Total vegetation cover soil protection Region:NRM Condamine QLD

Date: May 2017

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:

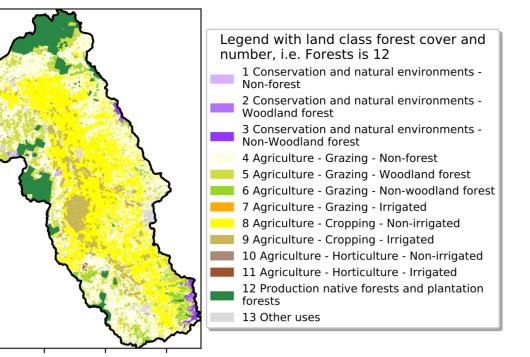
- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

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



Vegetation Cover May 2017

Land use and forest cover



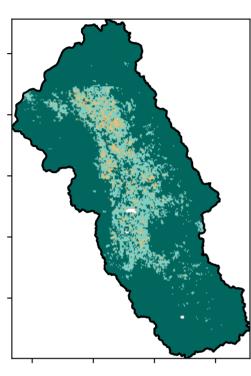
12º101001

52% 70%

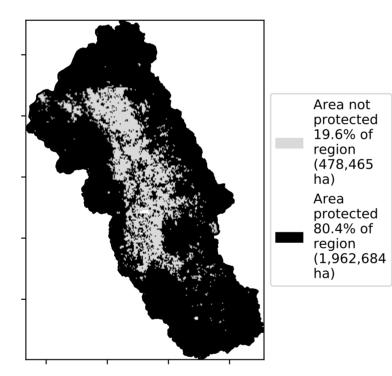
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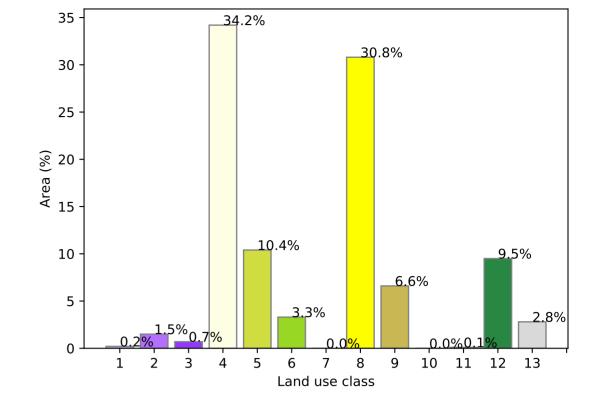
0.30%

Total Vegetation Cover [%]

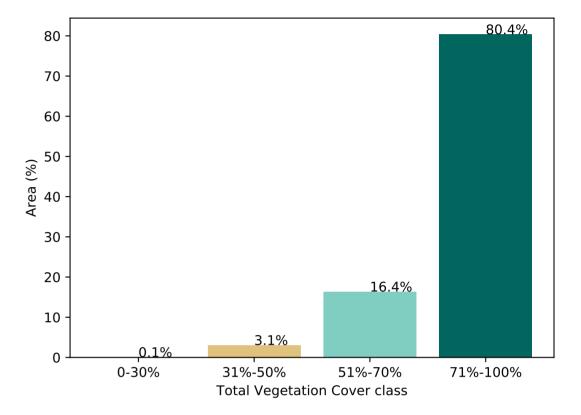


% Area protected from water erosion (>70%)

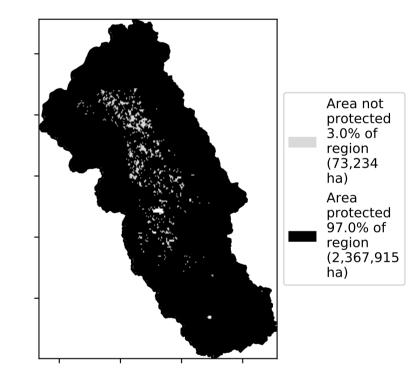




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Proportion of each land class in area

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.

Catchment Scale

of Australia (2018)

(2018) and Forests

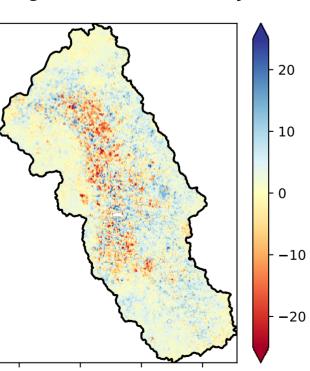
of Australia (2018)

Derived from

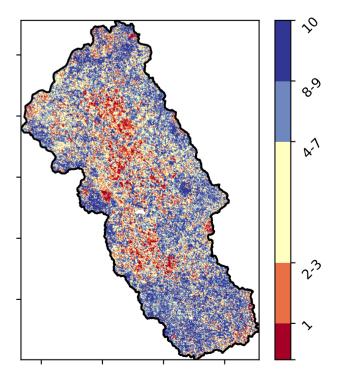
Use of Australia

Land Use and Forests

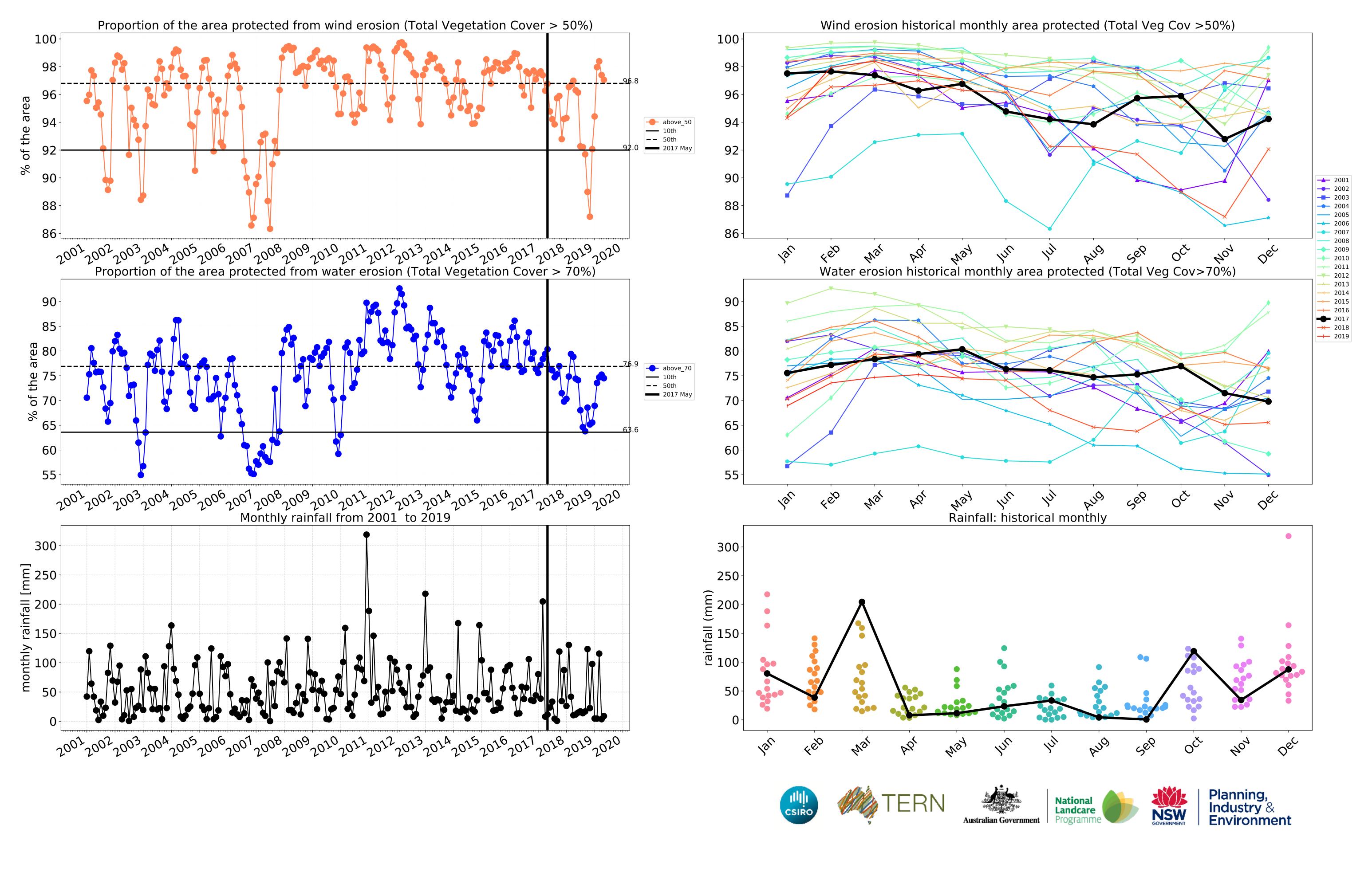
Catchment Scale Land



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 [%]**

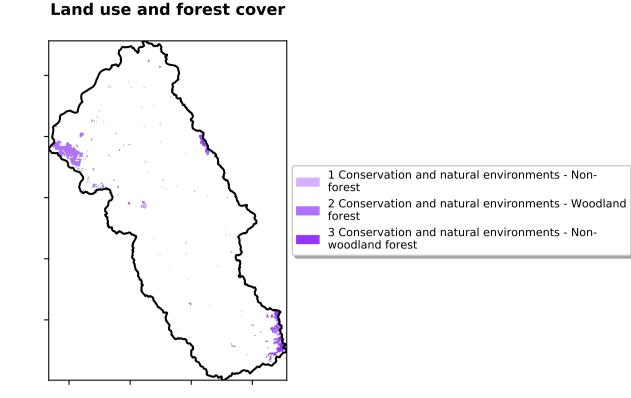




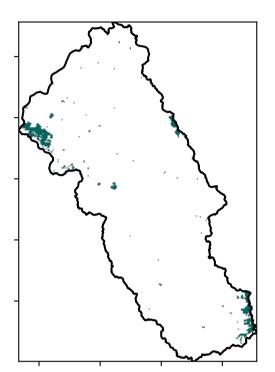


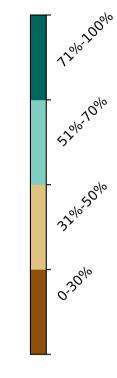
Conservation and natural environments

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

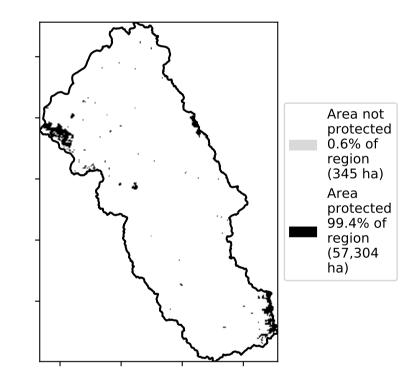


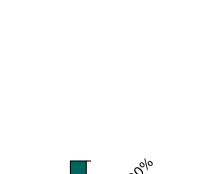
Total Vegetation Cover [%]

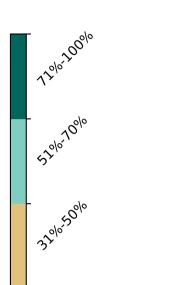




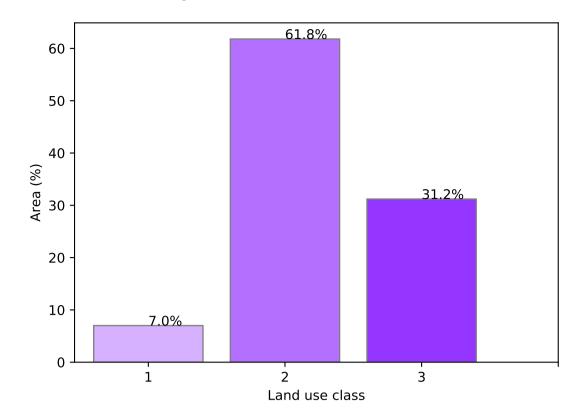
% Area protected from water erosion (>70%)



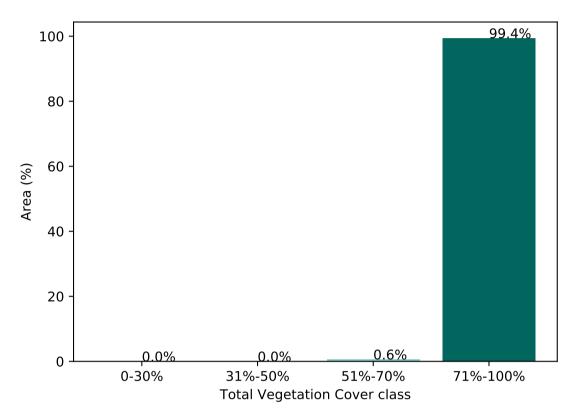




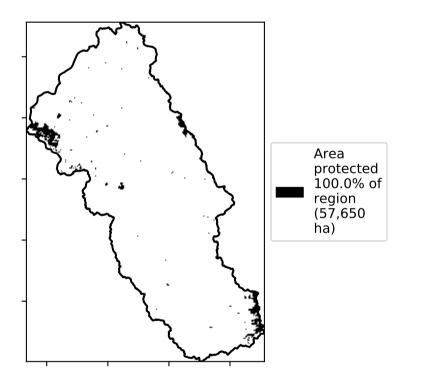
Proportion of each land class in area



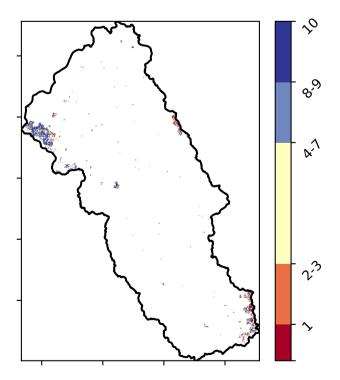
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

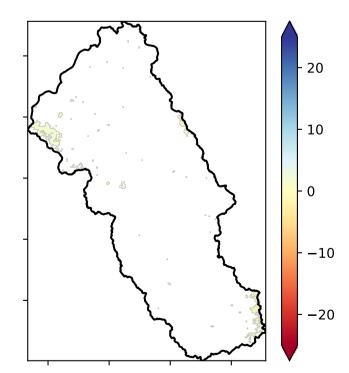


Total Vegetation Cover Decile [%]



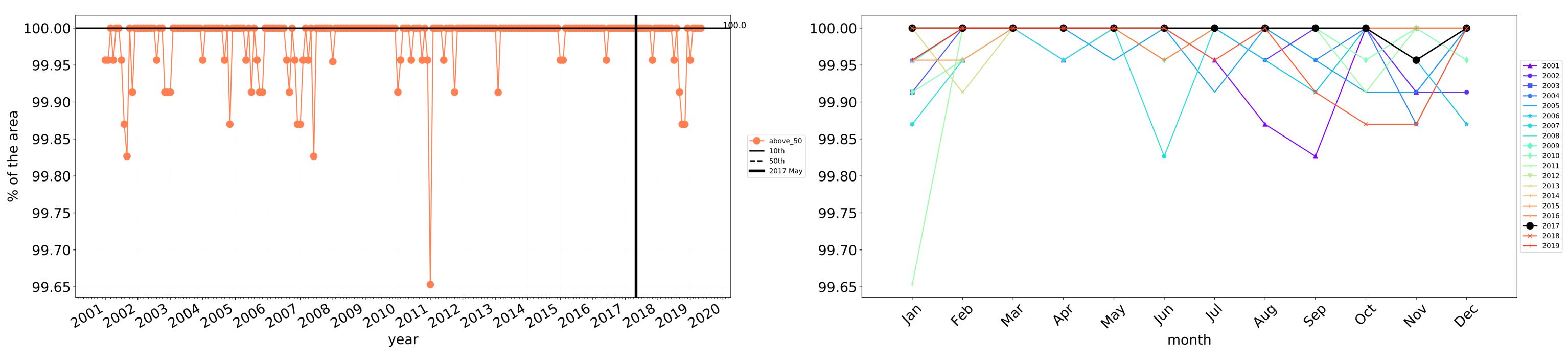
Total Vegetation Cover Anomaly [%]

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



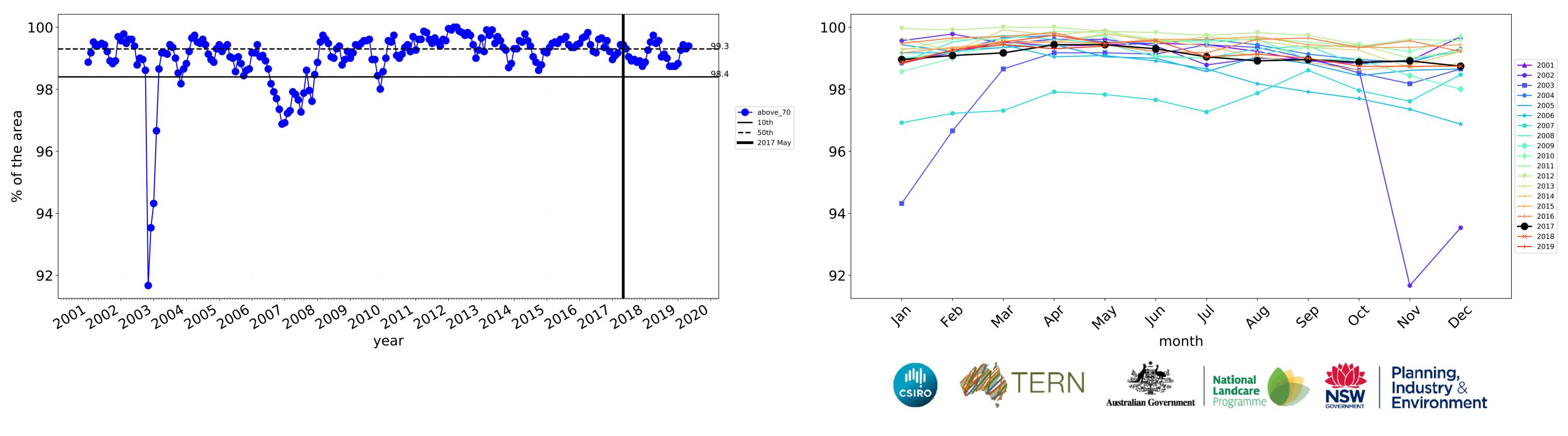
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





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%)



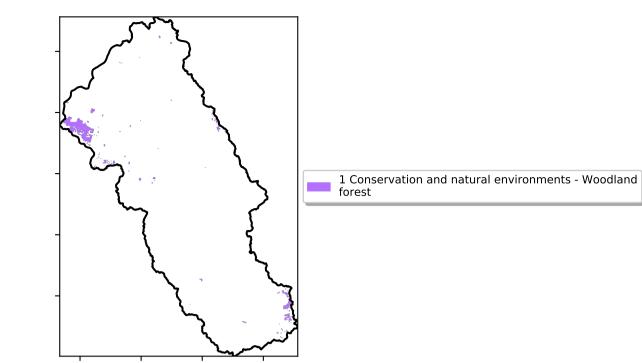
Conservation and natural environments Woodland forest

Land use and forest cover

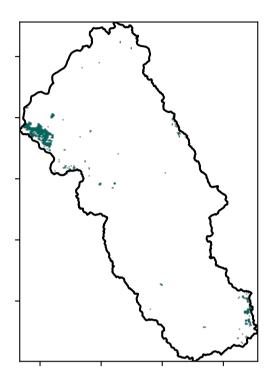
Catchment Scale Land Use and Forests of Australia (2018) Derived from

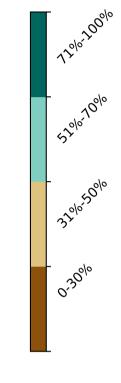
Use of Australia (2018) and Forests of Australia (2018)

Catchment Scale Land

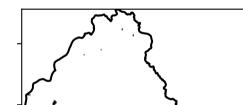


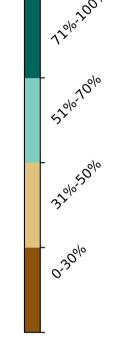
Total Vegetation Cover [%]

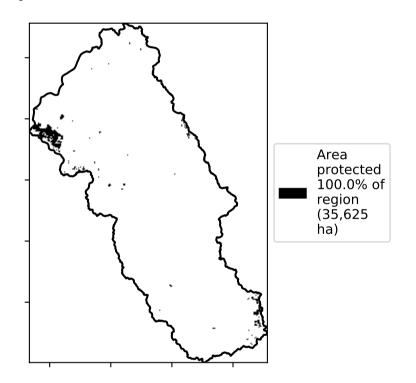


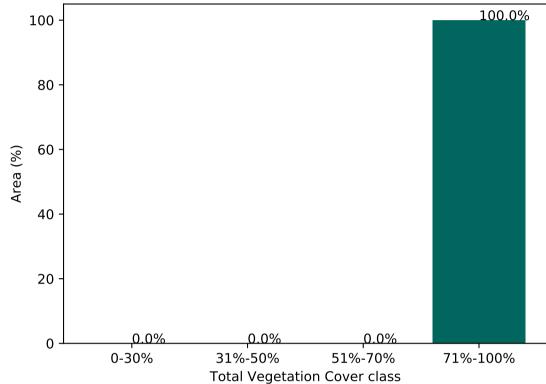


% Area protected from water erosion (>70%)

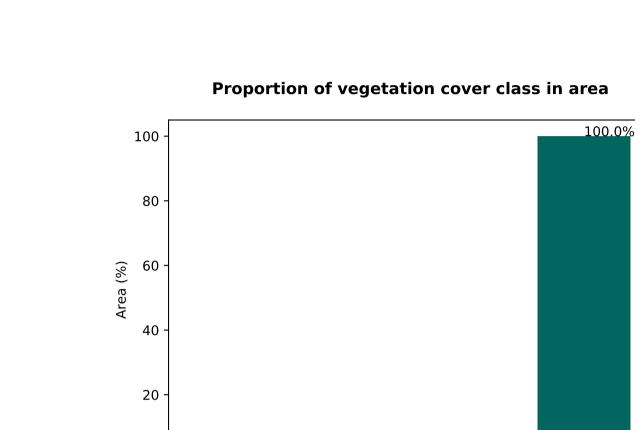




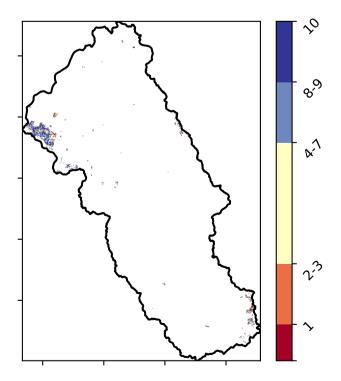




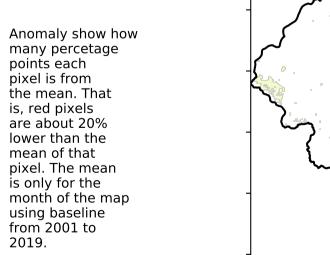
% Area protected from wind erosion (>50%)

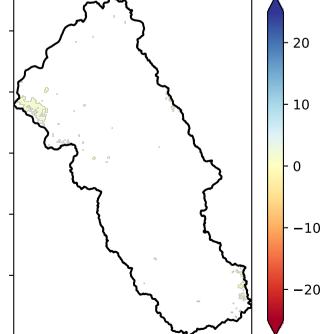


Total Vegetation Cover Decile [%]

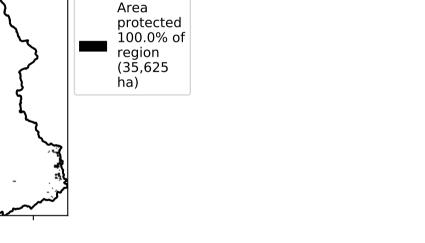






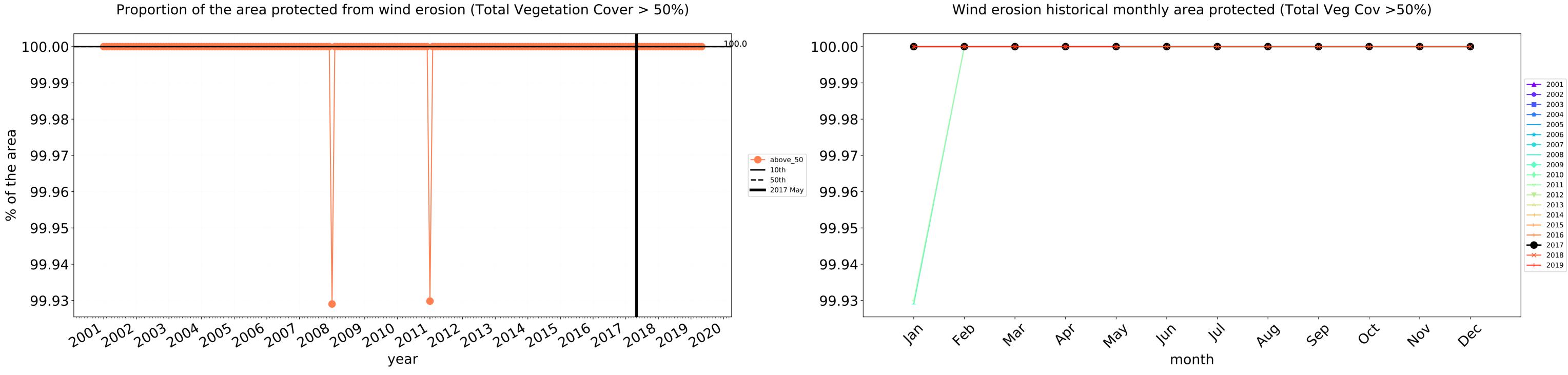


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

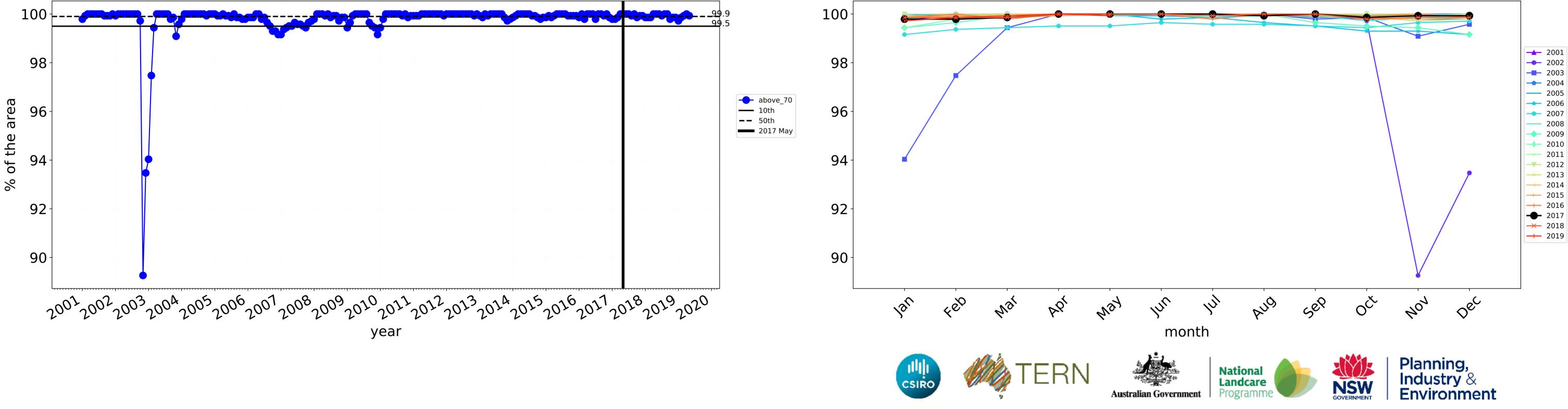


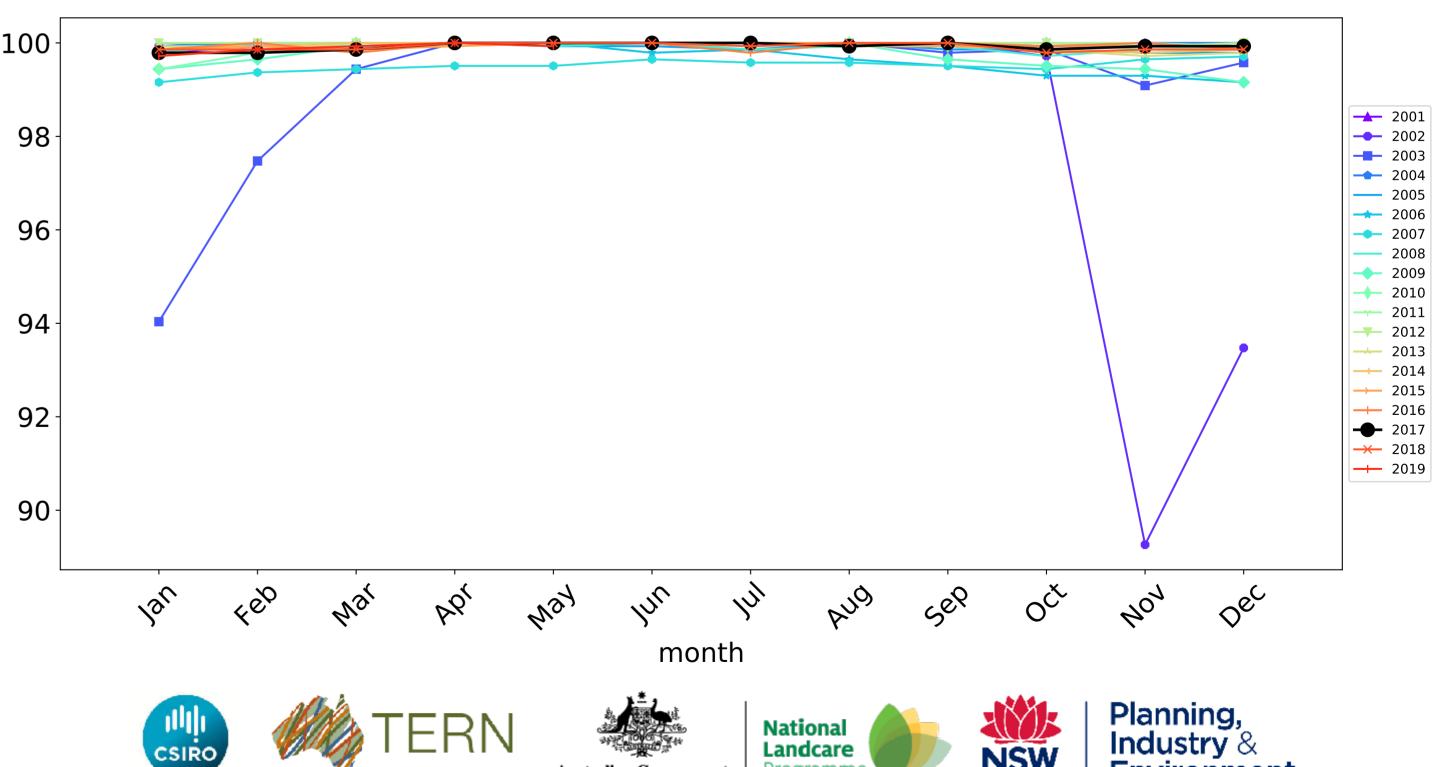
Total Vegetation Cover Anomaly [%]

Conservation and natural environments Woodland forest timeseries



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

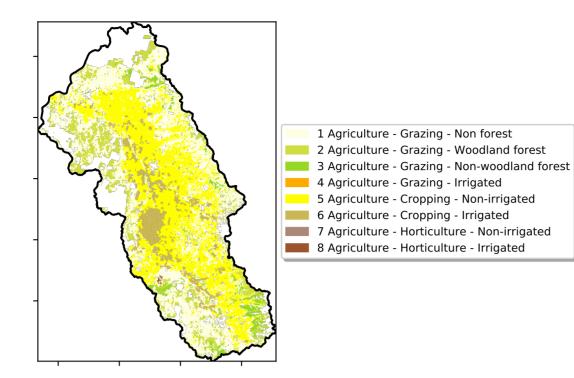




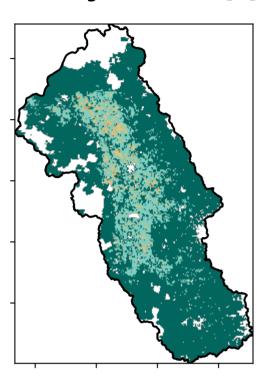
Water erosion historical monthly area protected (Total Veg Cov>70%)

Agriculture

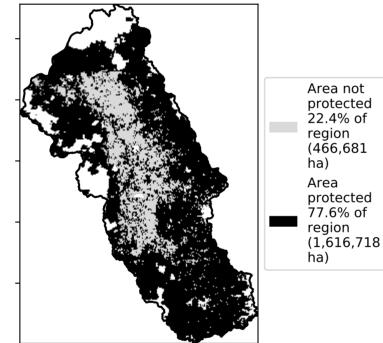
Land use and forest cover

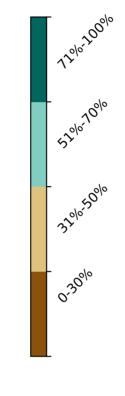


Total Vegetation Cover [%]



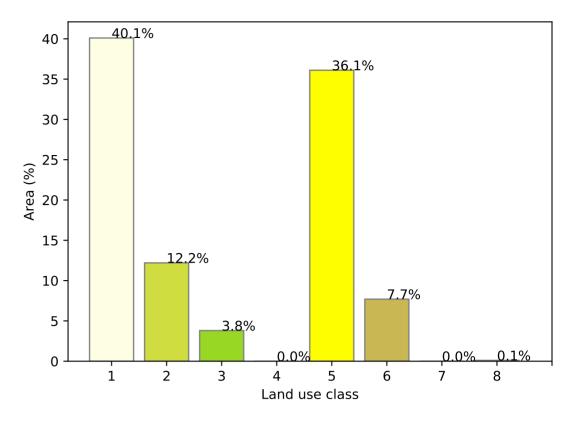
% Area protected from water erosion (>70%)



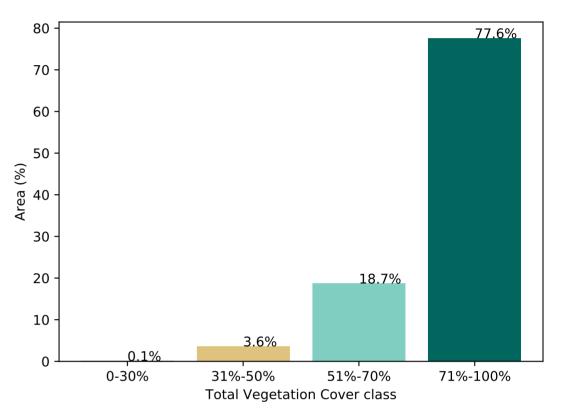




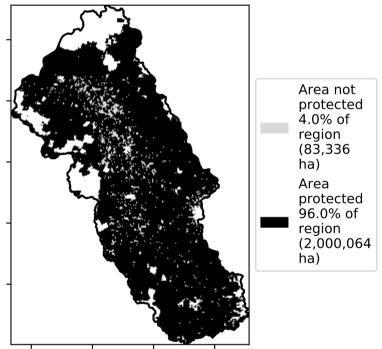
Proportion of each land class in area



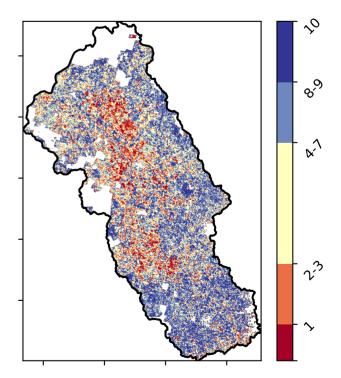
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]

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

Catchment Scale

of Australia (2018)

(2018) and Forests

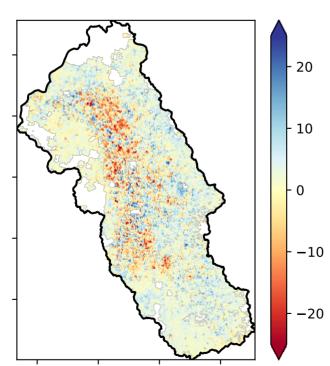
of Australia (2018)

Derived from

Use of Australia

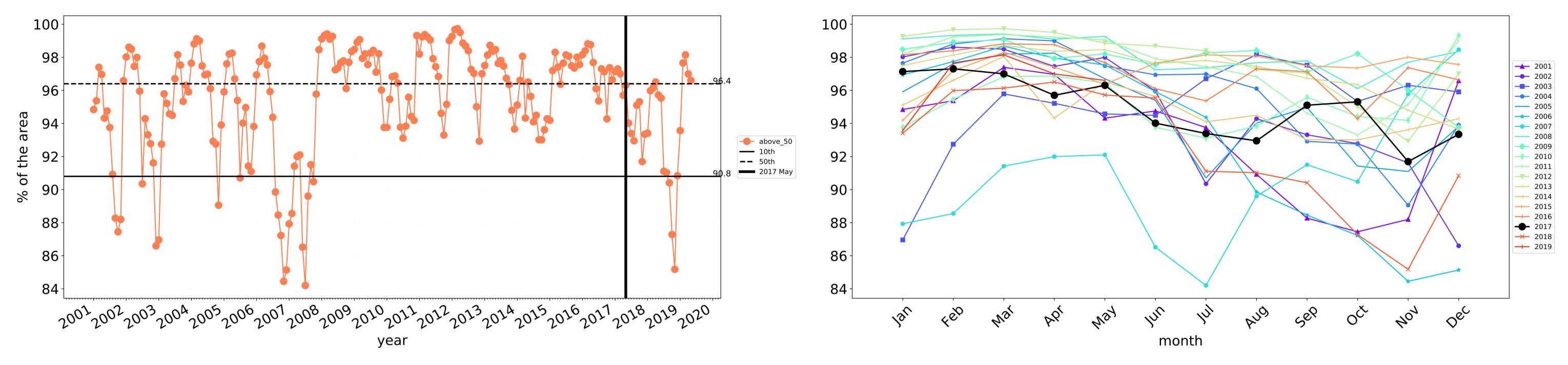
Land Use and Forests

Catchment Scale Land



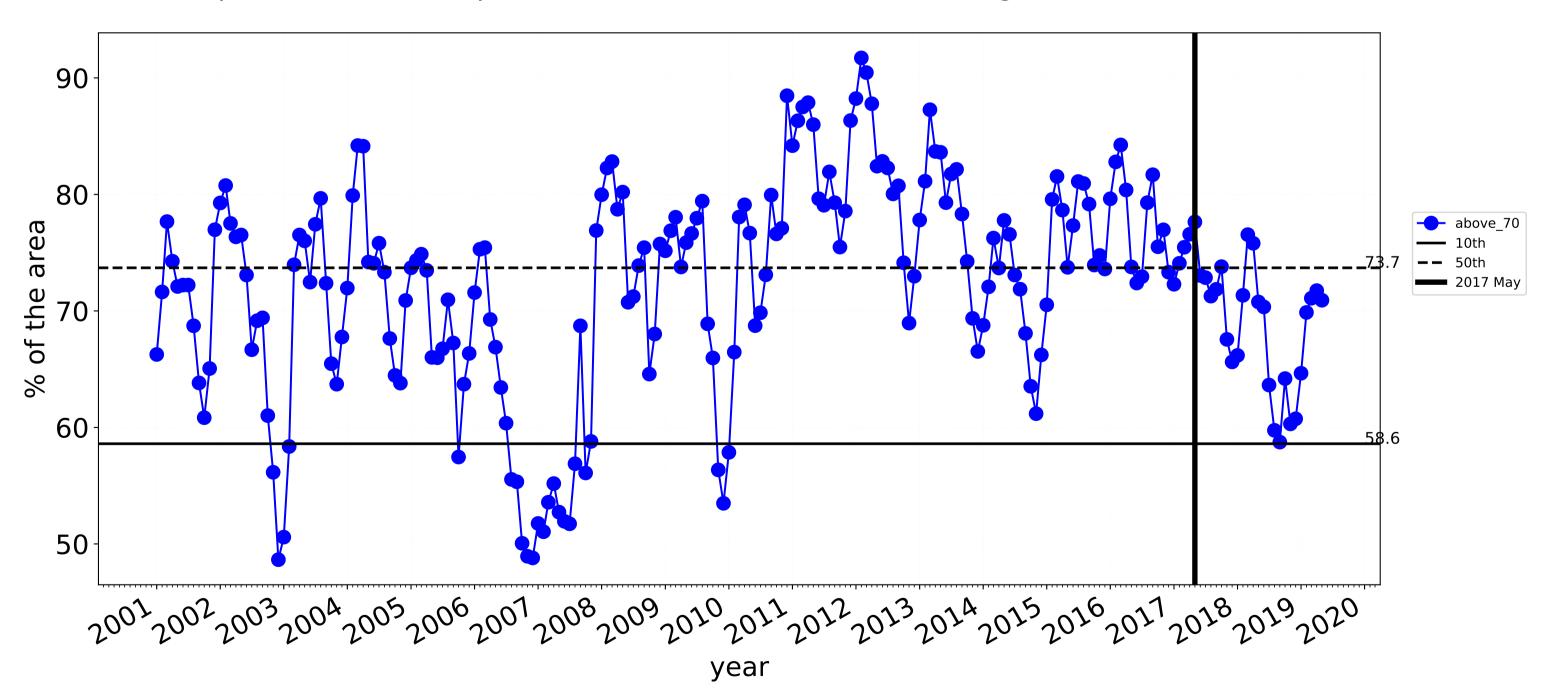
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





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

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

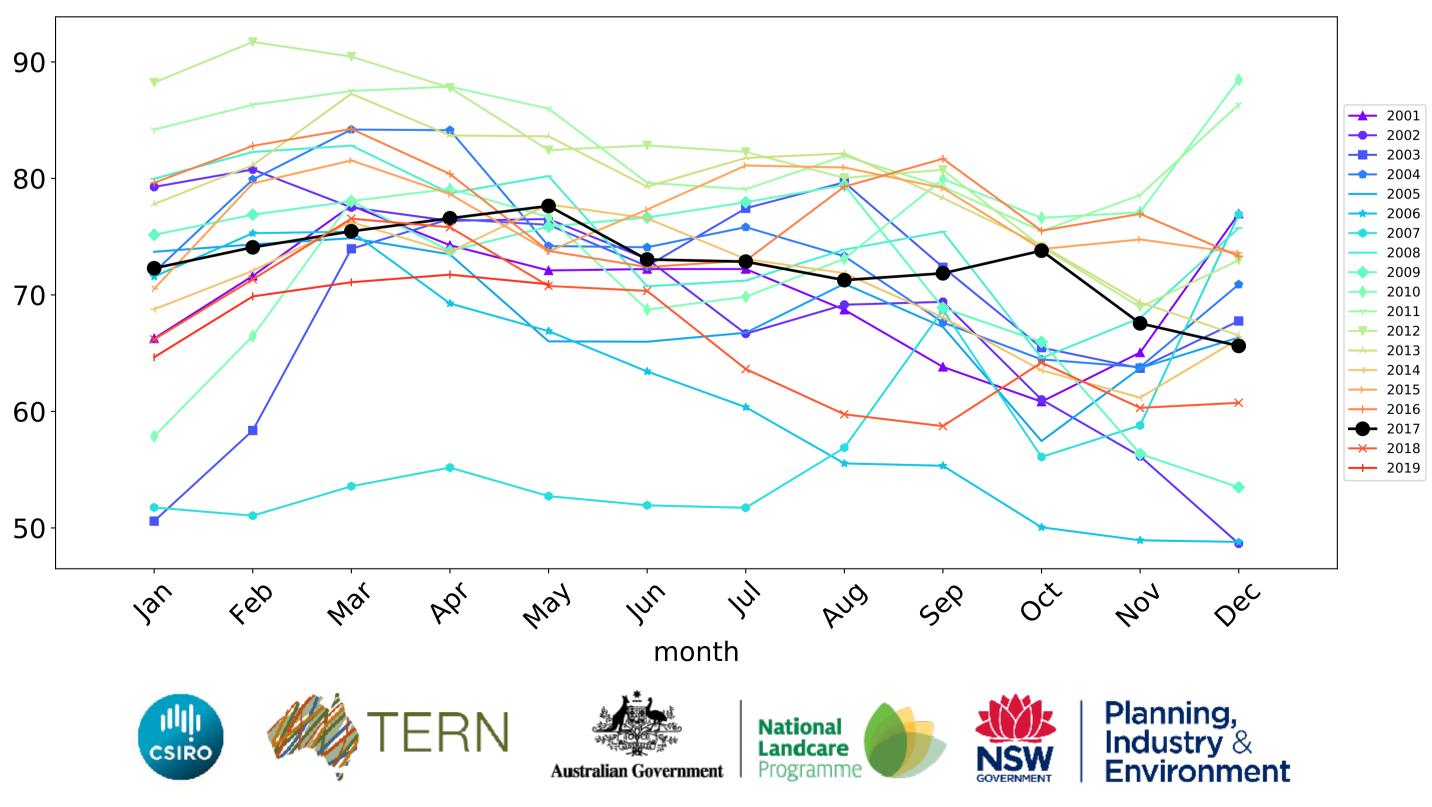


Agriculture timeseries



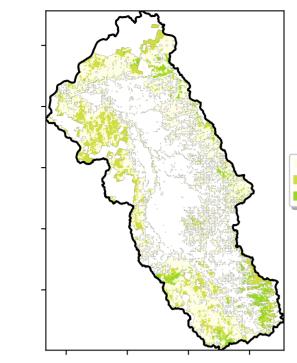
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

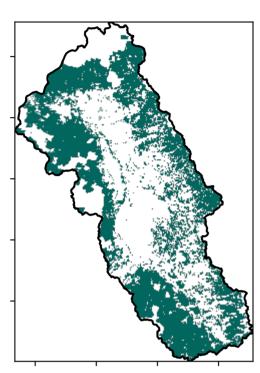


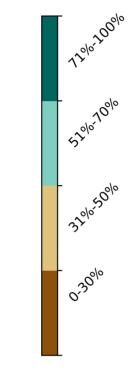
Grazing

Land use and forest cover



Total Vegetation Cover [%]



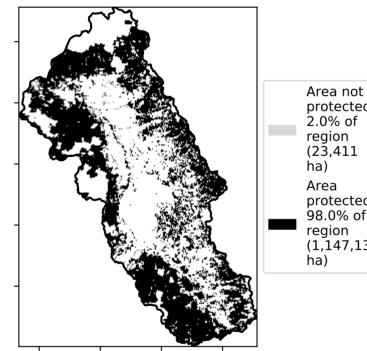


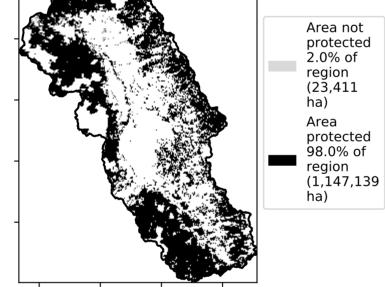
1 Agriculture - Grazing - Non forest

2 Agriculture - Grazing - Woodland forest

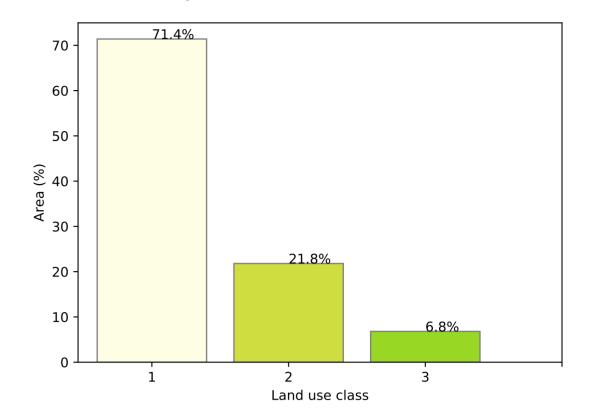
3 Agriculture - Grazing - Non-woodland forest

% Area protected from water erosion (>70%)

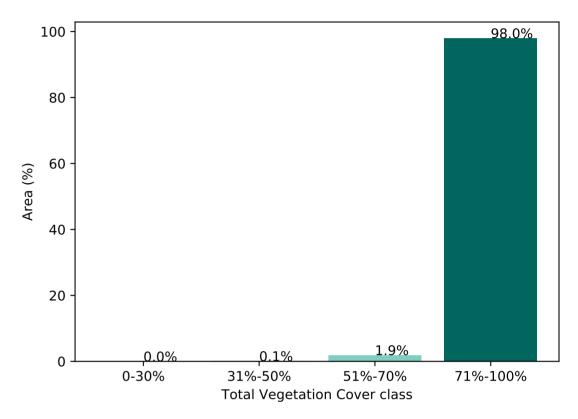




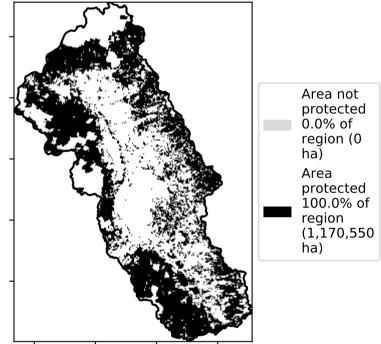
Proportion of each land class in area



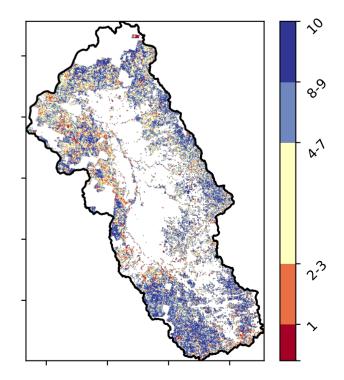
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





Deciles show where the

pixel value lies in the

record, from highest to lowest, for that month. That is, red pixels are

records for that month of

the map using baseline from 2001 to 2019.

in the lowest 10% of

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.

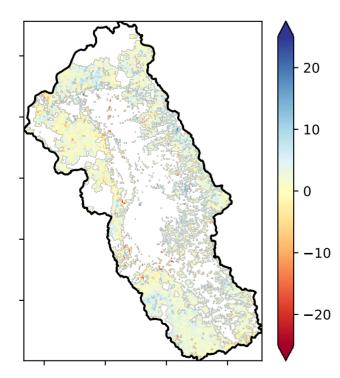
Catchment Scale Land Use and Forests of Australia (2018)

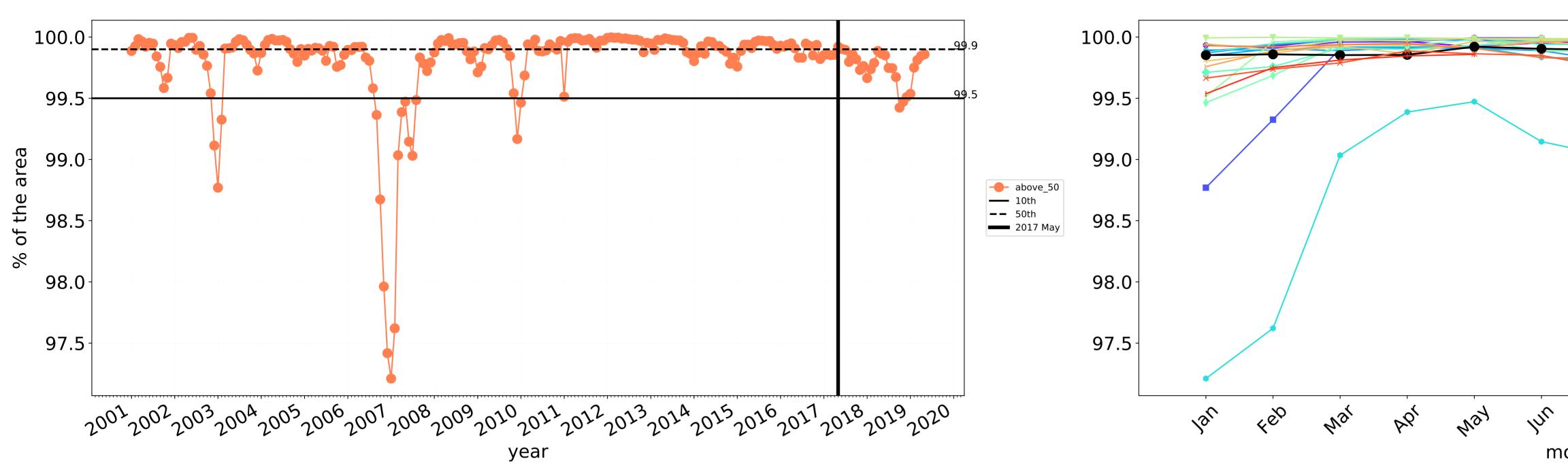
Catchment Scale Land

Derived from

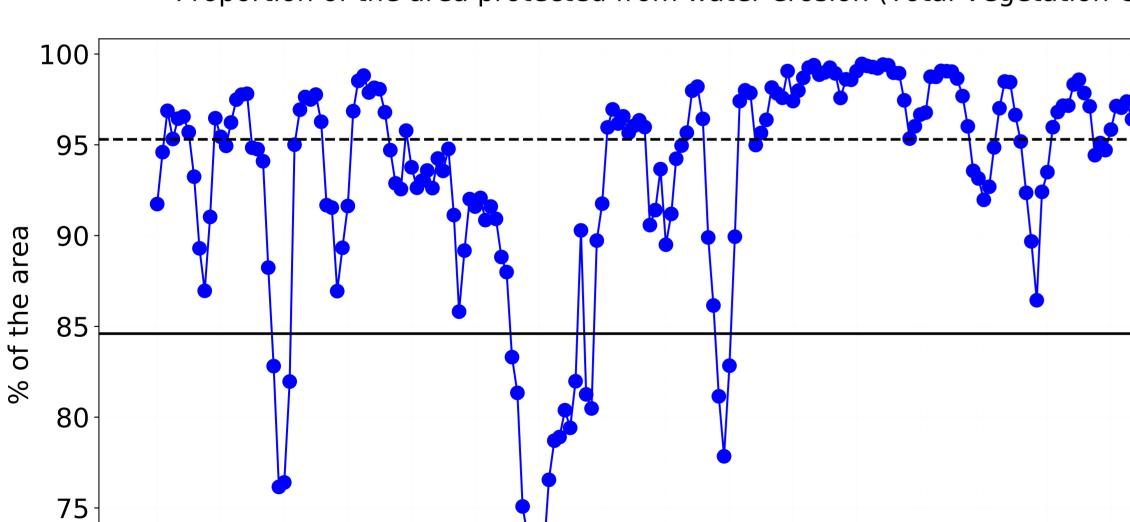
Use of Australia

(2018) and Forests of Australia (2018)





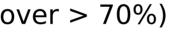
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

year

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



---- above_70 **—** 10th **——** 50th **——** 2017 May 20012002200320042005200620012008200920102011201220132014201520162011201820192020

100-

95

90

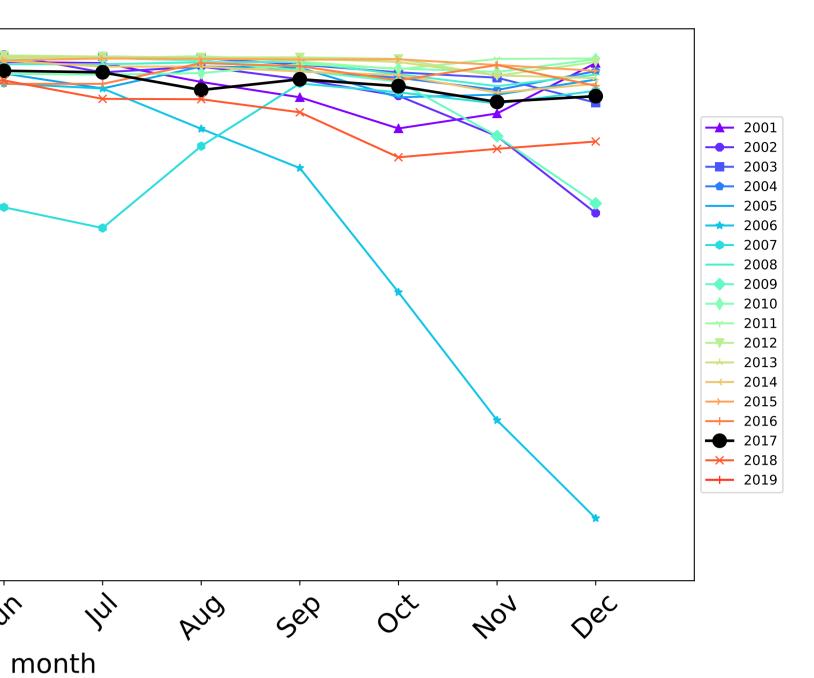
85

80

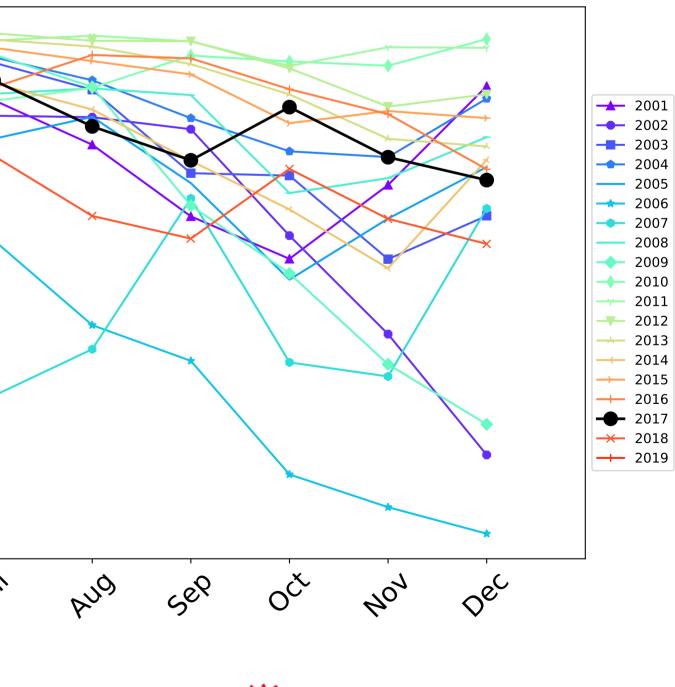
75

fed In Jan May PQ1 1's Mai month ERN (SOR) CSIRC

Australian Government



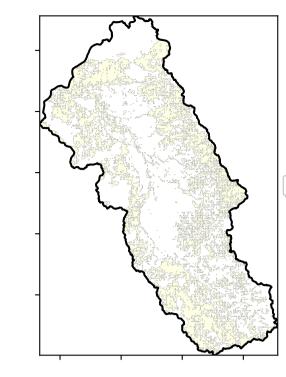
Water erosion historical monthly area protected (Total Veg Cov>70%)





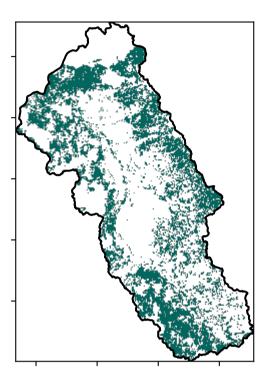
Grazing non forest

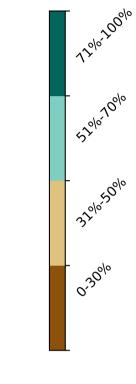
Land use and forest cover



1 Agriculture - Grazing - Non forest

Total Vegetation Cover [%]

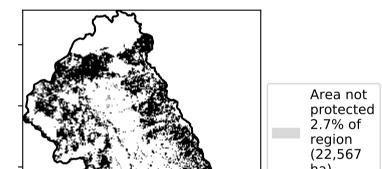




ha)

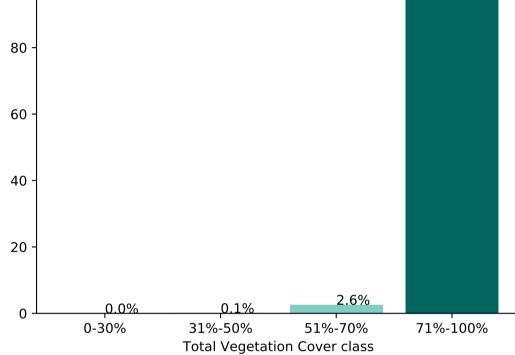
Area

% Area protected from water erosion (>70%)

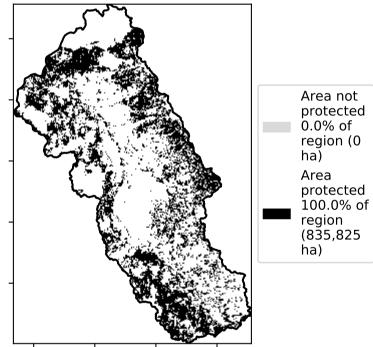


80 60 Area (%)

100



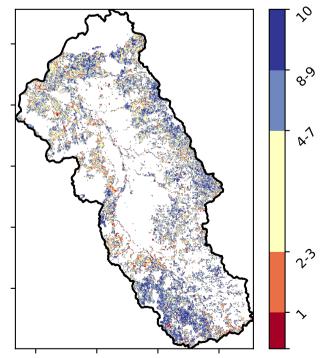
% Area protected from wind erosion (>50%)



Proportion of vegetation cover class in area

97.3%

Total Vegetation Cover Decile [%]





Deciles show where the pixel value lies in the

protected 97.3% of region (813,257 ha)

Total Vegetation Cover Anomaly [%]

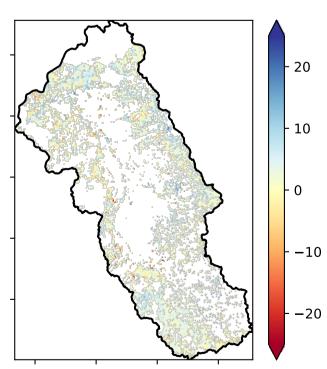
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

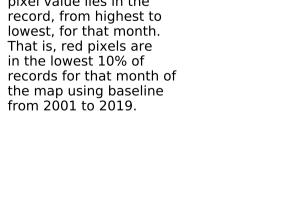
Catchment Scale Land

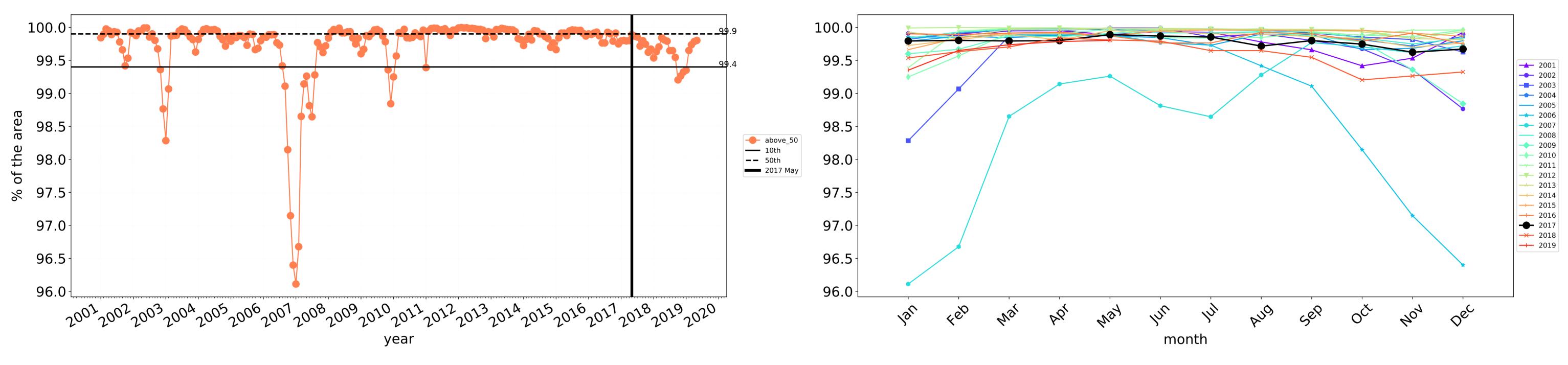
Derived from

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

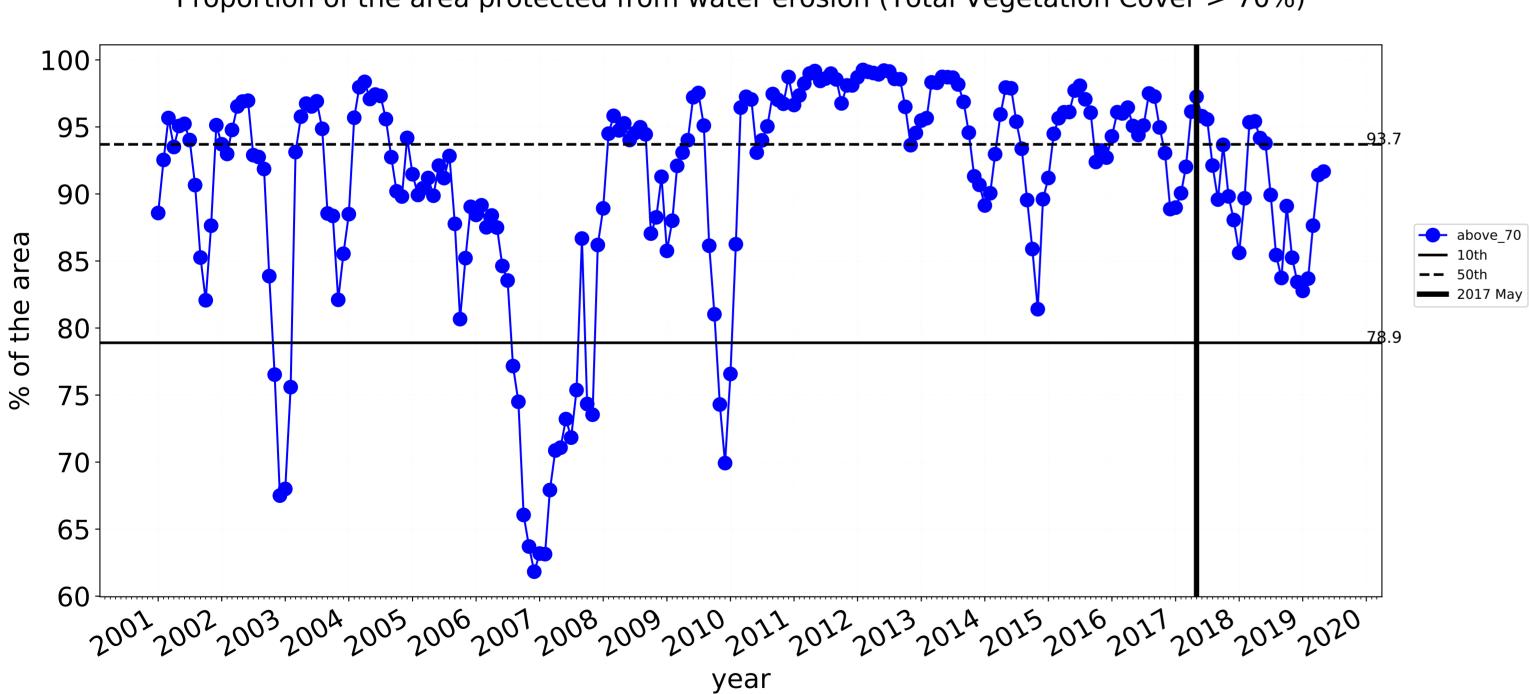




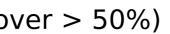




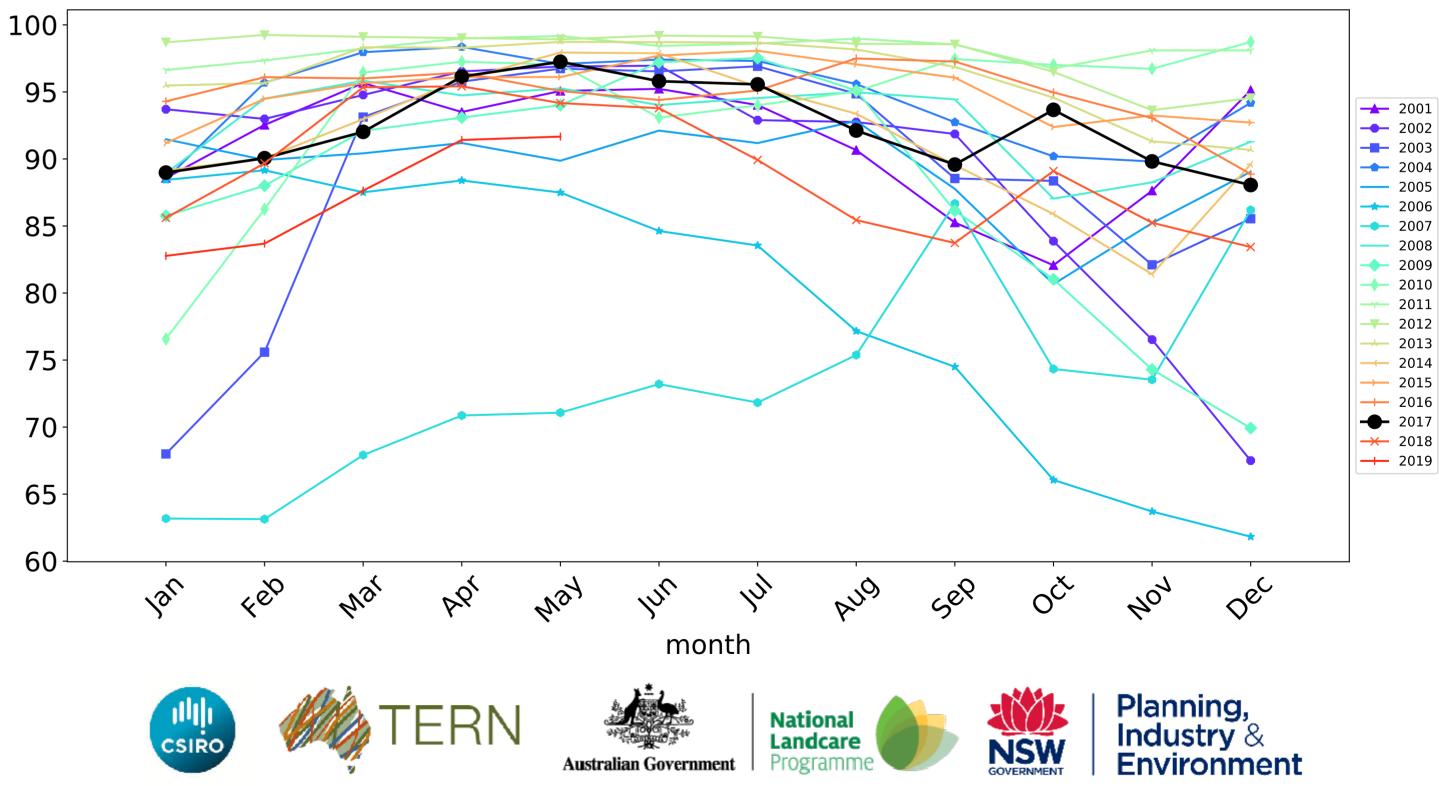
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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



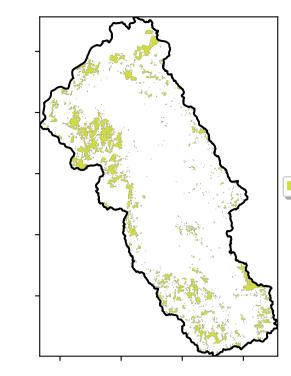
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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

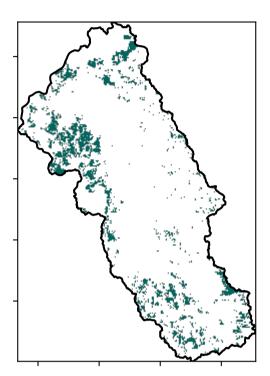
Grazing Woodland forest

Land use and forest cover

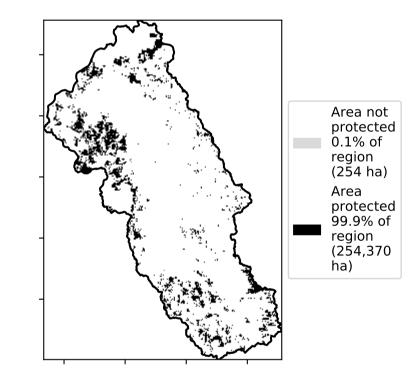


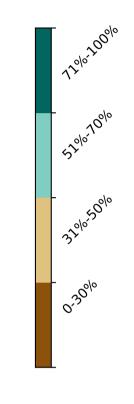
1 Agriculture - Grazing - Woodland forest

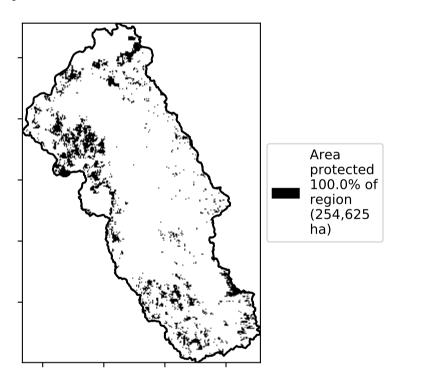
Total Vegetation Cover [%]



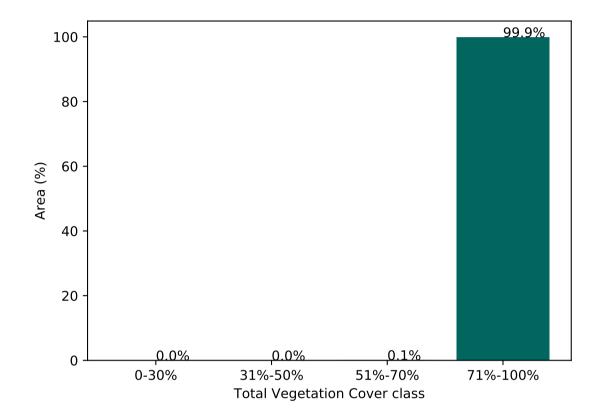






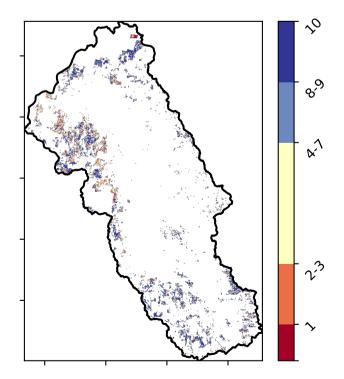


Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]

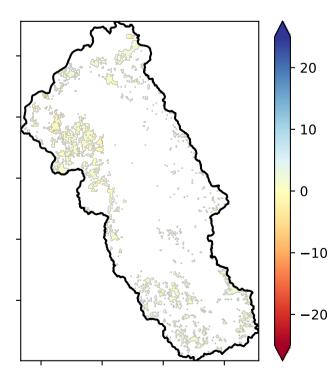
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land

Derived from

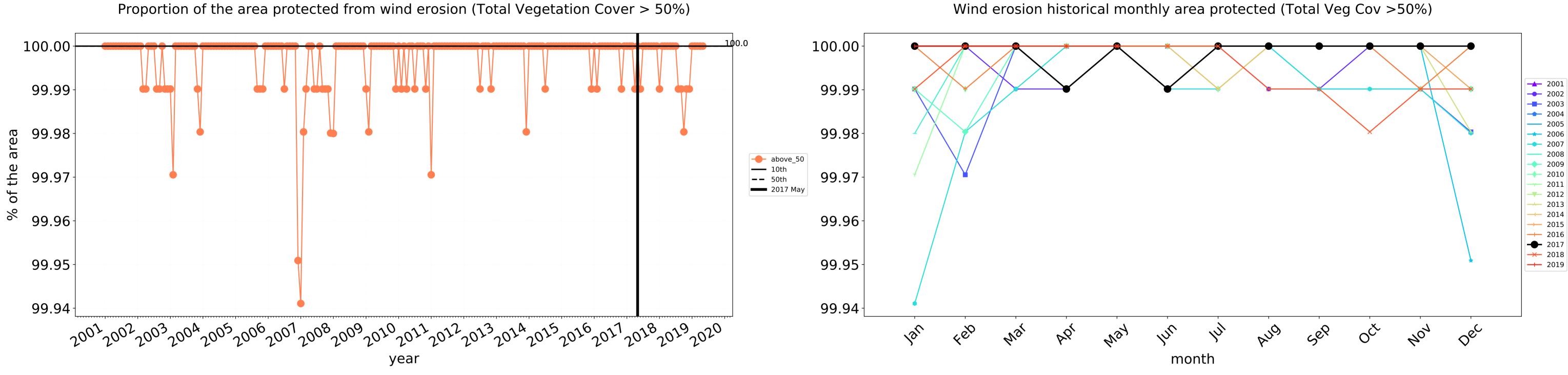
Use of Australia (2018) and Forests of Australia (2018)



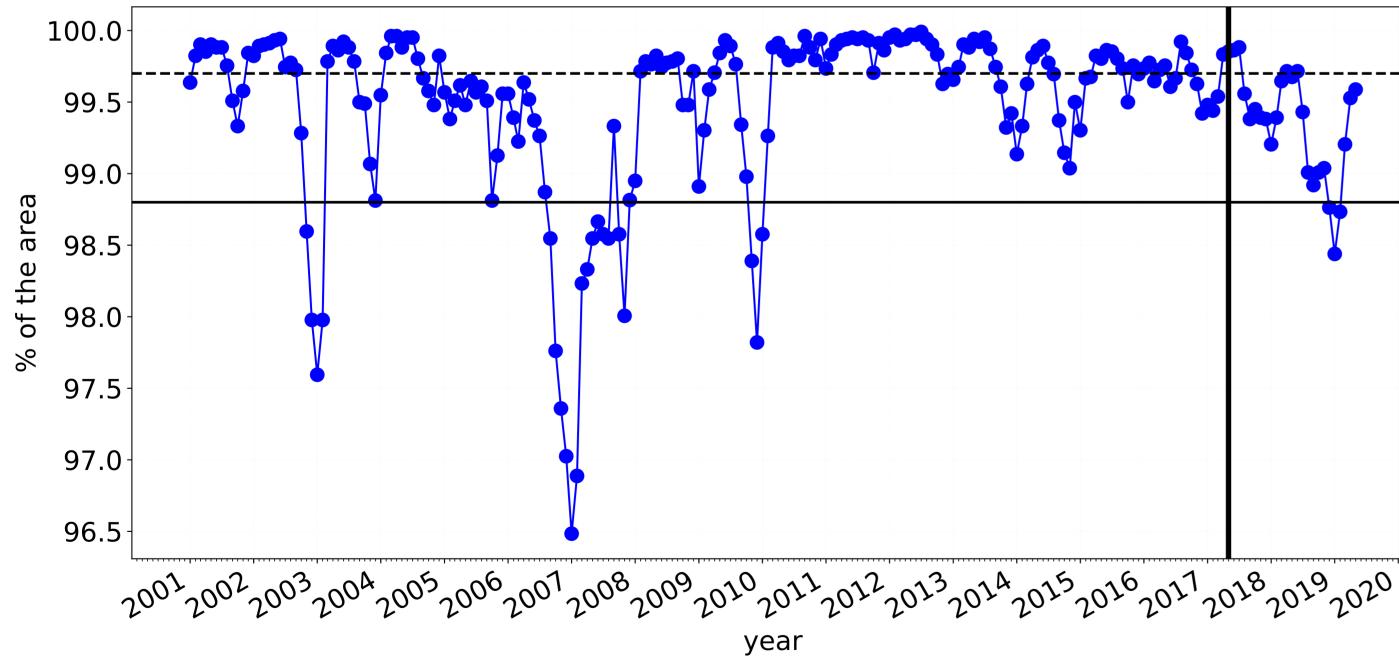
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



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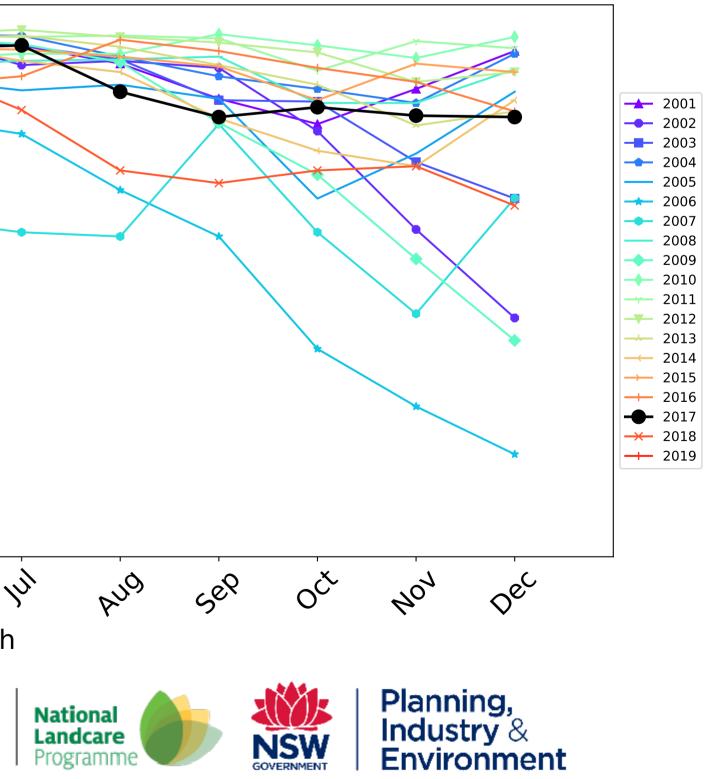


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



100.0-99.5 99.0 ---- above_70 **—** 10th **--** 50th 98.5 **——** 2017 May 98.0 97.5 97.0 96.5 feb Par May hill PQ Mai month ERN CSIRO Australian Government

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



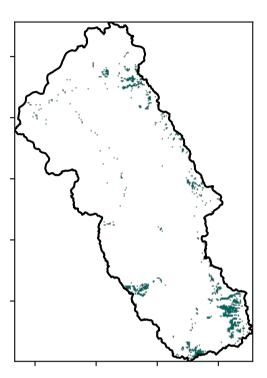
Grazing - Forest (non woodland)

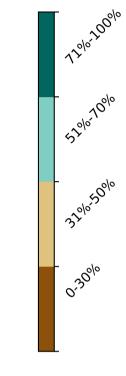
Land use and forest cover



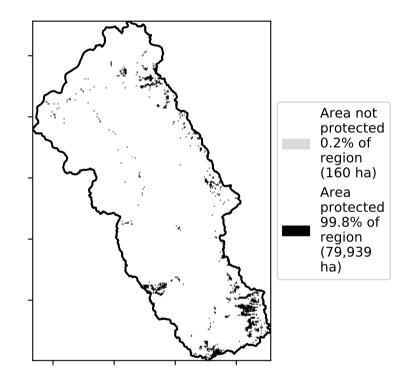
1 Agriculture - Grazing - Non-woodland forest

Total Vegetation Cover [%]



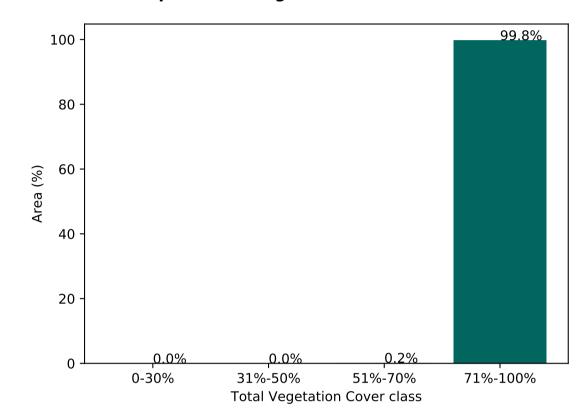


% Area protected from water erosion (>70%)

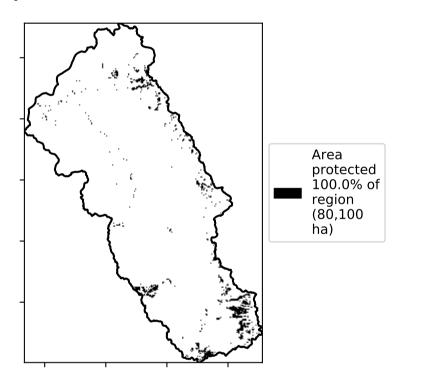




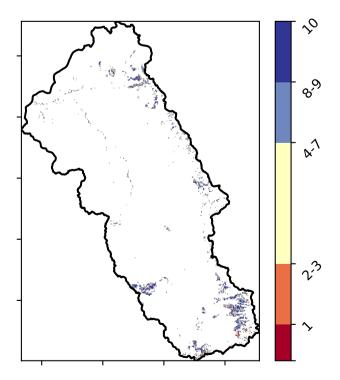
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





Deciles show where the

pixel value lies in the

record, from highest to lowest, for that month. That is, red pixels are

records for that month of

the map using baseline from 2001 to 2019.

in the lowest 10% of

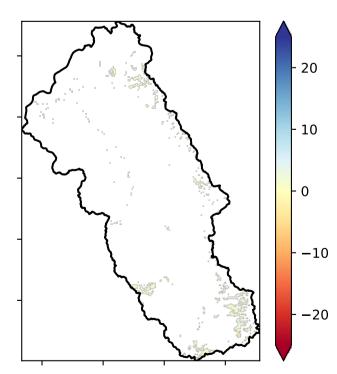
Total Vegetation Cover Anomaly [%]

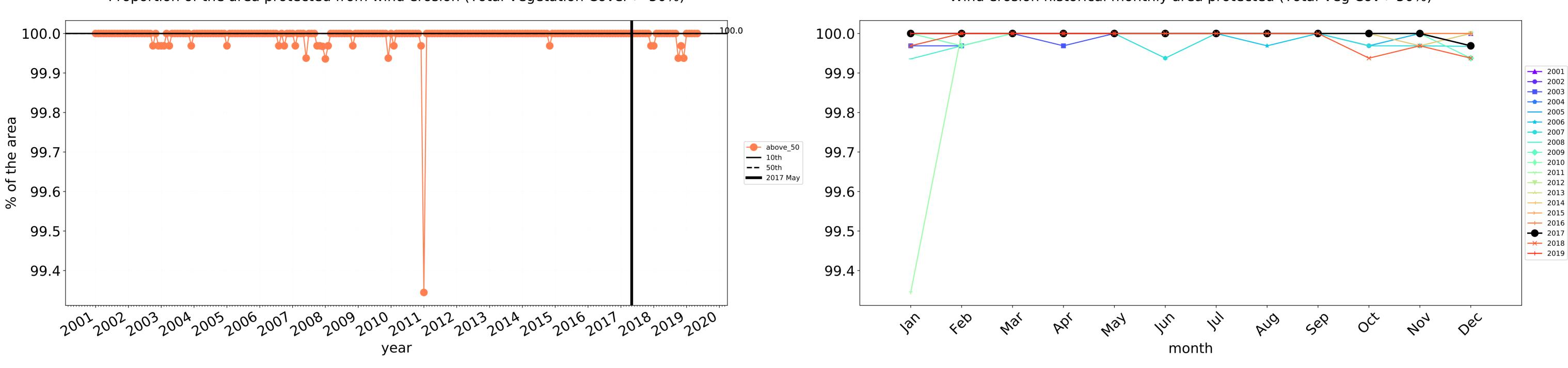
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

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

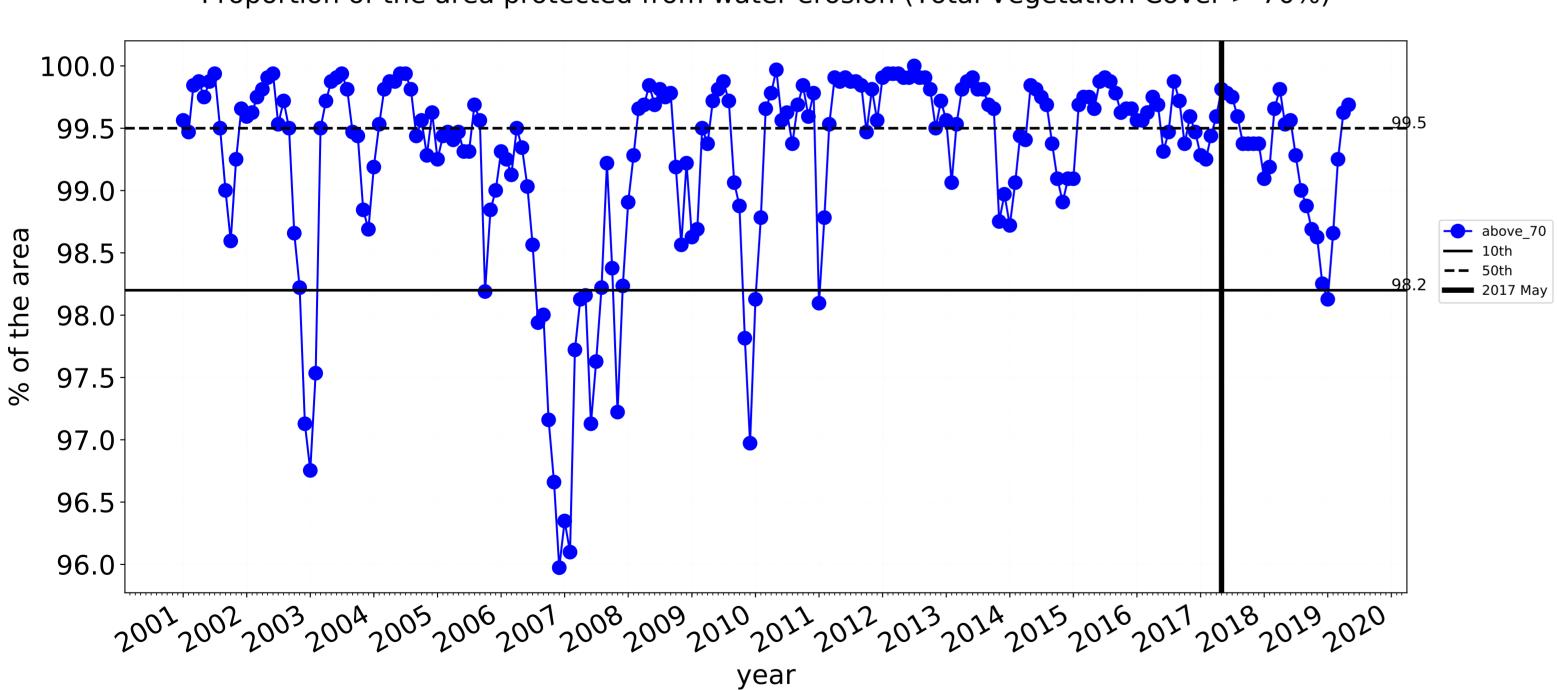
Use of Australia (2018) and Forests of Australia (2018)

Catchment Scale Land

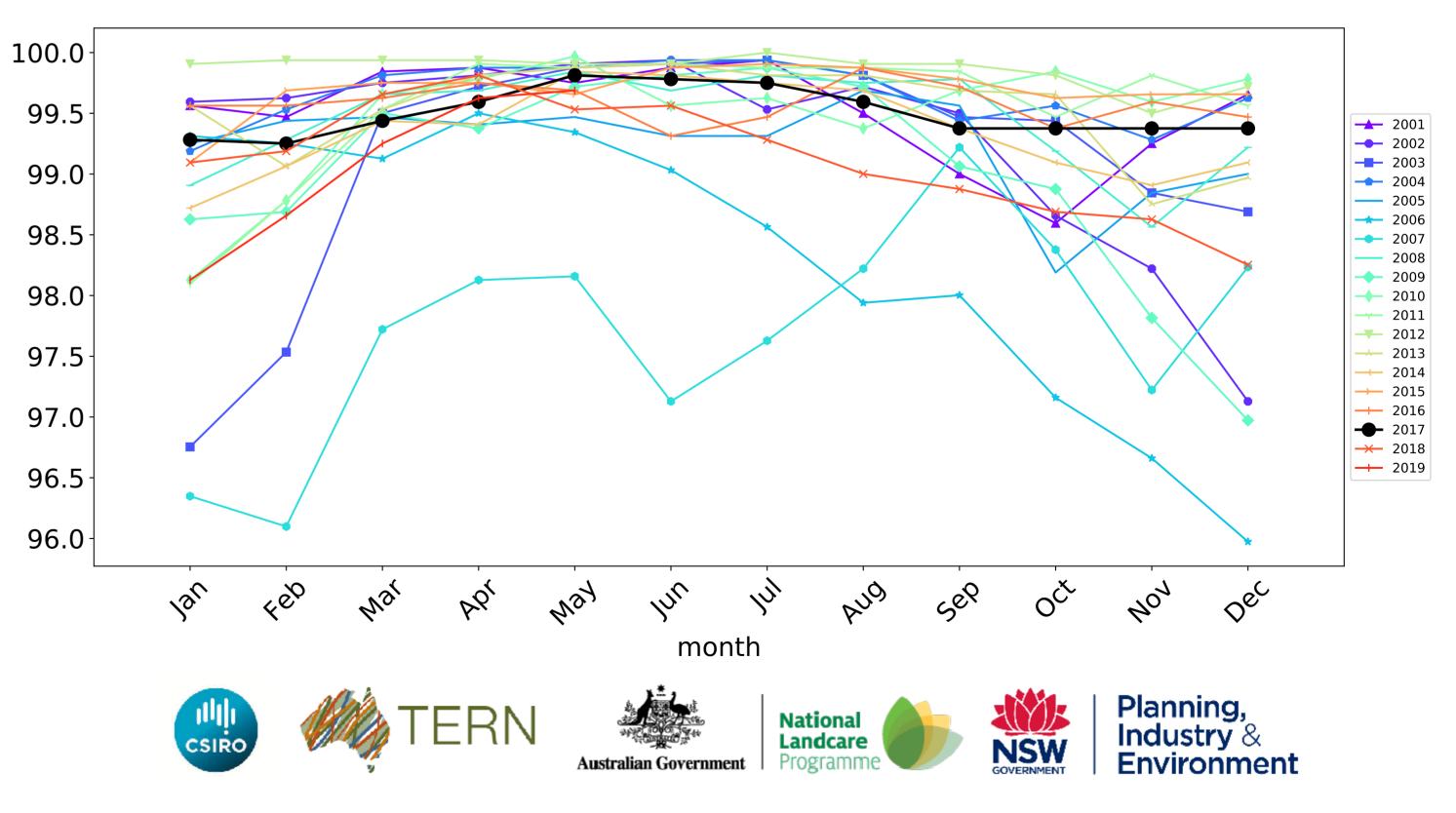




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



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

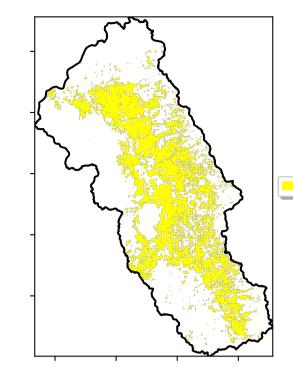


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

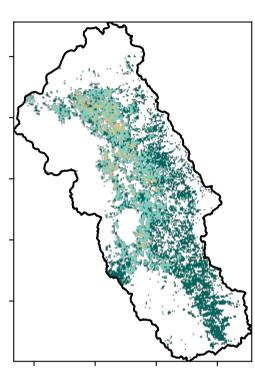
Cropping

Land use and forest cover

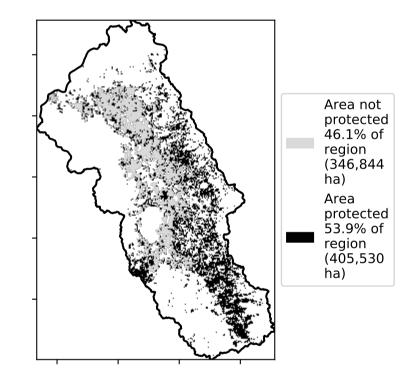


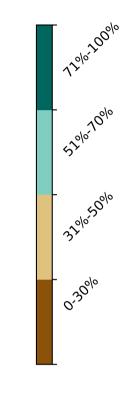
1 Agriculture - Cropping - Non-irrigated

Total Vegetation Cover [%]

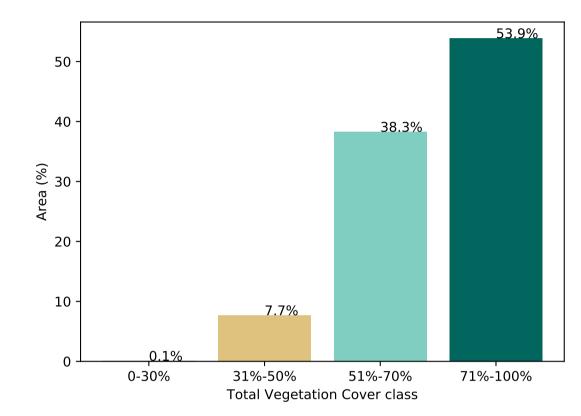




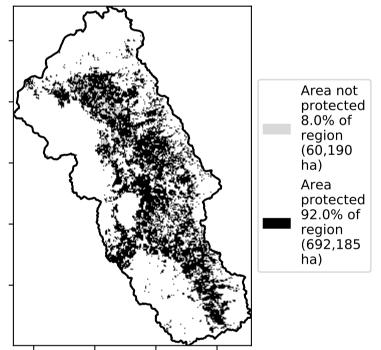




Proportion of vegetation cover class in area

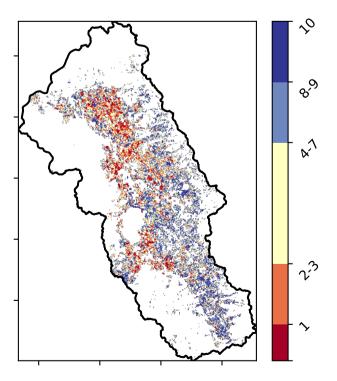


% Area protected from wind erosion (>50%)



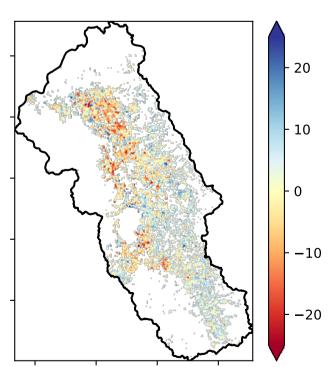
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Decile [%]



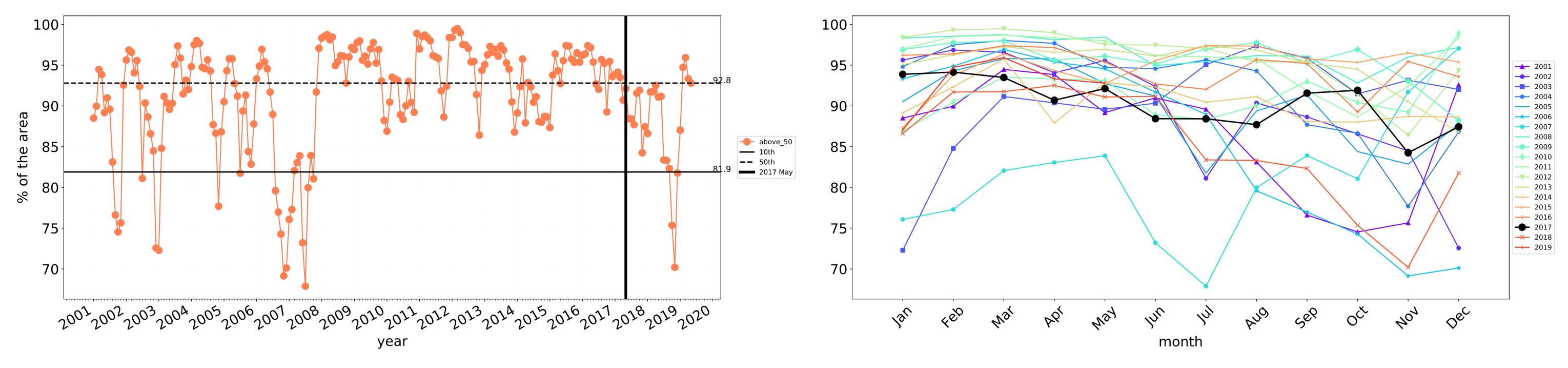
Total Vegetation Cover Anomaly [%]

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



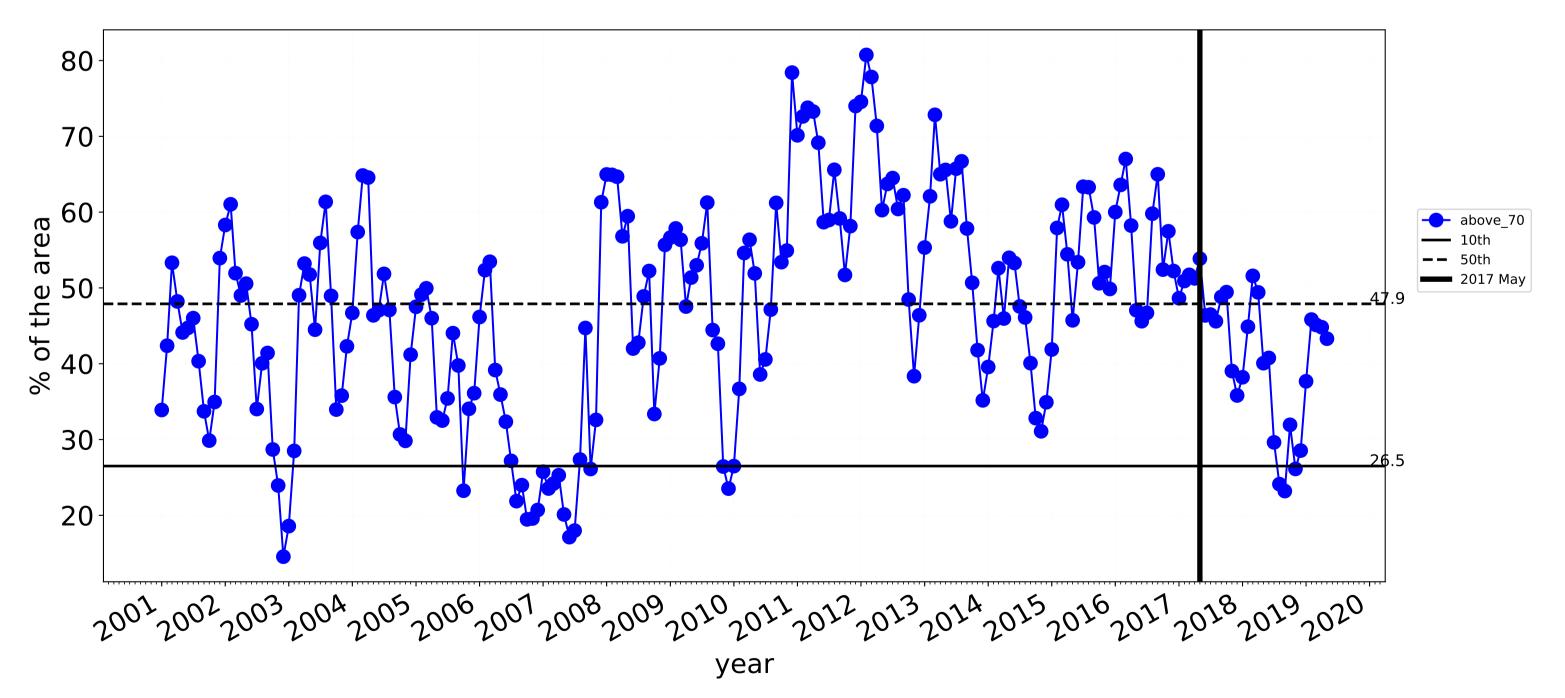
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





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





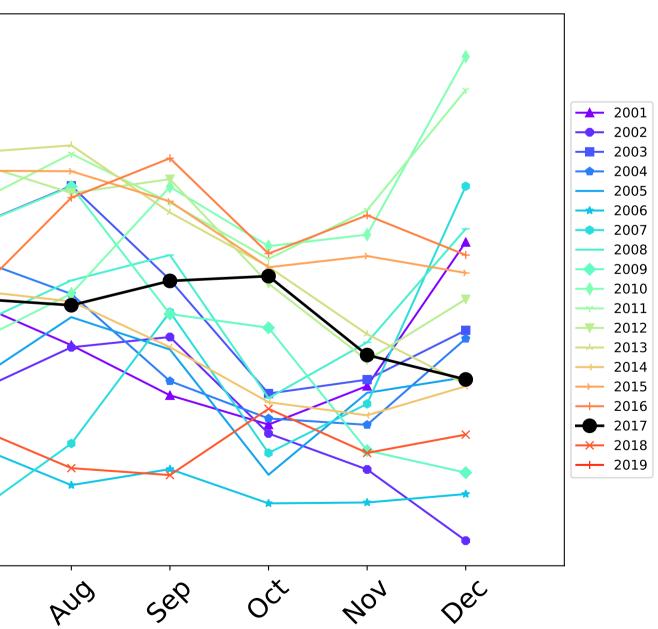
Cropping timeseries



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

80-70-60-50-40 30 20 lar feb May Jun 1/2/ Mai 29, month TERN CSIRO Australian Government

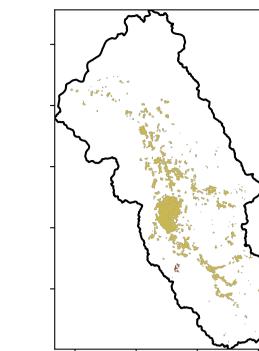
Water erosion historical monthly area protected (Total Veg Cov>70%)





Irrigation

Land use and forest cover



Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land

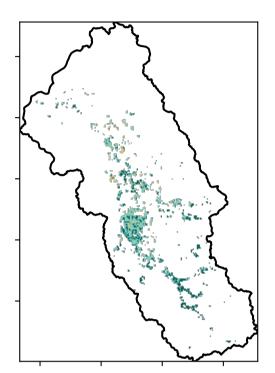
Derived from

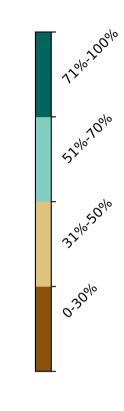
Use of Australia (2018) and Forests

of Australia (2018)

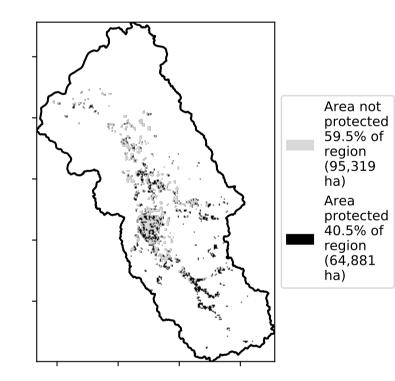
1 Agriculture - Grazing - Irrigated
2 Agriculture - Cropping - Irrigated
3 Agriculture - Horticulture - Irrigated

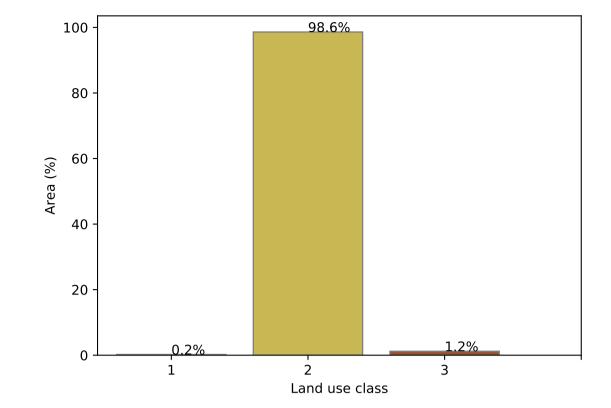
Total Vegetation Cover [%]





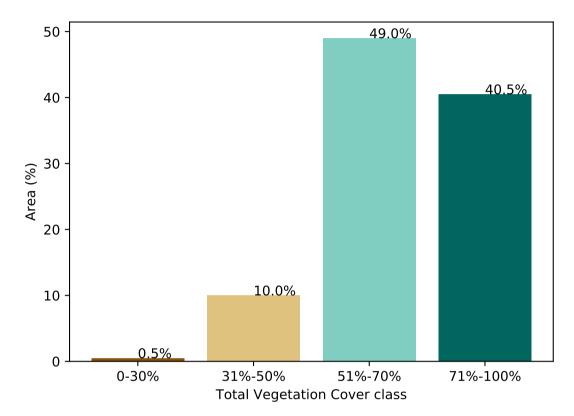
% Area protected from water erosion (>70%)



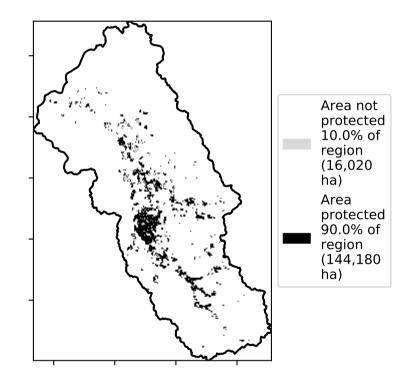


Proportion of each land class in area

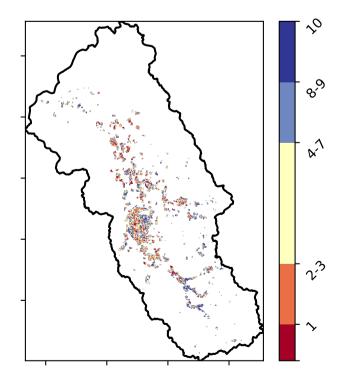
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

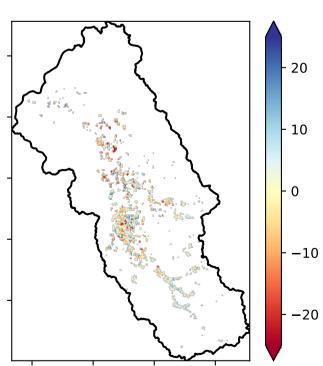


Total Vegetation Cover Decile [%]



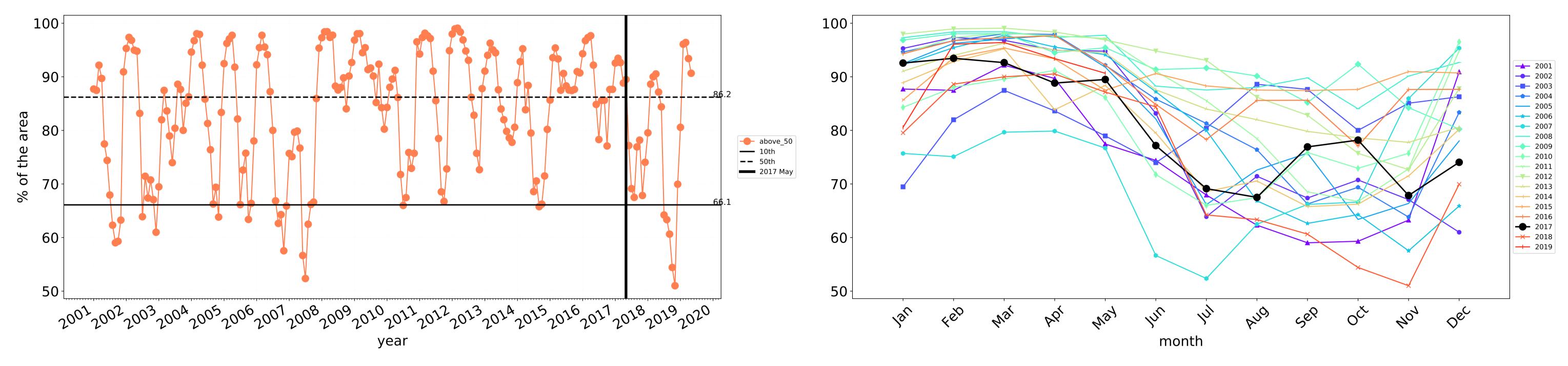
Total Vegetation Cover Anomaly [%]

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

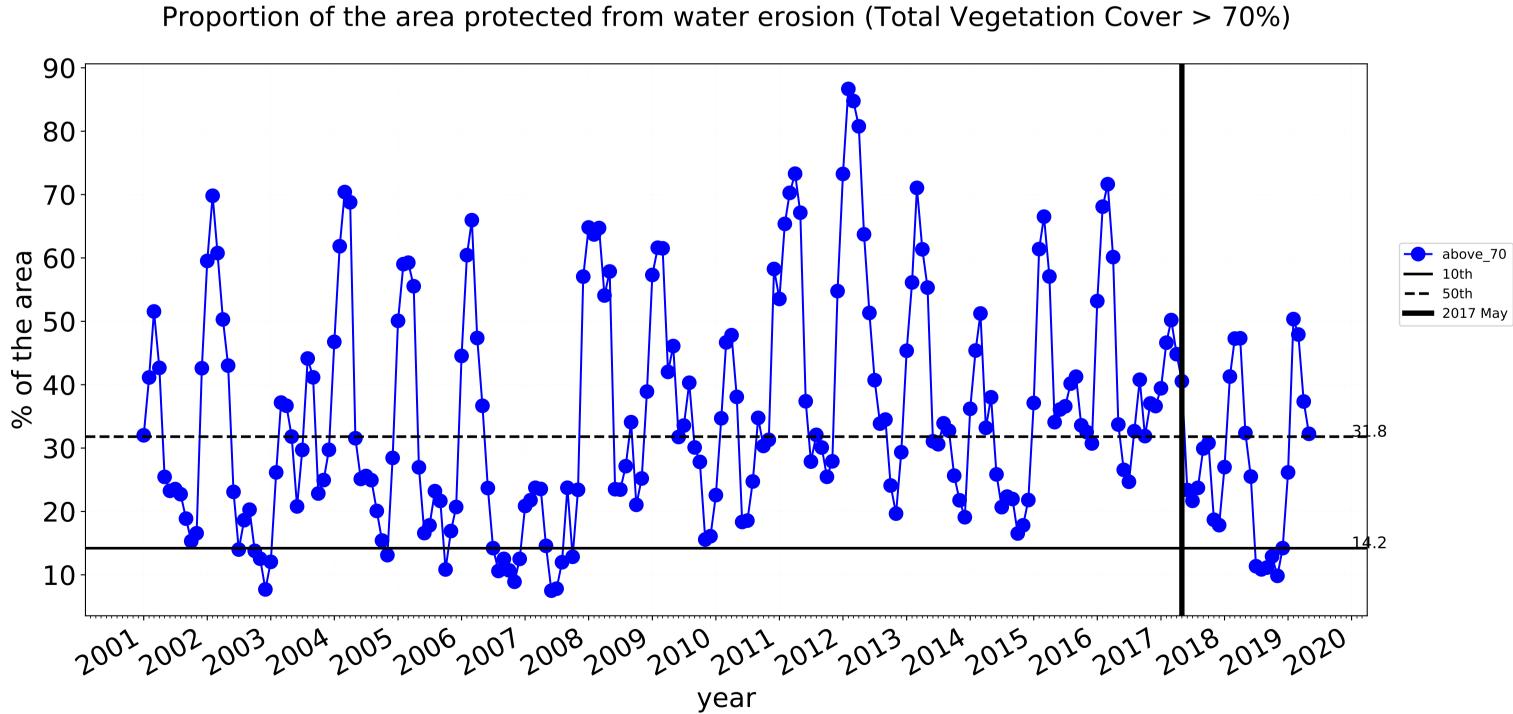


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





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



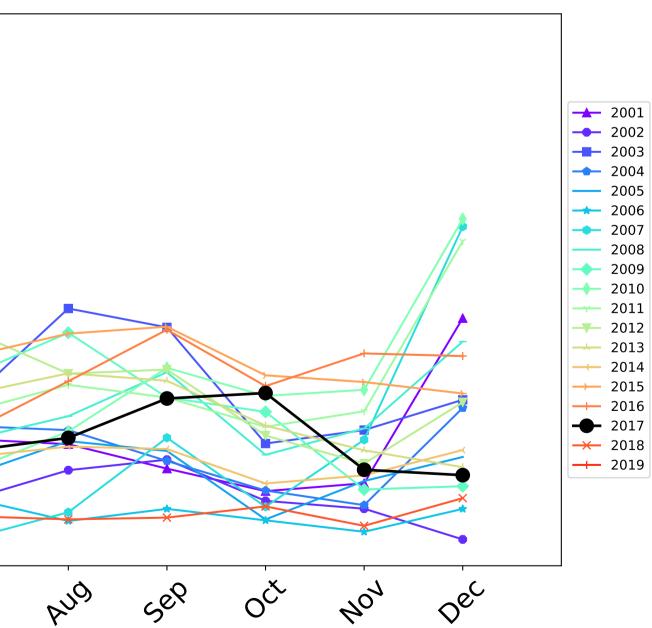
Irrigation timeseries



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

90-80-70-60-50-40 30 20 10-1ar feb May In War PQ' 1's month TERN CSIRO Australian Government

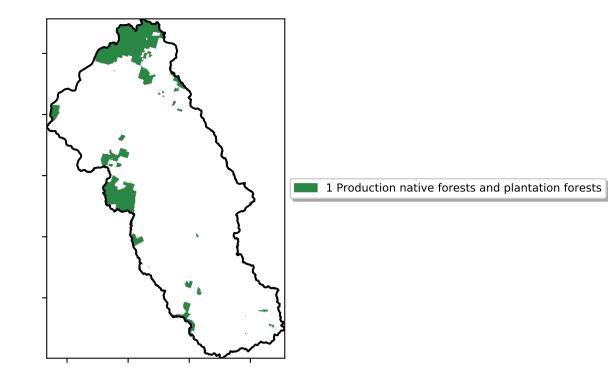
Water erosion historical monthly area protected (Total Veg Cov>70%)



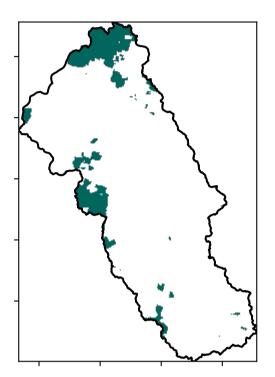


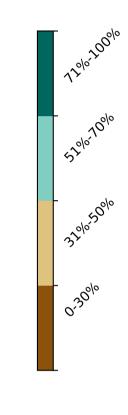
Production native forests and plantation forests

Land use and forest cover

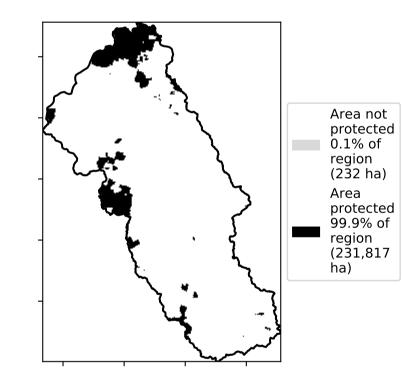


Total Vegetation Cover [%]

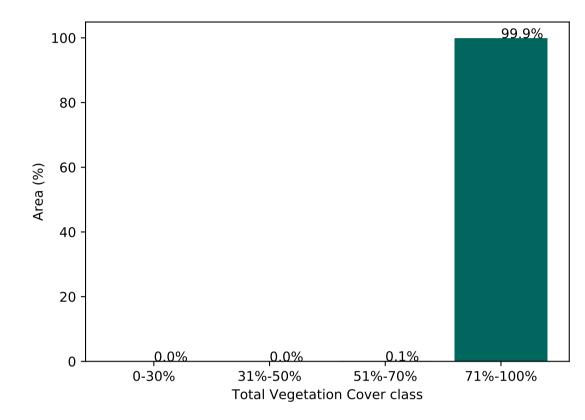




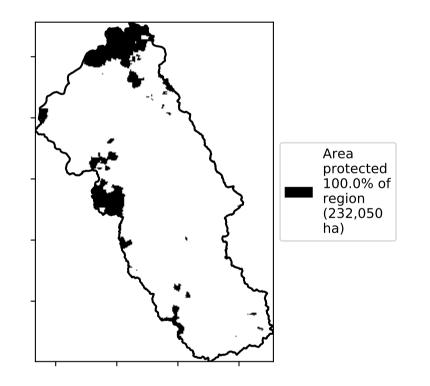
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

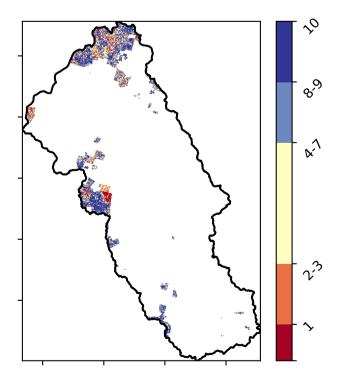


% Area protected from wind erosion (>50%)



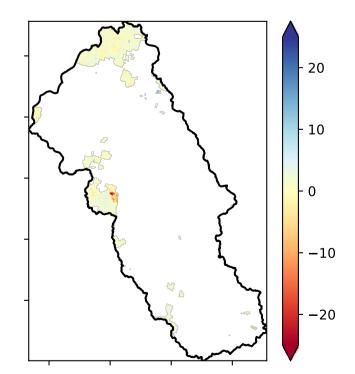
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Decile [%]



Total Vegetation Cover Anomaly [%]

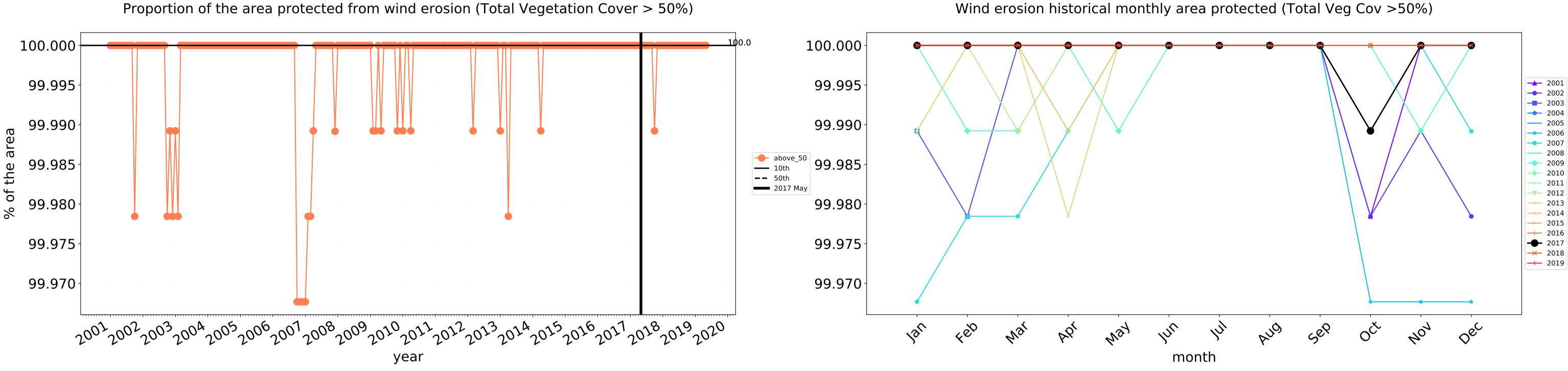
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



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

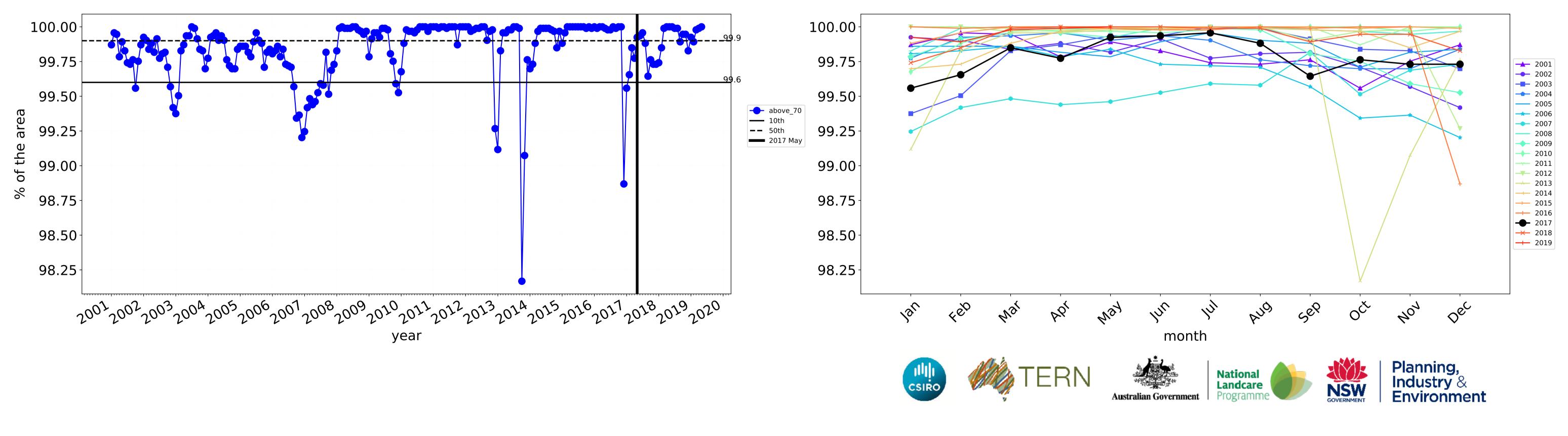


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Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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





Condamine (2,441,150 ha and no data 4,462 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	2,441,150	99.9% 2,438,900	96.8% 2,362,277	80.4% 1,961,814	66.4% 1,620,575	37.3% 910,372	10.7% 260,217
Conservation and natural environments	57,650	100.0% 57,650	100.0% 57,650	99.4% 57,325	98.5% 56,775	78.1% 45,000	29.9% 17,225
Conservation and natural environments Woodland forest	35,625	100.0% 35,625	100.0% 35,625	100.0% 35,625	99.6% 35,500	79.4% 28,300	19.7% 7,025
Agriculture	2,083,400	99.9% 2,081,400	96.3% 2,006,425	77.6% 1,617,500	62.0% 1,291,525	30.5% 634,425	9.2% 191,550
Grazing	1,170,550	100.0% 1,170,525	99.9% 1,169,625	98.0% 1,147,050	89.8% 1,050,875	50.9% 595,300	15.8% 185,325
Grazing non forest	835,825	100.0% 835,800	99.9% 834,900	97.3% 812,850	86.2% 720,775	40.0% 334,375	11.4% 95,625
Grazing Woodland forest	254,625	100.0% 254,625	100.0% 254,625	99.9% 254,250	98.6% 251,050	75.8% 192,975	22.0% 55,975
Grazing - Forest (non woodland)	80,100	100.0% 80,100	100.0% 80,100	99.8% 79,950	98.7% 79,050	84.8% 67,950	42.1% 33,725
Cropping	752,375	99.8% 751,125	92.1% 693,150	53.9% 405,250	28.8% 216,500	4.7% 35,525	0.7% 5,375
Irrigation	160,200	99.5% 159,475	89.5% 143,375	40.5% 64,950	14.9% 23,900	2.1% 3,425	0.5% 800
Production native forests and plantation forests	232,050	100.0% 232,050	100.0% 232,050	99.9% 231,875	99.5% 231,000	92.6% 214,950	21.2% 49,250

