Total vegetation cover soil protection Region:NRM West Gippsland VIC

Date: February 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

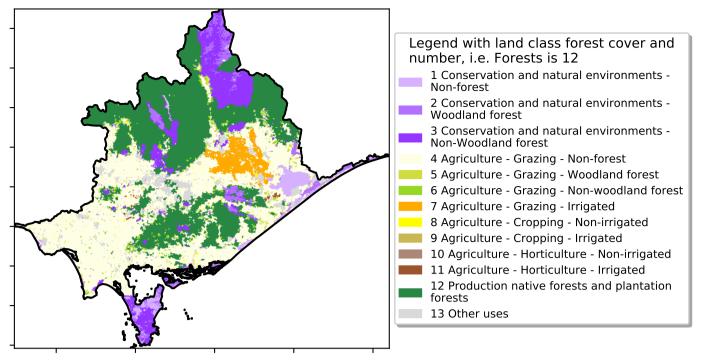


Vegetation Cover Feb 2021

Land use and forest cover

Proportion of each land class in area





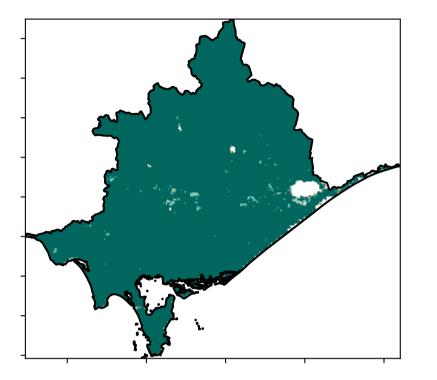
1210-20010

· 52°10'70°10

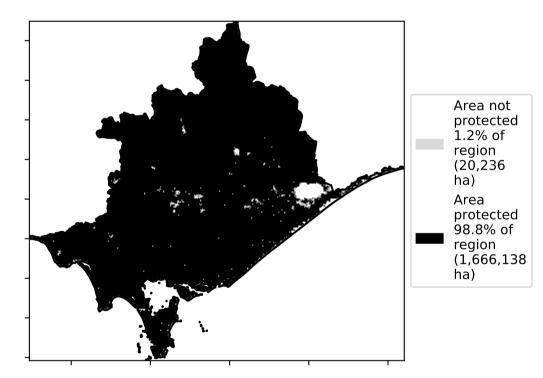
320050010

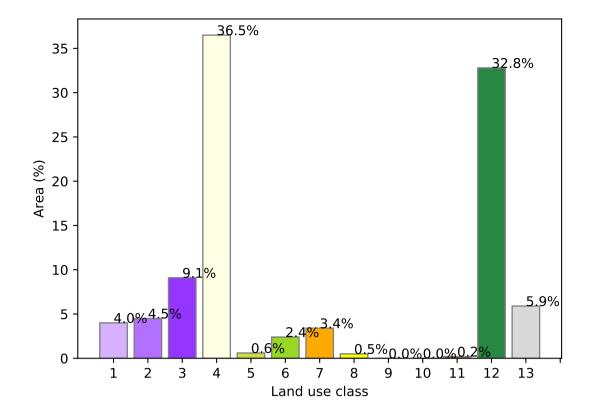
0-30%

Total Vegetation Cover [%]

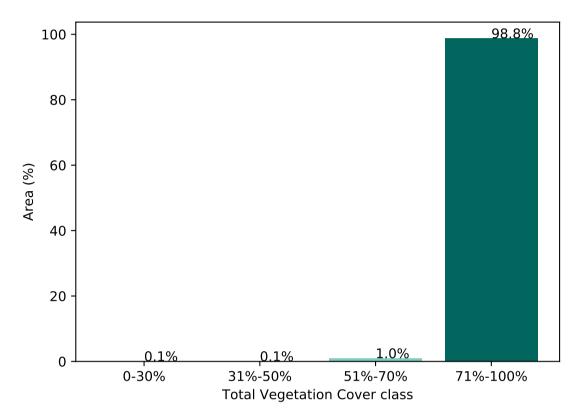


% Area protected from water erosion (>70%)

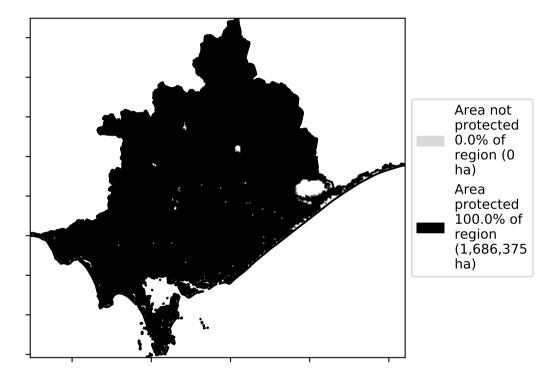




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



 $\sqrt{2}$

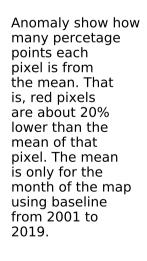
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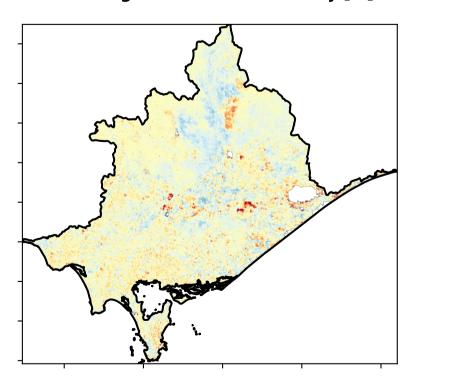
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Total Vegetation Cover Anomaly [%]

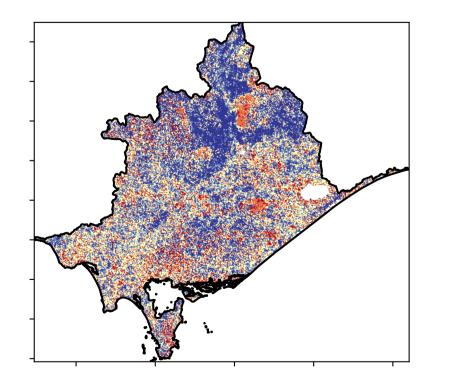
Total Vegetation Cover Decile [%]



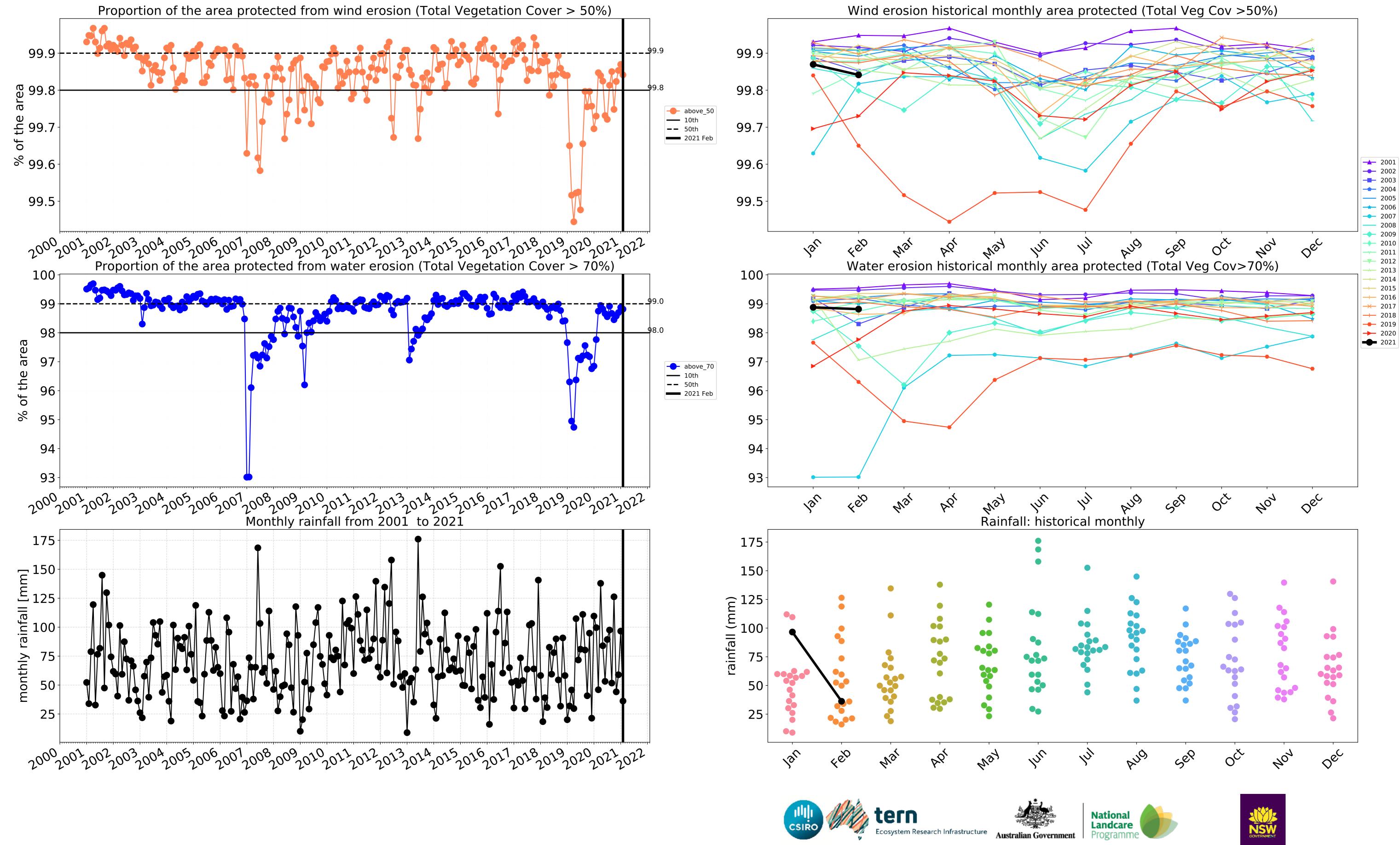


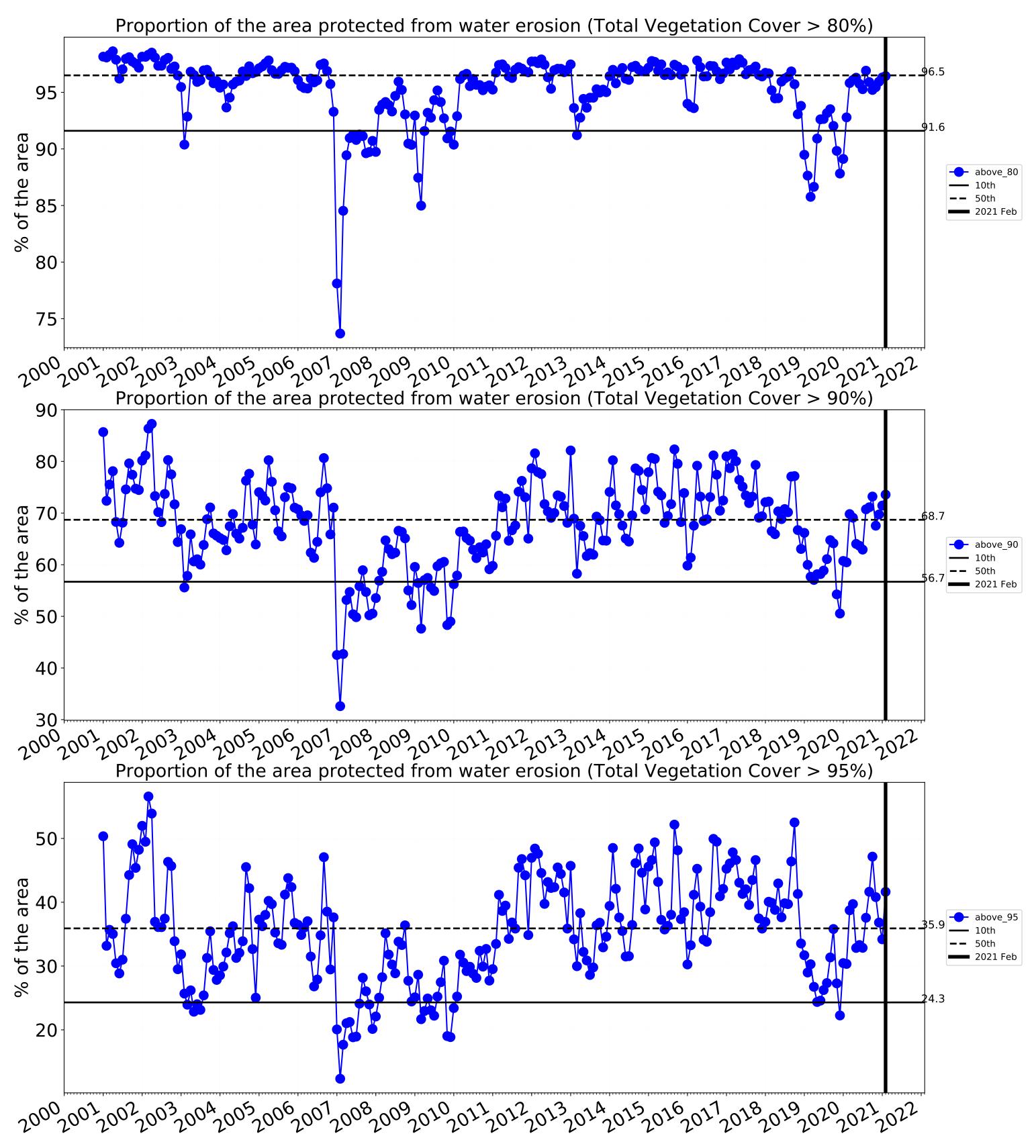
- 20 - 10 - 0 - -10

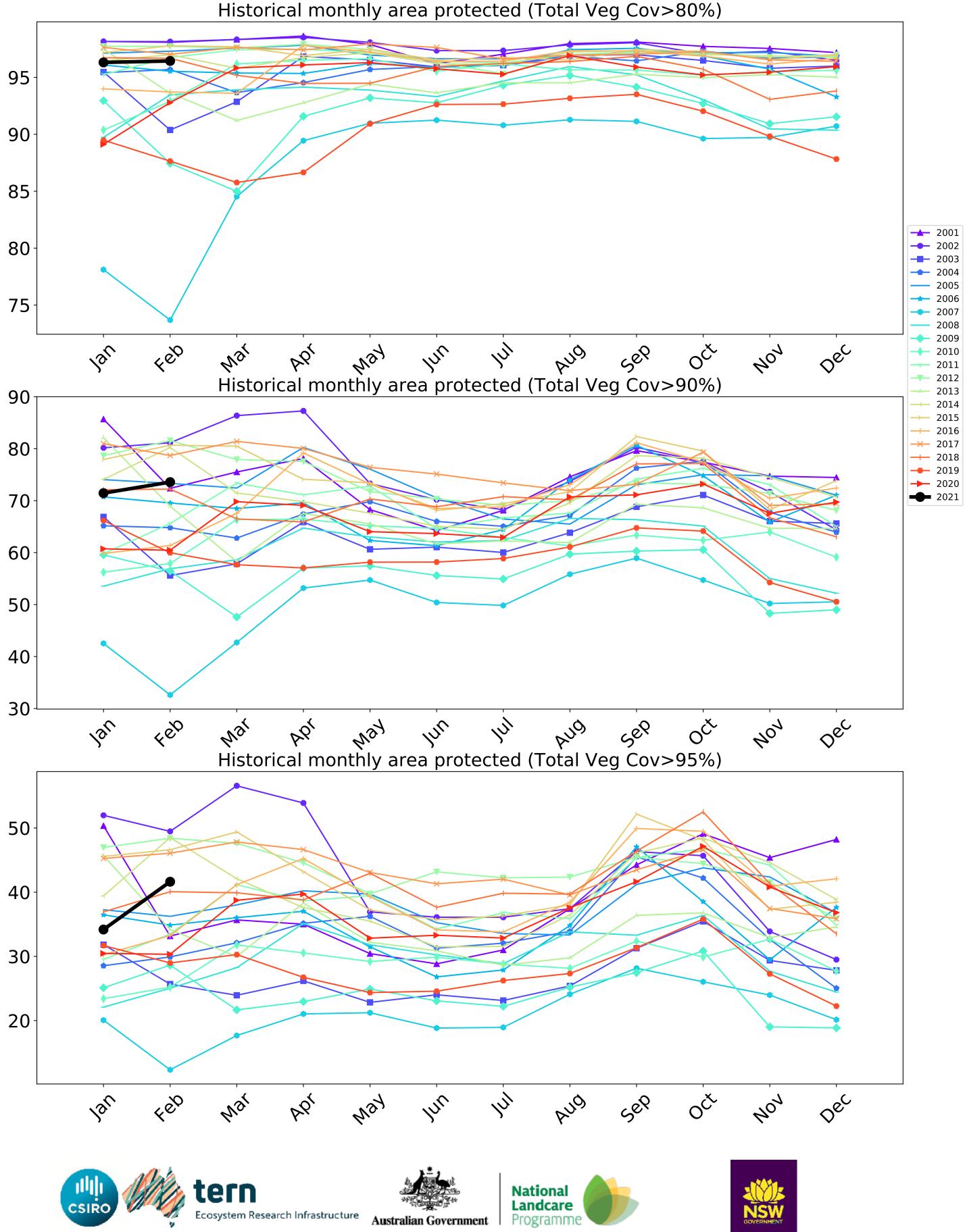
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.













Conservation and natural environments

forest

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)

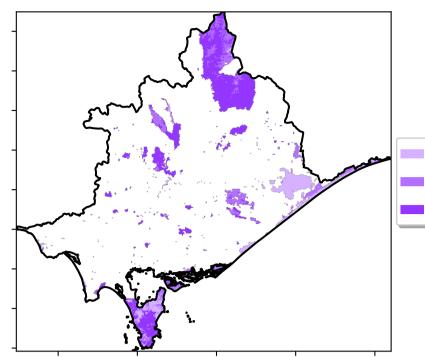
pixel is from

is, red pixels

are about 20% lower than the

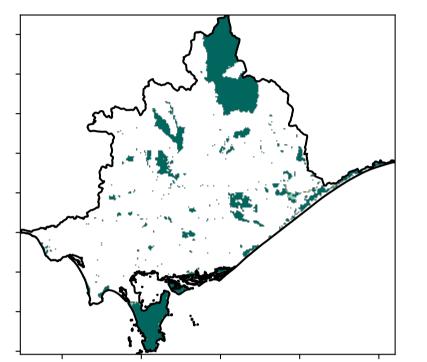
mean of that

from 2001 to 2019.

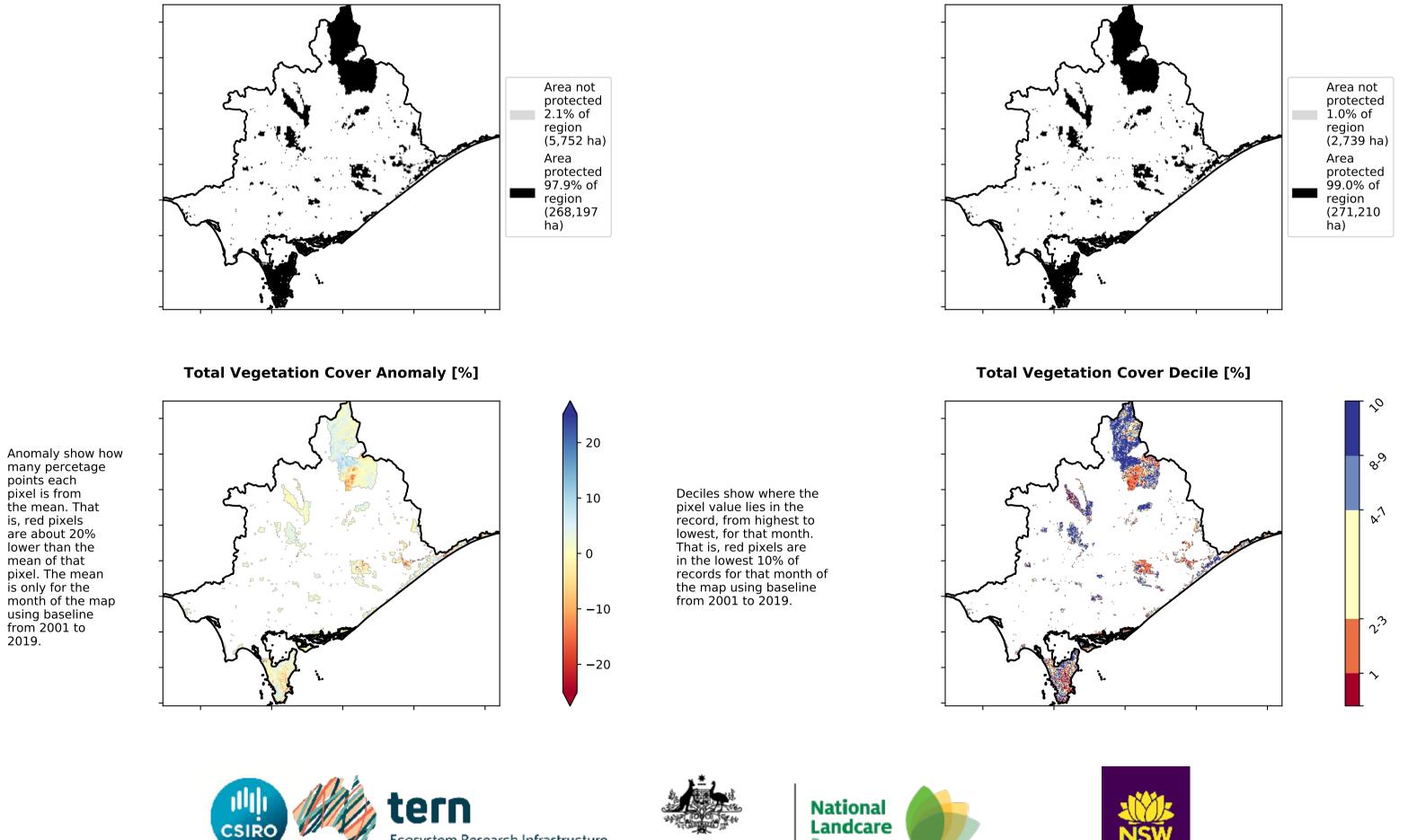


Land use and forest cover

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

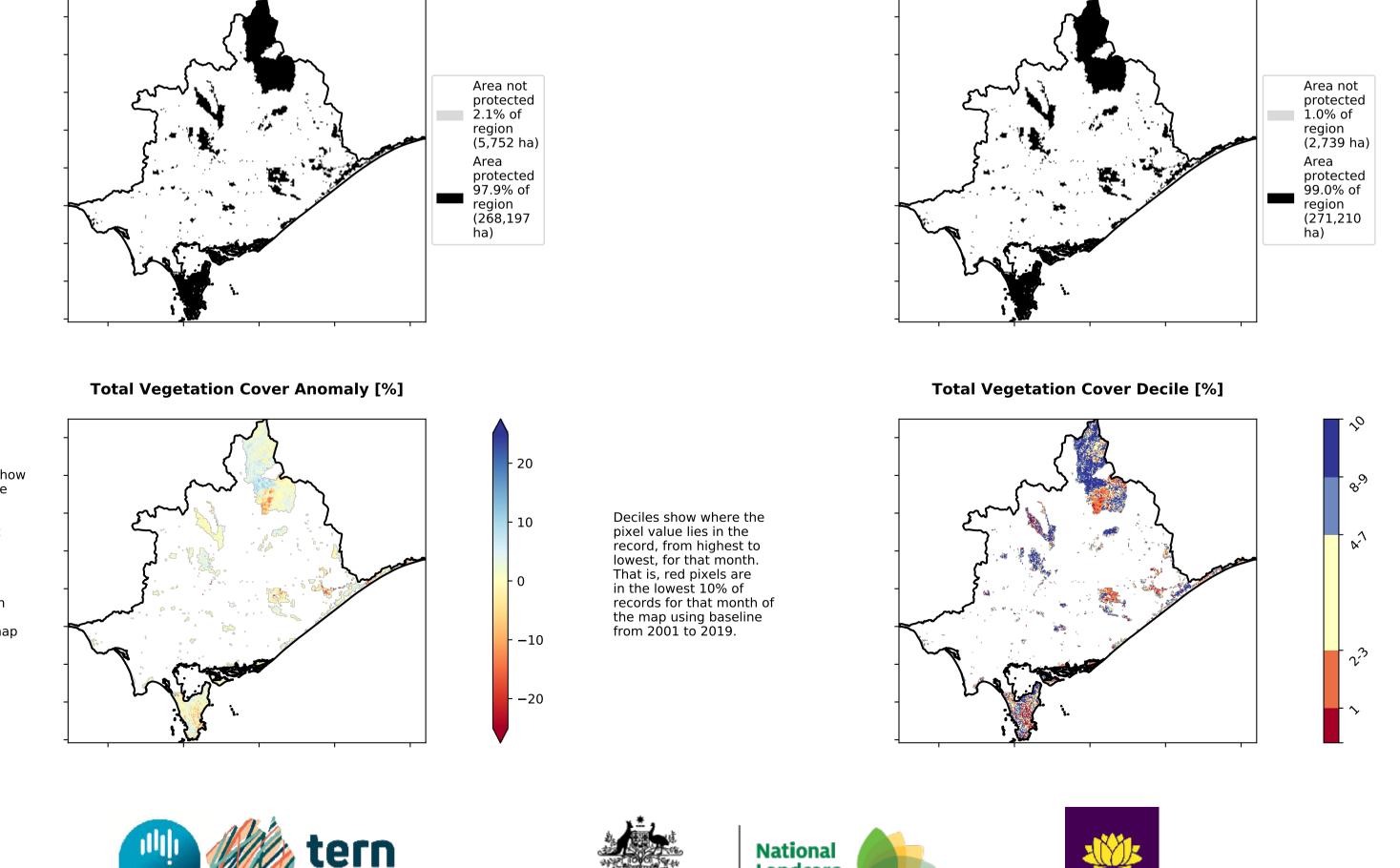


12%-2001 52°10'TOOK · 320/05001 0.30%

1 Conservation and natural environments - Non-forest

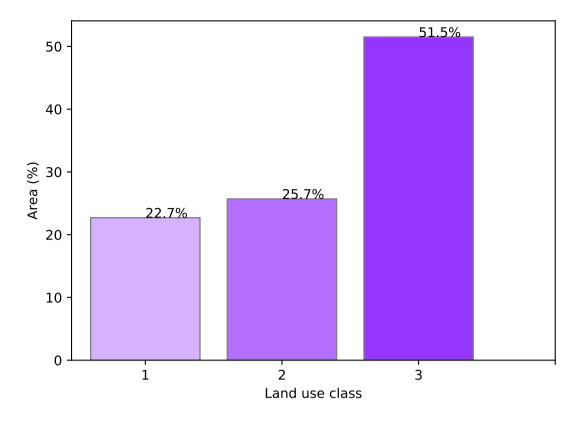
3 Conservation and natural environments - Non-

2 Conservation and natural environments – Woodland

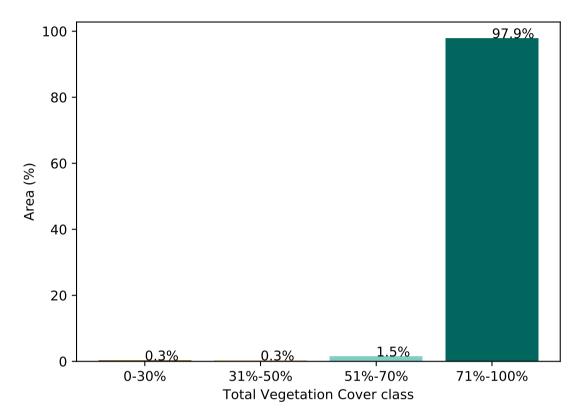


Programme

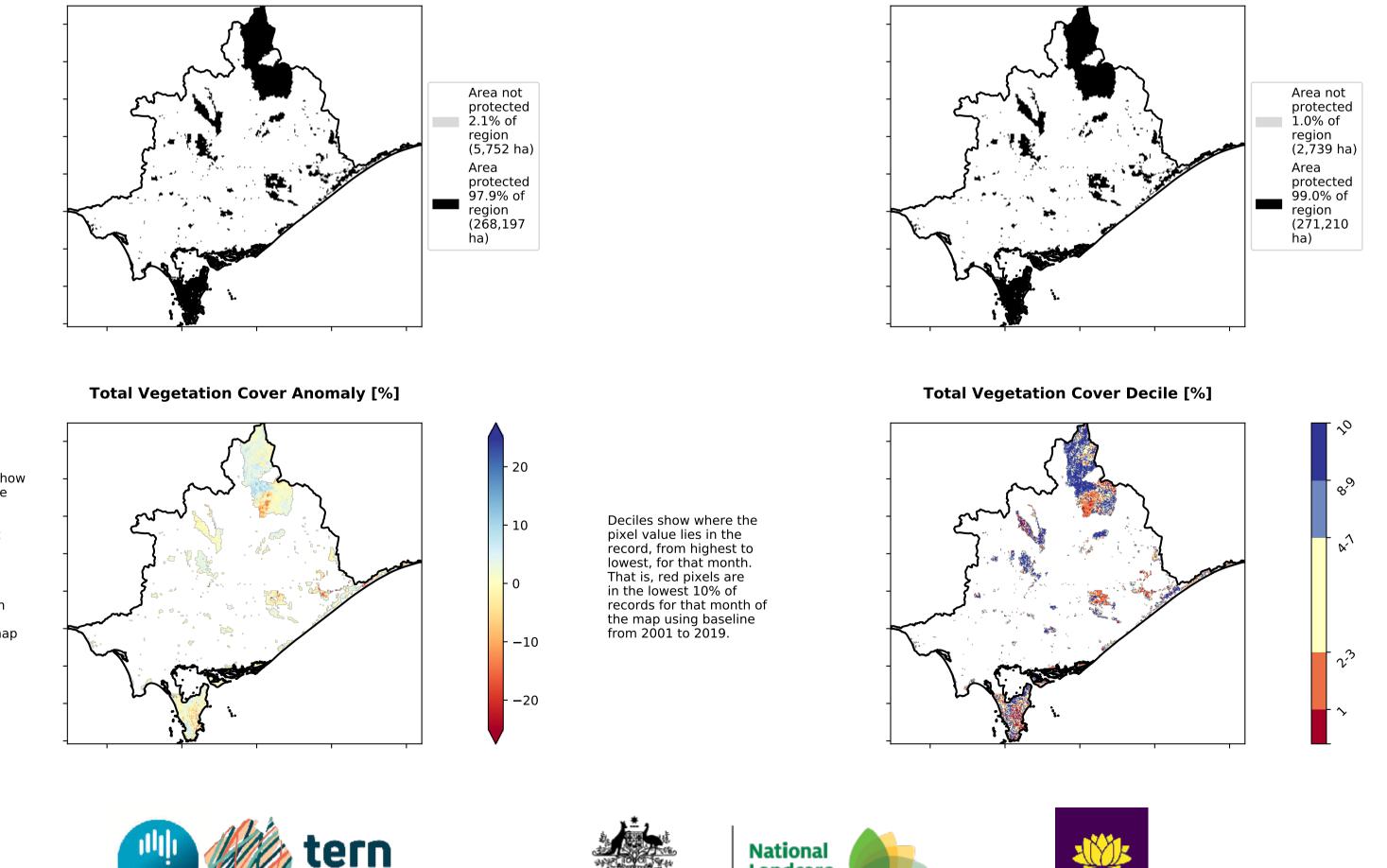
Proportion of each land class in area



Proportion of vegetation cover class in area



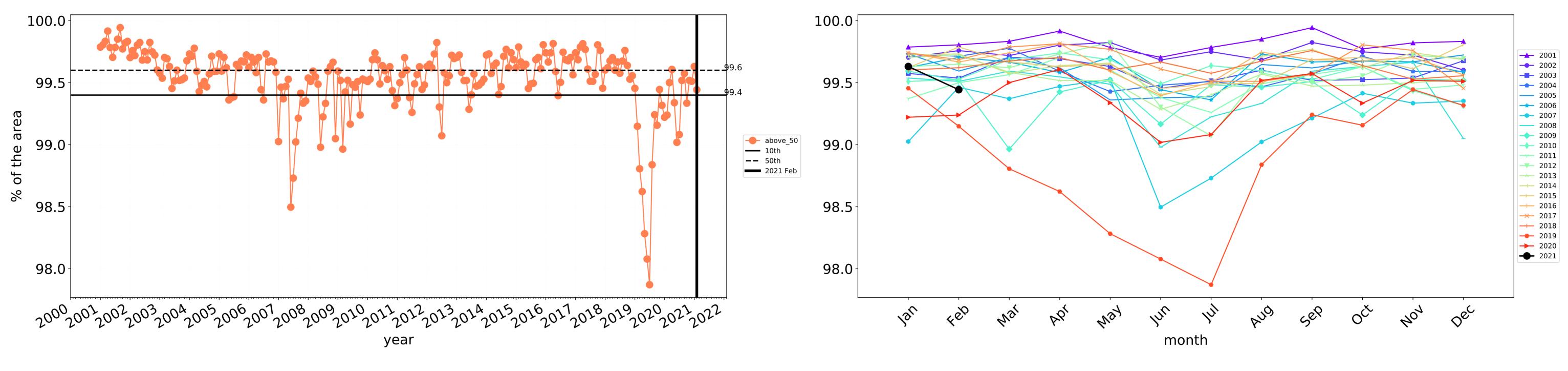
% Area protected from wind erosion (>50%)



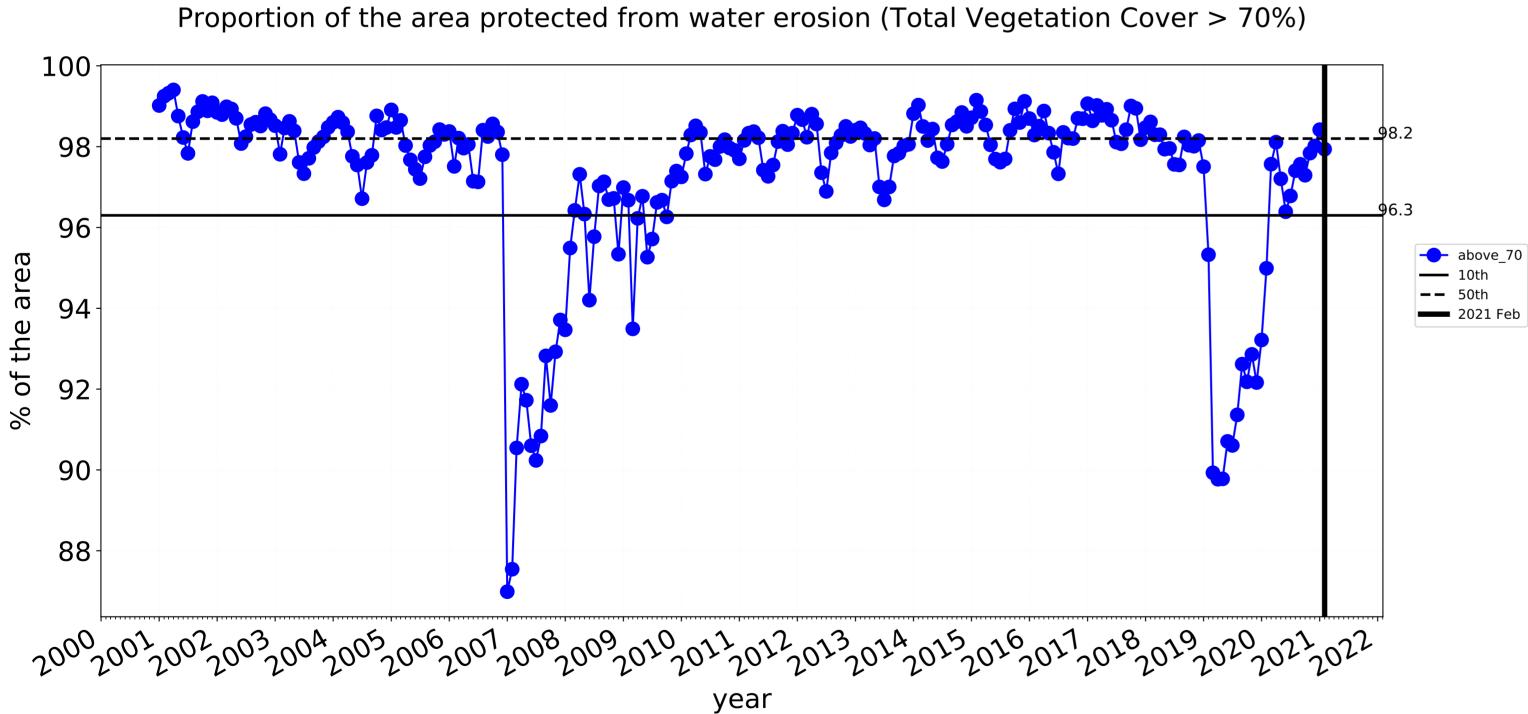
Ecosystem Research Infrastructure

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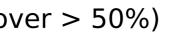
Australian Government



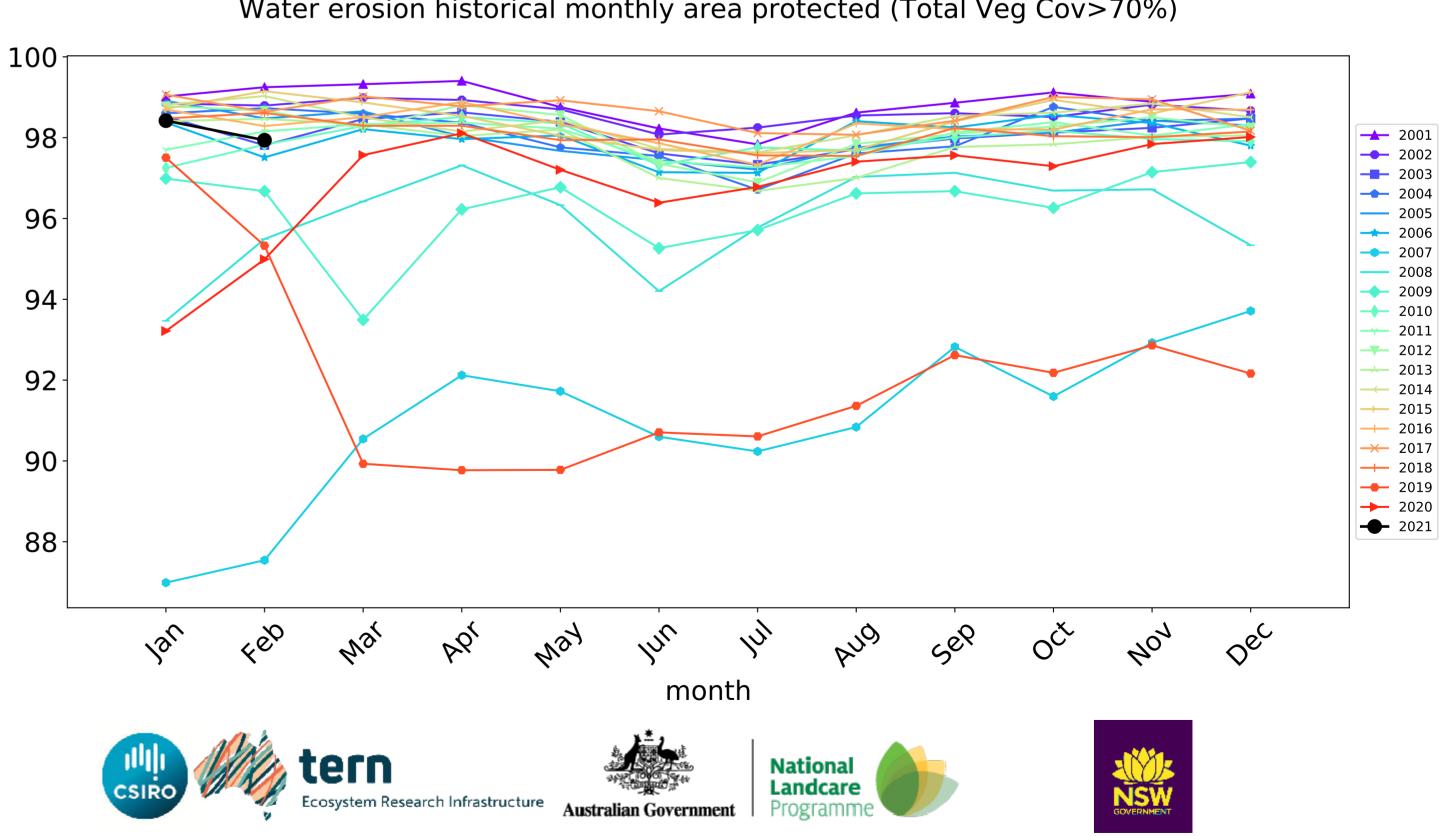
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



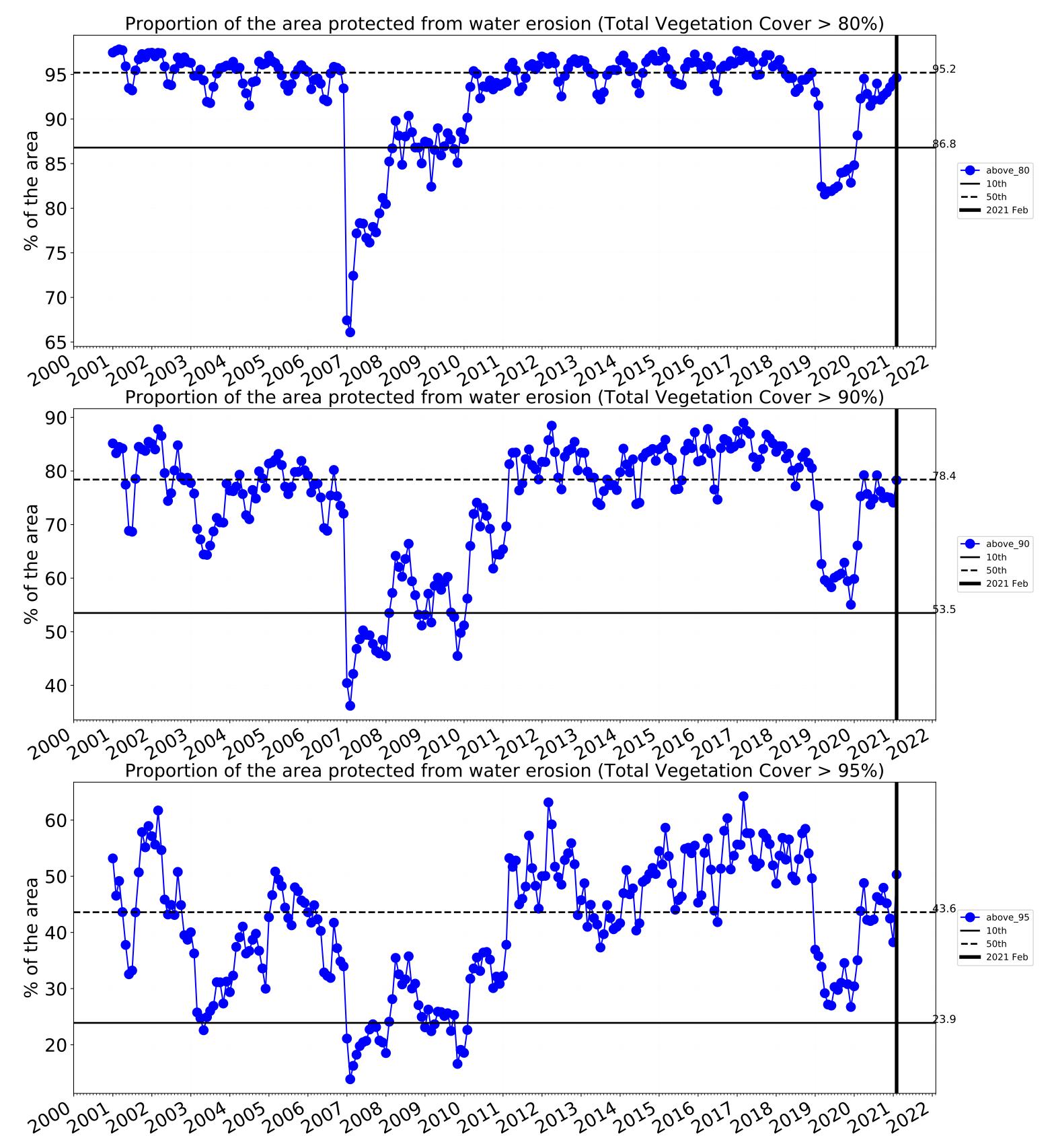
Conservation and natural environments timeseries

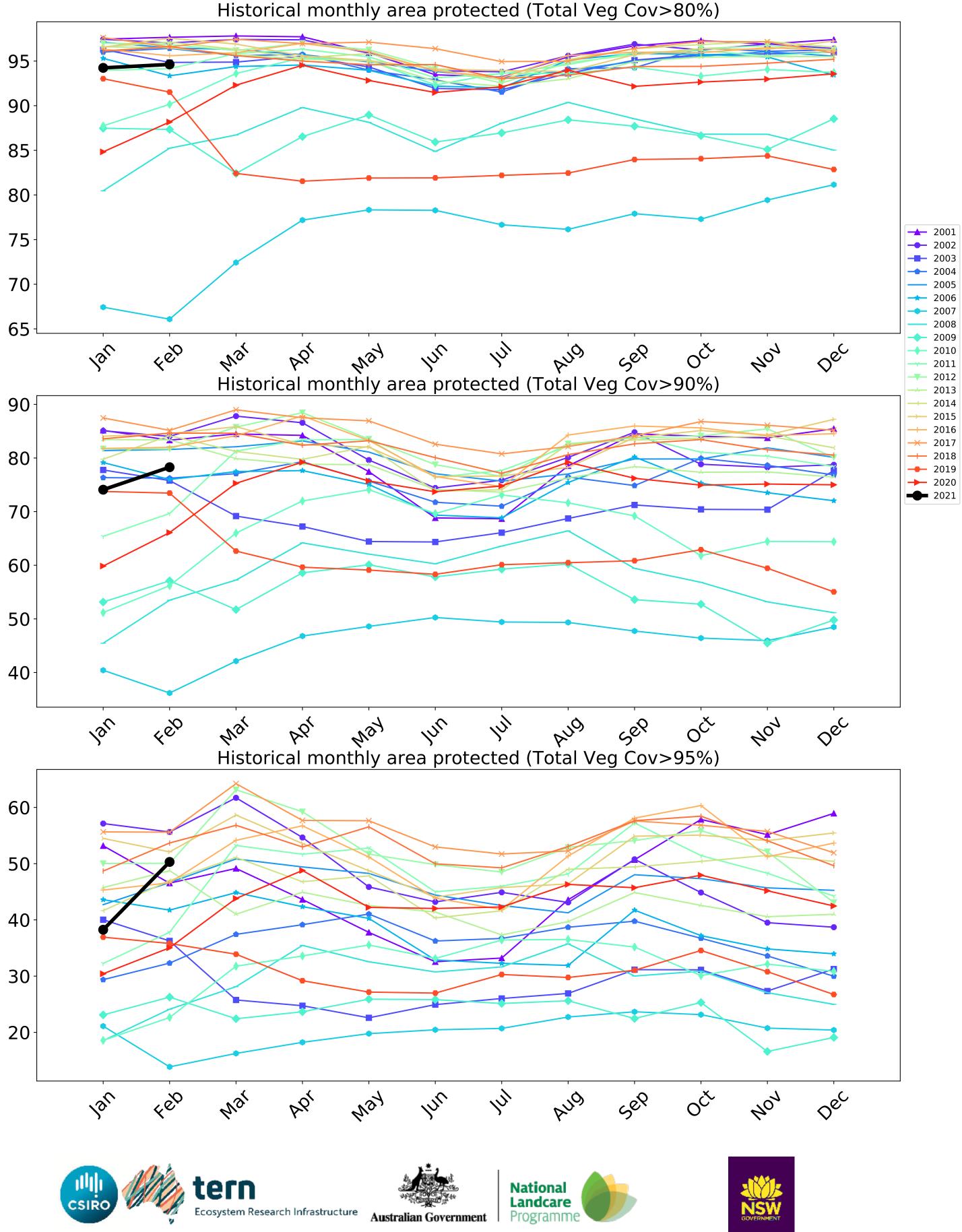


Wind erosion historical monthly area protected (Total Veg Cov >50%)



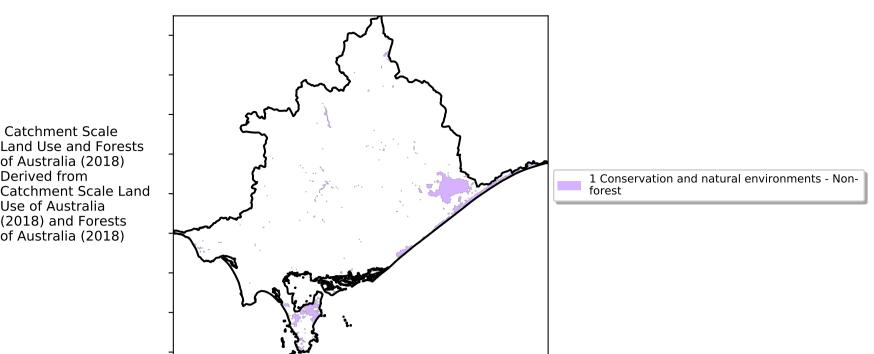
Water erosion historical monthly area protected (Total Veg Cov>70%)







Conservation and natural environments non forest



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

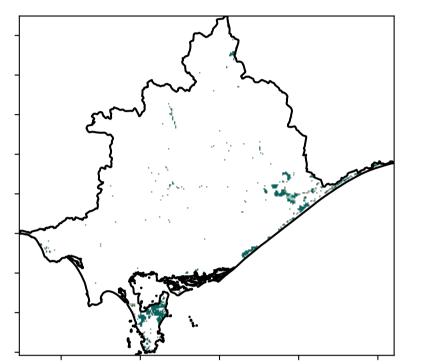
pixel is from

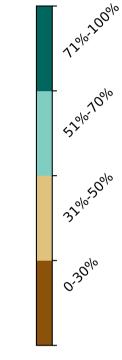
is, red pixels

mean of that

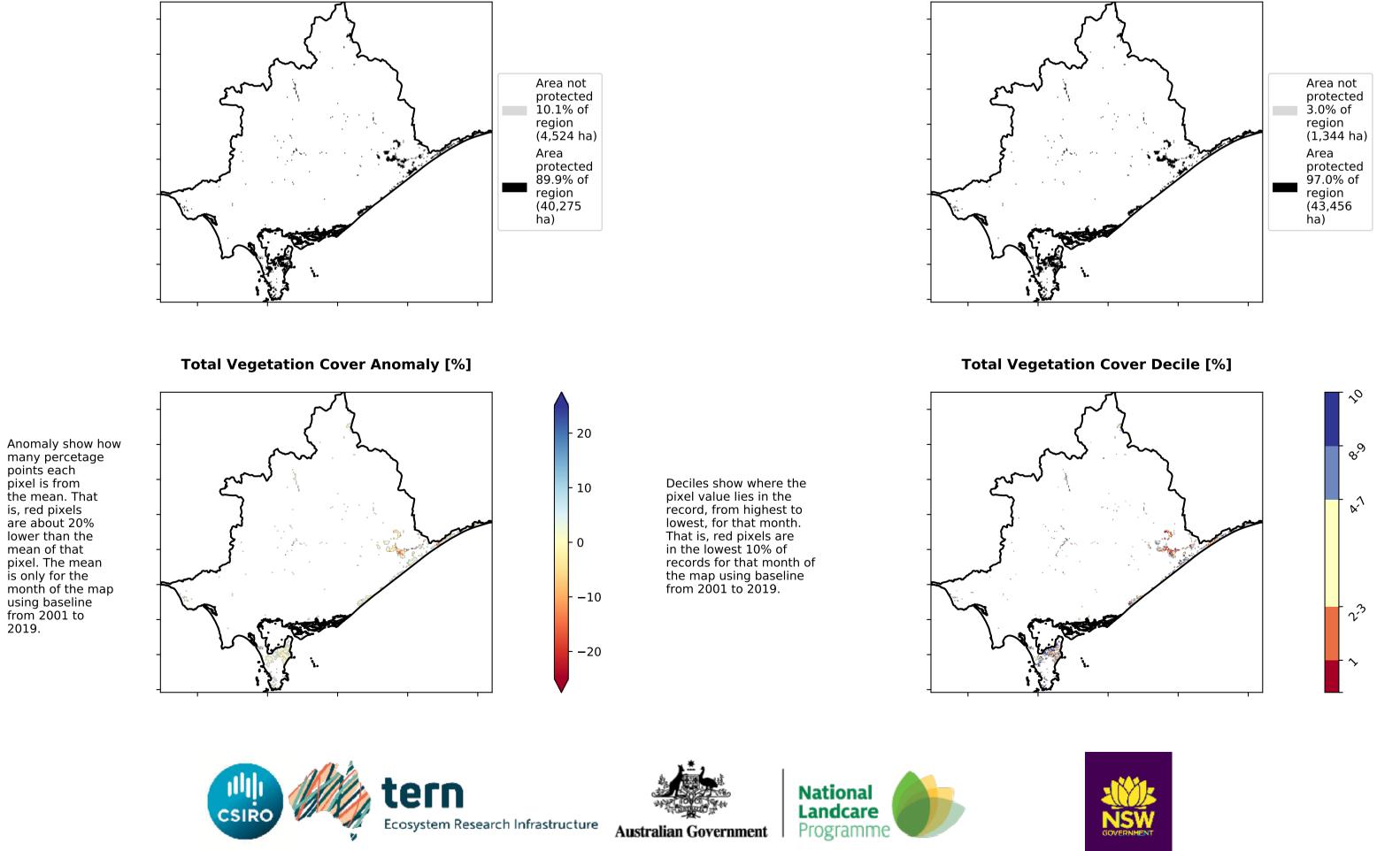
Total Vegetation Cover [%]

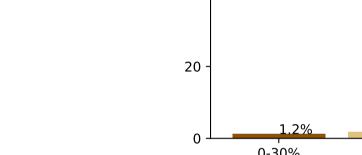
Land use and forest cover



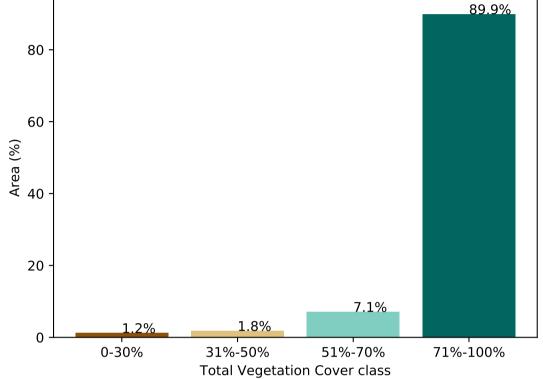


% Area protected from water erosion (>70%)

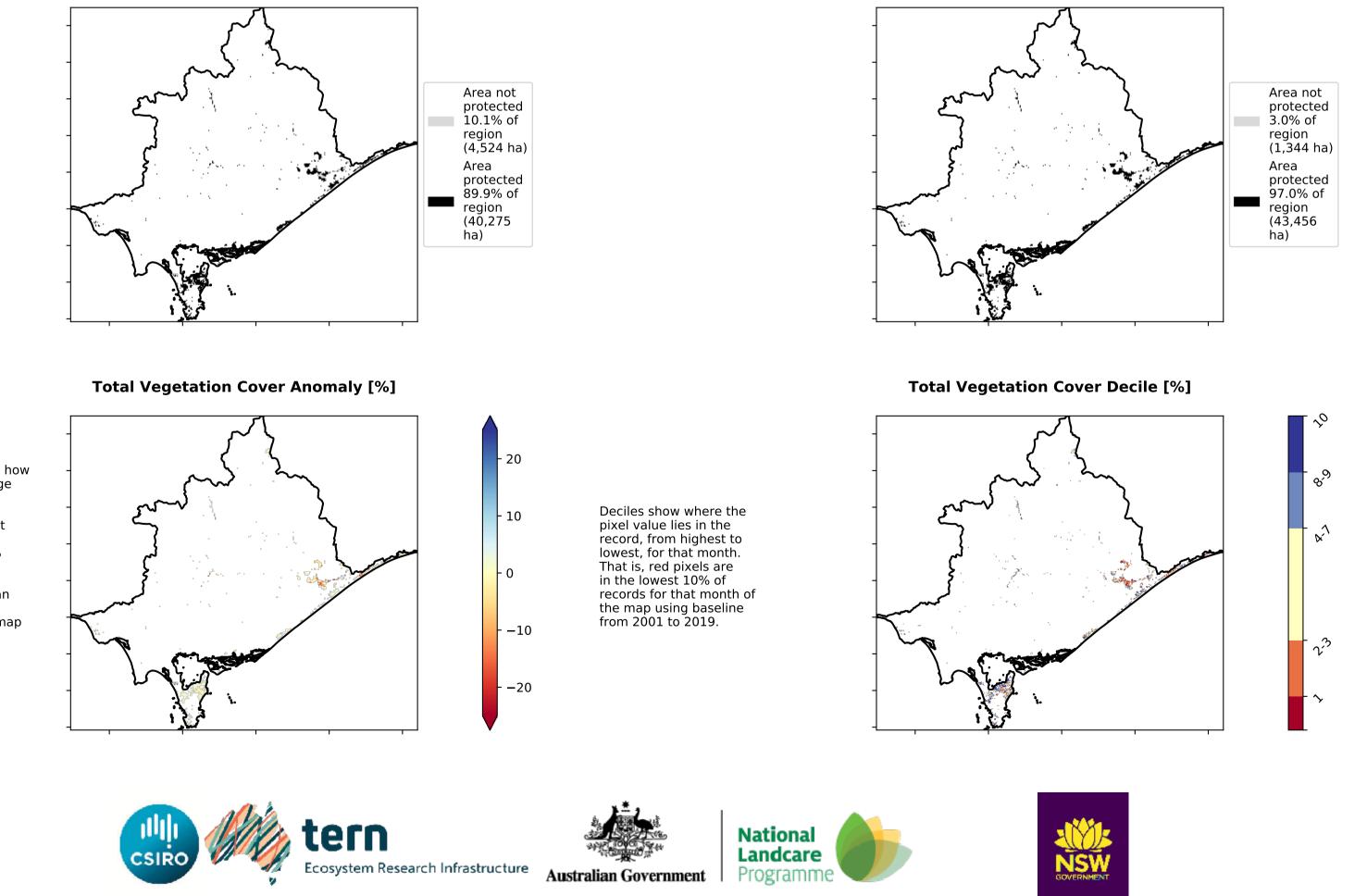


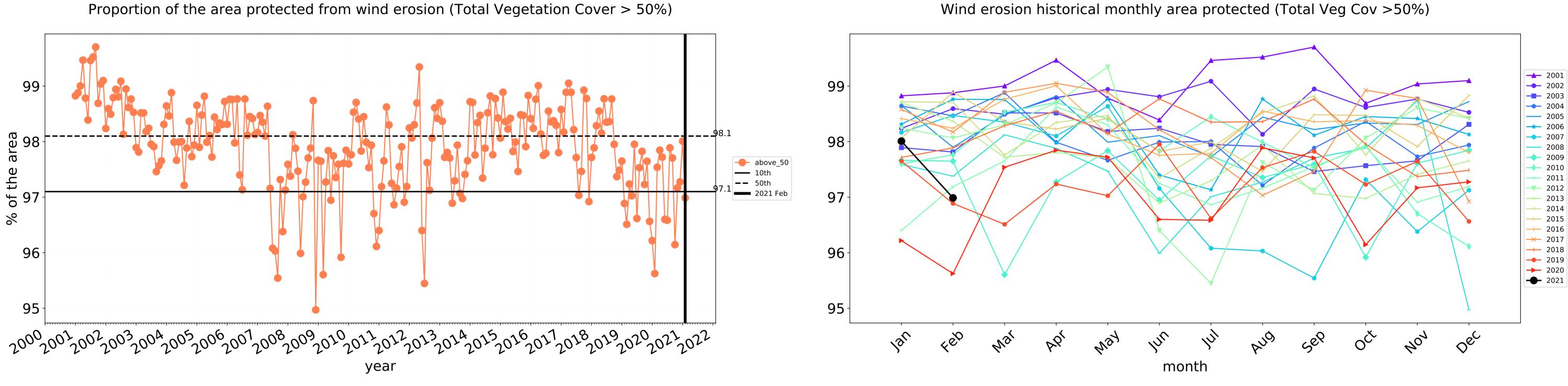


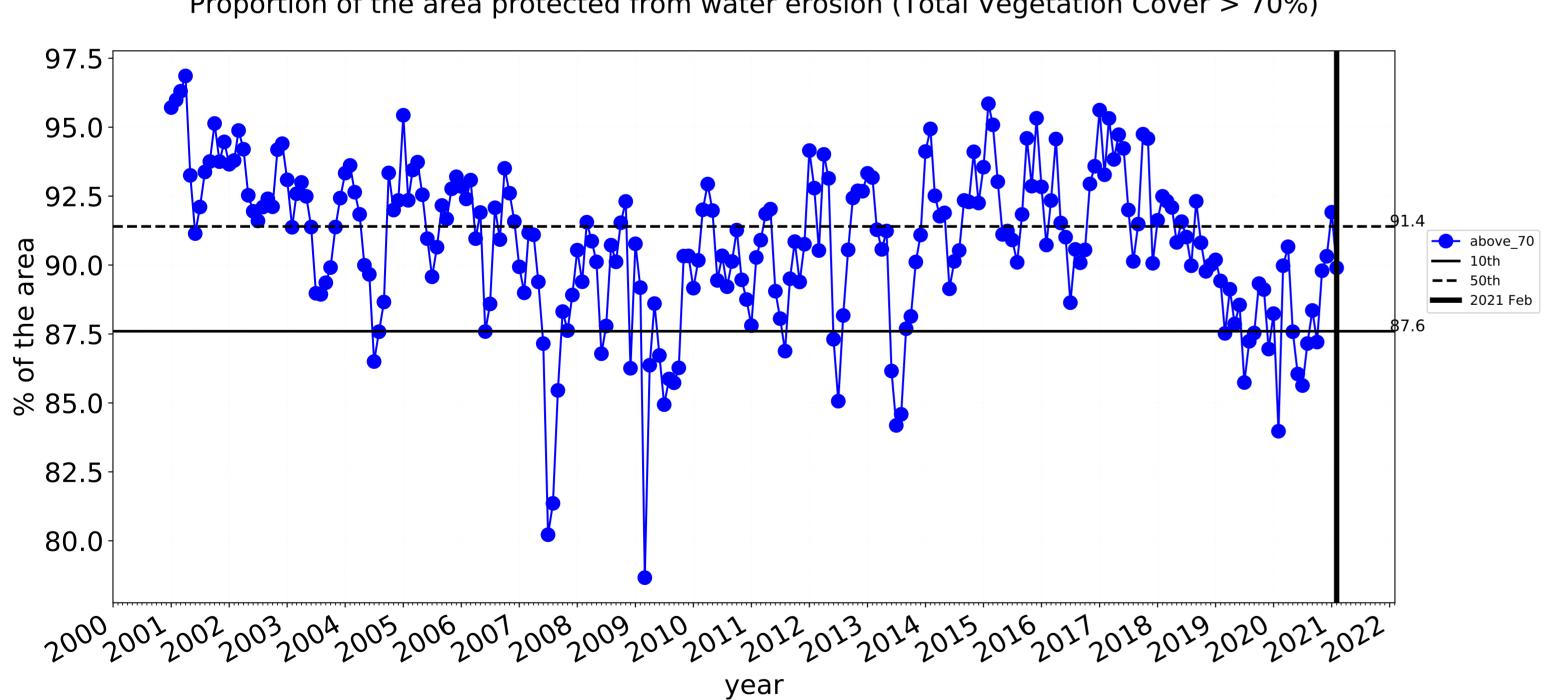
Proportion of vegetation cover class in area



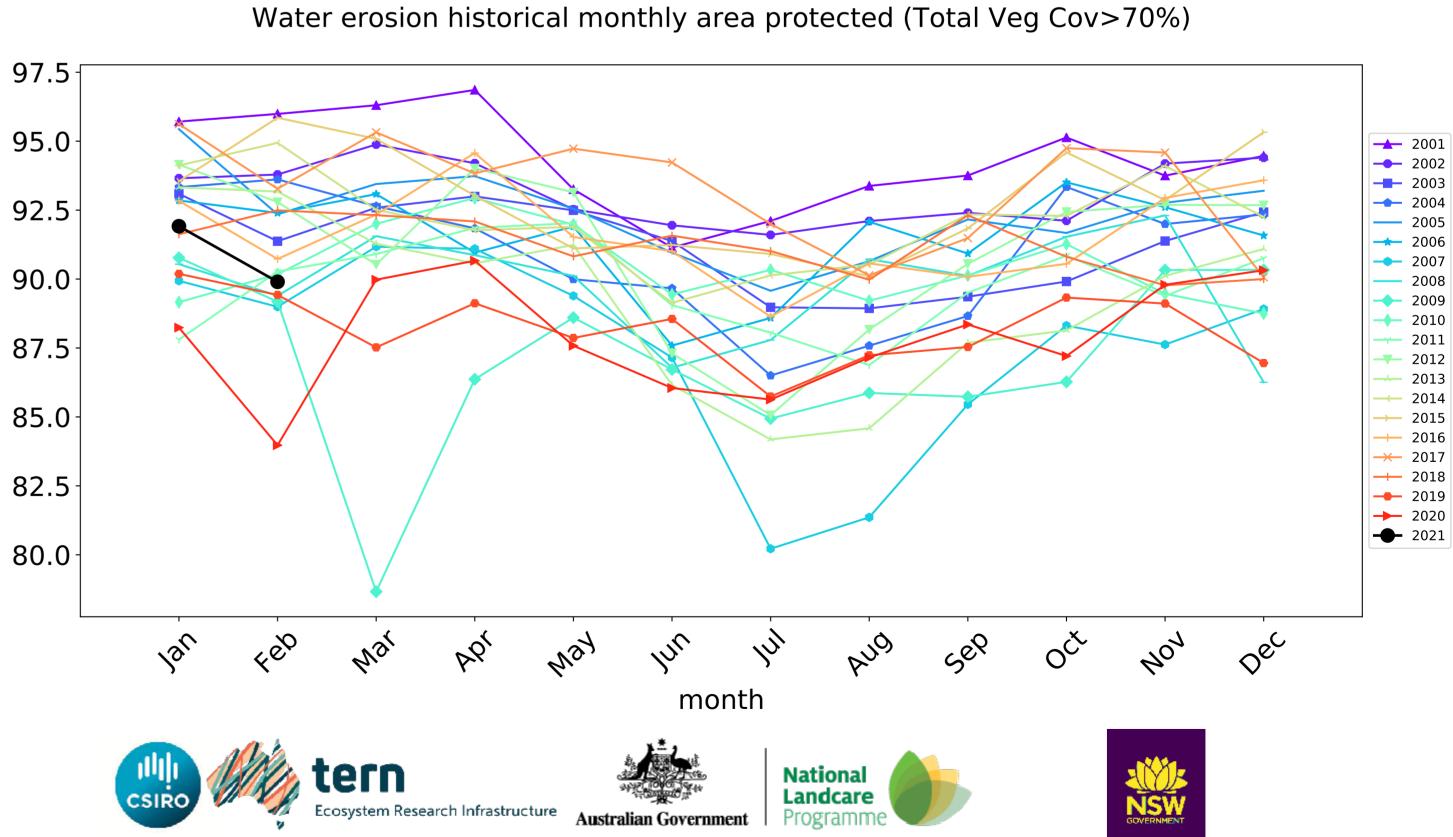
% Area protected from wind erosion (>50%)

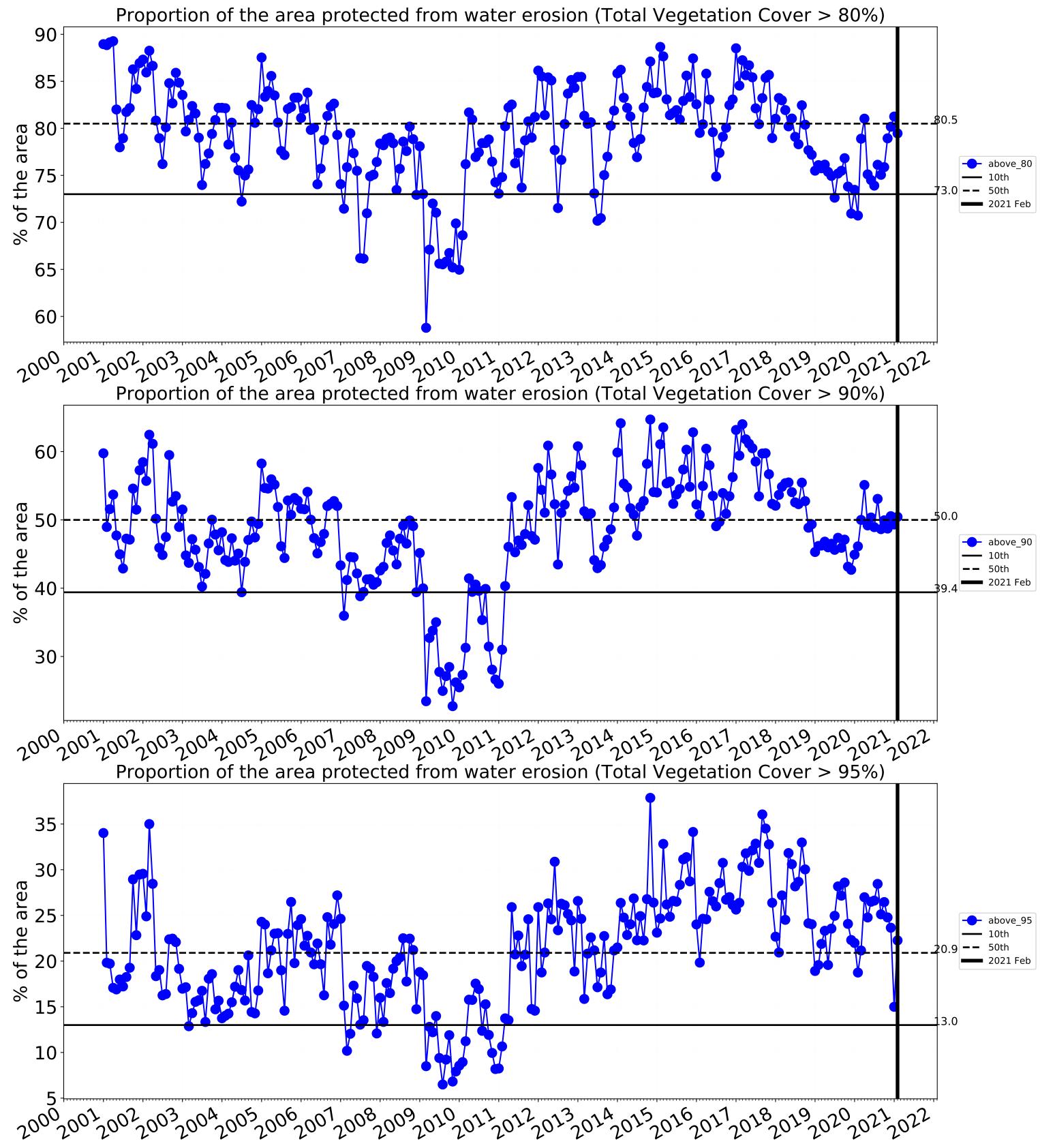


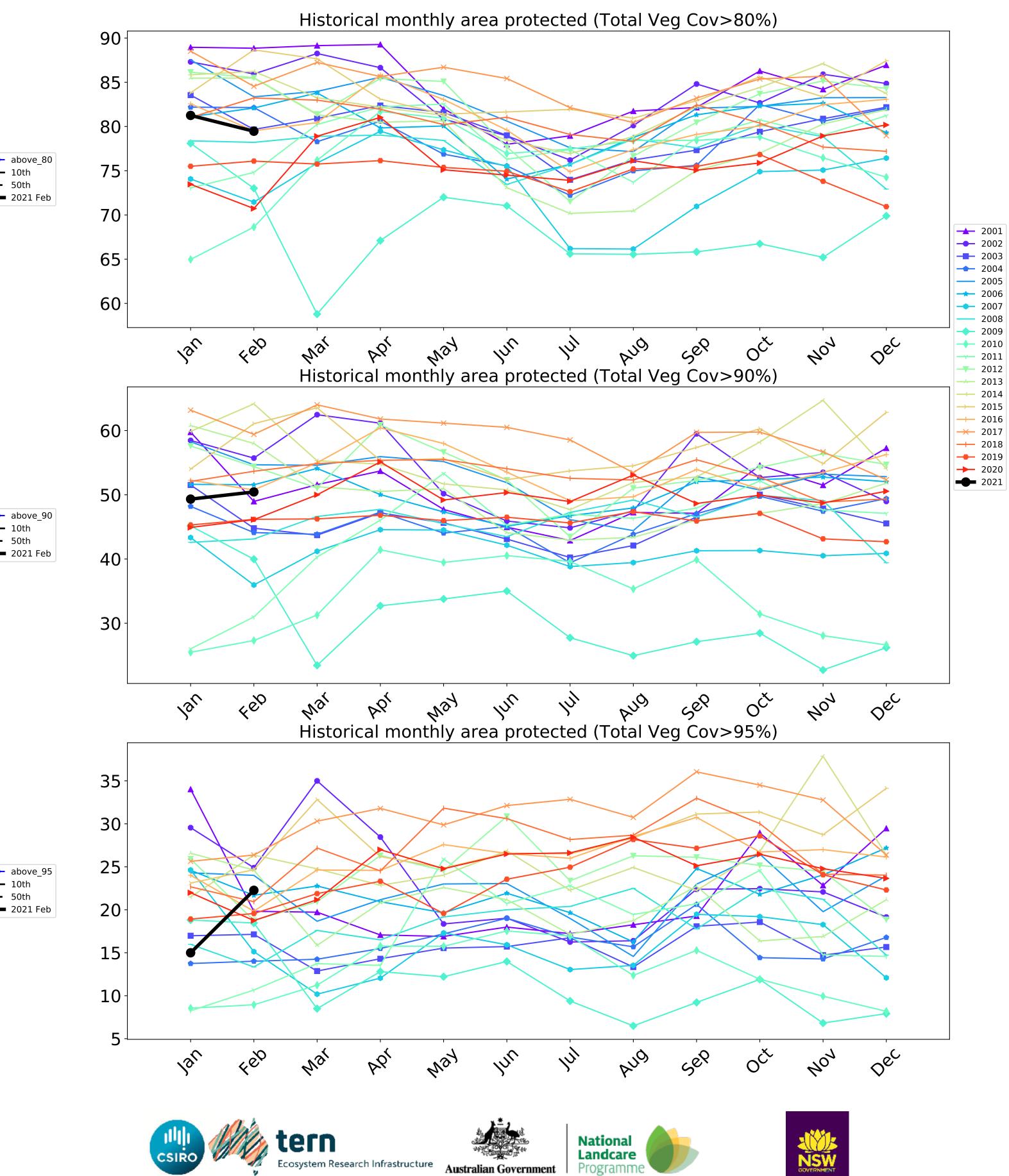




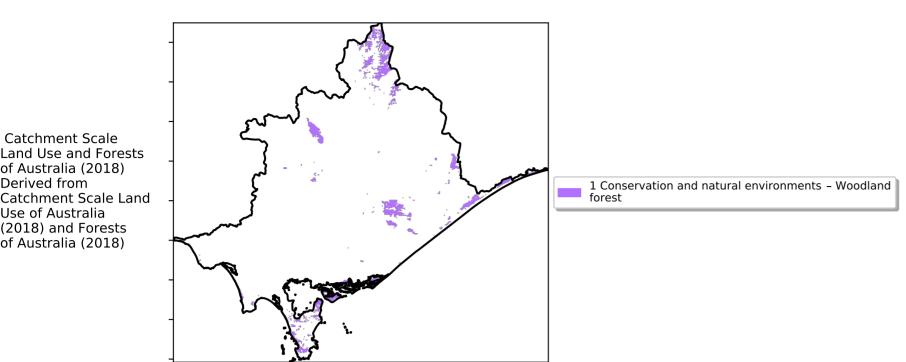
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)







Conservation and natural environments Woodland forest



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

pixel is from

is, red pixels are about 20% lower than the

mean of that pixel. The mean

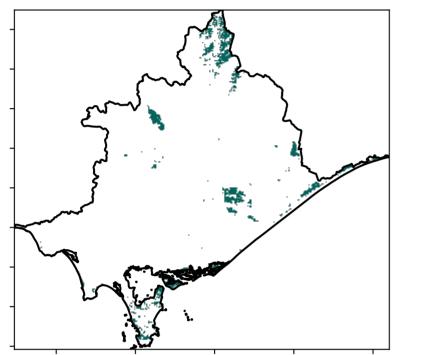
is only for the month of the map

using baseline from 2001 to 2019.

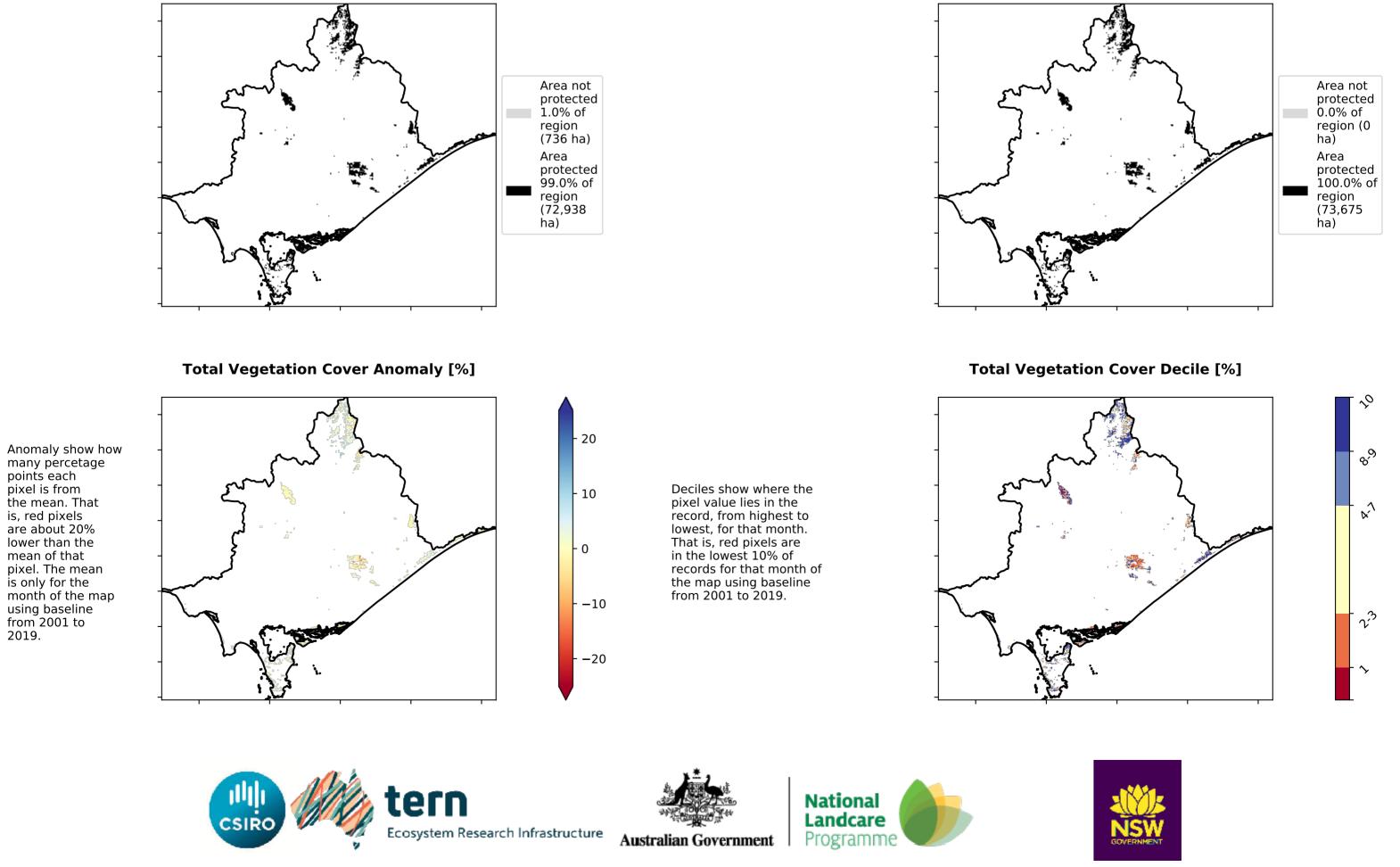
the mean. That

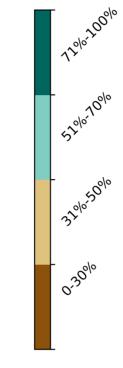
Total Vegetation Cover [%]

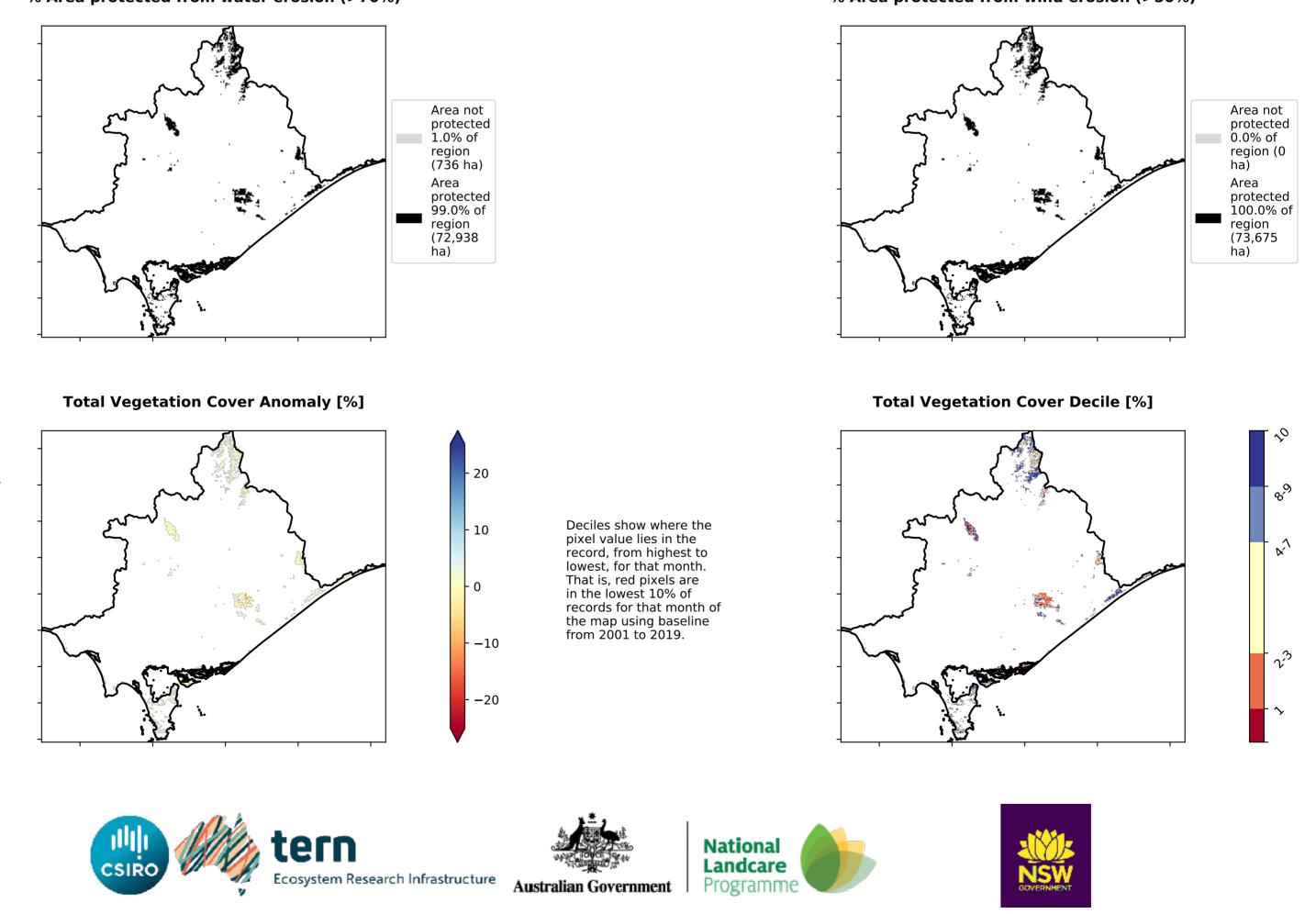
Land use and forest cover



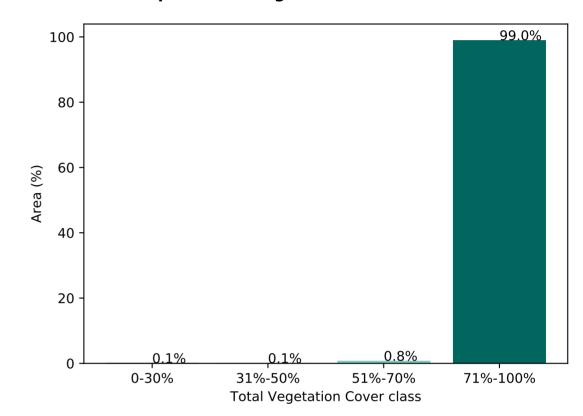
% Area protected from water erosion (>70%)



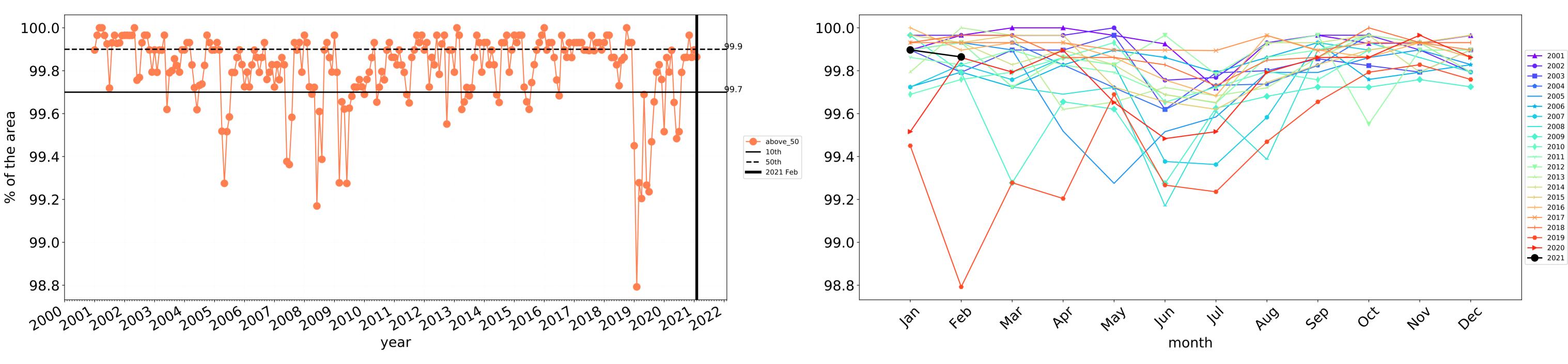




Proportion of vegetation cover class in area

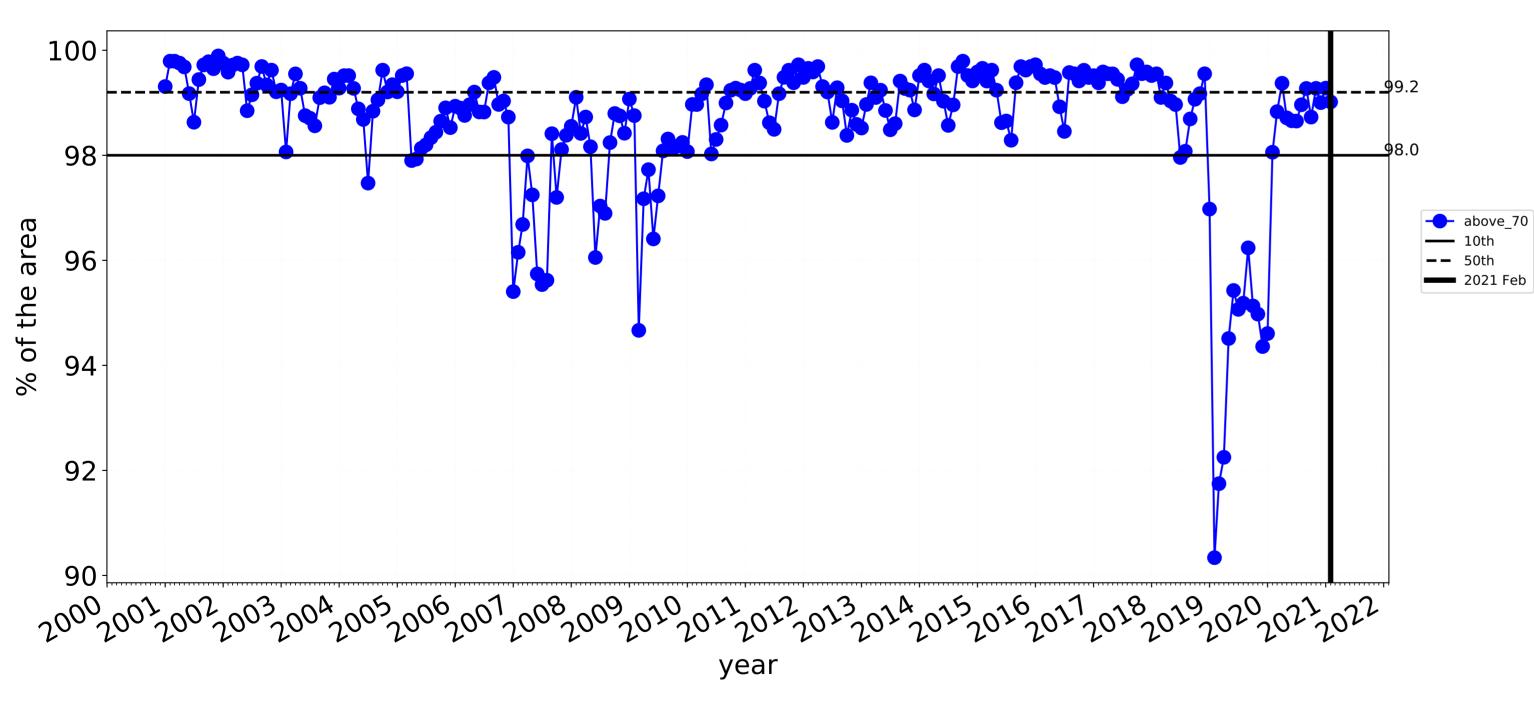


% Area protected from wind erosion (>50%)



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

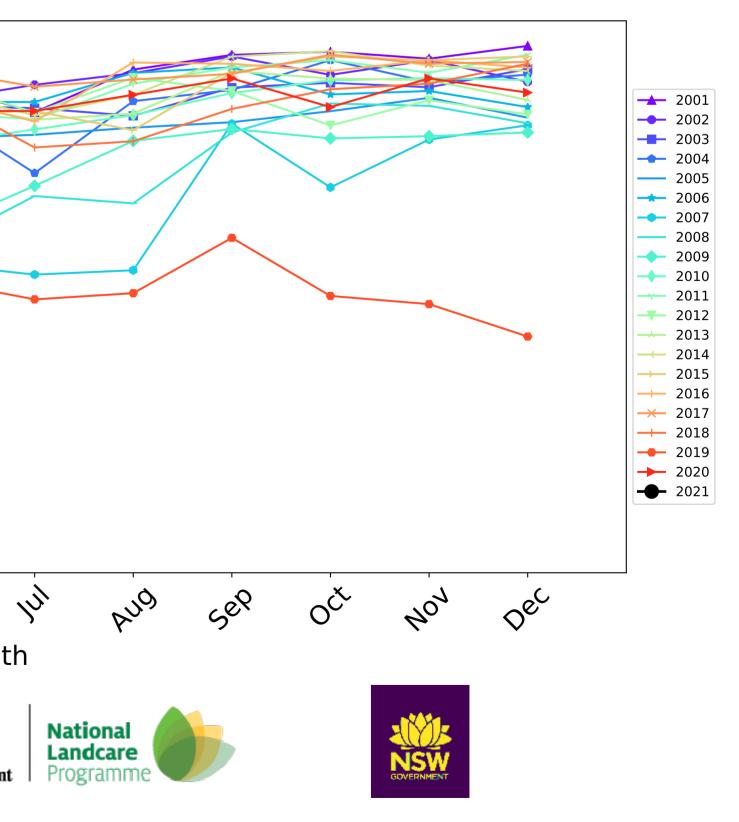
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

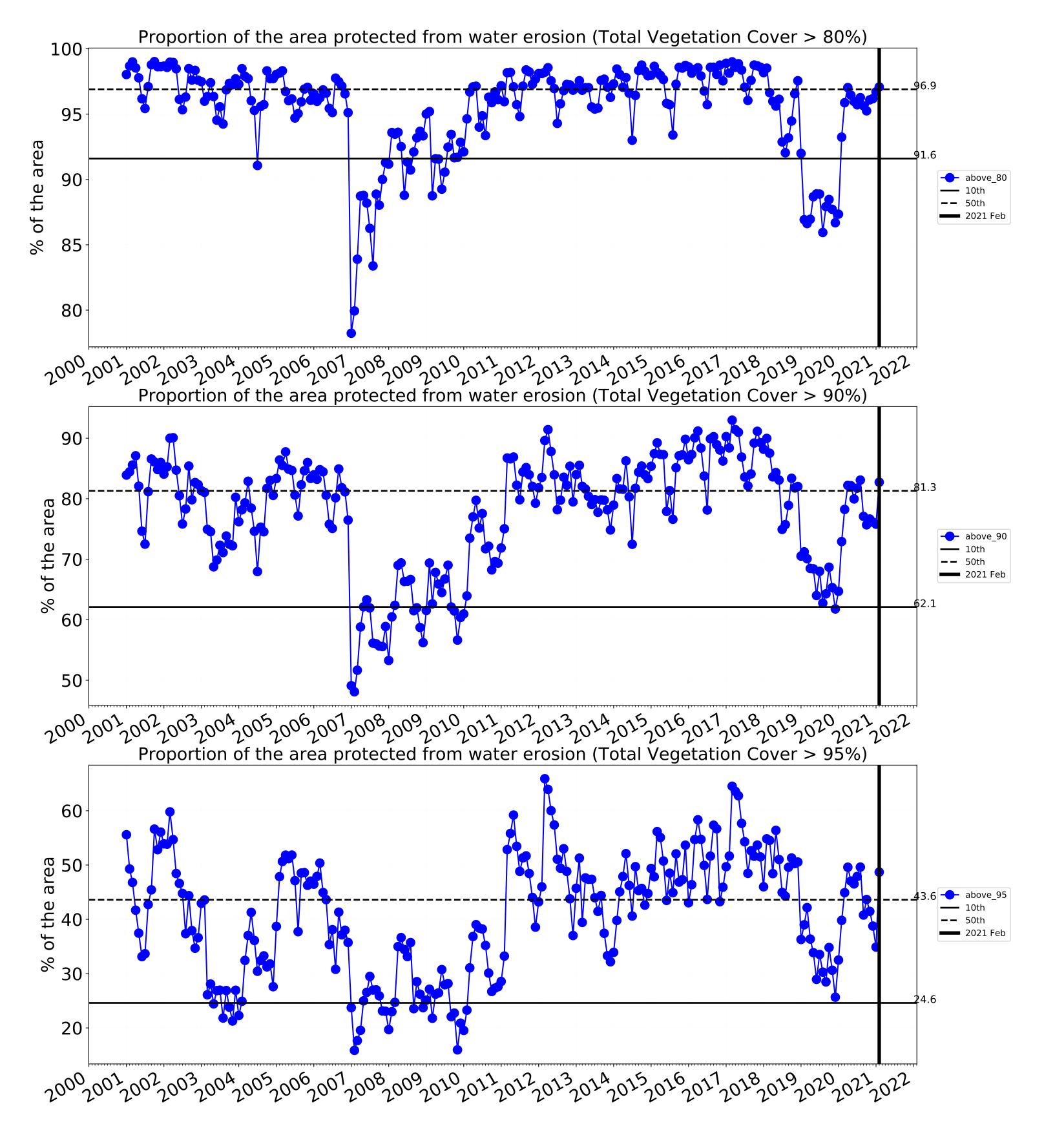


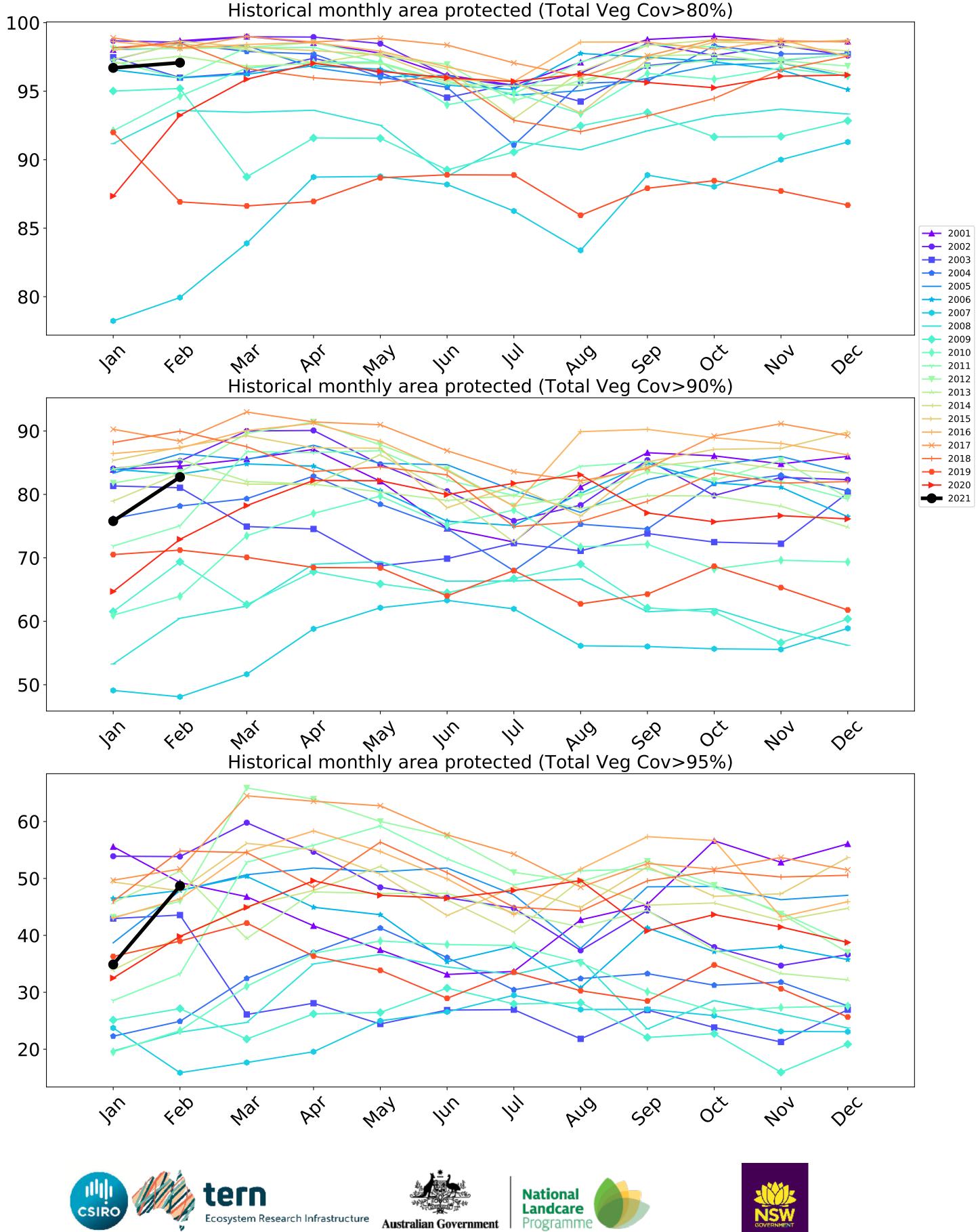
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

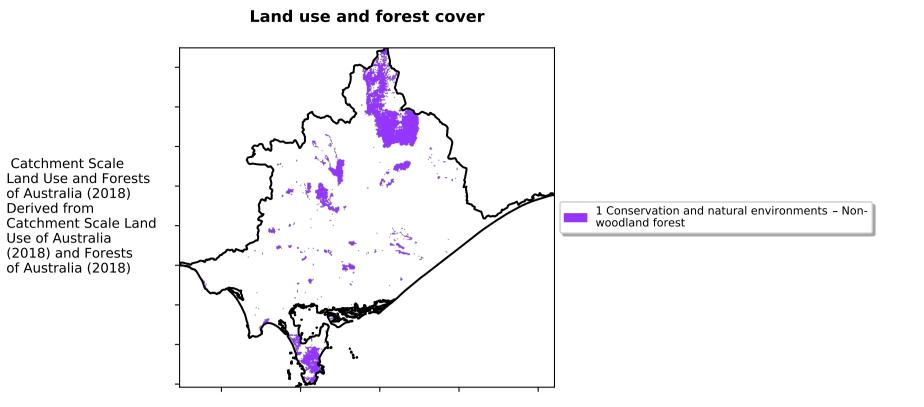




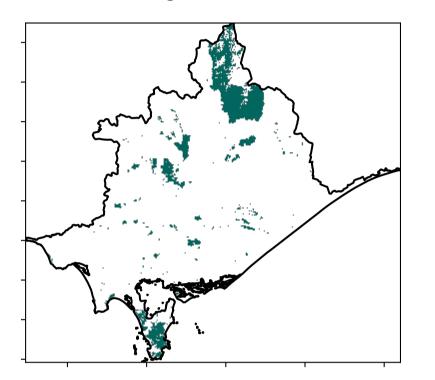




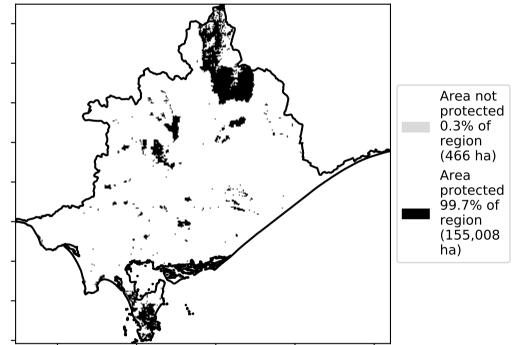
Conservation and natural environments Forest (non woodland)

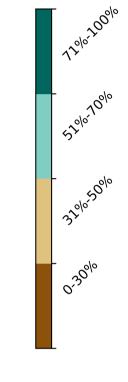


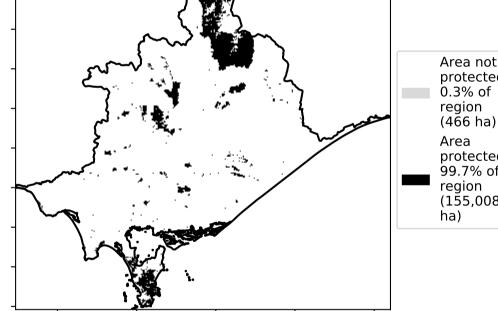
Total Vegetation Cover [%]



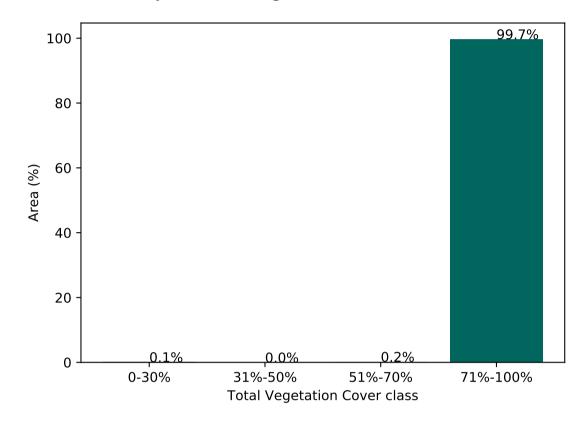
% Area protected from water erosion (>70%)



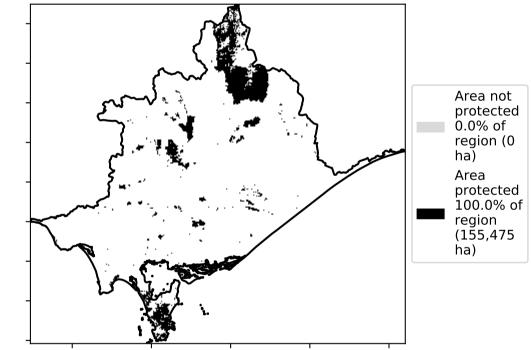




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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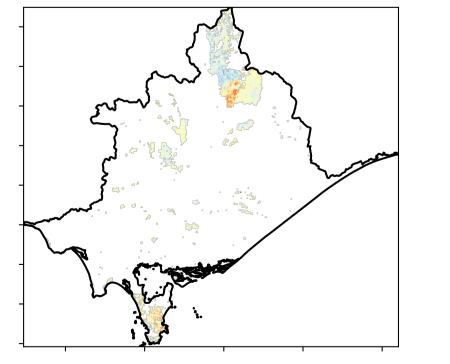
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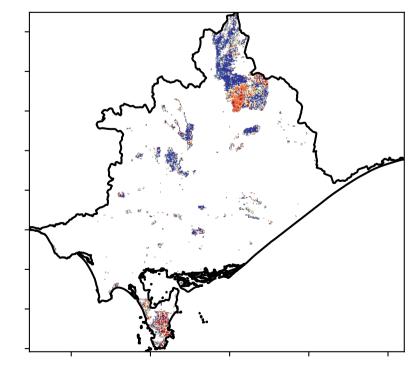
Total Vegetation Cover Anomaly [%]

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



- 20 - 10 - 0 - -10 -20

Total Vegetation Cover Decile [%]

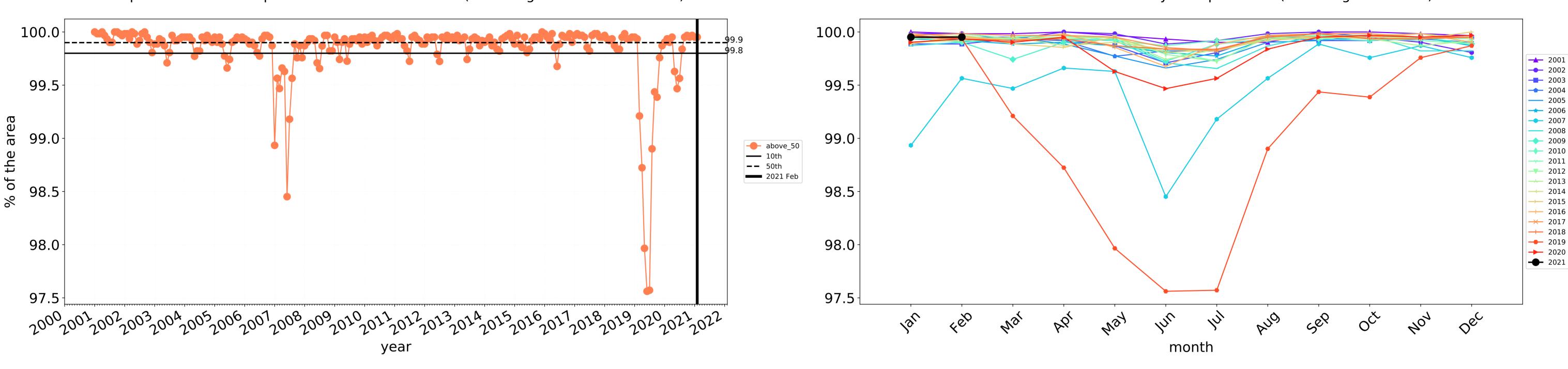




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline

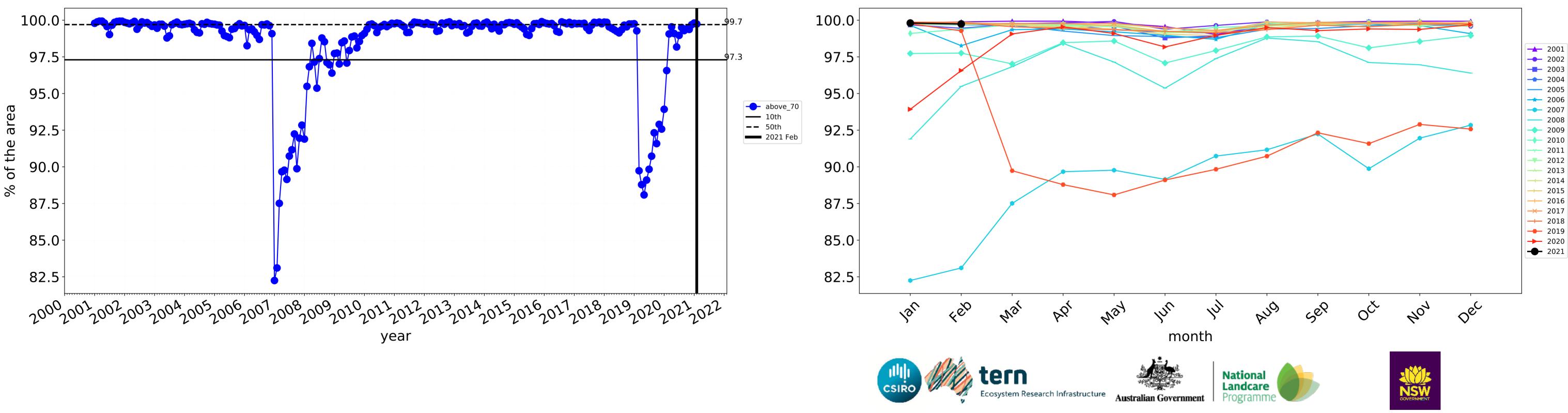
the map using baseline from 2001 to 2019.

Conservation and natural environments Forest (non woodland) timeseries



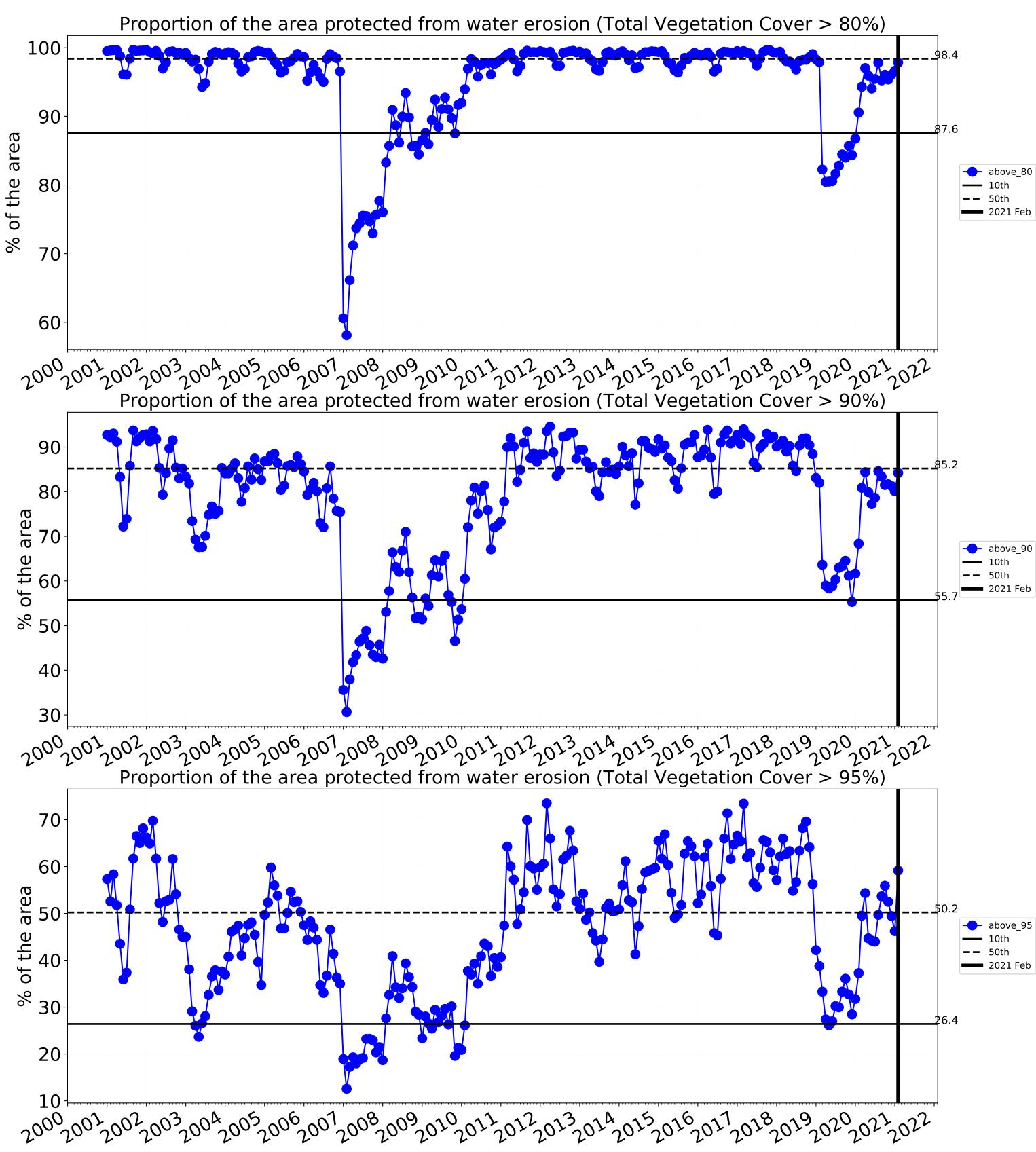
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

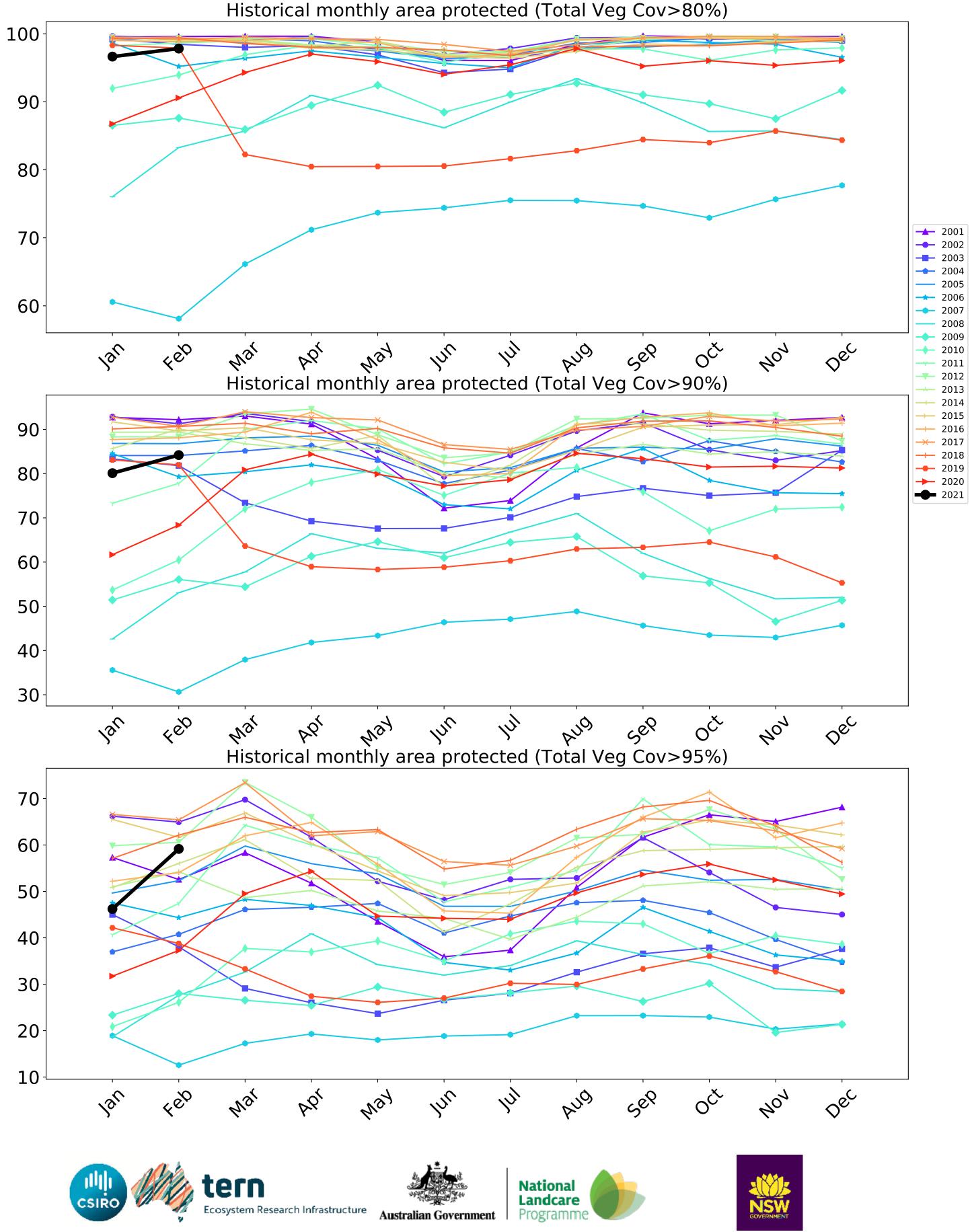
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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



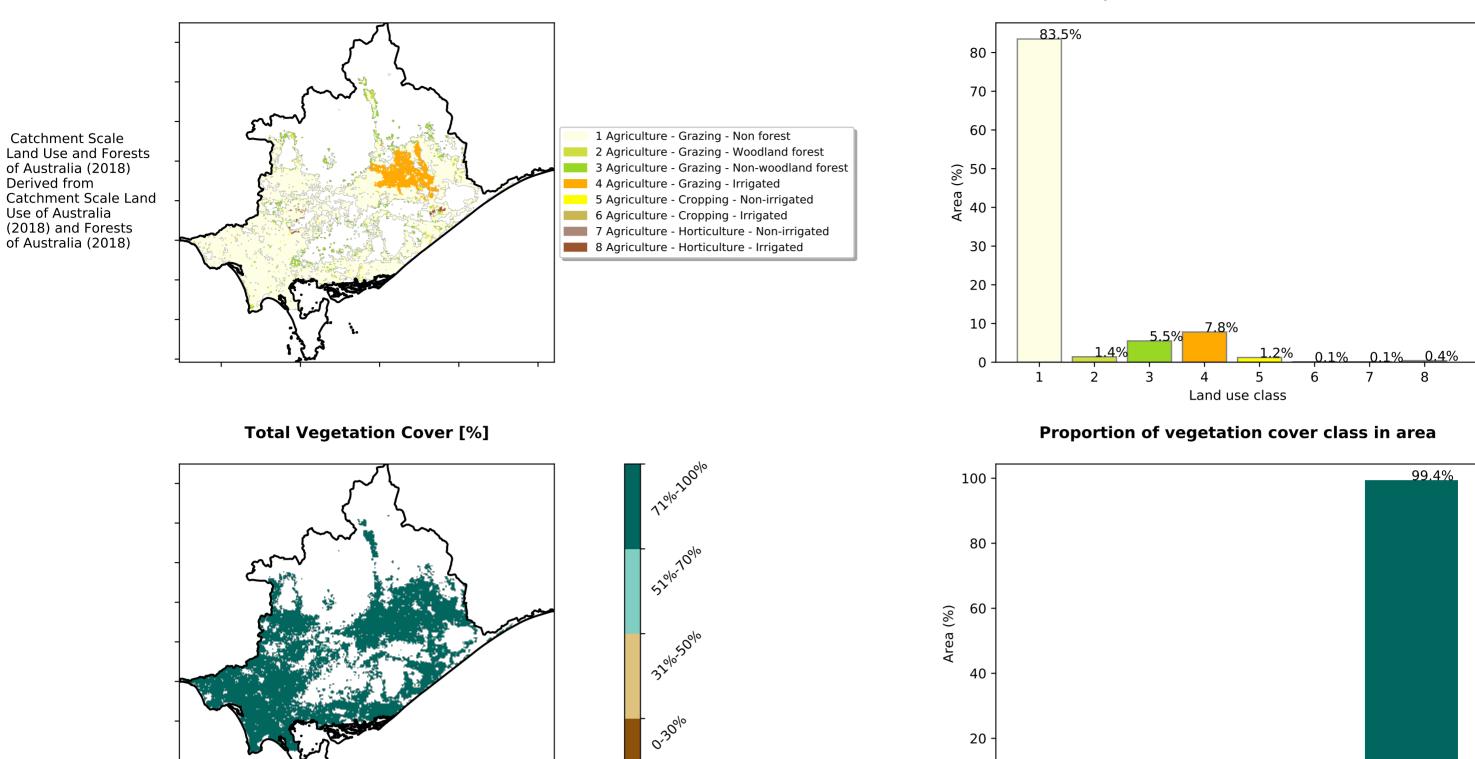




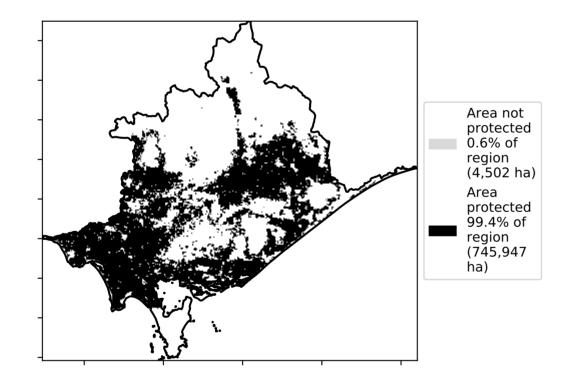
Agriculture

Land use and forest cover

Proportion of each land class in area



% Area protected from water erosion (>70%)



0.5%

71%-100%

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51%-70%

0.0%

Total Vegetation Cover class

% Area protected from wind erosion (>50%)

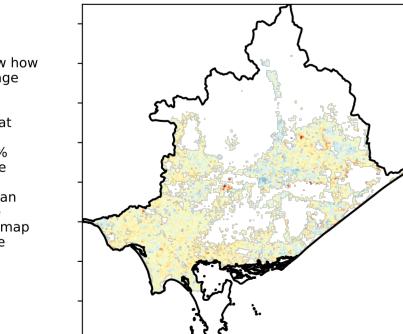
31%-50%

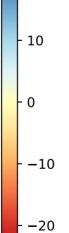
0.1%

0-30%

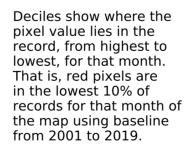
0

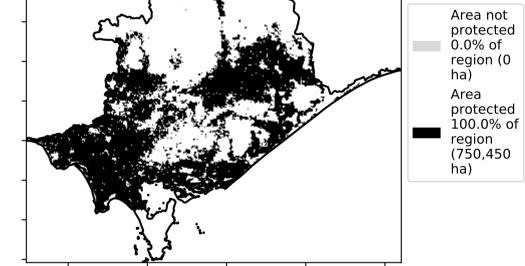
Total Vegetation Cover Anomaly [%]



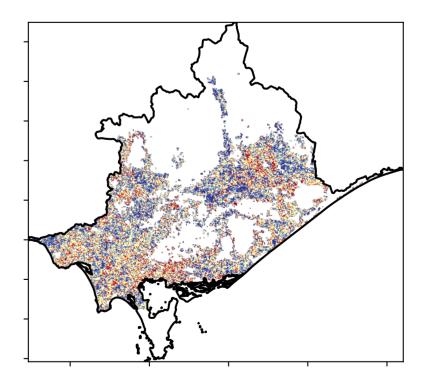


- 20





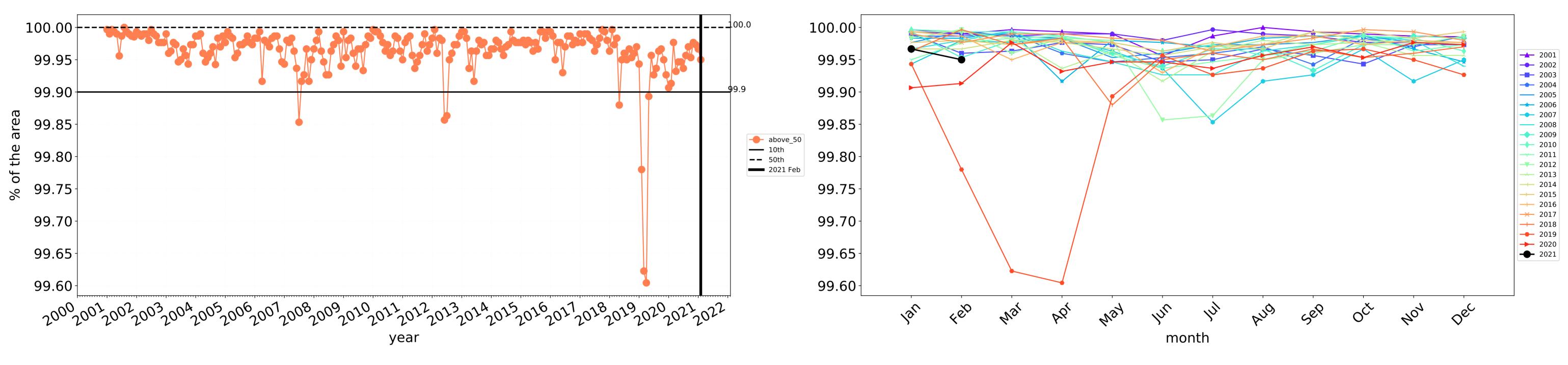
Total Vegetation Cover Decile [%]





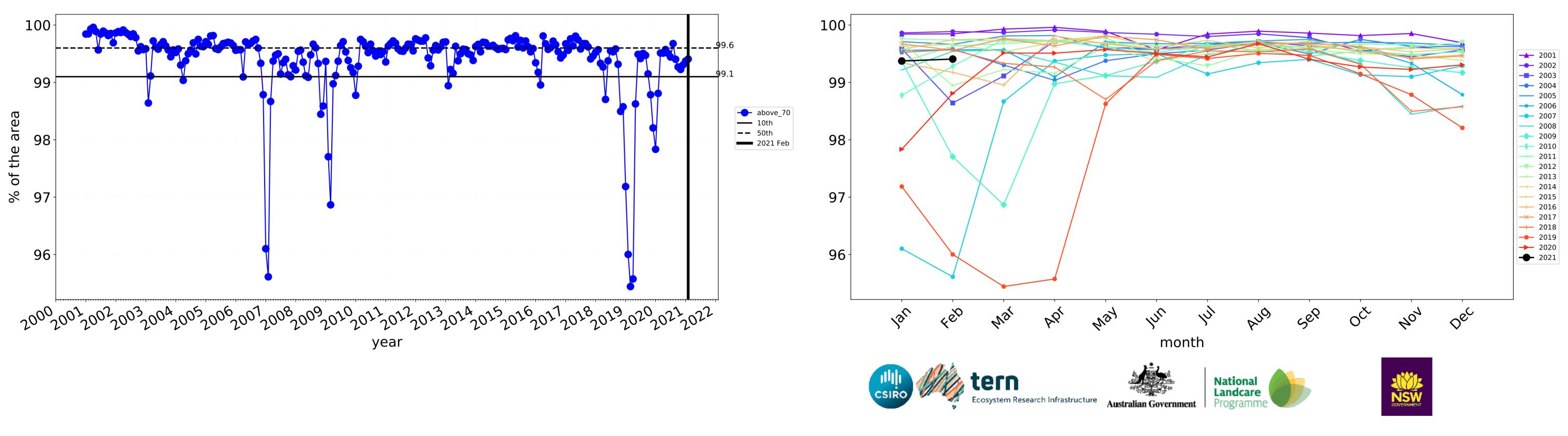
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





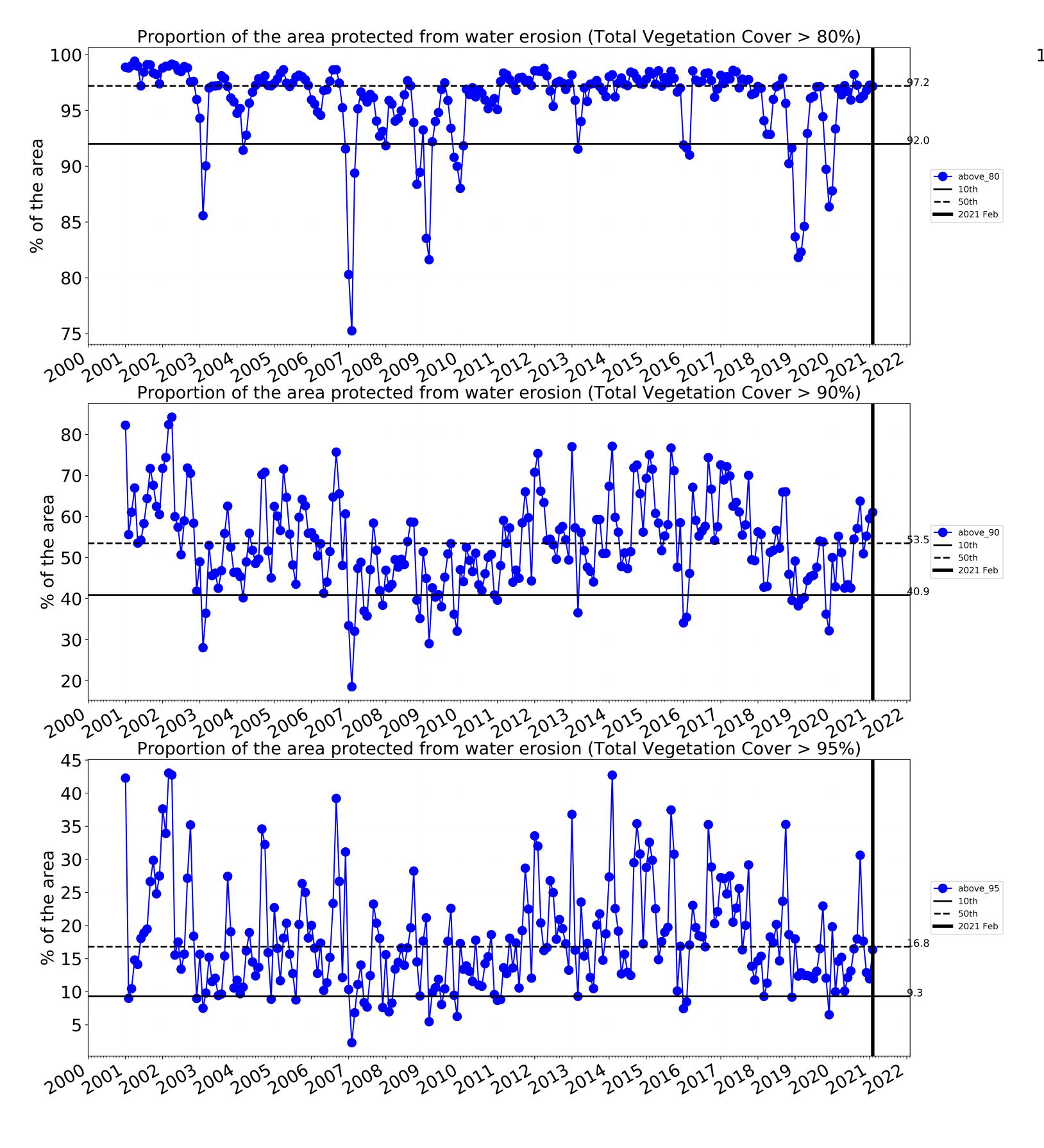
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

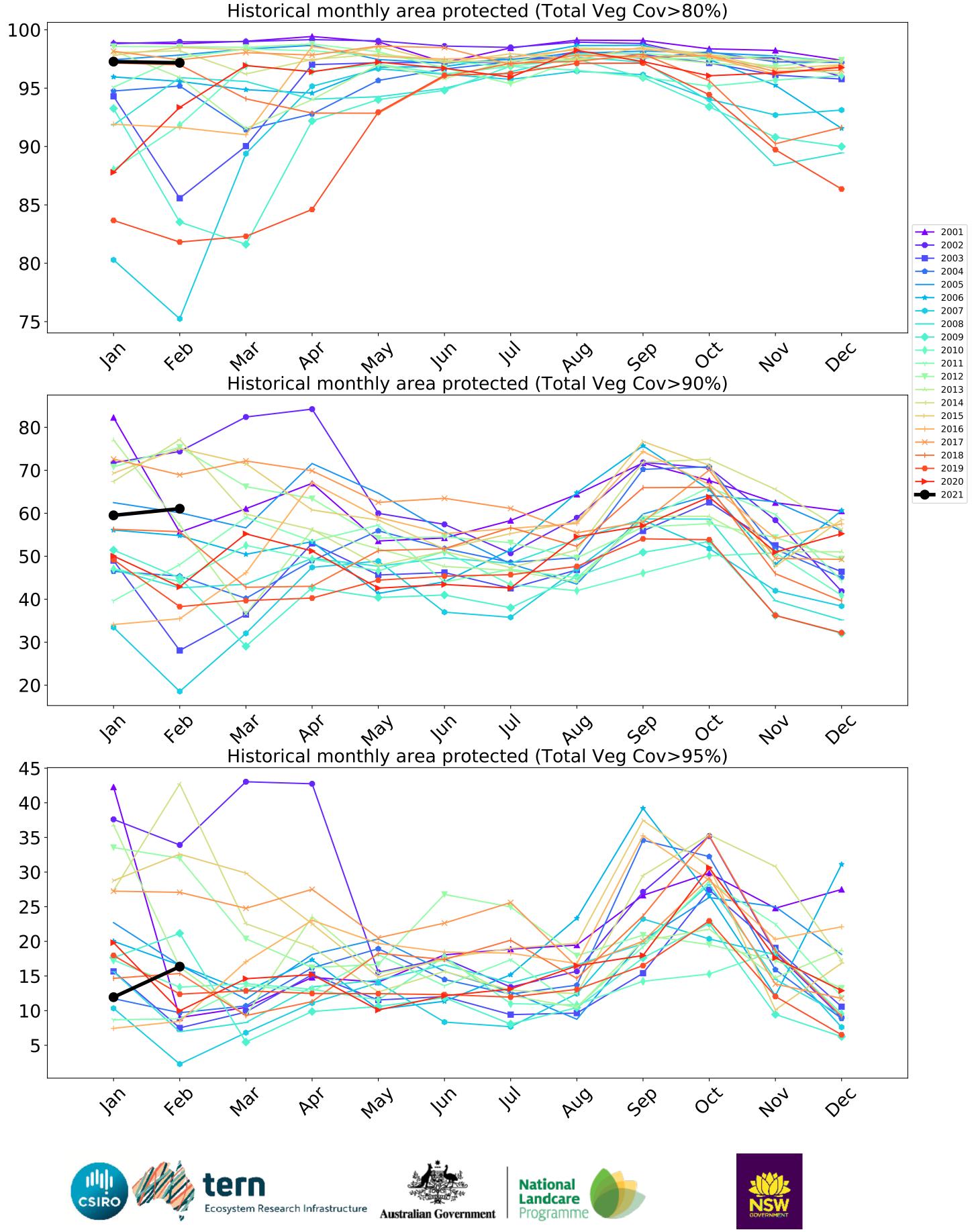
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

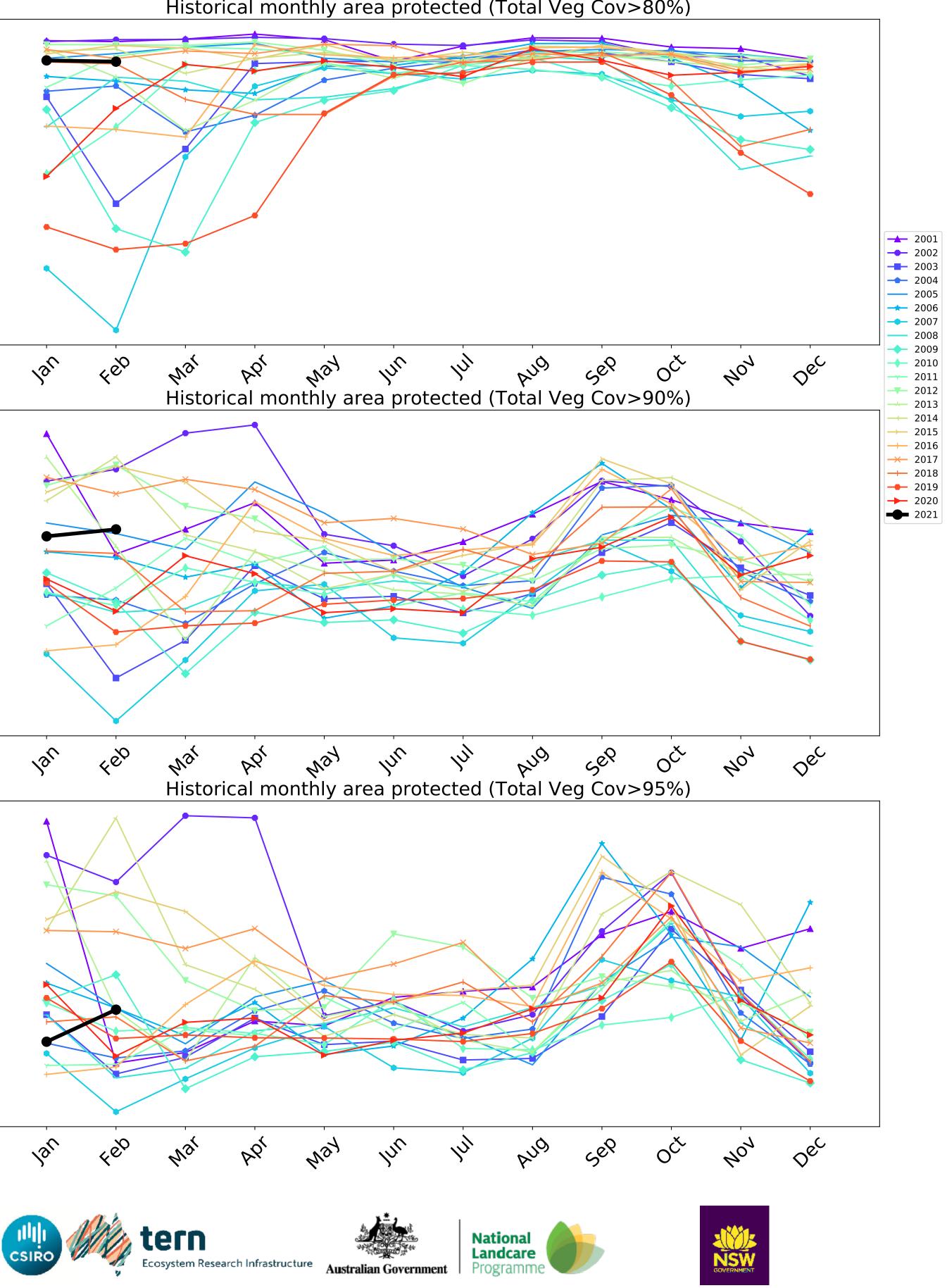


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

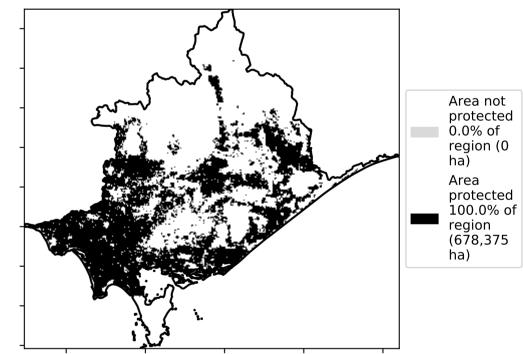


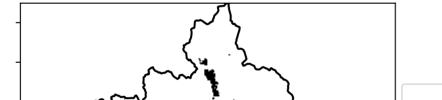




Grazing

92.4% 80 · Catchment Scale Land Use and Forests of Australia (2018) 60 Area (%) 1 Agriculture - Grazing - Non forest Derived from 2 Agriculture - Grazing - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 3 Agriculture - Grazing - Non-woodland forest 40 20 6.1% 1.6% 0 2 1 3 Land use class **Total Vegetation Cover [%]** Proportion of vegetation cover class in area 12%200% 99.4% 100 80 52°10°10°10 Area (%) 60 320050010 40 0.30% 20 0.5% 0.1% 0.0% 0 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class % Area protected from water erosion (>70%) % Area protected from wind erosion (>50%)





Land use and forest cover

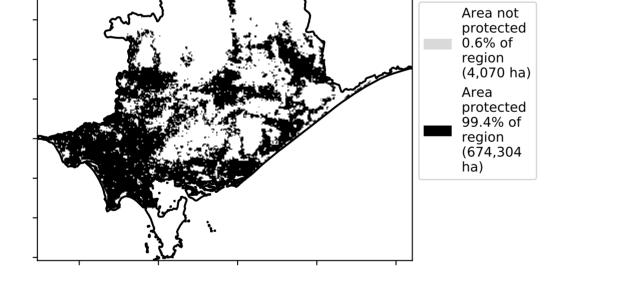


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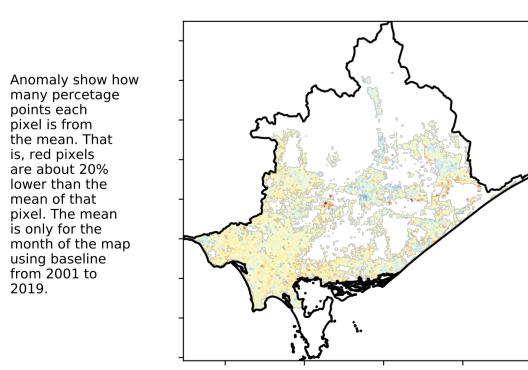
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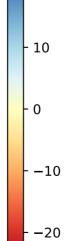
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Proportion of each land class in area



Total Vegetation Cover Anomaly [%]

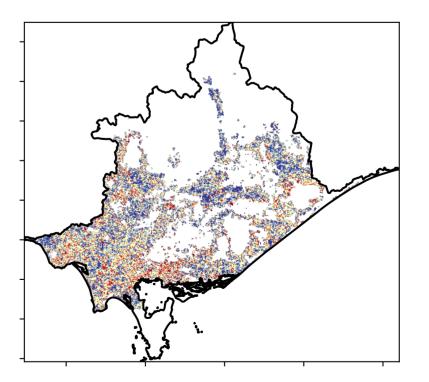




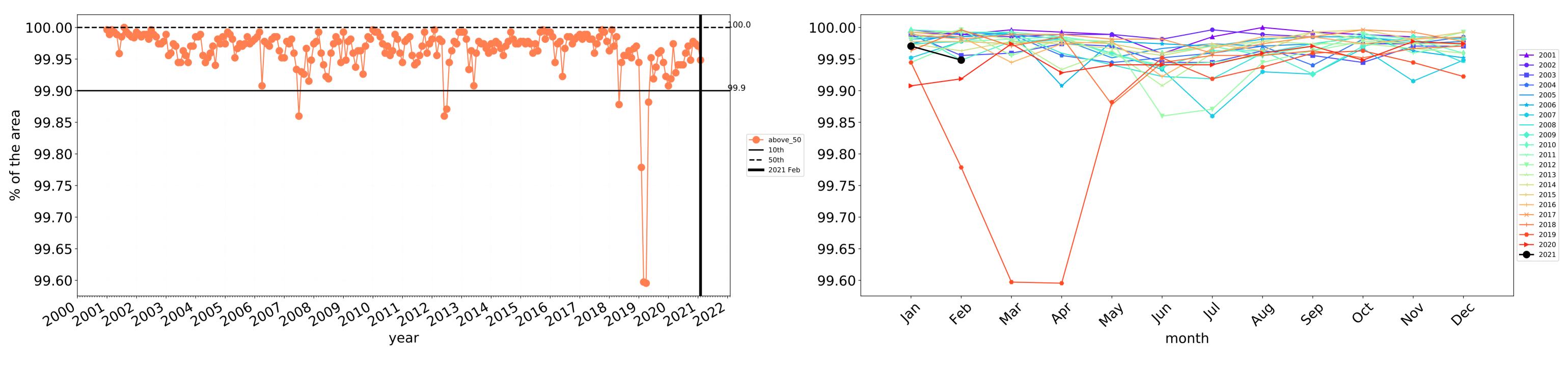
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Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]

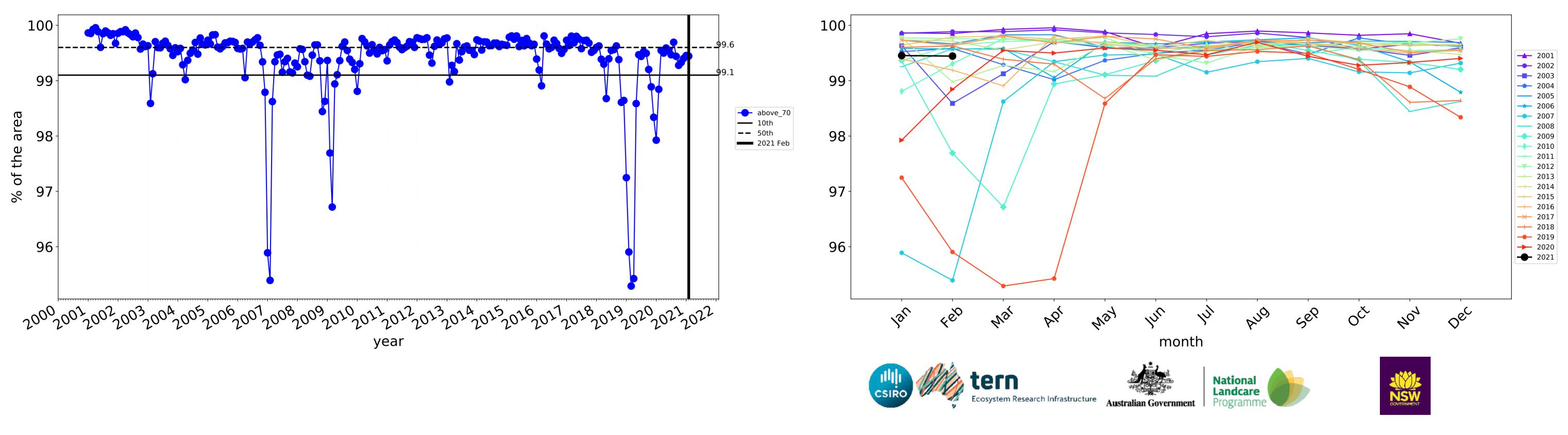






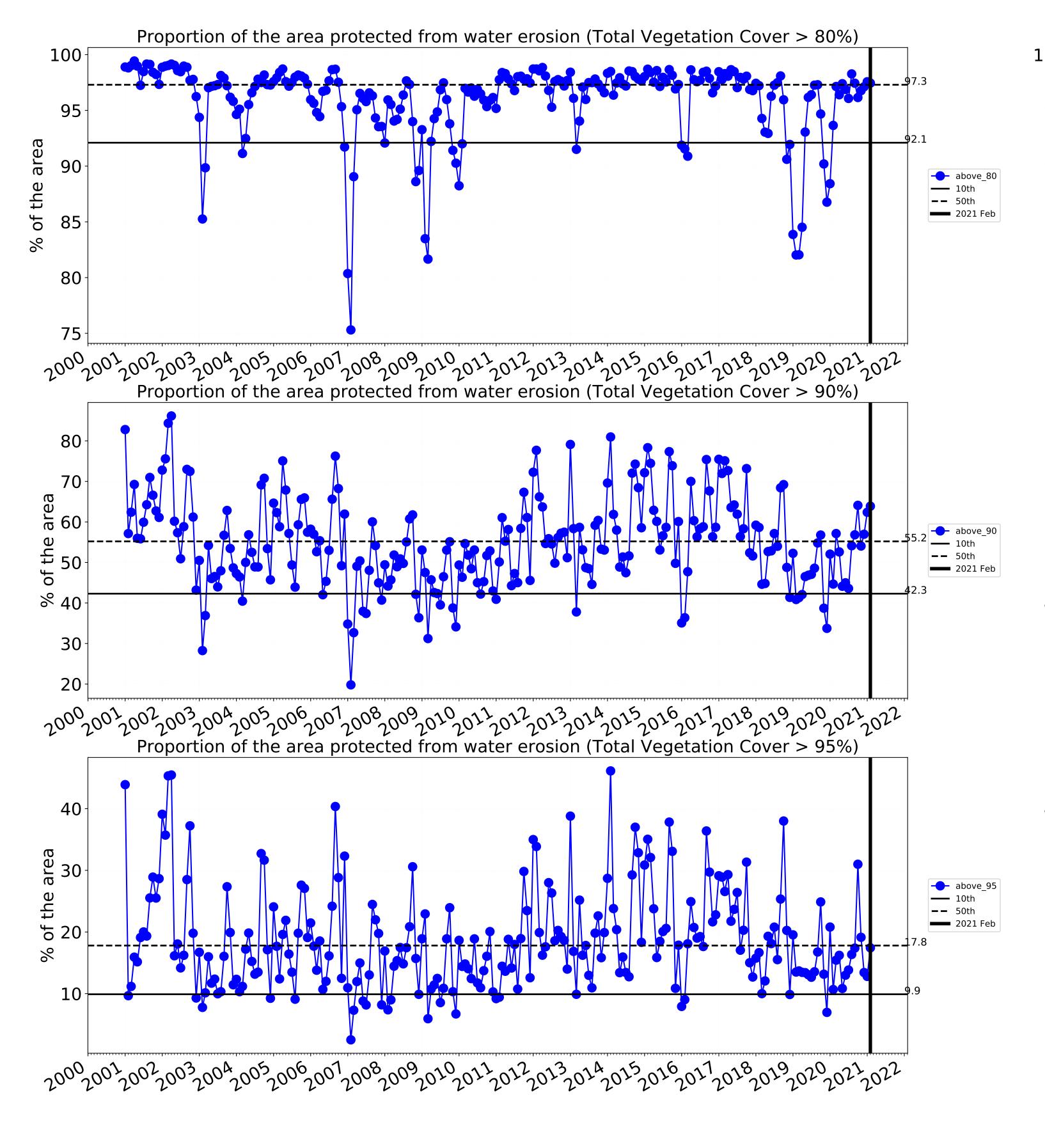
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

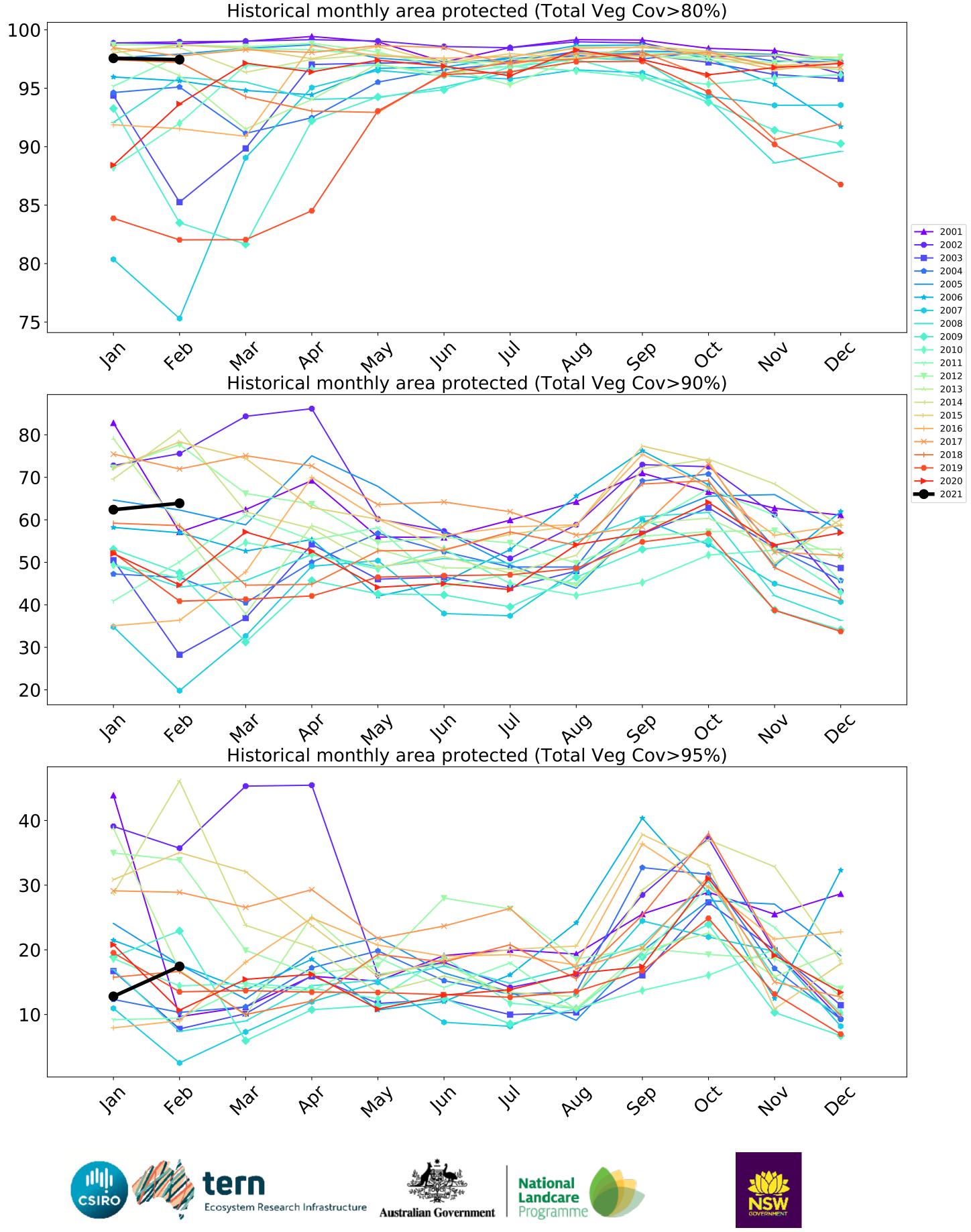
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

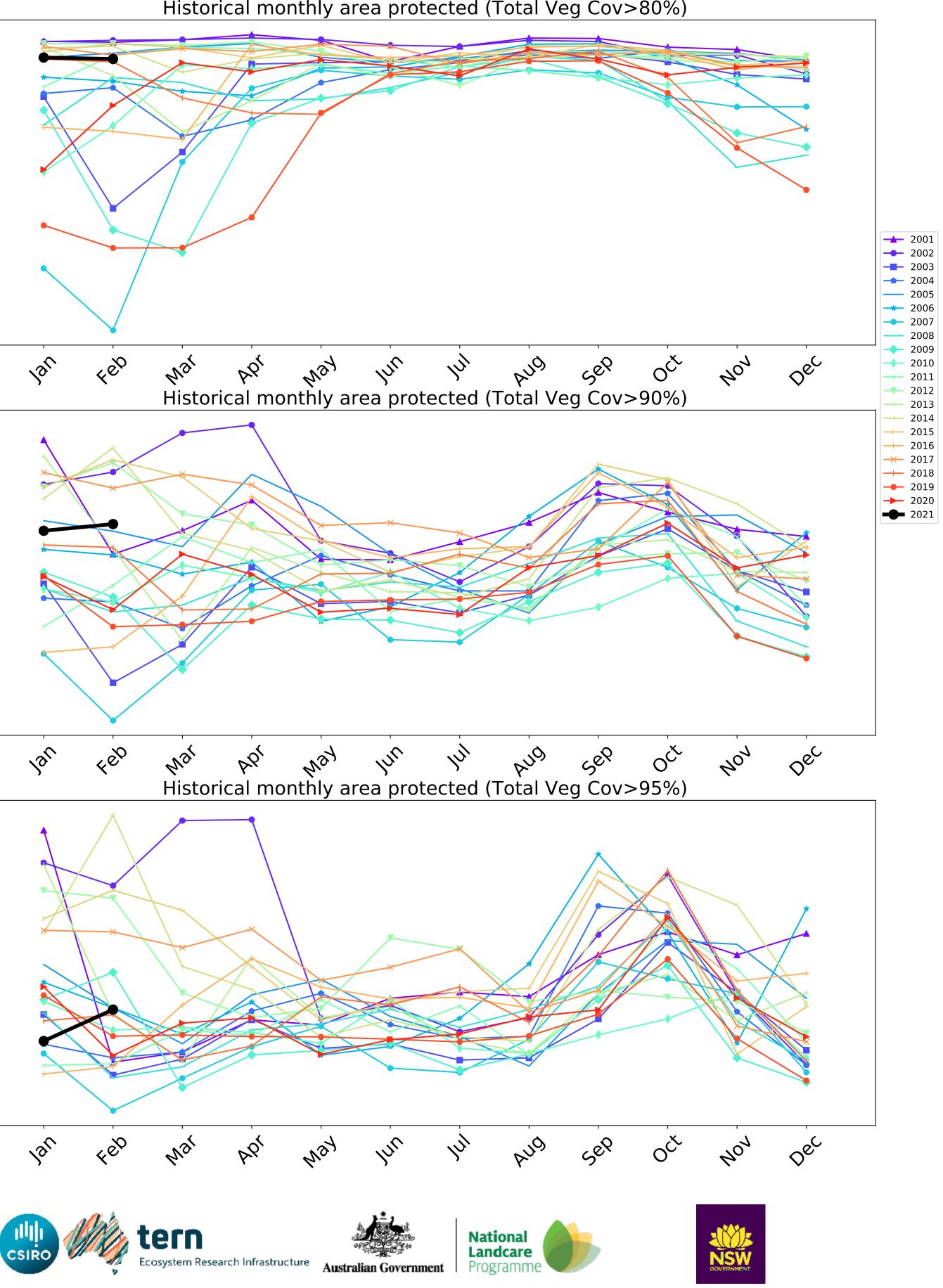


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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







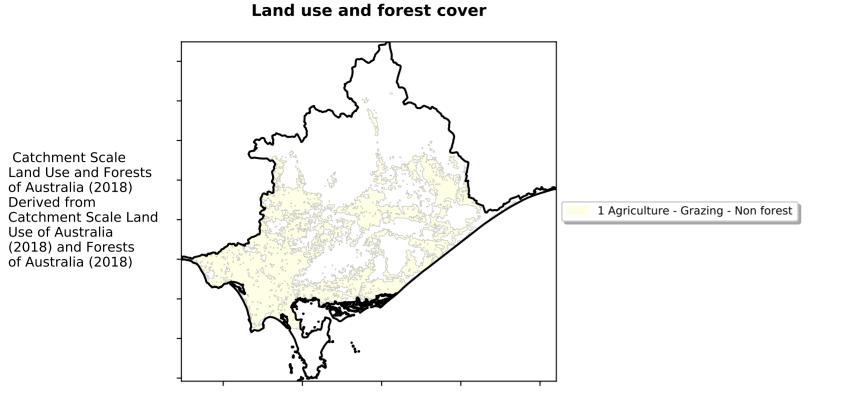
Grazing non forest

12%100%

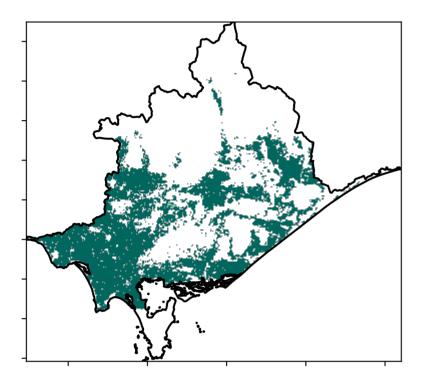
52°10°10°10

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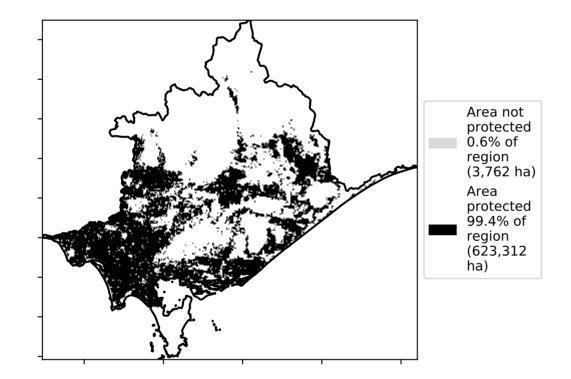
0.30%



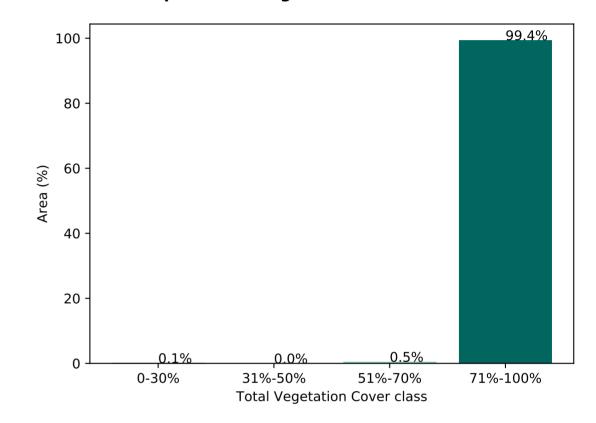
Total Vegetation Cover [%]



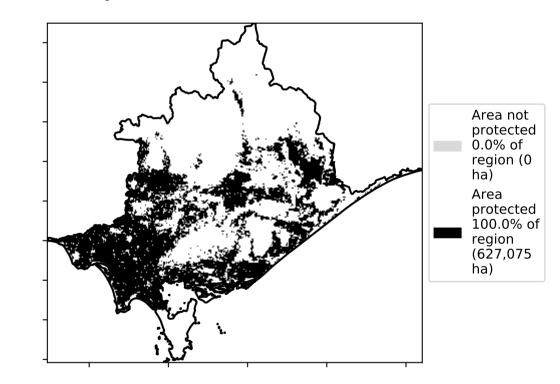
% Area protected from water erosion (>70%)



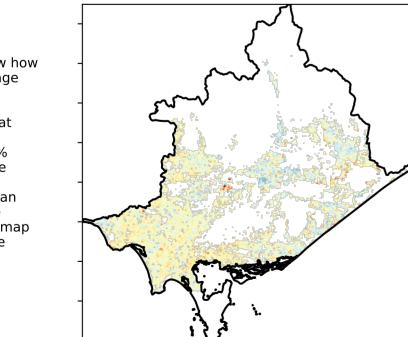
Proportion of vegetation cover class in area

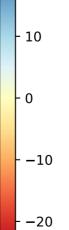


% Area protected from wind erosion (>50%)

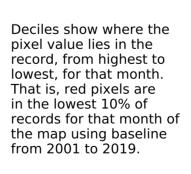


Total Vegetation Cover Anomaly [%]

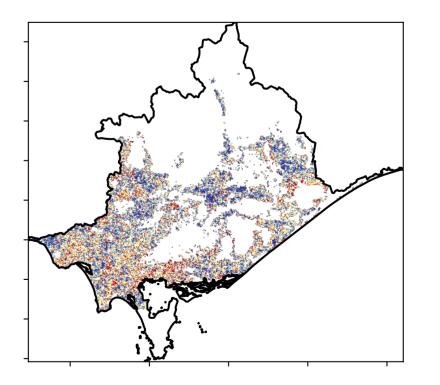




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Total Vegetation Cover Decile [%]



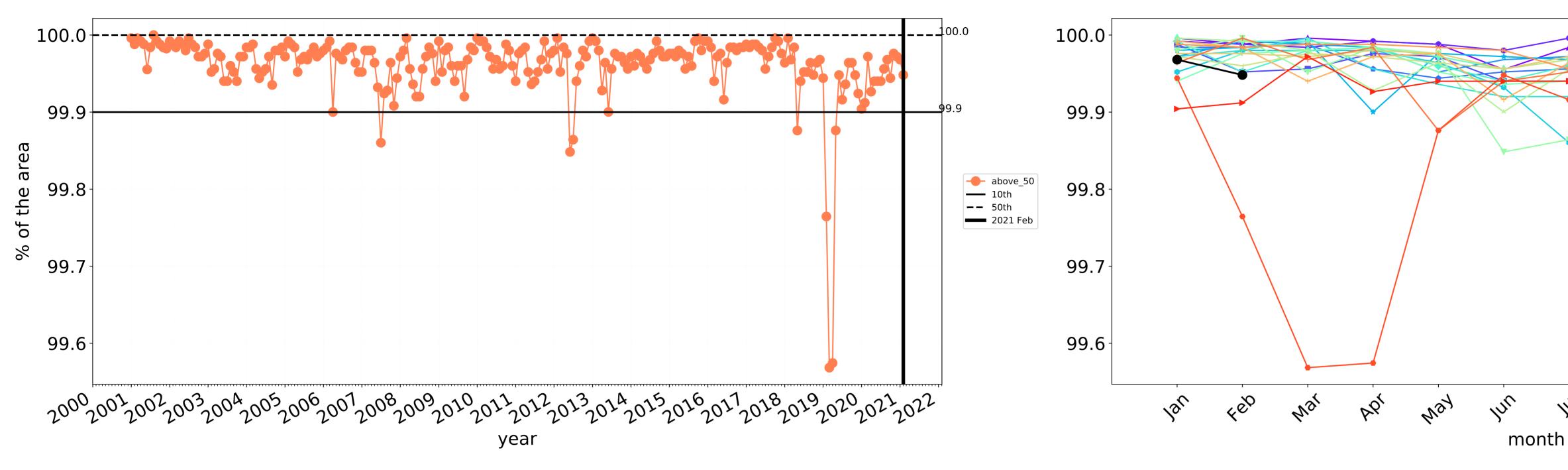
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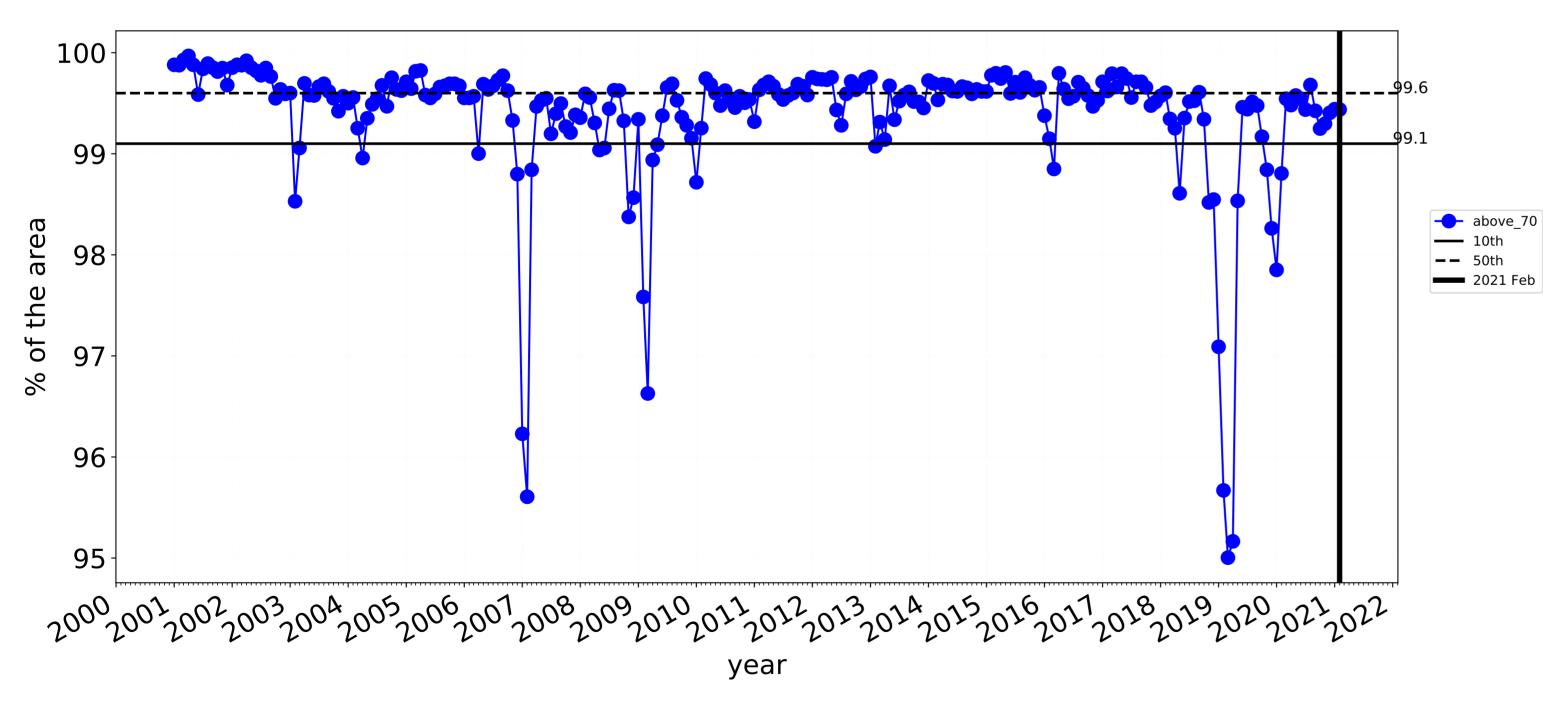


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



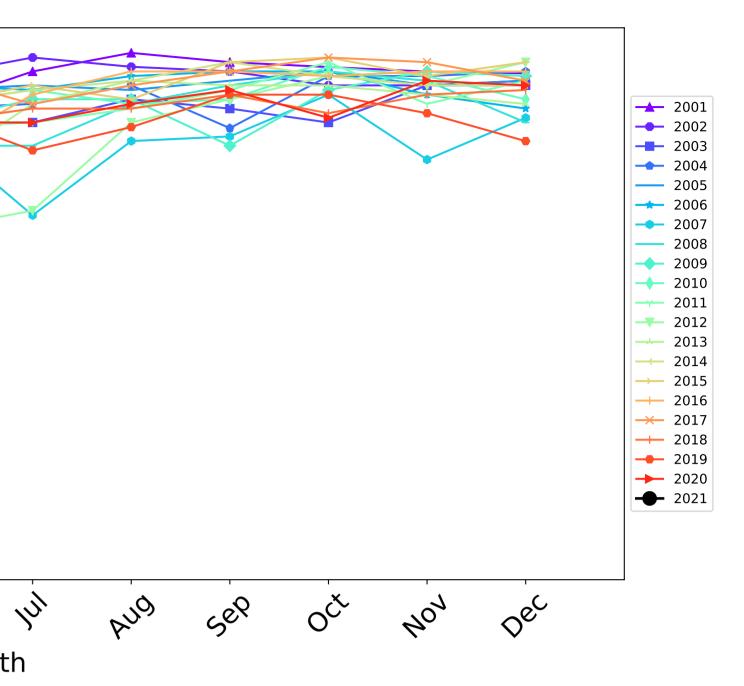
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



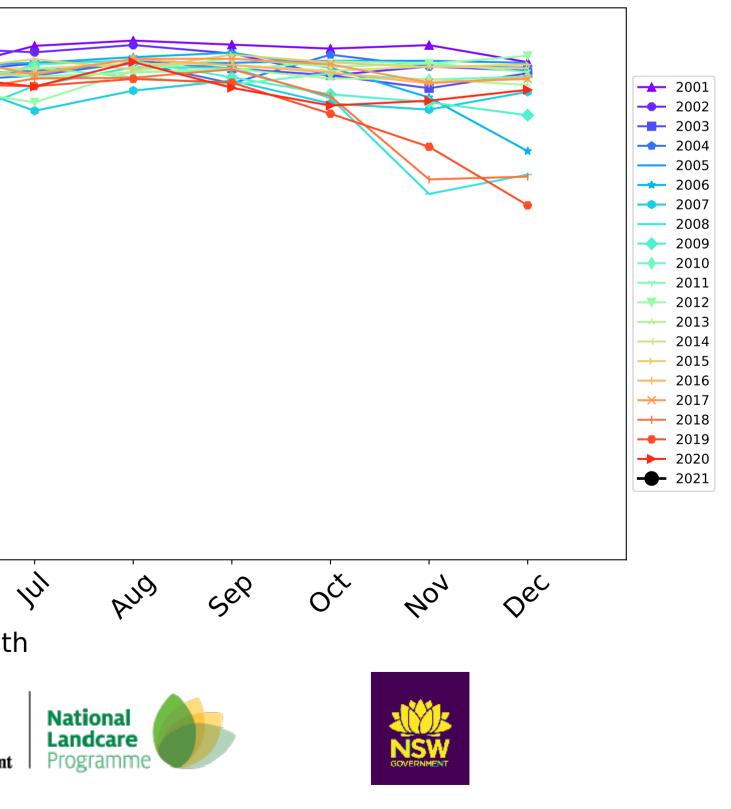


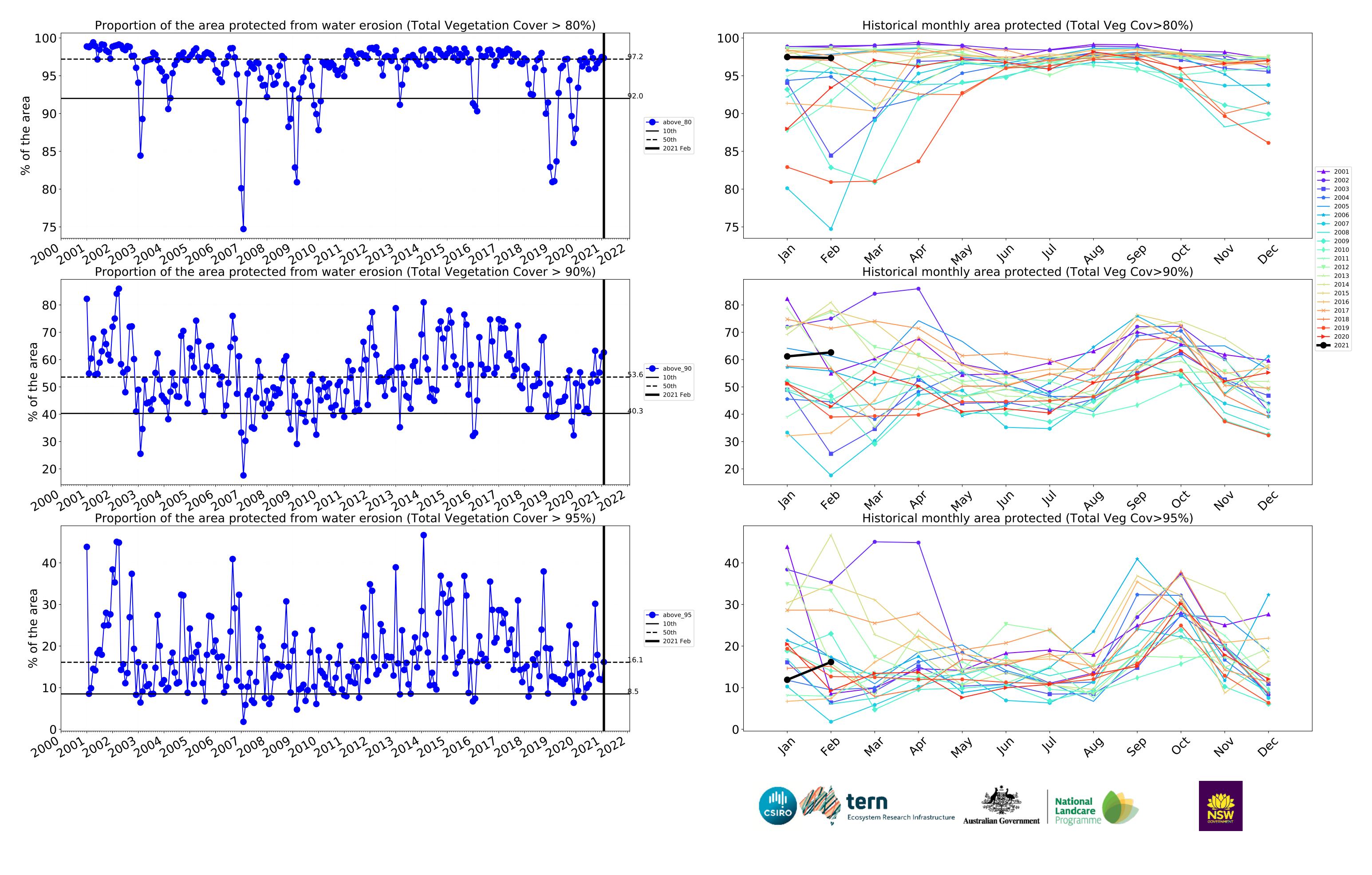
Wind erosion historical monthly area protected (Total Veg Cov >50%)

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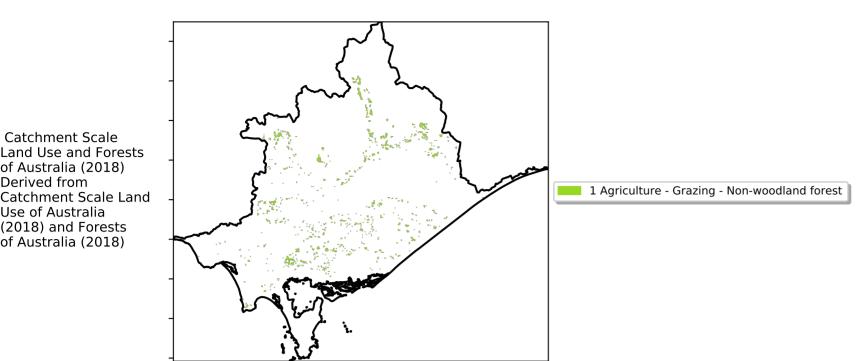


Water erosion historical monthly area protected (Total Veg Cov>70%)





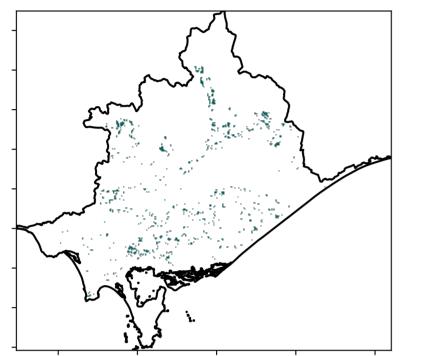
Grazing - Forest (non woodland)

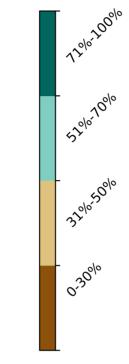


Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

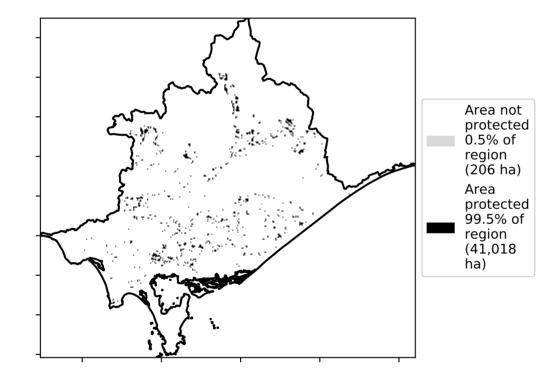
Total Vegetation Cover [%]

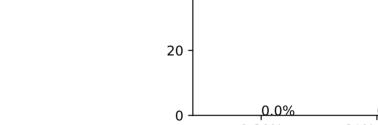
Land use and forest cover



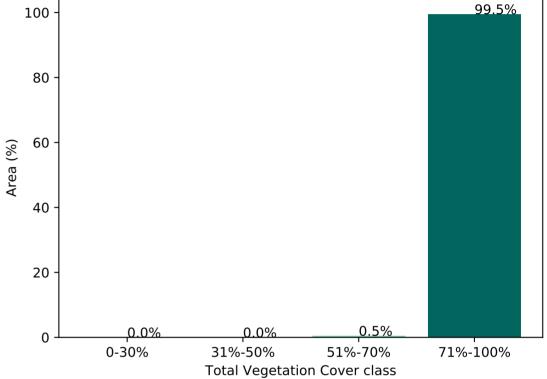


% Area protected from water erosion (>70%)

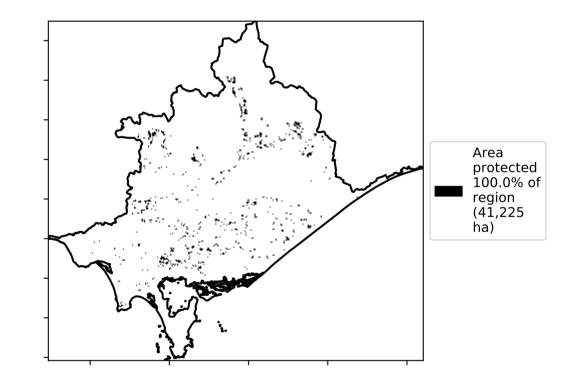




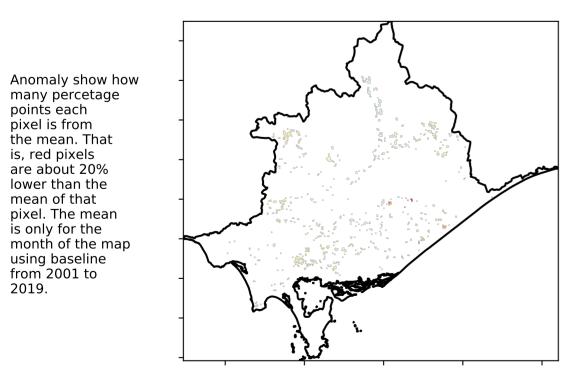
Proportion of vegetation cover class in area

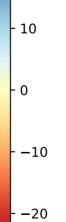


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]





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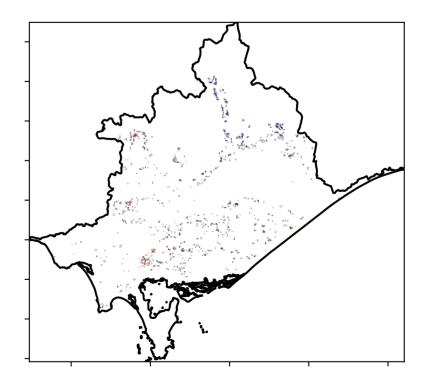
Total Vegetation Cover Decile [%]

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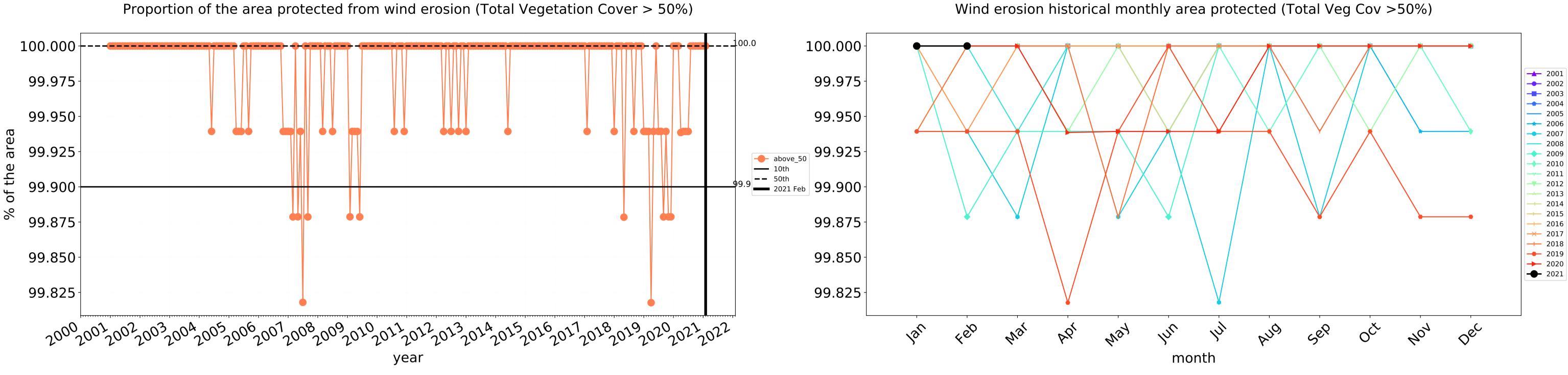




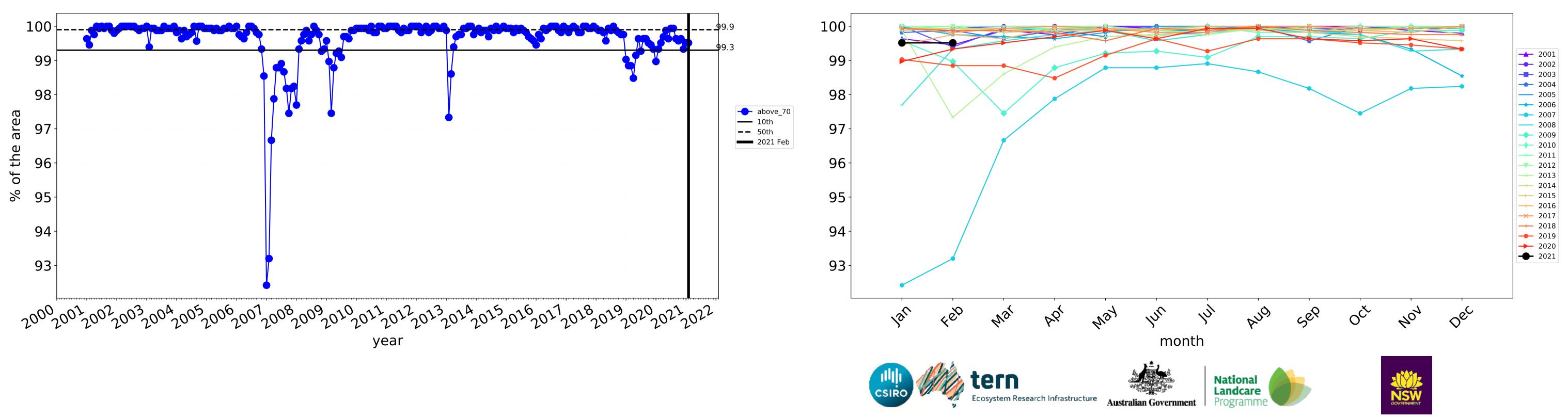
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of

records for that month of

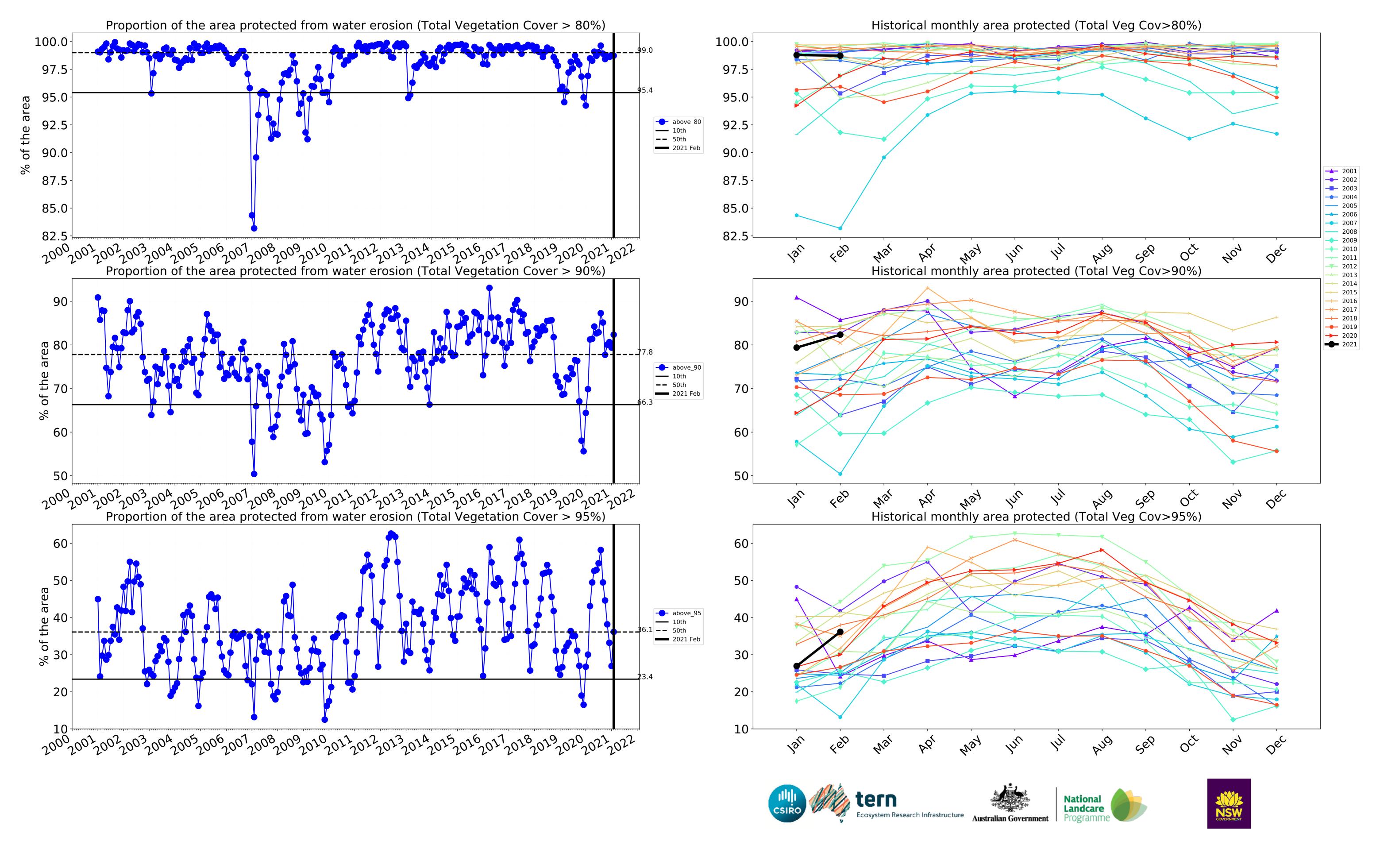
the map using baseline from 2001 to 2019.



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



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

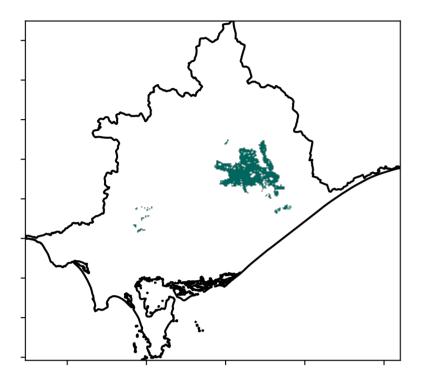


Irrigation

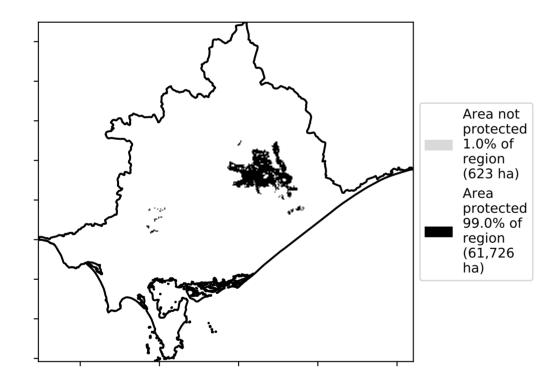
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

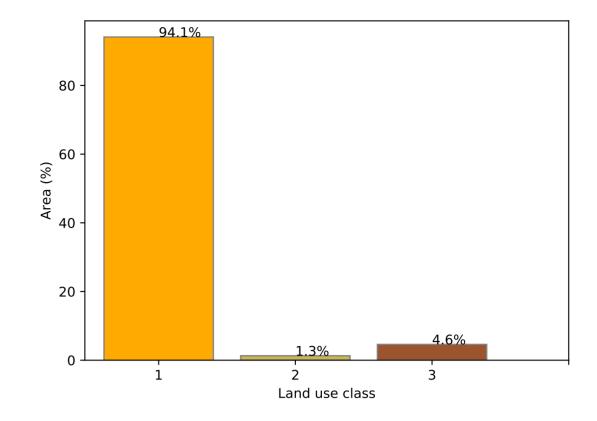
Land use and forest cover

Total Vegetation Cover [%]



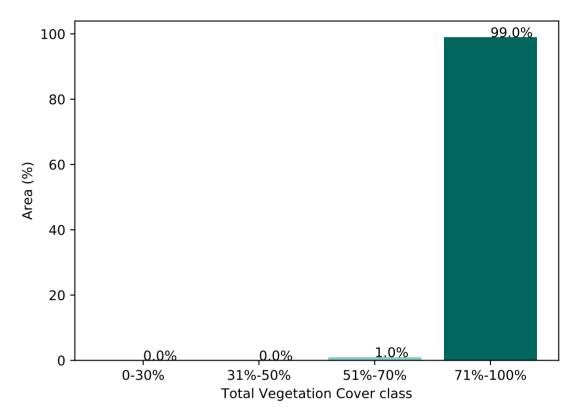




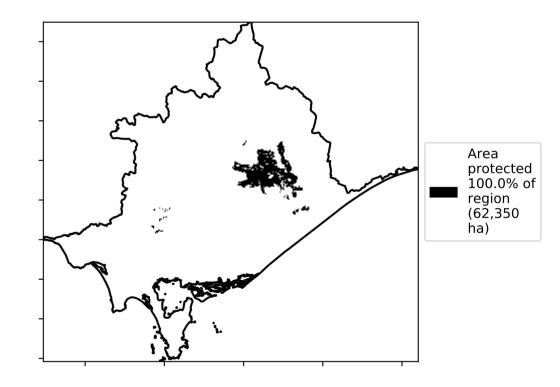


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



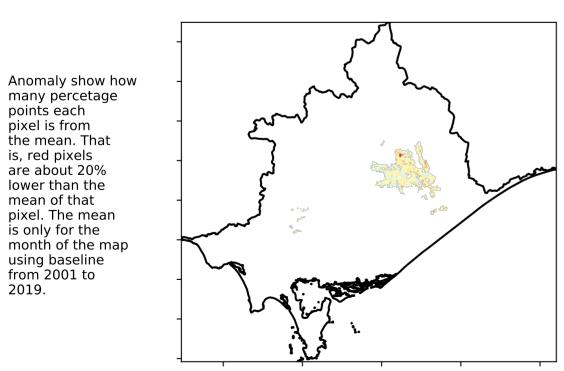
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Total Vegetation Cover Anomaly [%]



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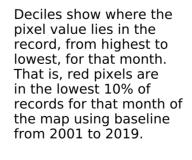
- 20

12%100%

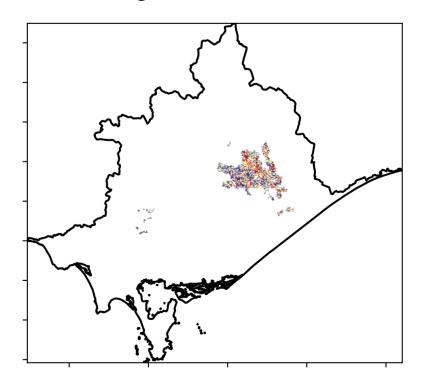
· 52°10'10°10

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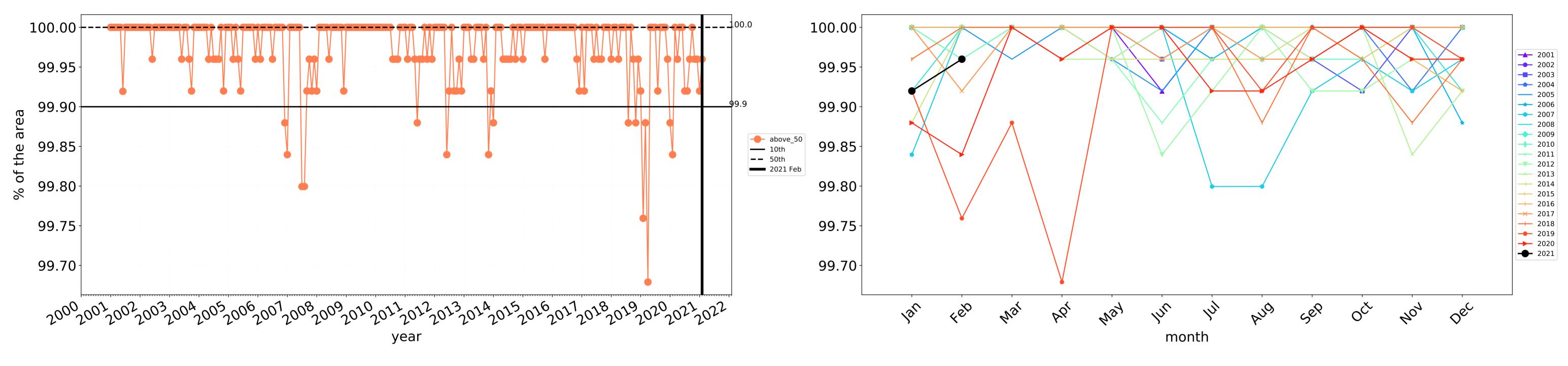
0.30%



Total Vegetation Cover Decile [%]

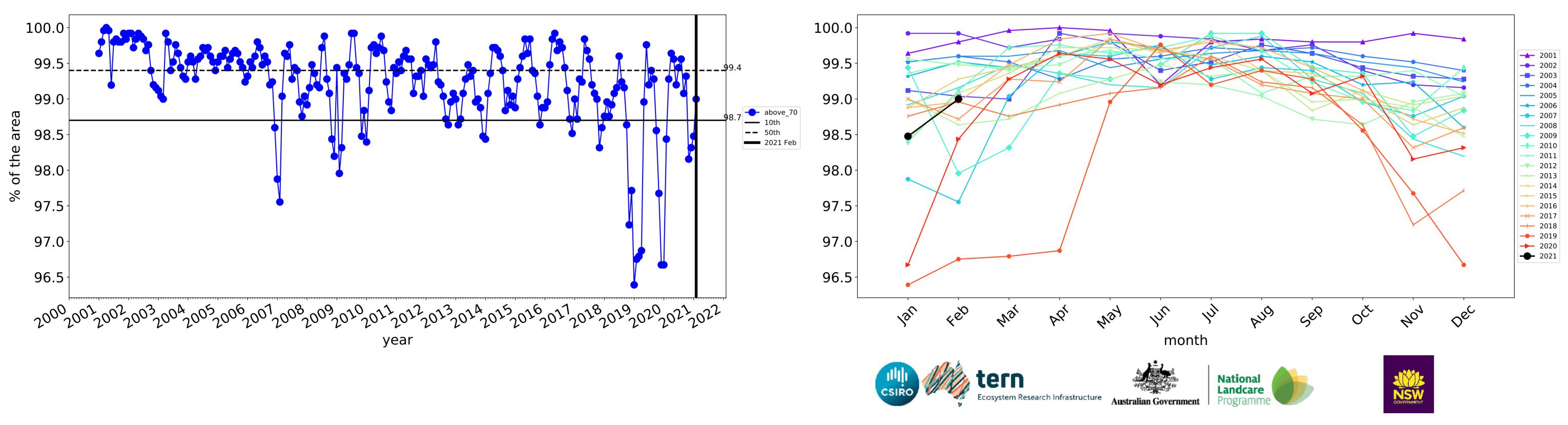




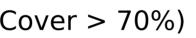


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

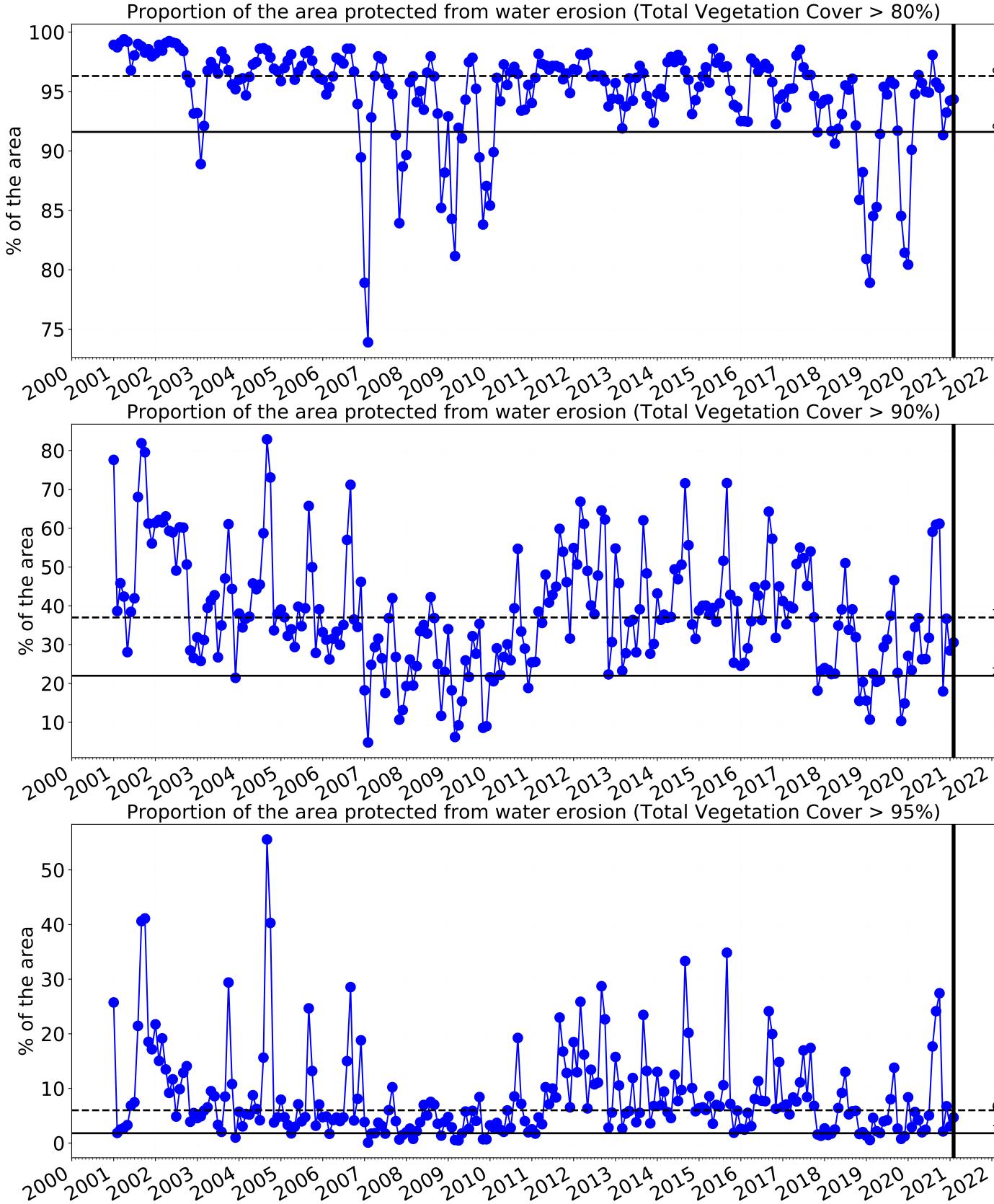
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



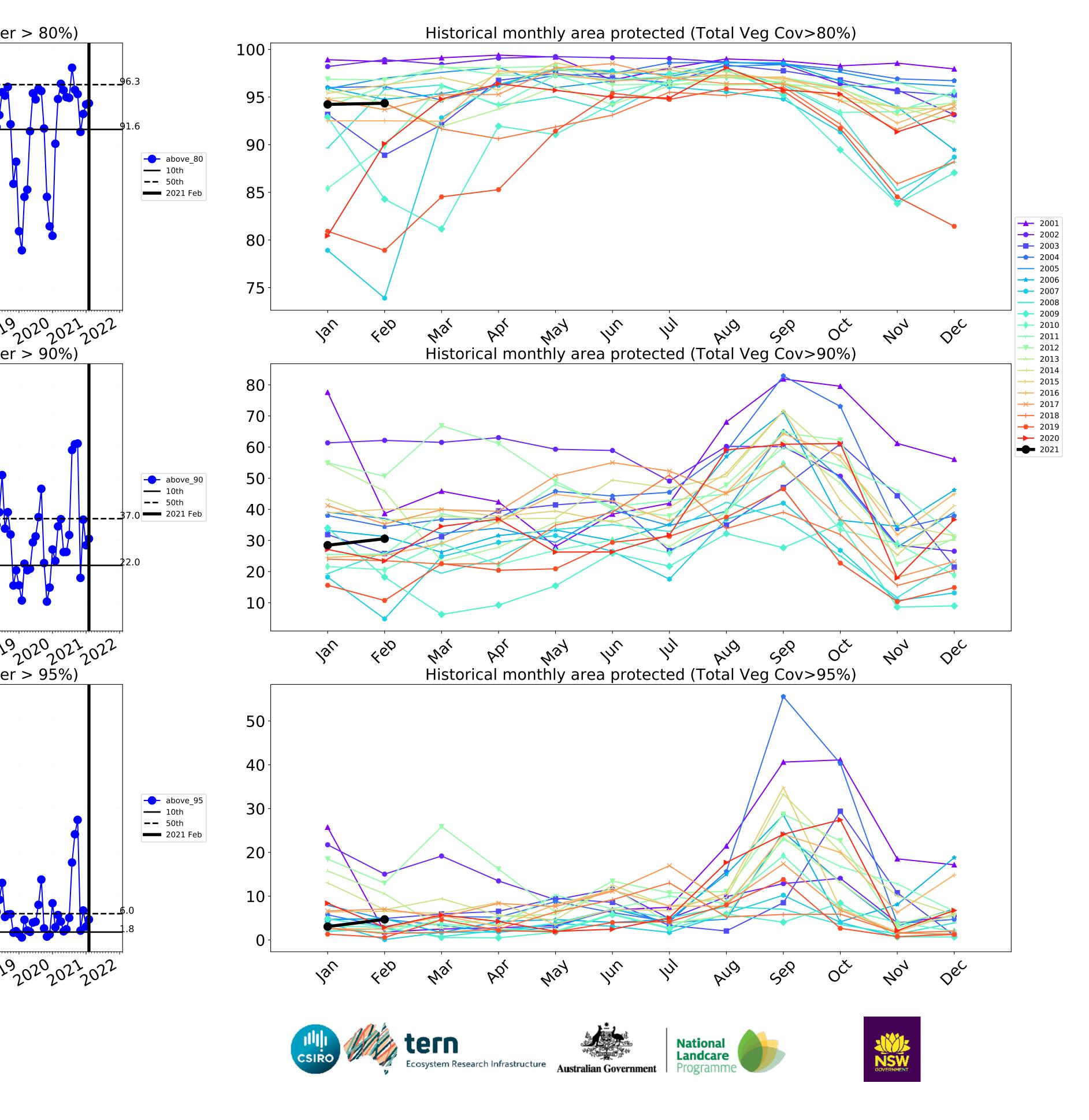
Wind erosion historical monthly area protected (Total Veg Cov >50%)



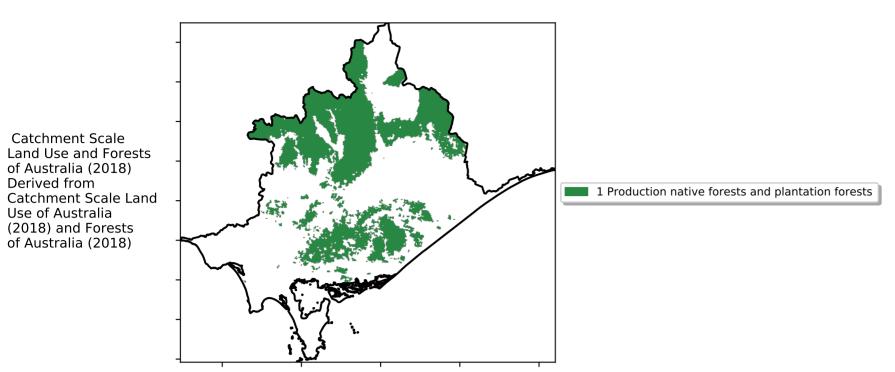
Water erosion historical monthly area protected (Total Veg Cov>70%)



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

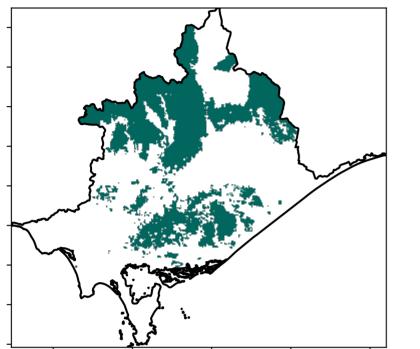


Production native forests and plantation forests

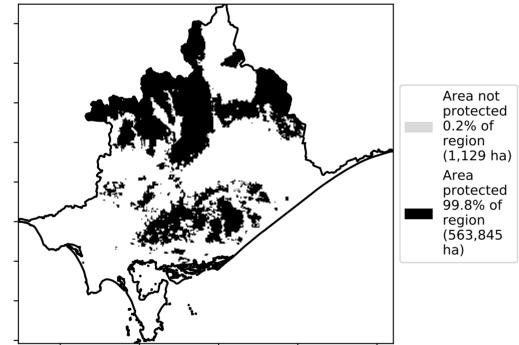


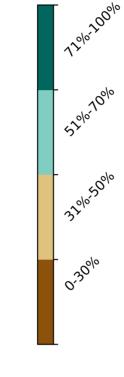
Land use and forest cover

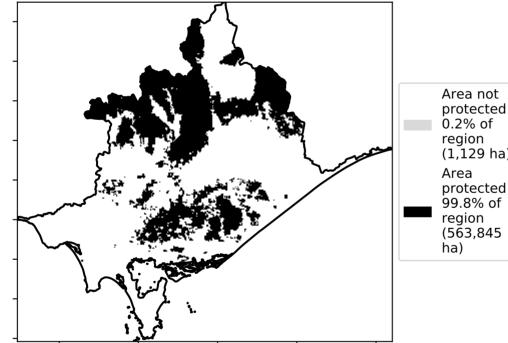
Total Vegetation Cover [%]



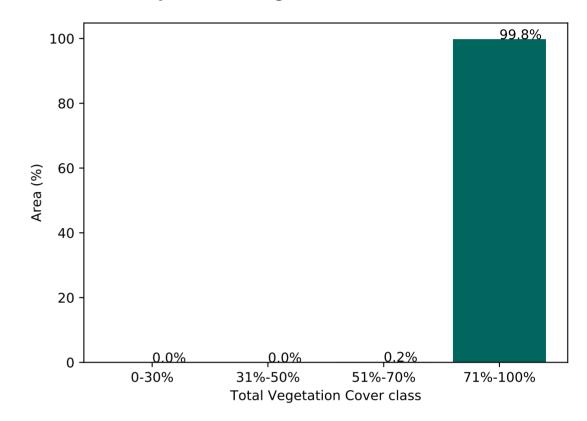
% Area protected from water erosion (>70%)



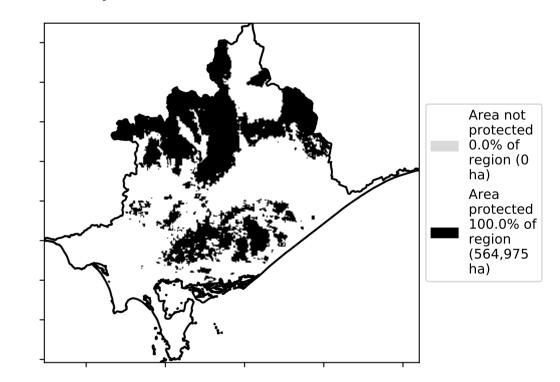




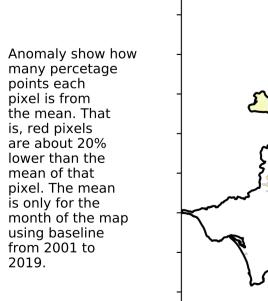


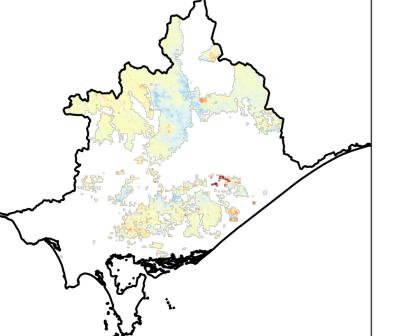


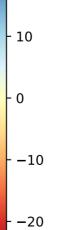
% Area protected from wind erosion (>50%)



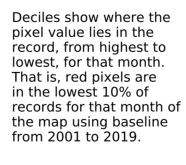
Total Vegetation Cover Anomaly [%]







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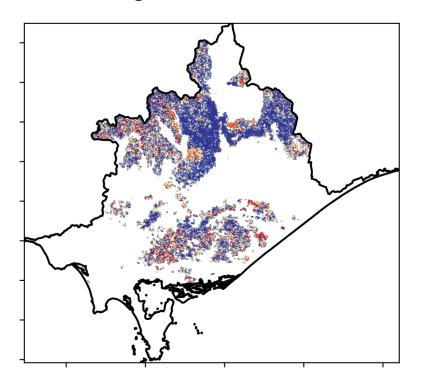
Total Vegetation Cover Decile [%]

0

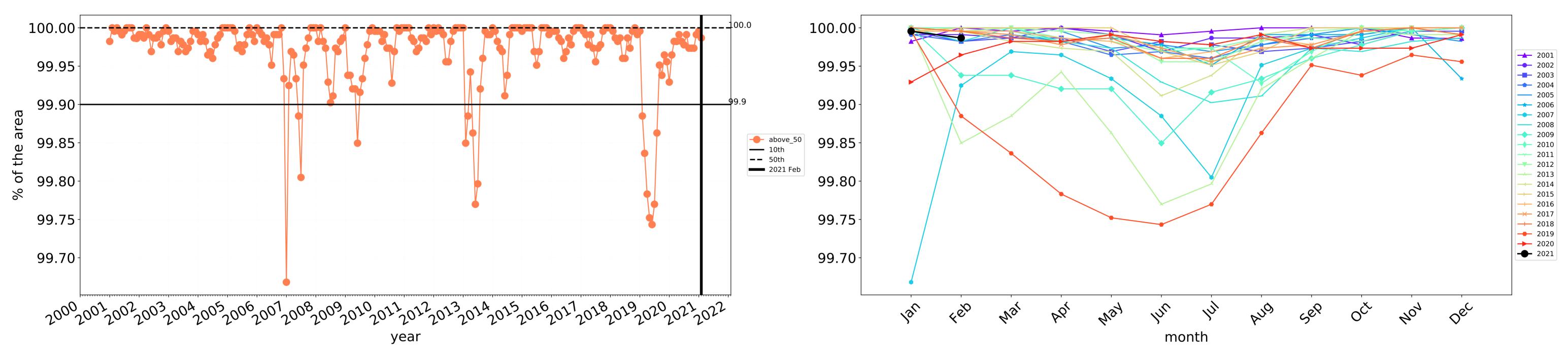
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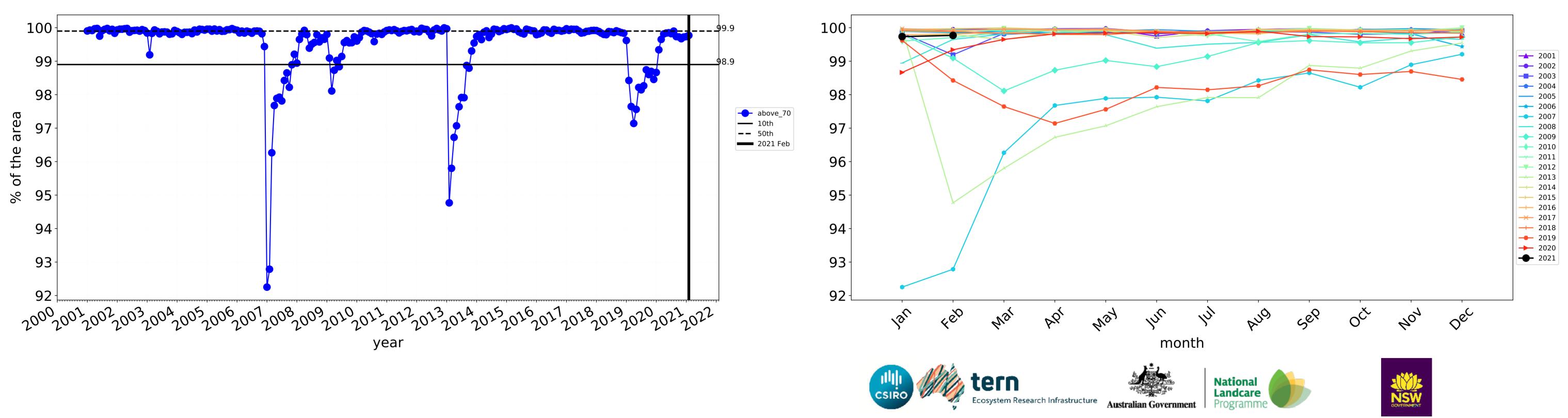






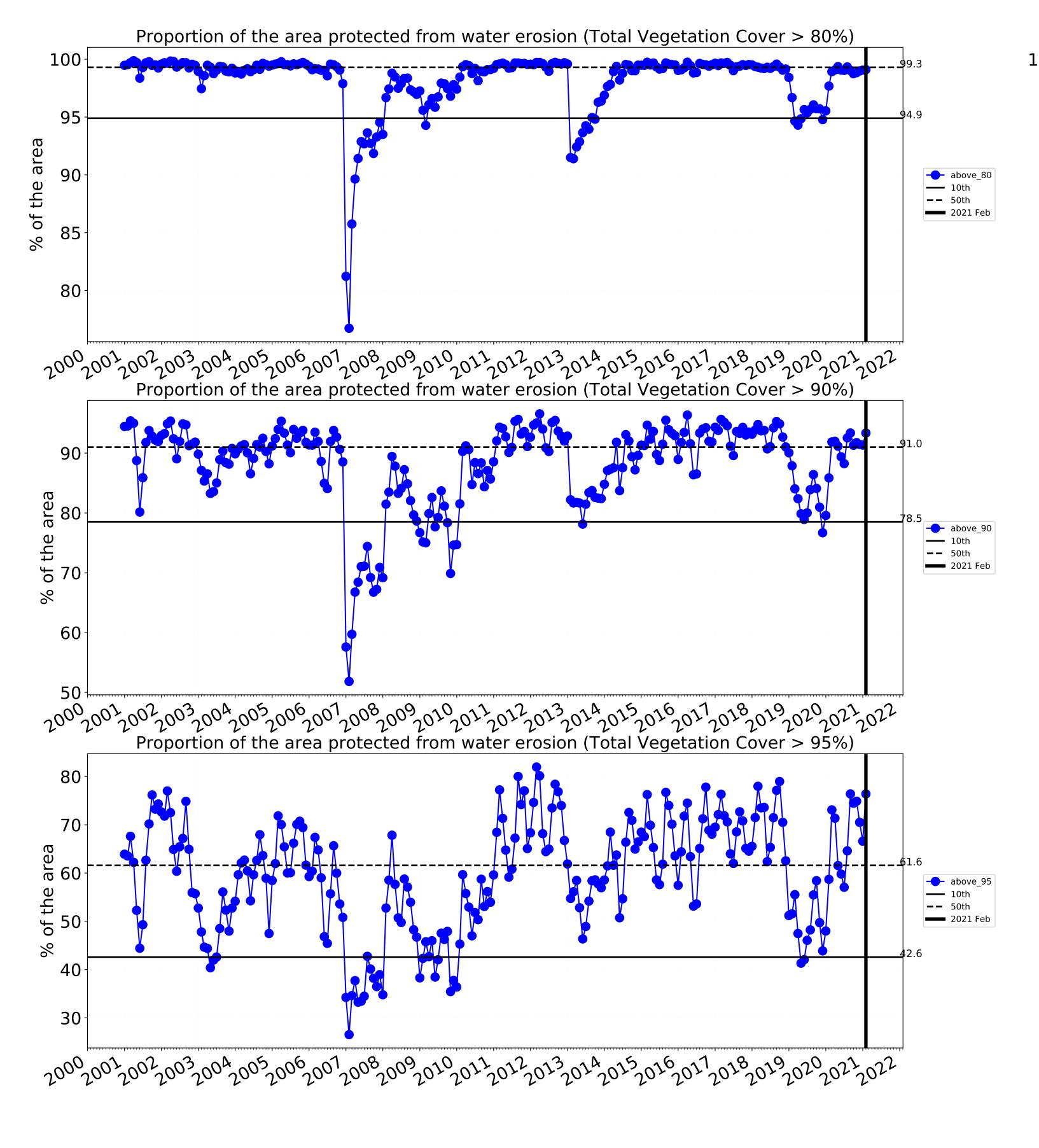
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

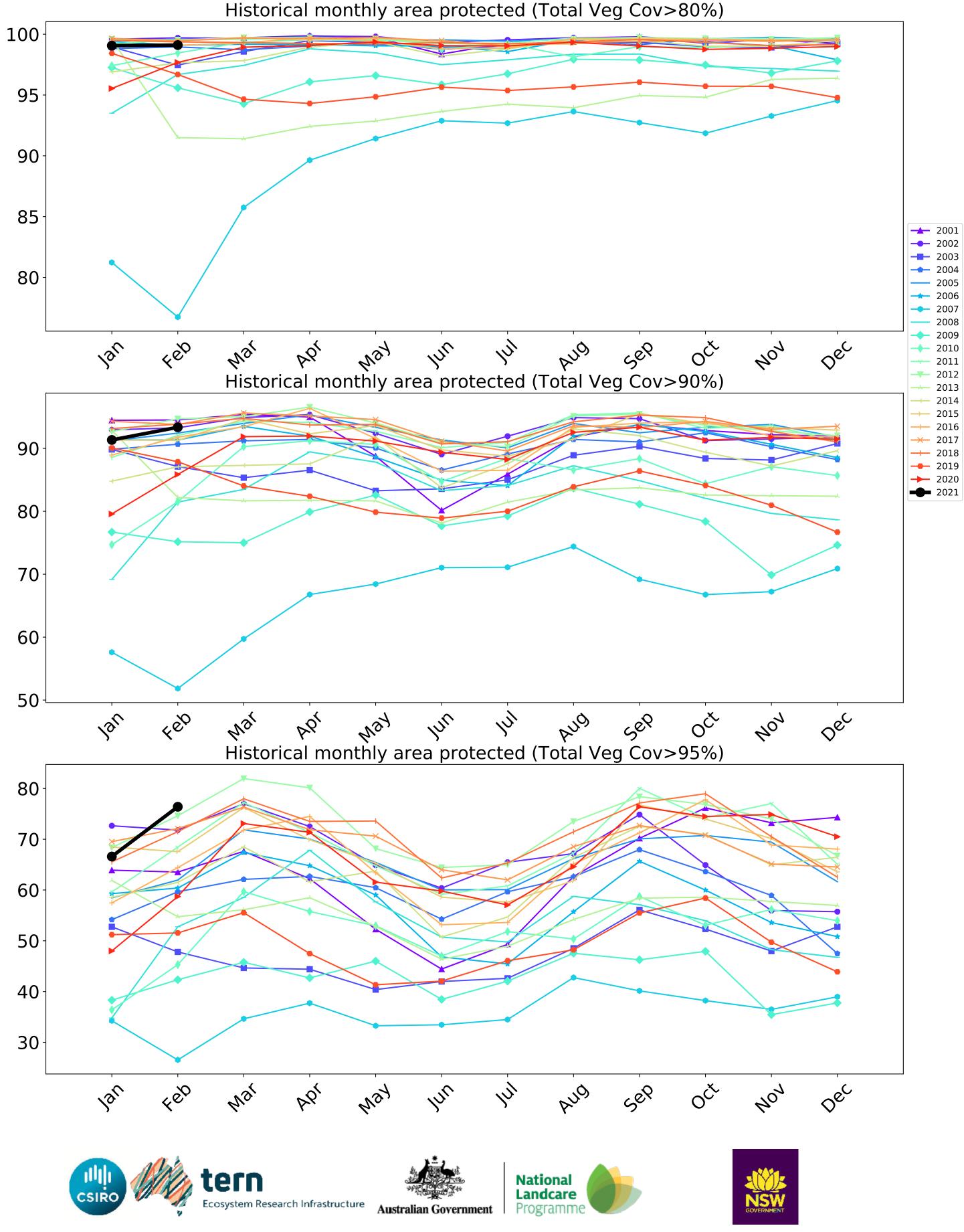
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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





West Gippsland (1,686,375 ha and no data 39,269 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	1,686,375	100.0% 1,685,550	99.8% 1,683,700	98.8% 1,666,400	96.4% 1,626,325	73.6% 1,240,700	41.6% 702,025
Conservation and natural environments	273,950	99.8% 273,350	99.4% 272,425	97.9% 268,300	94.6% 259,225	78.3% 214,450	50.3% 137,825
Conservation and natural environments non forest	44,800	98.8% 44,250	97.0% 43,450	89.9% 40,275	79.5% 35,600	50.4% 22,600	22.3% 9,975
Conservation and natural environments Woodland forest	73,675	100.0% 73,650	99.9% 73,575	99.0% 72,950	97.1% 71,525	82.7% 60,950	48.7% 35,875
Conservation and natural environments Forest (non woodland)	155,475	100.0% 155,450	100.0% 155,400	99.7% 155,075	97.8% 152,100	84.2% 130,900	59.2% 91,975
Agriculture	750,450	100.0% 750,400	100.0% 750,075	99.4% 746,000	97.2% 729,200	61.1% 458,175	16.4% 122,725
Grazing	678,375	100.0% 678,325	99.9% 678,025	99.4% 674,600	97.4% 661,075	63.9% 433,400	17.4% 118,250
Grazing non forest	627,075	100.0% 627,050	99.9% 626,750	99.4% 623,550	97.4% 610,475	62.6% 392,675	16.2% 101,350
Grazing - Forest (non woodland)	41,225	100.0% 41,225	100.0% 41,225	99.5% 41,025	98.7% 40,700	82.4% 33,950	36.1% 14,900
Irrigation	62,350	100.0% 62,350	100.0% 62,325	99.0% 61,725	94.3% 58,825	30.6% 19,050	4.7% 2,925
Production native forests and plantation forests	564,975	100.0% 564,975	100.0% 564,900	99.8% 563,675	99.1% 559,925	93.4% 527,425	76.4% 431,625

