Total vegetation cover soil protection Region:LGA Hinchinbrook_(S) QLD

Date: July 2021

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps. Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

• 71-100% High cover – protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)

- 51-70% Moderate cover protected from wind erosion
- 31-50% Low cover not protected
- 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares. Comparison with previous years:
 - Map: anomaly comparing this month to the average cover from the same month in previous years.
 - Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

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

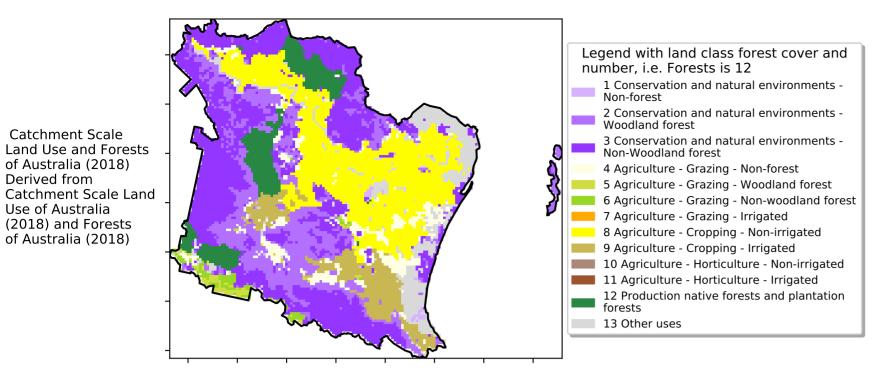
https://doi.org/10.4225/08/5848a3f19a7b3



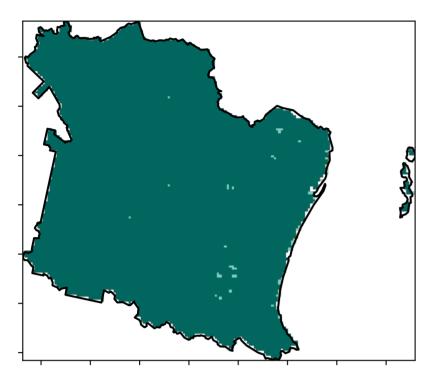
Vegetation Cover Jul 2021

Land use and forest cover

Proportion of each land class in area

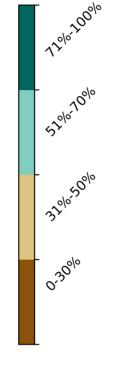


Total Vegetation Cover [%]

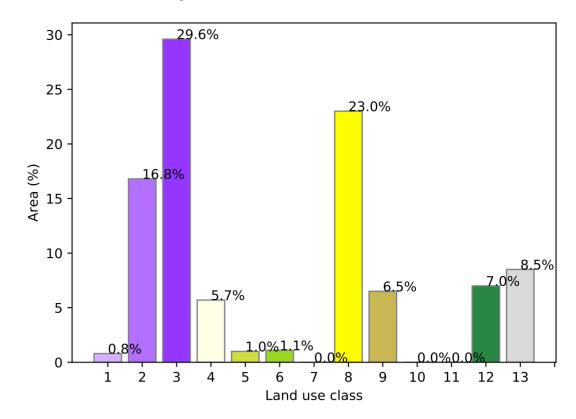


% Area protected from water erosion (>70%)

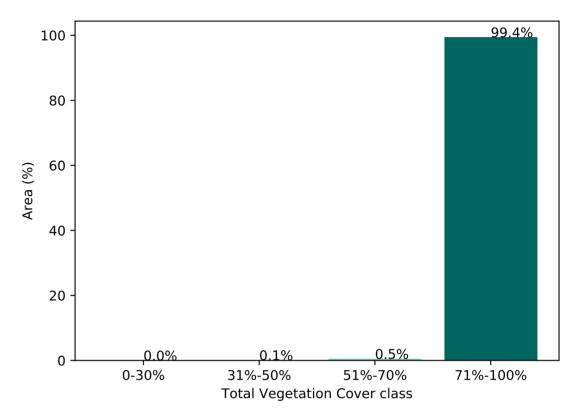




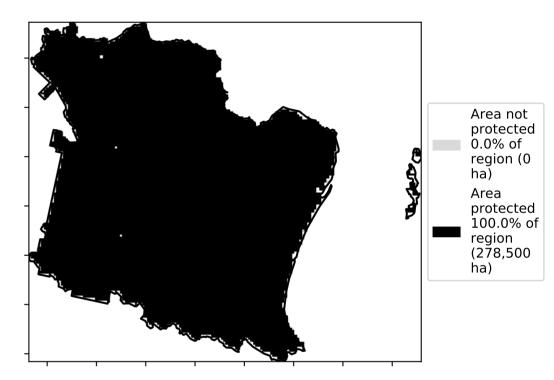
protected (1,671 ha)



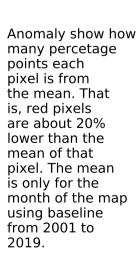
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

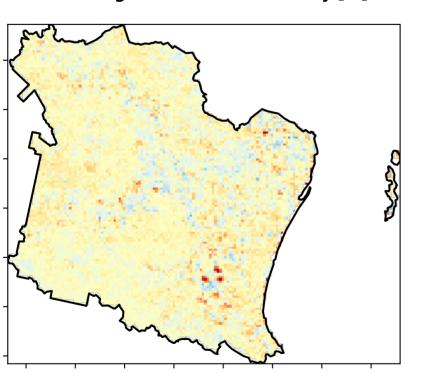


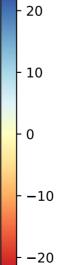
Catchment Scale

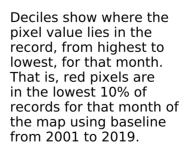
Derived from

Use of Australia

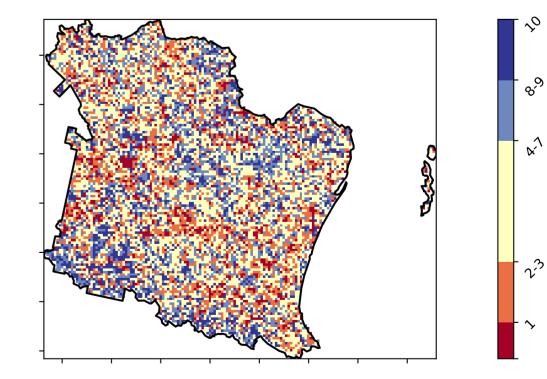
of Australia (2018)



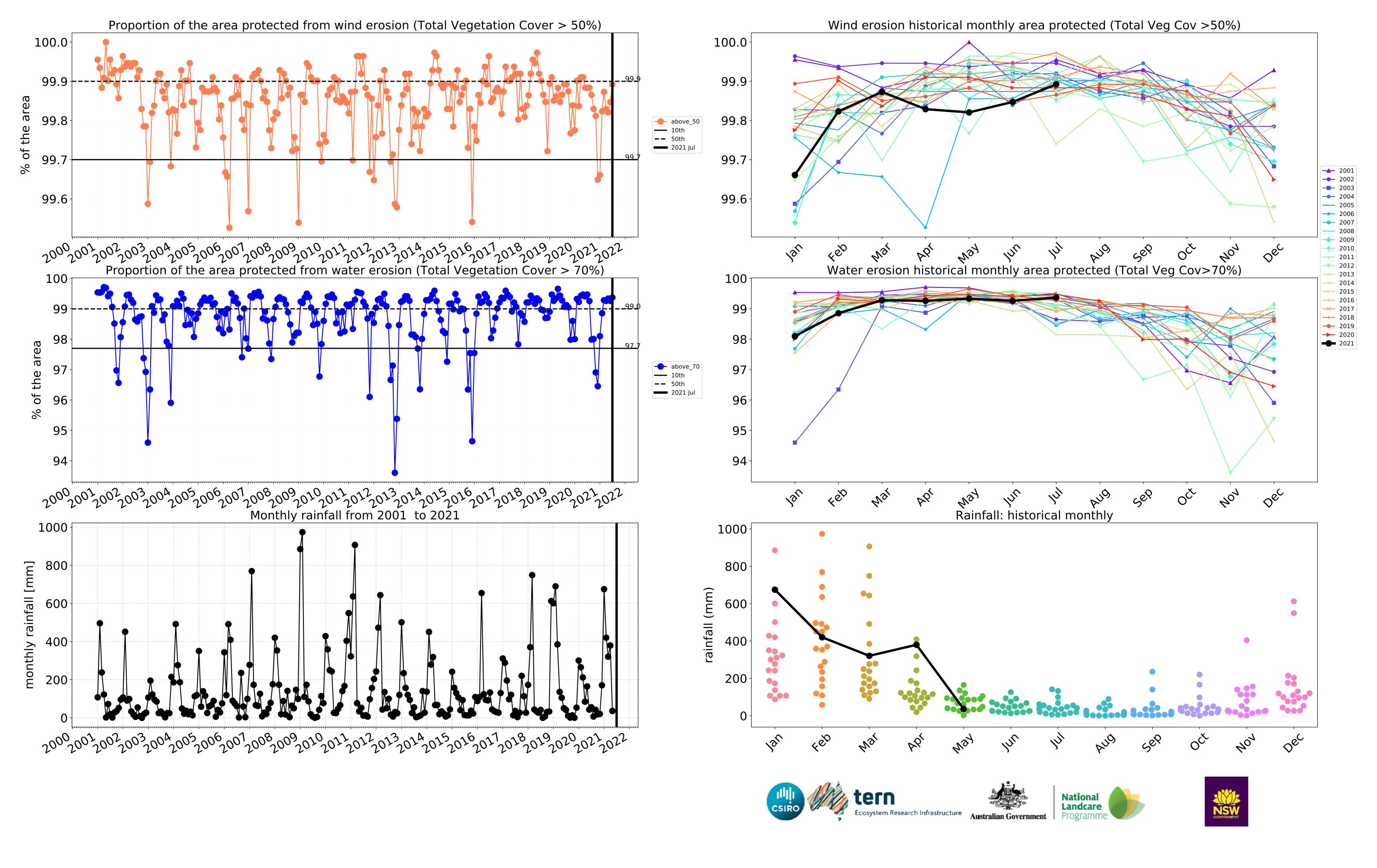




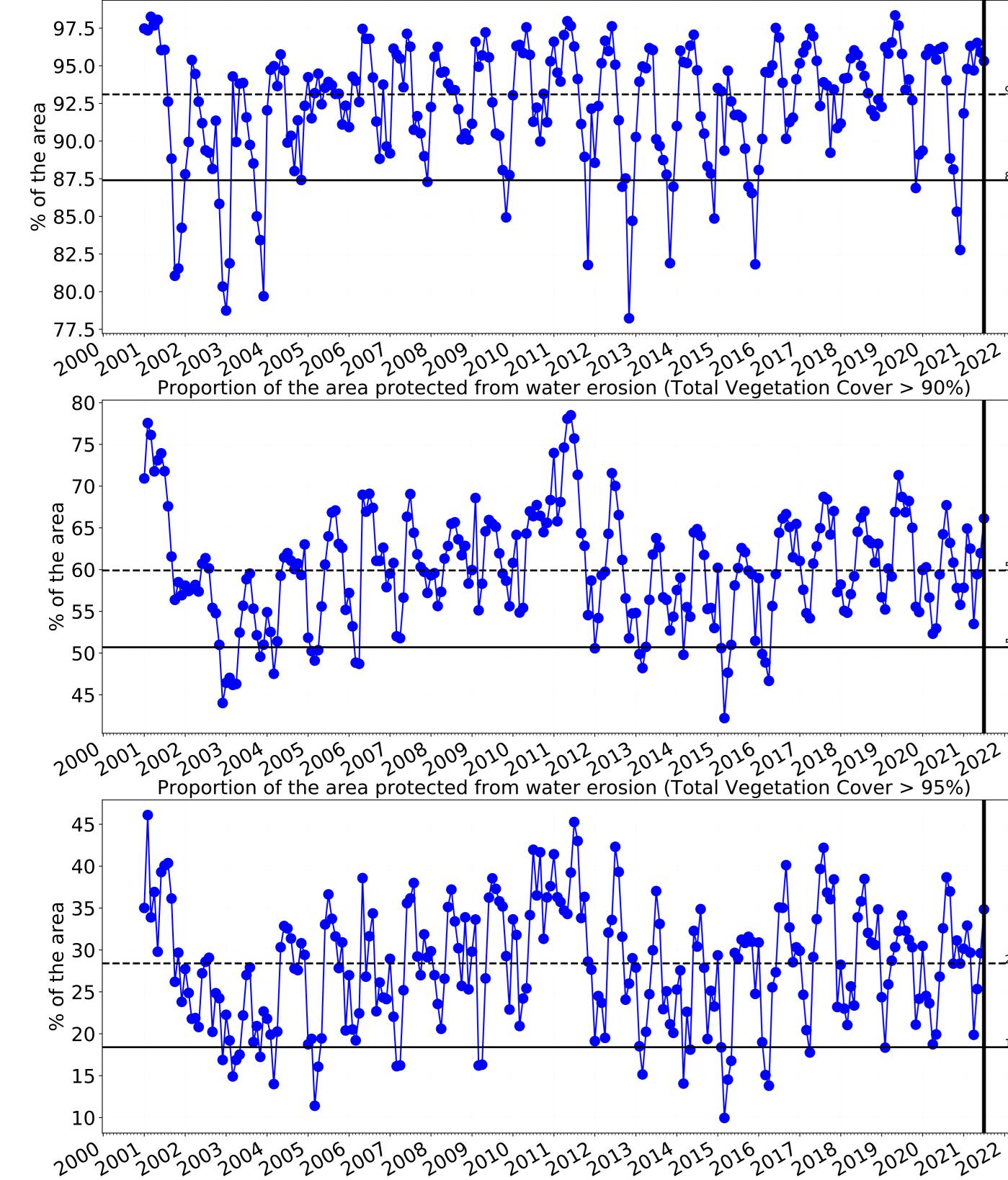
Total Vegetation Cover Decile [%]

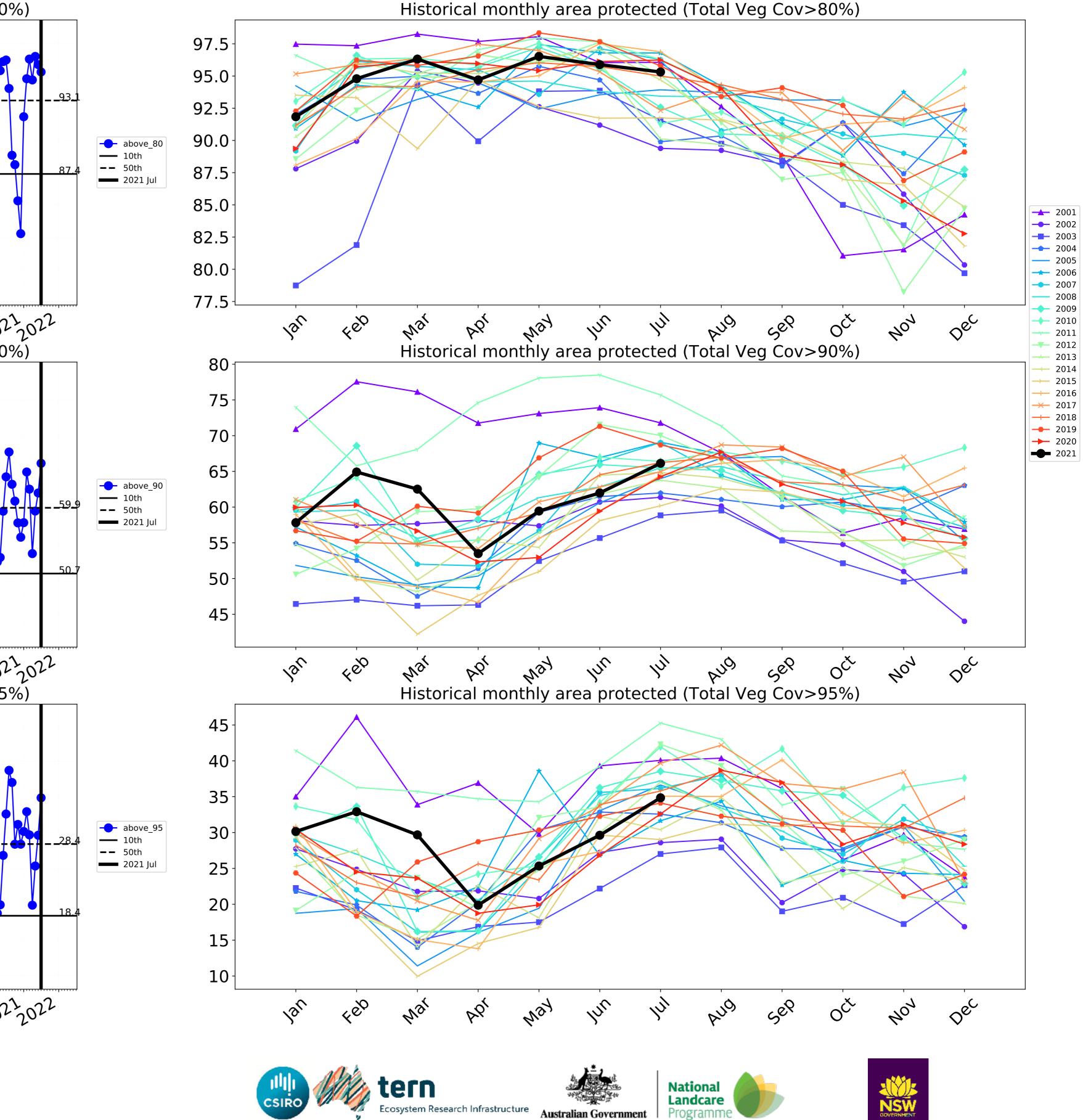






Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)







Conservation and natural environments

Land use and forest cover

1 Conservation and natural environments - Non-forest Ś 2 Conservation and natural environments - Woodland

forest 3 Conservation and natural environments - Nonwoodland forest

(%)

Area 06

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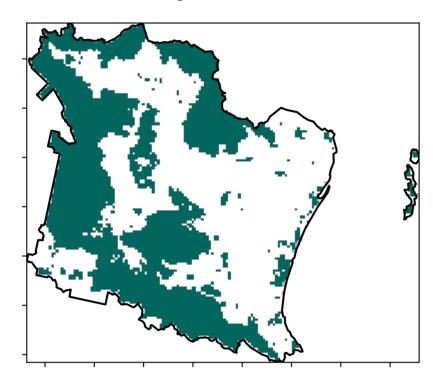
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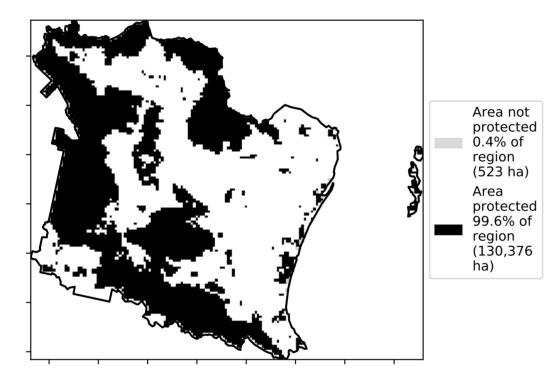
1.6%

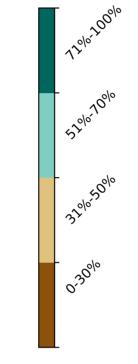
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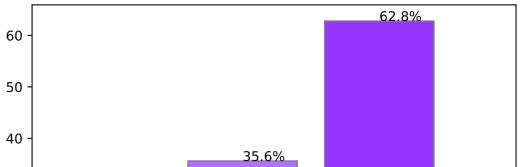




% Area protected from water erosion (>70%)







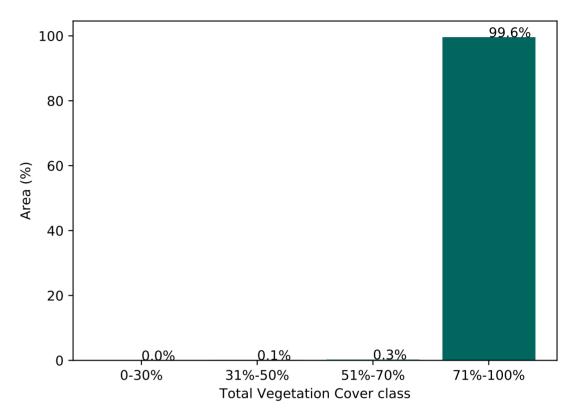


Proportion of vegetation cover class in area

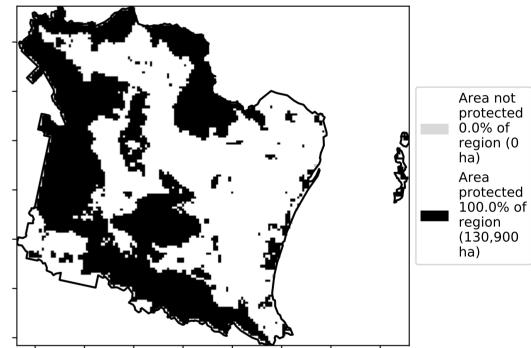
Land use class

2

3



% Area protected from wind erosion (>50%)



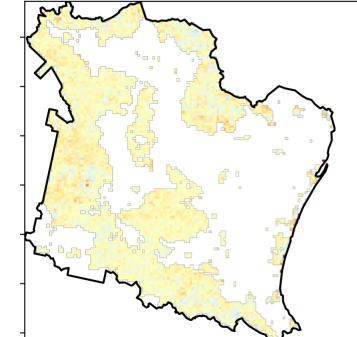
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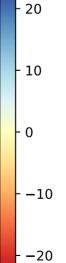
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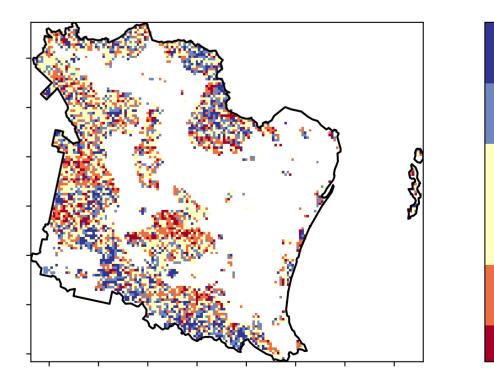
Total Vegetation Cover Anomaly [%]





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.

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 from 2001 to 2019.

Catchment Scale Land Use and Forests of Australia (2018)

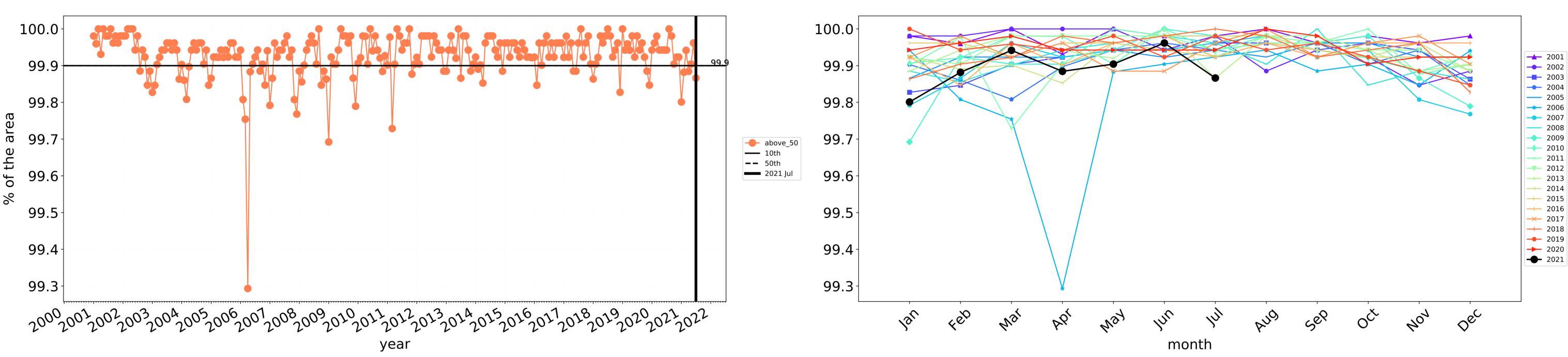
Catchment Scale Land

Derived from

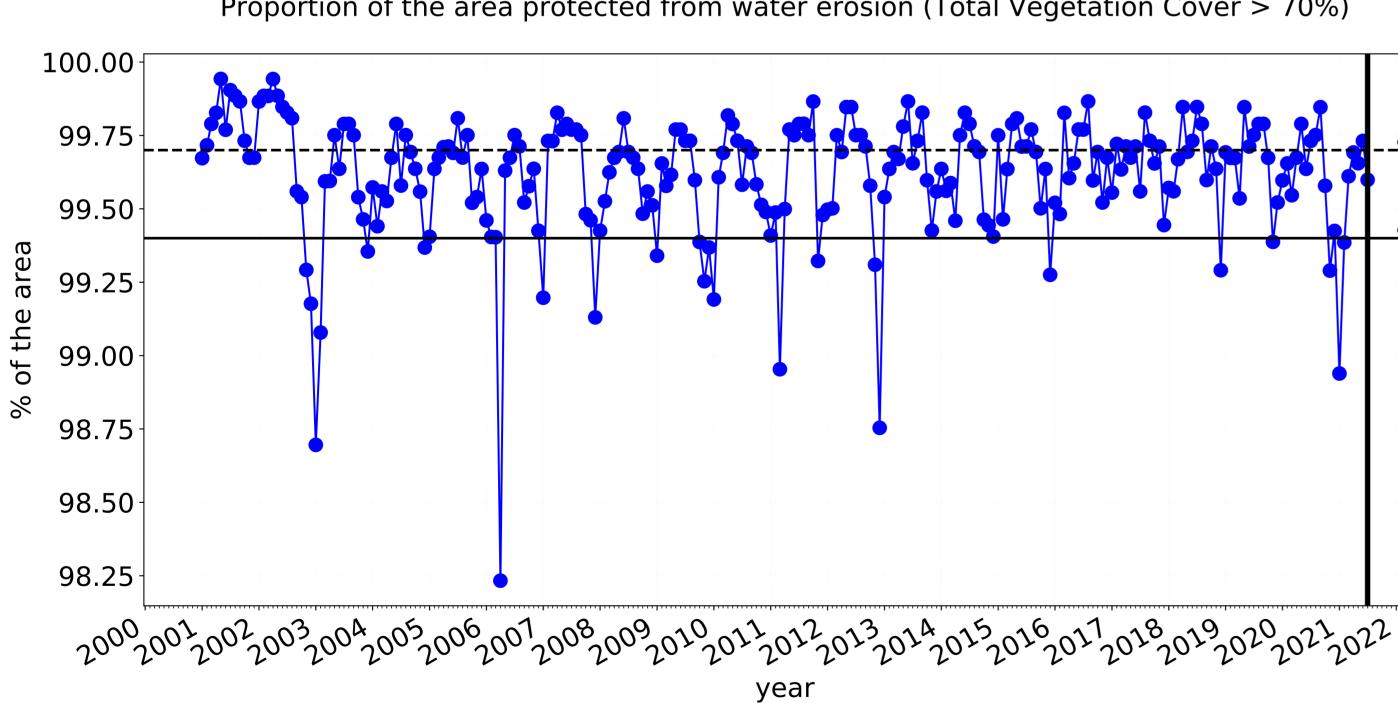
Use of Australia

(2018) and Forests

of Australia (2018)



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

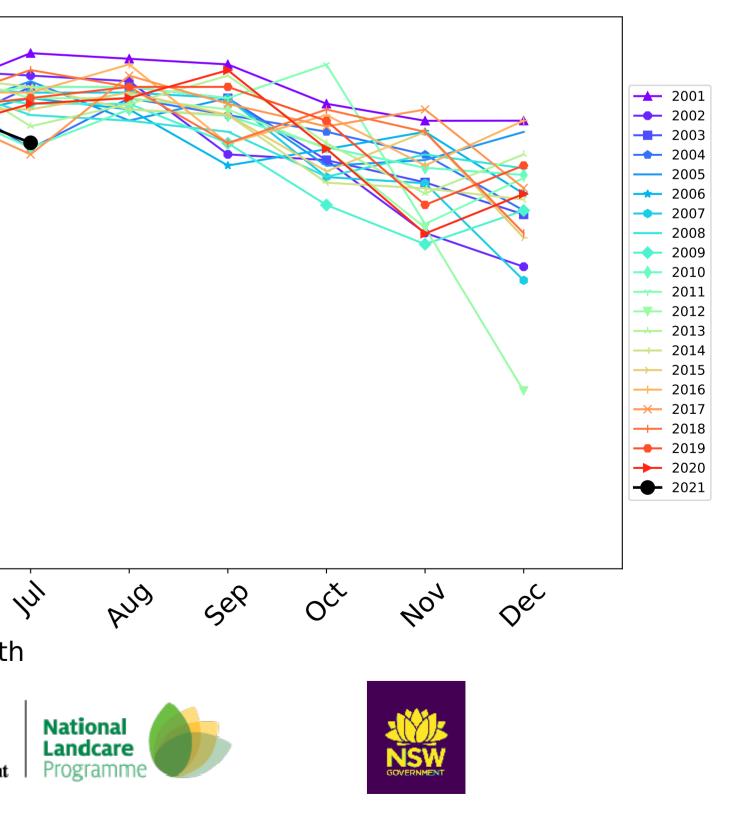


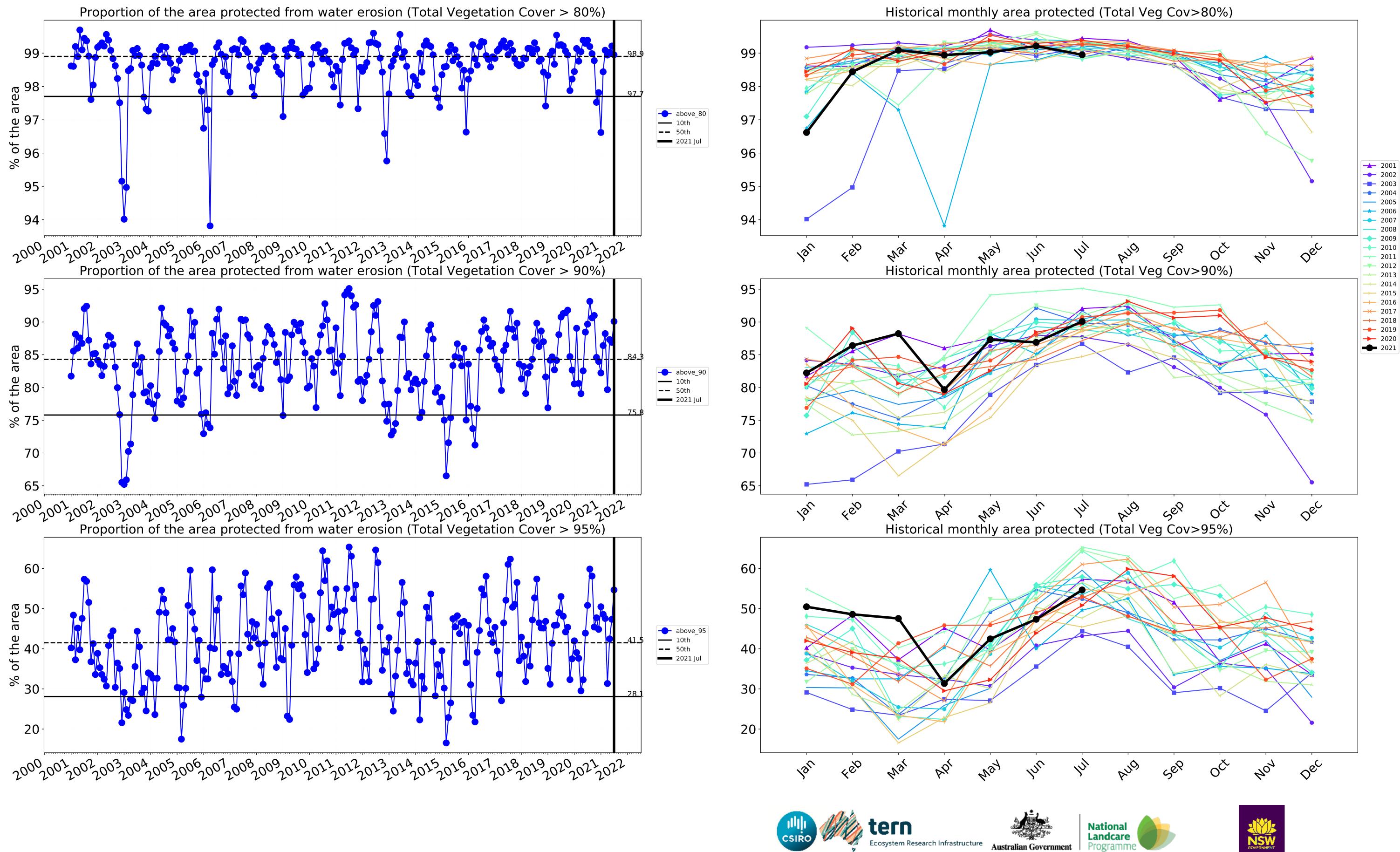
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

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

100.00 99.75 99.50 --- above_70 **—** 10th 99.25 **--** 50th 99.00 98.75 98.50 98.25 feb Jan In PQ May Way month tern Ecosystem Research Infrastructure Australian Government

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





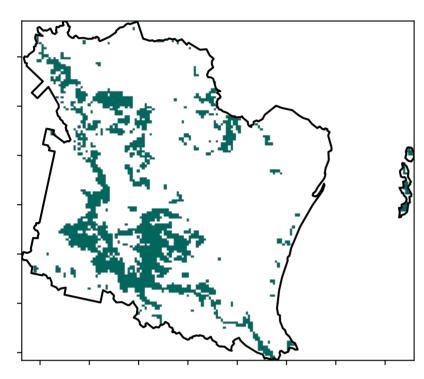


Conservation and natural environments Woodland forest

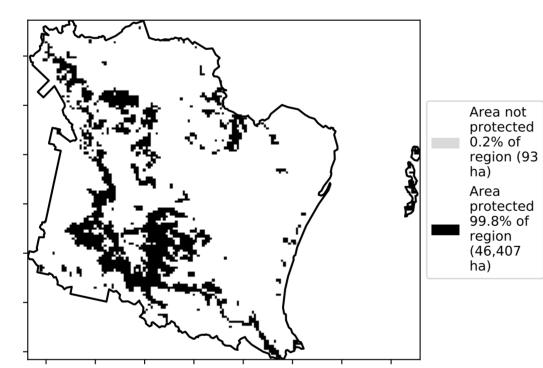
Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Woodland forest Catchment Scale Land (2018) and Forests of Australia (2018)

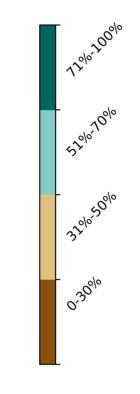
Land use and forest cover

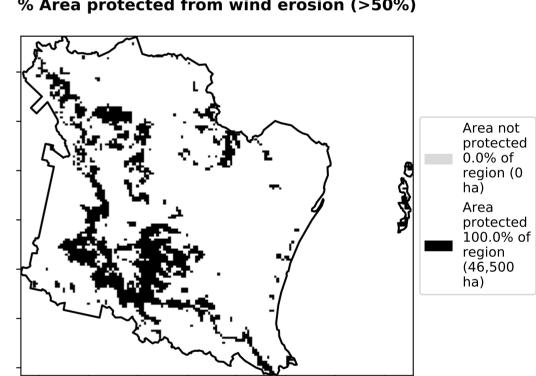
Total Vegetation Cover [%]



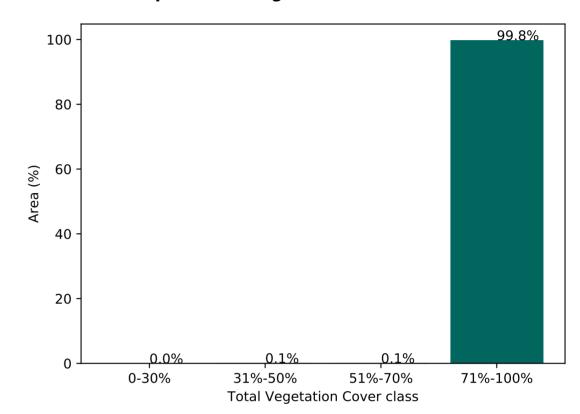
% Area protected from water erosion (>70%)







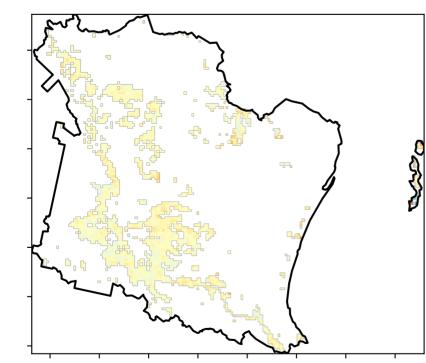
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

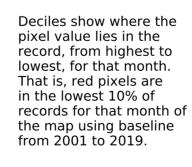


Total Vegetation Cover Anomaly [%]



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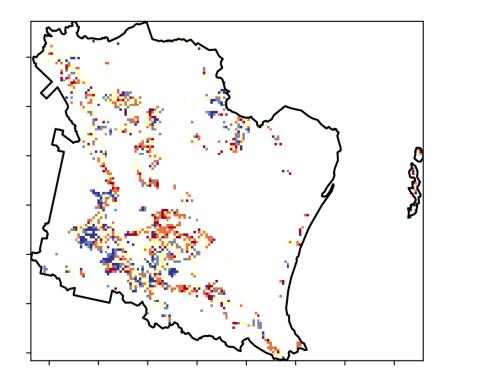
Total Vegetation Cover Decile [%]

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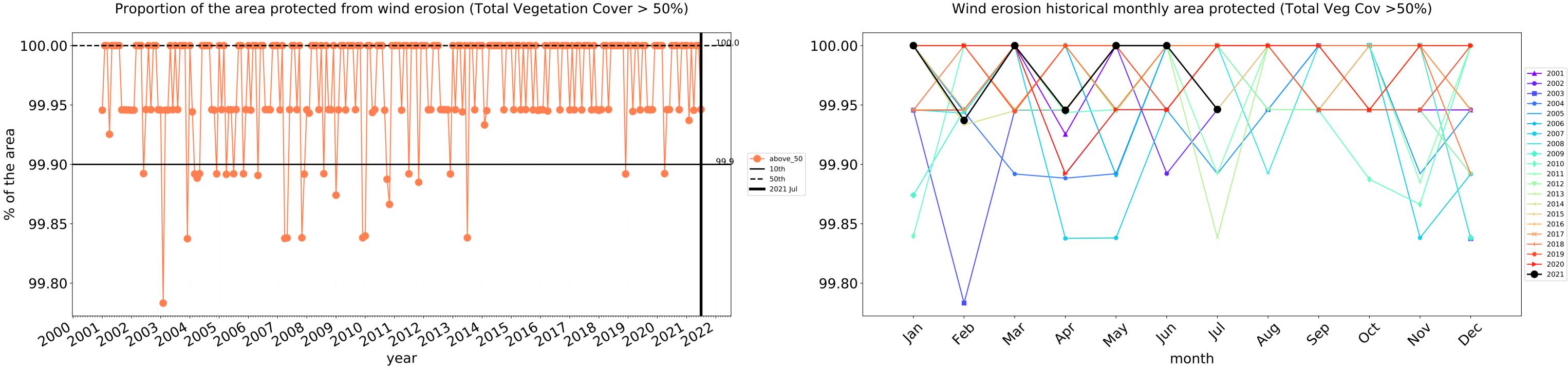
Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

Catchment Scale

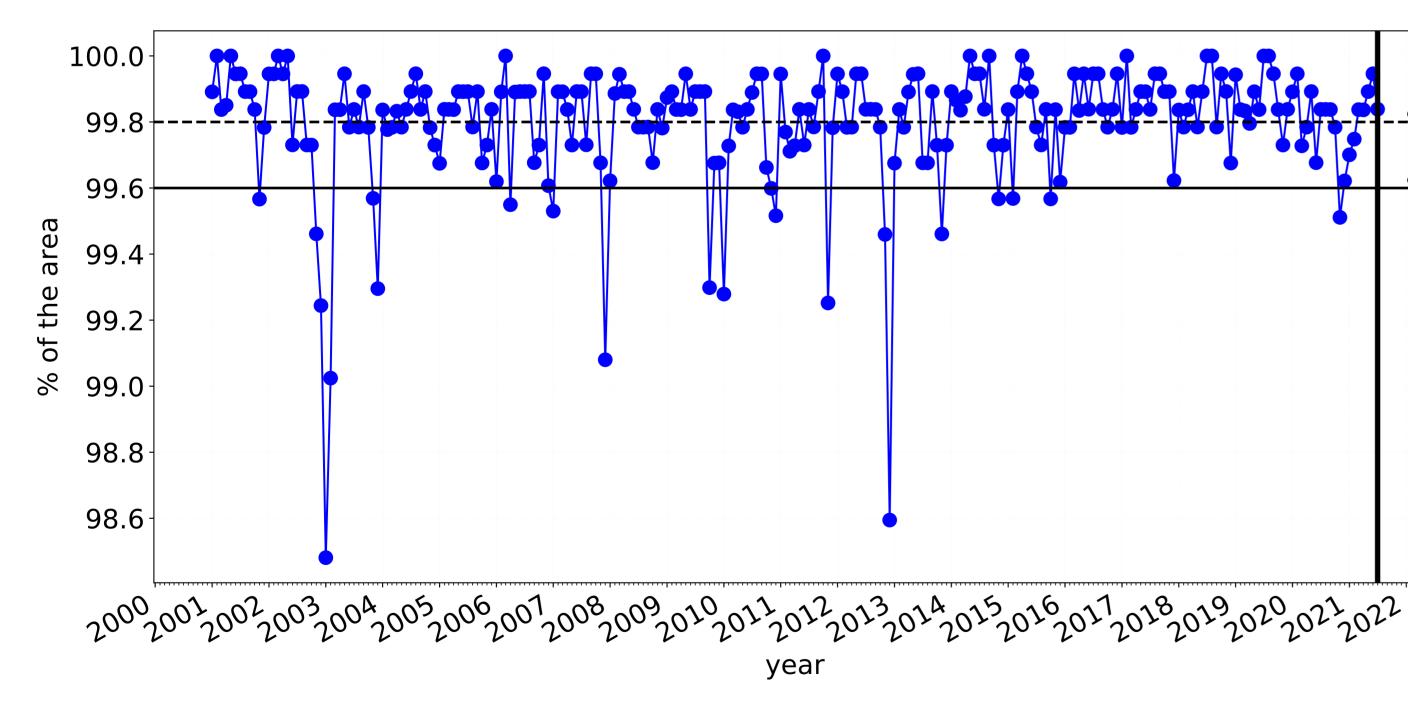
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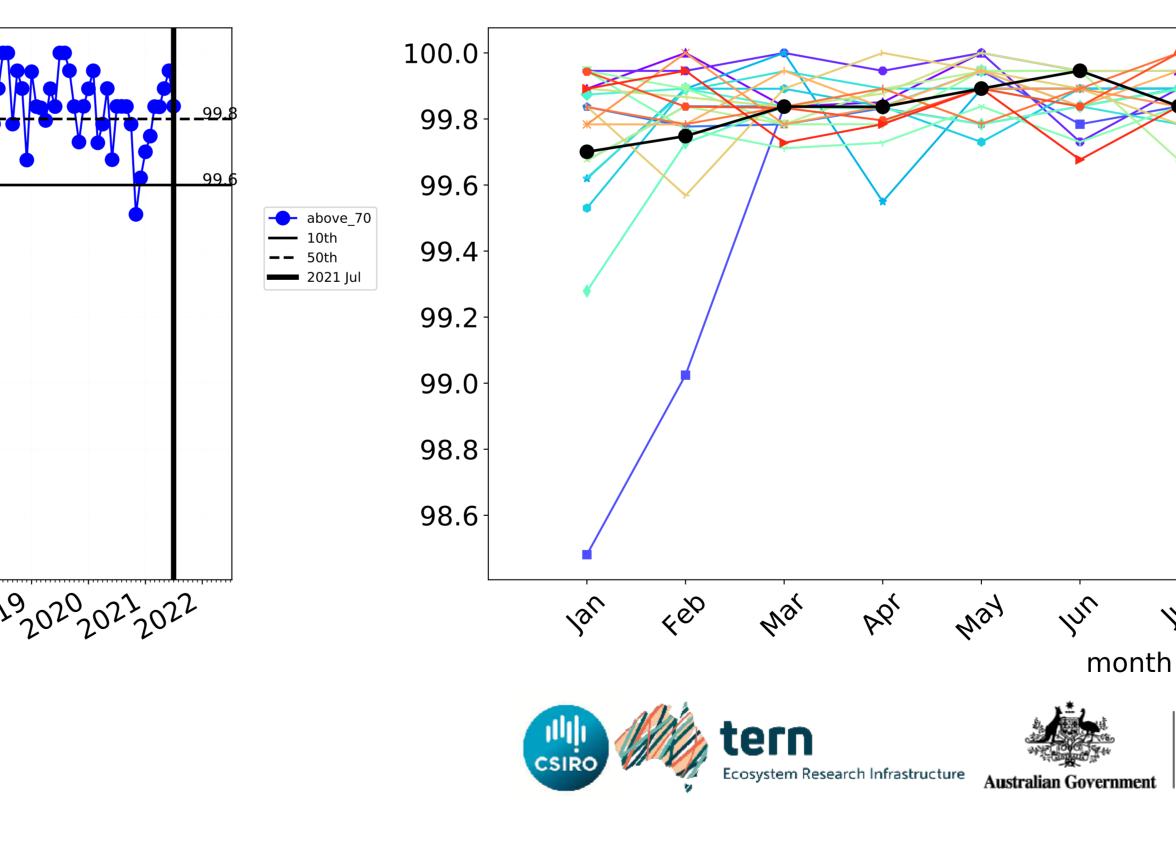
Use of Australia



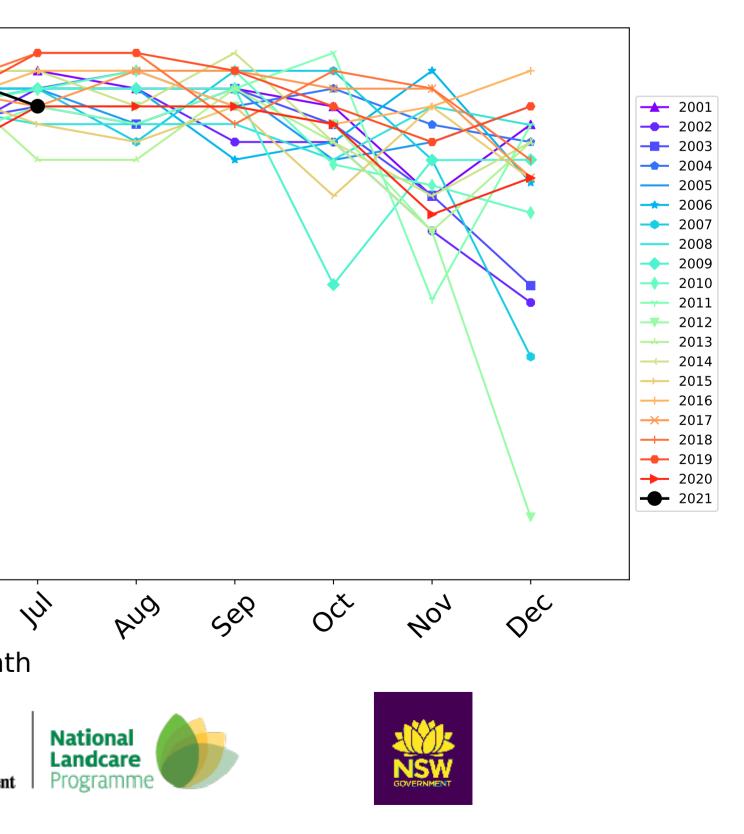


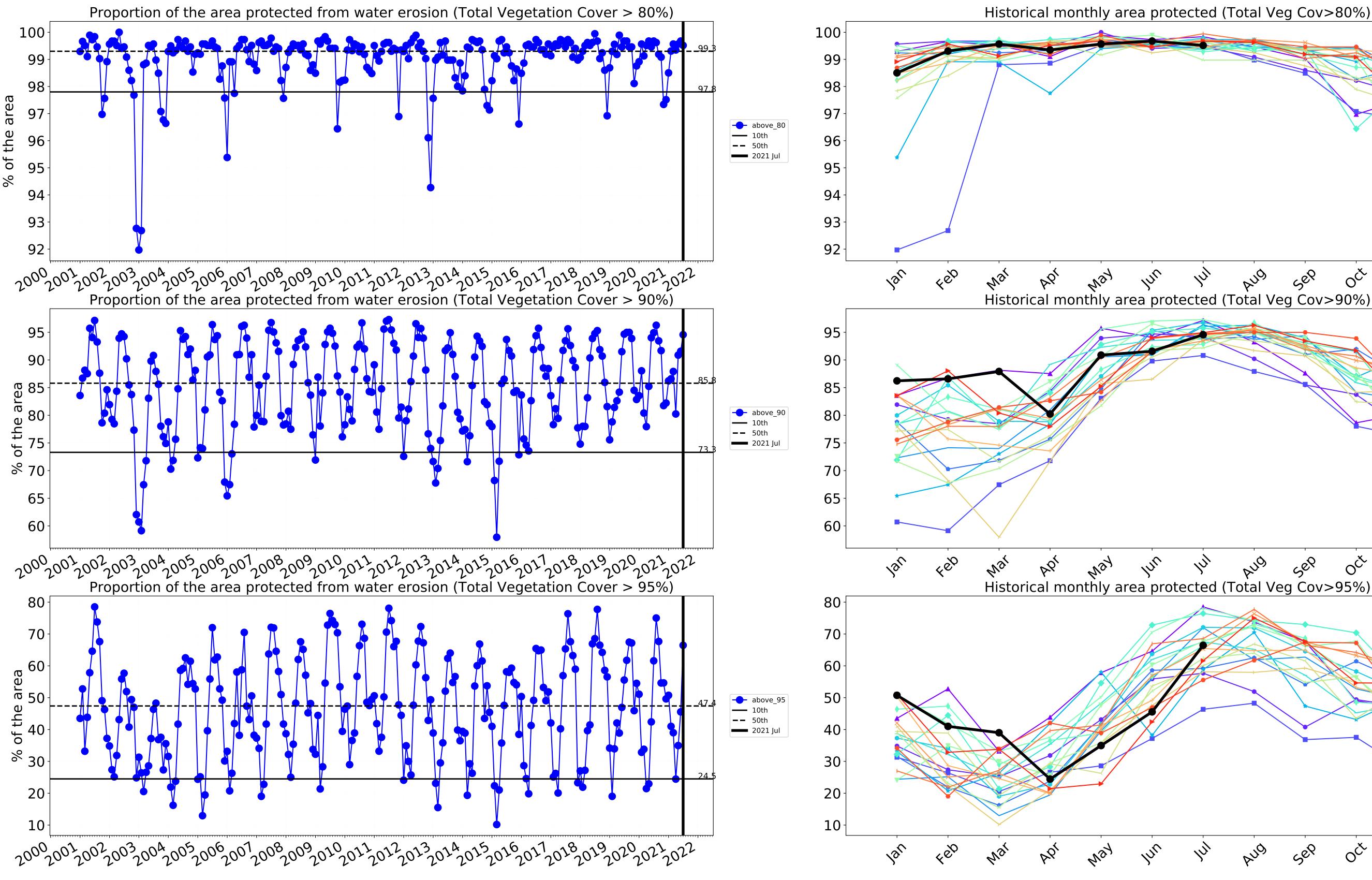
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

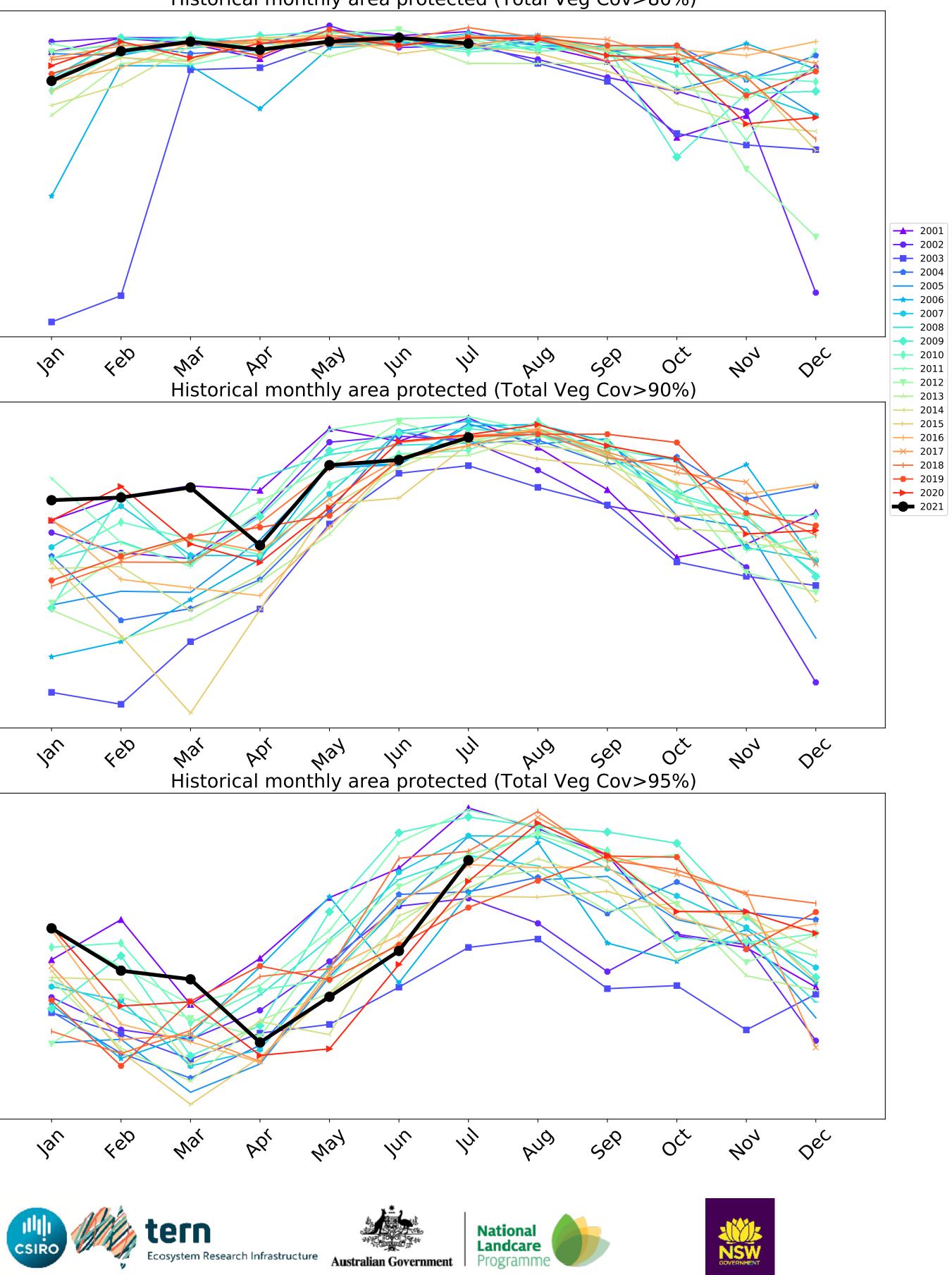




Water erosion historical monthly area protected (Total Veg Cov>70%)





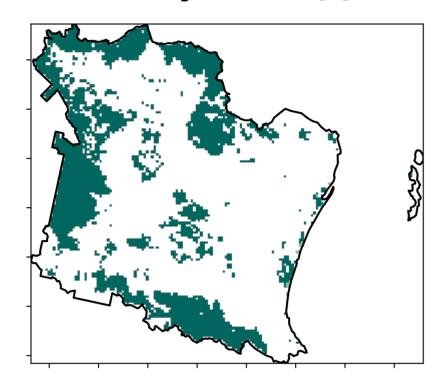


Conservation and natural environments Forest (non woodland)

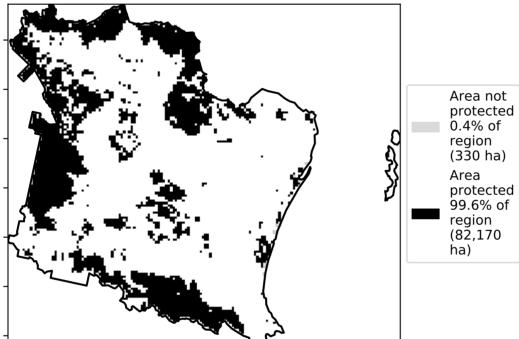
Land use and forest cover

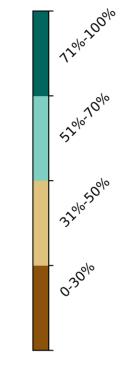
Catchment Scale Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Non-Catchment Scale Land woodland forest Ľ Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]



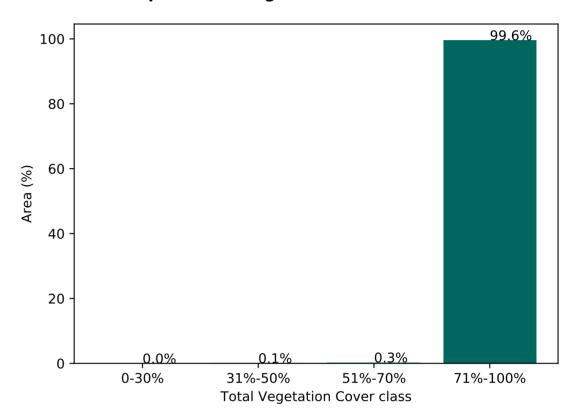
% Area protected from water erosion (>70%)



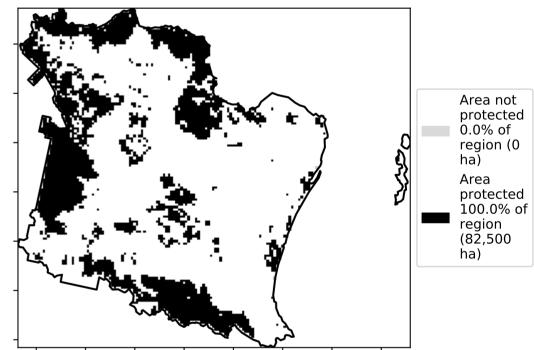




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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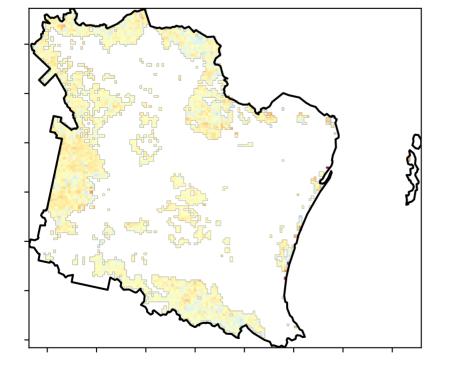
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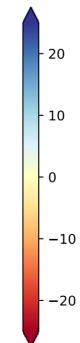
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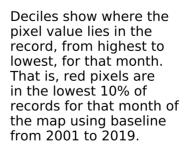
Total Vegetation Cover Anomaly [%]

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 from 2001 to 2019.

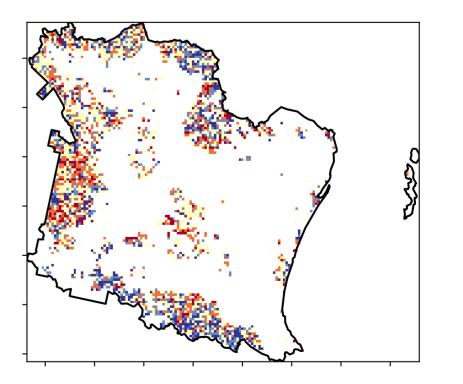
Derived from



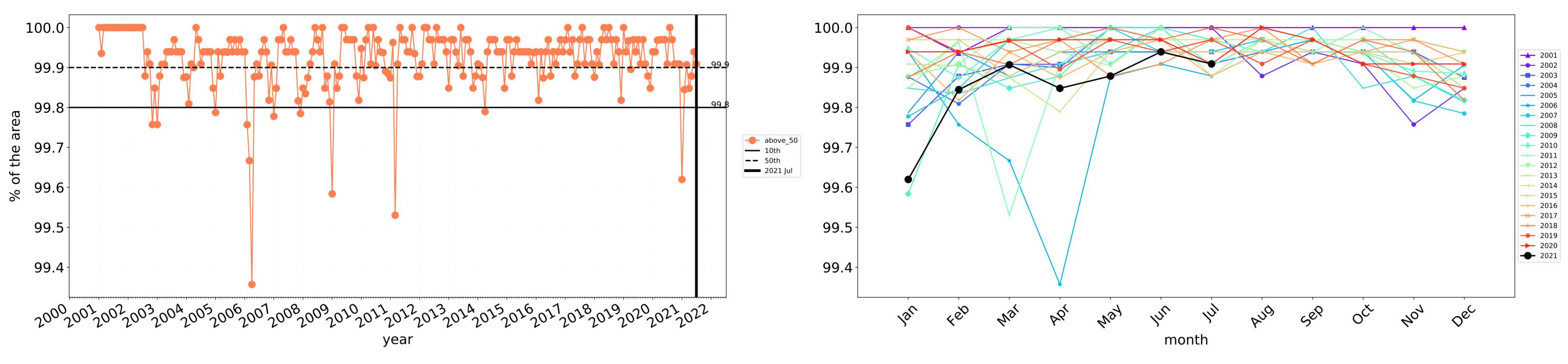




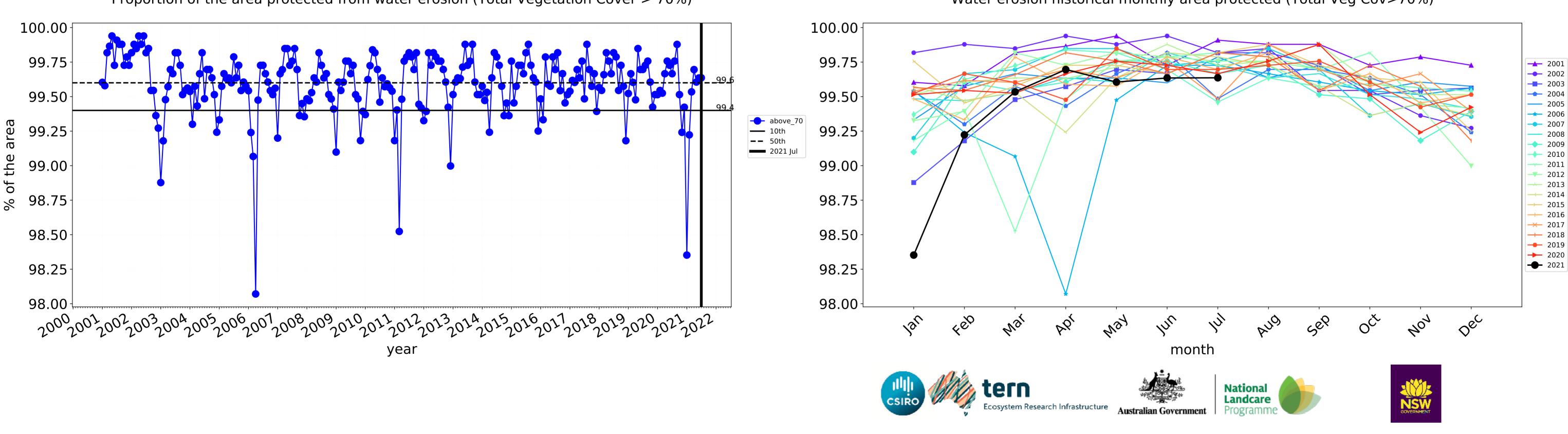
Total Vegetation Cover Decile [%]



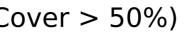




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



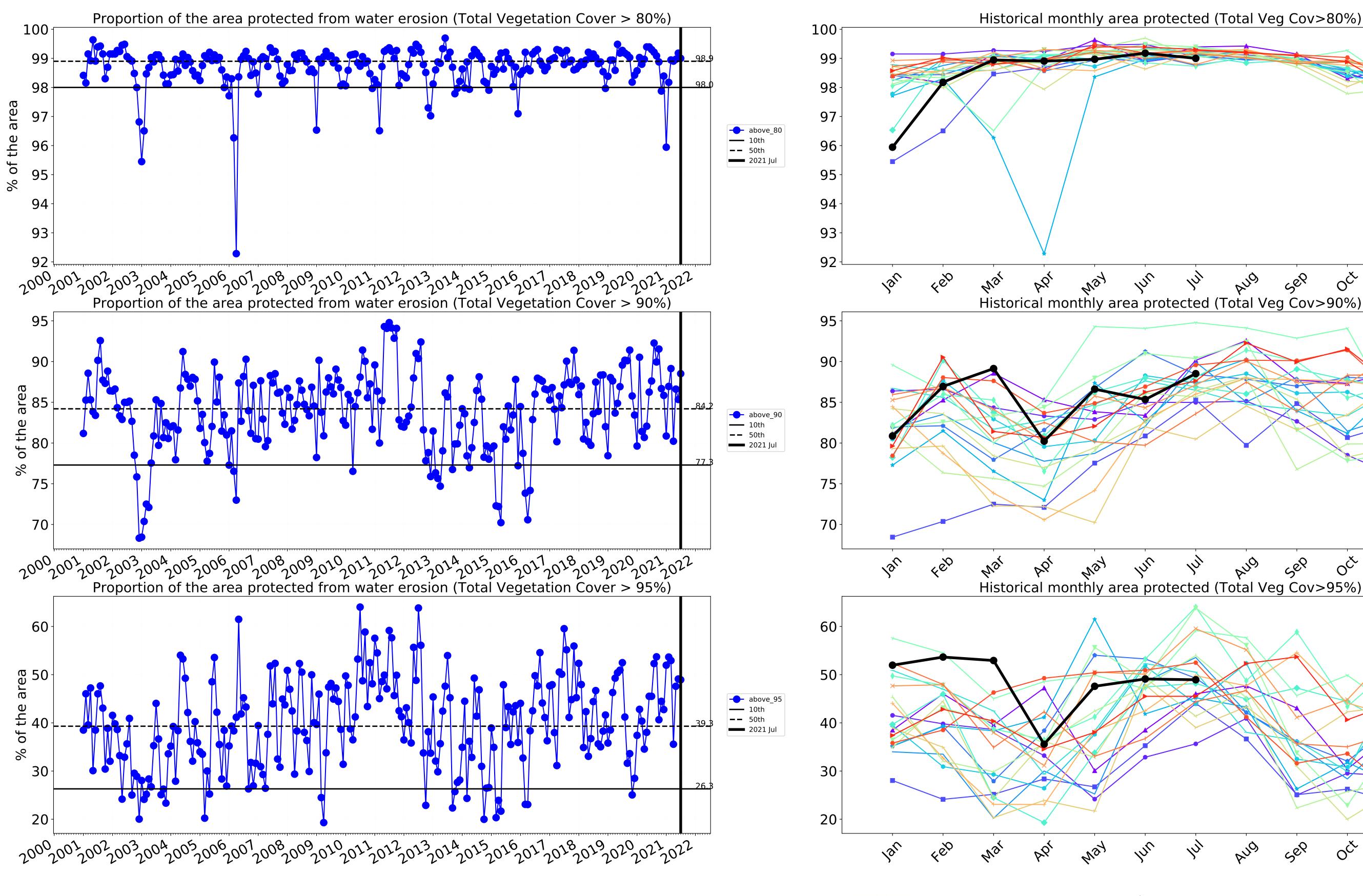
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



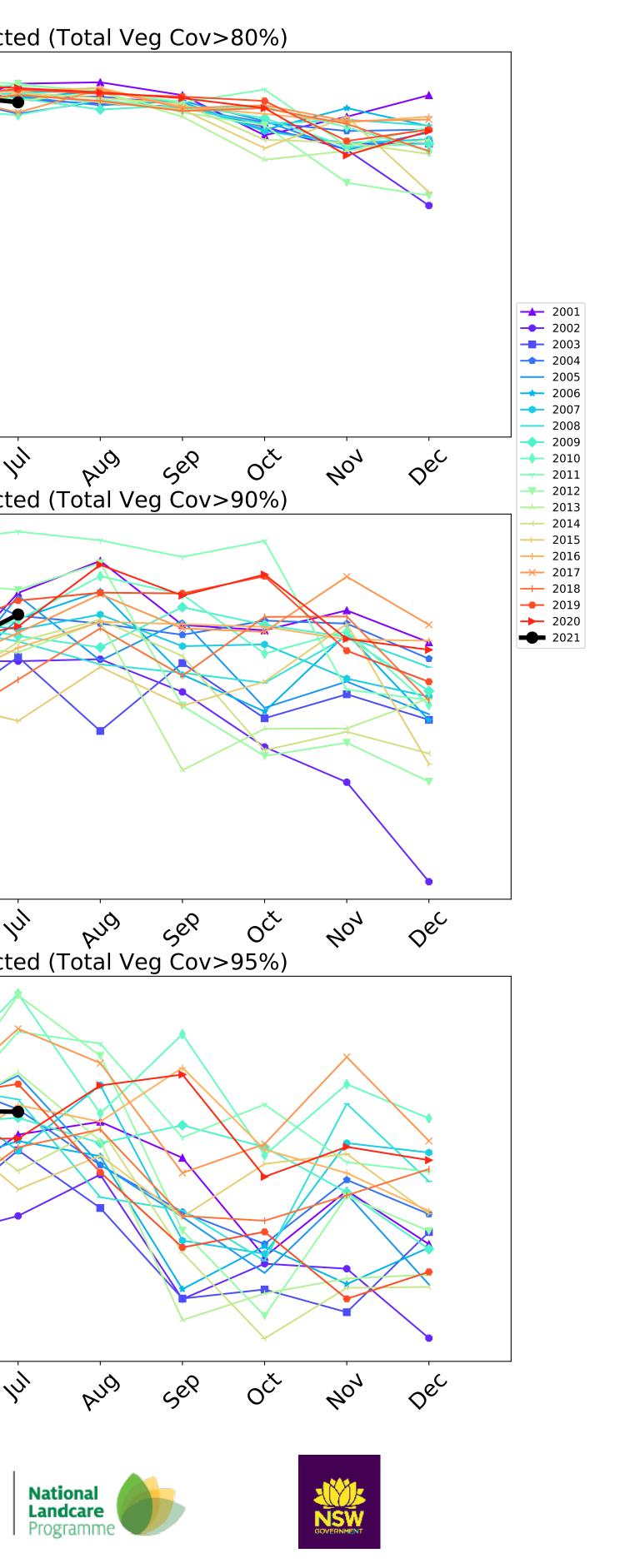
Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



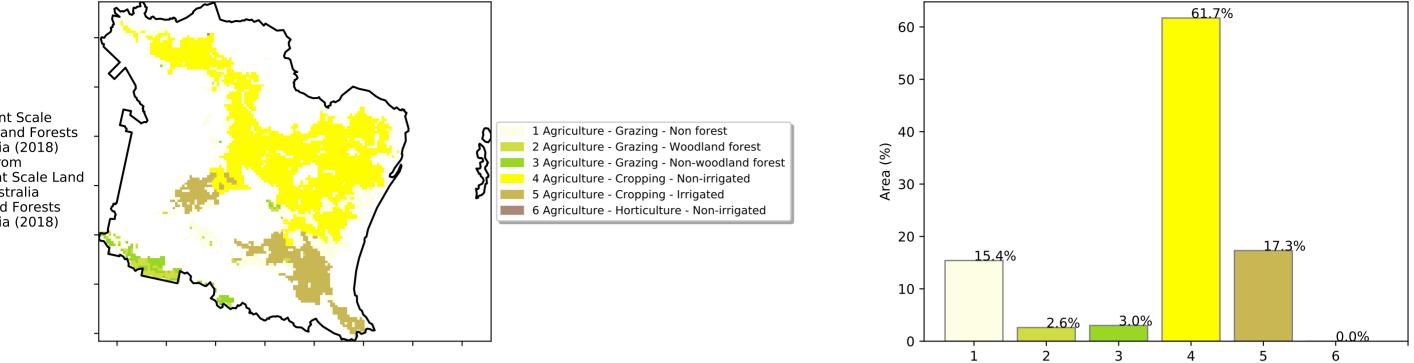




Agriculture

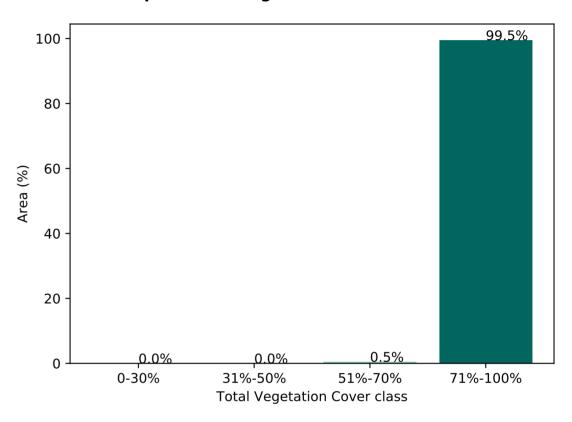
Land use and forest cover

Proportion of each land class in area

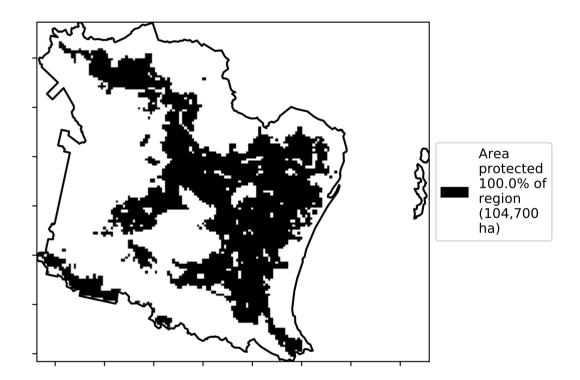


Proportion of vegetation cover class in area

Land use class

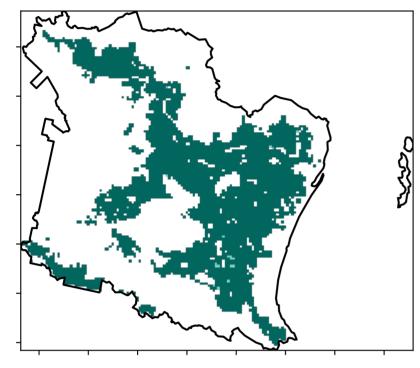


% Area protected from wind erosion (>50%)

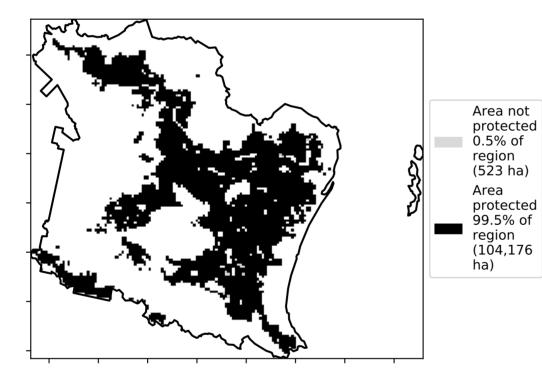


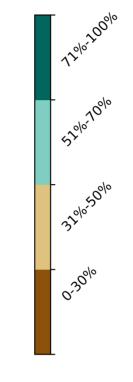
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)





% Area protected from water erosion (>70%)





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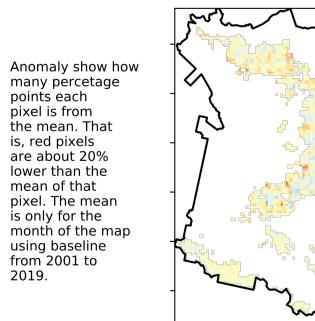
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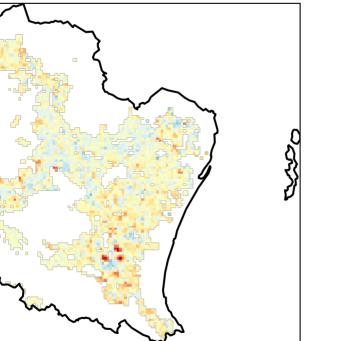
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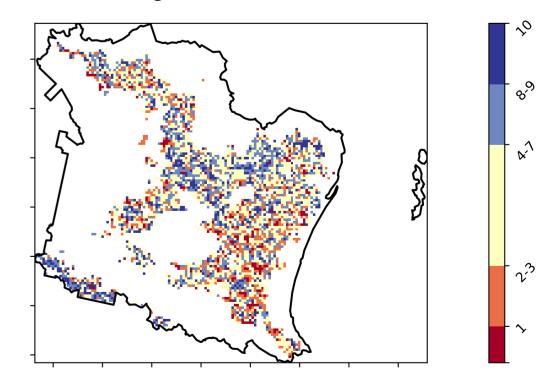
Total Vegetation Cover Anomaly [%]





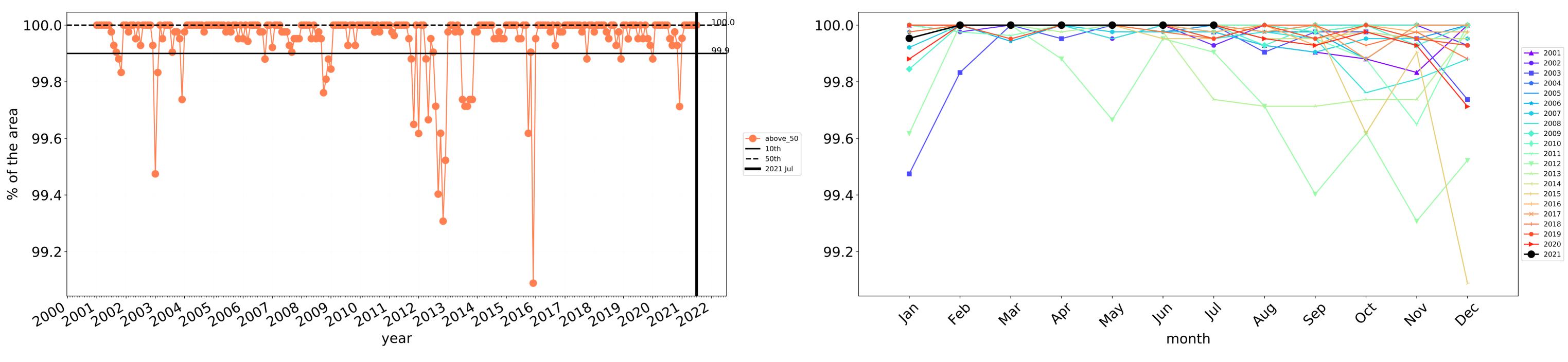
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



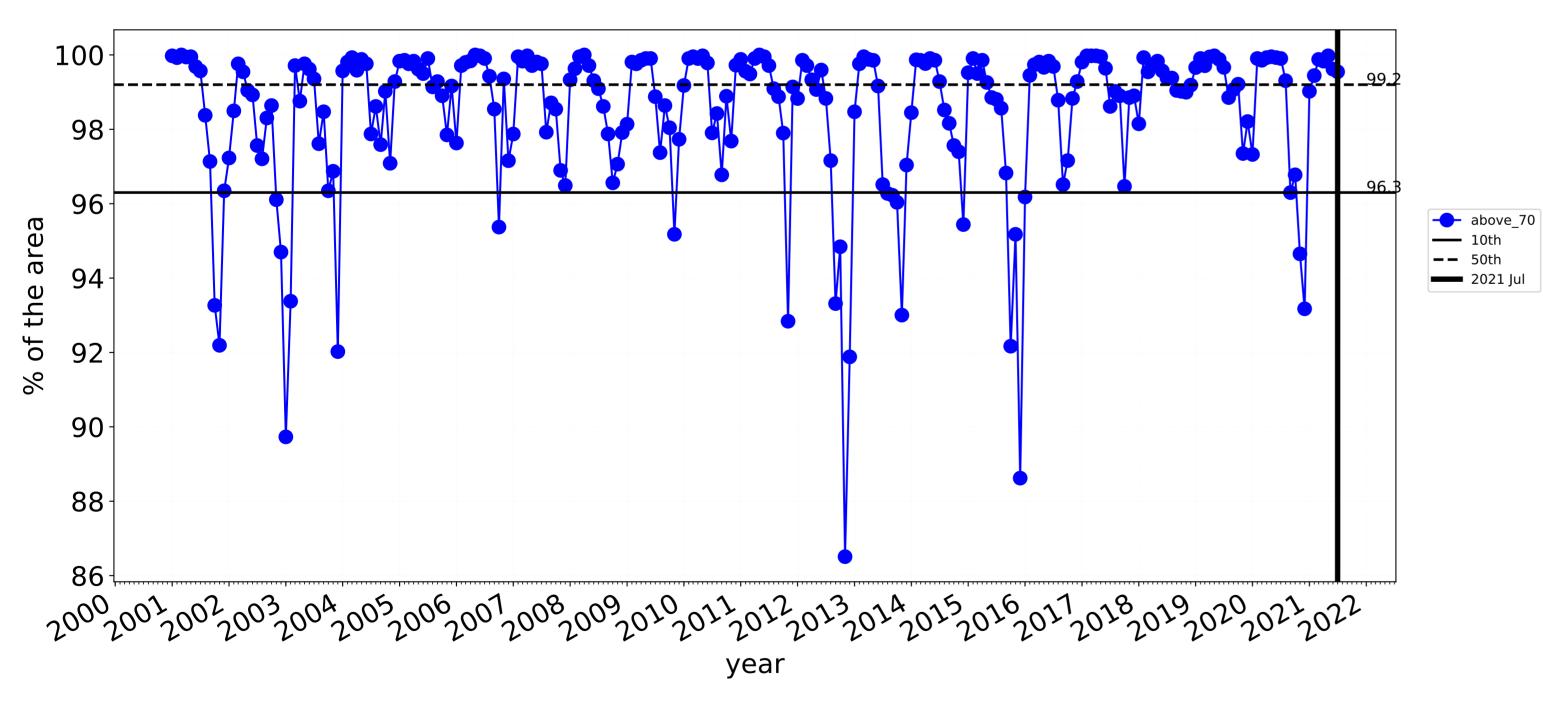




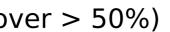


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

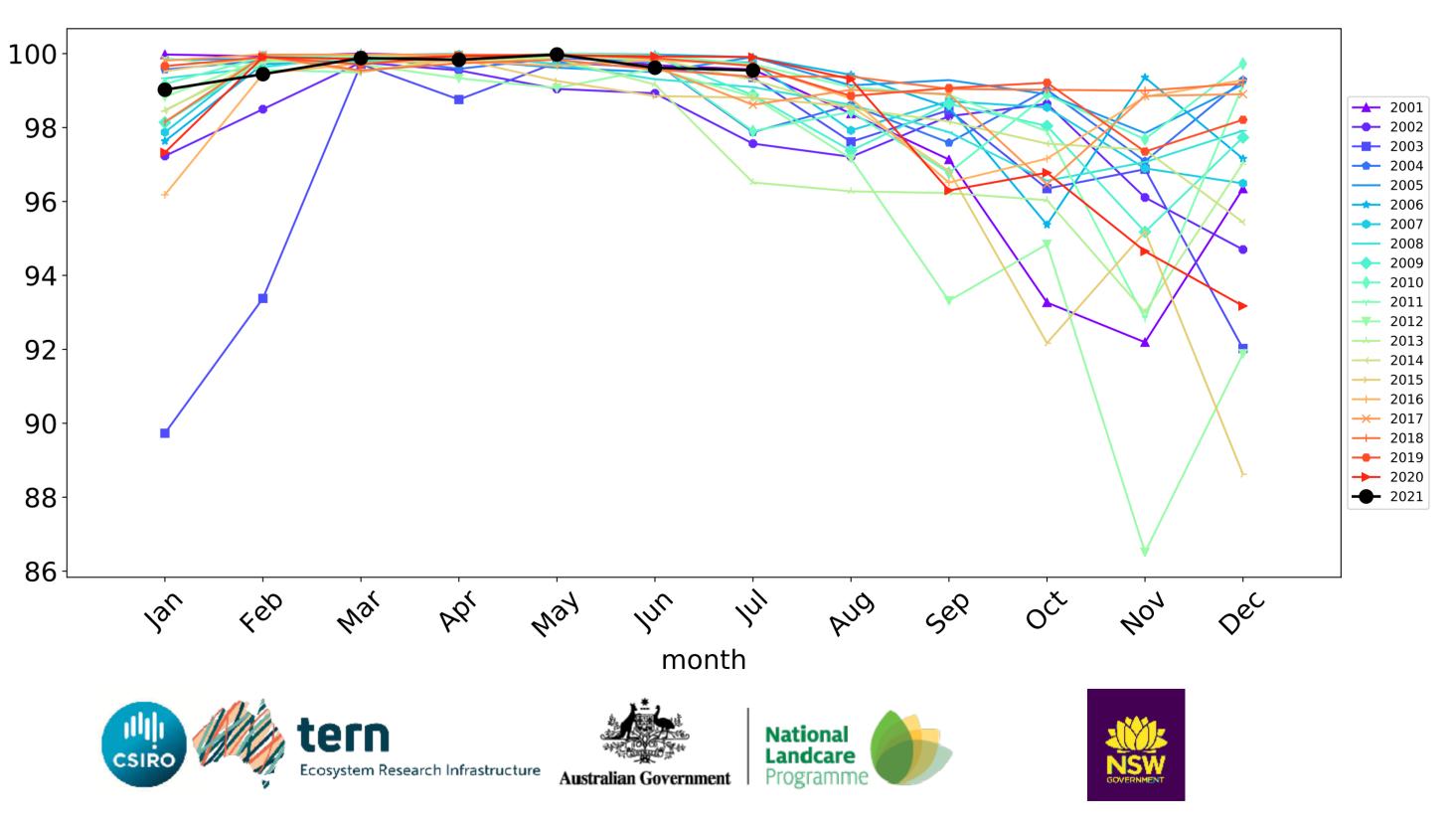
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



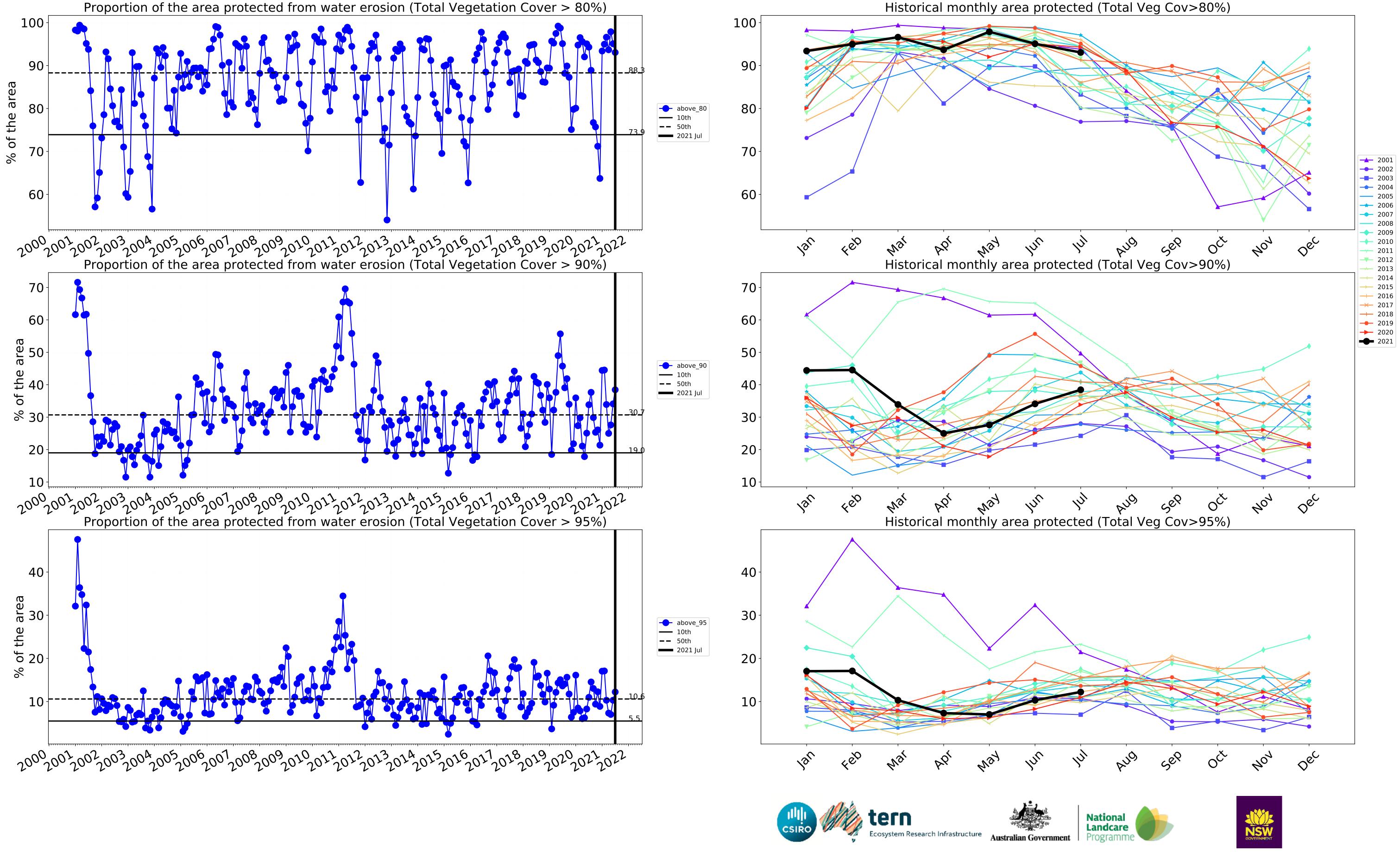
Agriculture timeseries



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

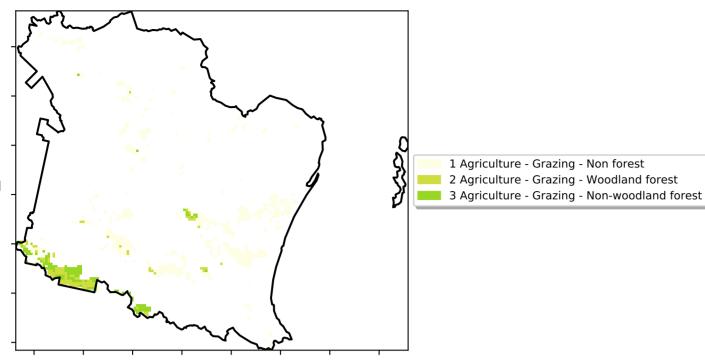


Water erosion historical monthly area protected (Total Veg Cov>70%)



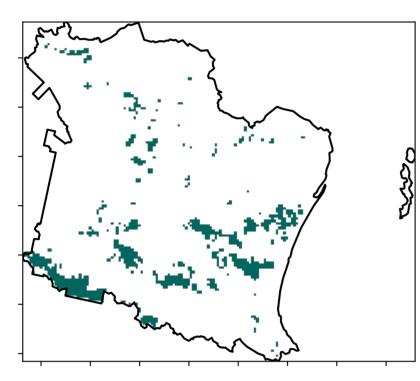
Grazing

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

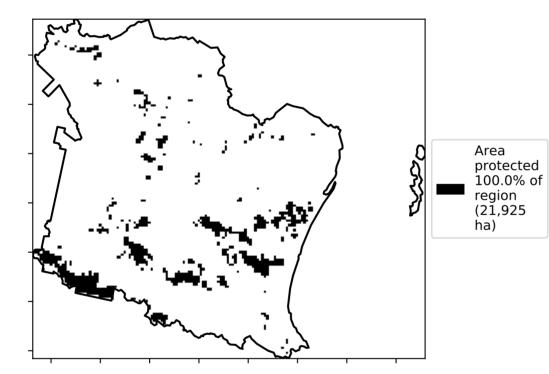


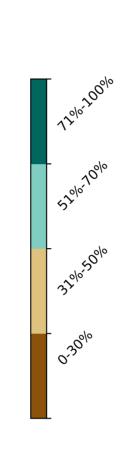
Land use and forest cover

Total Vegetation Cover [%]

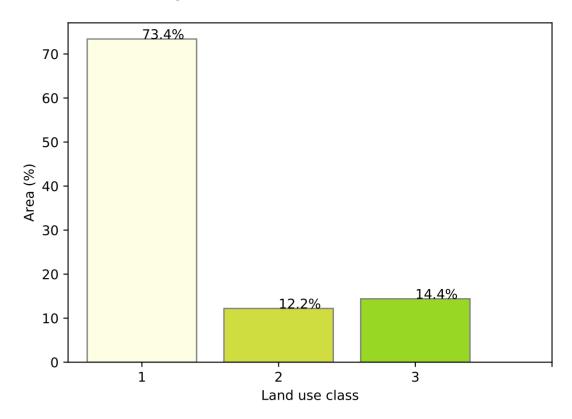


% Area protected from water erosion (>70%)

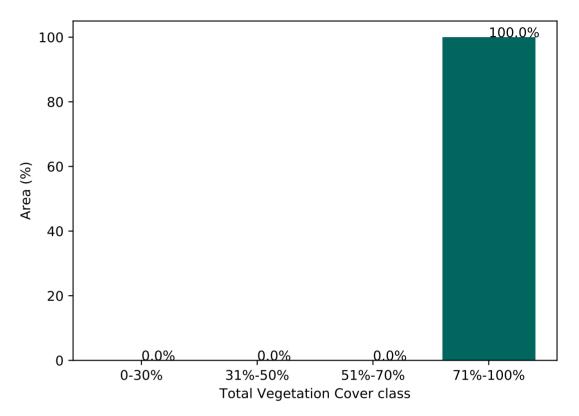




Proportion of each land class in area



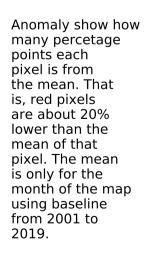
Proportion of vegetation cover class in area

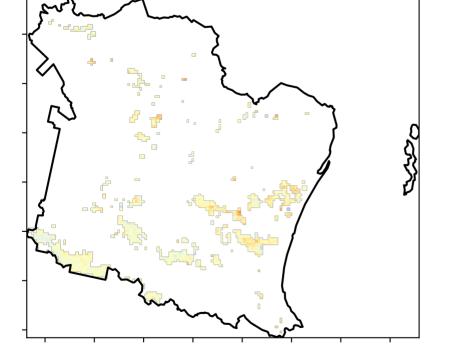


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

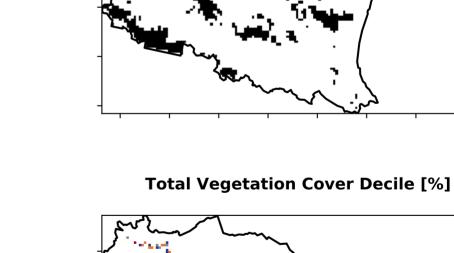


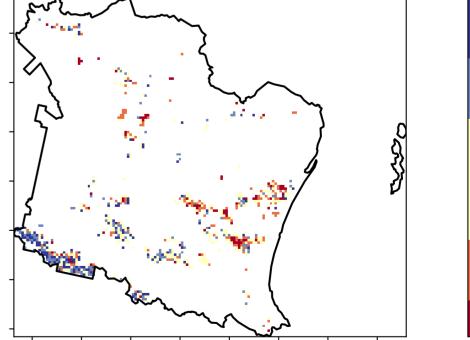


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Deciles show where the pixel value lies in the

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



Area

ha)

protected 100.0% of

\$

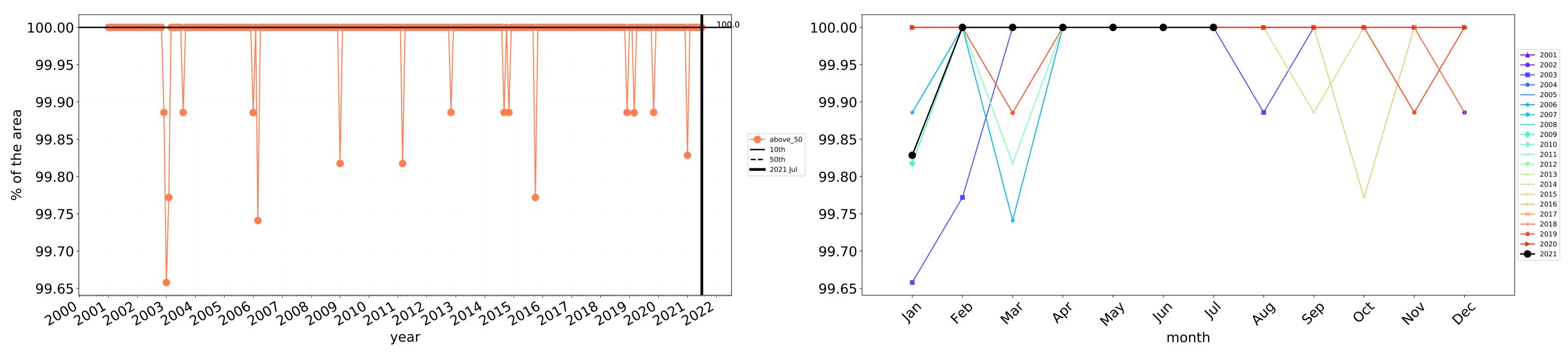
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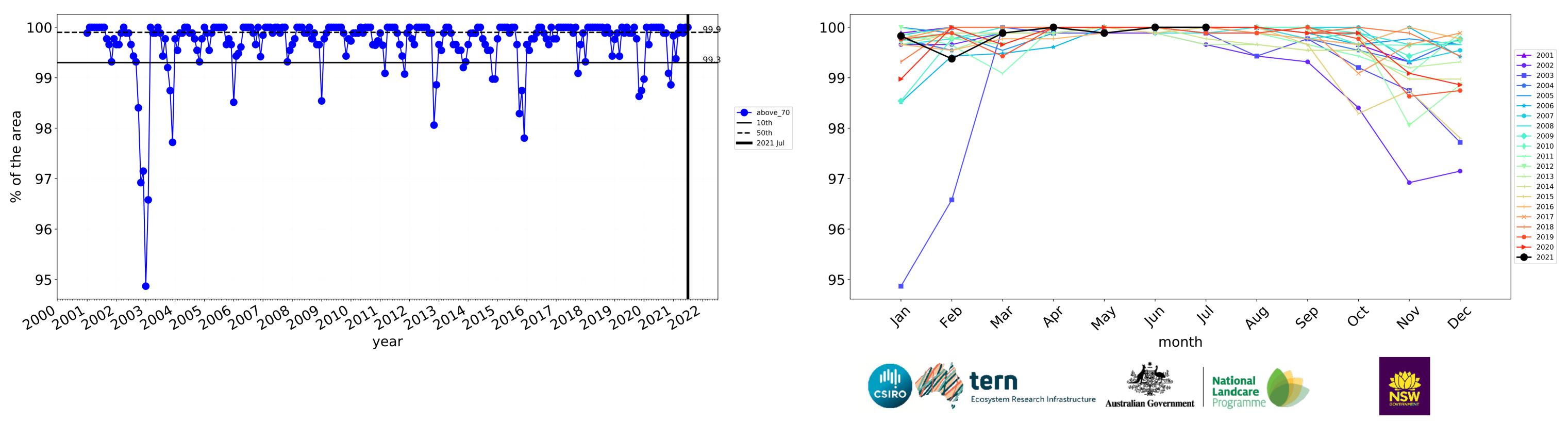
region (21,925

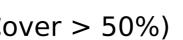
Ω



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

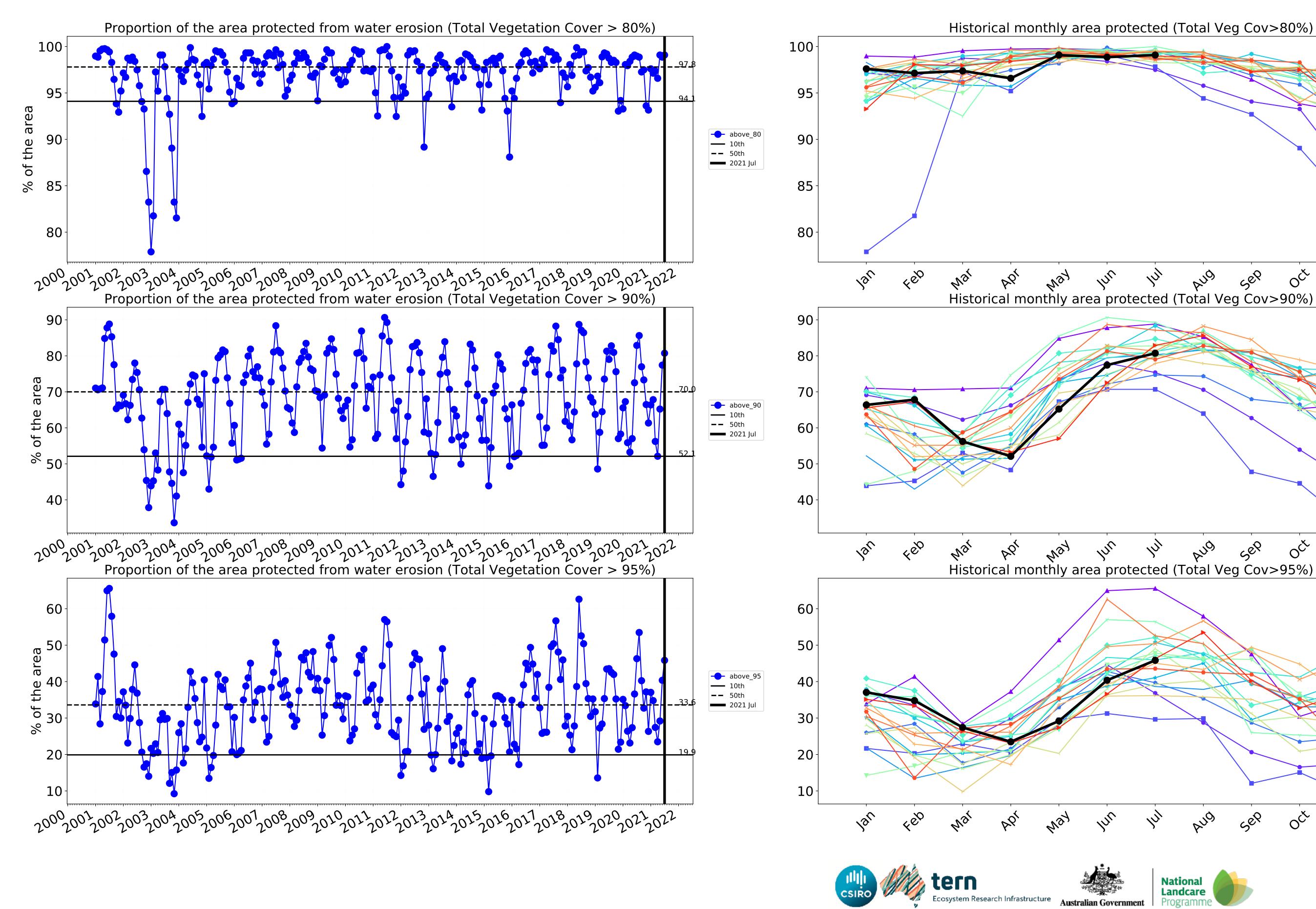
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

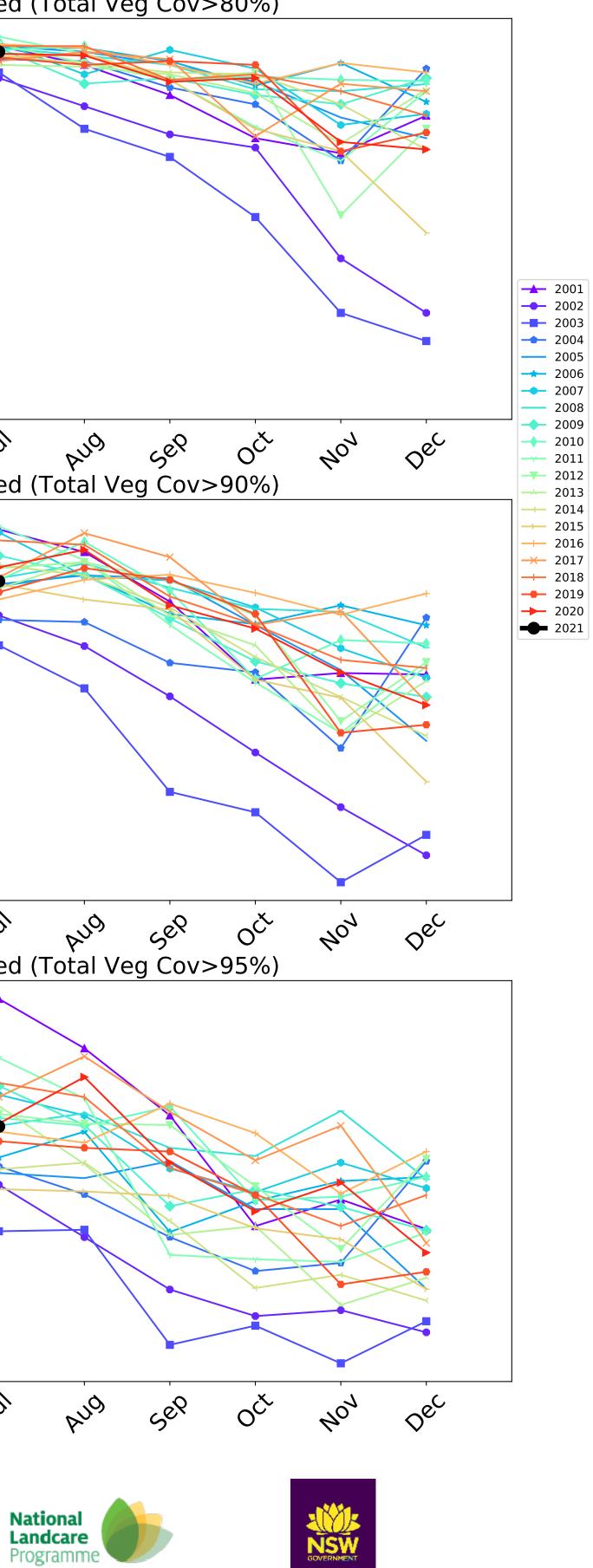




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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





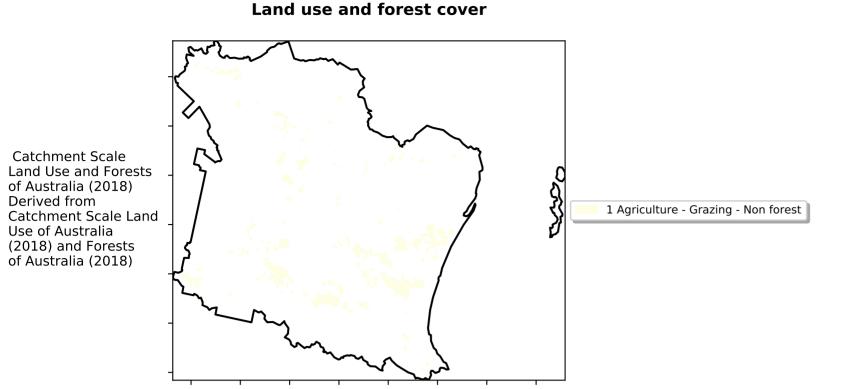
Grazing non forest

12%200%

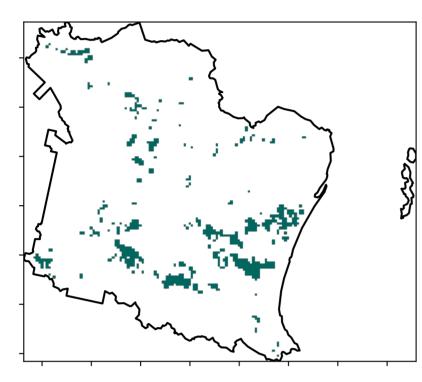
5200070010

32005001

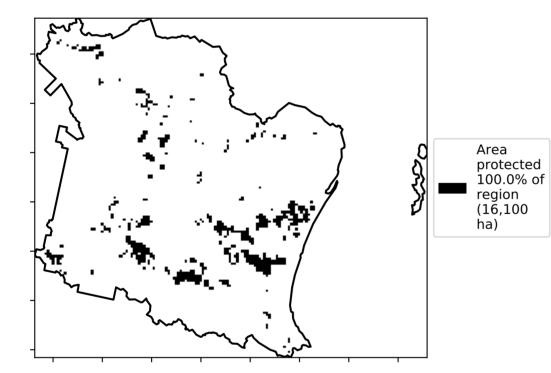
0.30%



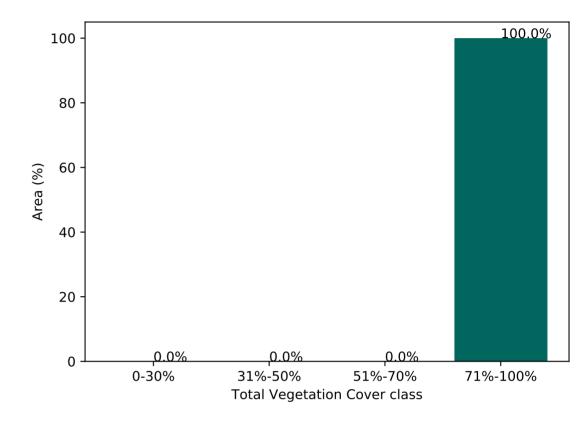
Total Vegetation Cover [%]



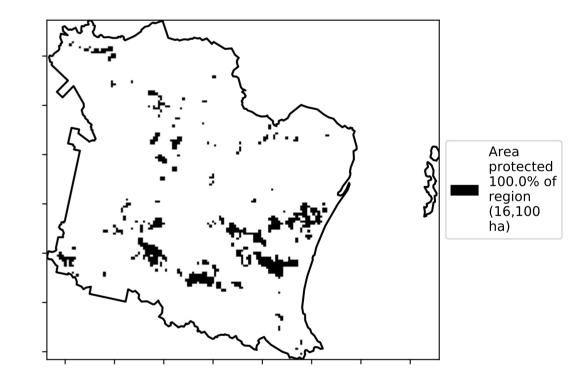
% Area protected from water erosion (>70%)



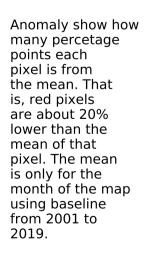
Proportion of vegetation cover class in area

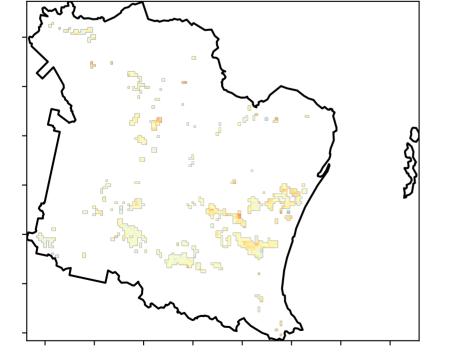


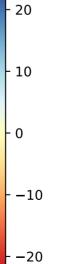
% Area protected from wind erosion (>50%)

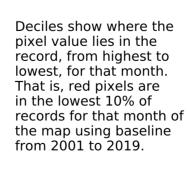


Total Vegetation Cover Anomaly [%]









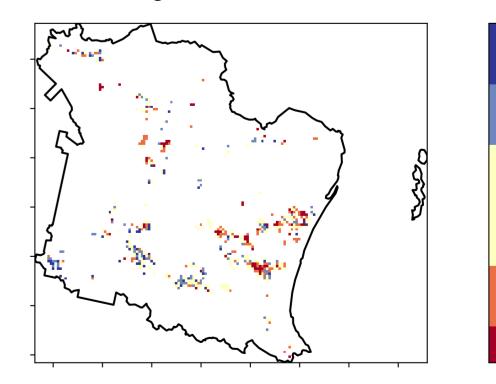
Total Vegetation Cover Decile [%]

\$

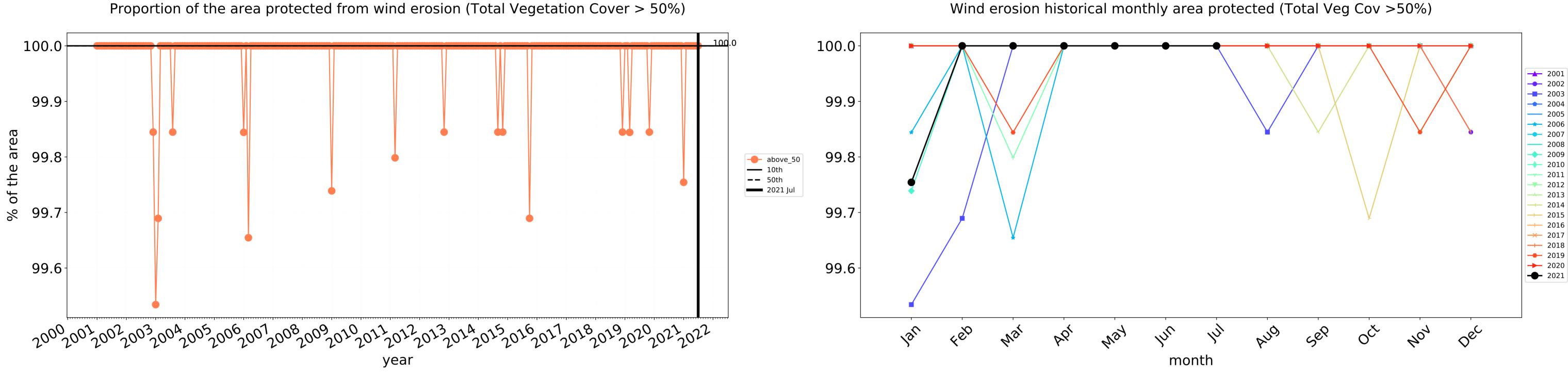
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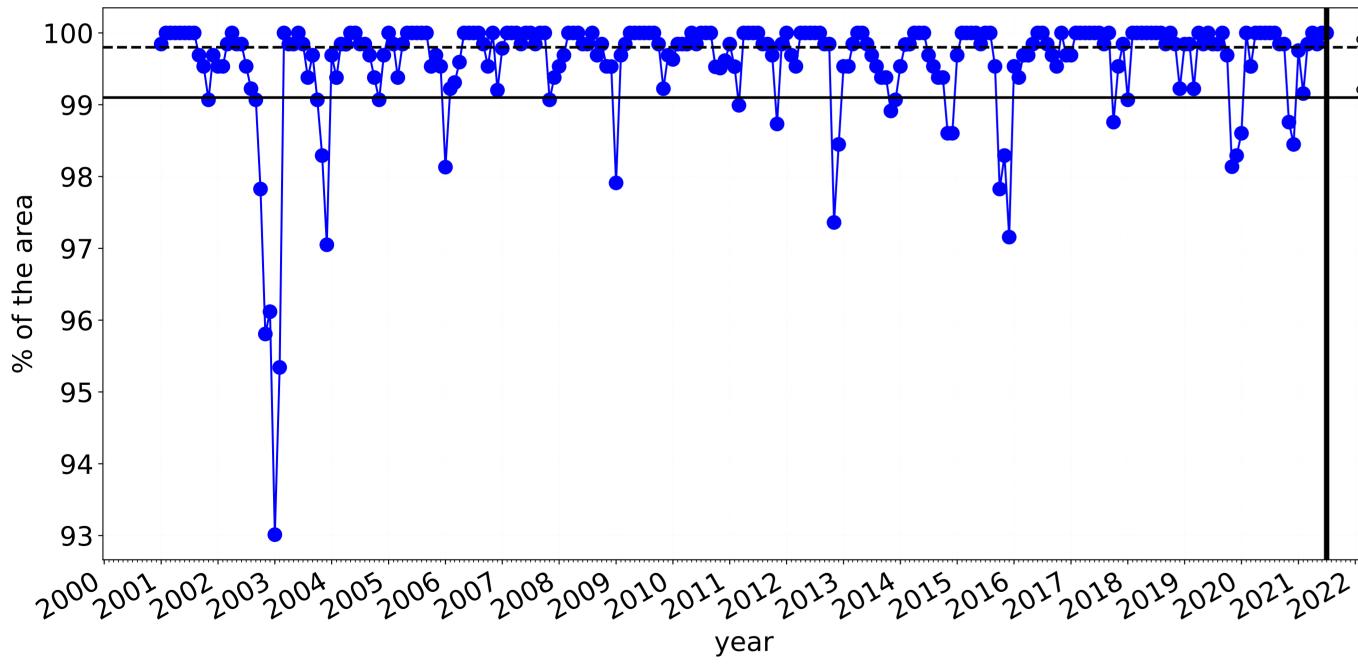
2.3







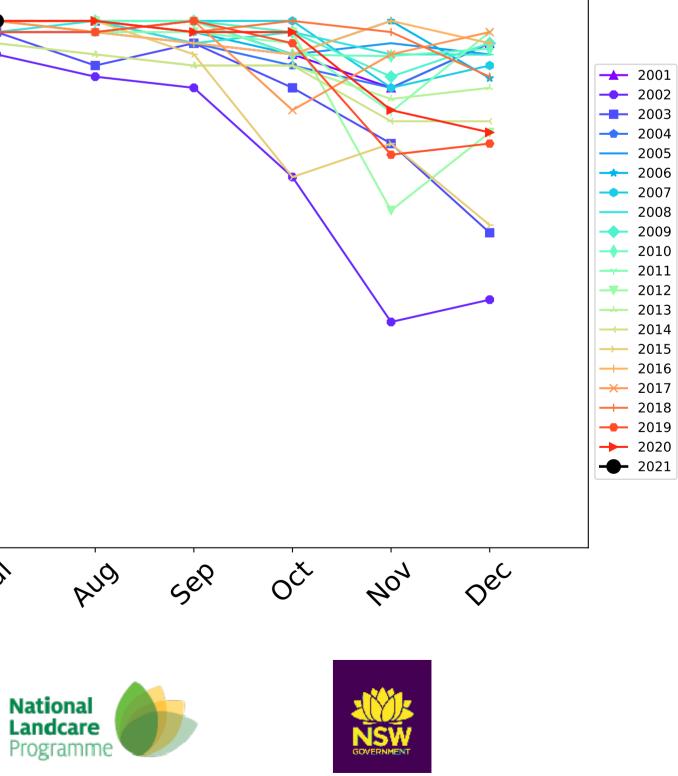
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

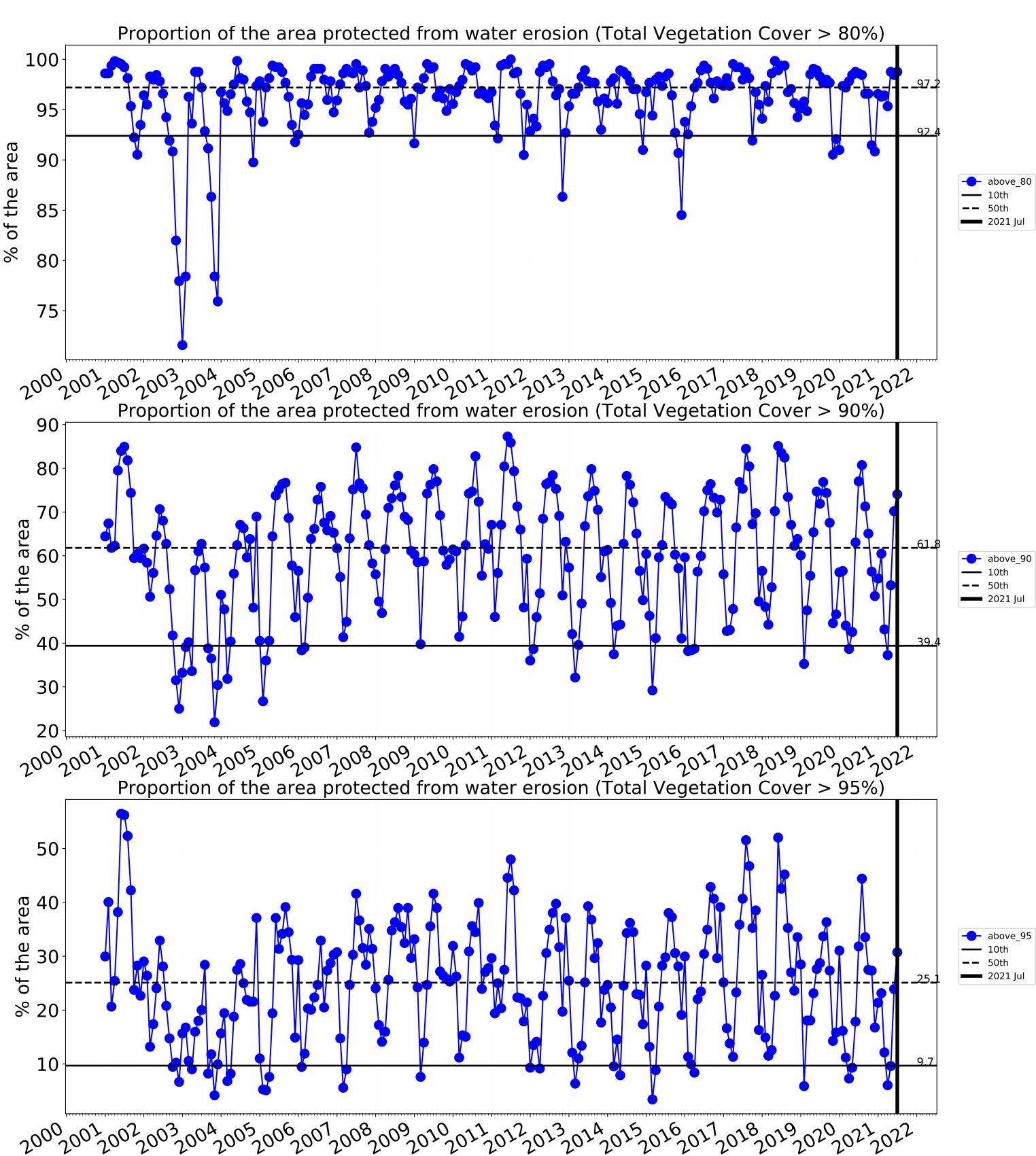


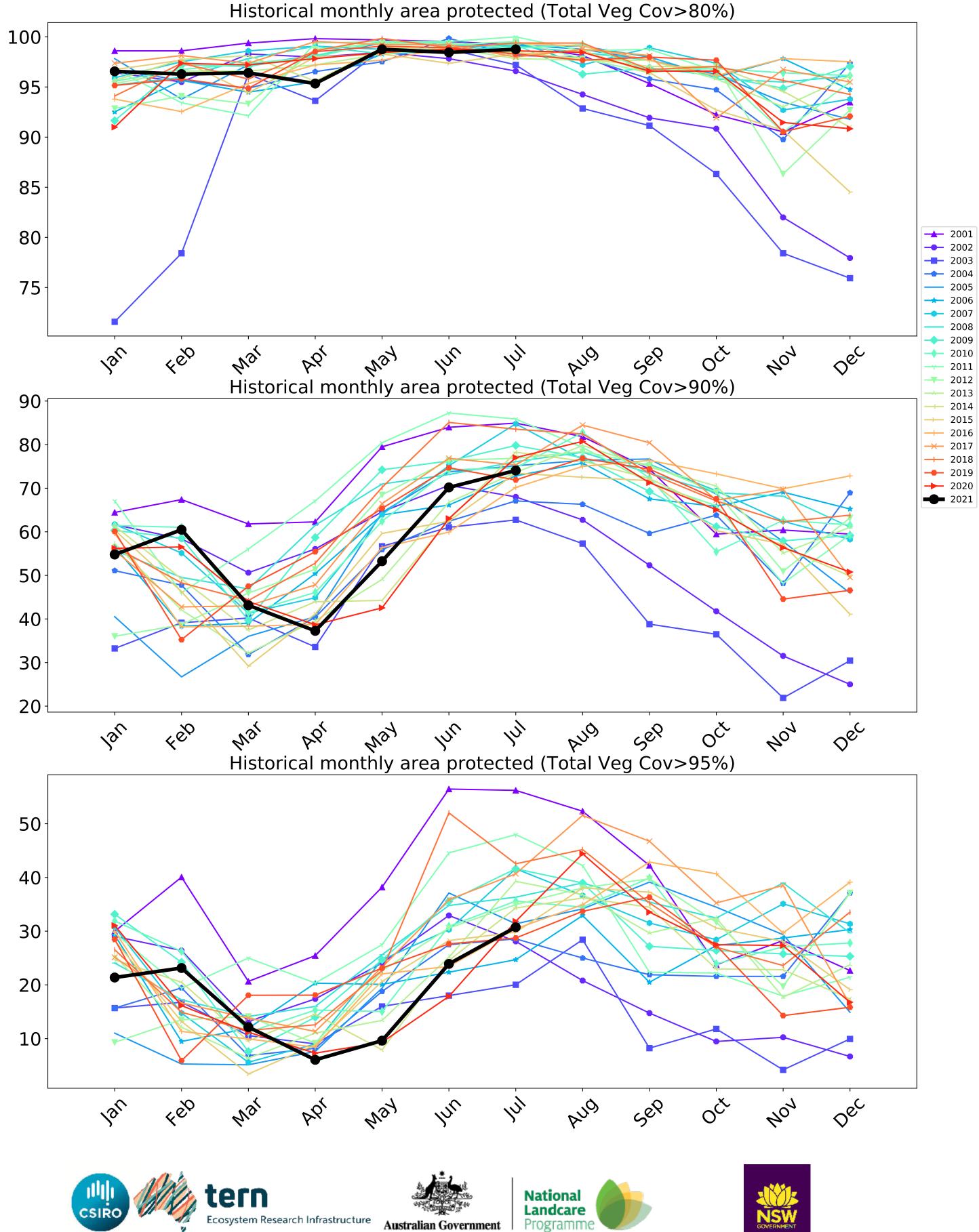
Grazing non forest timeseries

100 99.8 99 98 ---- above_70 **—** 10th **——** 50th 97 **——** 2021 Jul 96 95⁻ 94 93 Jan 4eb way In 1st PQ' Mai month tern Ecosystem Research Infrastructure Australian Government

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







CSIRO CONTRACTOR CONTR Australian Government

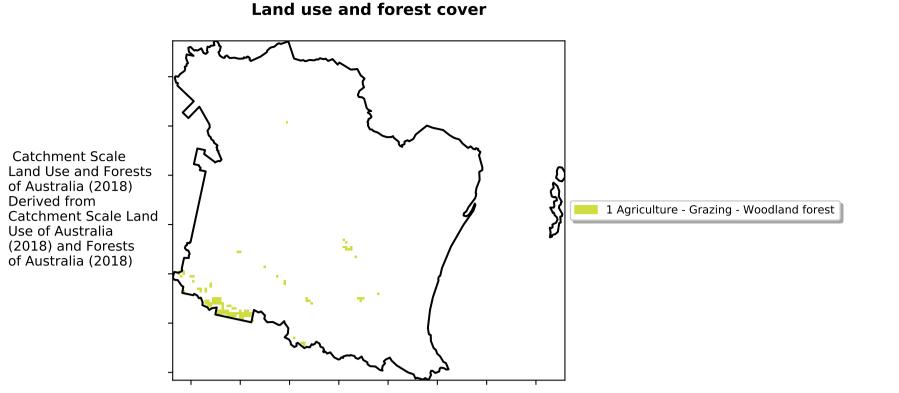
Grazing Woodland forest

1200-2000

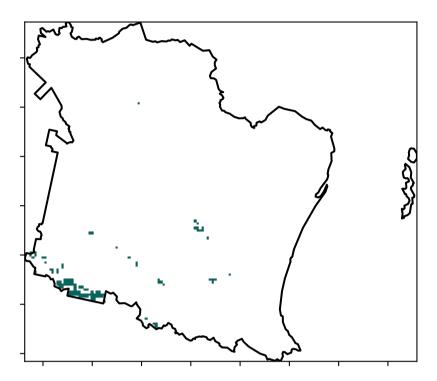
52°10°10°10

320050010

· 0.30%



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

the mean. That

are about 20% lower than the

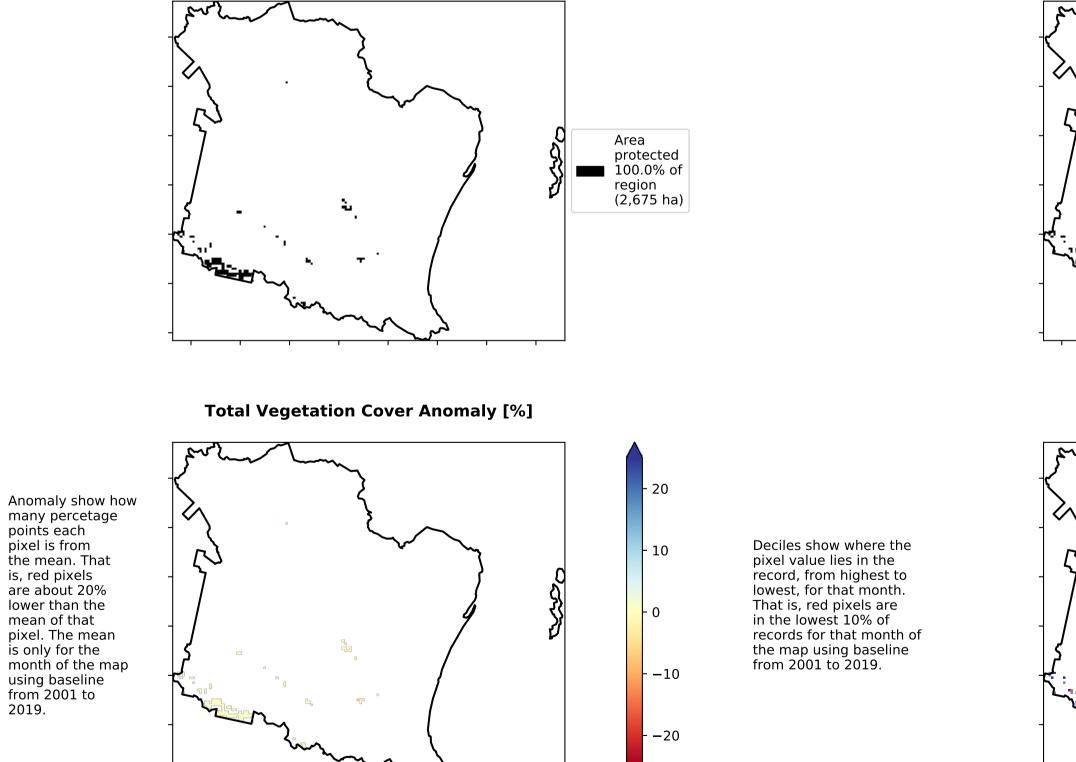
mean of that

is only for the

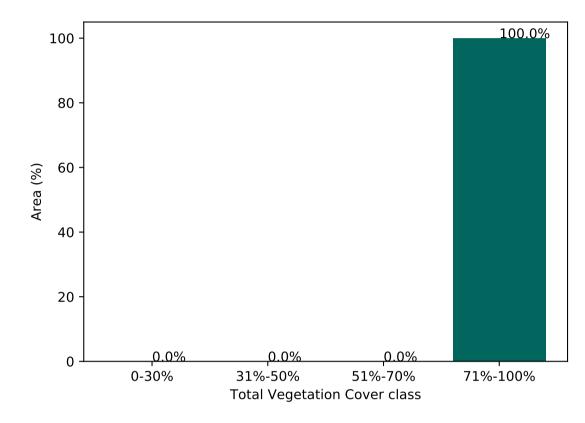
from 2001 to 2019.

pixel. The mean

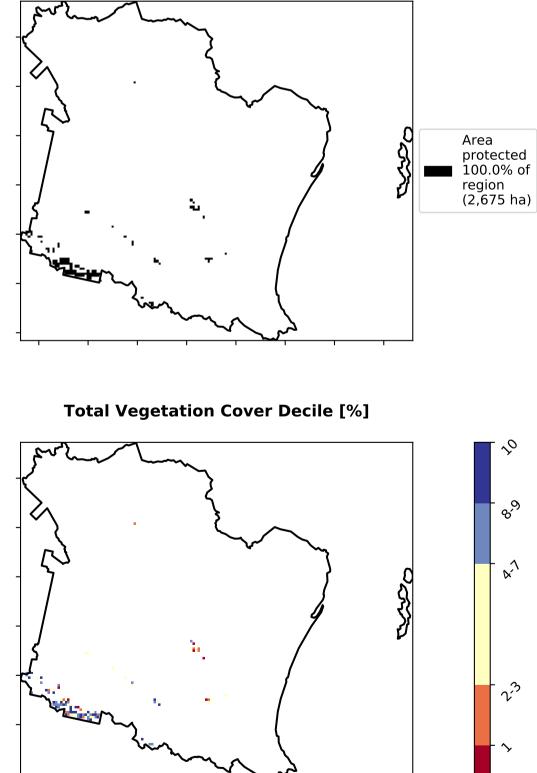
is, red pixels



Proportion of vegetation cover class in area



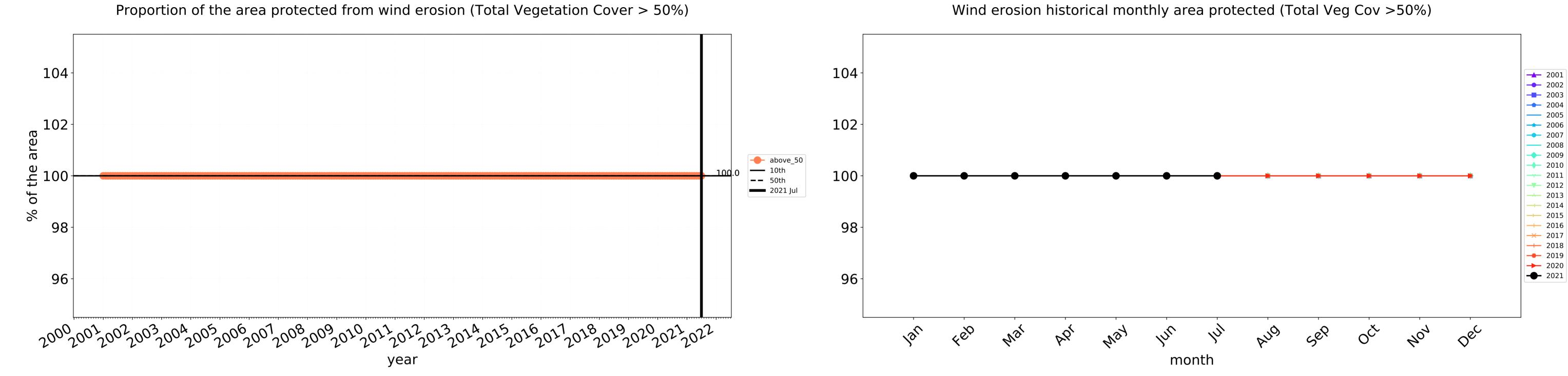
% Area protected from wind erosion (>50%)



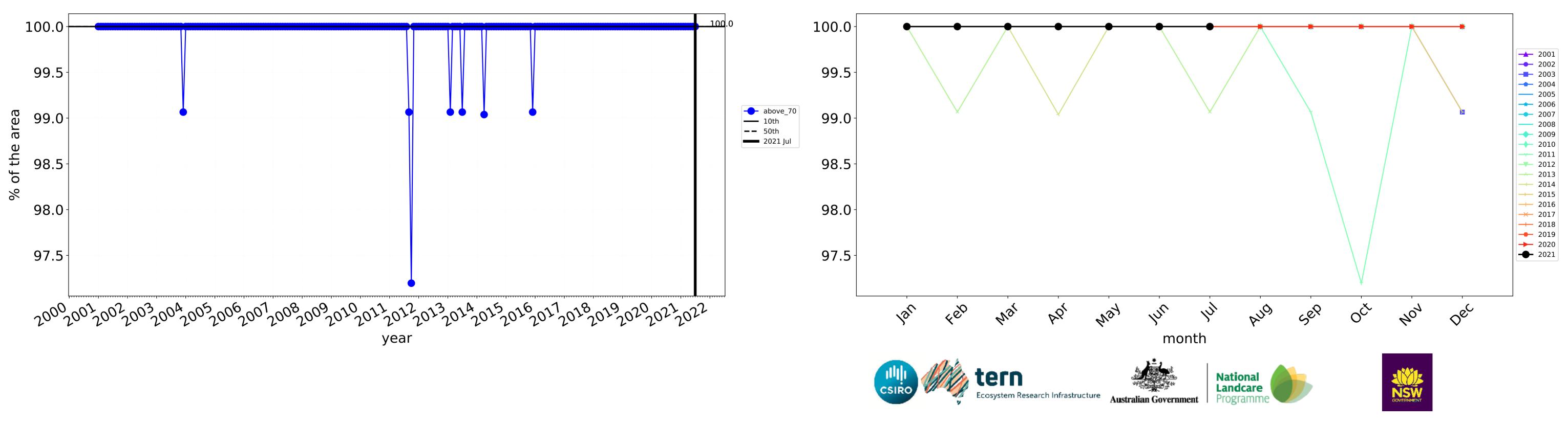


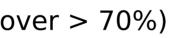
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Grazing Woodland forest timeseries

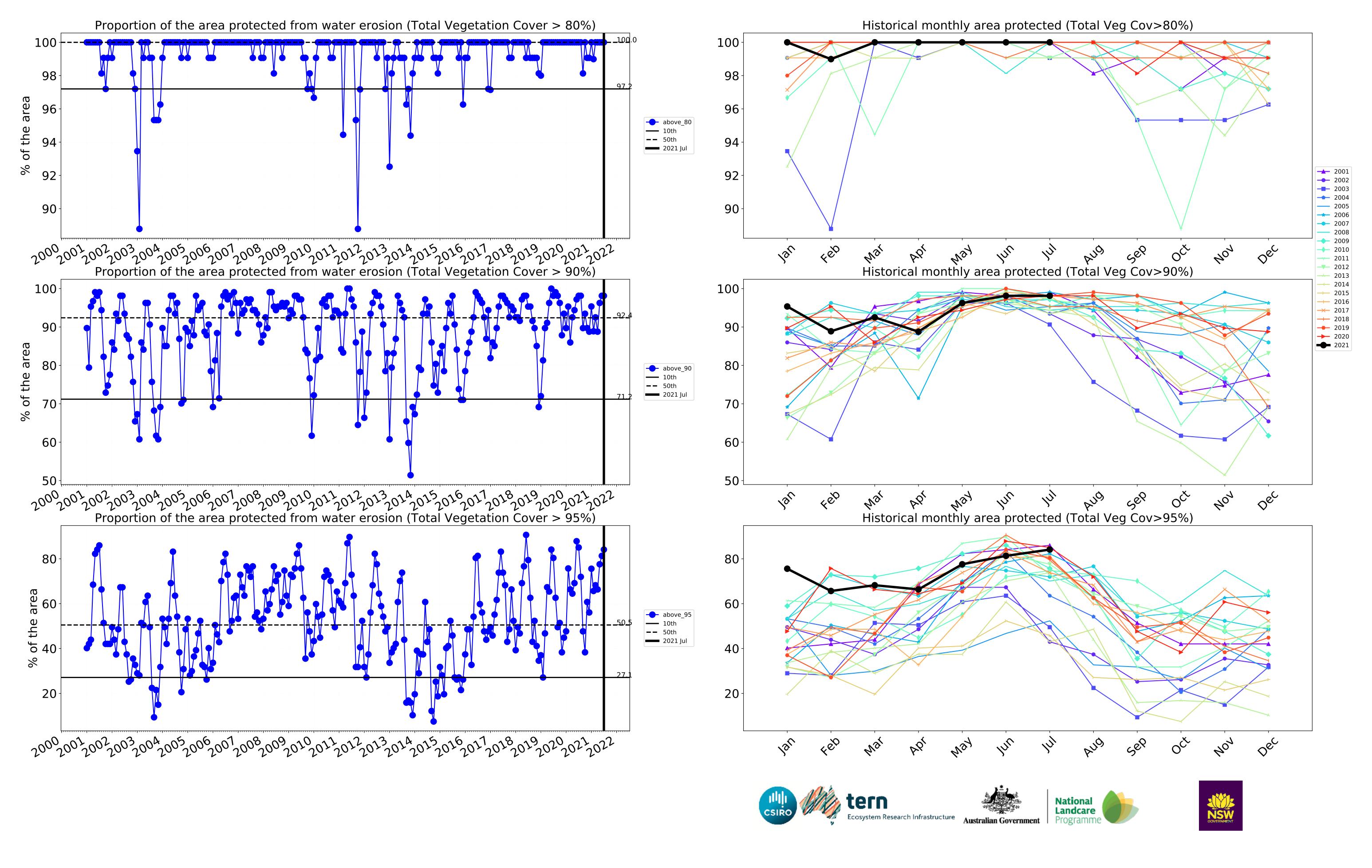


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





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



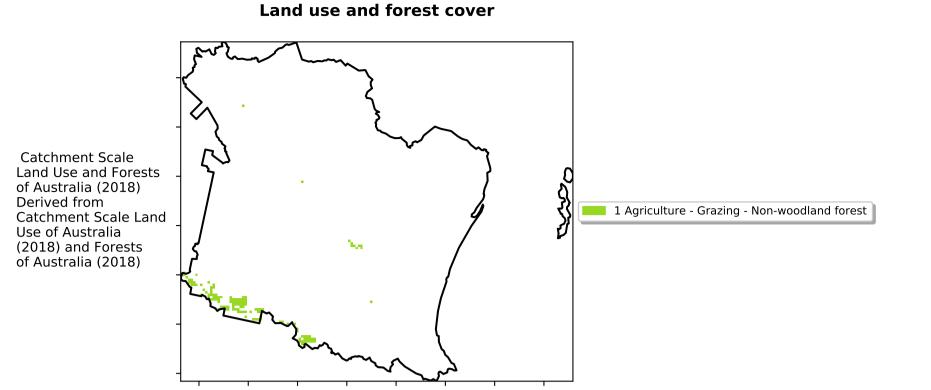
Grazing - Forest (non woodland)

1200-2000

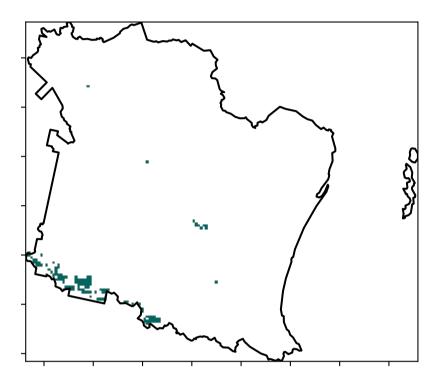
52°10°10°10

320050010

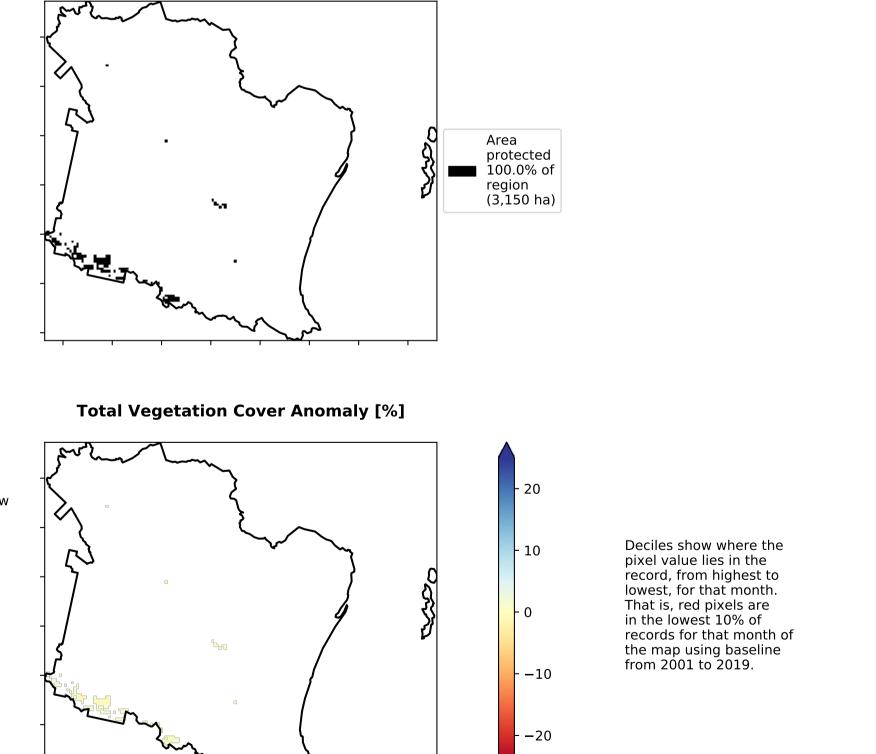
· 0.30%



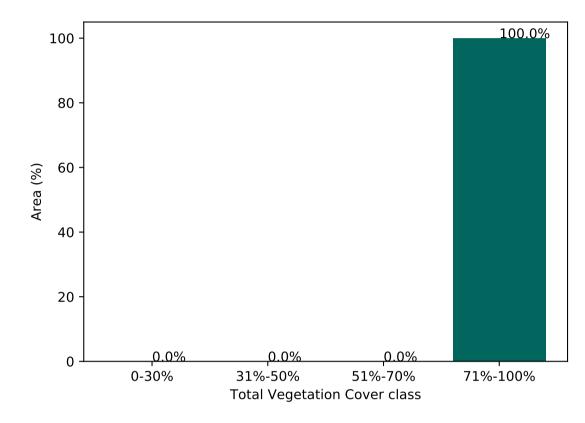
Total Vegetation Cover [%]



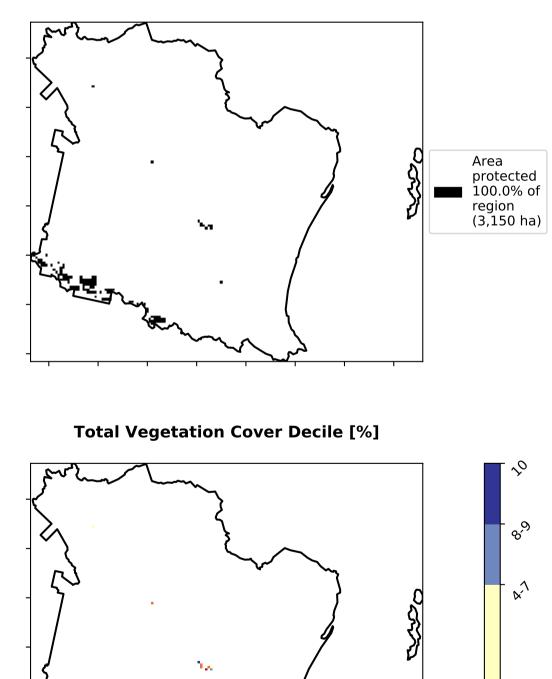
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

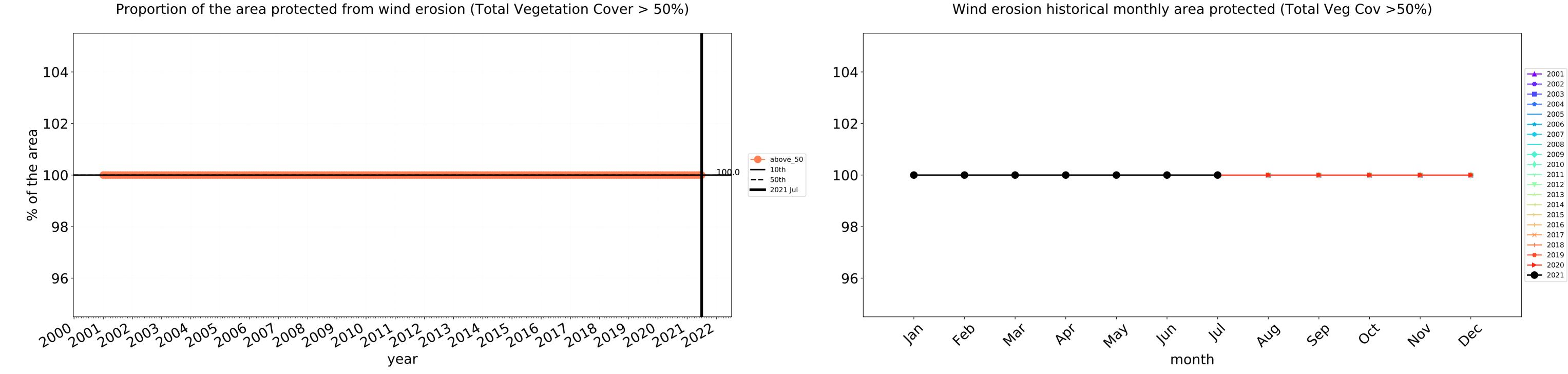


2^{?5}

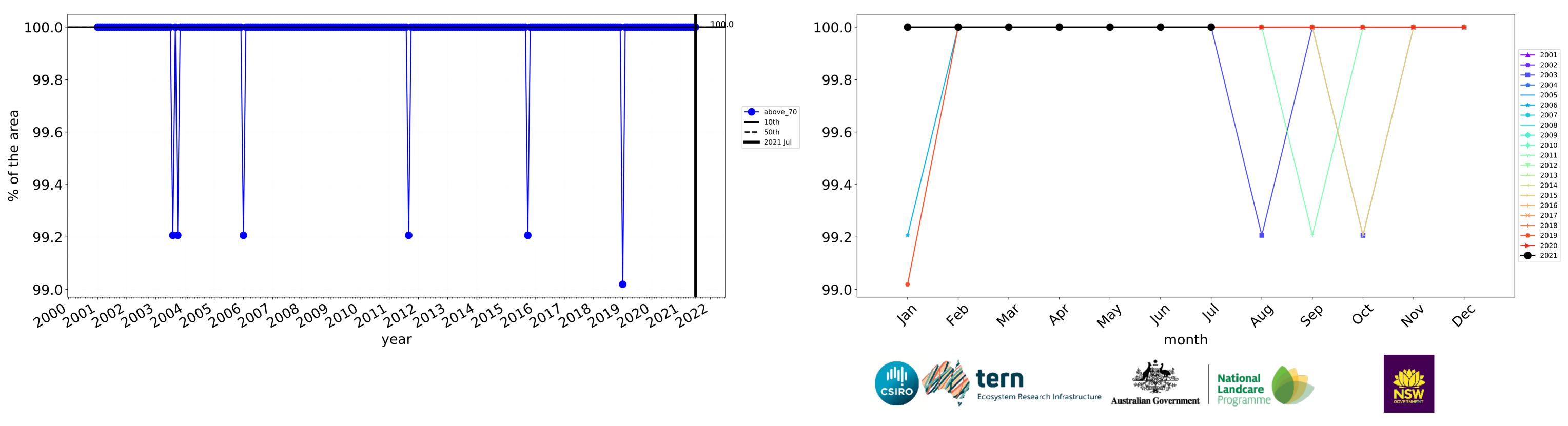


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



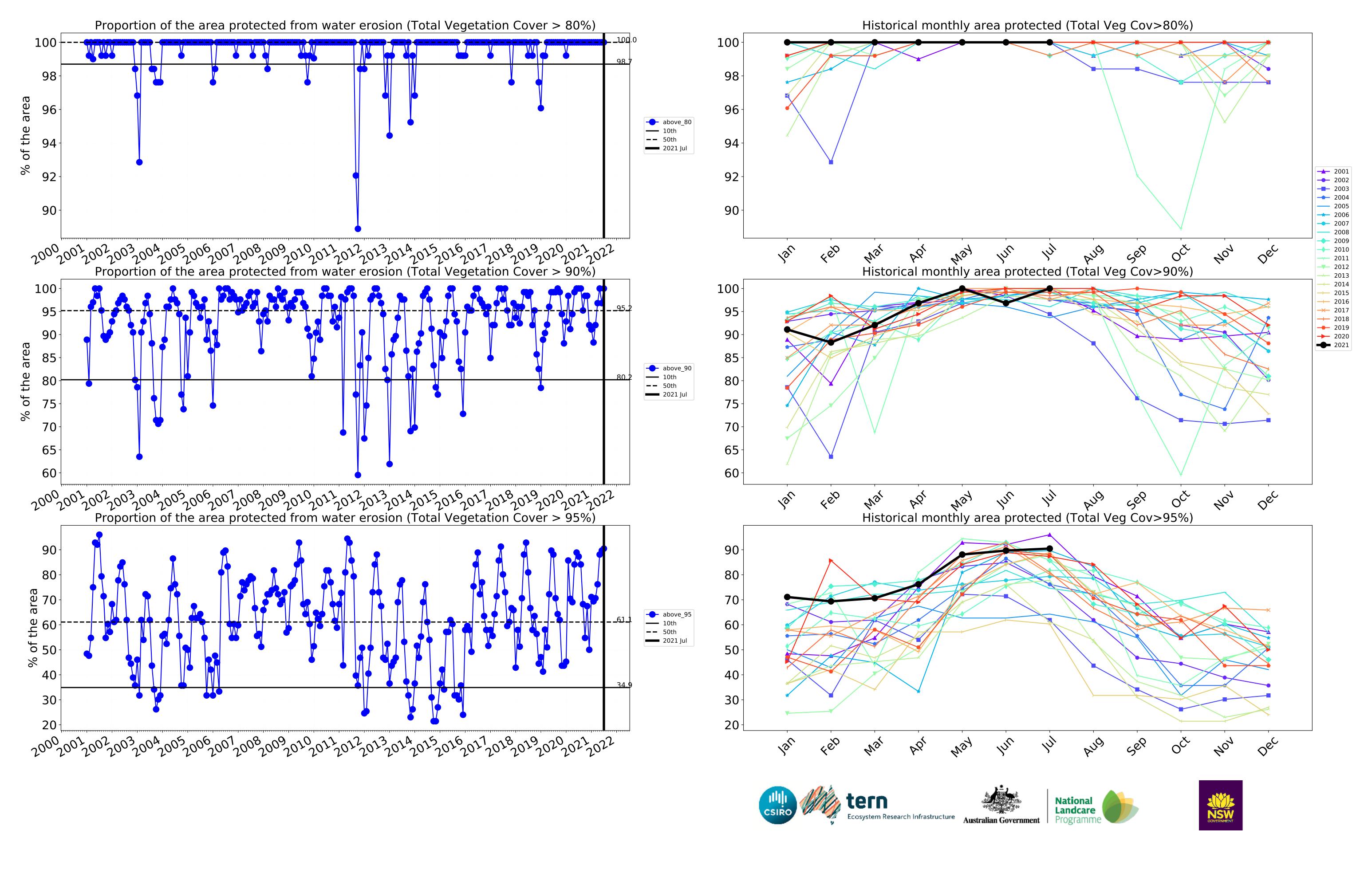


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

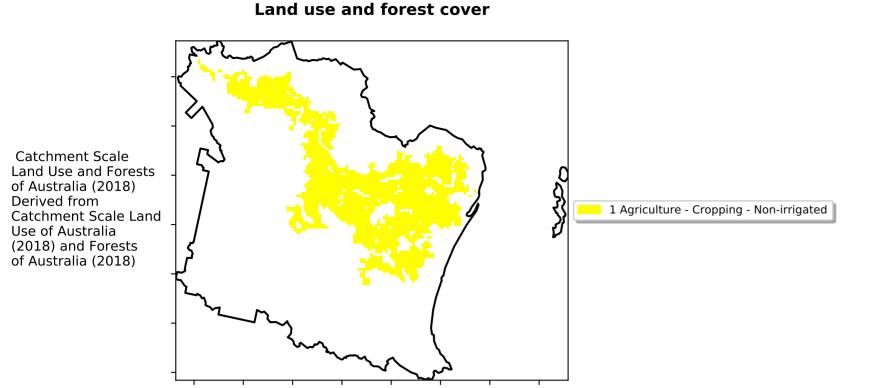


Grazing - Forest (non woodland) timeseries

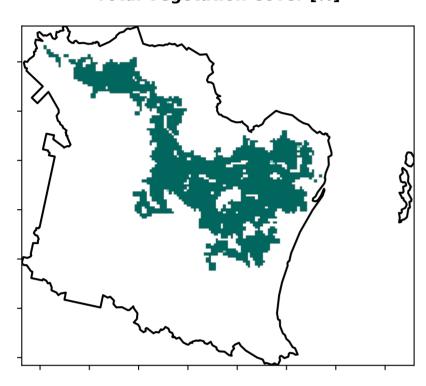
Water erosion historical monthly area protected (Total Veg Cov>70%)

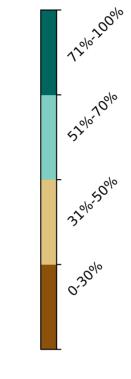


Cropping

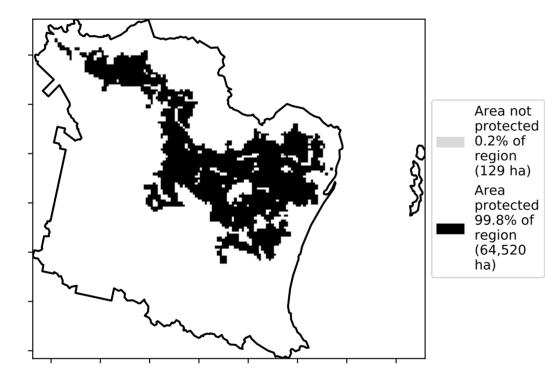


Total Vegetation Cover [%]

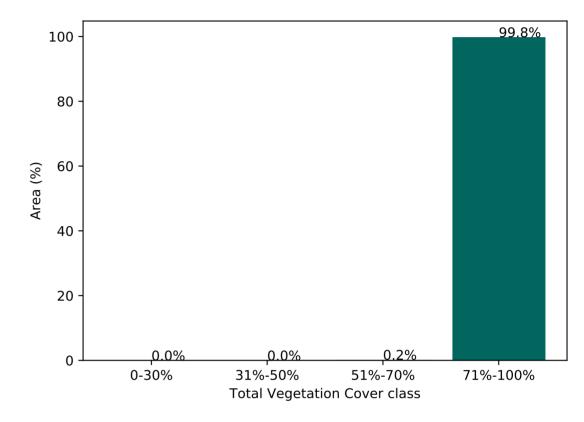




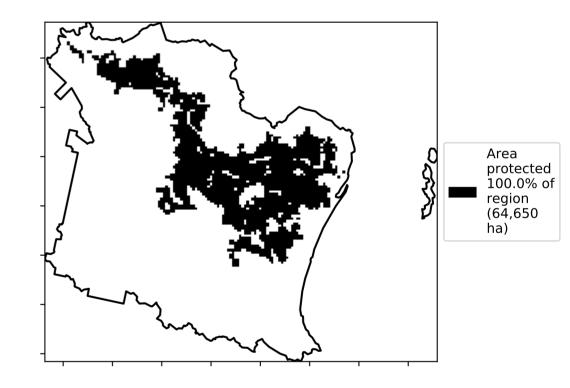
% Area protected from water erosion (>70%)



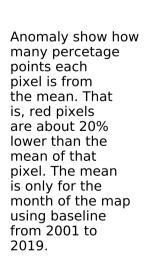
Proportion of vegetation cover class in area

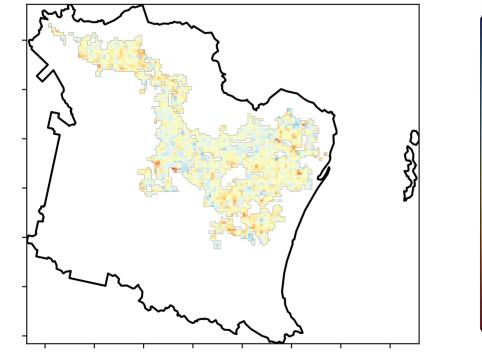


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]





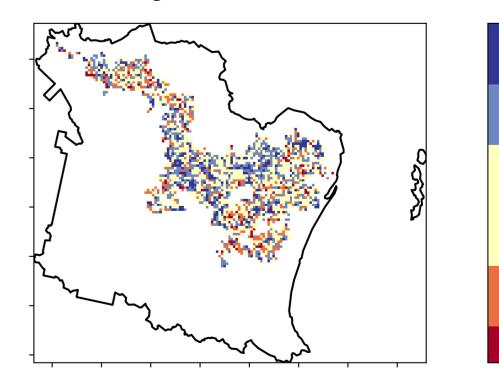
- 20 - 10 - 0 - -10 - -20 **Total Vegetation Cover Decile [%]**

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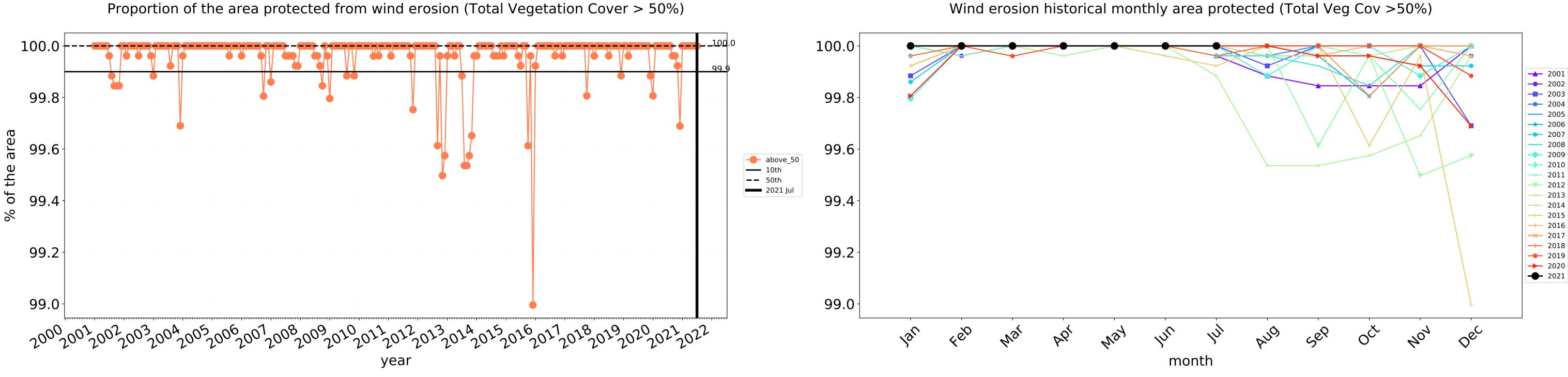




Deciles show where the pixel value lies in the

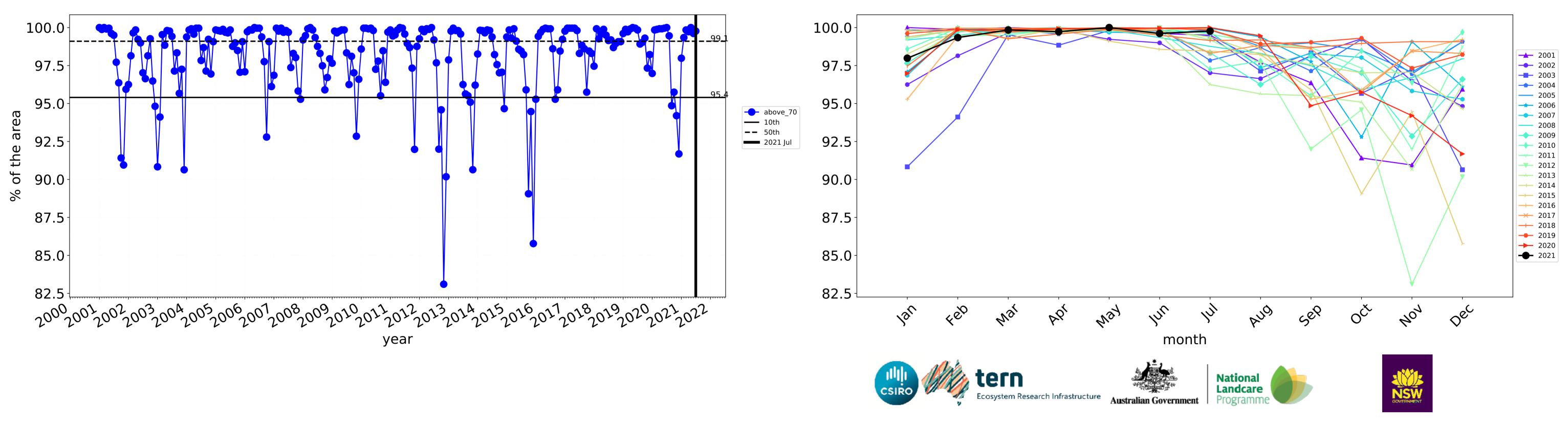
record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

the map using baseline from 2001 to 2019.

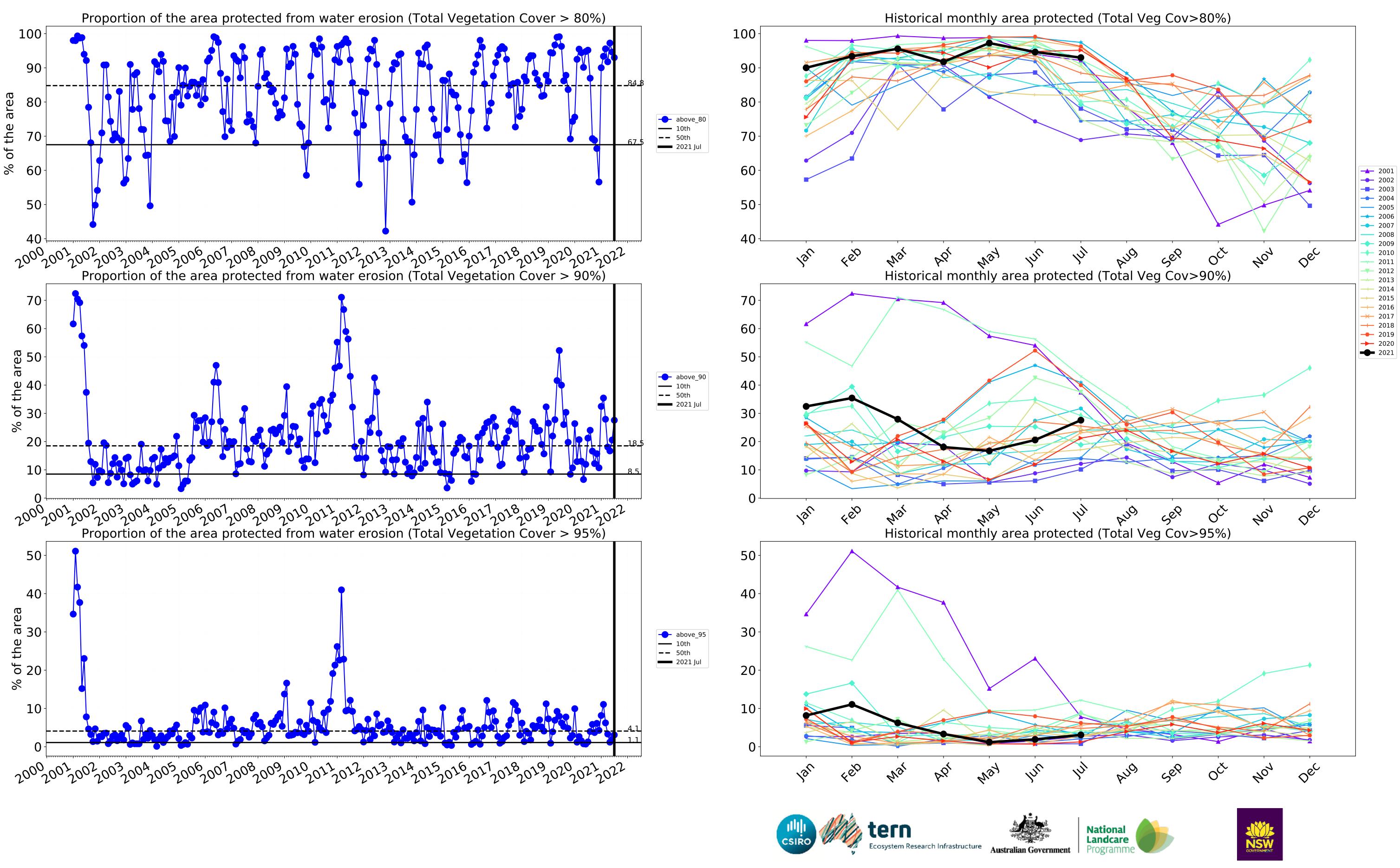


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



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

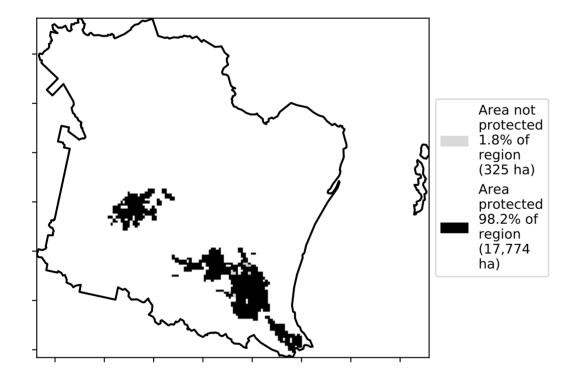


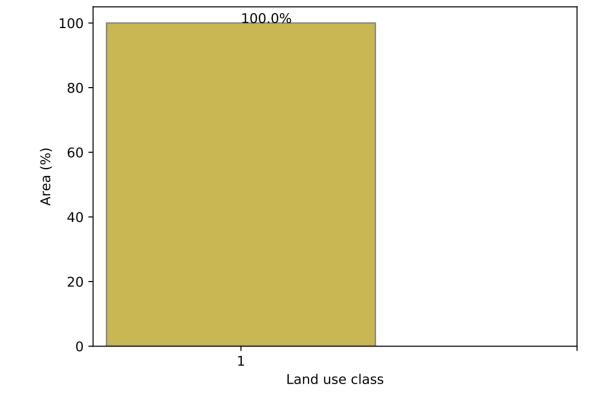
Irrigation

Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 2 1 Agriculture - Cropping - Irrigated **Total Vegetation Cover [%]** 12%200% 2 52°1070°12 0

32005001 0.30%

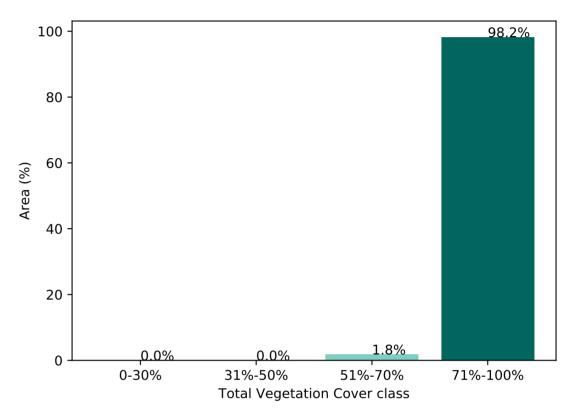
% Area protected from water erosion (>70%)



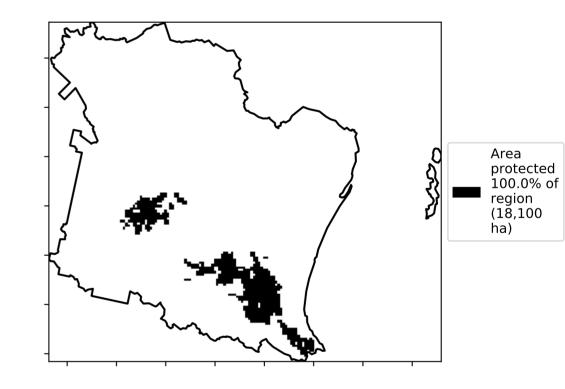


Proportion of each land class in area

Proportion of vegetation cover class in area

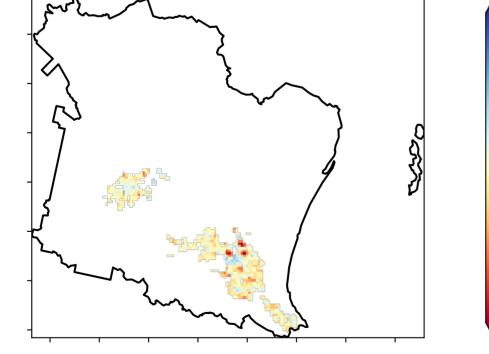


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean That 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.



- 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.

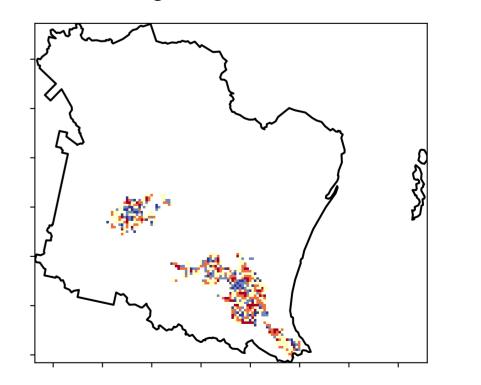
Total Vegetation Cover Decile [%]

\$

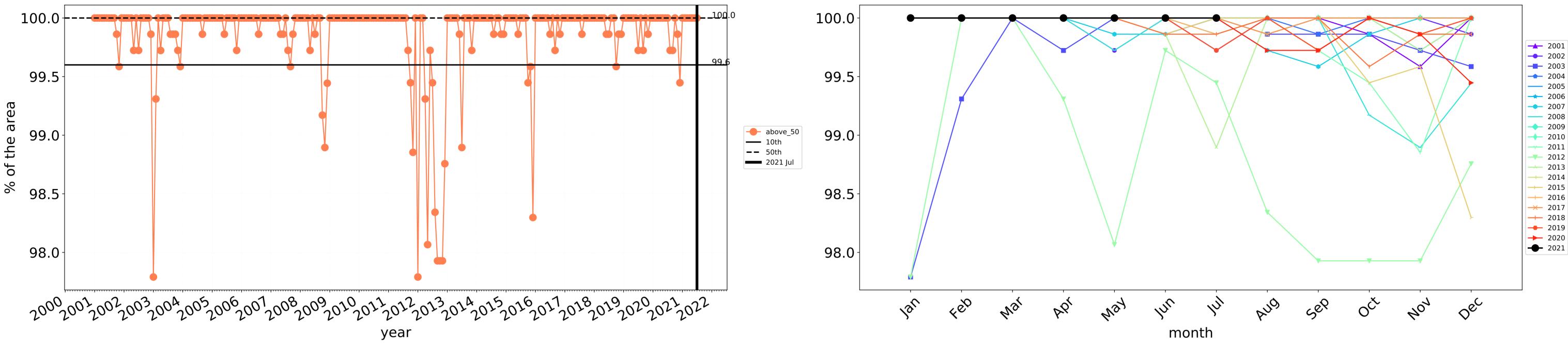
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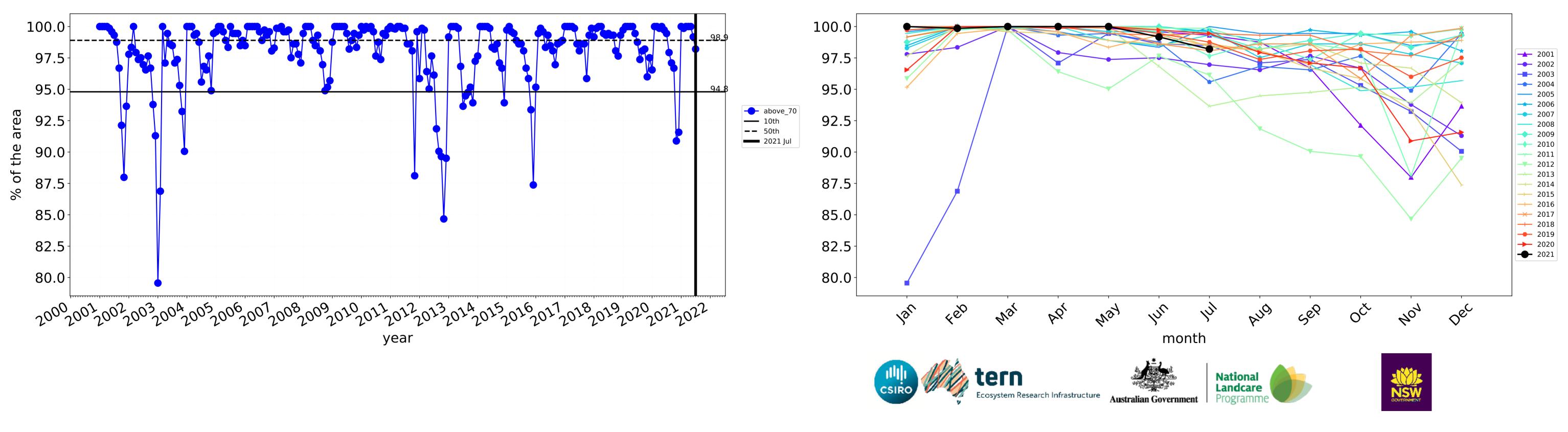


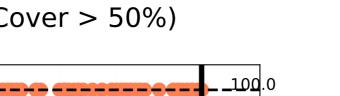




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

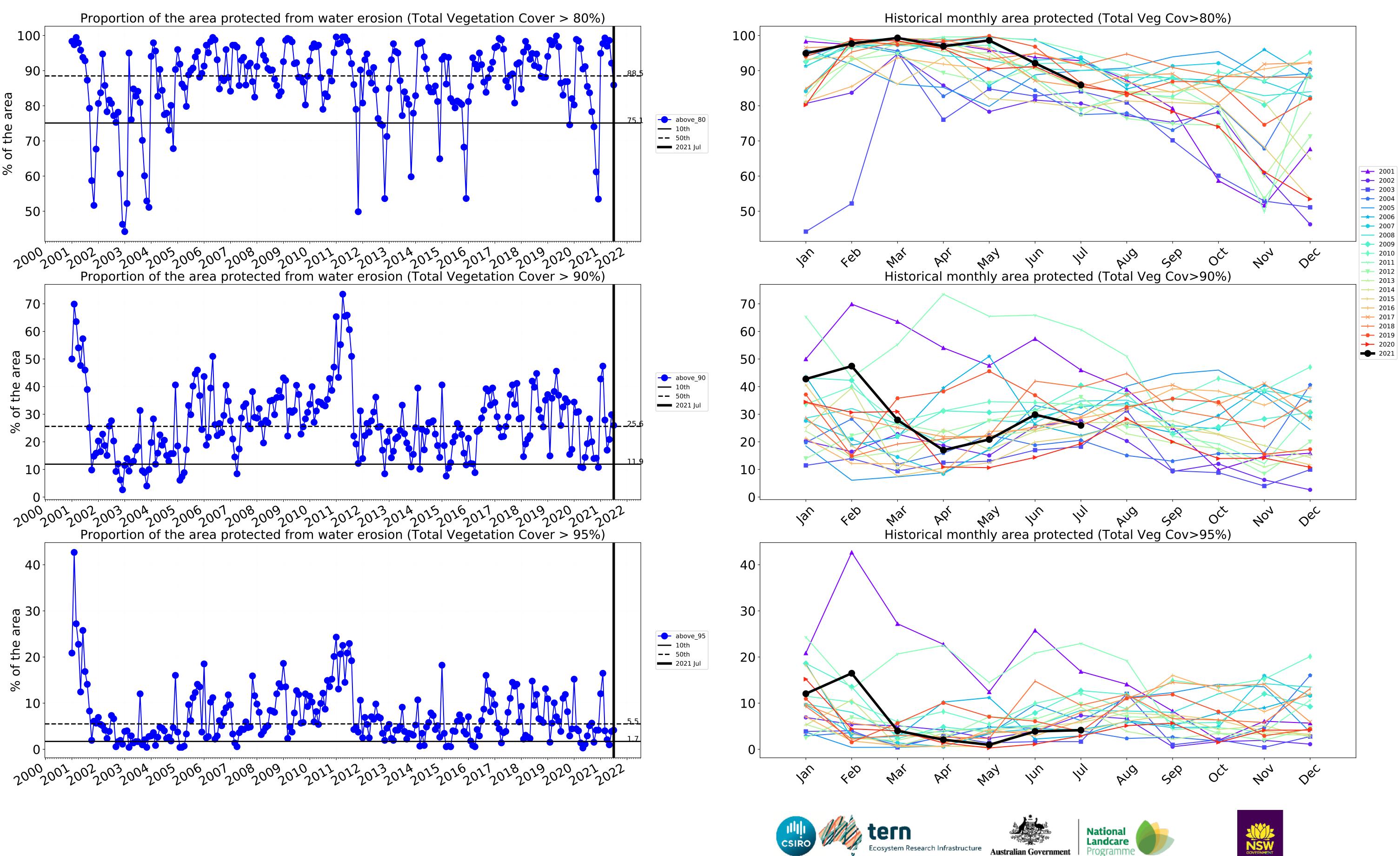
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)





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

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



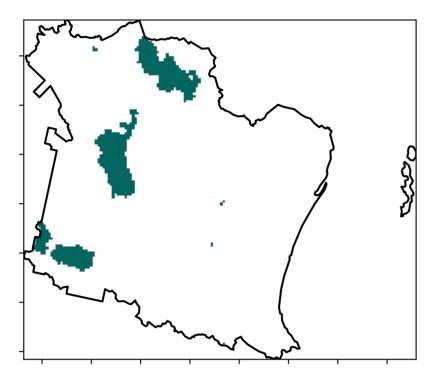


Production native forests and plantation forests

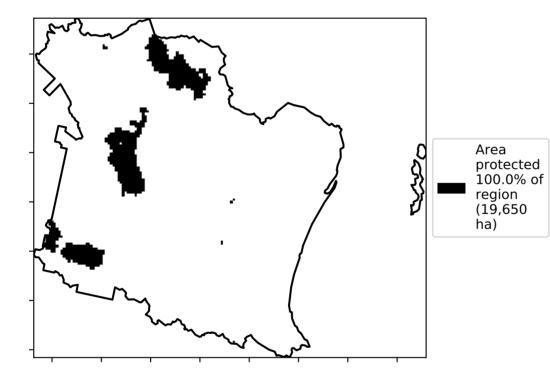
Catchment Scale Land Use and Forests of Australia (2018) Derived from £ Ś 1 Production native forests and plantation forests Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]

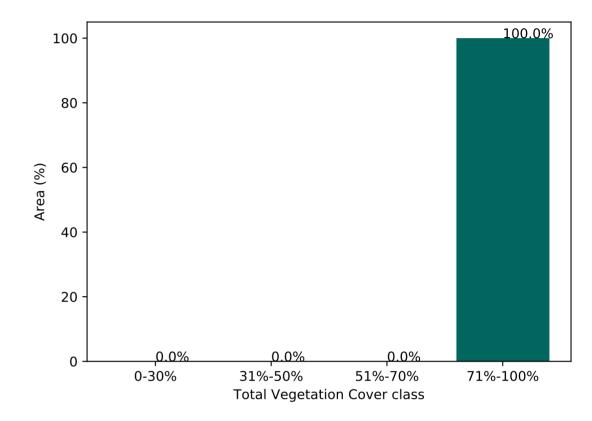
Land use and forest cover



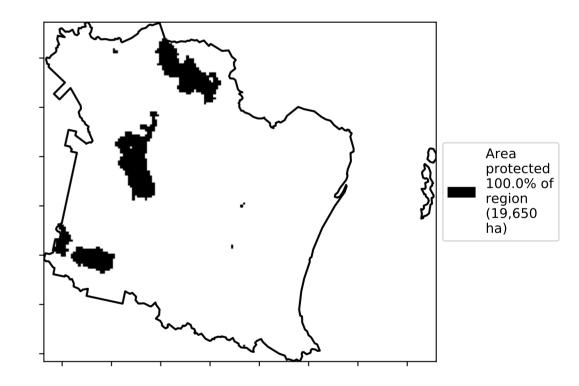
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area

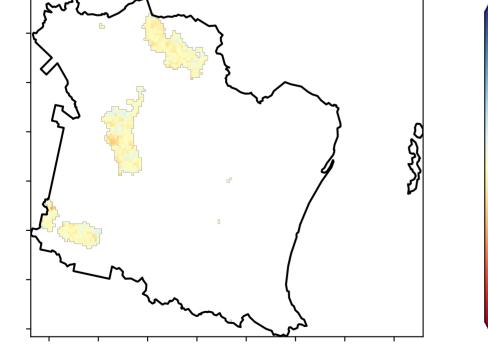


% Area protected from wind erosion (>50%)



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 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. -10

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12º10-100'

52% TON

32%50%

0.30%

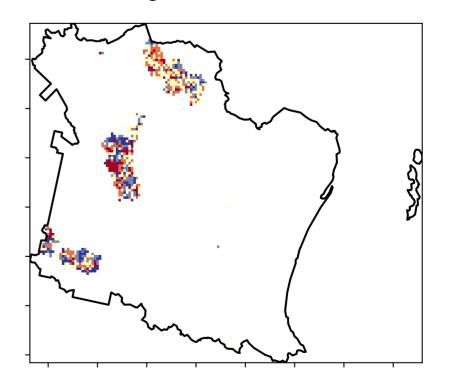
Total Vegetation Cover Decile [%]

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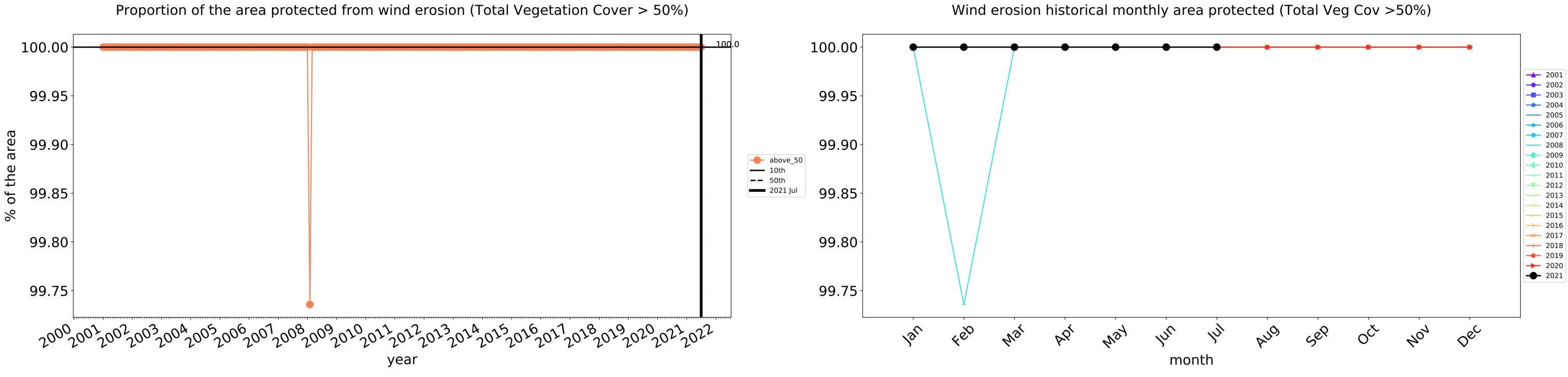
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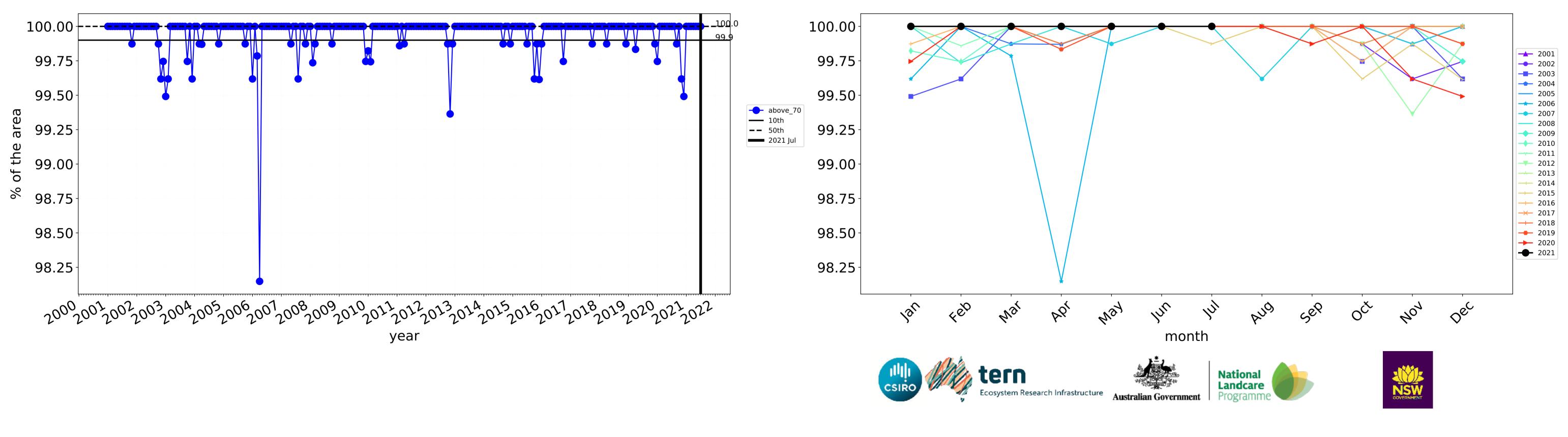




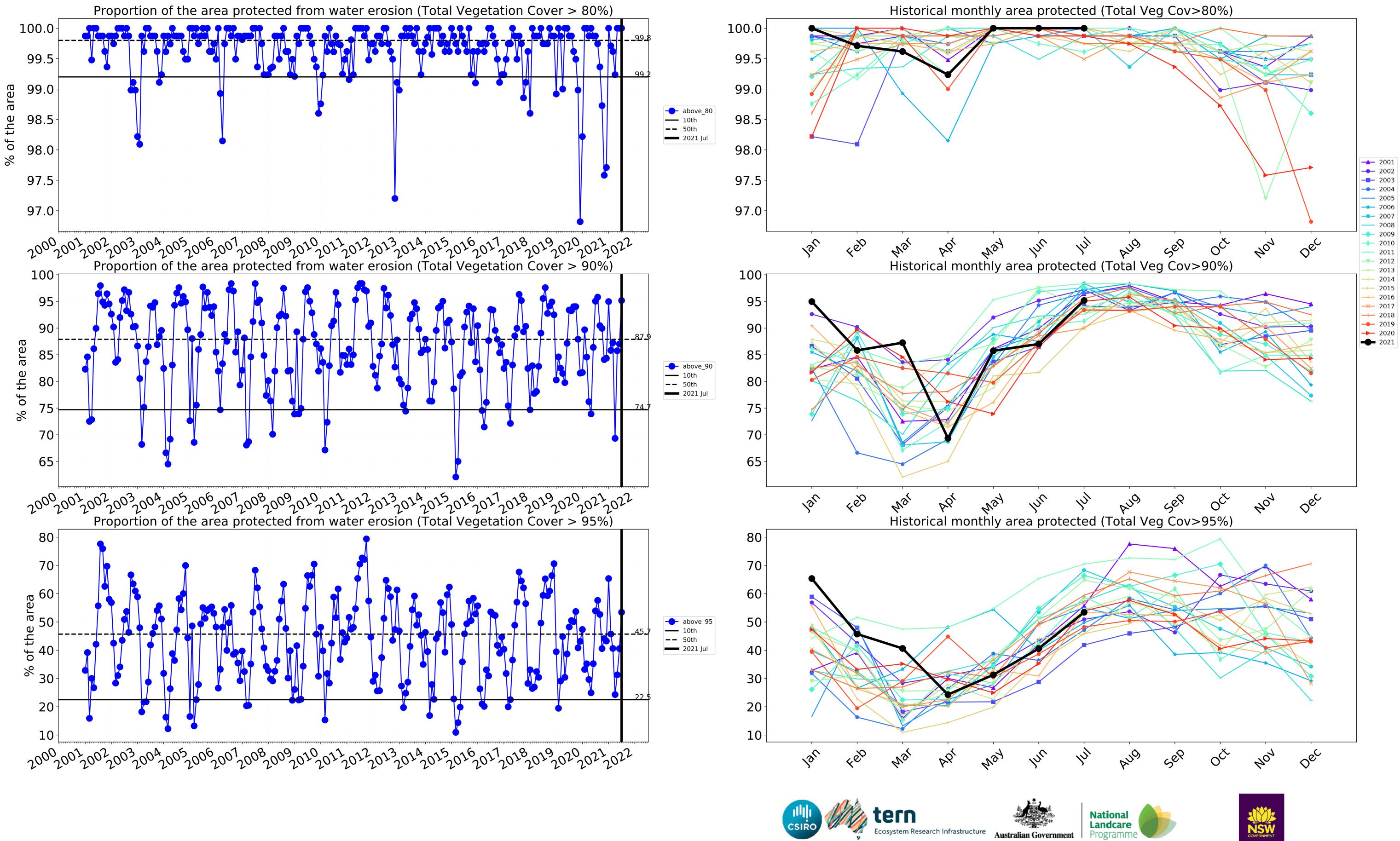
Production native forests and plantation forests timeseries



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



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



4

Hinchinbrook_(S) (278,500 ha and no data 2,162 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	278,500	100.0% 278,450	99.9% 278,200	99.4% 276,750	95.3% 265,450	66.1% 184,175	34.8% 97,050
Conservation and natural environments	130,900	100.0% 130,875	99.9% 130,725	99.6% 130,375	98.9% 129,525	90.1% 117,925	54.7% 71,550
Conservation and natural environments Woodland forest	46,500	100.0% 46,500	99.9% 46,475	99.8% 46,425	99.5% 46,275	94.6% 43,975	66.5% 30,900
Conservation and natural environments Forest (non woodland)	82,500	100.0% 82,500	99.9% 82,425	99.6% 82,200	99.0% 81,675	88.5% 73,025	48.9% 40,375
Agriculture	104,700	100.0% 104,700	100.0% 104,700	99.5% 104,225	93.1% 97,425	38.4% 40,250	12.2% 12,800
Grazing	21,925	100.0% 21,925	100.0% 21,925	100.0% 21,925	99.1% 21,725	80.7% 17,700	45.8% 10,050
Grazing non forest	16,100	100.0% 16,100	100.0% 16,100	100.0% 16,100	98.8% 15,900	74.1% 11,925	30.7% 4,950
Grazing Woodland forest	2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	98.1% 2,625	84.1% 2,250
Grazing - Forest (non woodland)	3,150	100.0% 3,150	100.0% 3,150	100.0% 3,150	100.0% 3,150	100.0% 3,150	90.5% 2,850
Cropping	64,650	100.0% 64,650	100.0% 64,650	99.8% 64,500	93.0% 60,125	27.6% 17,825	3.1% 2,000
Irrigation	18,100	100.0% 18,100	100.0% 18,100	98.2% 17,775	85.9% 15,550	26.0% 4,700	4.1% 750
Production native forests and plantation forests	19,650	100.0% 19,650	100.0% 19,650	100.0% 19,650	100.0% 19,650	95.2% 18,700	53.4% 10,500

