Total vegetation cover soil protection Region:NRM Burnett Mary QLD

Date: March 2020

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

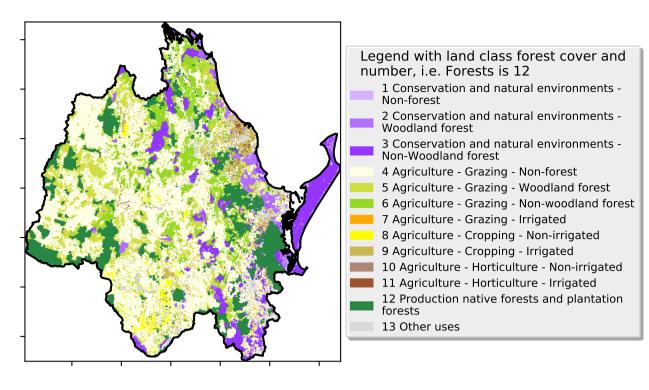


Vegetation Cover Mar 2020

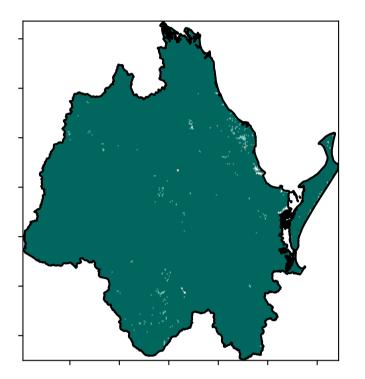
Land use and forest cover

Proportion of each land class in area

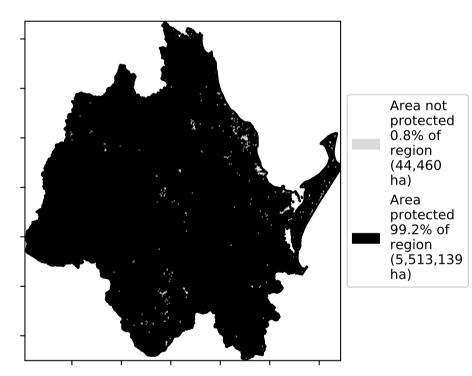


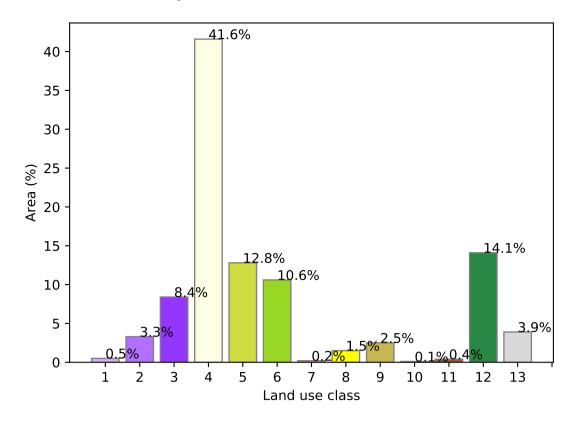


Total Vegetation Cover [%]

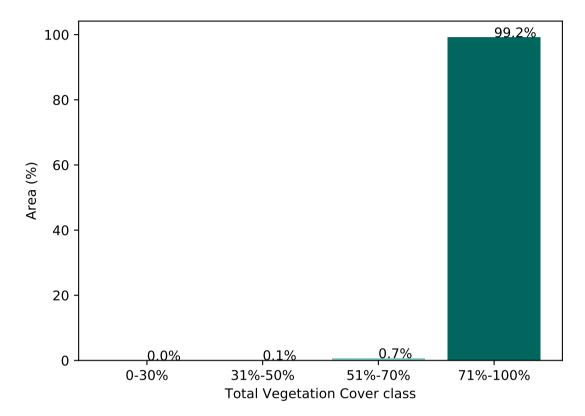


% Area protected from water erosion (>70%)





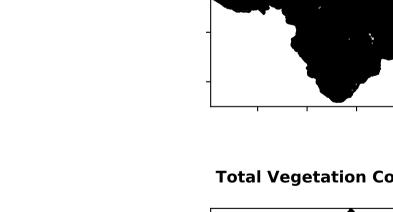
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

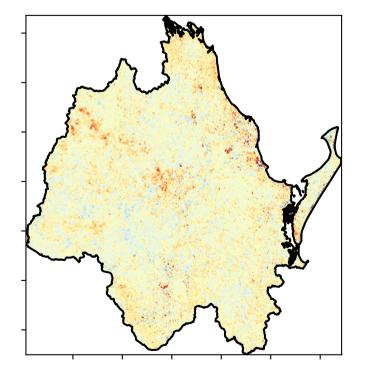


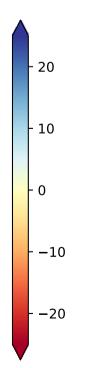
Total Vegetation Cover Anomaly [%]



Total Vegetation Cover Decile [%]

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





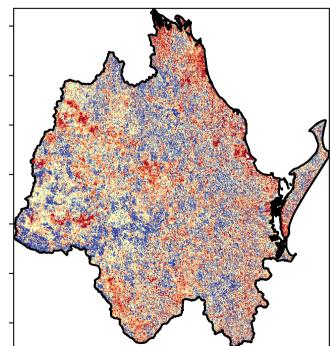
12010-200%

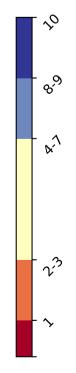
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0.30%

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



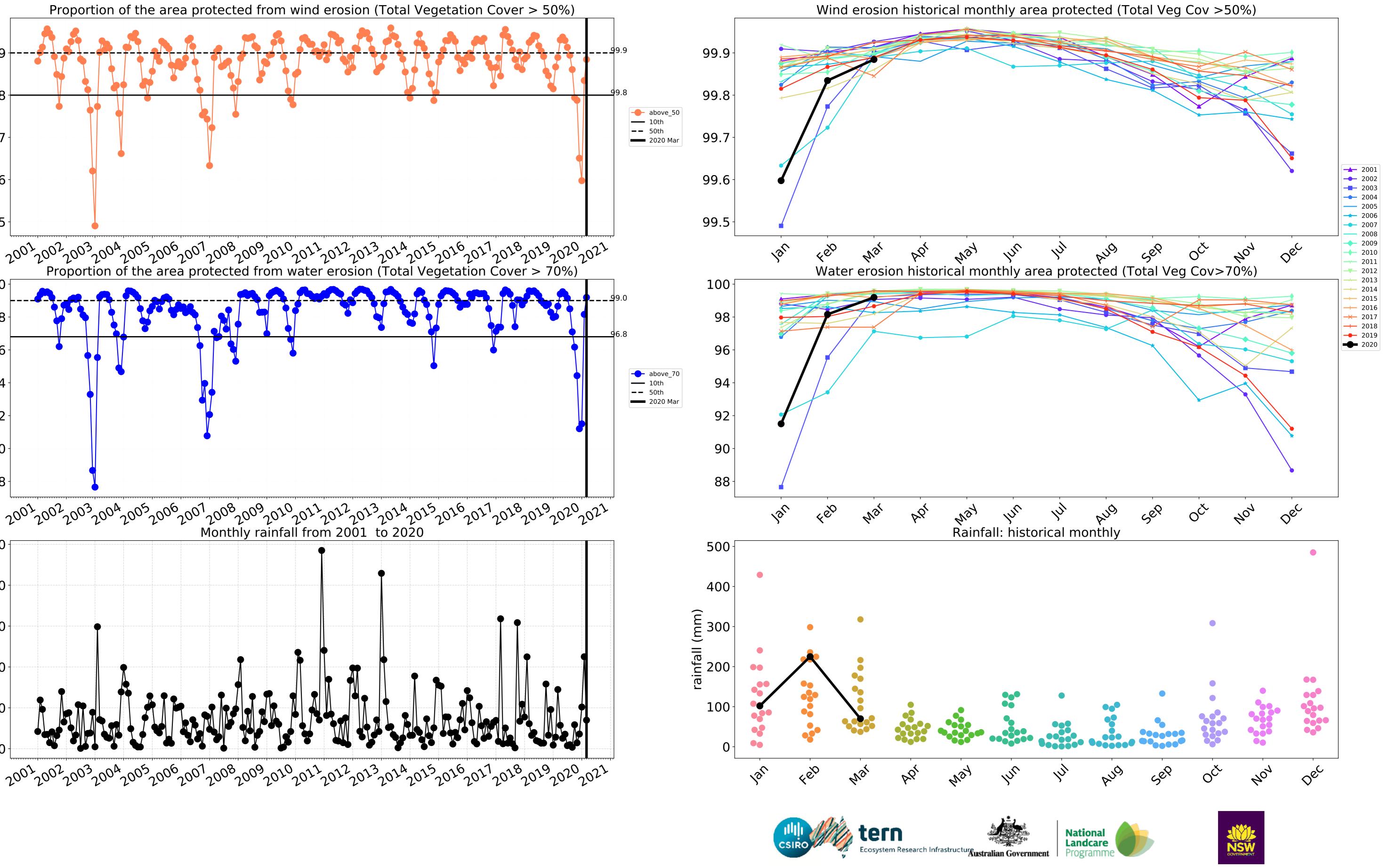


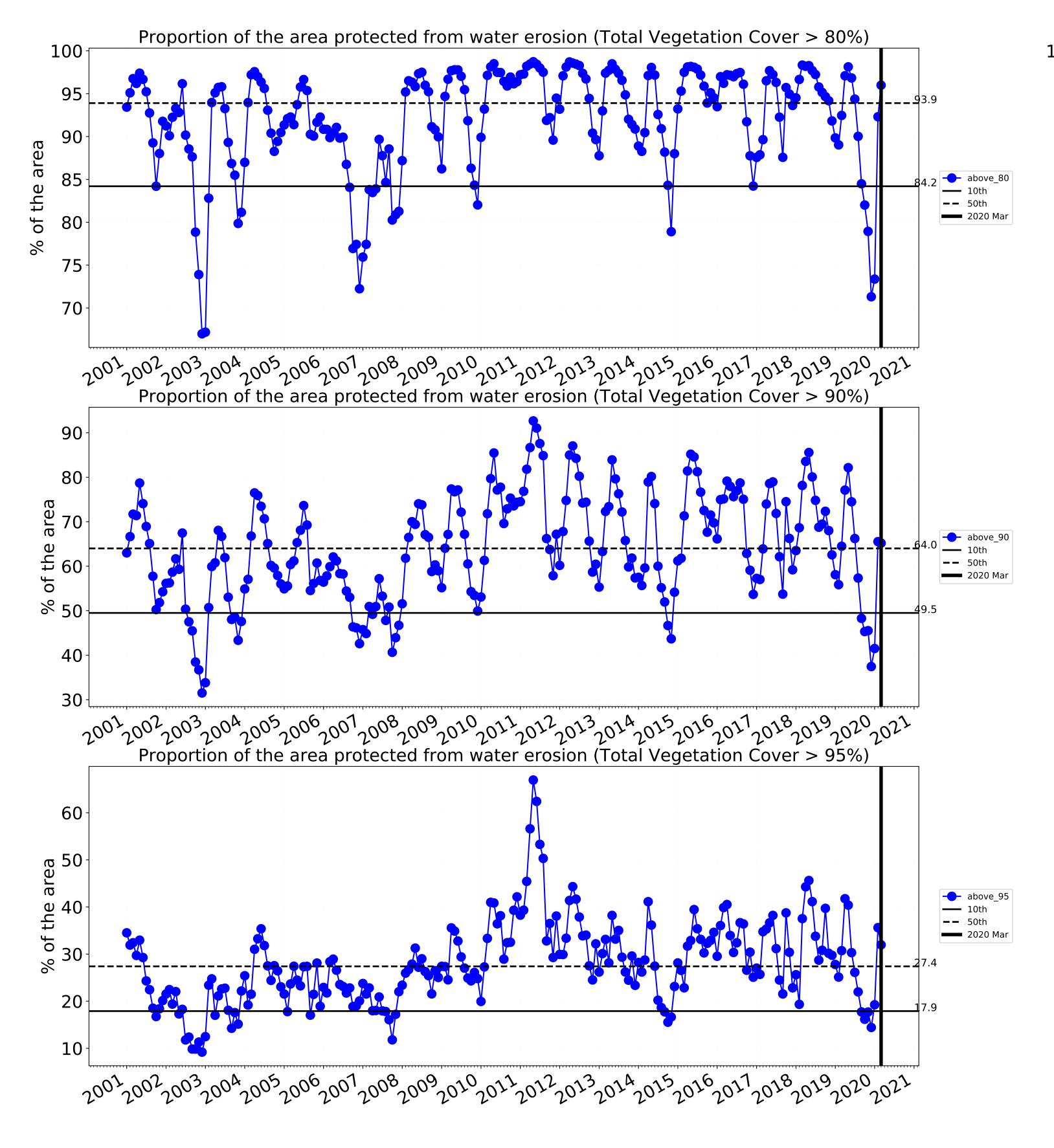


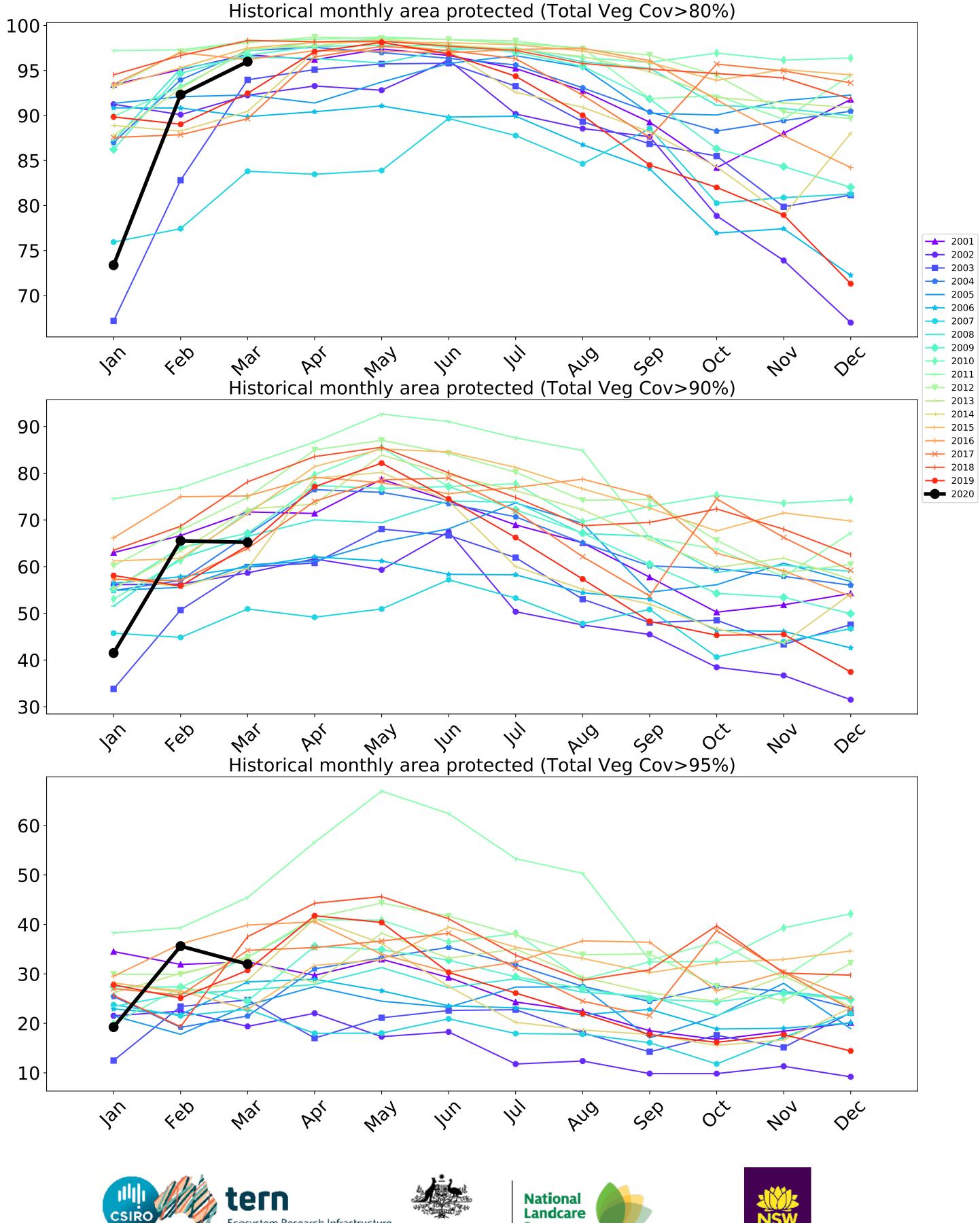
99.9 area 8.66 f the 99.7 of % 99.6 99.5 200120022003200420052006200120082009201020112012201320142015201620112018201920202021 Proportion of the area protected from water erosion (Total Vegetation Cover > 70%) 100-98 % of the area 94 92 90 88 20⁰¹20⁰²20⁰³20⁰⁴20⁰⁵20⁰⁶20¹20⁸20⁹20¹⁰20¹²20¹²20¹²20¹³20¹⁴20¹⁵20¹⁶20¹¹20¹⁸20¹⁹20²⁰20²¹ Monthly rainfall from 2001 to 2020 500 monthly rainfall [mm] 300 100 100

0

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





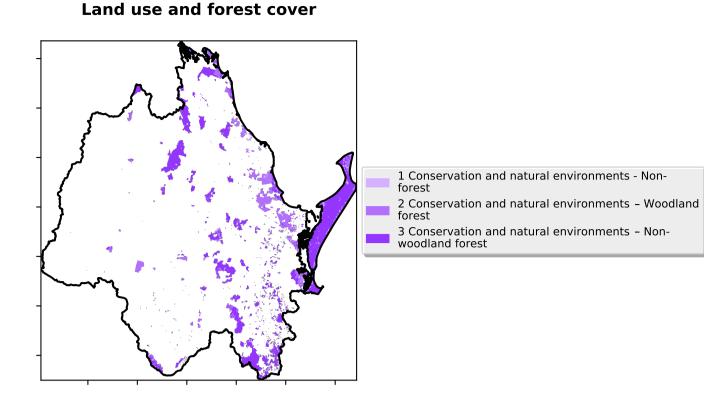




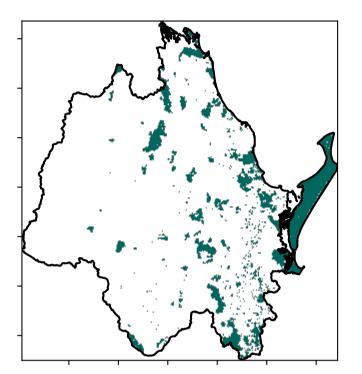
Programm

Conservation and natural environments

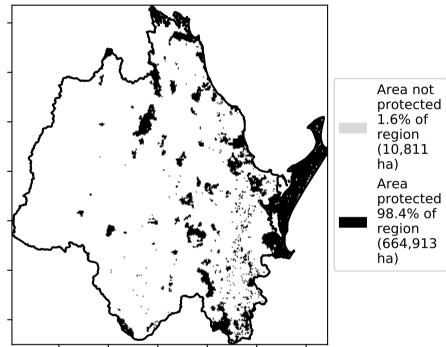
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

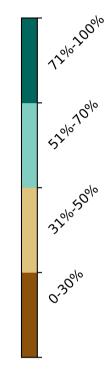


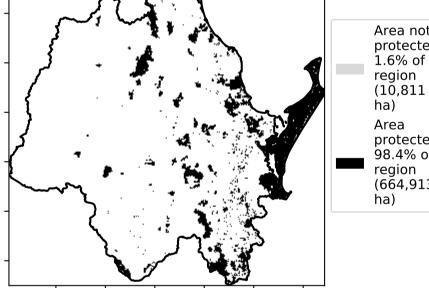
Total Vegetation Cover [%]



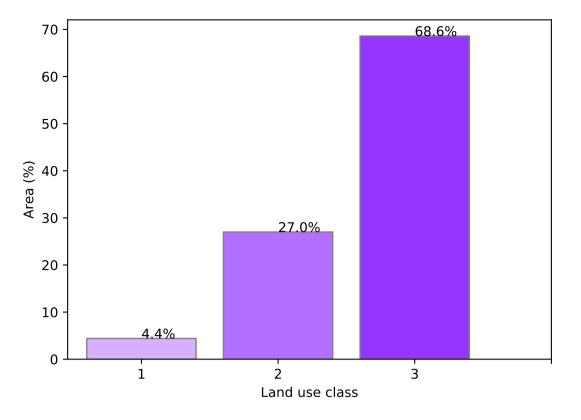




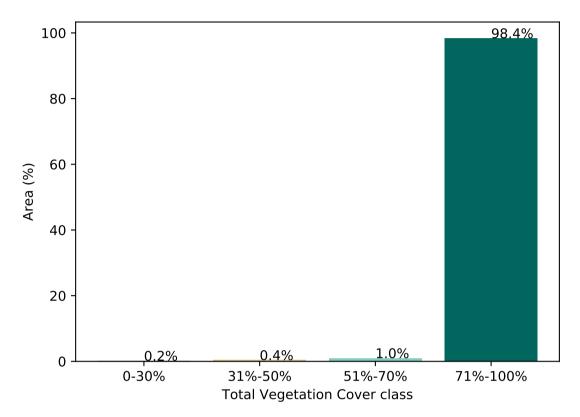




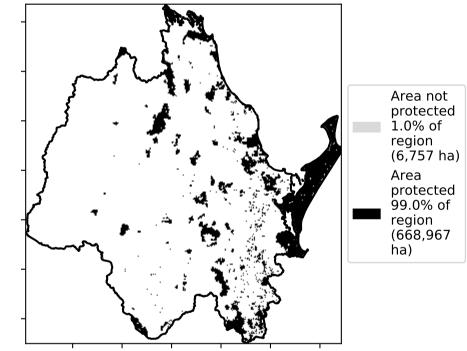
Proportion of each land class in area



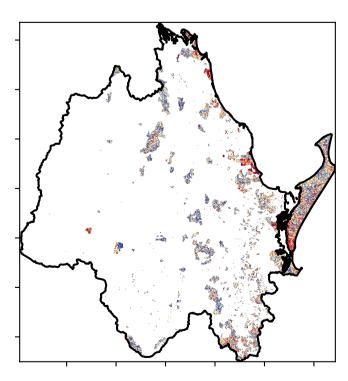
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





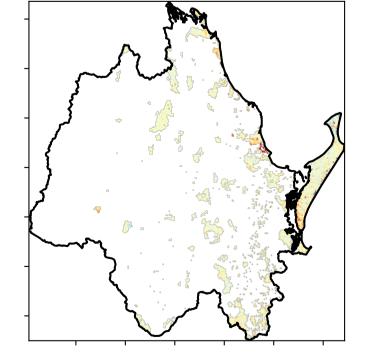
Deciles show where the pixel value lies in the

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

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

Total Vegetation Cover Anomaly [%]

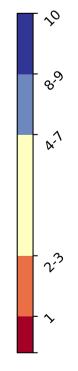
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map from 2001 to 2019.

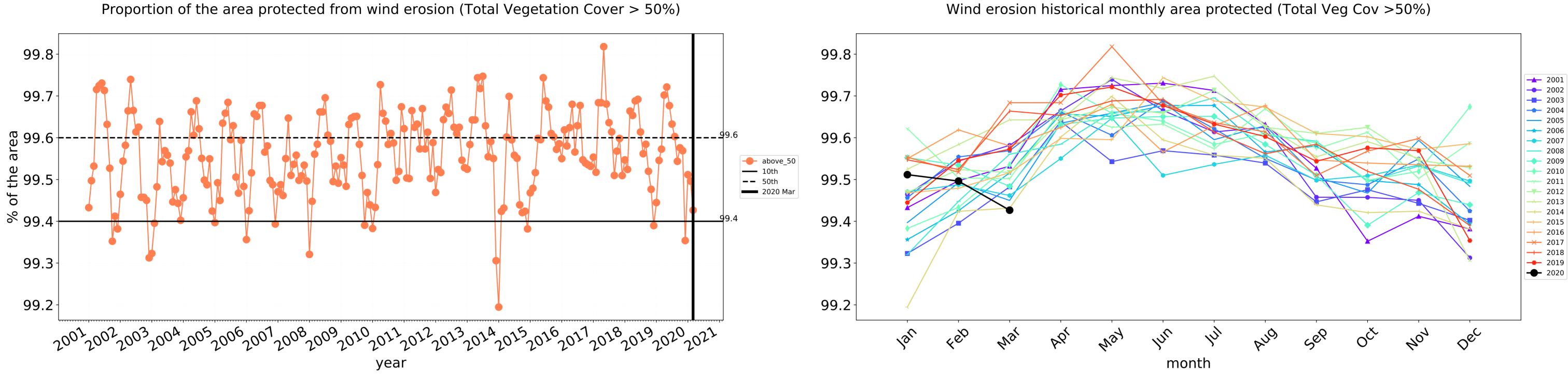


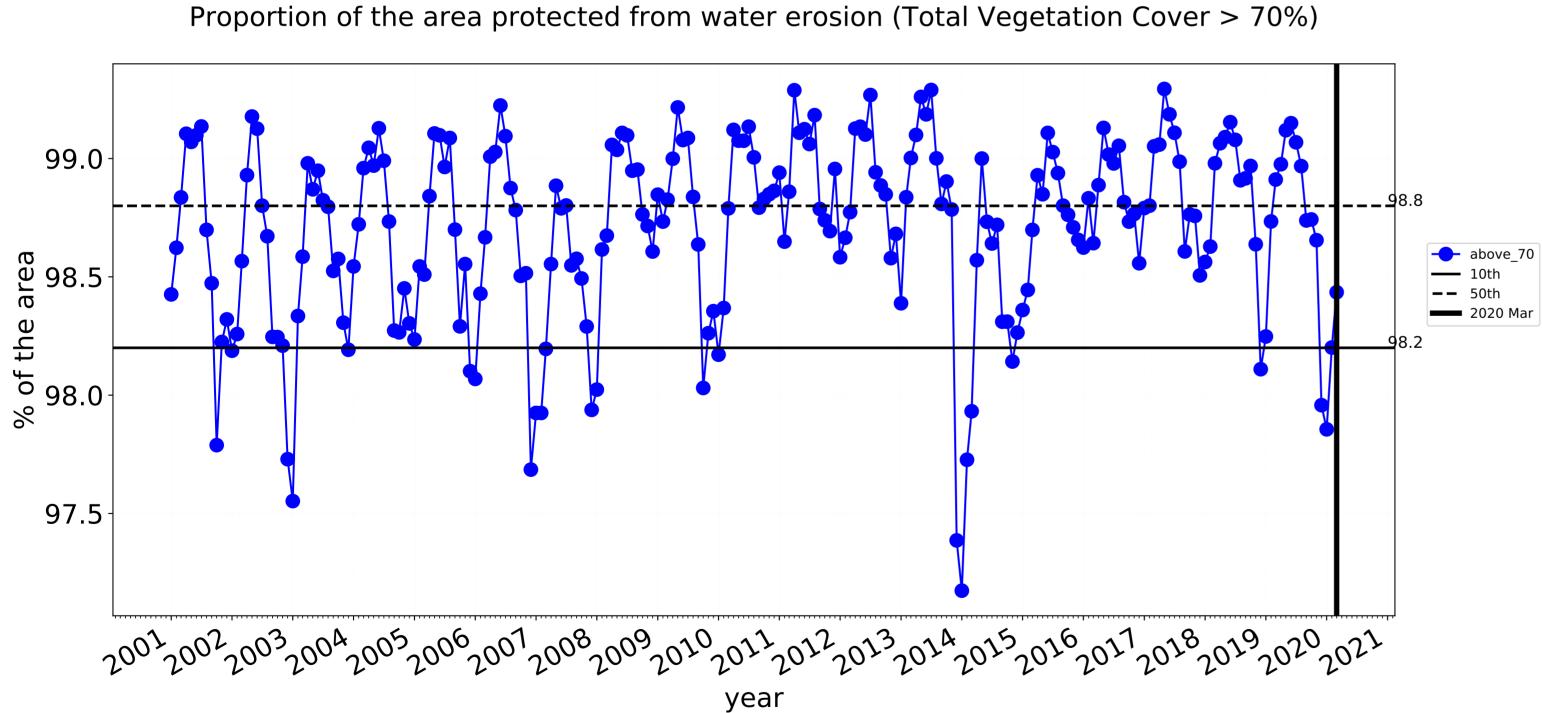


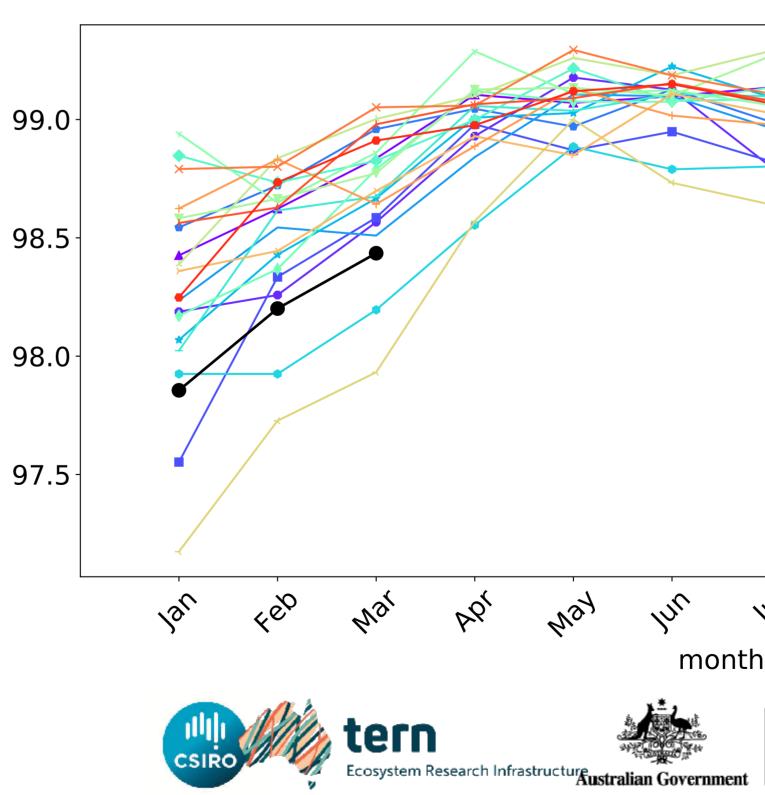
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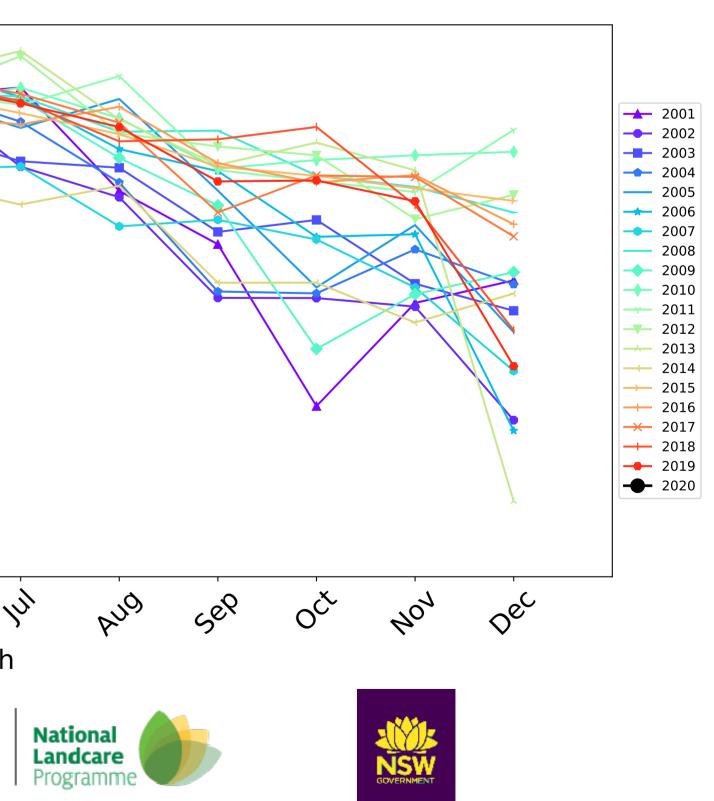


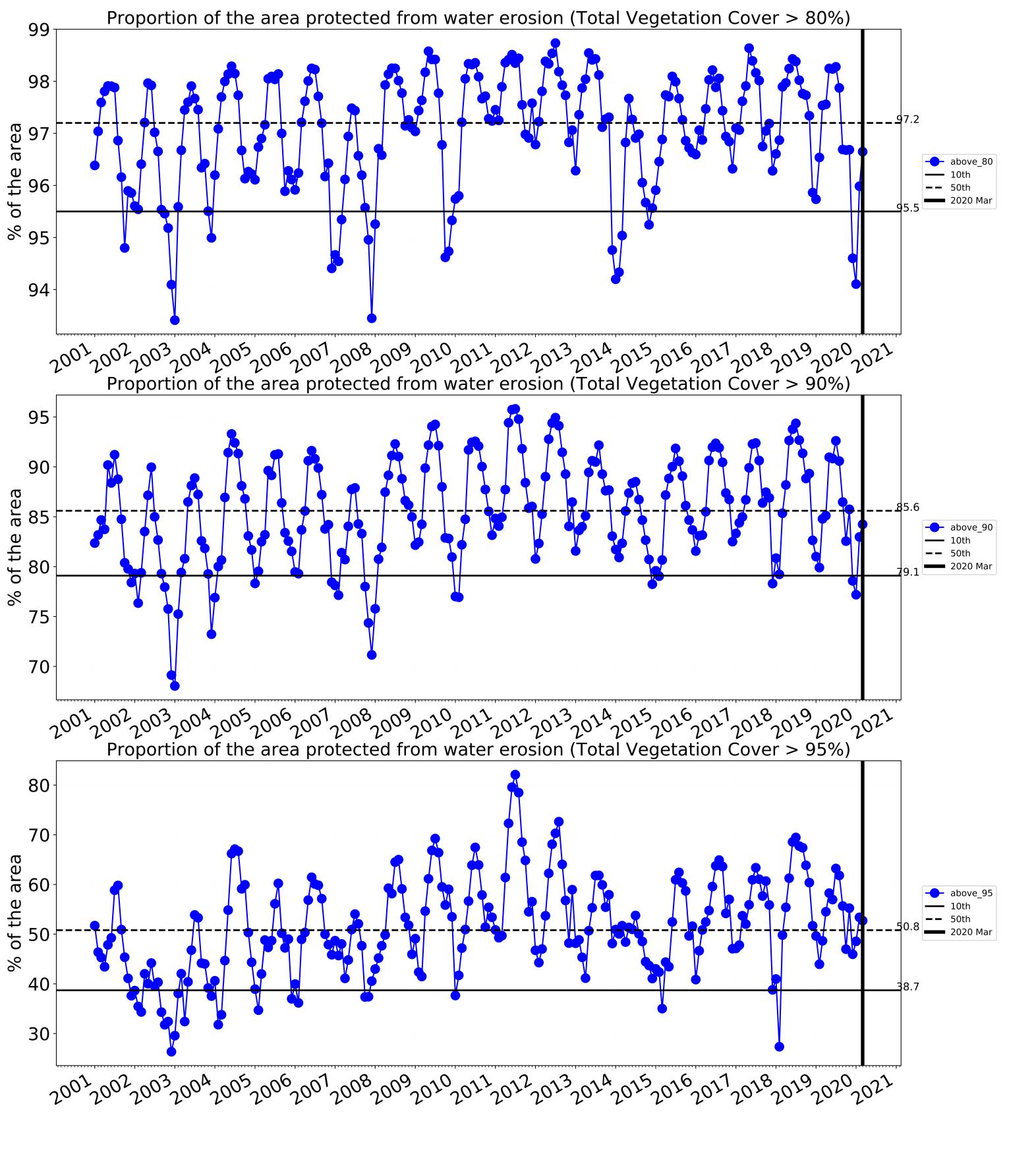


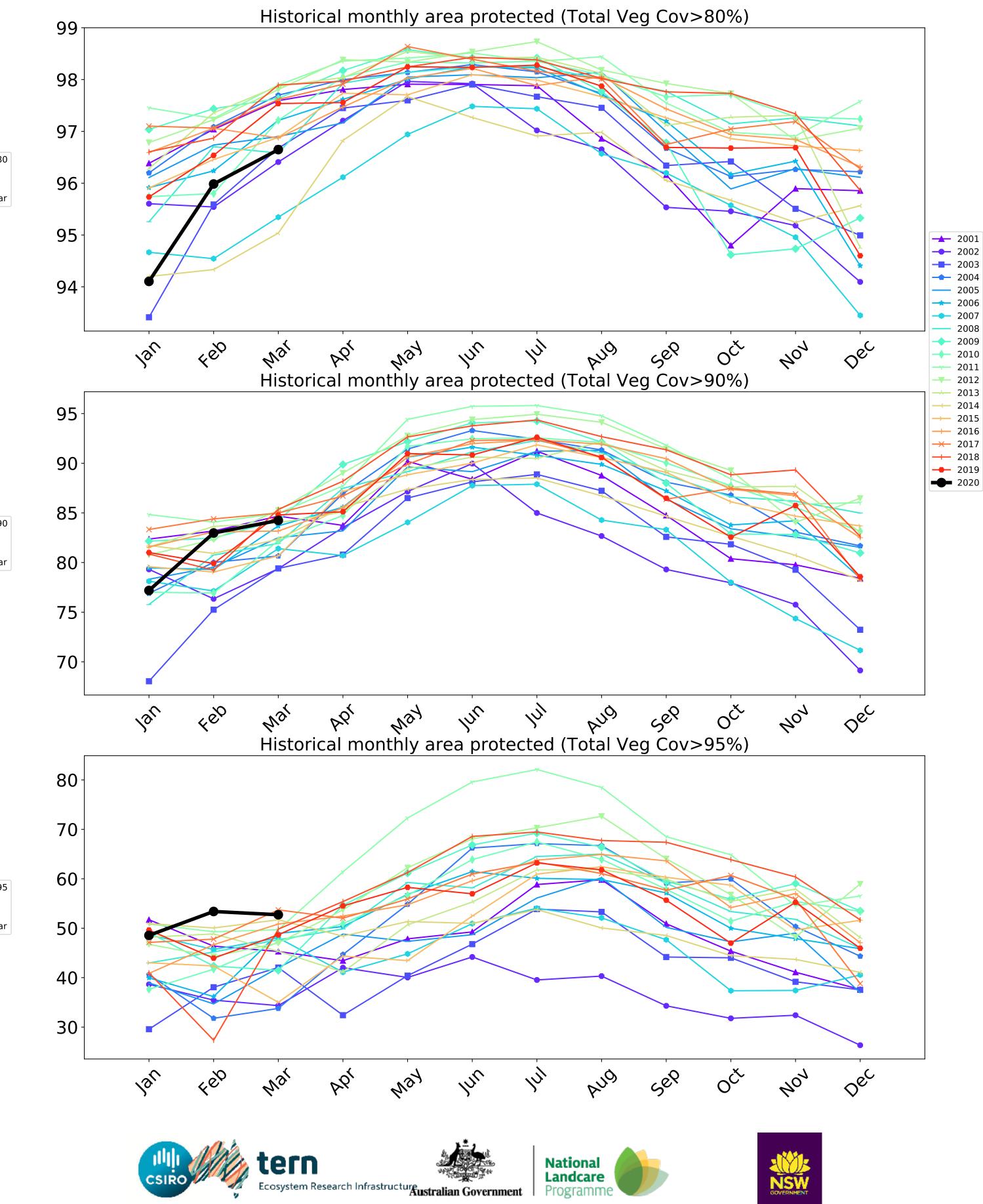




Water erosion historical monthly area protected (Total Veg Cov>70%)

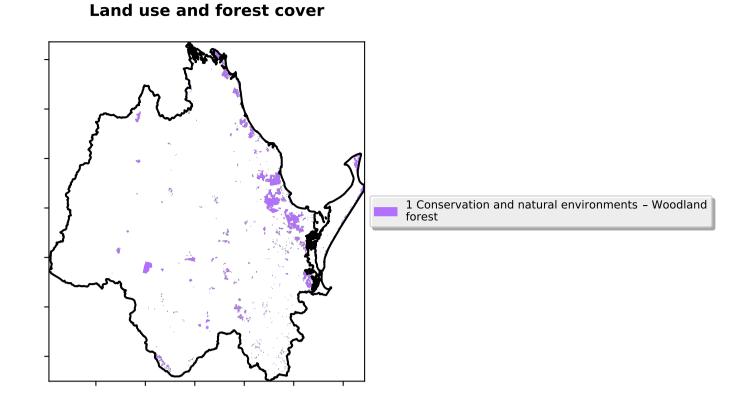




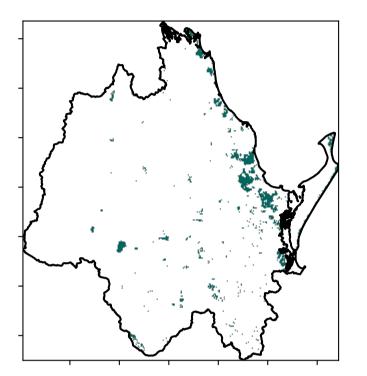


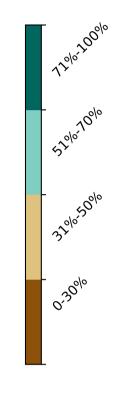
Conservation and natural environments Woodland forest

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

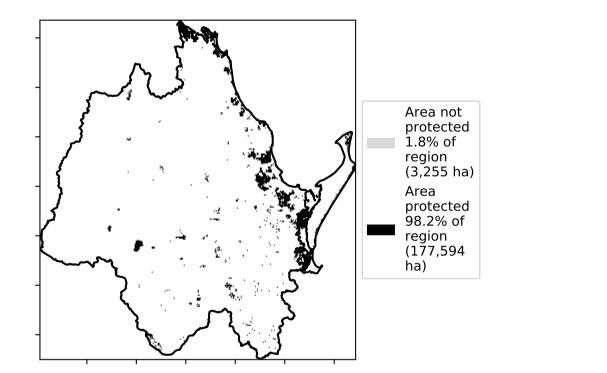


Total Vegetation Cover [%]

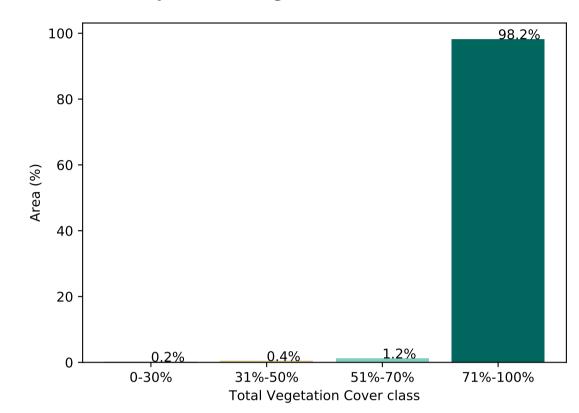




% Area protected from water erosion (>70%)





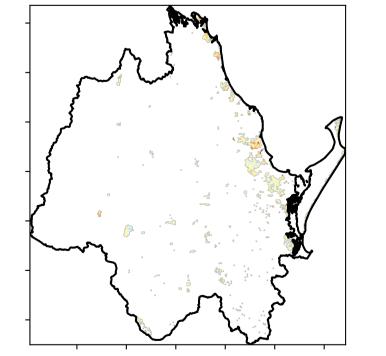


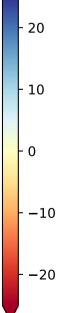
% Area protected from wind erosion (>50%)

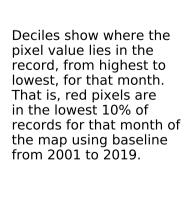


Total Vegetation Cover Anomaly [%]

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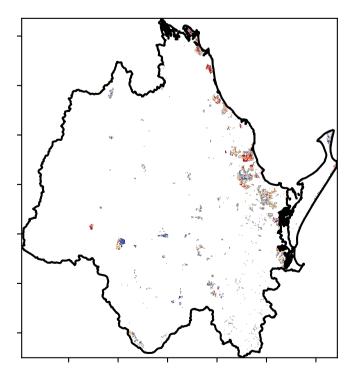


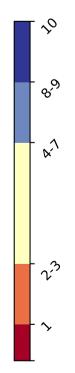




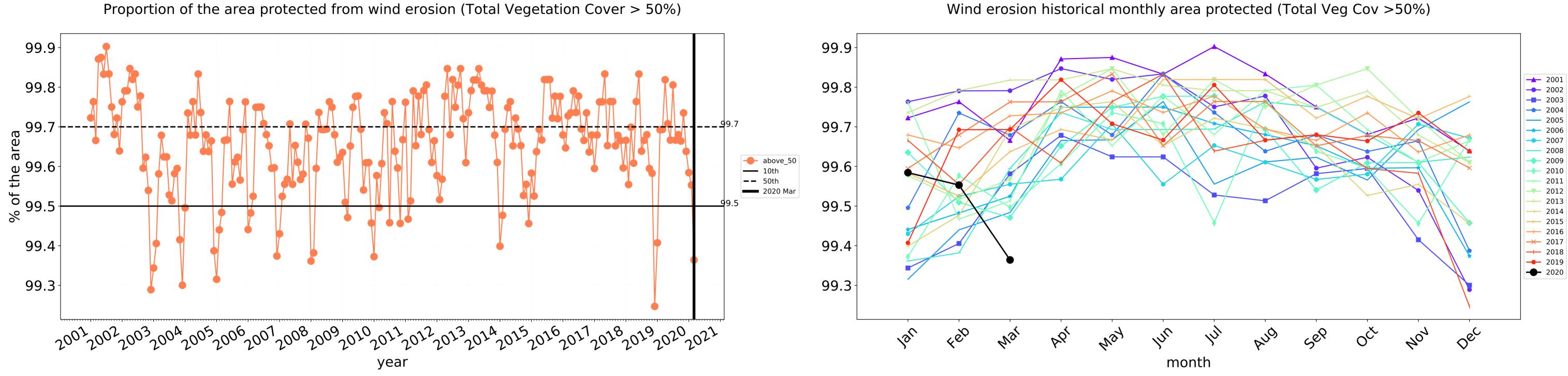
Area not protected 1.0% of region (1,808 ha) Area protected 99.0% of region (179,041 ha)

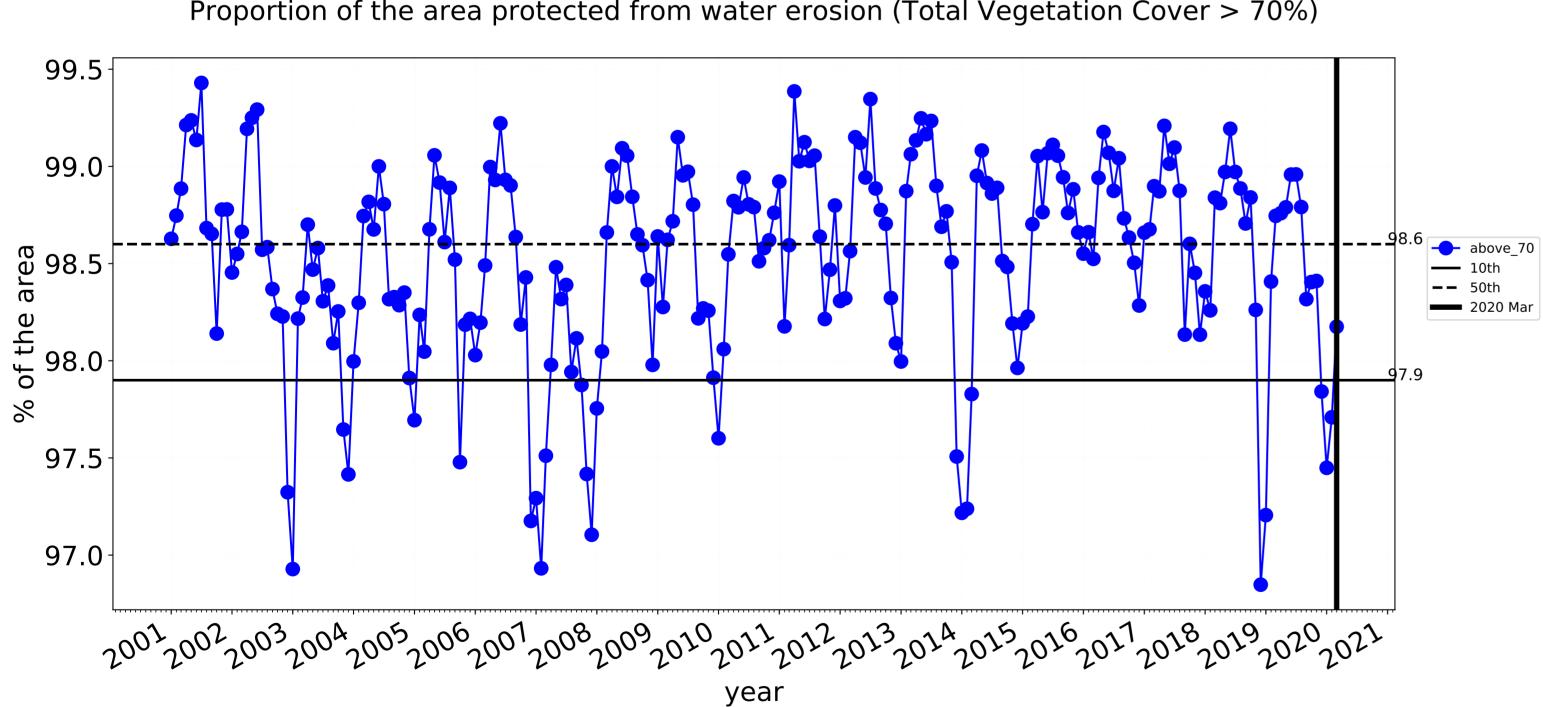
Total Vegetation Cover Decile [%]



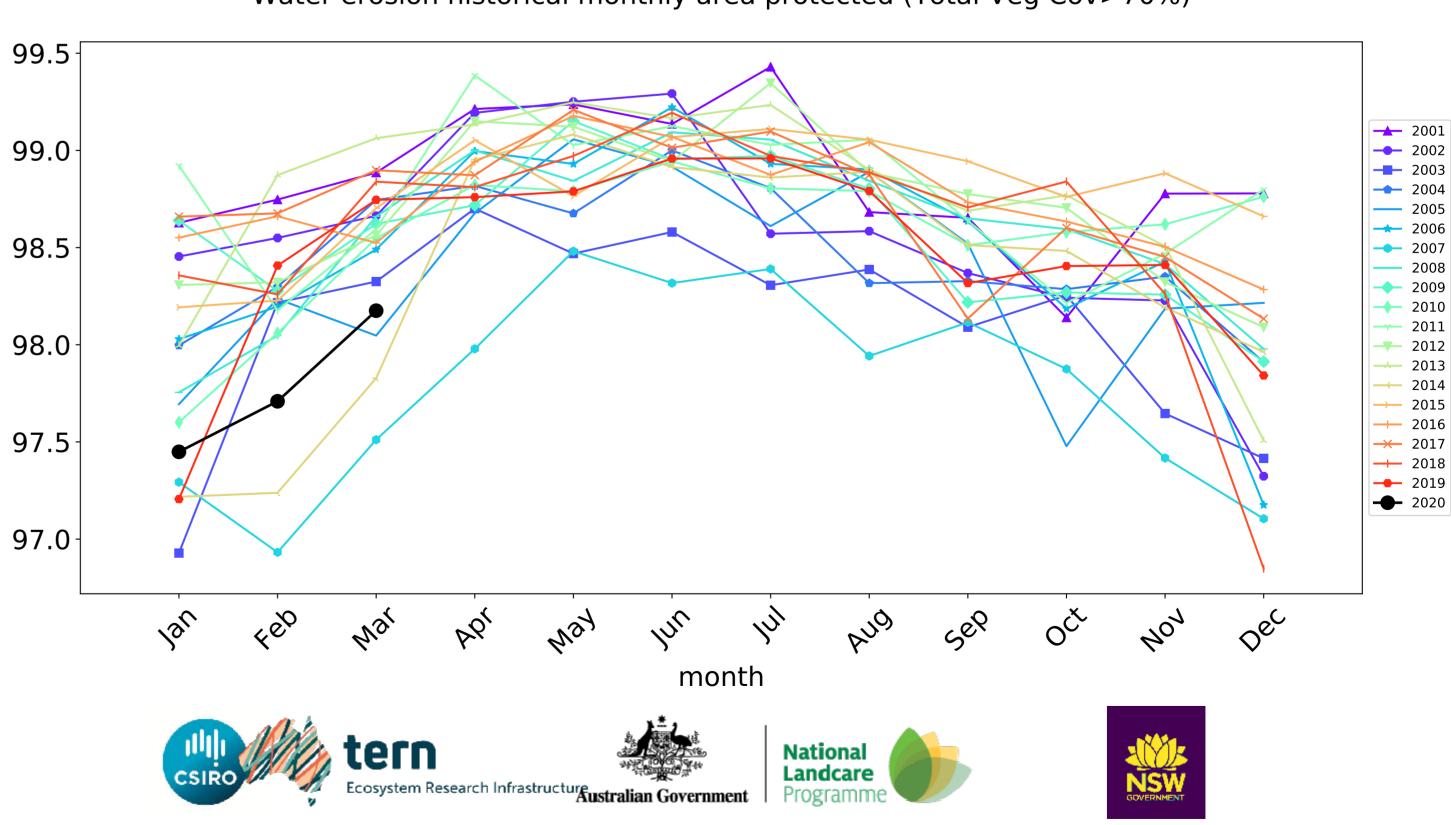




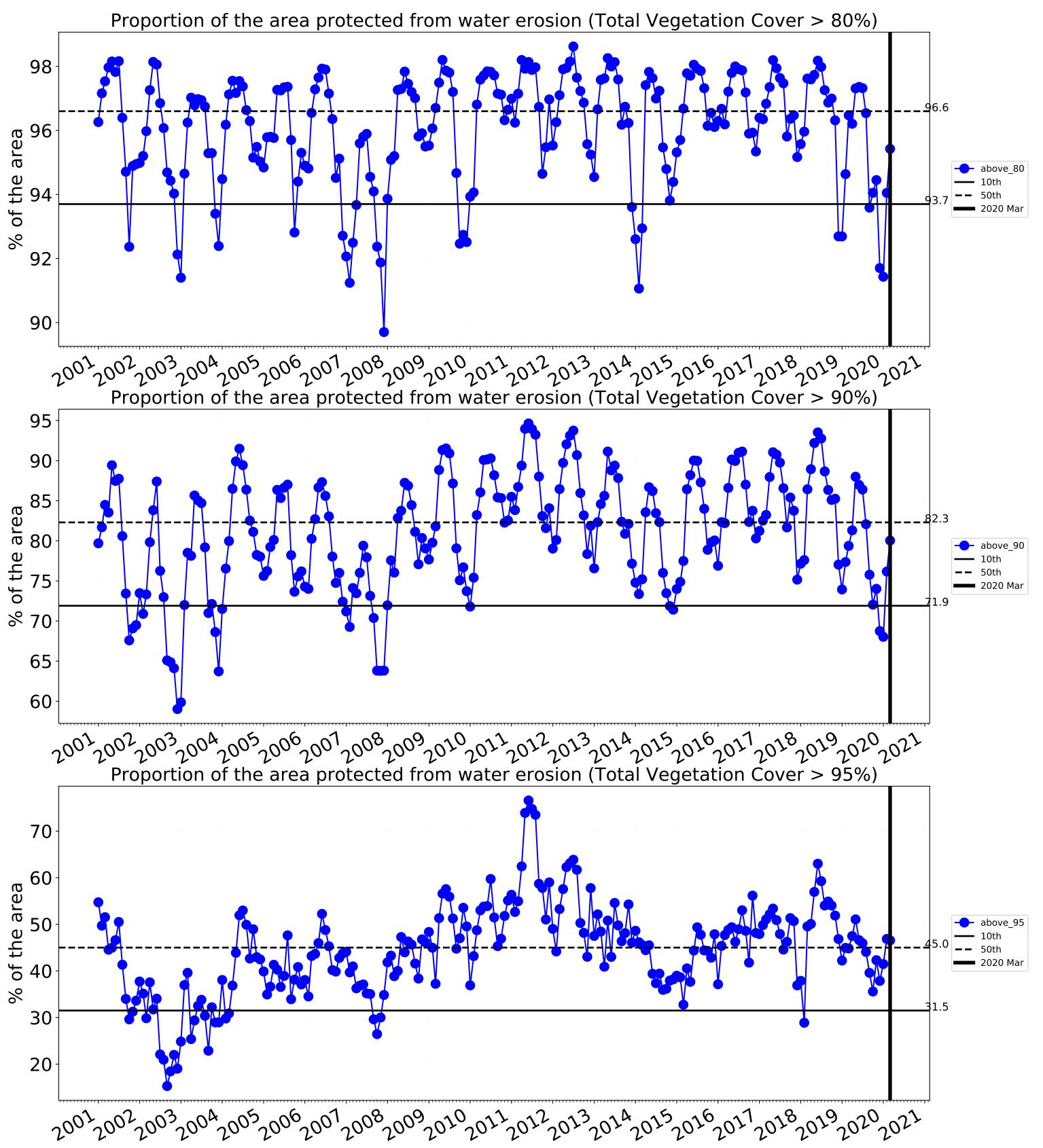


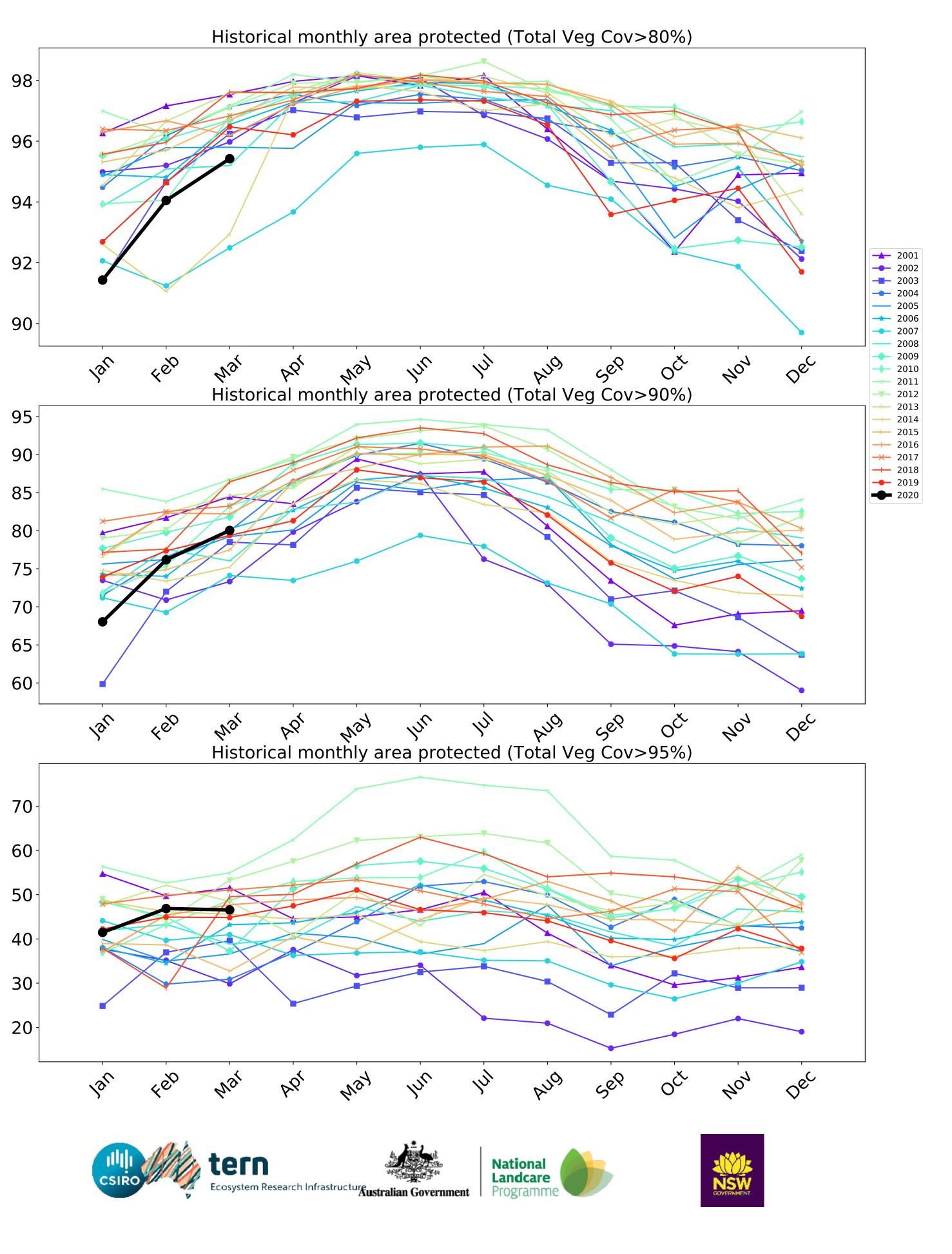


Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

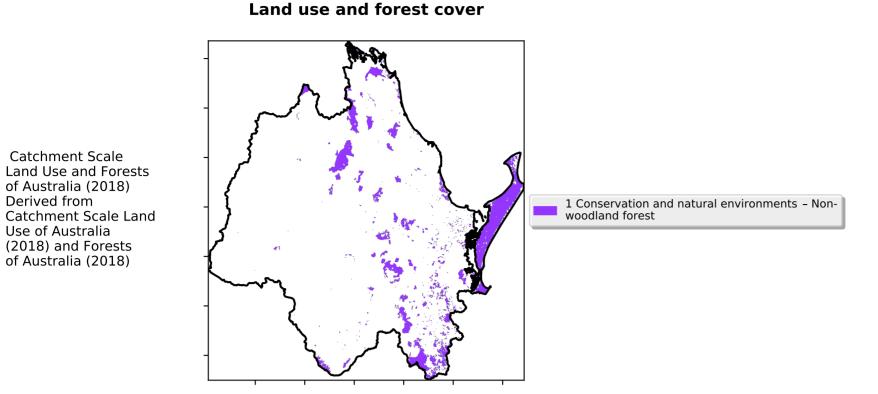


Water erosion historical monthly area protected (Total Veg Cov>70%)

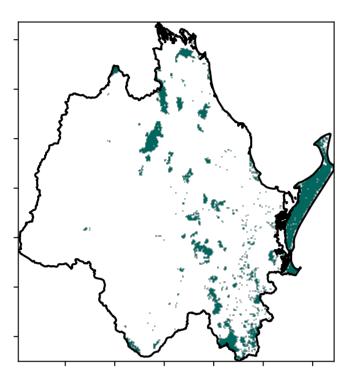




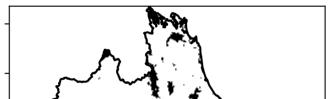
Conservation and natural environments Forest (non woodland)

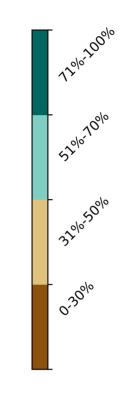


Total Vegetation Cover [%]



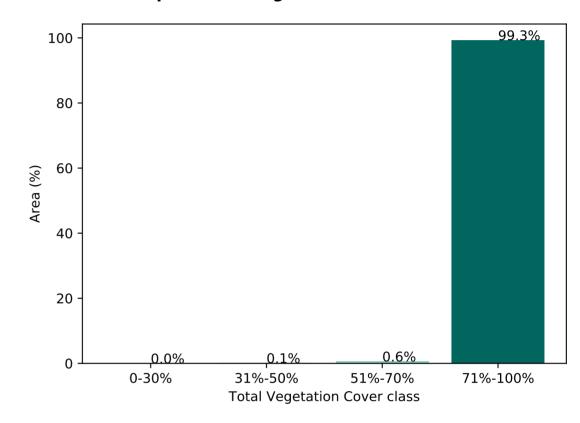
% Area protected from water erosion (>70%)



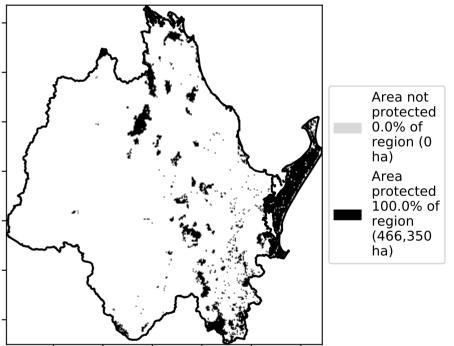




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



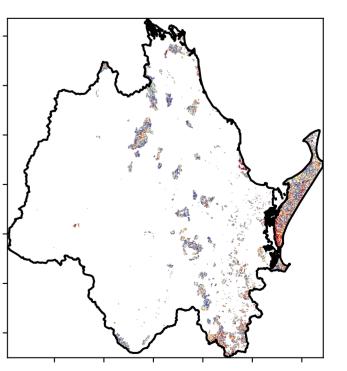
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Total Vegetation Cover Decile [%]





Area not protected 0.7% of region (3,264 ha) Area protected 99.3% of region (463,085 ha)

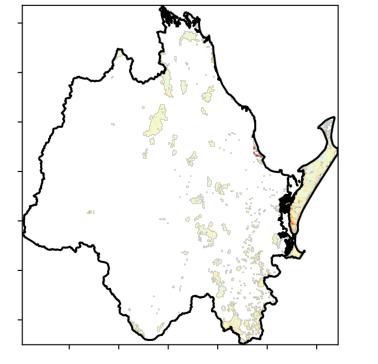
Total Vegetation Cover Anomaly [%]

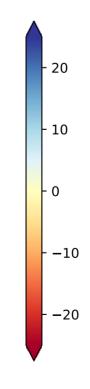
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

Catchment Scale

Derived from

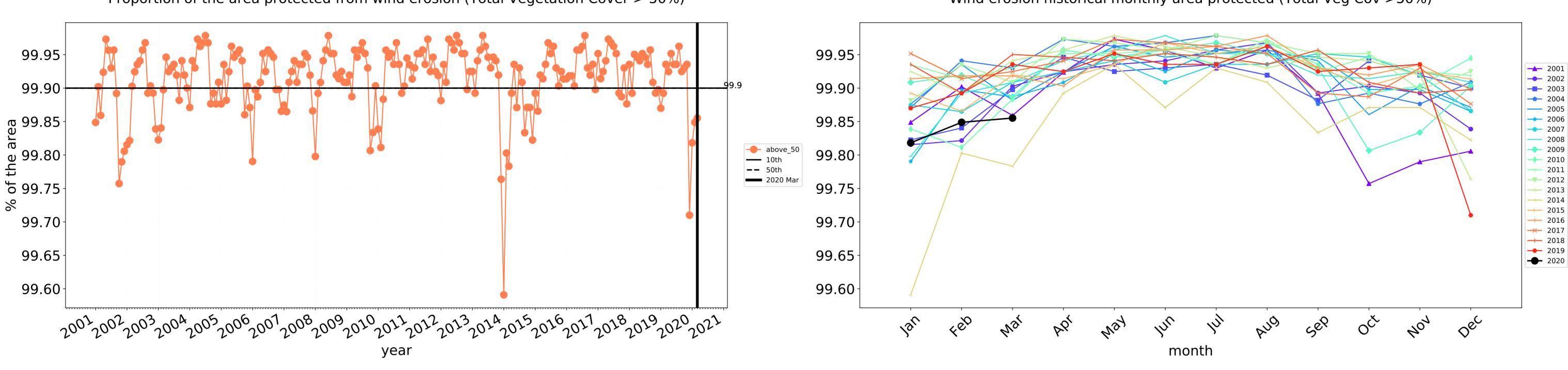
Use of Australia (2018) and Forests of Australia (2018)





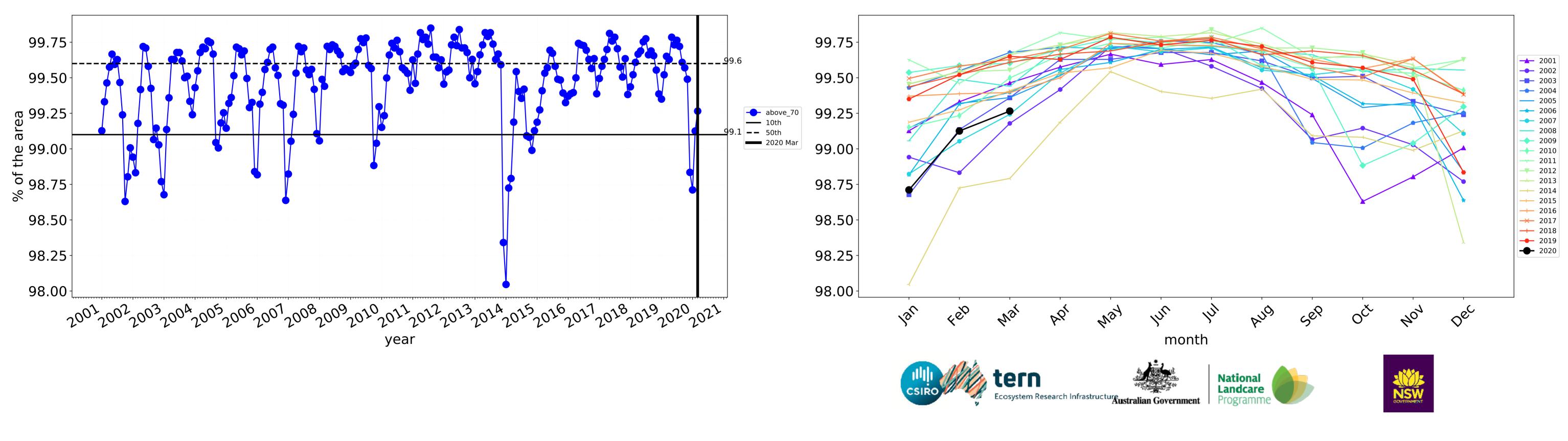
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Conservation and natural environments Forest (non woodland) timeseries



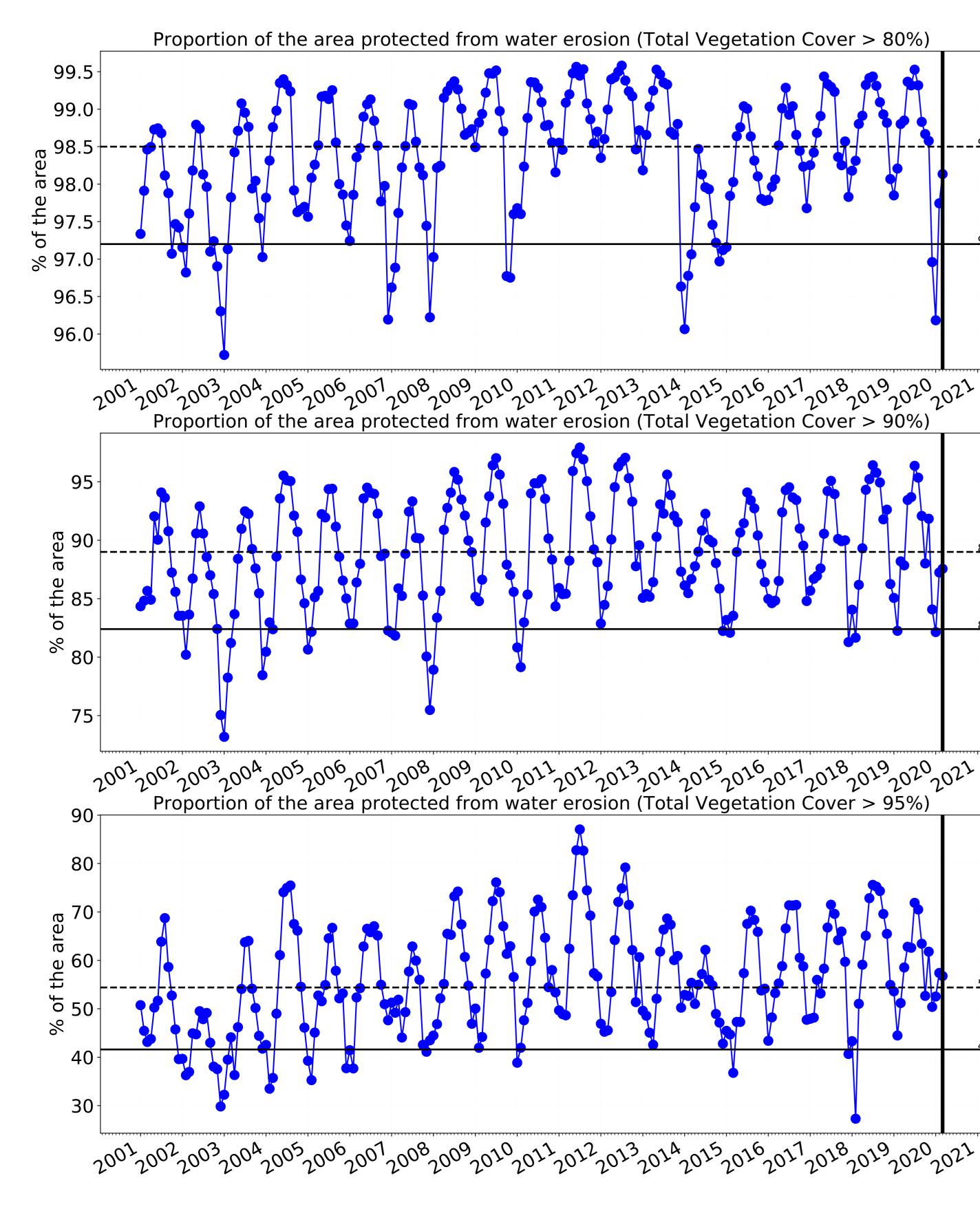
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

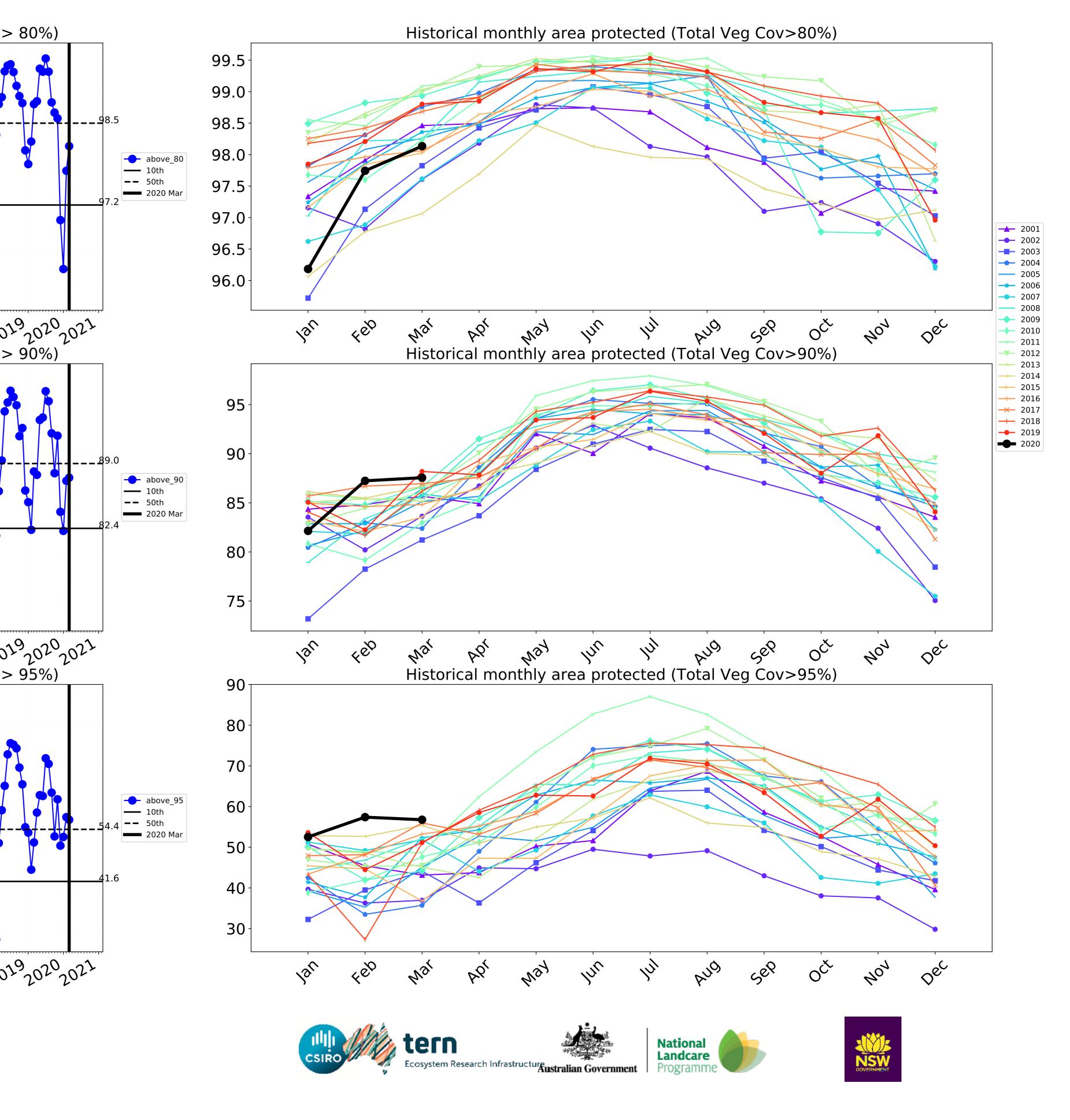




Water erosion historical monthly area protected (Total Veg Cov>70%)

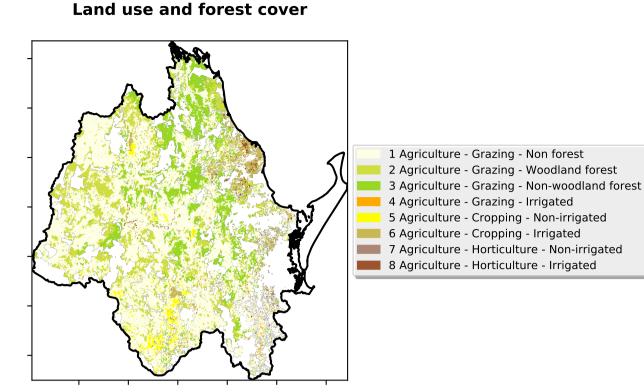
Wind erosion historical monthly area protected (Total Veg Cov >50%)



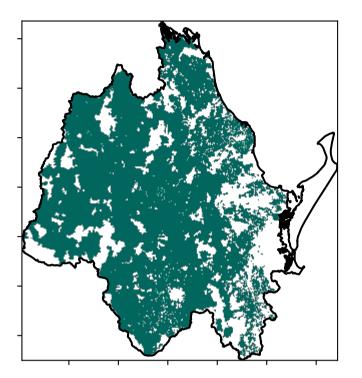


Agriculture

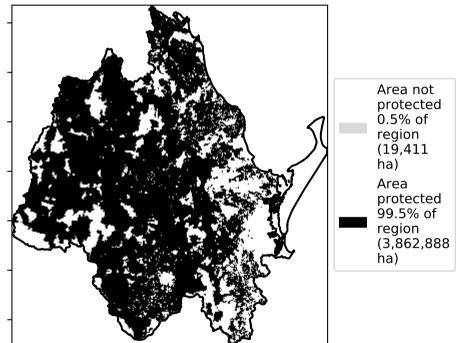
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



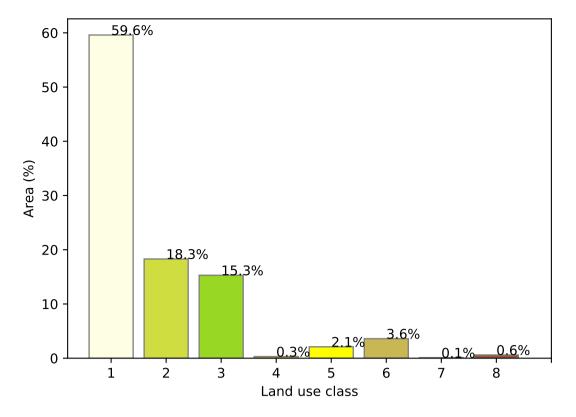
Total Vegetation Cover [%]





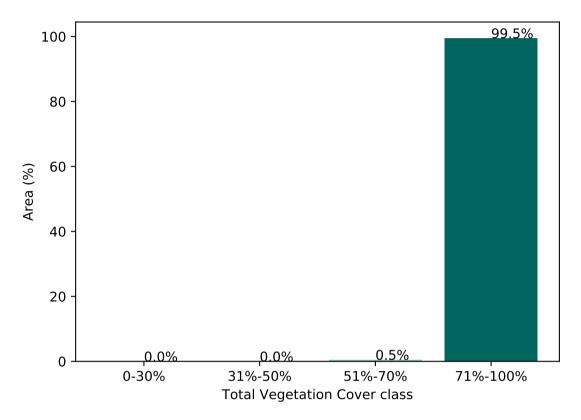


· 12%-200° · 52% 70% 3201050010 0.30%



Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



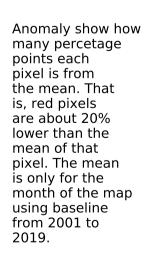
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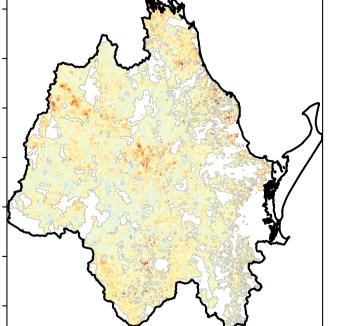
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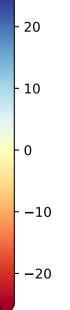
A-1

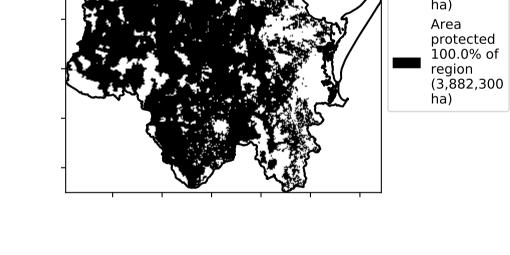
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Total Vegetation Cover Anomaly [%]

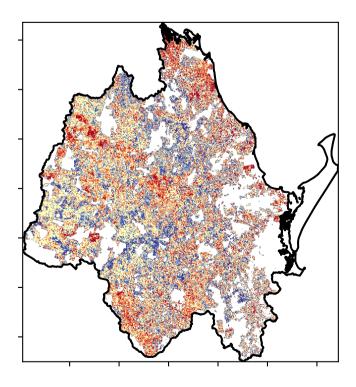








Total Vegetation Cover Decile [%]

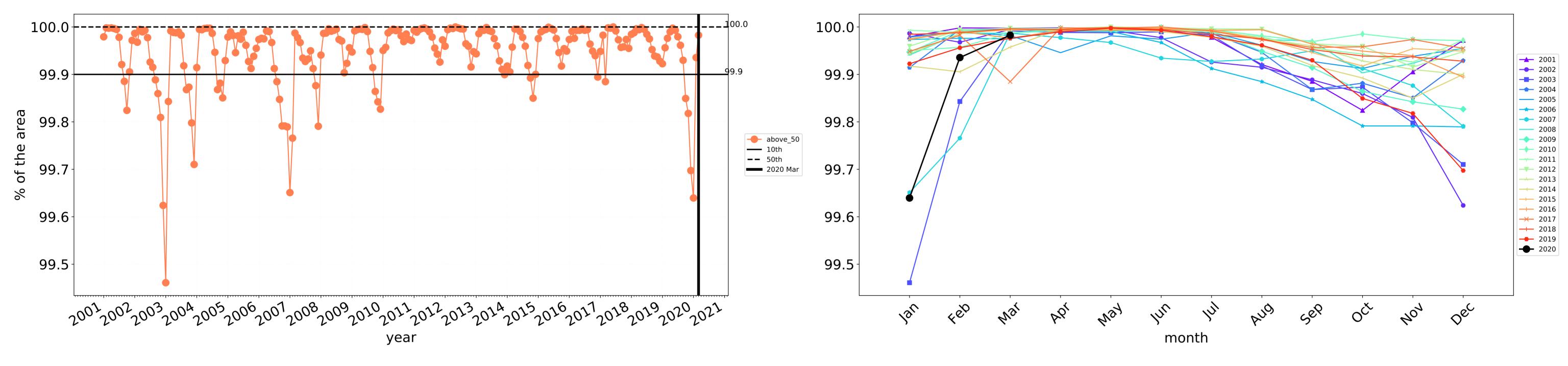




Deciles show where the pixel value lies in the

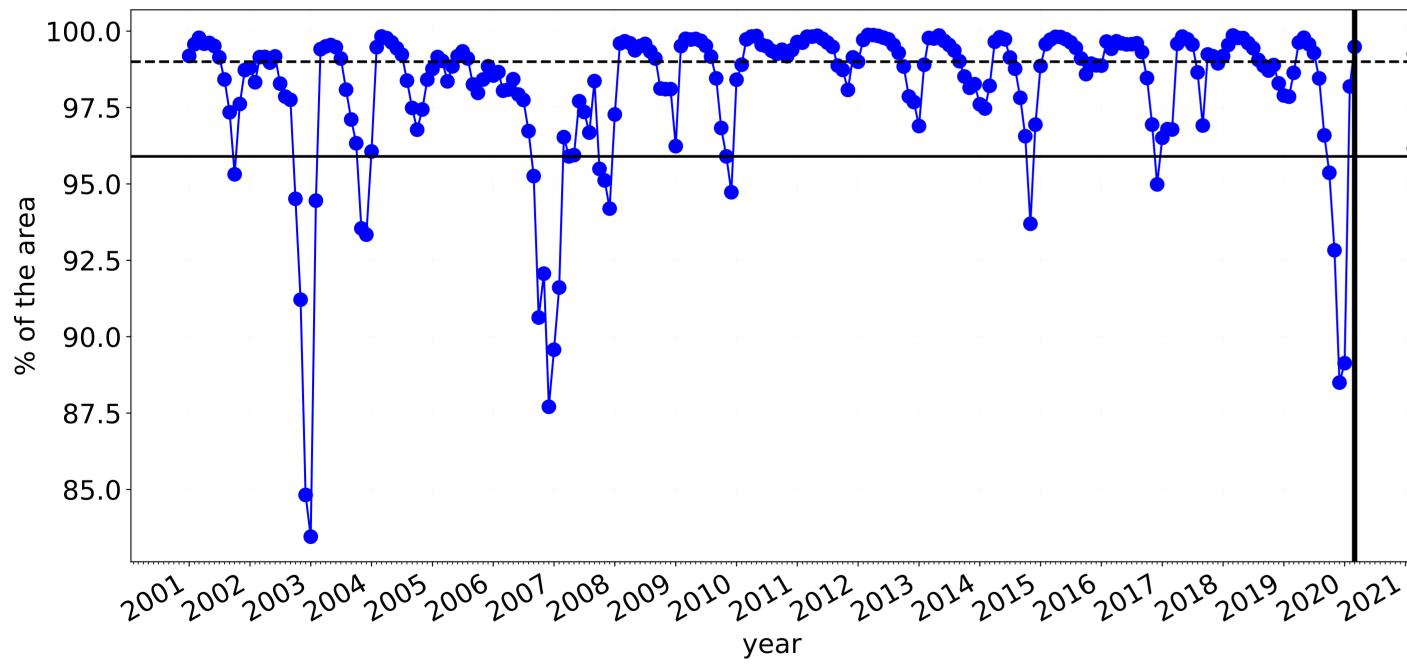
record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

the map using baseline from 2001 to 2019.



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

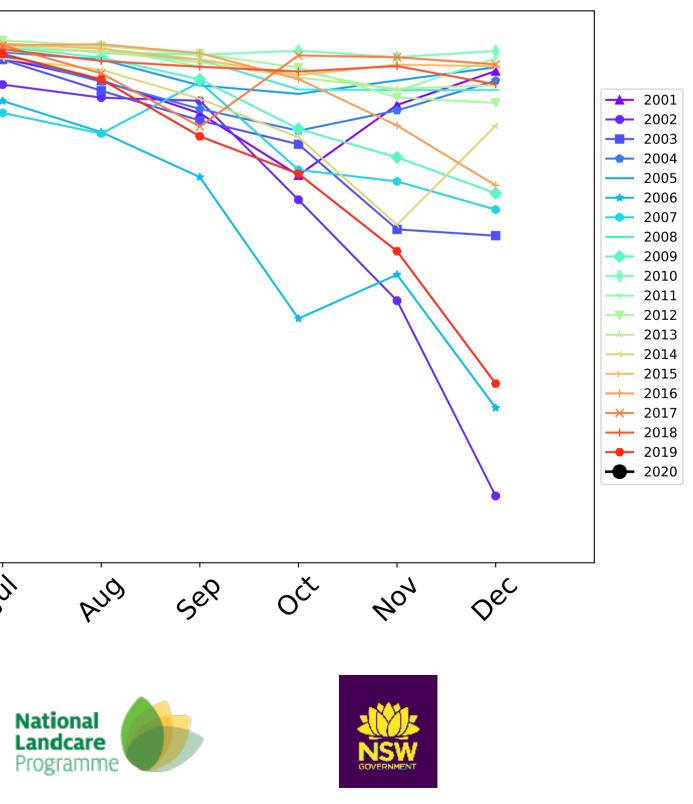
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

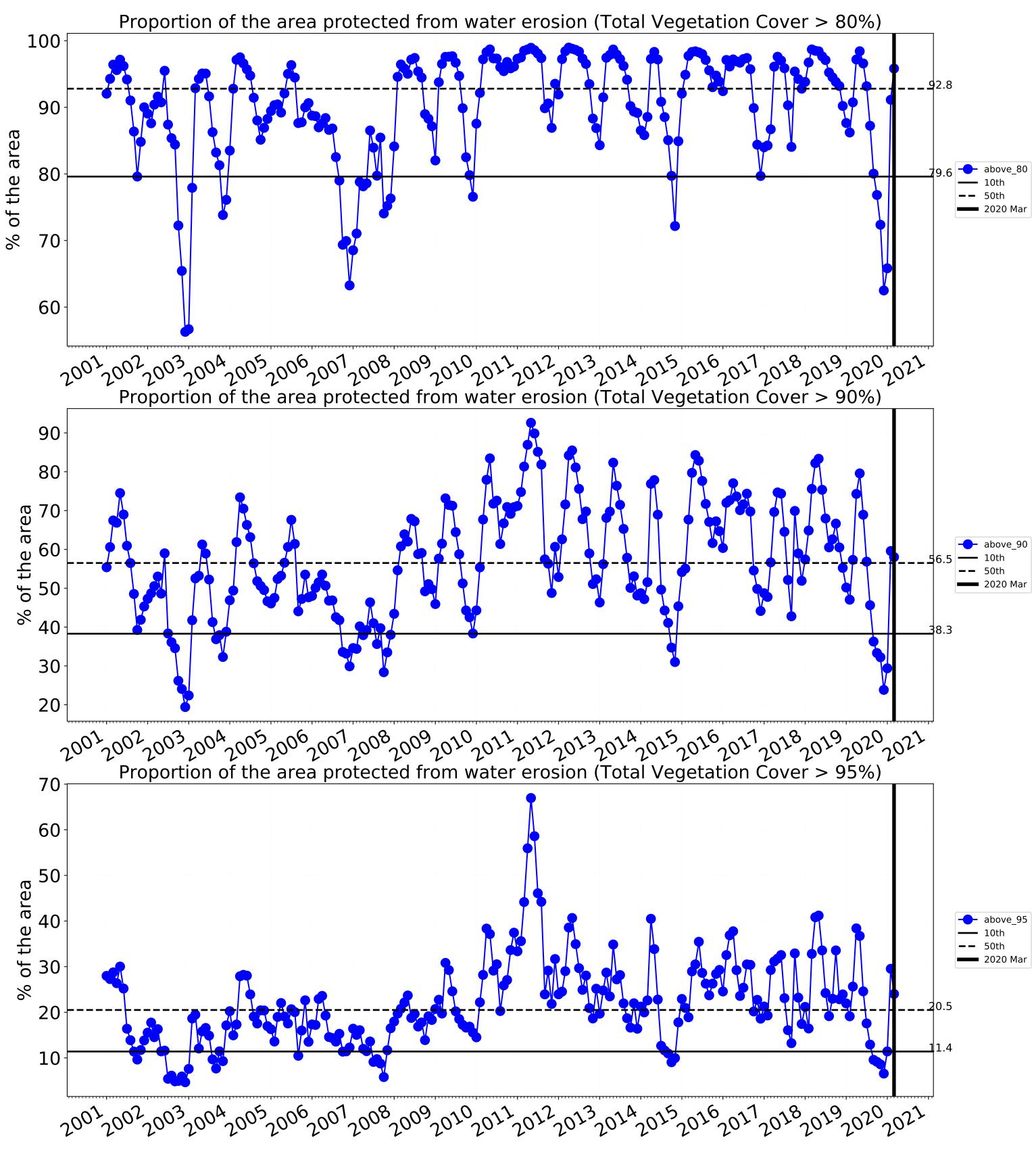


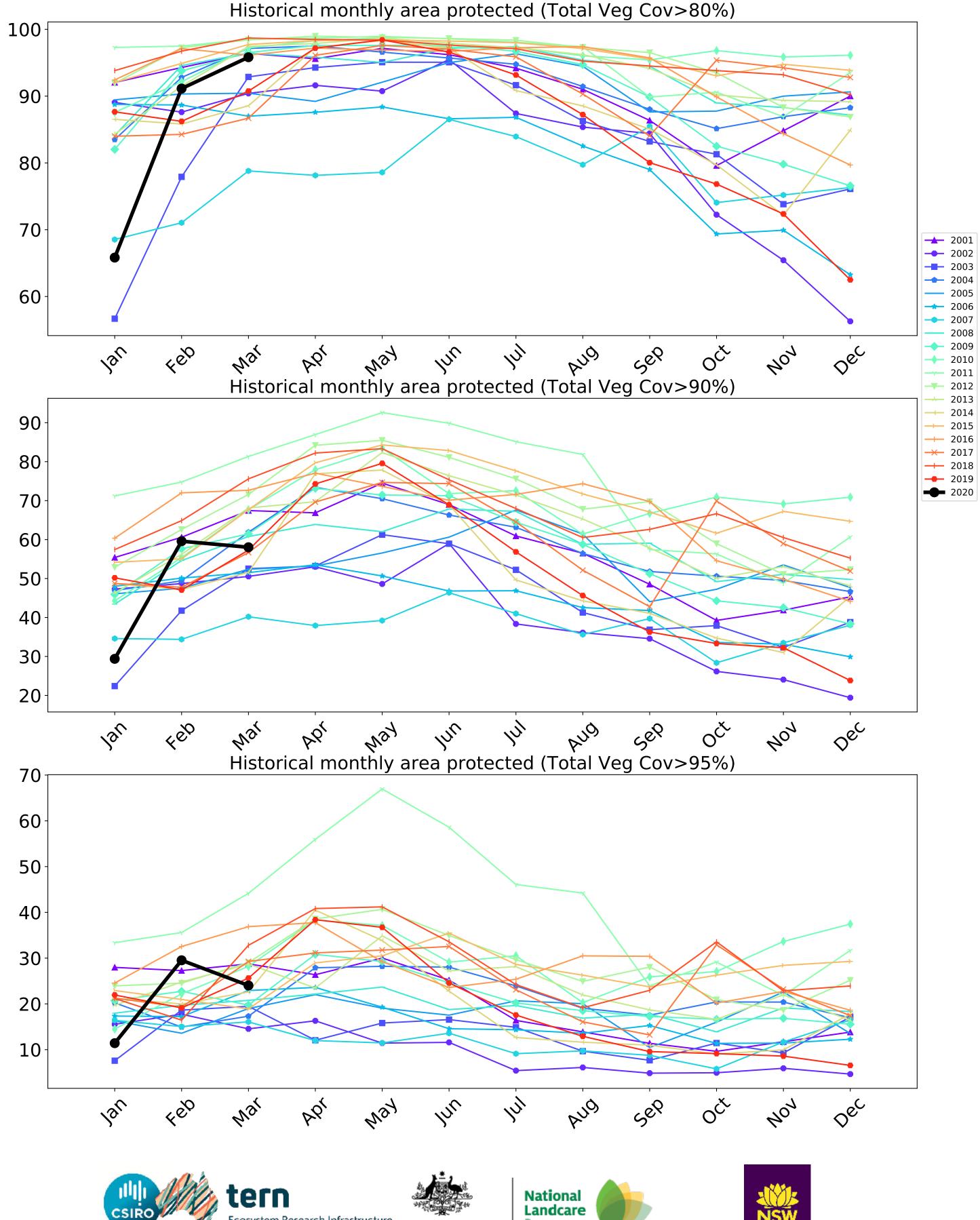
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100.0 97.5 95.0 --- above_70 **—** 10th **——** 50th 92.5 **—** 2020 Mar 90.0 87.5 85.0-Jan 4eb way In 1¹1 PQ Mai month tern Ecosystem Research Infrastructure Australian Government

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





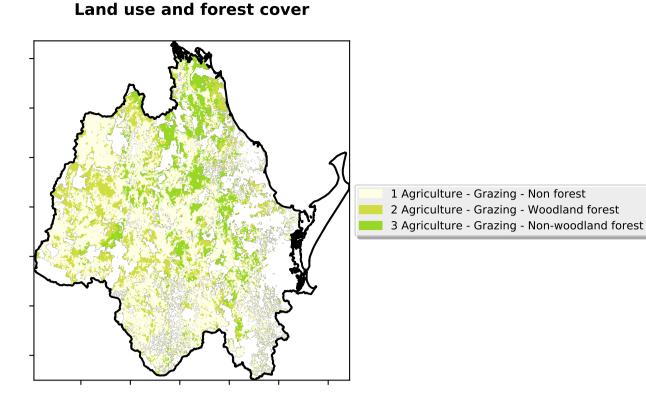


Programm

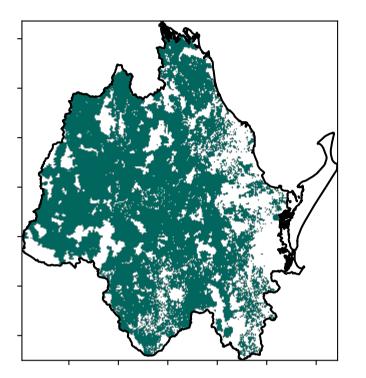


Grazing

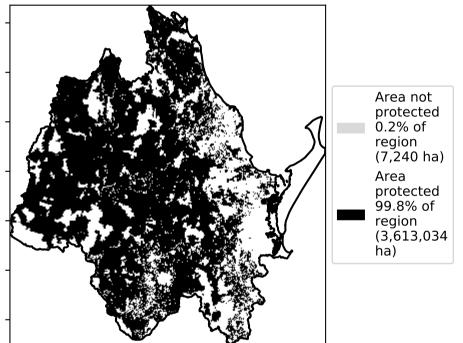
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

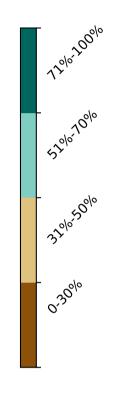


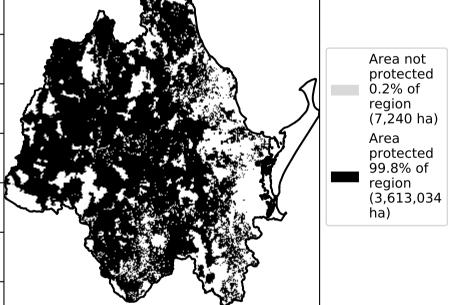
Total Vegetation Cover [%]

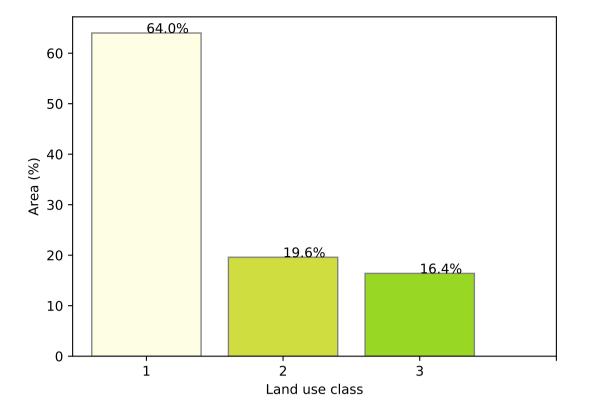


% Area protected from water erosion (>70%)



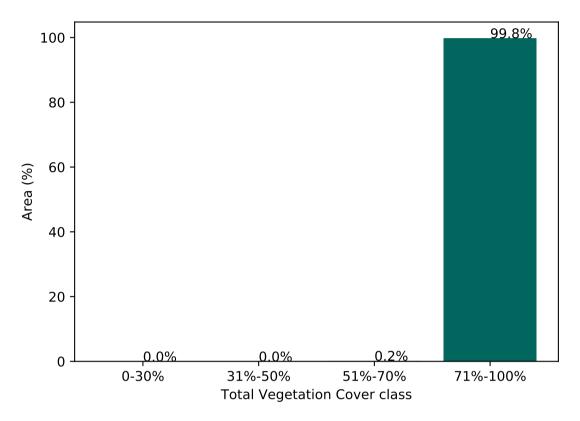




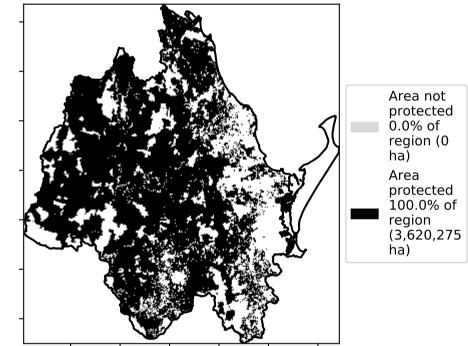


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



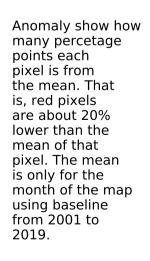
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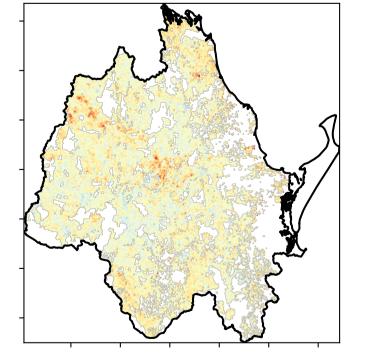
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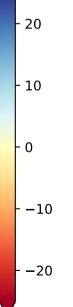
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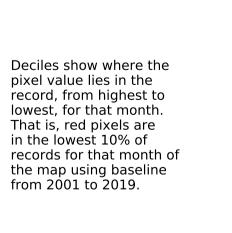
2?

Total Vegetation Cover Anomaly [%]

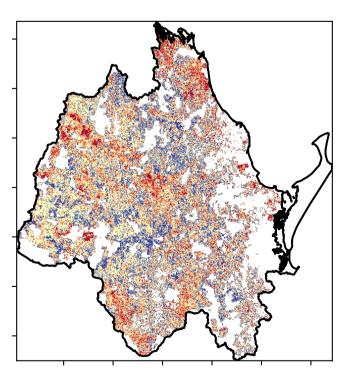




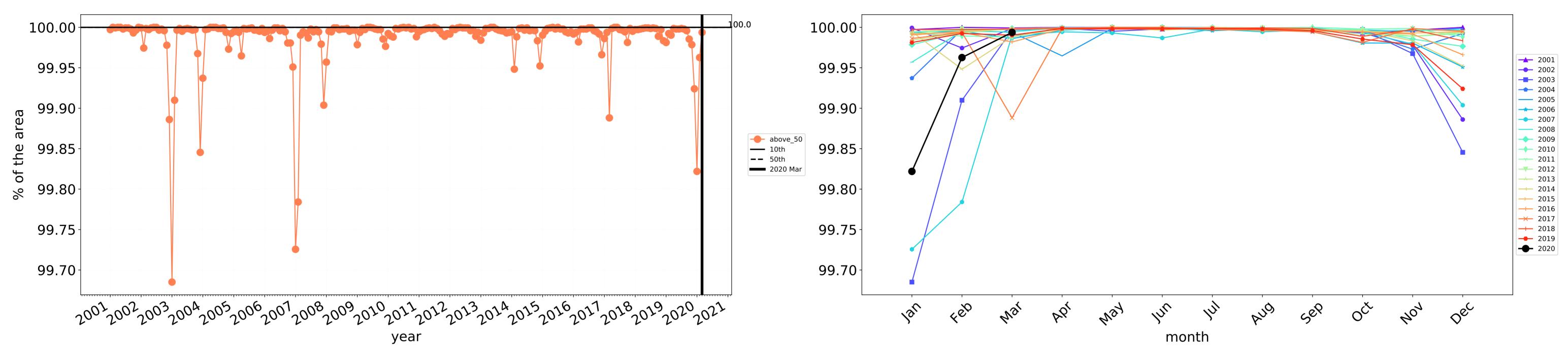




Total Vegetation Cover Decile [%]

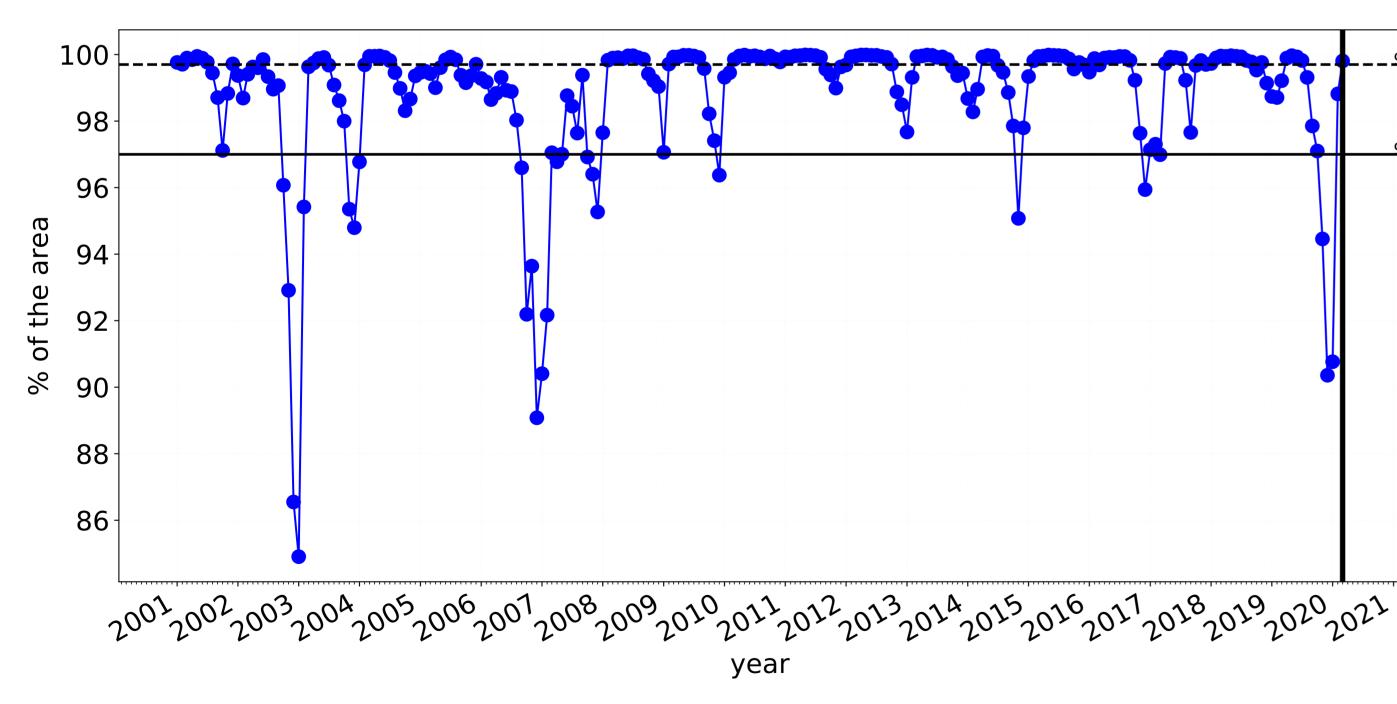






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

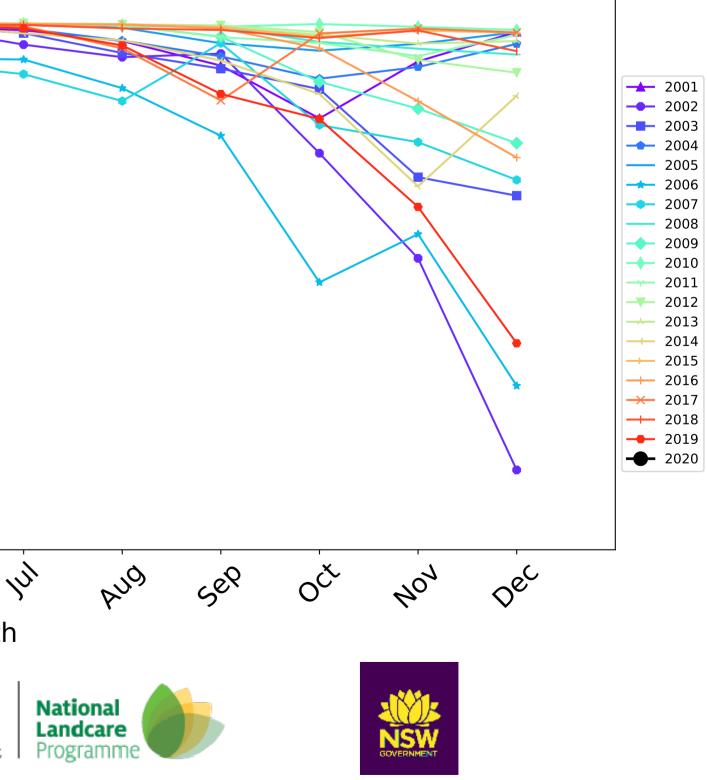
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

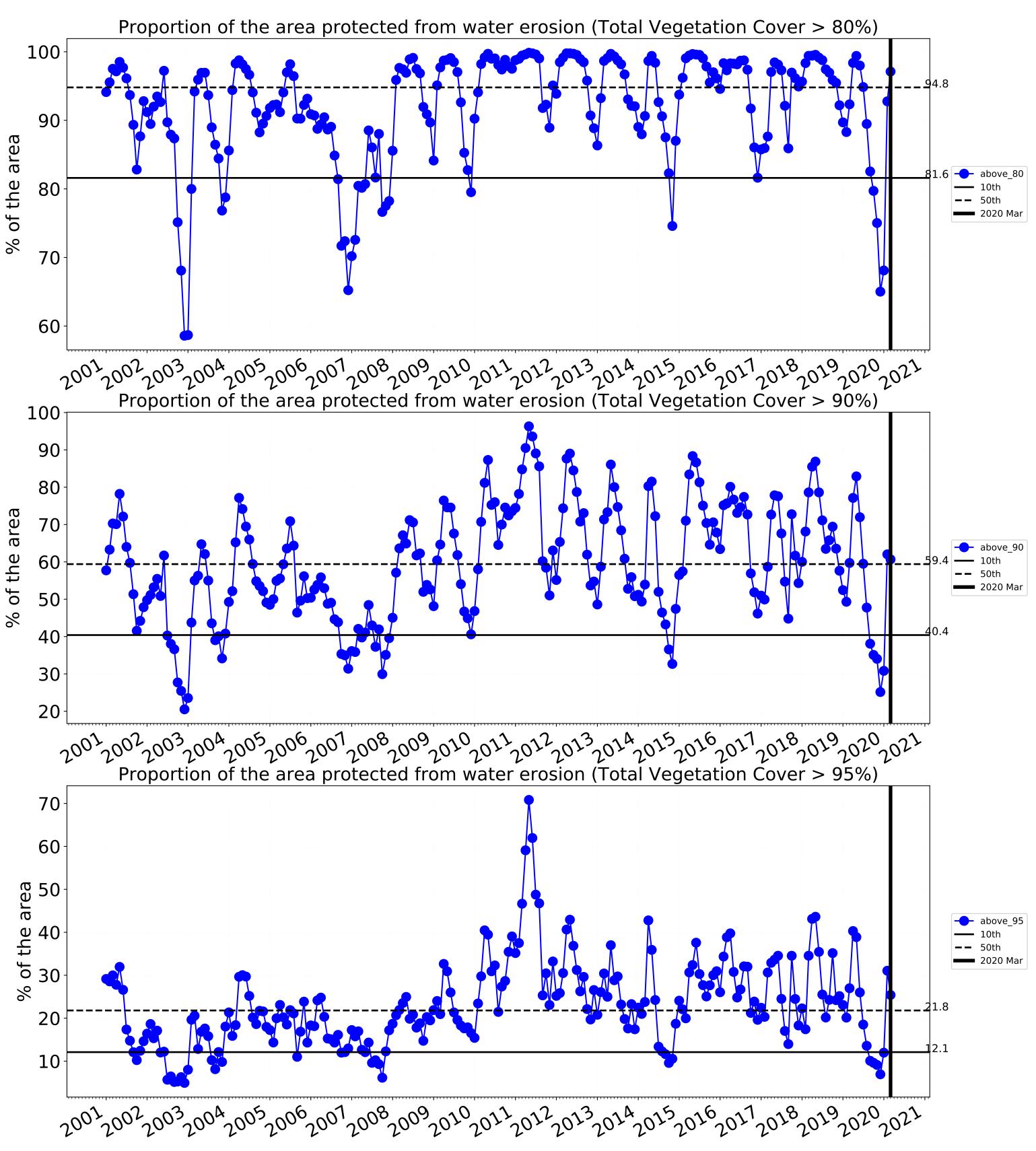


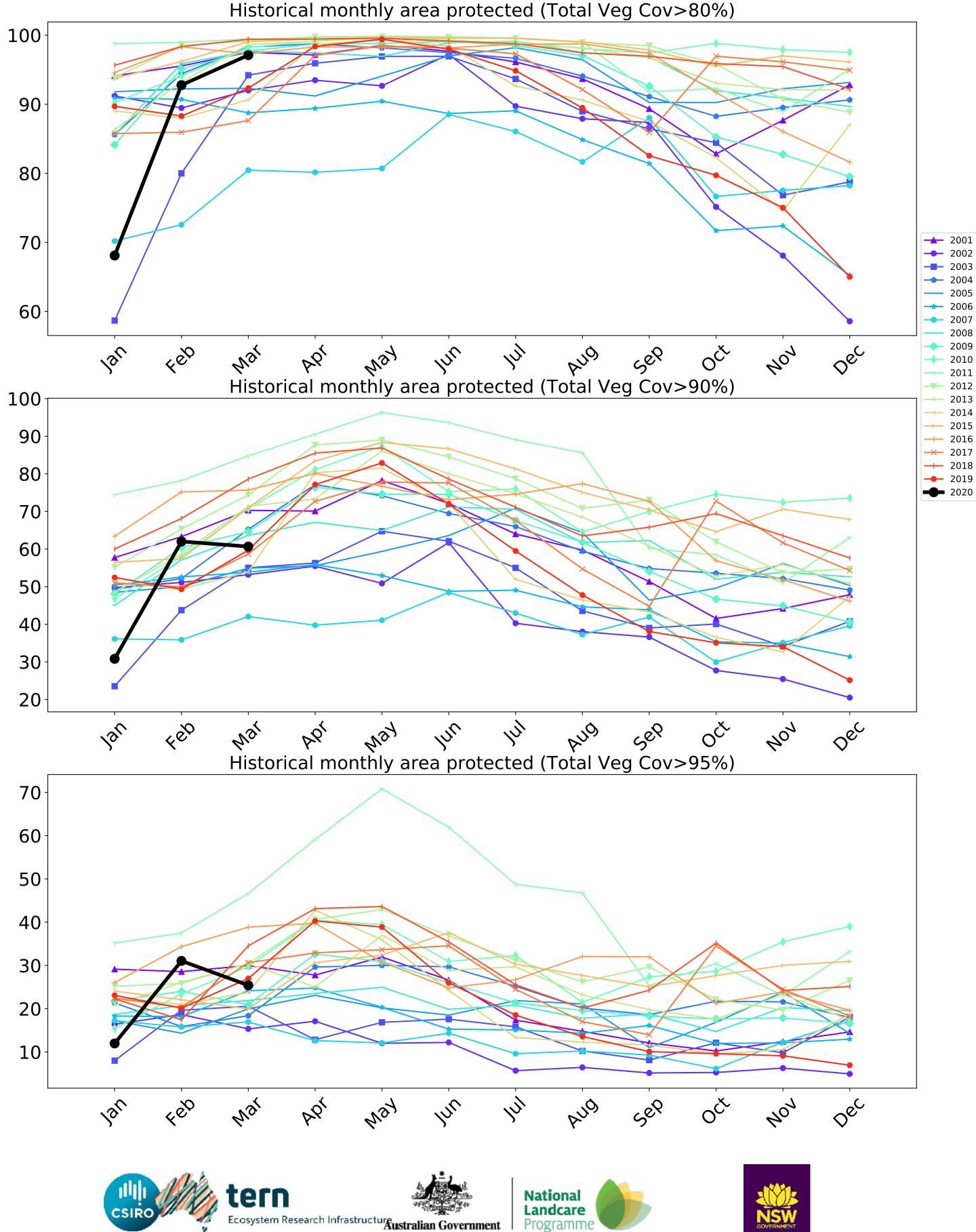
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100 98 96 ---- above_70 **—** 10th 94 **——** 50th **—** 2020 Mar 92 90 88 86 4eb lar In May PQ War month tern Ecosystem Research Infrastructure

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



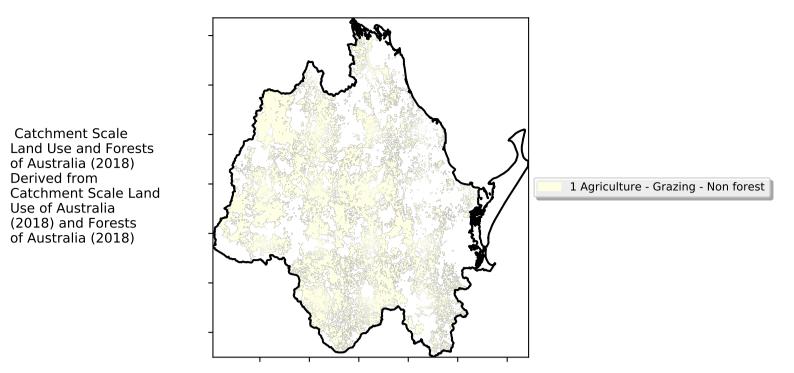




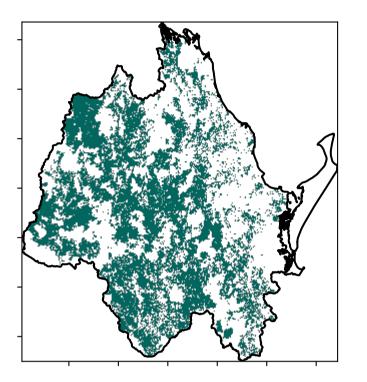


Grazing non forest

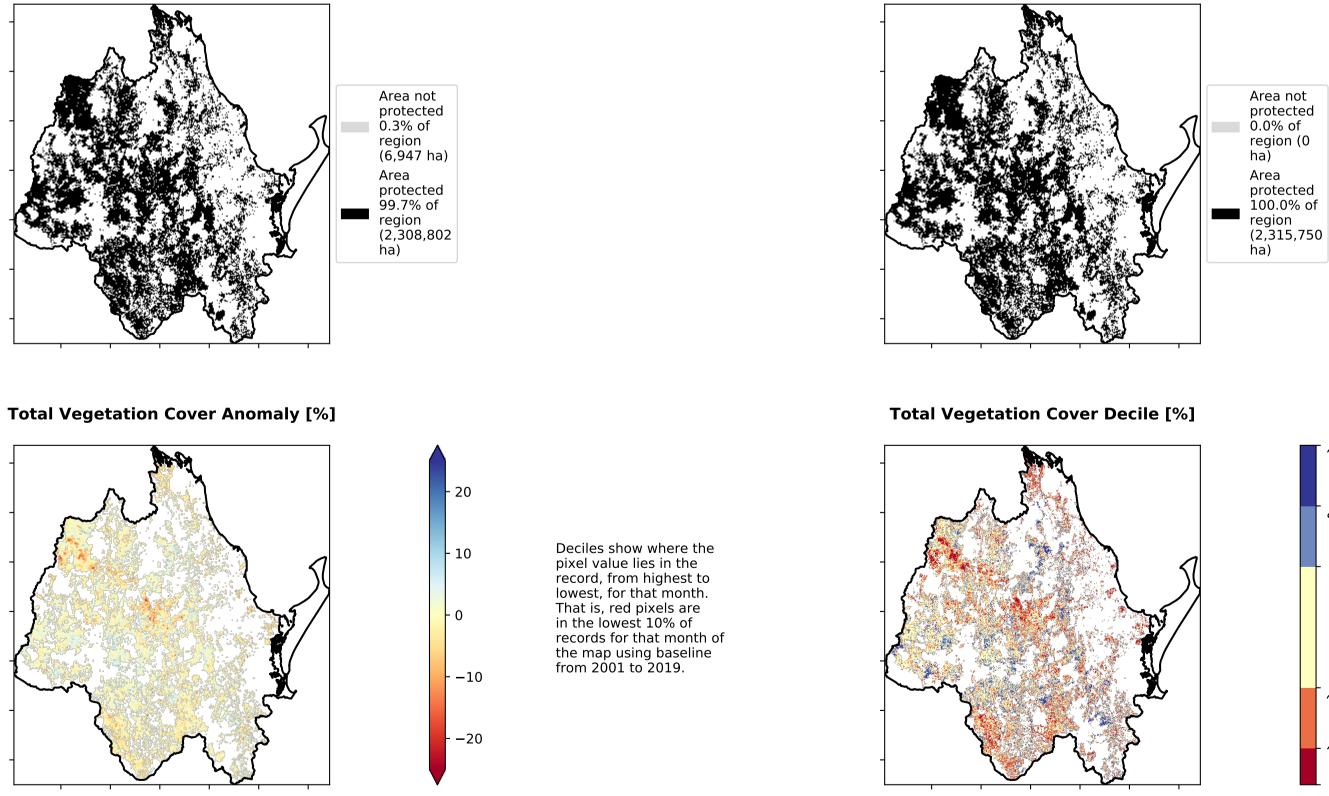
Land use and forest cover

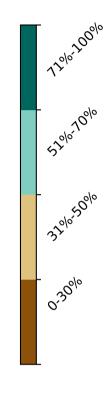


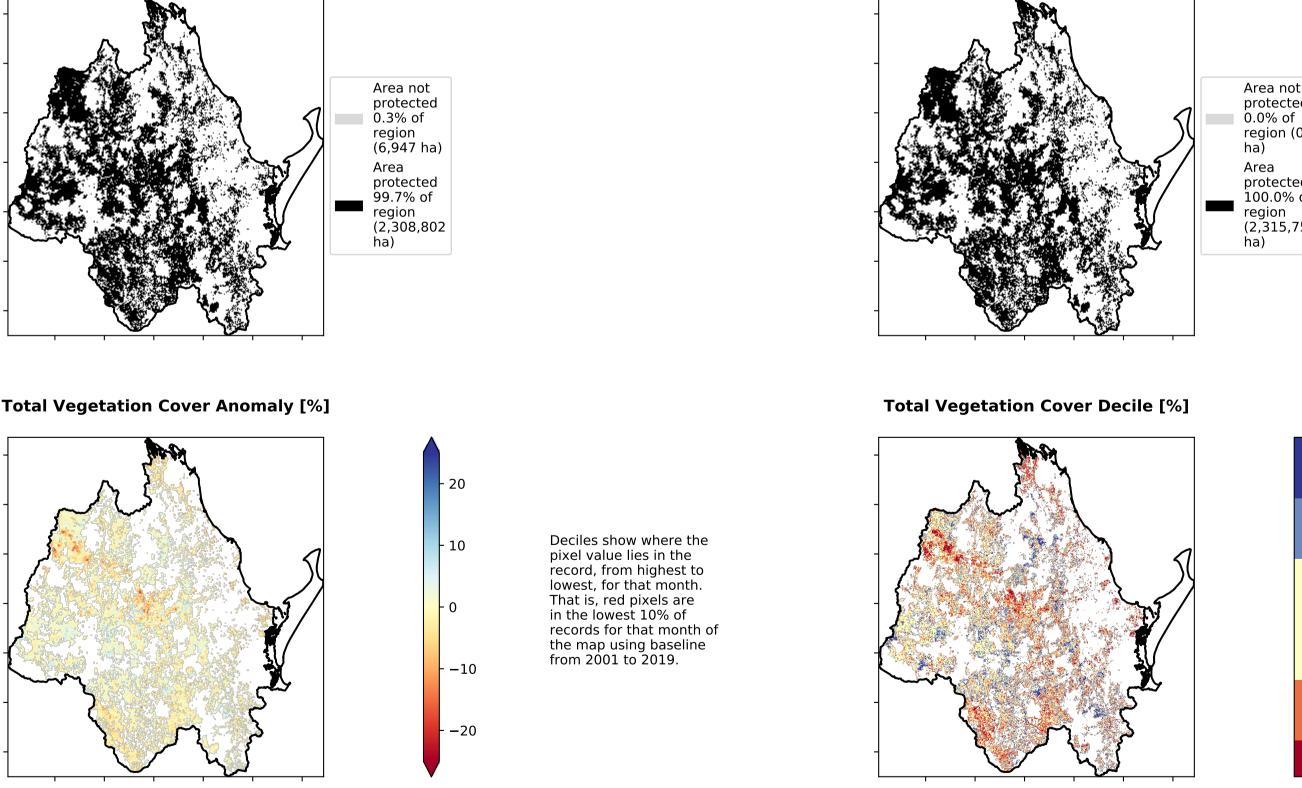
Total Vegetation Cover [%]



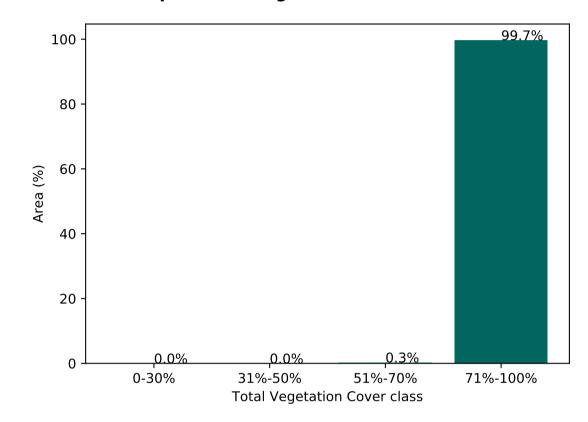




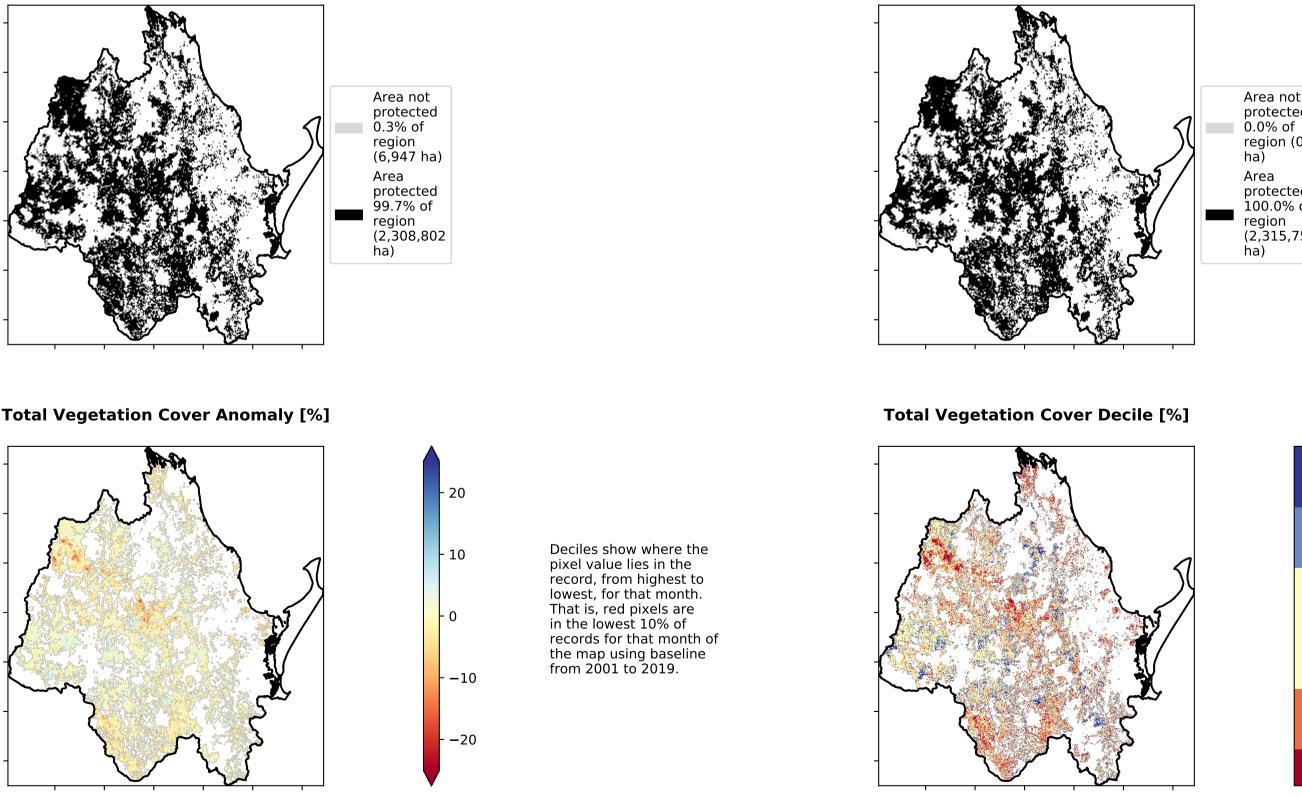




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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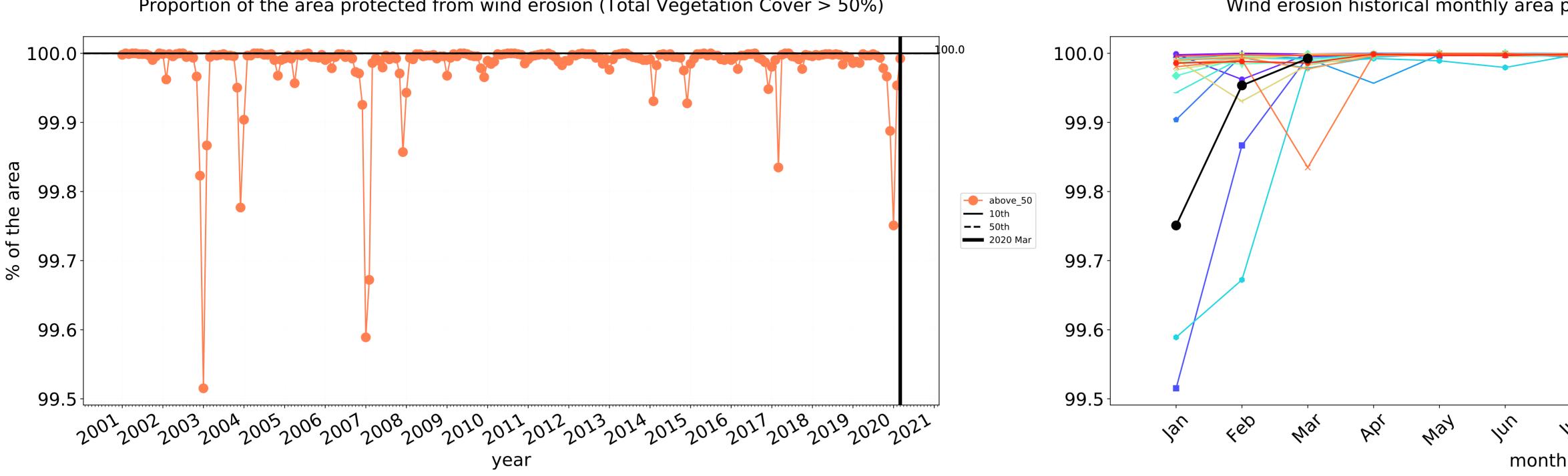
2?3

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.

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

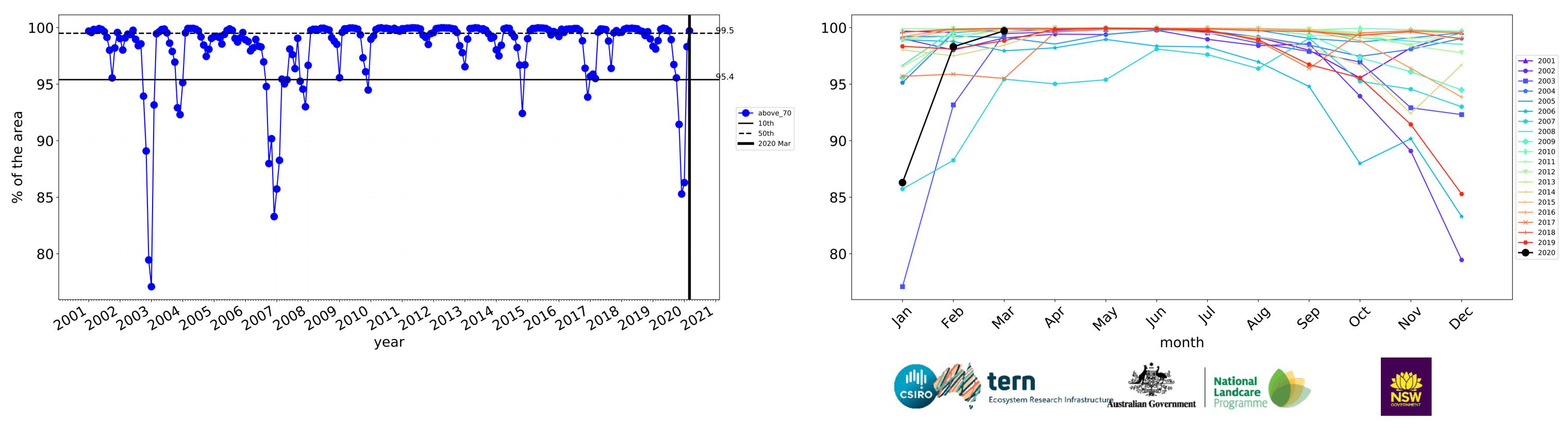


20



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

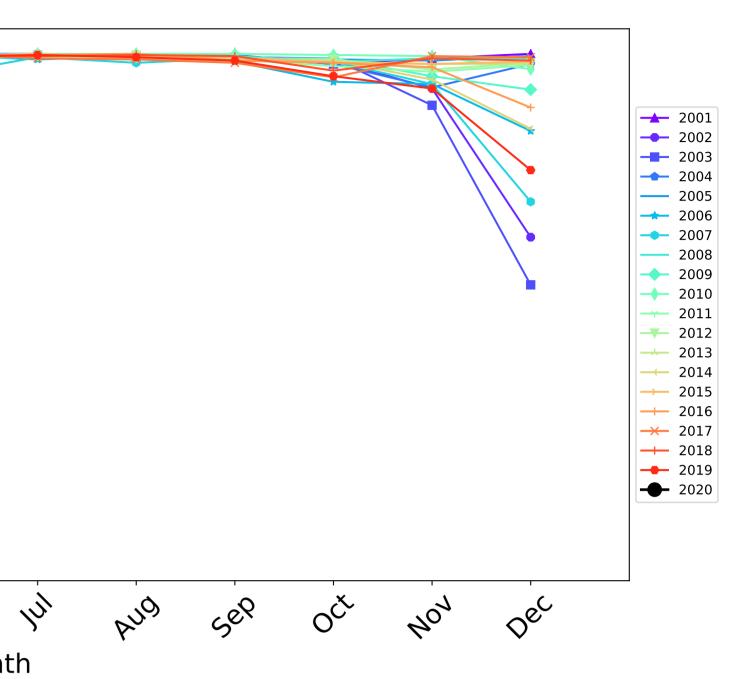
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

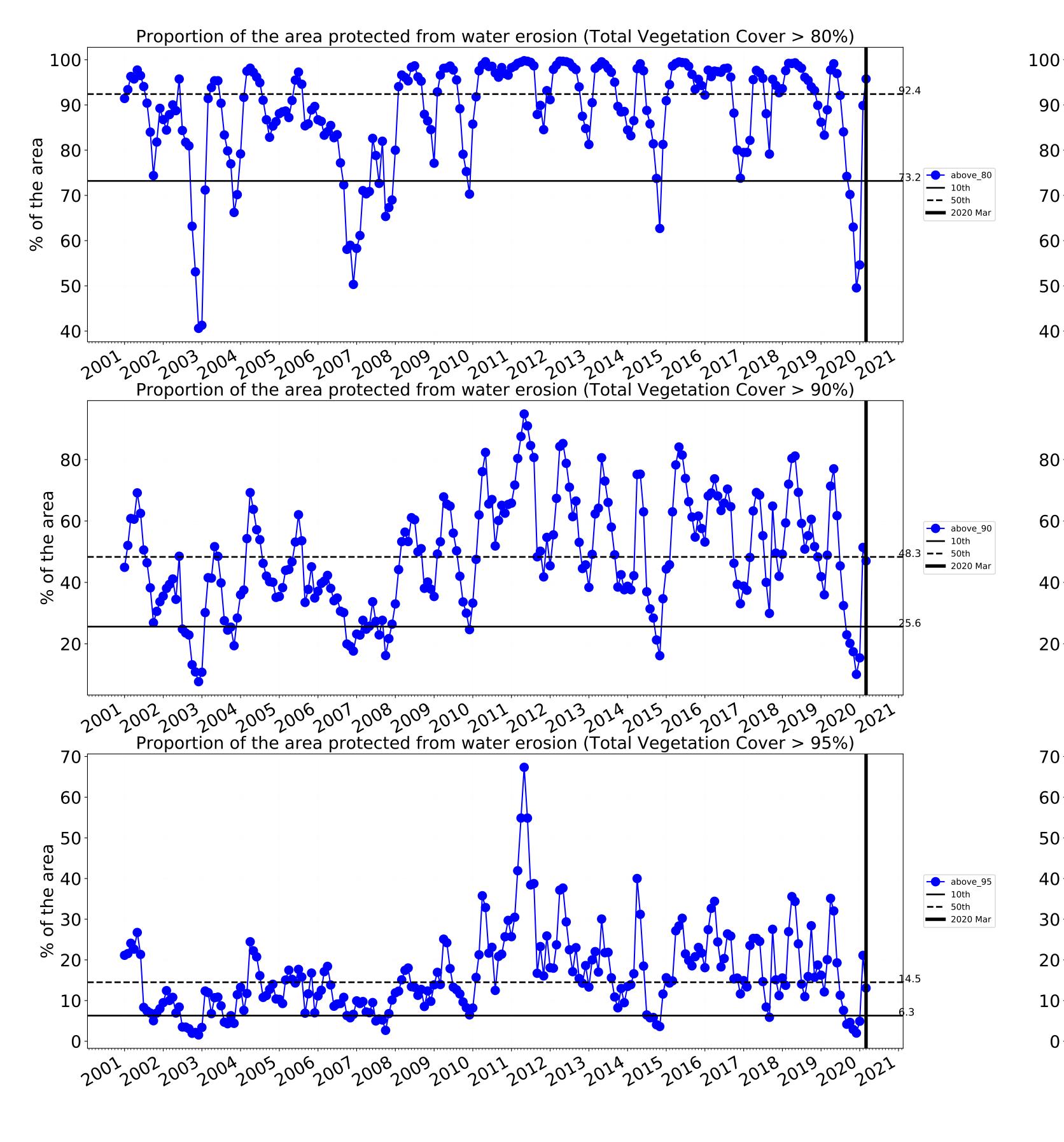


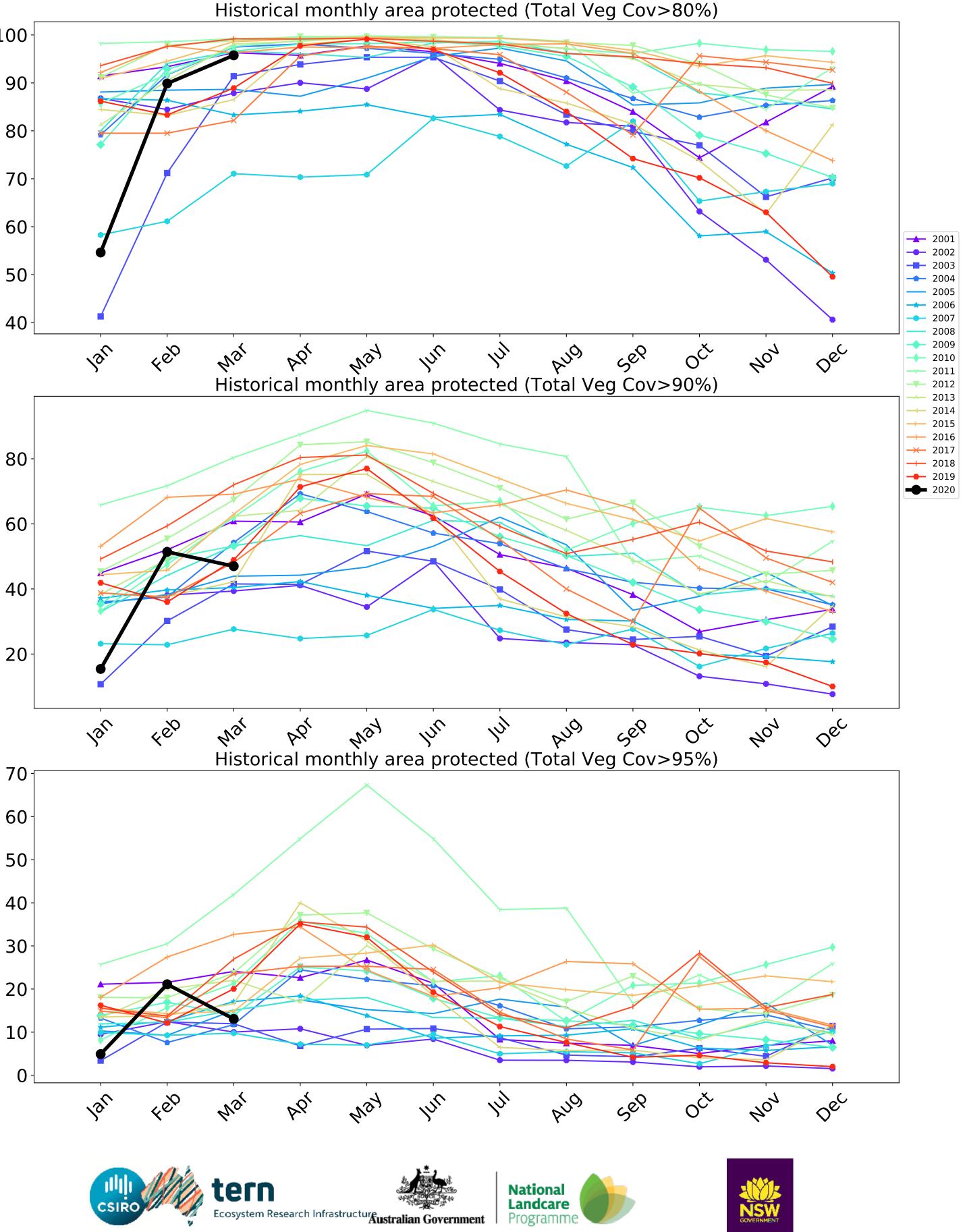
Grazing non forest timeseries

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

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



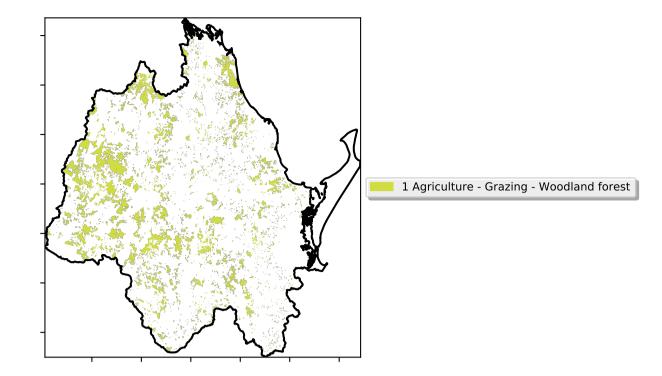




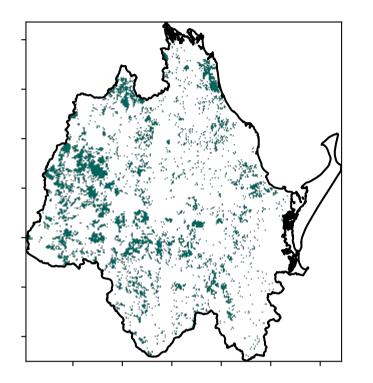
Ecosystem Research Infrastructure

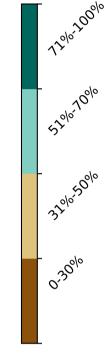
Grazing Woodland forest

Land use and forest cover

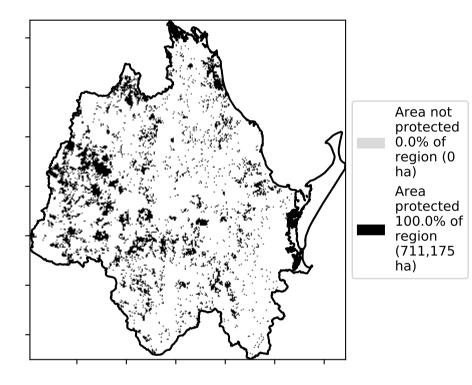


Total Vegetation Cover [%]



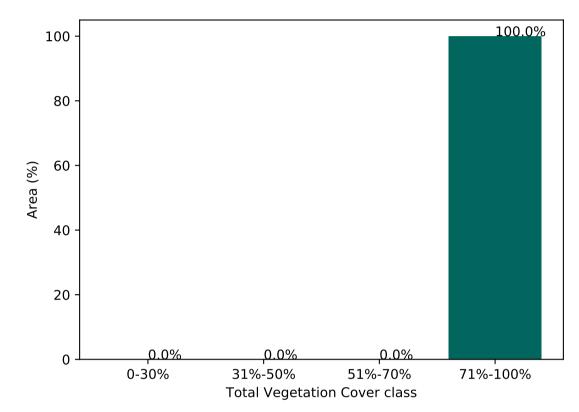


% Area protected from water erosion (>70%)

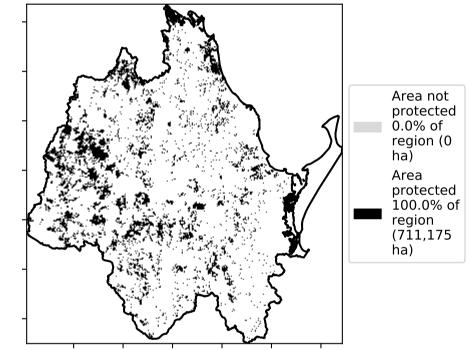




Proportion of vegetation cover class in area

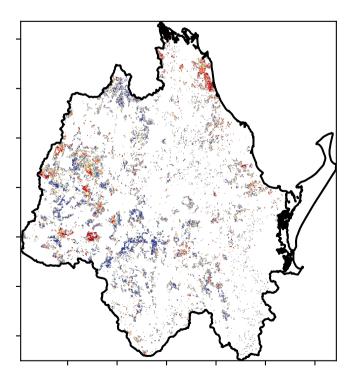


% Area protected from wind erosion (>50%)



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

Total Vegetation Cover Decile [%]

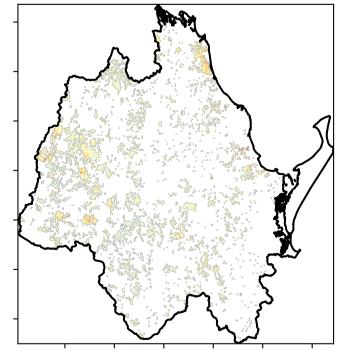


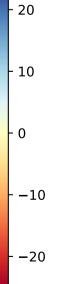


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

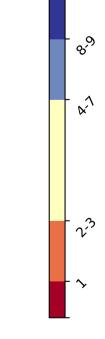
Total Vegetation Cover Anomaly [%]

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.

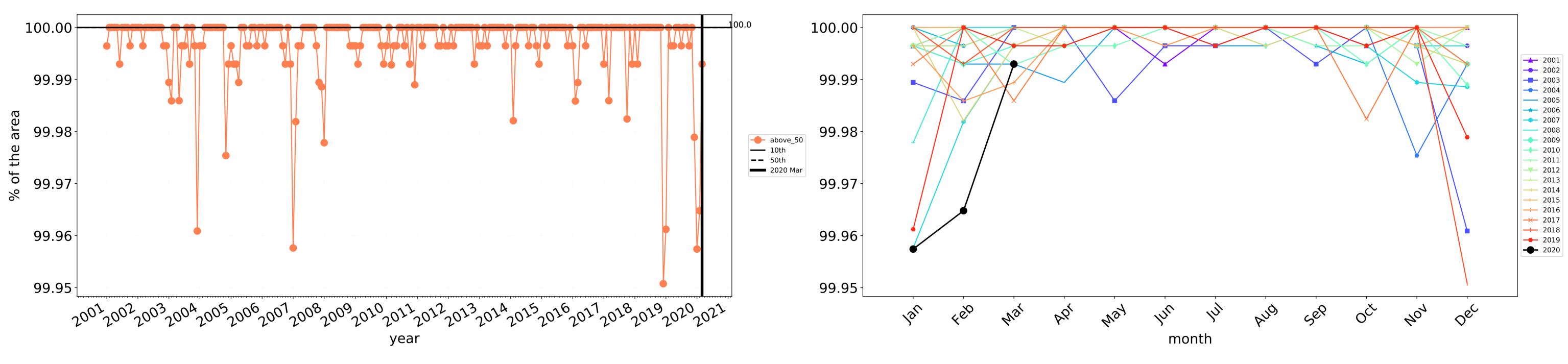






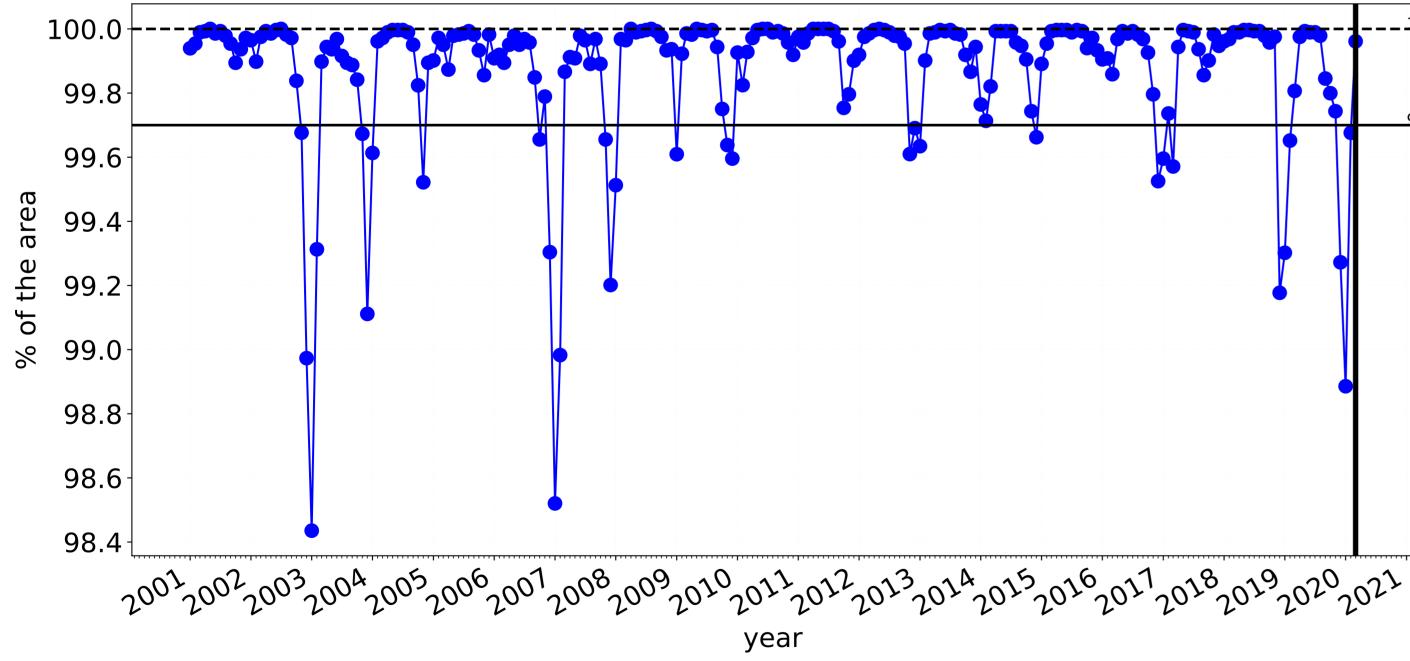


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Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

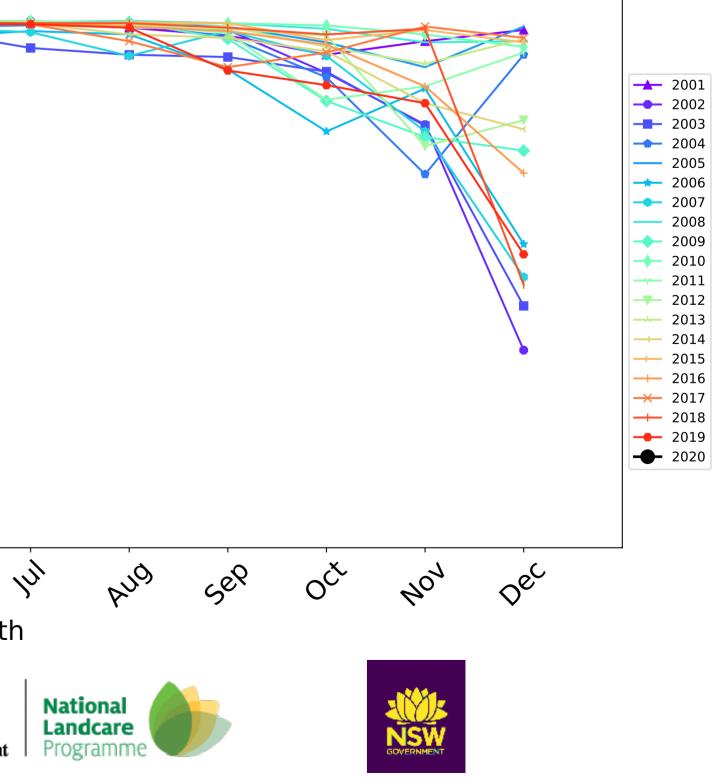
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

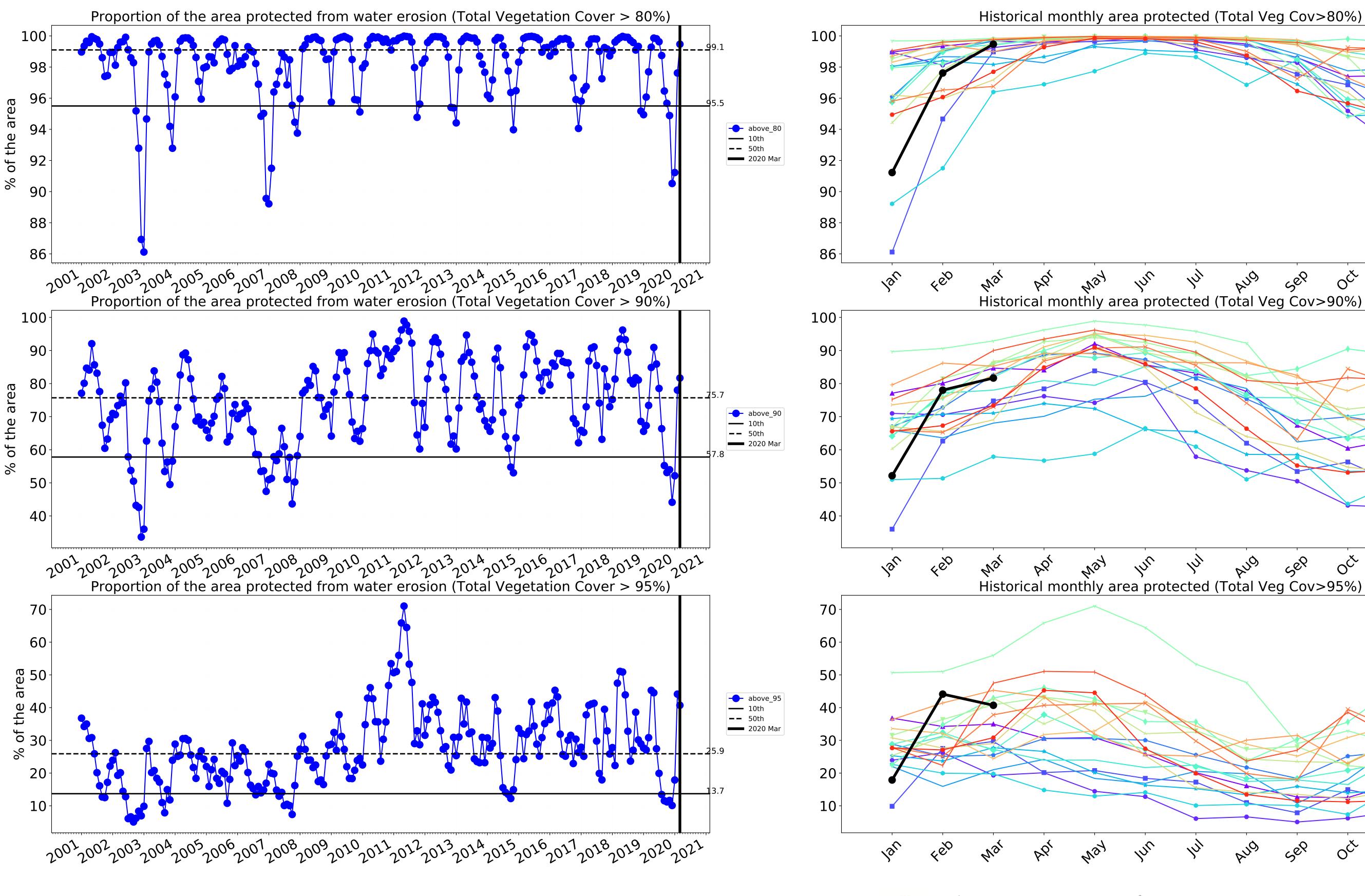


Wind erosion historical monthly area protected (Total Veg Cov >50%)

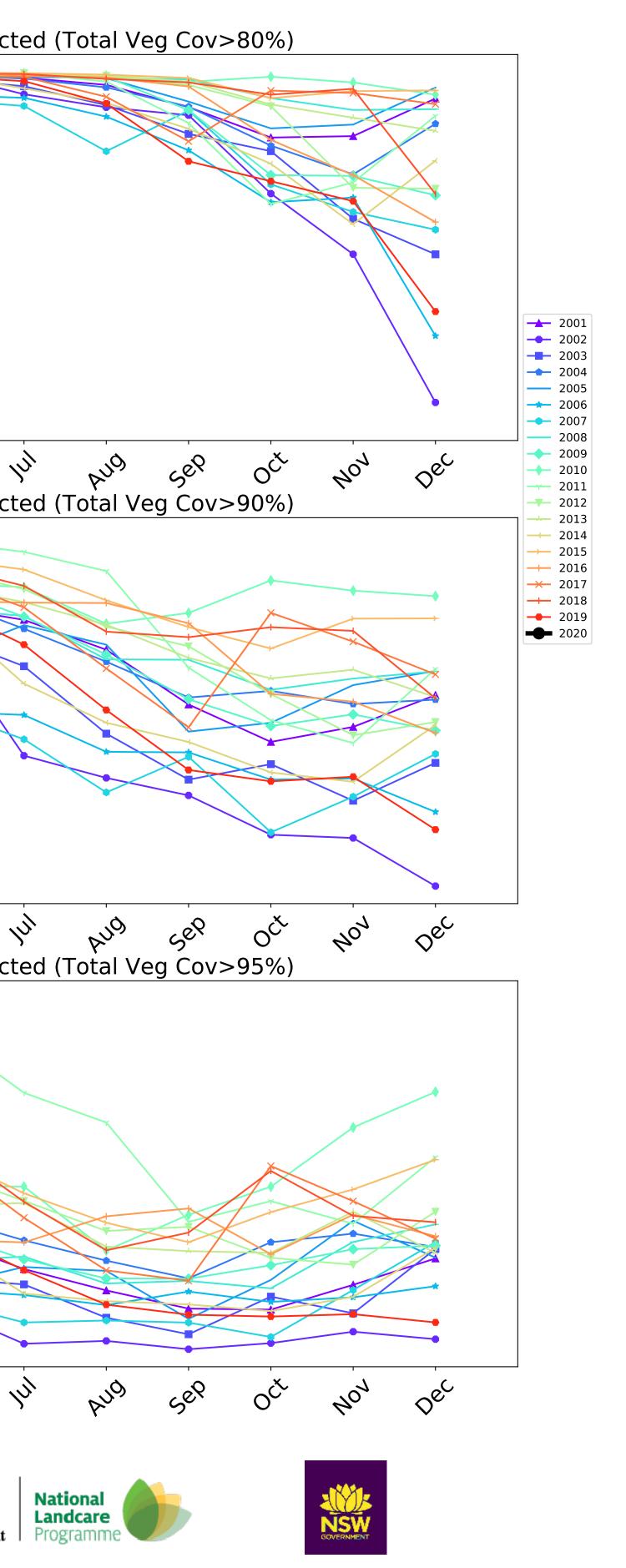
100.0 100.0 99.8 99.6 ---- above_70 **—** 10th 99.4 **——** 50th **——** 2020 Mar 99.2 99.0 98.8 98.6 98.4 feb 1ar In May Wai PQ1 month tern Ecosystem Research Infrastructure

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





Ecosystem Research Infrastructure Australian Government



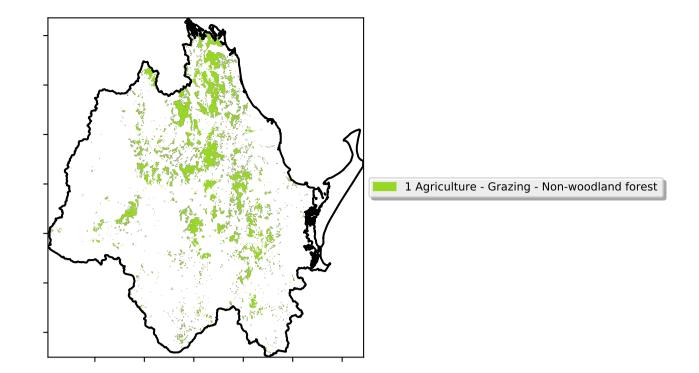
Grazing - Forest (non woodland)

12%200%

· 52% 70%

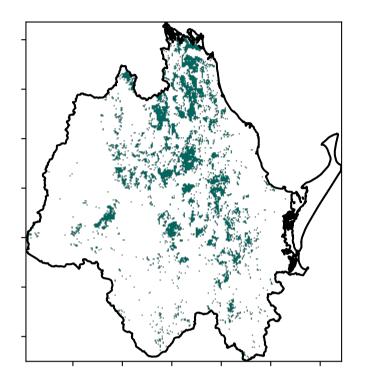
320050010

0.30%

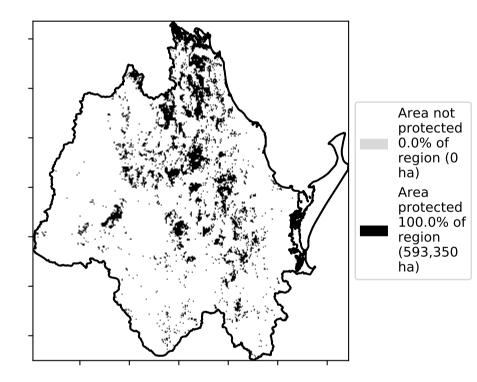


Total Vegetation Cover [%]

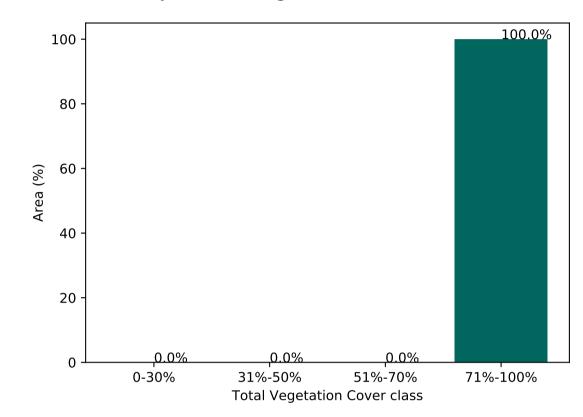
Land use and forest cover



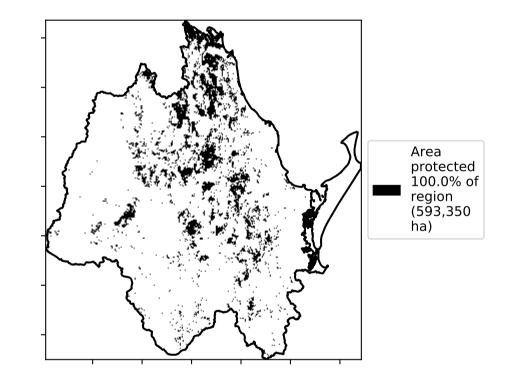








% Area protected from wind erosion (>50%)



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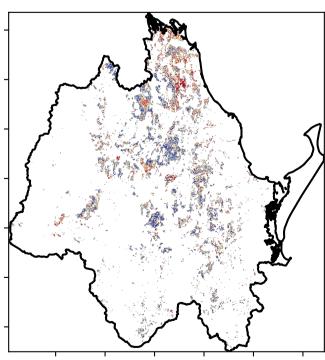
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Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

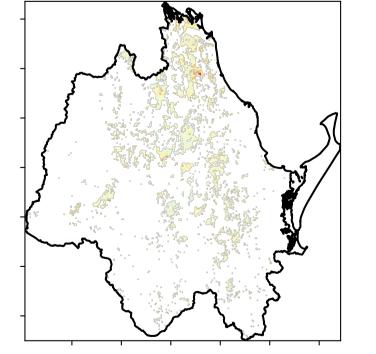
Total Vegetation Cover Decile [%]

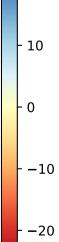




Total Vegetation Cover Anomaly [%]

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

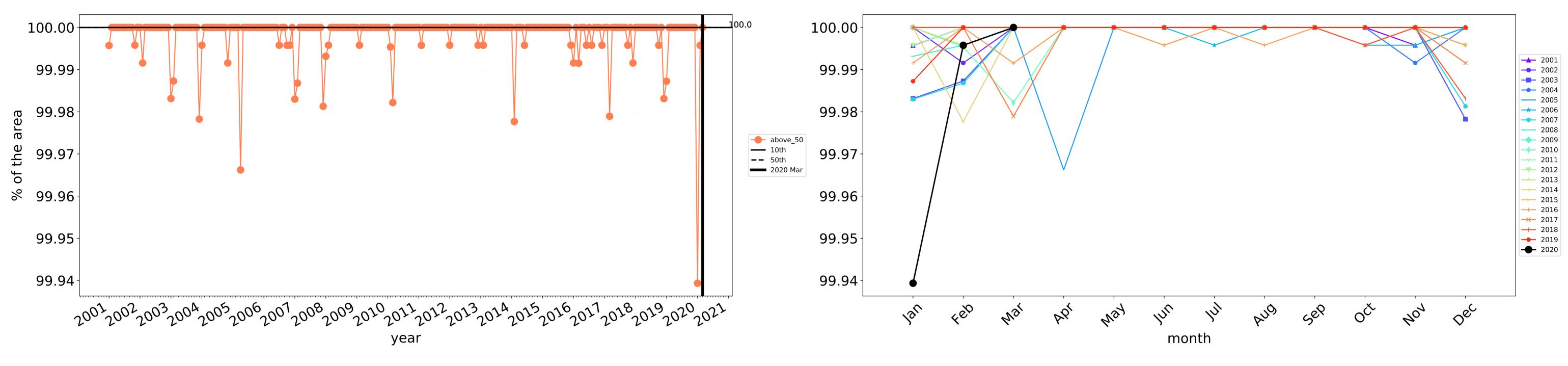




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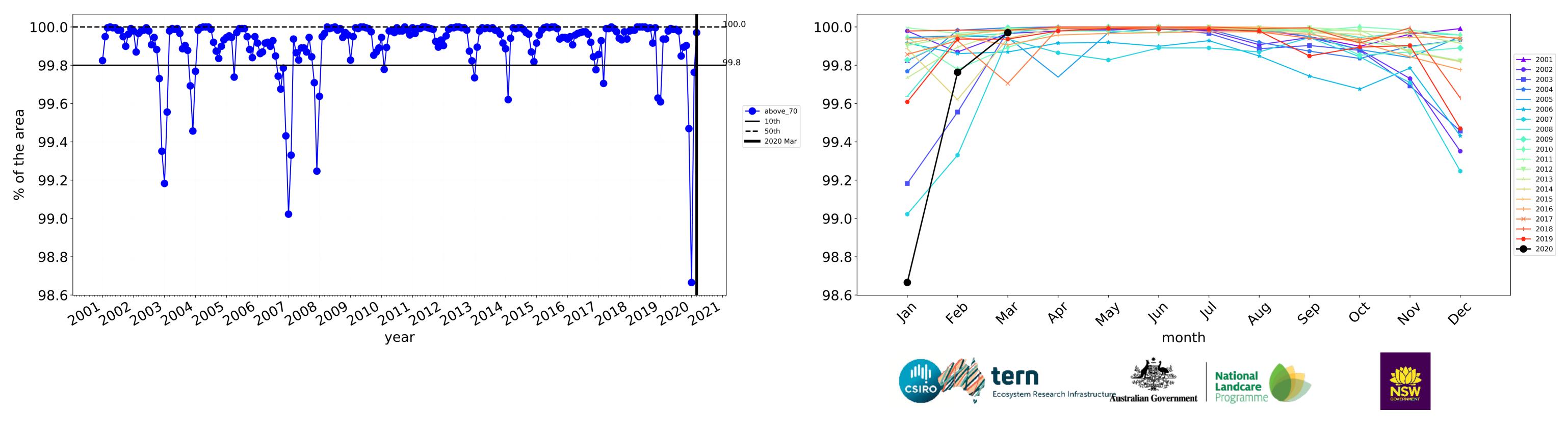
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





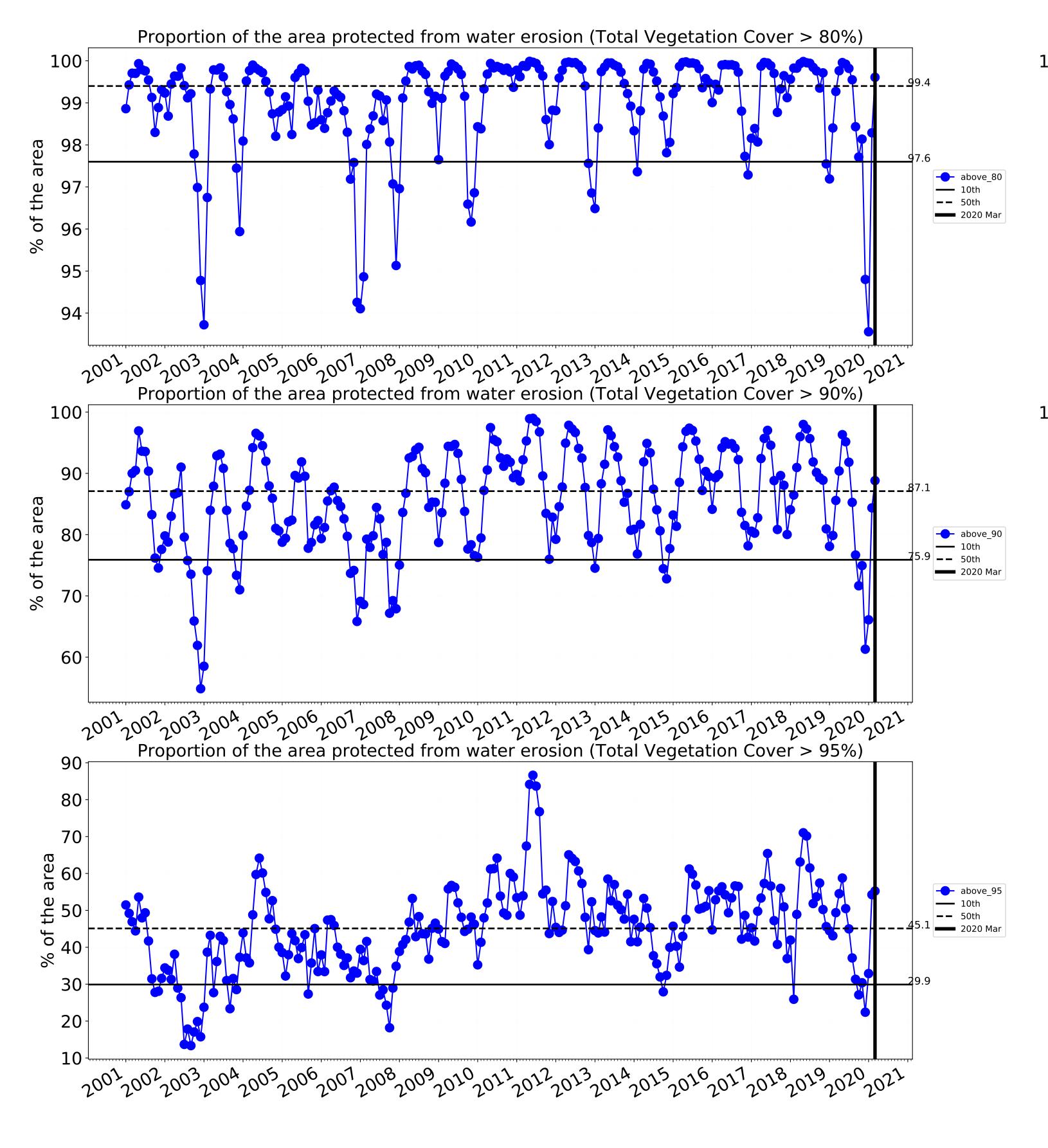
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

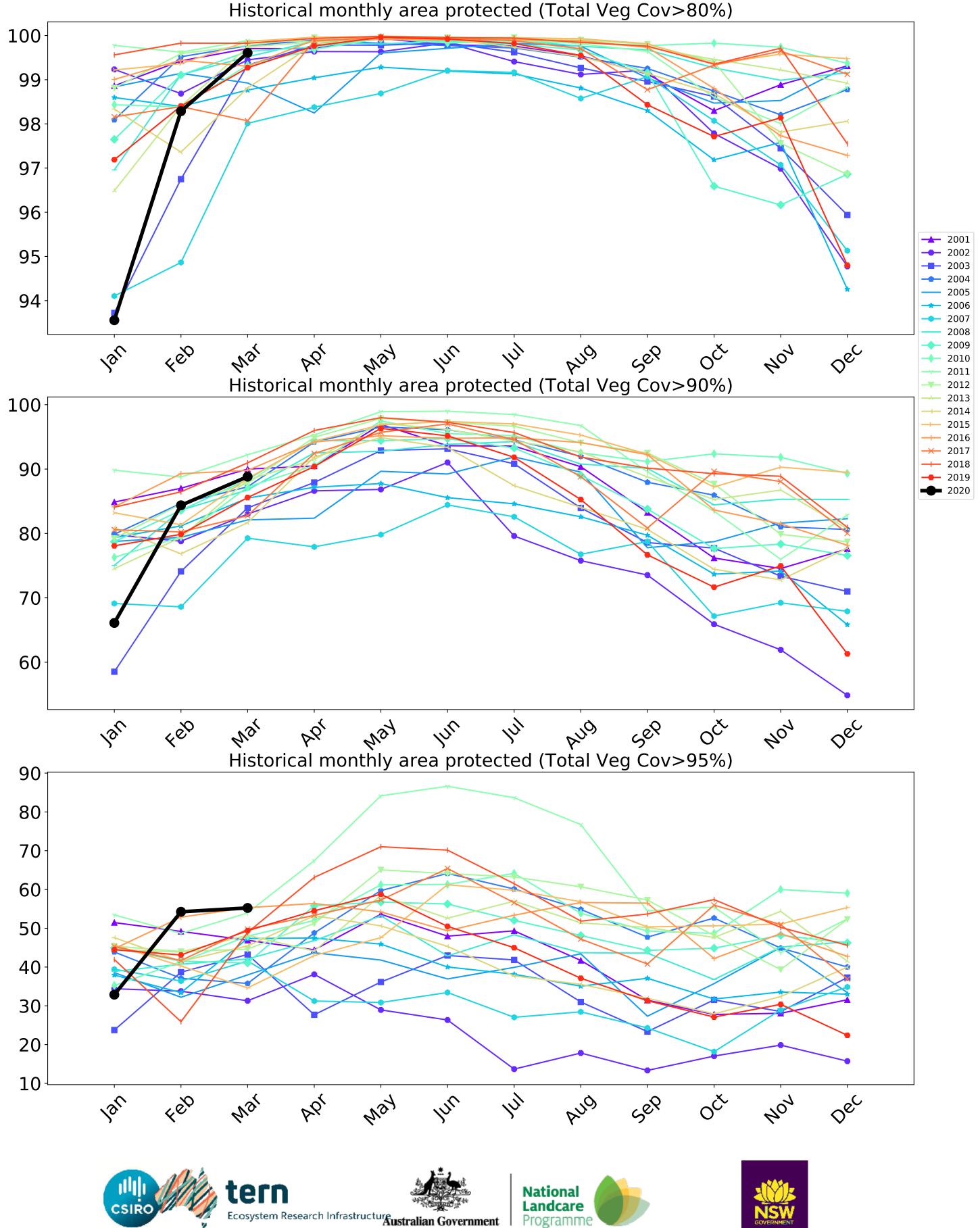
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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

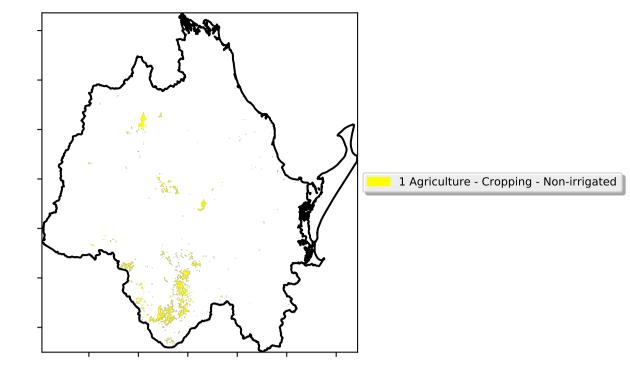




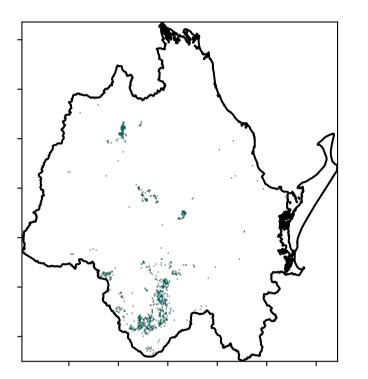
Ecosystem Research Infrastructure Australian Government

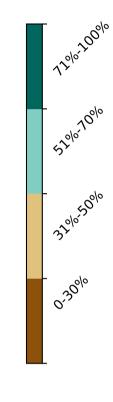
Cropping

Land use and forest cover

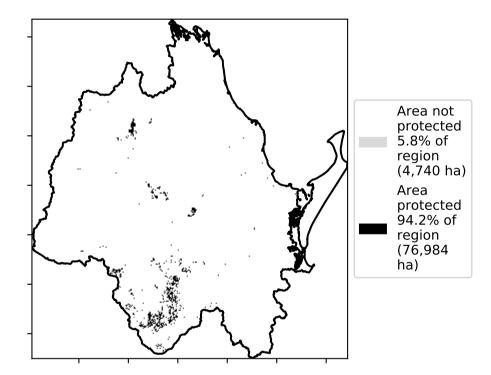


Total Vegetation Cover [%]

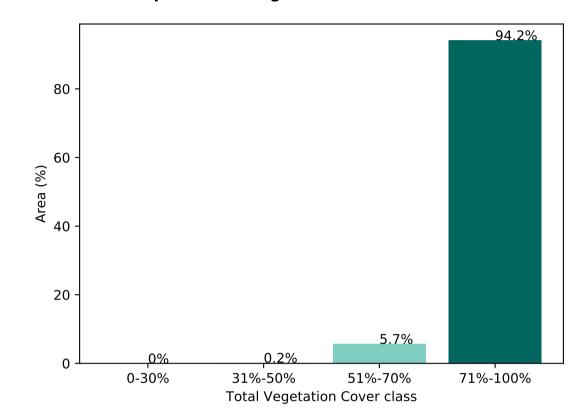




% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



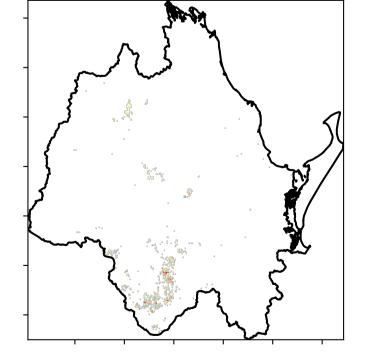
% Area protected from wind erosion (>50%)

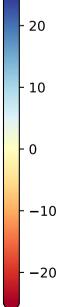


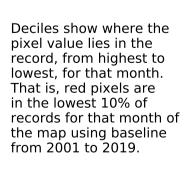
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]

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

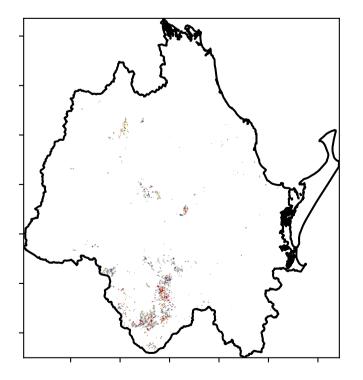


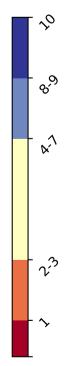




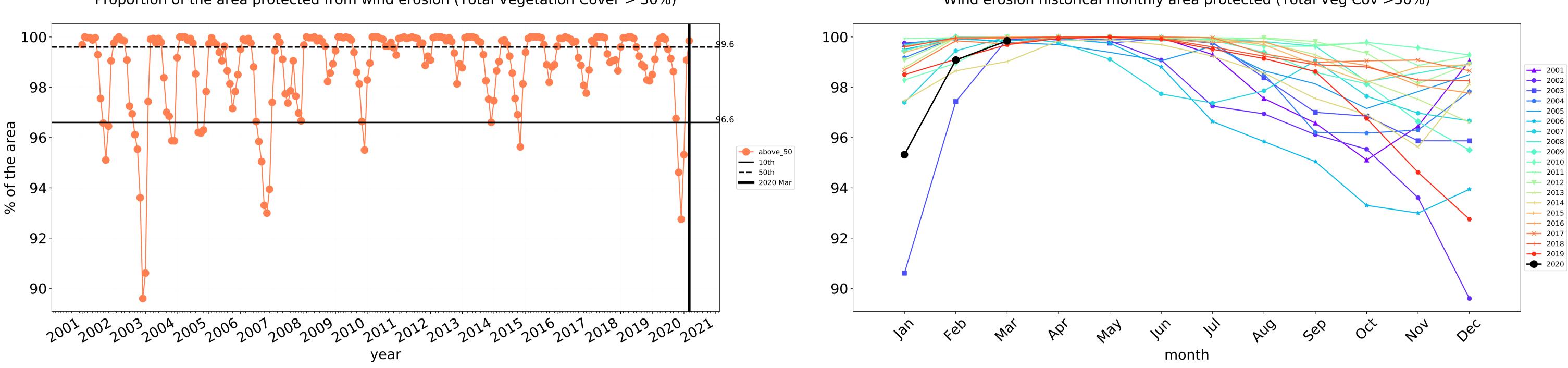
Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (81,725 ha)

Total Vegetation Cover Decile [%]



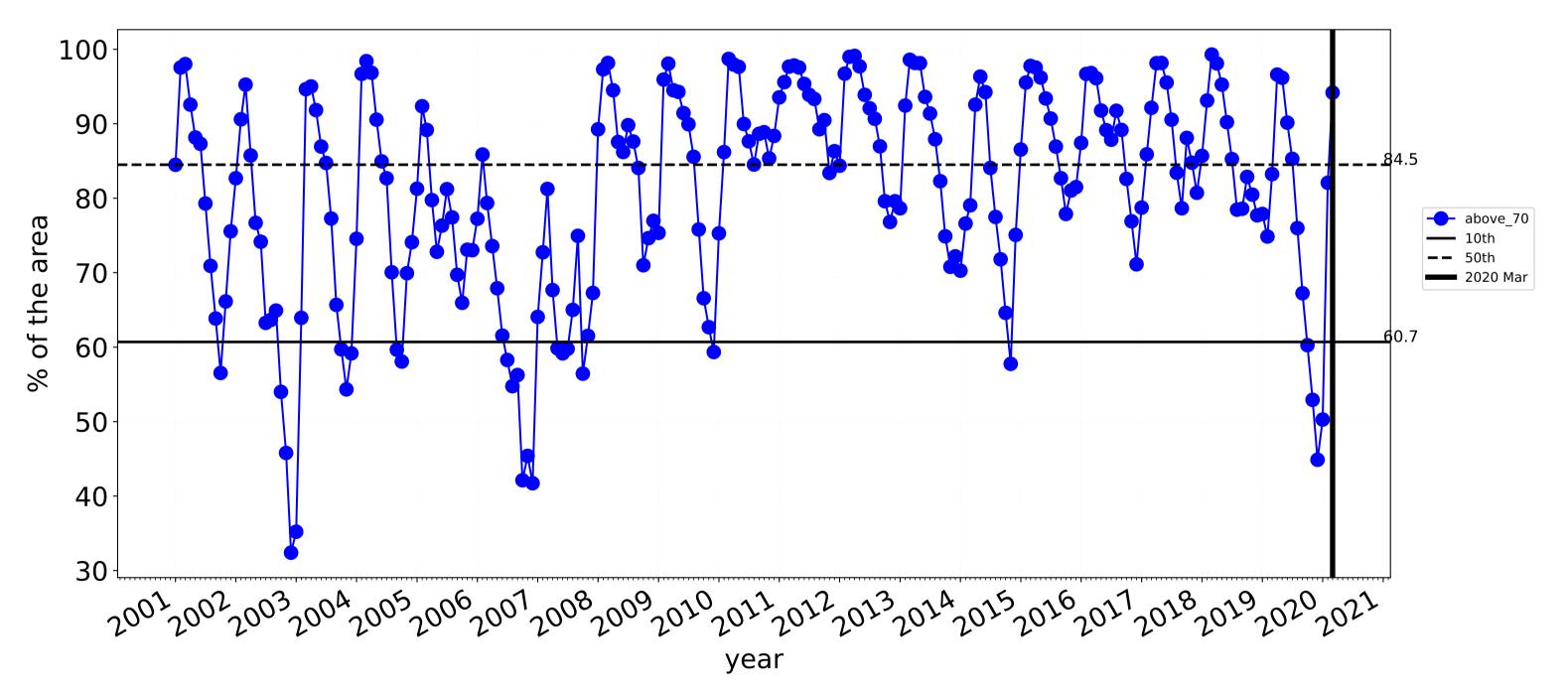






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



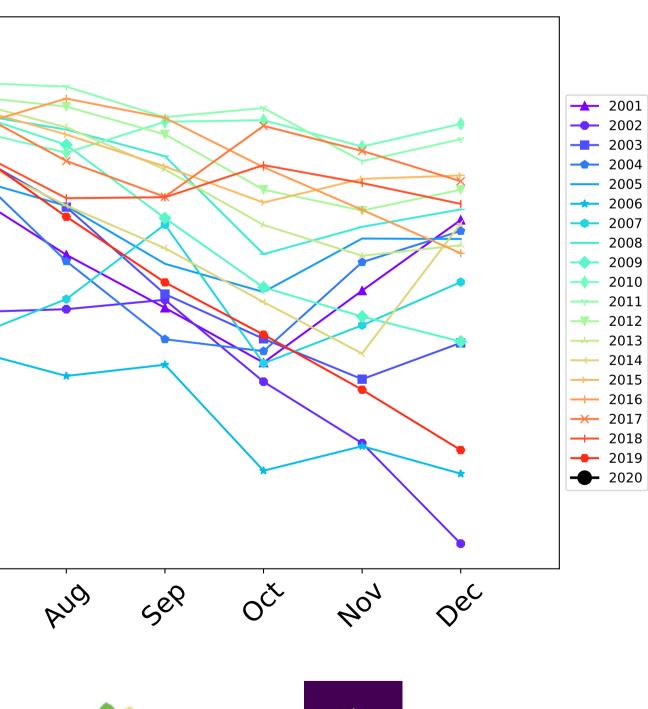


Cropping timeseries

100-90 80 70-60 50 40 30 feb lar way In war 1's Þb, month tern Ecosystem Research Infrastructure

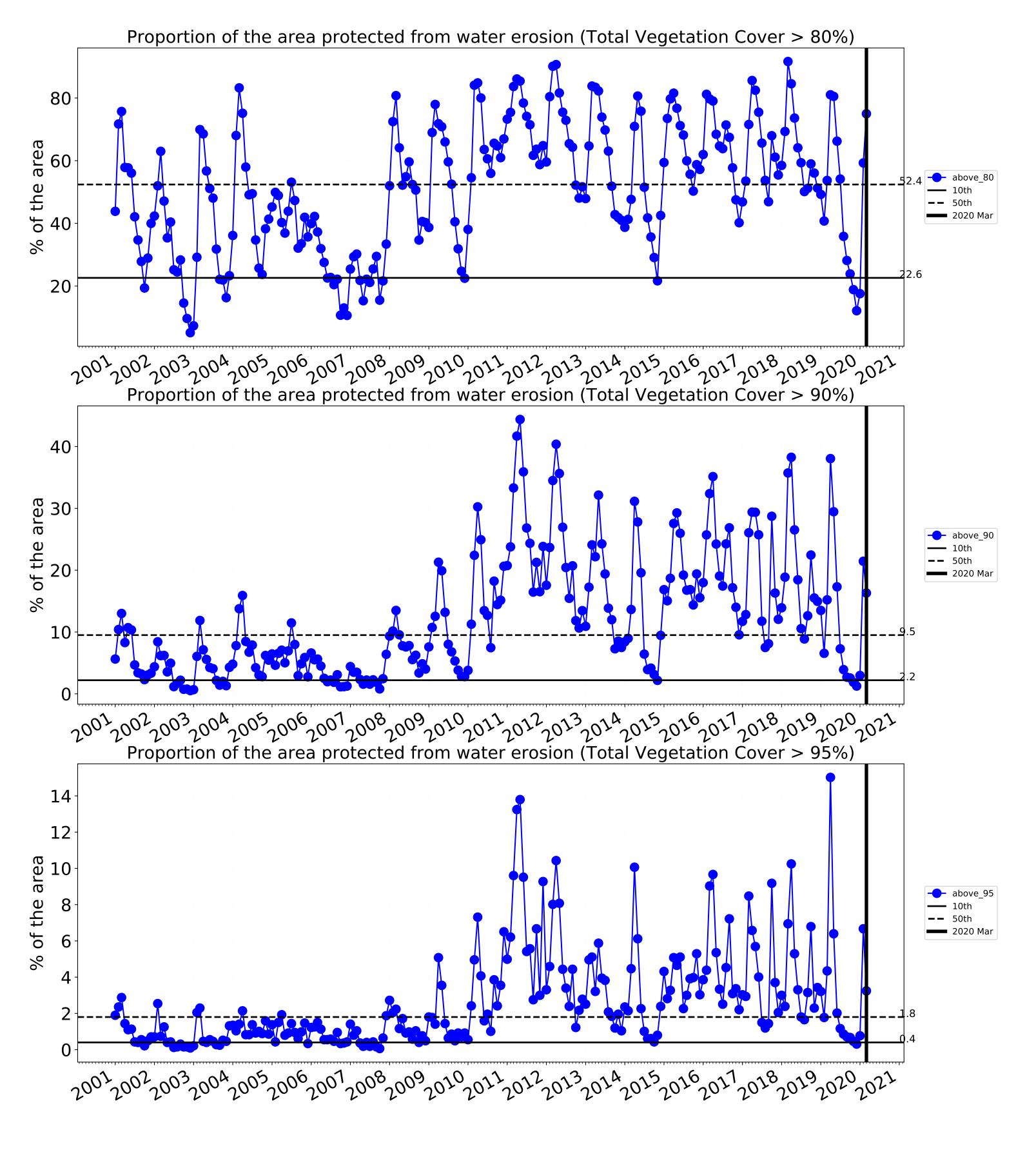
Wind erosion historical monthly area protected (Total Veg Cov >50%)

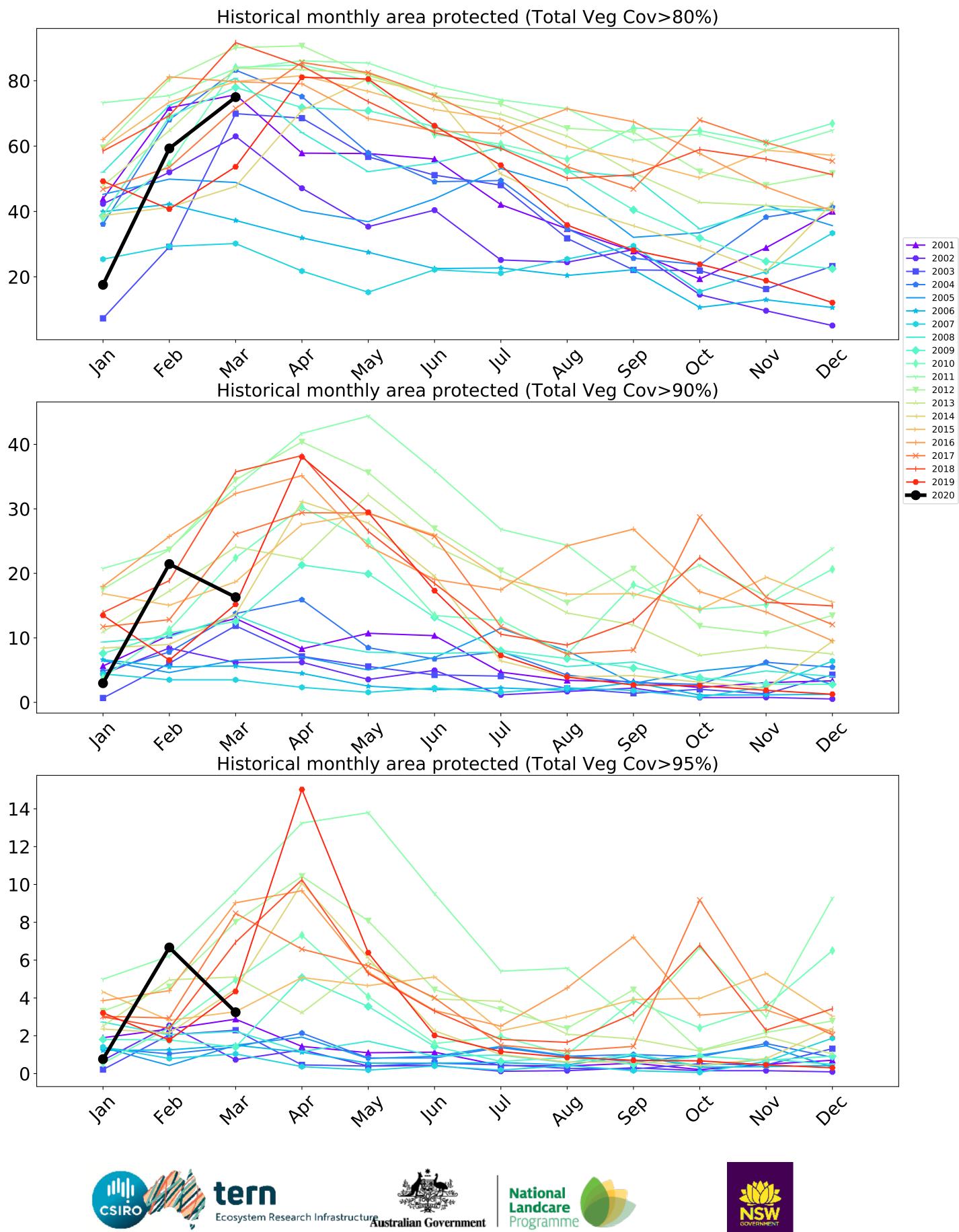
Water erosion historical monthly area protected (Total Veg Cov>70%)





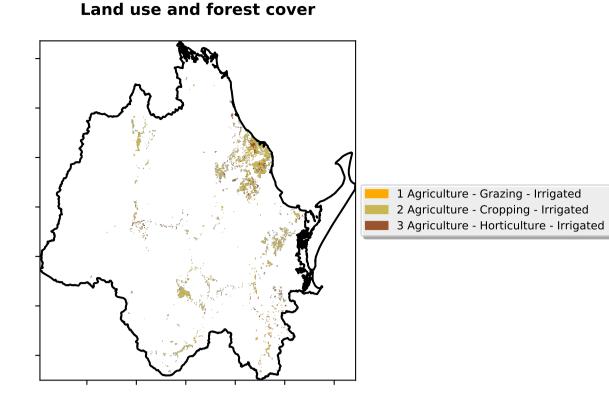




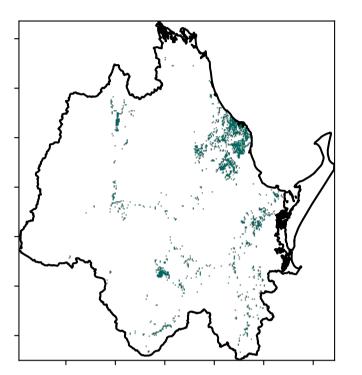


Irrigation

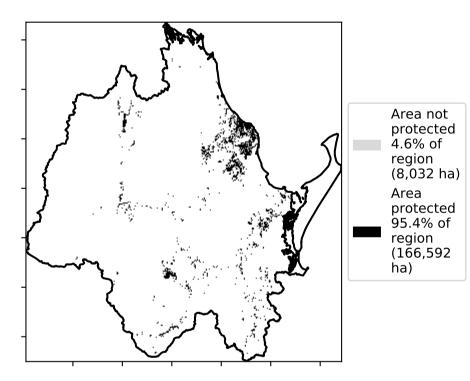
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

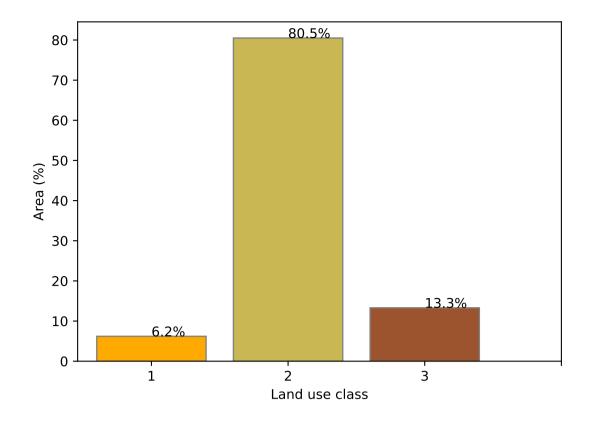


Total Vegetation Cover [%]



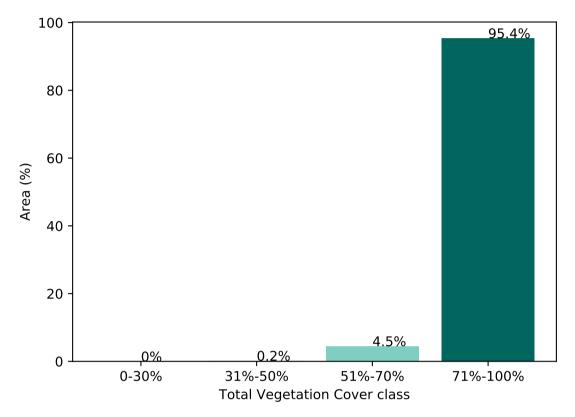




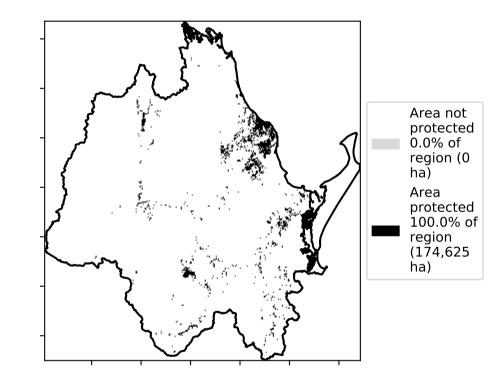


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



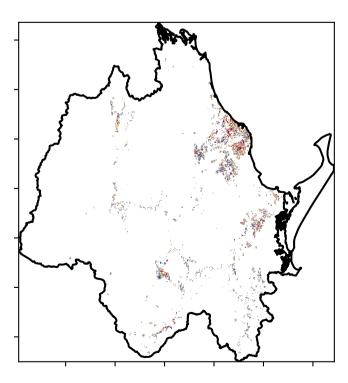
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Total Vegetation Cover Decile [%]



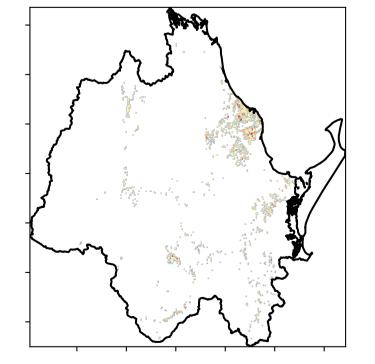


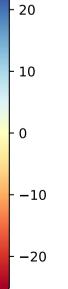
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline

the map using baseline from 2001 to 2019.

Total Vegetation Cover Anomaly [%]

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





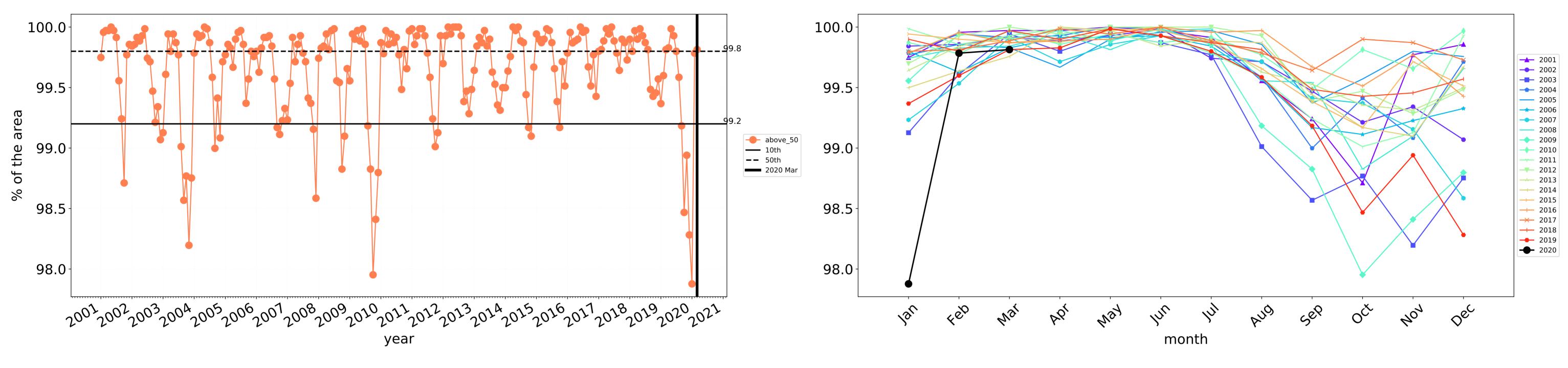
12º10-200%

· 52% 70%

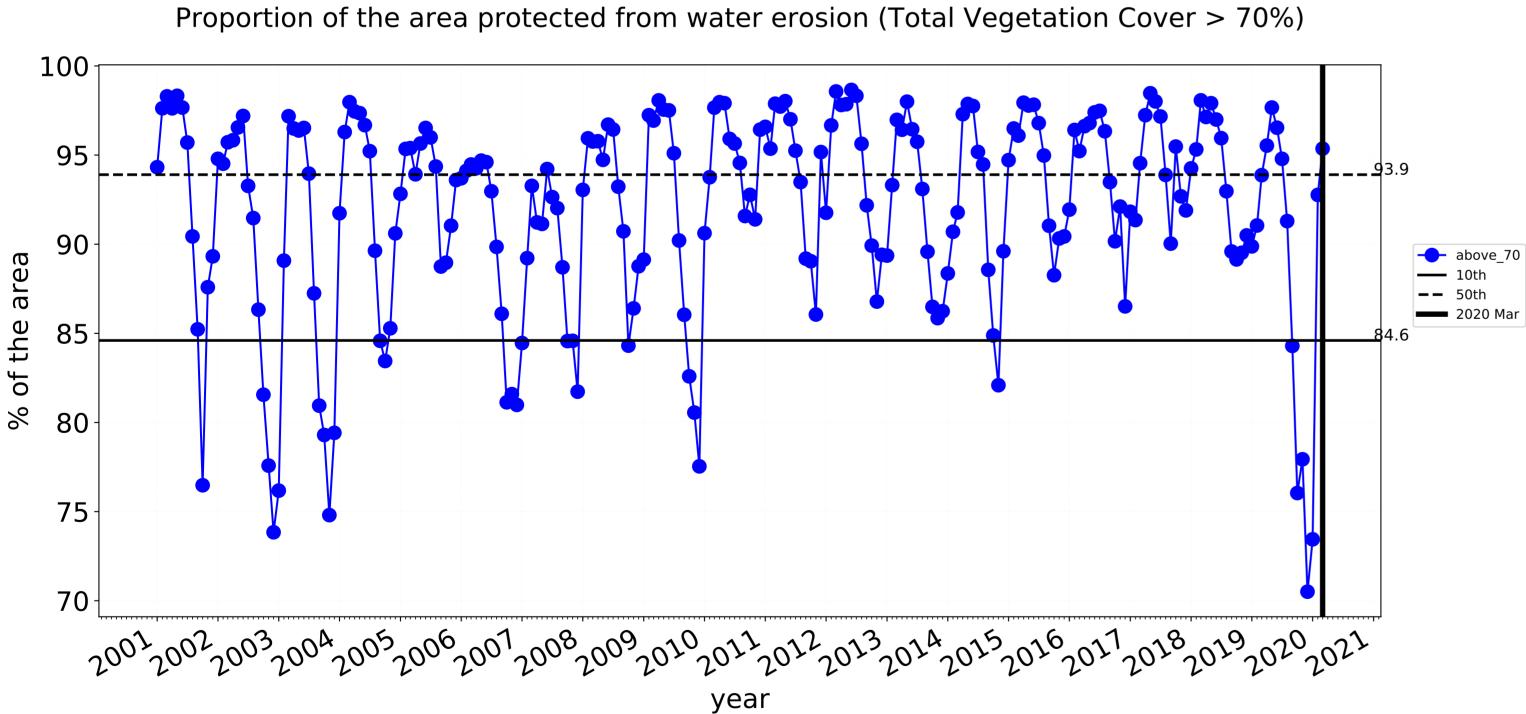
320050010

0.30%





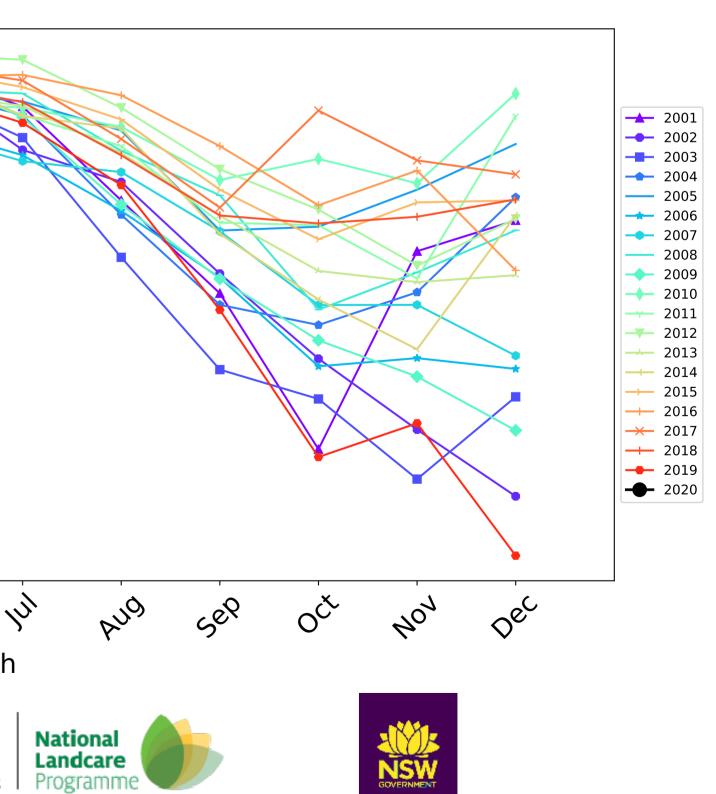
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

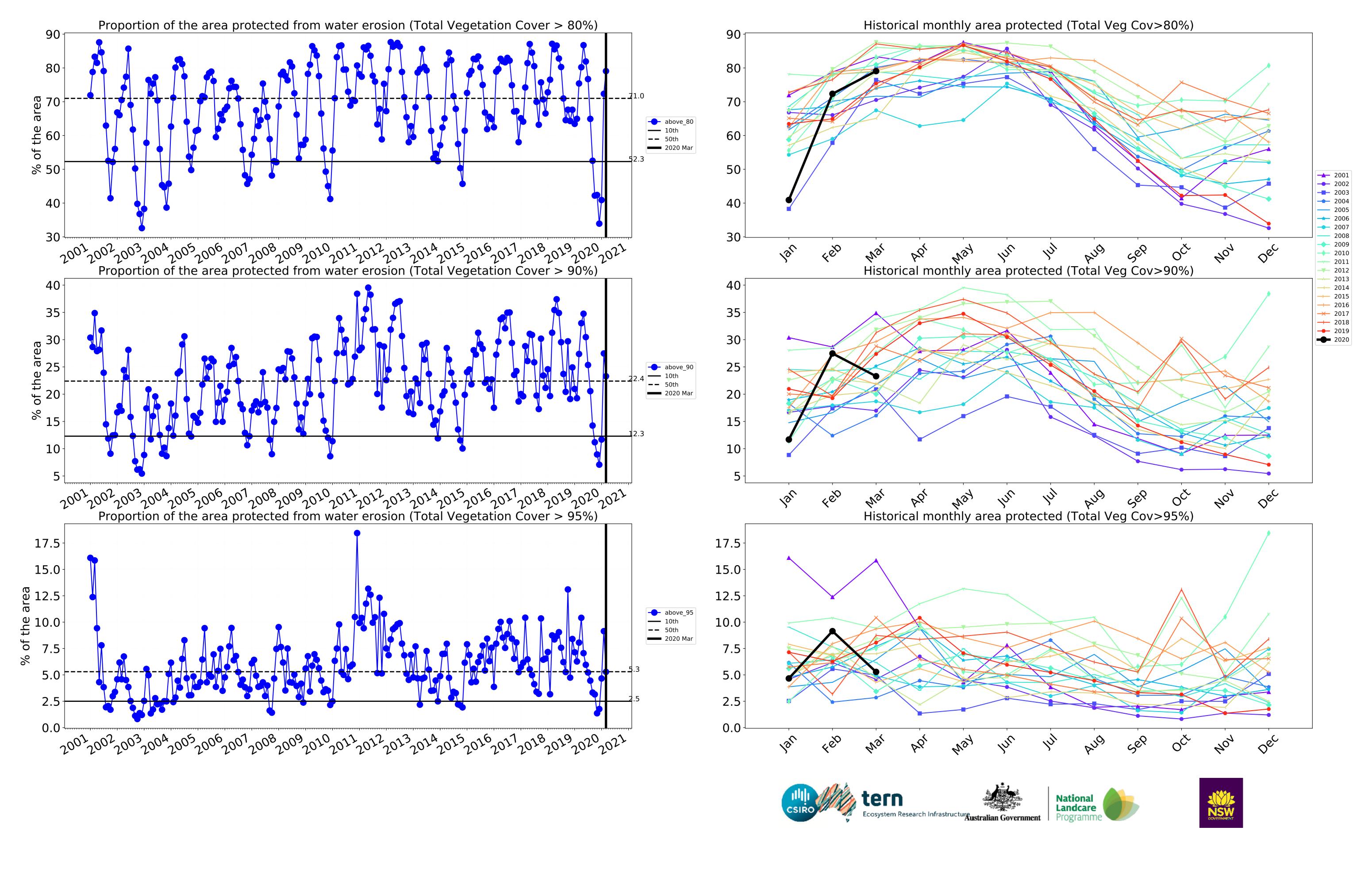


Wind erosion historical monthly area protected (Total Veg Cov >50%)

100-95 90 85 80 75 70-Jan feb May In Mai PG1 month tern Ecosystem Research Infrastructure Australian Government

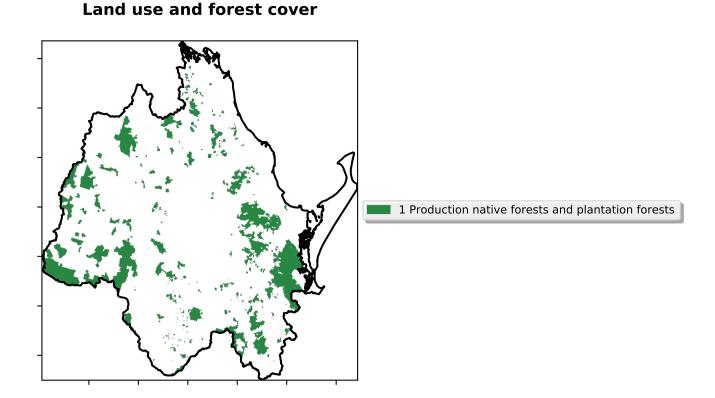
Water erosion historical monthly area protected (Total Veg Cov>70%)



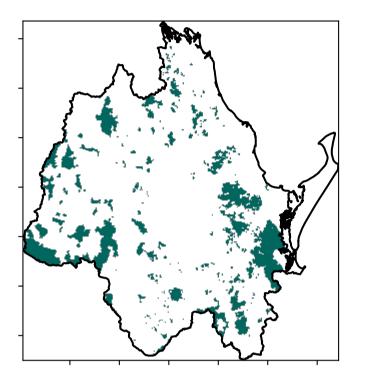


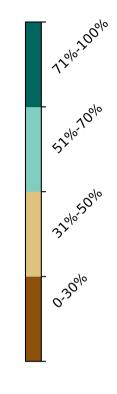
Production native forests and plantation forests

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



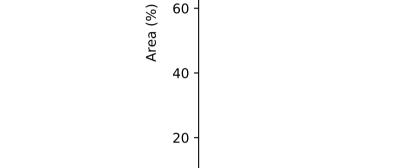
Total Vegetation Cover [%]





% Area protected from water erosion (>70%)





0

0.0%

0-30%

100

80

Proportion of vegetation cover class in area

0.0%

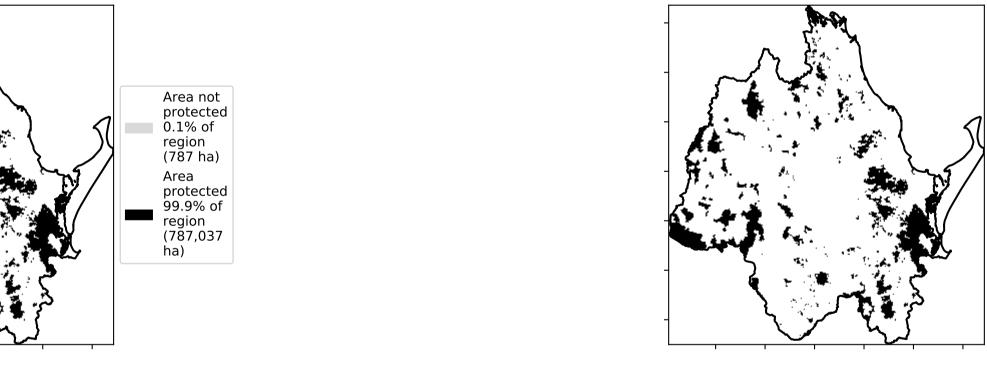
Total Vegetation Cover class

% Area protected from wind erosion (>50%)

31%-50%

0.1%

51%-70%





Area

ha)

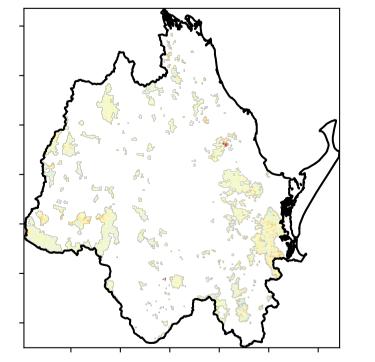
protected 100.0% of region (787,825

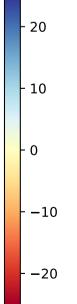
99.9%

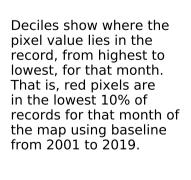
71%-100%

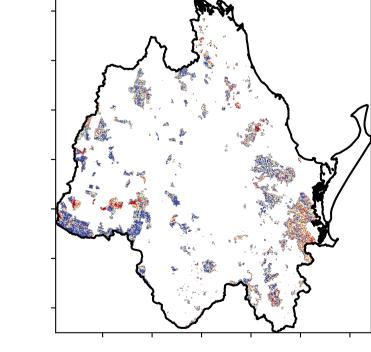
Total Vegetation Cover Anomaly [%]

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

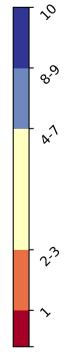




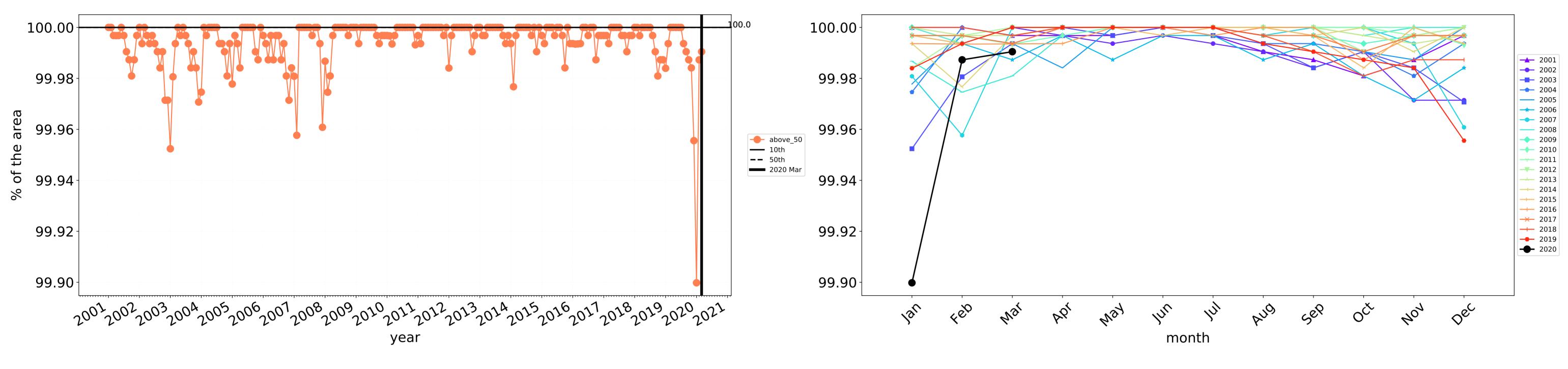




Total Vegetation Cover Decile [%]

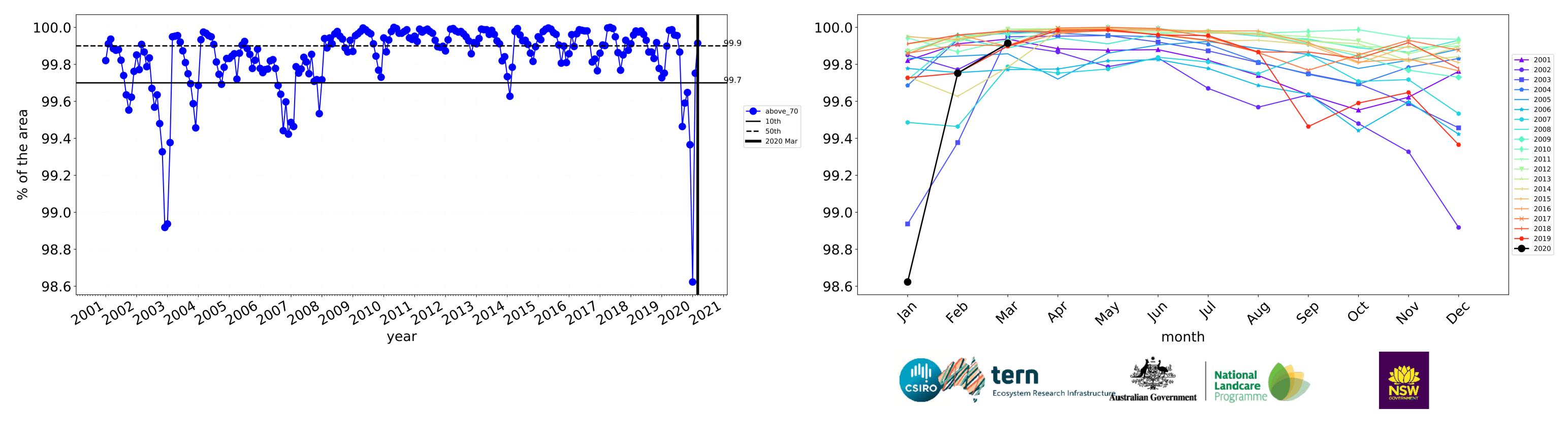




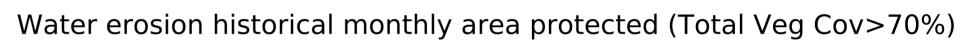


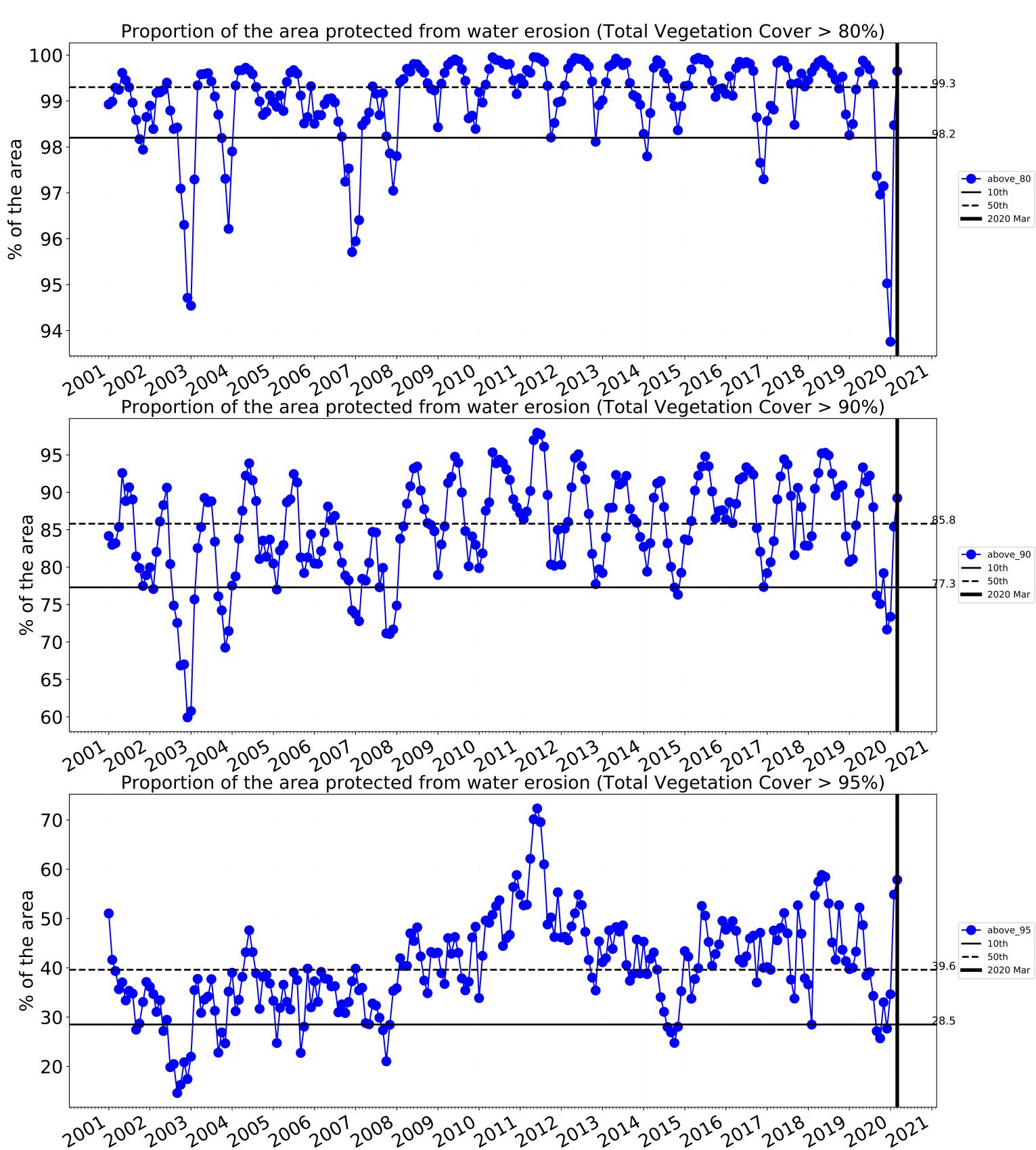
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

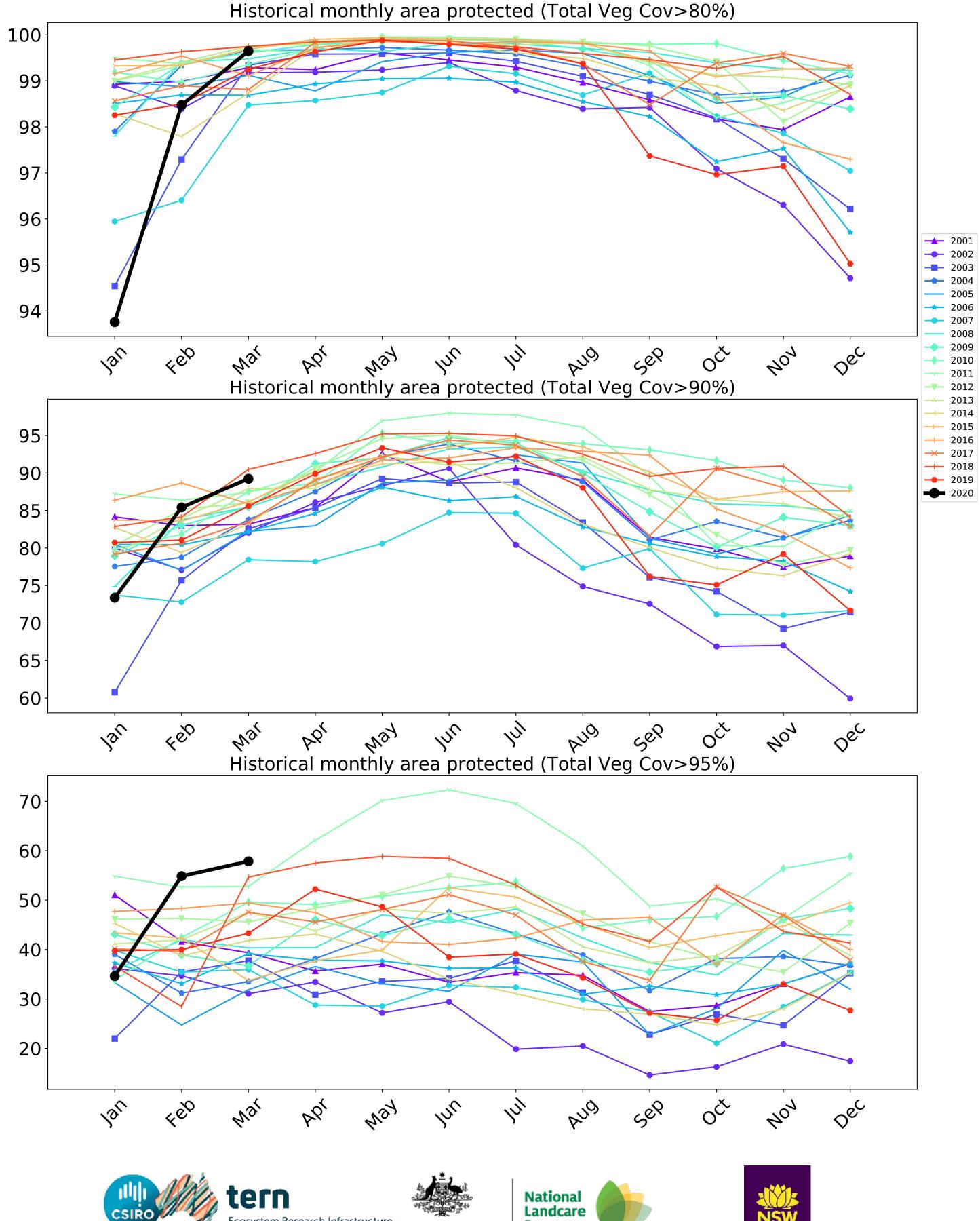
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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









Programm

Burnett Mary (5,557,600 ha and no data 19,255 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	5,557,600	100.0% 5,555,875	99.9% 5,551,175	99.2% 5,512,750	96.0% 5,334,675	65.2% 3,623,325	32.0% 1,776,775
Conservation and natural environments	675,725	99.8% 674,475	99.4% 671,850	98.4% 665,150	96.6% 653,075	84.2% 569,250	52.7% 356,275
Conservation and natural environments Woodland forest	180,850	99.8% 180,450	99.4% 179,700	98.2% 177,550	95.4% 172,575	80.0% 144,750	46.6% 84,200
Conservation and natural environments Forest (non woodland)	466,350	100.0% 466,225	99.9% 465,675	99.3% 462,925	98.1% 457,650	87.6% 408,325	56.8% 264,725
Agriculture	3,882,300	100.0% 3,882,275	100.0% 3,881,625	99.5% 3,862,350	95.8% 3,720,225	58.0% 2,253,075	24.0% 932,650
Grazing	3,620,275	100.0% 3,620,275	100.0% 3,620,050	99.8% 3,613,300	97.1% 3,515,750	60.7% 2,196,325	25.4% 920,025
Grazing non forest	2,315,750	100.0% 2,315,750	100.0% 2,315,575	99.7% 2,309,225	95.7% 2,217,325	47.0% 1,088,425	13.1% 302,725
Grazing Woodland forest	711,175	100.0% 711,175	100.0% 711,125	100.0% 710,900	99.5% 707,400	81.7% 580,875	40.7% 289,550
Grazing - Forest (non woodland)	593,350	100.0% 593,350	100.0% 593,350	100.0% 593,175	99.6% 591,025	88.8% 527,025	55.2% 327,750
Cropping	81,725	100.0% 81,725	99.8% 81,600	94.2% 76,975	75.0% 61,275	16.3% 13,325	3.2% 2,650
Irrigation	174,625	100.0% 174,600	99.8% 174,300	95.4% 166,525	79.1% 138,075	23.3% 40,675	5.3% 9,225
Production native forests and plantation forests	787,825	100.0% 787,825	100.0% 787,750	99.9% 787,150	99.6% 785,050	89.2% 703,025	57.9% 455,825

