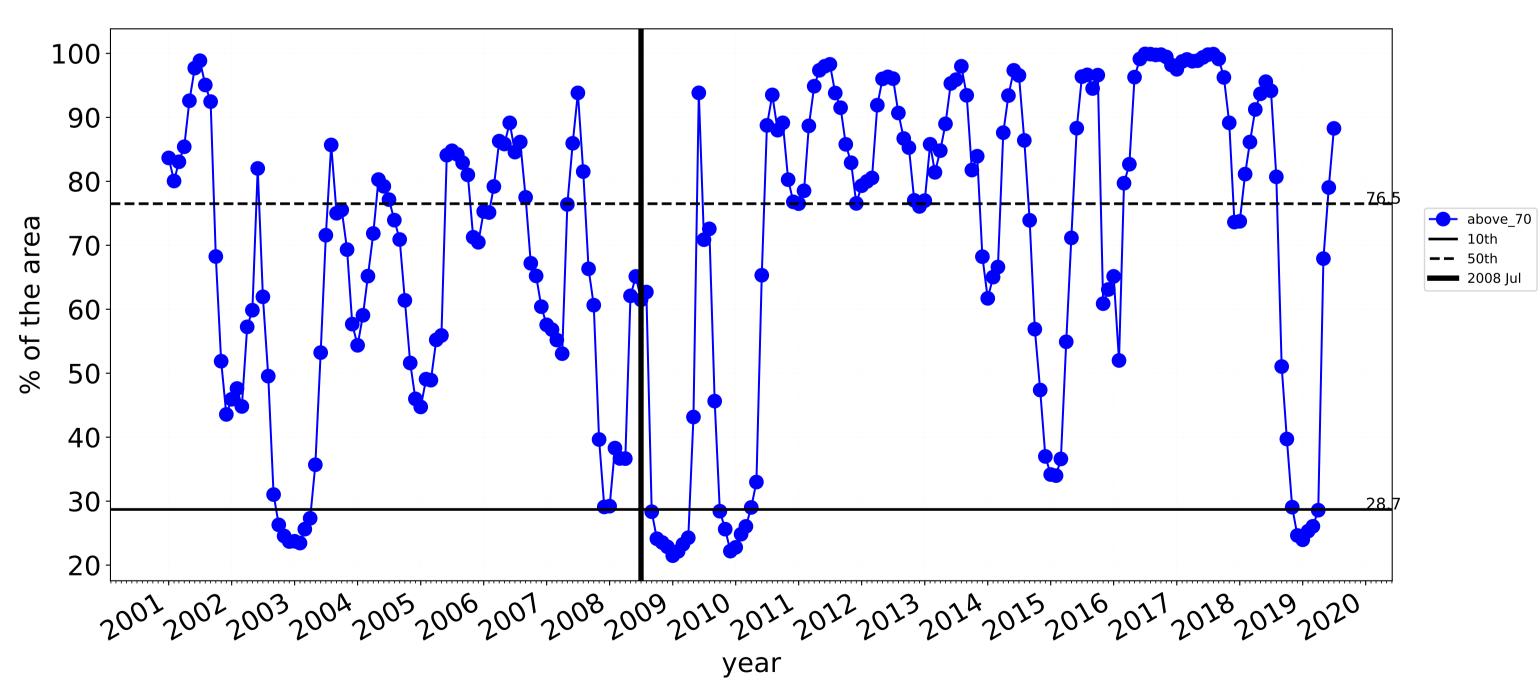


Conservation and natural environments non forest timeseries

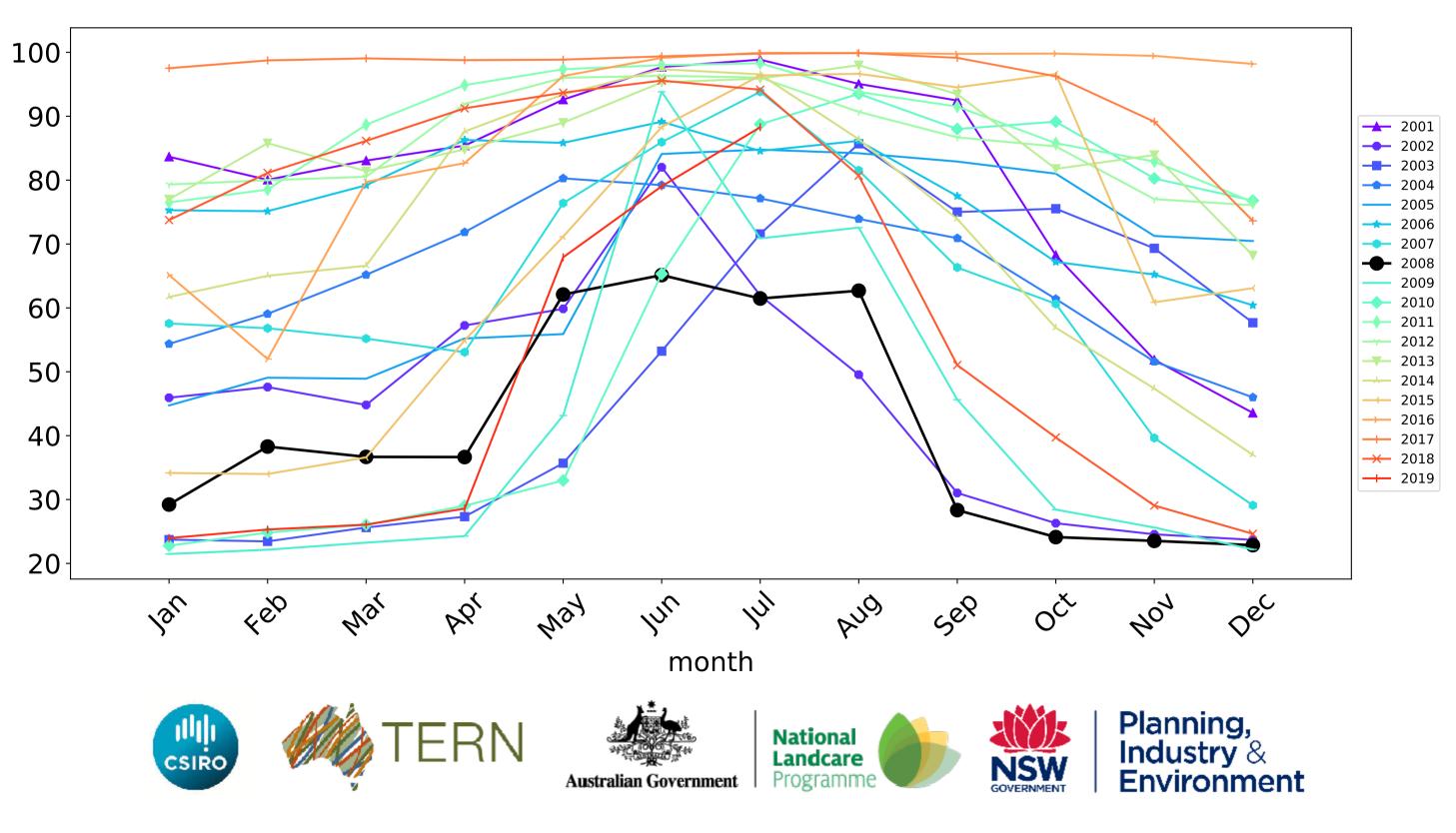


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

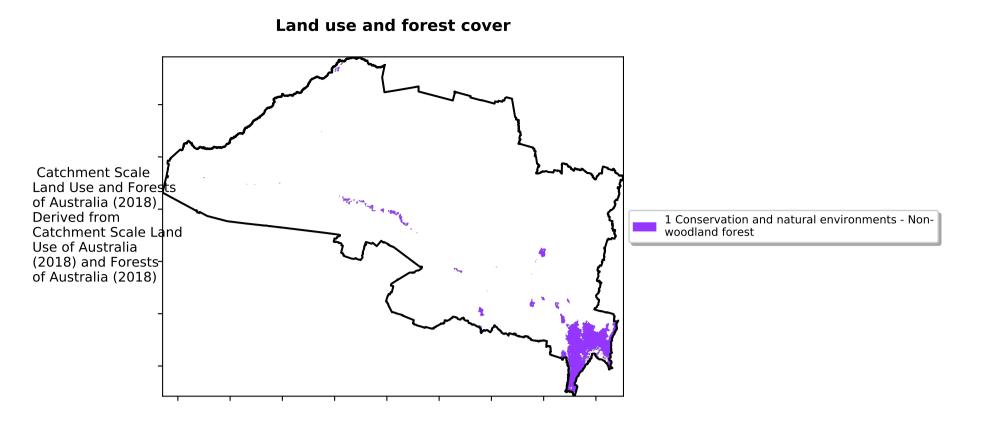




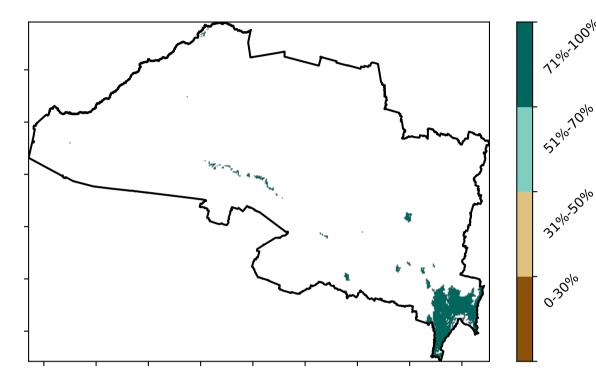
Water erosion historical monthly area protected (Total Veg Cov>70%)



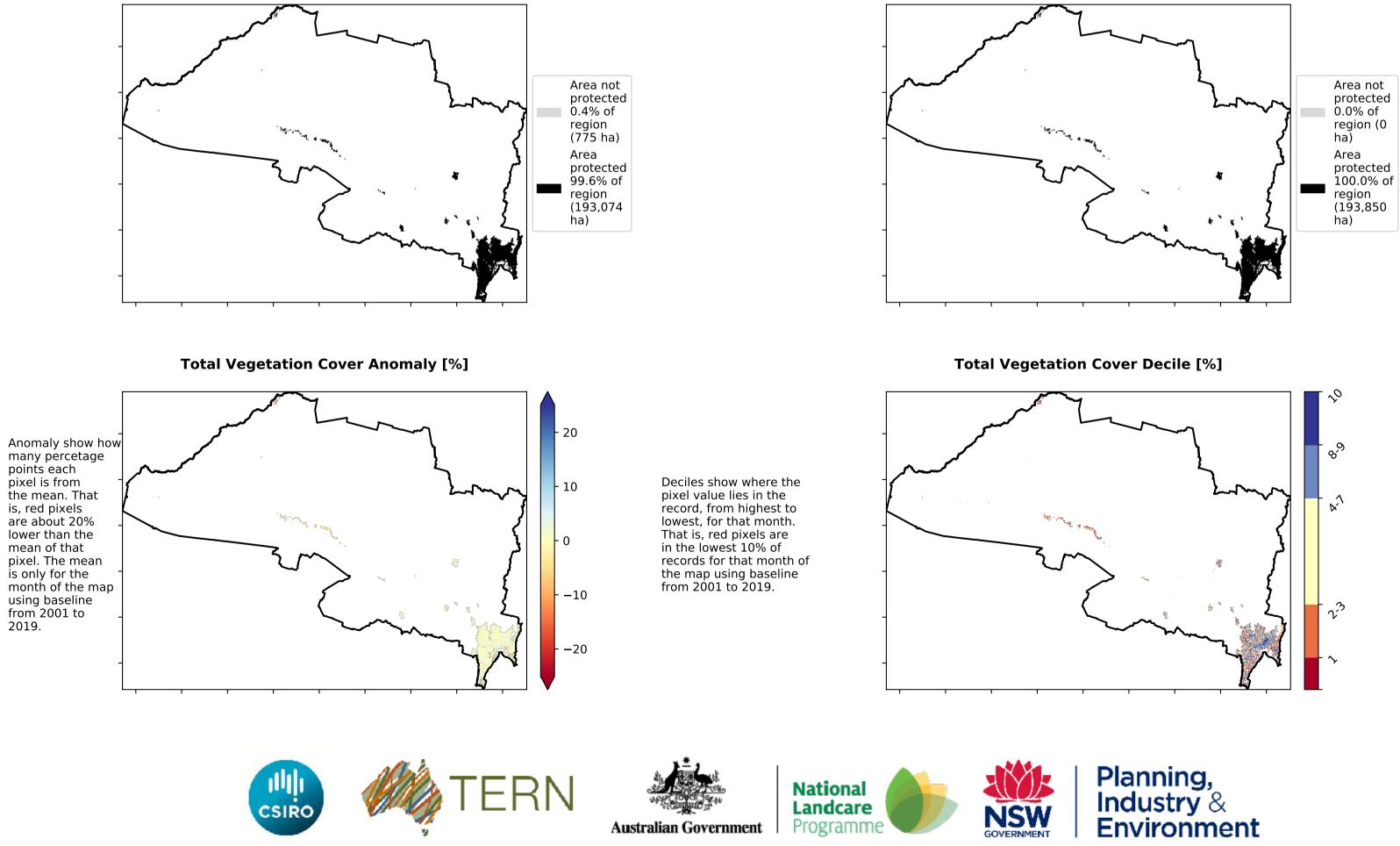
Conservation and natural environments Forest (non woodland)



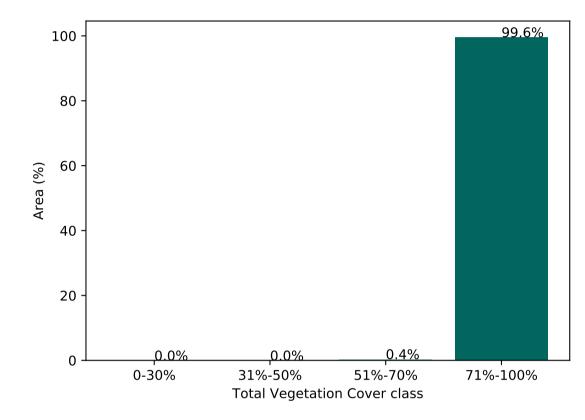
Total Vegetation Cover [%]



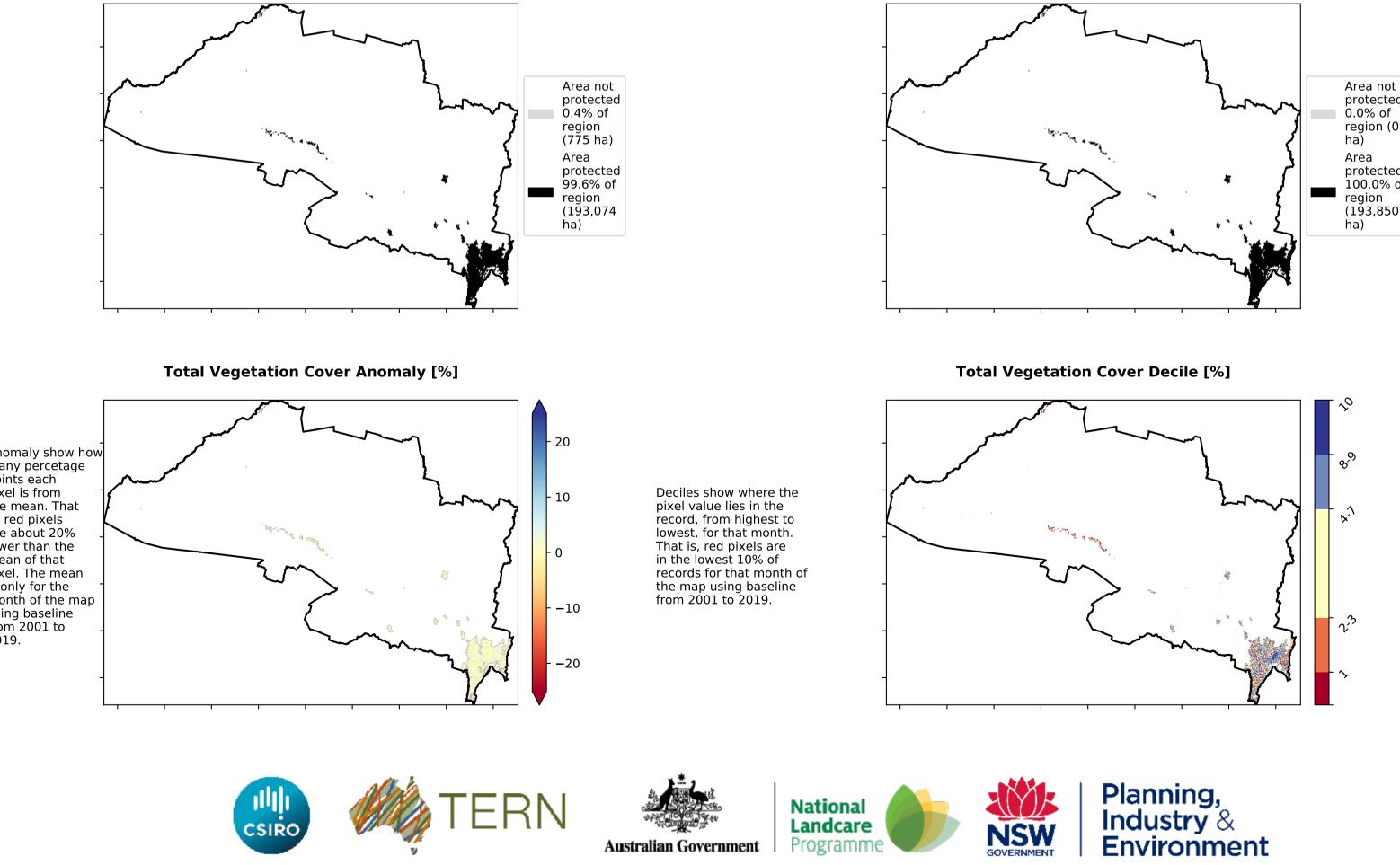
% Area protected from water erosion (>70%)



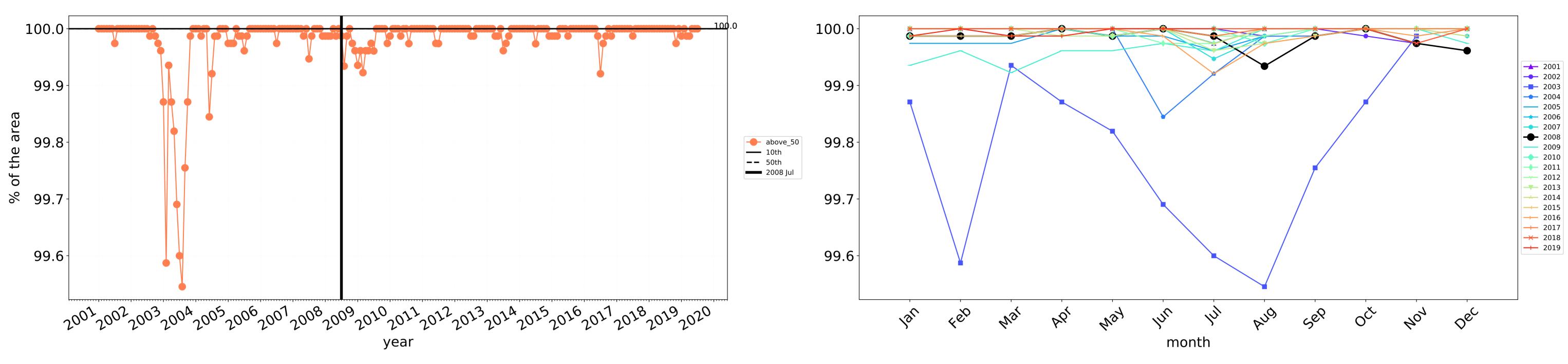
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

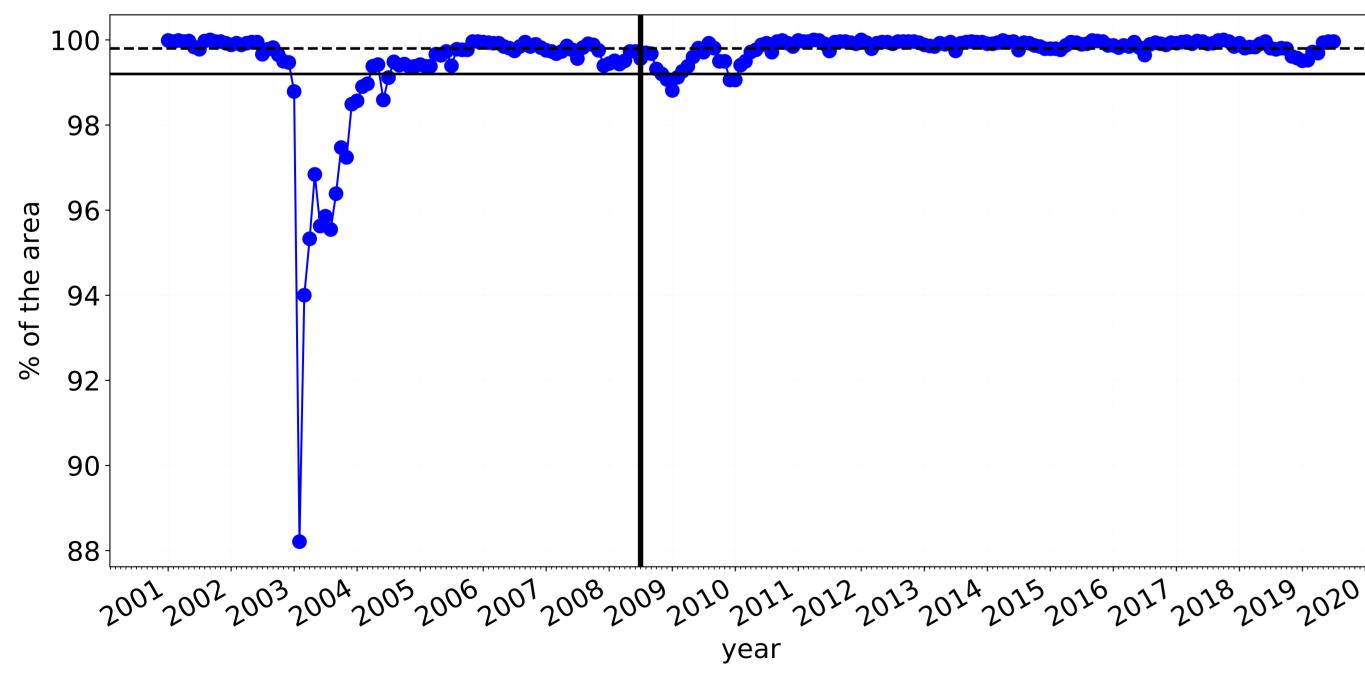


Conservation and natural environments Forest (non woodland) timeseries

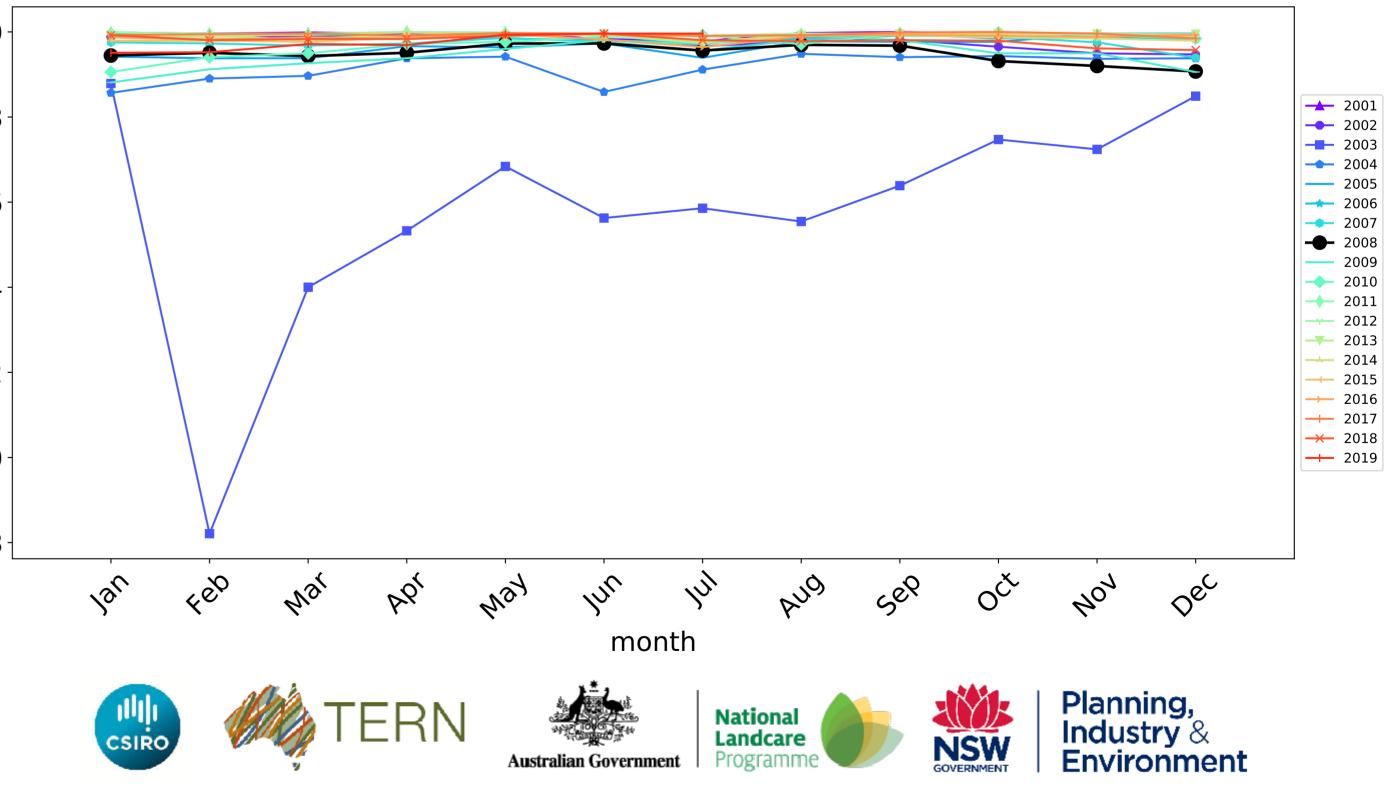


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



100 98 ---- above_70 96 **—** 10th **——** 50th **——** 2008 Jul 94 92 90 88 4eb Jan Mar

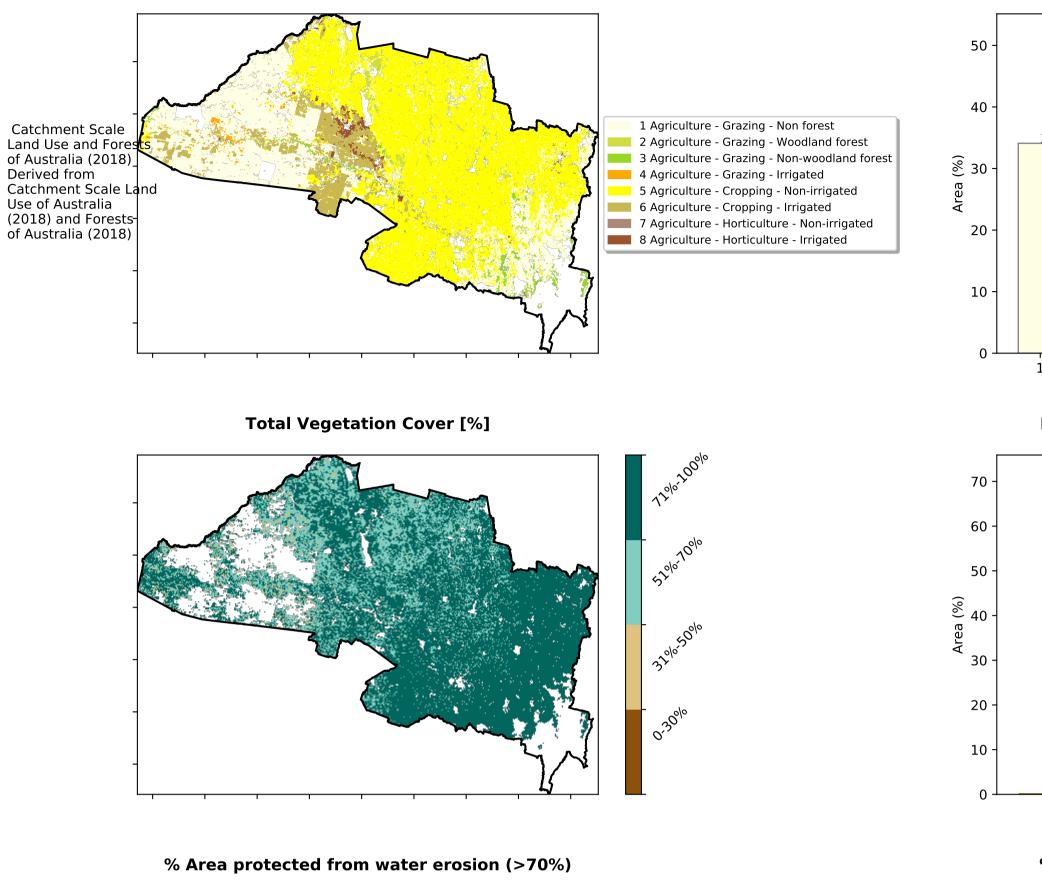


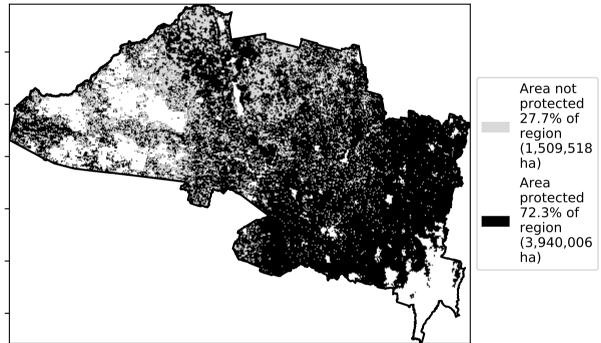
Water erosion historical monthly area protected (Total Veg Cov>70%)

Agriculture

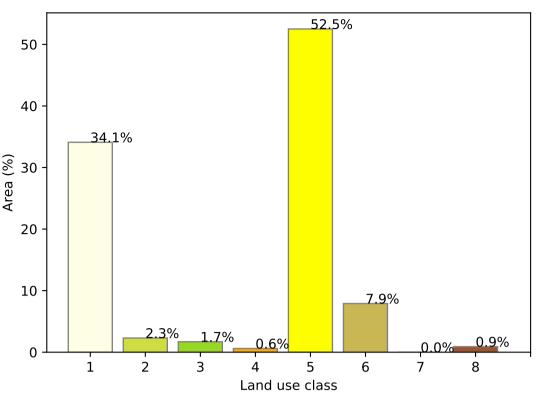
Land use and forest cover

Proportion of each land class in area

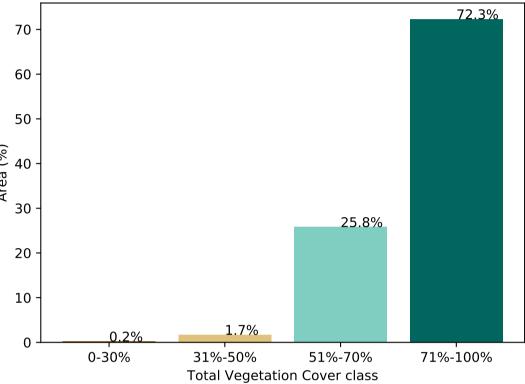








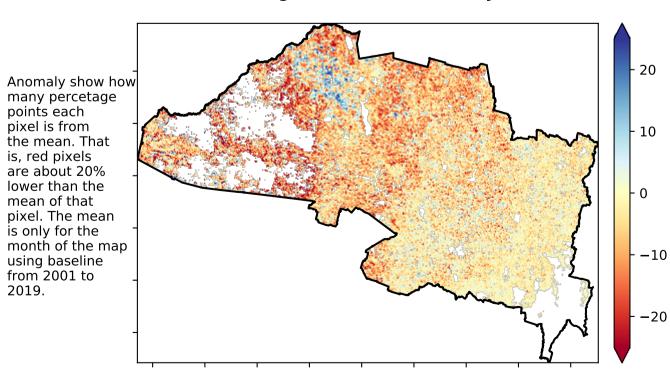
Proportion of vegetation cover class in area



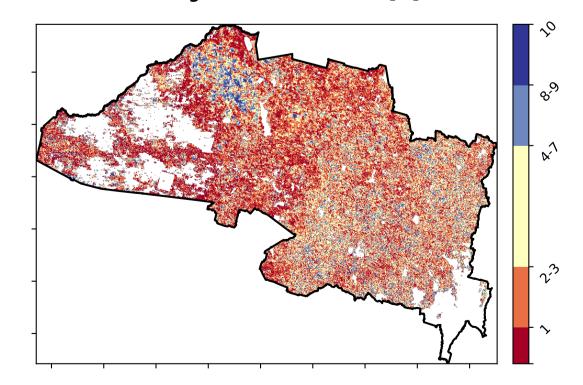
% Area protected from wind erosion (>50%)



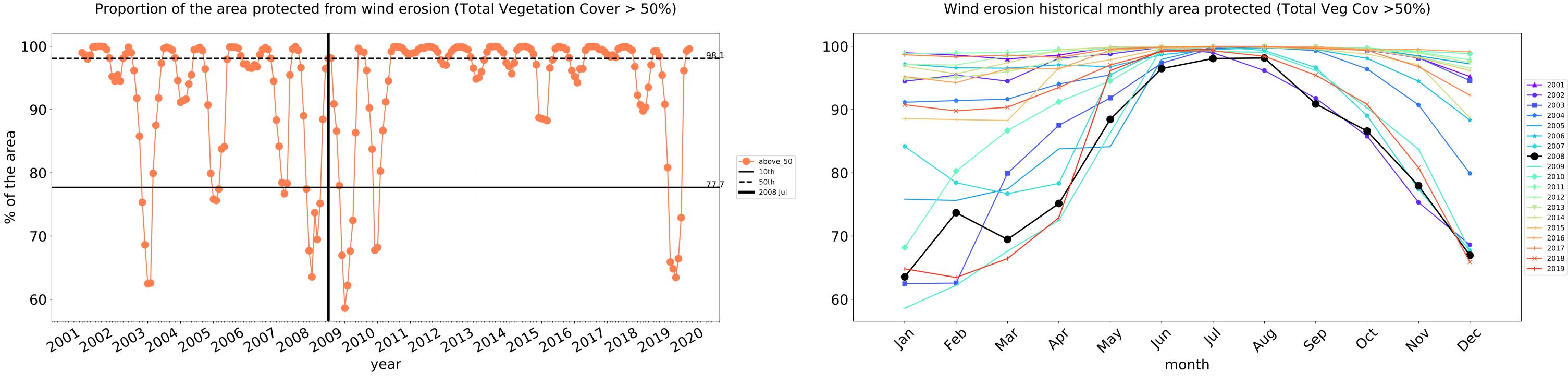
Total Vegetation Cover Anomaly [%]



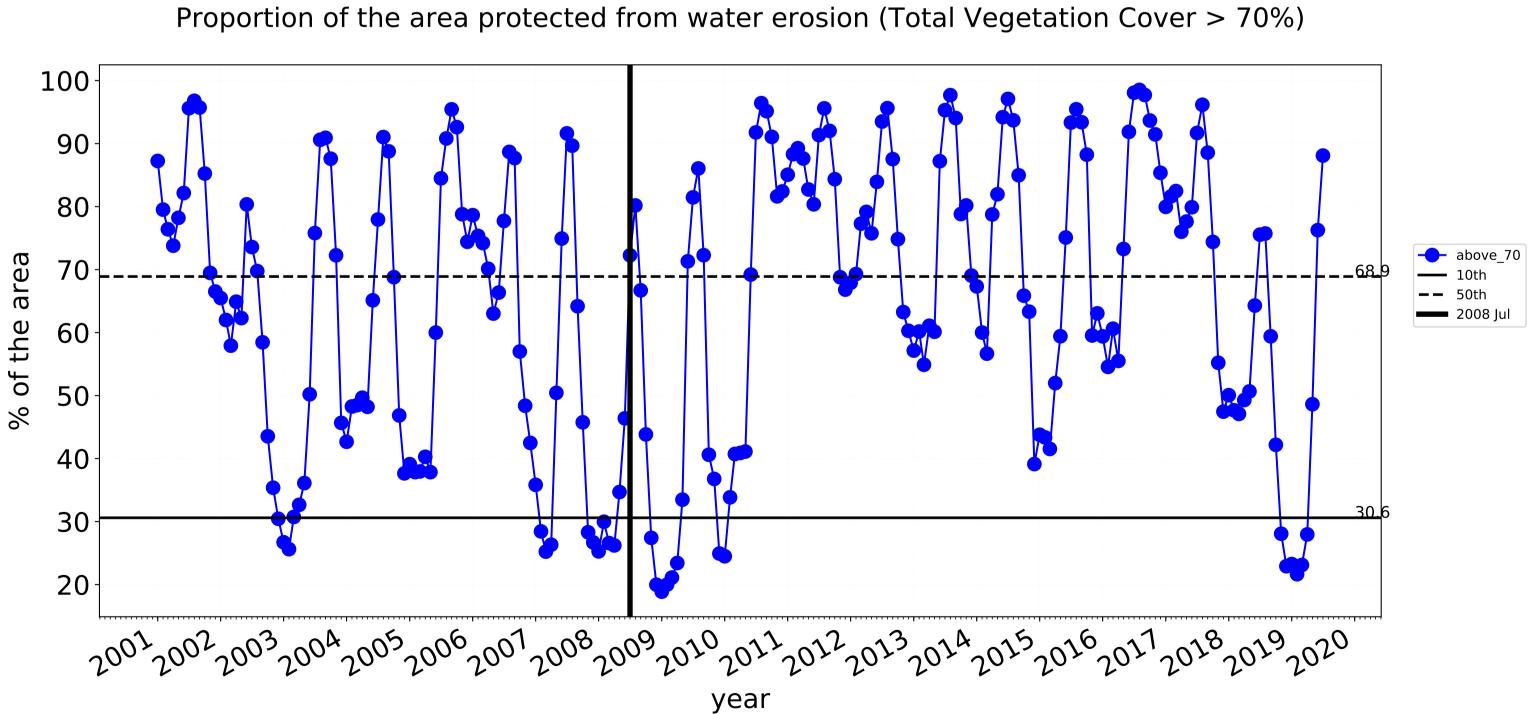
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.





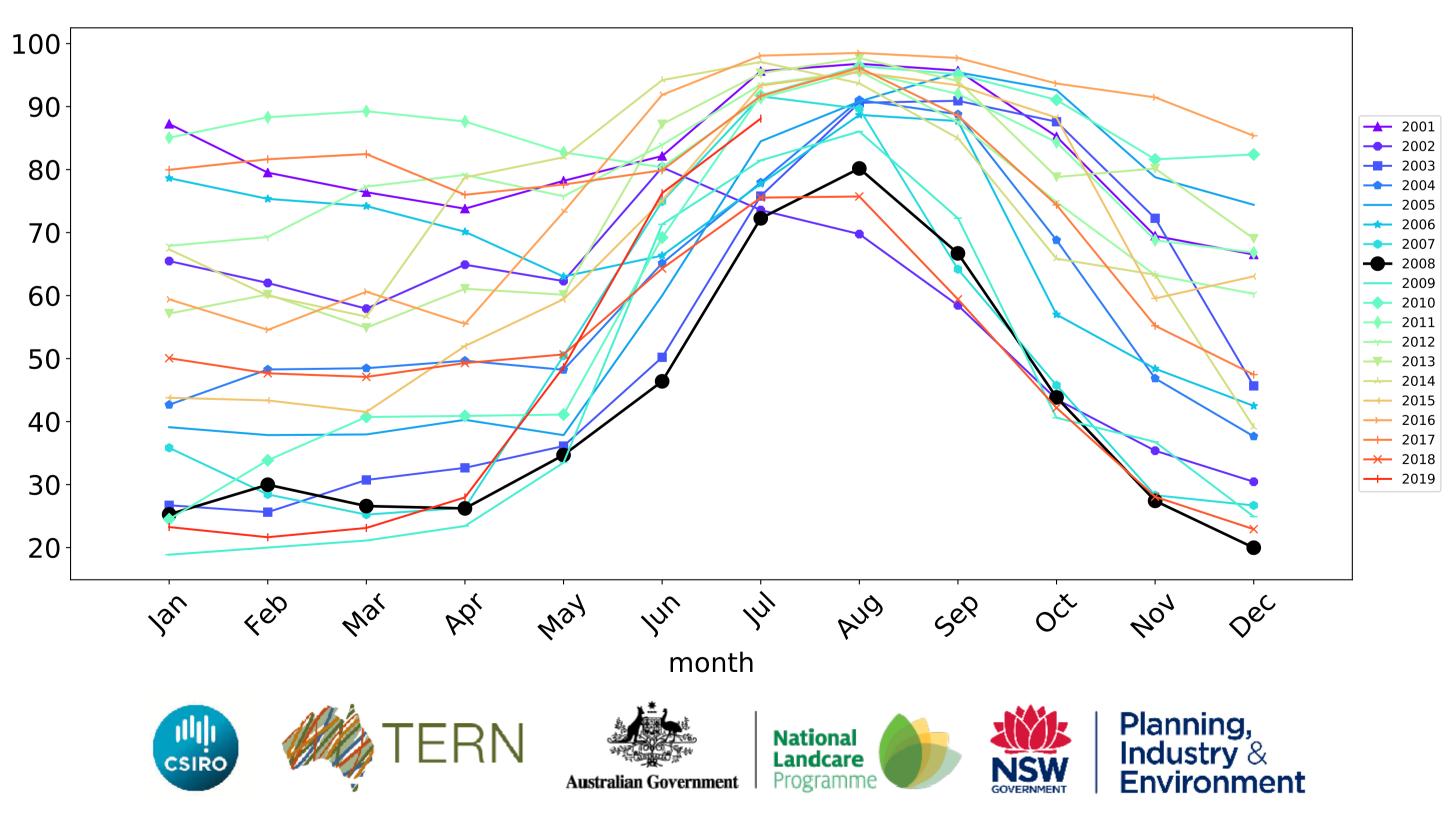


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



Agriculture timeseries

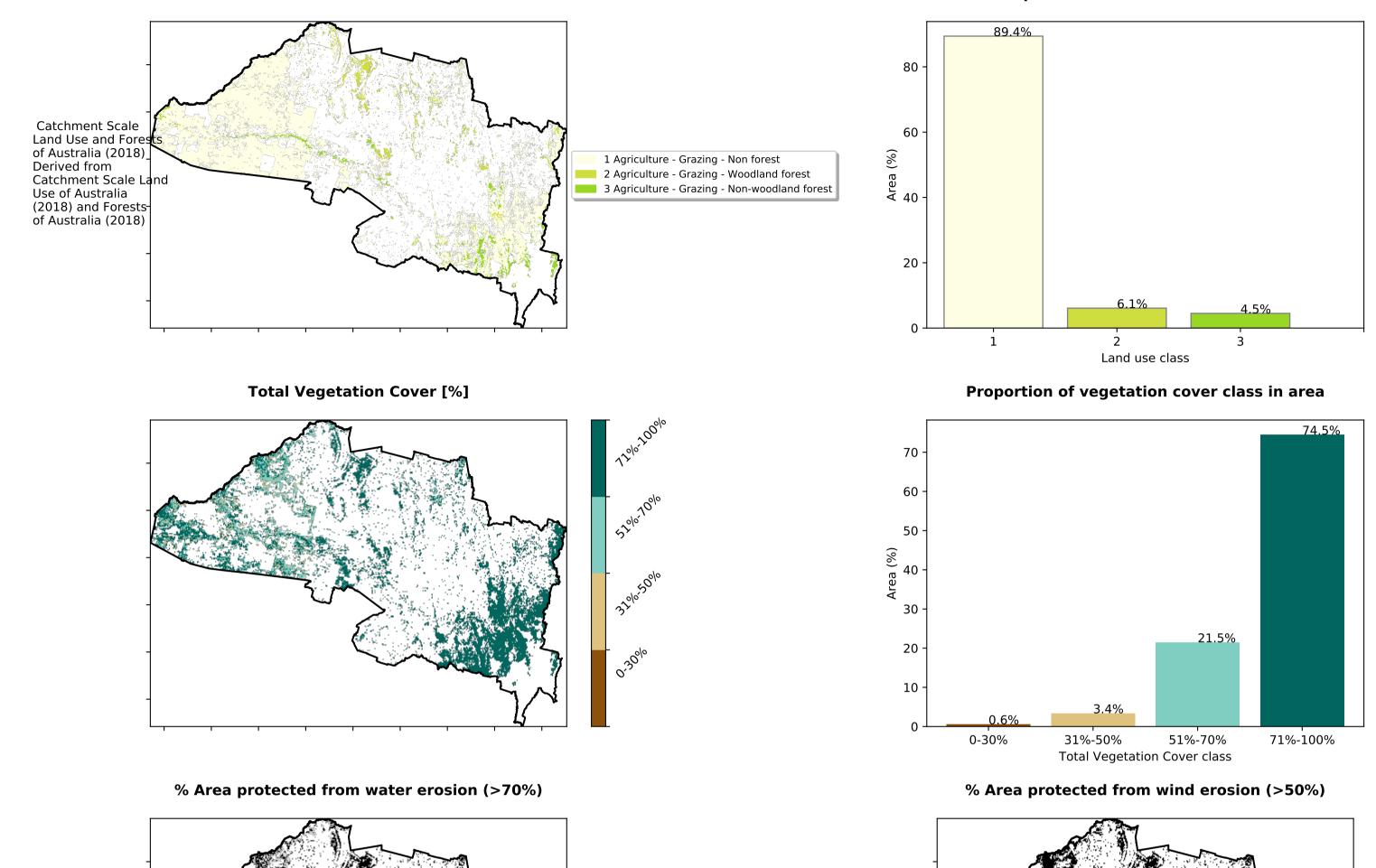
Water erosion historical monthly area protected (Total Veg Cov>70%)



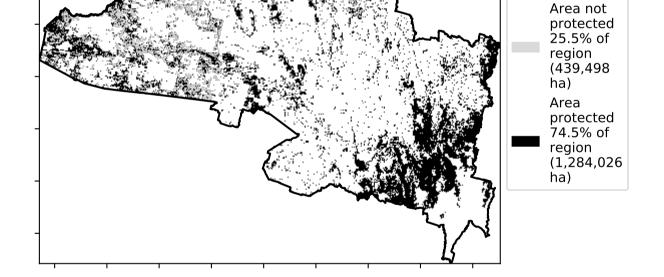
Grazing

Land use and forest cover

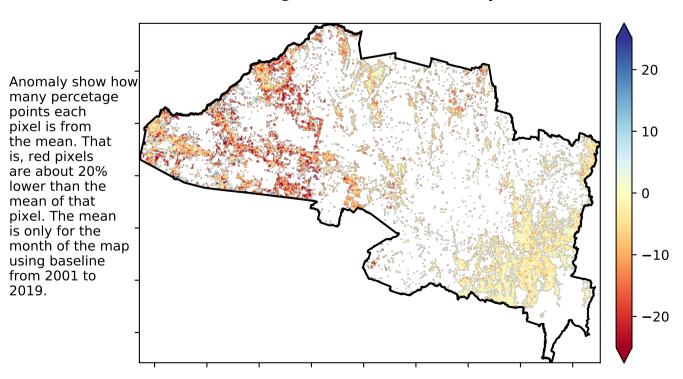
Proportion of each land class in area



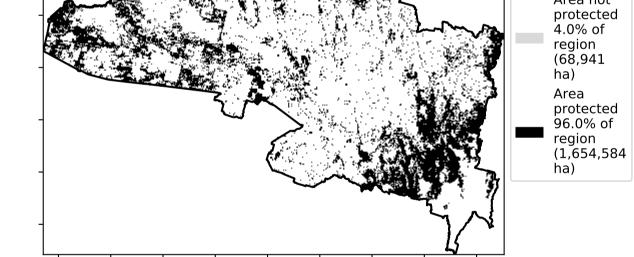


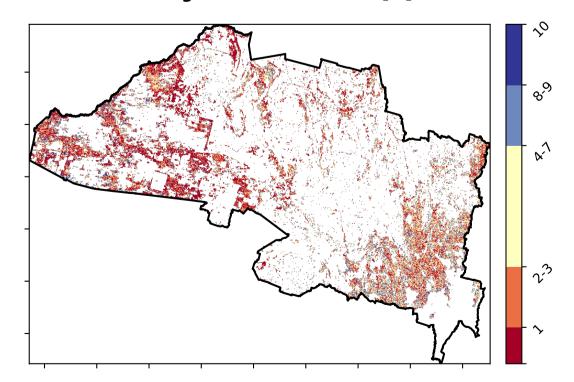


Total Vegetation Cover Anomaly [%]

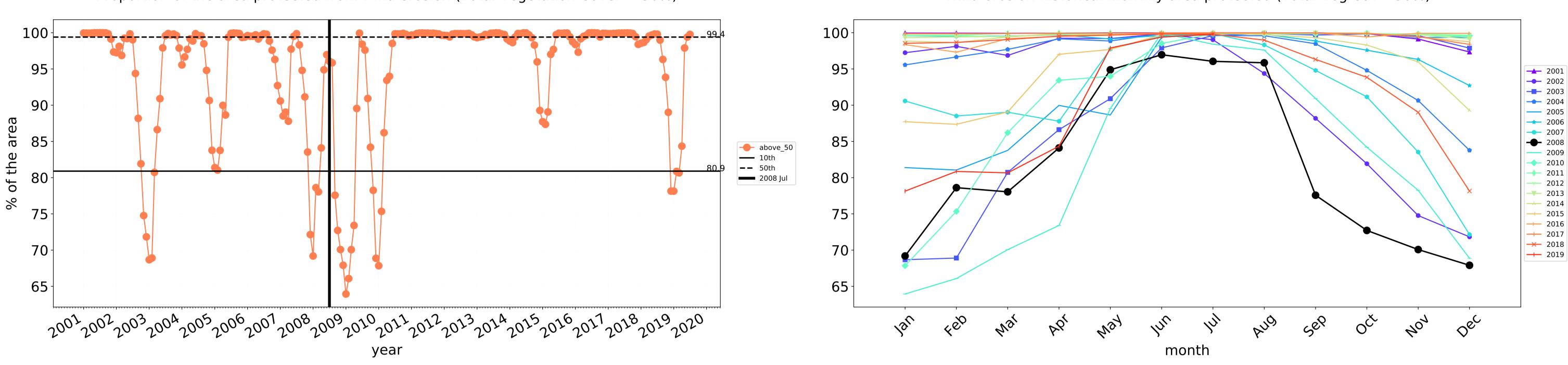


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

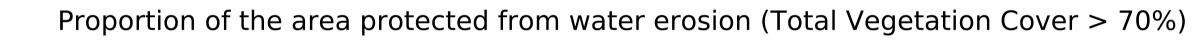


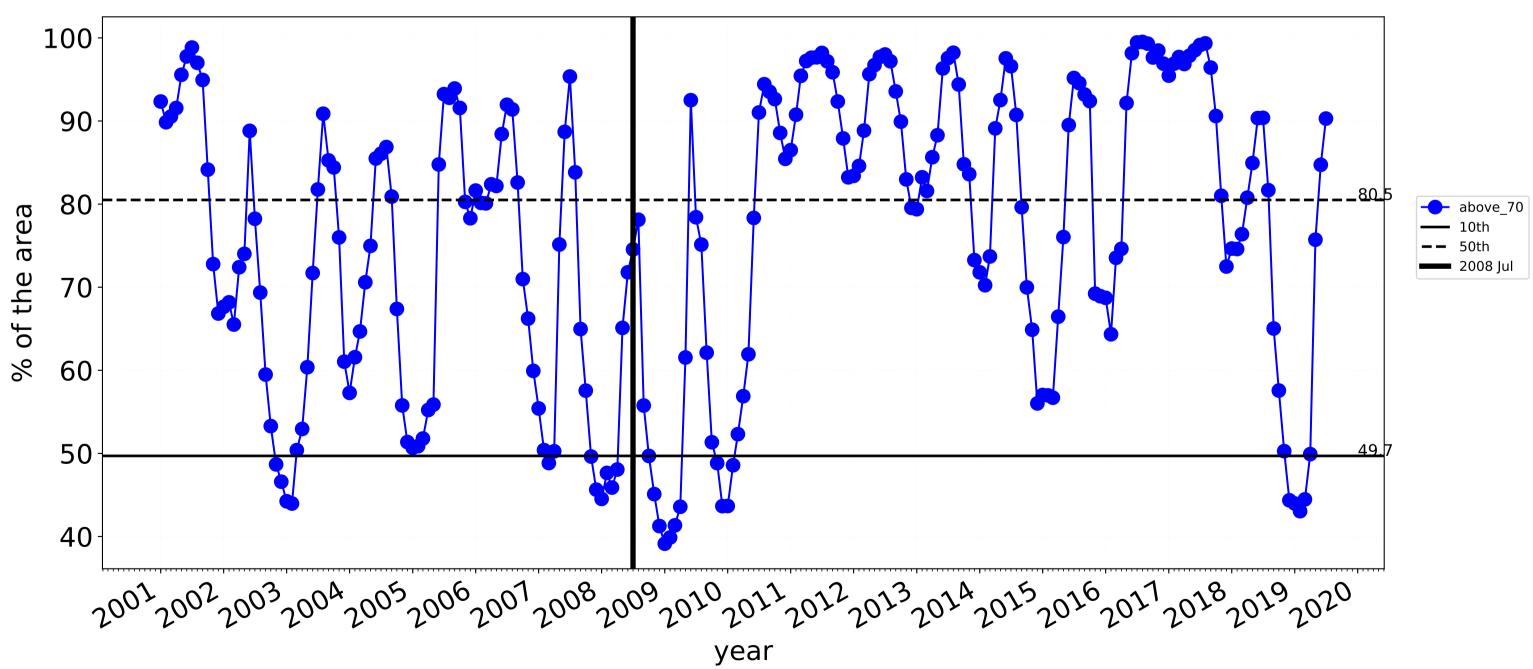




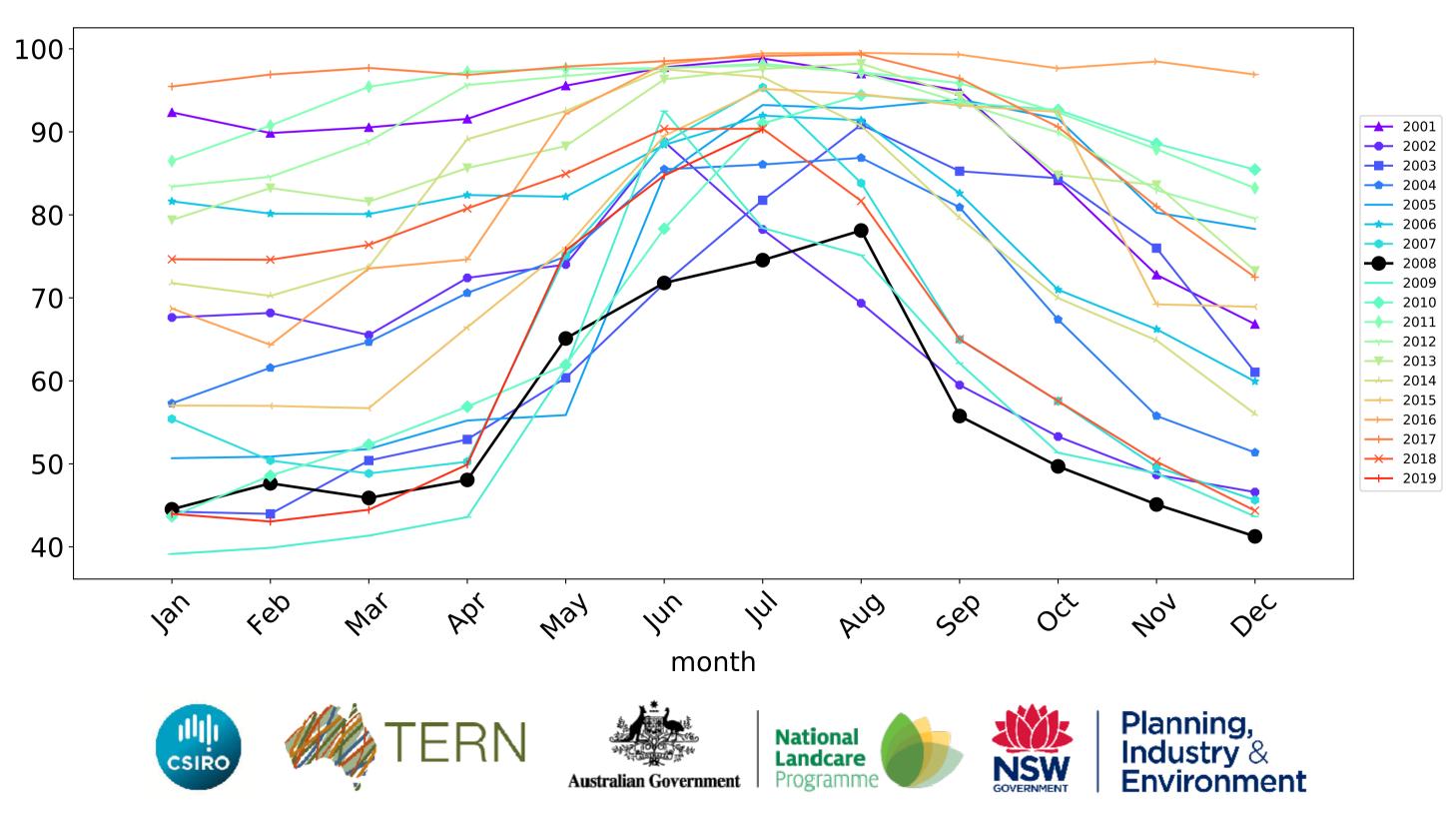


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



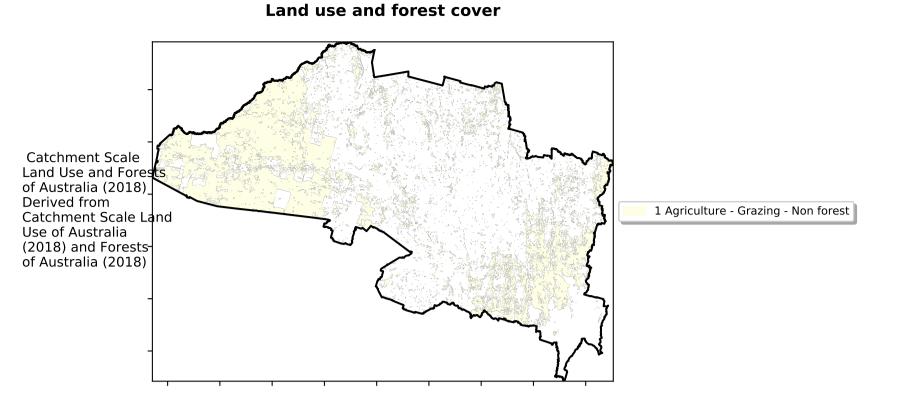


Grazing timeseries

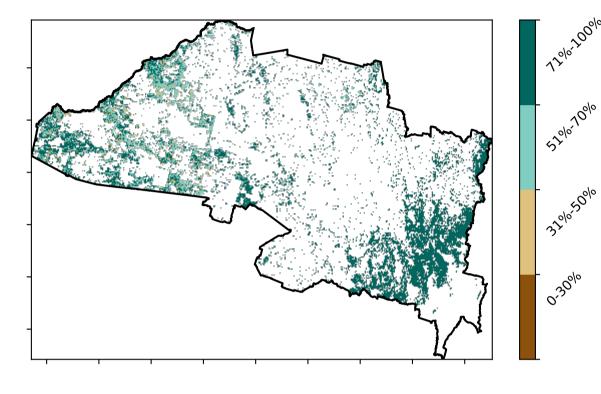


Wind erosion historical monthly area protected (Total Veg Cov >50%)

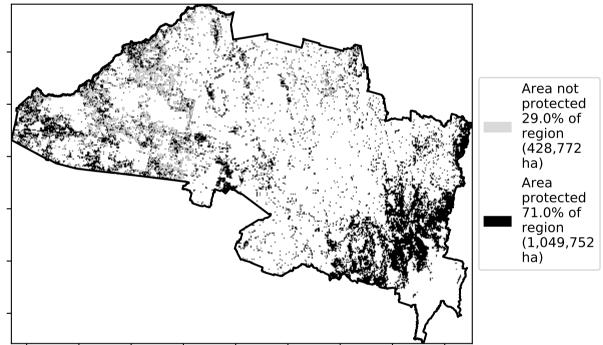
Grazing non forest



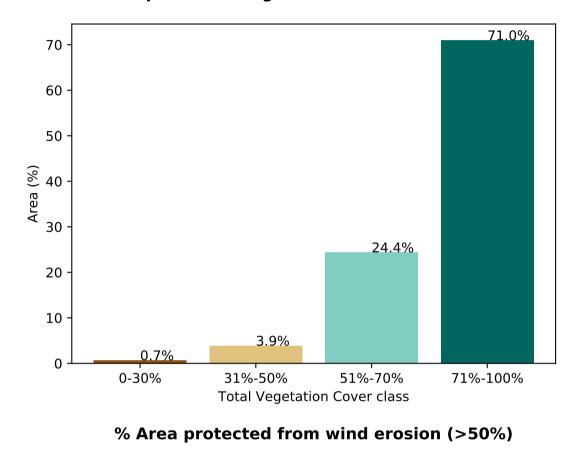
Total Vegetation Cover [%]

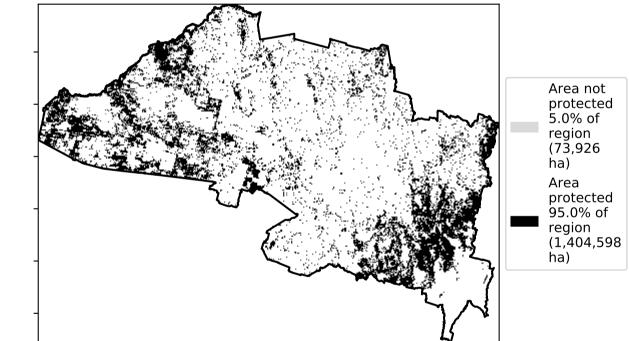


% Area protected from water erosion (>70%)

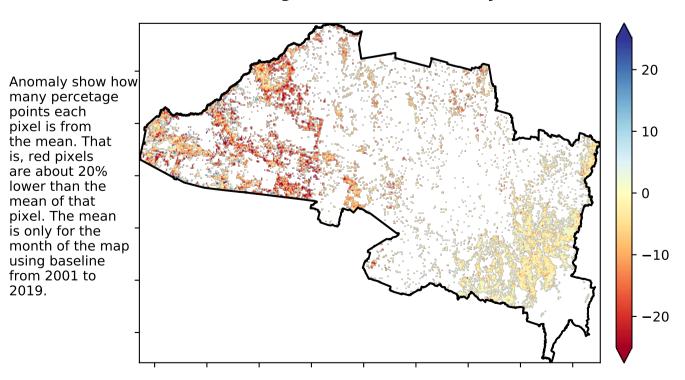


Proportion of vegetation cover class in area

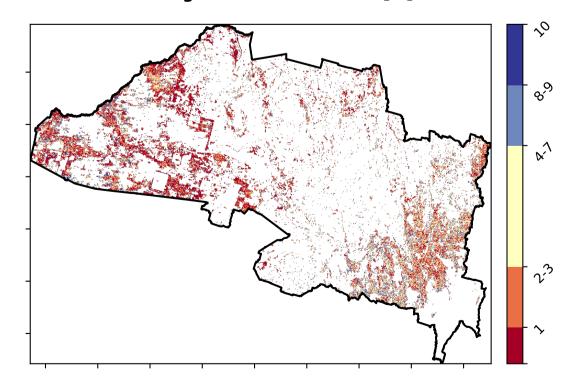




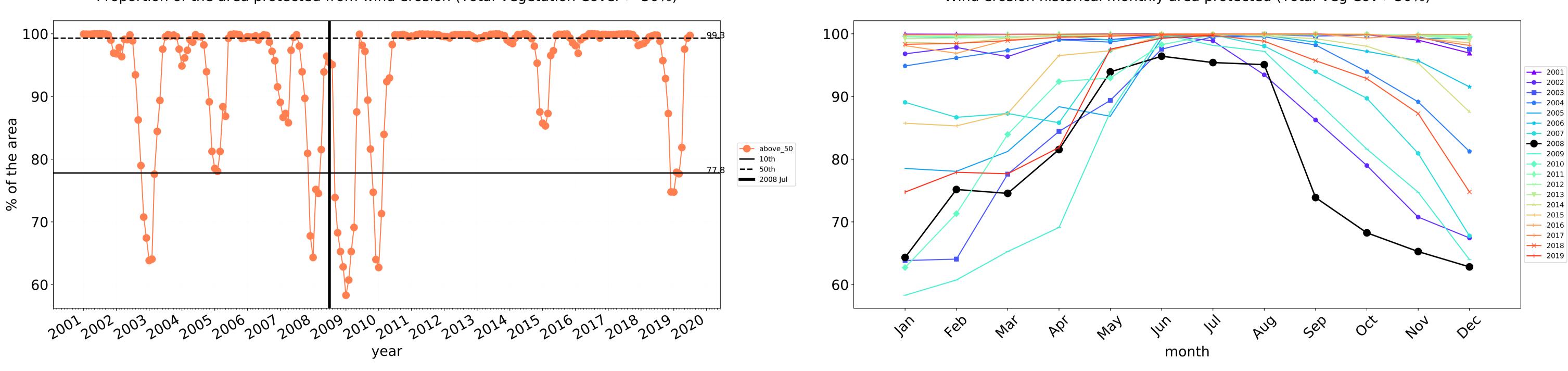
Total Vegetation Cover Anomaly [%]



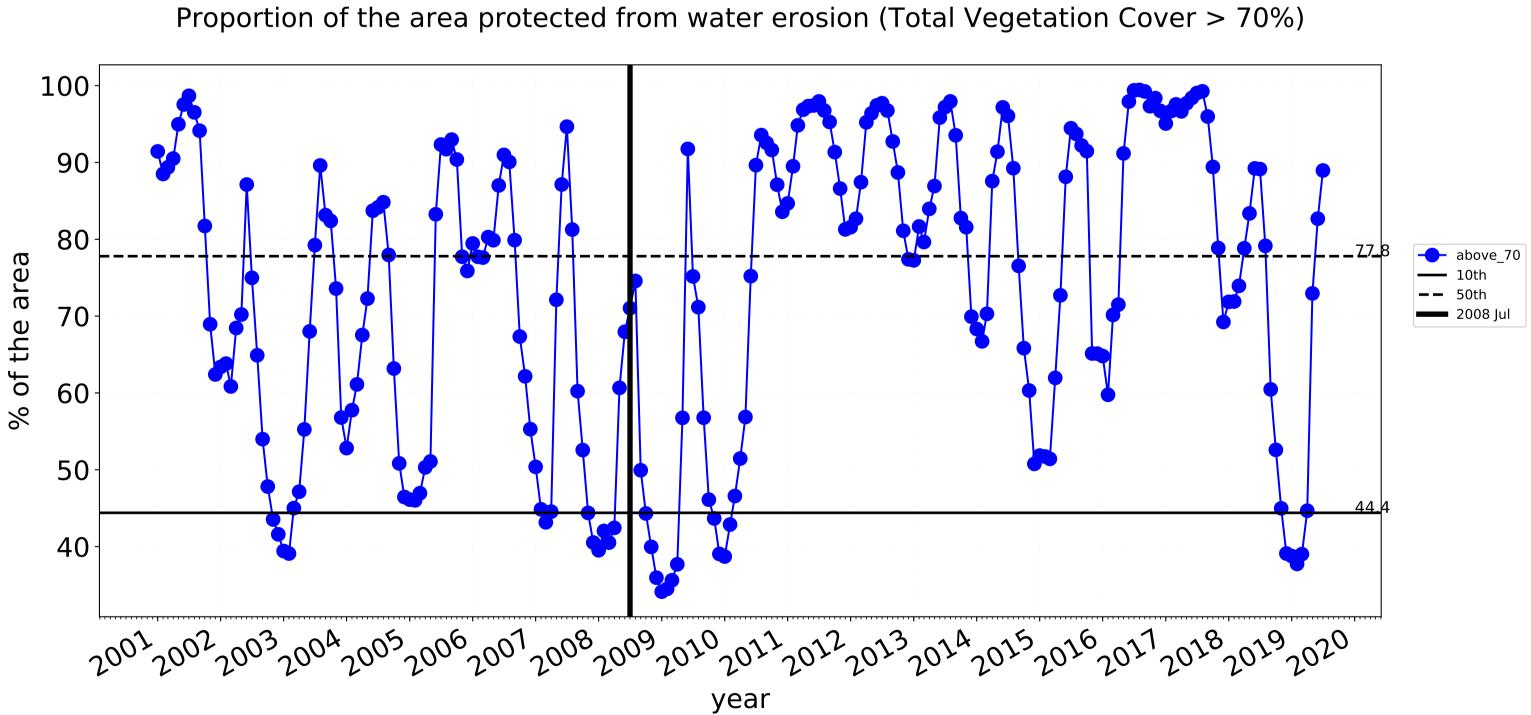
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.





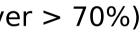


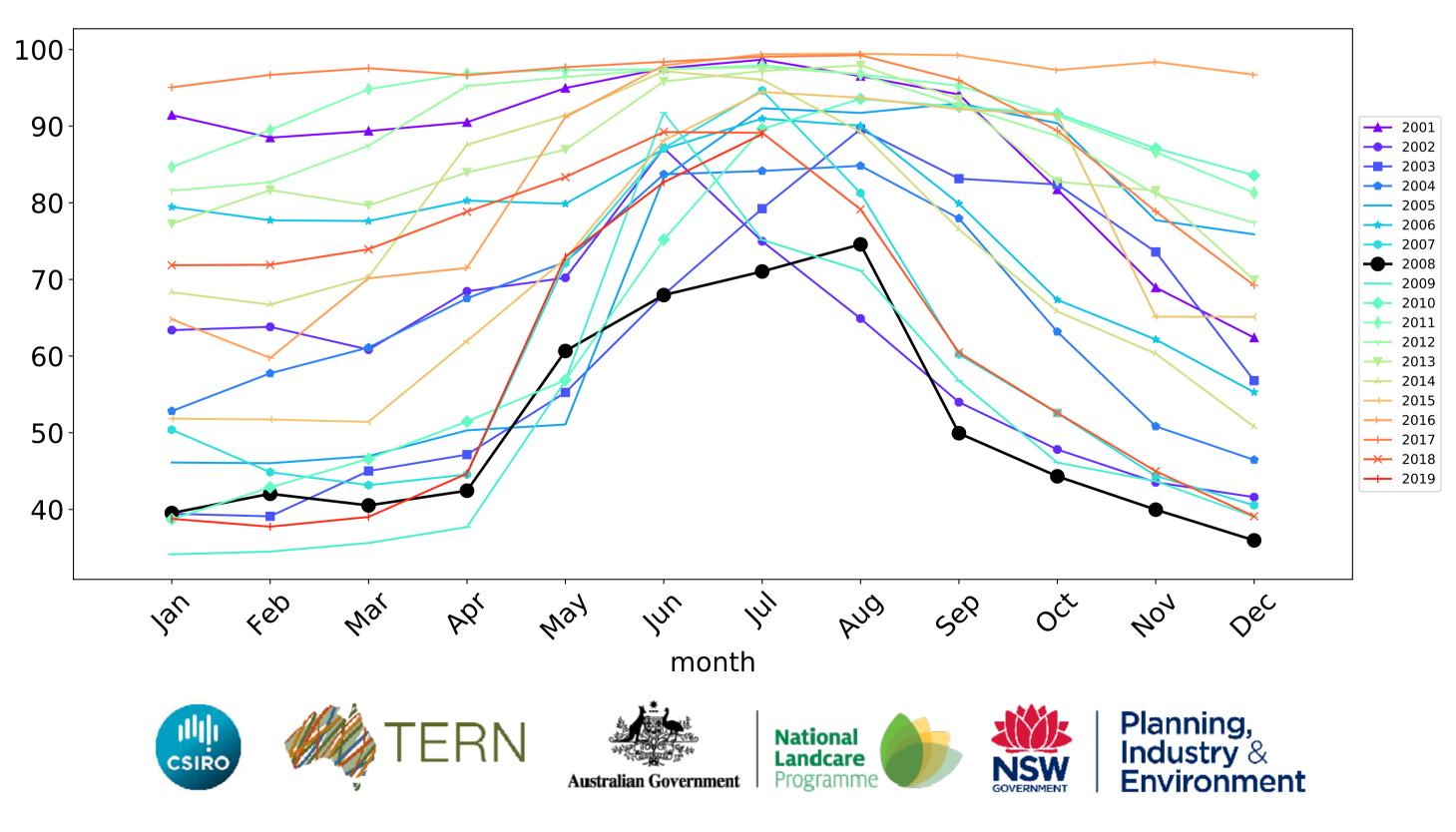
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



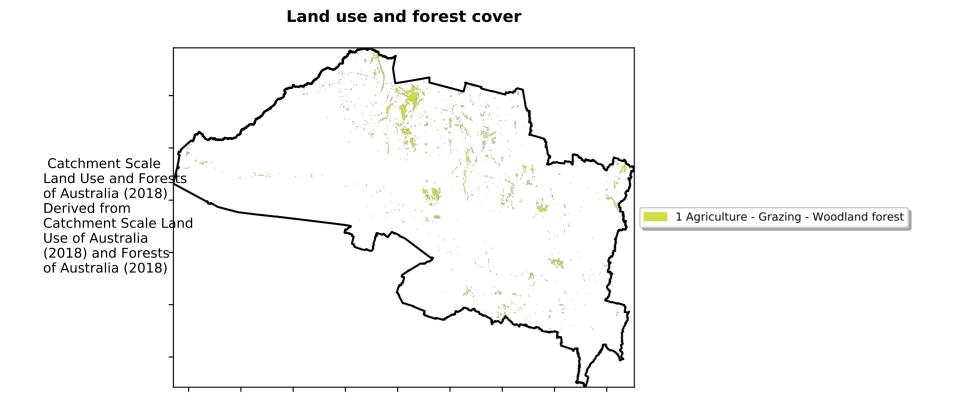
Grazing non forest timeseries

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

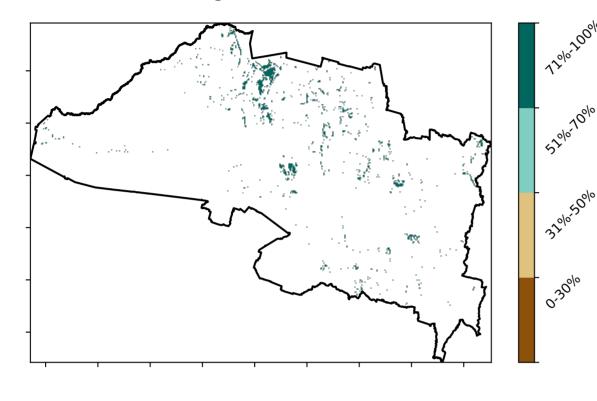




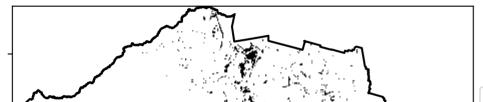
Grazing Woodland forest



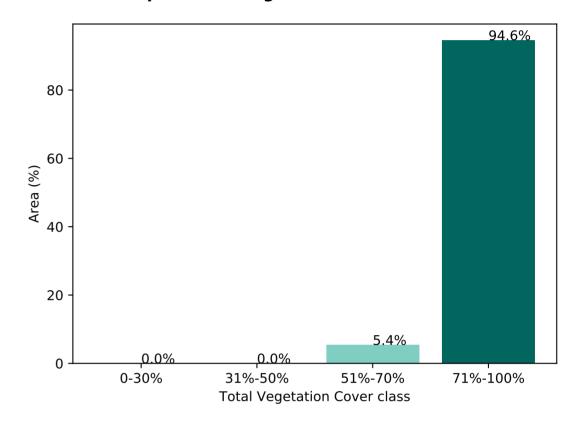
Total Vegetation Cover [%]



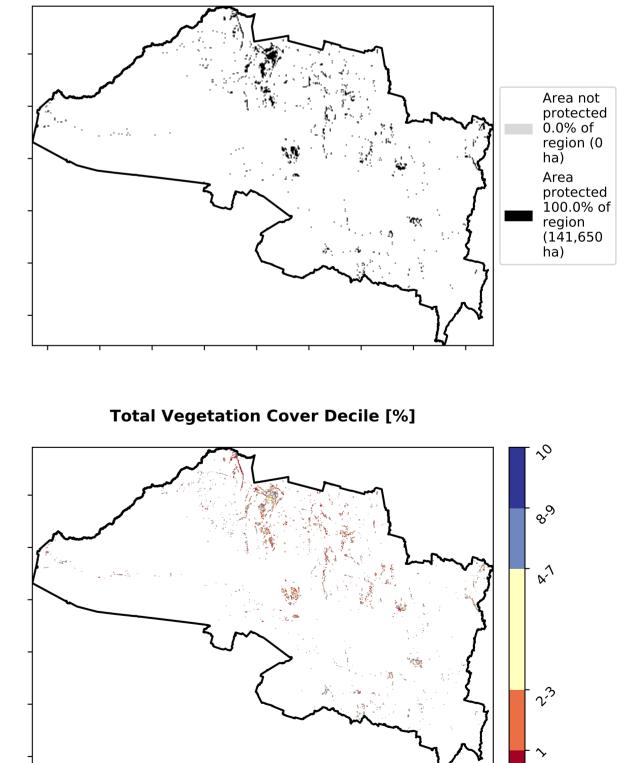
% Area protected from water erosion (>70%)

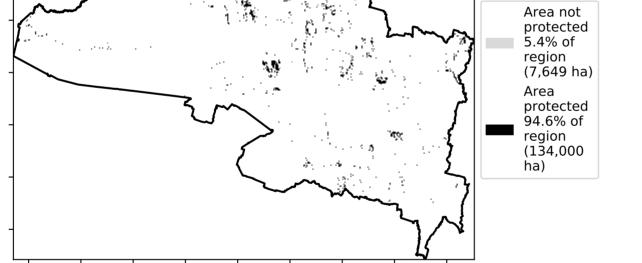




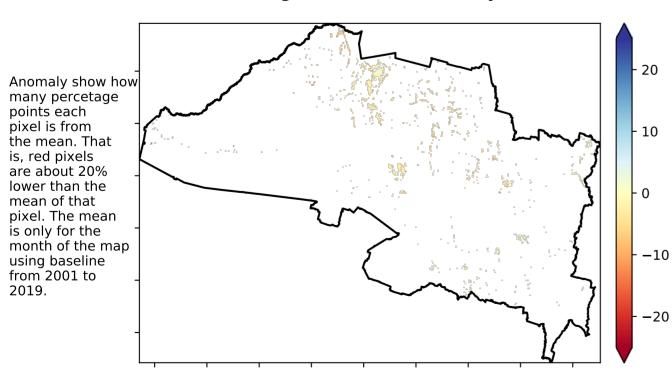


% Area protected from wind erosion (>50%)



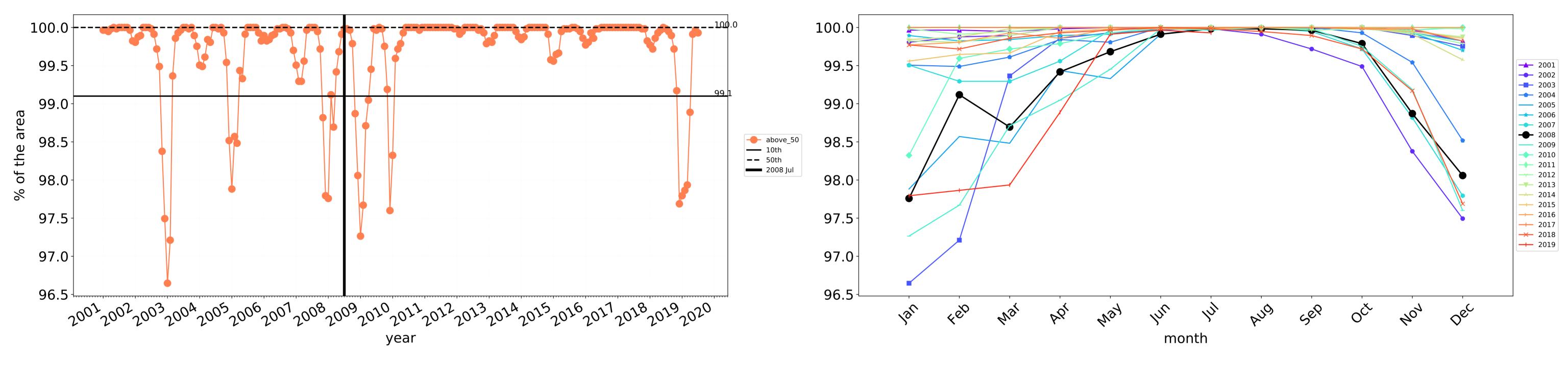


Total Vegetation Cover Anomaly [%]



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





100-

90

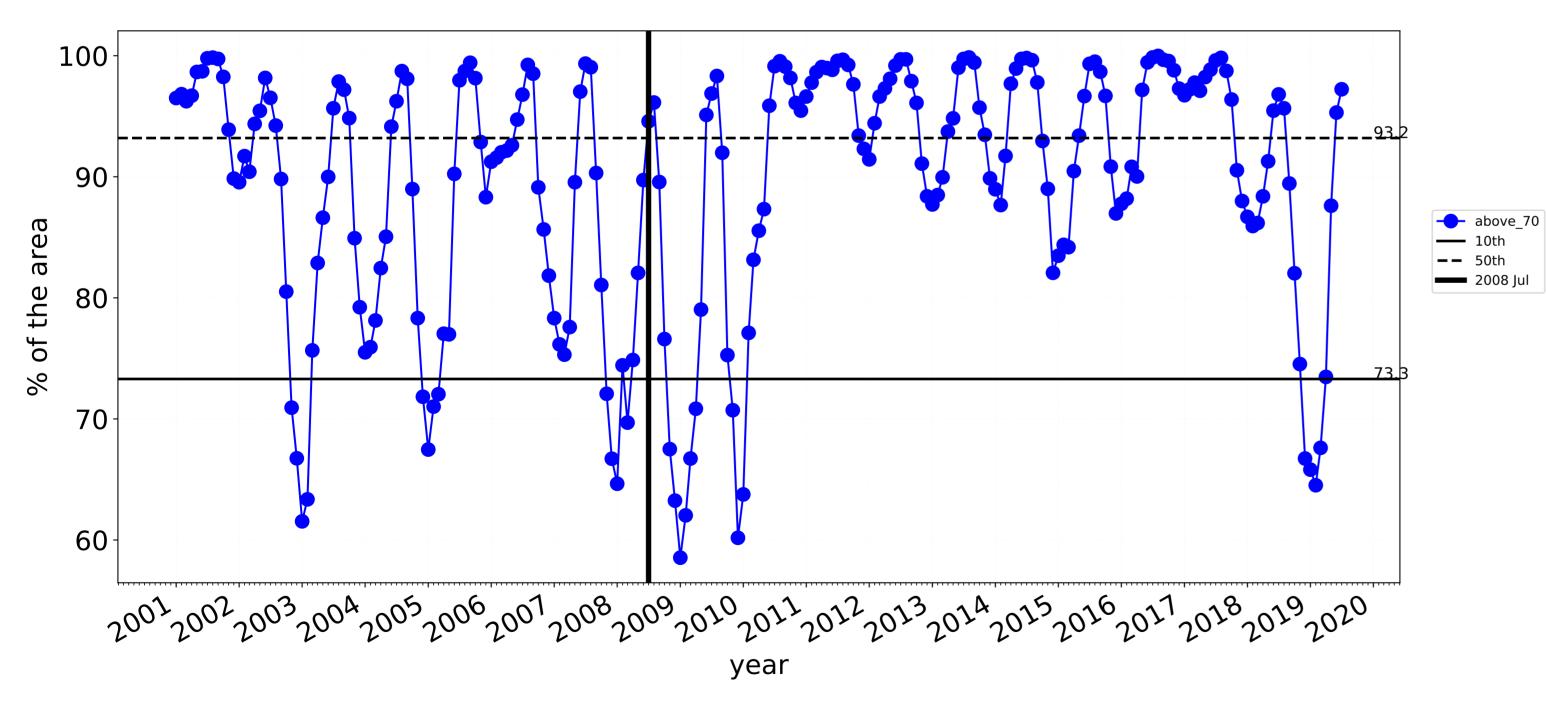
80

70

60

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

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



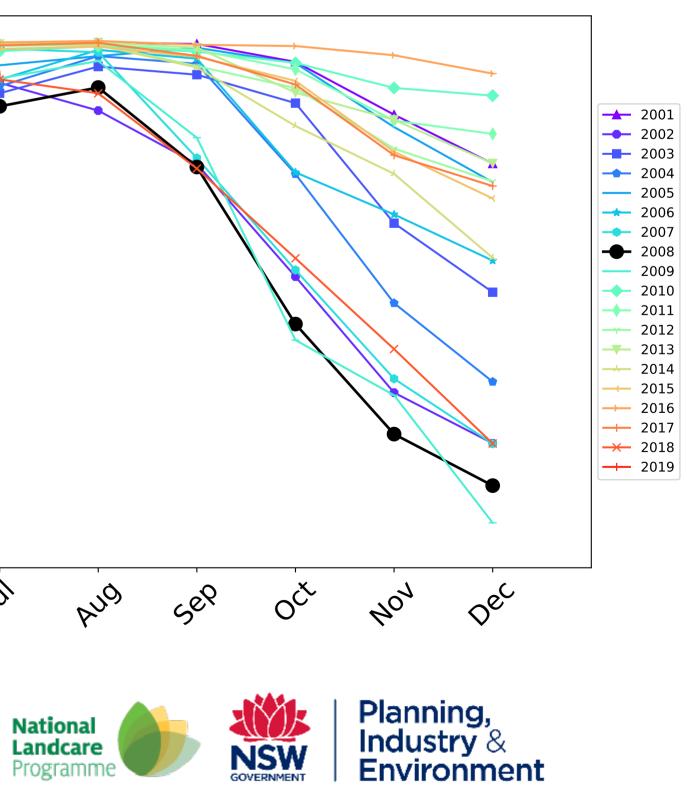


Wind erosion historical monthly area protected (Total Veg Cov >50%)

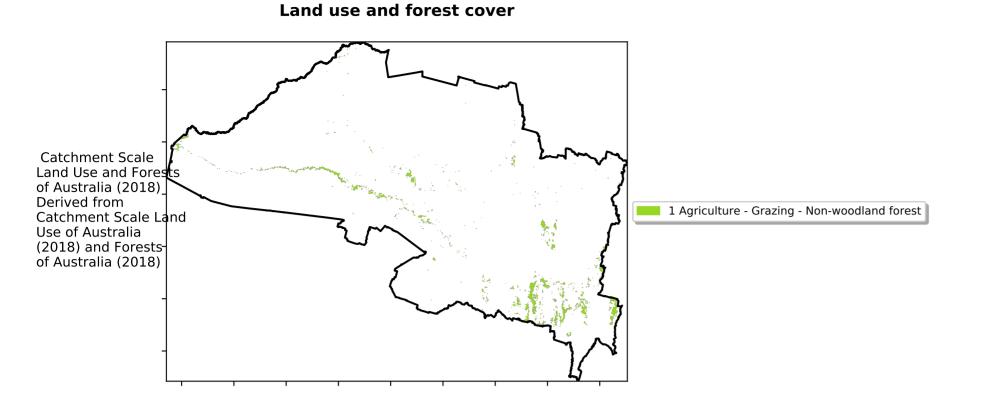


Water erosion historical monthly area protected (Total Veg Cov>70%)

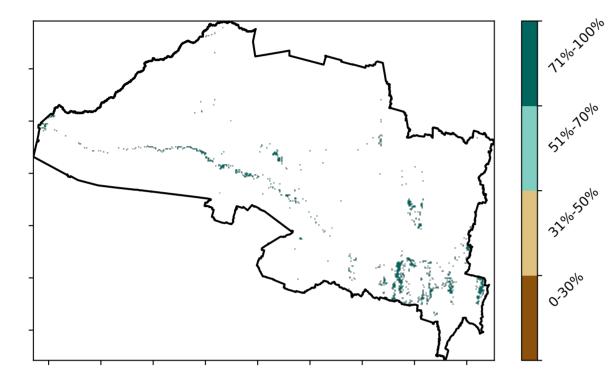
Programme



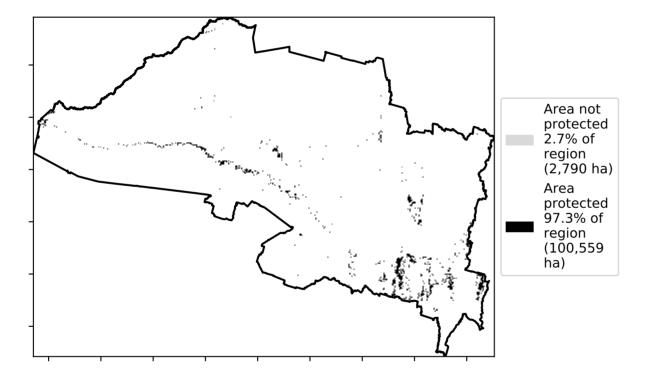
Grazing - Forest (non woodland)



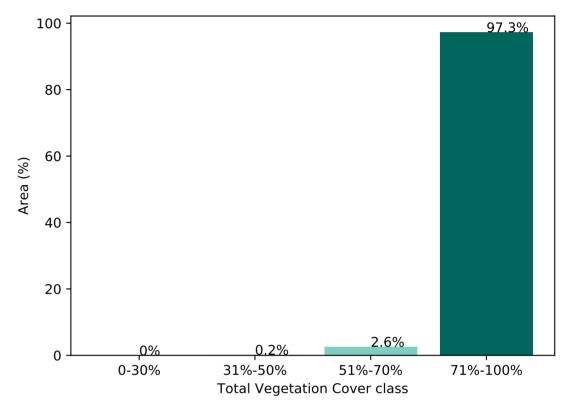
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



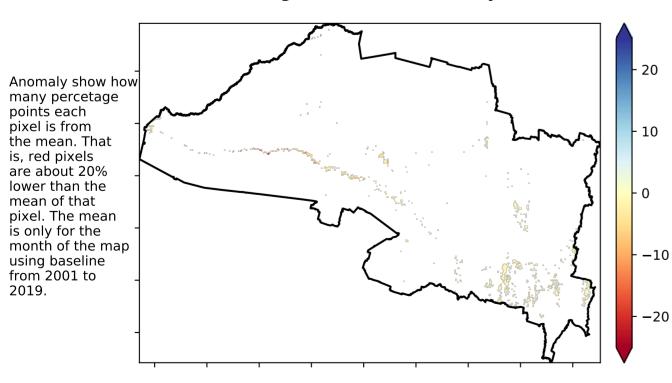
Proportion of vegetation cover class in area



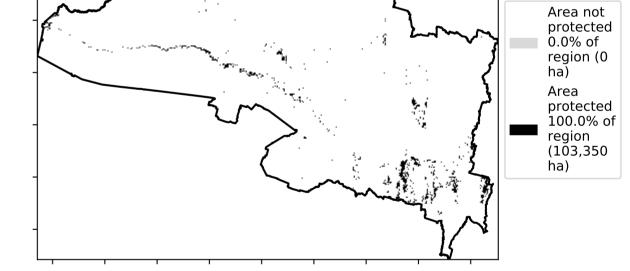
% Area protected from wind erosion (>50%)

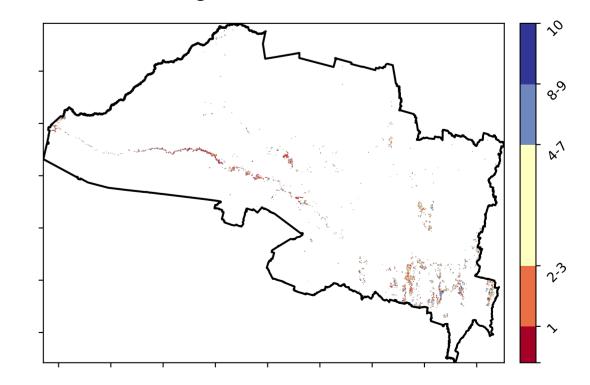


Total Vegetation Cover Anomaly [%]

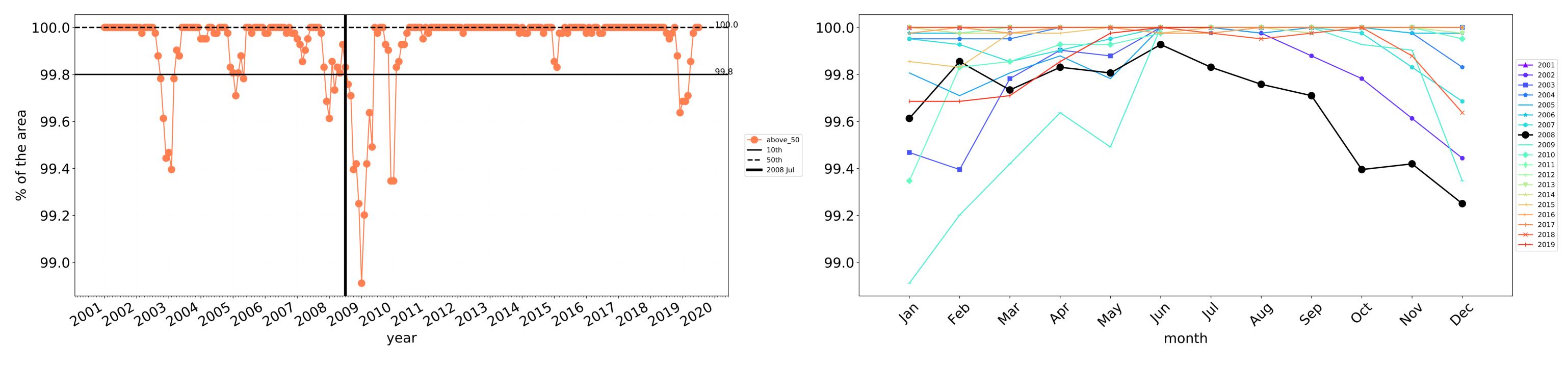


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.



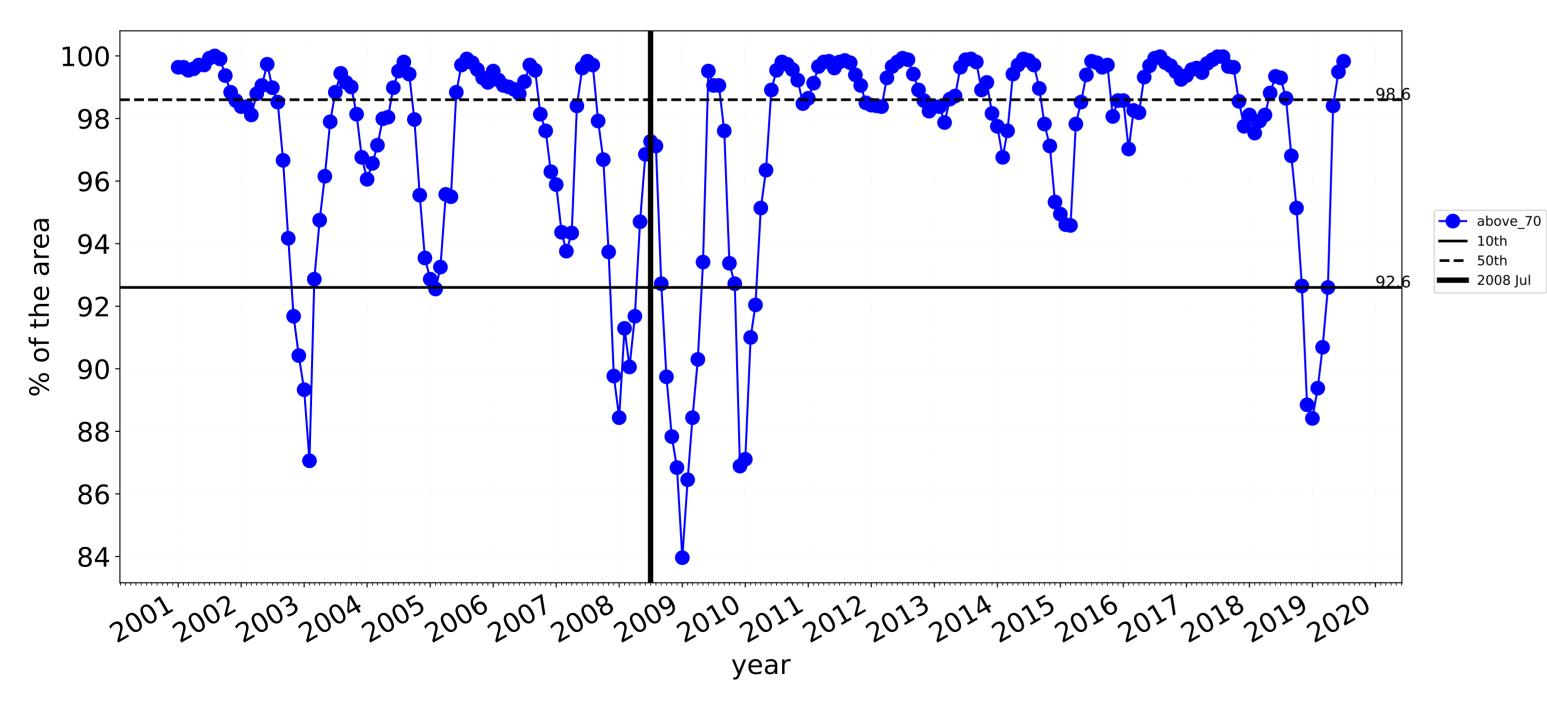


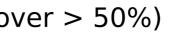




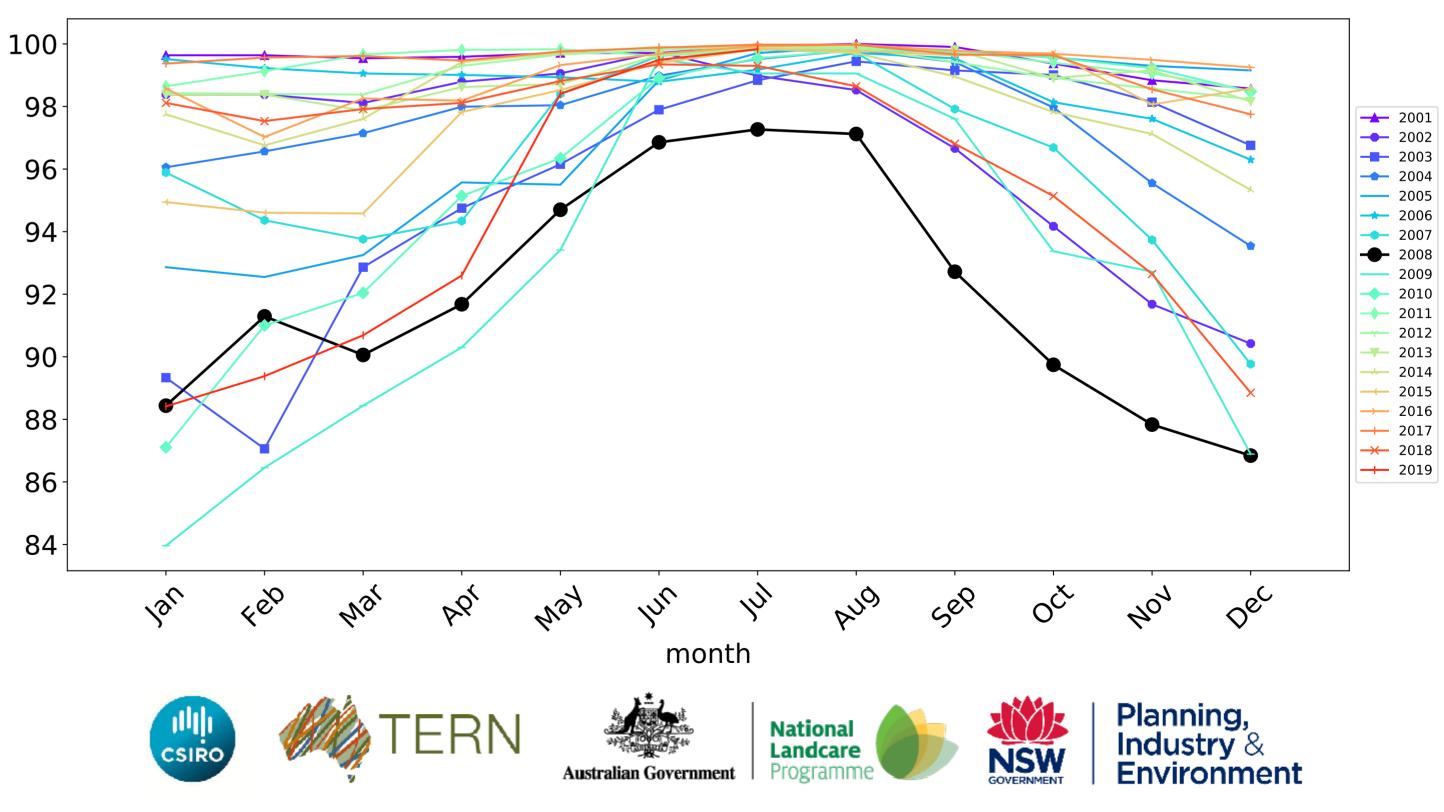
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

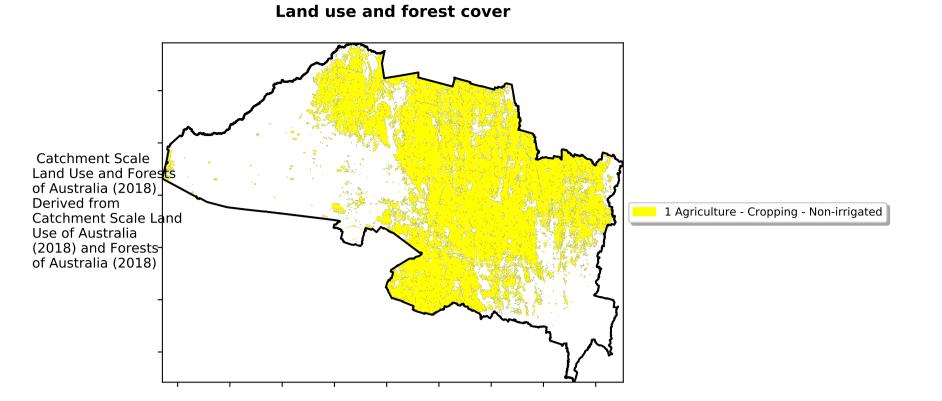




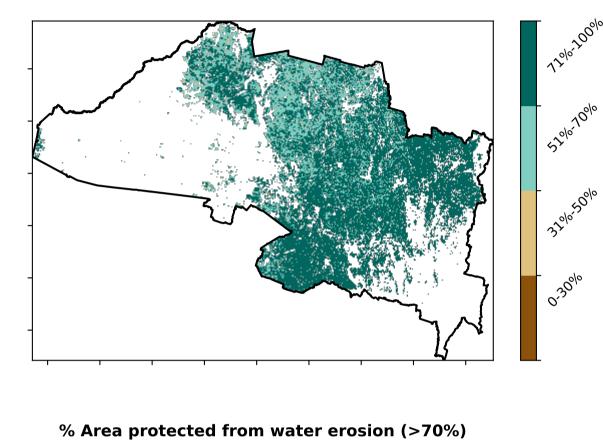
Wind erosion historical monthly area protected (Total Veg Cov >50%)



Cropping



Total Vegetation Cover [%]





Area not

- 20

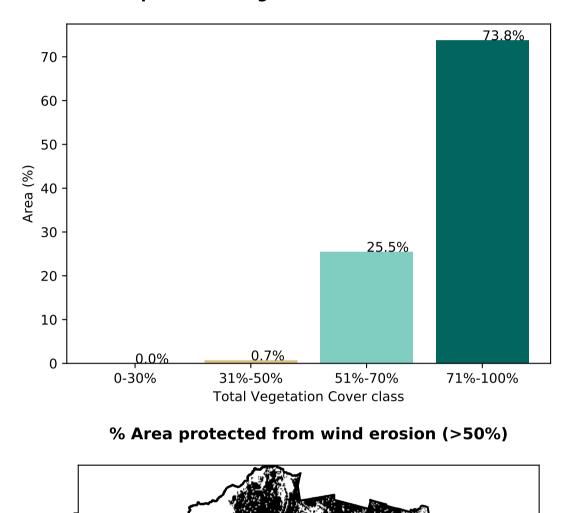
- 10

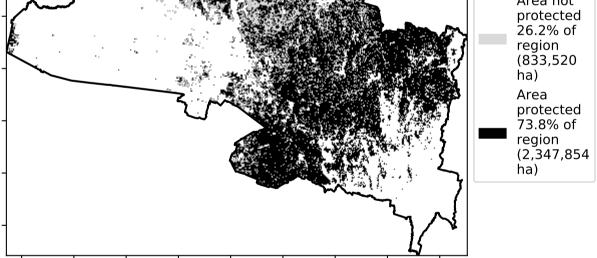
0

-10

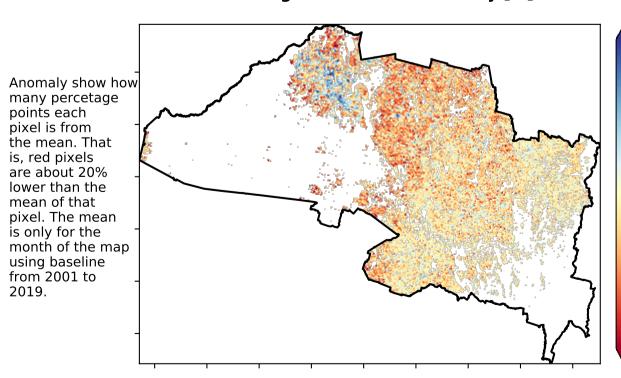
-20

Proportion of vegetation cover class in area

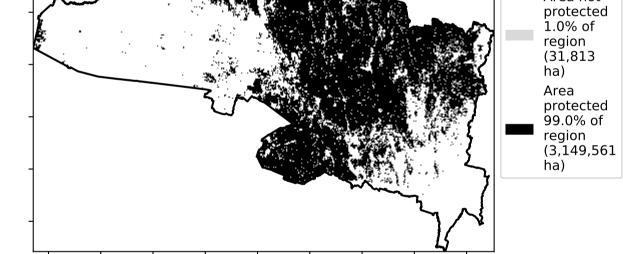


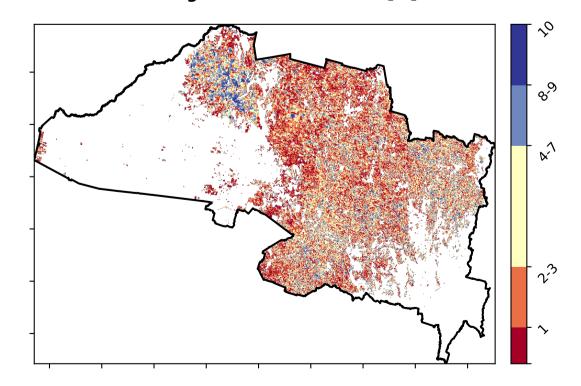


Total Vegetation Cover Anomaly [%]

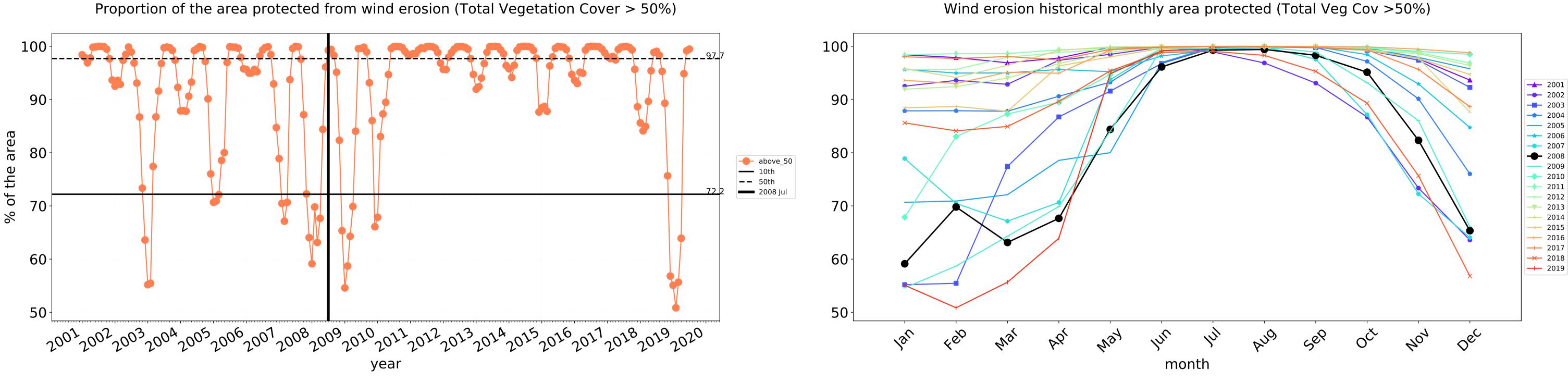


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

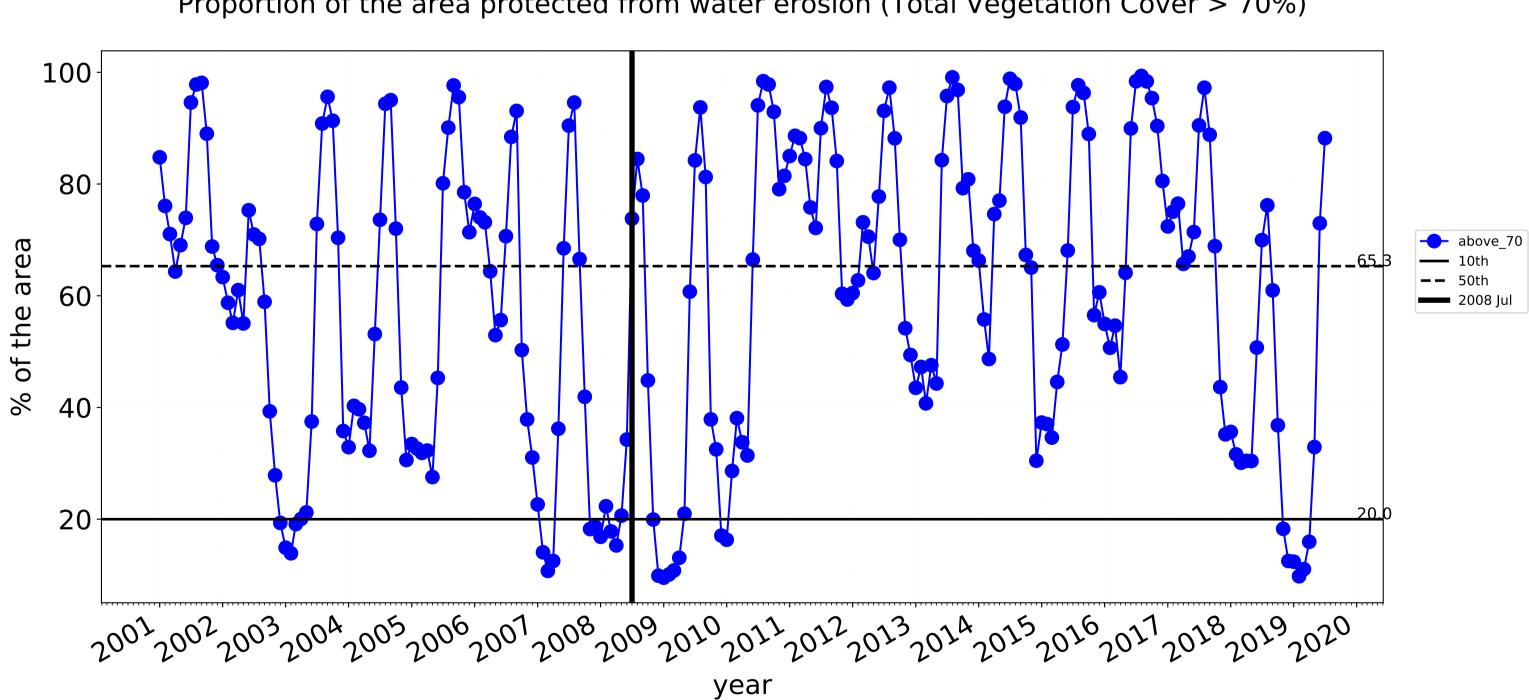






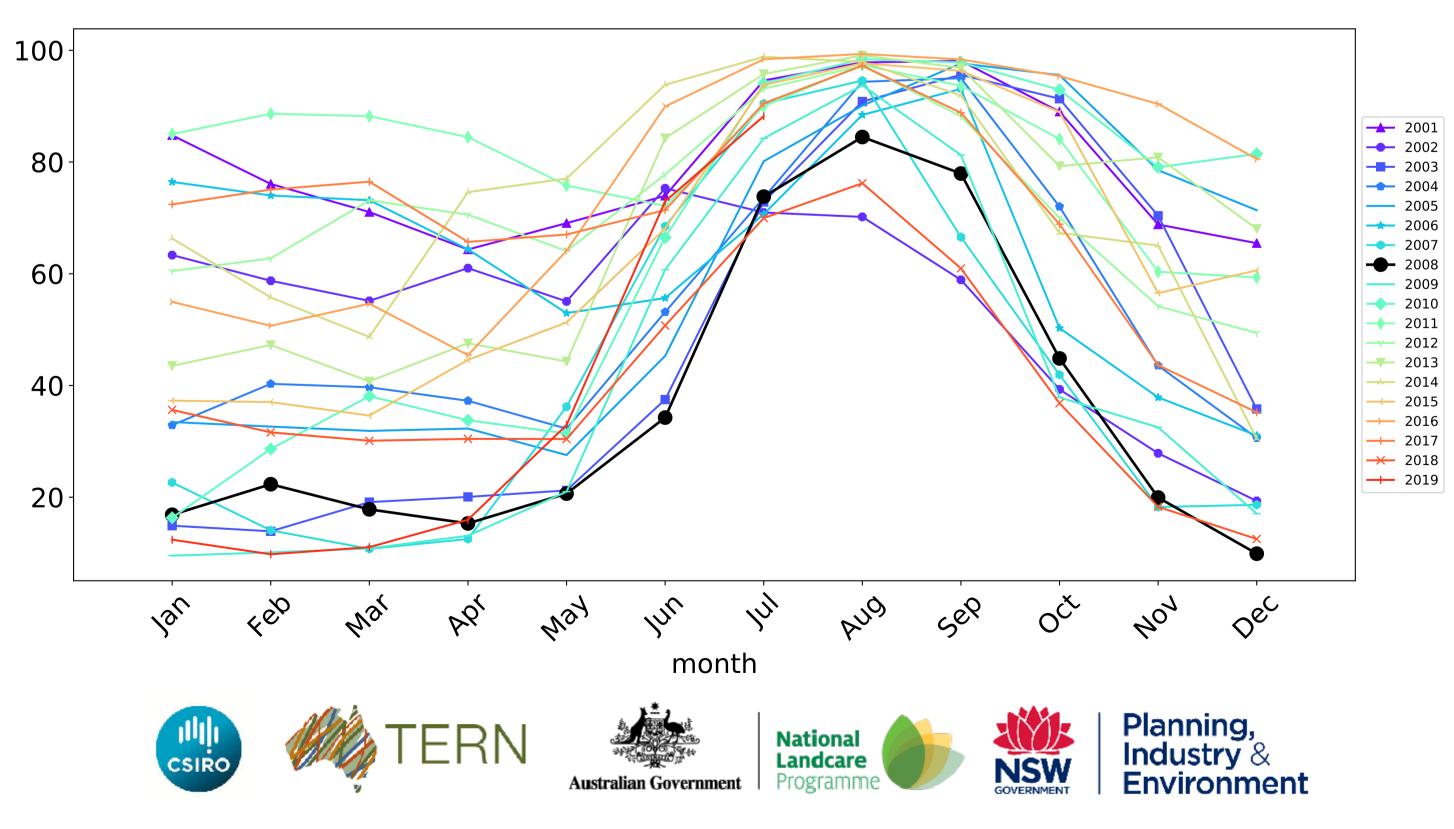


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



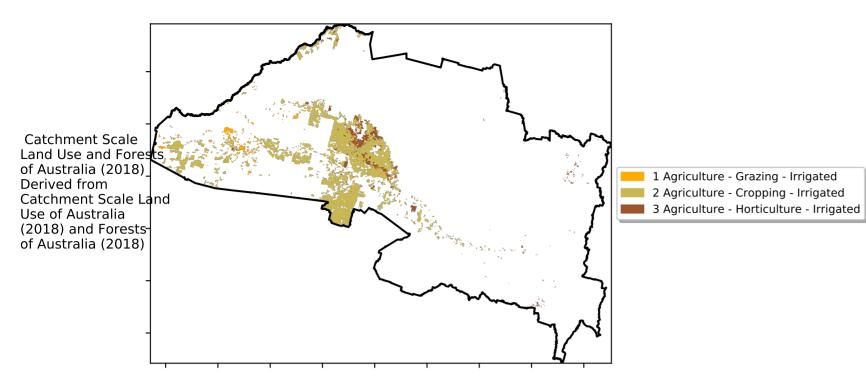
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

Cropping timeseries

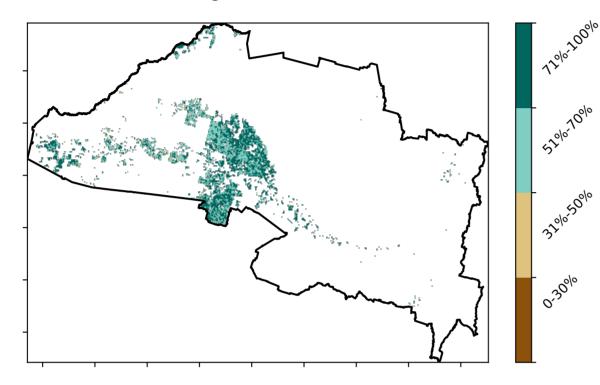


Irrigation

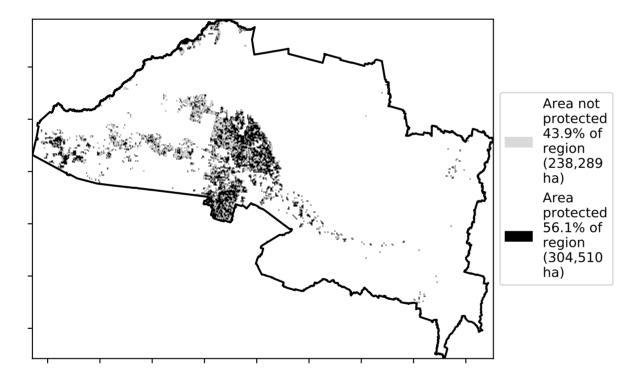
Land use and forest cover

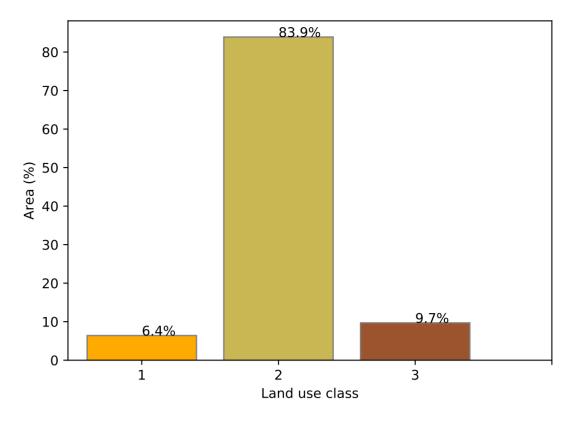


Total Vegetation Cover [%]



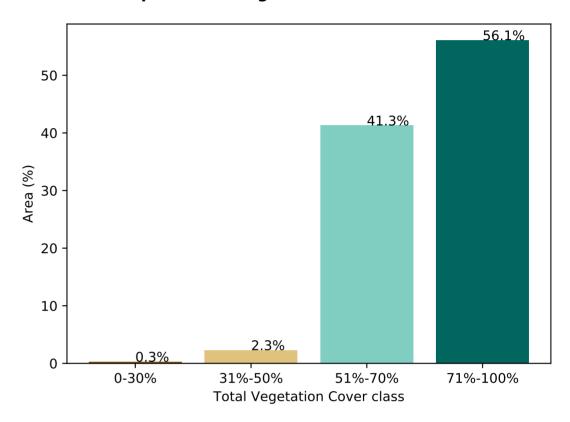
% Area protected from water erosion (>70%)



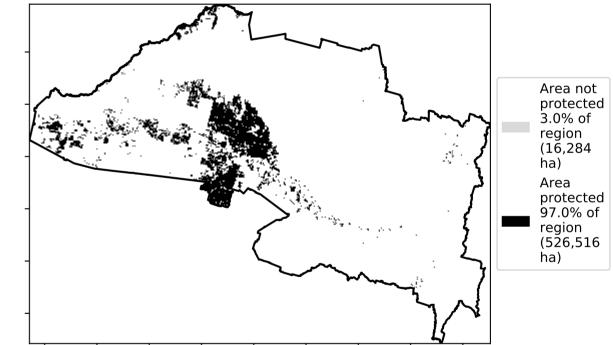


Proportion of each land class in area

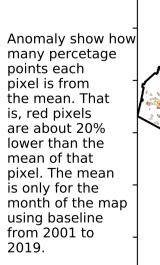
Proportion of vegetation cover class in area

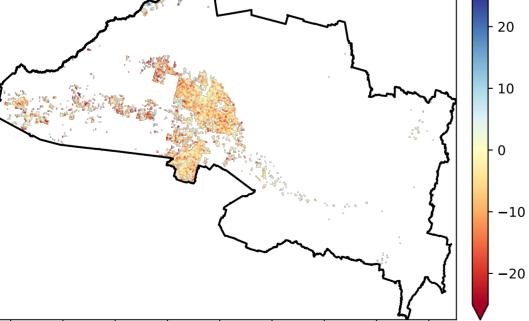


% Area protected from wind erosion (>50%)

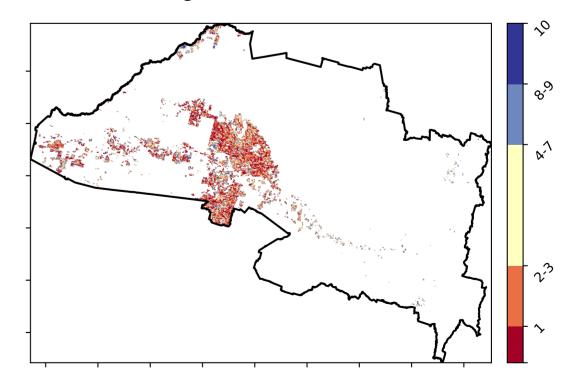


Total Vegetation Cover Anomaly [%]

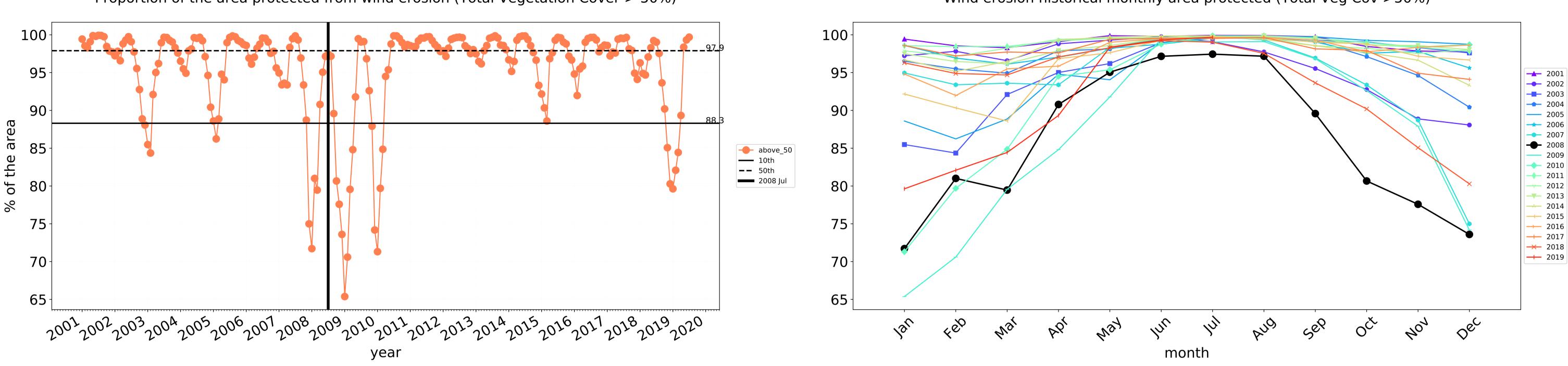




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

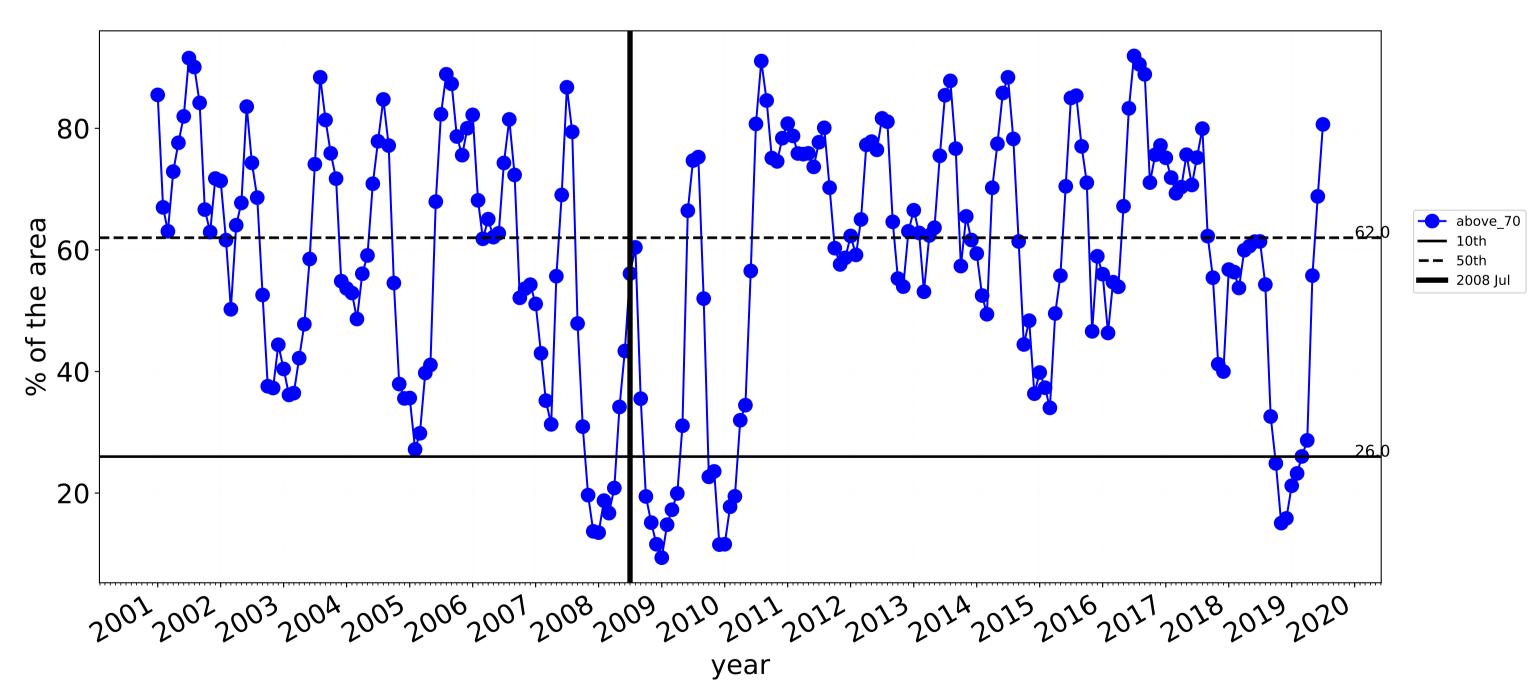




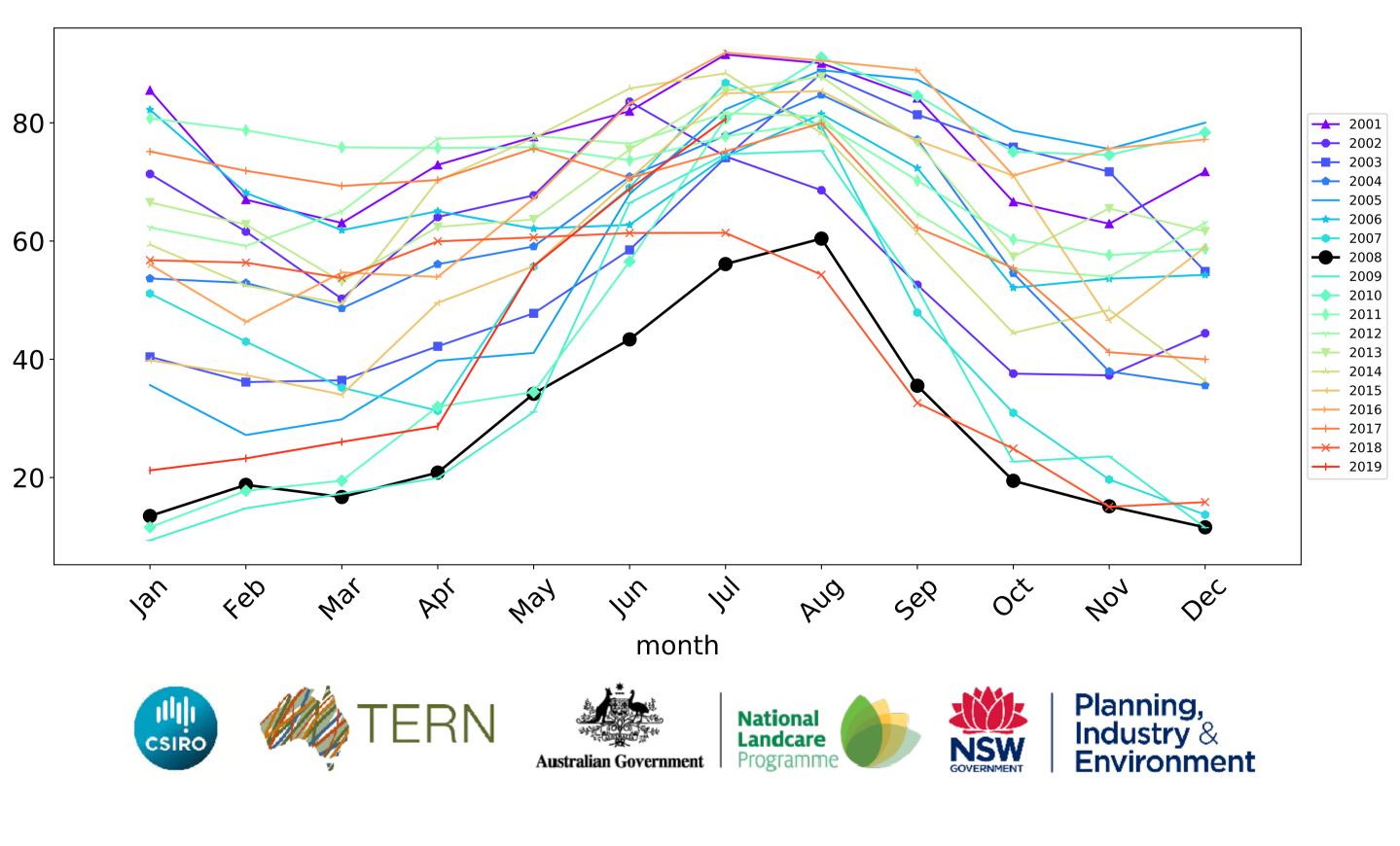


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

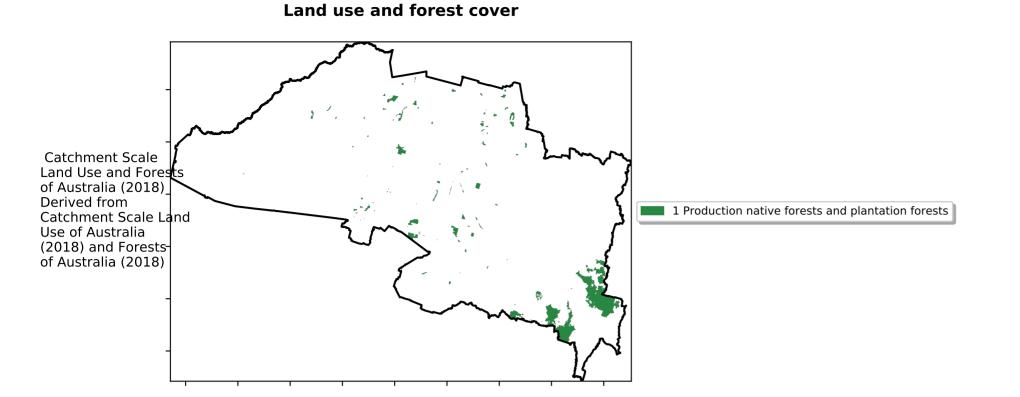


Irrigation timeseries

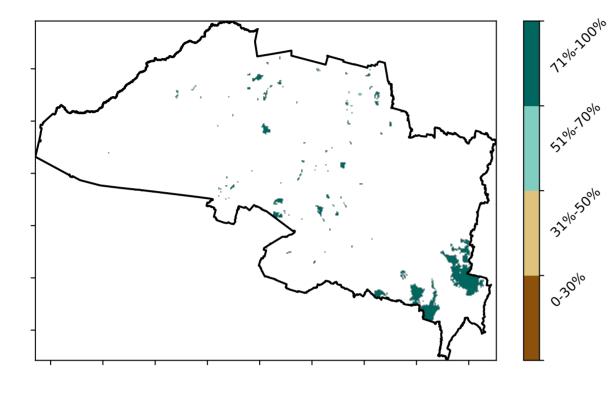


Water erosion historical monthly area protected (Total Veg Cov>70%)

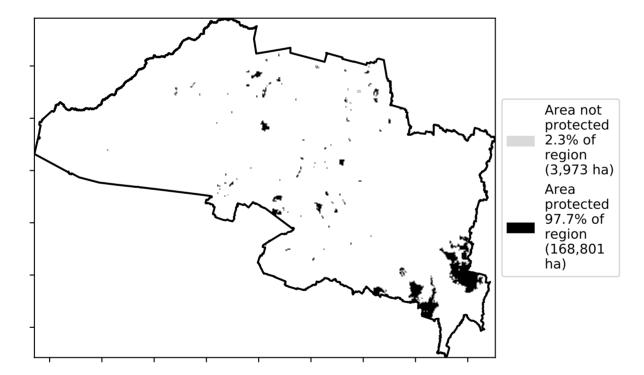
Production native forests and plantation forests



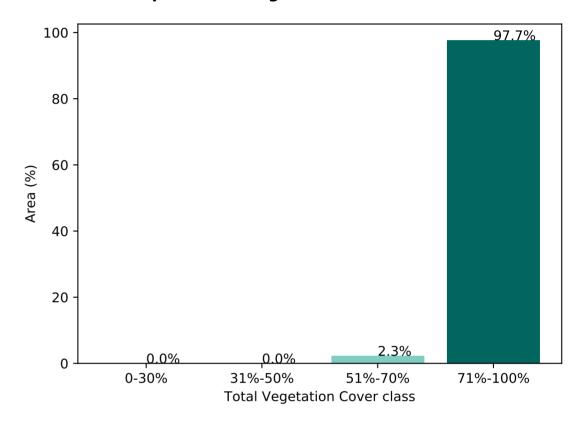
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



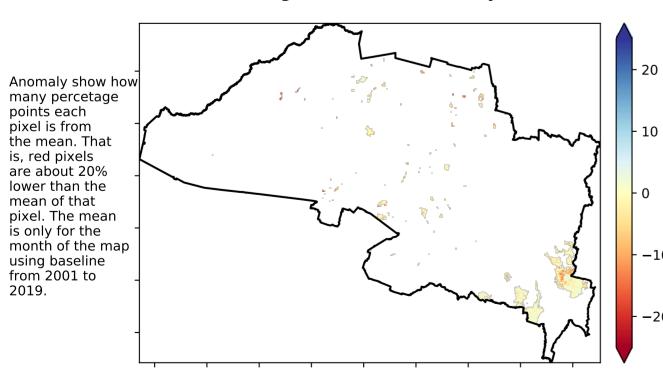




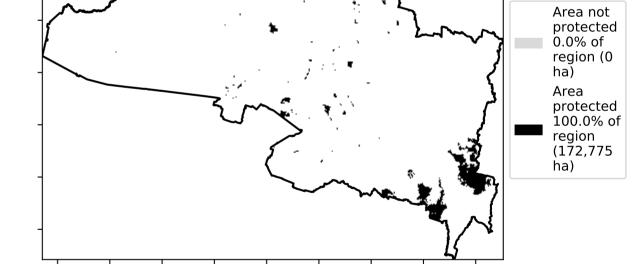
% Area protected from wind erosion (>50%)



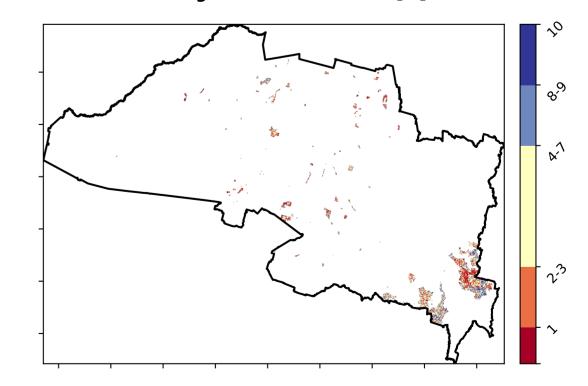
Total Vegetation Cover Anomaly [%]



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.



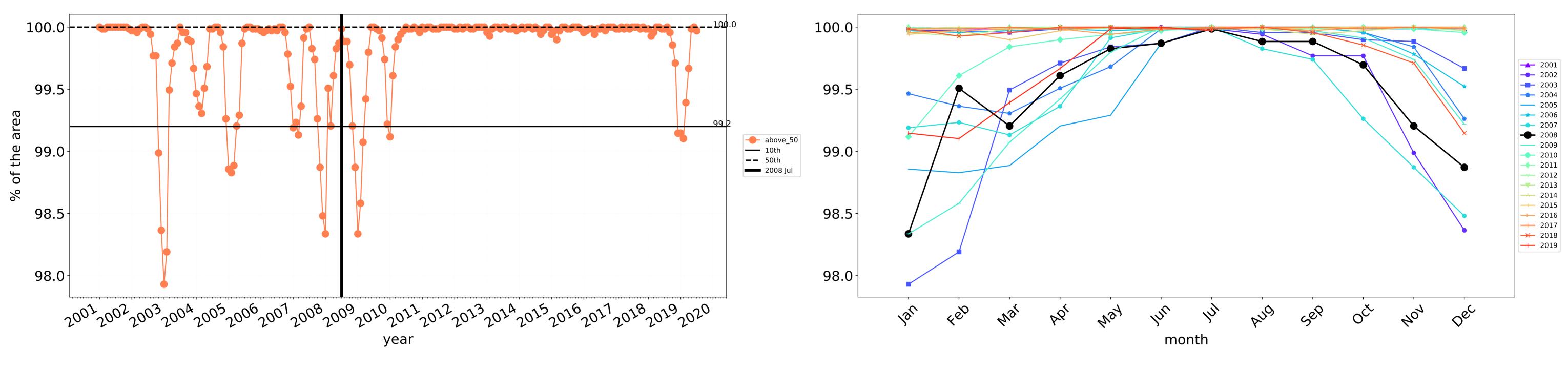
Total Vegetation Cover Decile [%]



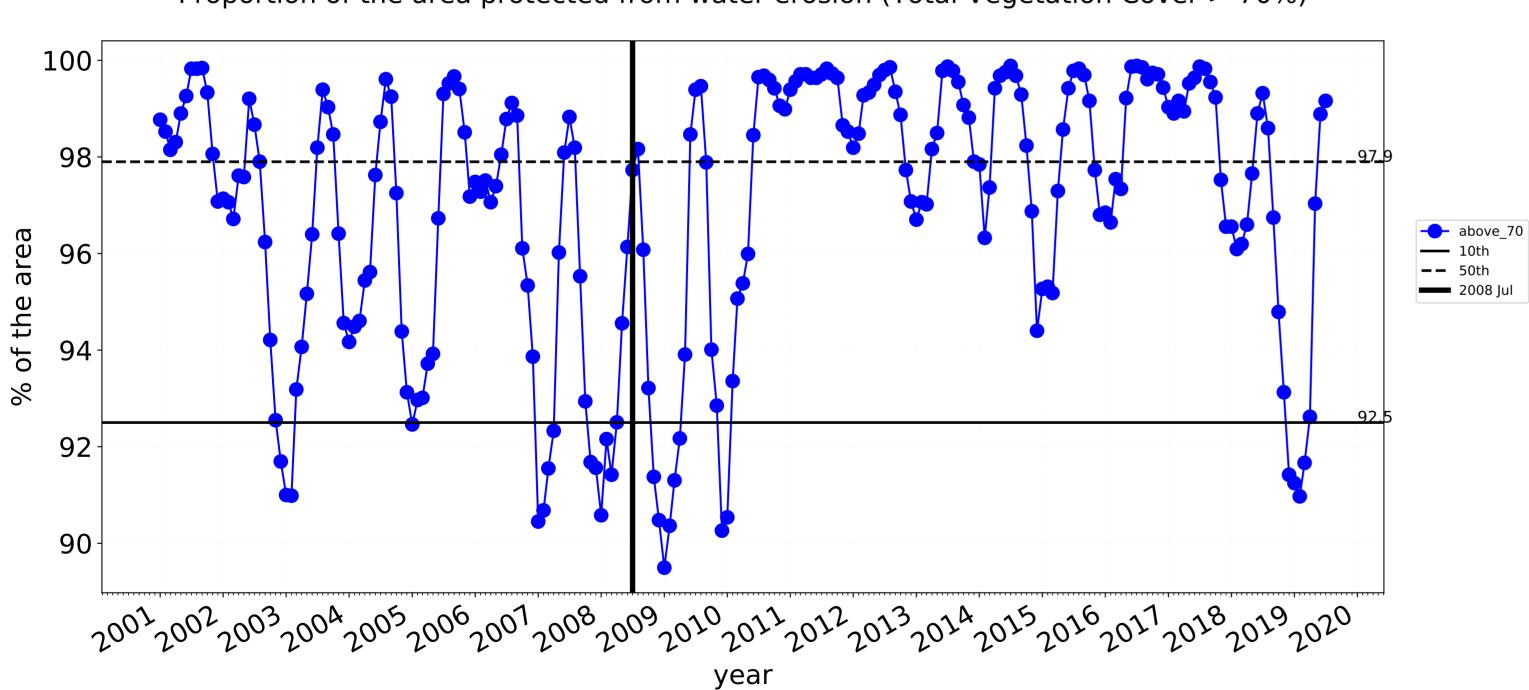


-10

-20

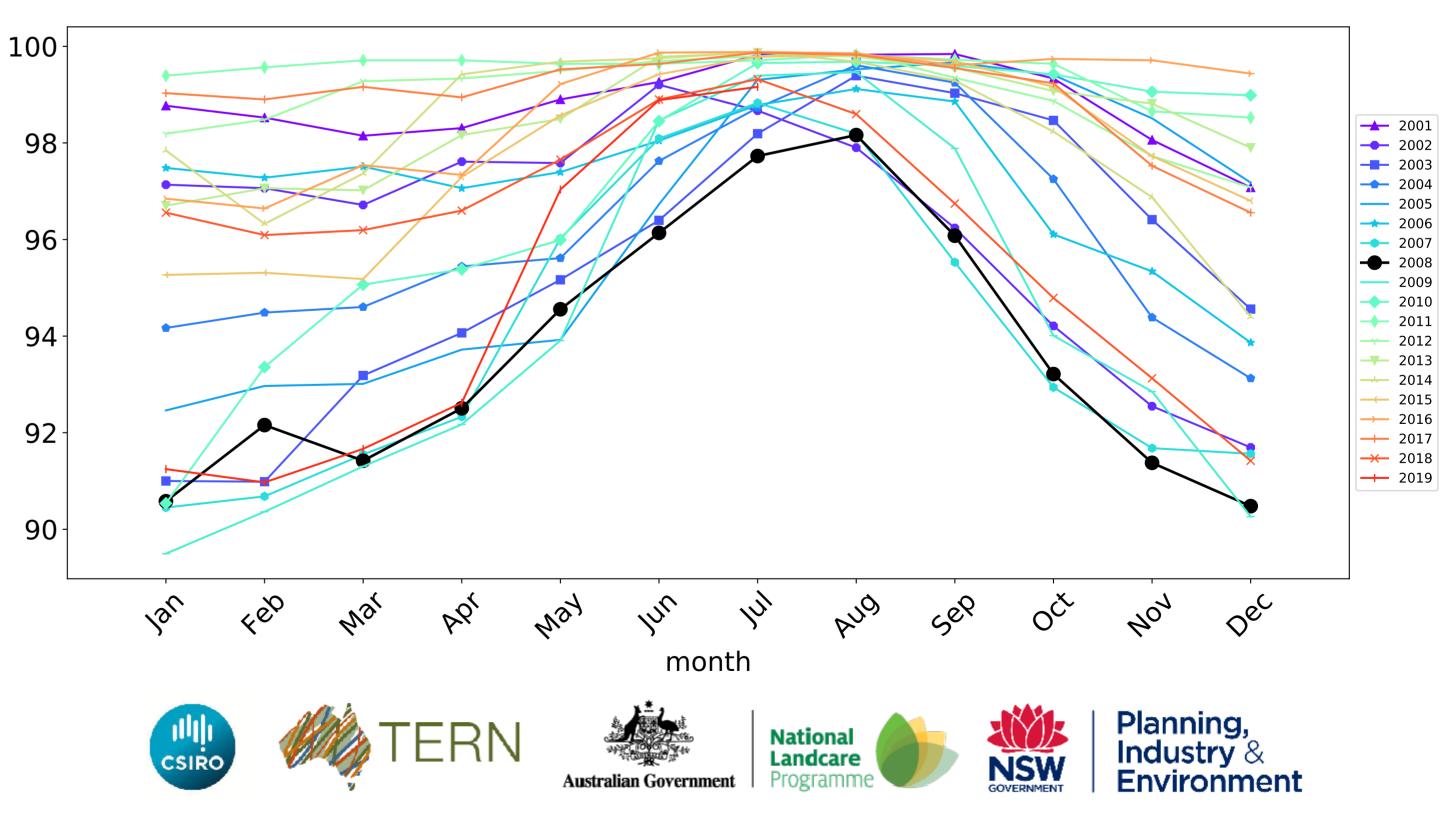


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

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



Riverina (6,662,225 ha and no data 46,110 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	6,662,225	99.8% 6,647,351	98.1% 6,537,003	73.9% 4,924,931	43.8% 2,915,946	12.9% 862,038	4.6% 309,108
Conservation and natural environments	301,375	99.7% 300,375	98.6% 297,200	91.4% 275,550	83.2% 250,850	63.4% 191,100	35.7% 107,525
Conservation and natural environments non forest	63,325	98.4% 62,325	93.5% 59,225	61.5% 38,925	33.6% 21,300	14.3% 9,050	6.6% 4,200
Conservation and natural environments Forest (non woodland)	193,850	100.0% 193,850	100.0% 193,825	99.6% 193,000	97.5% 188,975	83.7% 162,325	50.8% 98,425
Agriculture	5,449,525	99.8% 5,437,650	98.1% 5,344,250	72.3% 3,938,150	40.2% 2,190,225	8.6% 471,200	1.9% 104,325
Grazing	1,723,525	99.4% 1,713,450	96.1% 1,655,500	74.5% 1,284,800	52.4% 902,975	18.6% 320,275	4.5% 76,700
Grazing non forest	1,478,525	99.3% 1,468,450	95.4% 1,410,700	71.0% 1,050,300	48.1% 710,725	15.9% 234,825	3.6% 53,375
Grazing Woodland forest	141,650	100.0% 141,650	100.0% 141,625	94.6% 133,975	71.7% 101,525	23.7% 33,525	4.3% 6,025
Grazing - Forest (non woodland)	103,350	100.0% 103,350	99.8% 103,175	97.3% 100,525	87.8% 90,725	50.2% 51,925	16.7% 17,300
Cropping	3,181,375	100.0% 3,180,775	99.3% 3,158,050	73.8% 2,348,050	37.7% 1,198,500	4.4% 141,500	0.8% 24,200
Irrigation	542,800	99.8% 541,600	97.4% 528,925	56.1% 304,550	16.3% 88,550	1.7% 9,425	0.6% 3,425
Production native forests and plantation forests	172,775	100.0% 172,775	100.0% 172,750	97.7% 168,850	92.0% 159,025	65.3% 112,775	38.5% 66,475

