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

Date: April 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

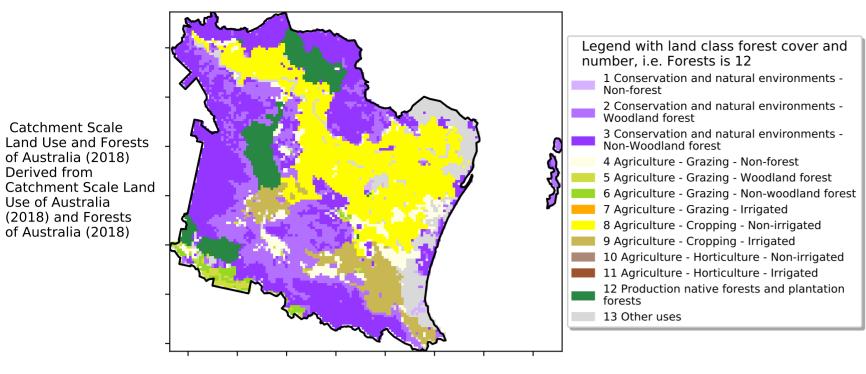


Vegetation Cover Apr 2021

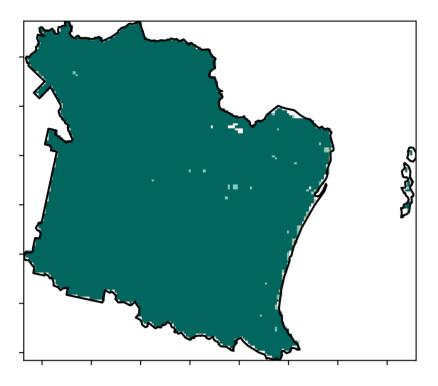
30

Land use and forest cover

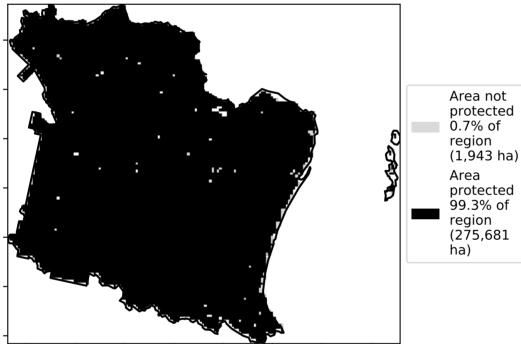
Proportion of each land class in area

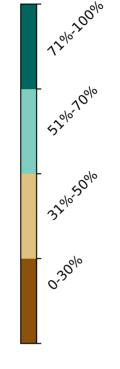


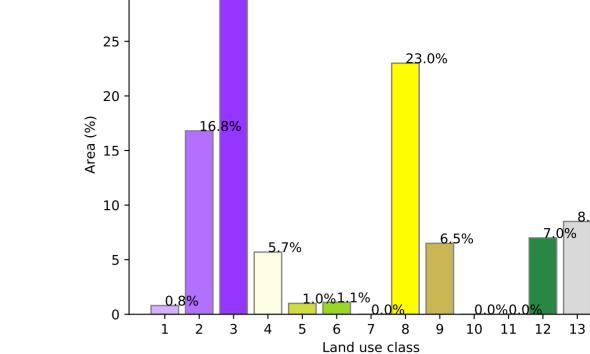
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)





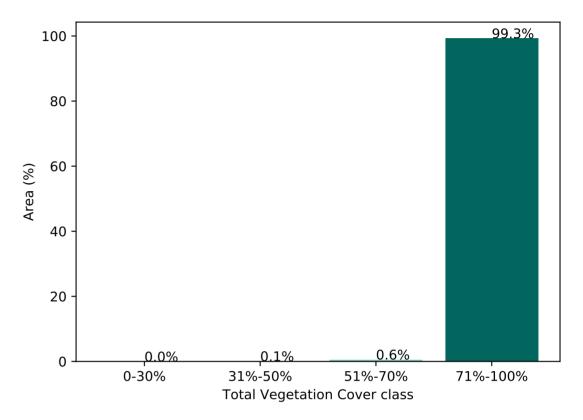


29.6%

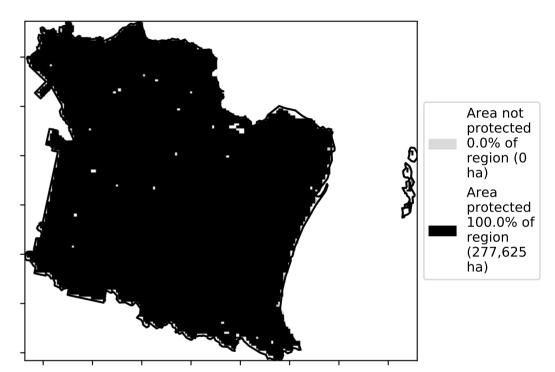
Proportion of vegetation cover class in area

8.5%

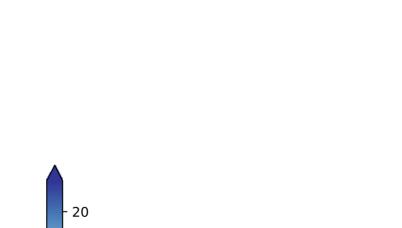
7 0%

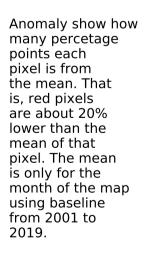


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]





Catchment Scale

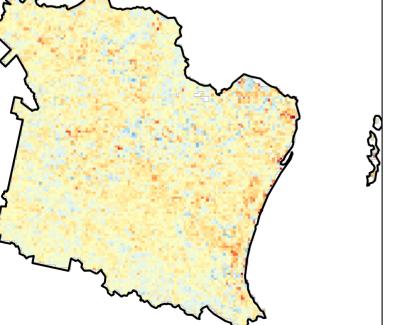
of Australia (2018)

(2018) and Forests

of Australia (2018)

Derived from

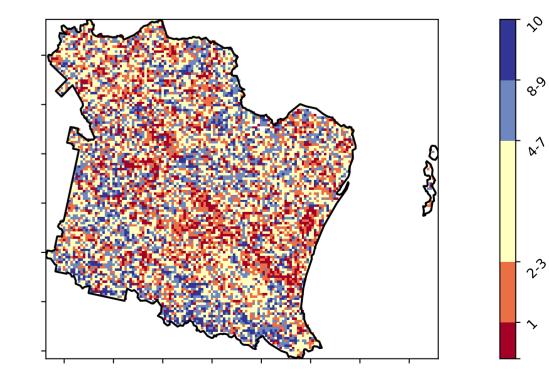
Use of Australia



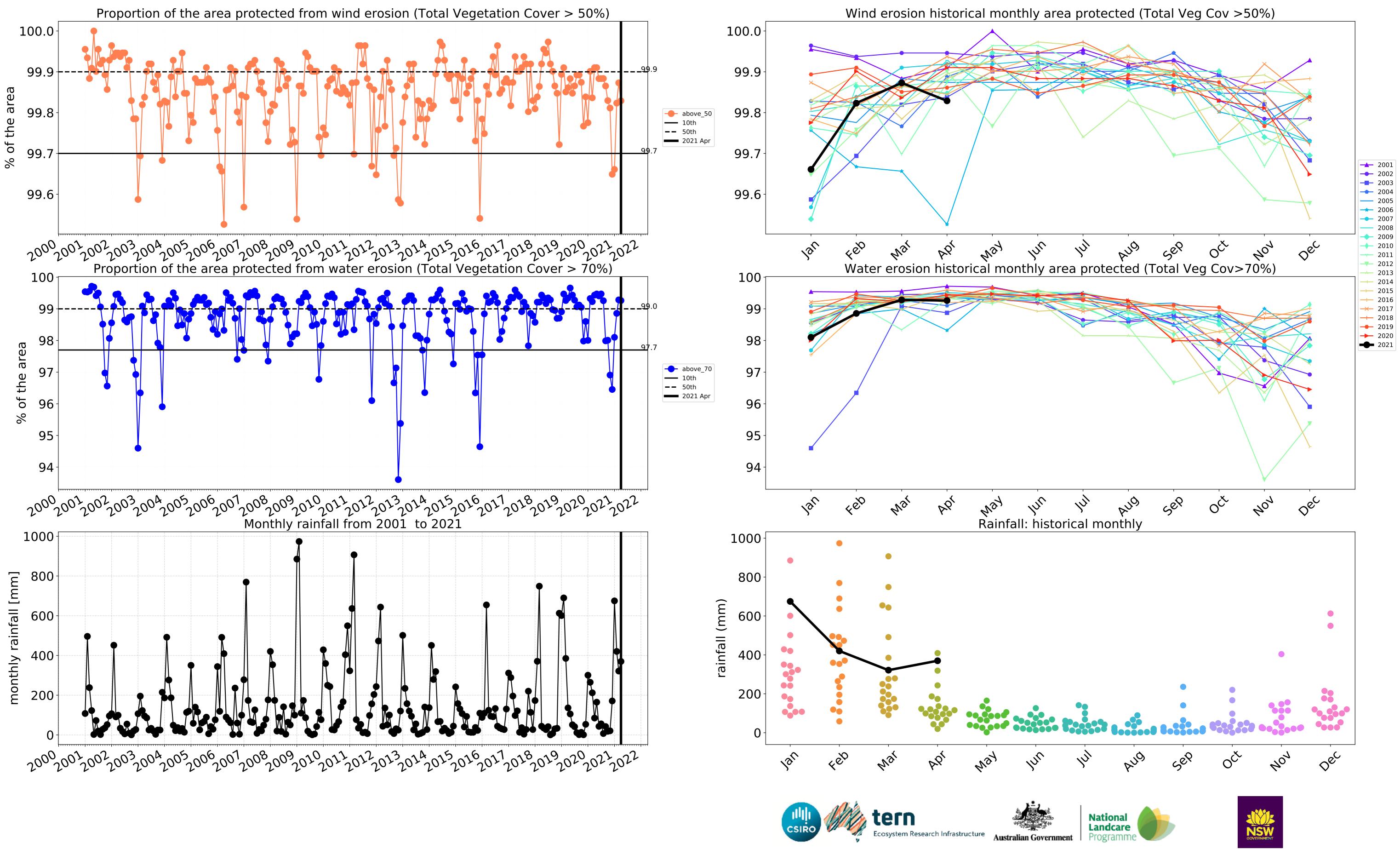


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

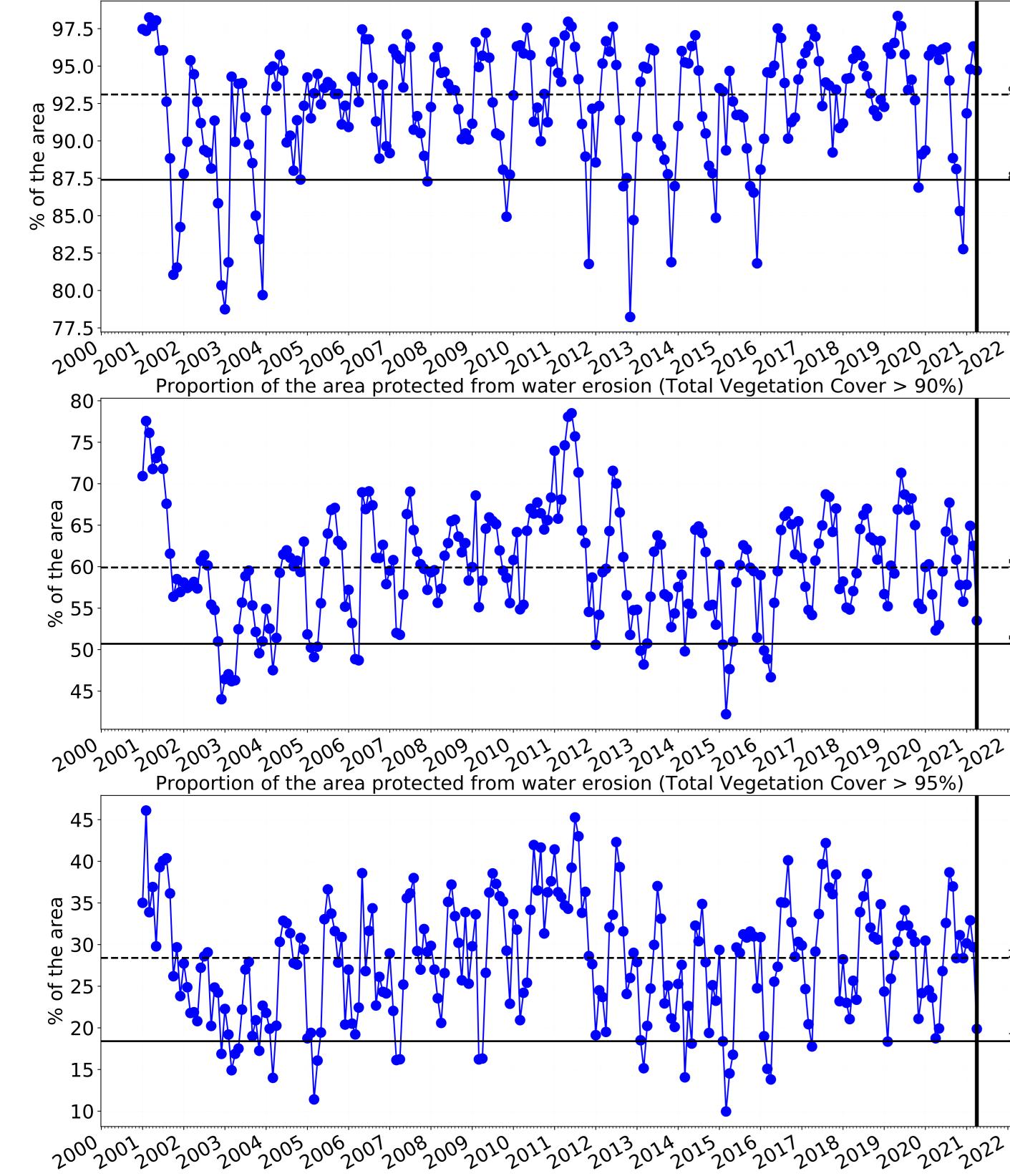
Total Vegetation Cover Decile [%]

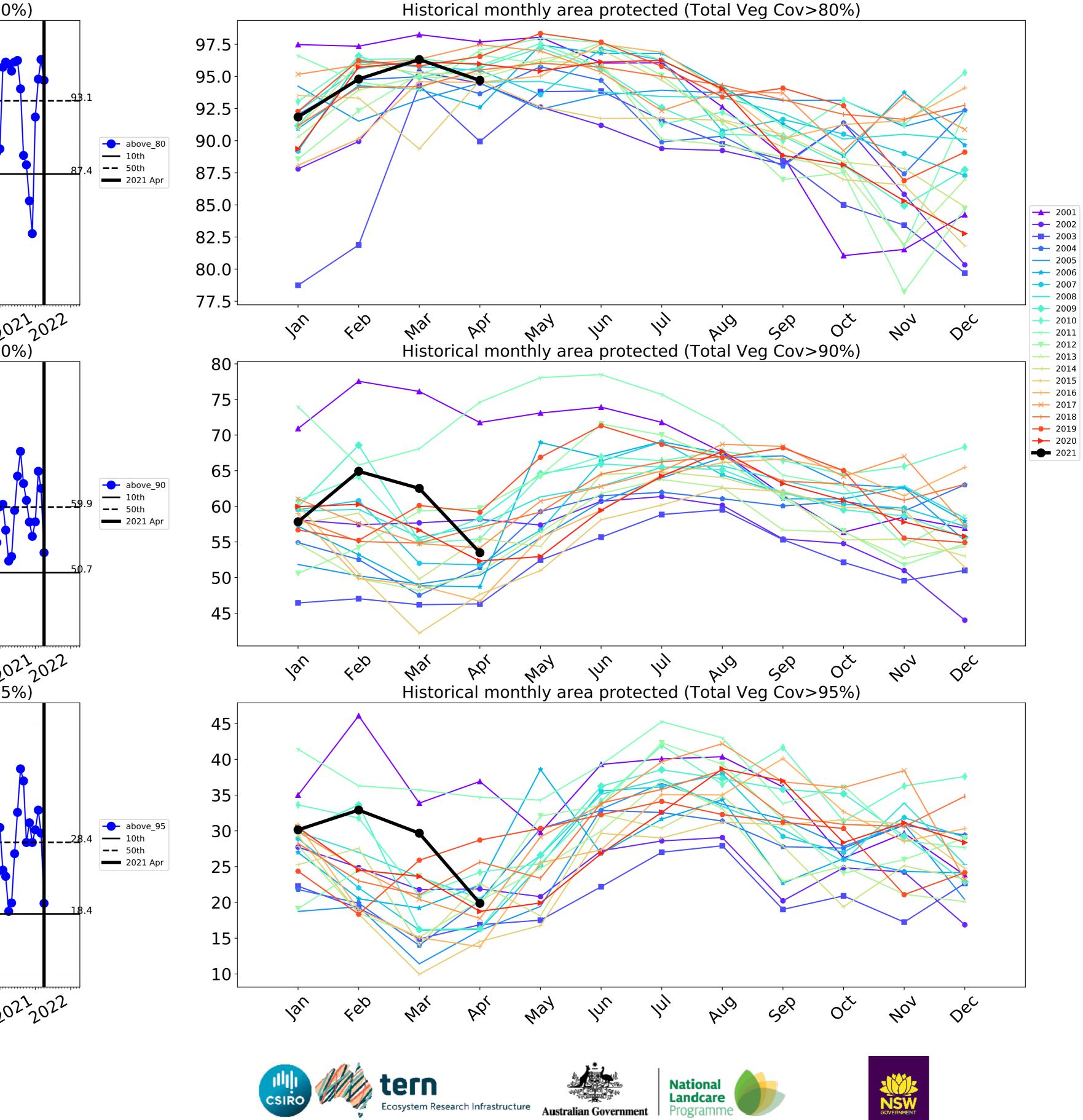






Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)





Conservation and natural environments

Land use and forest cover

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

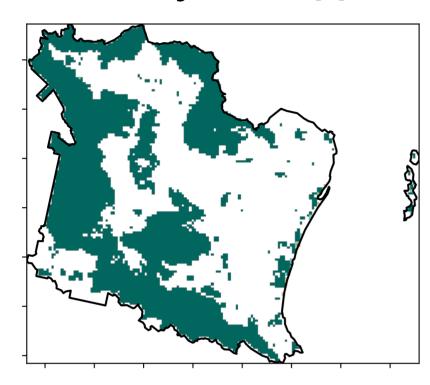
forest 3 Conservation and natural environments - Nonwoodland forest

100

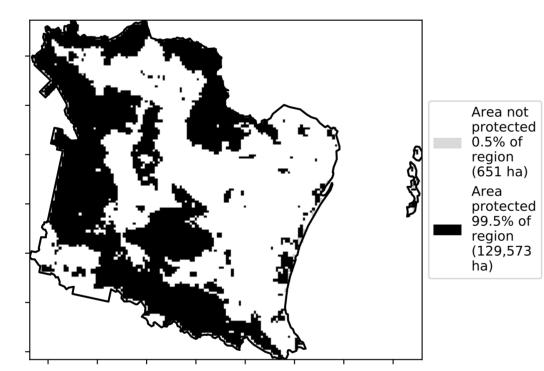
80

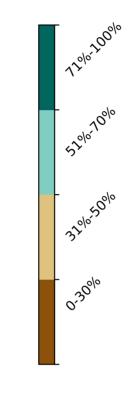
Area (%)

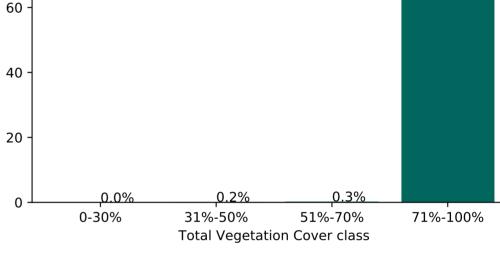




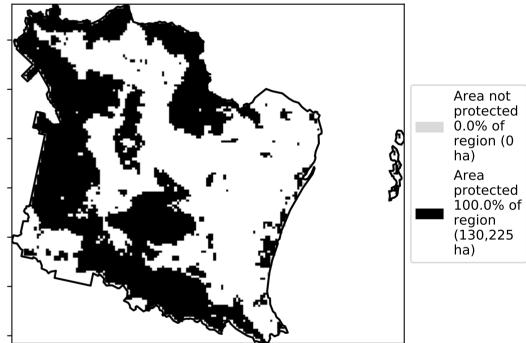
% Area protected from water erosion (>70%)

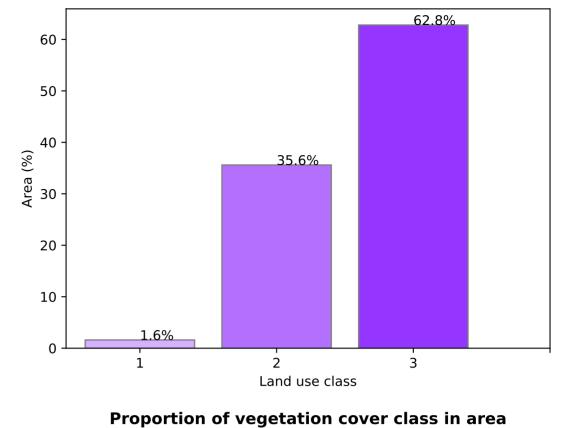






% Area protected from wind erosion (>50%)





Proportion of each land class in area

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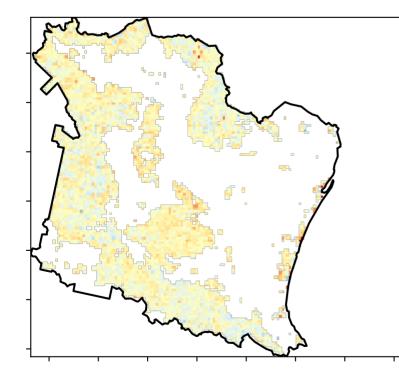
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99.5%

Total Vegetation Cover Anomaly [%]

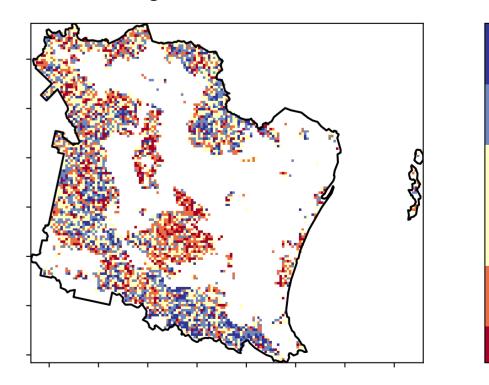


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0

Total Vegetation Cover Decile [%]





Deciles show where the pixel value lies in the

record, from highest to

lowest, for that month. That is, red pixels are

records for that month of

the map using baseline from 2001 to 2019.

in the lowest 10% of

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

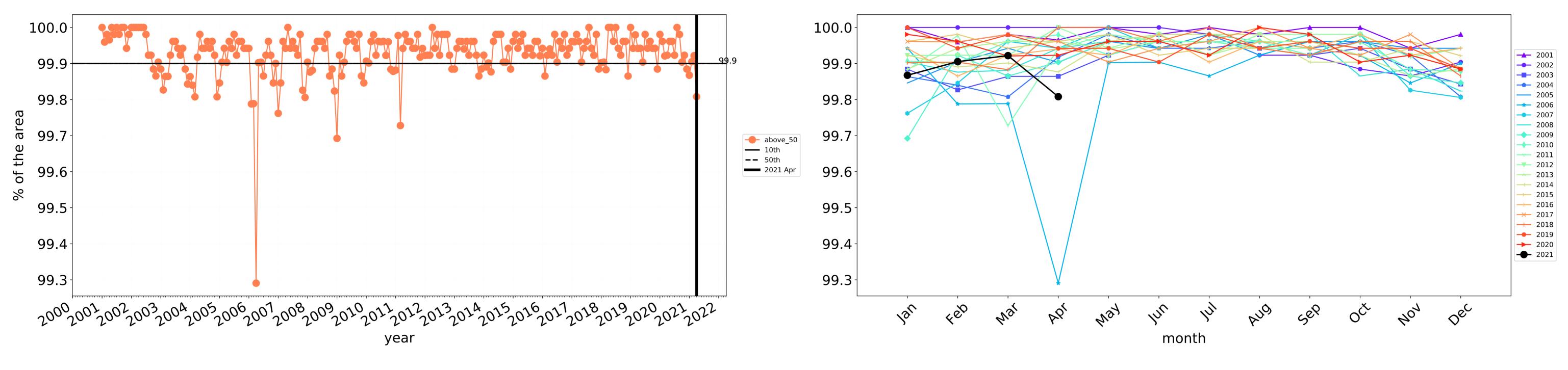
Derived from

Use of Australia

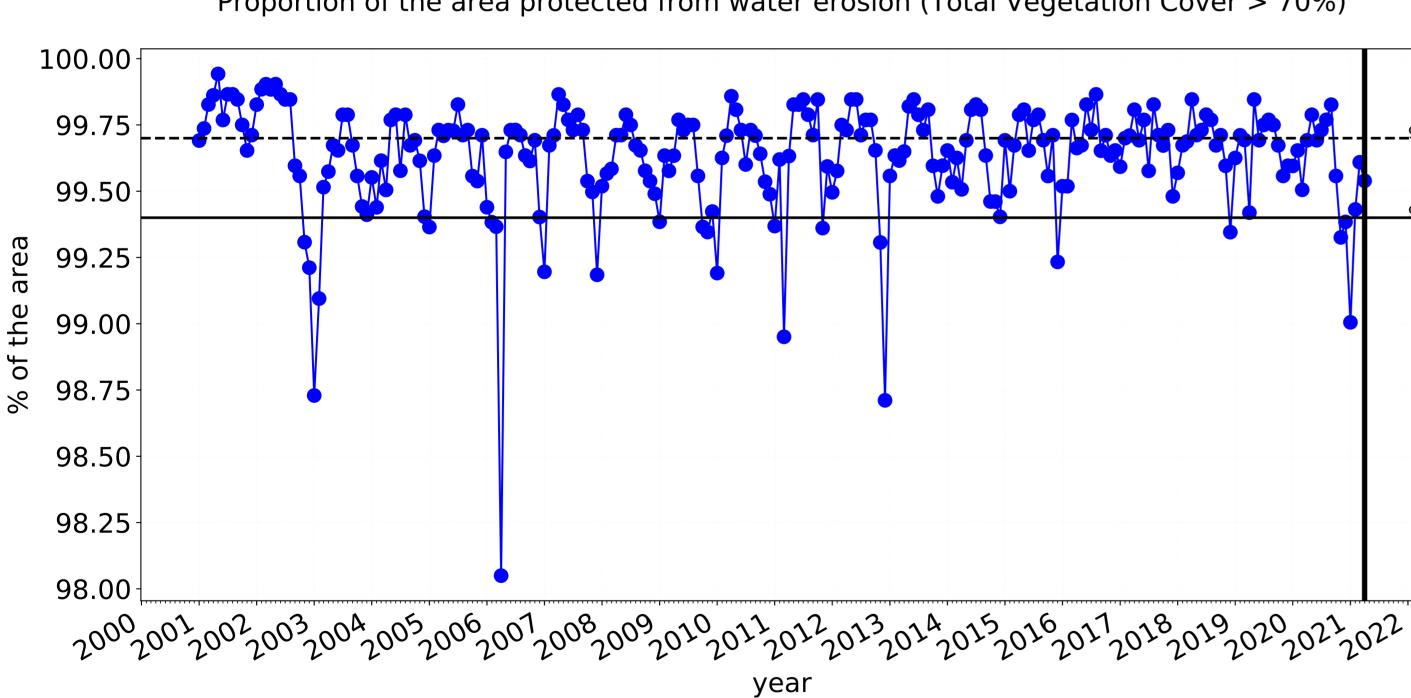
(2018) and Forests

of Australia (2018)



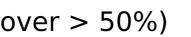


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



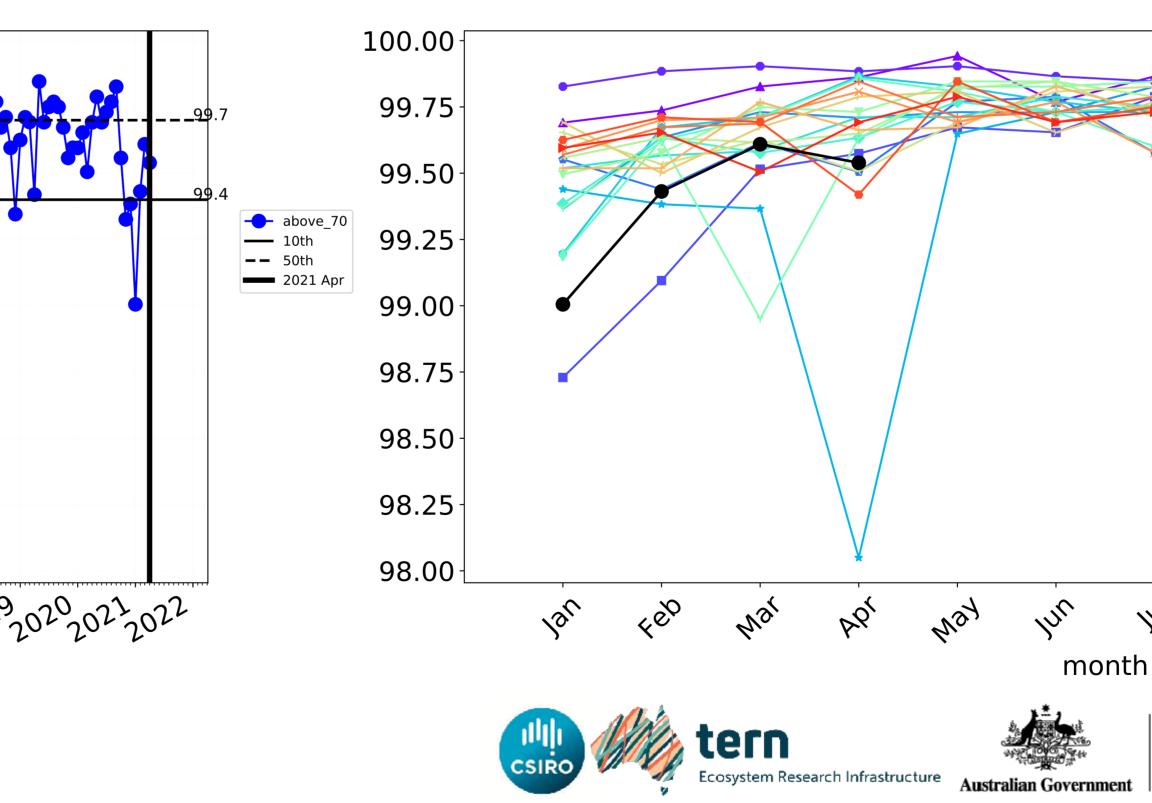
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

Conservation and natural environments timeseries



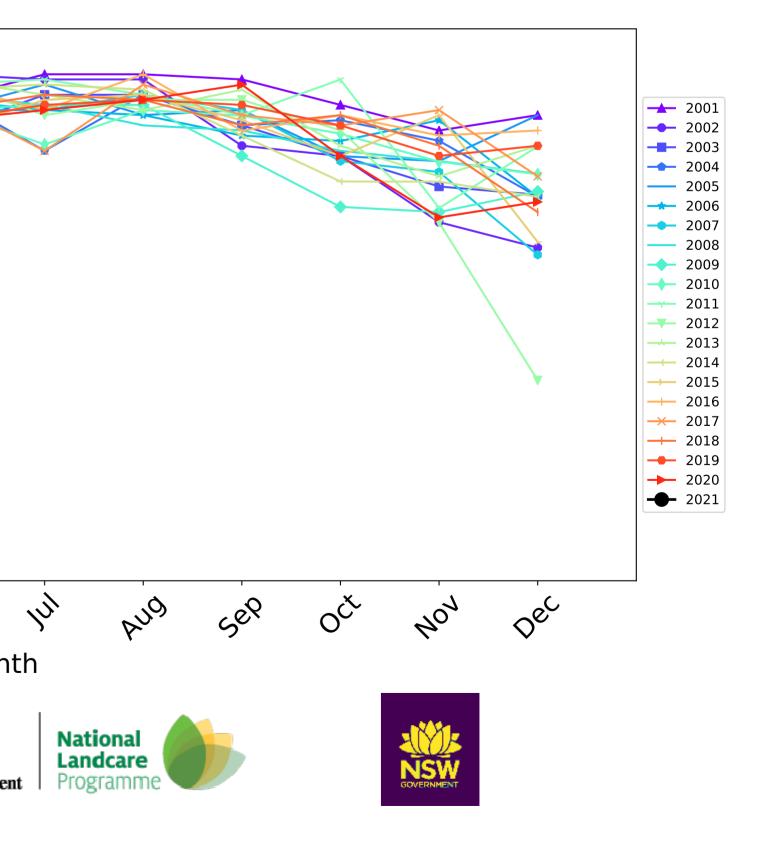
Wind erosion historical monthly area protected (Total Veg Cov >50%)

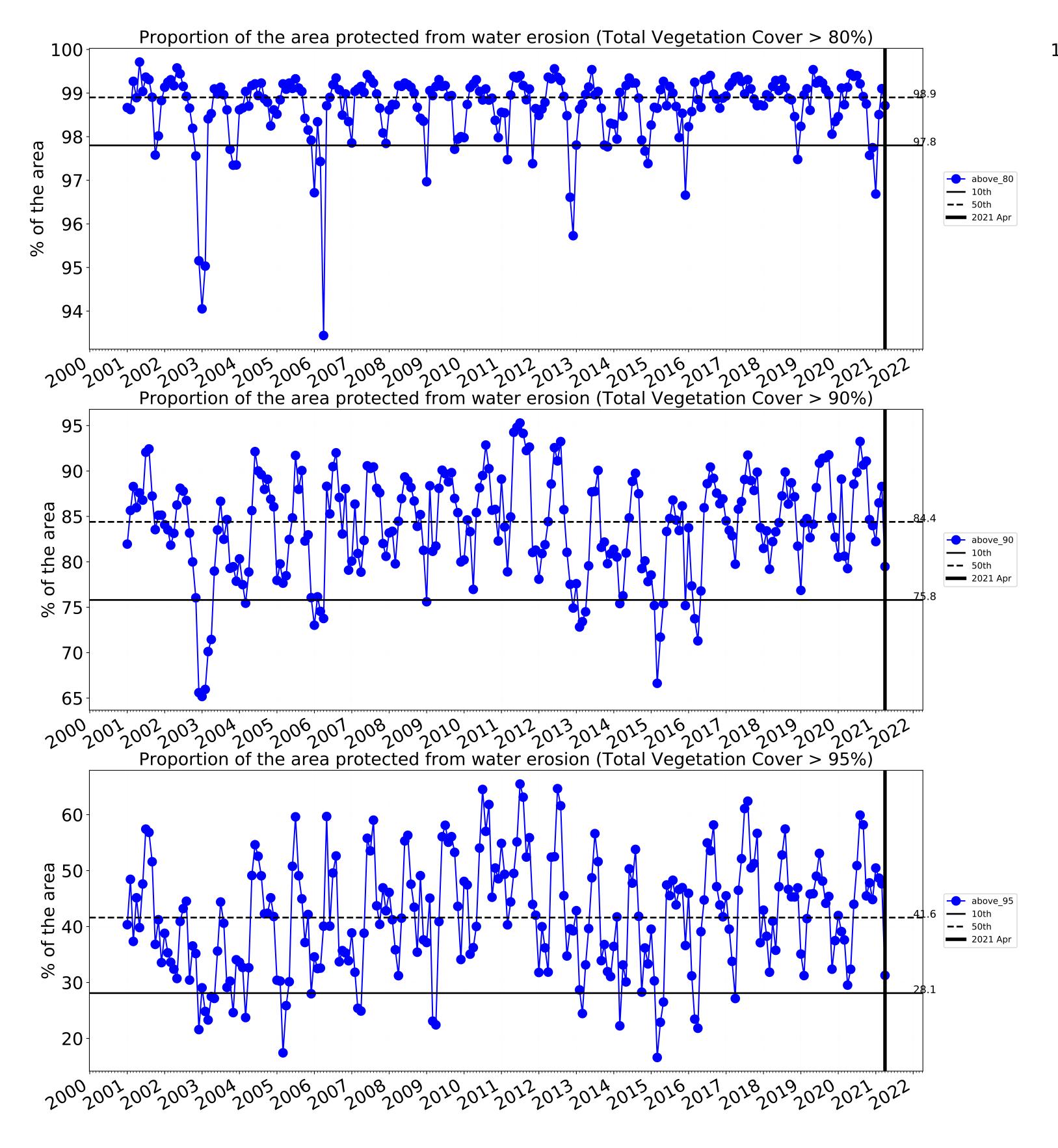


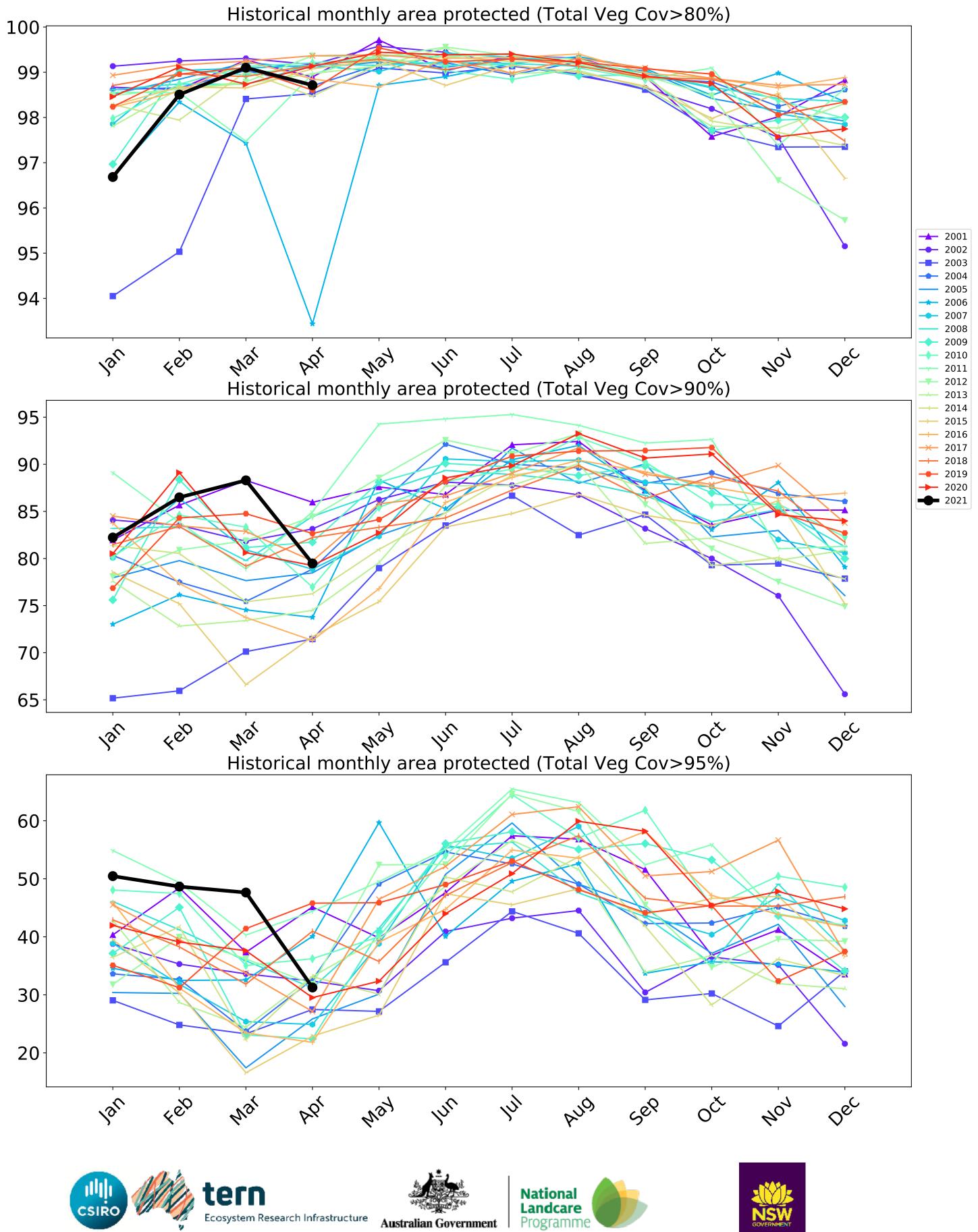


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Water erosion historical monthly area protected (Total Veg Cov>70%)







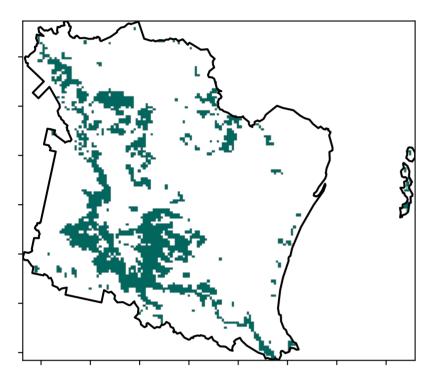


Conservation and natural environments Woodland forest

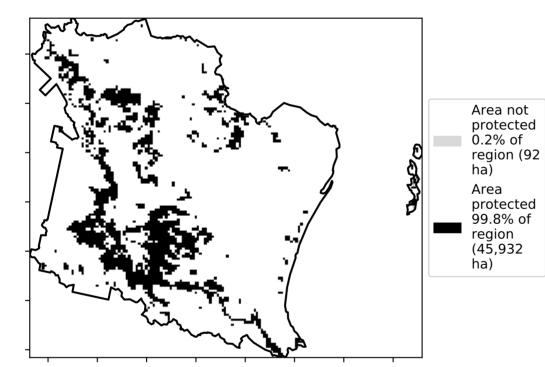
Land Use and Forests of Australia (2018) Ş 1 Conservation and natural environments - Woodland forest Catchment Scale Land (2018) and Forests of Australia (2018)

Land use and forest cover

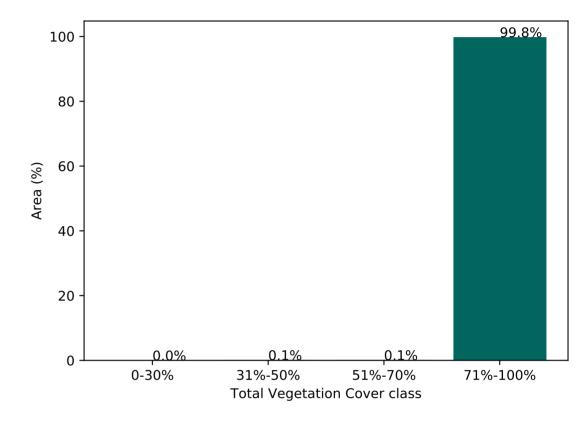
Total Vegetation Cover [%]



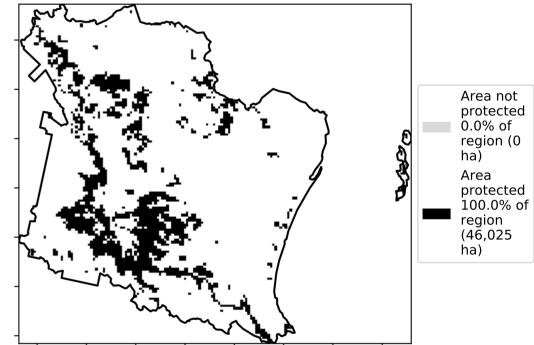
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



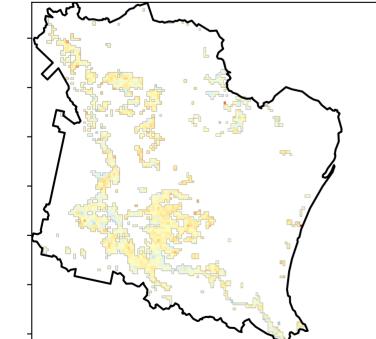
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Total Vegetation Cover Anomaly [%]



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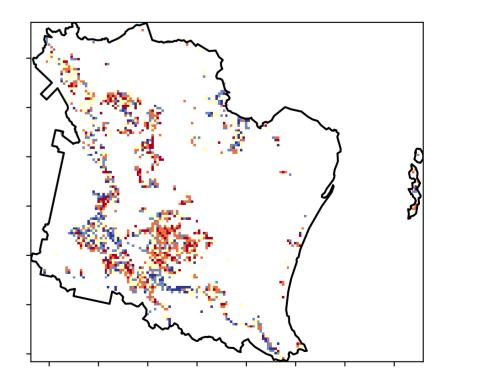
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52°1070°1

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0.30%

Total Vegetation Cover Decile [%]



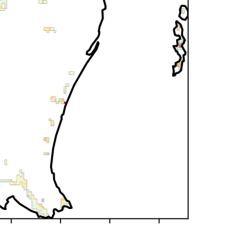


Anomaly show how many percetage points each pixel is from the mean That the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

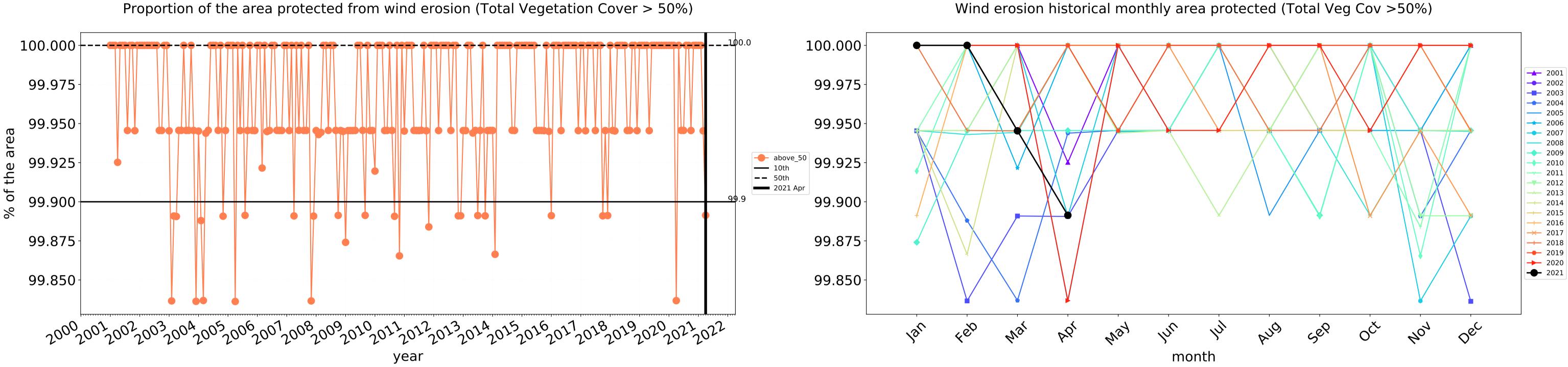
Catchment Scale

Derived from

Use of Australia

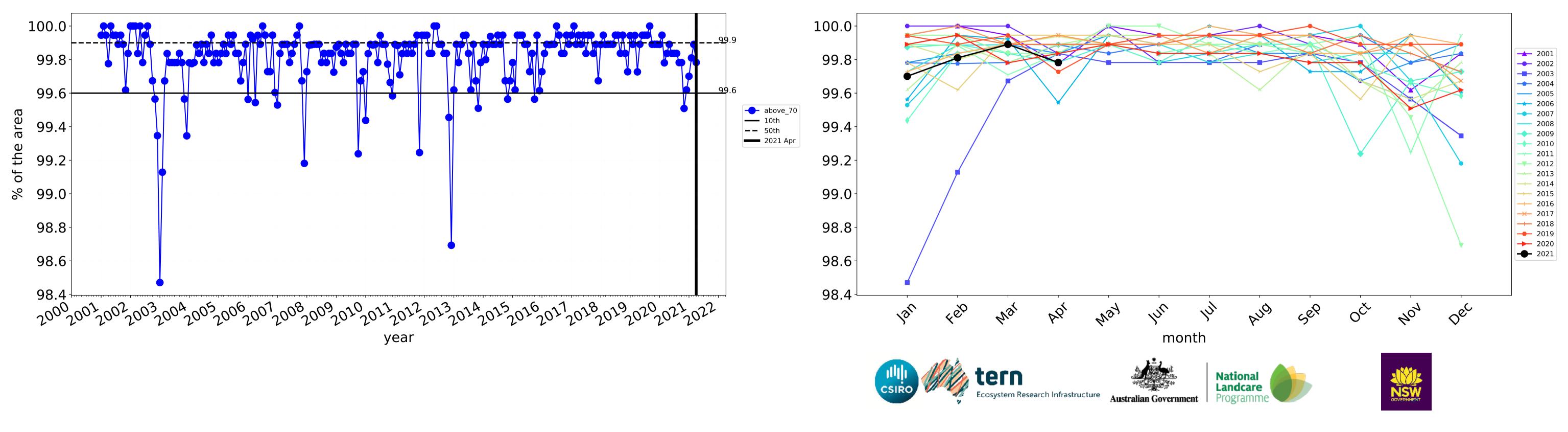


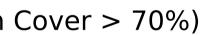
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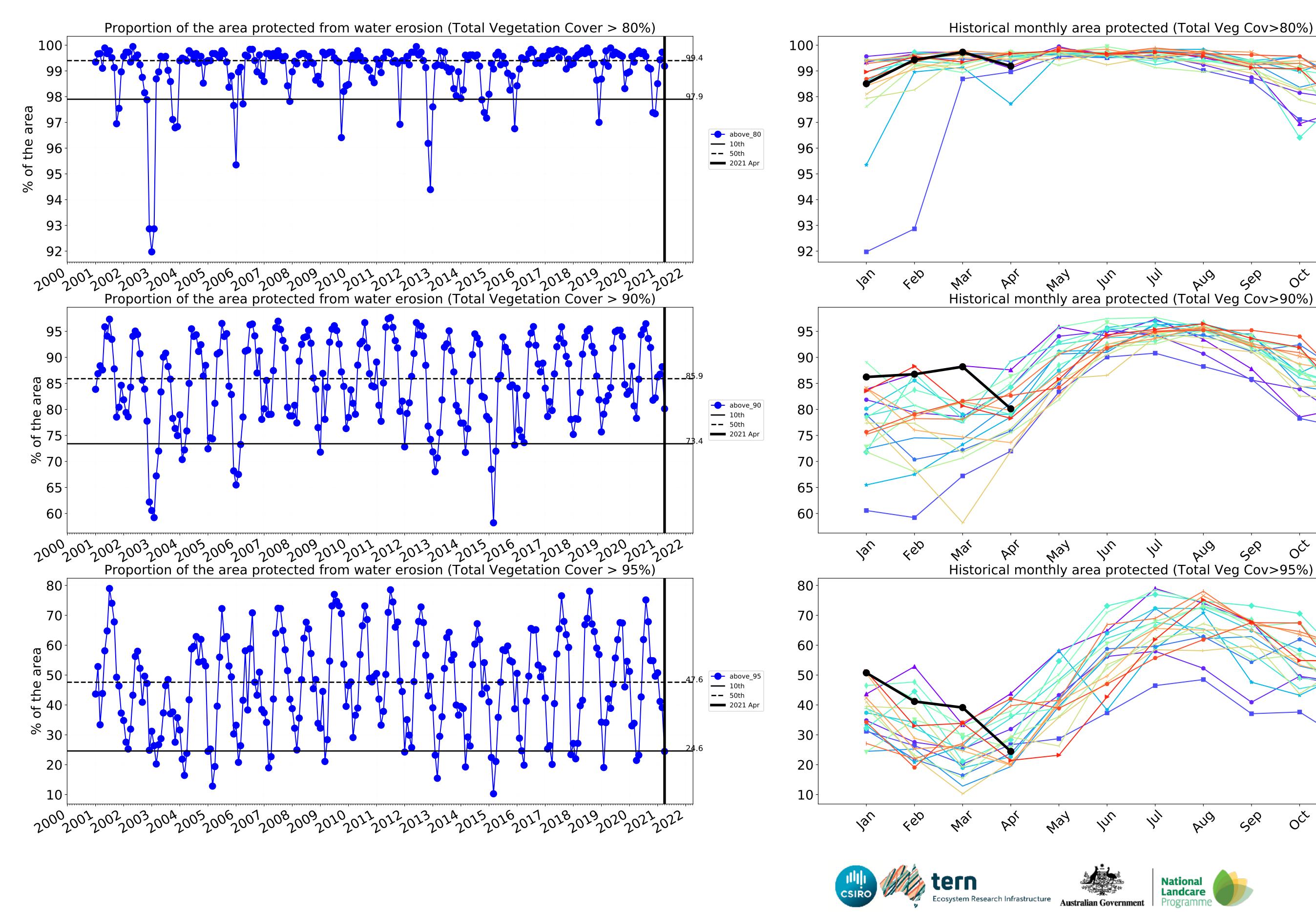
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

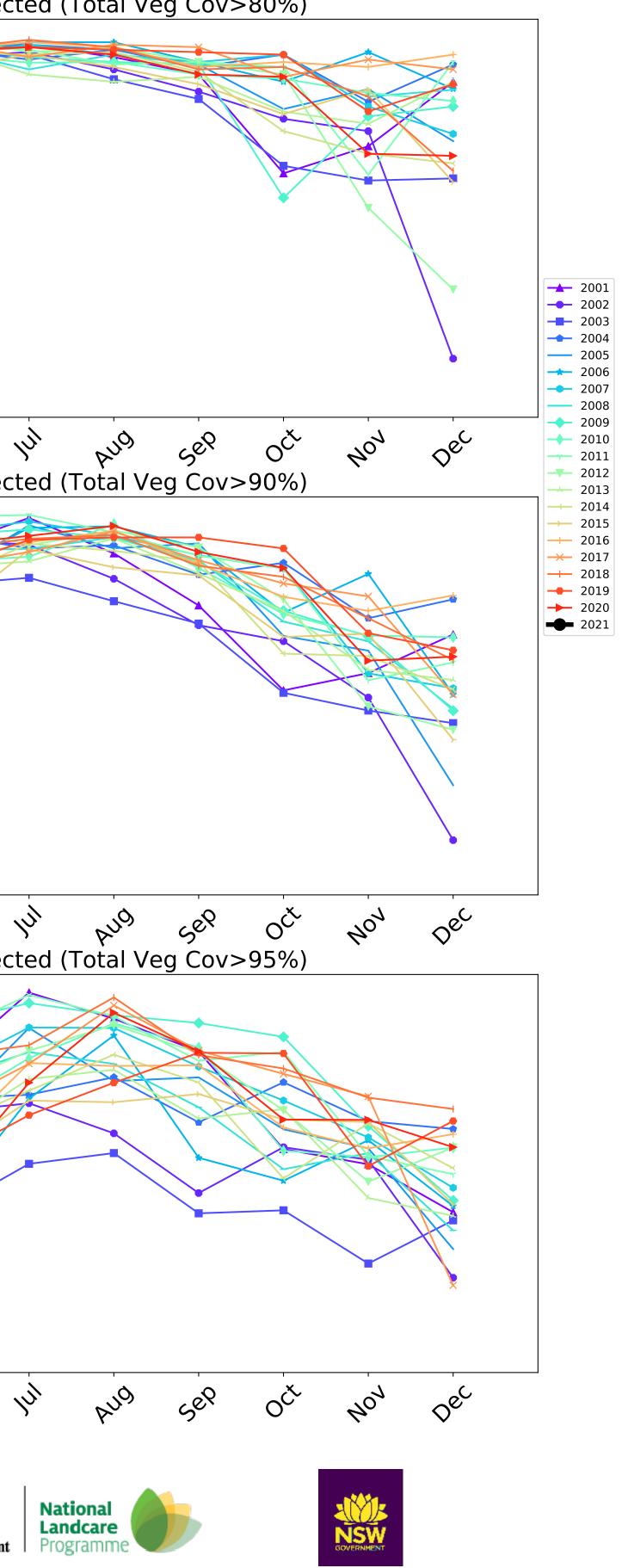
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)









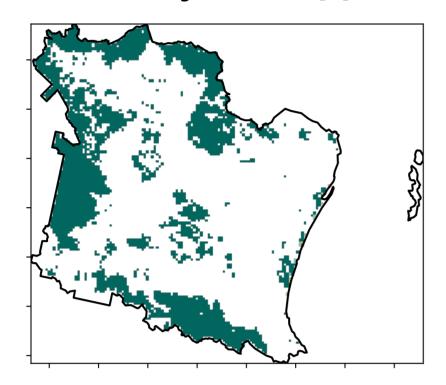


Conservation and natural environments Forest (non woodland)

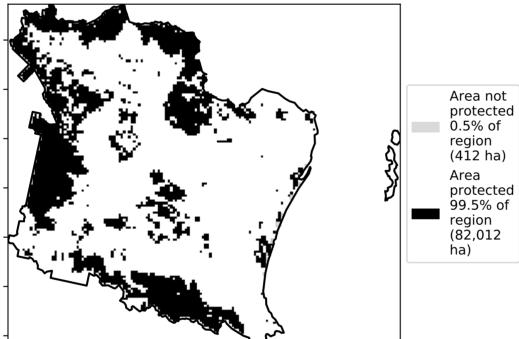
Land use and forest cover

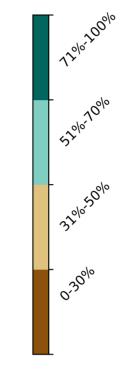
Ş 1 Conservation and natural environments - Nonwoodland forest Ľ

Total Vegetation Cover [%]



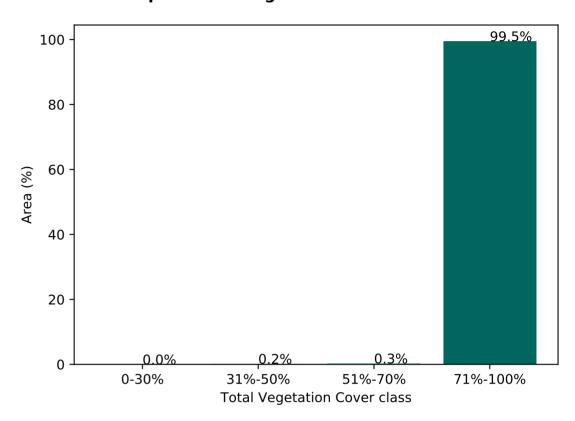
% Area protected from water erosion (>70%)



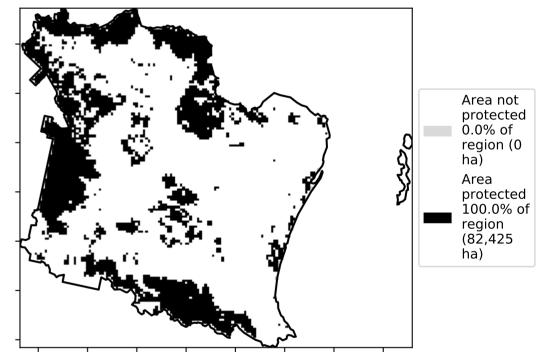




Proportion of vegetation cover class in area



% 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)

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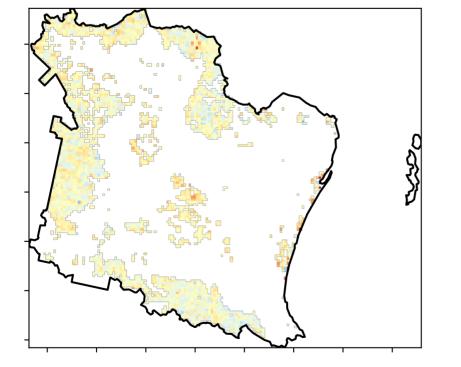
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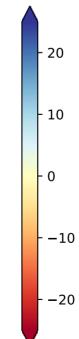
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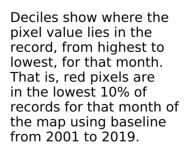
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Total Vegetation Cover Anomaly [%]

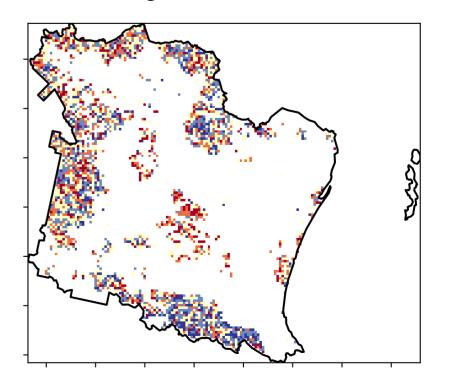
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.





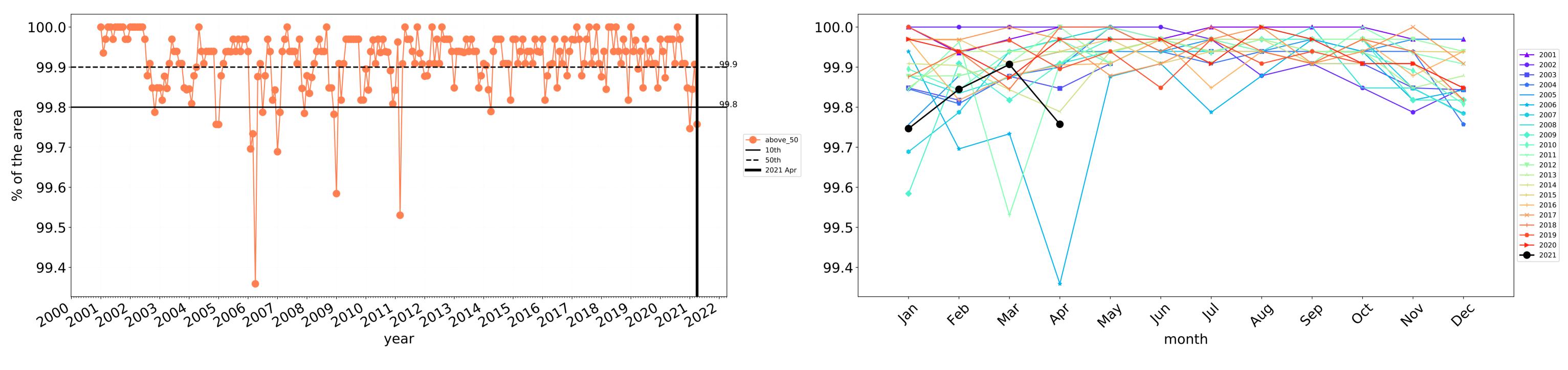


Total Vegetation Cover Decile [%]

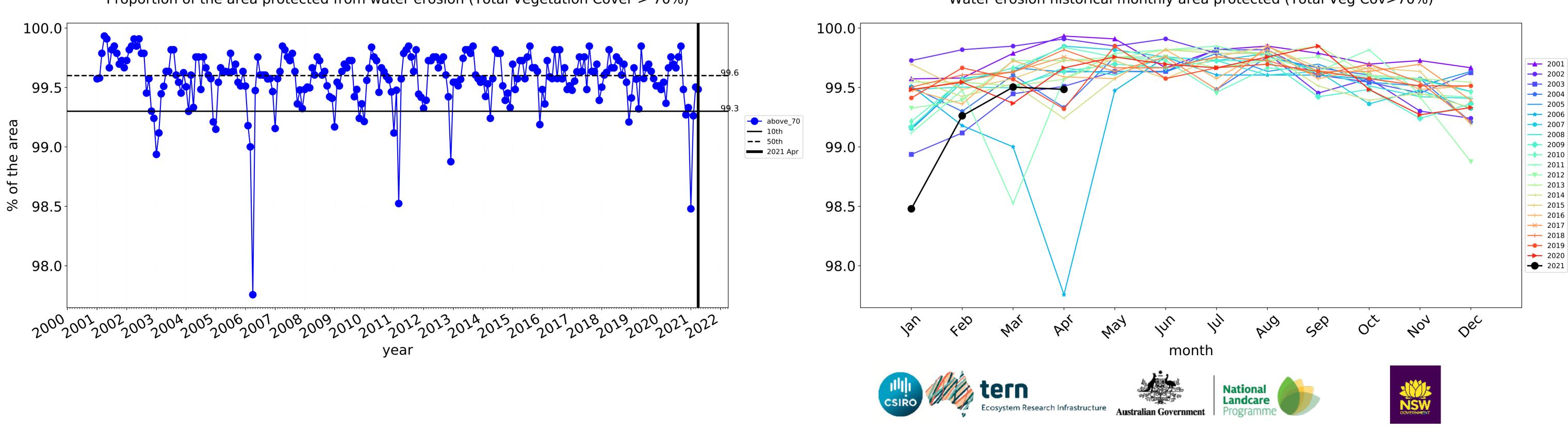




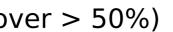
Conservation and natural environments Forest (non woodland) timeseries



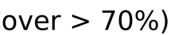
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



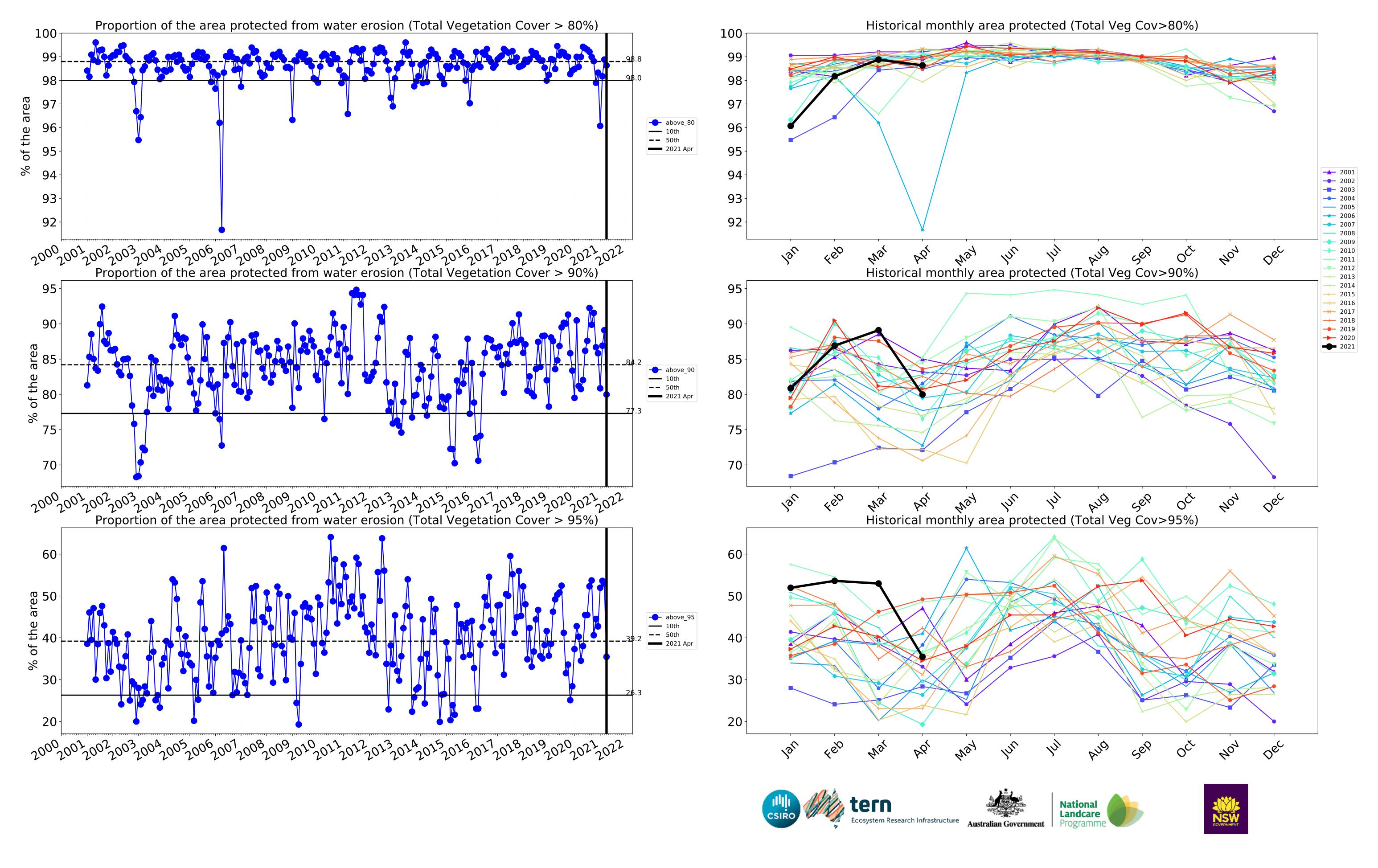
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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



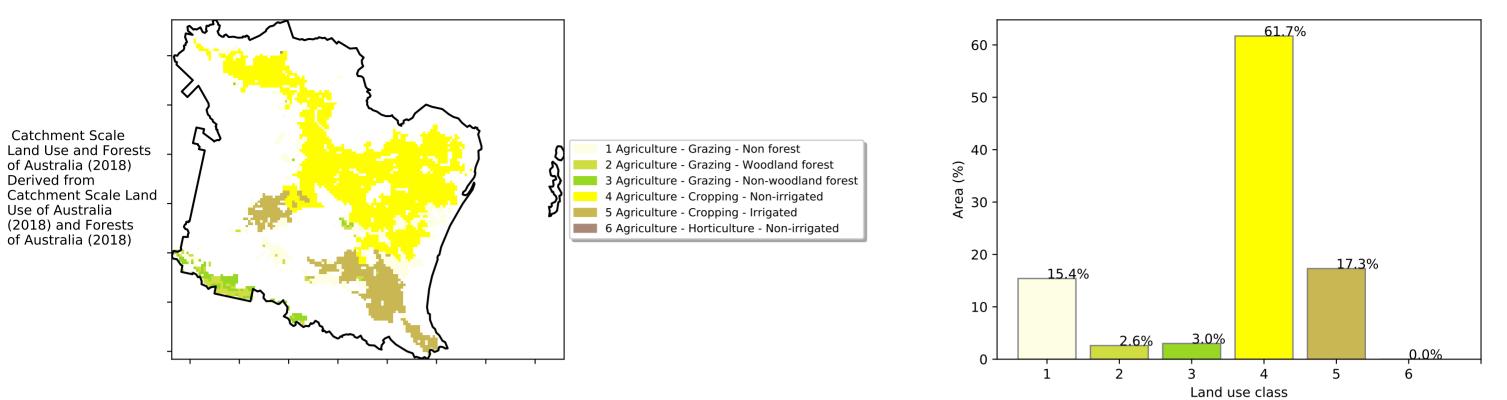
Water erosion historical monthly area protected (Total Veg Cov>70%)



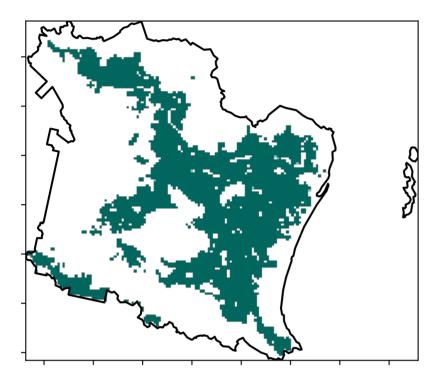
Agriculture

Land use and forest cover

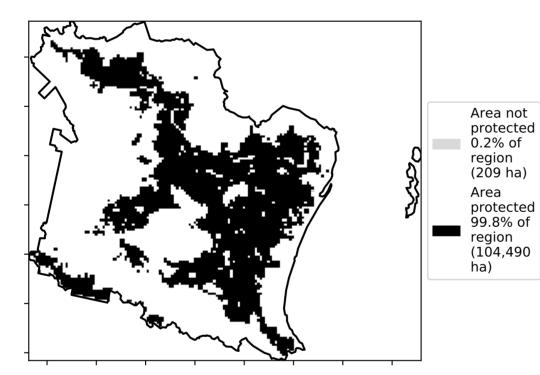
Proportion of each land class in area

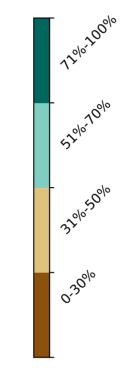


Total Vegetation Cover [%]

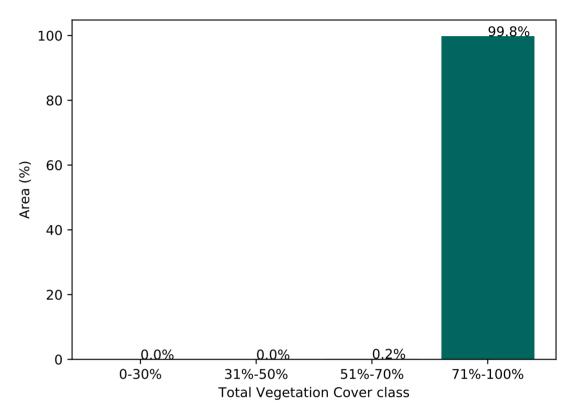


% Area protected from water erosion (>70%)

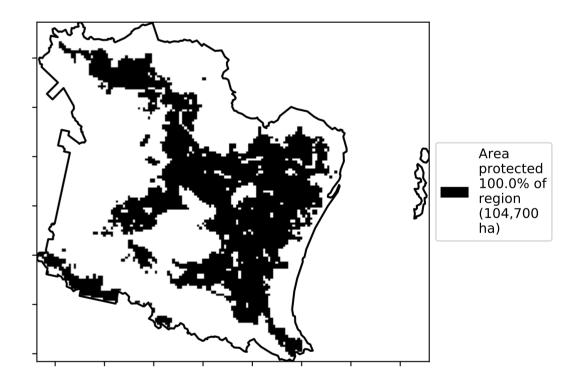




Proportion of vegetation cover class in area



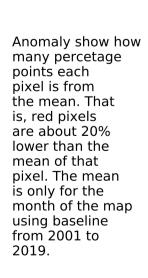
% Area protected from wind erosion (>50%)

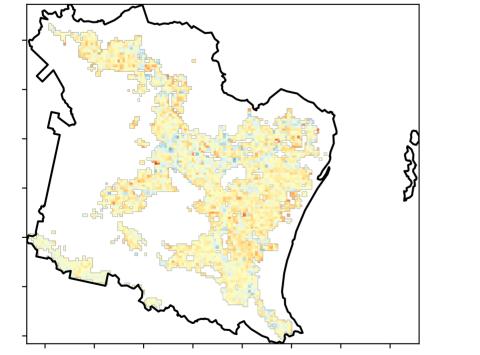


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Total Vegetation Cover Anomaly [%]



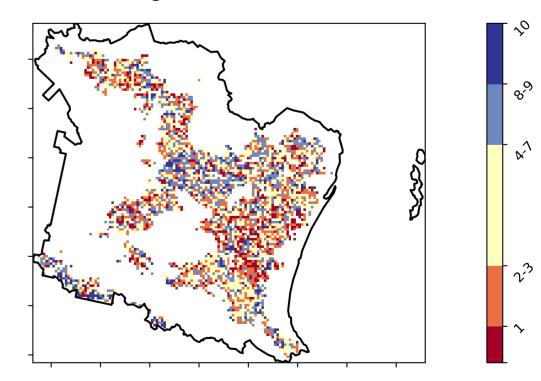


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Total Vegetation Cover Decile [%]





Deciles show where the

pixel value lies in the

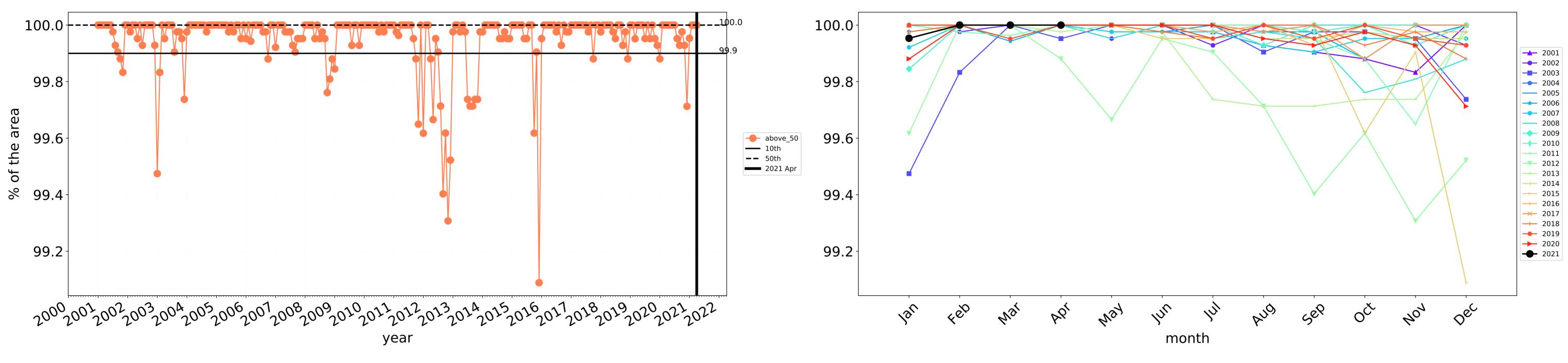
record, from highest to

lowest, for that month. That is, red pixels are

records for that month of

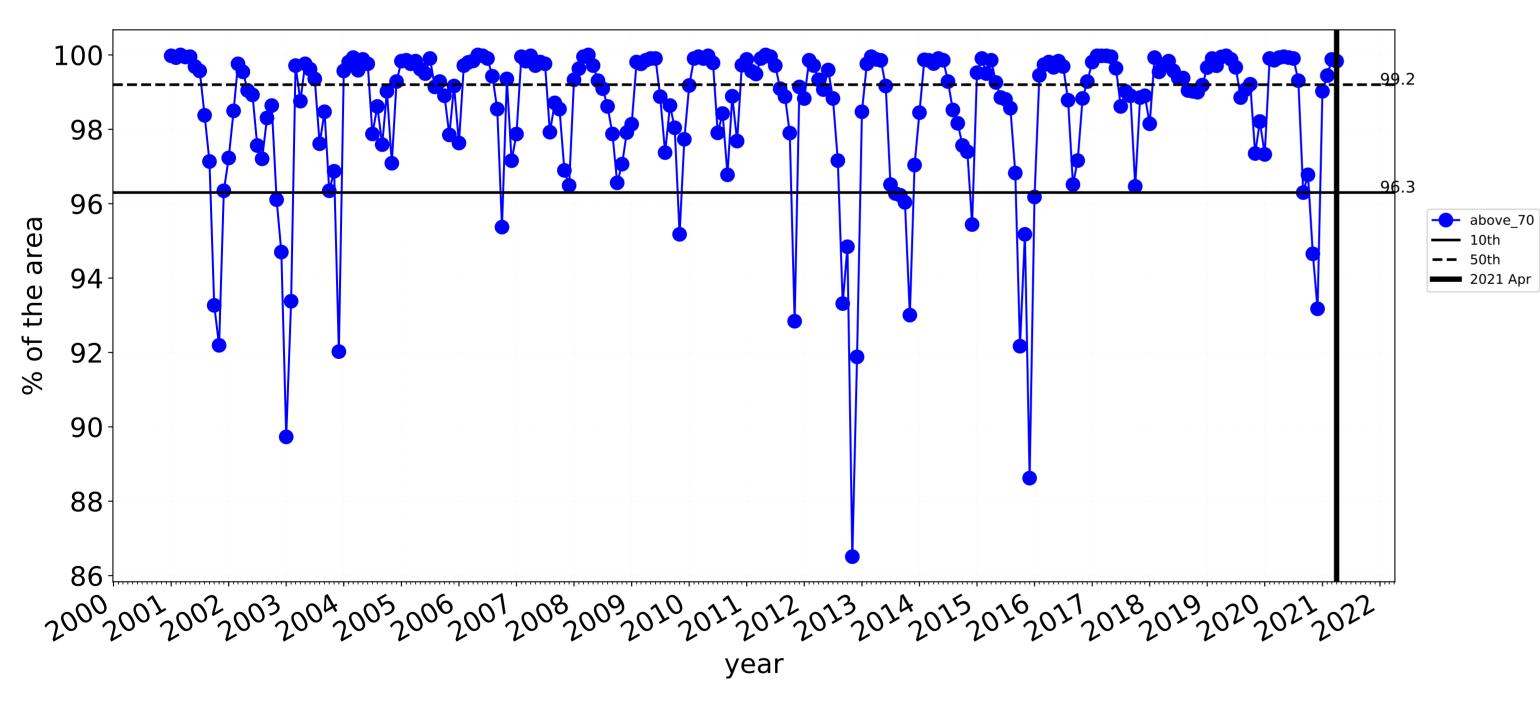
the map using baseline from 2001 to 2019.

in the lowest 10% of

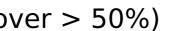


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

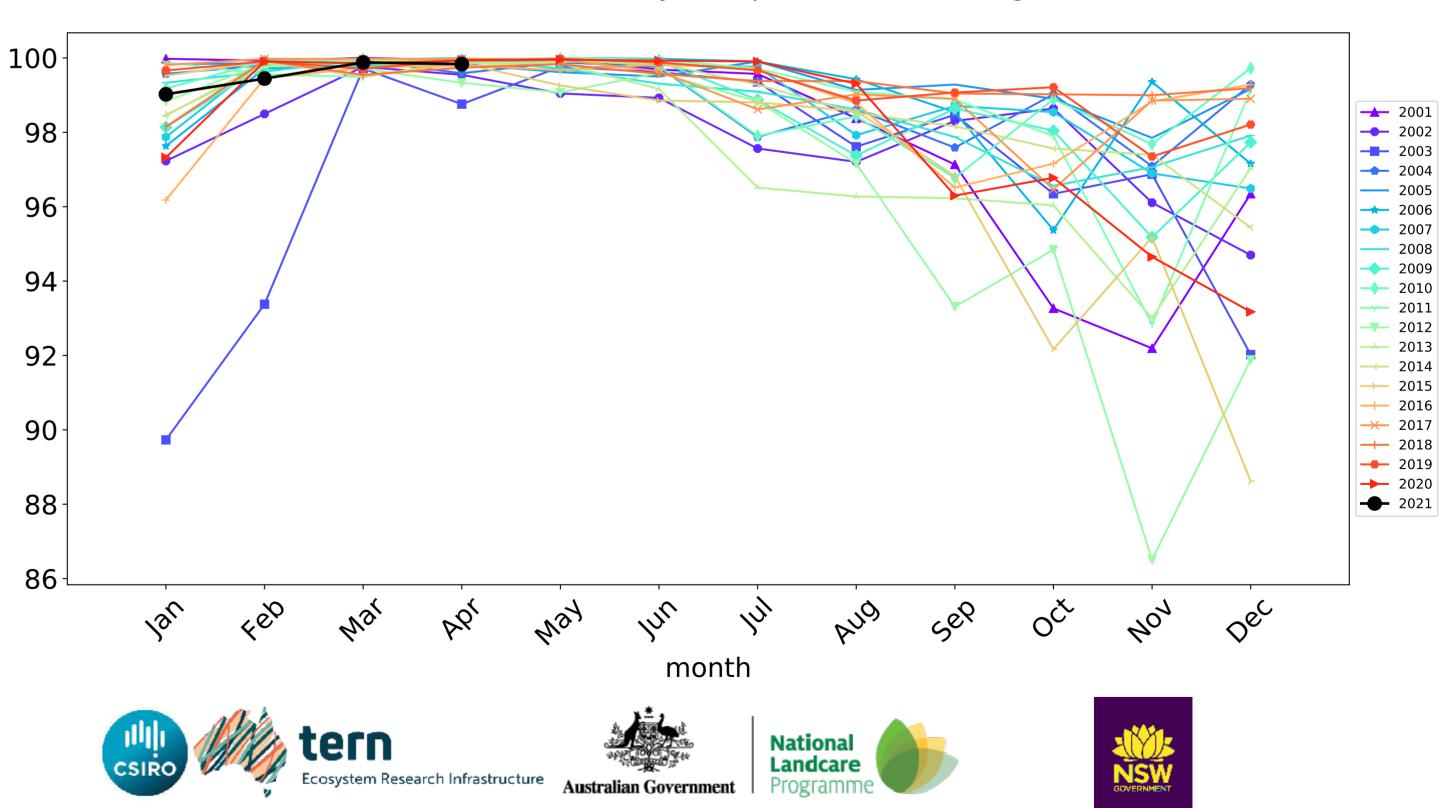
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



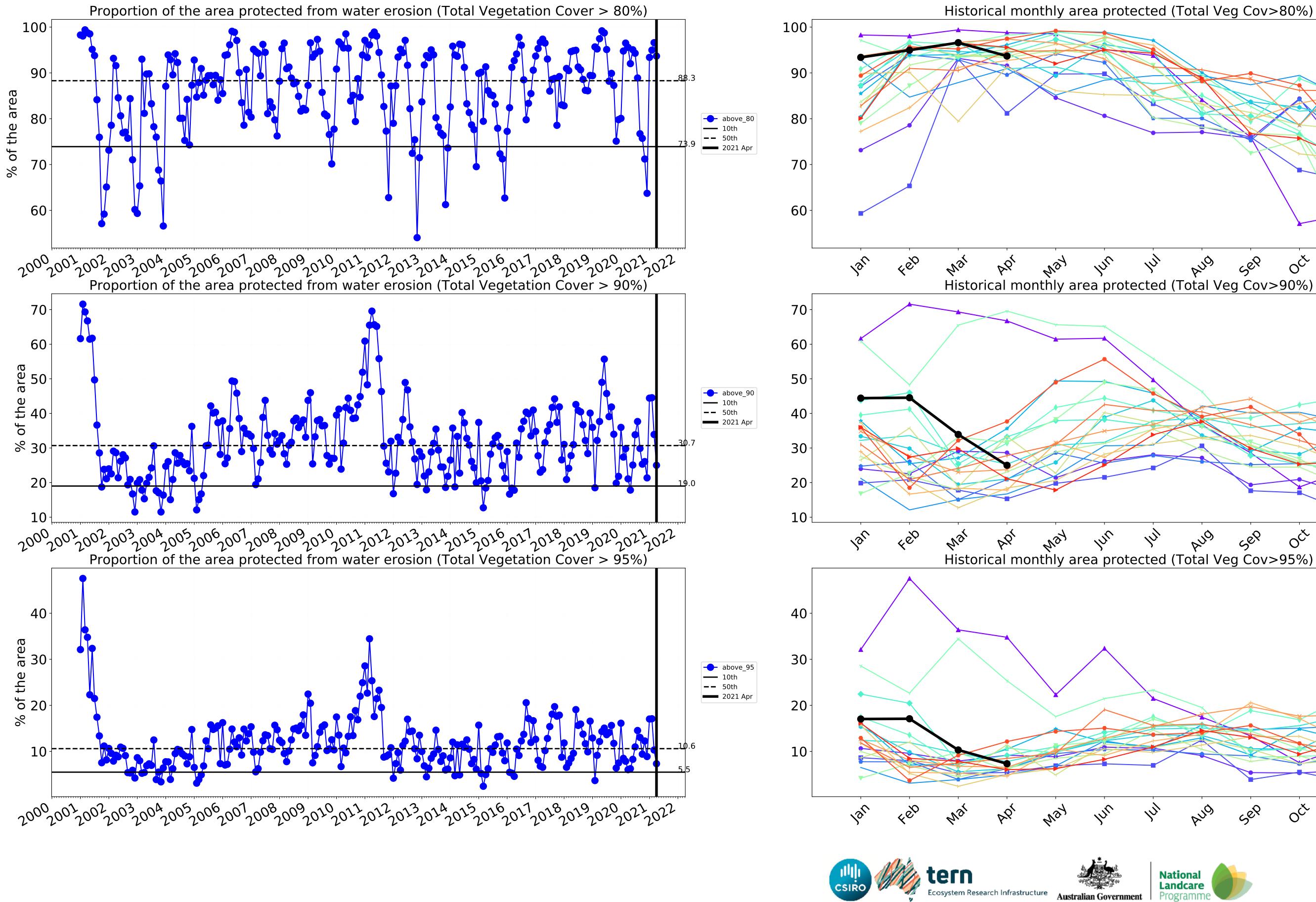
Agriculture timeseries

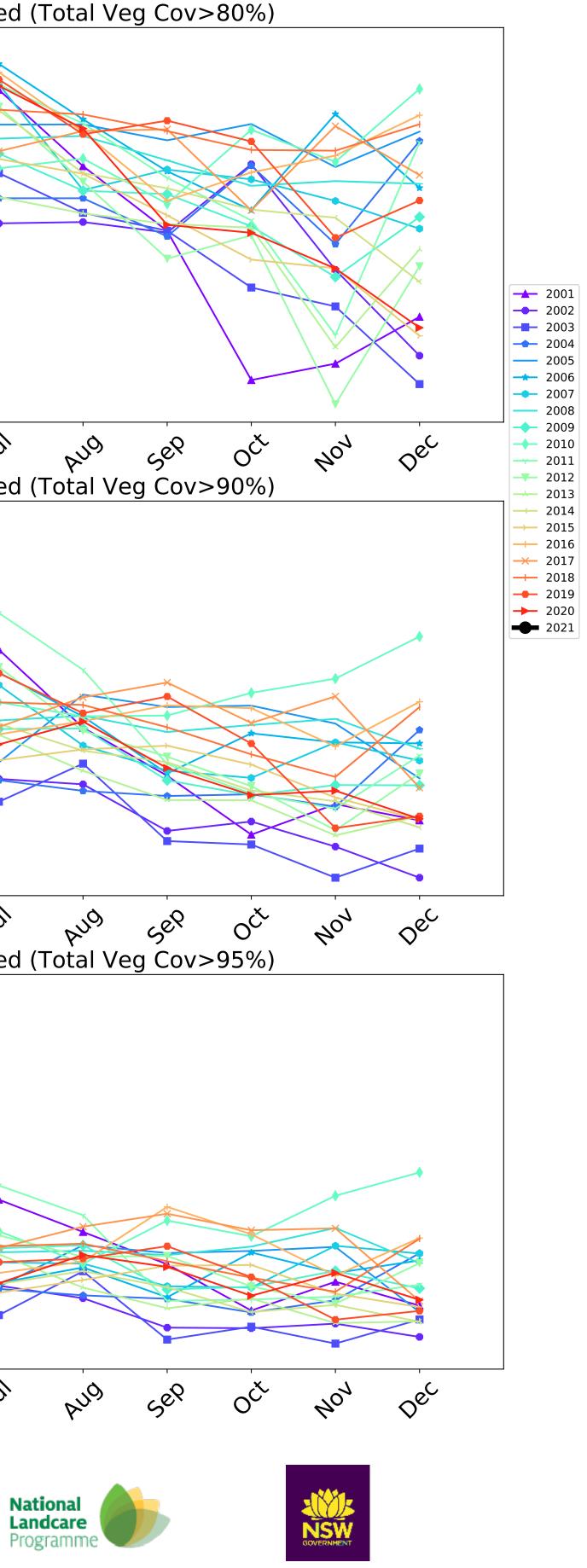


Wind erosion historical monthly area protected (Total Veg Cov >50%)



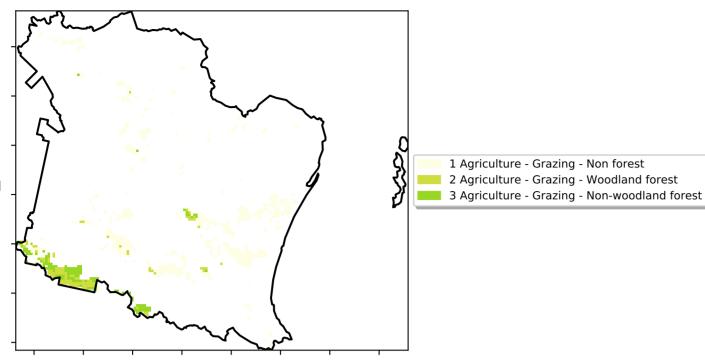
Water erosion historical monthly area protected (Total Veg Cov>70%)





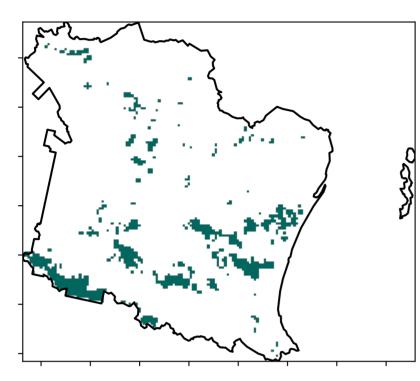
Grazing

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

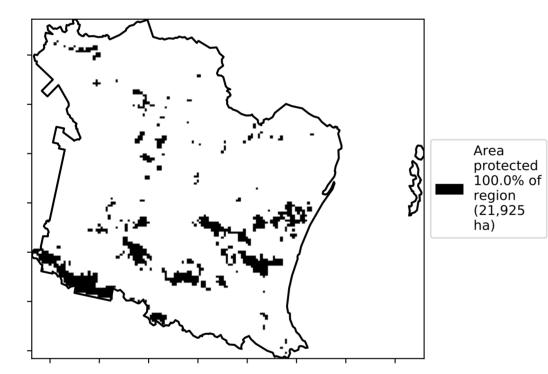


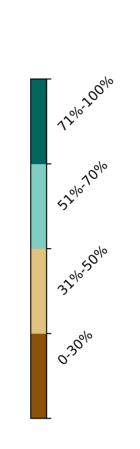
Land use and forest cover

Total Vegetation Cover [%]

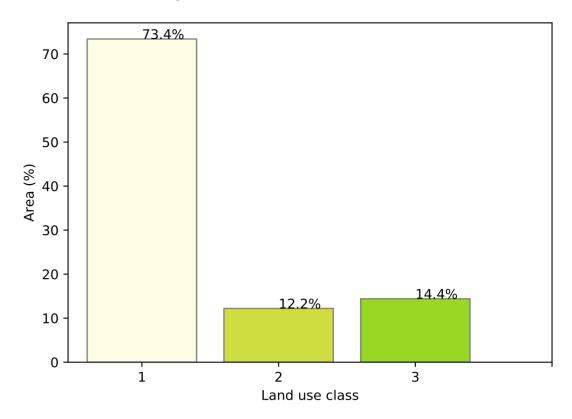


% Area protected from water erosion (>70%)

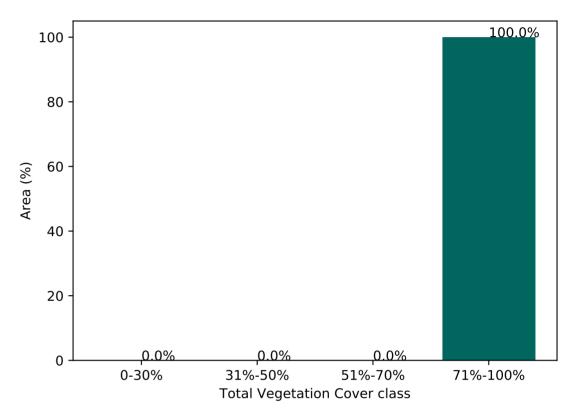




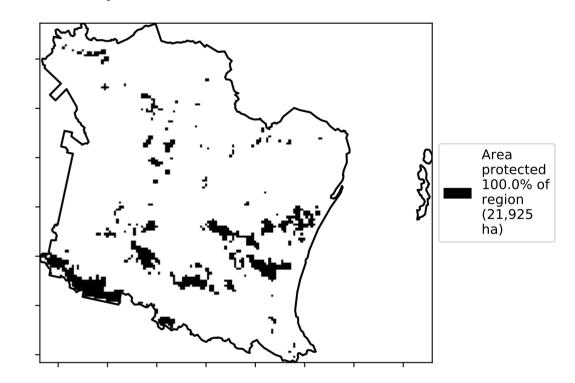
Proportion of each land class in area



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



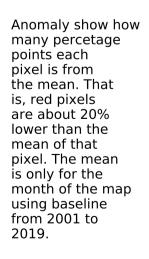
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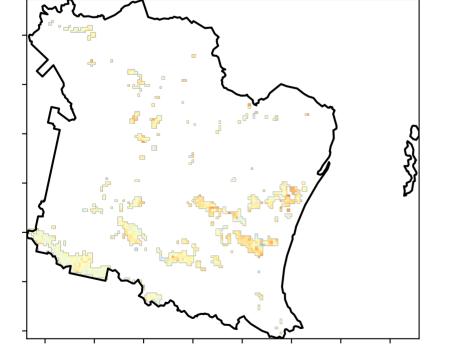
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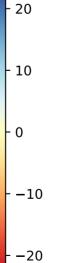
A-1

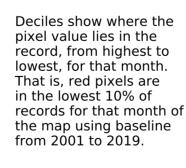
23

Total Vegetation Cover Anomaly [%]

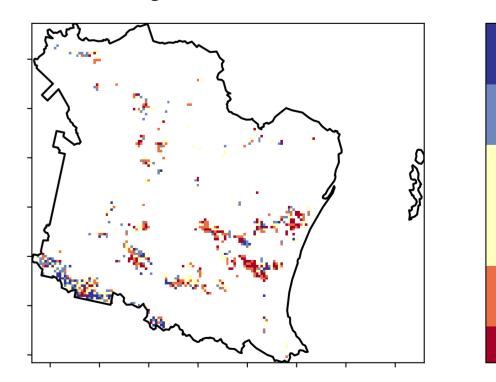




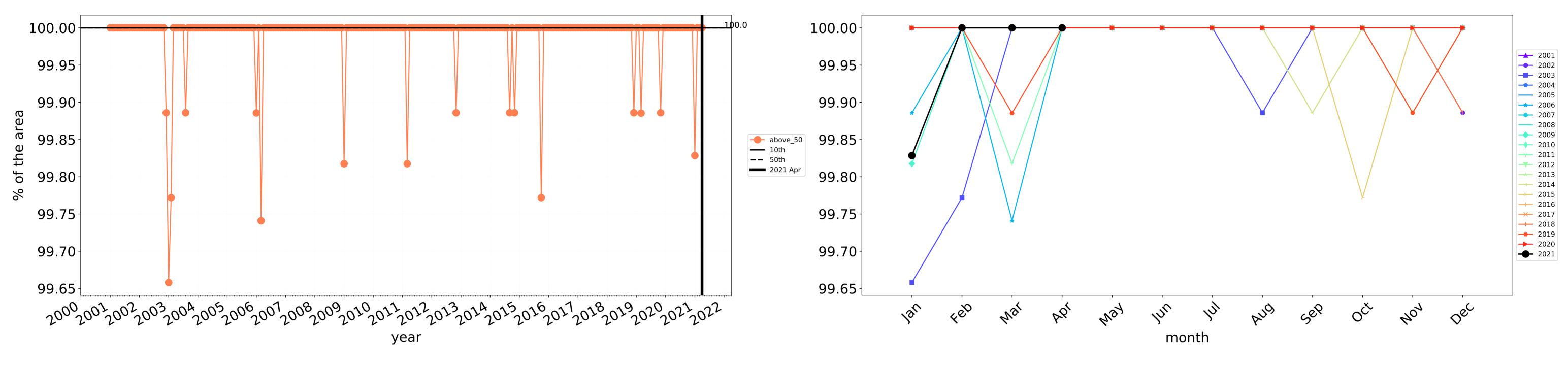




Total Vegetation Cover Decile [%]

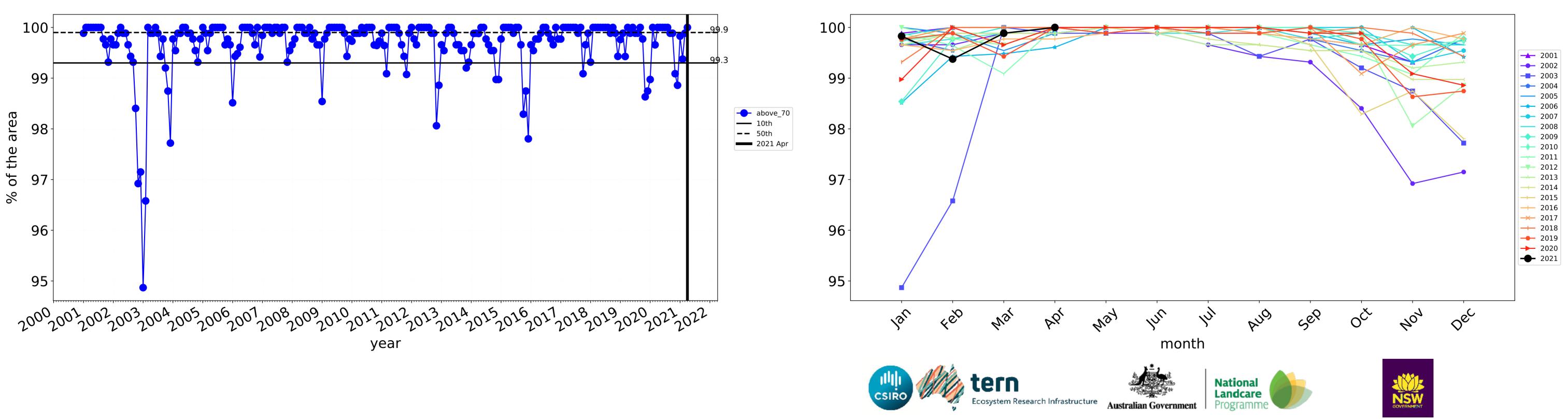


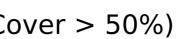




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

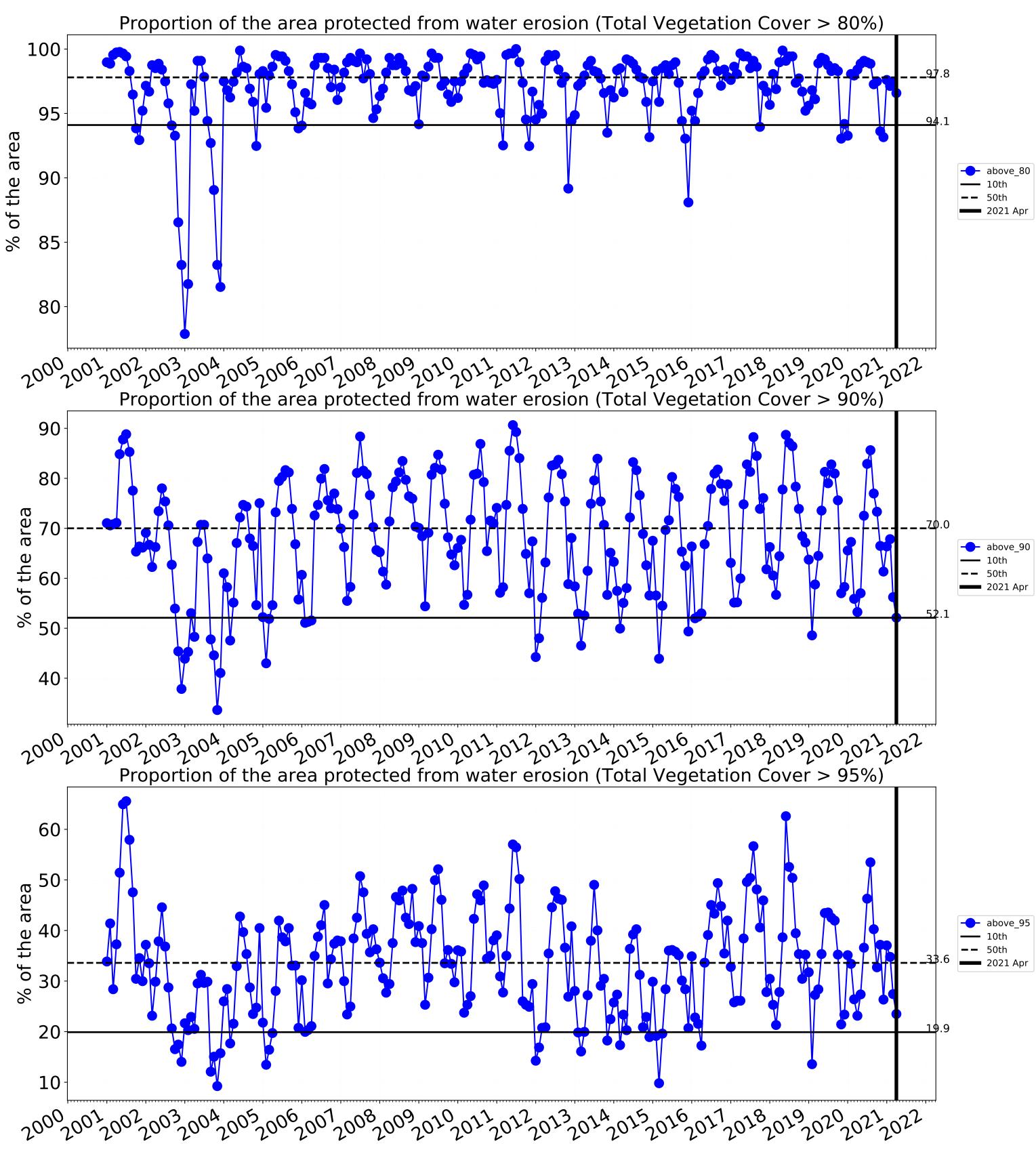
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

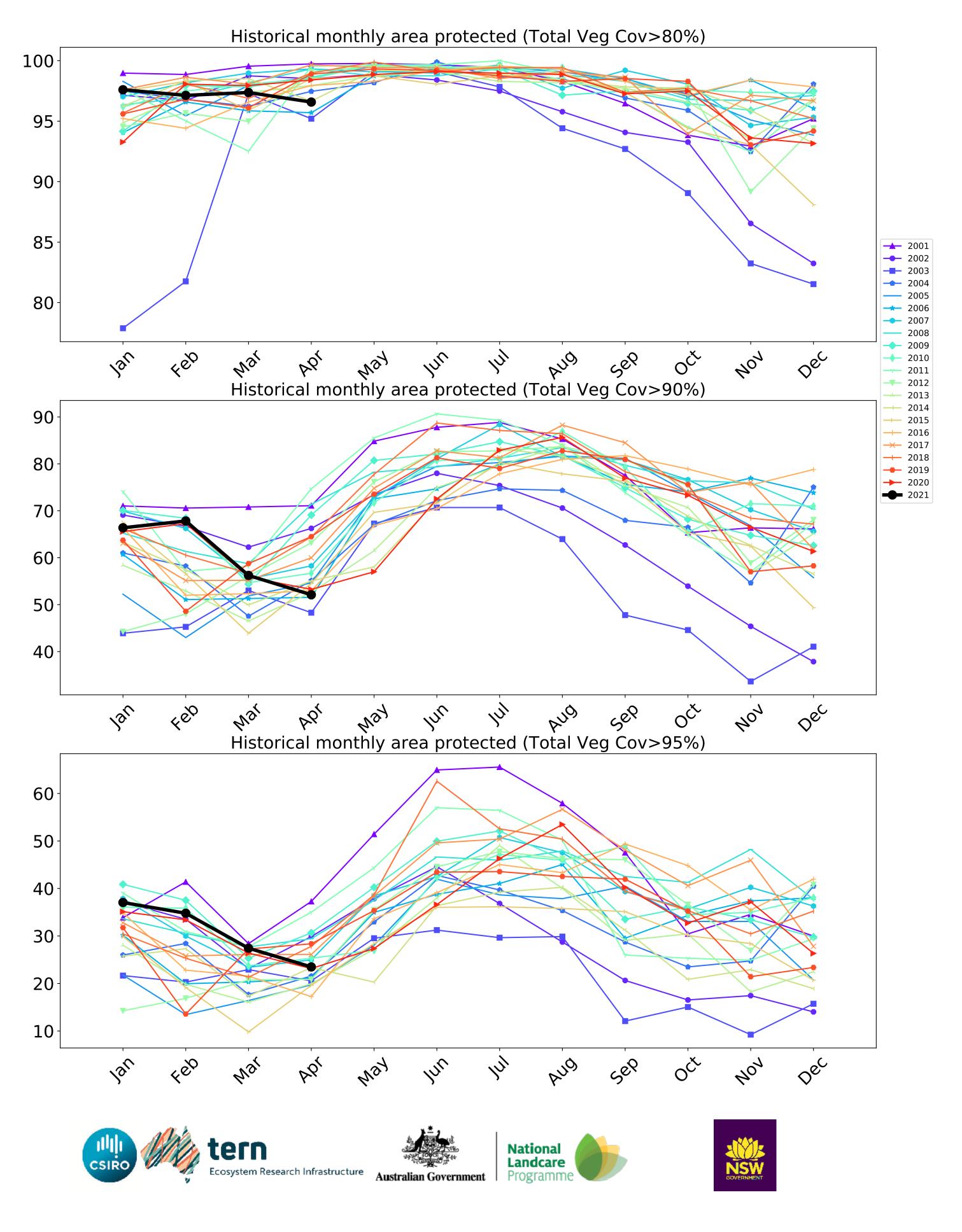




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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





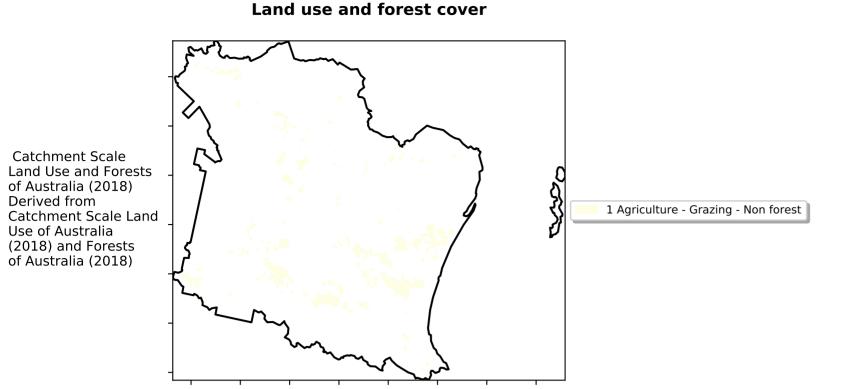
Grazing non forest

12%200%

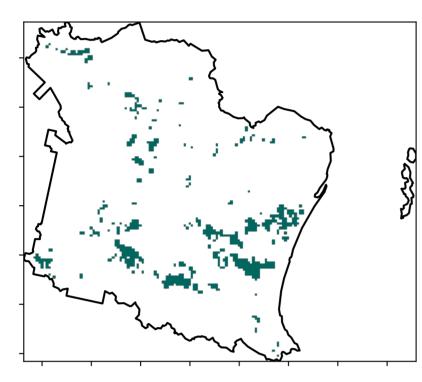
5200070010

32005001

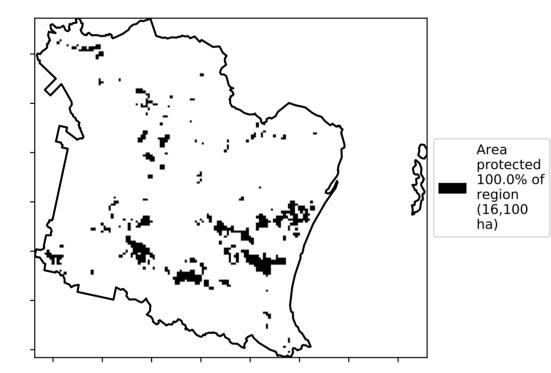
0.30%



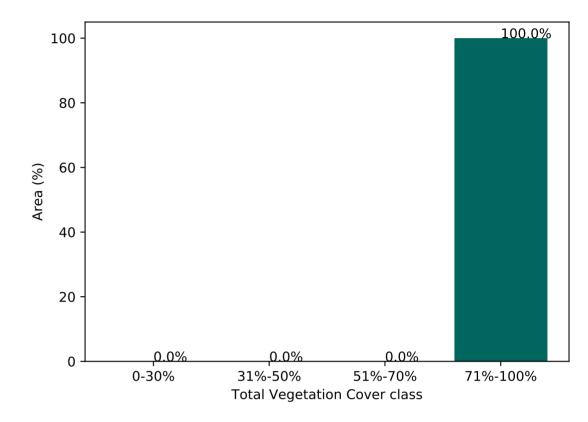
Total Vegetation Cover [%]



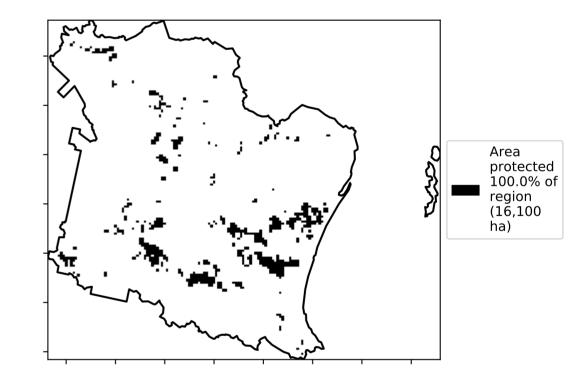
% Area protected from water erosion (>70%)



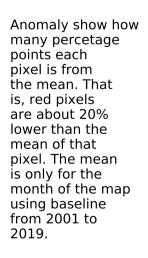
Proportion of vegetation cover class in area

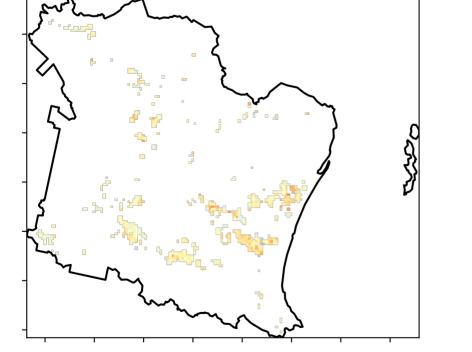


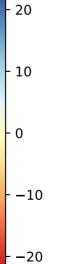
% Area protected from wind erosion (>50%)

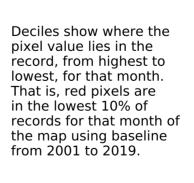


Total Vegetation Cover Anomaly [%]









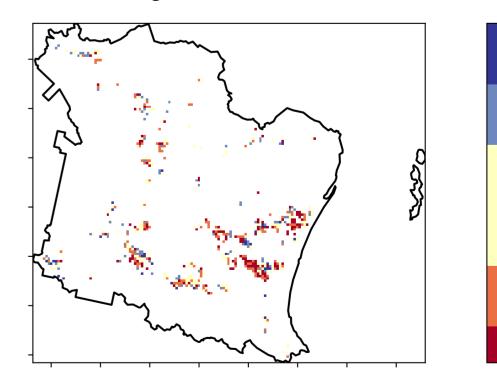
Total Vegetation Cover Decile [%]

\$

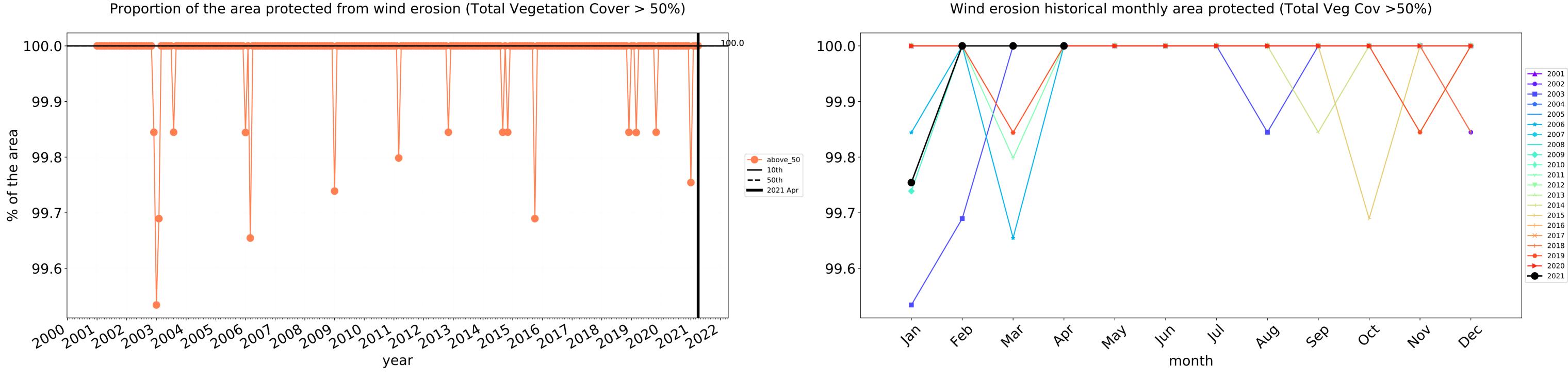
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A.1

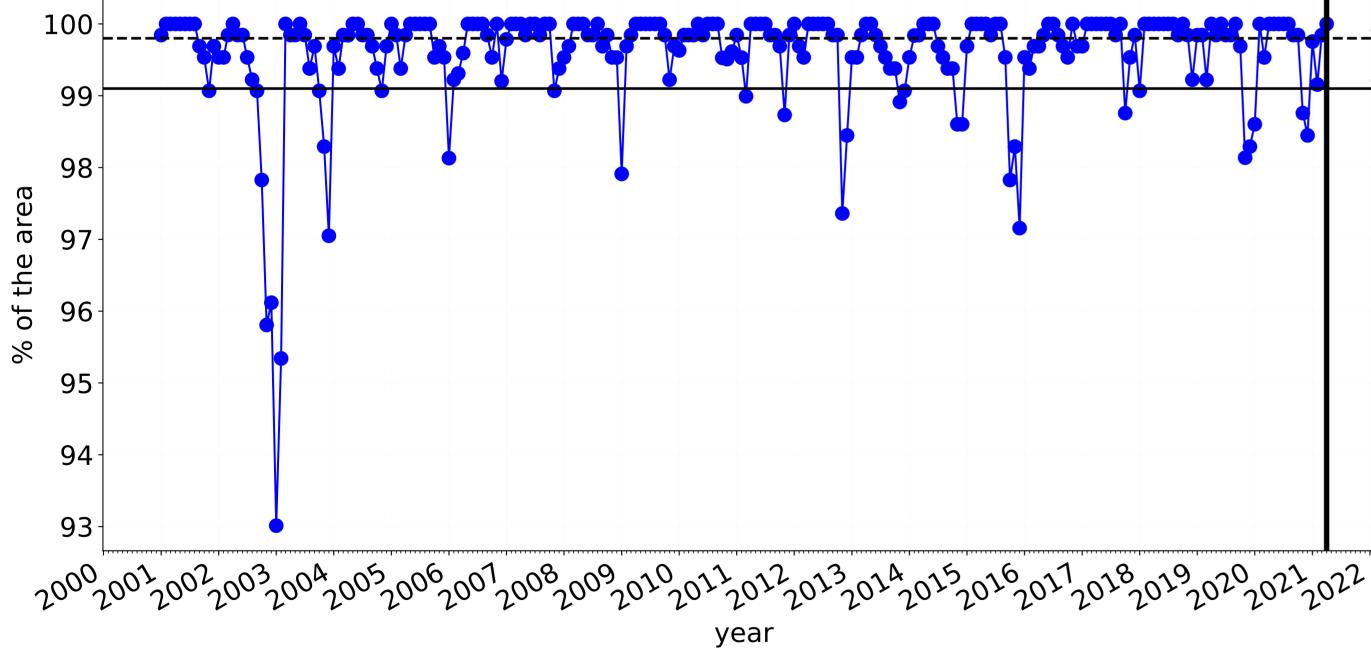
2.3







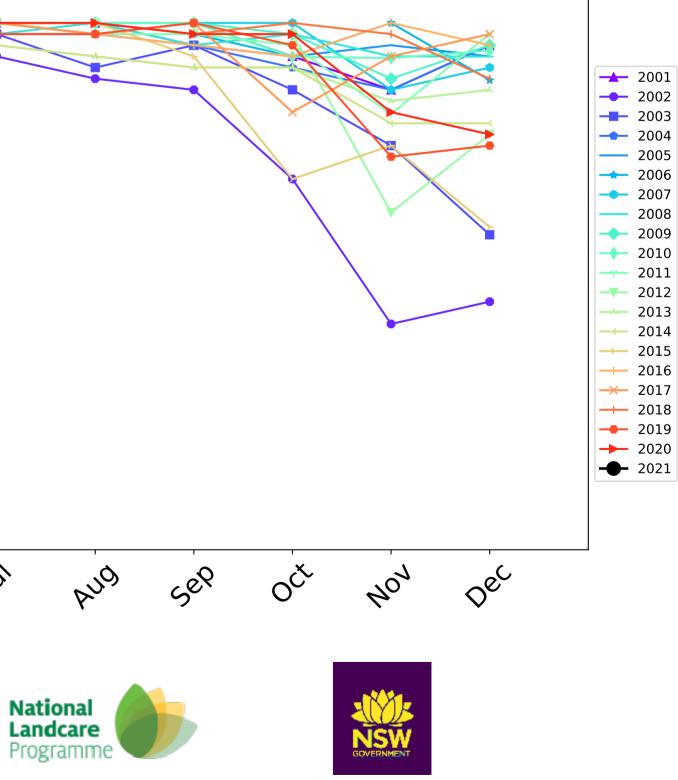
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

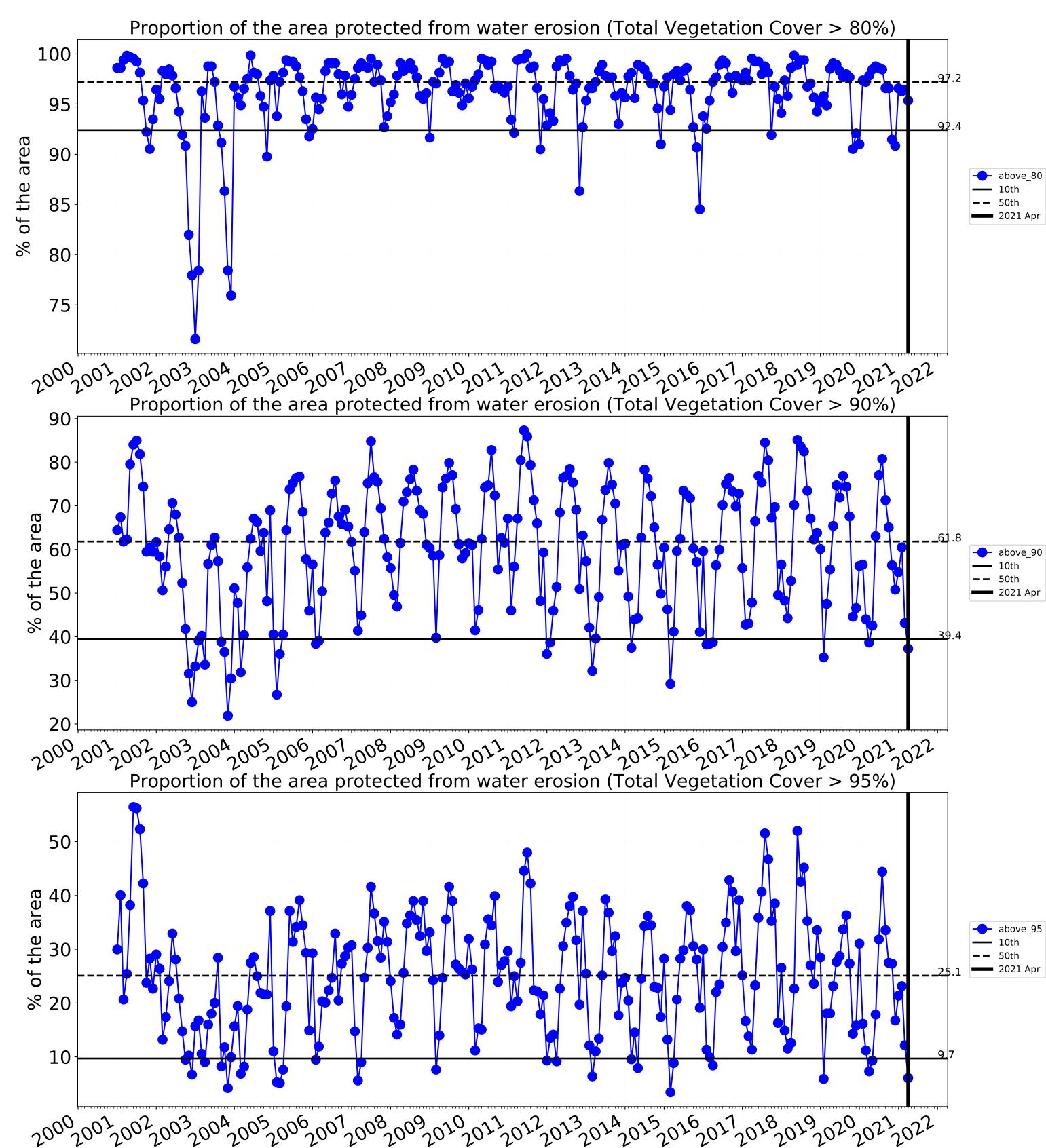


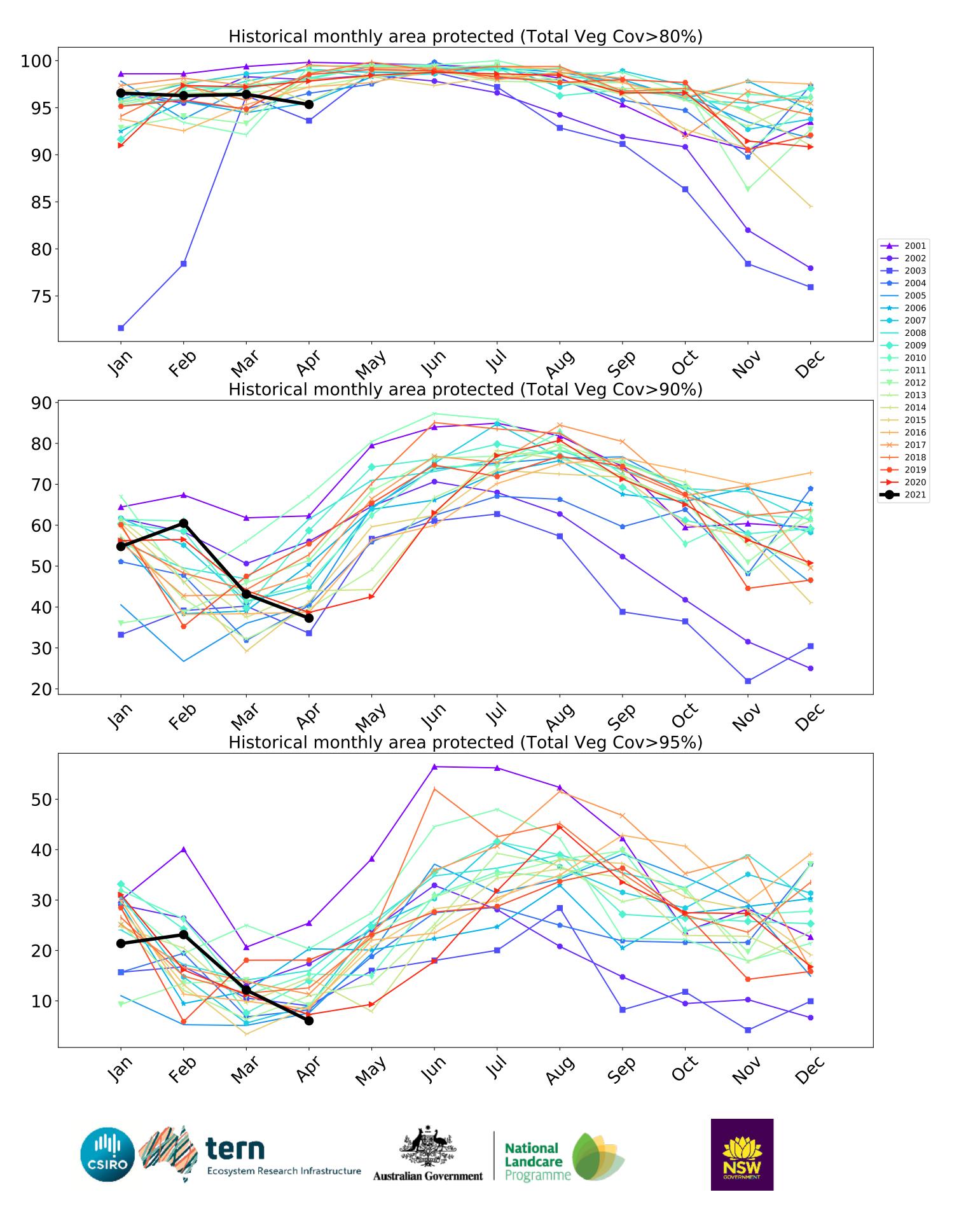
Grazing non forest timeseries

100 99 98 ---- above_70 **—** 10th **——** 50th 97 **—** 2021 Apr 96 95⁻ 94 93 Jan 4eb way In PQ 1¹1 Mai month tern Ecosystem Research Infrastructure Australian Government

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







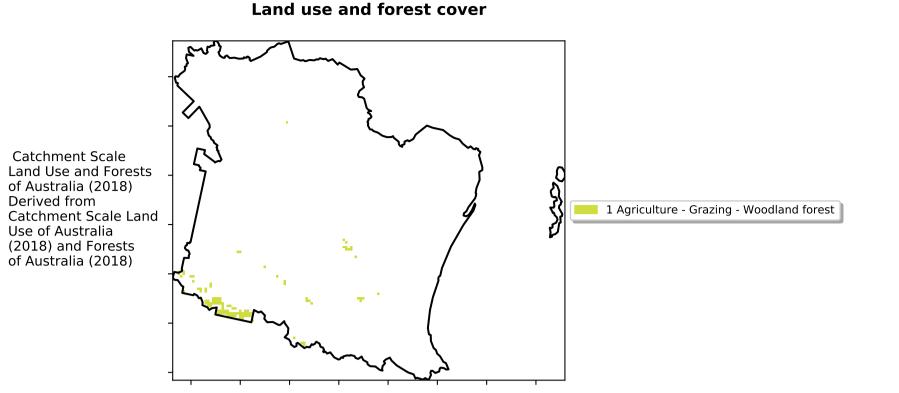
Grazing Woodland forest

1200-2000

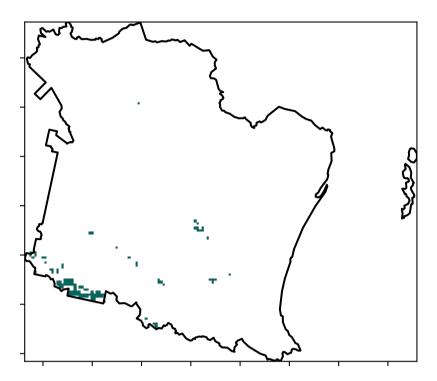
52°10-70°10

320050010

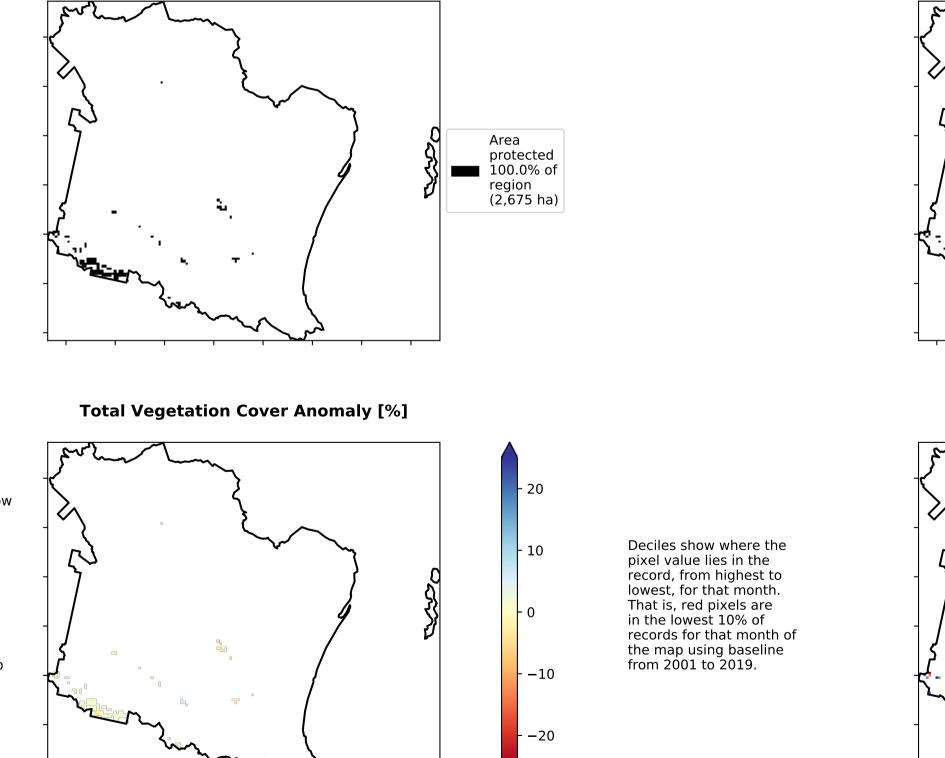
· 0.30%



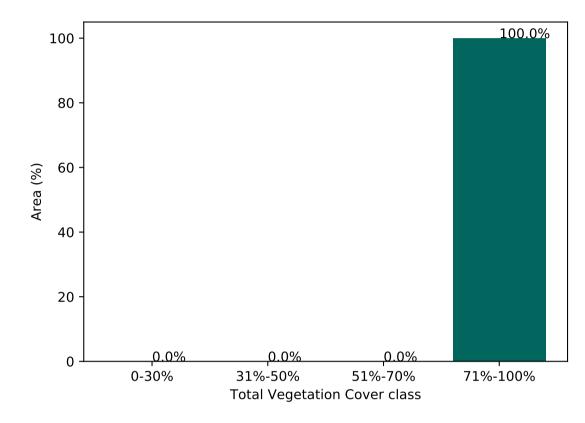
Total Vegetation Cover [%]



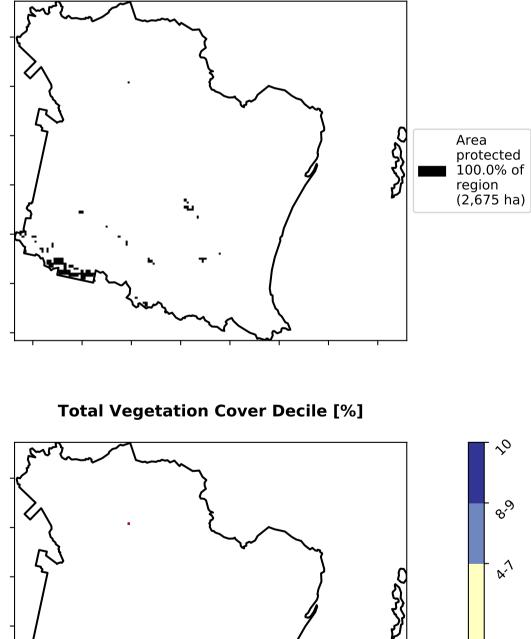
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



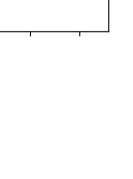
% Area protected from wind erosion (>50%)



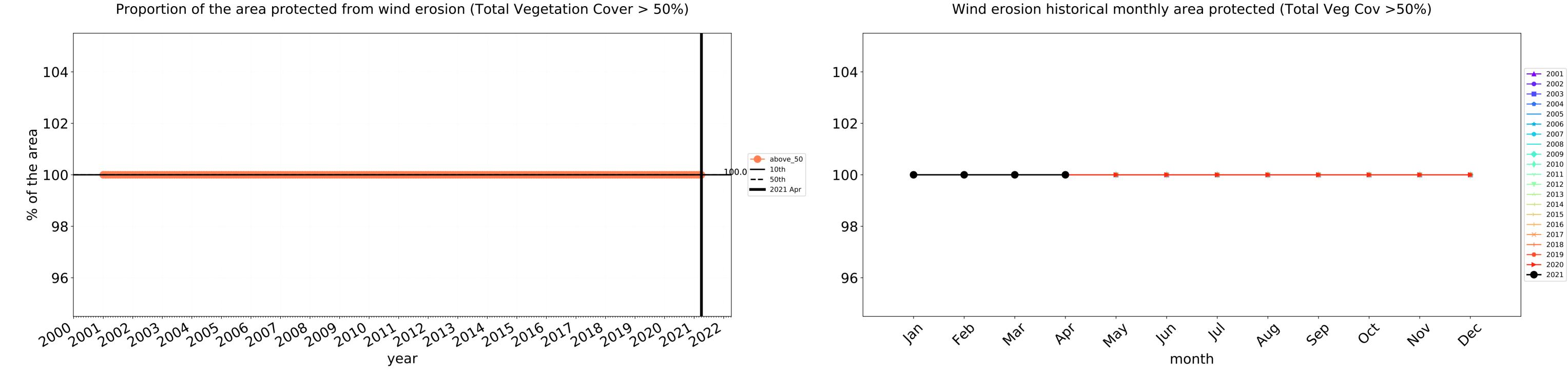


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

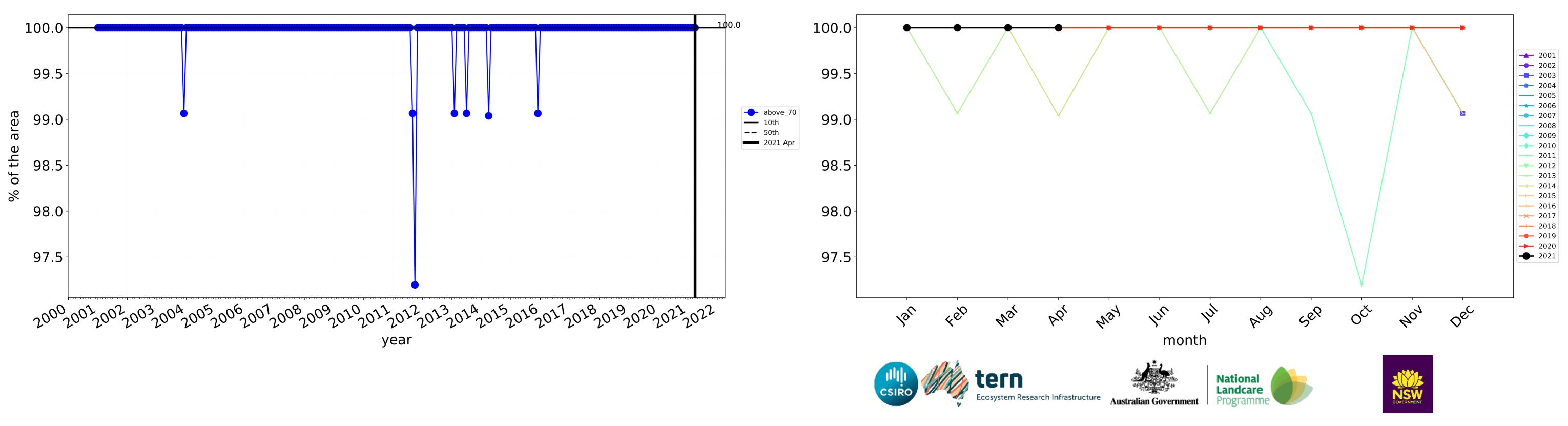




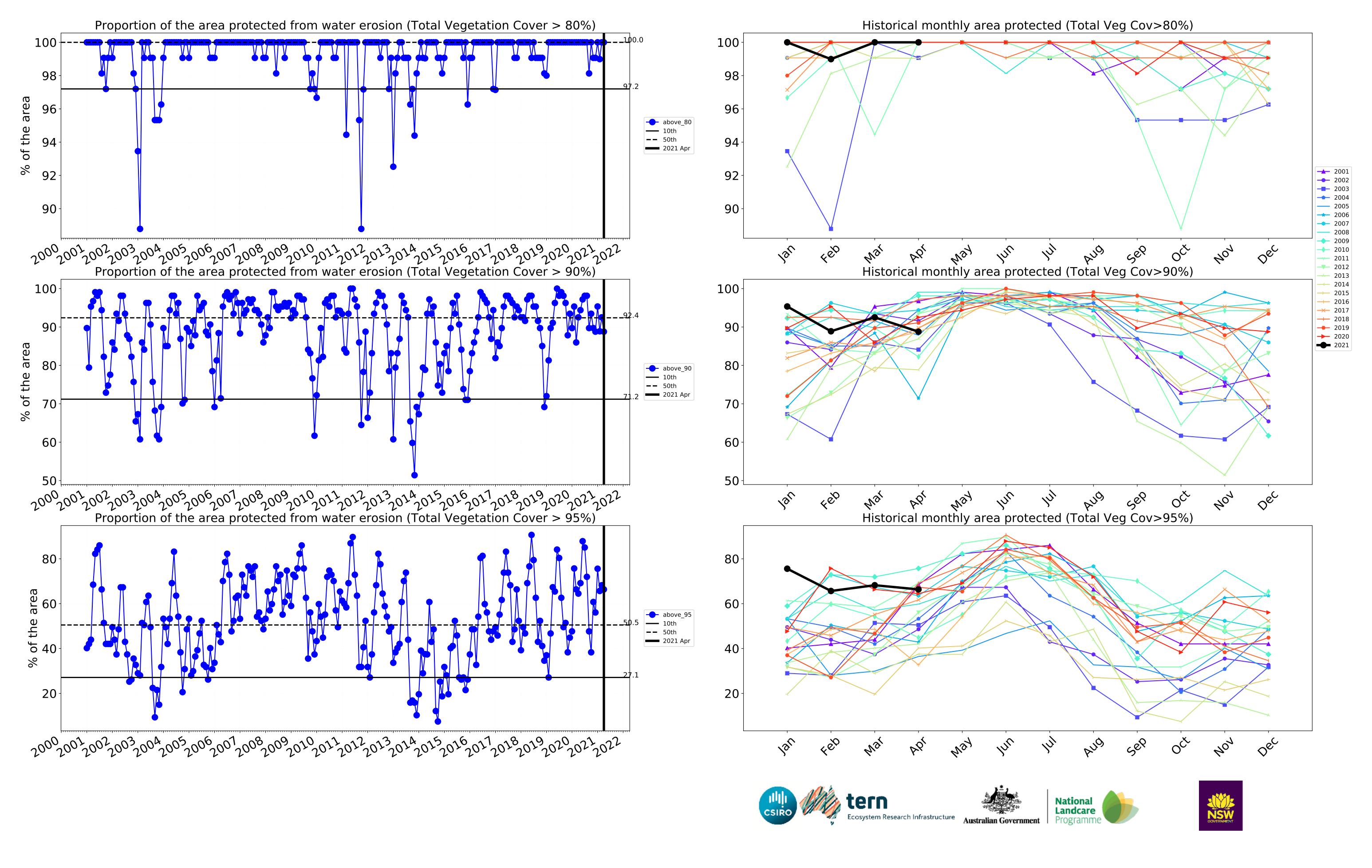
Grazing Woodland forest timeseries



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



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



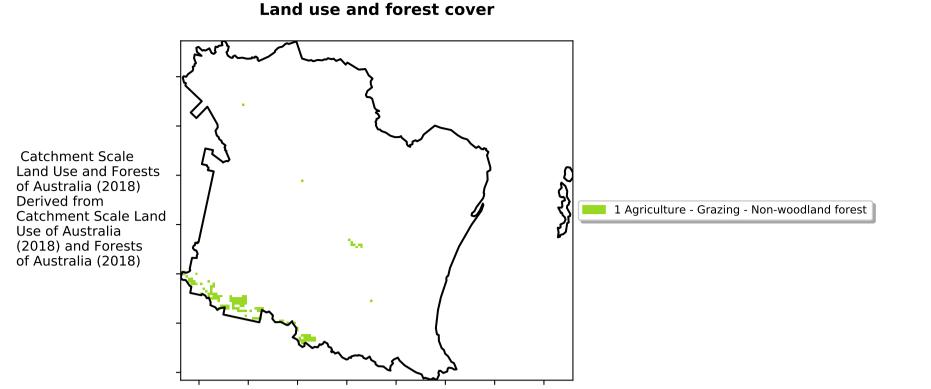
Grazing - Forest (non woodland)

1200-2000

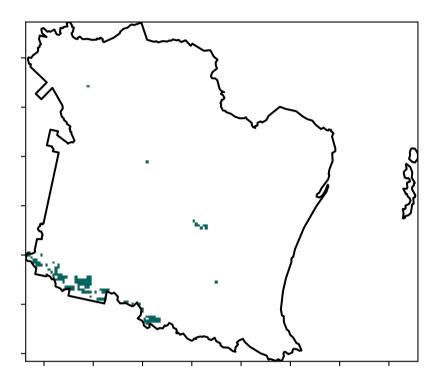
52°10-70°10

320050010

· 0.30%



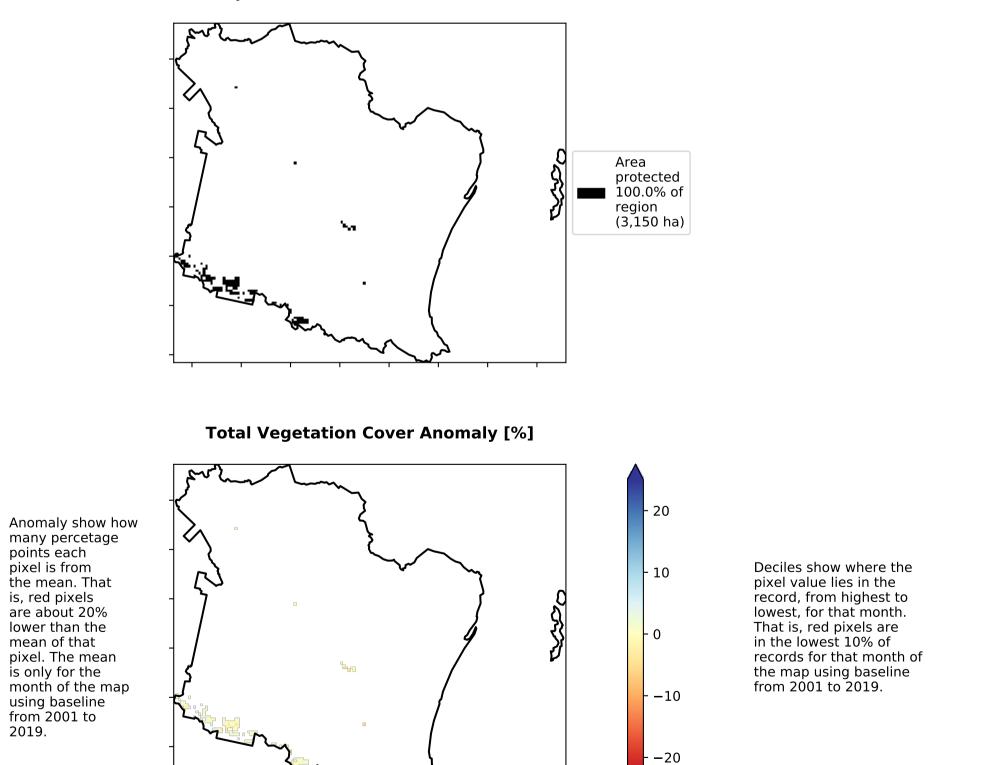
Total Vegetation Cover [%]



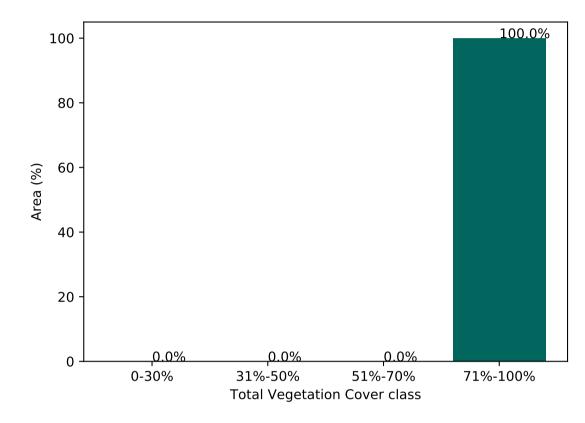
% Area protected from water erosion (>70%)

is, red pixels

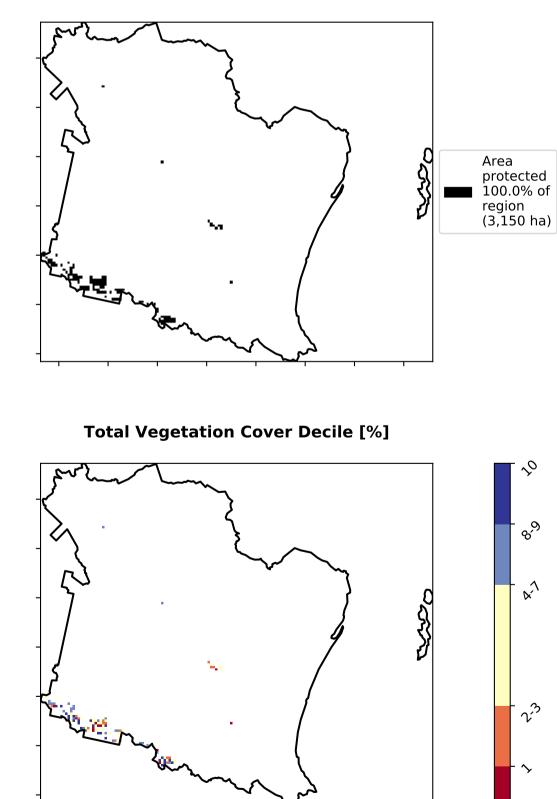
mean of that



Proportion of vegetation cover class in area

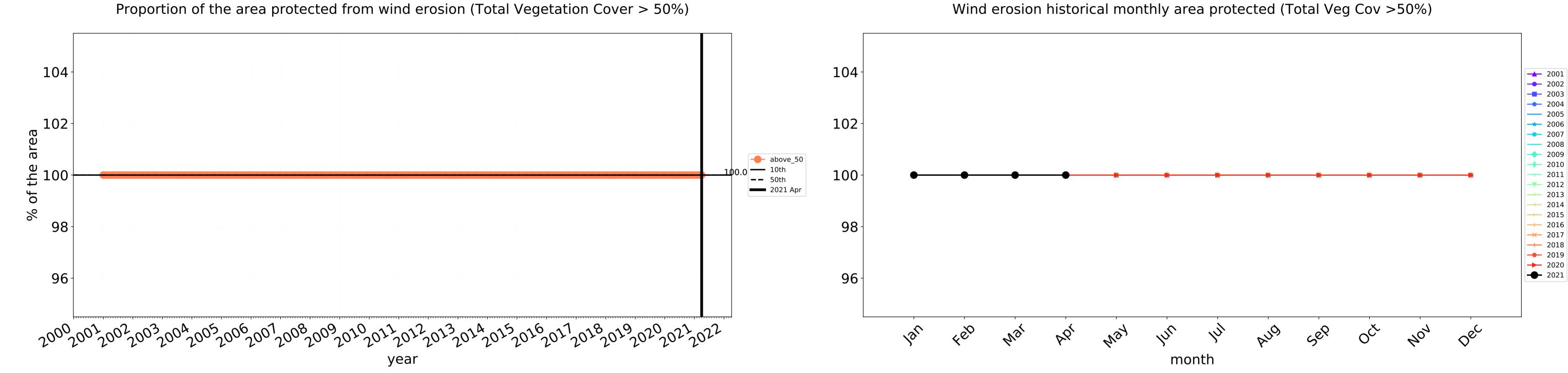


% Area protected from wind erosion (>50%)

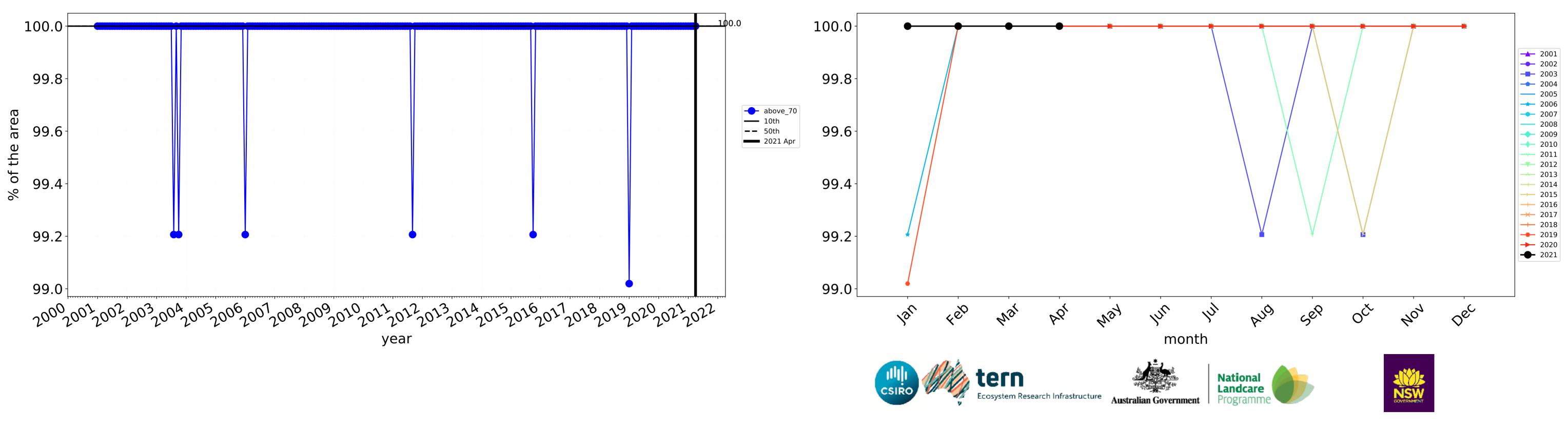




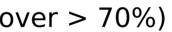




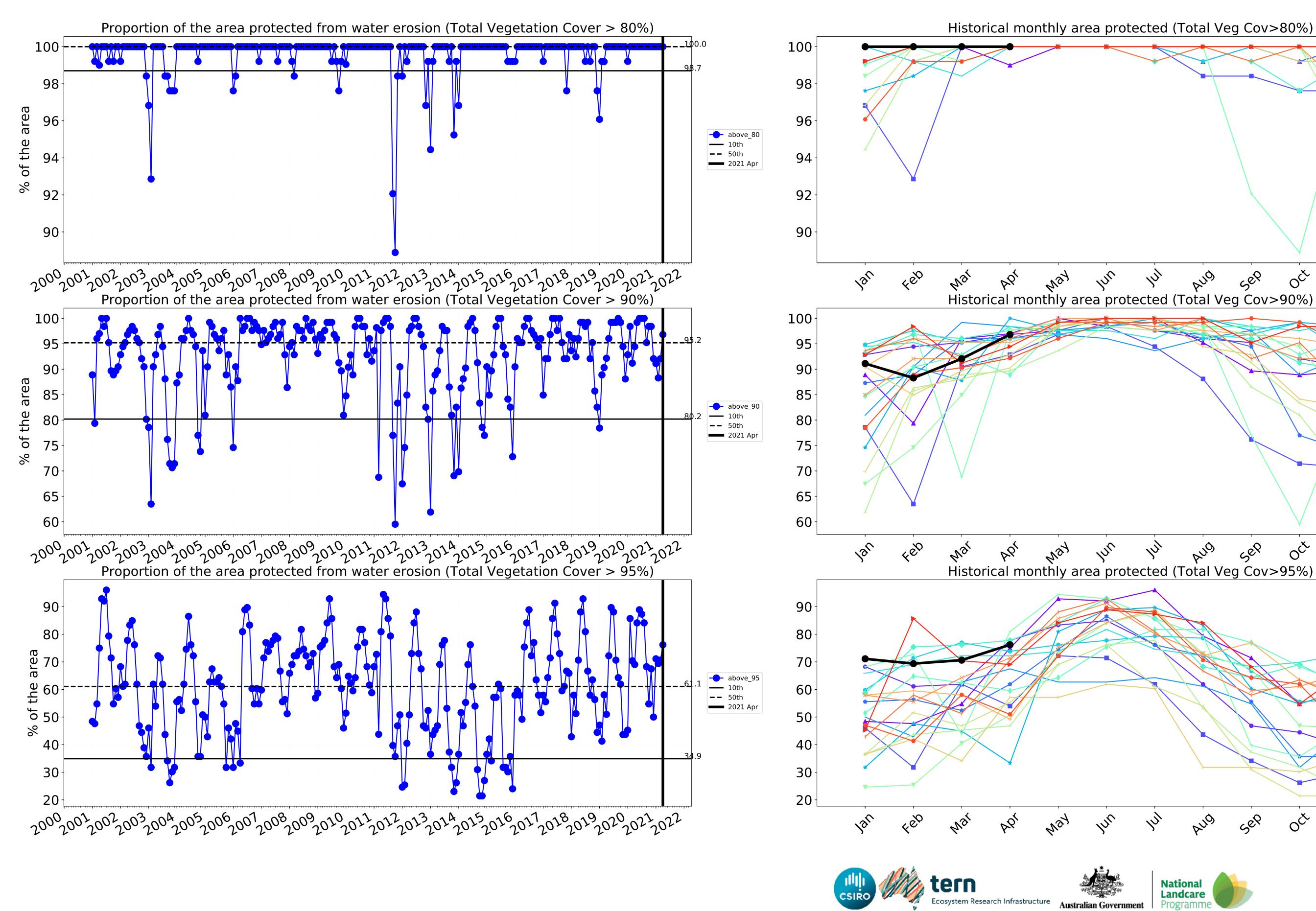
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

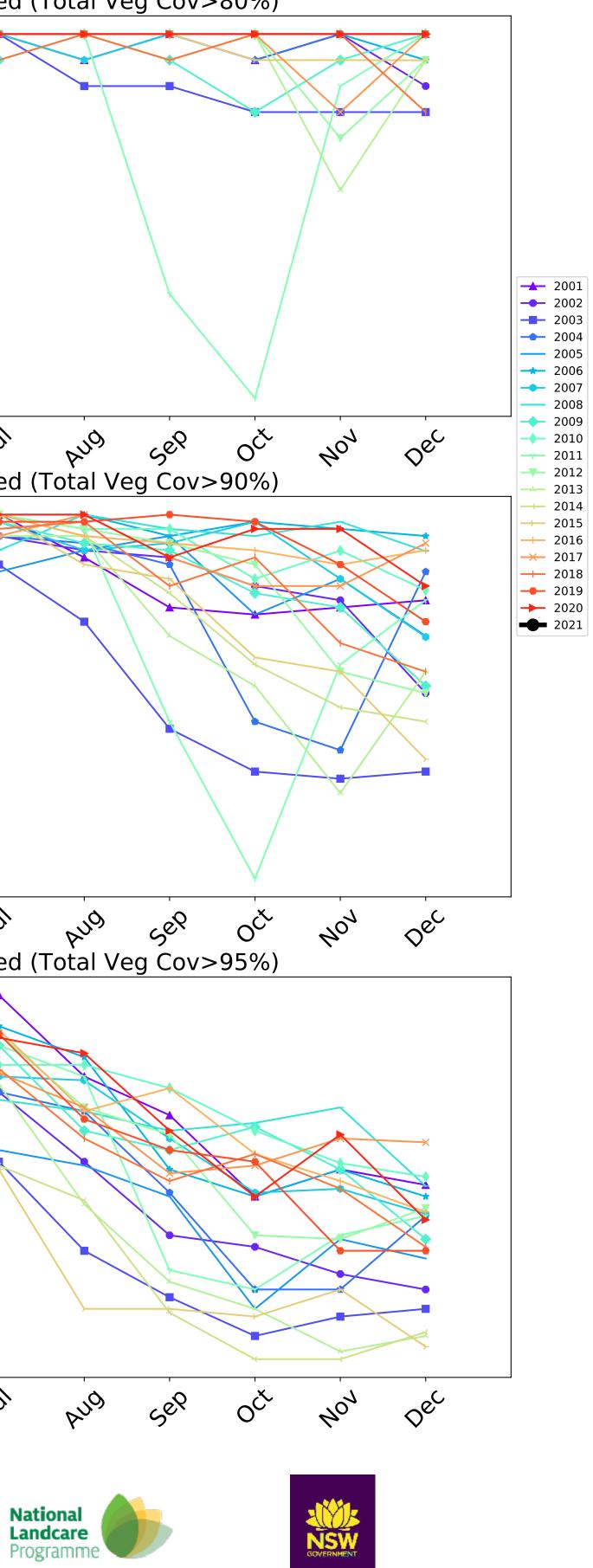


Grazing - Forest (non woodland) timeseries



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





Cropping

12%200%

52000 TOOL

32%50%

0.30%

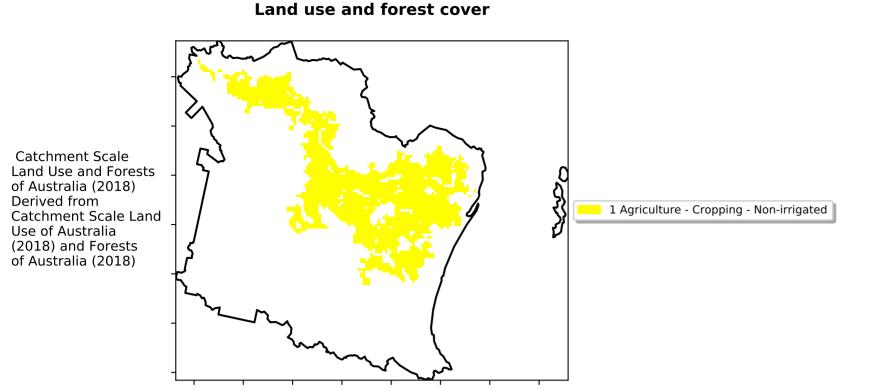
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- 10

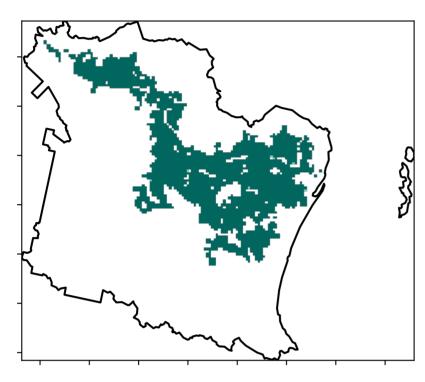
0

-10

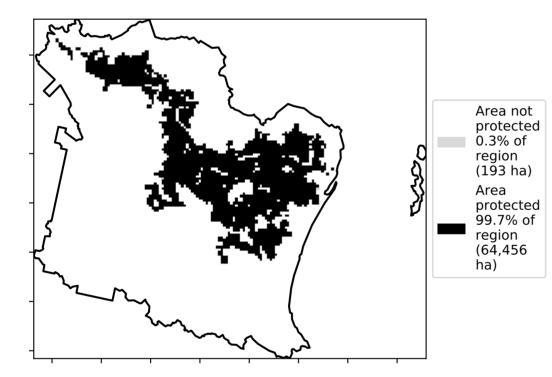
-20



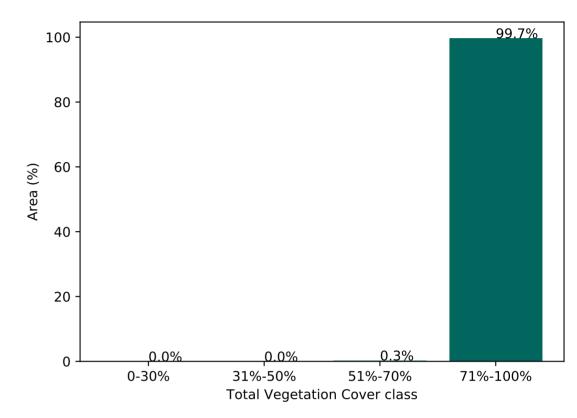
Total Vegetation Cover [%]



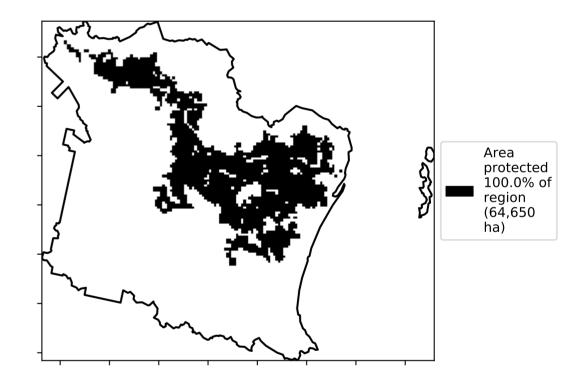
% Area protected from water erosion (>70%)





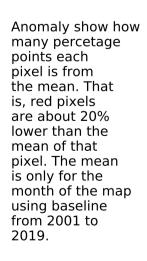


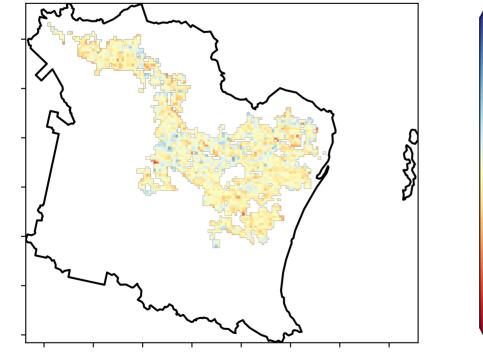
% Area protected from wind erosion (>50%)



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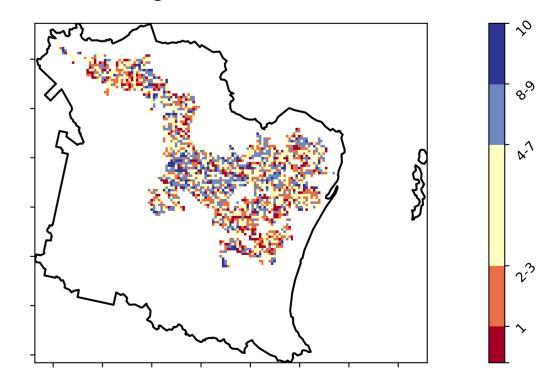
Total Vegetation Cover Anomaly [%]



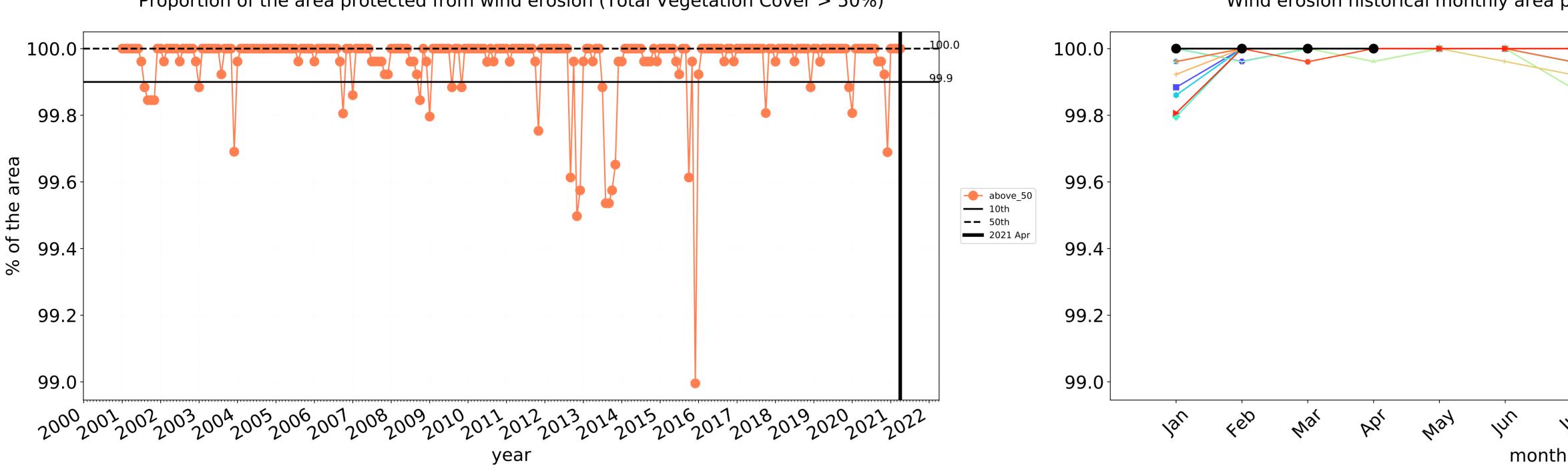


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

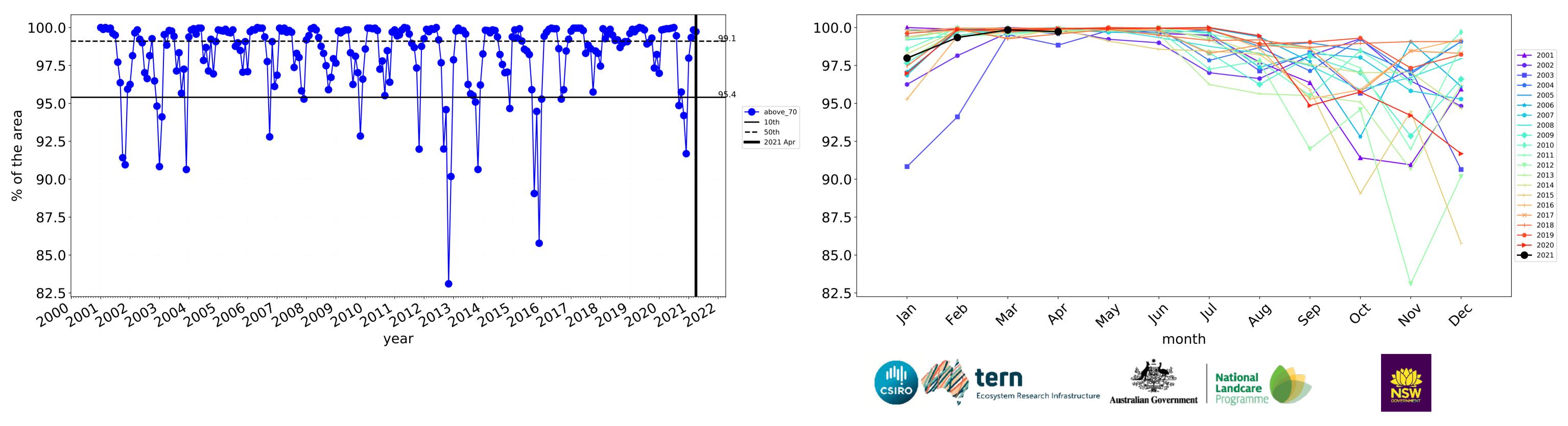






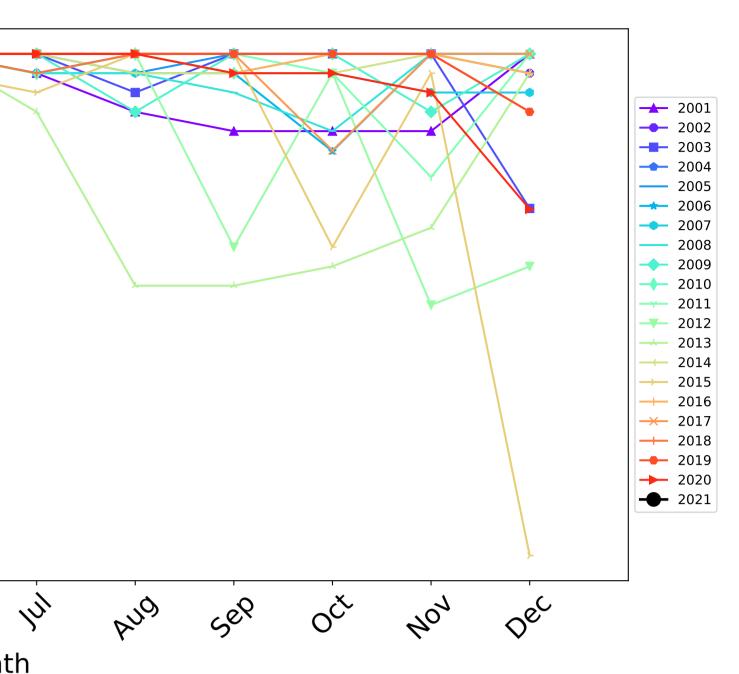
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

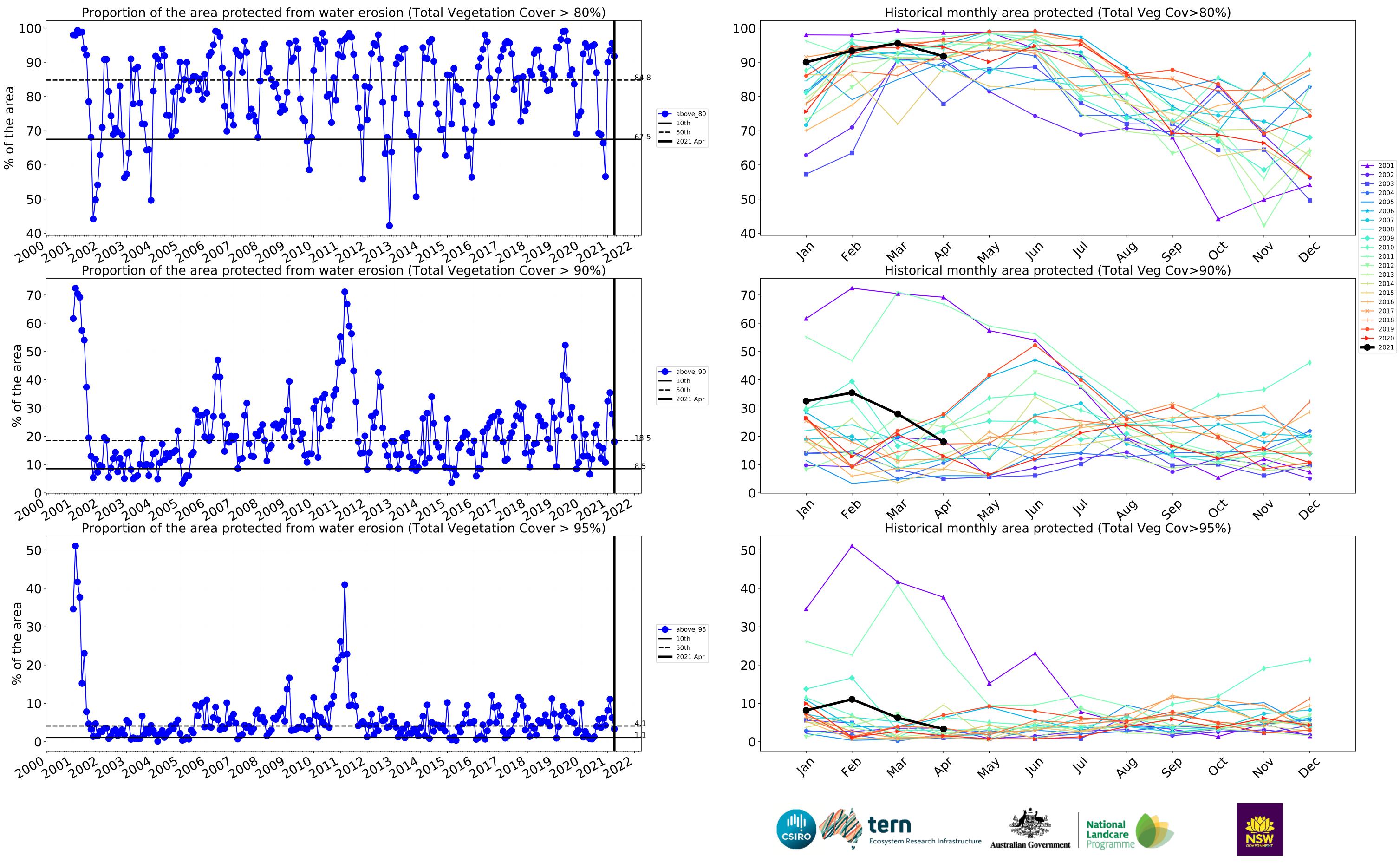
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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





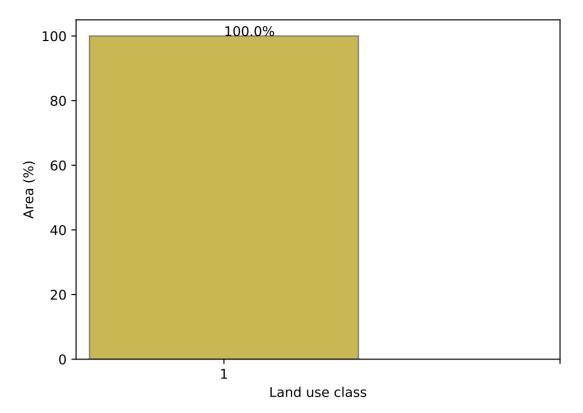


Irrigation

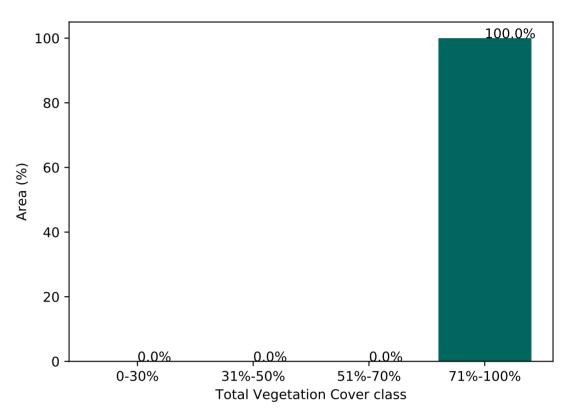
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 2 1 Agriculture - Cropping - Irrigated **Total Vegetation Cover [%]** 12%200% 2 52°1070°10

Land use and forest cover

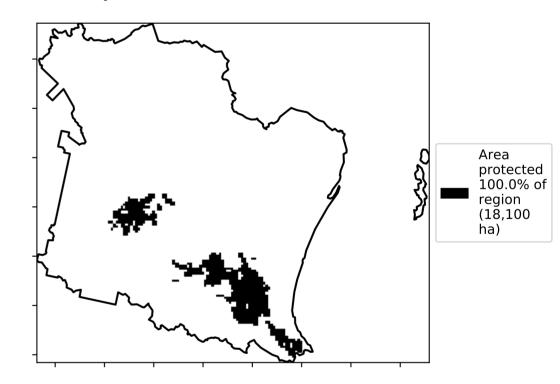
Proportion of each land class in area

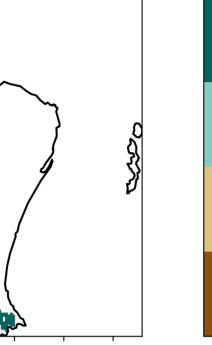


Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





32005001

0.30%

- 20

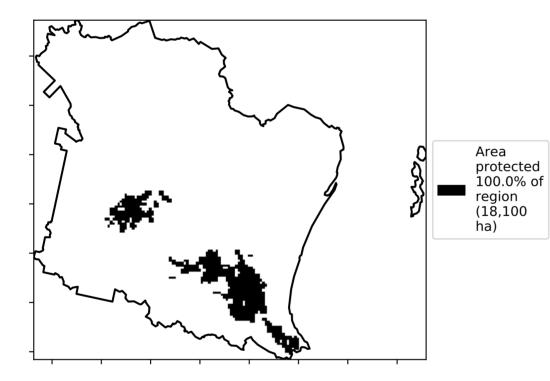
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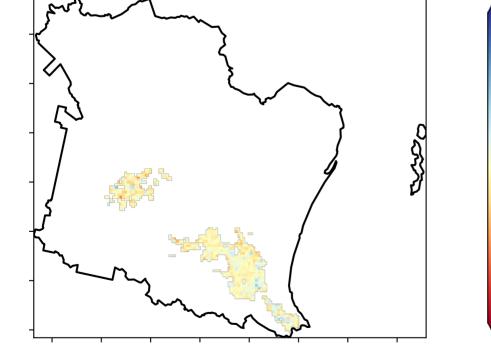
-20

% Area protected from water erosion (>70%)



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.



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.

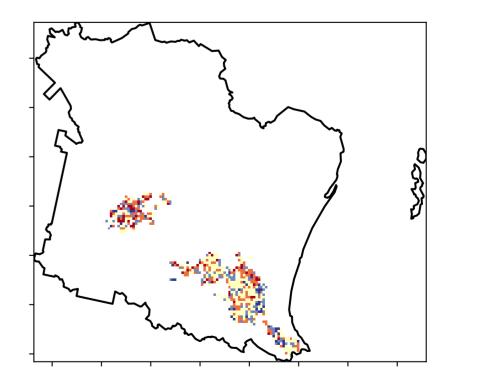
Total Vegetation Cover Decile [%]

\$

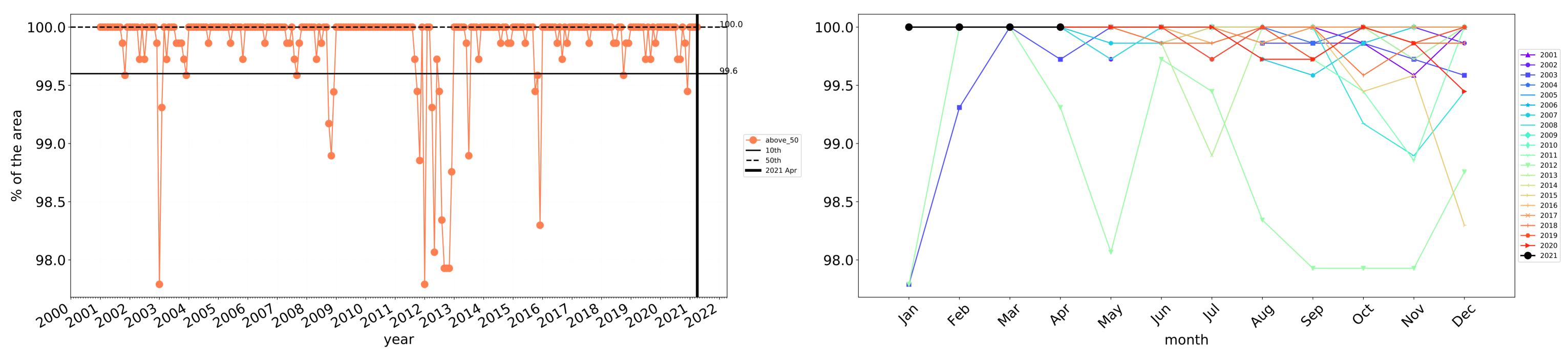
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A-1

2.3

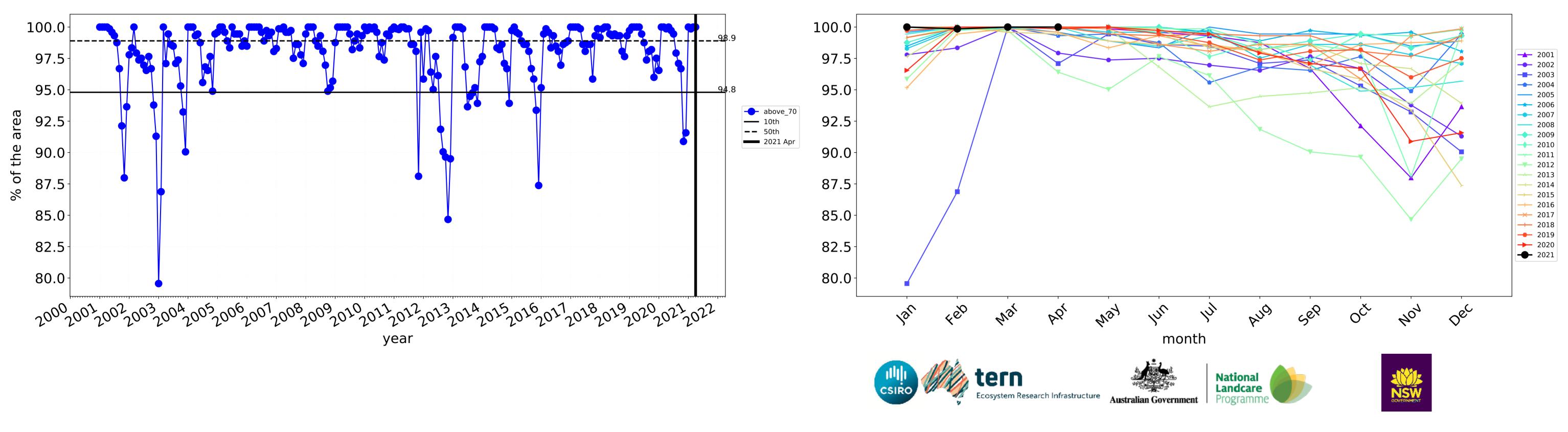


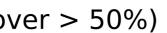




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

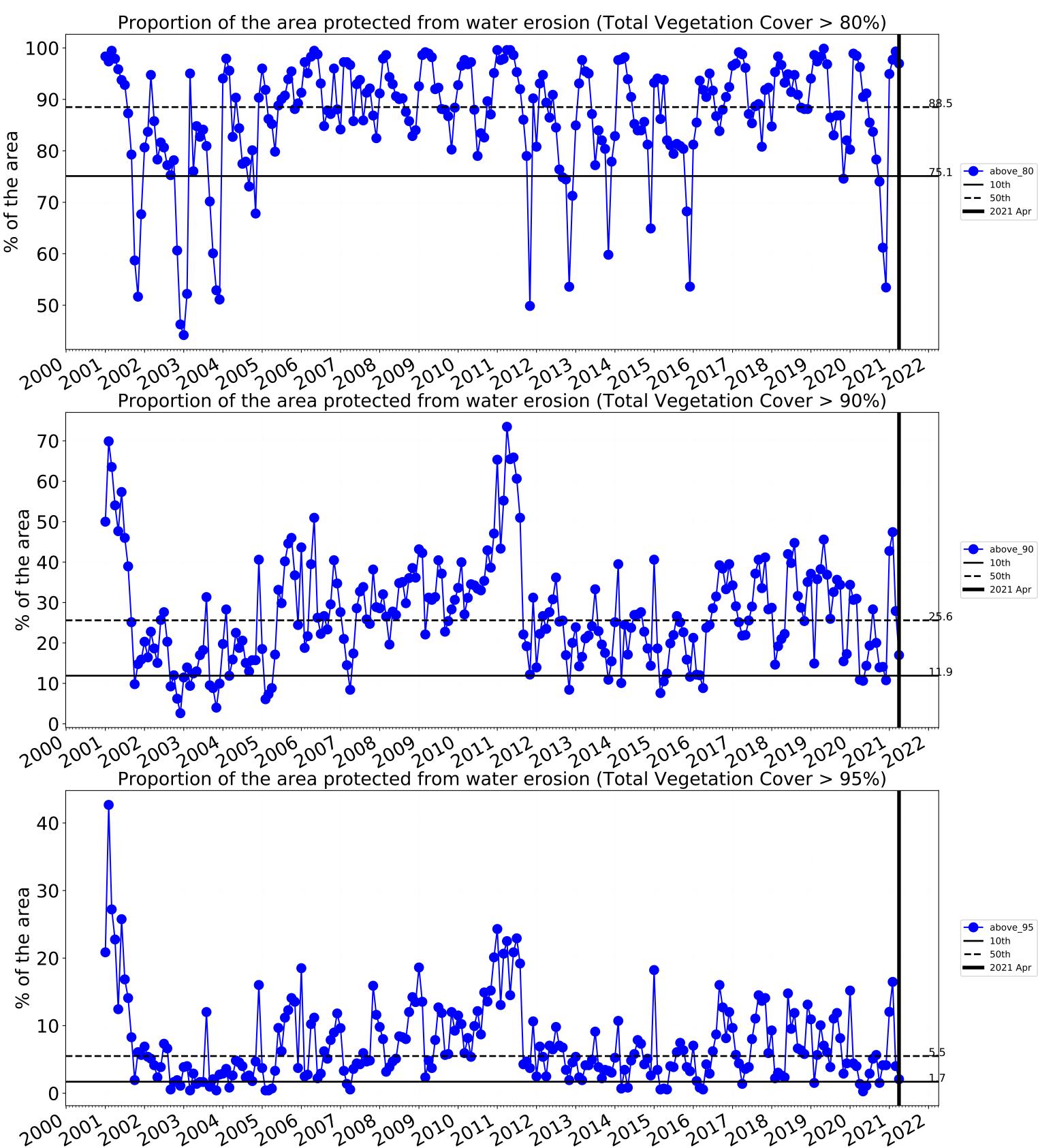
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

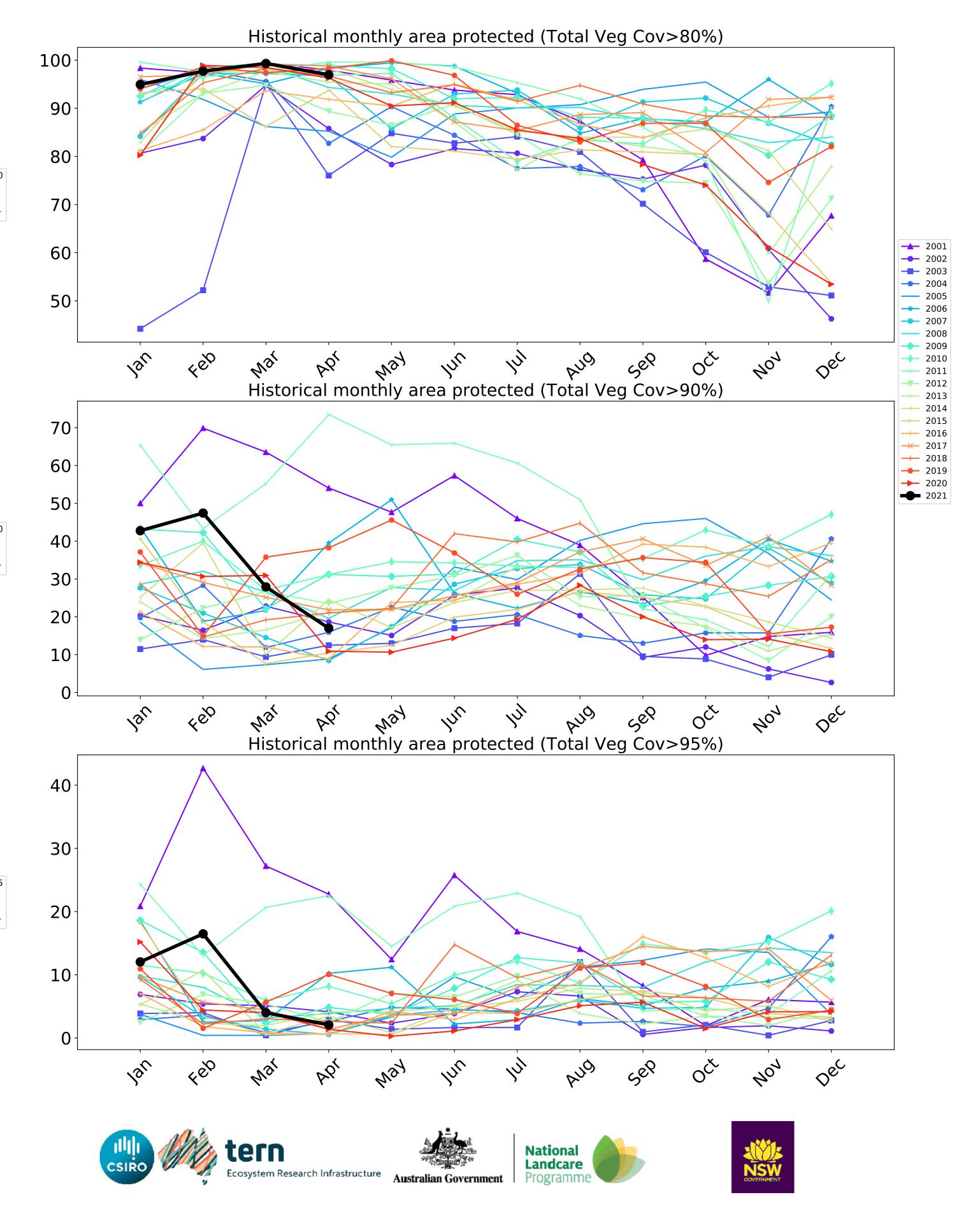




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

12º10-100'

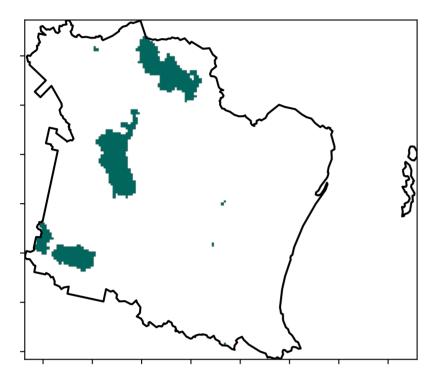
52°1070°1

32%50%

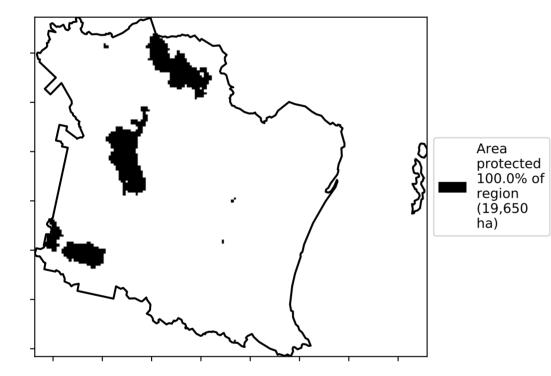
0.30%

Total Vegetation Cover [%]

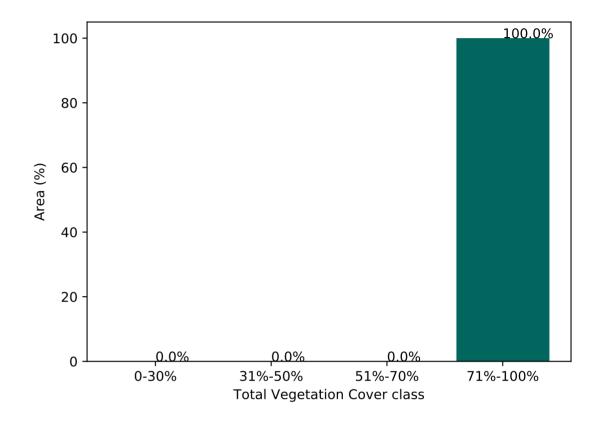
Land use and forest cover



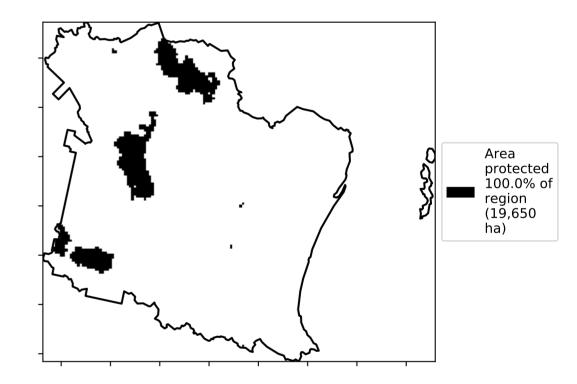
% Area protected from water erosion (>70%)



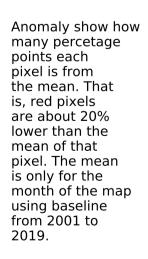
Proportion of vegetation cover class in area

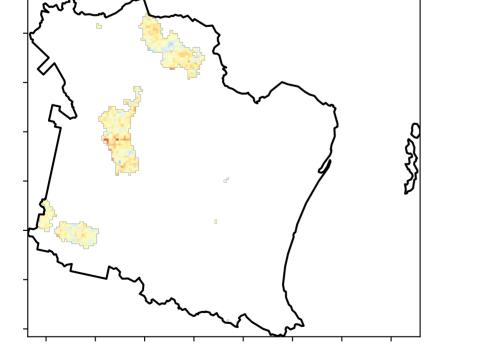


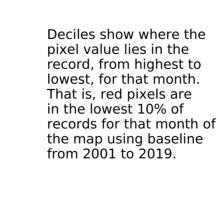
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]







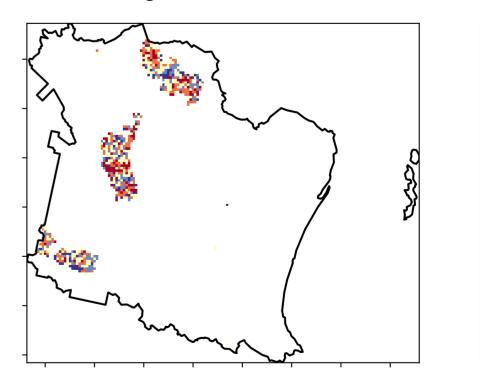
Total Vegetation Cover Decile [%]

\$

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23





32

- 20

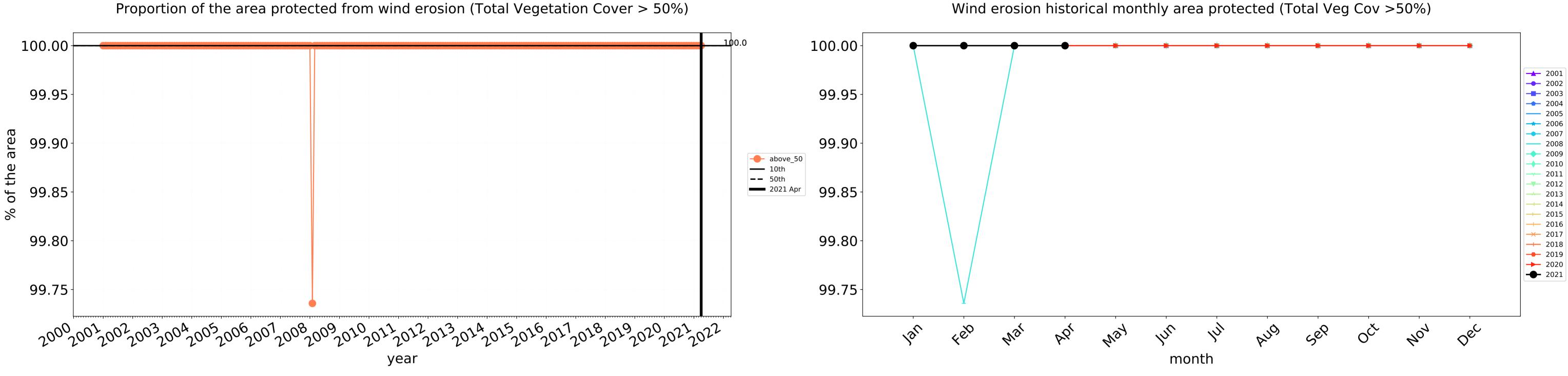
- 10

0

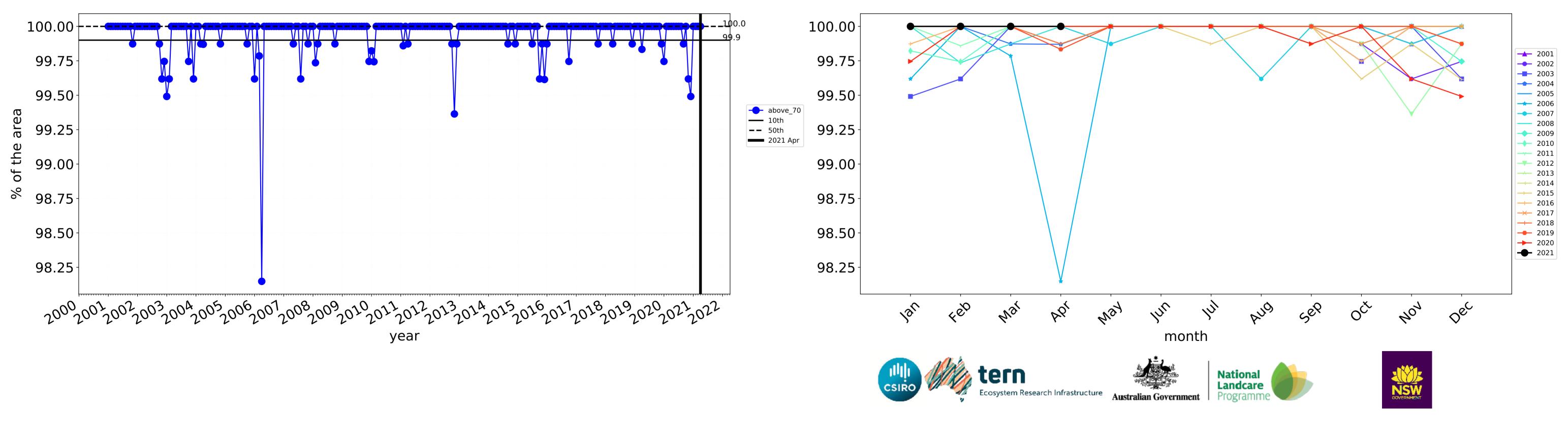
-10

-20

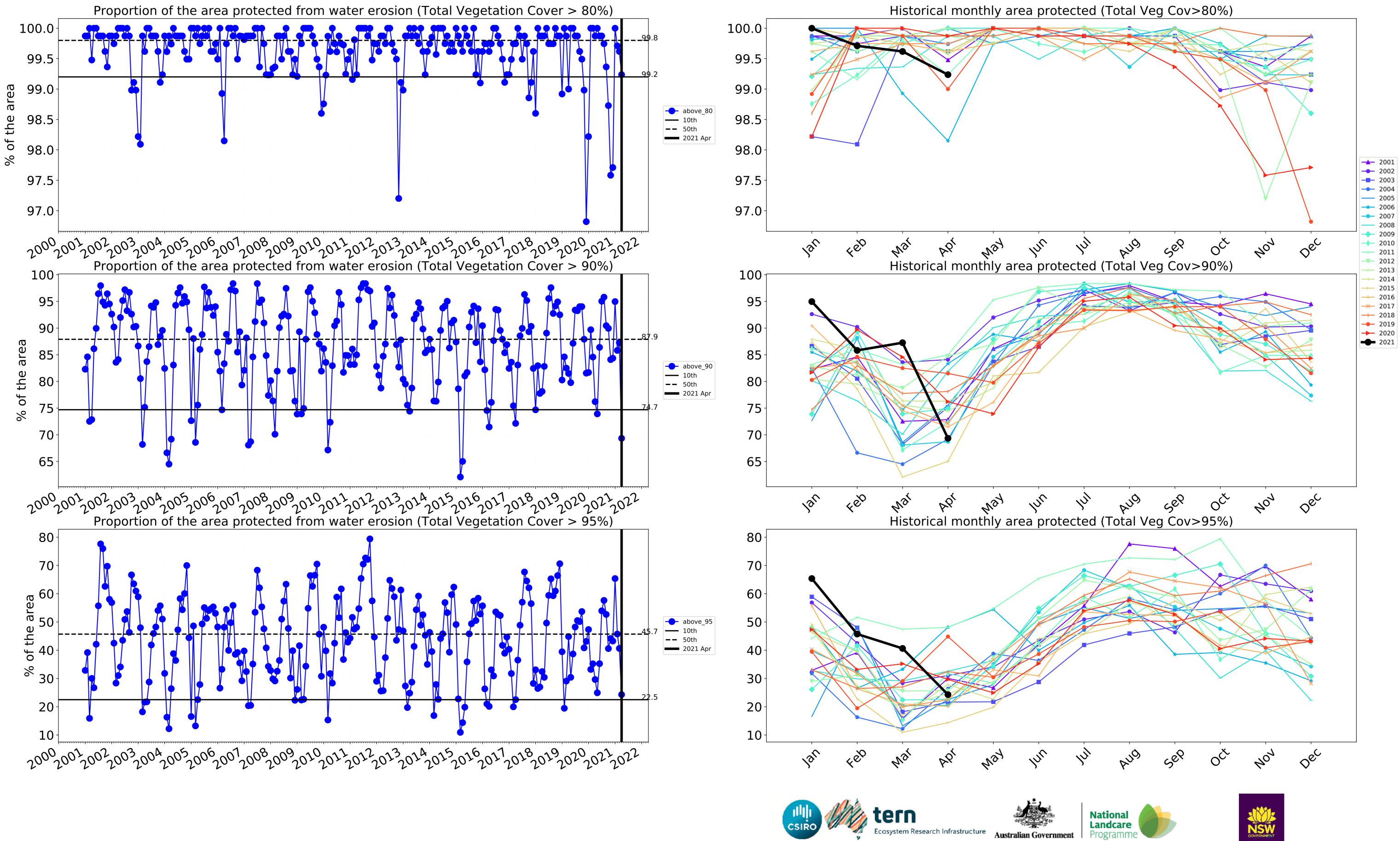
Production native forests and plantation forests timeseries



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



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



Hinchinbrook_(S) (277,625 ha and no data 3,037 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	277,625	100.0% 277,525	99.8% 277,150	99.3% 275,575	94.7% 262,900	53.5% 148,500	19.9% 55,175
Conservation and natural environments	130,225	100.0% 130,175	99.8% 129,975	99.5% 129,625	98.7% 128,550	79.5% 103,500	31.3% 40,725
Conservation and natural environments Woodland forest	46,025	100.0% 46,025	99.9% 45,975	99.8% 45,925	99.2% 45,650	80.1% 36,875	24.4% 11,250
Conservation and natural environments Forest (non woodland)	82,425	99.9% 82,375	99.8% 82,225	99.5% 82,000	98.6% 81,300	80.0% 65,925	35.5% 29,225
Agriculture	104,700	100.0% 104,700	100.0% 104,700	99.8% 104,525	93.7% 98,075	25.0% 26,175	7.3% 7,675
Grazing	21,925	100.0% 21,925	100.0% 21,925	100.0% 21,925	96.6% 21,175	52.1% 11,425	23.5% 5,150
Grazing non forest	16,100	100.0% 16,100	100.0% 16,100	100.0% 16,100	95.3% 15,350	37.3% 6,000	6.1% 975
Grazing Woodland forest	2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	100.0% 2,675	88.8% 2,375	66.4% 1,775
Grazing - Forest (non woodland)	3,150	100.0% 3,150	100.0% 3,150	100.0% 3,150	100.0% 3,150	96.8% 3,050	76.2% 2,400
Cropping	64,650	100.0% 64,650	100.0% 64,650	99.7% 64,475	91.8% 59,325	18.1% 11,675	3.3% 2,150
Irrigation	18,100	100.0% 18,100	100.0% 18,100	100.0% 18,100	97.0% 17,550	17.0% 3,075	2.1% 375
Production native forests and plantation forests	19,650	100.0% 19,650	100.0% 19,650	100.0% 19,650	99.2% 19,500	69.3% 13,625	24.3% 4,775

