Total vegetation cover soil protection Region:NRM Riverina NSW

Date: May 2010

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:

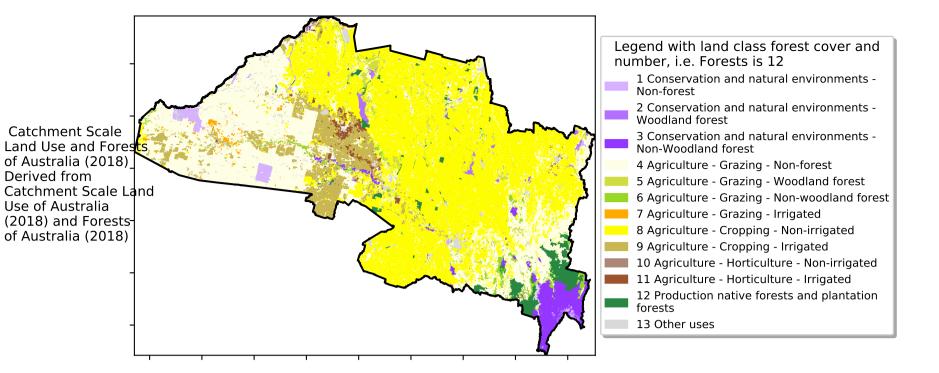
https://doi.org/10.4225/08/5848a3f19a7b3



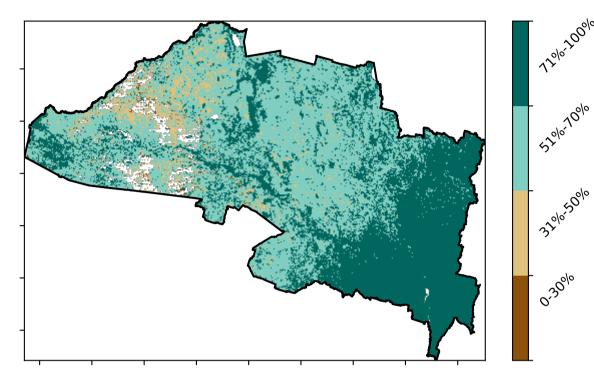
Vegetation Cover May 2010

Land use and forest cover

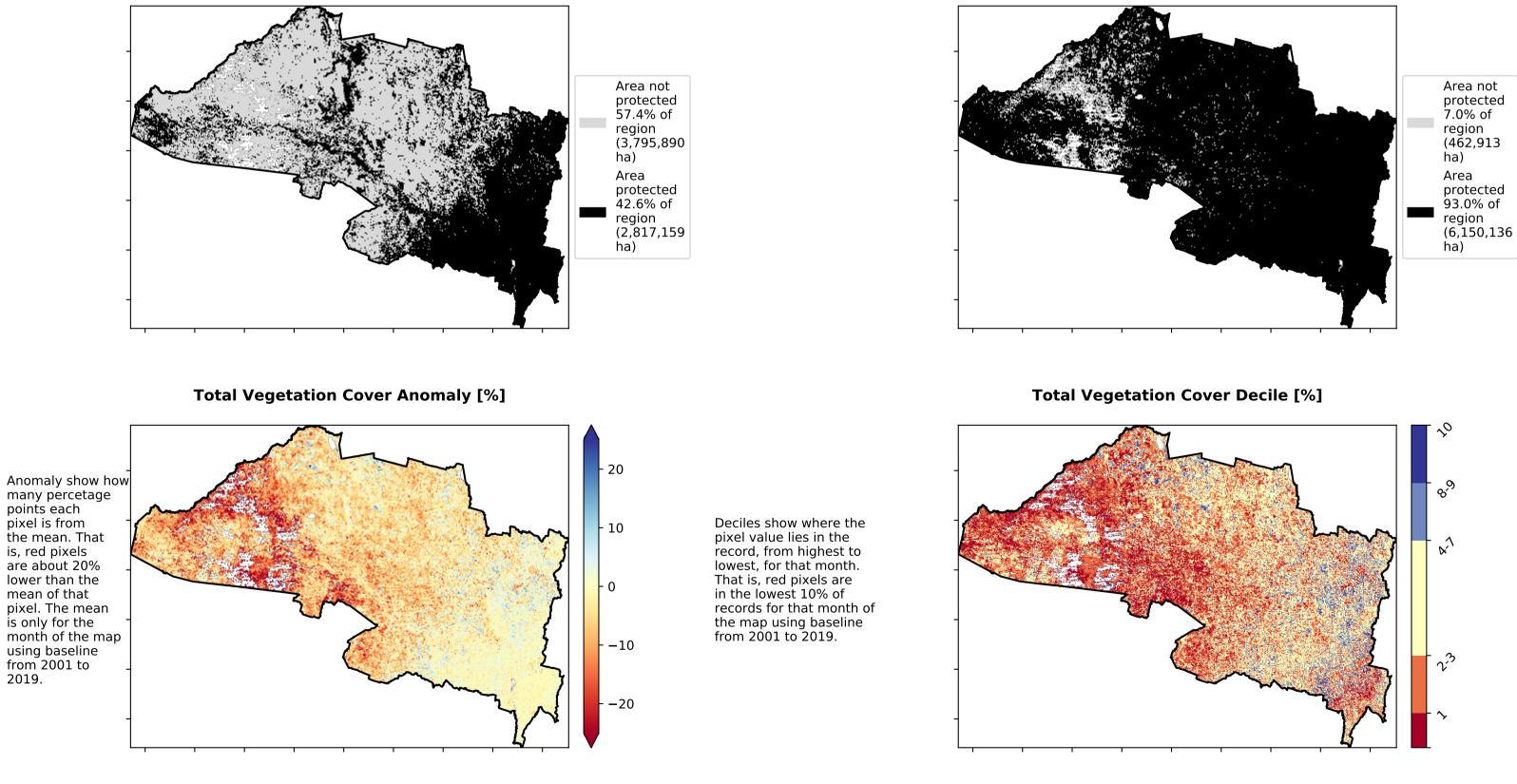
Proportion of each land class in area

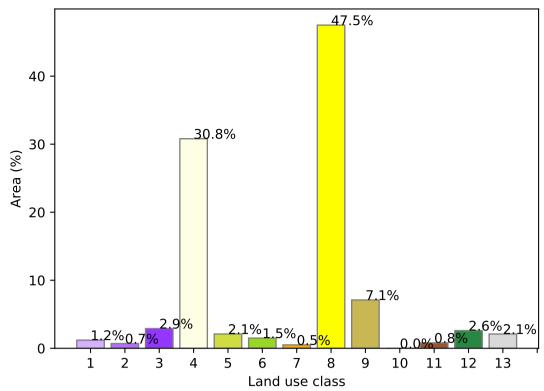


Total Vegetation Cover [%]

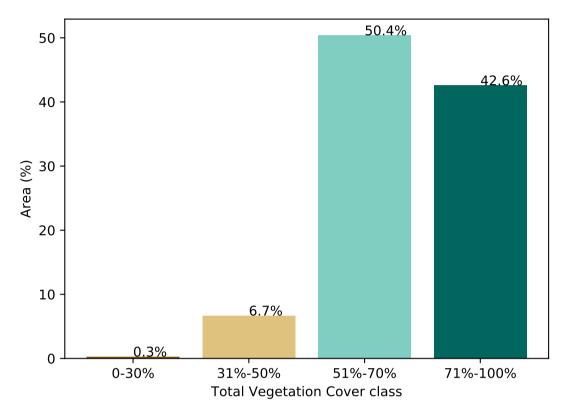


% Area protected from water erosion (>70%)

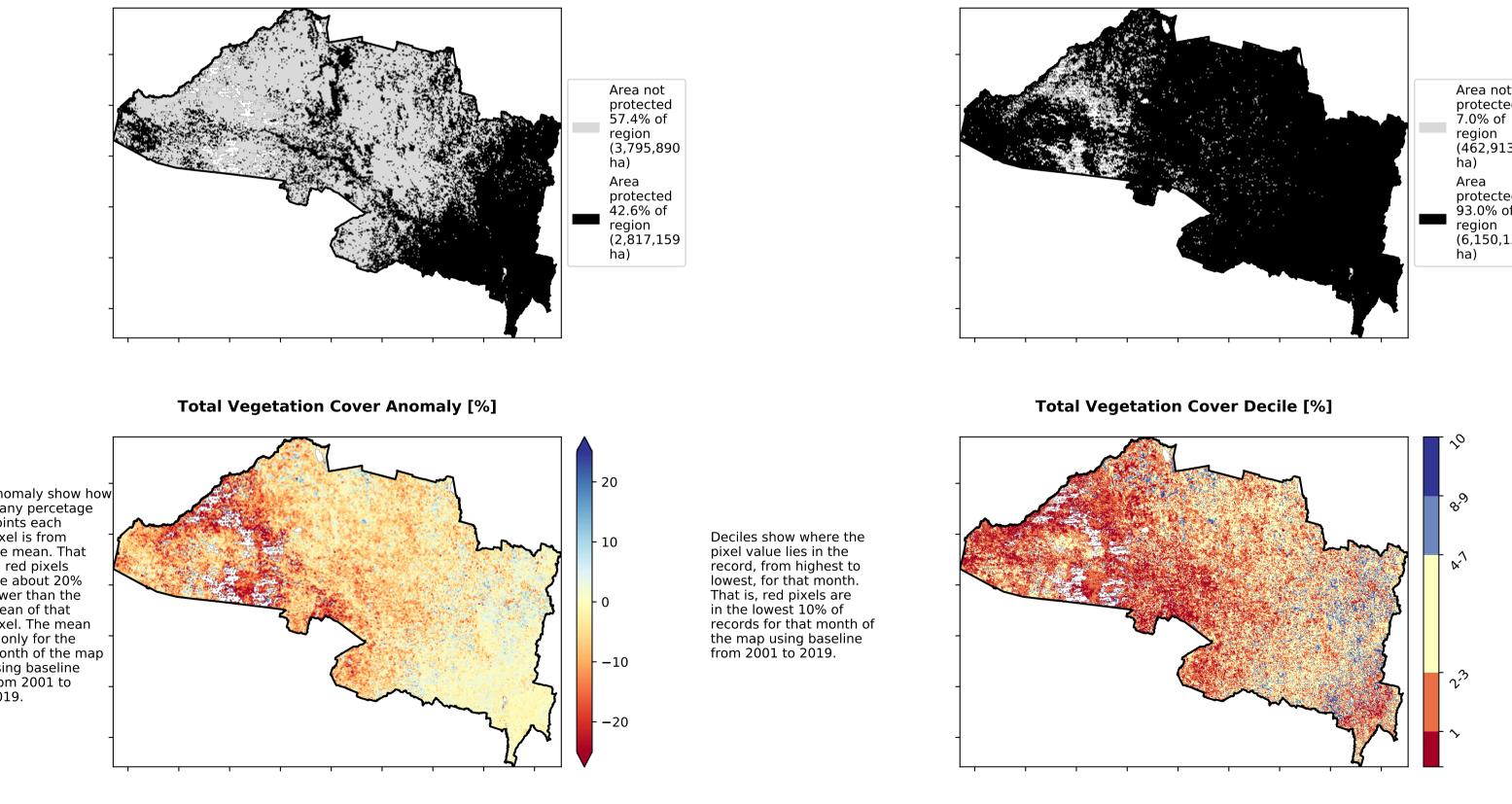




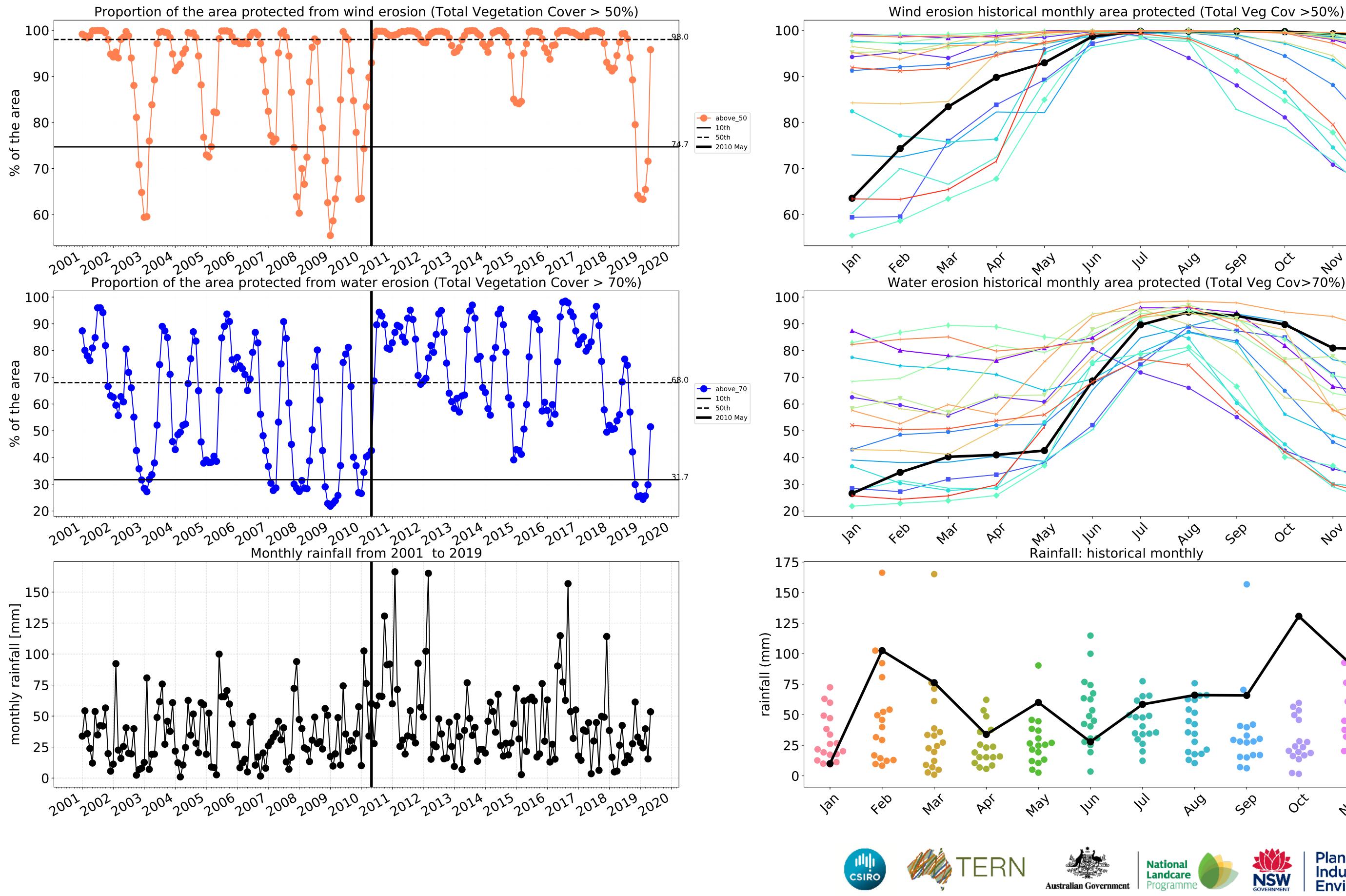
Proportion of vegetation cover class in area

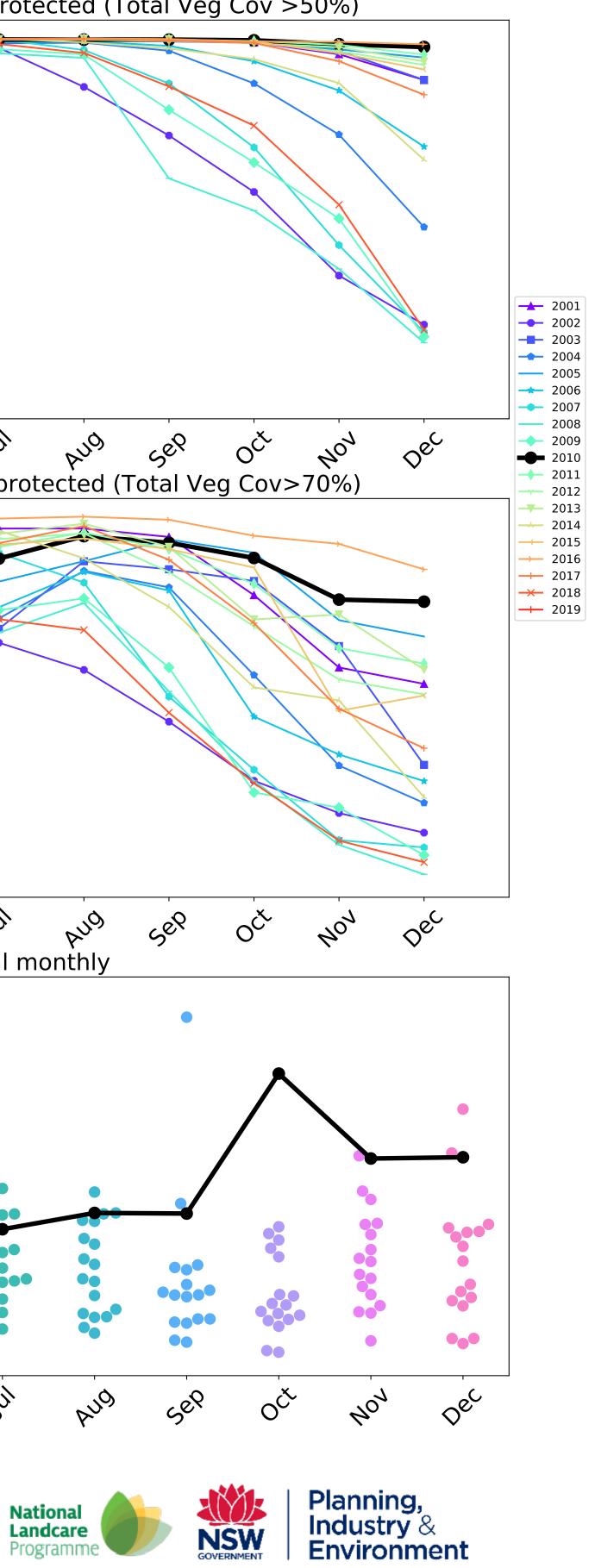


% Area protected from wind erosion (>50%)

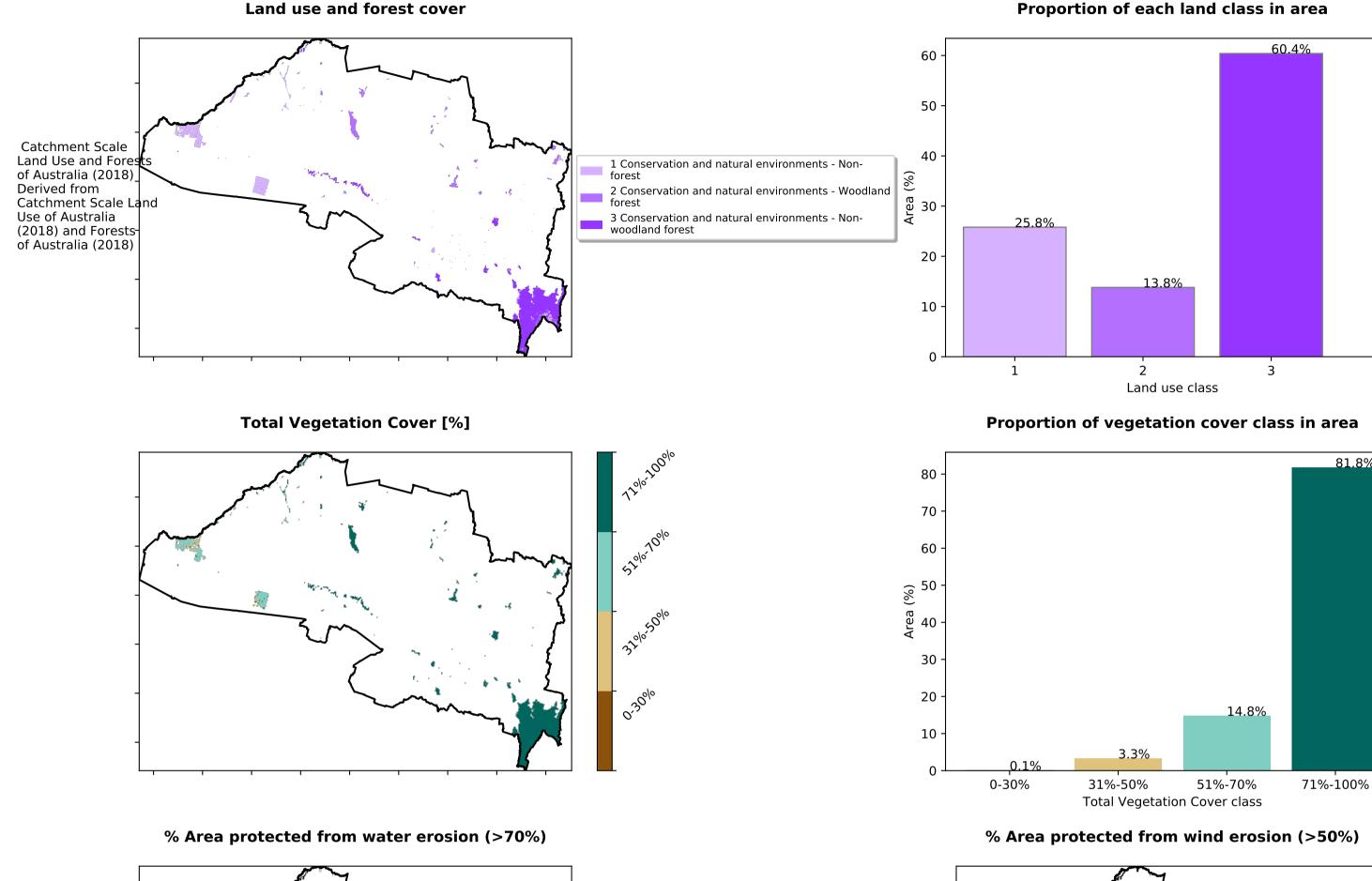






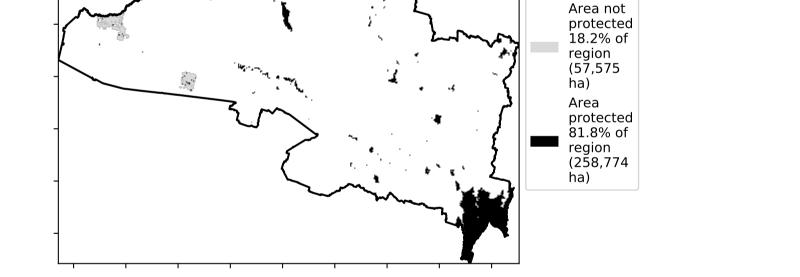


Conservation and natural environments

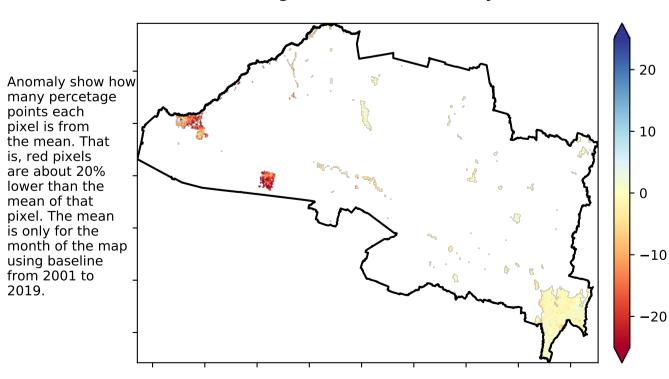


Proportion of each land class in area

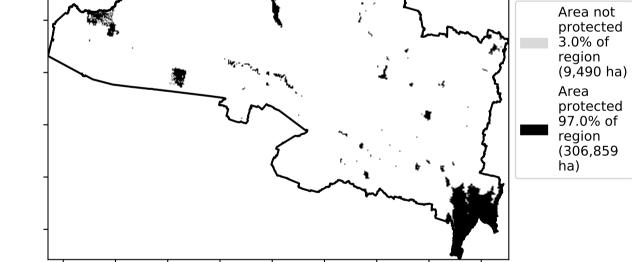
81.8%

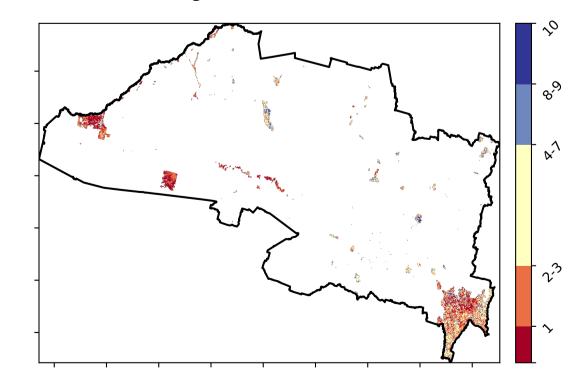


Total Vegetation Cover Anomaly [%]



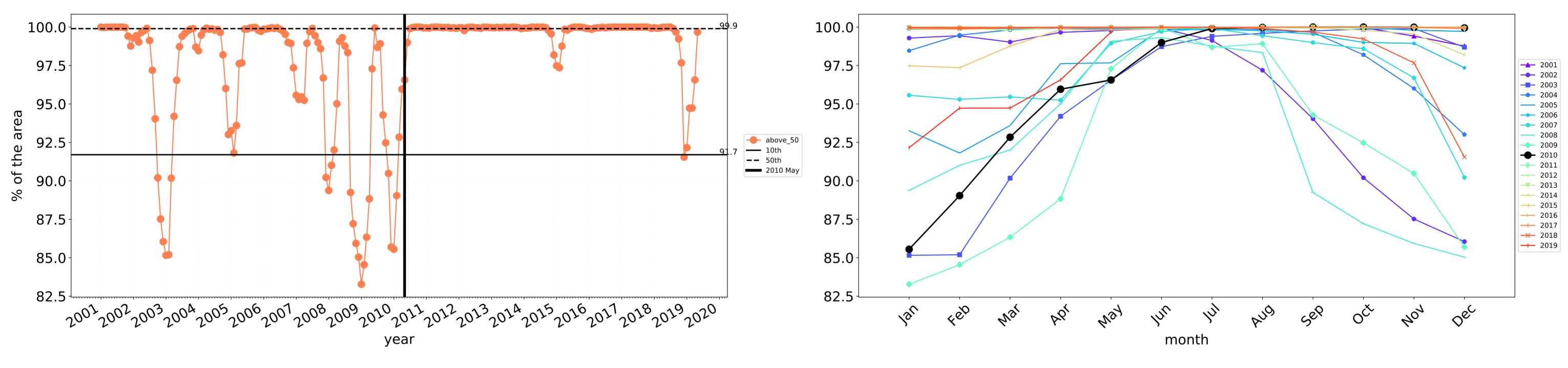
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





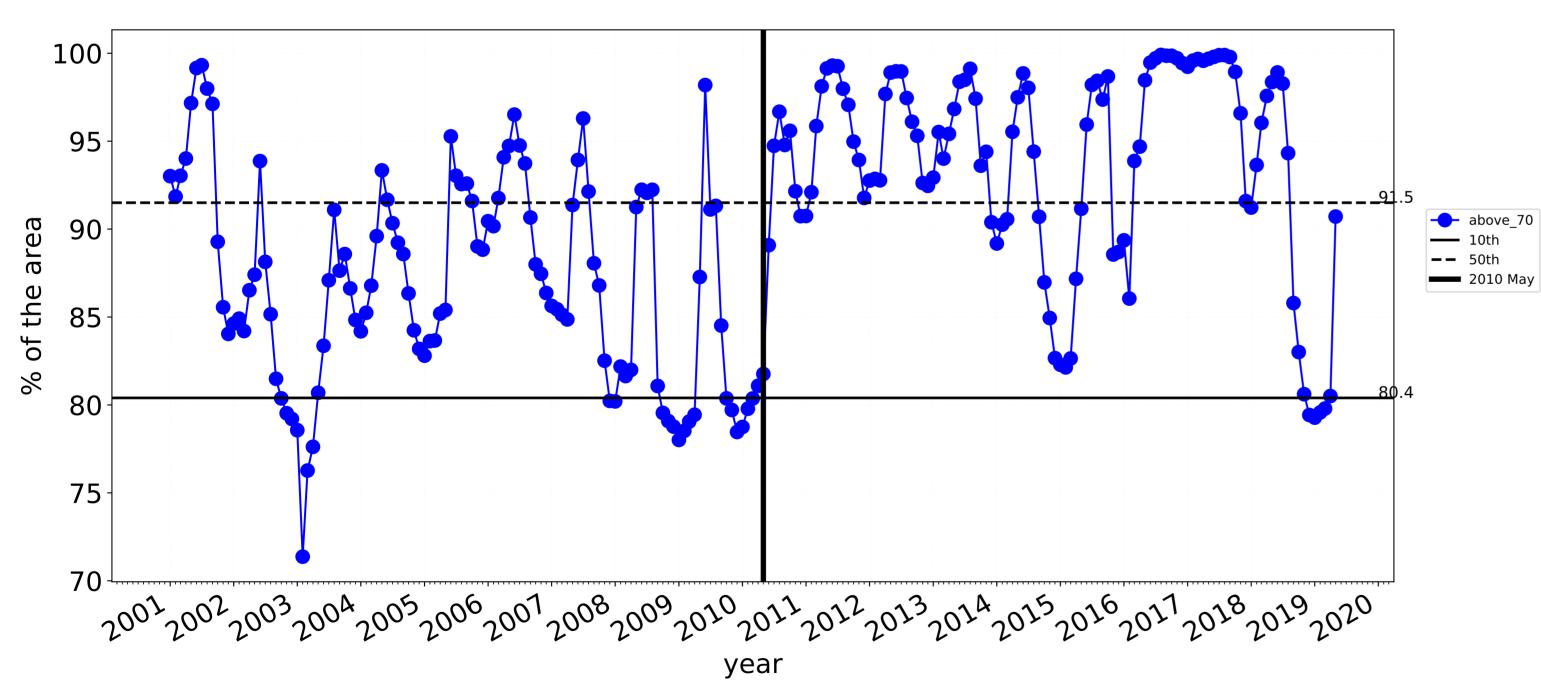


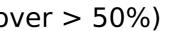
Conservation and natural environments timeseries



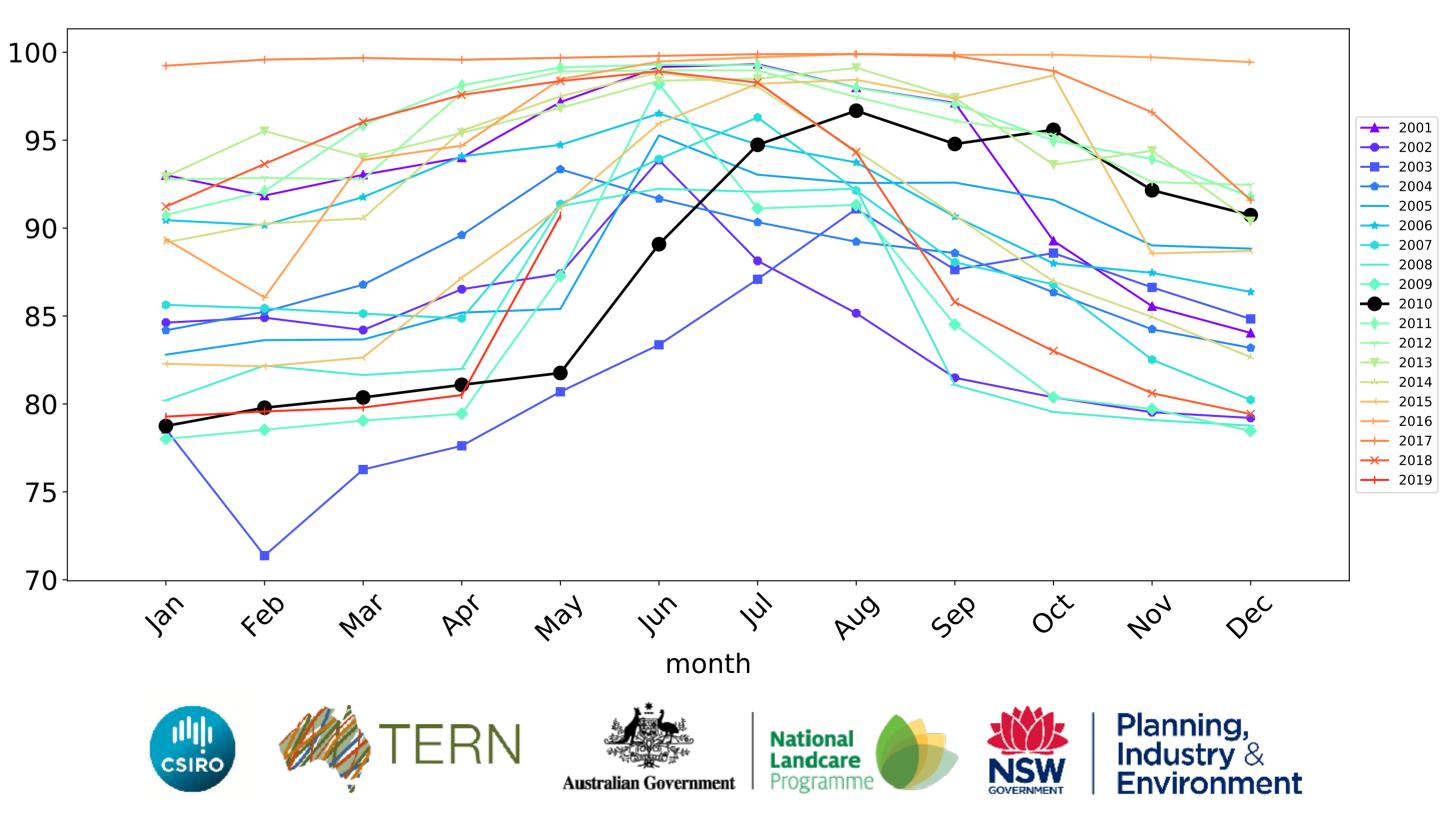
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

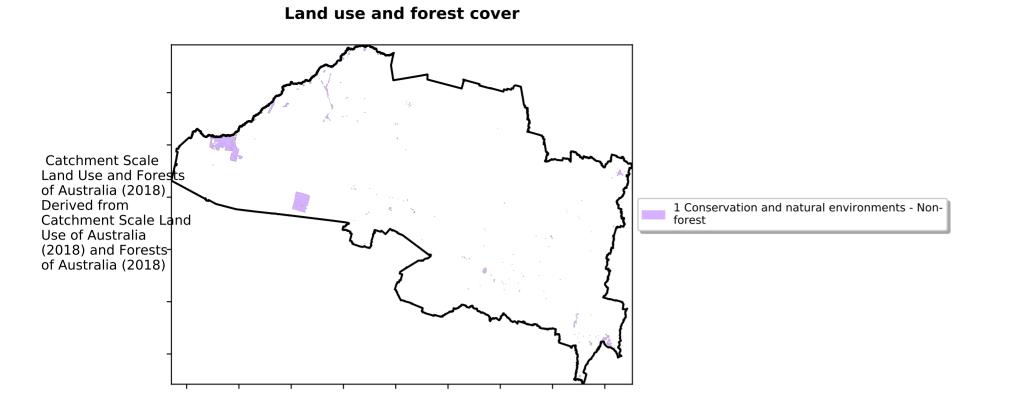




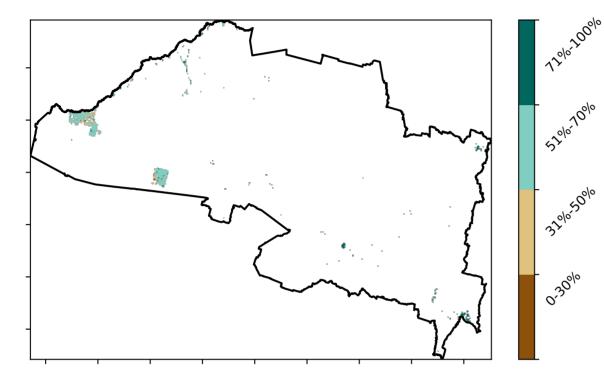
Wind erosion historical monthly area protected (Total Veg Cov >50%)



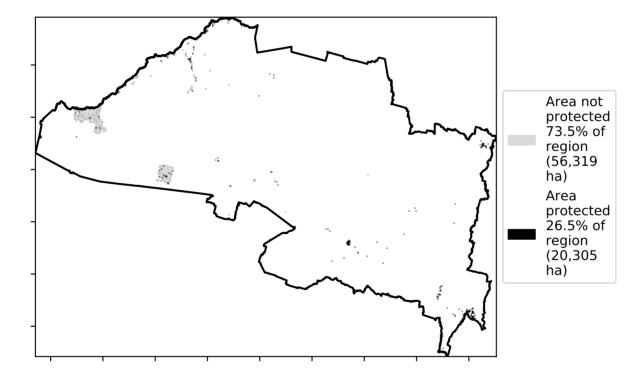
Conservation and natural environments non forest



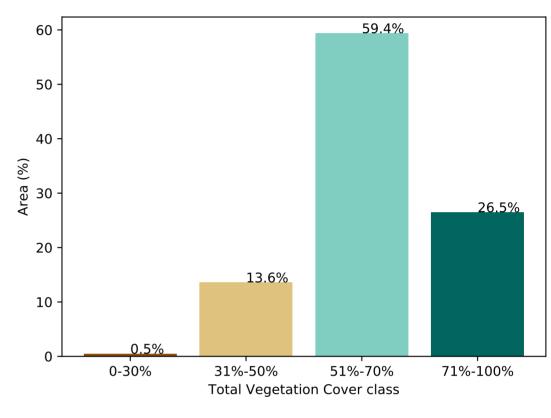
Total Vegetation Cover [%]



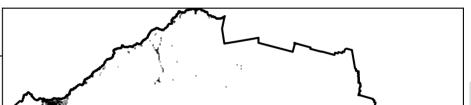
% Area protected from water erosion (>70%)



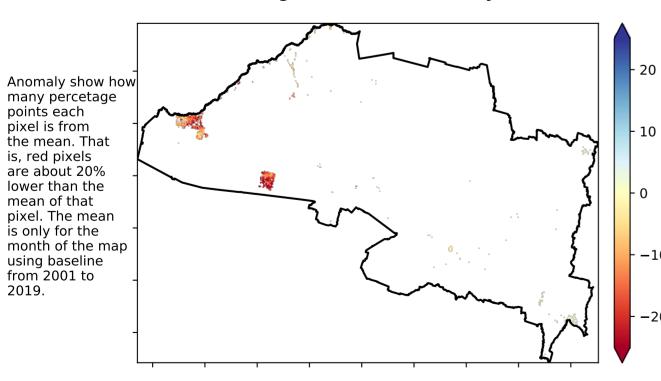
Proportion of vegetation cover class in area



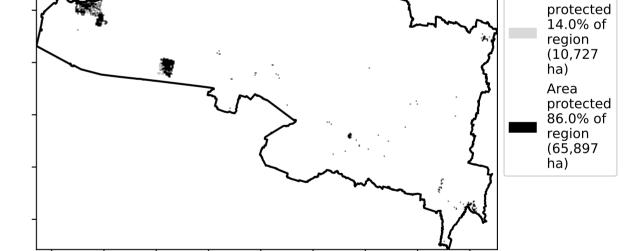
% Area protected from wind erosion (>50%)



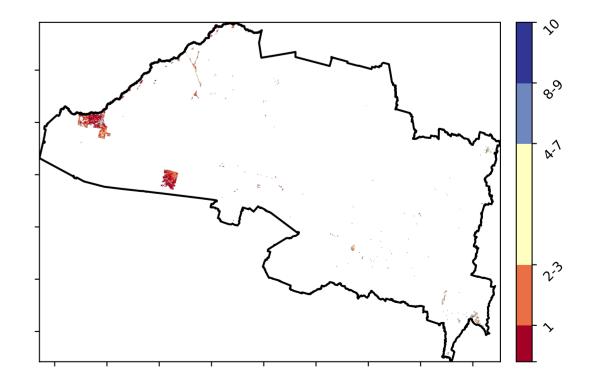
Total Vegetation Cover Anomaly [%]



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 [%]





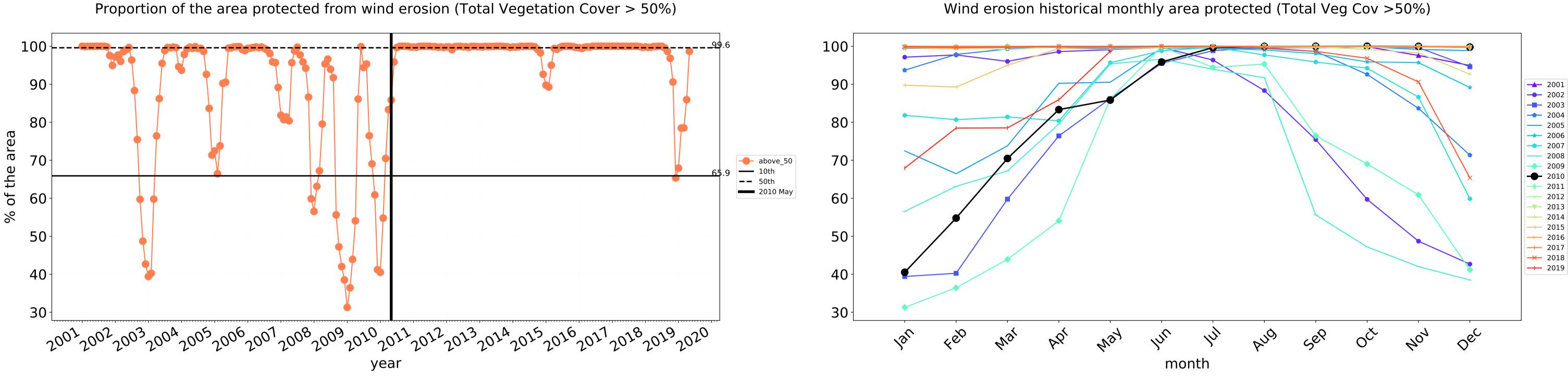
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0

-10

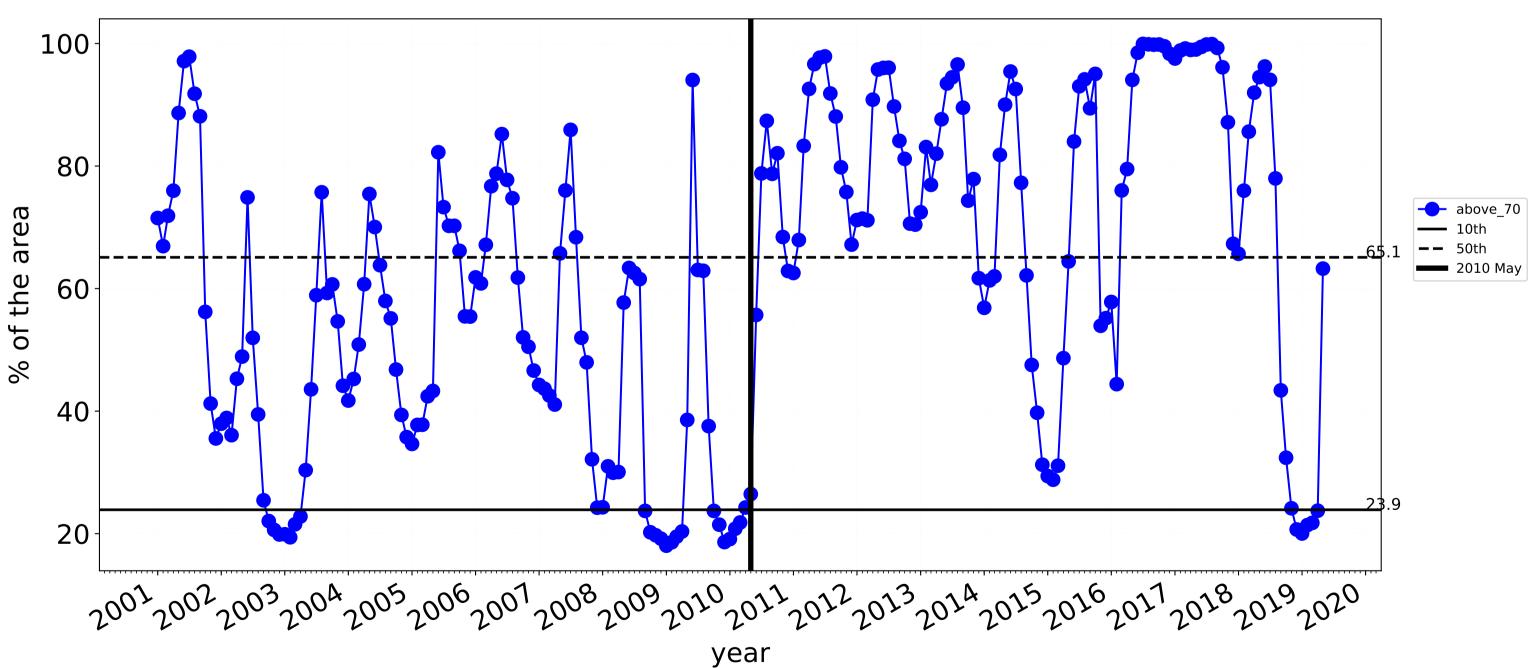
-20

Conservation and natural environments non forest timeseries

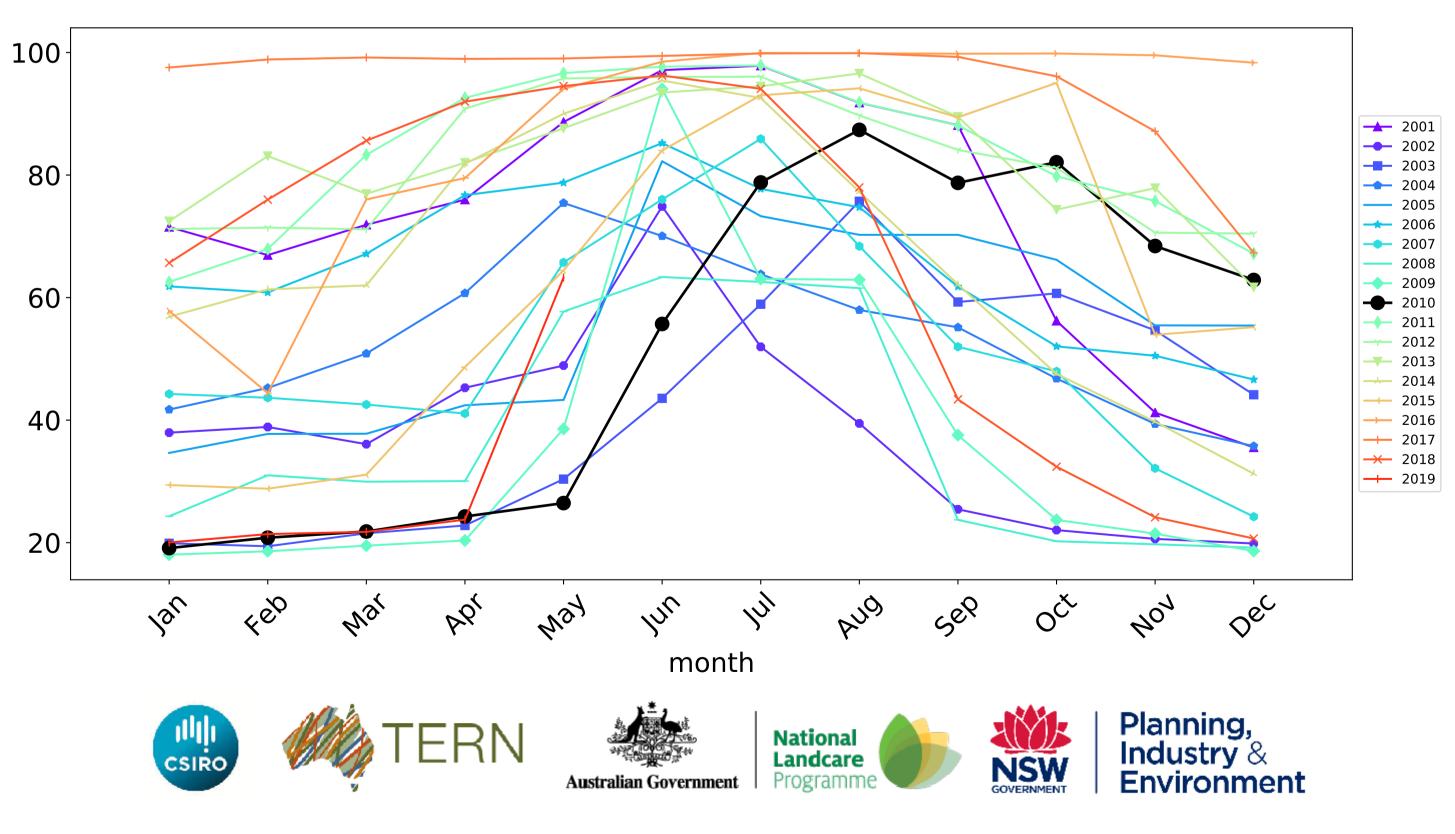


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

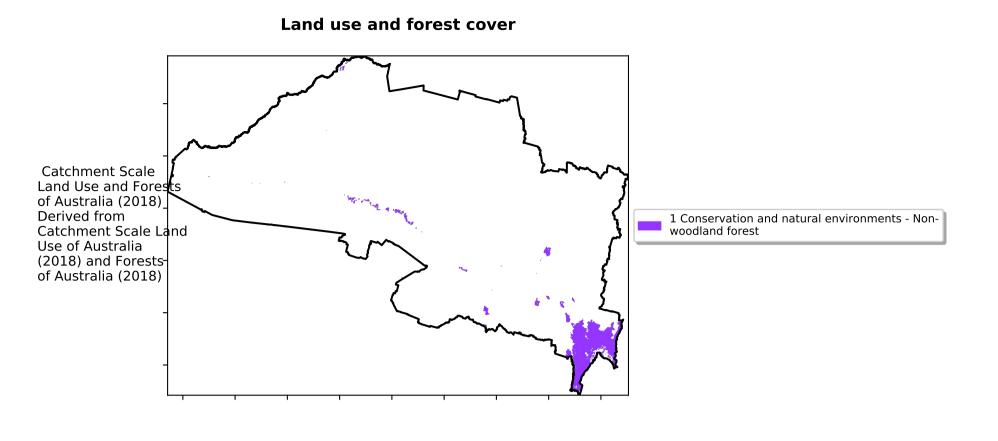




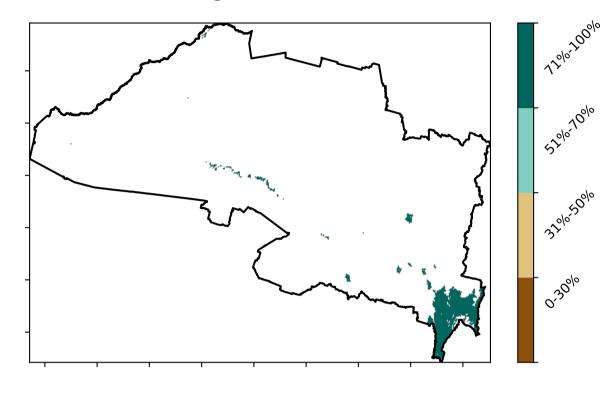
Water erosion historical monthly area protected (Total Veg Cov>70%)



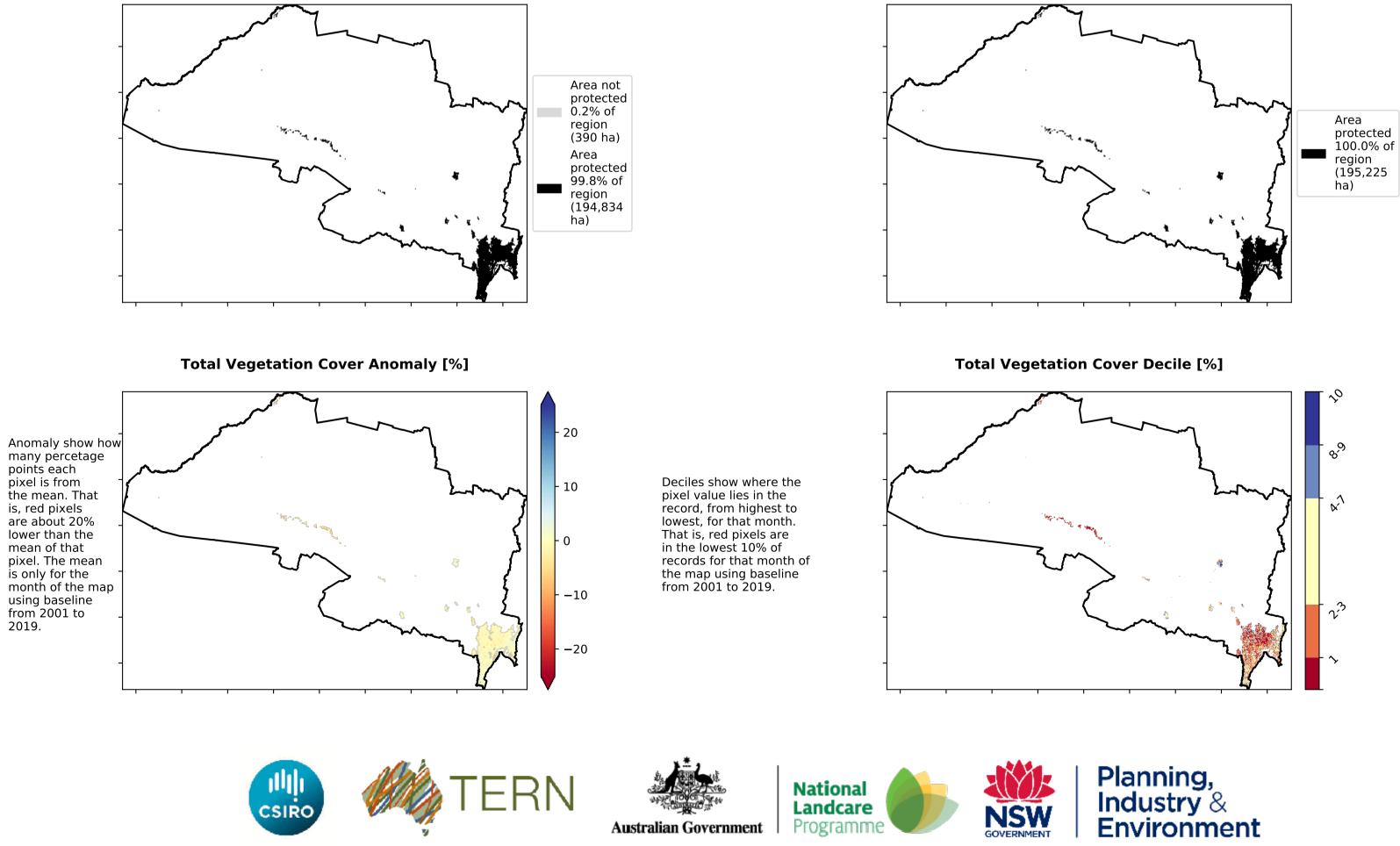
Conservation and natural environments Forest (non woodland)



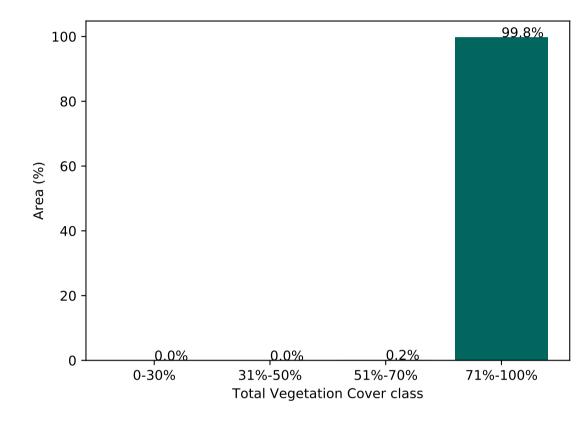
Total Vegetation Cover [%]



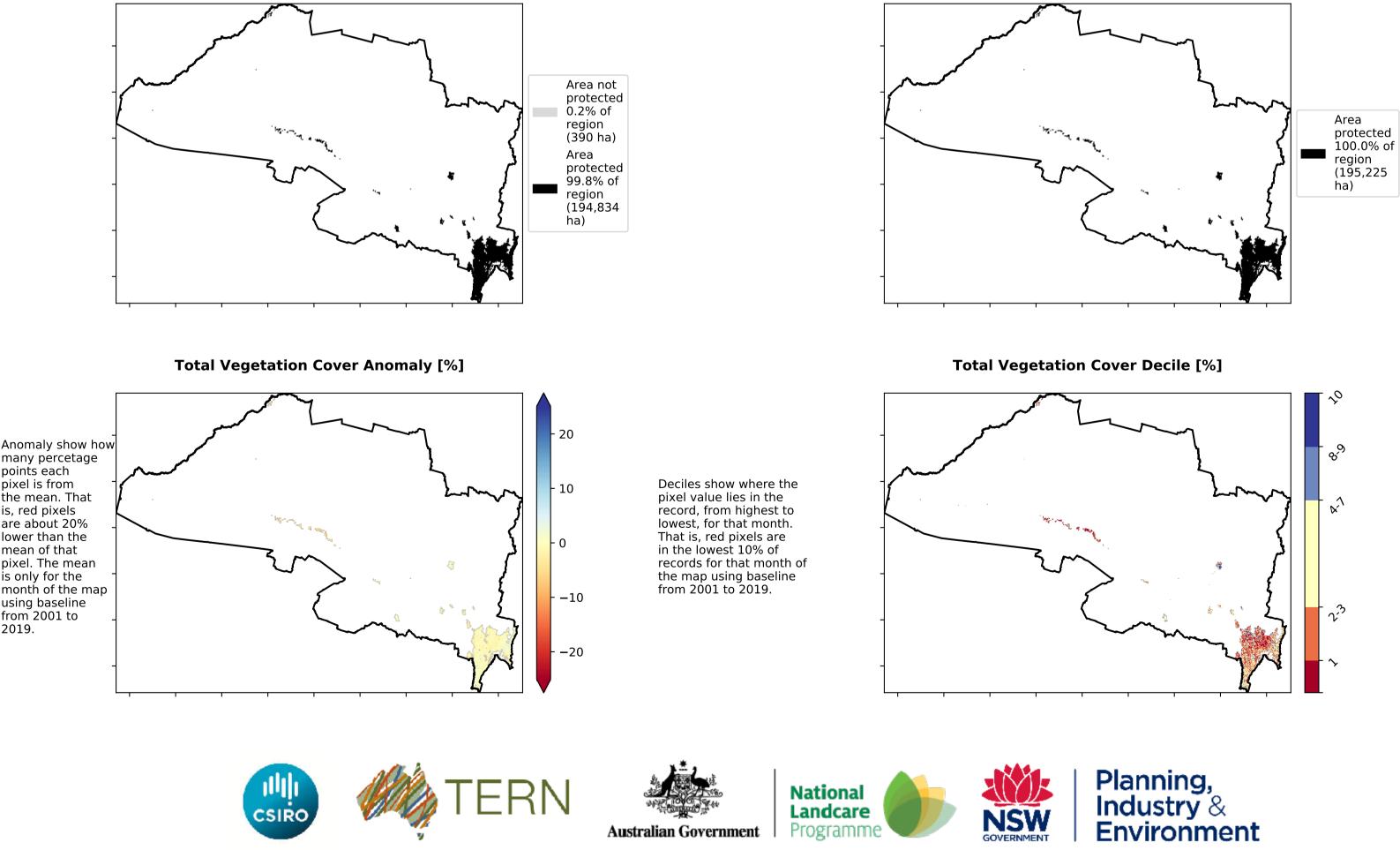
% Area protected from water erosion (>70%)



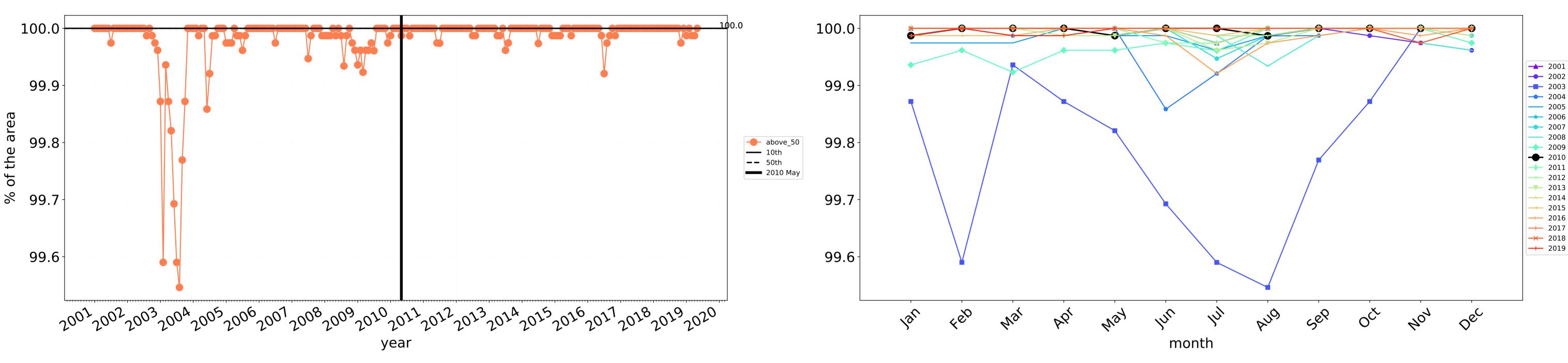
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

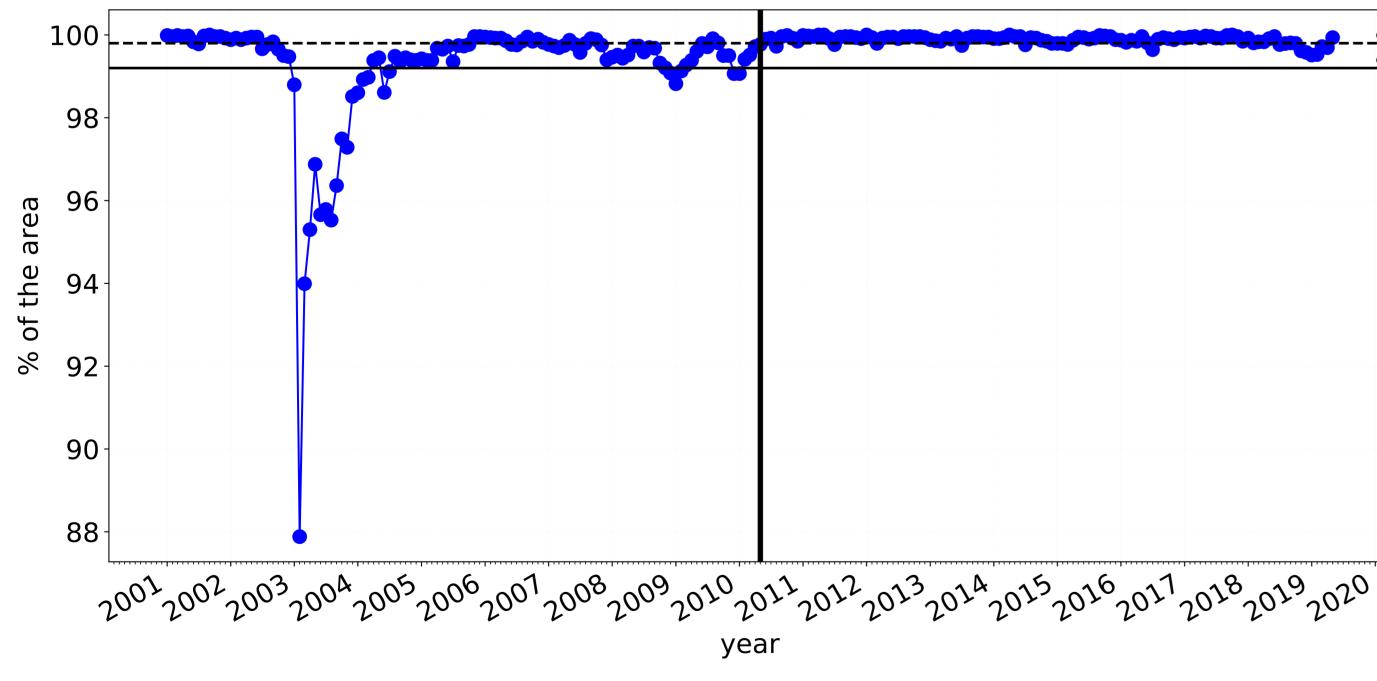


Conservation and natural environments Forest (non woodland) timeseries



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

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

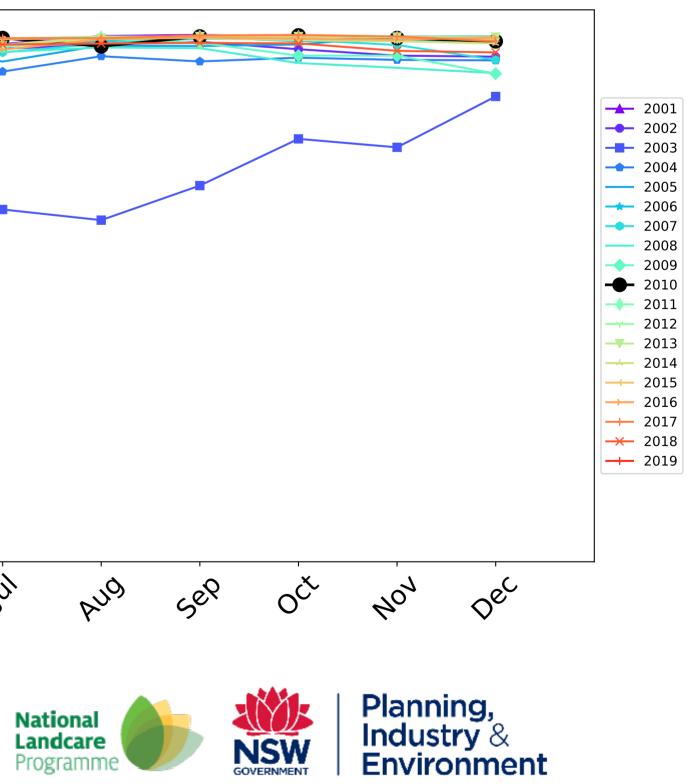


Wind erosion historical monthly area protected (Total Veg Cov >50%)

100 98 96 ---- above_70 **—** 10th **——** 50th **——** 2010 May 94 92 90 88 lar 4eb May In PQ 1/2/ Mar month TERN (SOL) CSIRO

Australian Government

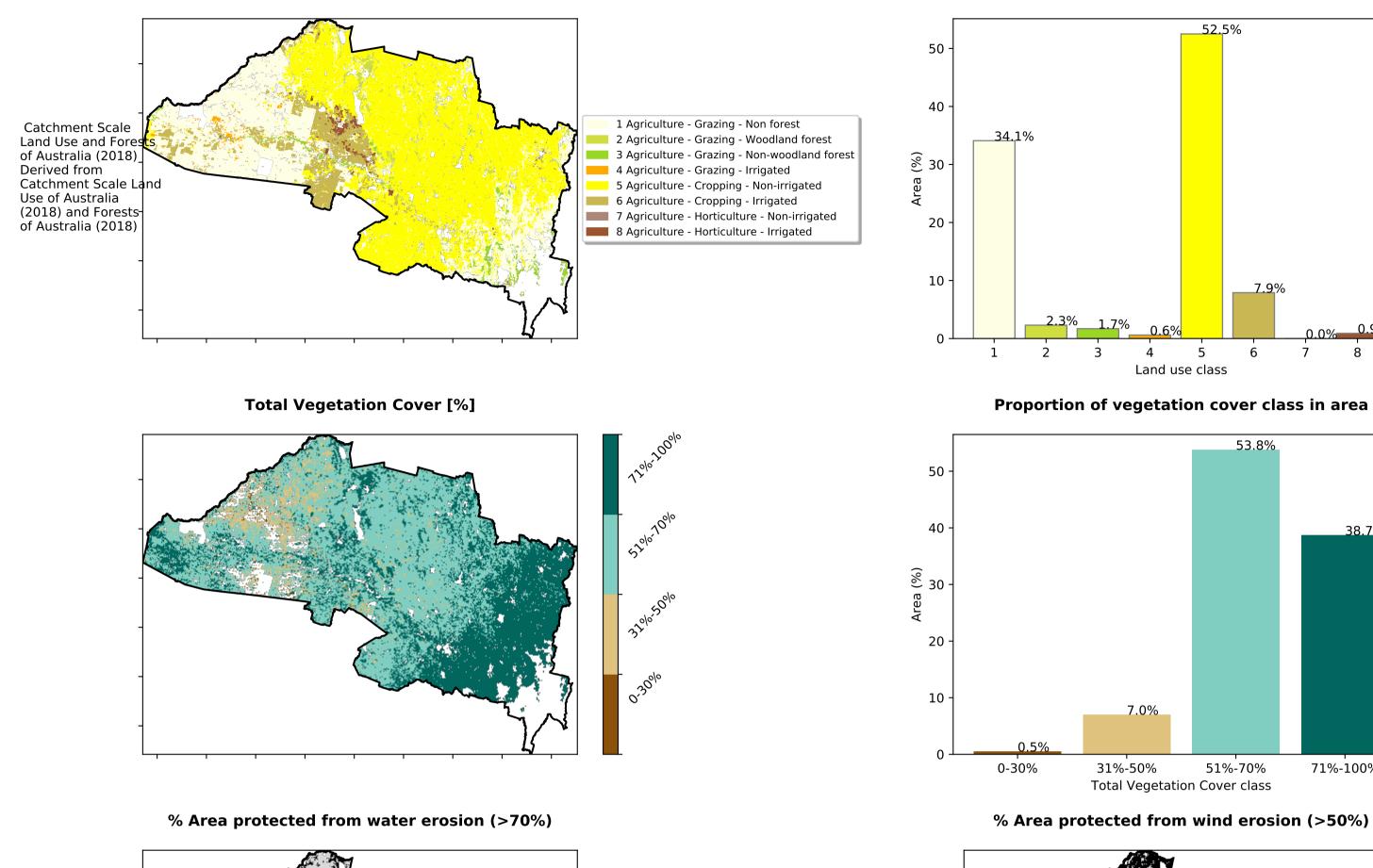
Water erosion historical monthly area protected (Total Veg Cov>70%)

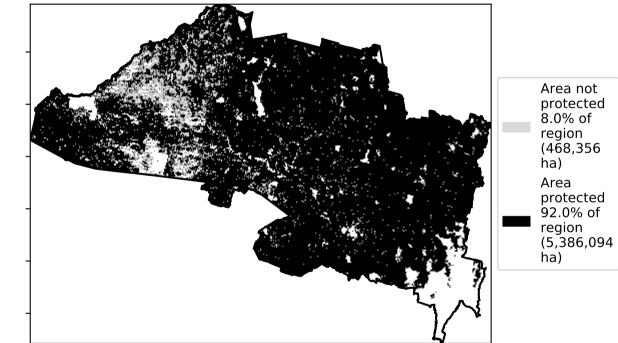


Agriculture

Land use and forest cover

Proportion of each land class in area





0.9%

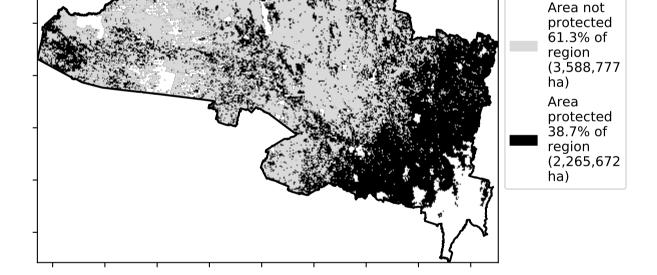
8

38.7%

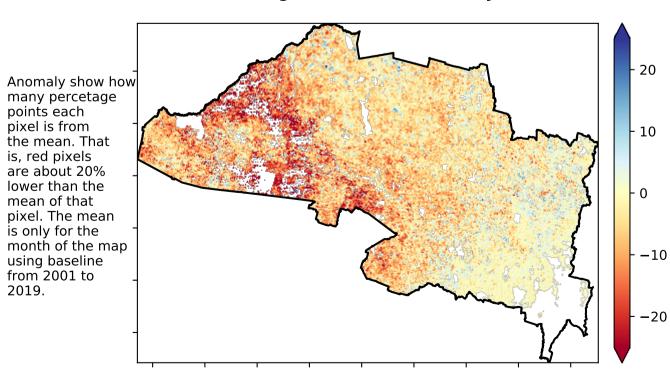
71%-100%

0.0%

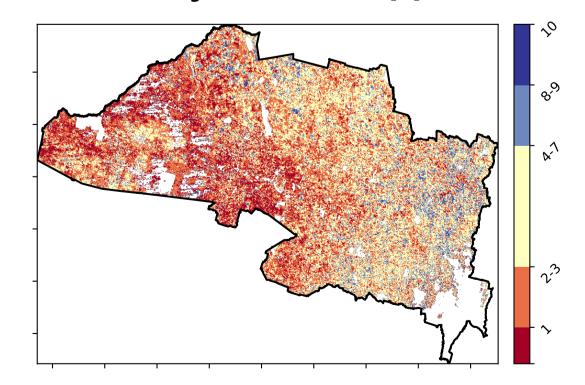
7



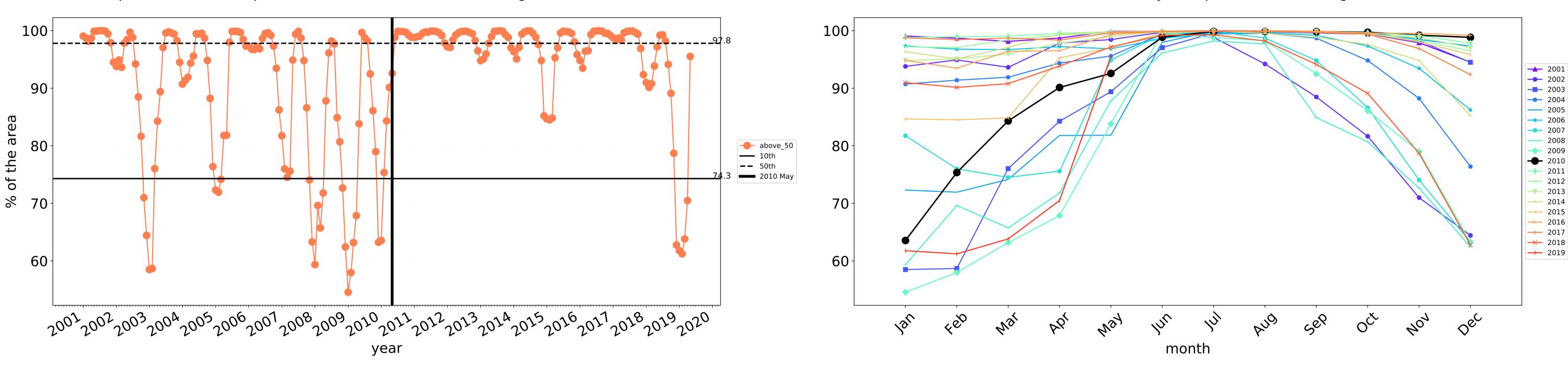
Total Vegetation Cover Anomaly [%]



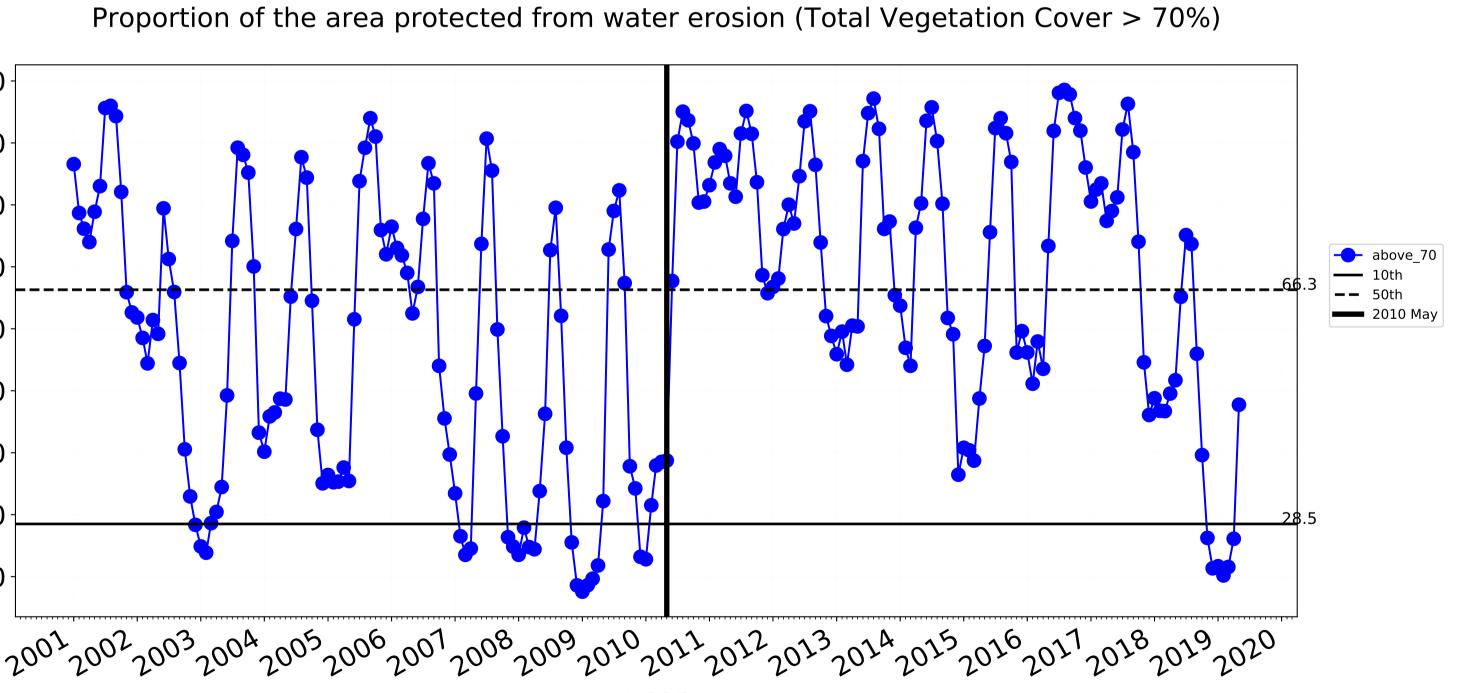
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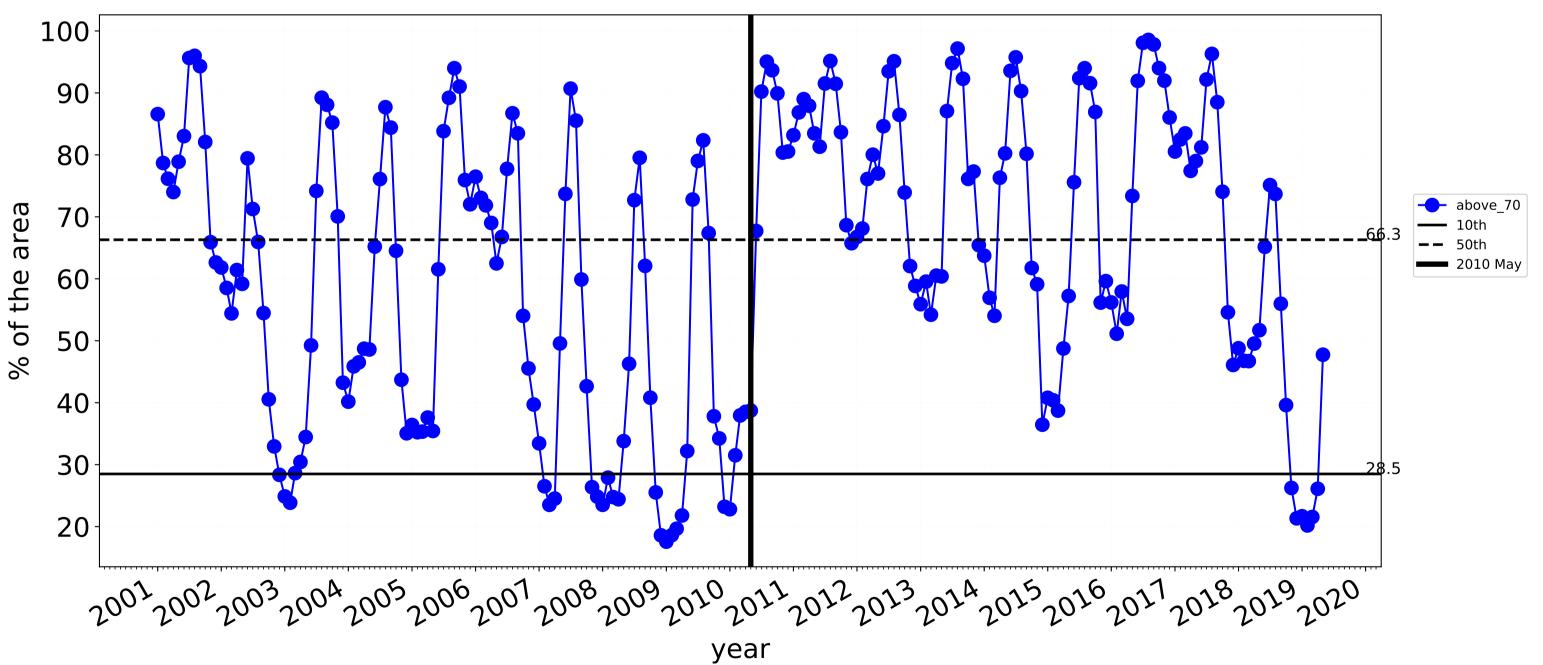






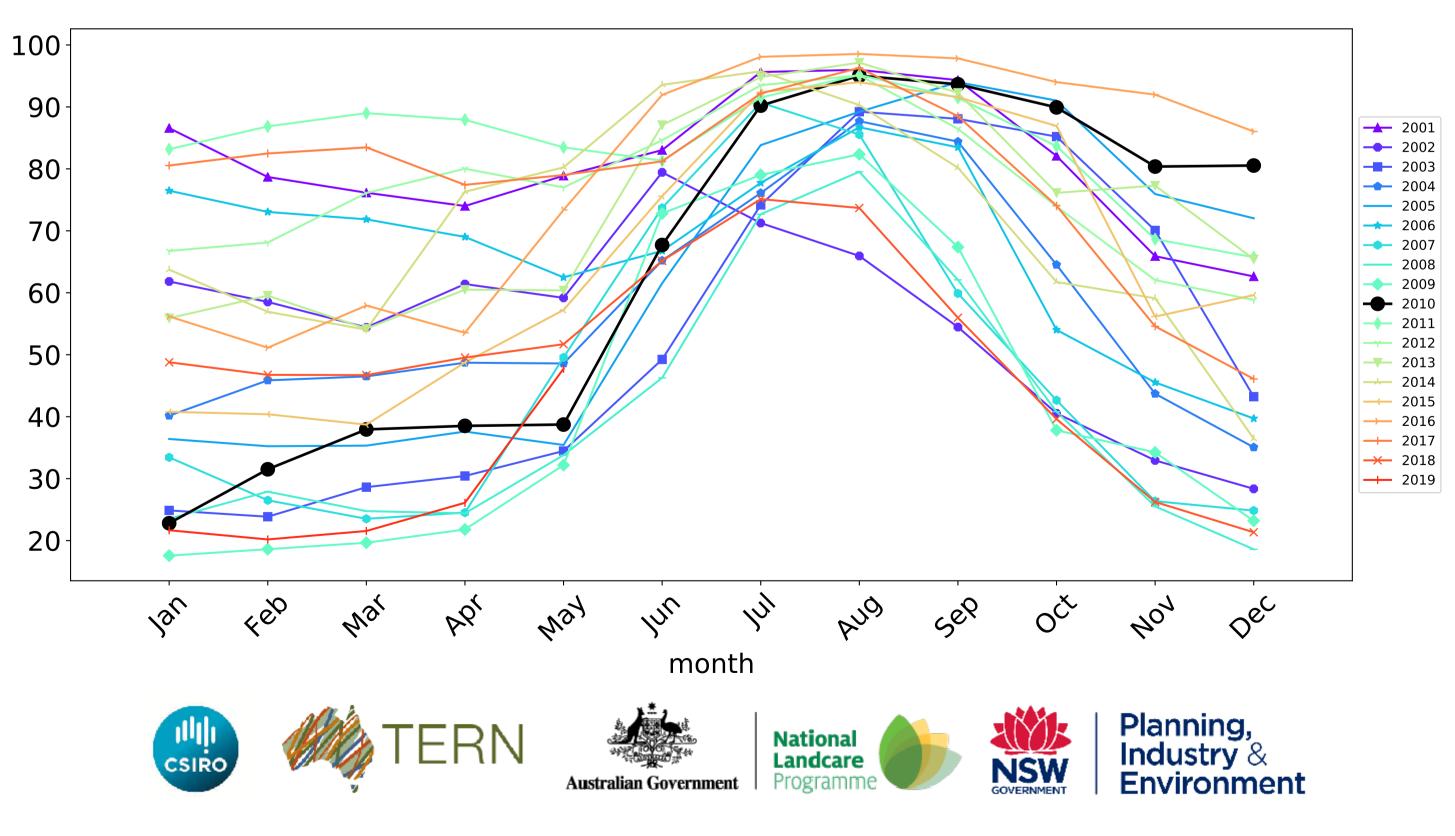
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





Agriculture timeseries

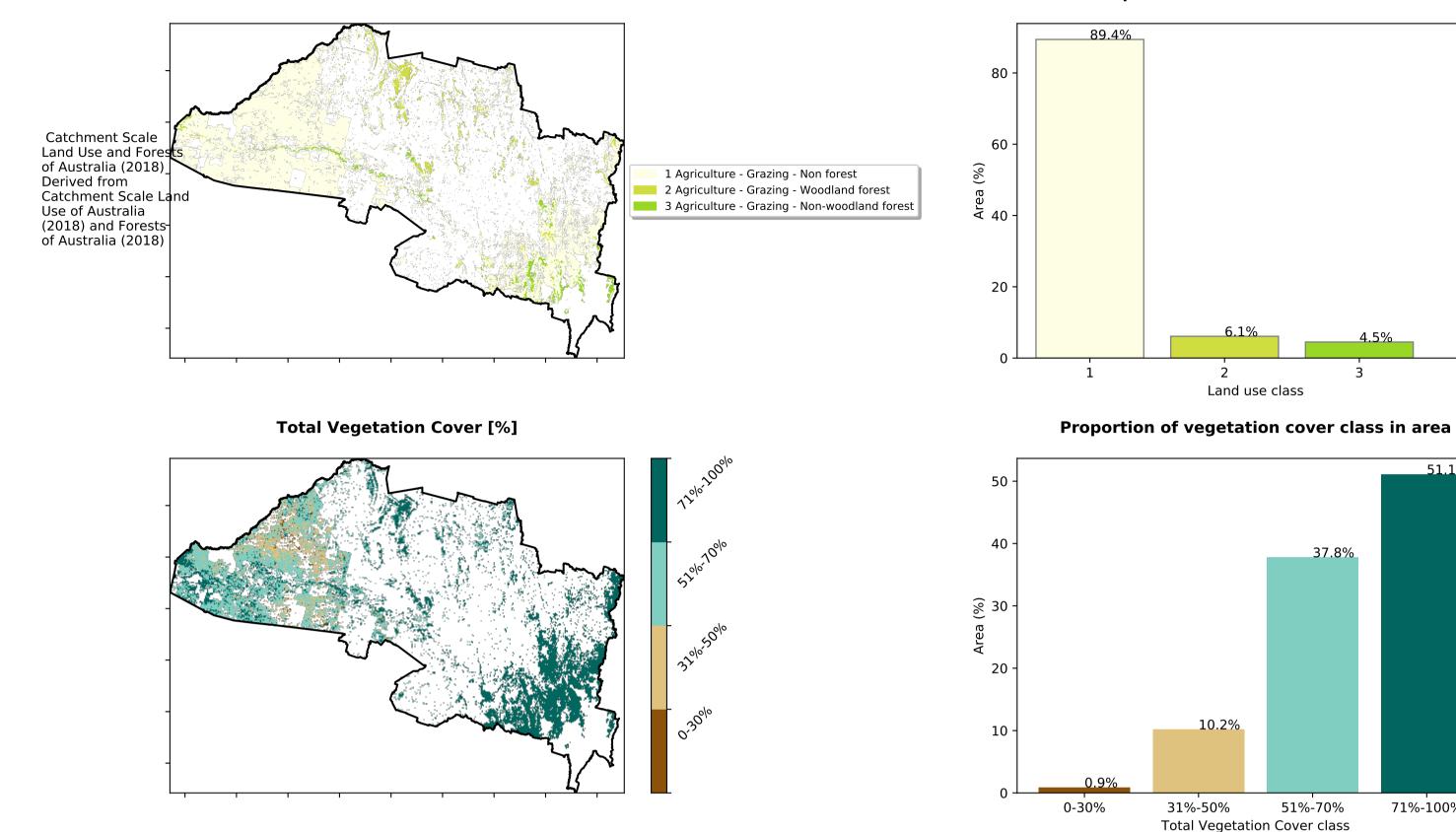
Water erosion historical monthly area protected (Total Veg Cov>70%)



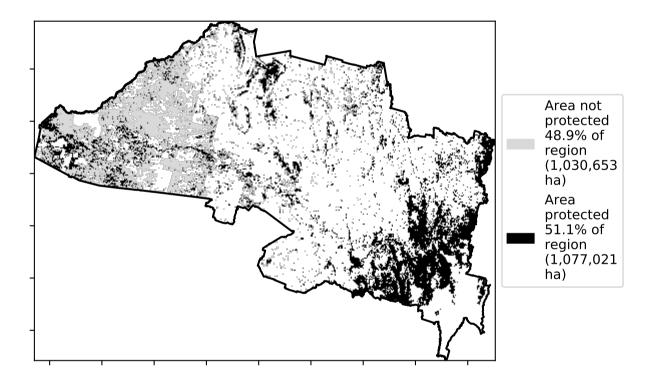
Grazing

Land use and forest cover

Proportion of each land class in area



% Area protected from water erosion (>70%)



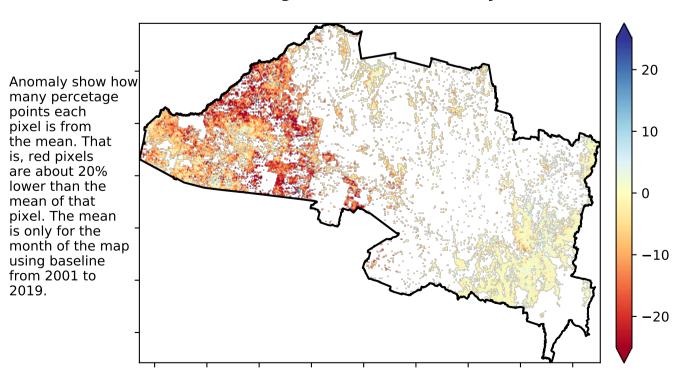
% Area protected from wind erosion (>50%)

Area not

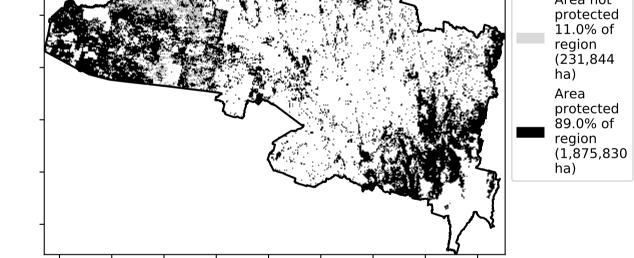
51.1%

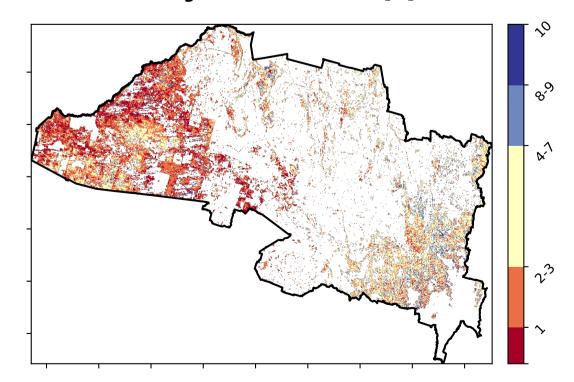
71%-100%

Total Vegetation Cover Anomaly [%]

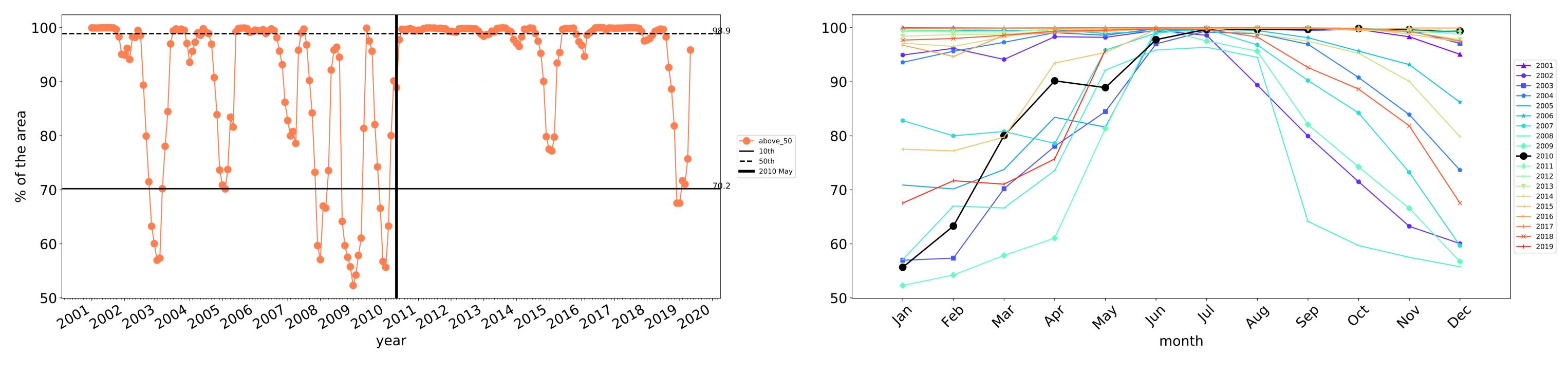


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.



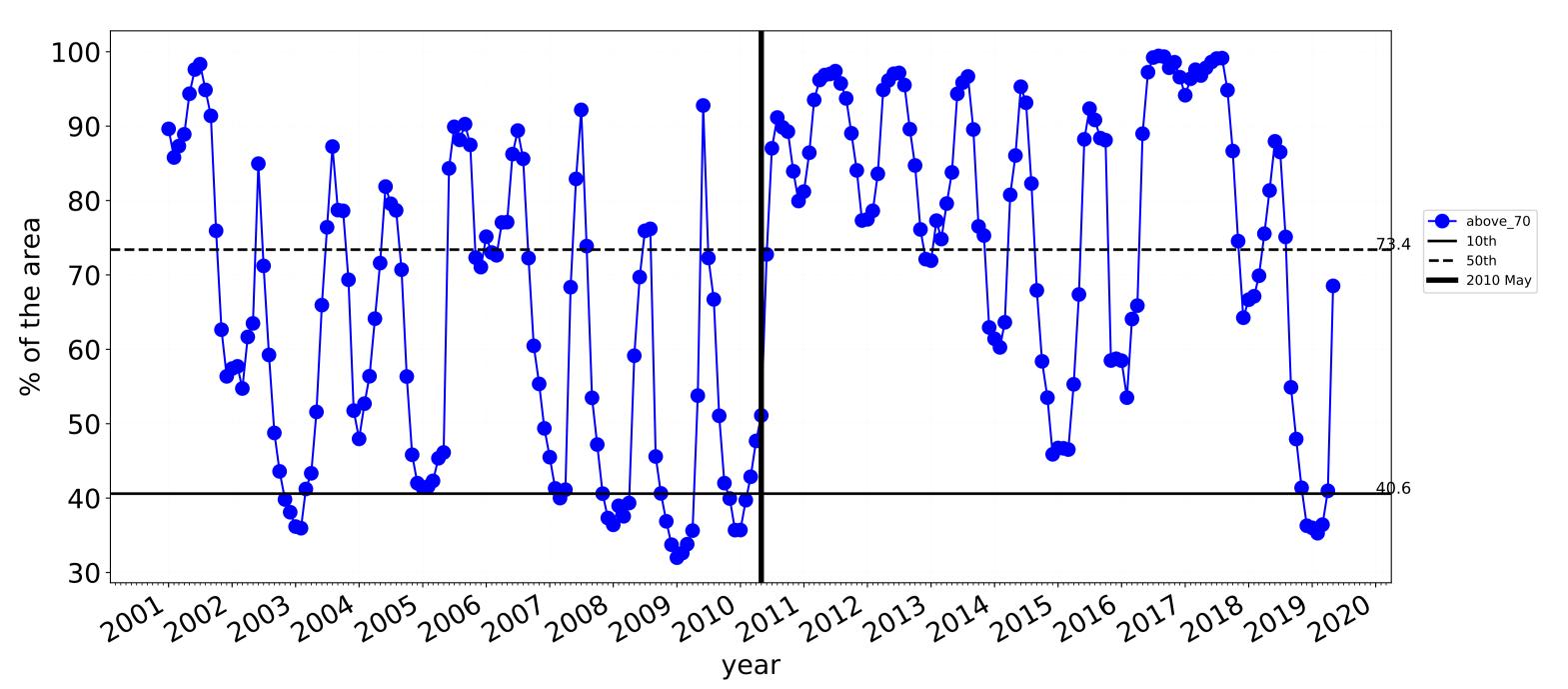






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

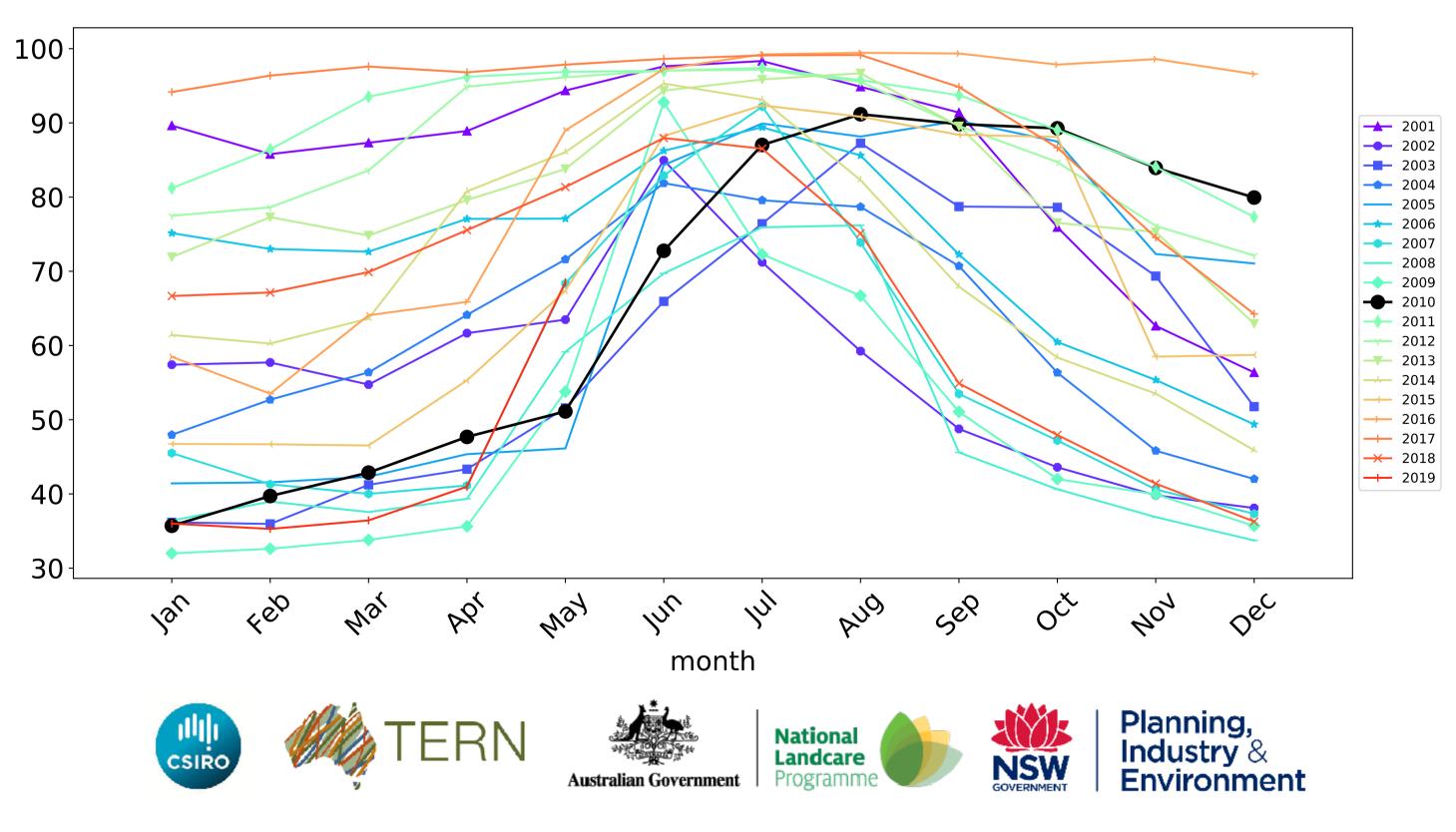




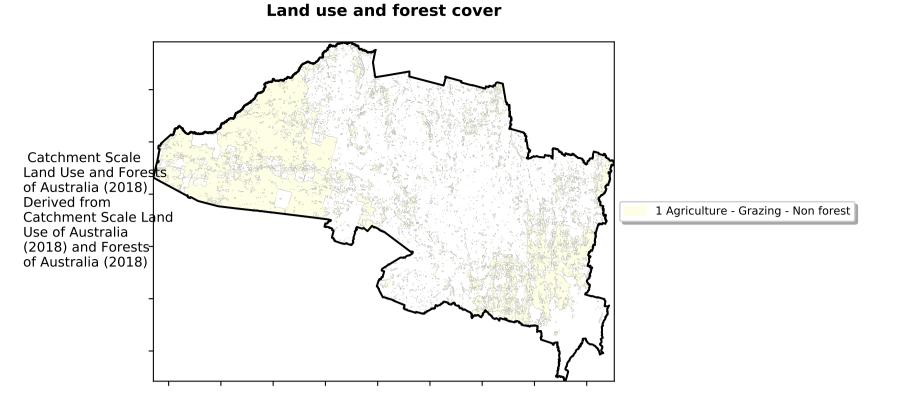
Grazing timeseries



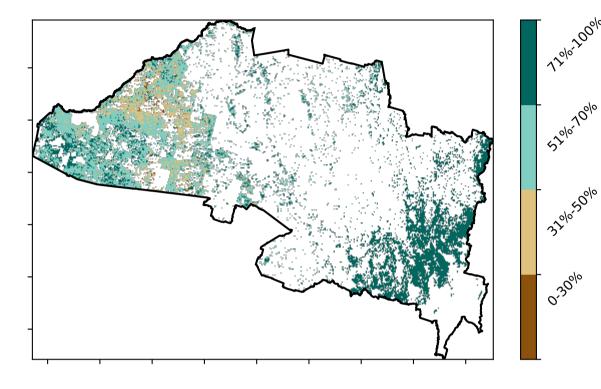
Wind erosion historical monthly area protected (Total Veg Cov >50%)



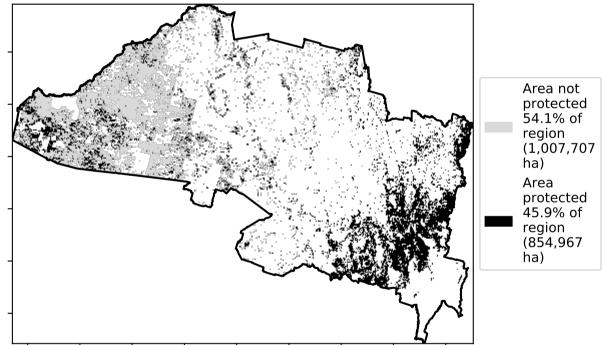
Grazing non forest



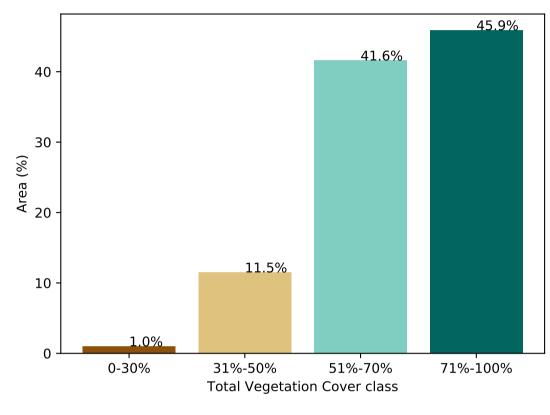
Total Vegetation Cover [%]



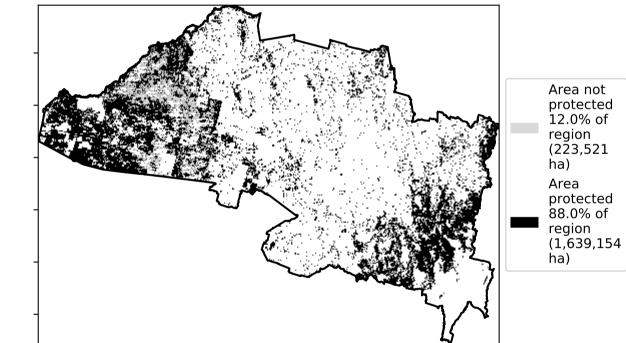
% Area protected from water erosion (>70%)



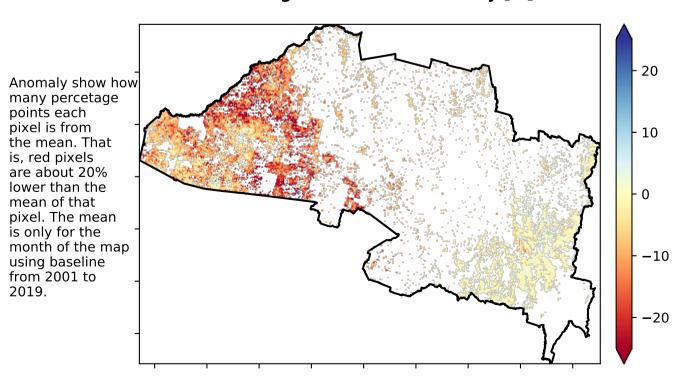
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

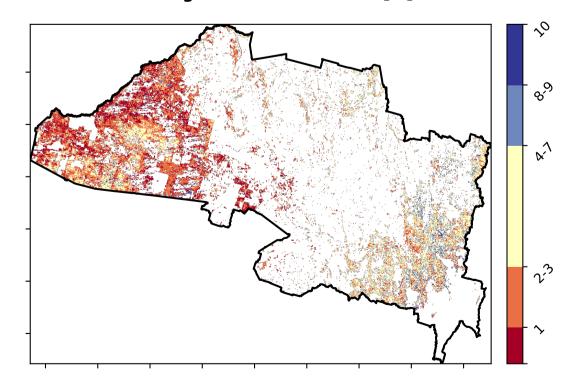


Total Vegetation Cover Anomaly [%]



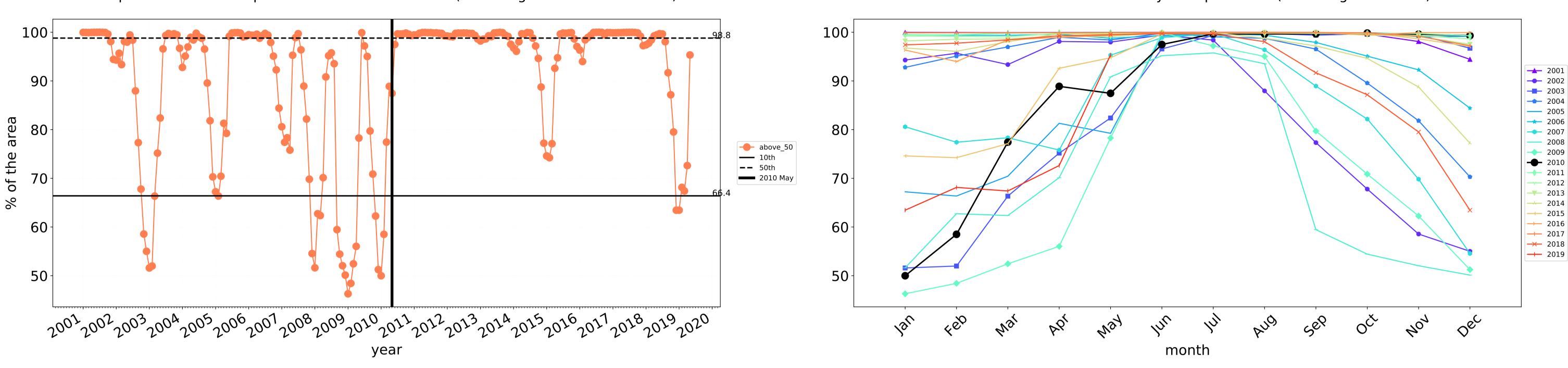
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



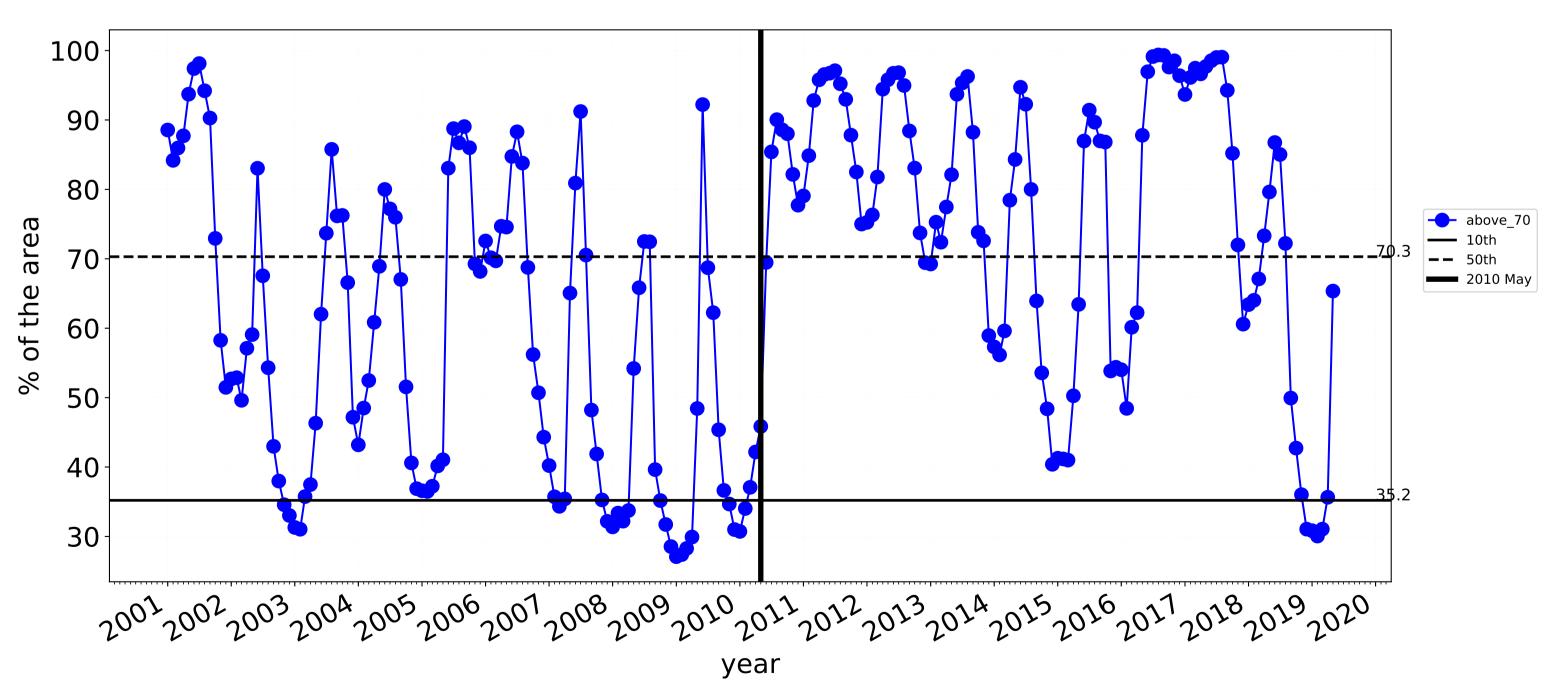


12



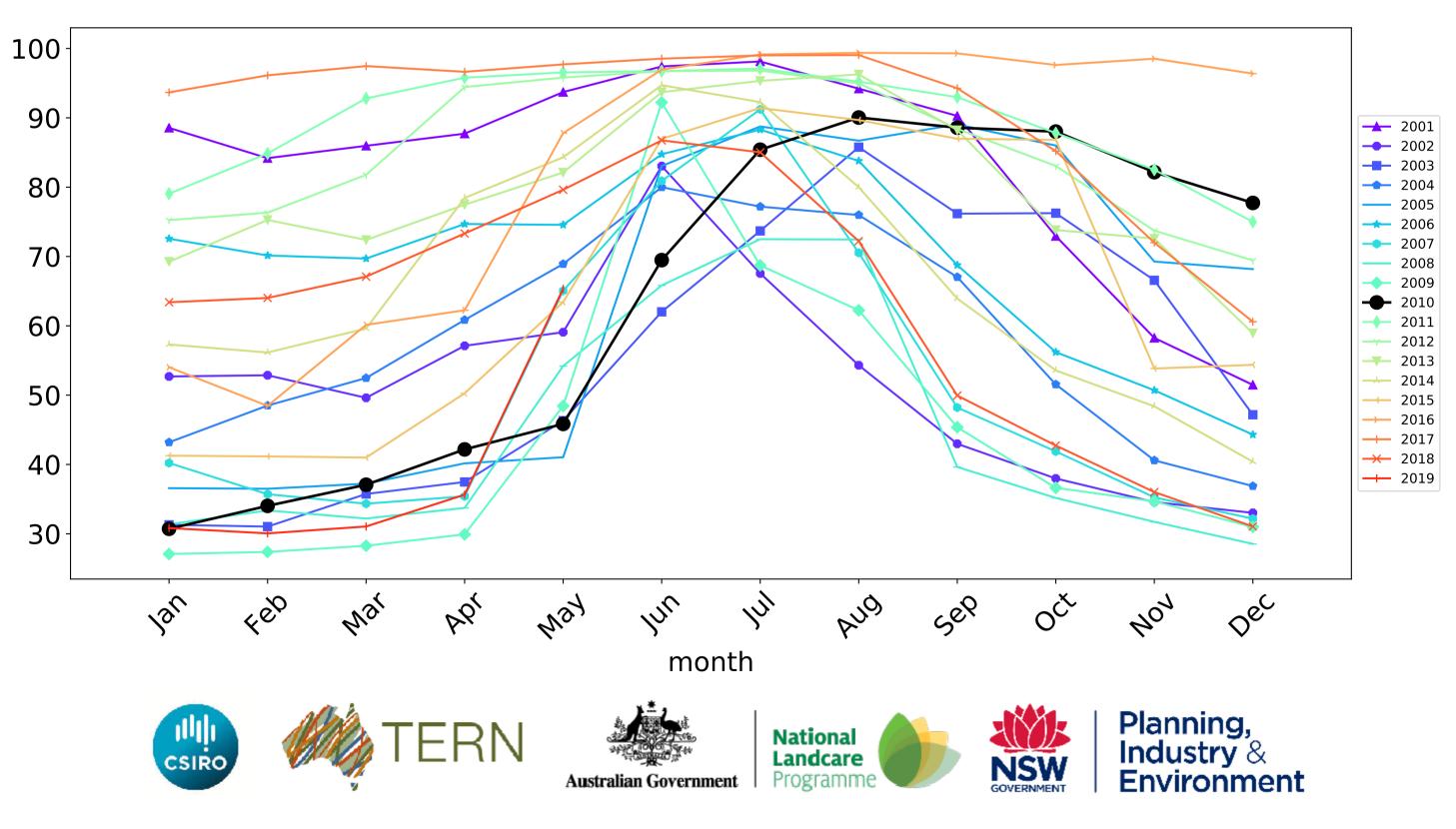
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



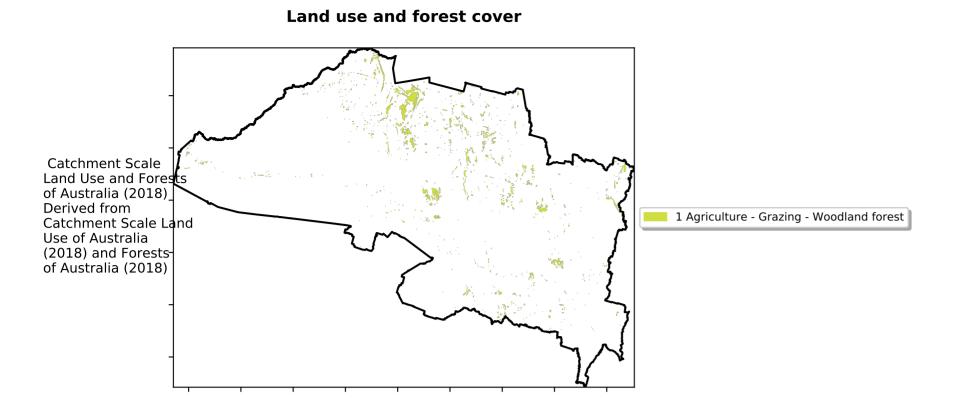


Grazing non forest timeseries

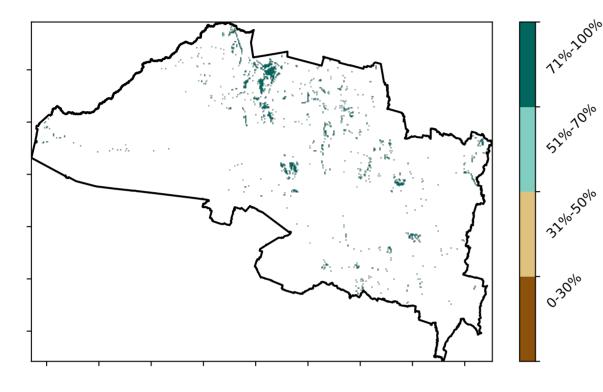
Water erosion historical monthly area protected (Total Veg Cov>70%)



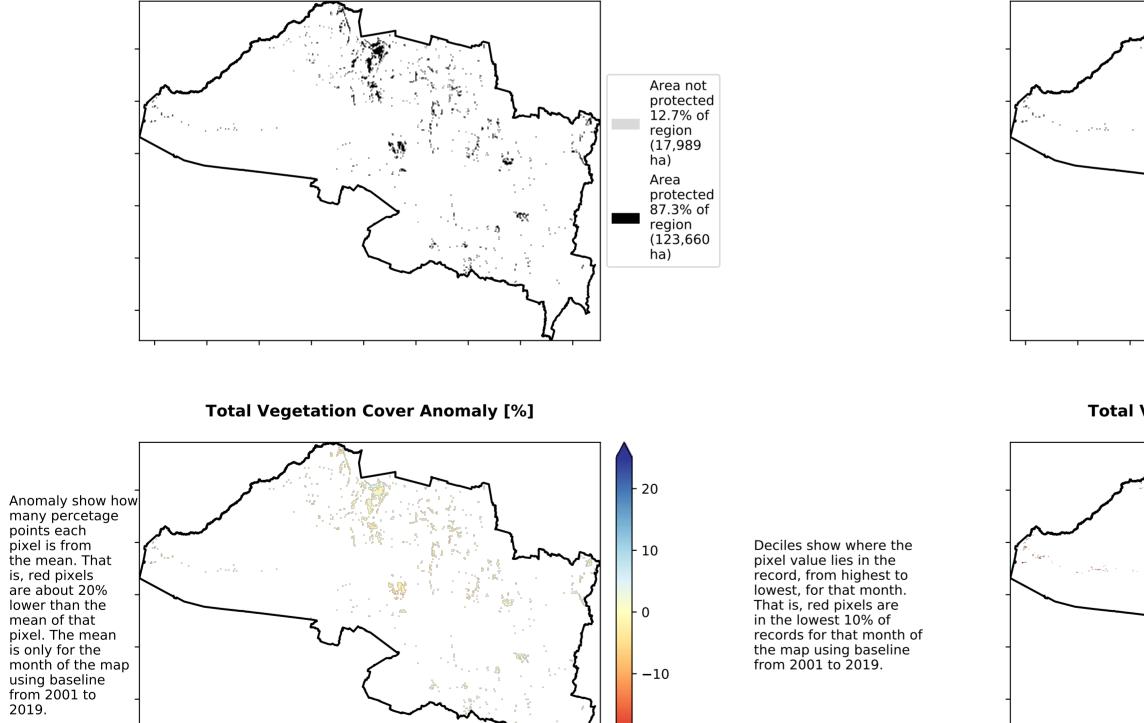
Grazing Woodland forest



Total Vegetation Cover [%]



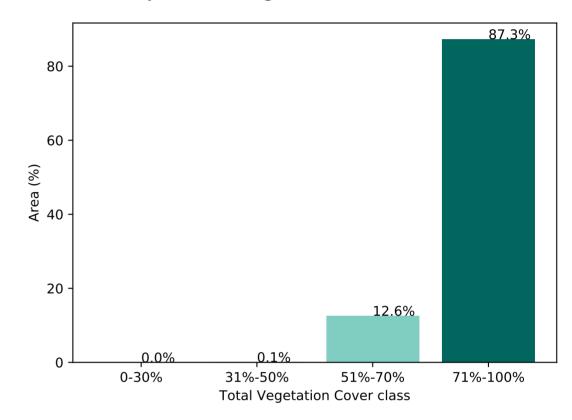
% Area protected from water erosion (>70%)



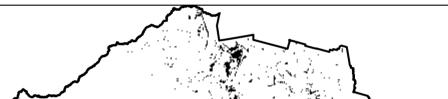
-10

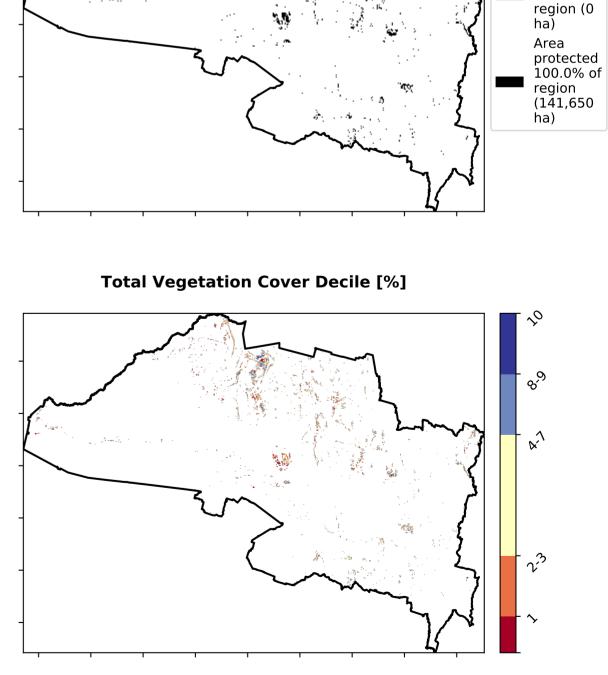
-20



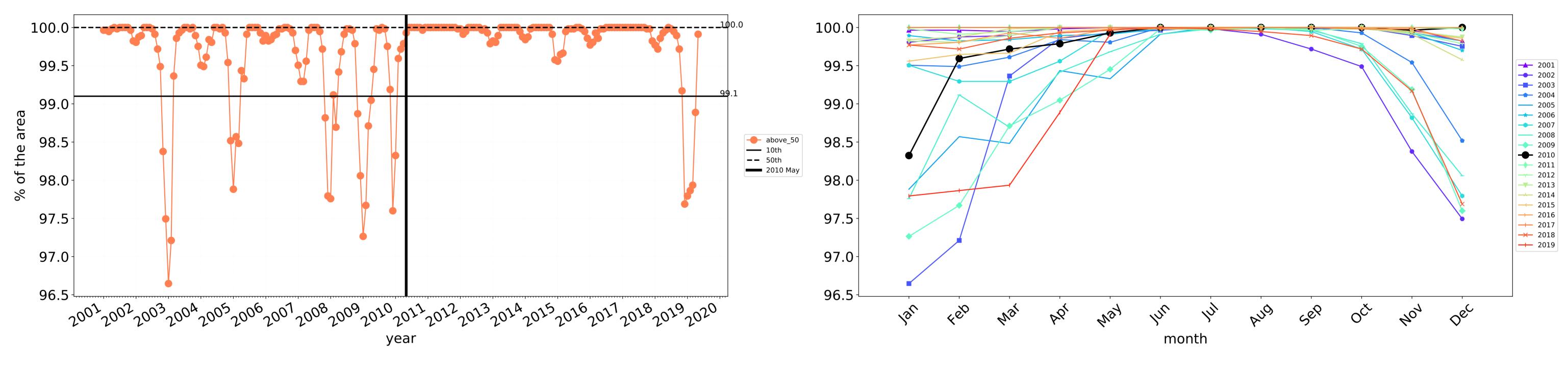


% Area protected from wind erosion (>50%)



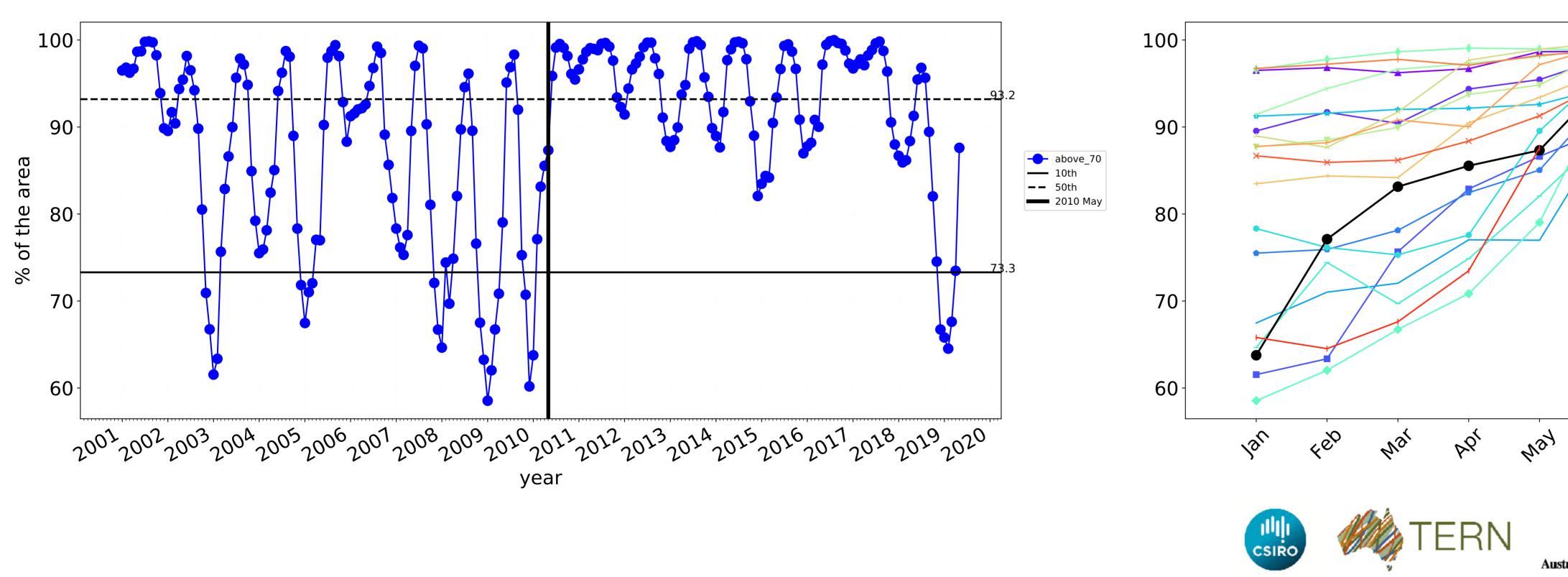


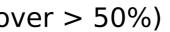




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





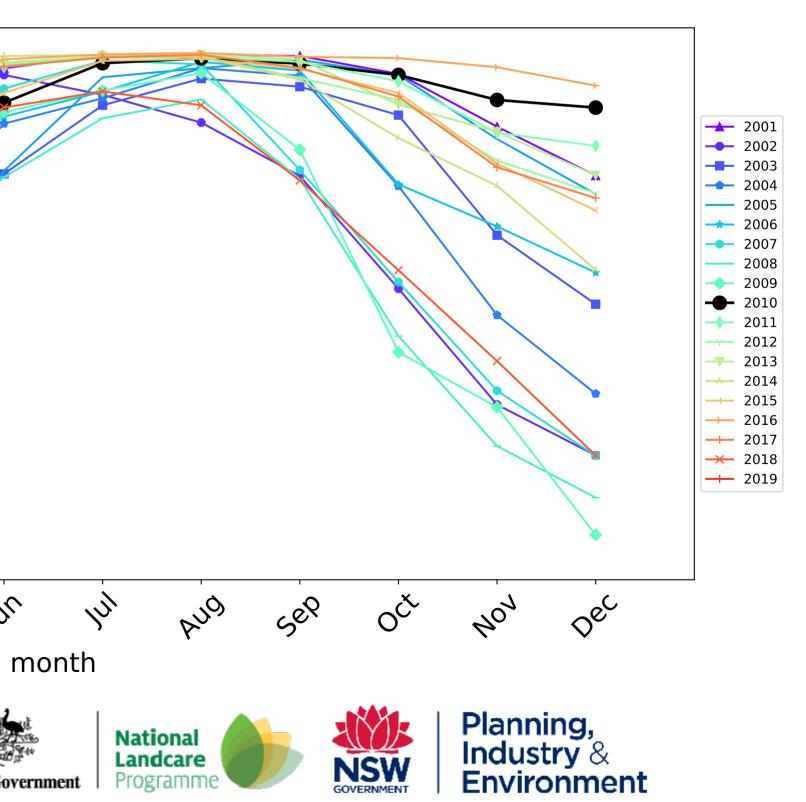


Wind erosion historical monthly area protected (Total Veg Cov >50%)

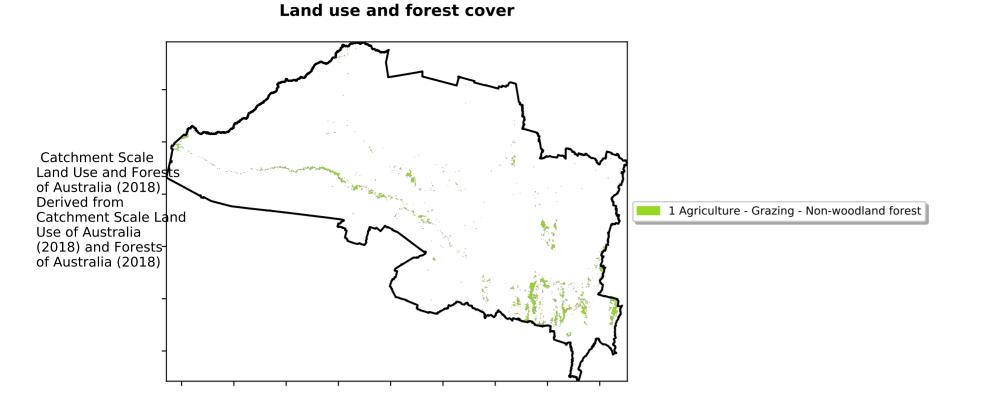
Water erosion historical monthly area protected (Total Veg Cov>70%)

In

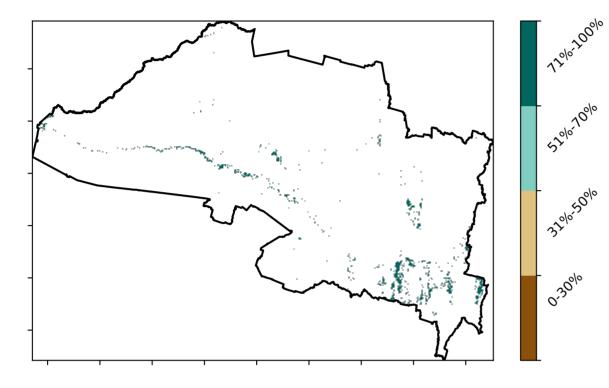
Australian Government



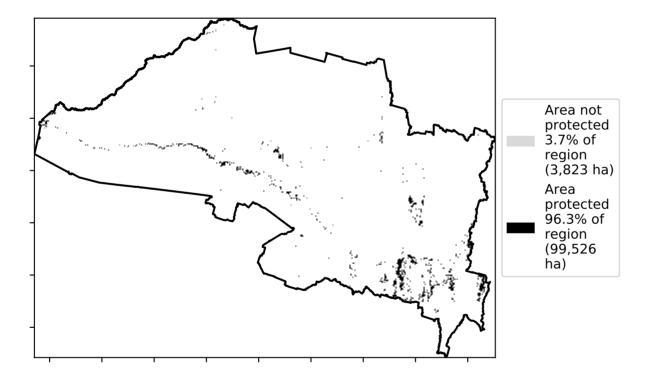
Grazing - Forest (non woodland)



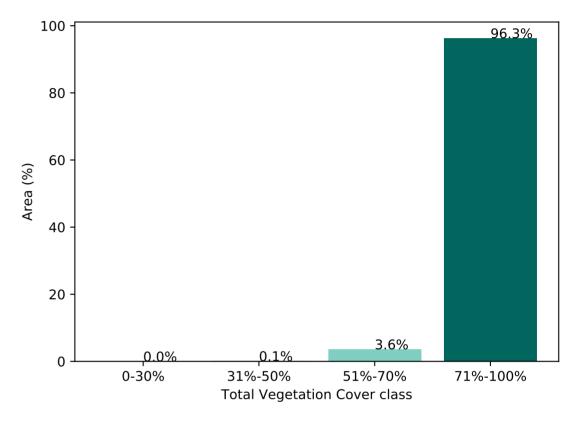
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



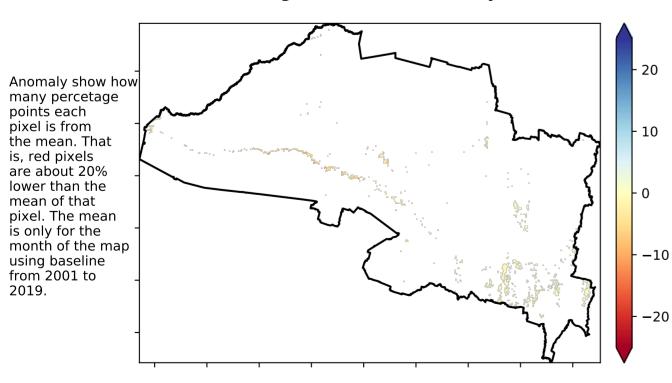
Proportion of vegetation cover class in area



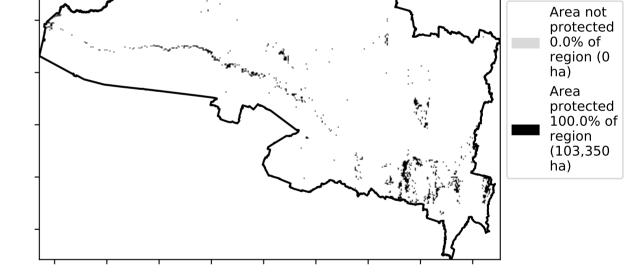
% Area protected from wind erosion (>50%)

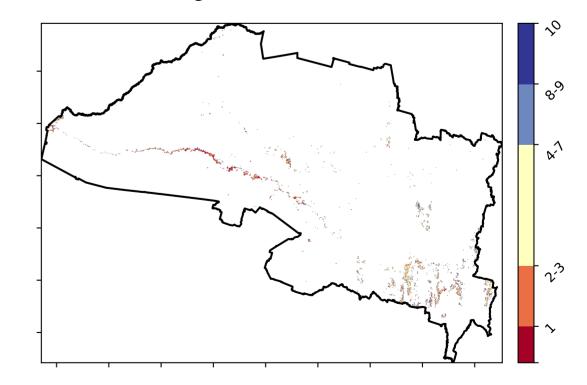


Total Vegetation Cover Anomaly [%]

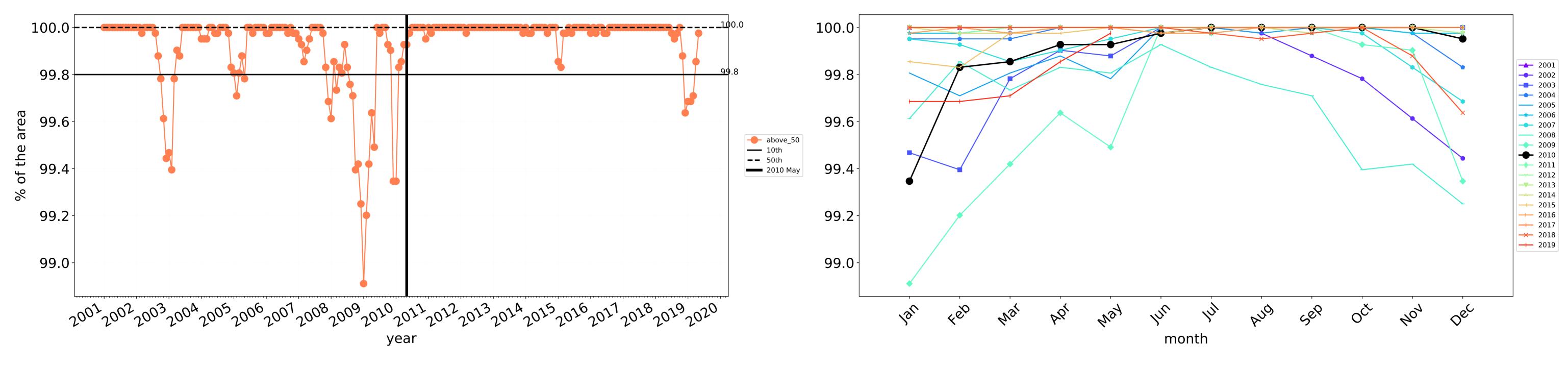


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline the map using baseline from 2001 to 2019.



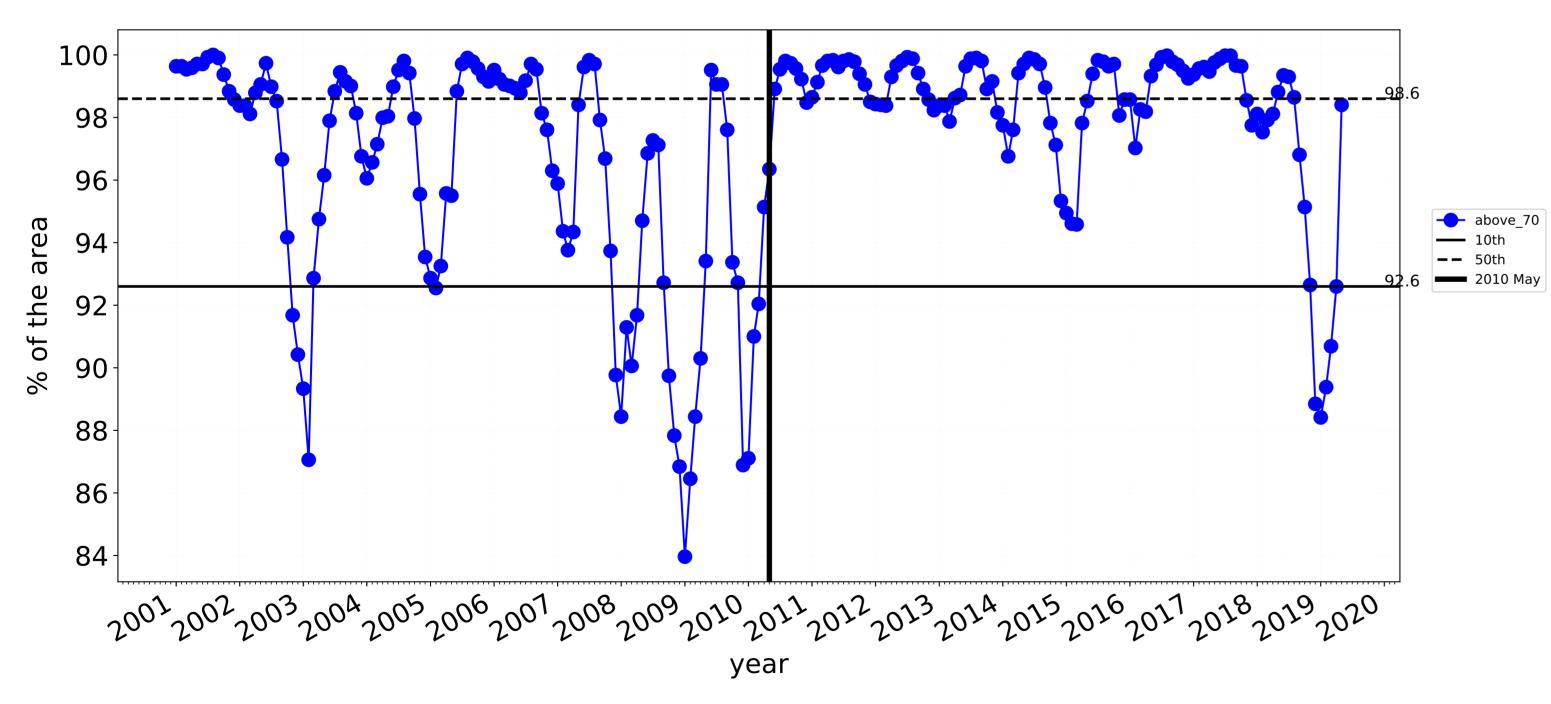


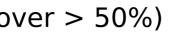




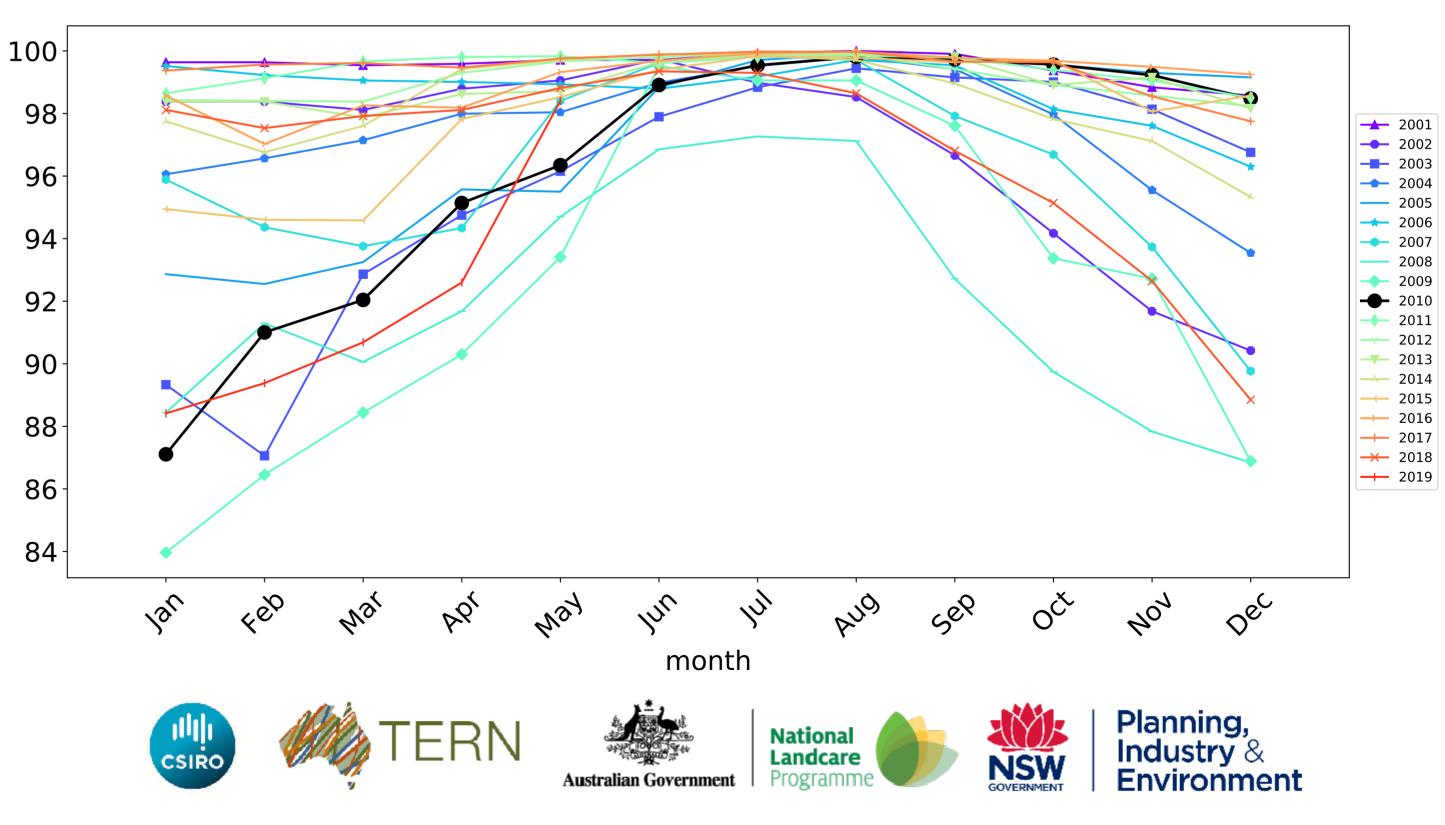
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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

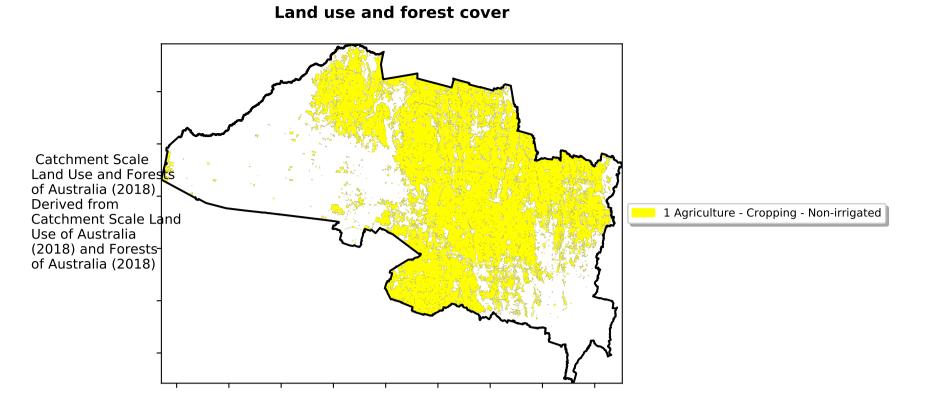




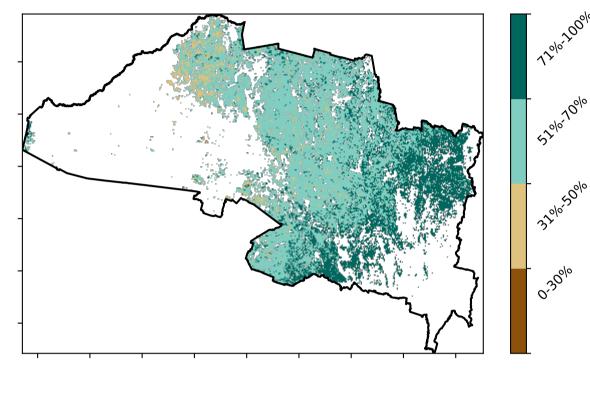
Wind erosion historical monthly area protected (Total Veg Cov >50%)



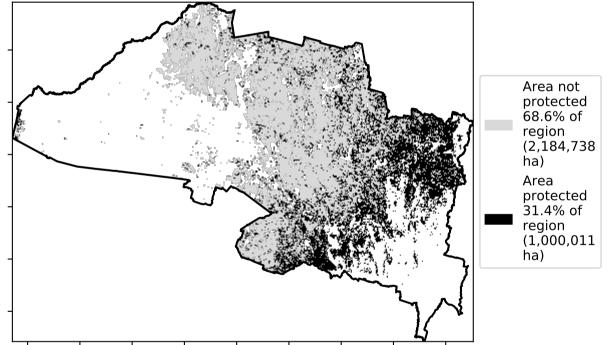
Cropping



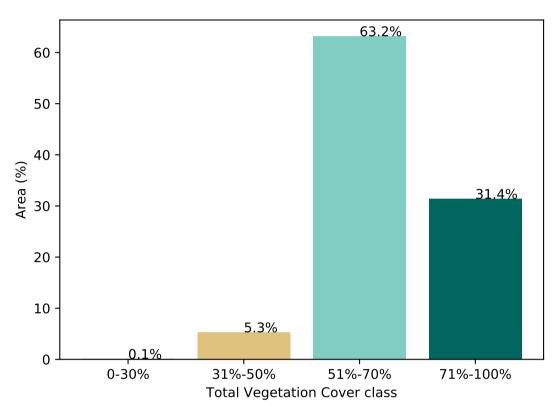
Total Vegetation Cover [%]



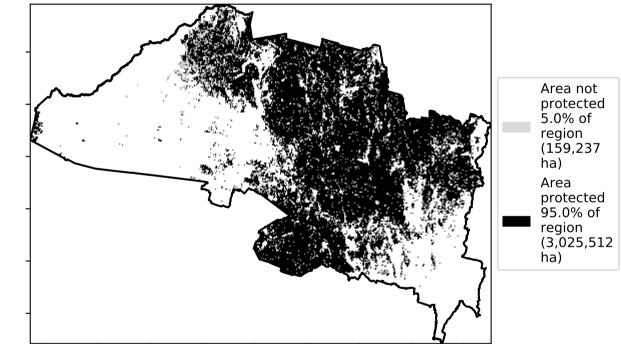
% Area protected from water erosion (>70%)



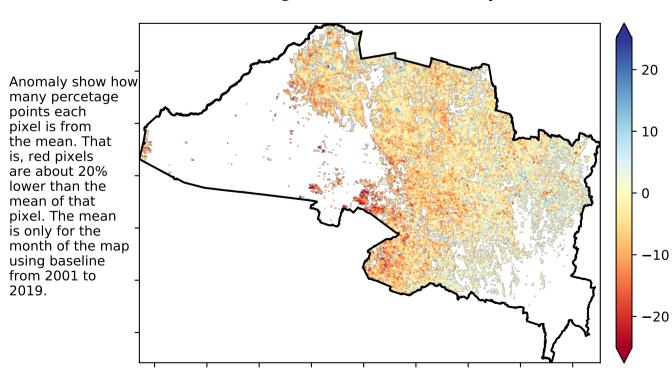




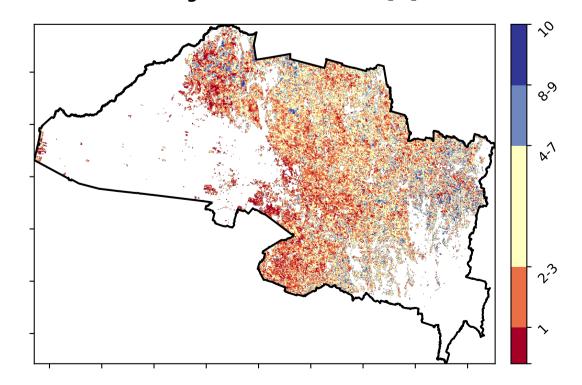
% Area protected from wind erosion (>50%)



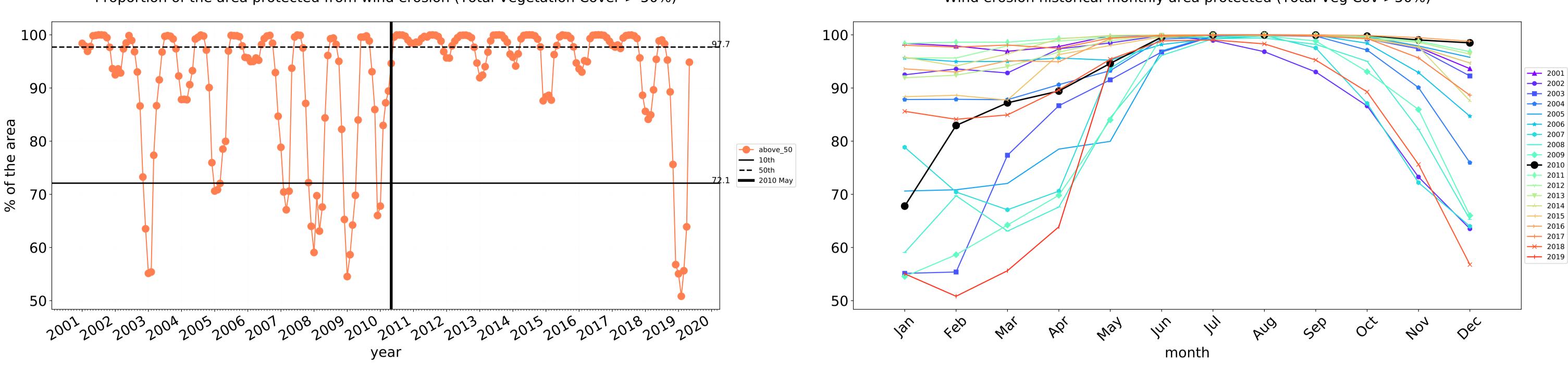
Total Vegetation Cover Anomaly [%]



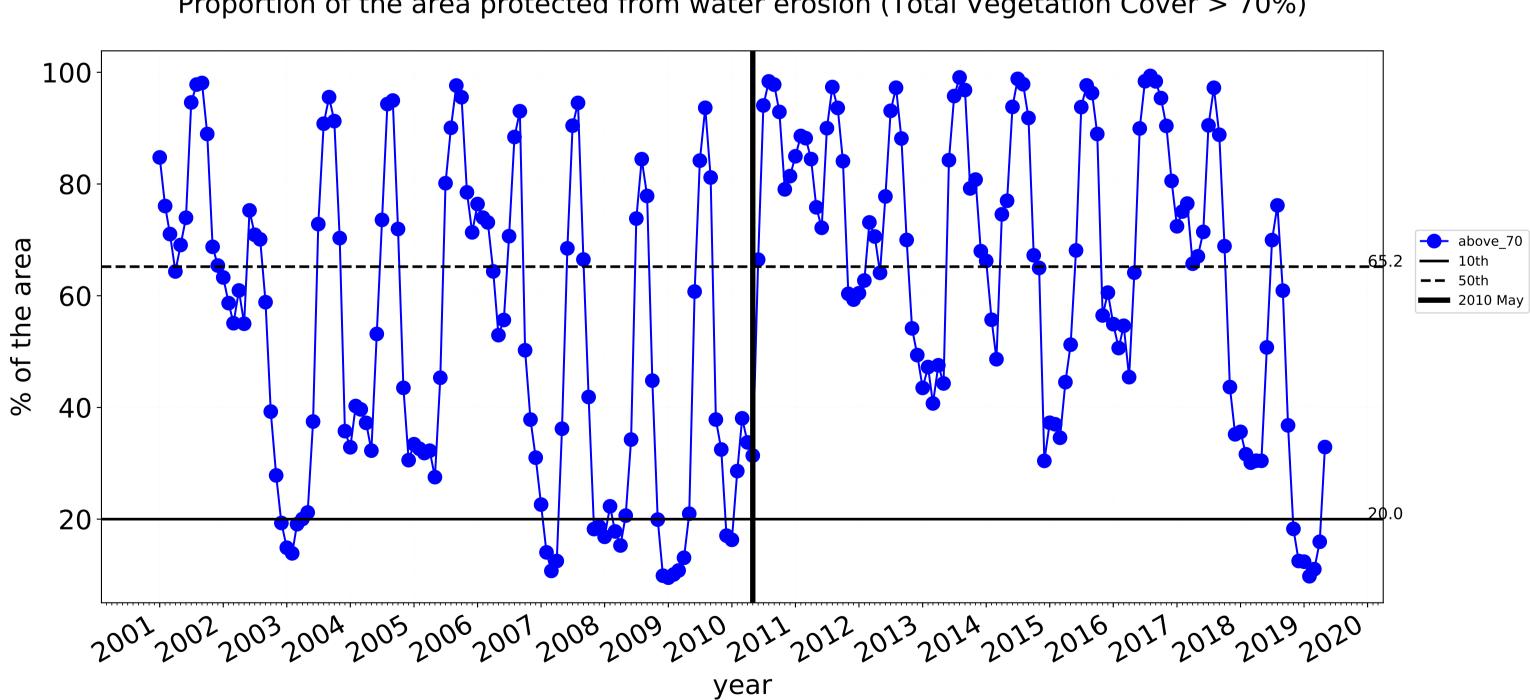
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline the map using baseline from 2001 to 2019.







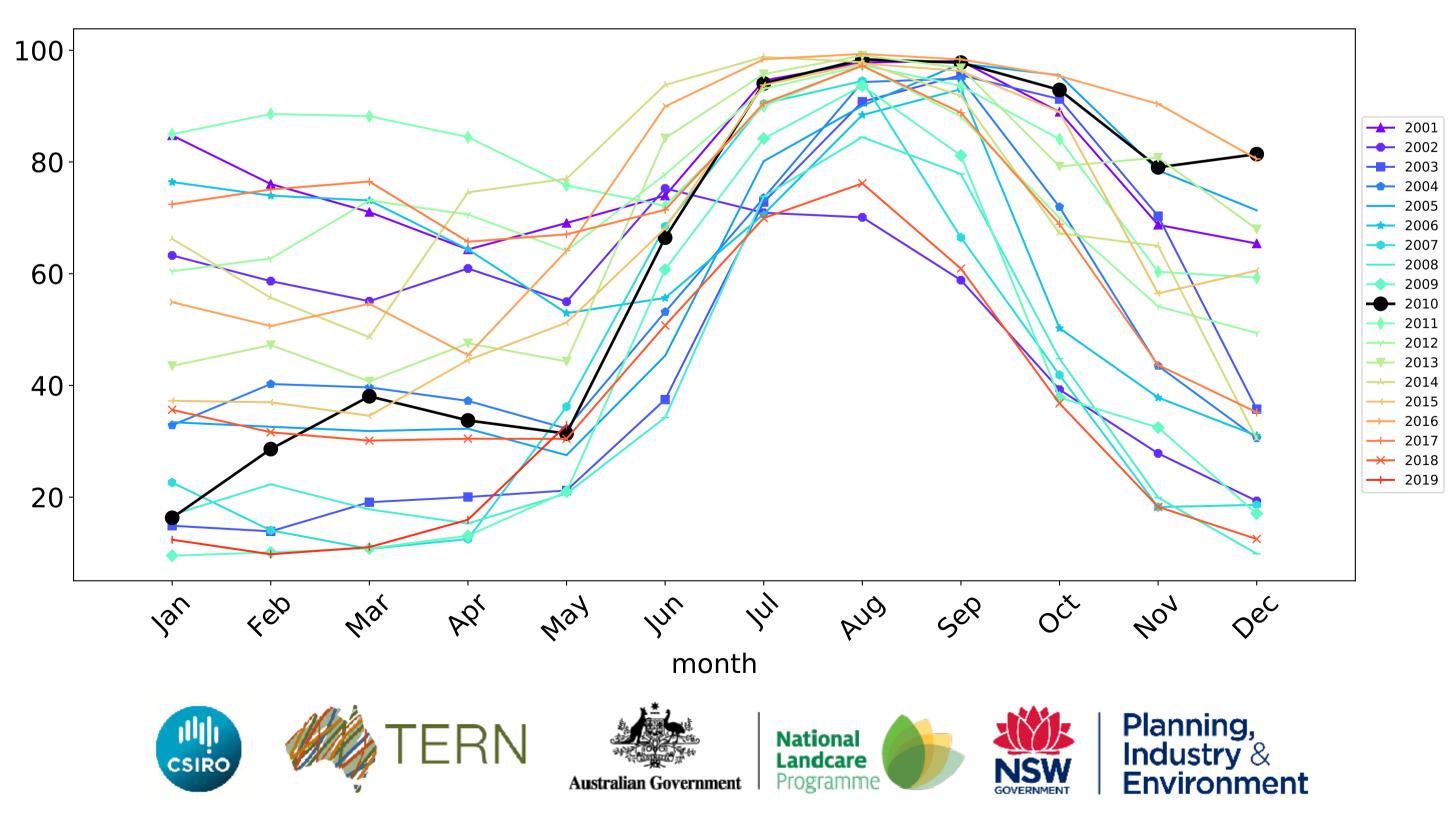
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

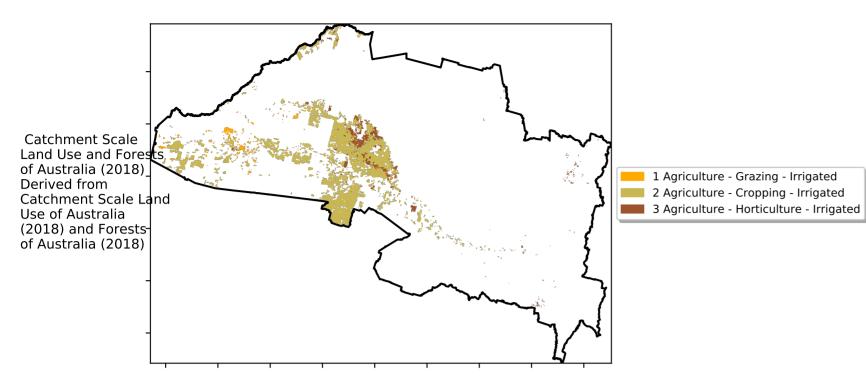
Cropping timeseries

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

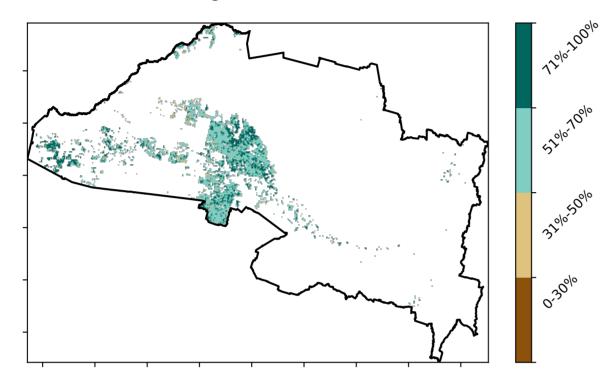


Irrigation

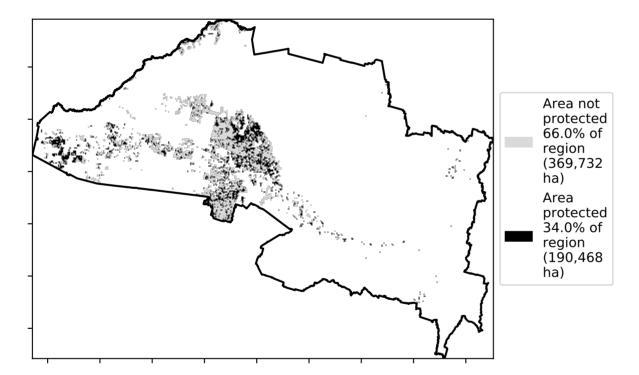
Land use and forest cover

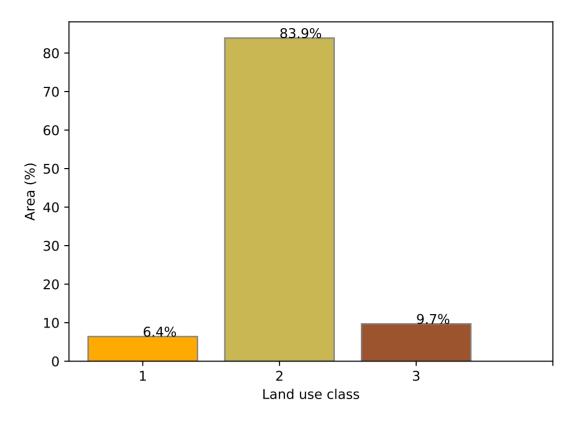


Total Vegetation Cover [%]



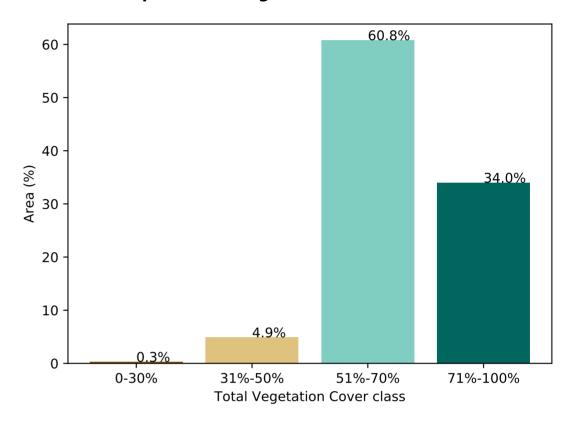
% Area protected from water erosion (>70%)



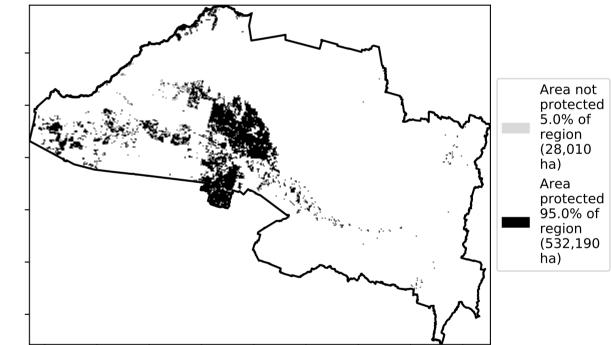


Proportion of each land class in area

Proportion of vegetation cover class in area

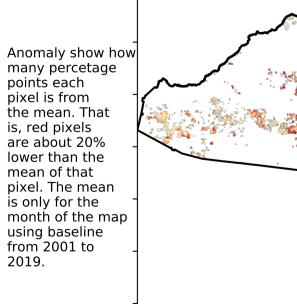


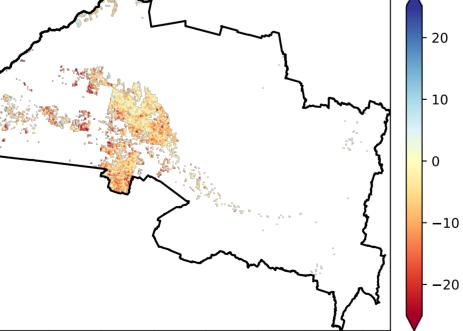
% Area protected from wind erosion (>50%)



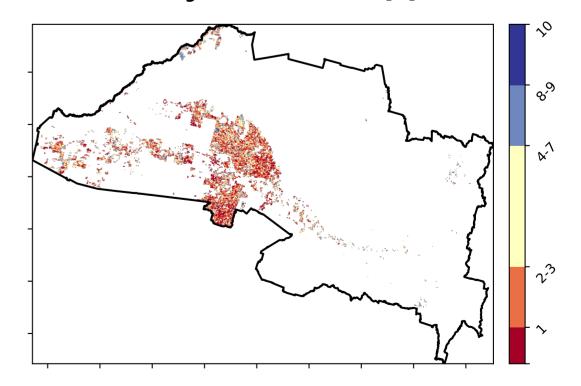


Total Vegetation Cover Anomaly [%]

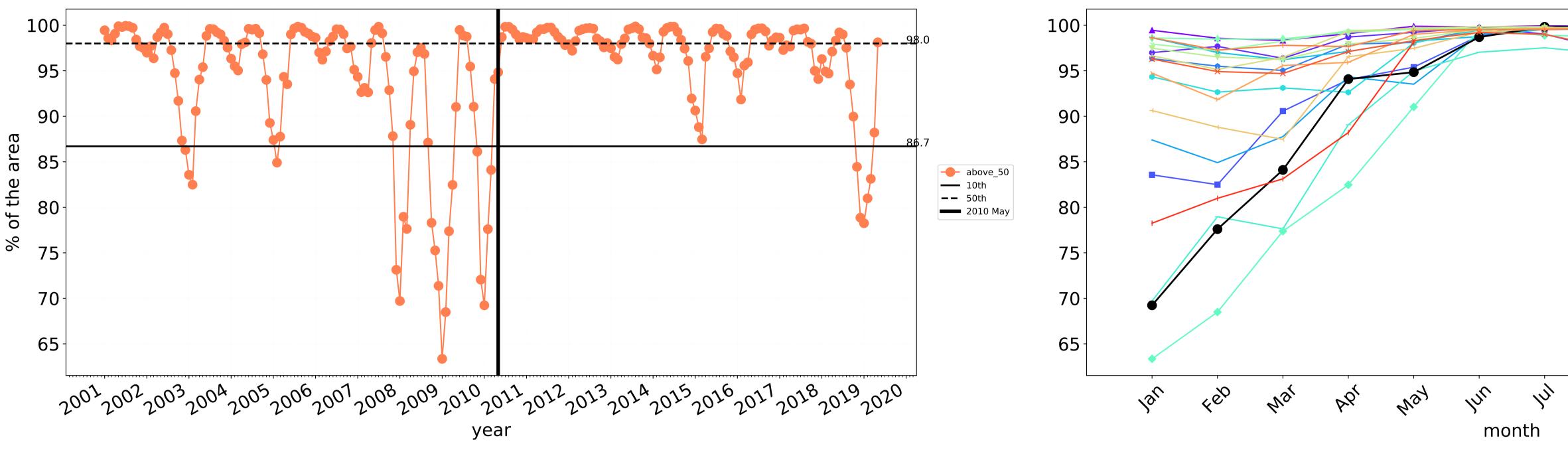




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

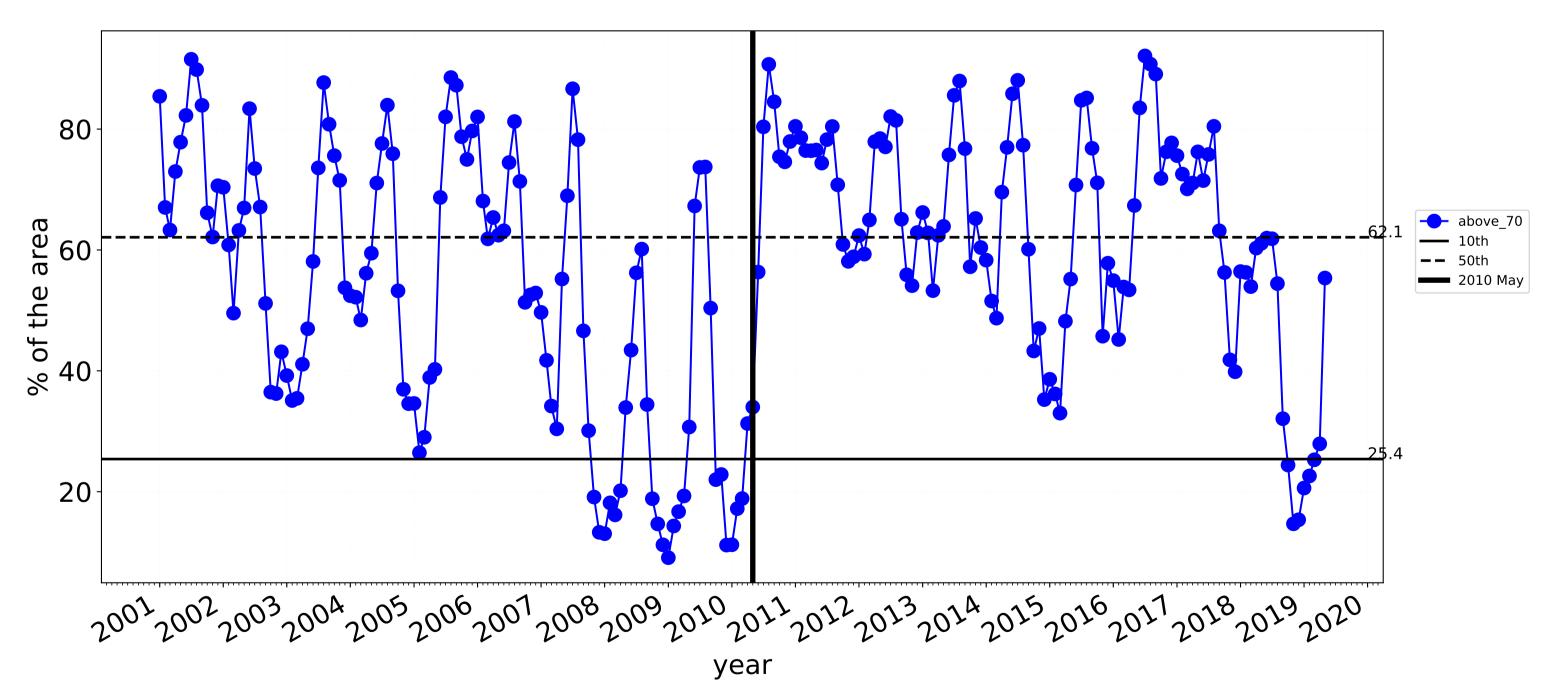






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

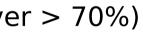
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



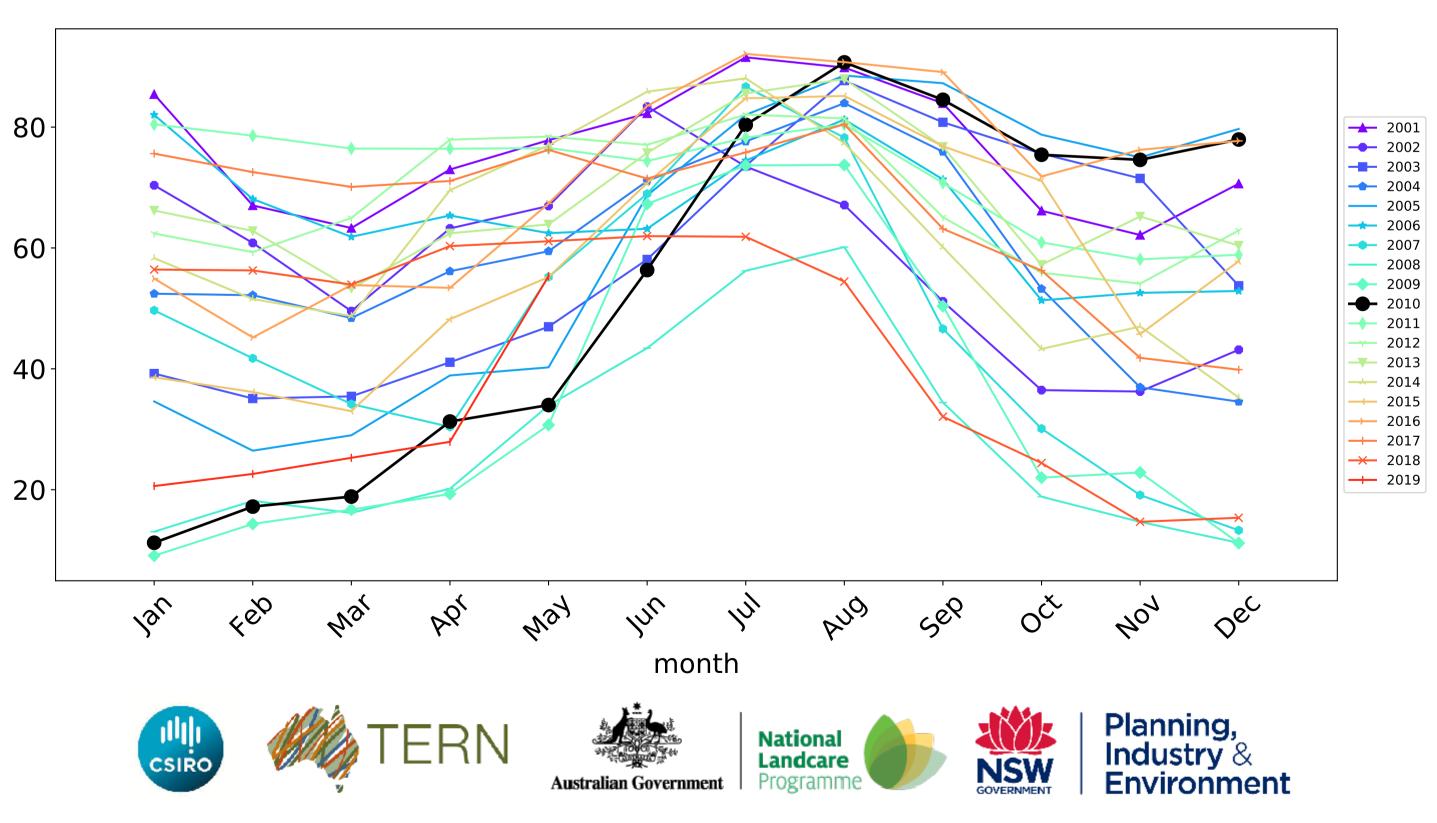
Irrigation timeseries



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

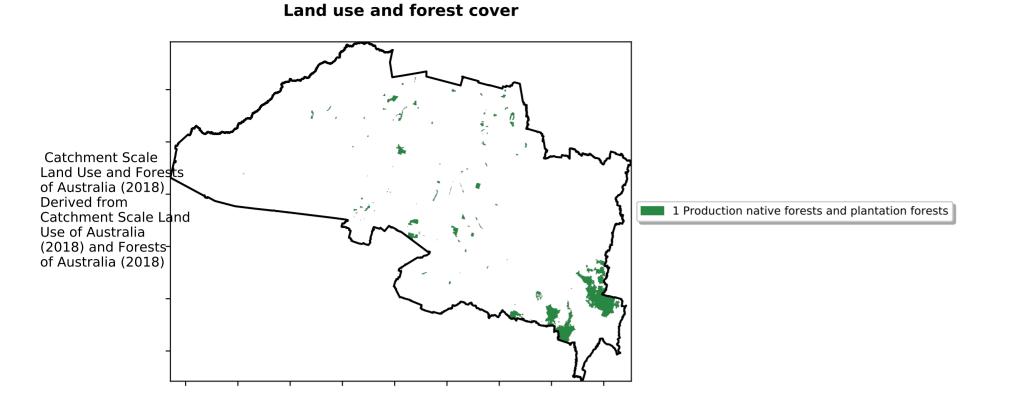


Water erosion historical monthly area protected (Total Veg Cov>70%)

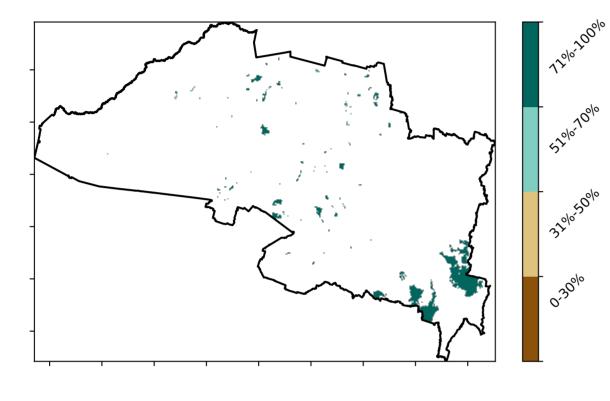


___ 2001 --- 2002 ---- 2003 **---** 2004 2005 **----** 2006 --- 2007 2008 **---** 2009 ---- 2010 --- 2011 2012 **—** 2013 <mark>→</mark> 2014 **→** 2015 **→** 2016 --- 2017 **→** 2018 **→** 2019 Dec AUG Sel 401 OČ

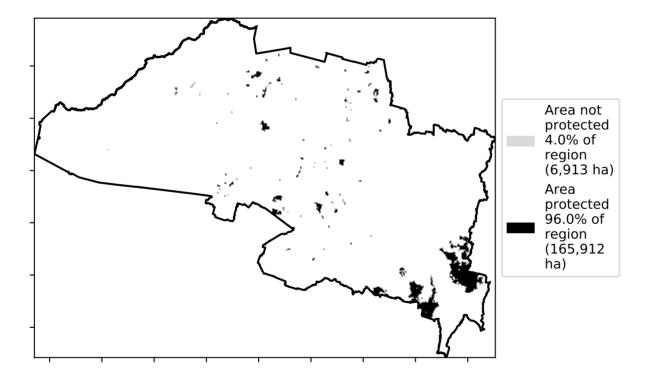
Production native forests and plantation forests



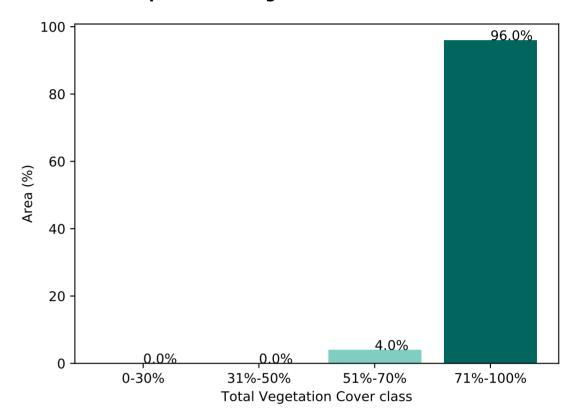
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



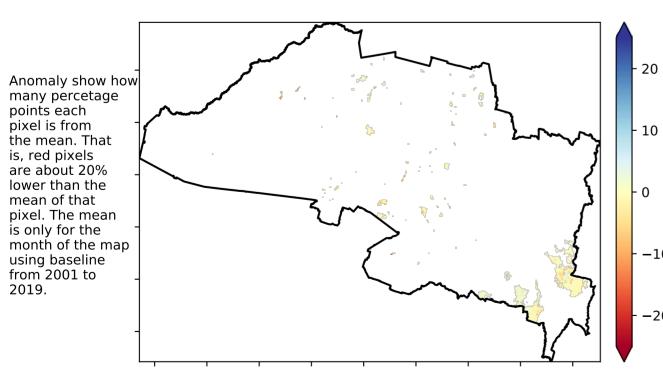




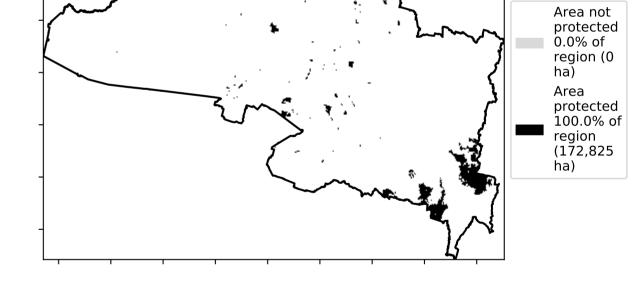
% Area protected from wind erosion (>50%)



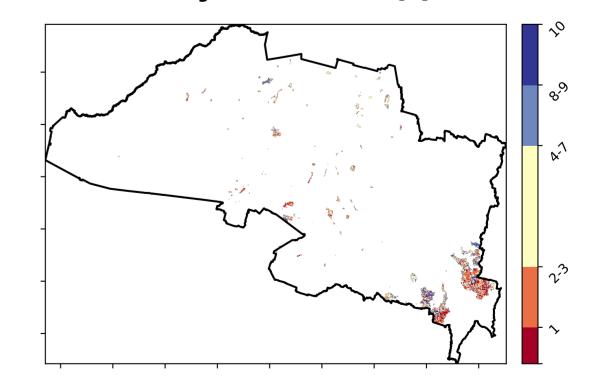
Total Vegetation Cover Anomaly [%]



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 [%]

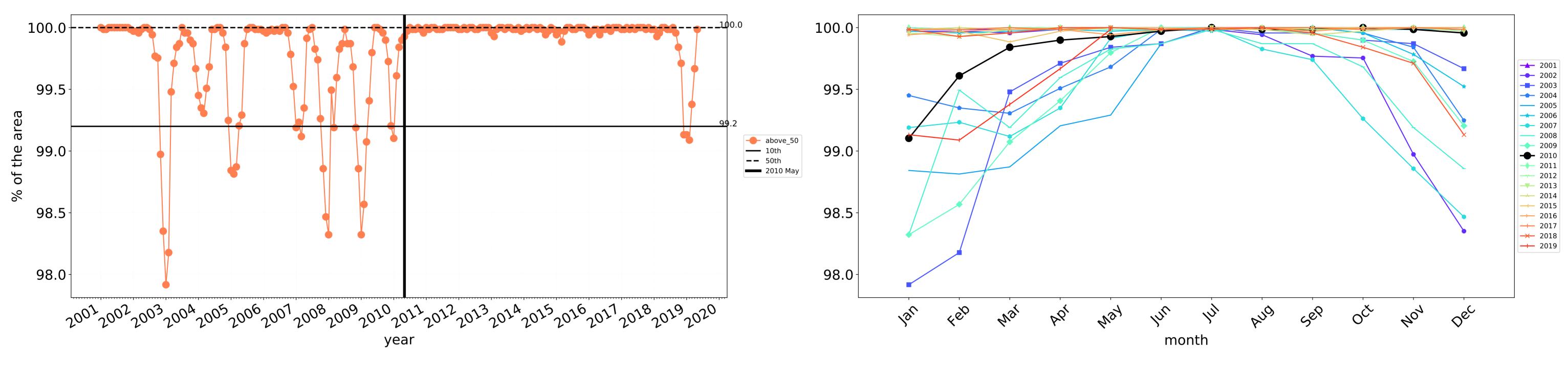




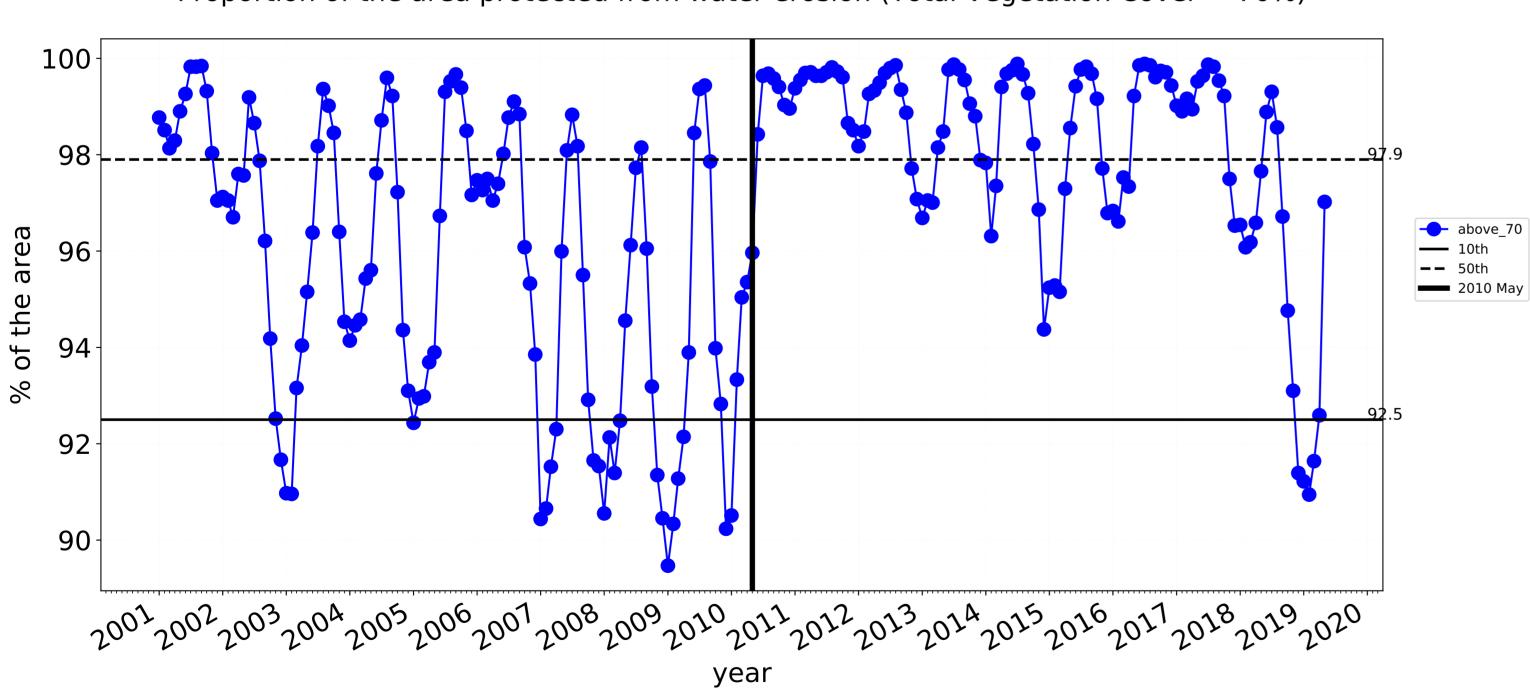
-10

-20

Production native forests and plantation forests timeseries

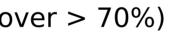


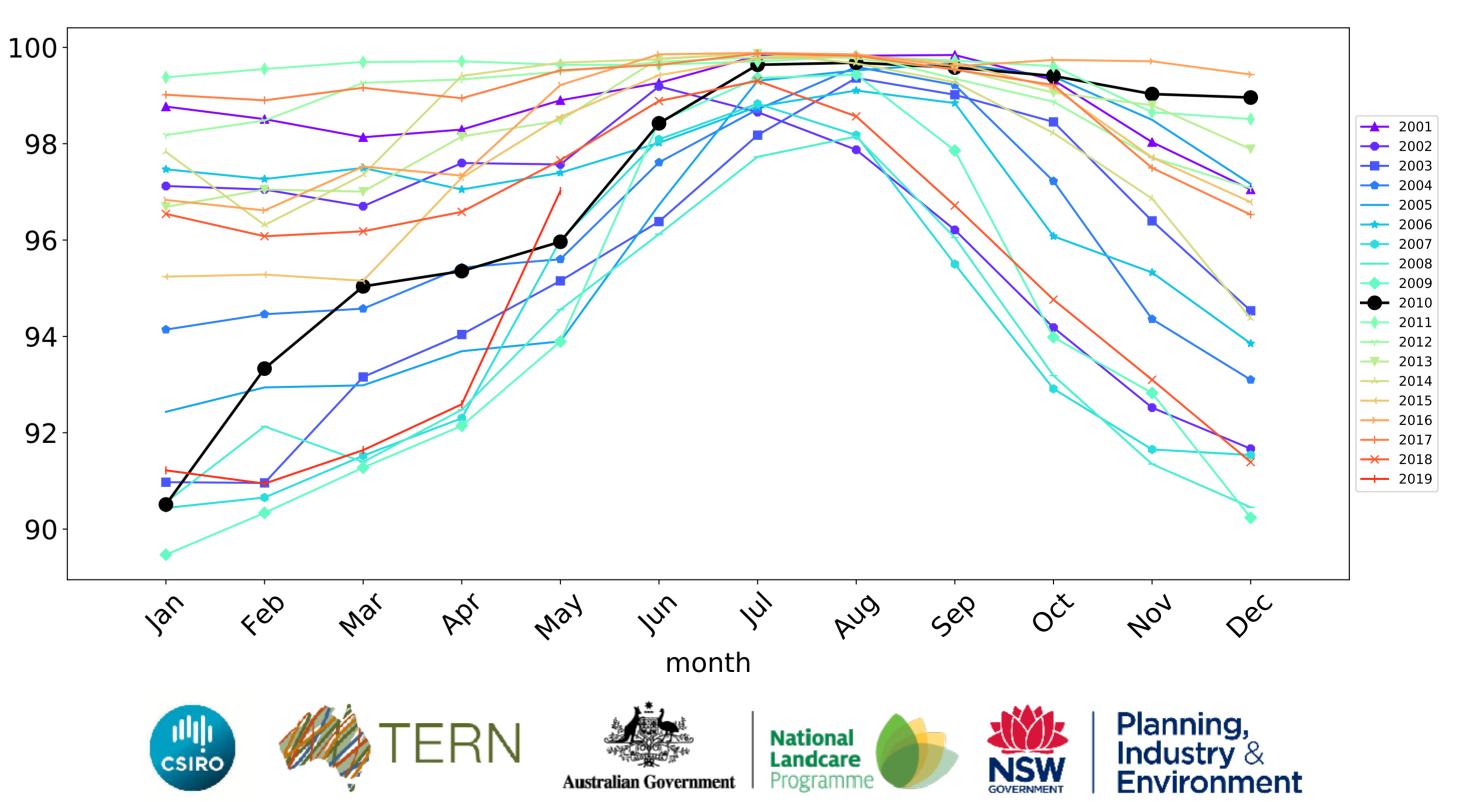
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

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





Riverina (6,613,050 ha and no data 95,285 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	6,613,050	99.6% 6,588,251	92.9% 6,146,686	42.6% 2,816,794	25.1% 1,658,324	10.5% 696,043	3.5% 229,449
Conservation and natural environments	316,350	99.9% 315,925	96.6% 305,475	81.8% 258,650	77.8% 246,125	62.7% 198,425	30.1% 95,200
Conservation and natural environments non forest	76,625	99.4% 76,200	85.8% 65,775	26.5% 20,275	18.7% 14,300	12.6% 9,675	5.2% 4,000
Conservation and natural environments Forest (non woodland)	195,225	100.0% 195,225	100.0% 195,200	99.8% 194,775	98.5% 192,325	86.5% 168,800	44.4% 86,725
Agriculture	5,854,450	99.6% 5,831,875	92.6% 5,419,750	38.7% 2,267,550	20.4% 1,191,700	6.1% 354,975	0.8% 46,975
Grazing	2,107,675	99.1% 2,087,850	88.9% 1,873,850	51.1% 1,077,325	35.1% 740,500	14.1% 296,900	2.0% 43,050
Grazing non forest	1,862,675	98.9% 1,842,850	87.5% 1,629,025	45.9% 854,050	30.7% 572,125	11.6% 215,675	1.3% 24,825
Grazing Woodland forest	141,650	100.0% 141,650	99.9% 141,550	87.3% 123,700	58.8% 83,300	19.1% 27,000	2.6% 3,650
Grazing - Forest (non woodland)	103,350	100.0% 103,350	99.9% 103,275	96.3% 99,575	82.3% 85,075	52.5% 54,225	14.1% 14,575
Cropping	3,184,750	100.0% 3,183,475	94.6% 3,013,600	31.4% 999,350	13.2% 418,950	1.7% 54,800	0.1% 2,975
Irrigation	560,200	99.7% 558,725	94.8% 531,325	34.0% 190,500	5.7% 32,125	0.6% 3,225	0.2% 950
Production native forests and plantation forests	172,825	100.0% 172,775	99.9% 172,700	96.0% 165,850	89.8% 155,125	71.1% 122,875	47.3% 81,800

