Total vegetation cover soil protection Region:NRM Mackay Whitsunday QLD

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

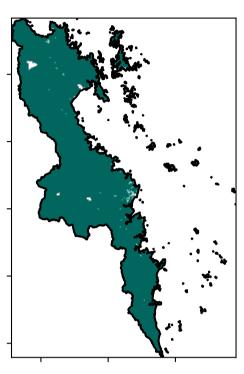


Vegetation Cover Jun 2021

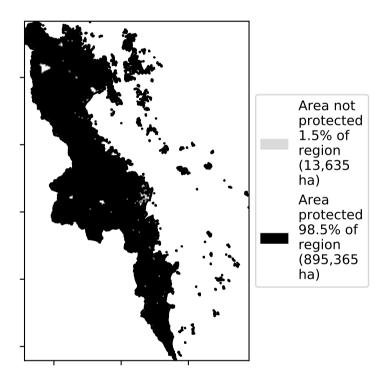
Land use and forest cover

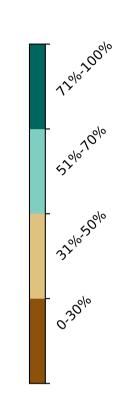
Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated **11** Agriculture - Horticulture - Irrigated 12 Production native forests and plantation forests 13 Other uses

Total Vegetation Cover [%]

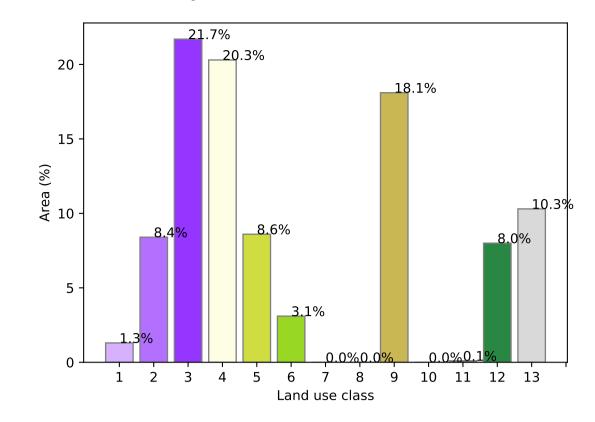


% Area protected from water erosion (>70%)

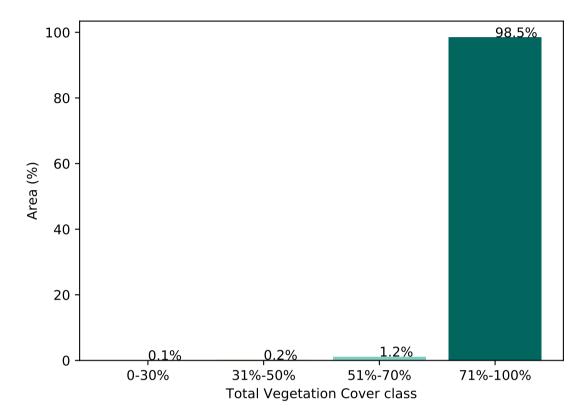




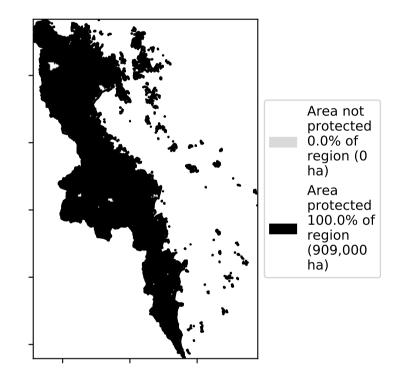
Proportion of each land class in area



Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

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

of Australia (2018)

(2018) and Forests

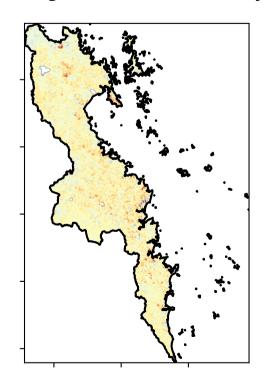
of Australia (2018)

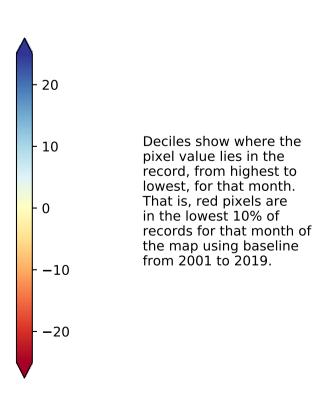
Derived from

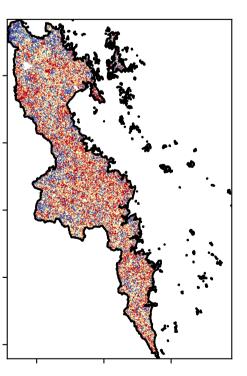
Use of Australia

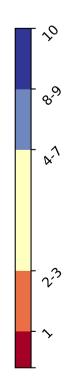
Land Use and Forests

Catchment Scale Land

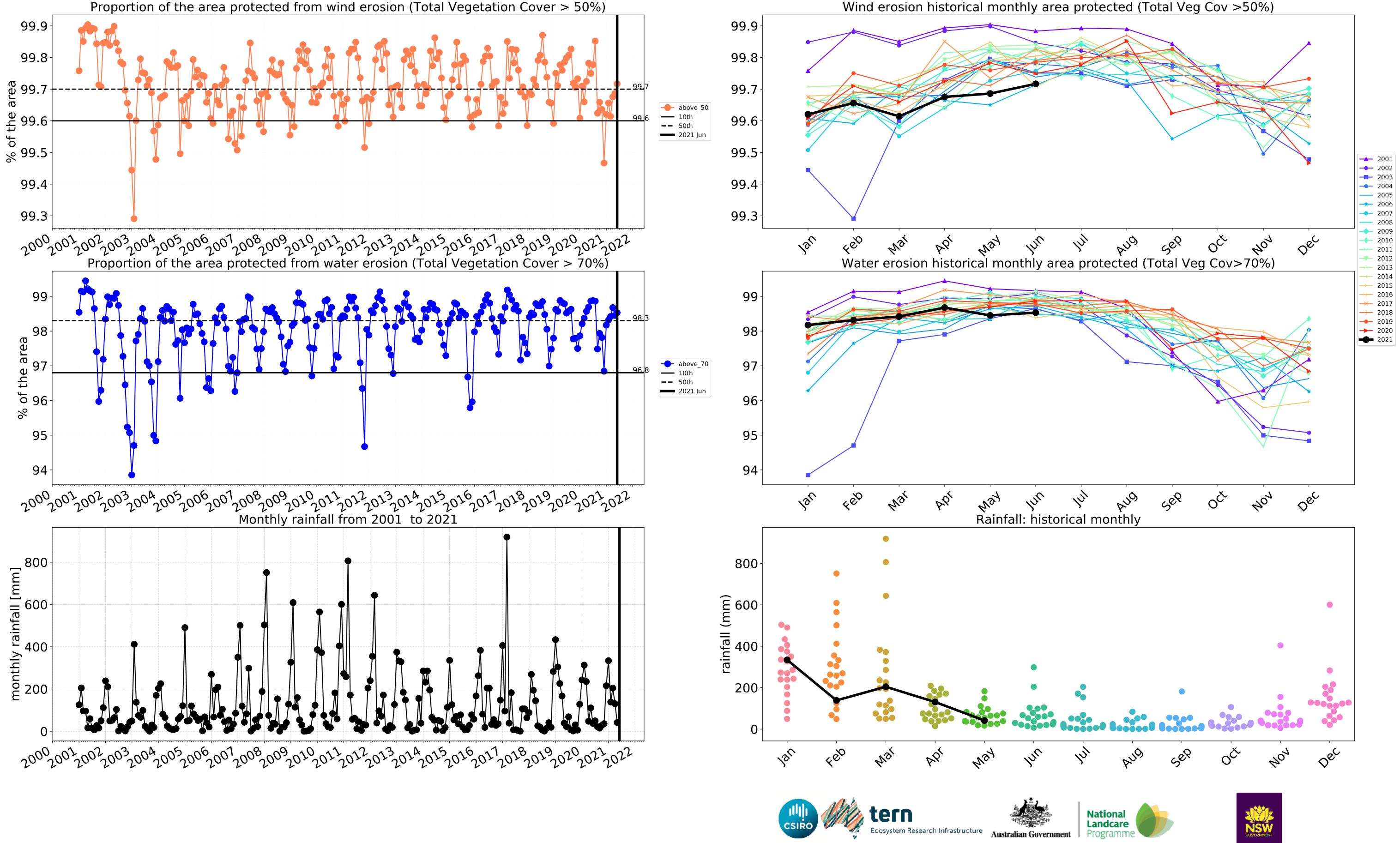


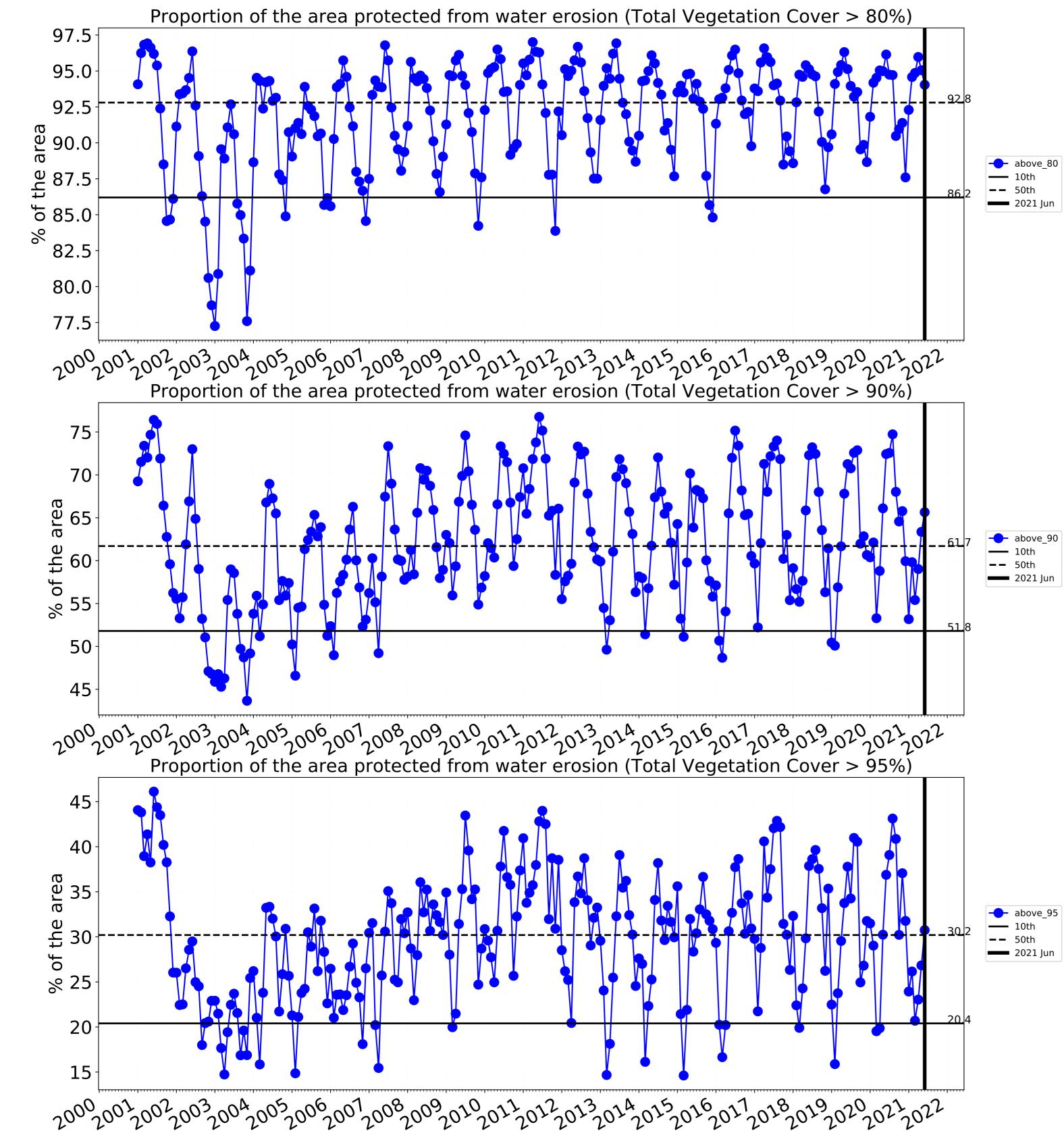


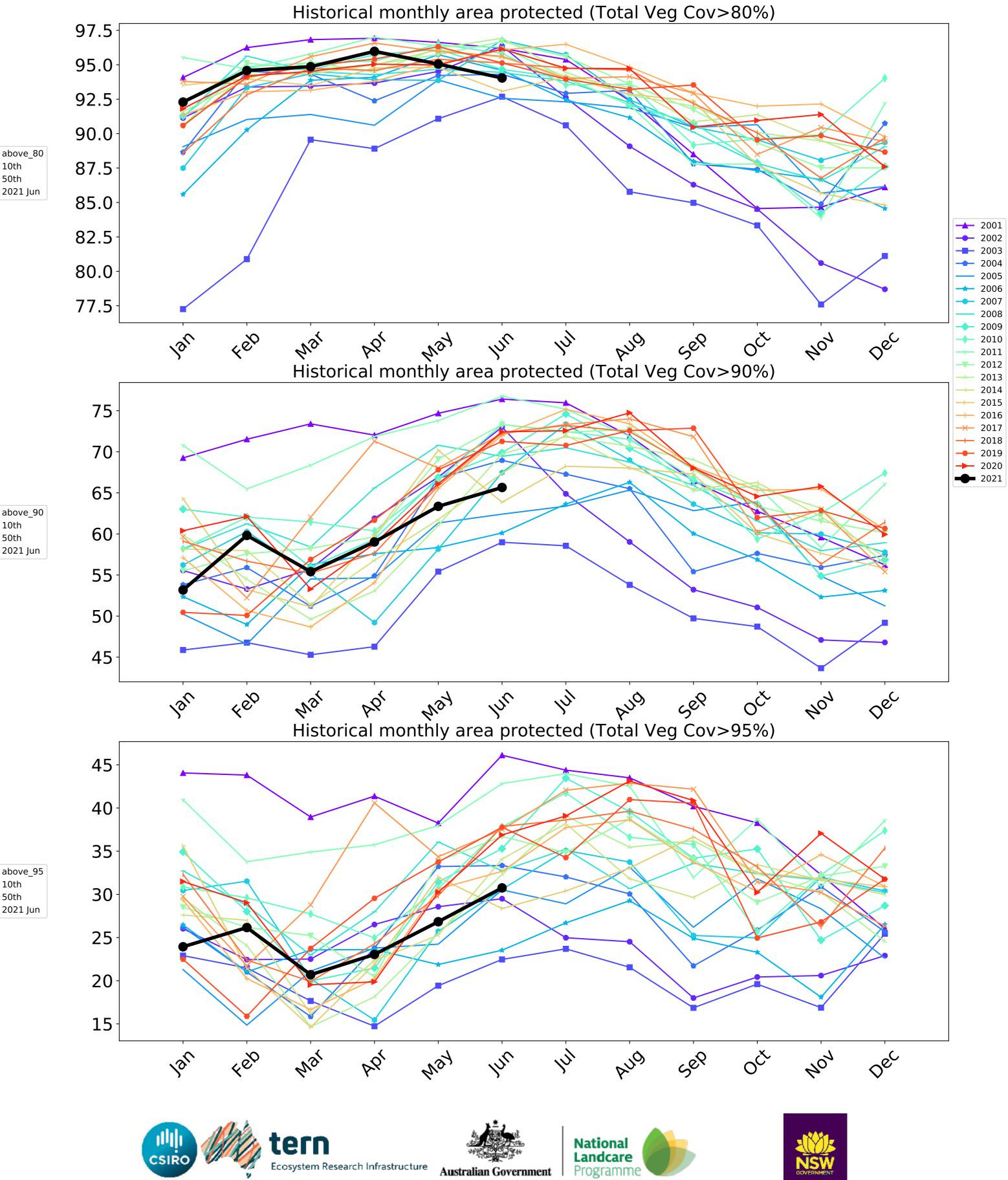


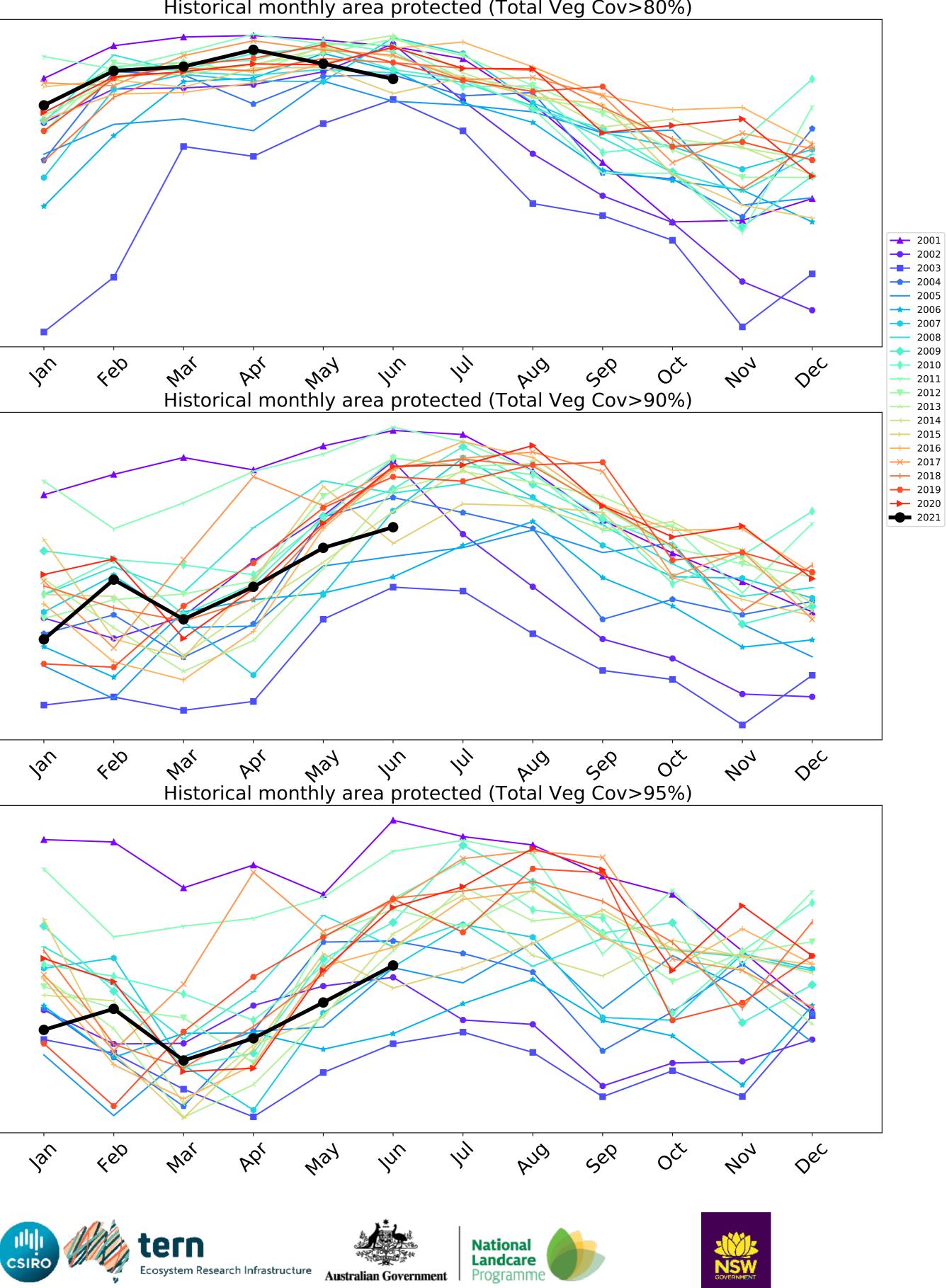










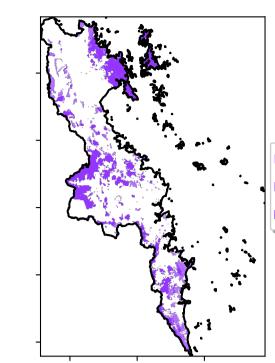


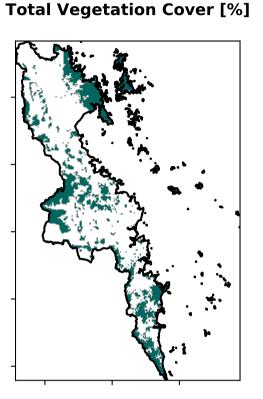
Conservation and natural environments

forest

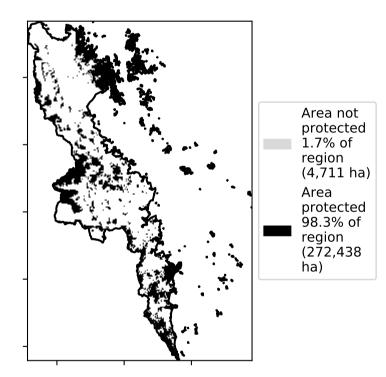
forest

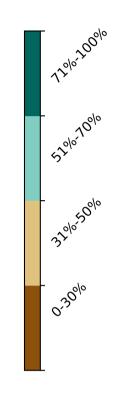
Land use and forest cover







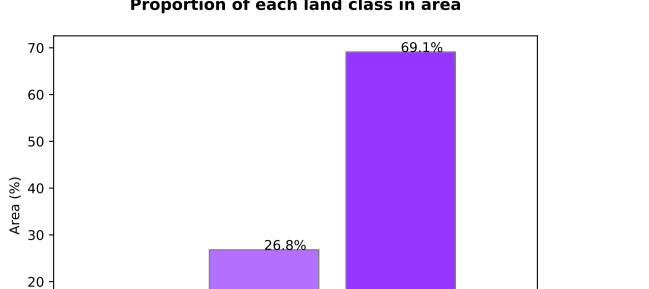




1 Conservation and natural environments - Non-

3 Conservation and natural environments - Non-woodland forest

2 Conservation and natural environments – Woodland



Proportion of each land class in area

Proportion of vegetation cover class in area

Land use class

3

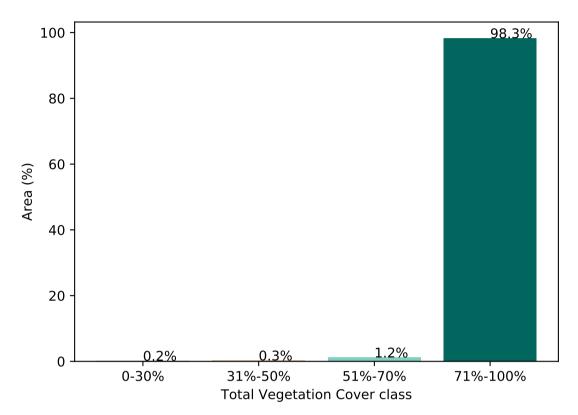
2

10

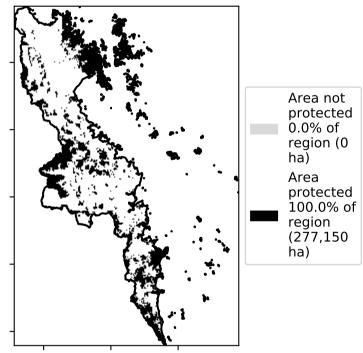
0

4.0%

1



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]

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

Catchment Scale Land Use and Forests

of Australia (2018)

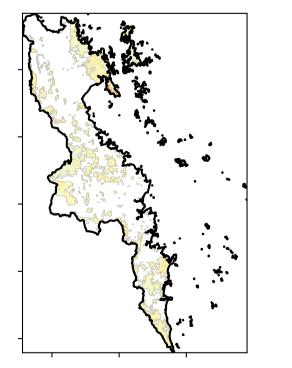
(2018) and Forests

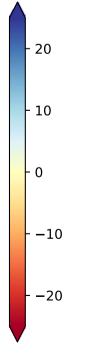
of Australia (2018)

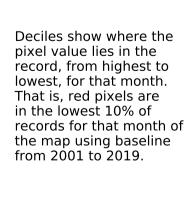
Catchment Scale Land

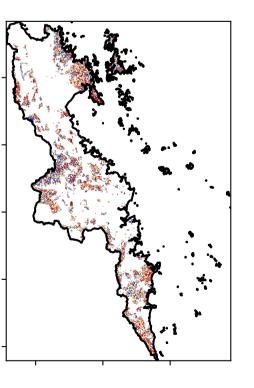
Derived from

Use of Australia



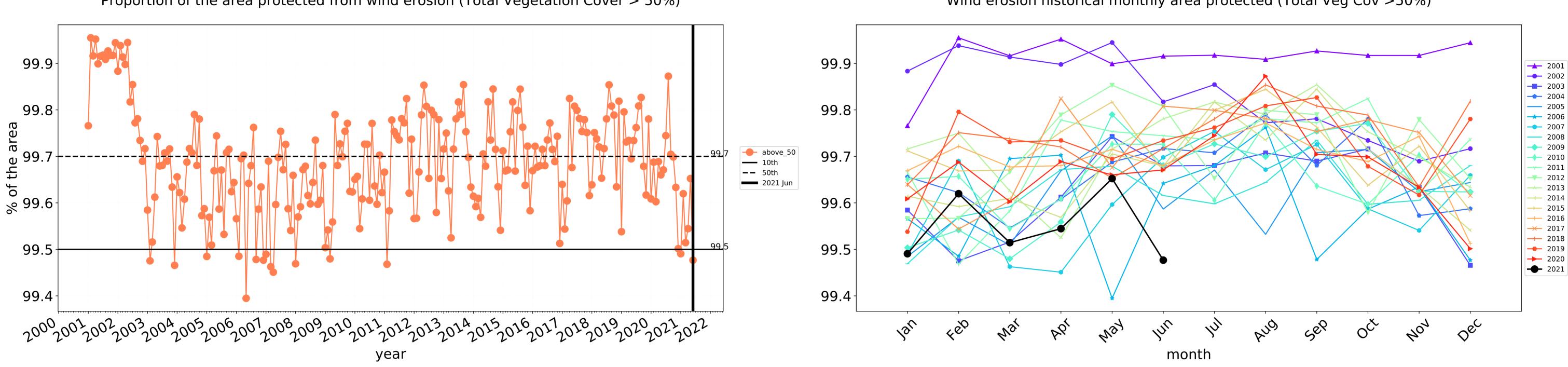






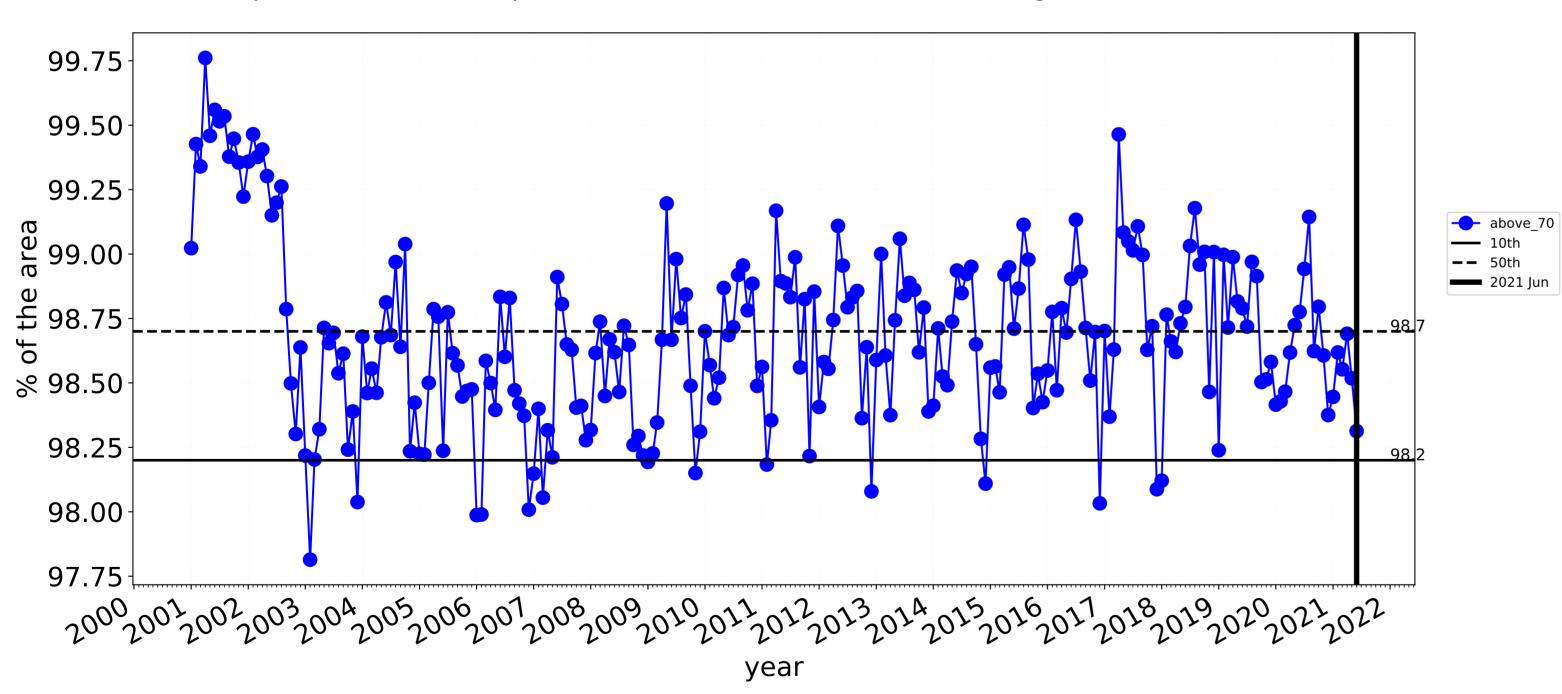






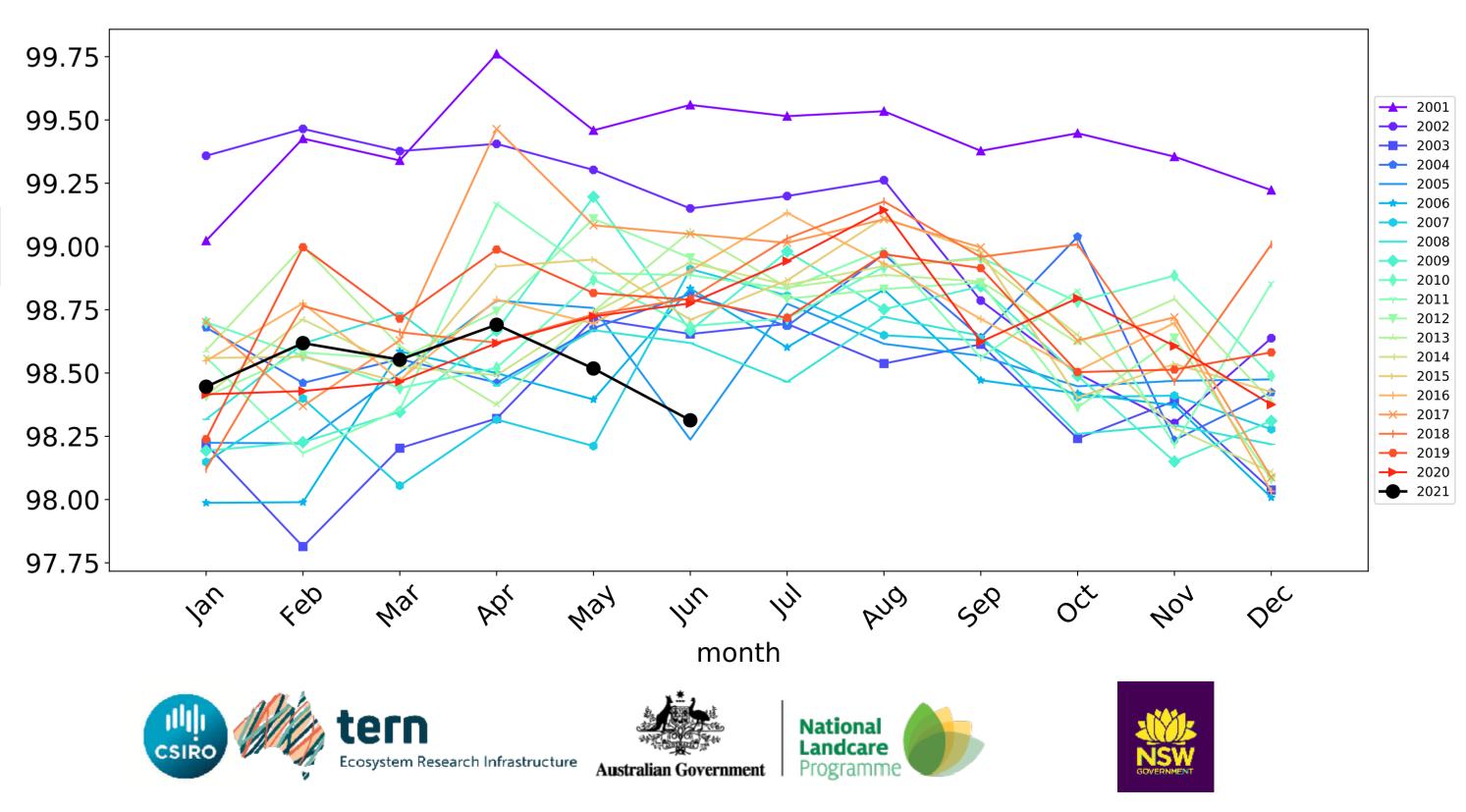
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



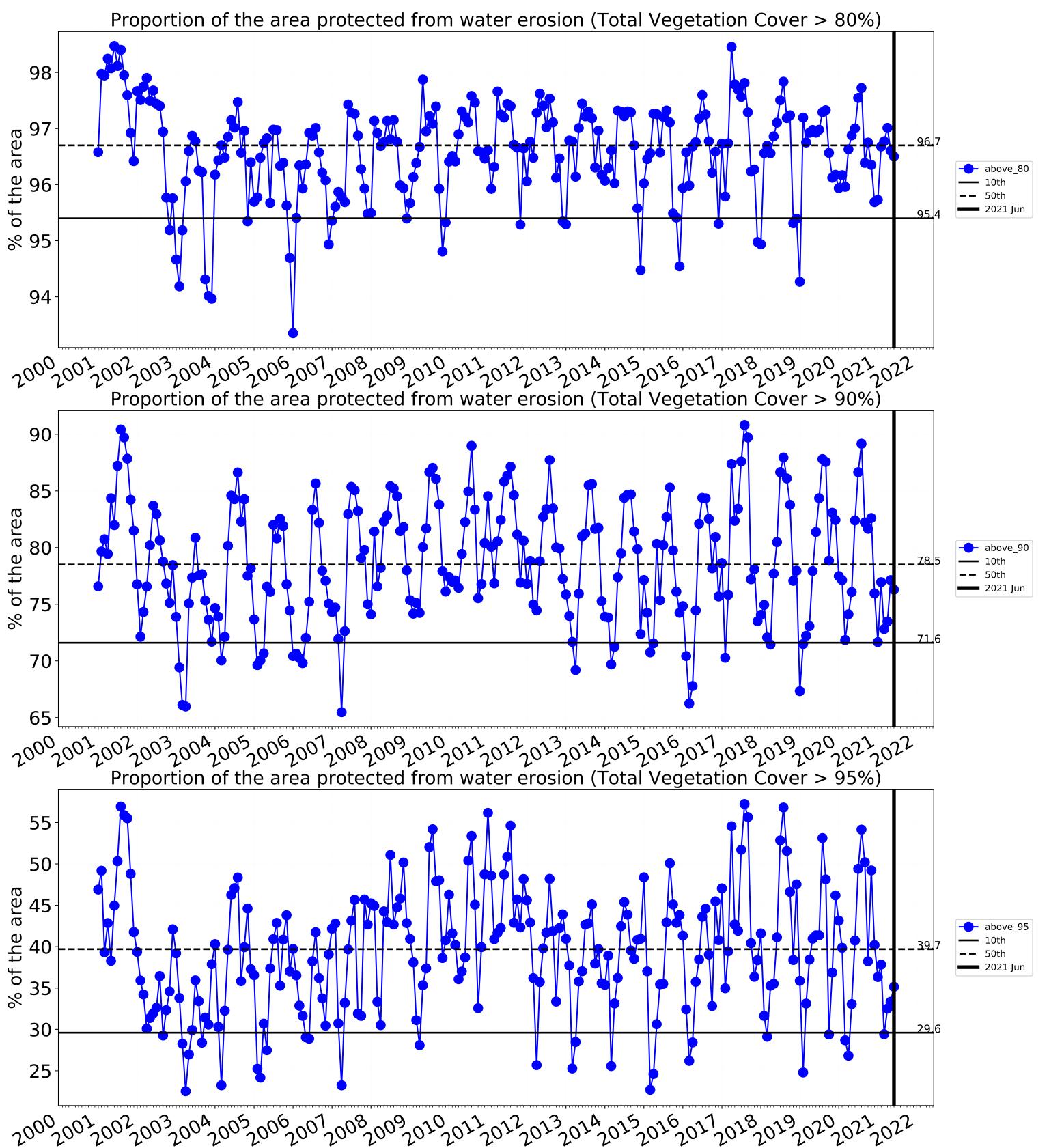


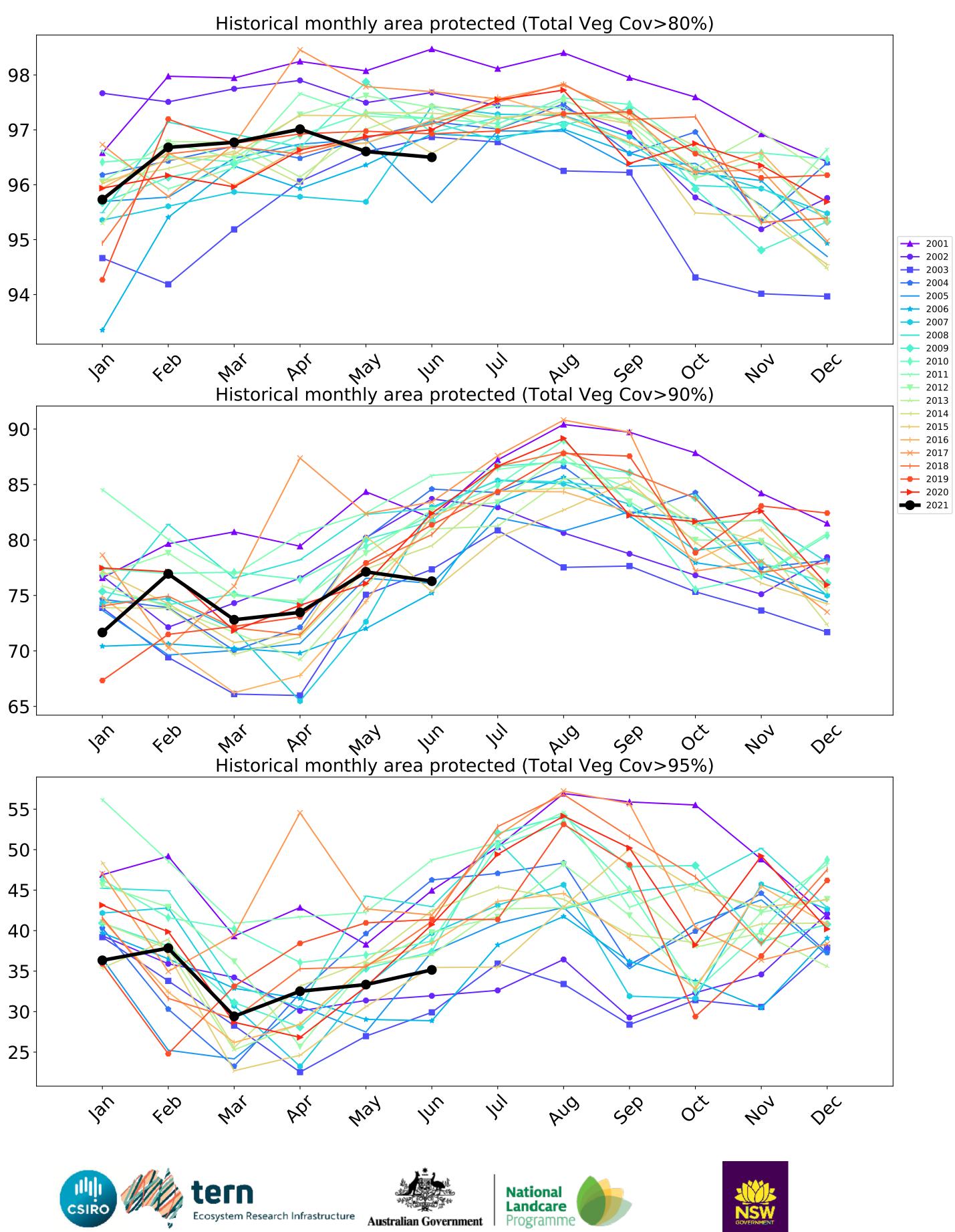
Conservation and natural environments timeseries

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



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

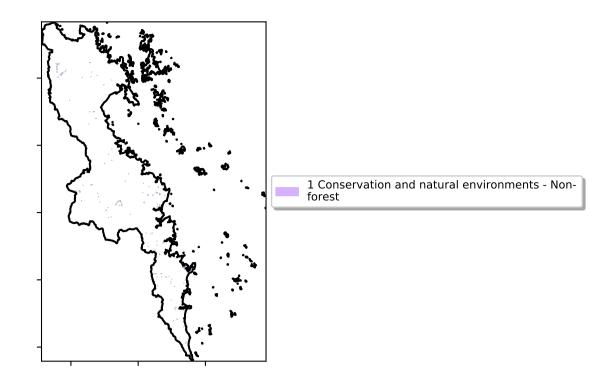




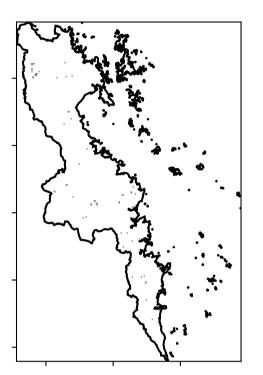


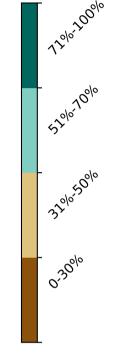
Conservation and natural environments non forest

Land use and forest cover

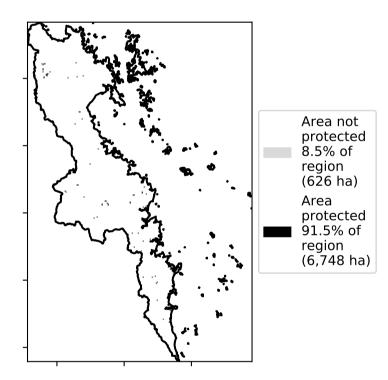


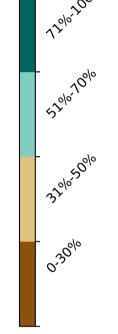
Total Vegetation Cover [%]

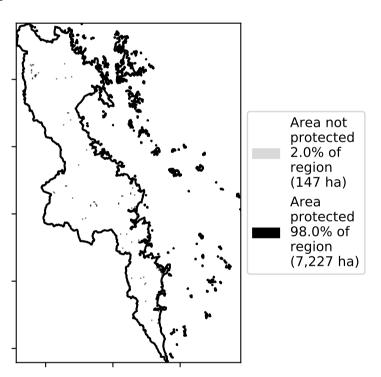




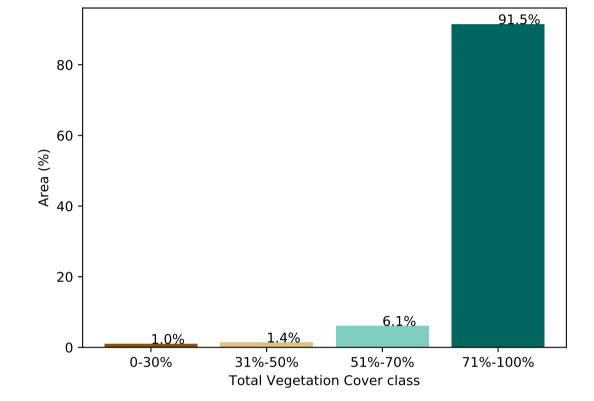
% Area protected from water erosion (>70%)





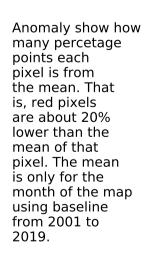


Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

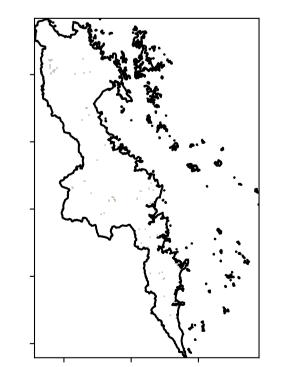
Total Vegetation Cover Anomaly [%]

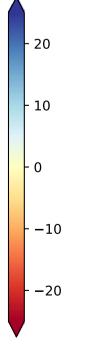


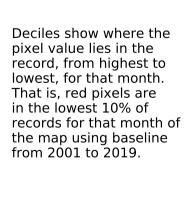
Catchment Scale Land Use and Forests of Australia (2018) Derived from

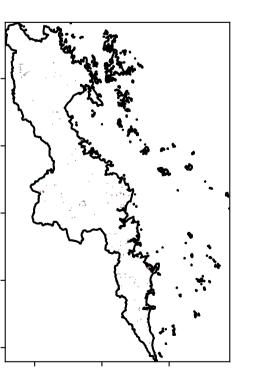
Use of Australia (2018) and Forests of Australia (2018)

Catchment Scale Land



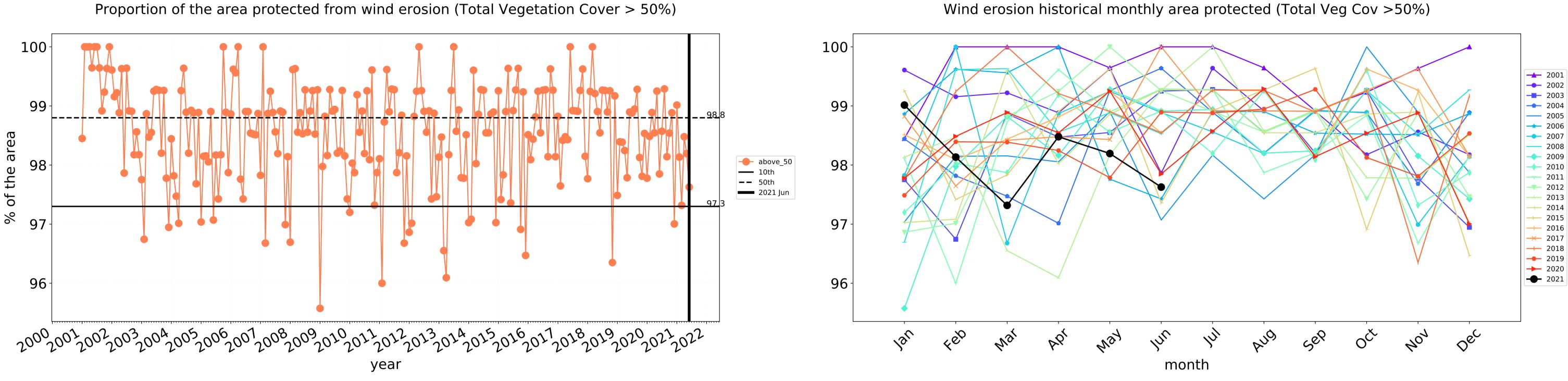












100

98-

96-

94

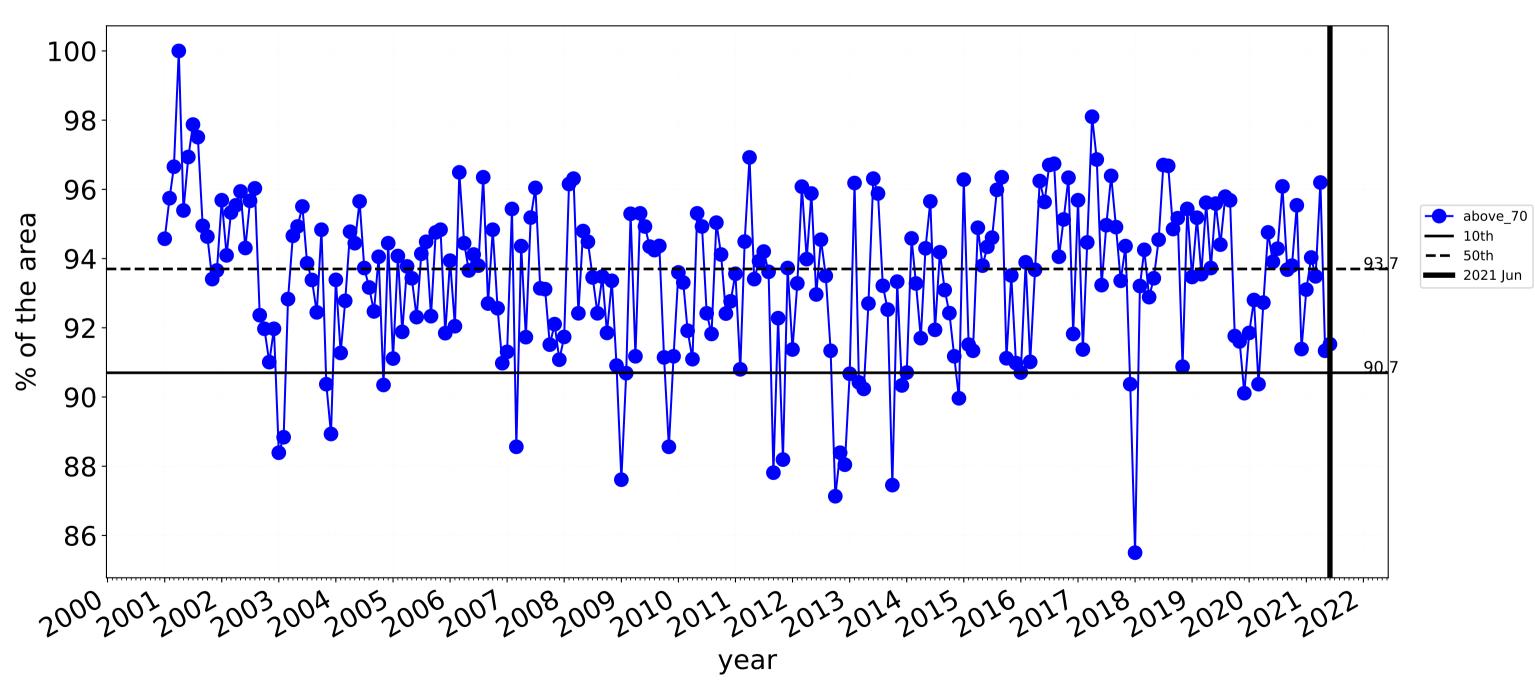
92

90-

88

86-





Jan feb May In (J) 291 War month

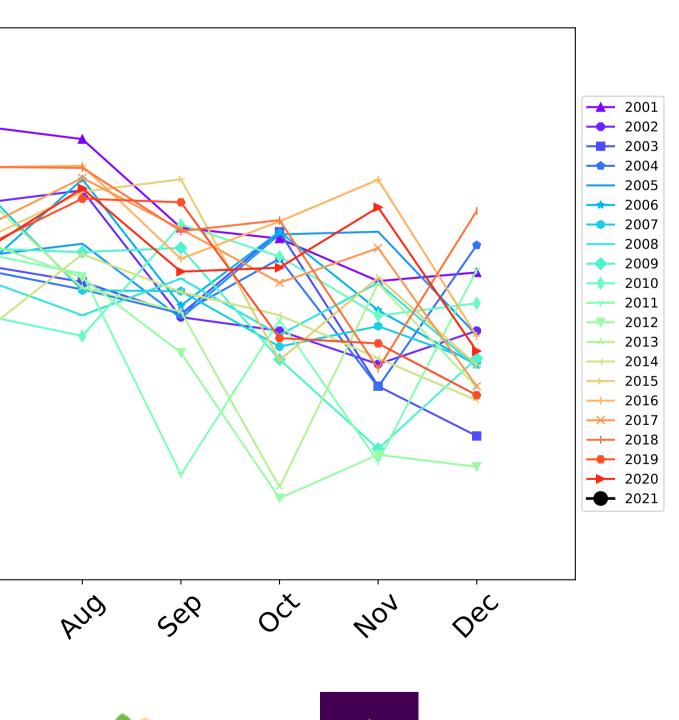
Ecosystem Research Infrastructure Australian Government

9

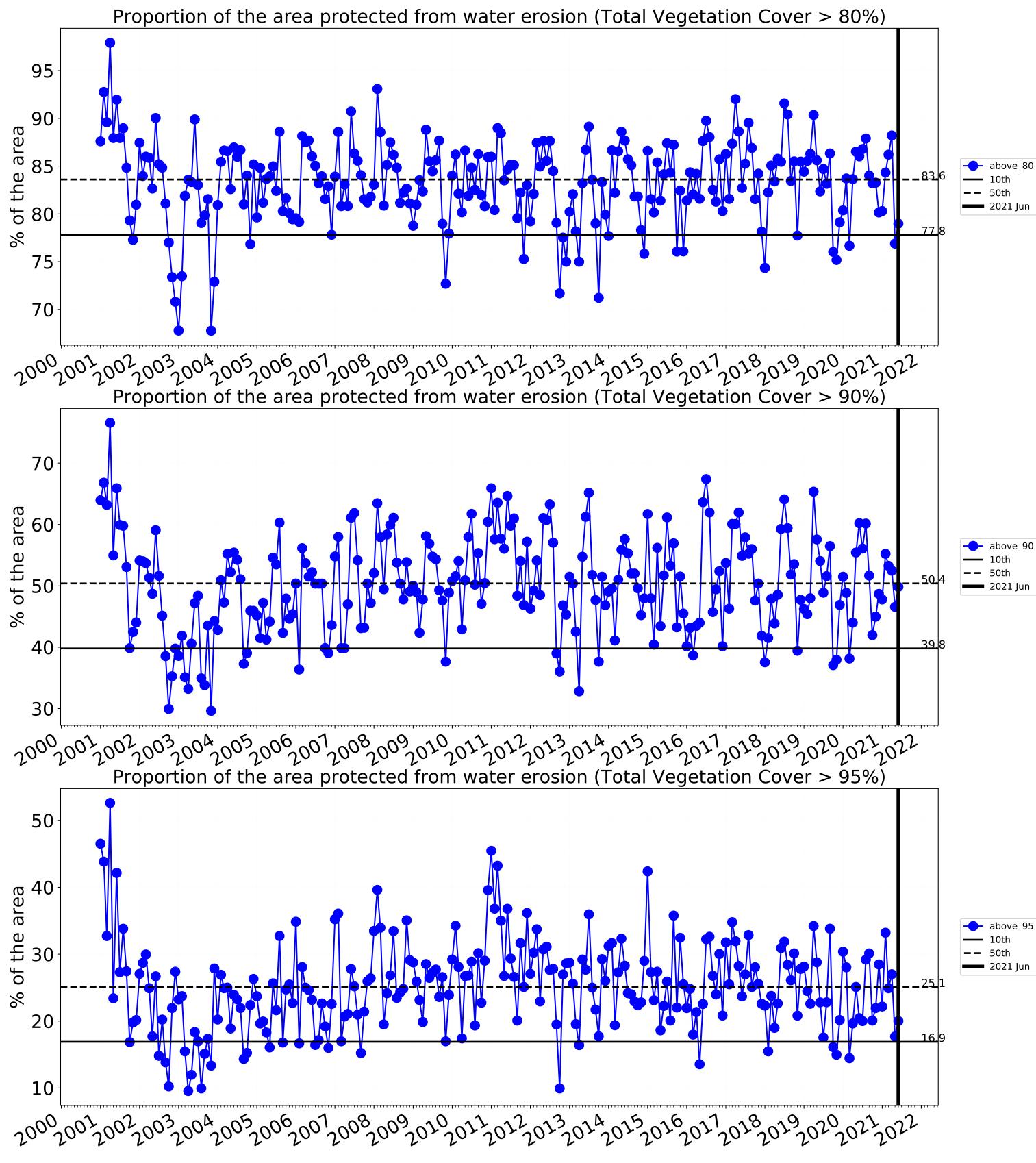
National Landcare

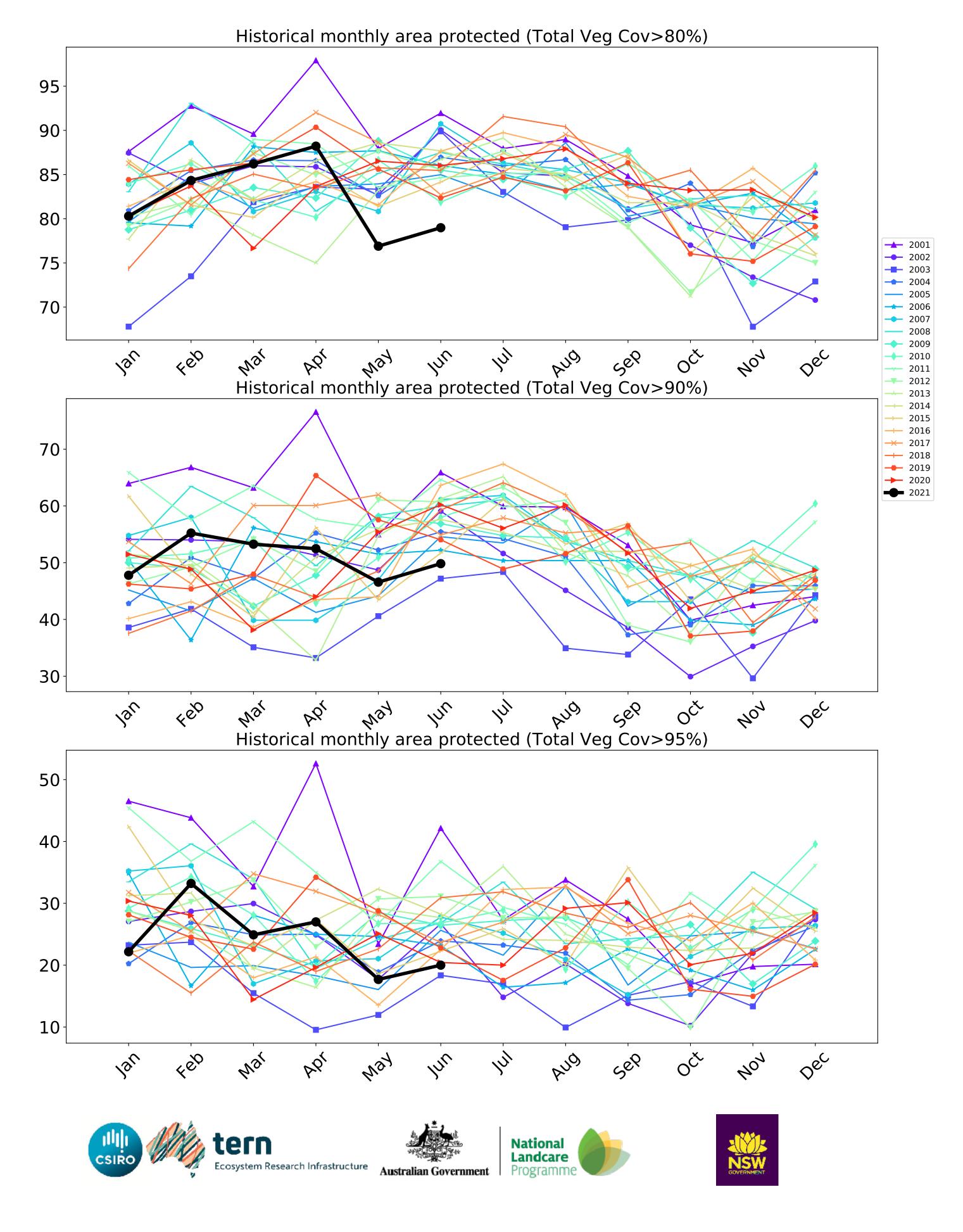
Programm

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



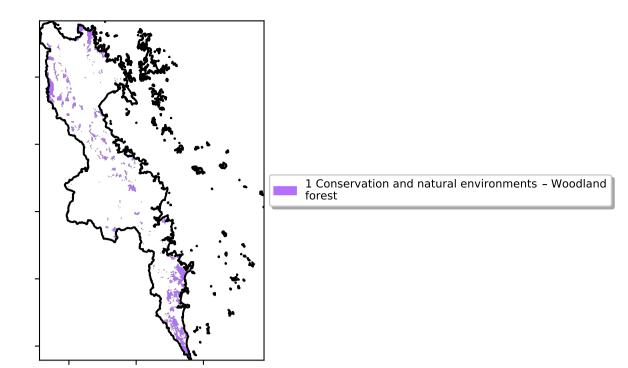
NSW



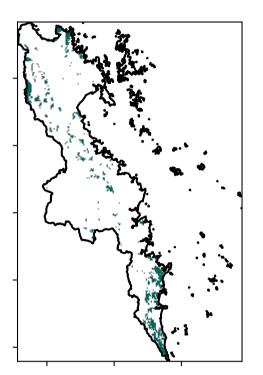


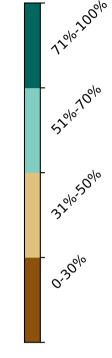
Conservation and natural environments Woodland forest

Land use and forest cover

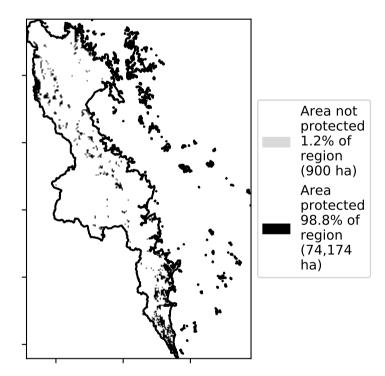


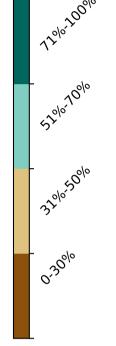
Total Vegetation Cover [%]



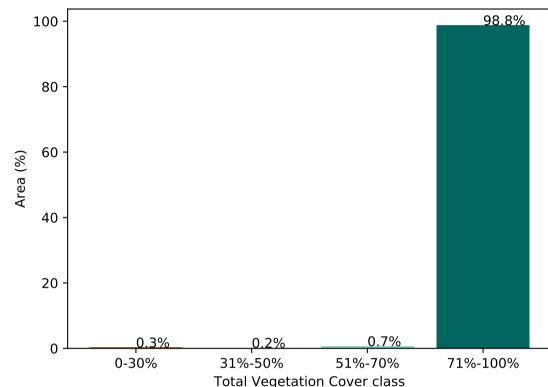


% Area protected from water erosion (>70%)

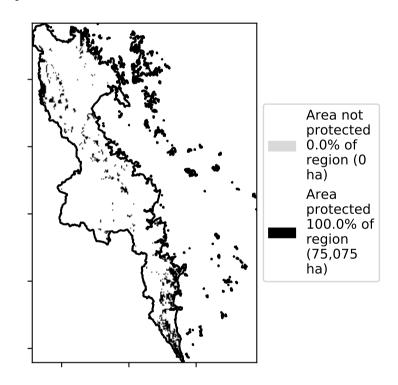




Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

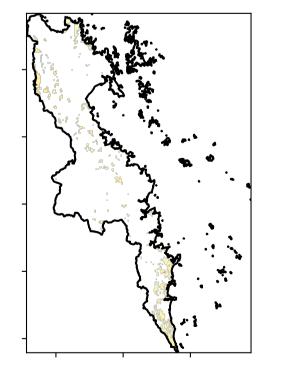


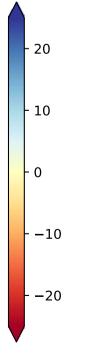
Total Vegetation Cover class

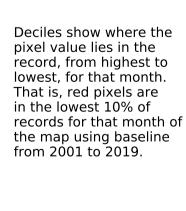
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

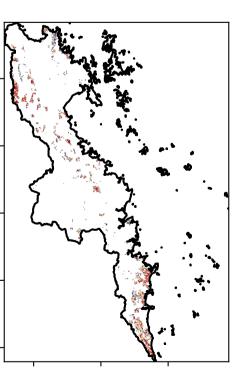
Total Vegetation Cover Anomaly [%]

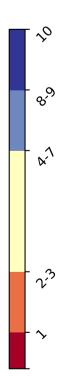
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



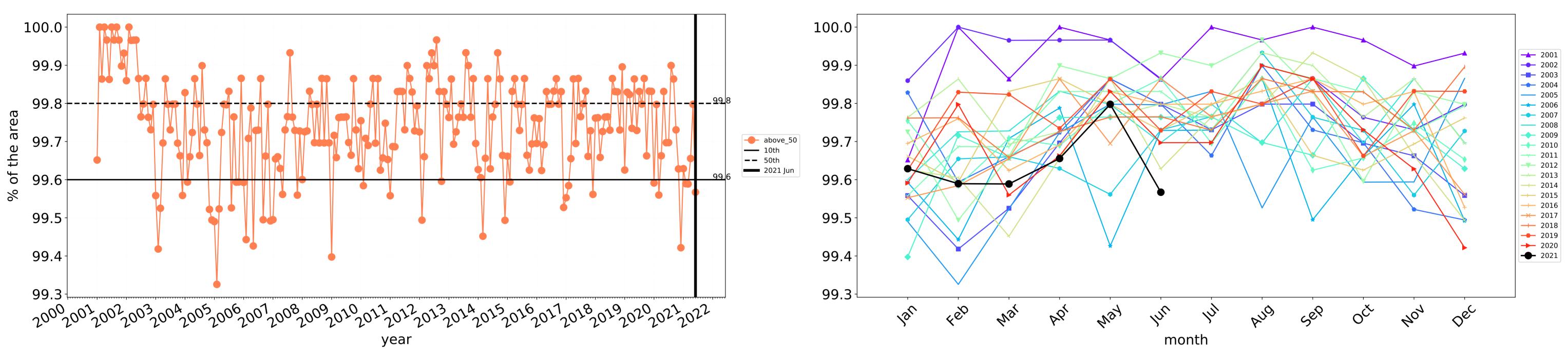






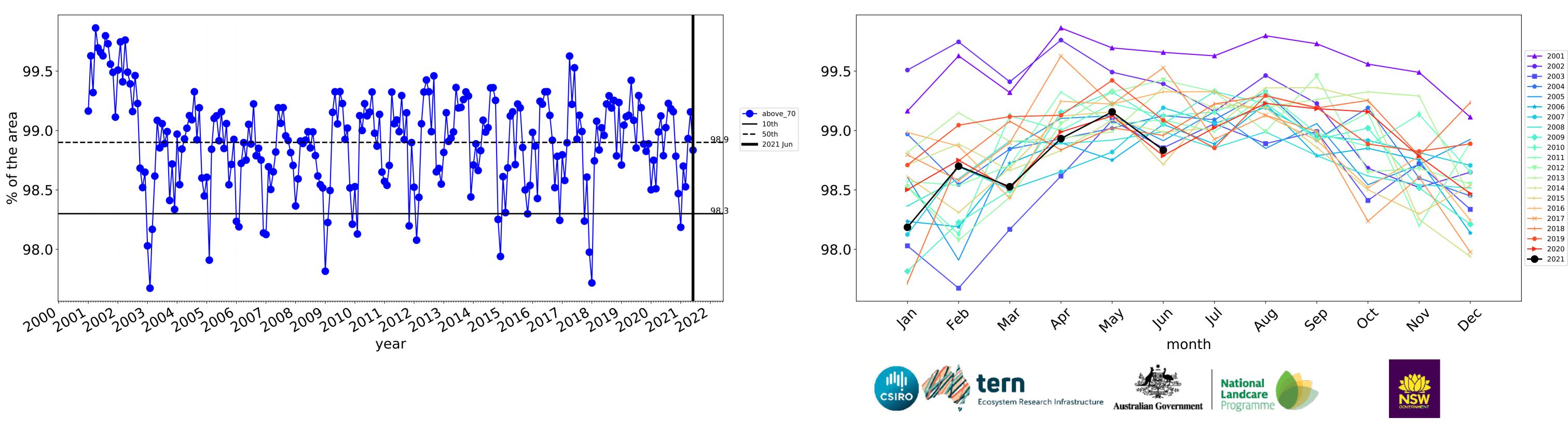


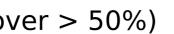




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

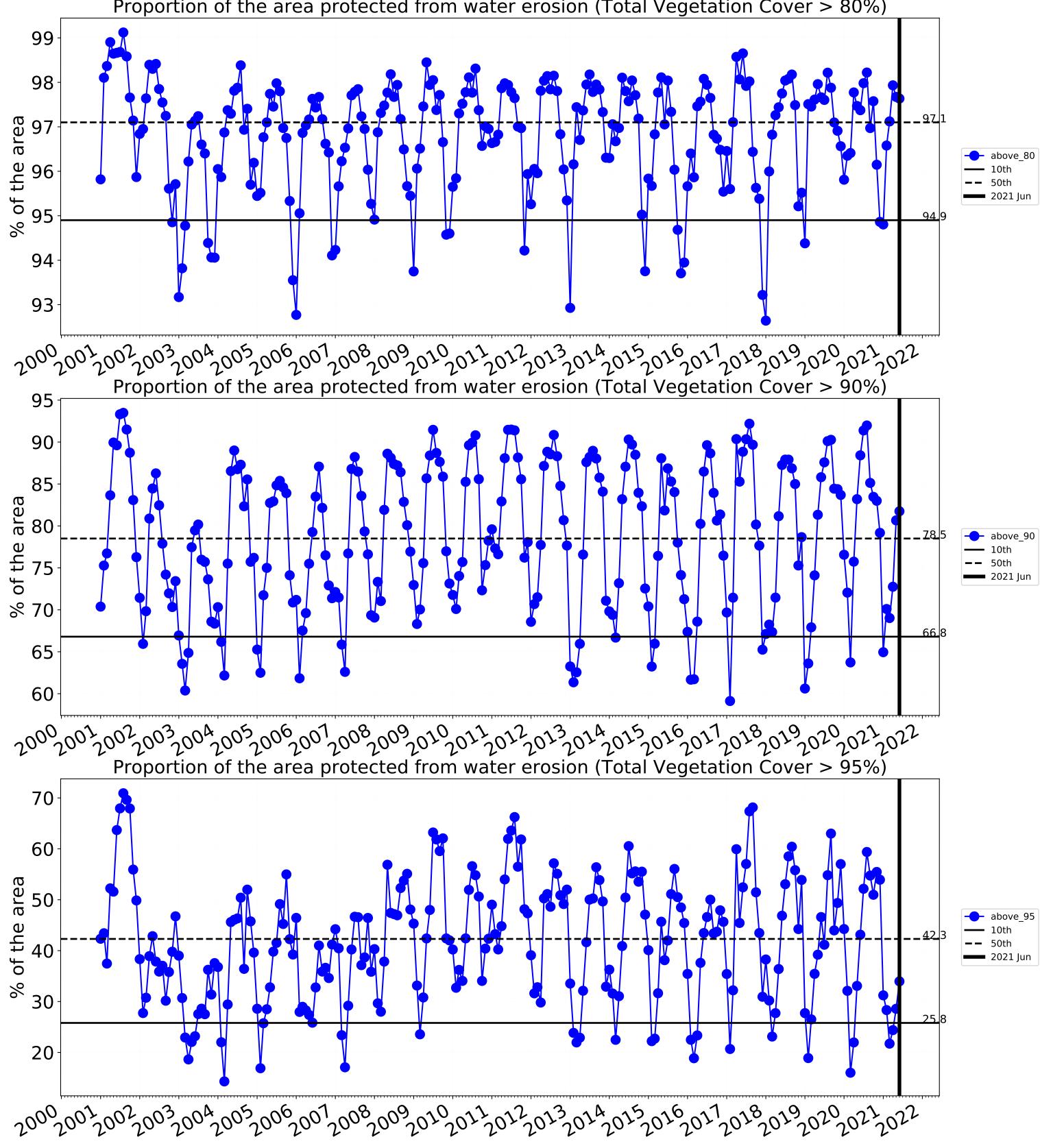
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



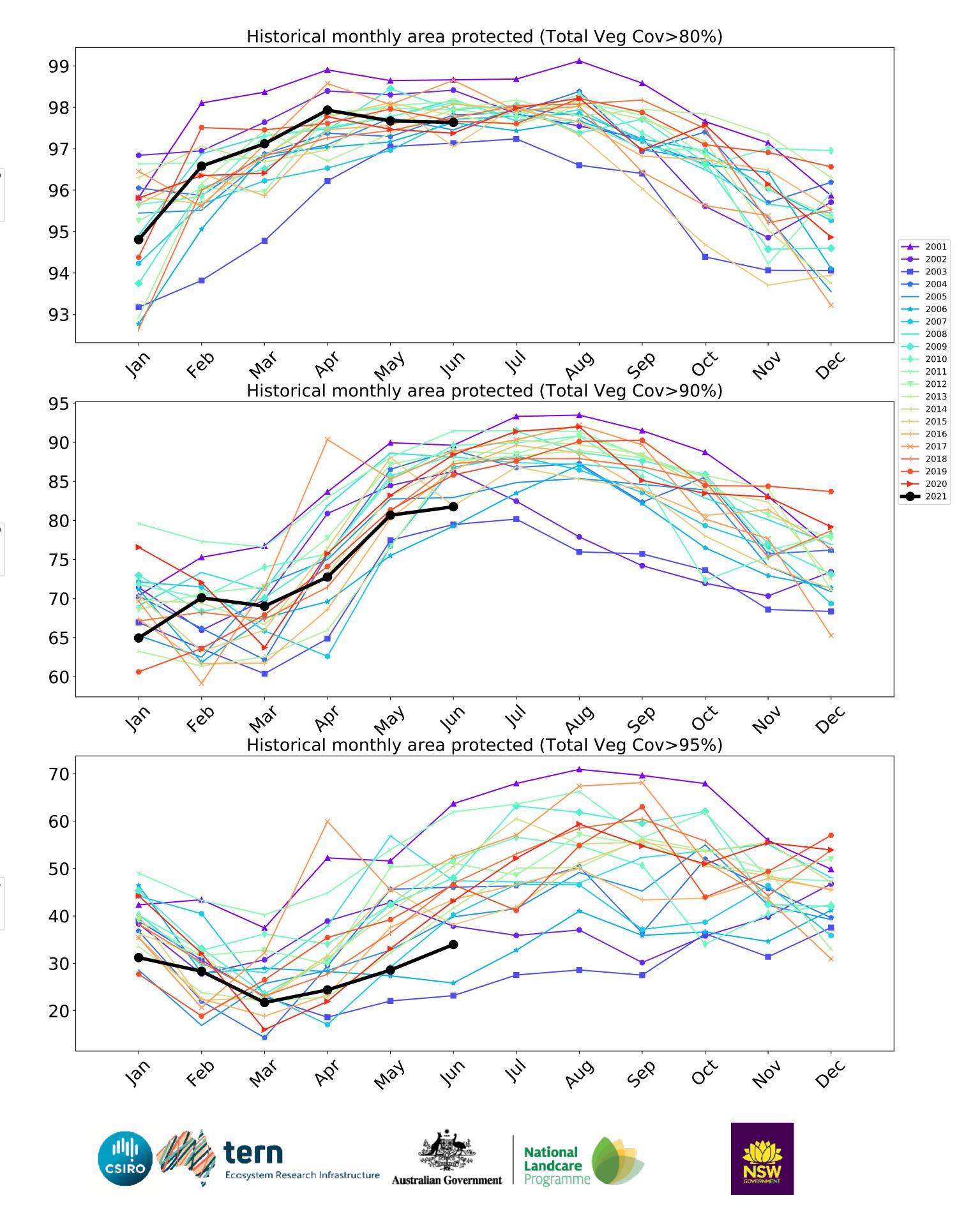


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

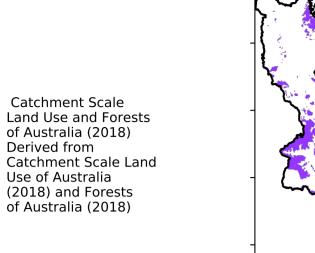


Proportion of the area protected from water erosion (Total Vegetation Cover > 80%)



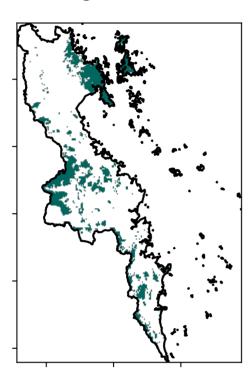
Conservation and natural environments Forest (non woodland)

Land use and forest cover

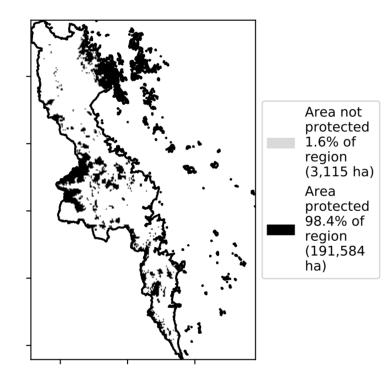


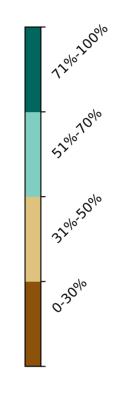
1 Conservation and natural environments – Nonwoodland forest

Total Vegetation Cover [%]

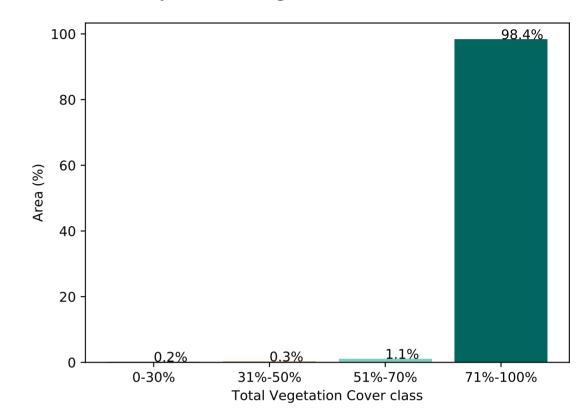




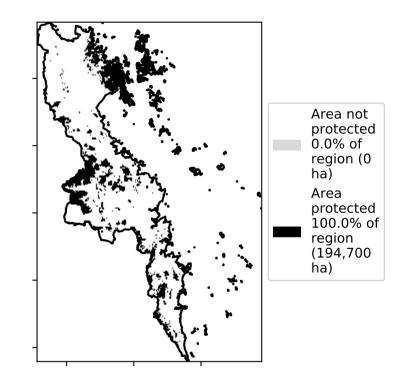




Proportion of vegetation cover class in area

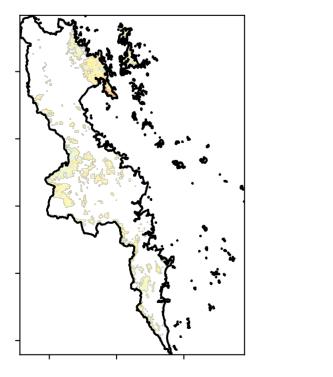


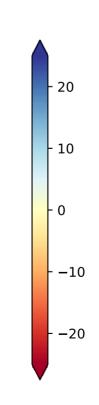
% Area protected from wind erosion (>50%)

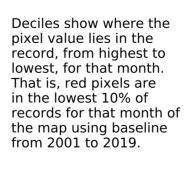


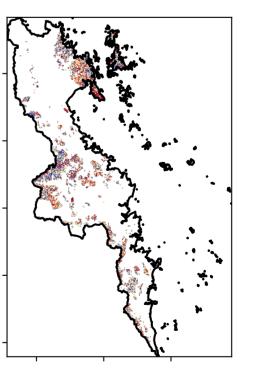
Total Vegetation Cover Anomaly [%]

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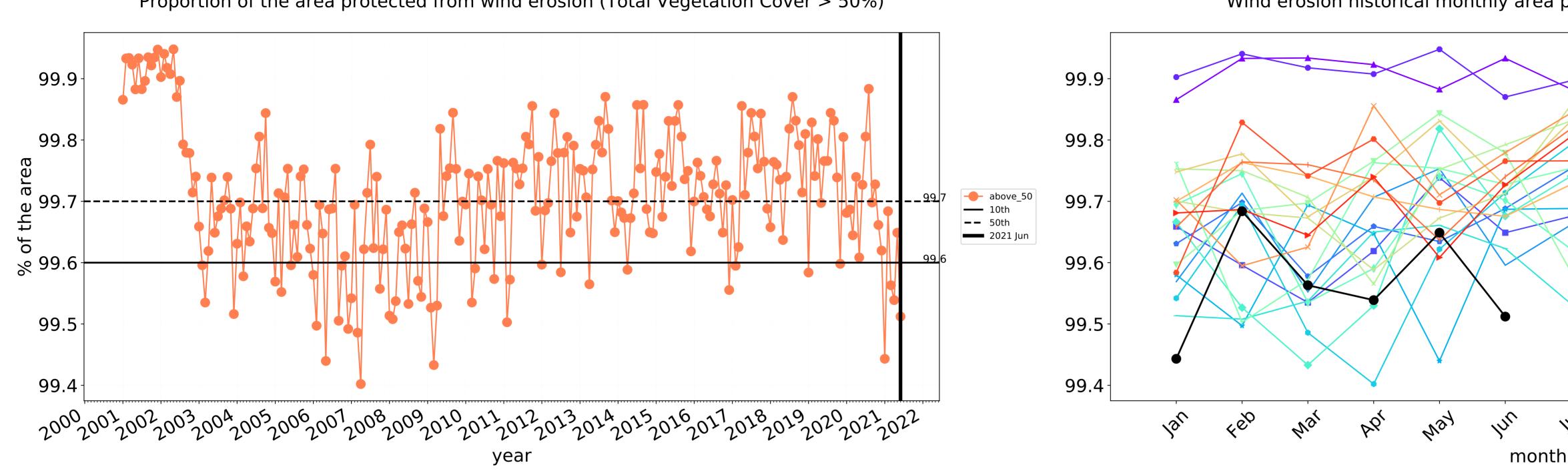






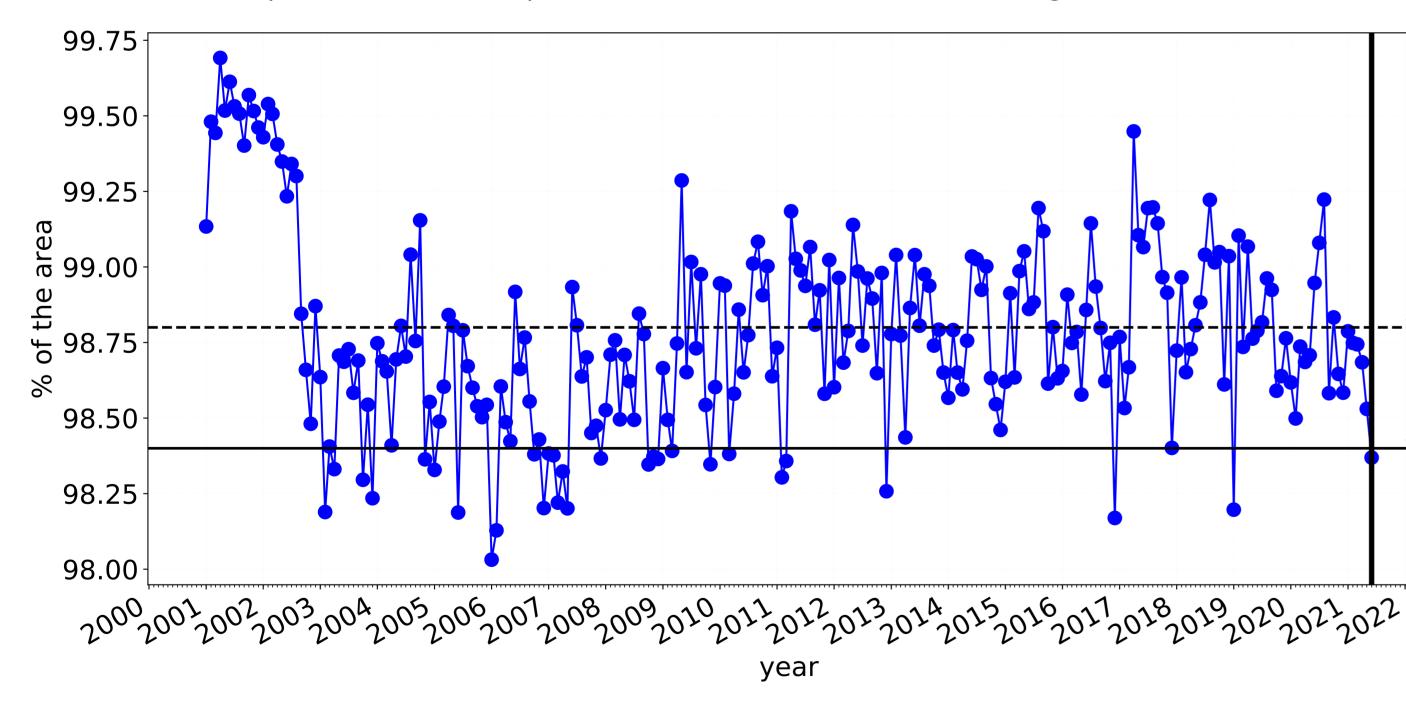


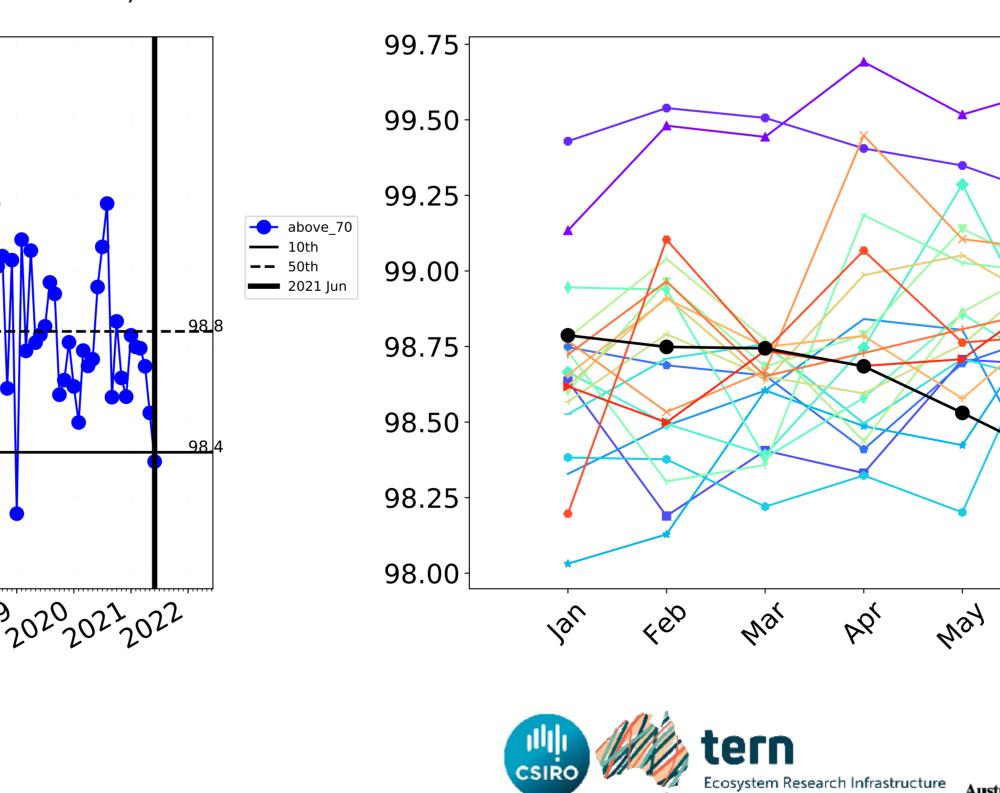
Conservation and natural environments Forest (non woodland) timeseries



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







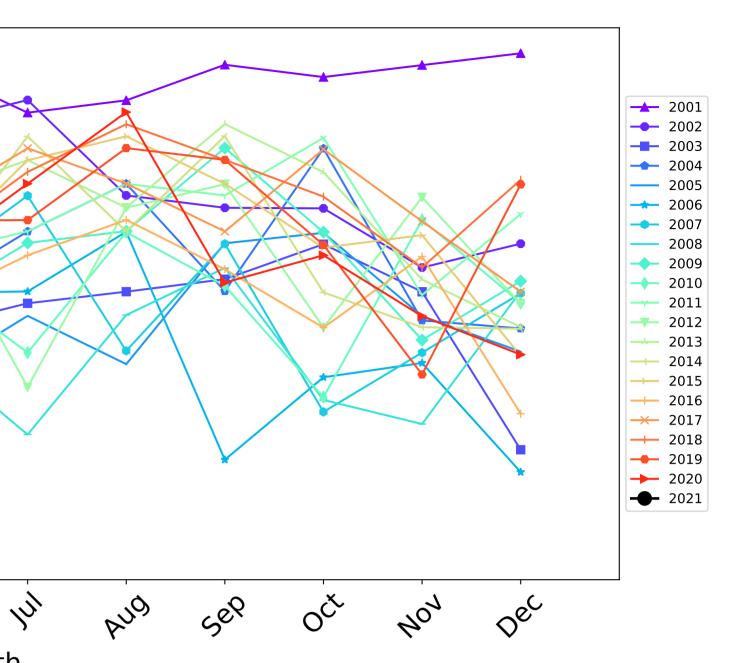
Wind erosion historical monthly area protected (Total Veg Cov >50%)

Inu

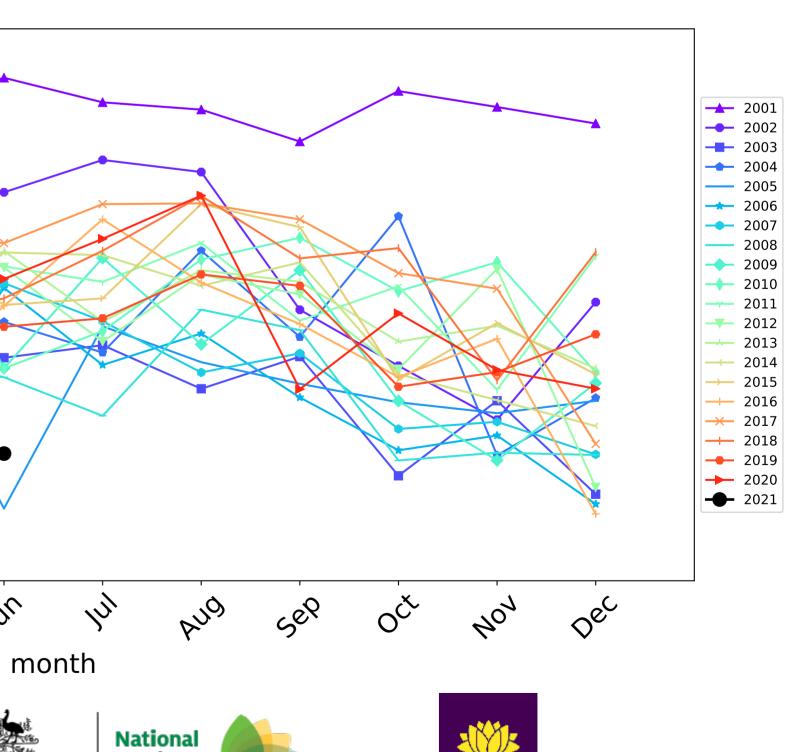
Australian Government

Landcare

Programme

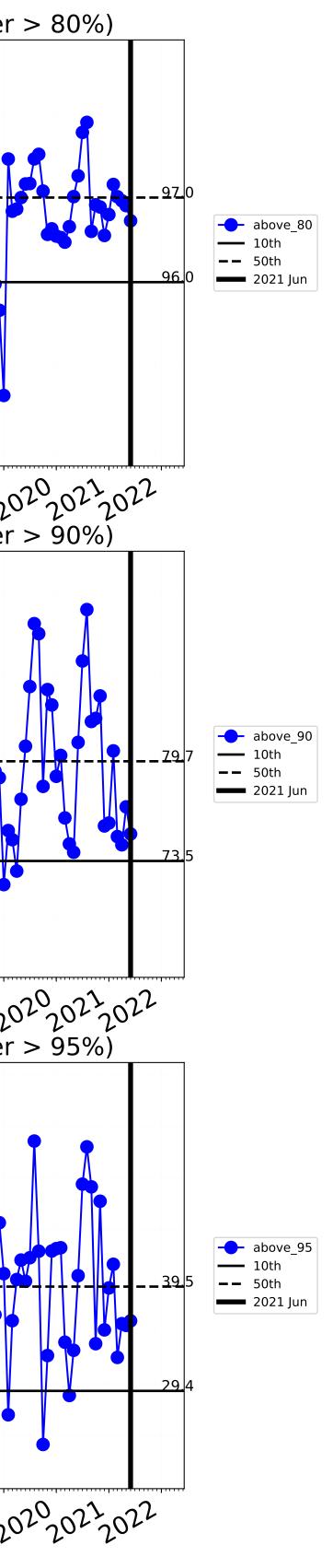


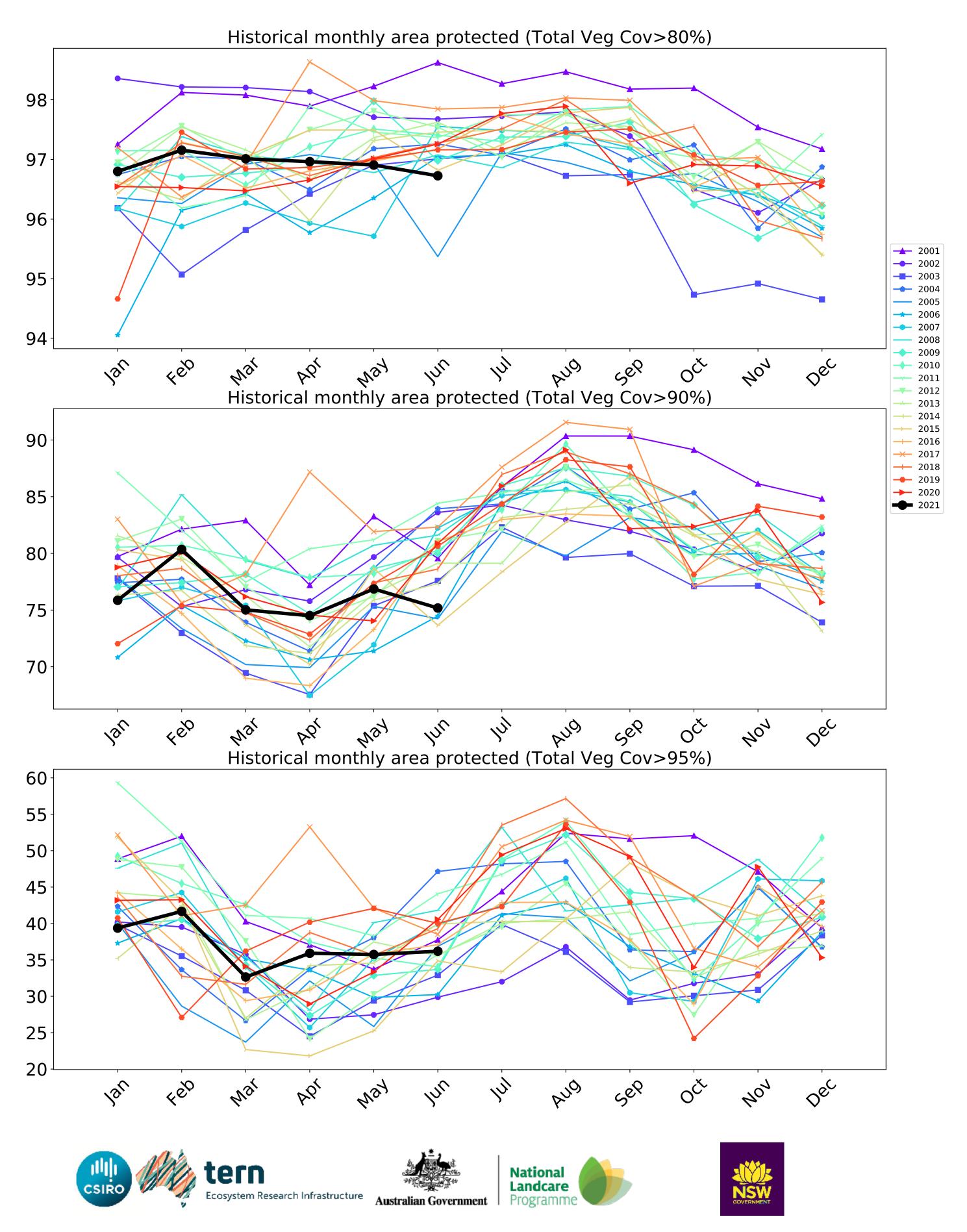
Water erosion historical monthly area protected (Total Veg Cov>70%)



NSW

Proportion of the area protected from water erosion (Total Vegetation Cover > 80%) 98 area 97 of the 96 % 95 94 90 area 82 8 8 of **%** 75 70 Proportion of the area protected from water erosion (Total Vegetation Cover > 95%) 60 55 50 earea 42 of the % 35 30 25 20^{1} 20^{0} 2

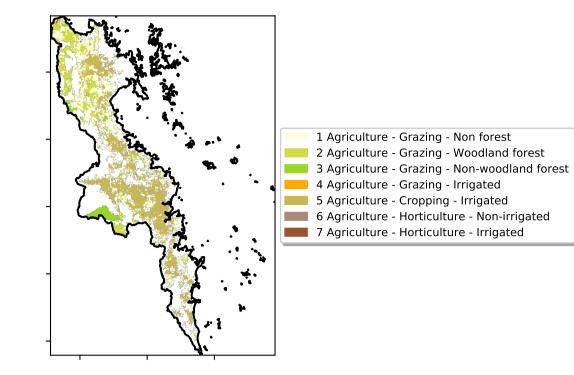




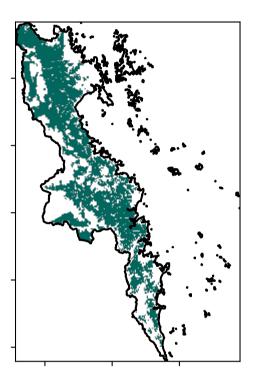


Agriculture

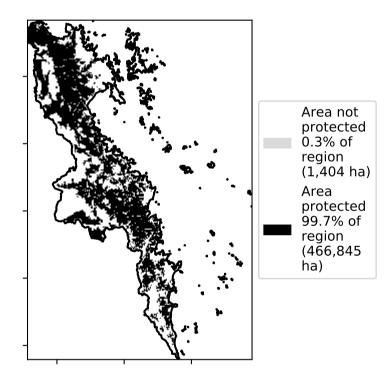
Land use and forest cover

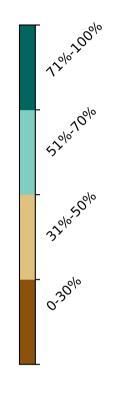


Total Vegetation Cover [%]



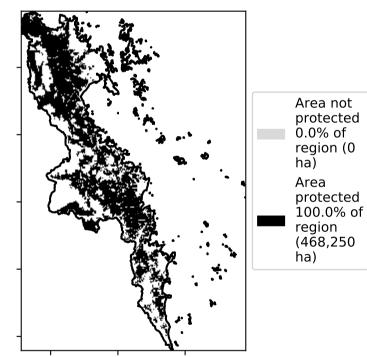








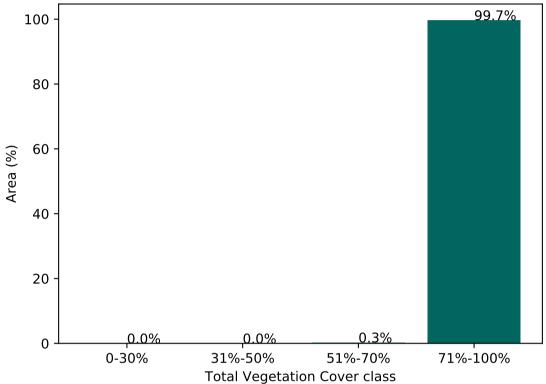
% Area protected from wind erosion (>50%)

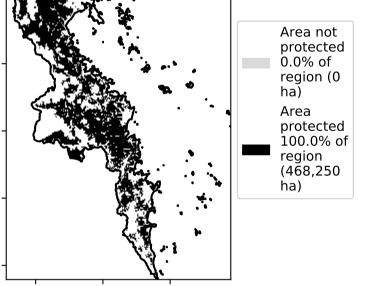


40.4% 40 36.0% 35 30 Area (%) - 05 -17.2% 15 10 6.1% 5 0.2% 0.0% 0.0% 0 2 1 3 4 5 6 7 Land use class

Proportion of each land class in area

Proportion of vegetation cover class in area





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A-1

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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.

Catchment Scale

of Australia (2018)

Derived from

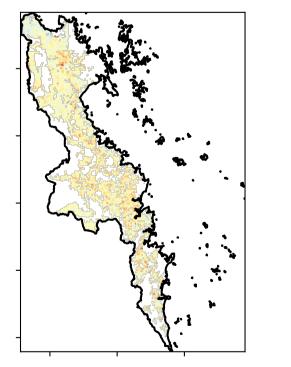
Use of Australia

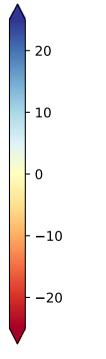
(2018) and Forests

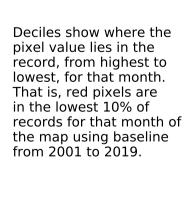
of Australia (2018)

Land Use and Forests

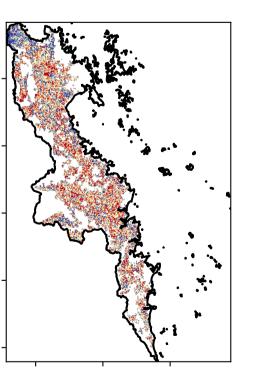
Catchment Scale Land





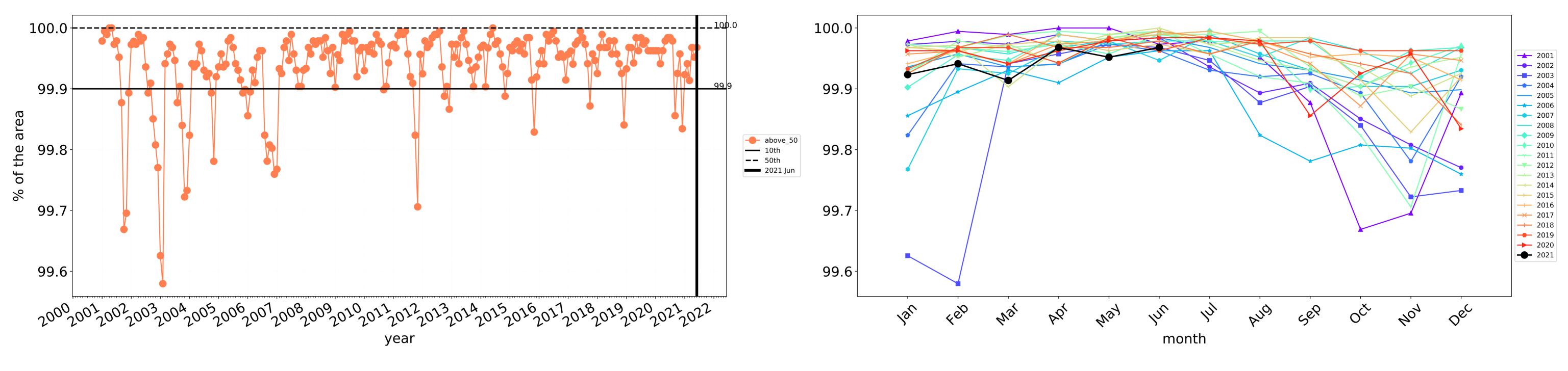


Total Vegetation Cover Decile [%]

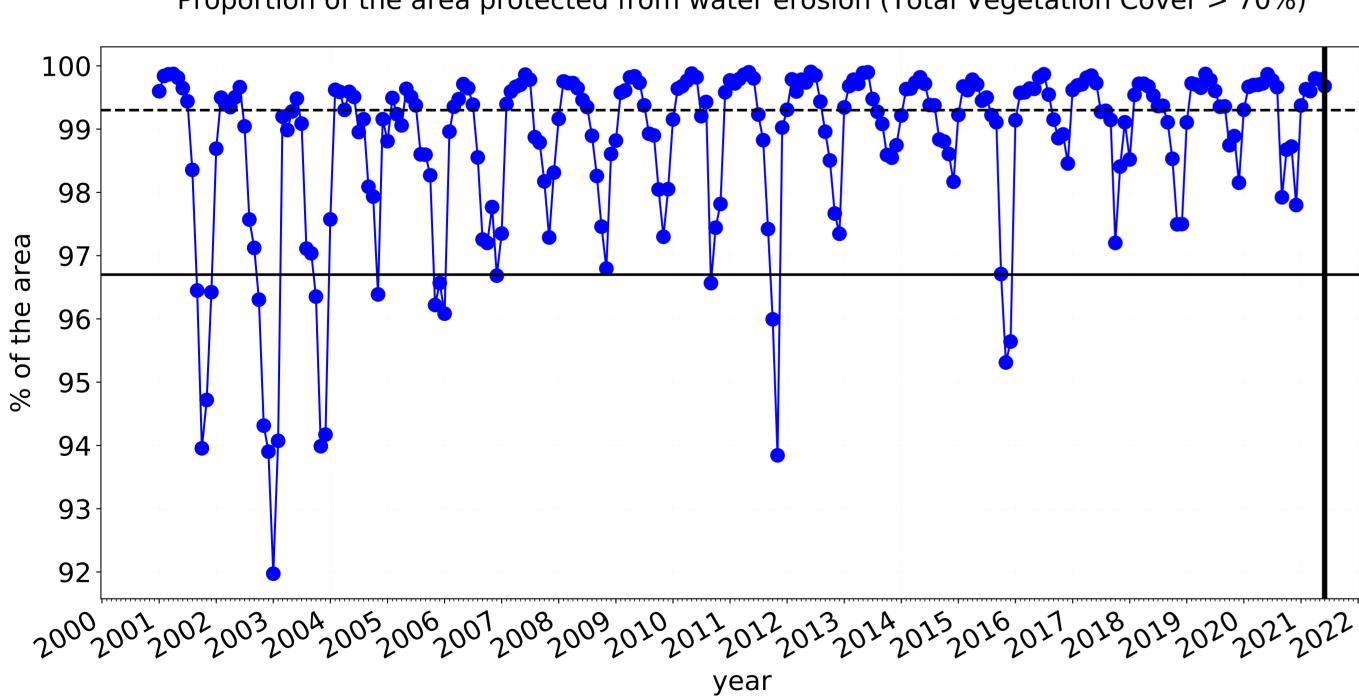




12



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

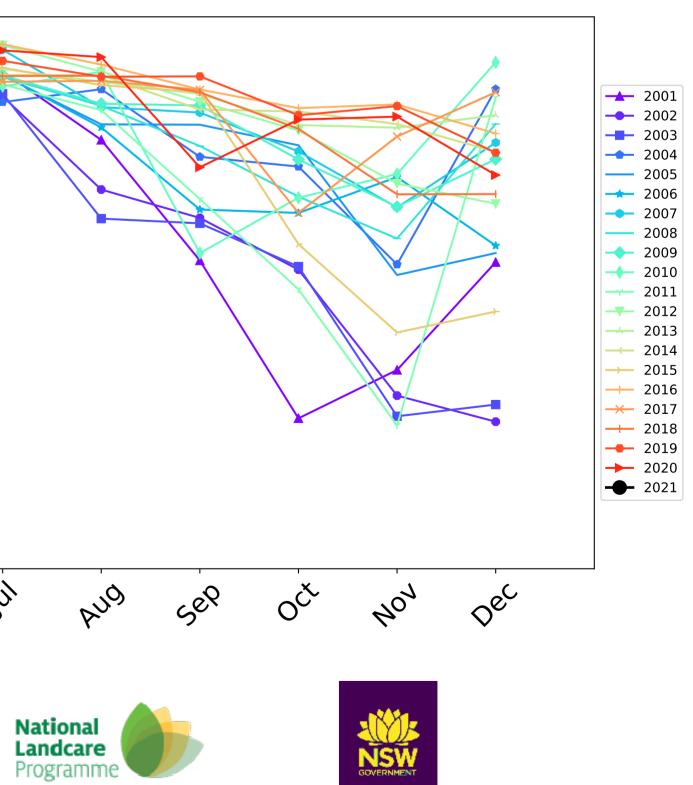


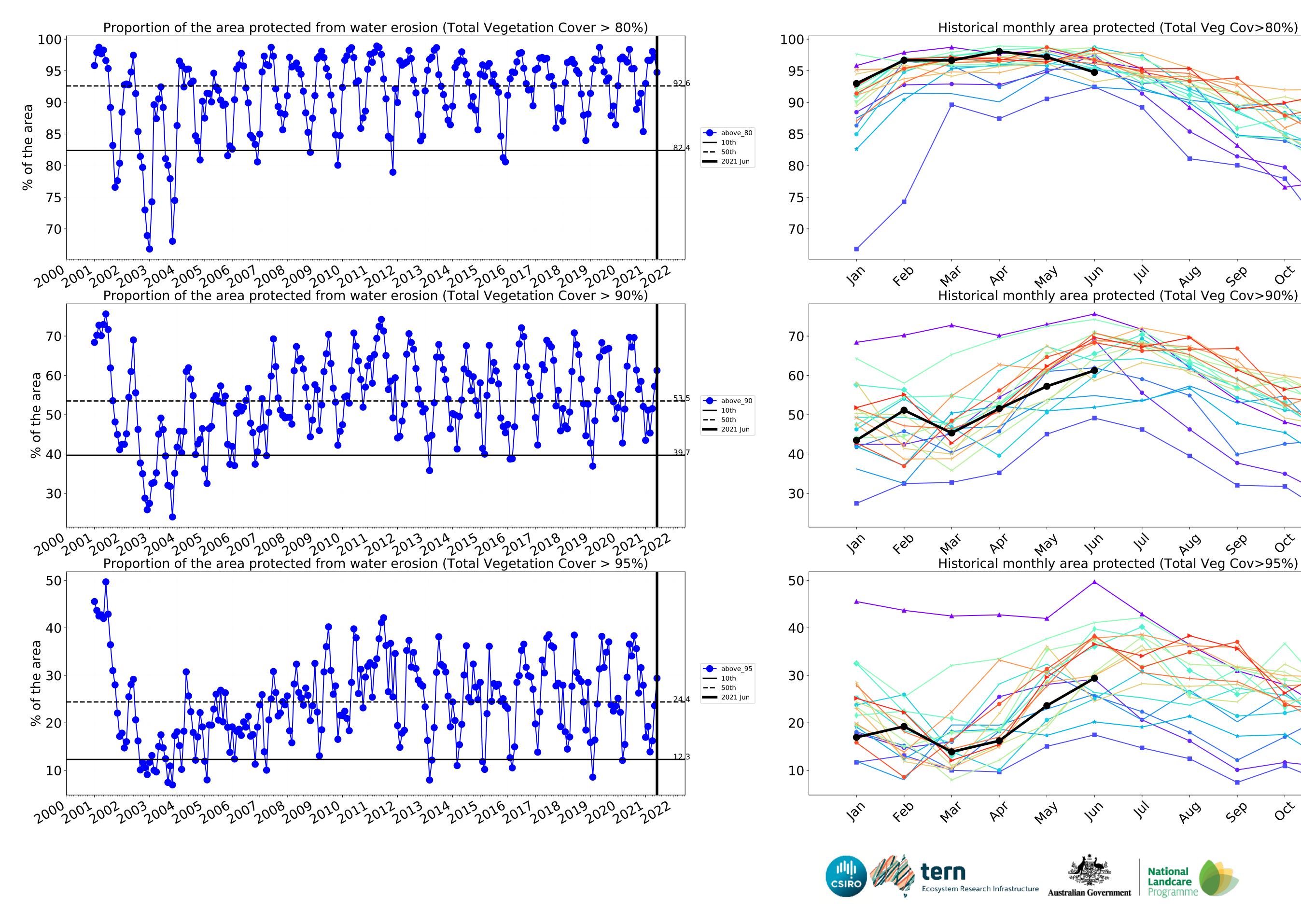
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

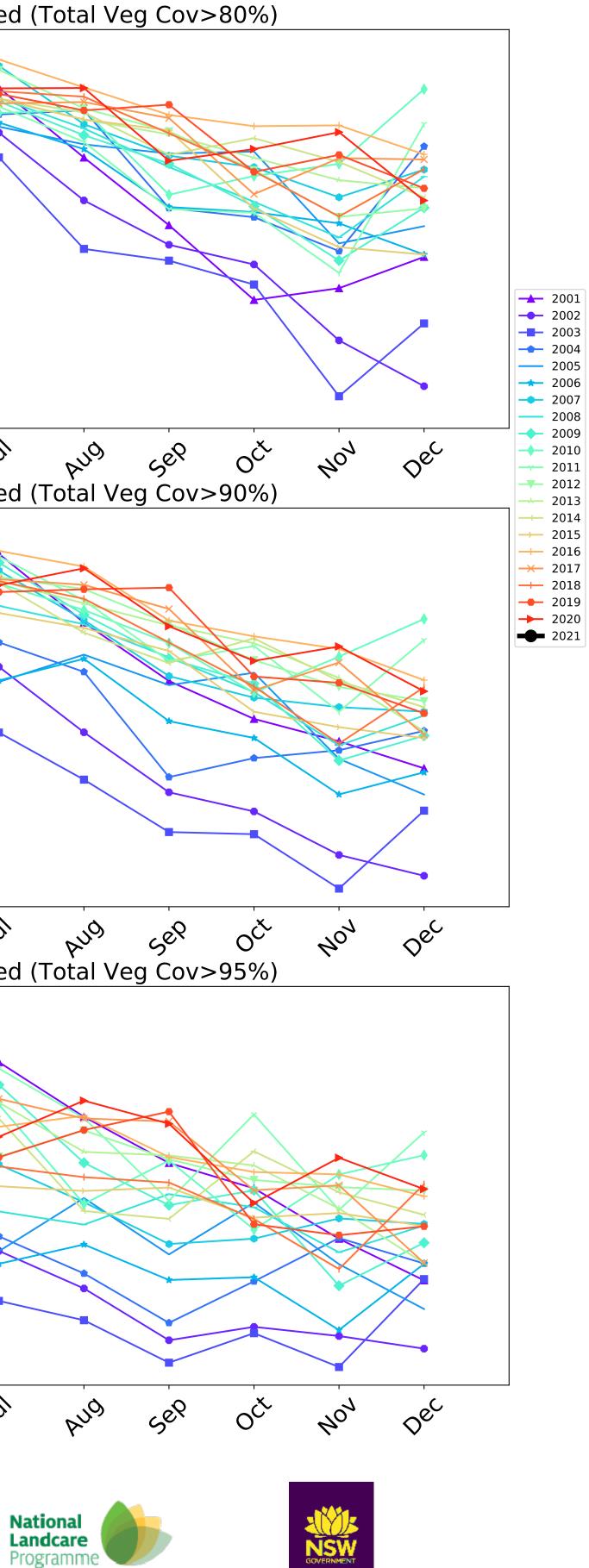
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100-99.3 99 98 ---- above_70 97 **—** 10th **——** 50th **——** 2021 Jun 96 95 94 93 92 Par 4eb way Mai In 1¹1 Þb, month tern Ecosystem Research Infrastructure Australian Government

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

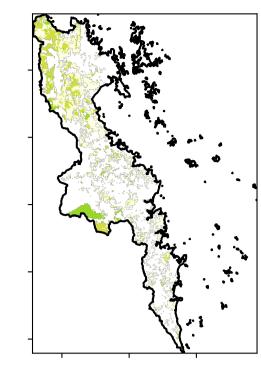




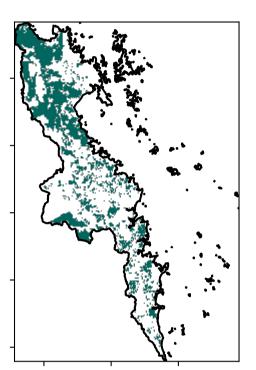


Grazing

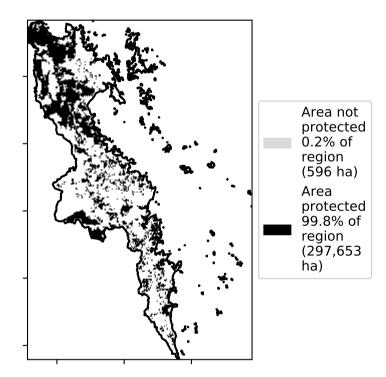
Land use and forest cover

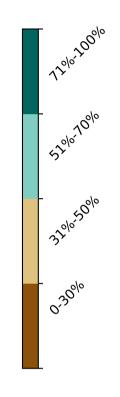


Total Vegetation Cover [%]





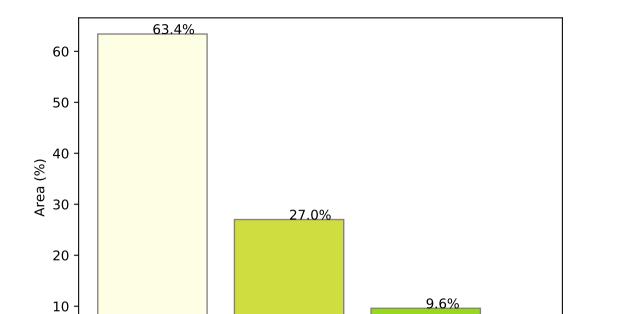




1 Agriculture - Grazing - Non forest

2 Agriculture - Grazing - Woodland forest

3 Agriculture - Grazing - Non-woodland forest



Proportion of each land class in area

Proportion of vegetation cover class in area

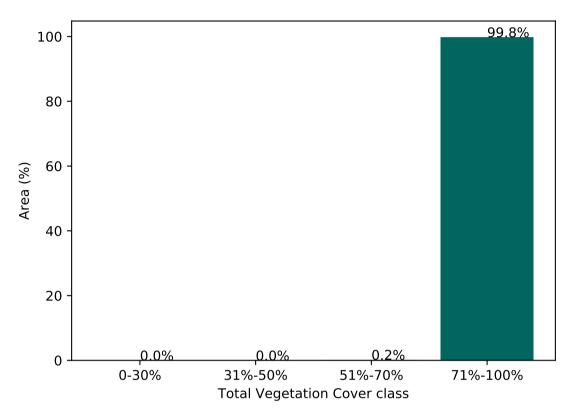
Land use class

3

2

0

1



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]

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

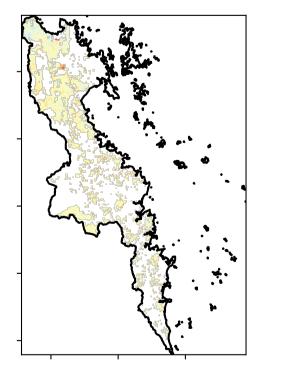
Catchment Scale Land Use and Forests of Australia (2018)

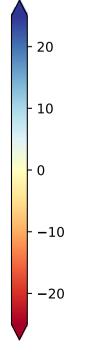
Catchment Scale Land

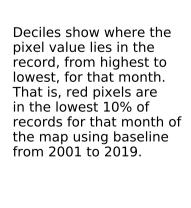
Derived from

Use of Australia

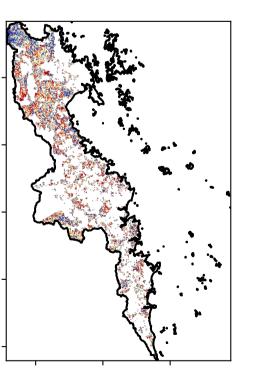
(2018) and Forests of Australia (2018)

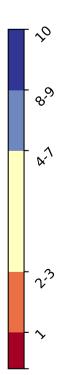




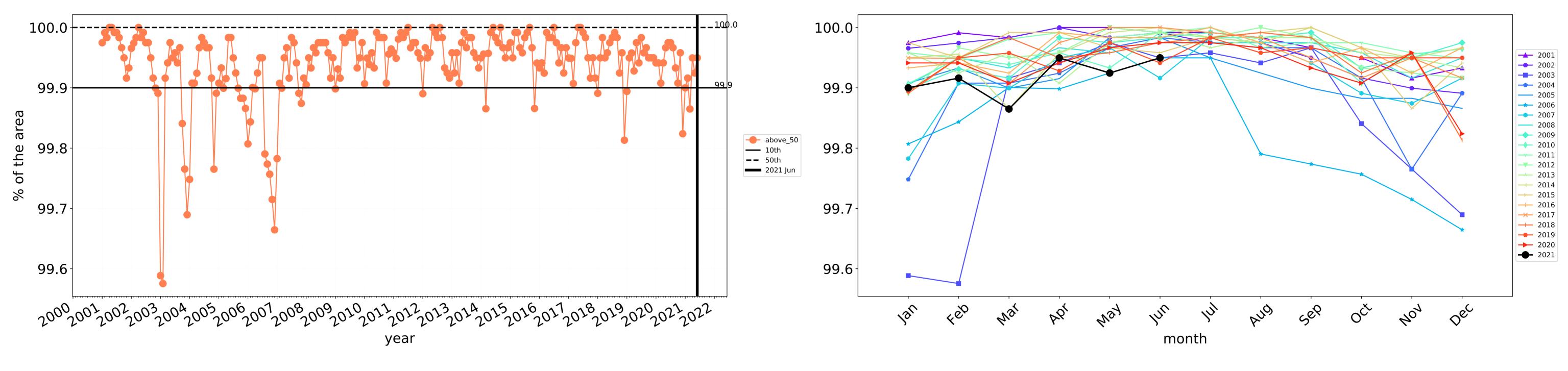


Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (298,250 ha)



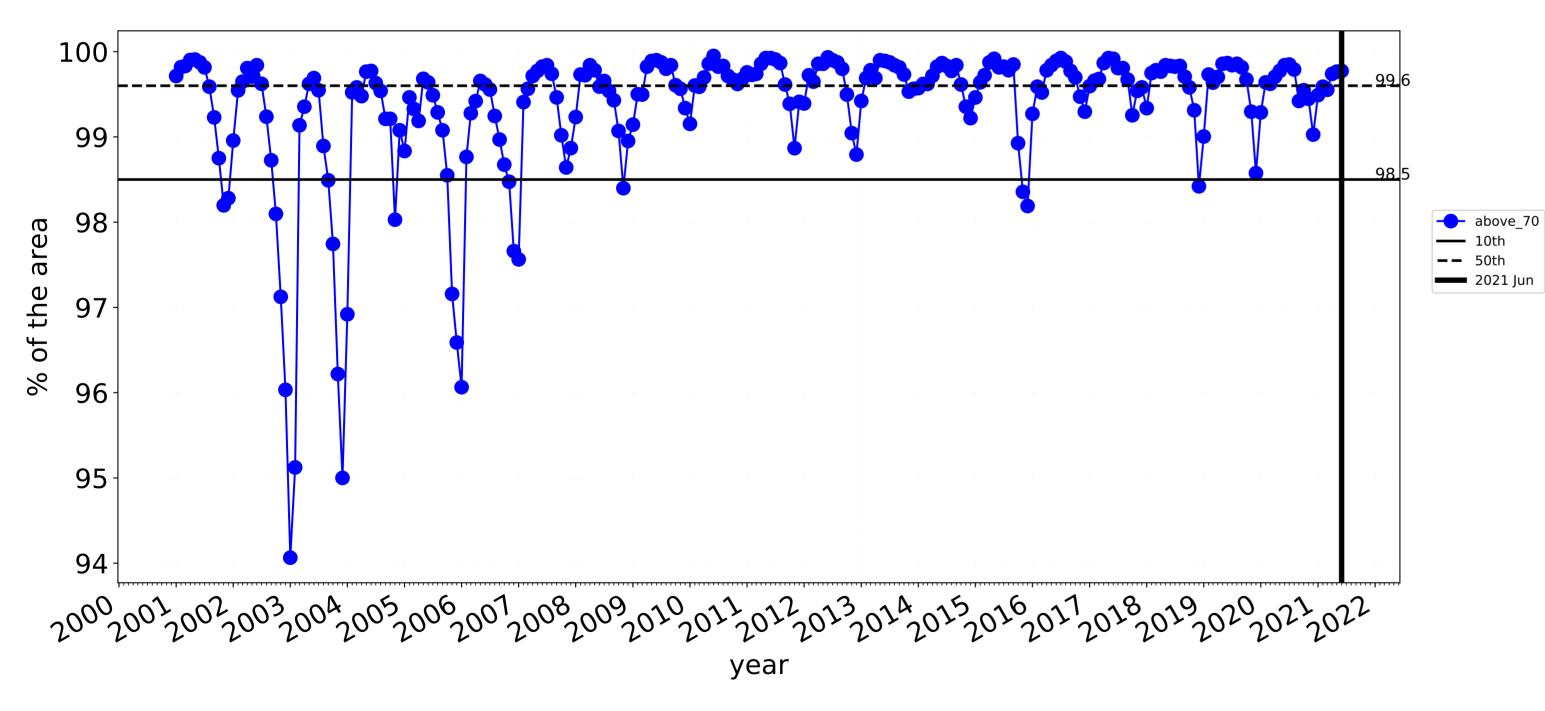


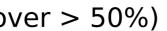




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

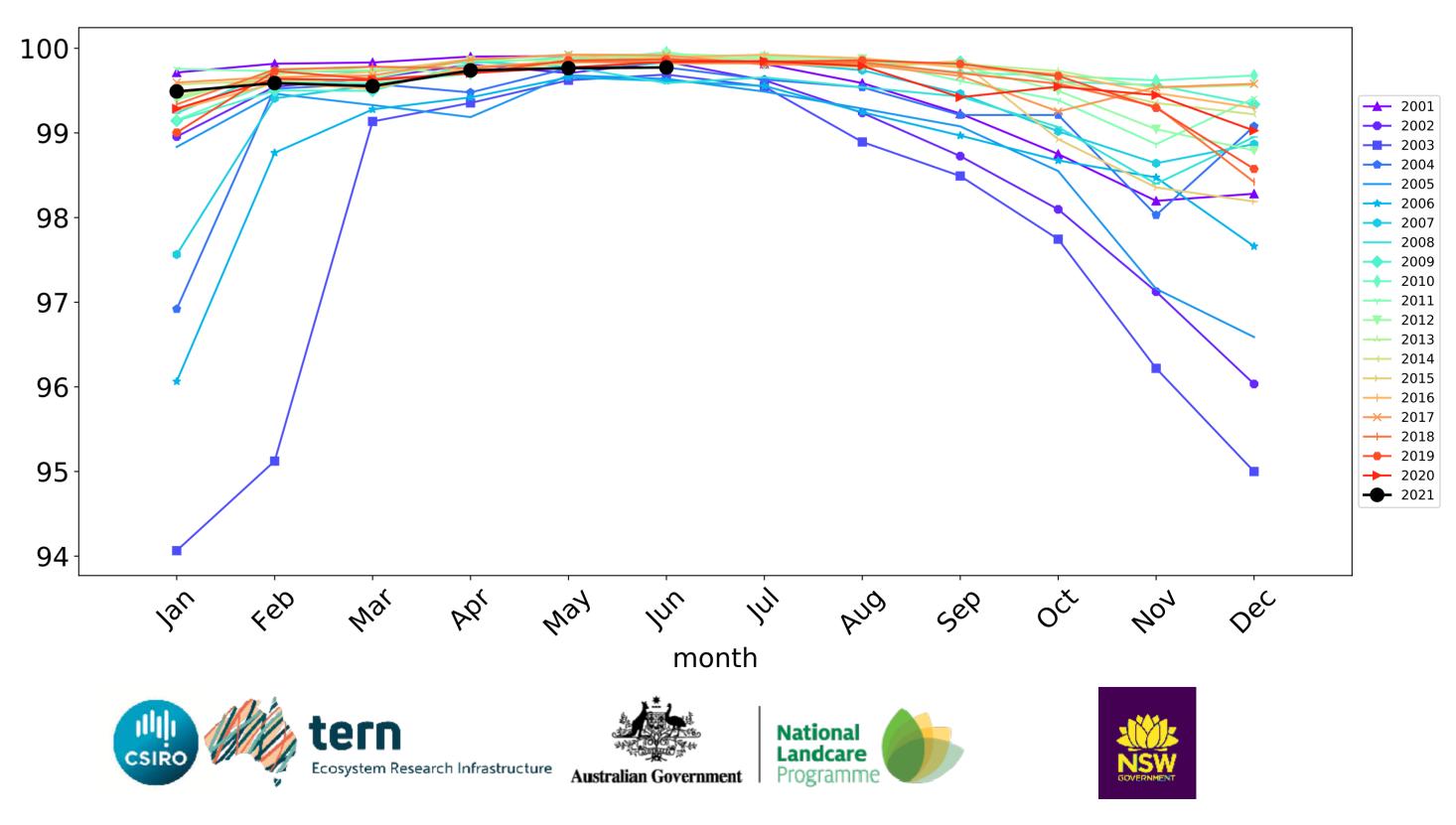


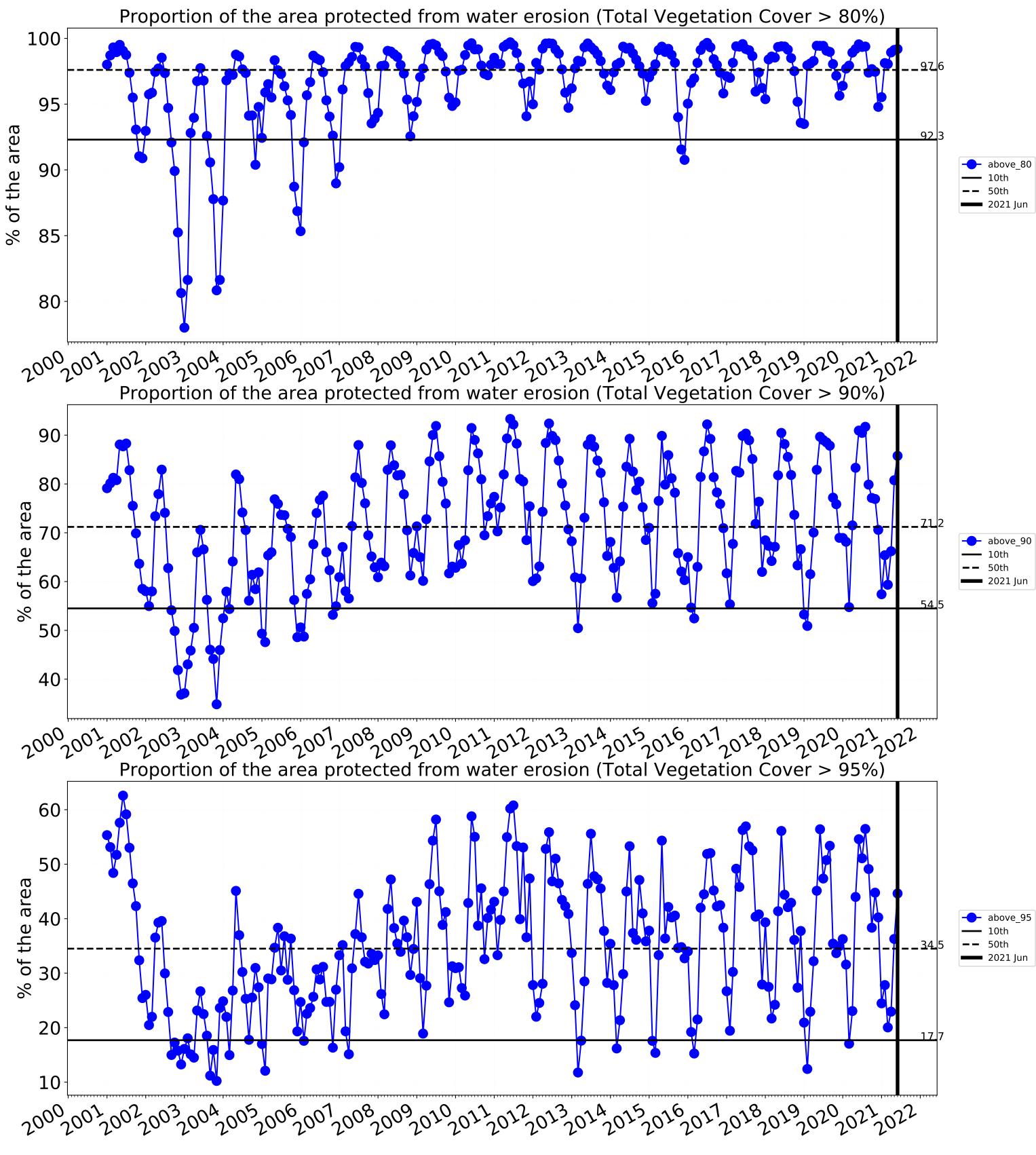


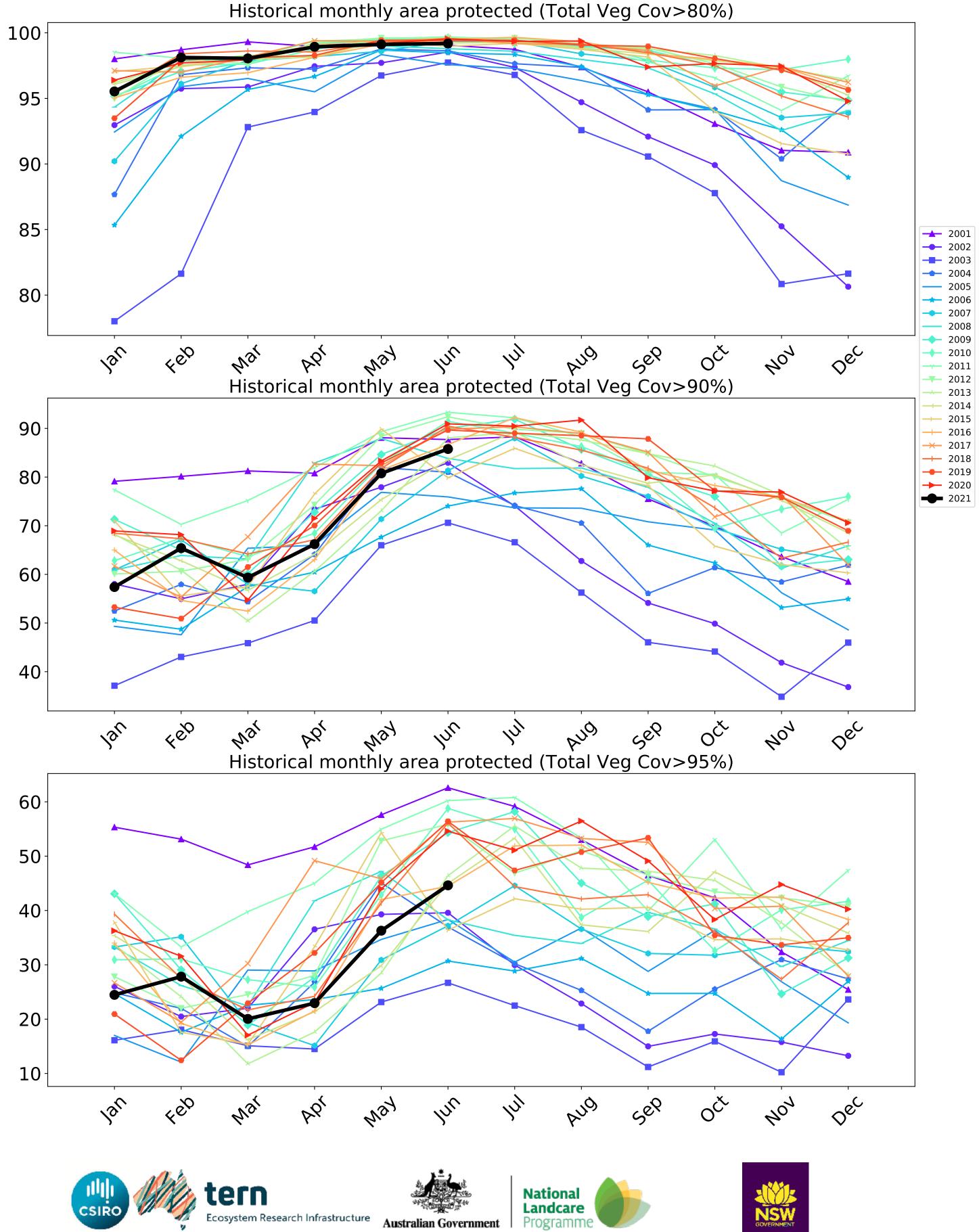


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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



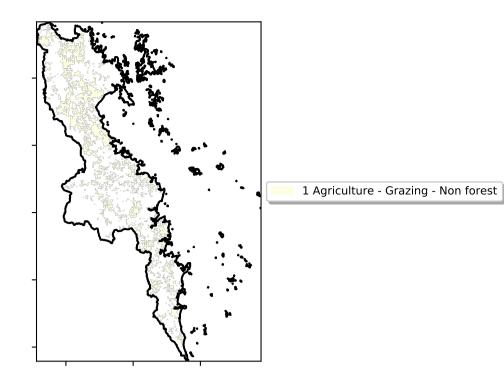




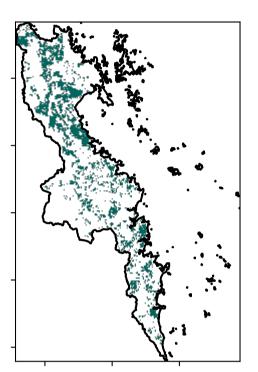


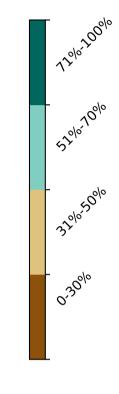
Grazing non forest

Land use and forest cover

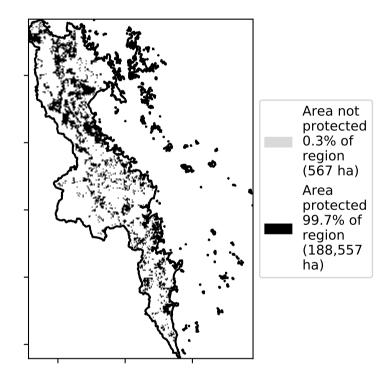


Total Vegetation Cover [%]

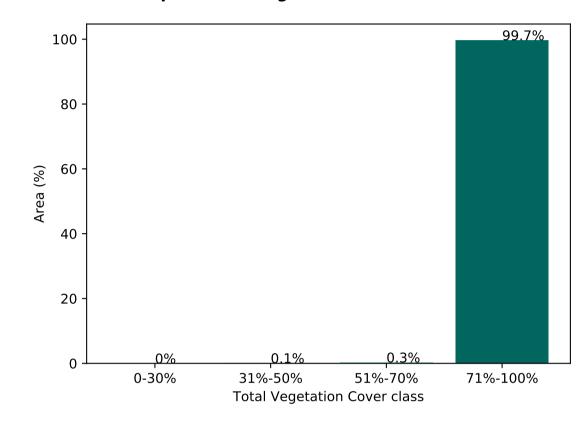




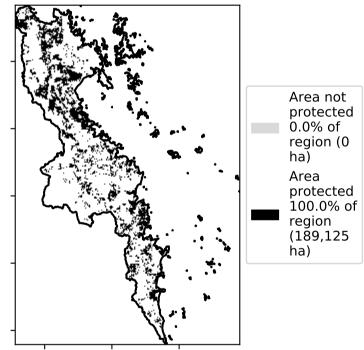
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



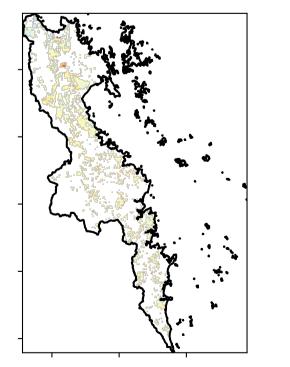
% Area protected from wind erosion (>50%)

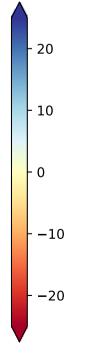


Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

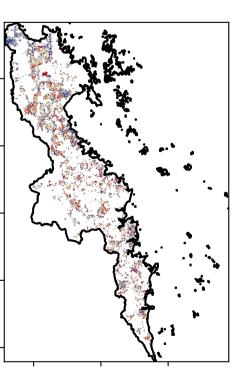
Total Vegetation Cover Anomaly [%]

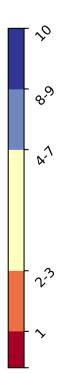
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



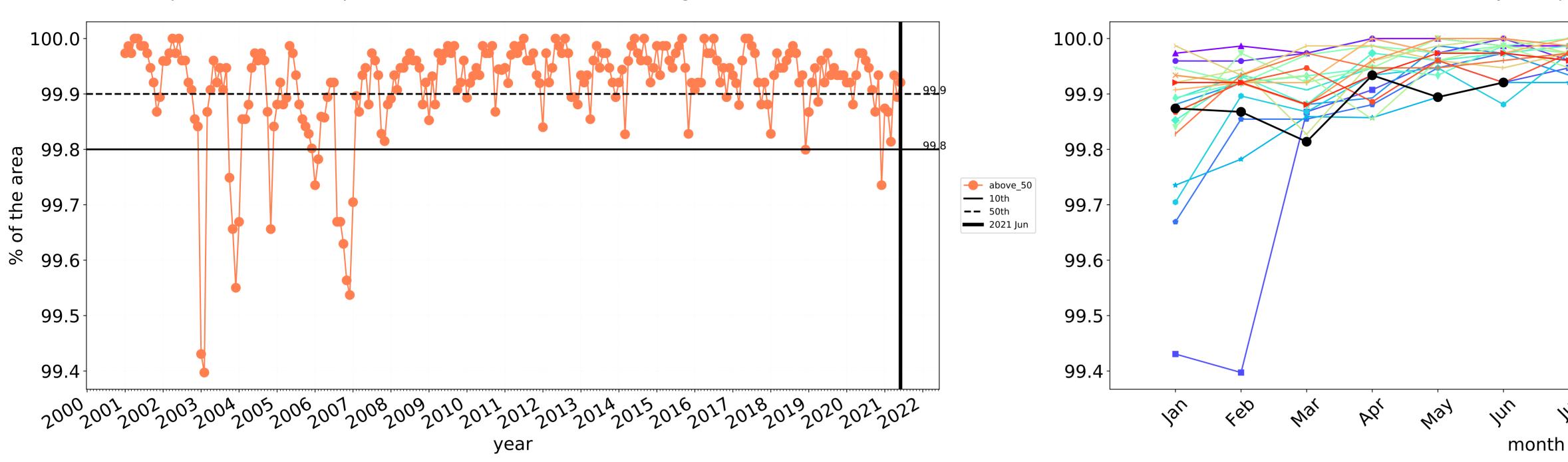






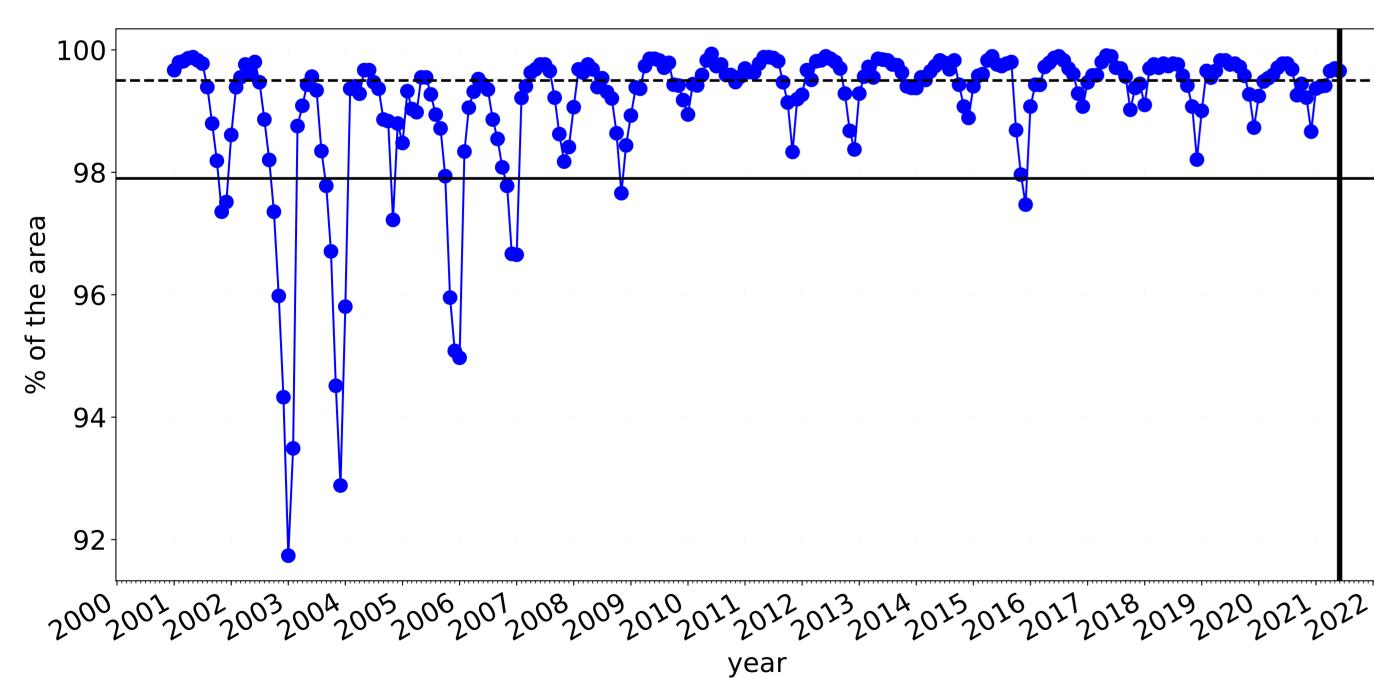




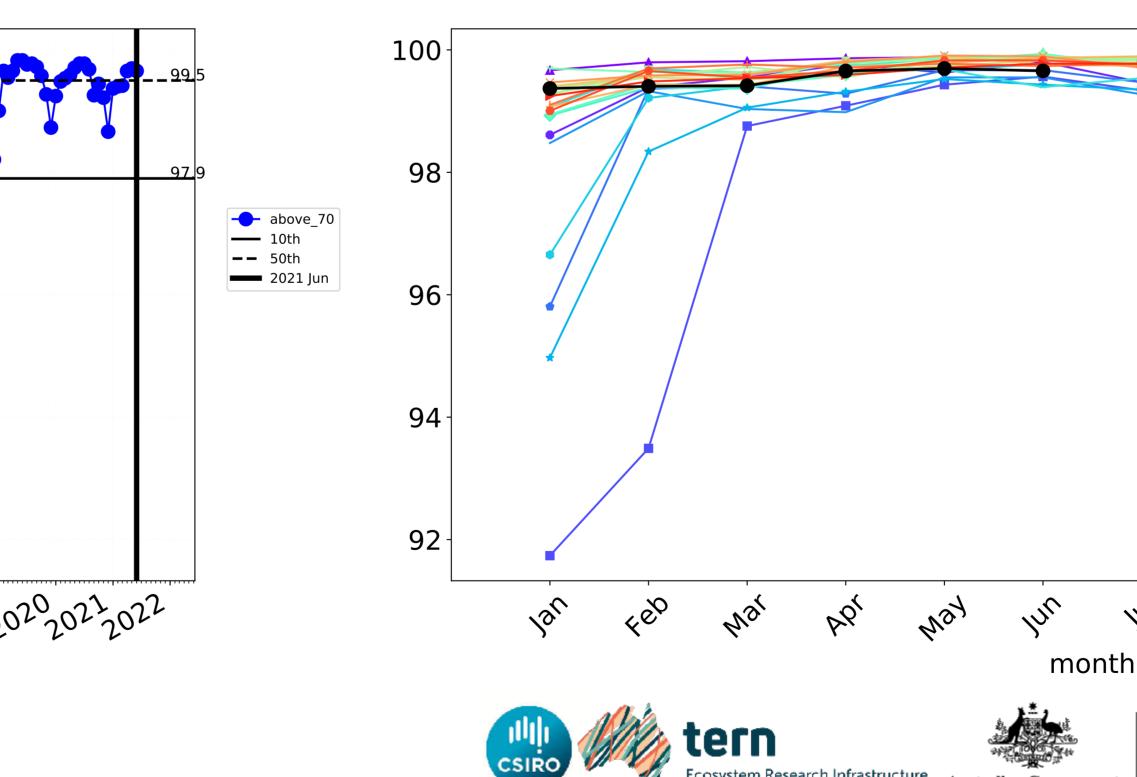


Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

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



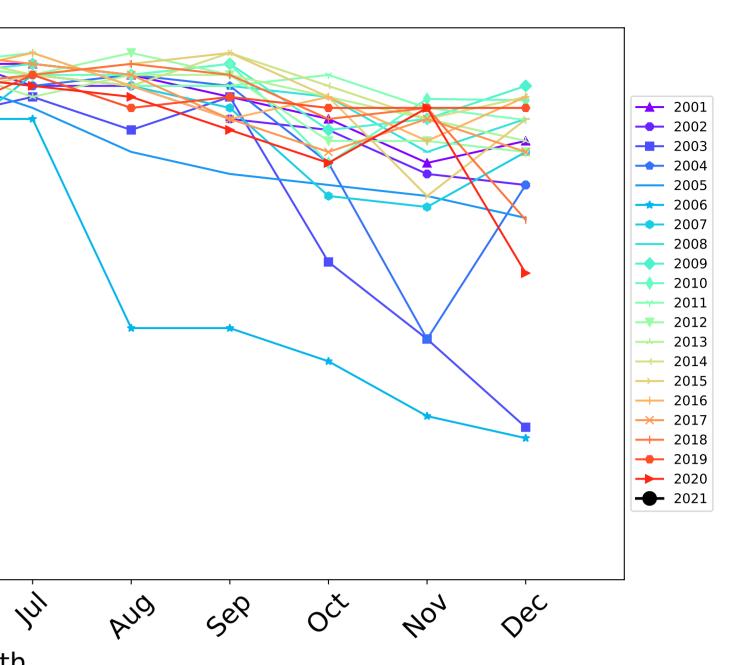
Wind erosion historical monthly area protected (Total Veg Cov >50%)



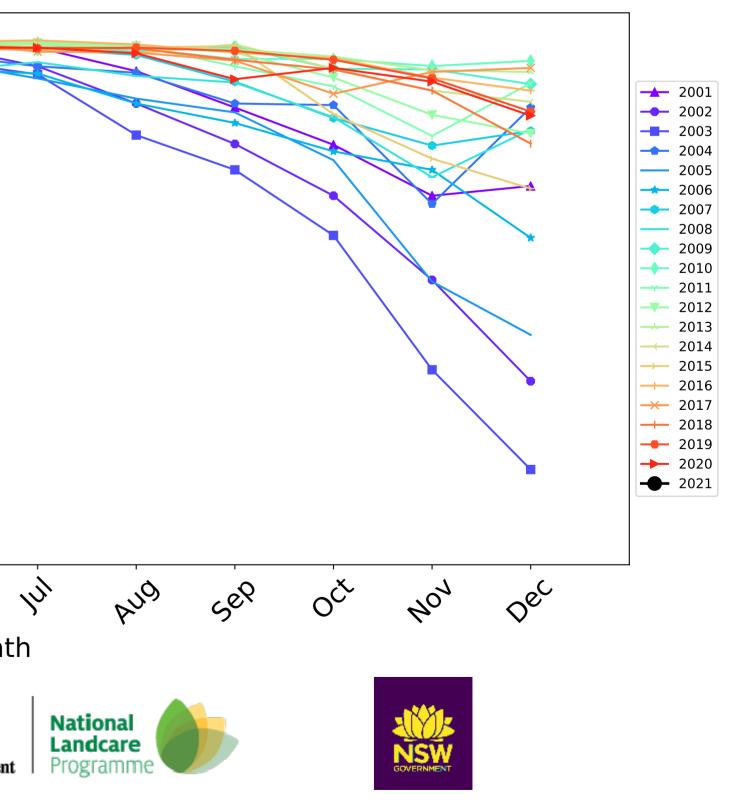
2**3**

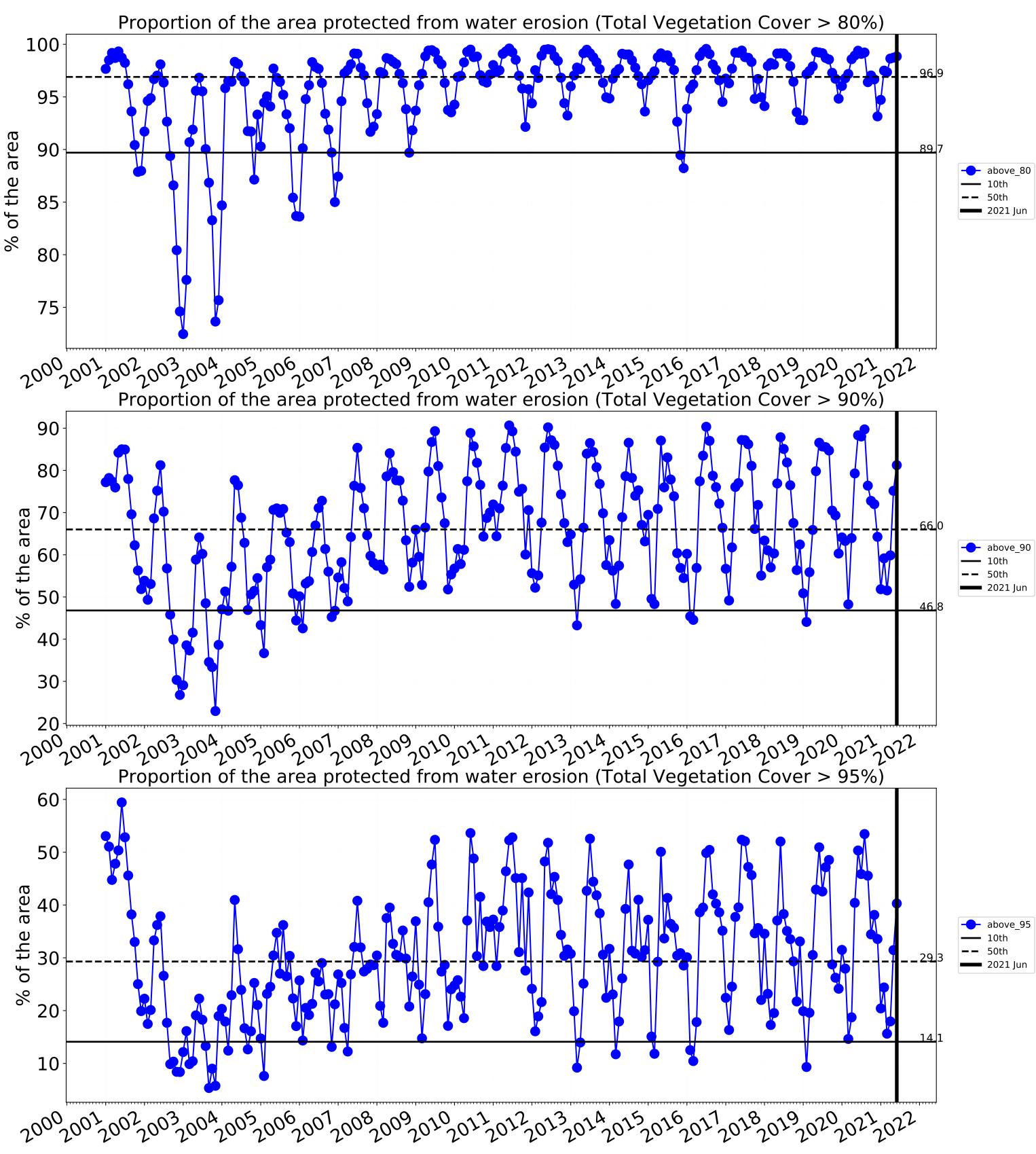
Australian Government

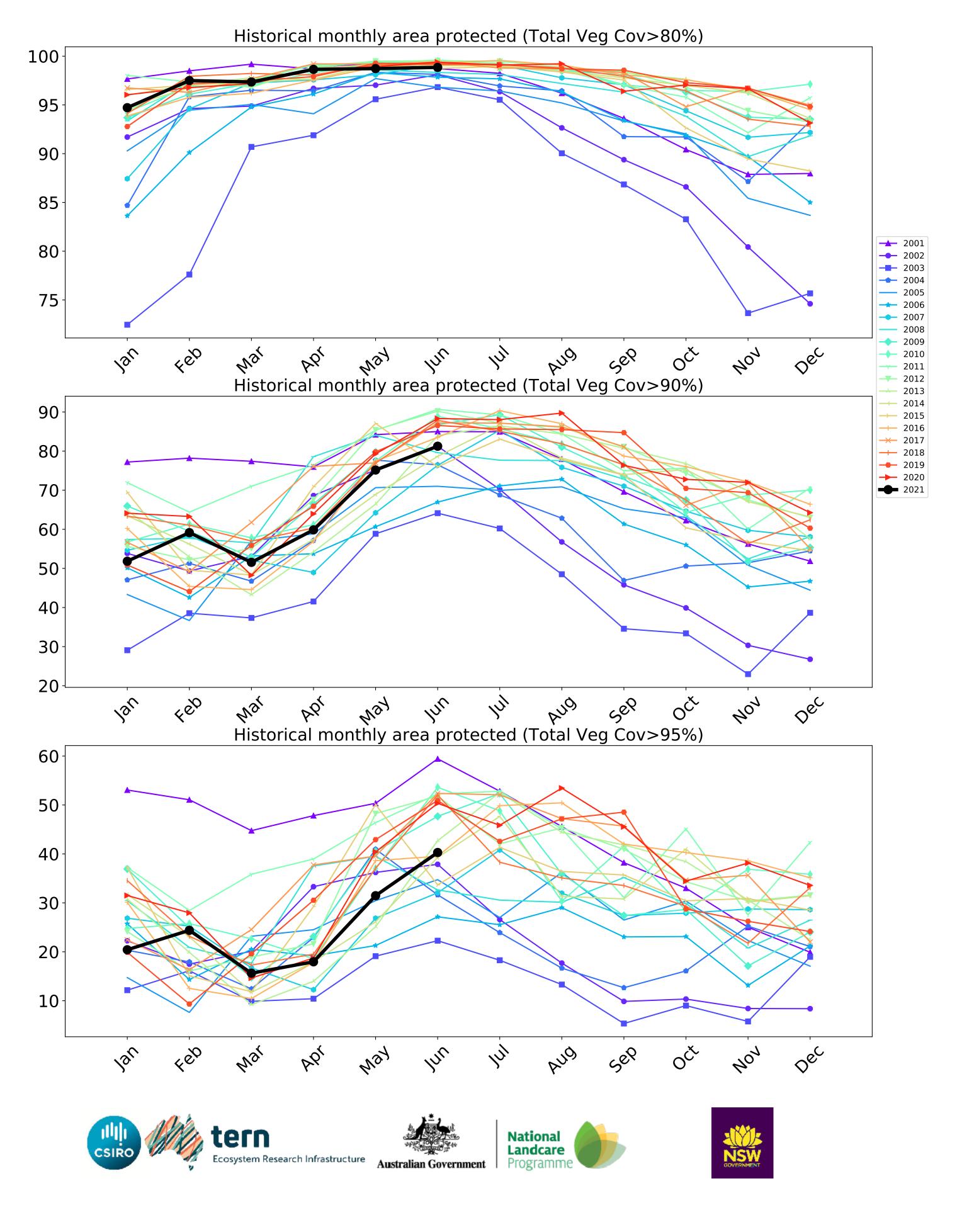
Ecosystem Research Infrastructure



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

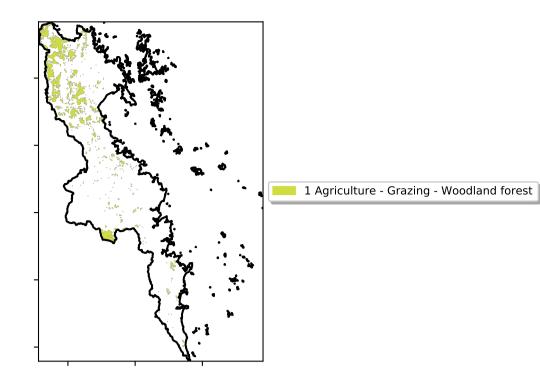




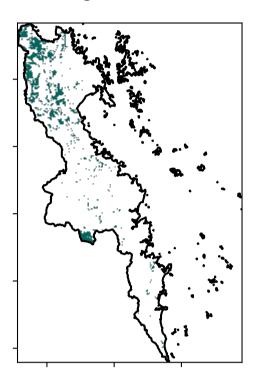


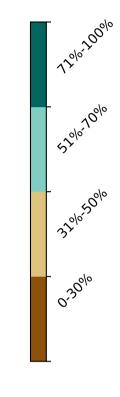
Grazing Woodland forest

Land use and forest cover

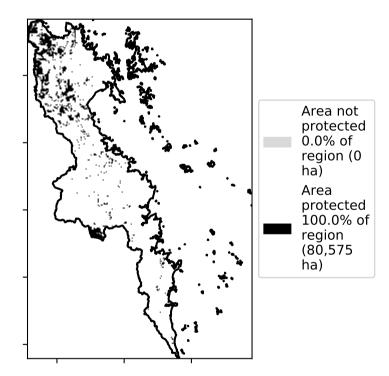


Total Vegetation Cover [%]

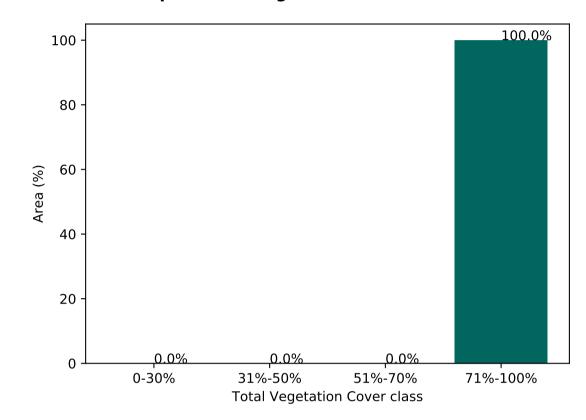




% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



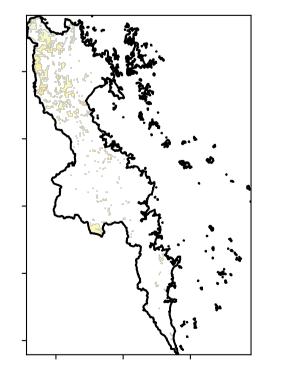
% Area protected from wind erosion (>50%)

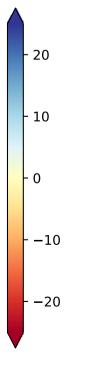


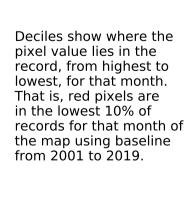
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover Anomaly [%]

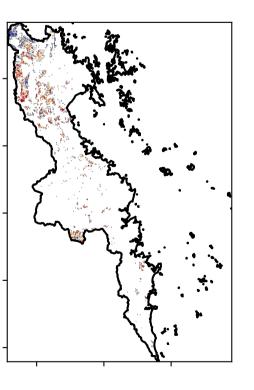
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

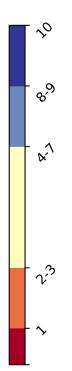




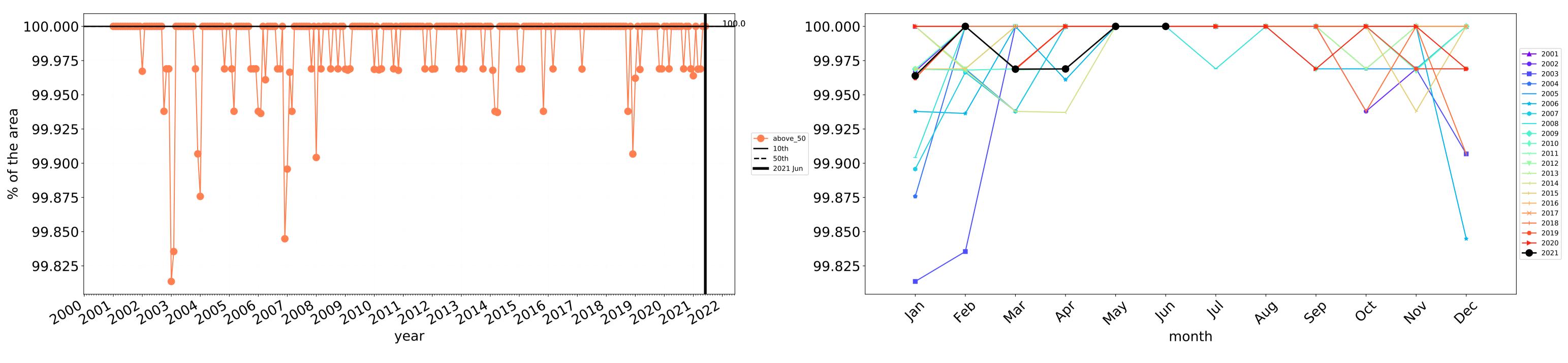


Area protected 100.0% of region (80,575 ha)



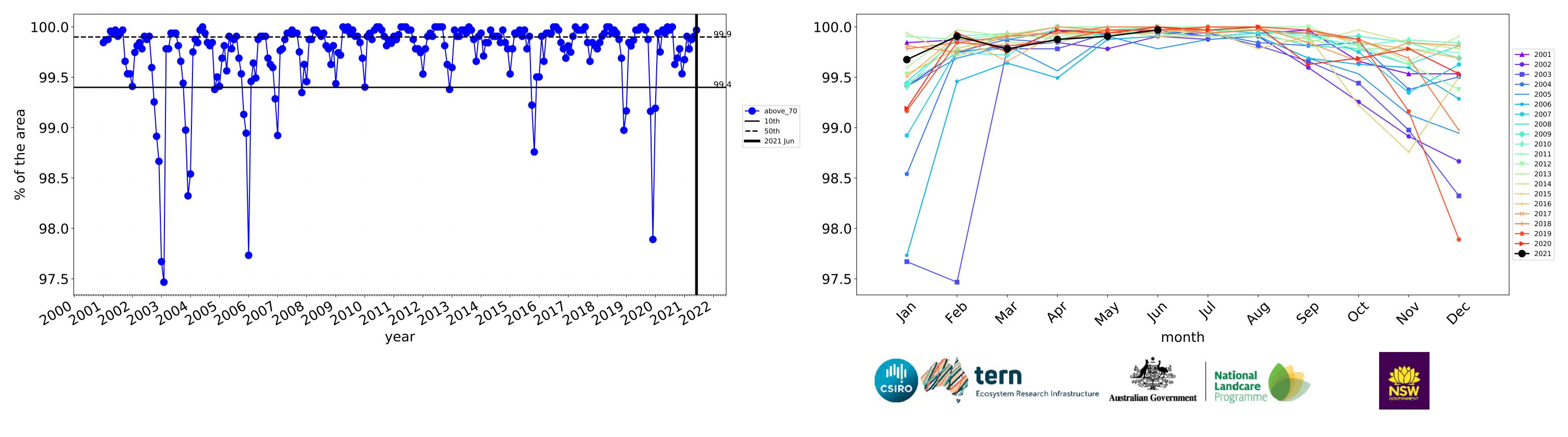


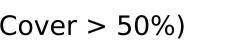




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

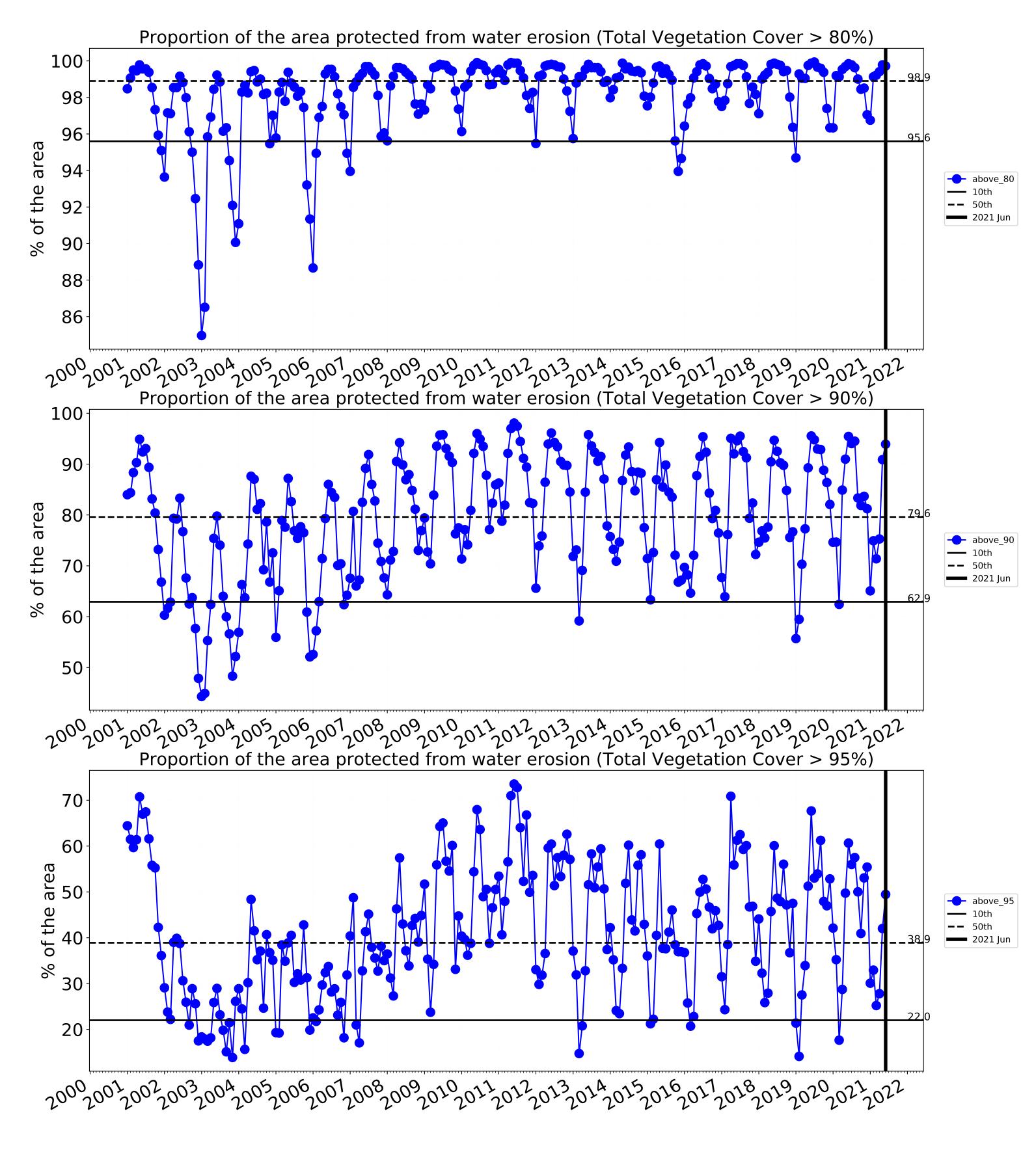
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

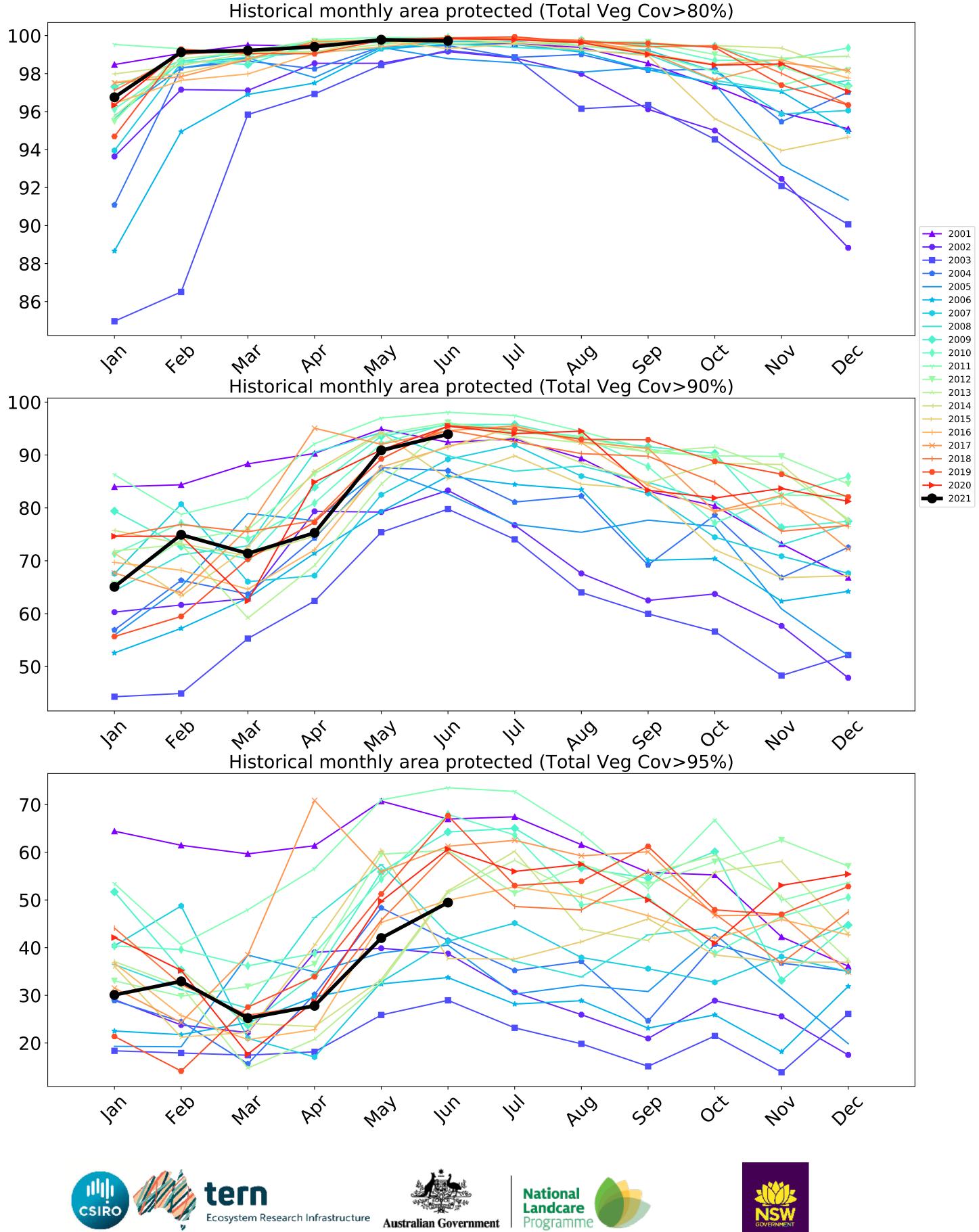




Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

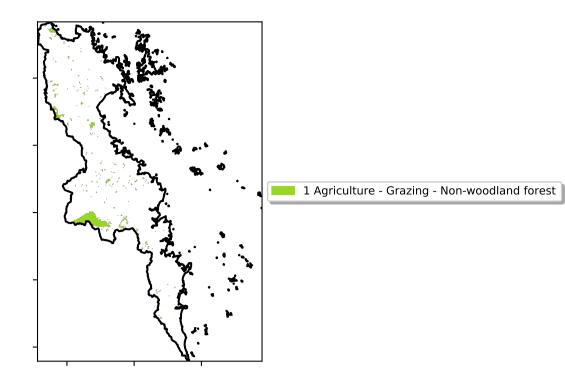




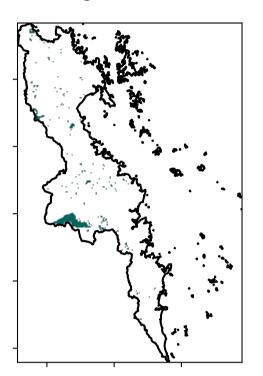
csire tern Ecosystem Research Infrastructure Australian Government

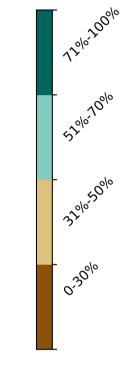
Grazing - Forest (non woodland)

Land use and forest cover

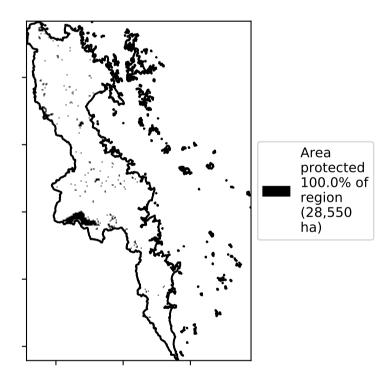


Total Vegetation Cover [%]

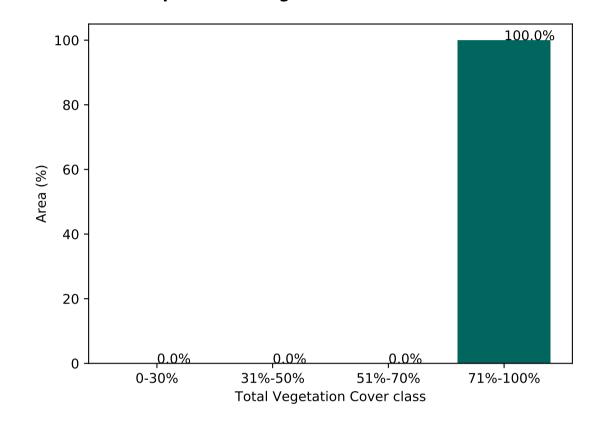




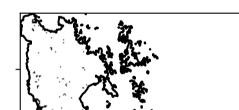
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



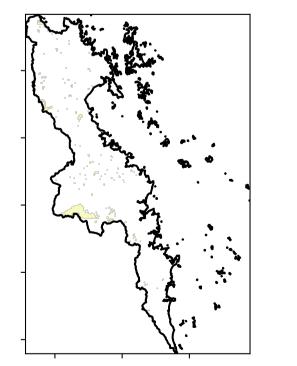
% Area protected from wind erosion (>50%)

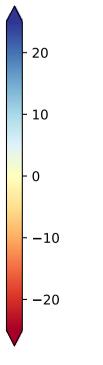


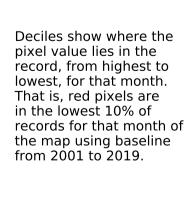
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

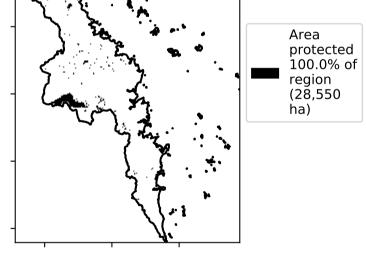
Total Vegetation Cover Anomaly [%]

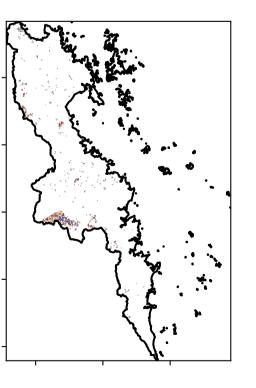
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

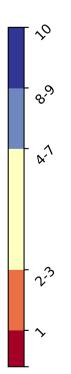




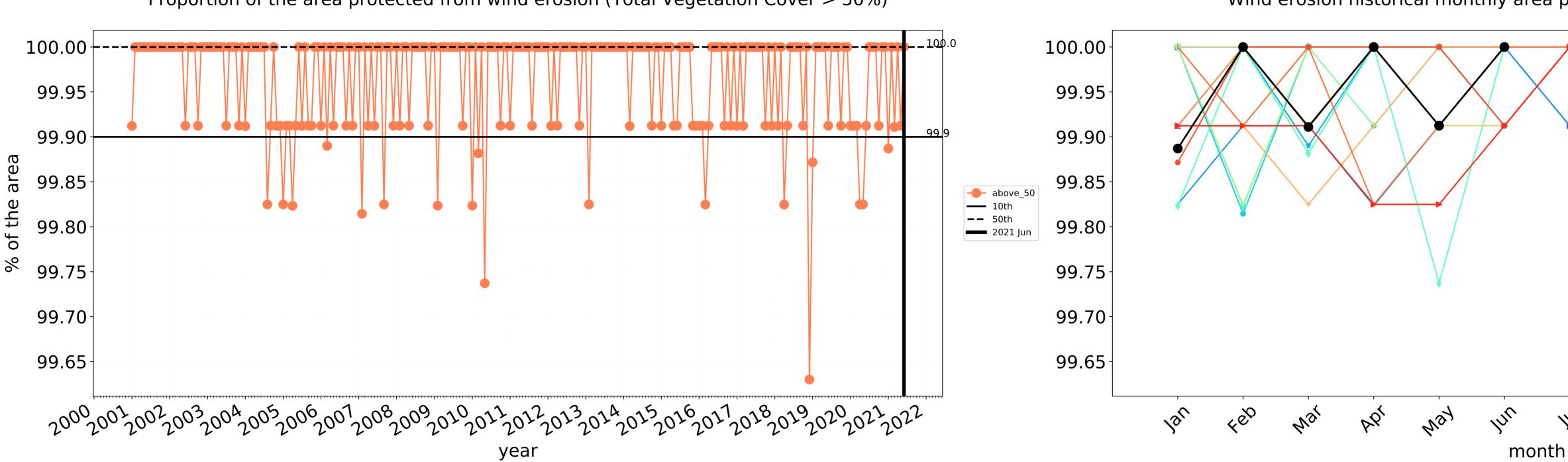






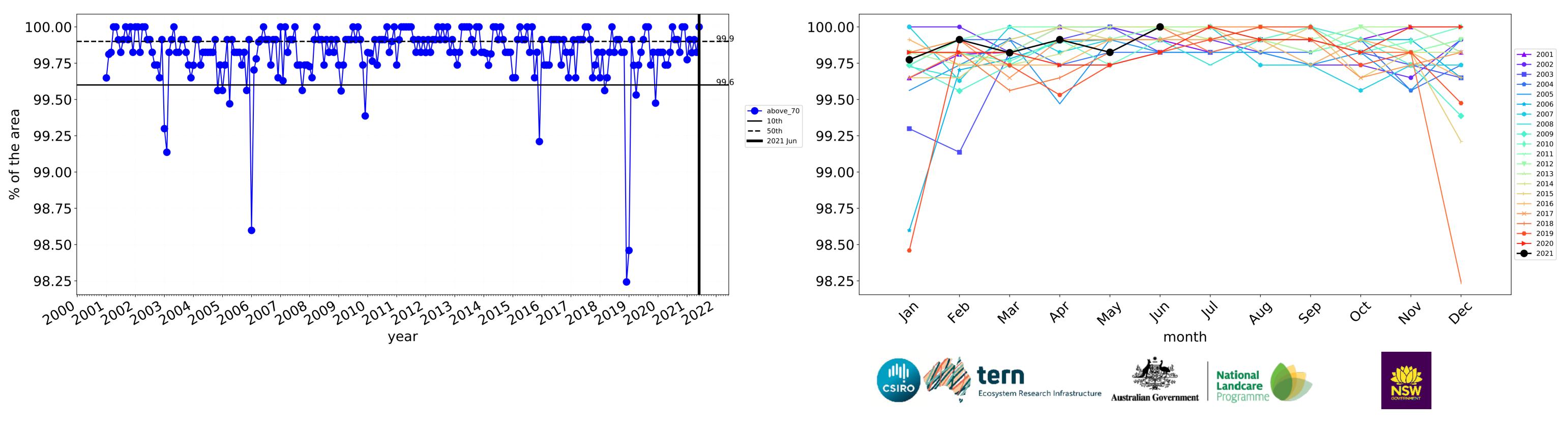






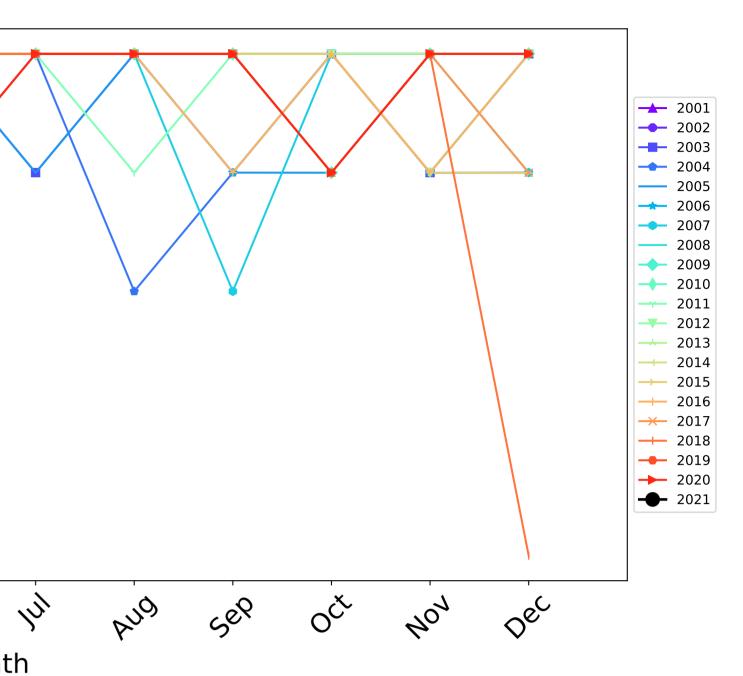
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

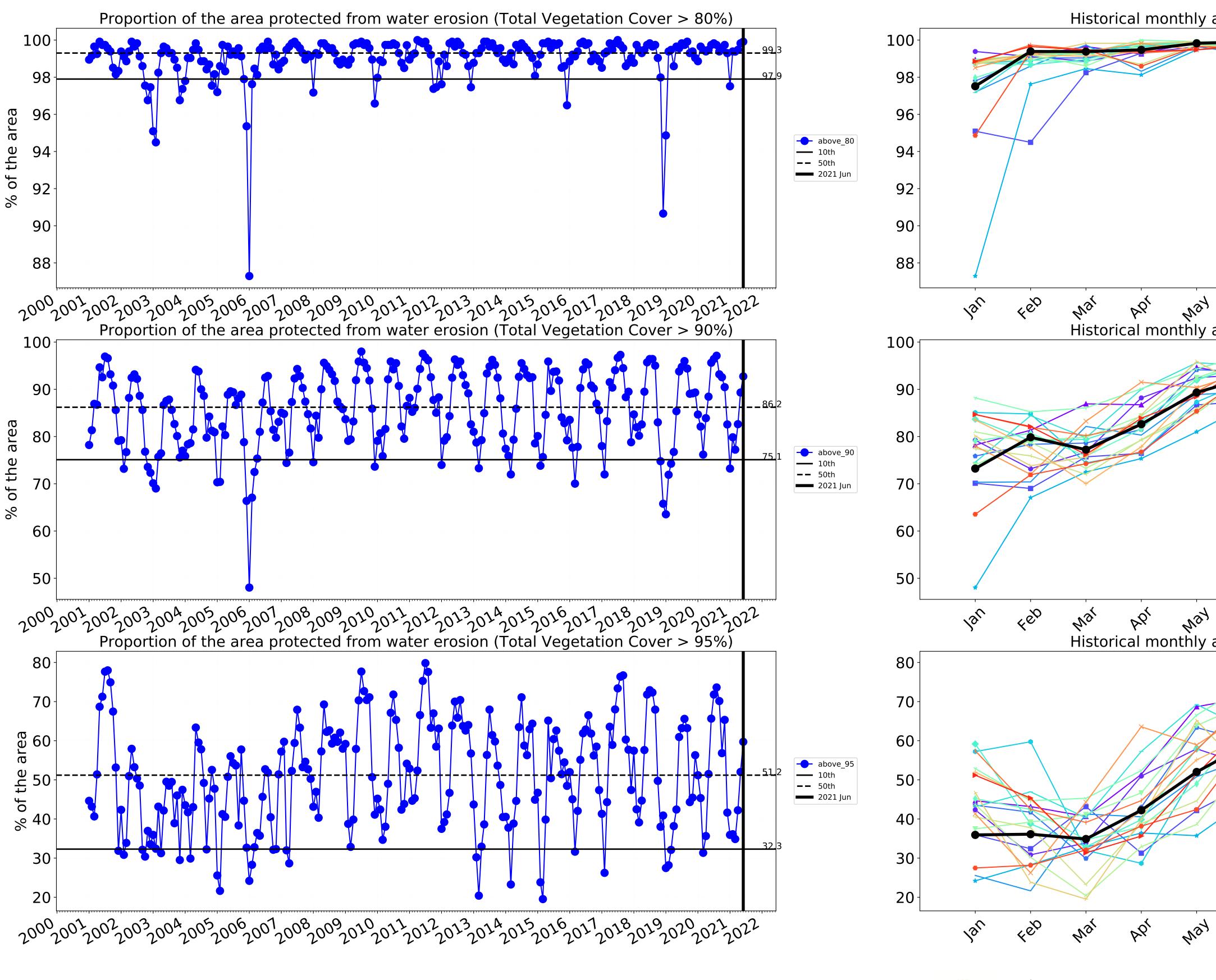
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

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

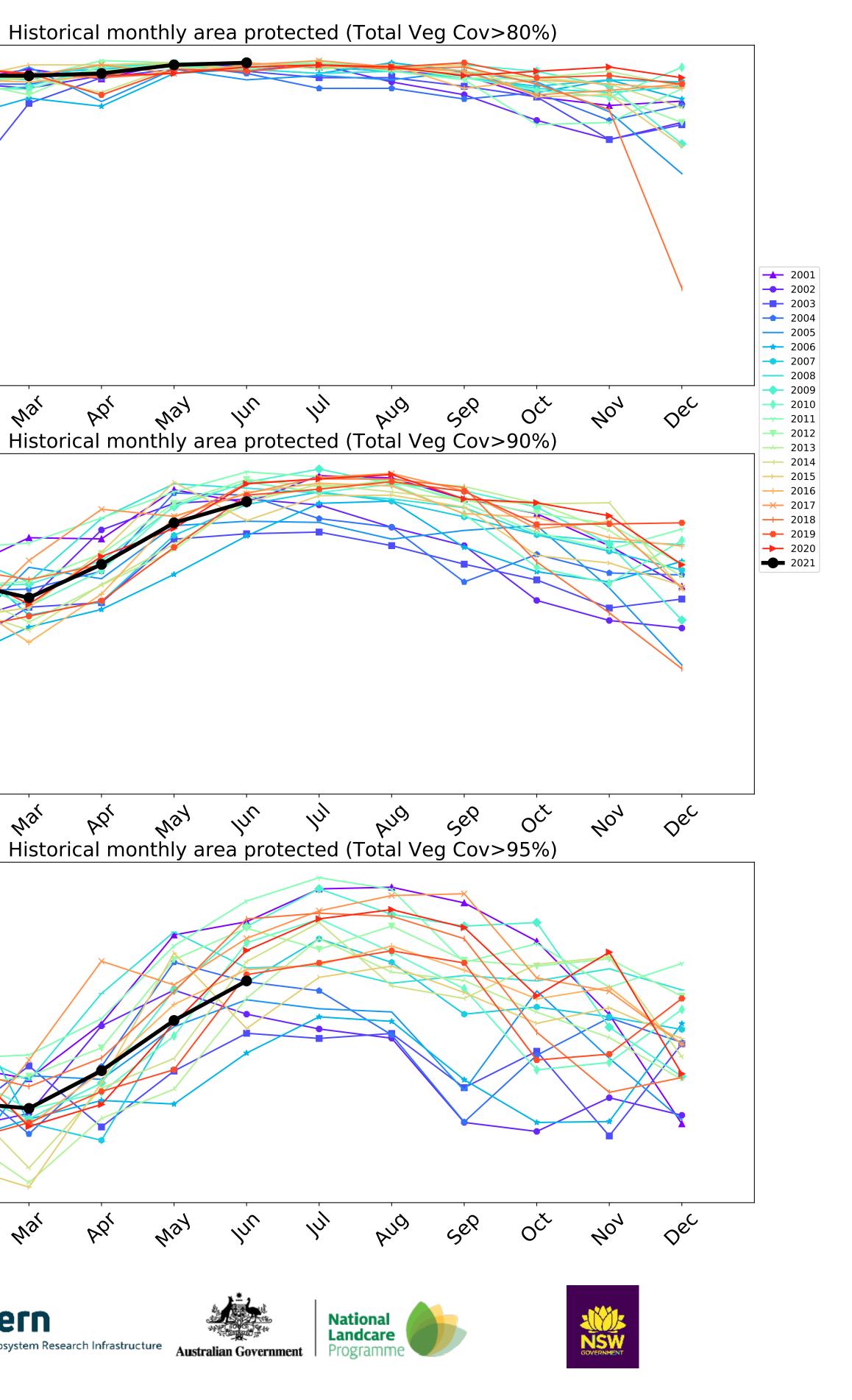






Jul

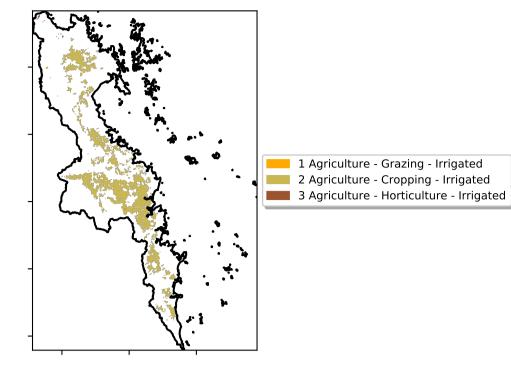
JUL



Irrigation

Land use and forest cover

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



1 Agriculture - Grazing - Irrigated

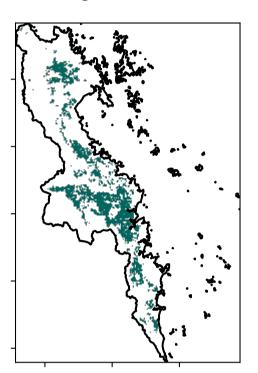
1210-200°

· 52% 70%

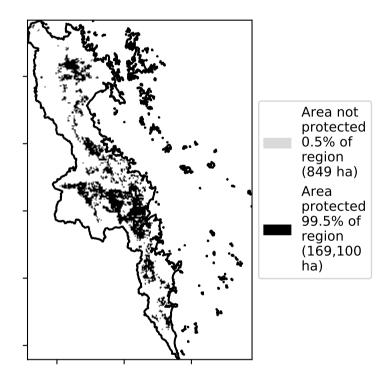
3201050010

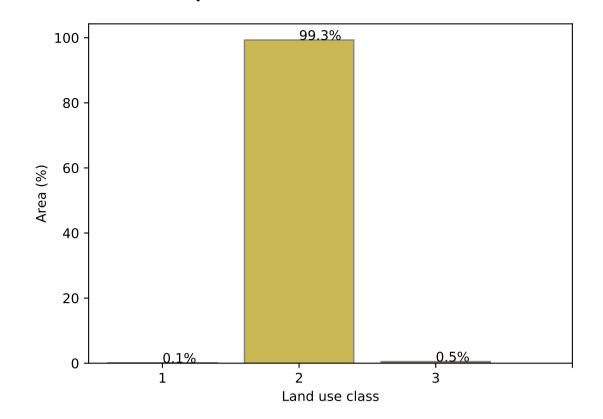
0.30%

Total Vegetation Cover [%]



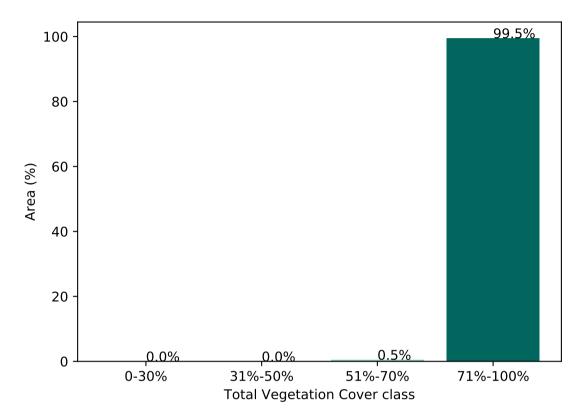
% Area protected from water erosion (>70%)



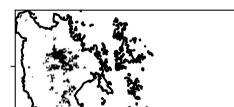


Proportion of each land class in area

Proportion of vegetation cover class in area

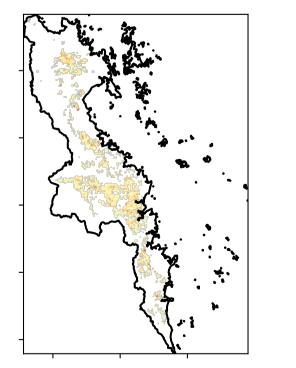


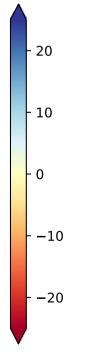
% Area protected from wind erosion (>50%)

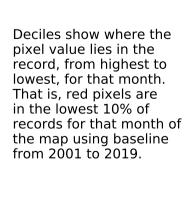


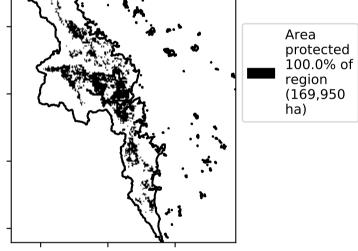
Total Vegetation Cover Anomaly [%]

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.







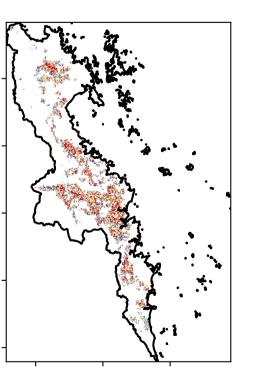


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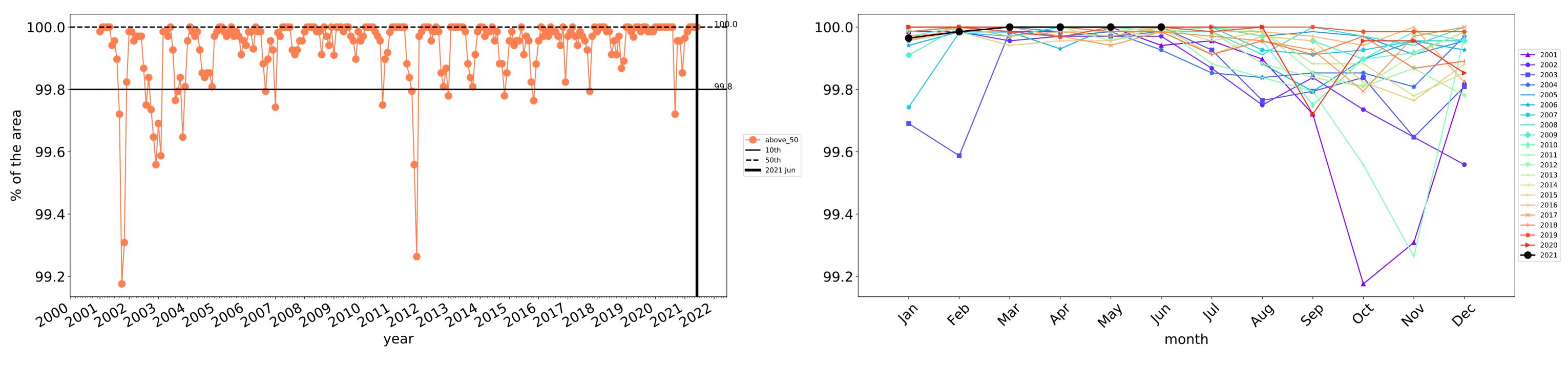
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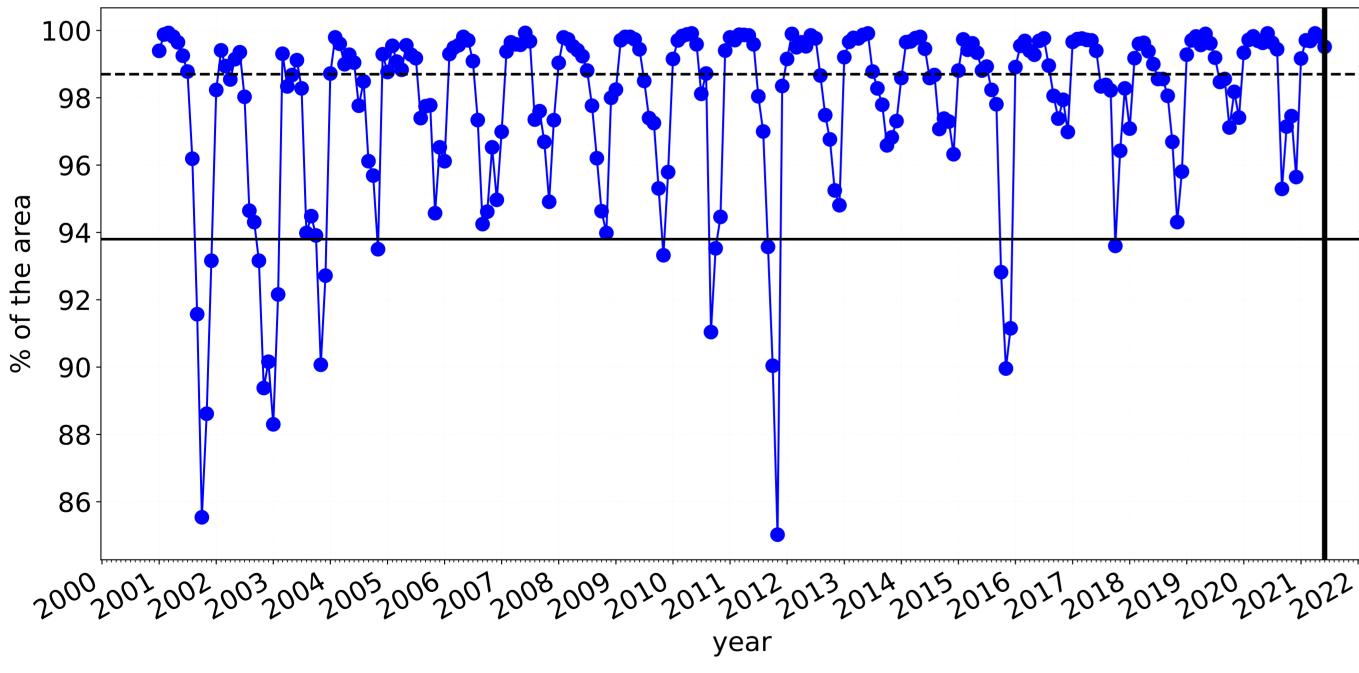


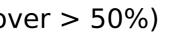




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



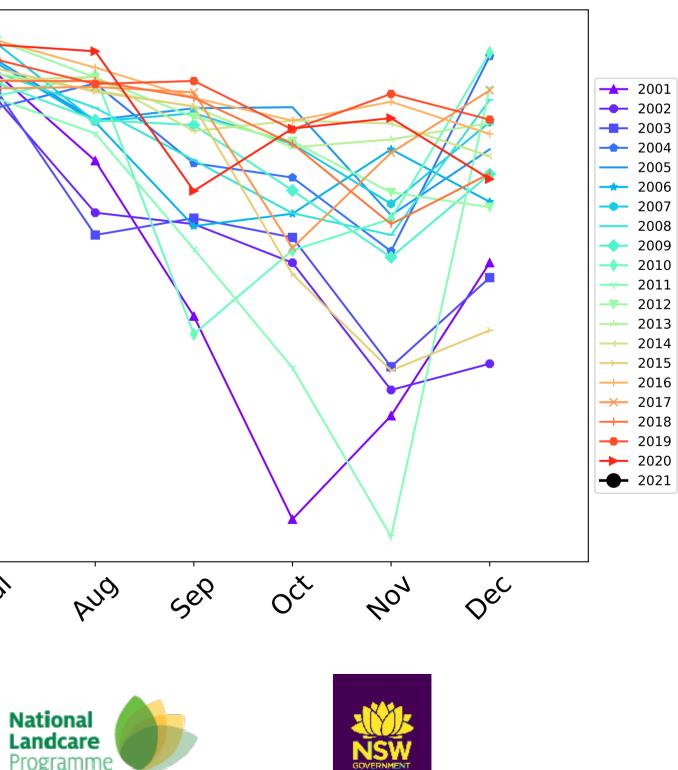


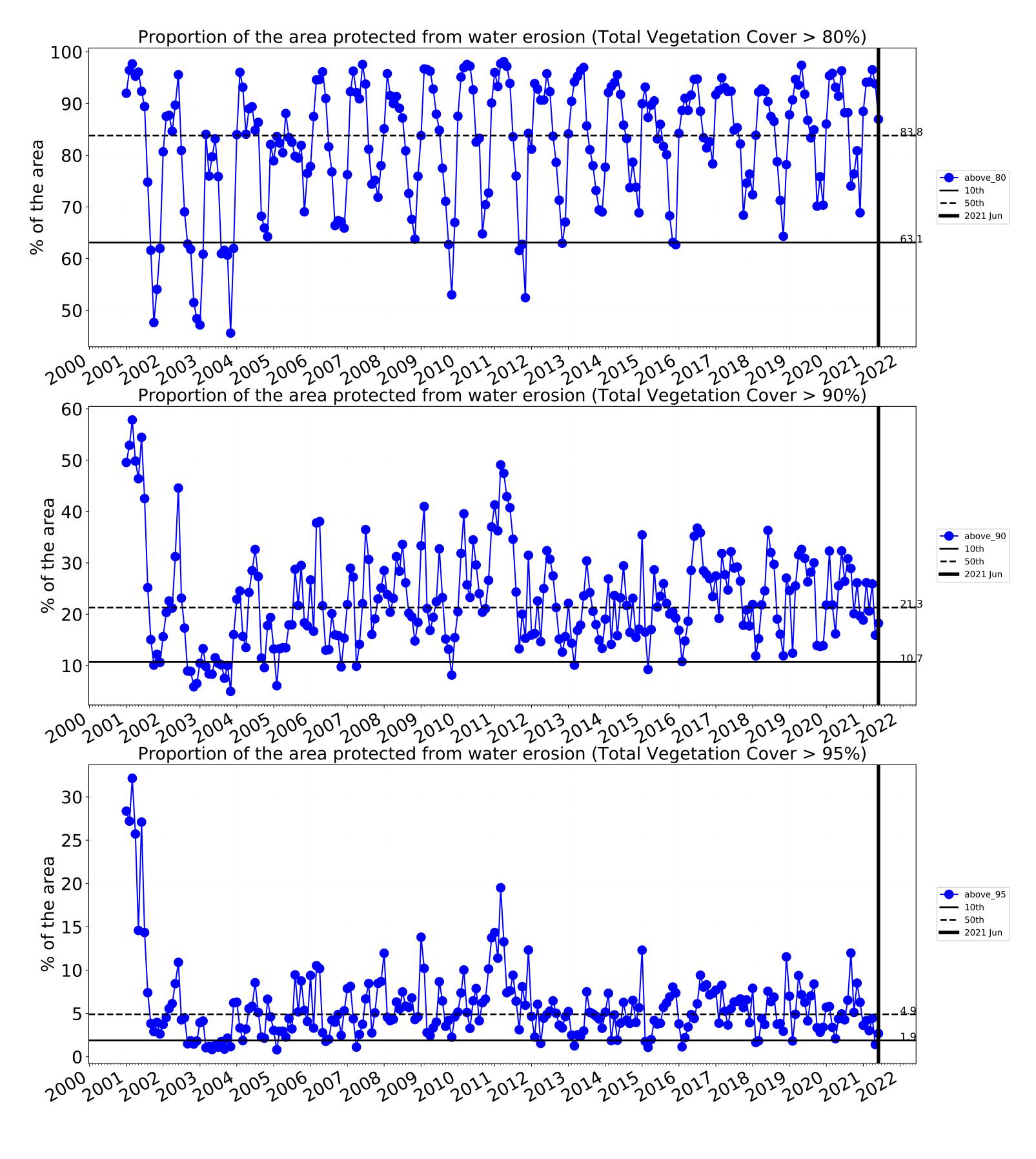


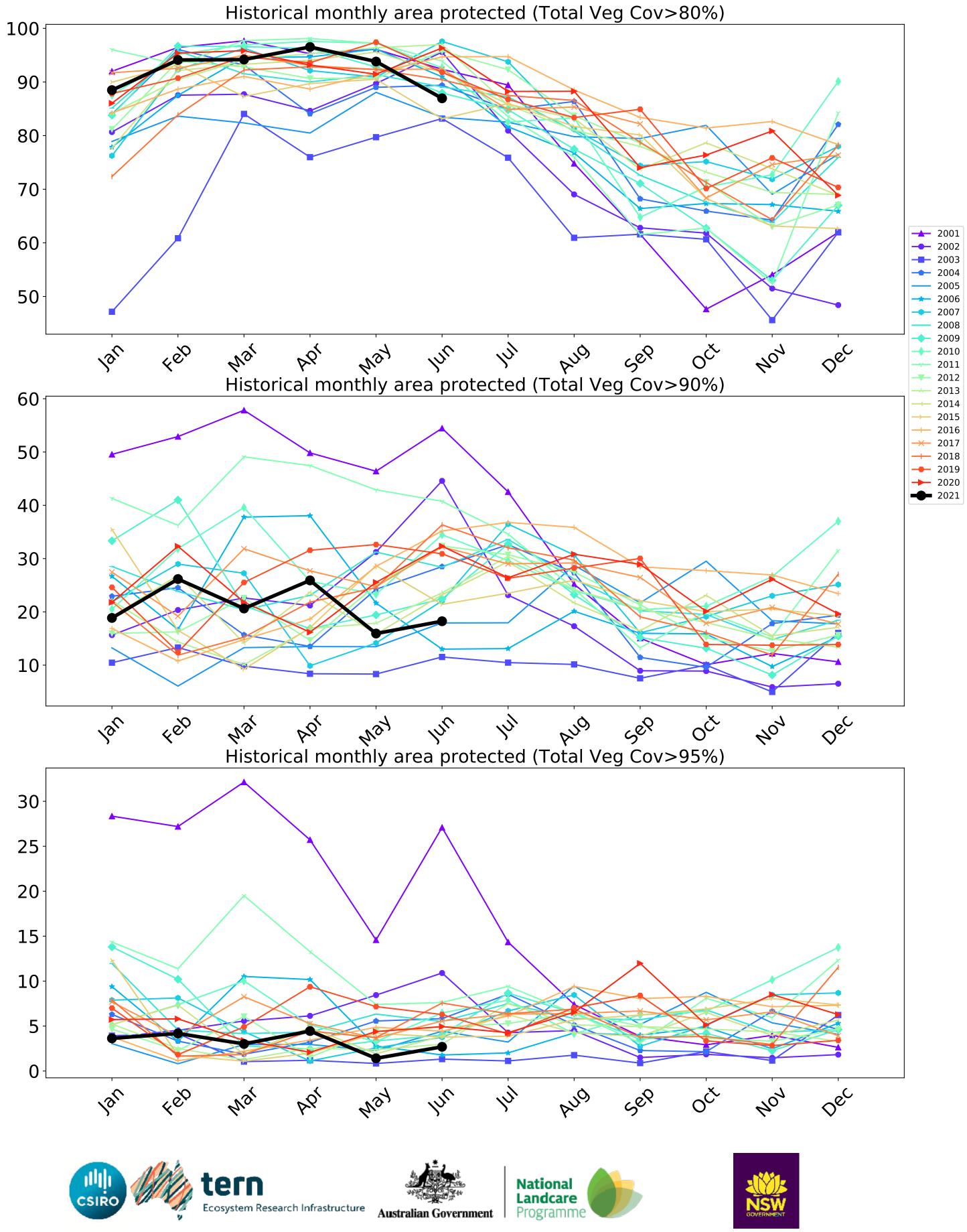
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100-98. 98 96 ---- above_70 **—** 10th 94 **——** 50th **——** 2021 Jun 92 90 88 86 Jan 4eb way In In In PQ Mar month tern Ecosystem Research Infrastructure Programme Australian Government

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

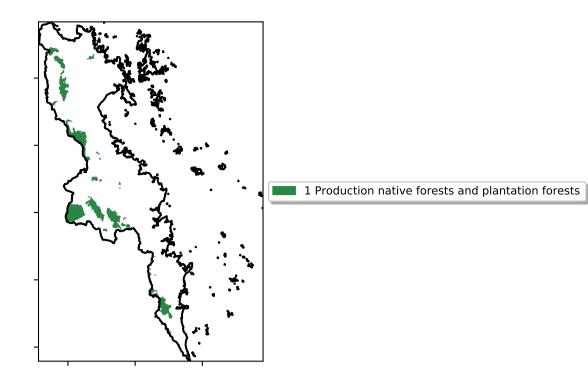




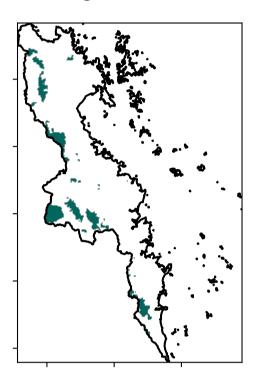


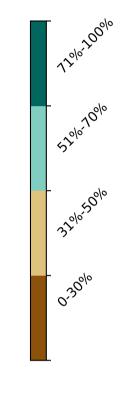
Production native forests and plantation forests

Land use and forest cover

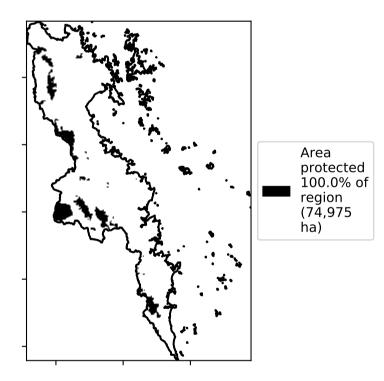


Total Vegetation Cover [%]

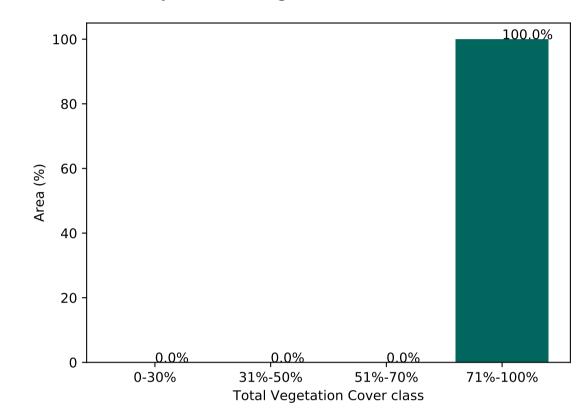




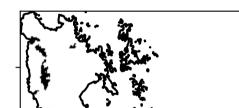
% Area protected from water erosion (>70%)





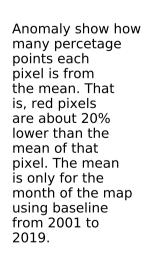


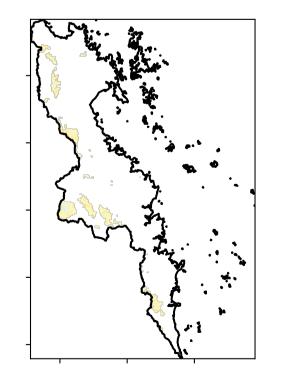
% Area protected from wind erosion (>50%)

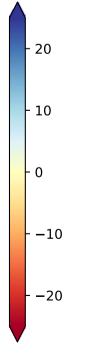


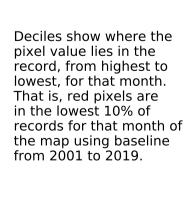
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

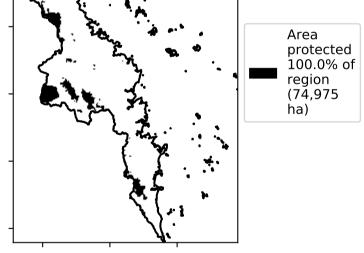
Total Vegetation Cover Anomaly [%]

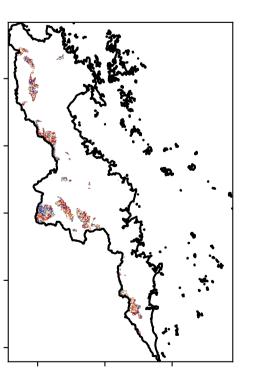






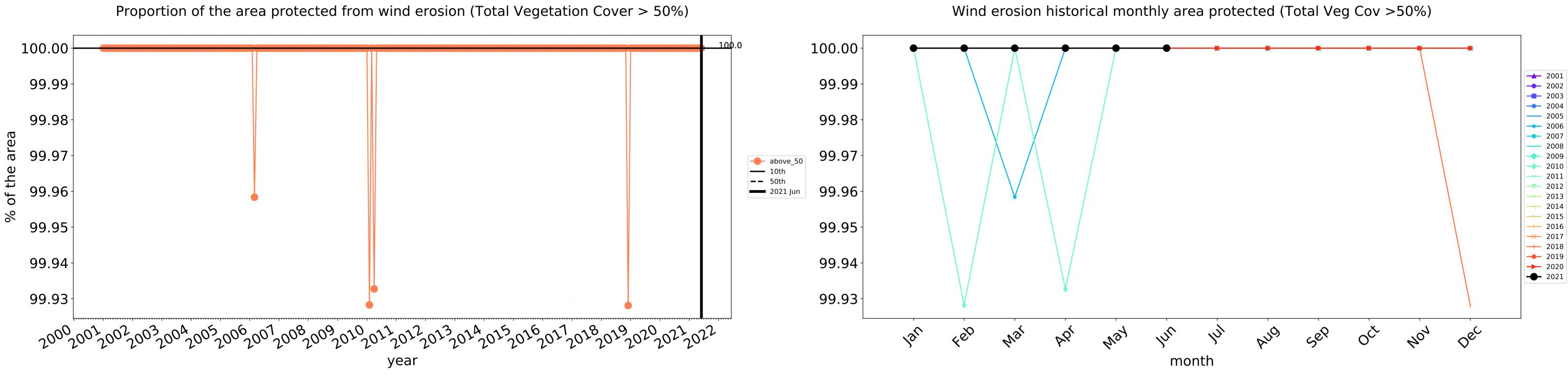




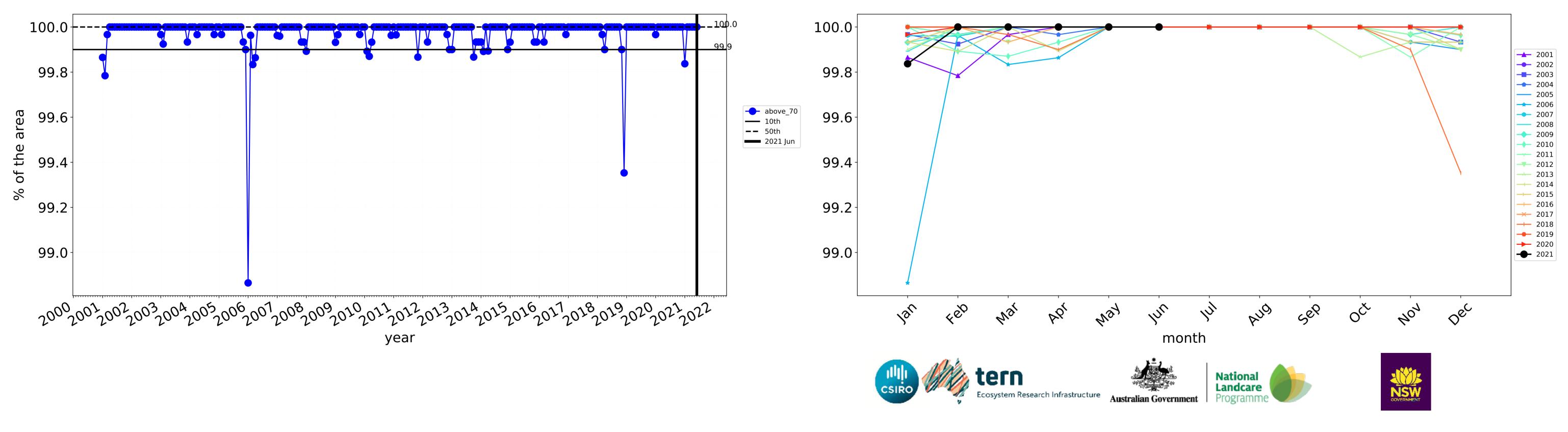




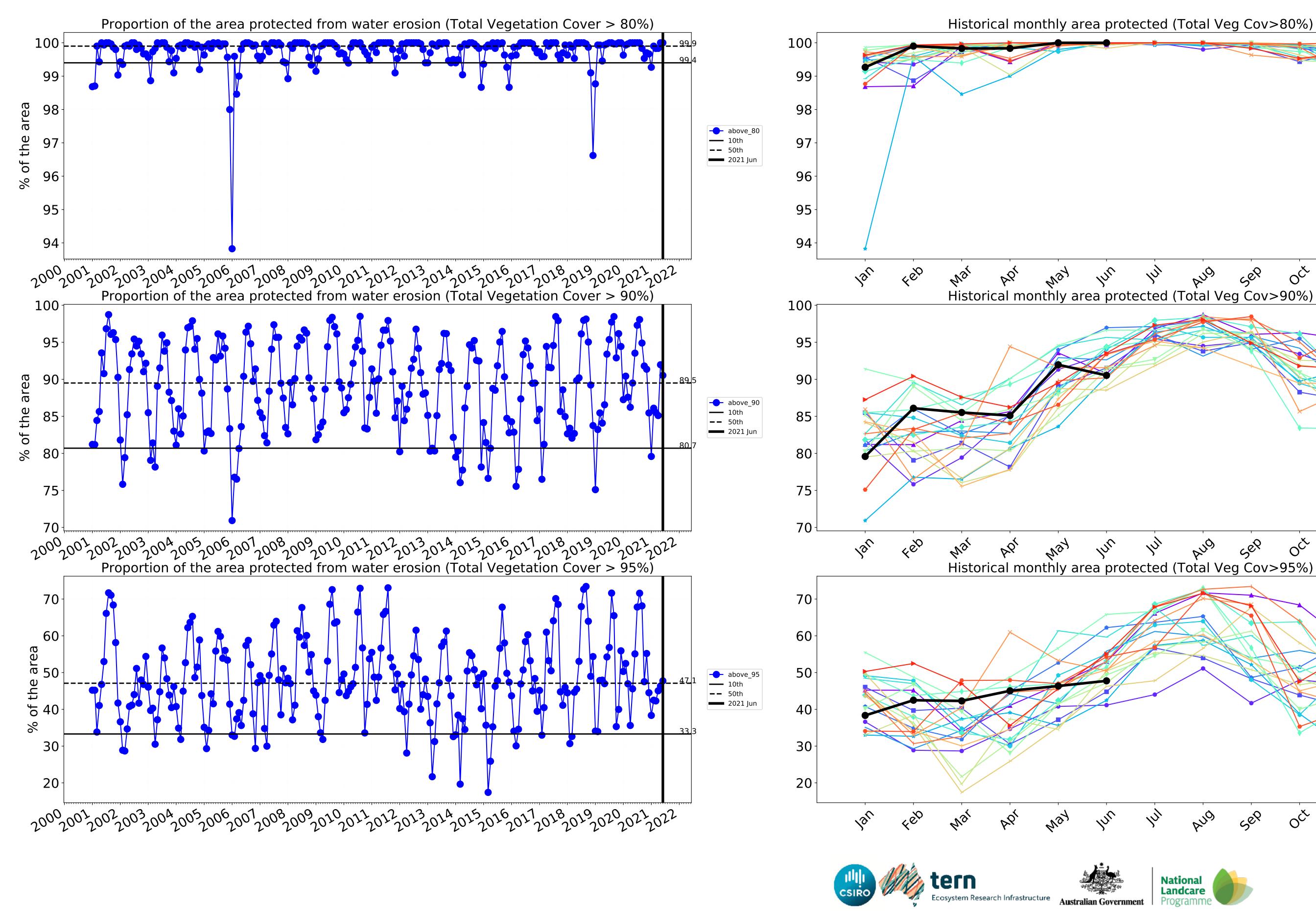




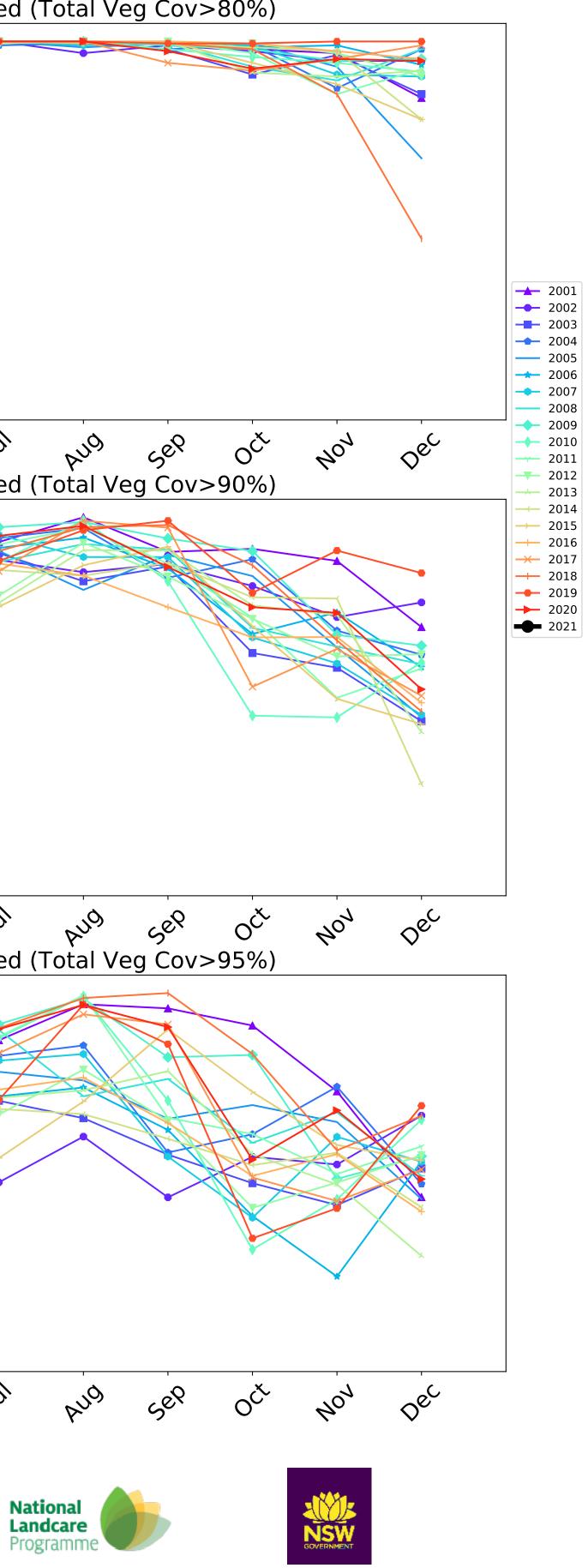
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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



4



Mackay Whitsunday (909,000 ha and no data 24,060 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	909,000	99.9% 908,025	99.7% 906,425	98.5% 895,650	94.0% 854,825	65.7% 596,775	30.7% 279,500
Conservation and natural environments	277,150	99.8% 276,550	99.5% 275,700	98.3% 272,475	96.5% 267,450	76.3% 211,425	35.2% 97,425
Conservation and natural environments non forest	7,375	99.0% 7,300	97.6% 7,200	91.5% 6,750	79.0% 5,825	49.8% 3,675	20.0% 1,475
Conservation and natural environments Woodland forest	75,075	99.8% 74,900	99.6% 74,750	98.8% 74,200	97.6% 73,300	81.8% 61,375	34.0% 25,500
Conservation and natural environments Forest (non woodland)	194,700	99.8% 194,350	99.5% 193,750	98.4% 191,525	96.7% 188,325	75.2% 146,375	36.2% 70,450
Agriculture	468,250	100.0% 468,225	100.0% 468,100	99.7% 466,750	94.7% 443,650	61.3% 286,825	29.4% 137,675
Grazing	298,250	100.0% 298,225	99.9% 298,100	99.8% 297,575	99.2% 295,825	85.8% 255,800	44.6% 133,100
Grazing non forest	189,125	100.0% 189,100	99.9% 188,975	99.7% 188,475	98.8% 186,950	81.2% 153,650	40.3% 76,200
Grazing Woodland forest	80,575	100.0% 80,575	100.0% 80,575	100.0% 80,550	99.7% 80,350	93.9% 75,675	49.5% 39,850
Grazing - Forest (non woodland)	28,550	100.0% 28,550	100.0% 28,550	100.0% 28,550	99.9% 28,525	92.7% 26,475	59.7% 17,050
Irrigation	169,950	100.0% 169,950	100.0% 169,950	99.5% 169,125	87.0% 147,775	18.2% 31,000	2.7% 4,575
Production native forests and plantation forests	74,975	100.0% 74,975	100.0% 74,975	100.0% 74,975	100.0% 74,975	90.5% 67,875	47.7% 35,800

