Total vegetation cover soil protection Region:LGA Wingecarribee_(A) NSW

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:

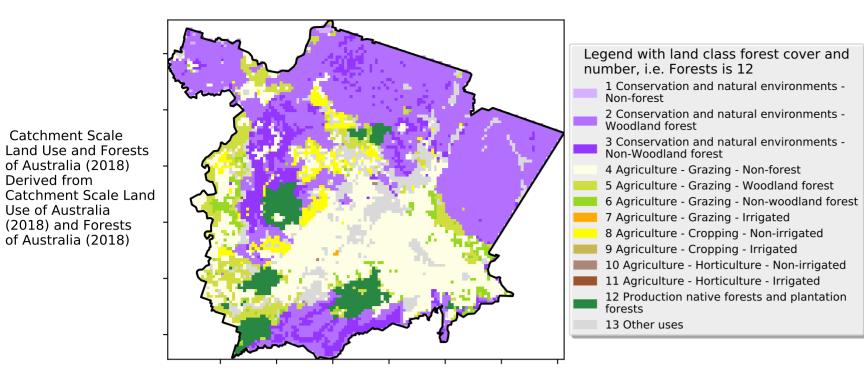
https://doi.org/10.4225/08/5848a3f19a7b3



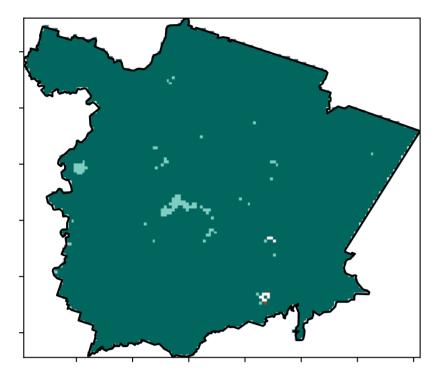
Vegetation Cover Dec 2019

Land use and forest cover

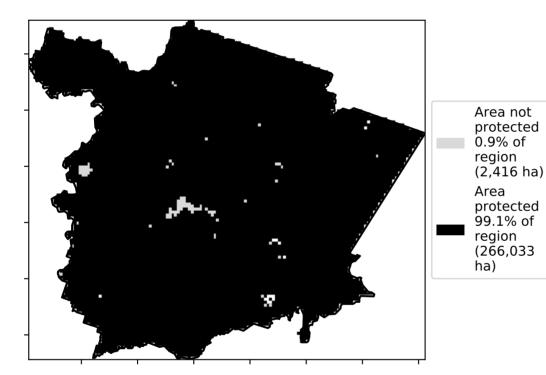
Proportion of each land class in area

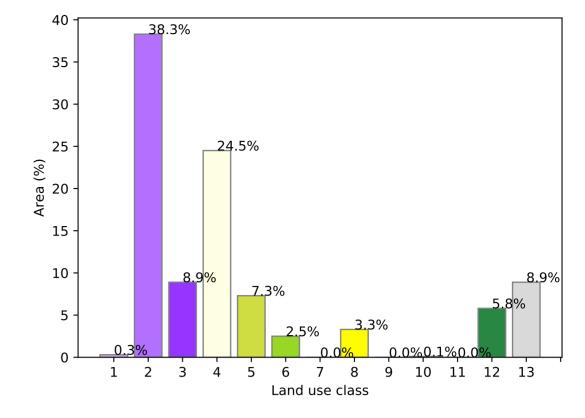


Total Vegetation Cover [%]

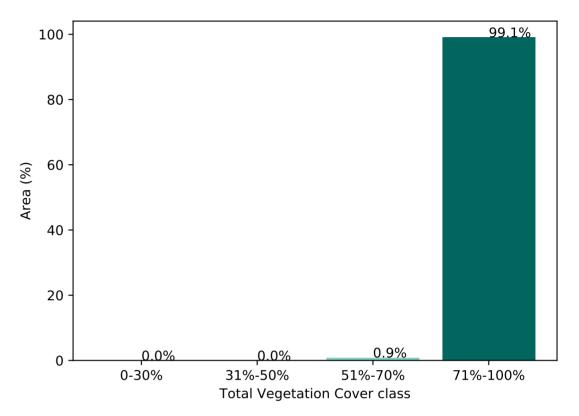


% Area protected from water erosion (>70%)





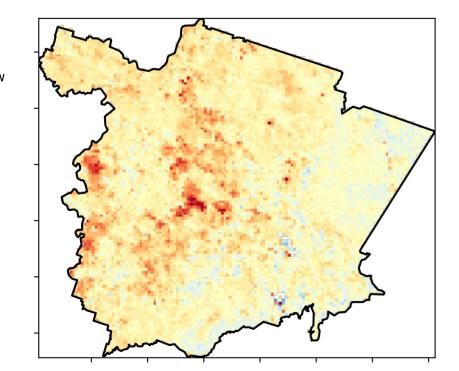
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



10 0 -10

-20

- 20

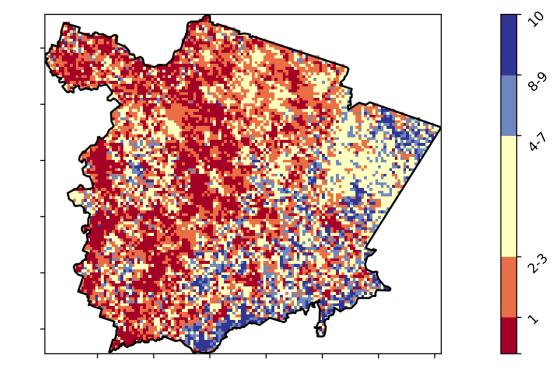
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· 52°10'70°10

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0-30%

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

in the lowest 10% of

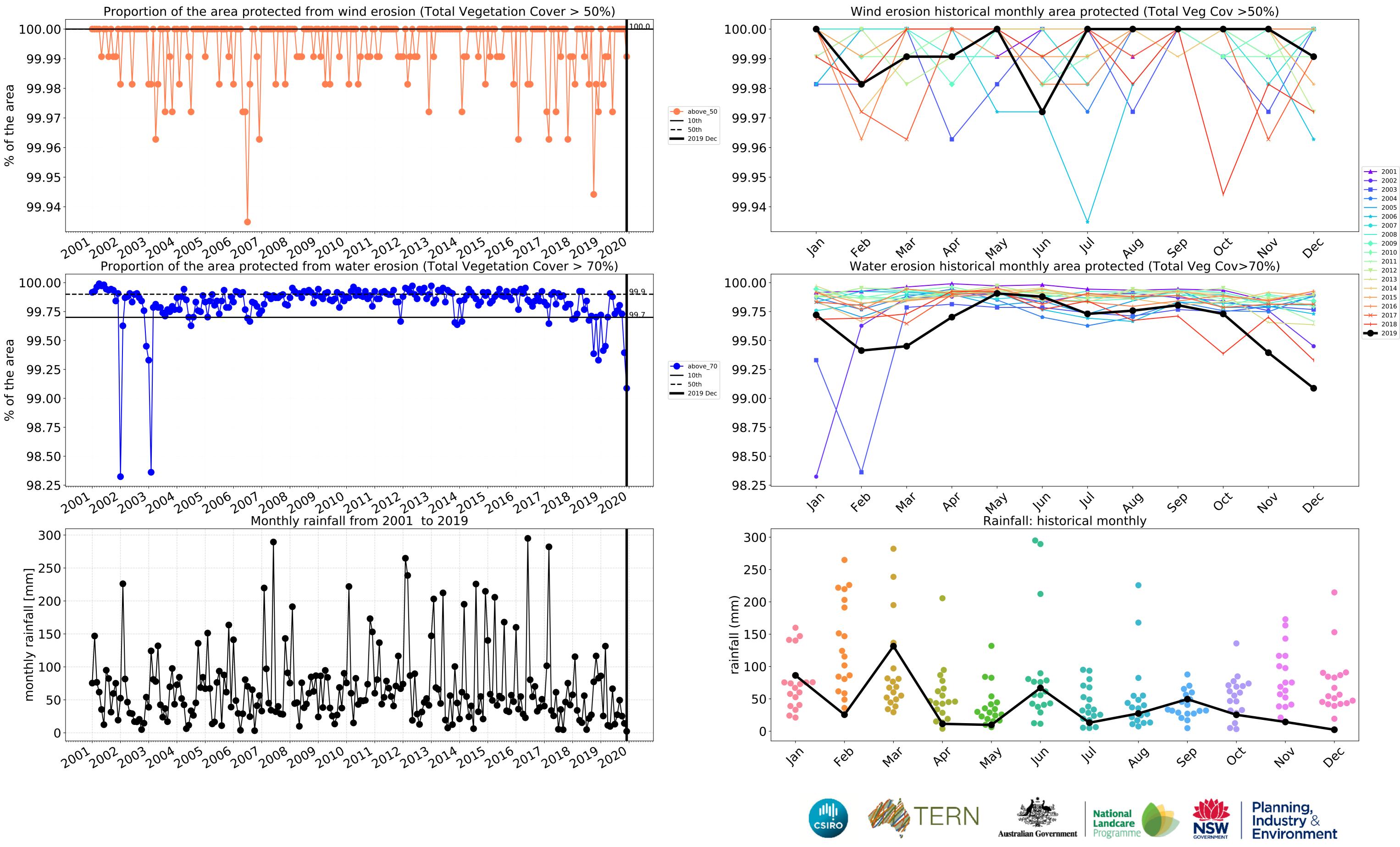
from 2001 to 2019.

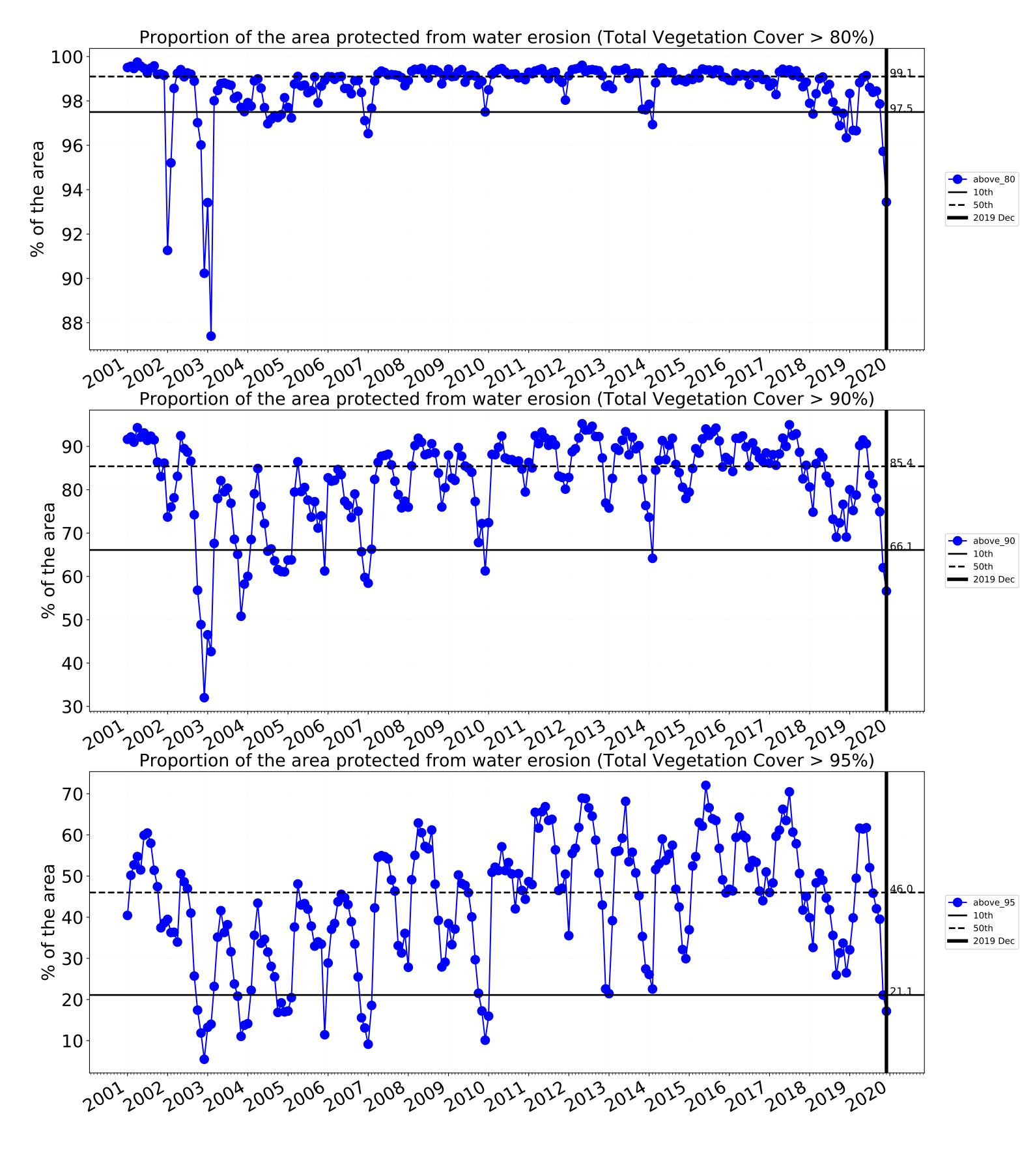
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

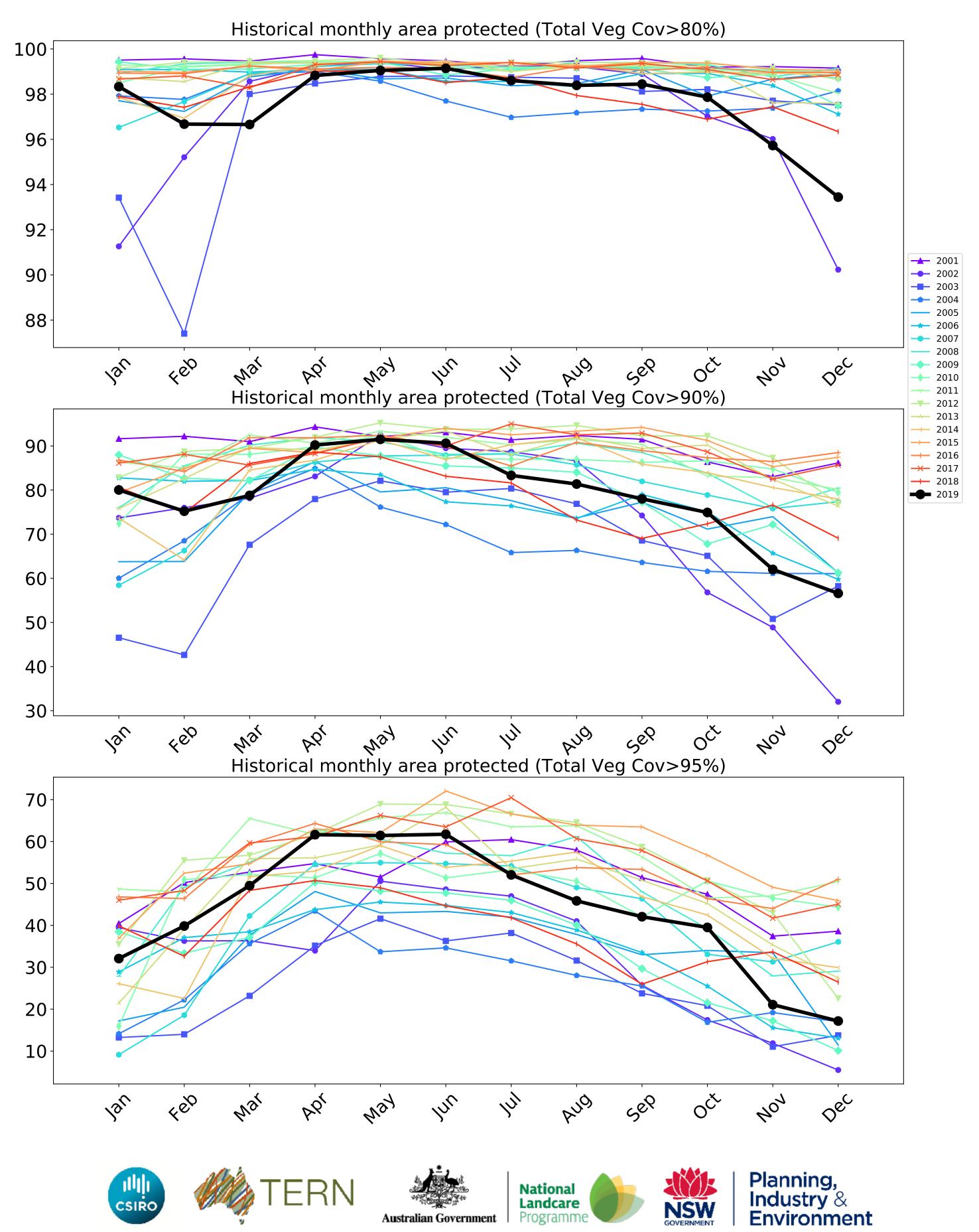
Derived from

Use of Australia









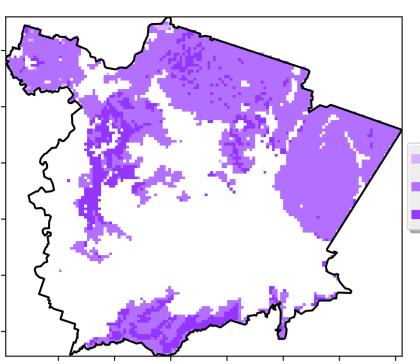


Conservation and natural environments

forest

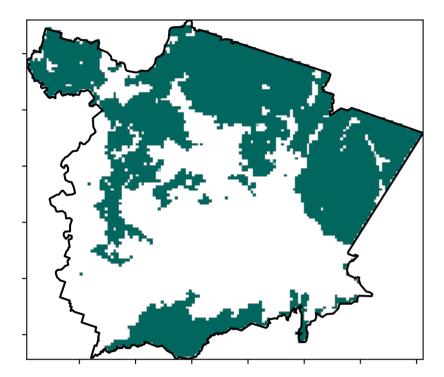
woodland forest

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

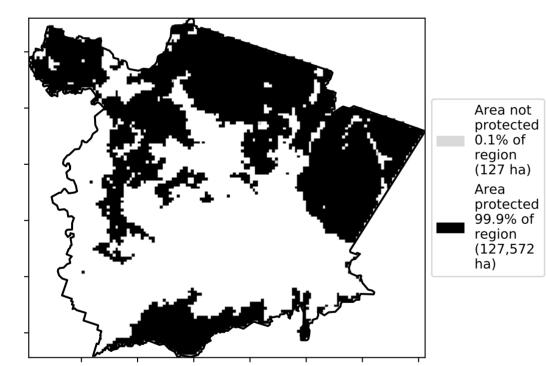


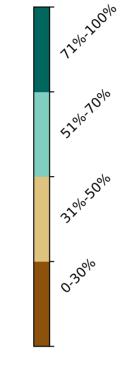
Land use and forest cover

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

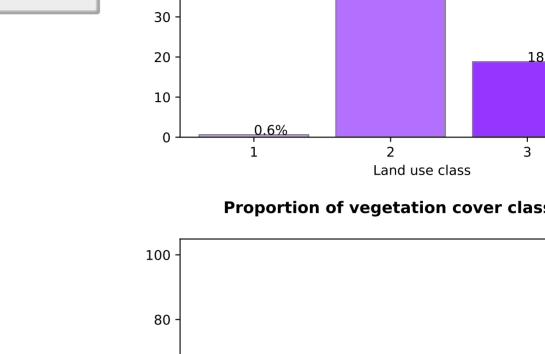




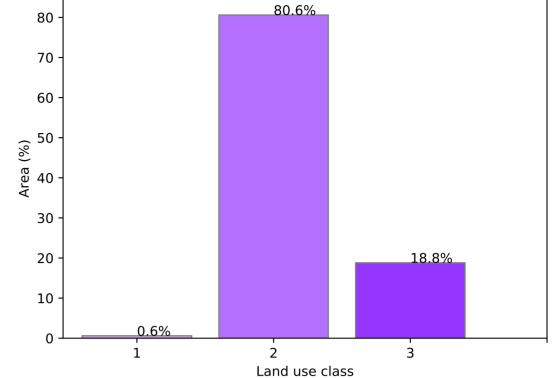
1 Conservation and natural environments - Non-forest

3 Conservation and natural environments - Non-

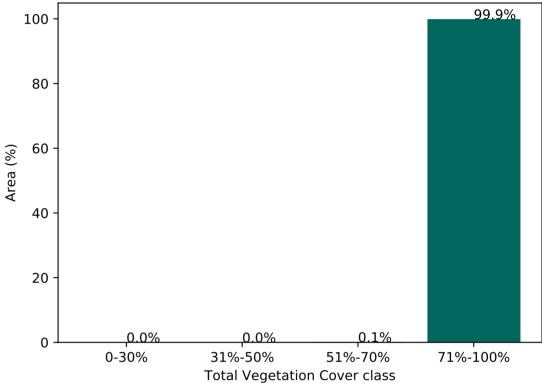
2 Conservation and natural environments - Woodland



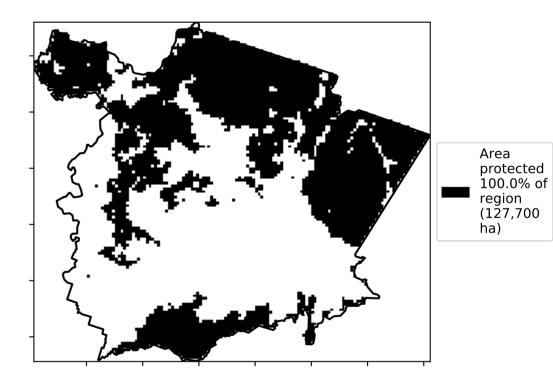
Proportion of each land class in area



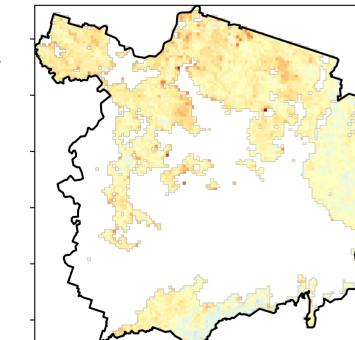
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



- 10 0 -10

- 20

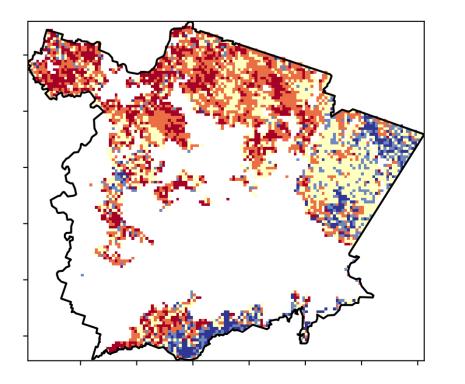
Total Vegetation Cover Decile [%]

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Deciles show where the

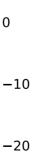
pixel value lies in the

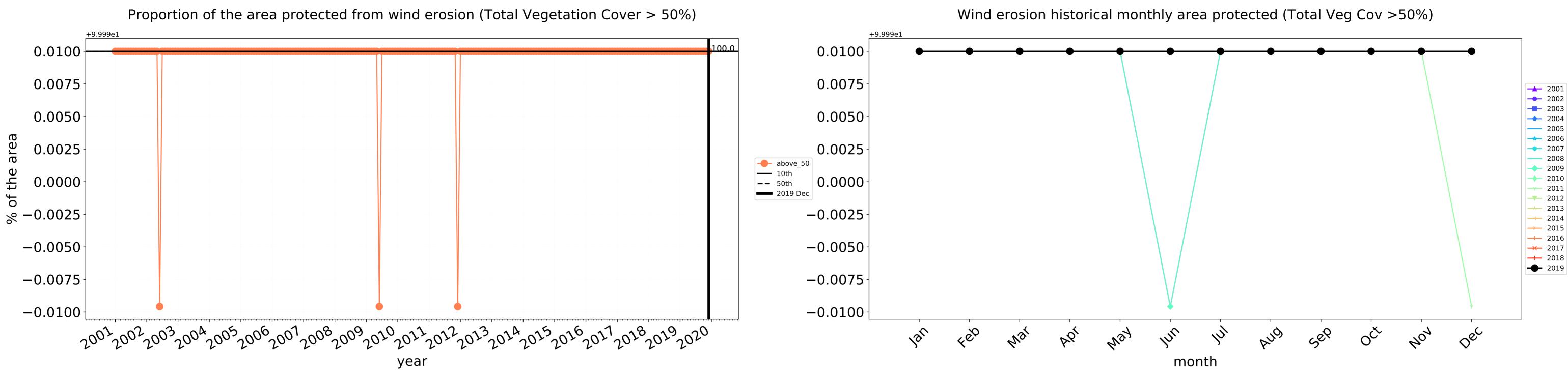
in the lowest 10% of

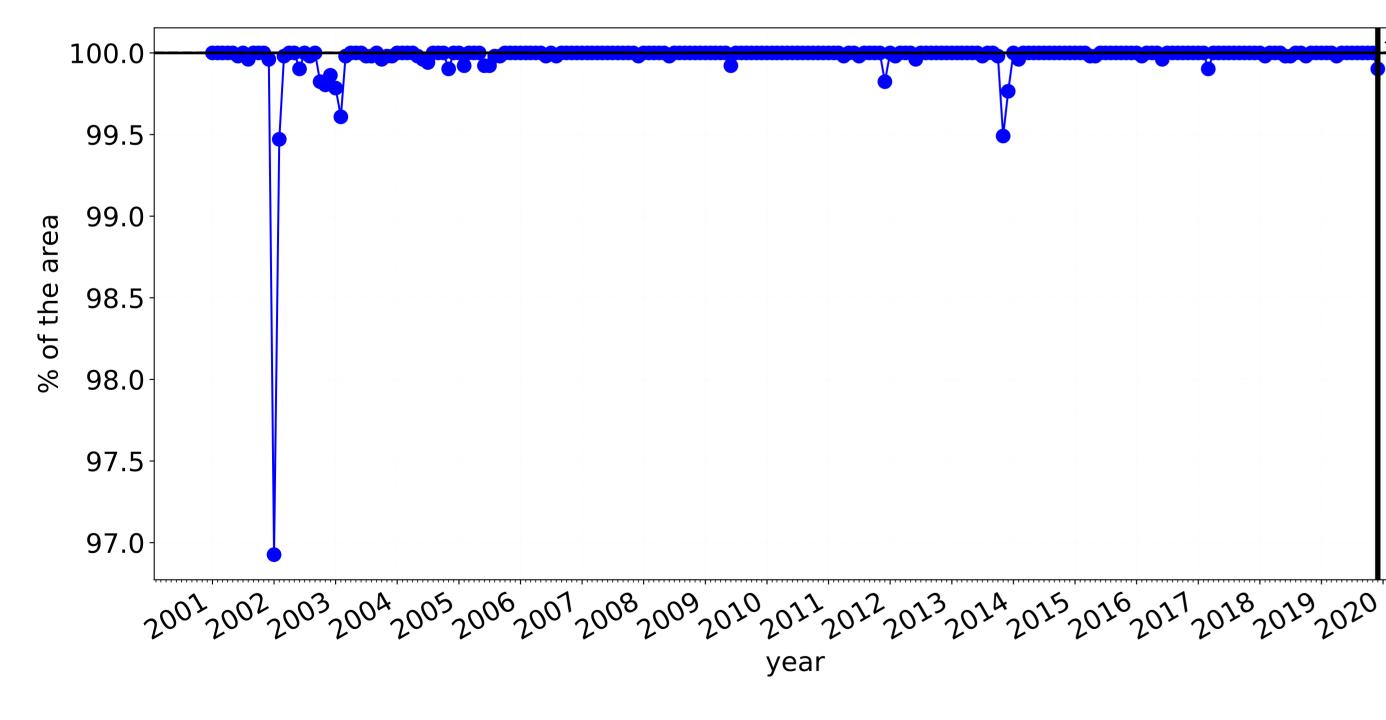
records for that month of the map using baseline from 2001 to 2019.

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

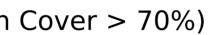
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.



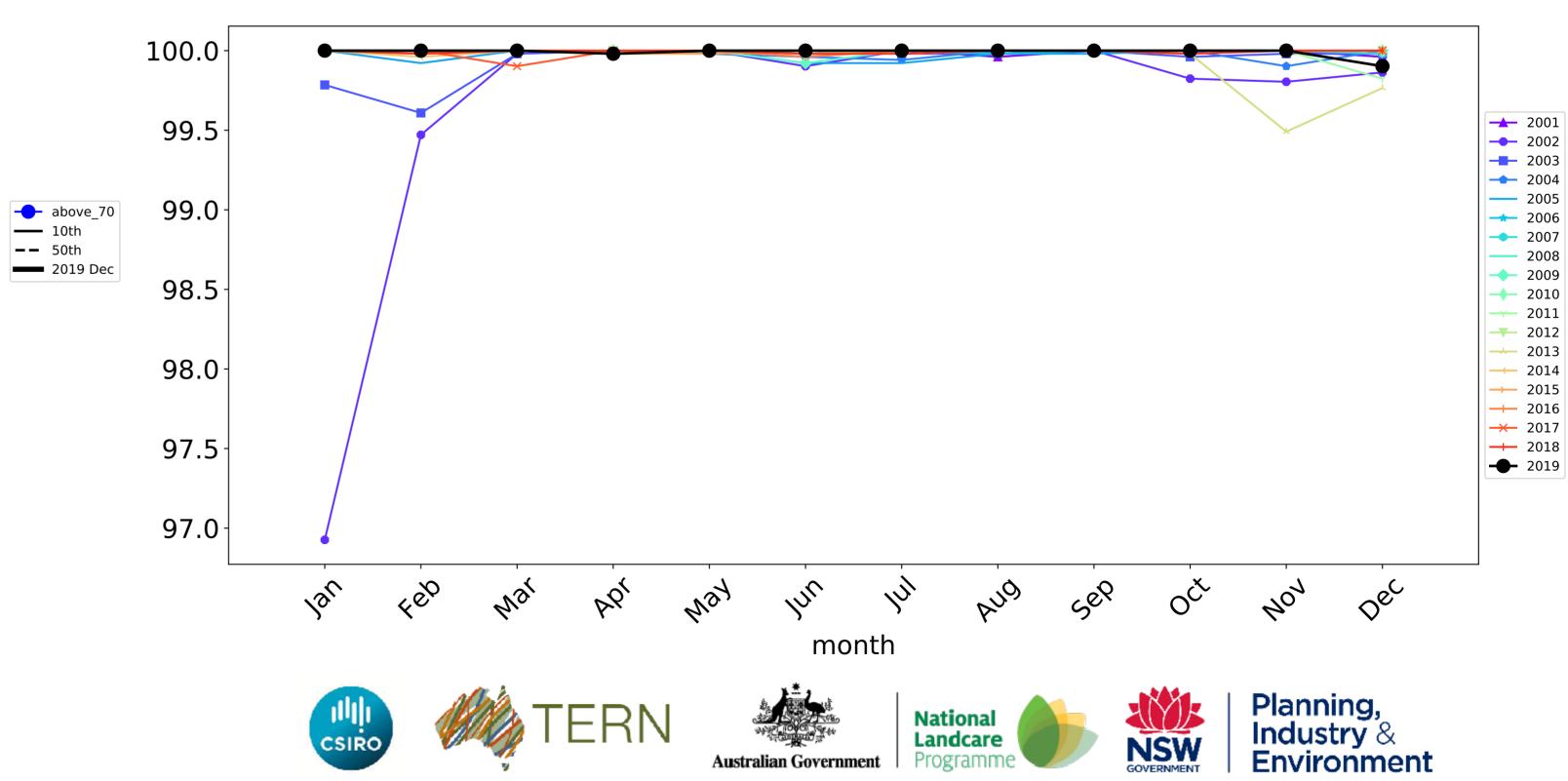




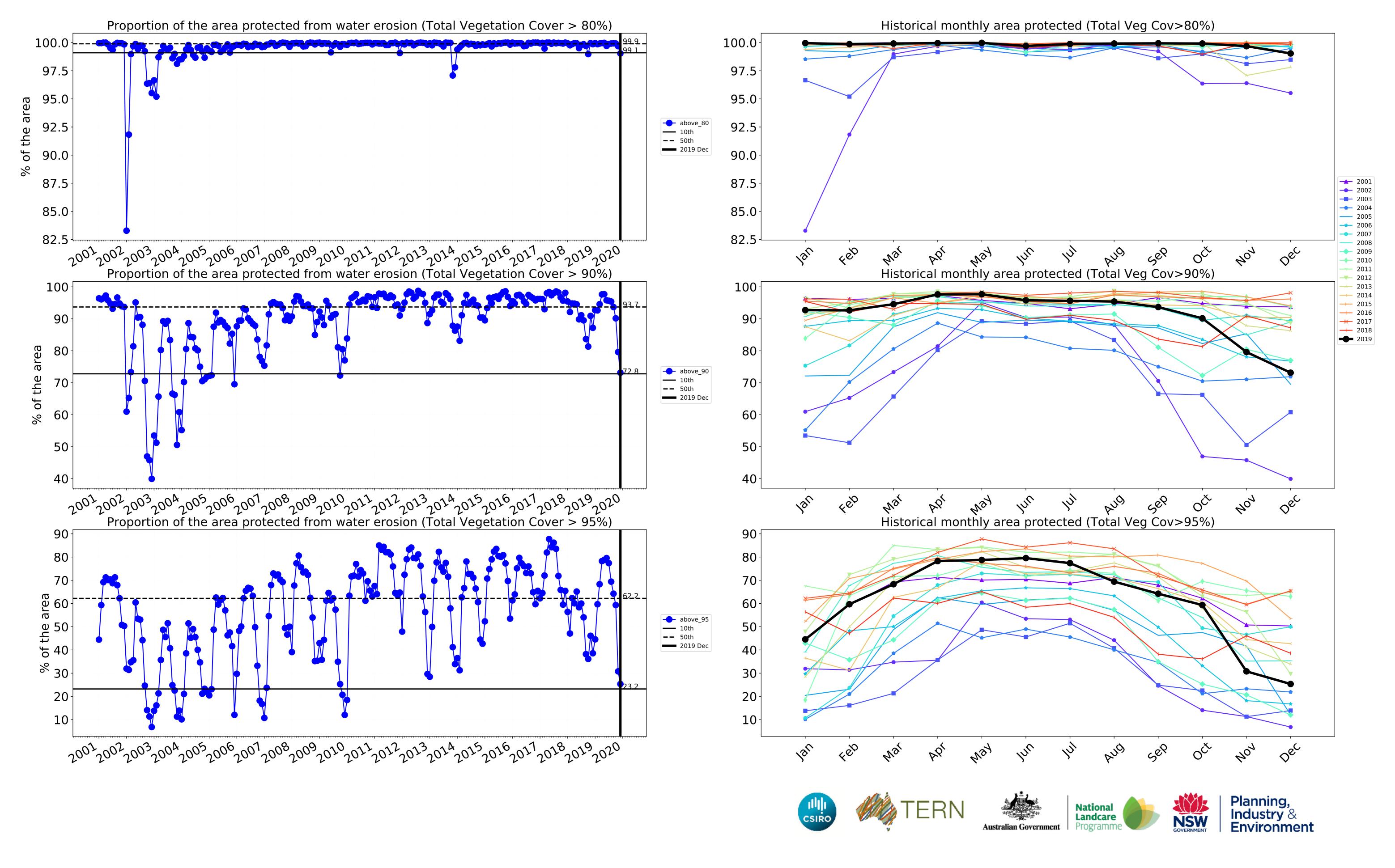
Conservation and natural environments timeseries



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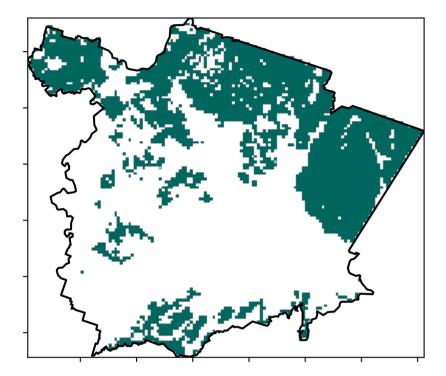
Water erosion historical monthly area protected (Total Veg Cov>70%)



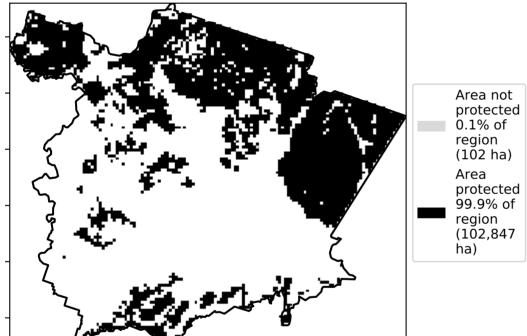
Conservation and natural environments Woodland forest

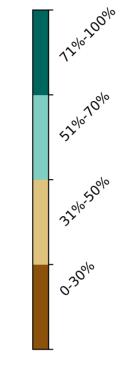
1 Conservation and natural environments - Woodland forest

Total Vegetation Cover [%]



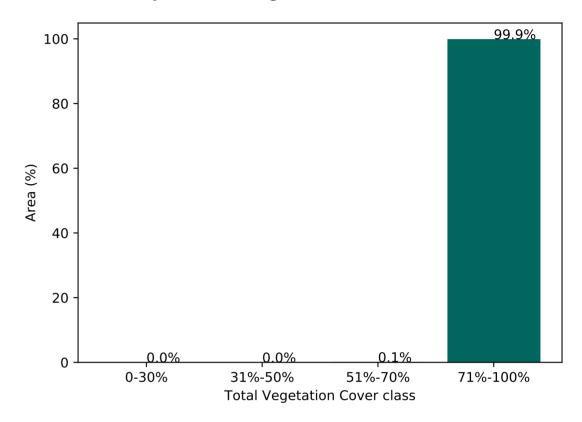
% Area protected from water erosion (>70%)



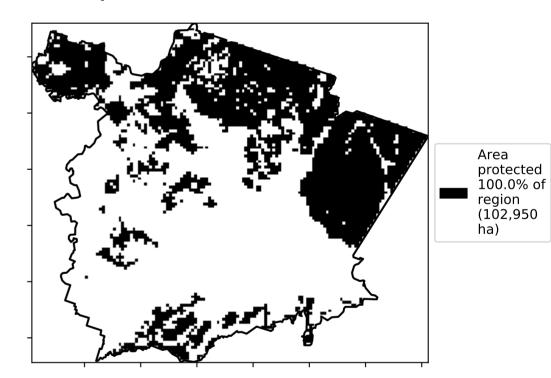




Proportion of vegetation cover class in area



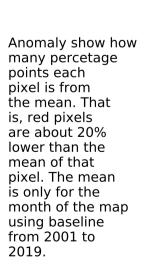
% Area protected from wind erosion (>50%)

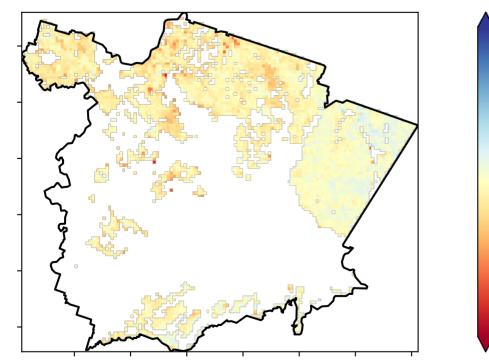


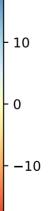
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Land use and forest cover

Total Vegetation Cover Anomaly [%]







-20

- 20

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.

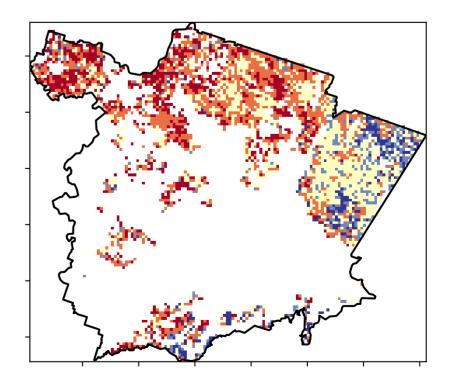
Total Vegetation Cover Decile [%]

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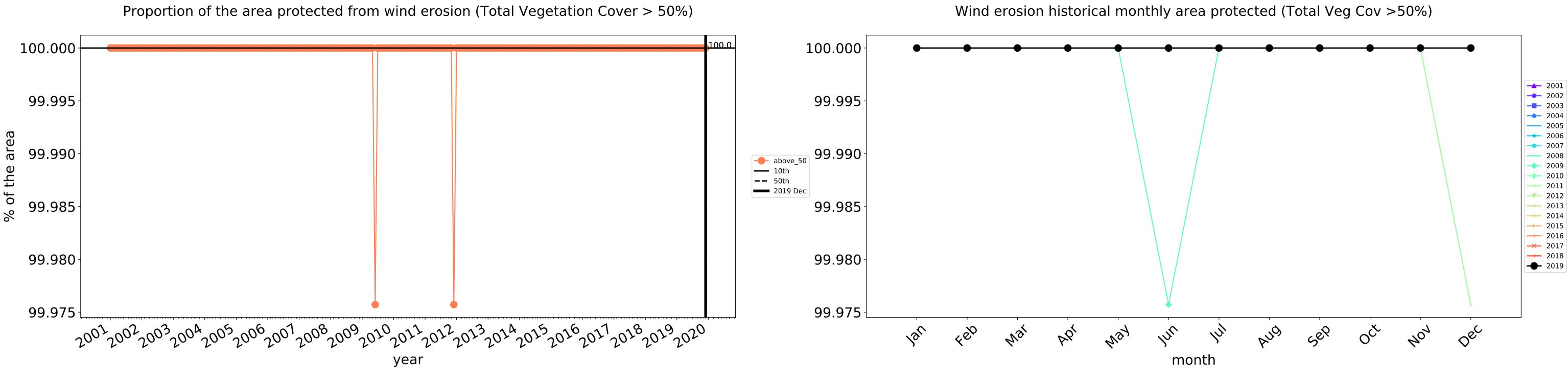
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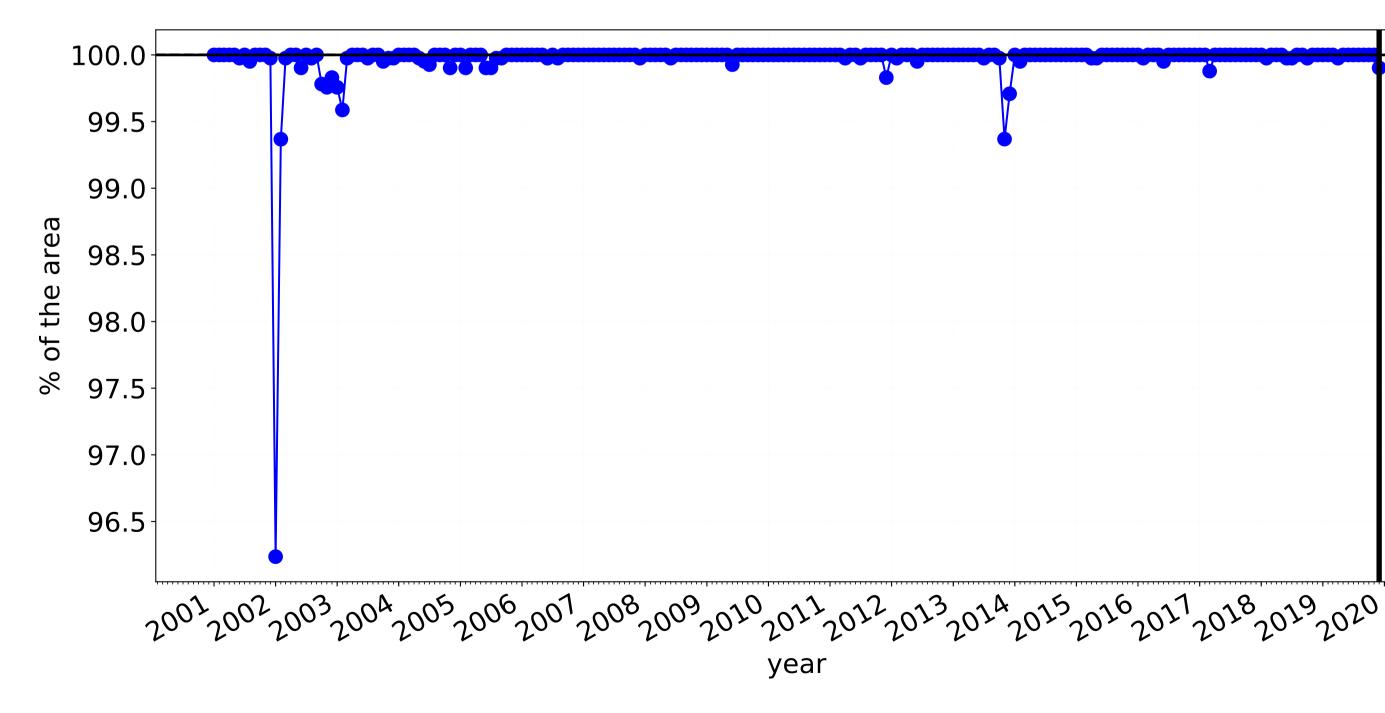


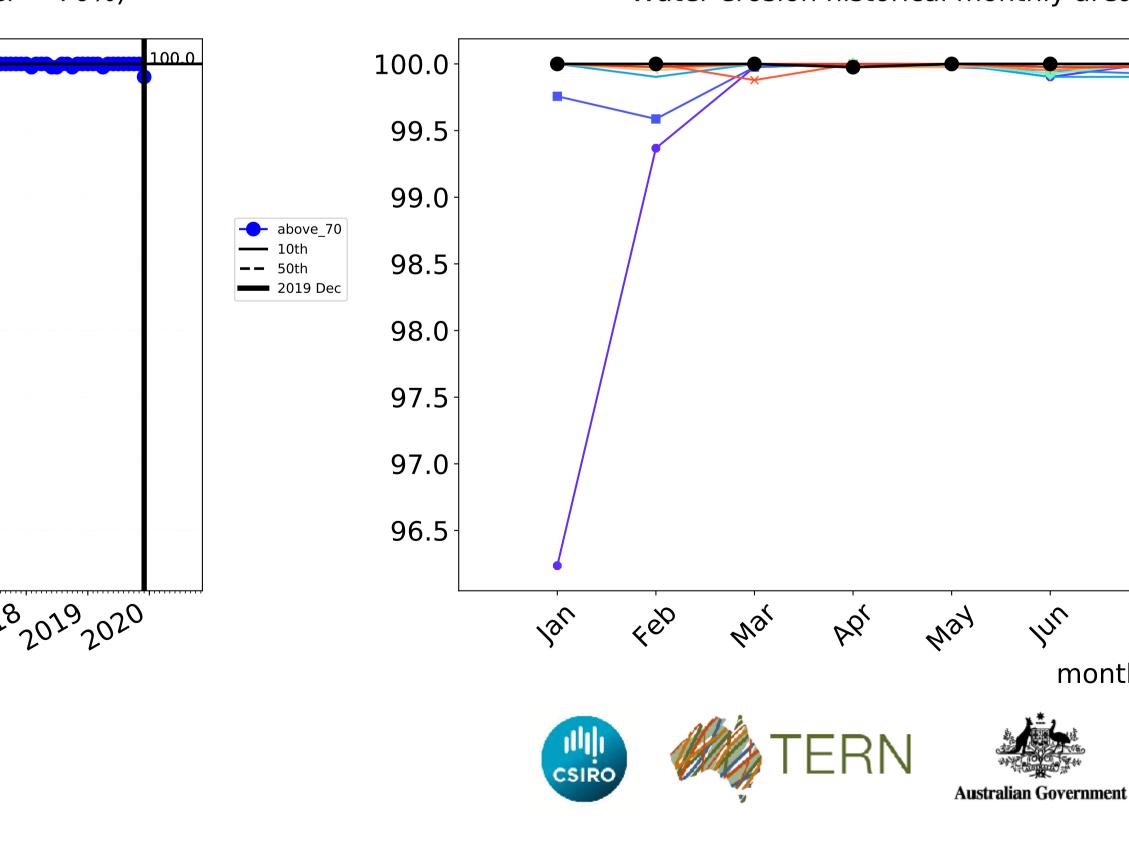
the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean from 2001 to 2019.

Conservation and natural environments Woodland forest timeseries

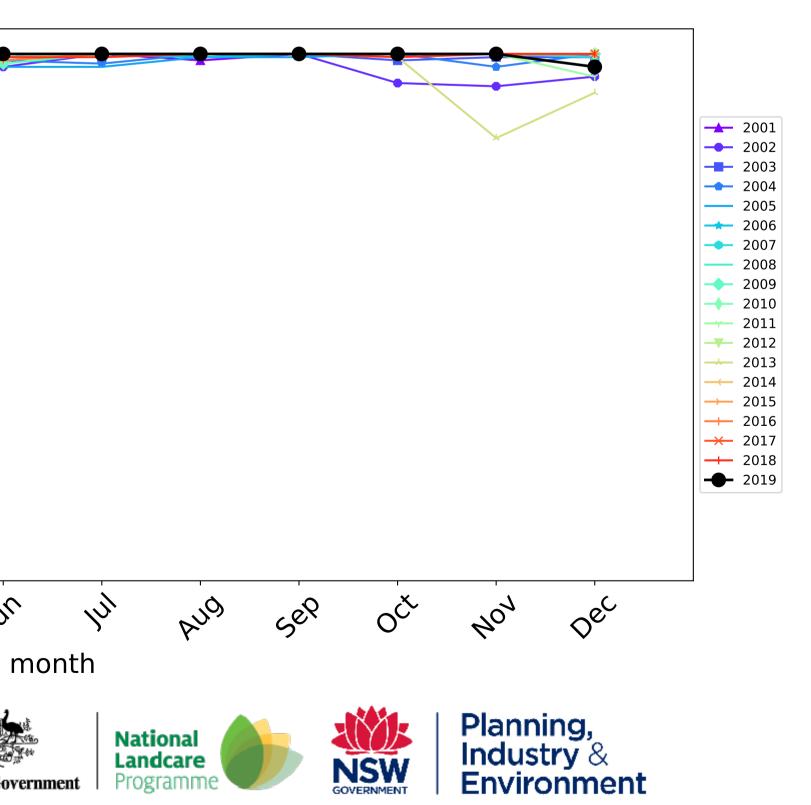


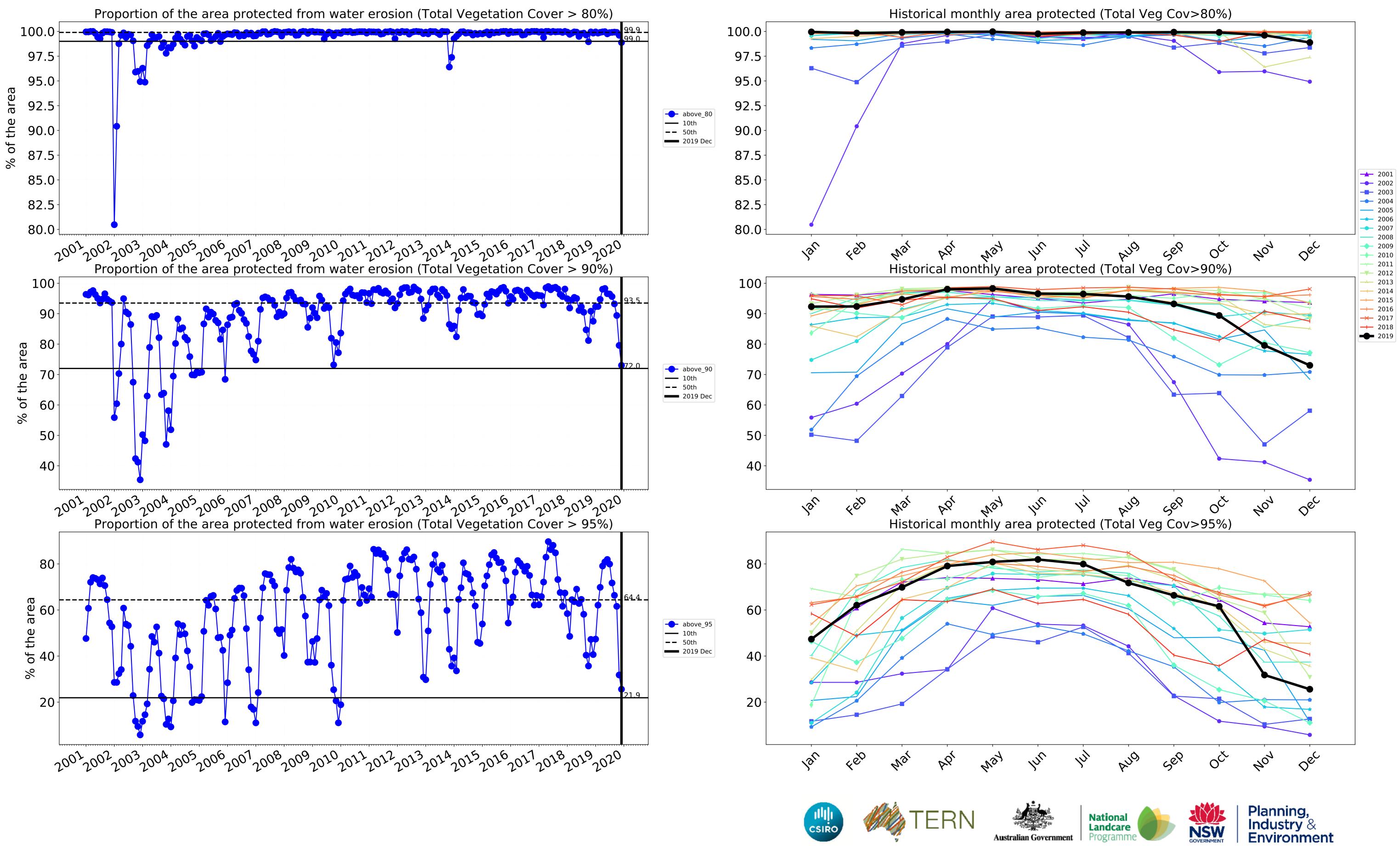
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



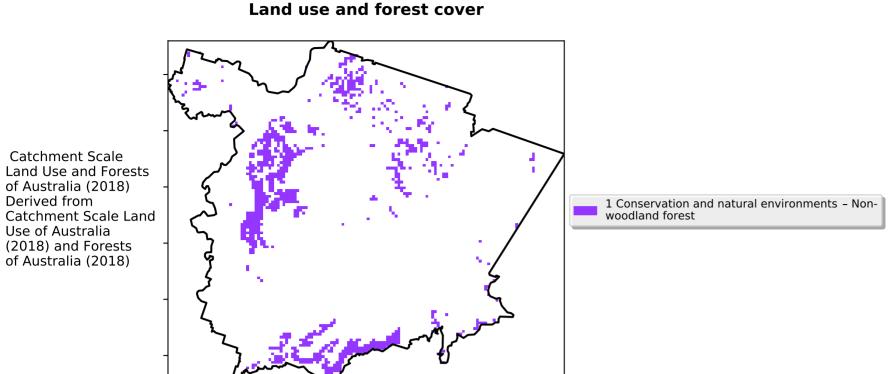


Water erosion historical monthly area protected (Total Veg Cov>70%)

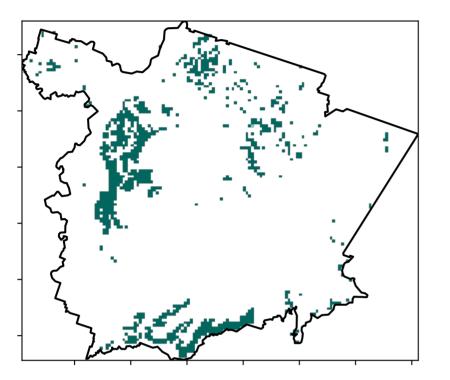




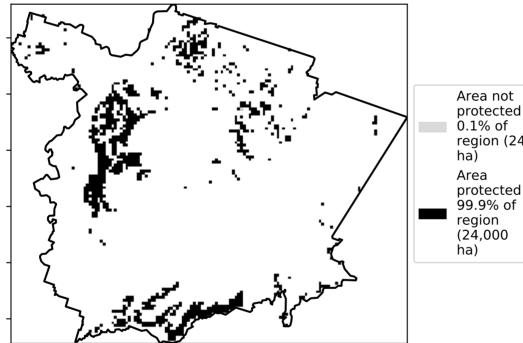
Conservation and natural environments Forest (non woodland)

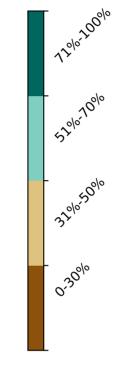


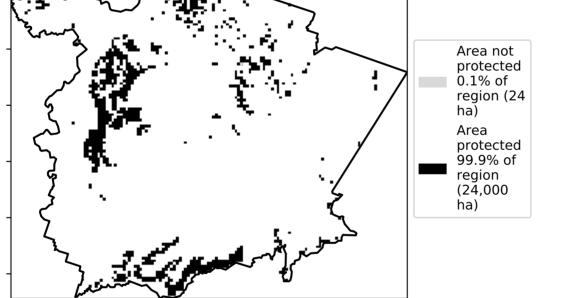
Total Vegetation Cover [%]



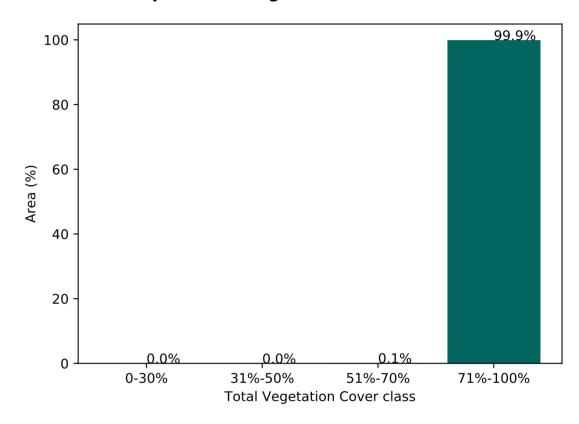
% Area protected from water erosion (>70%)



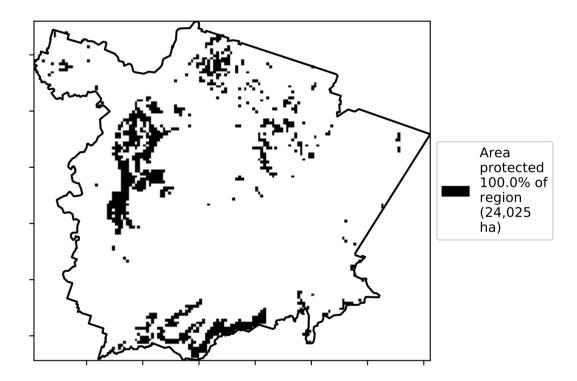




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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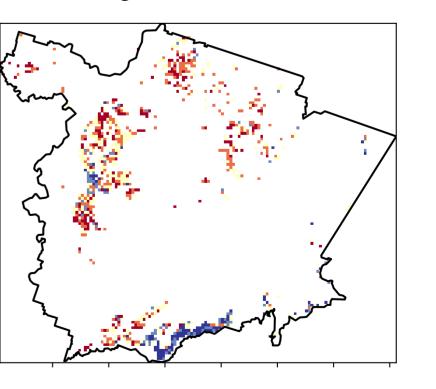
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests

Total Vegetation Cover Anomaly [%]

- 20 - 10 0 -10-20

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

Total Vegetation Cover Decile [%]





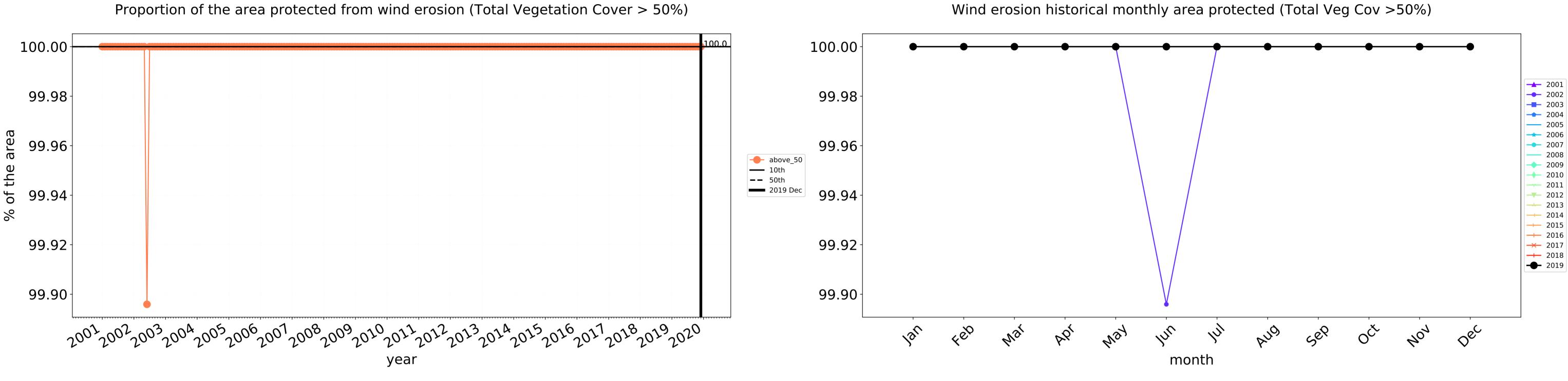


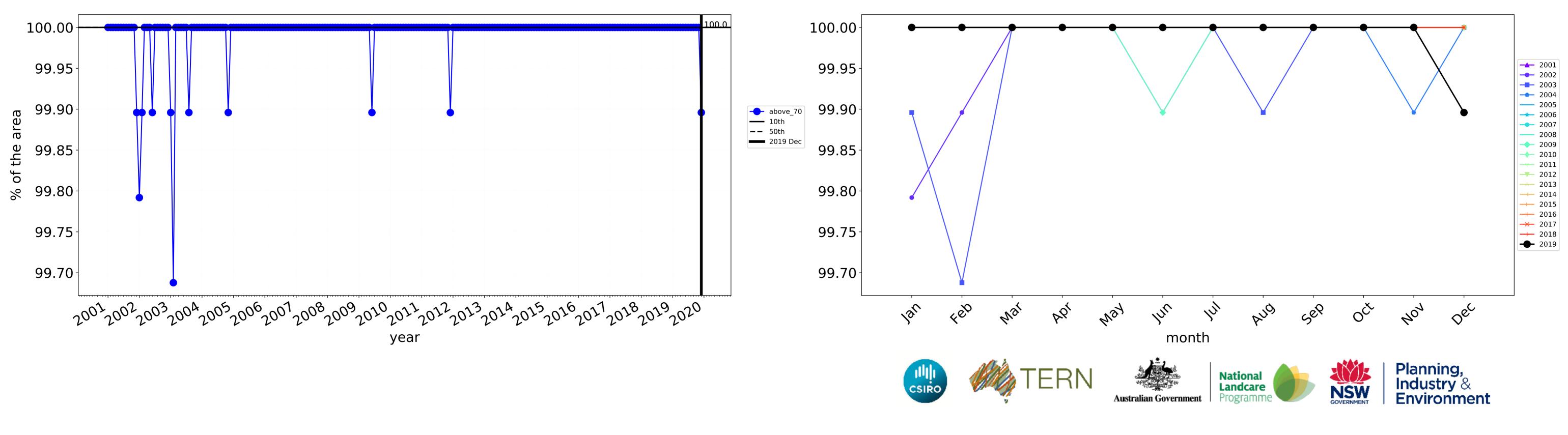


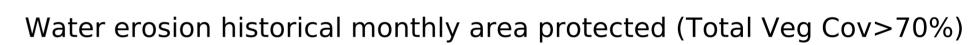


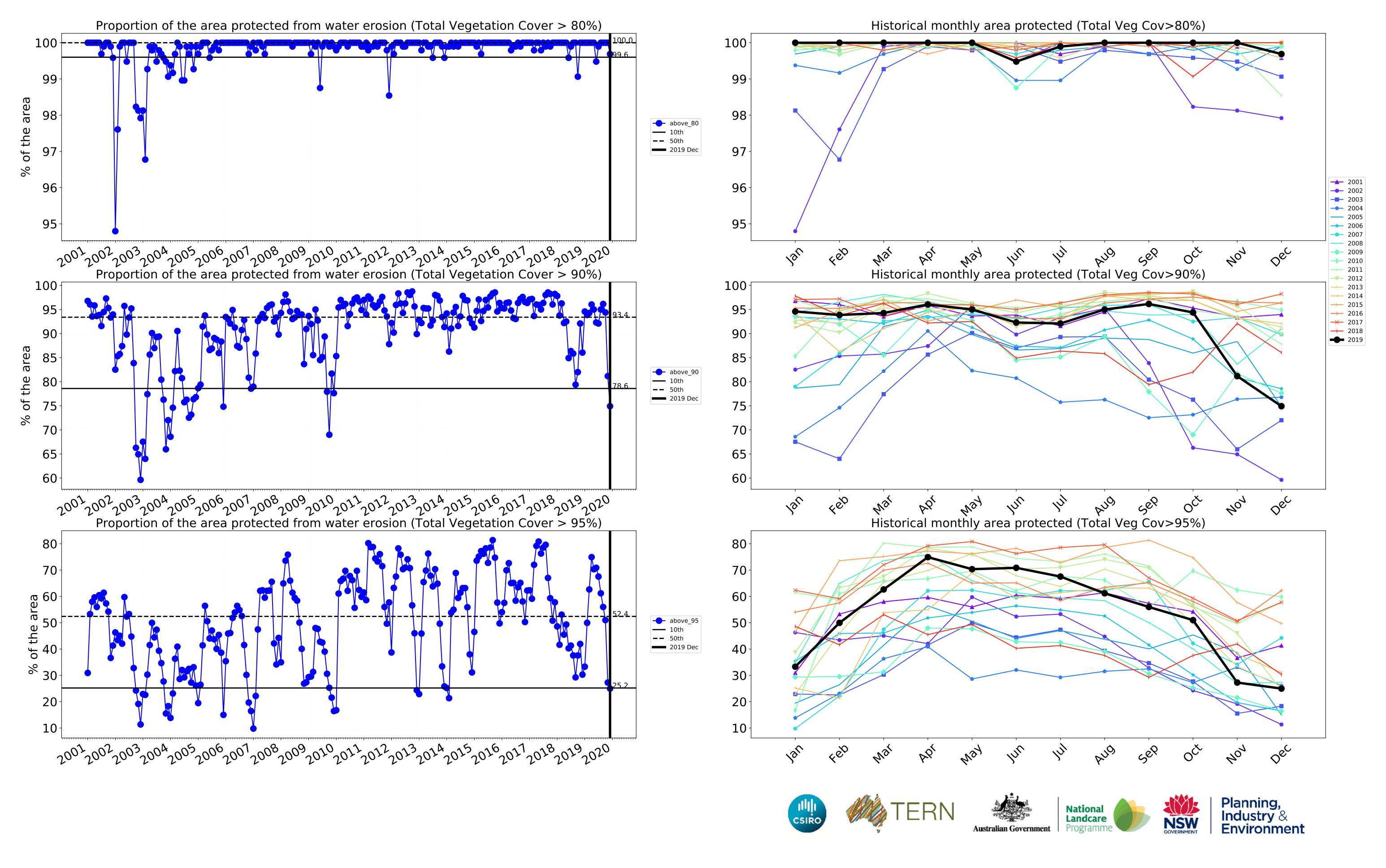
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Conservation and natural environments Forest (non woodland) timeseries





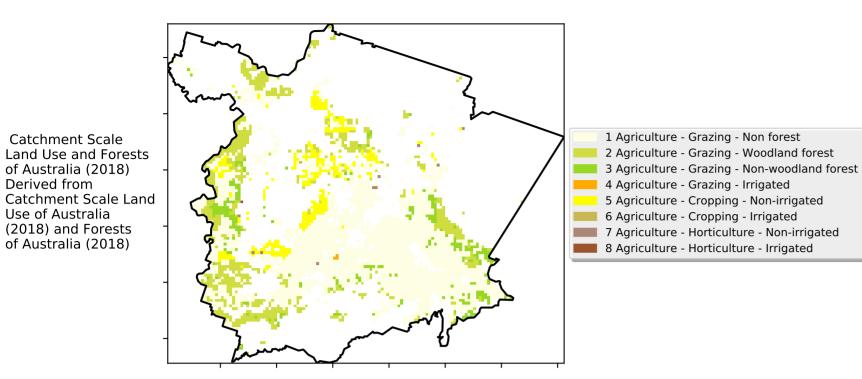




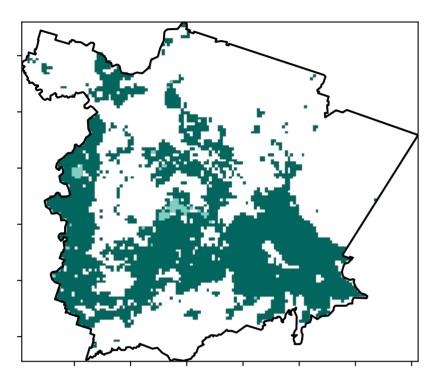


Agriculture

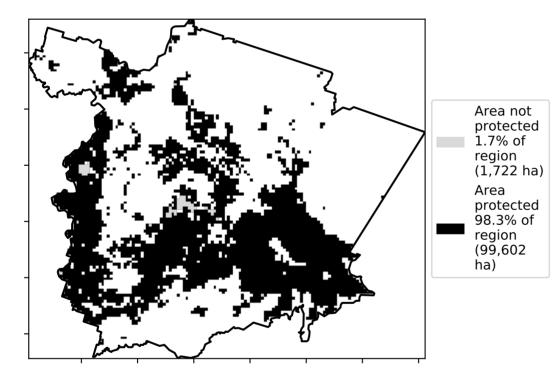
Land use and forest cover

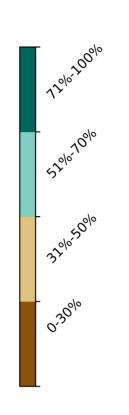


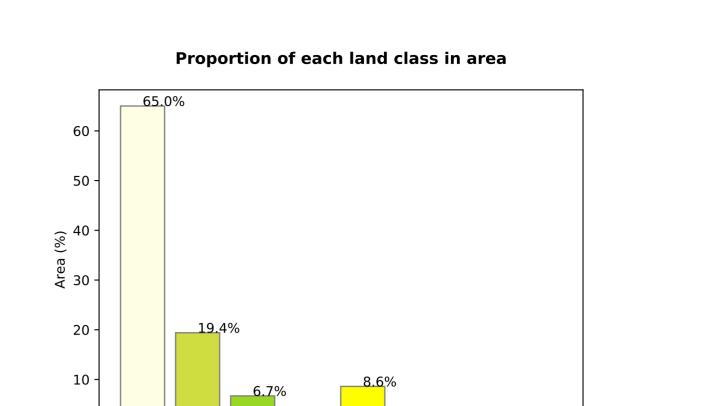
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)







Proportion of vegetation cover class in area

Land use class

5

4

0

1

2

3

0.2%

0.0%

6

0.0%

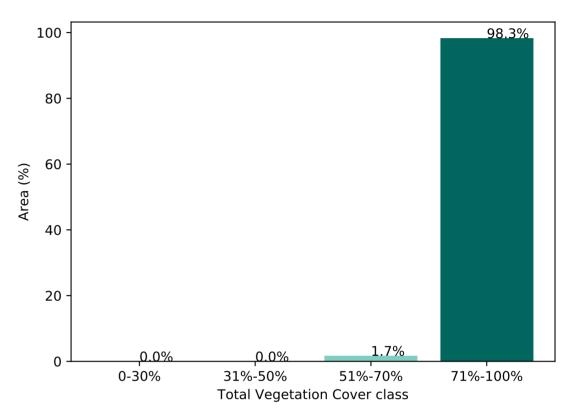
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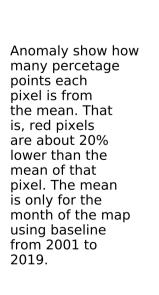
8



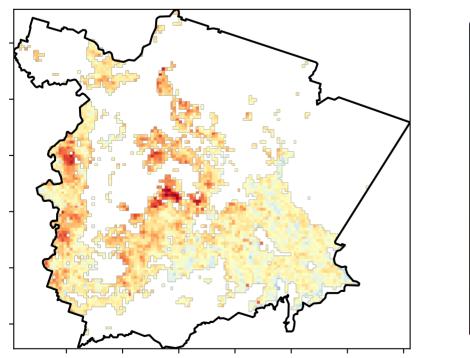
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

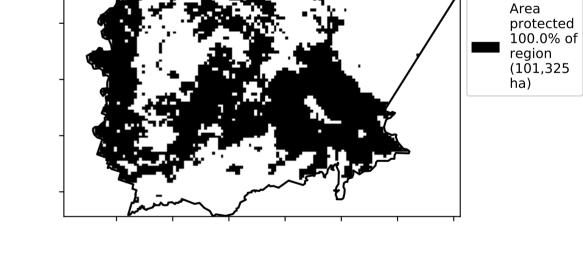


Derived from

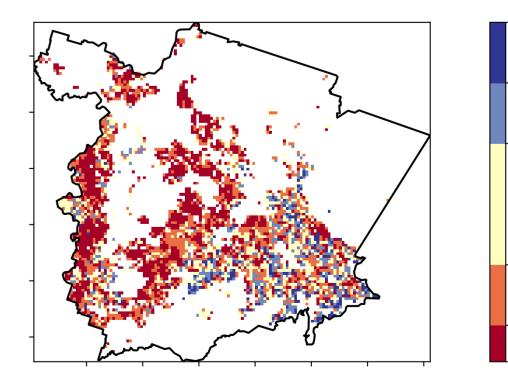




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Total Vegetation Cover Decile [%]





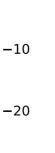
Deciles show where the

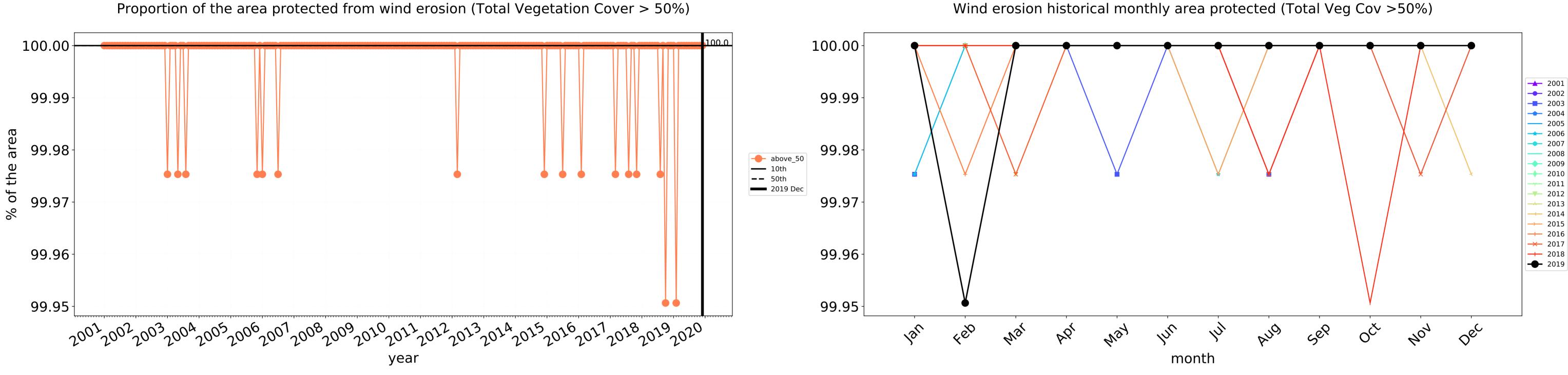
pixel value lies in the

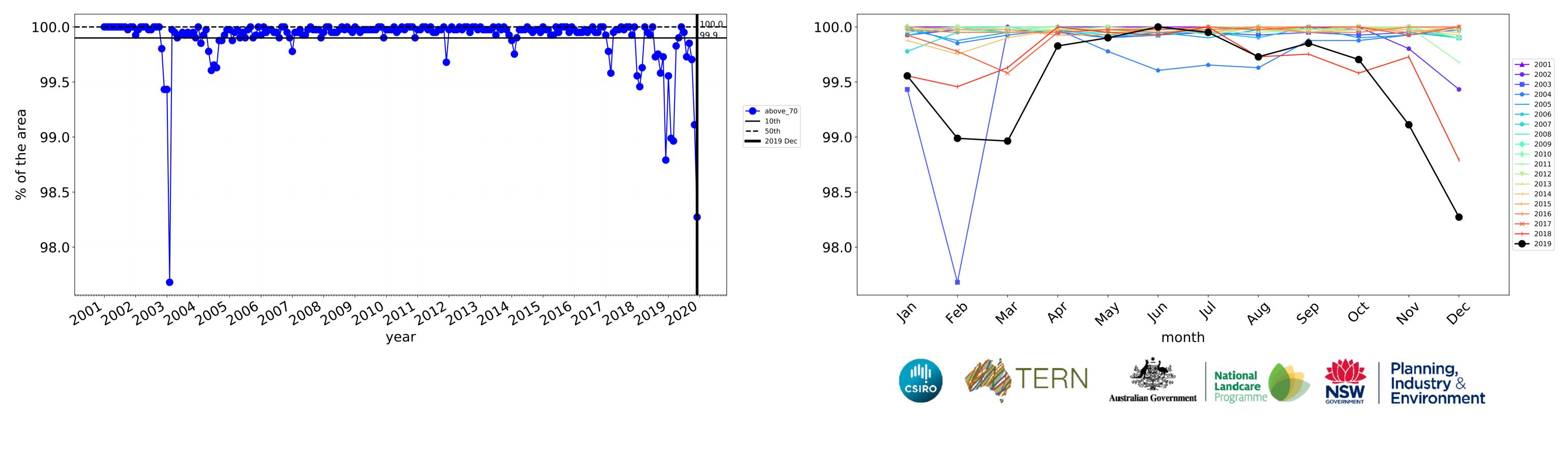
in the lowest 10% of

records for that month of the map using baseline from 2001 to 2019.

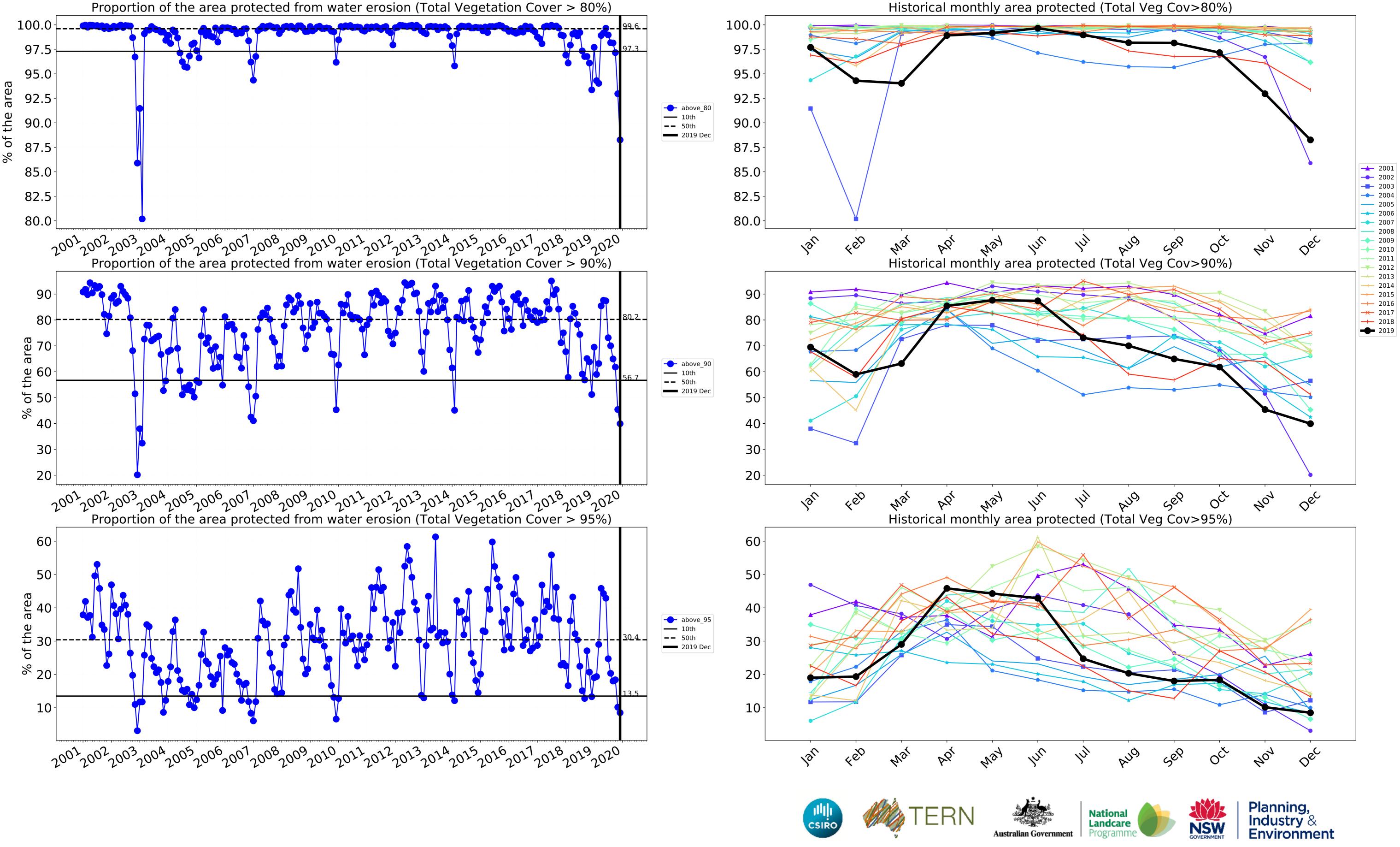
record, from highest to lowest, for that month. That is, red pixels are





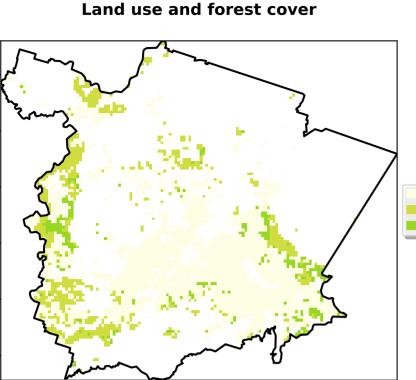


Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing

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



1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest

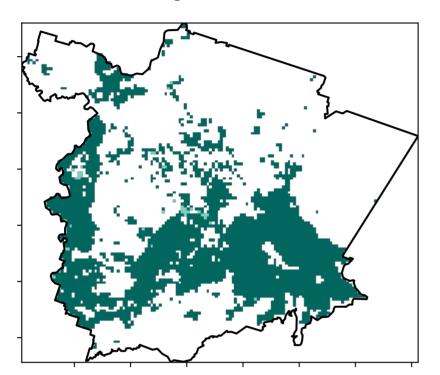
12º10-200%

52°10010

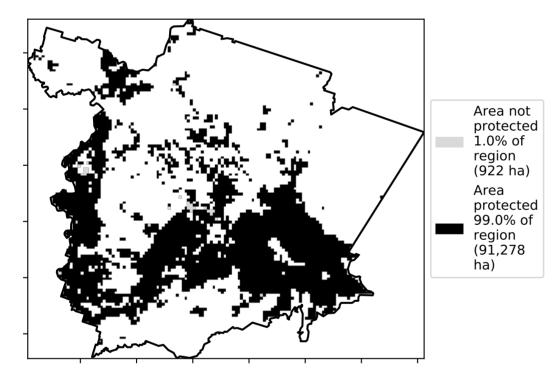
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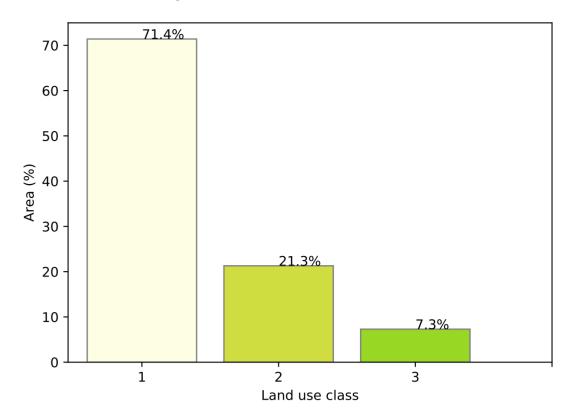
0.30%

Total Vegetation Cover [%]



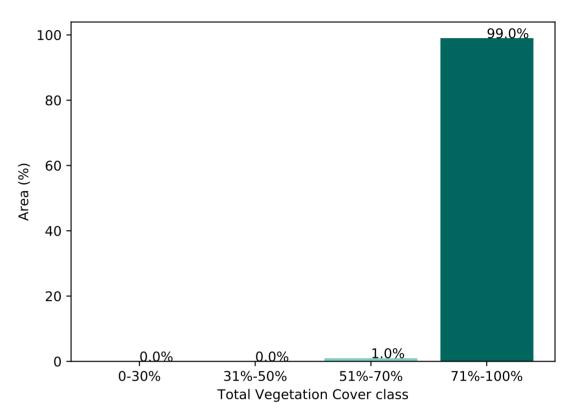
% Area protected from water erosion (>70%)



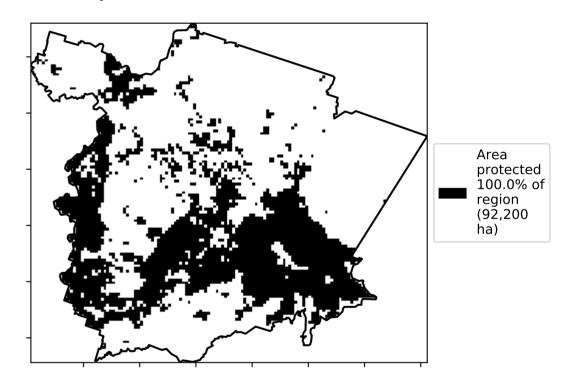


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

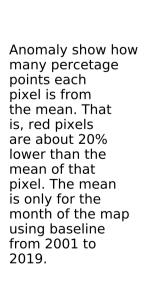


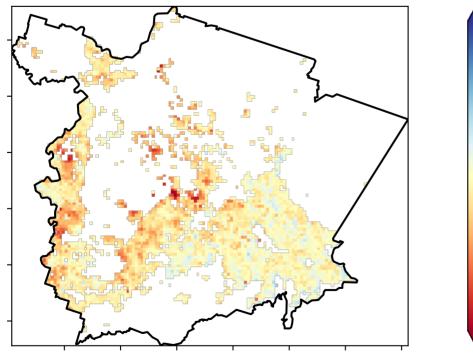
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Total Vegetation Cover Anomaly [%]





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.

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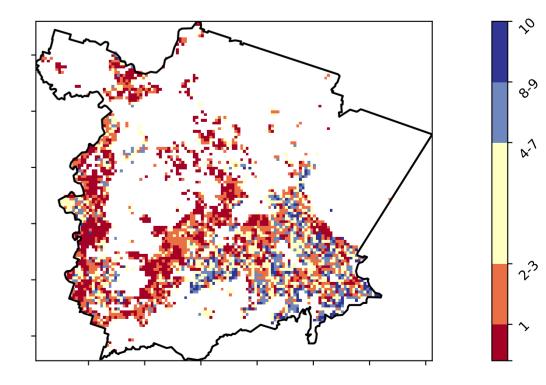
- 10

0

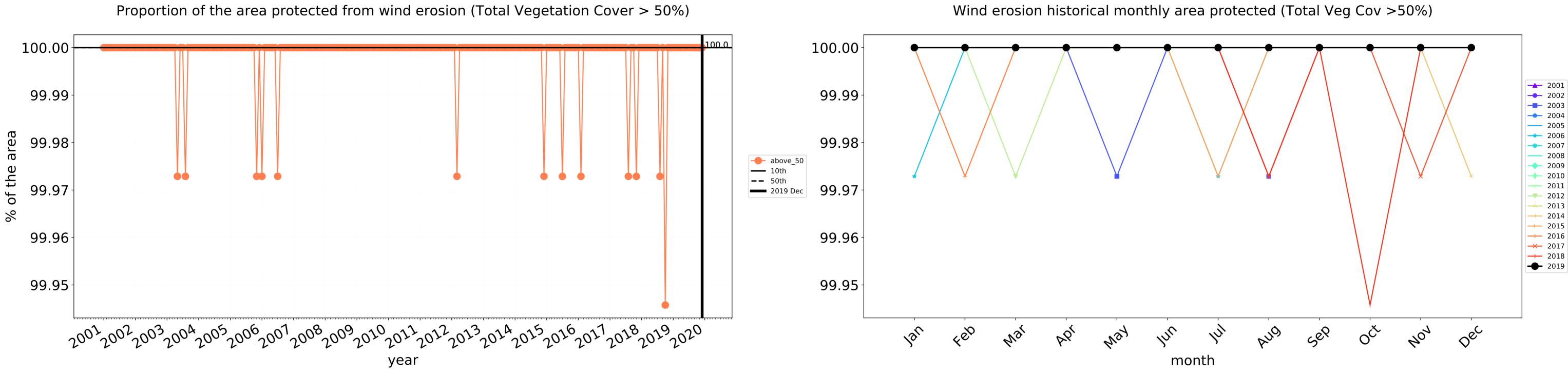
-10

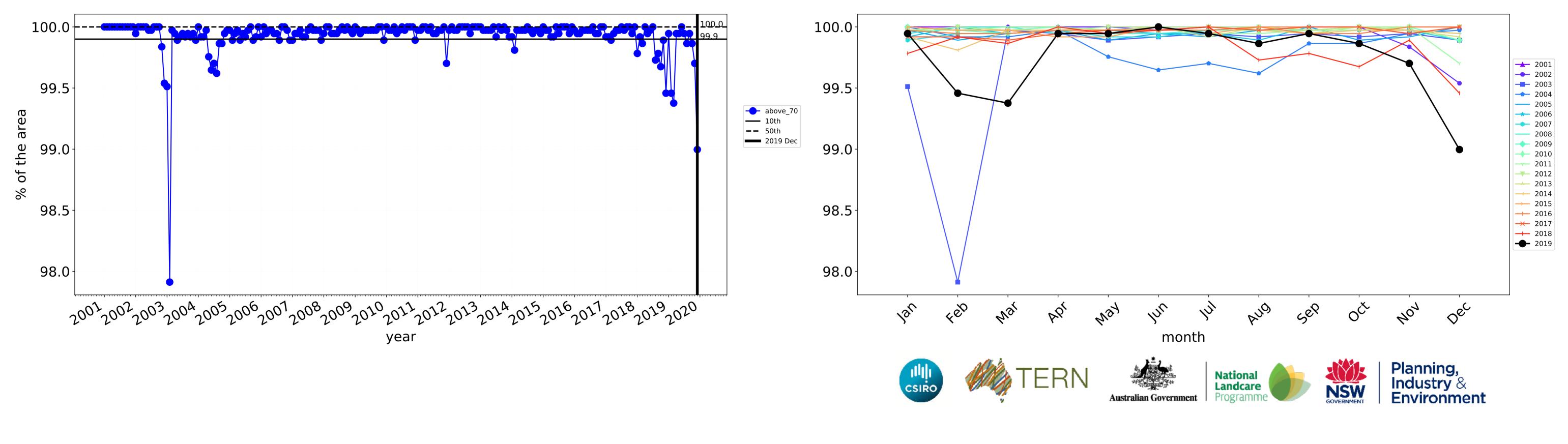
-20

Total Vegetation Cover Decile [%]

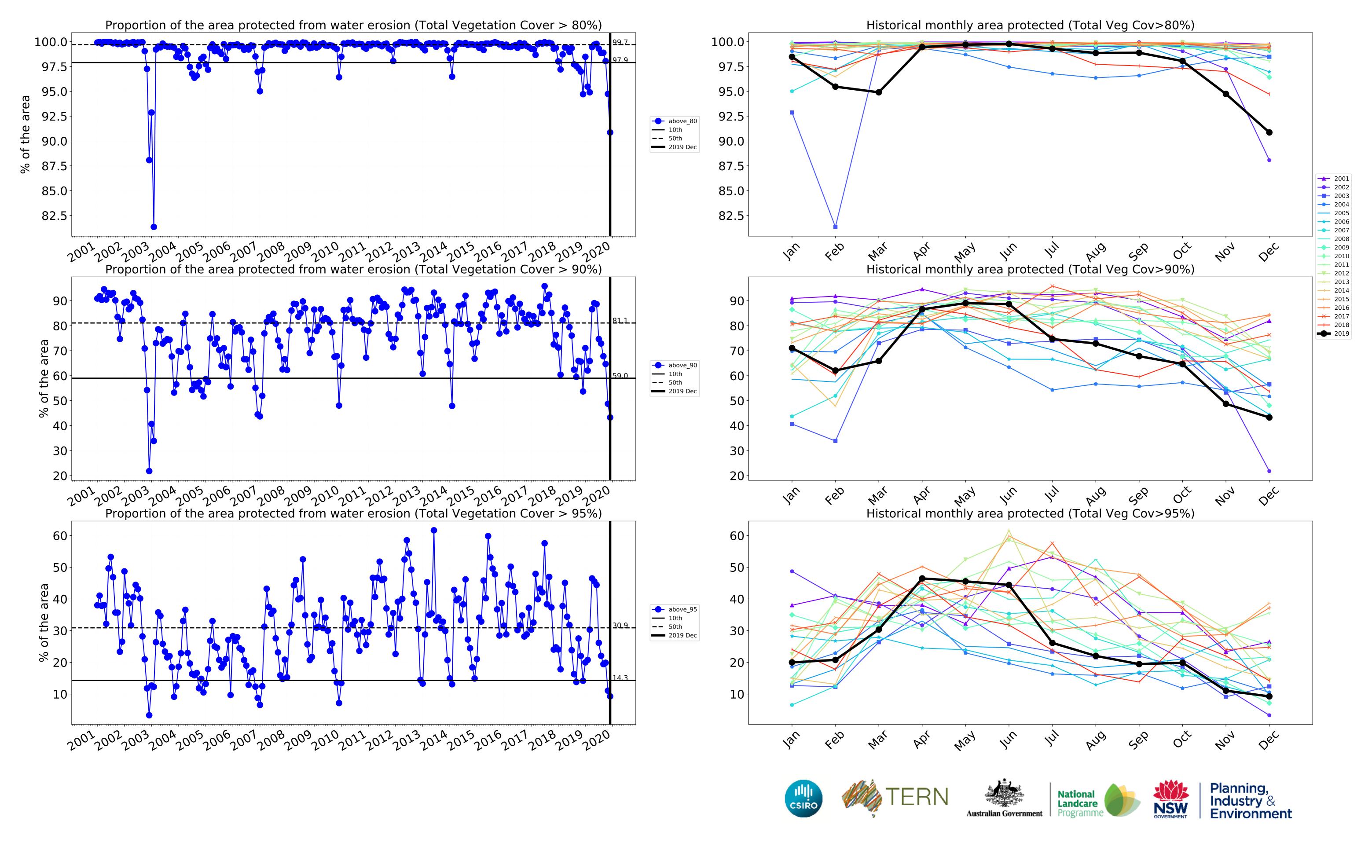








Water erosion historical monthly area protected (Total Veg Cov>70%)



Grazing non forest

1200-2000

52°1070°10

32°1050°10

0.30%

- 20

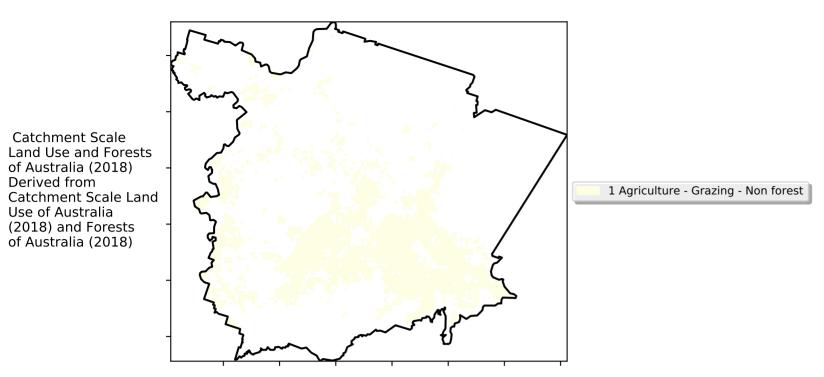
- 10

0

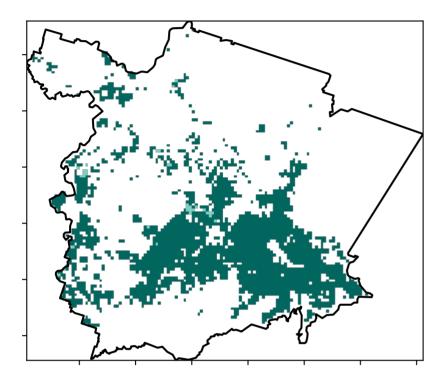
-10

-20

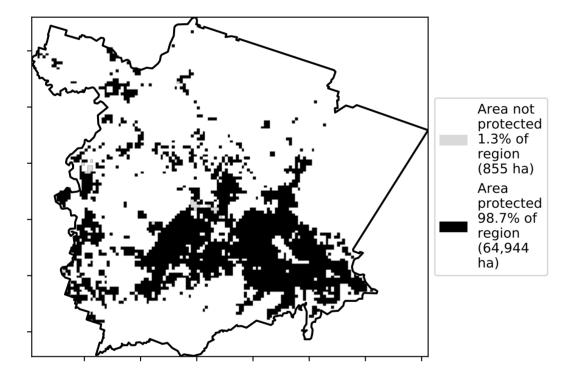
Land use and forest cover



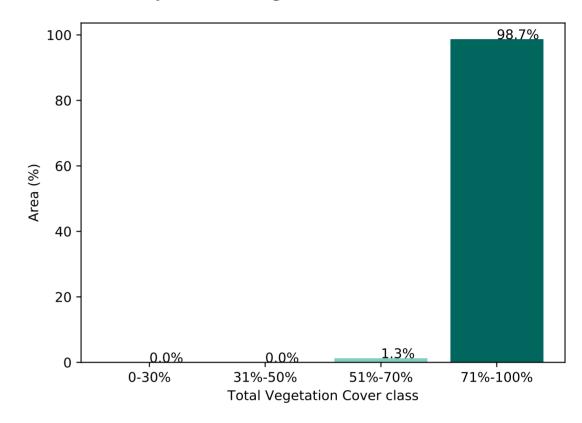
Total Vegetation Cover [%]



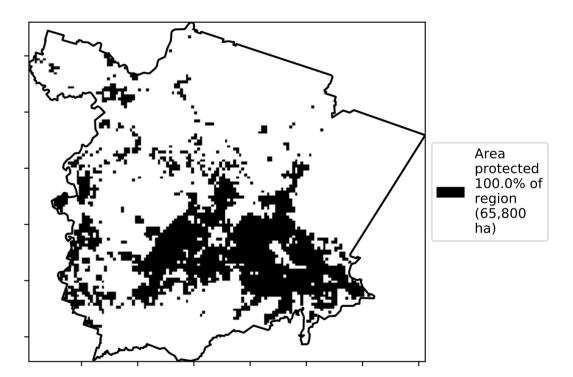
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



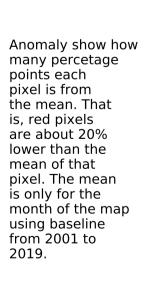
% Area protected from wind erosion (>50%)

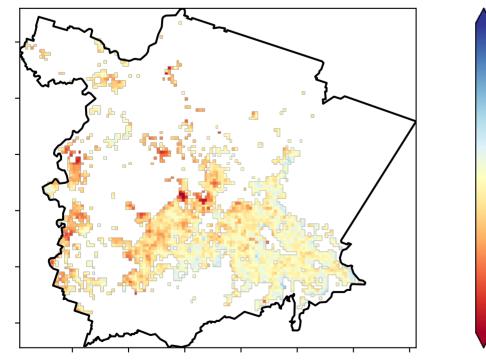


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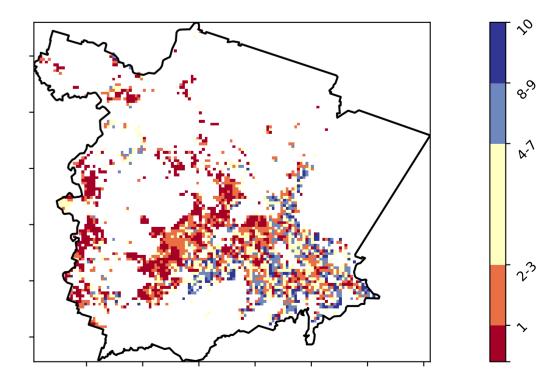
A.1

Total Vegetation Cover Anomaly [%]

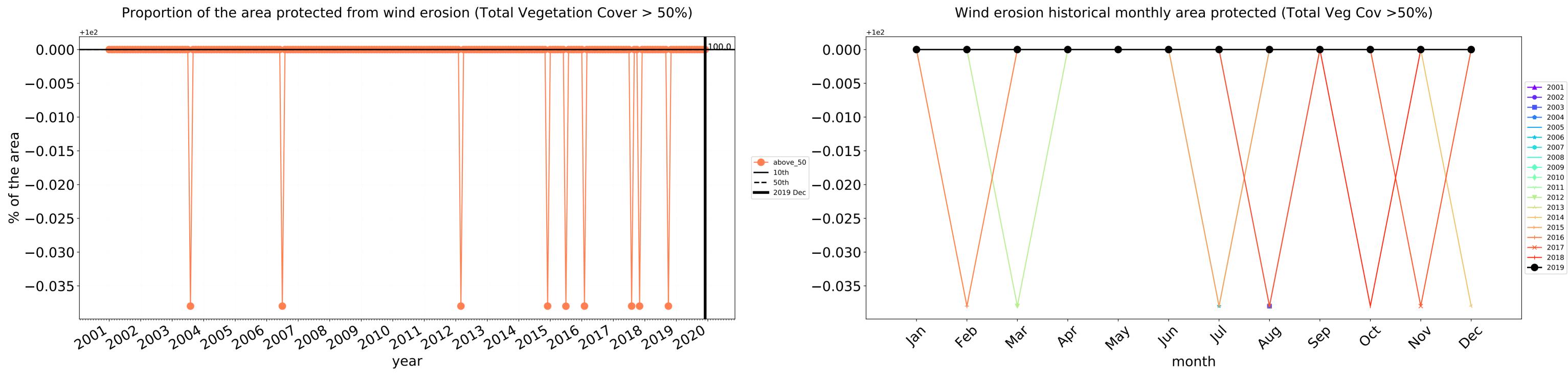


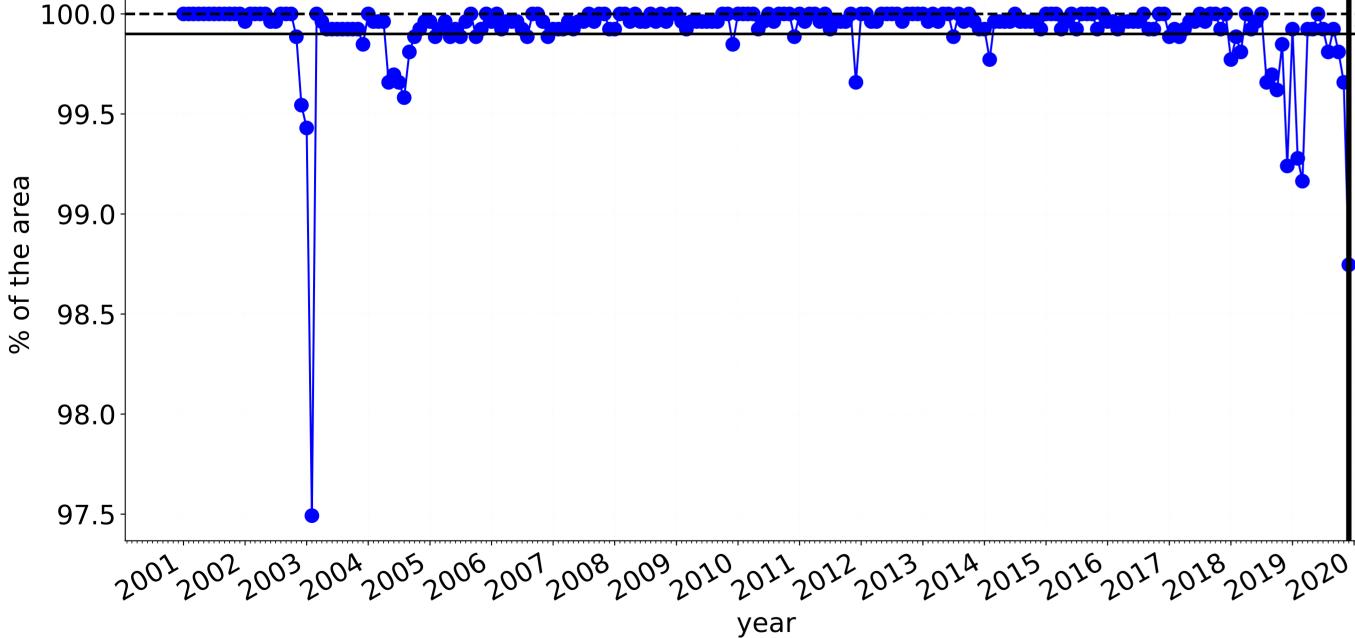


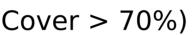
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019. **Total Vegetation Cover Decile [%]**





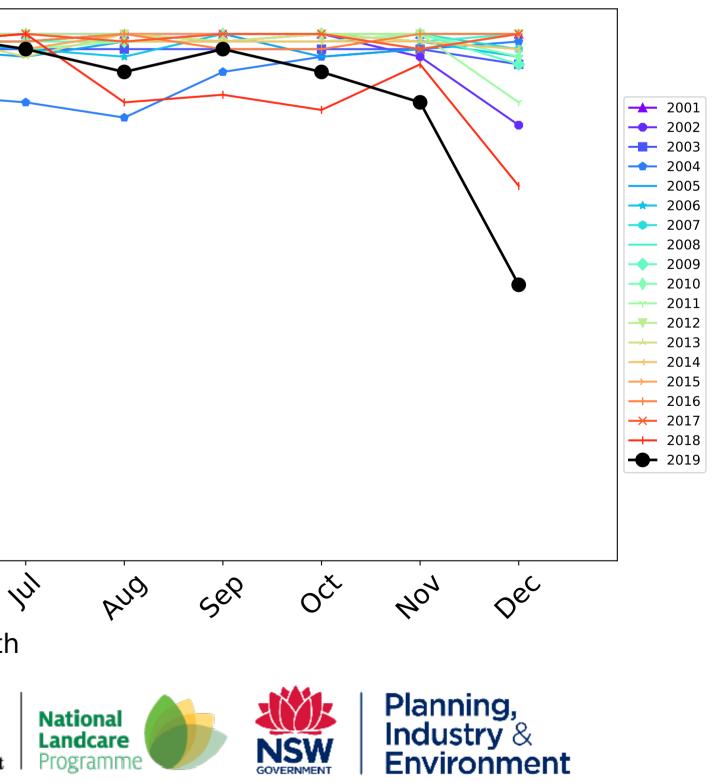


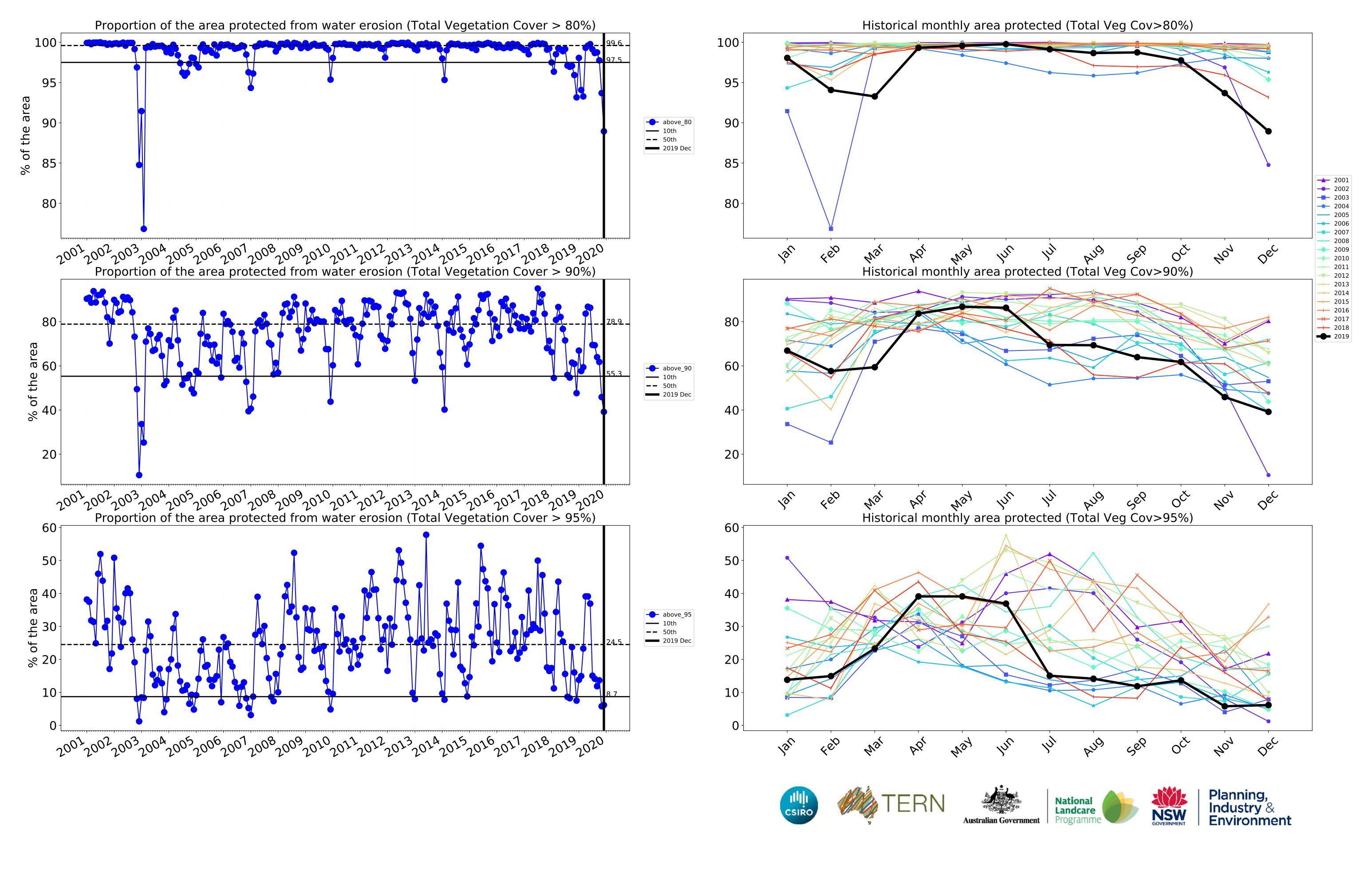




100.0-100<u>.0</u> 99.9 99.5 ---- above_70 **—** 10th 99.0 **——** 50th **——** 2019 Dec 98.5 98.0 97.5 4eb 1ar In May Mar PQ month ERN CSIRO Australian Government

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





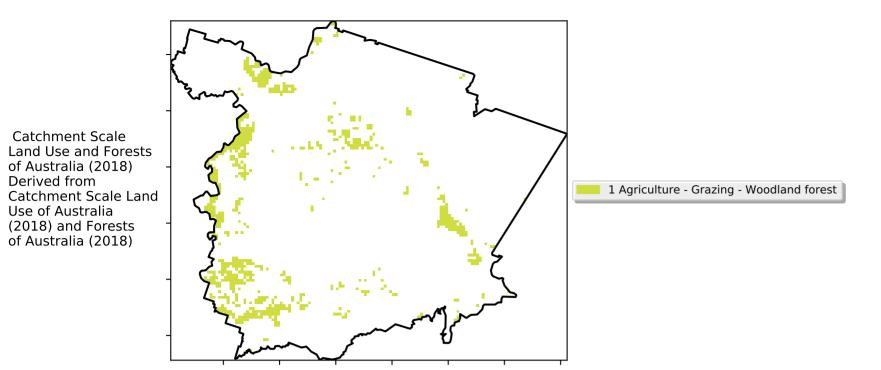
Grazing Woodland forest

120010000

52°1070°10

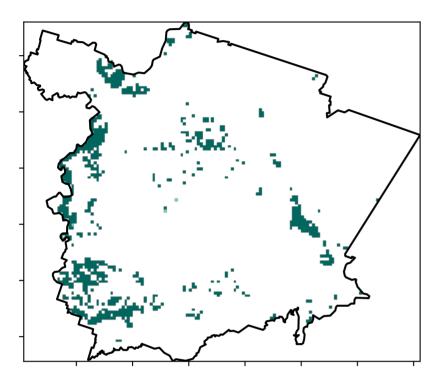
32005000

0.30%

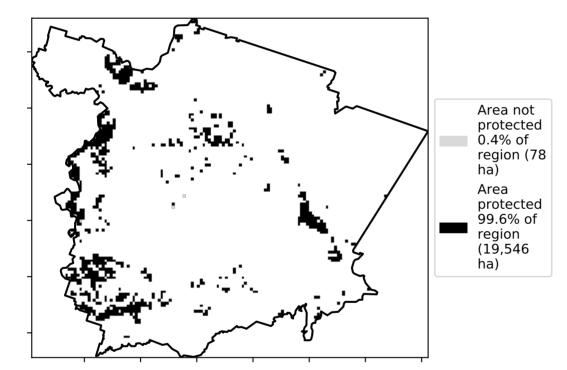


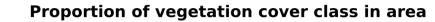
Total Vegetation Cover [%]

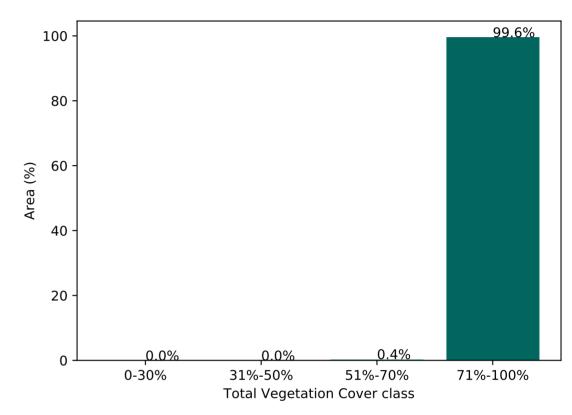
Land use and forest cover



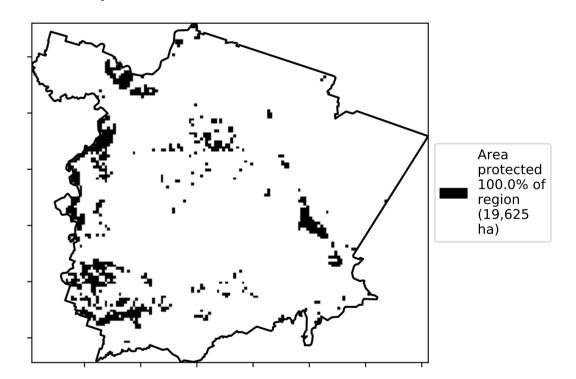
% Area protected from water erosion (>70%)







% Area protected from wind erosion (>50%)



\$

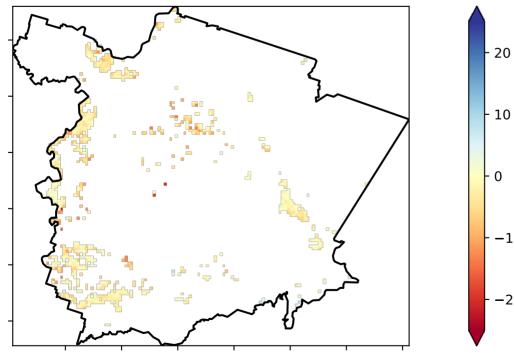
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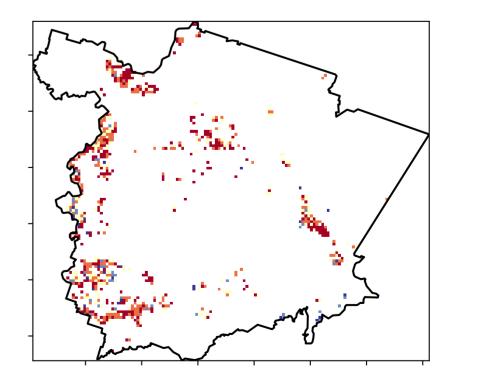
Total Vegetation Cover Anomaly [%]

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.

Total Vegetation Cover Decile [%]



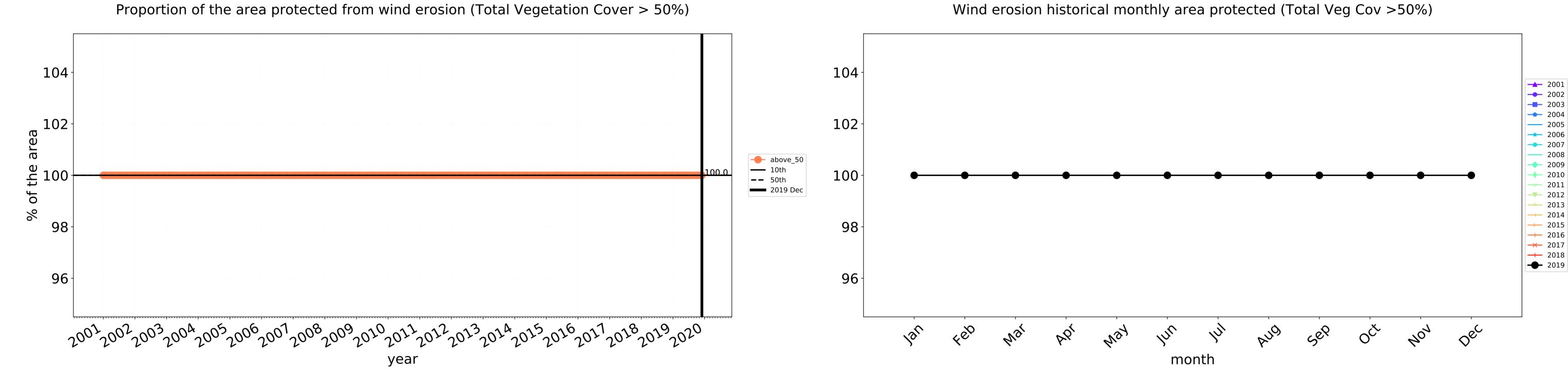


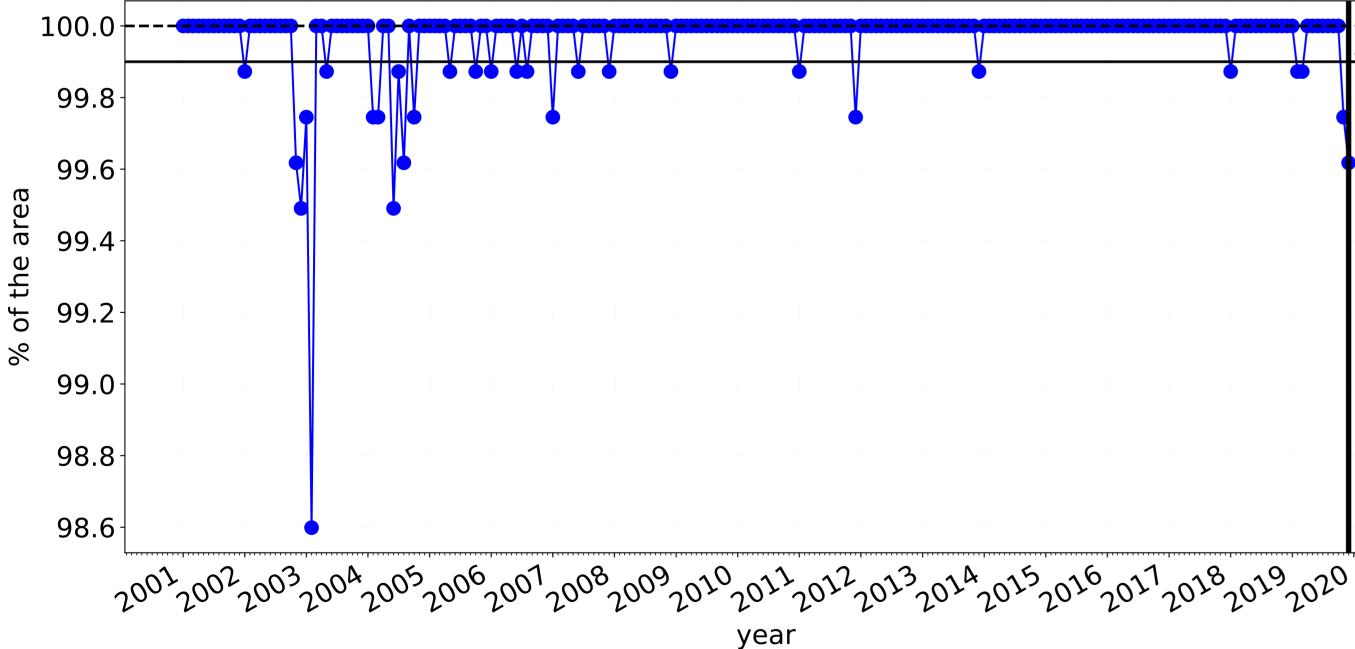
0

-10

-20

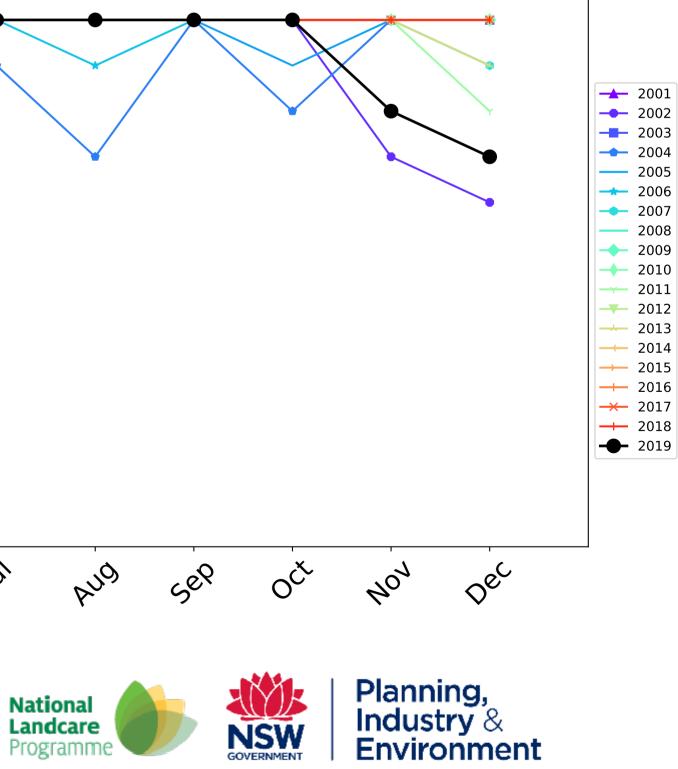
Grazing Woodland forest timeseries

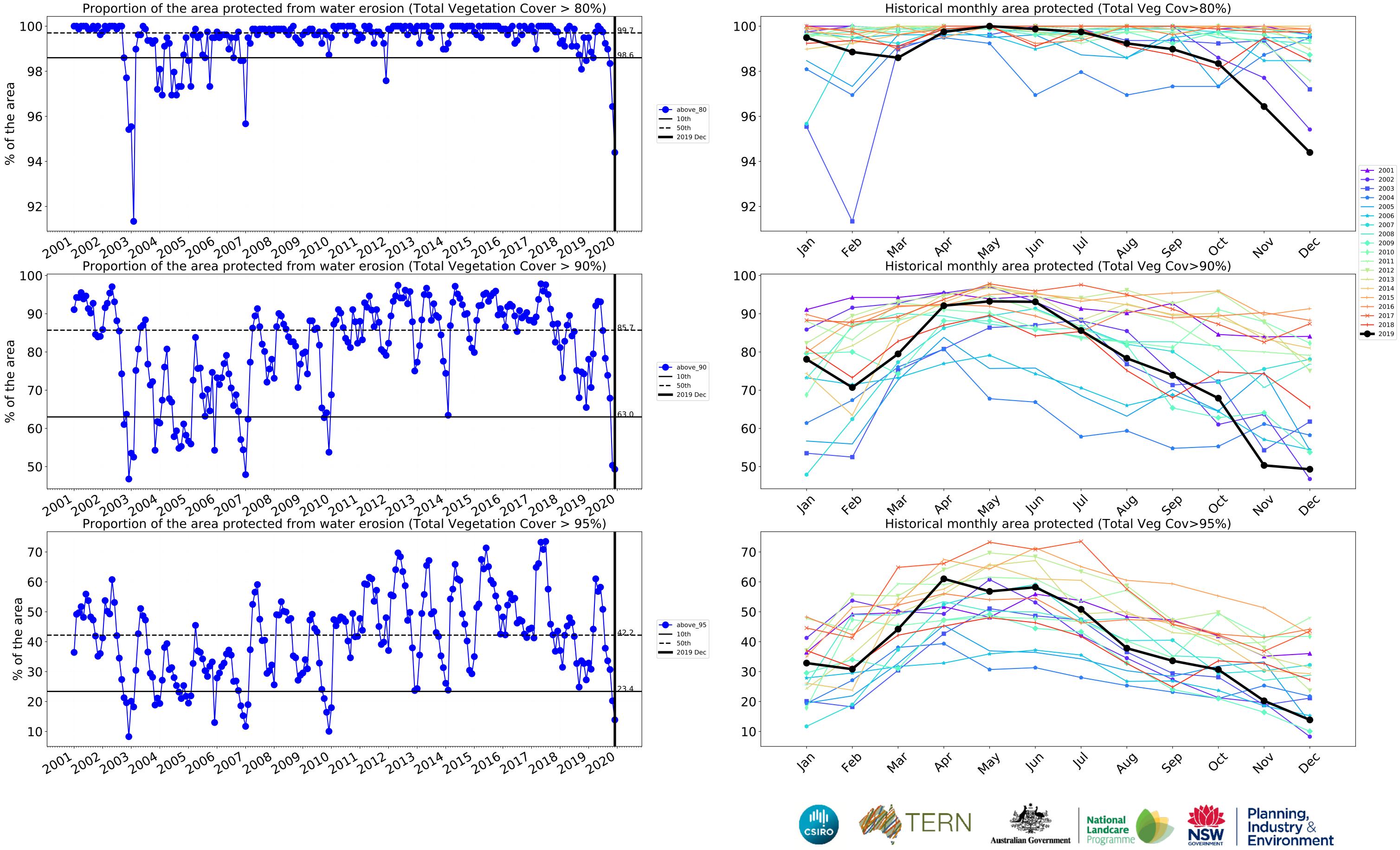




100.0 100.0-99.8 99.6 ---- above_70 **——** 10th **——** 50th 99.4 **——** 2019 Dec 99.2 99.0 98.8-98.6 Jan 4e0 Mar way In PQ hy month TERN CSIRO (SOL) Australian Government

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





Australian Government

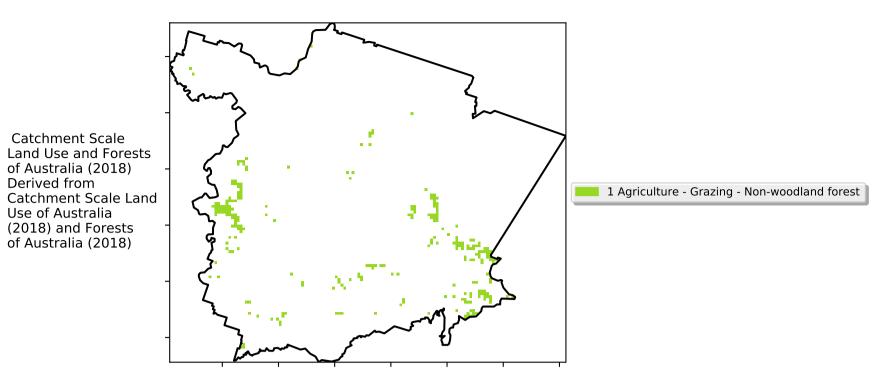
Grazing - Forest (non woodland)

12% 10°10°%

· 52°1070010

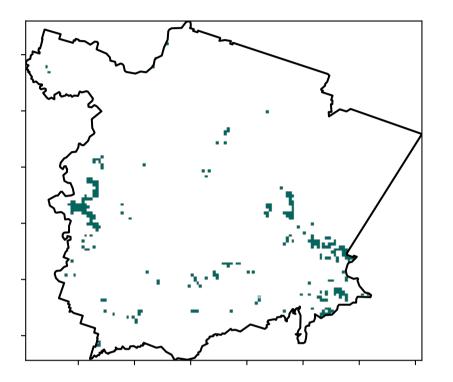
320050010

0.30%

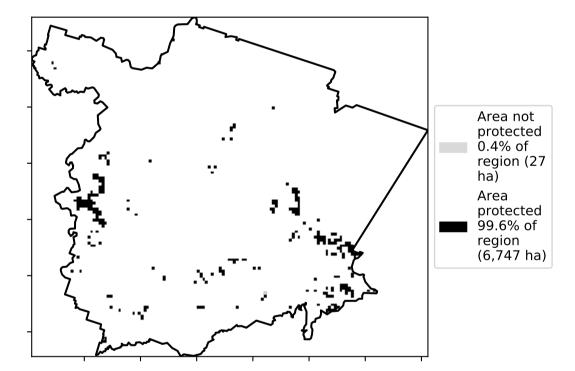


Land use and forest cover

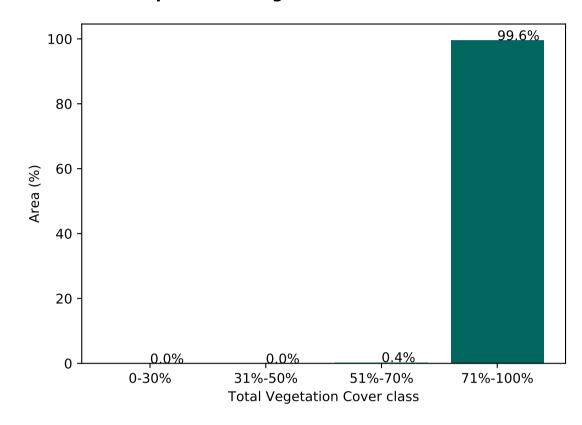
Total Vegetation Cover [%]



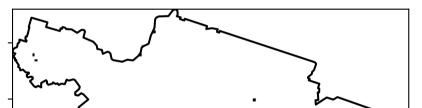
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

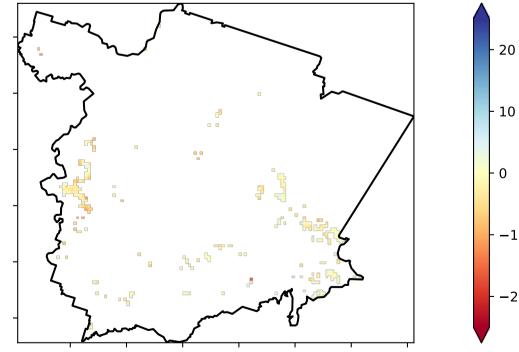


% Area protected from wind erosion (>50%)

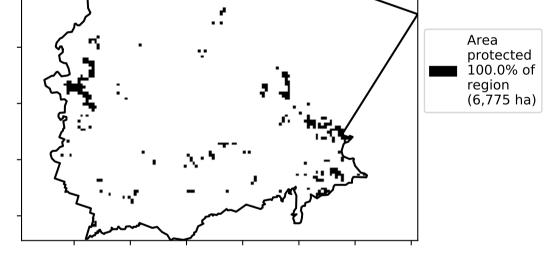


Total Vegetation Cover Anomaly [%]

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



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.



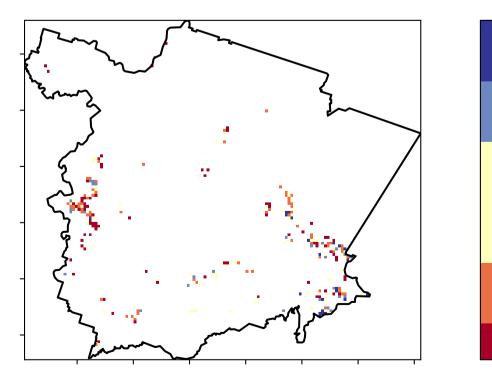
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2.3

Total Vegetation Cover Decile [%]



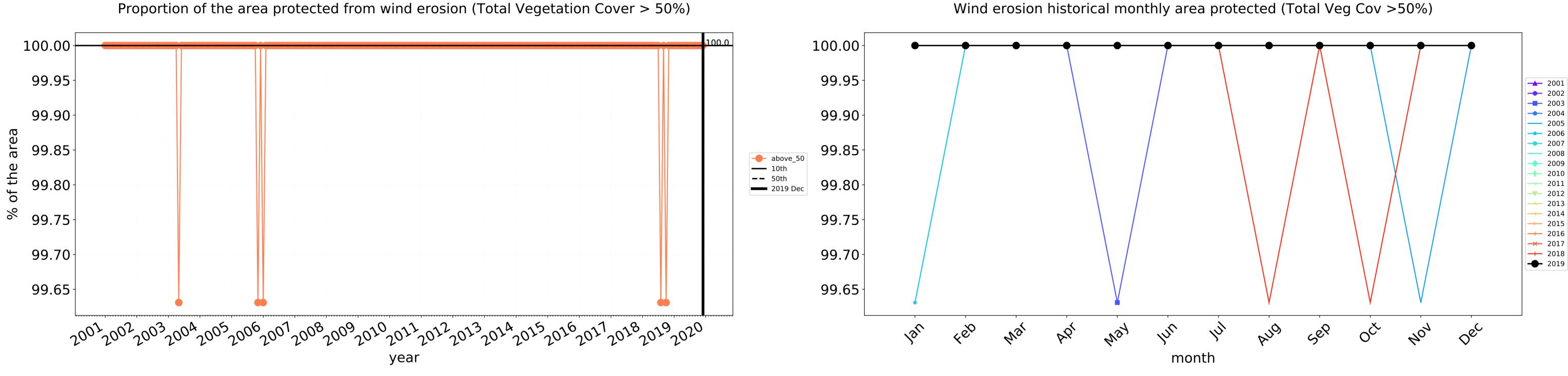


- 20

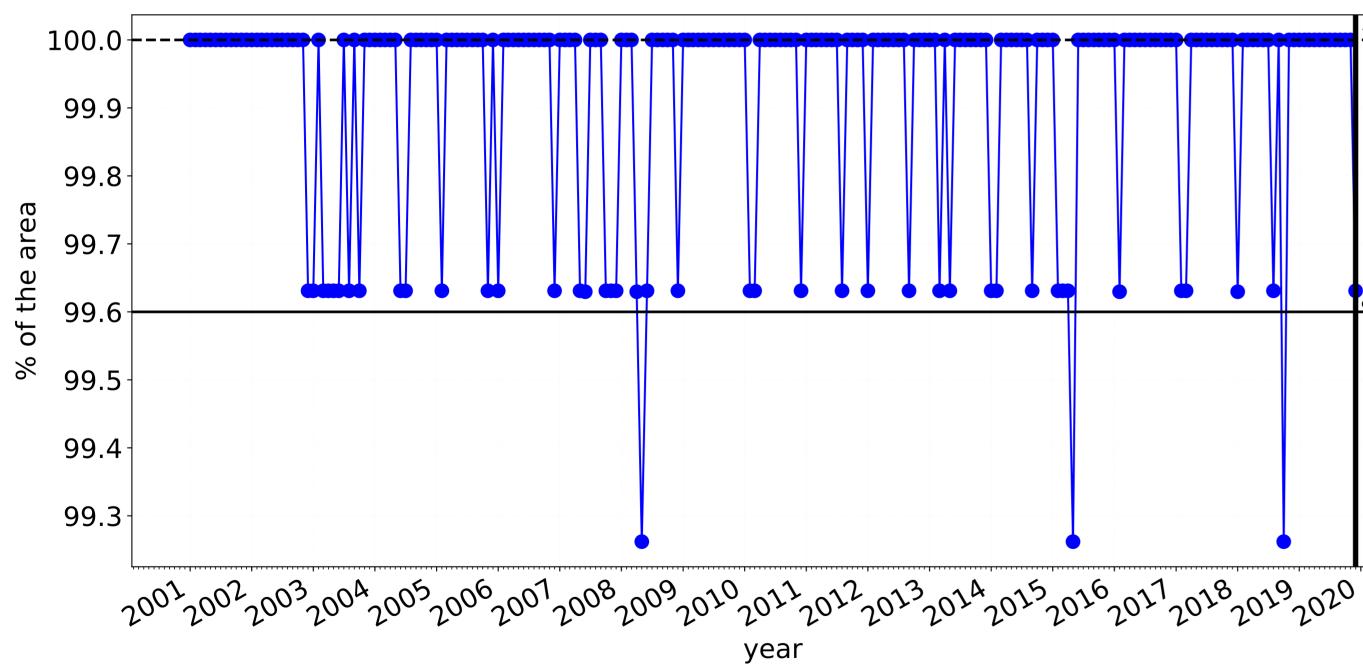
- 0

-10

-20

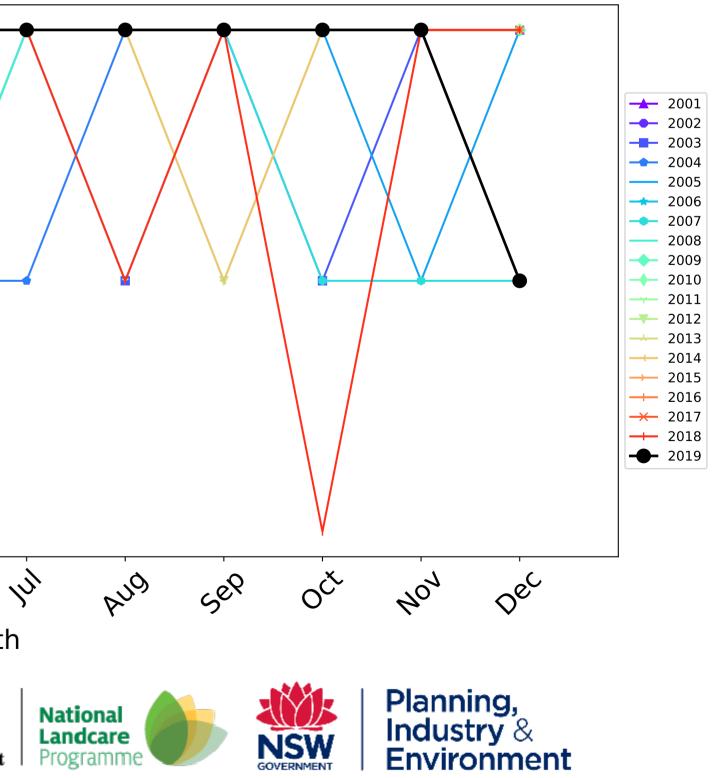


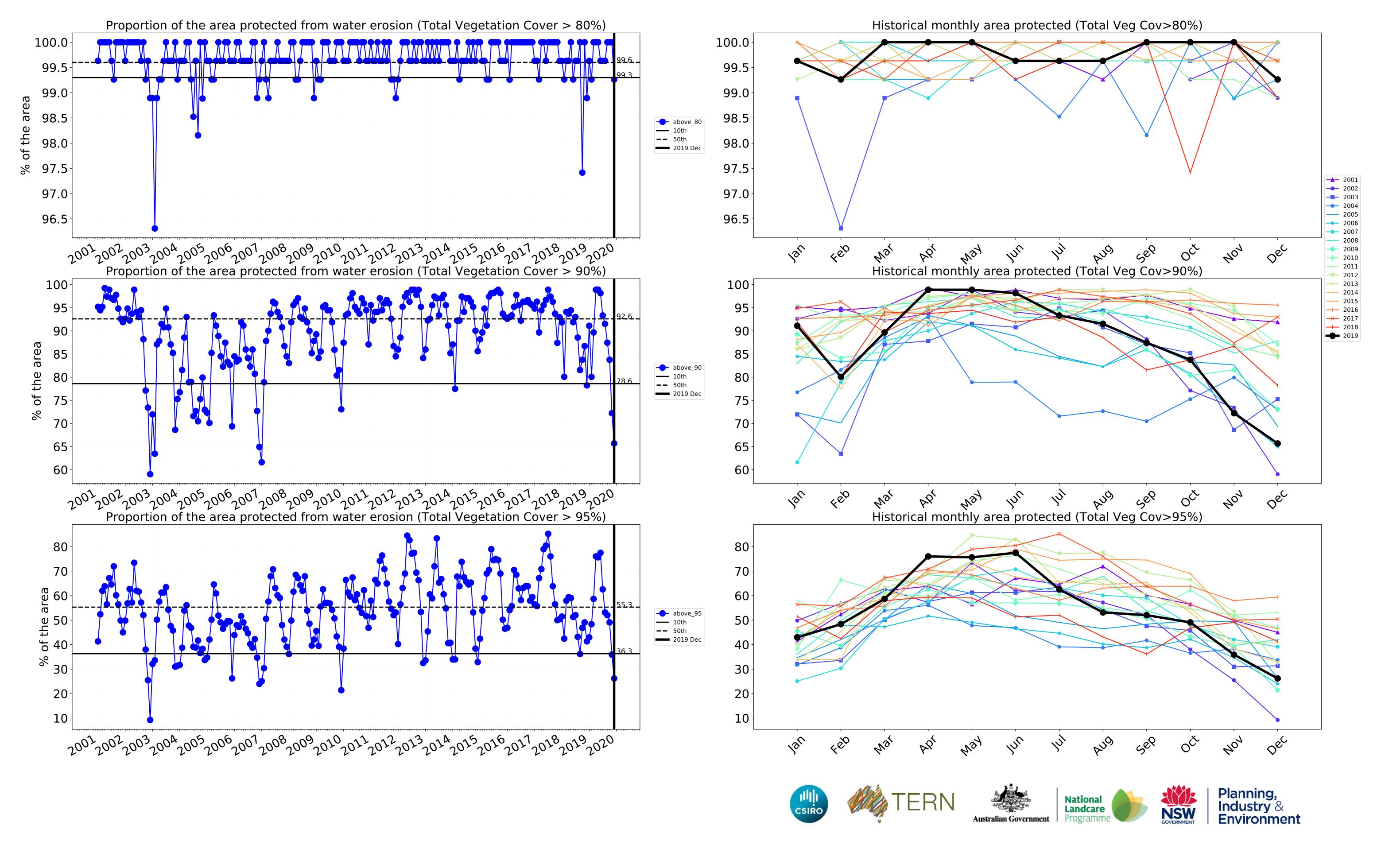




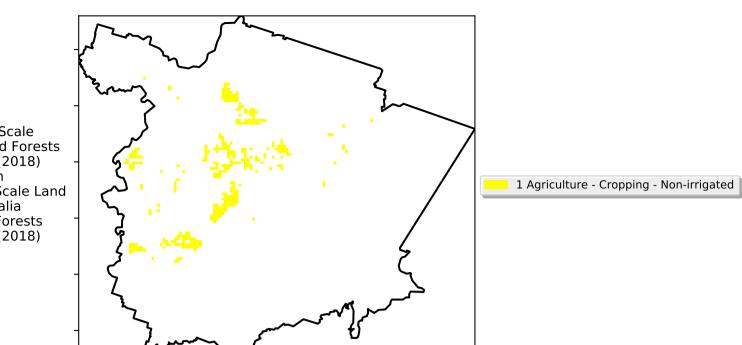
100.0 100.0 99.9 99.8 ---- above_70 **—** 10th 99.7 **——** 50th **—** 2019 Dec 99.6 99.5 99.4 99.3 feb lar May In War Pb month TERN Australian Government

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



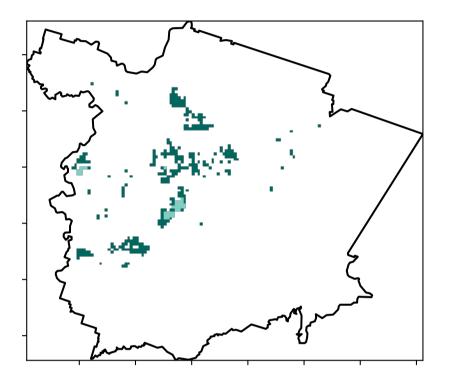


Cropping

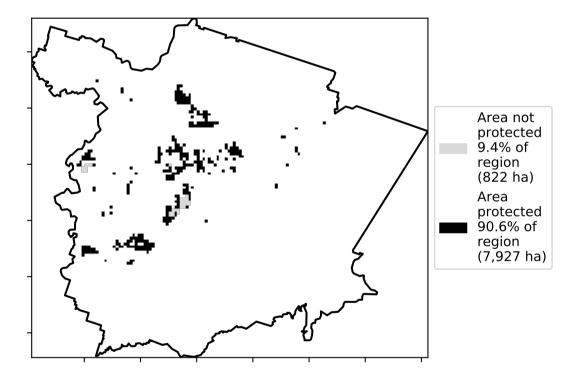


Total Vegetation Cover [%]

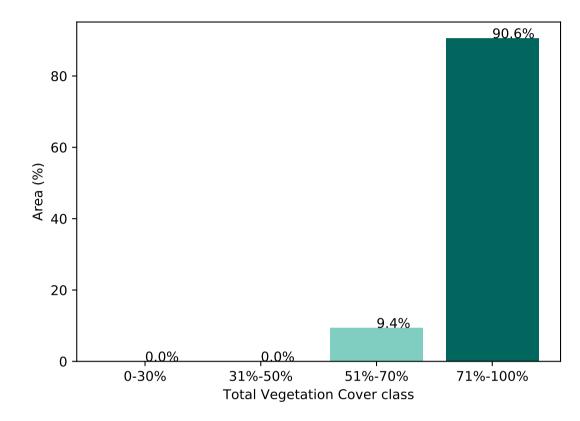
Land use and forest cover



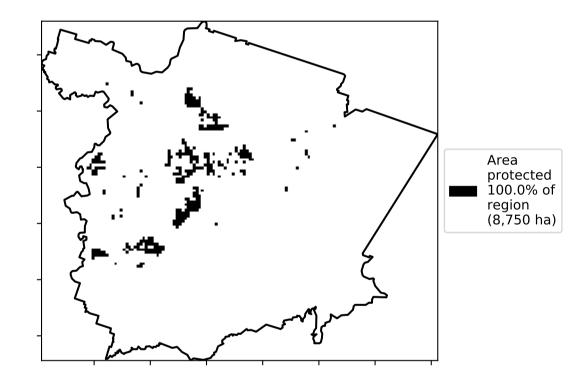
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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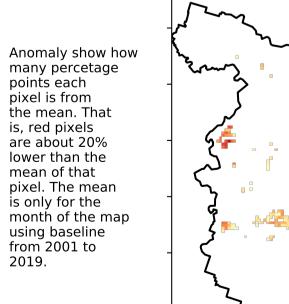
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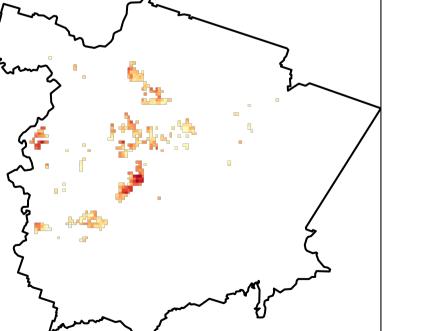
x.1

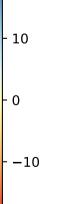
2.3

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

Total Vegetation Cover Anomaly [%]







- 20

12% 10°10°%

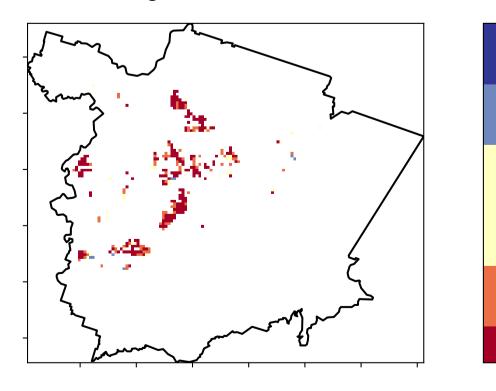
52°10°10°10

32°1050°10

0.30%

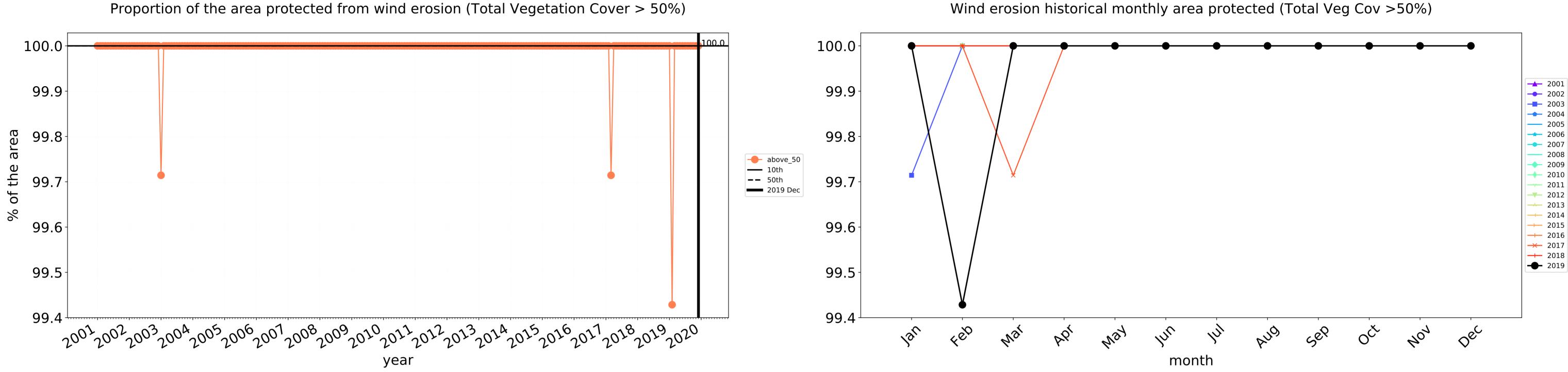
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

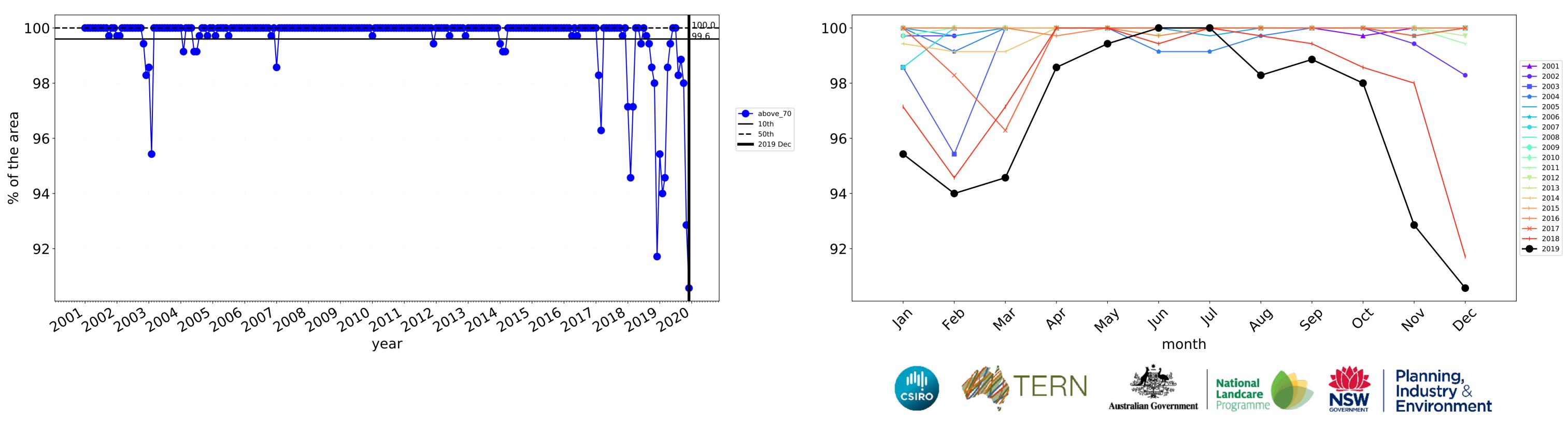
Total Vegetation Cover Decile [%]





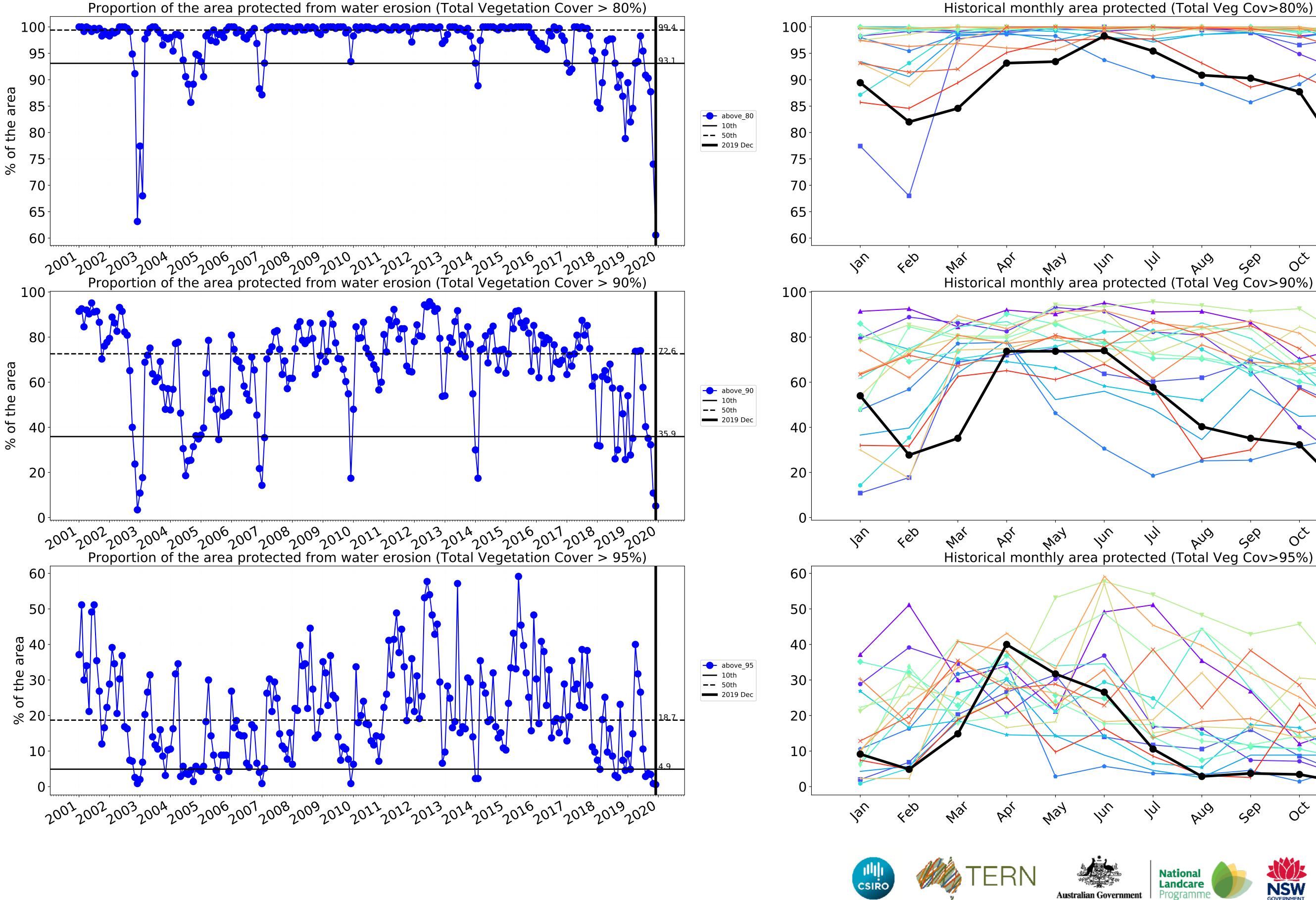
-20



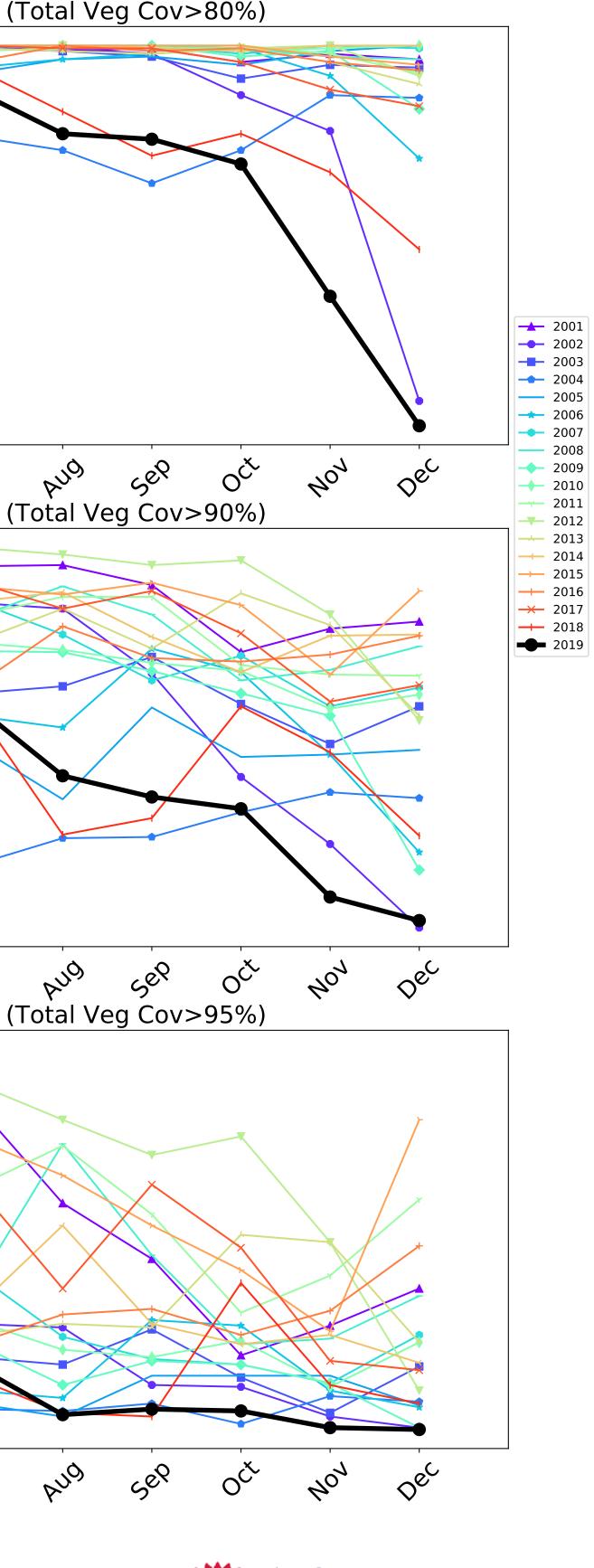


Cropping timeseries

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



Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)





Production native forests and plantation forests

Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Production native forests and plantation forests Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

1200-20000

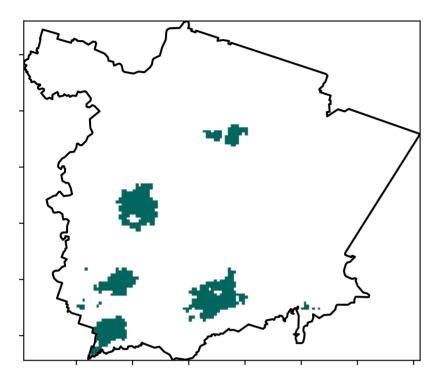
52% TON

· 32°10'50°10

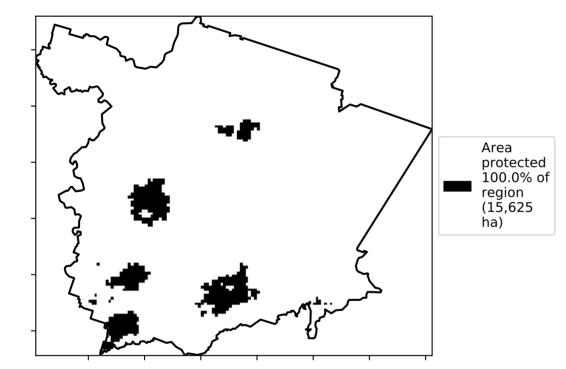
0.30%

Land use and forest cover

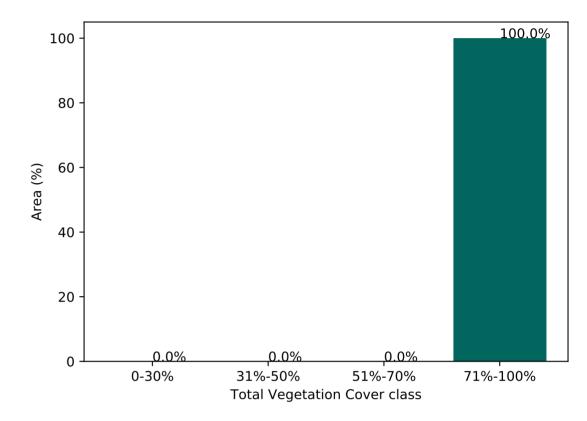
Total Vegetation Cover [%]



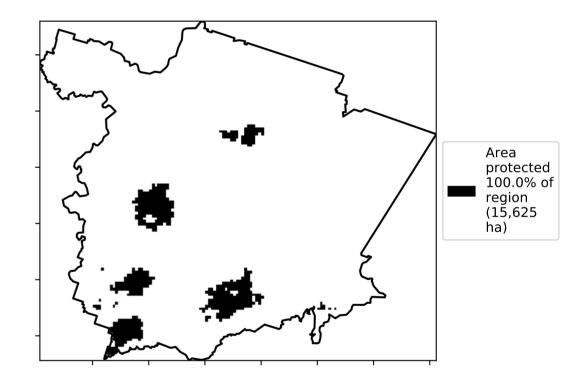
% Area protected from water erosion (>70%)







% Area protected from wind erosion (>50%)

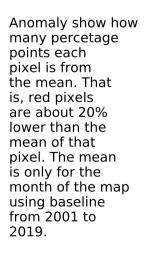


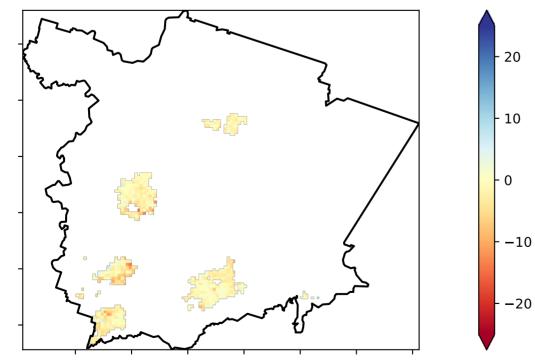
 $\hat{\mathcal{S}}$

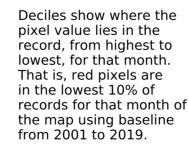
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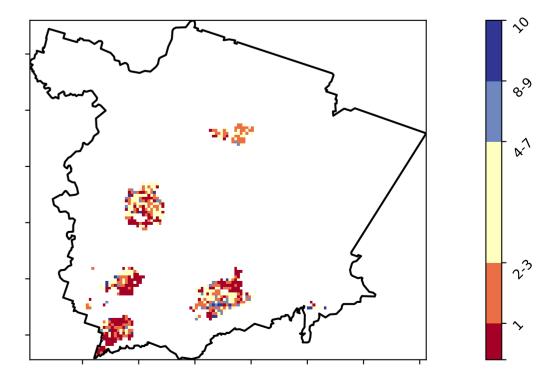
Total Vegetation Cover Anomaly [%]



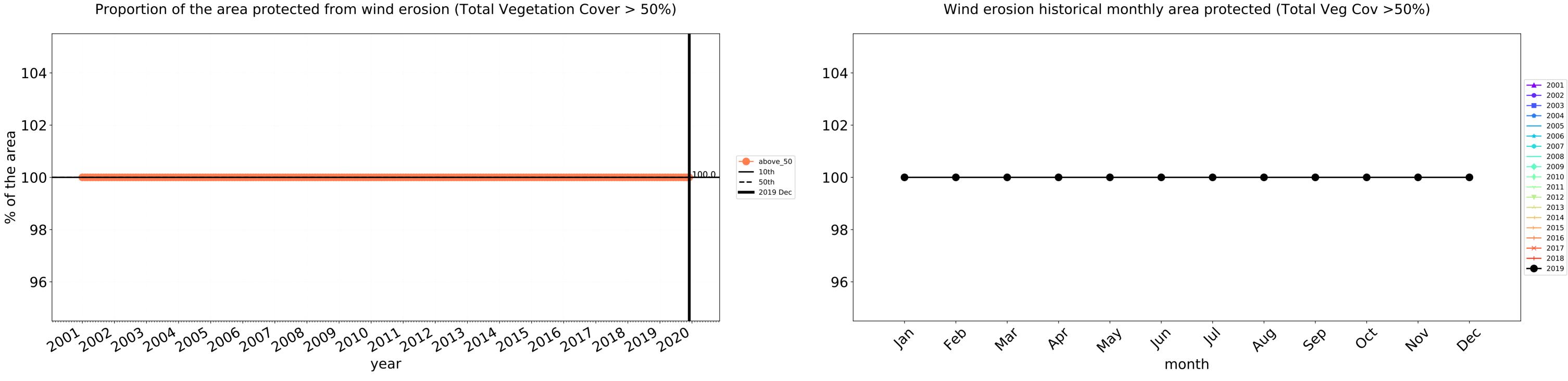


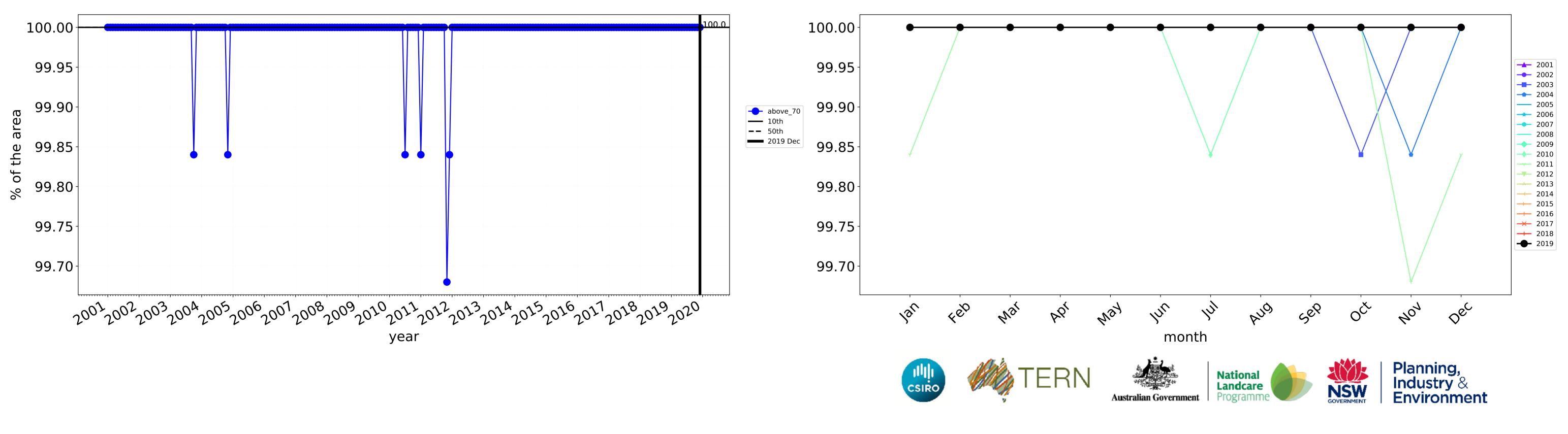


Total Vegetation Cover Decile [%]

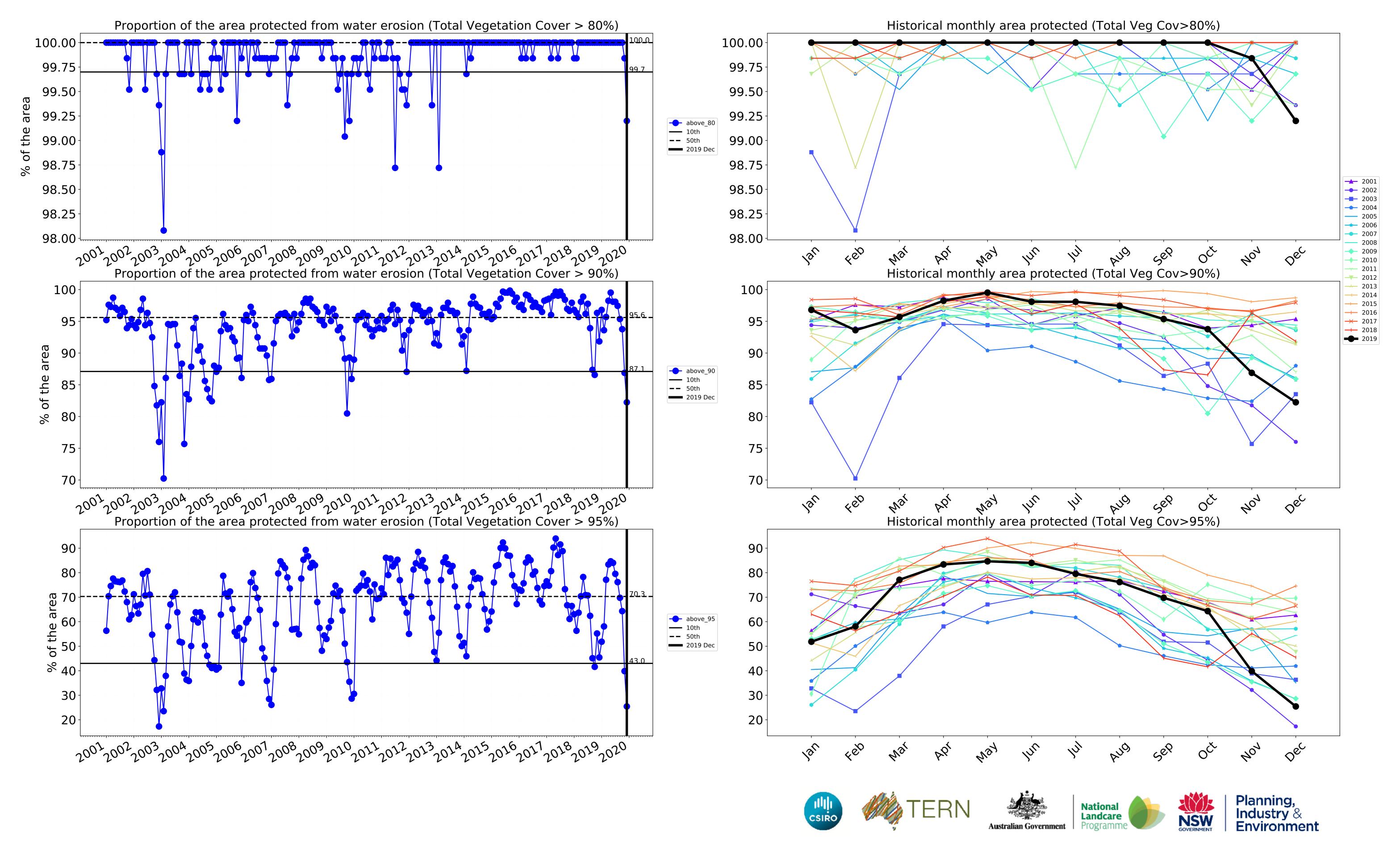








Water erosion historical monthly area protected (Total Veg Cov>70%)



Wingecarribee_(A) (268,450 ha and no data 451 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	268,450	100.0% 268,425	100.0% 268,425	99.1% 266,000	93.4% 250,850	56.6% 151,925	17.2% 46,075
Conservation and natural environments	127,700	100.0% 127,700	100.0% 127,700	99.9% 127,575	99.0% 126,475	73.1% 93,400	25.3% 32,350
Conservation and natural environments Woodland forest	102,950	100.0% 102,950	100.0% 102,950	99.9% 102,850	98.9% 101,800	73.0% 75,175	25.6% 26,350
Conservation and natural environments Forest (non woodland)	24,025	100.0% 24,025	100.0% 24,025	99.9% 24,000	99.7% 23,950	74.9% 18,000	25.0% 6,000
Agriculture	101,325	100.0% 101,325	100.0% 101,325	98.3% 99,575	88.3% 89,425	39.9% 40,450	8.5% 8,600
Grazing	92,200	100.0% 92,200	100.0% 92,200	99.0% 91,275	90.9% 83,775	43.3% 39,900	9.3% 8,550
Grazing non forest	65,800	100.0% 65,800	100.0% 65,800	98.7% 64,975	88.9% 58,525	39.2% 25,775	6.2% 4,050
Grazing Woodland forest	19,625	100.0% 19,625	100.0% 19,625	99.6% 19,550	94.4% 18,525	49.3% 9,675	13.9% 2,725
Grazing - Forest (non woodland)	6,775	100.0% 6,775	100.0% 6,775	99.6% 6,750	99.3% 6,725	65.7% 4,450	26.2% 1,775
Cropping	8,750	100.0% 8,750	100.0% 8,750	90.6% 7,925	60.6% 5,300	$5.1\%\\450$	0.6% 50
Production native forests and plantation forests	15,625	100.0% 15,625	100.0% 15,625	100.0% 15,625	99.2% 15,500	82.2% 12,850	25.4% 3,975

