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

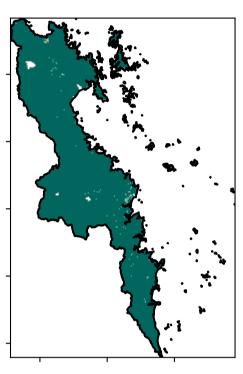


Vegetation Cover Jul 2021

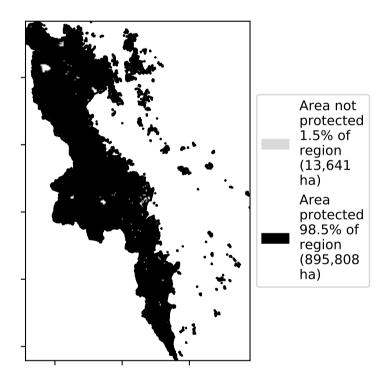
Land use and forest cover

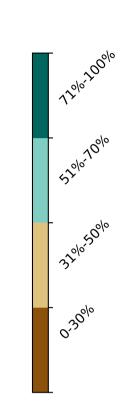
Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - 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 [%]

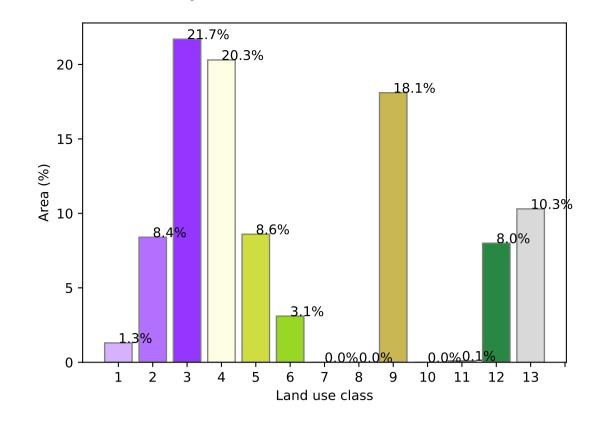


% Area protected from water erosion (>70%)

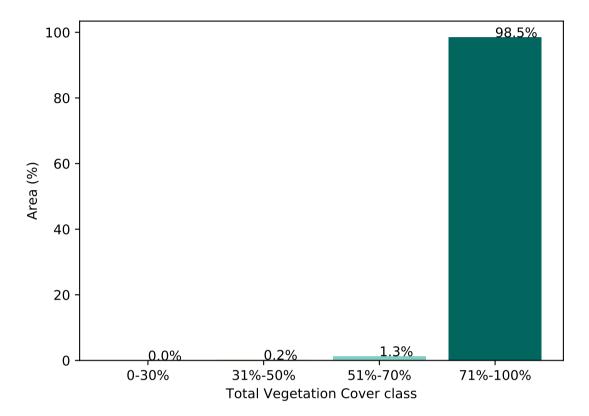




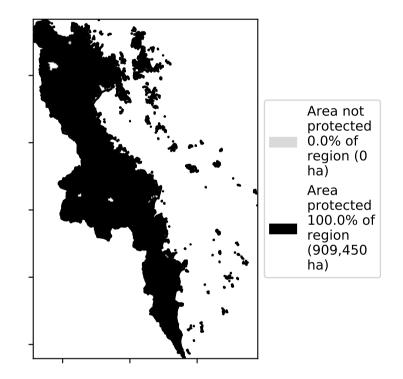
Proportion of each land class in area



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

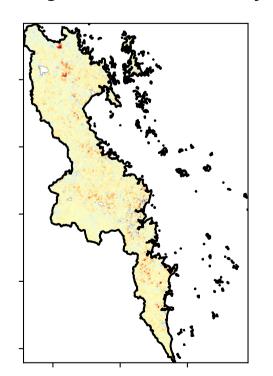
of Australia (2018)

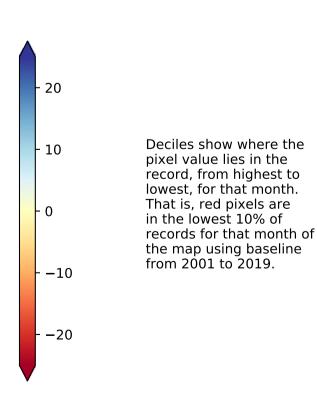
Derived from

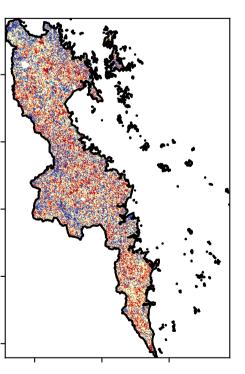
Use of Australia

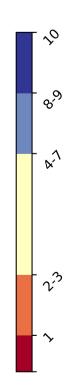
Land Use and Forests

Catchment Scale Land

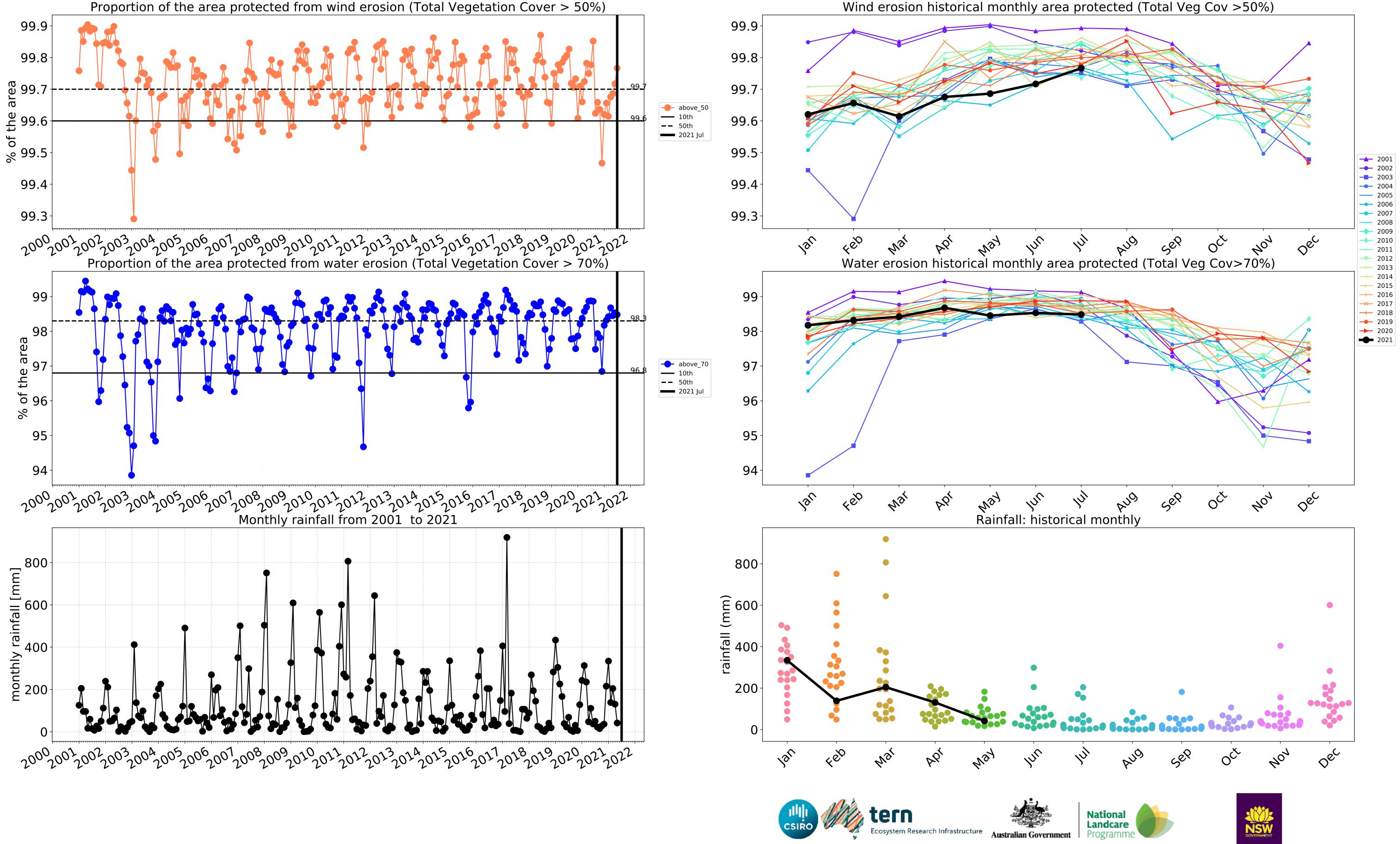


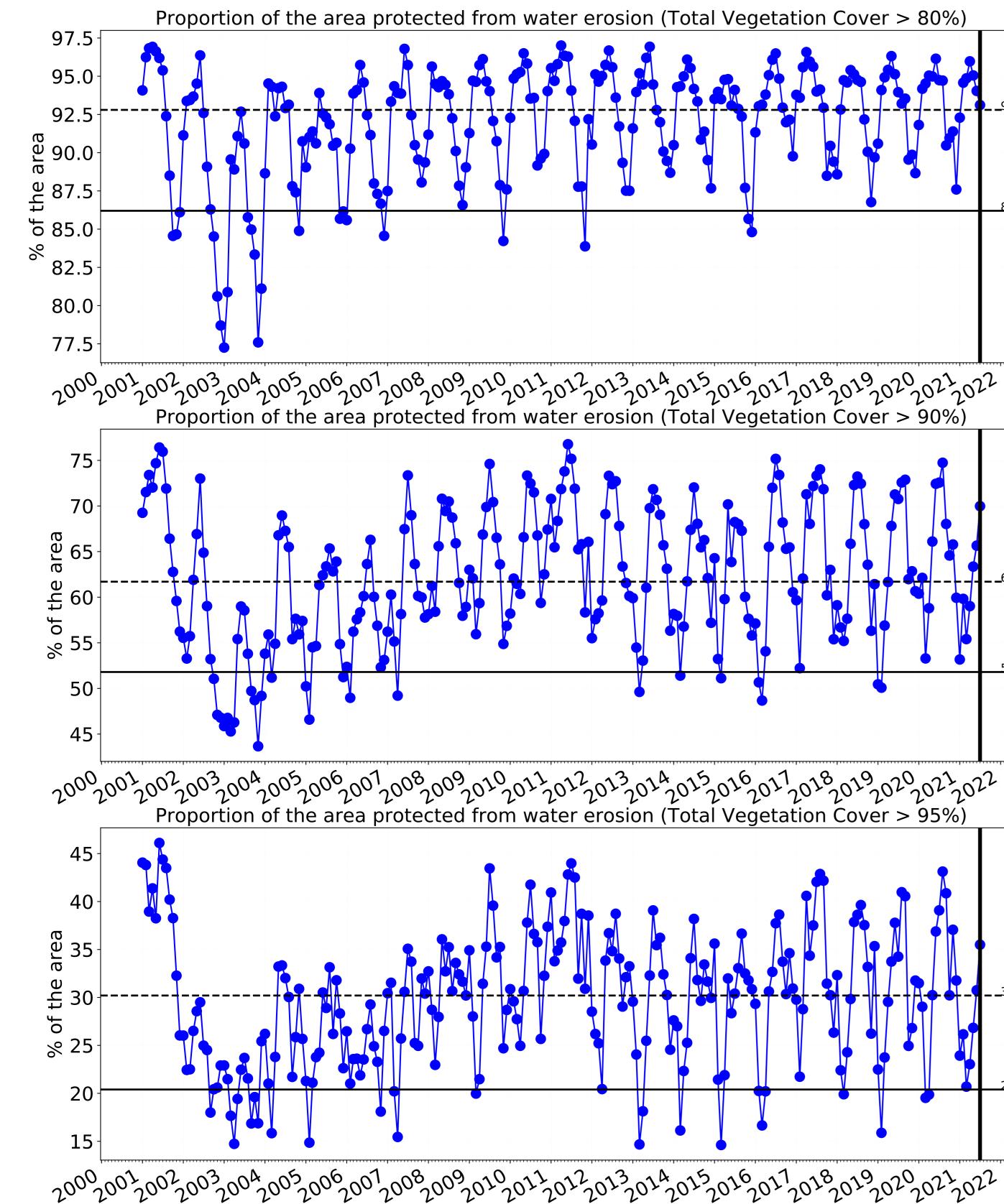


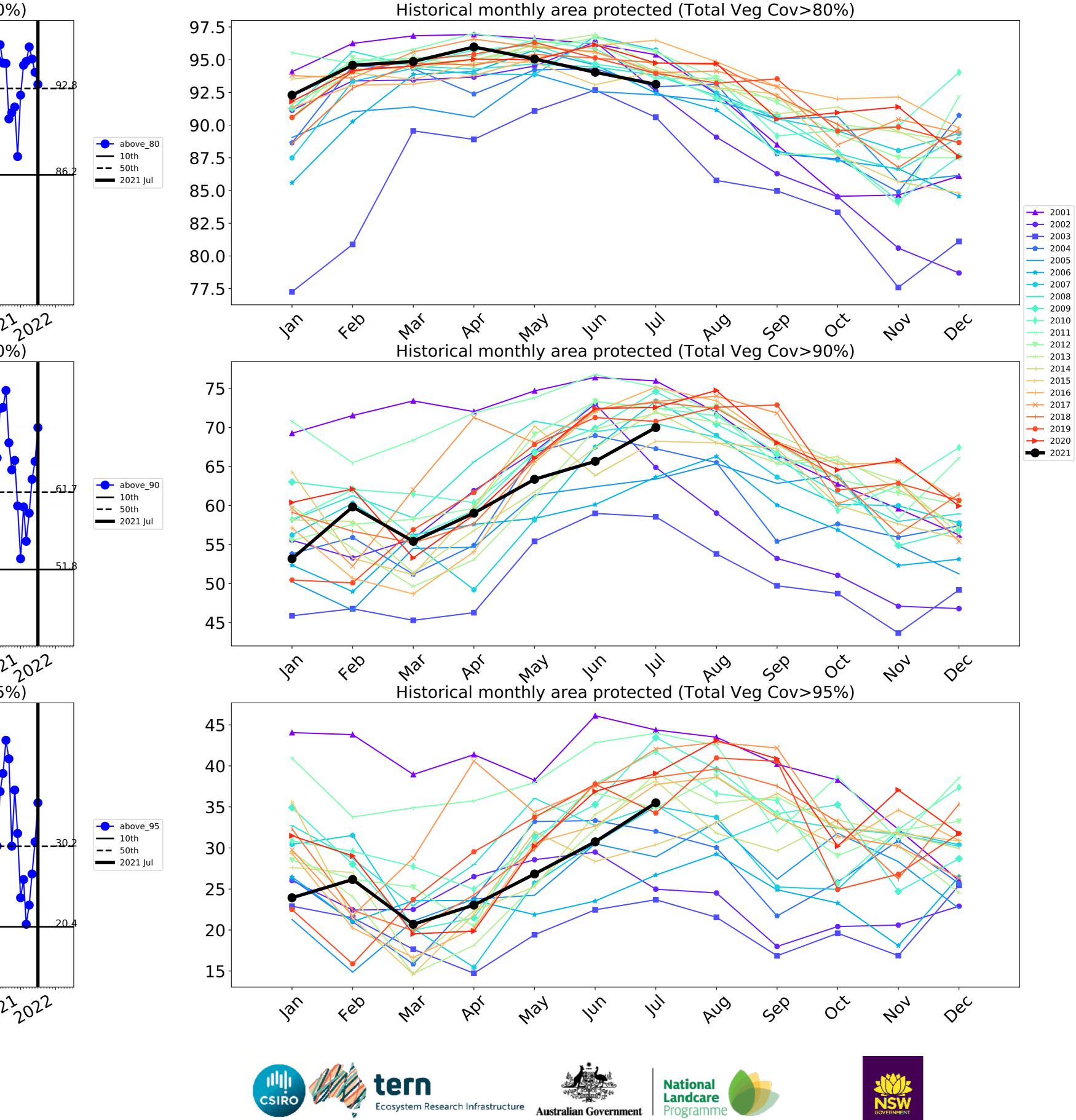








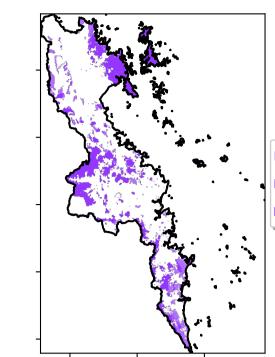






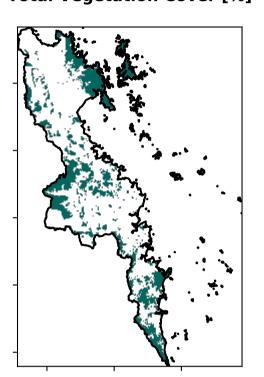
Conservation and natural environments

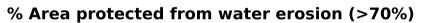
Land use and forest cover

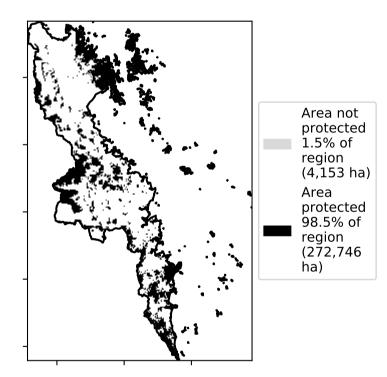


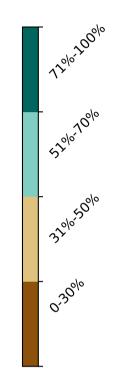
1 Conservation and natural environments - Nonforest 2 Conservation and natural environments – Woodland forest 3 Conservation and natural environments - Non-woodland forest

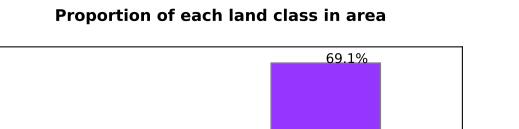
Total Vegetation Cover [%]

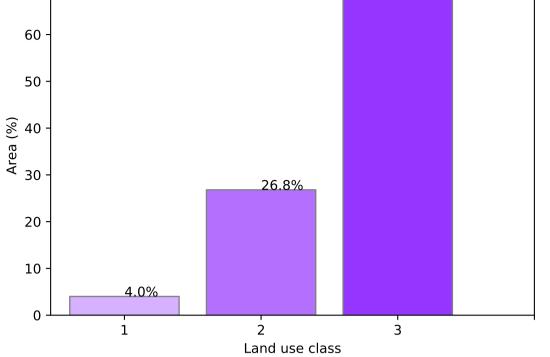






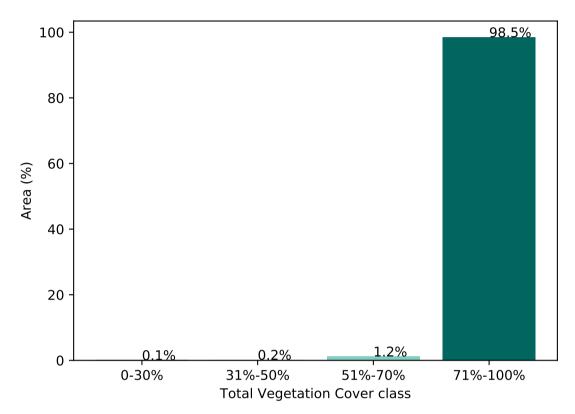






70

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]

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

Catchment Scale Land Use and Forests

of Australia (2018)

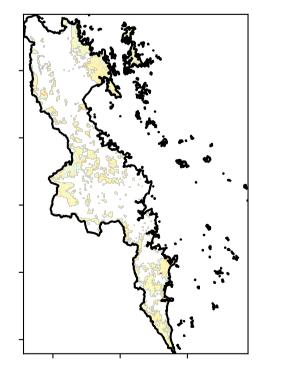
(2018) and Forests

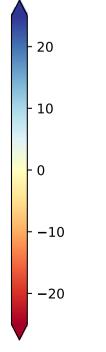
of Australia (2018)

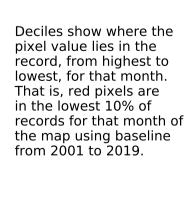
Catchment Scale Land

Derived from

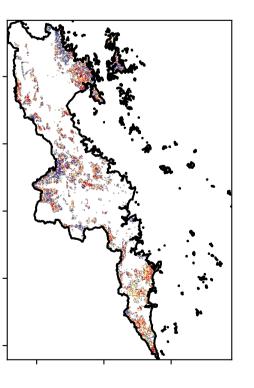
Use of Australia

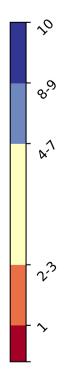




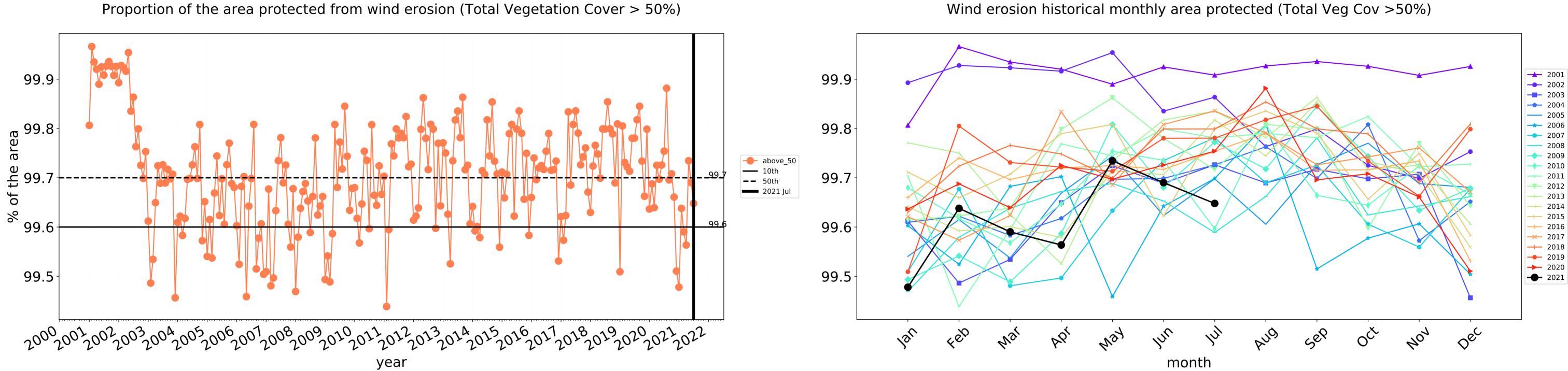


Area not protected 0.0% of region (0 ha) Area protected 100.0% of region (276,900 ha)

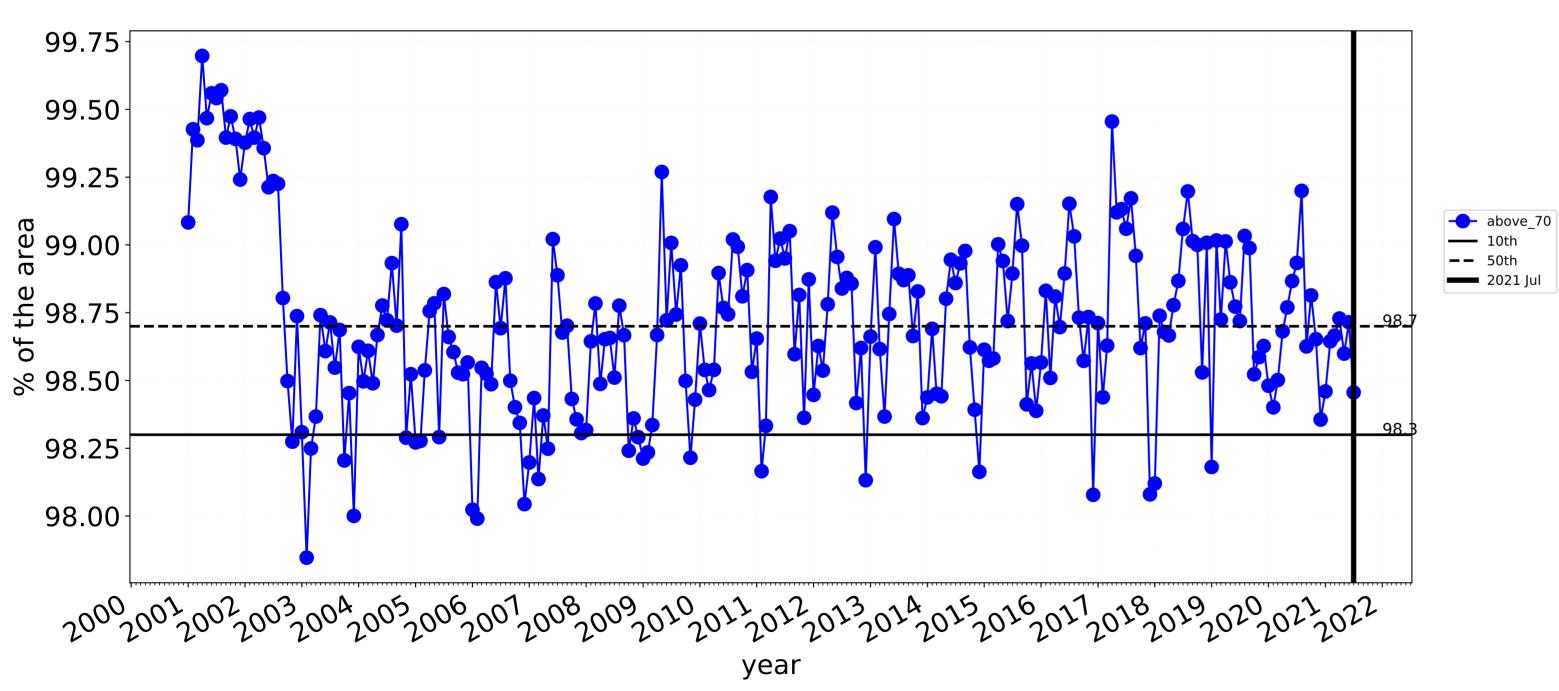






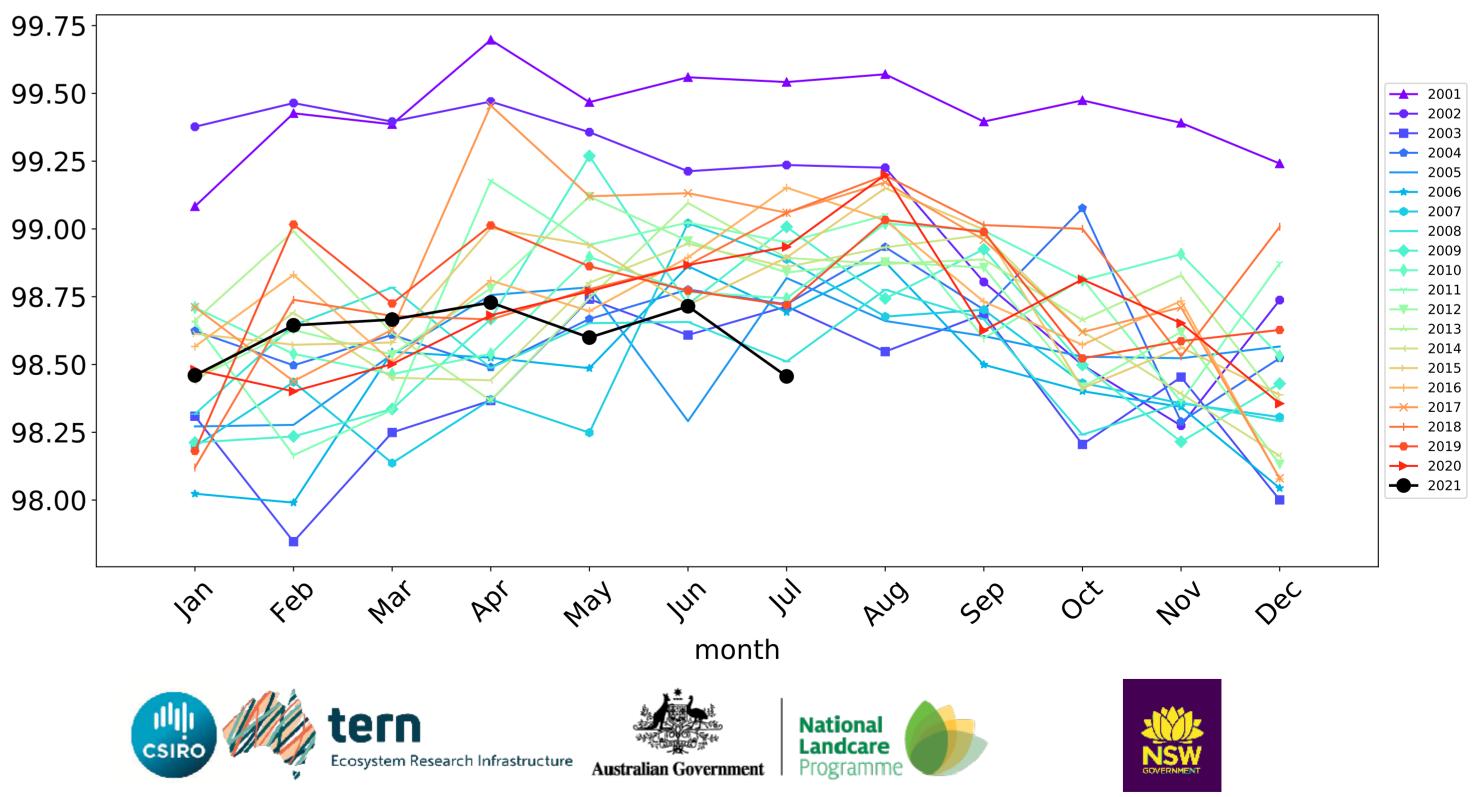


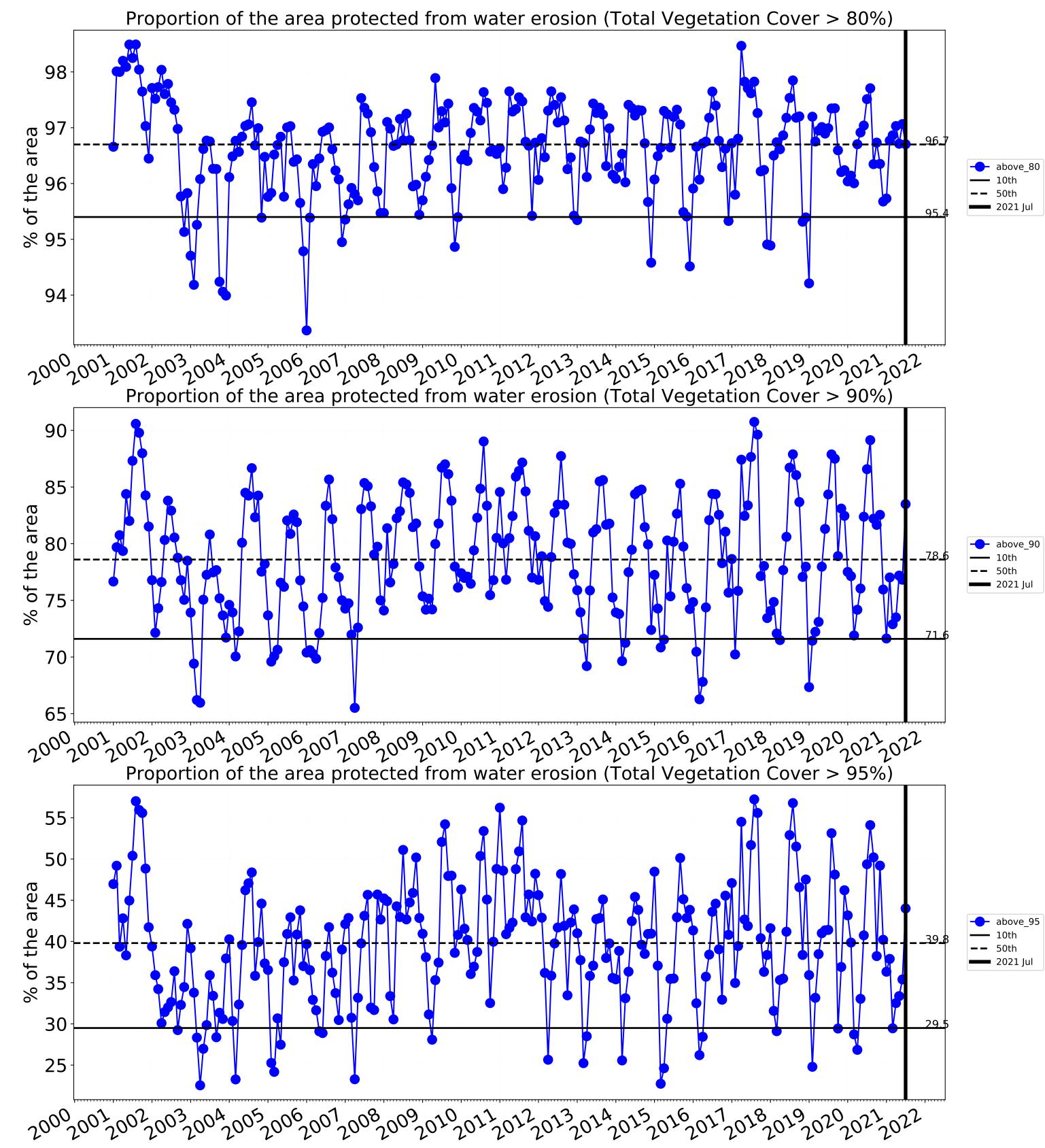
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)

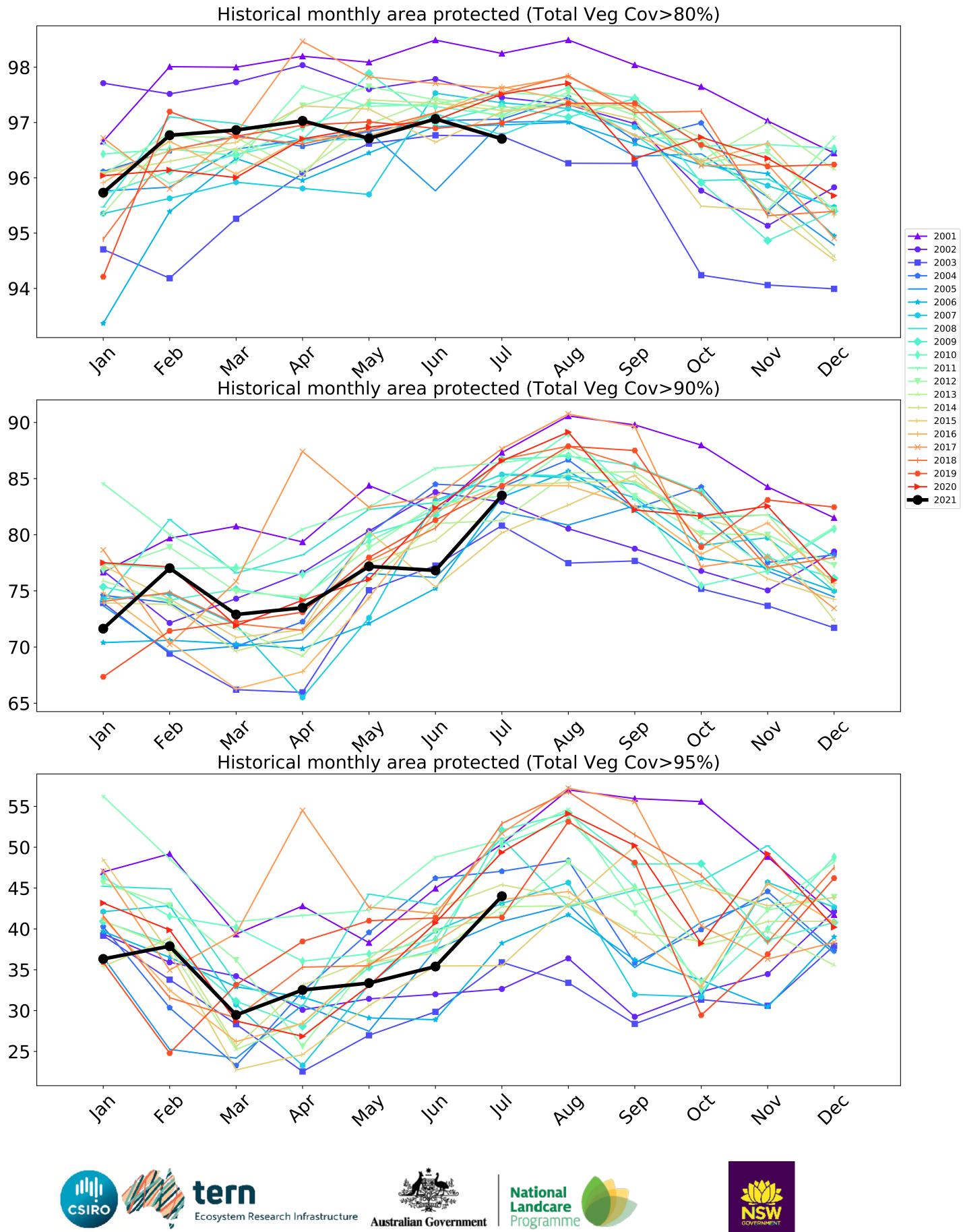


Conservation and natural environments timeseries

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



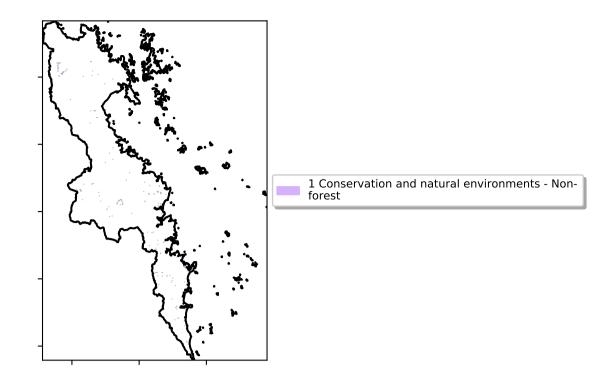




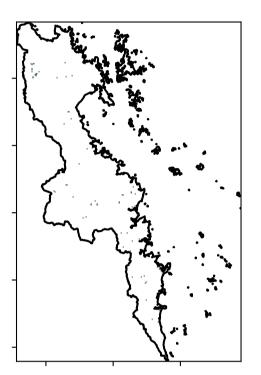


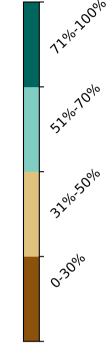
Conservation and natural environments non forest

Land use and forest cover

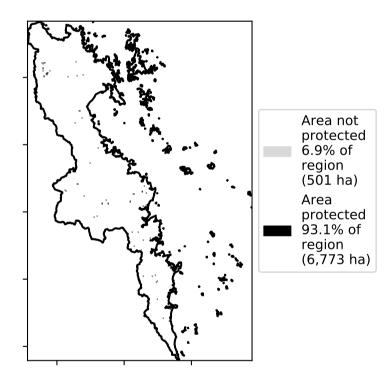


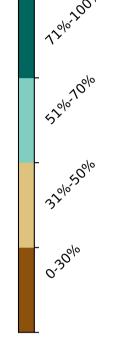
Total Vegetation Cover [%]

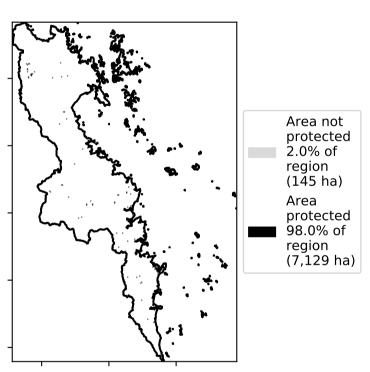




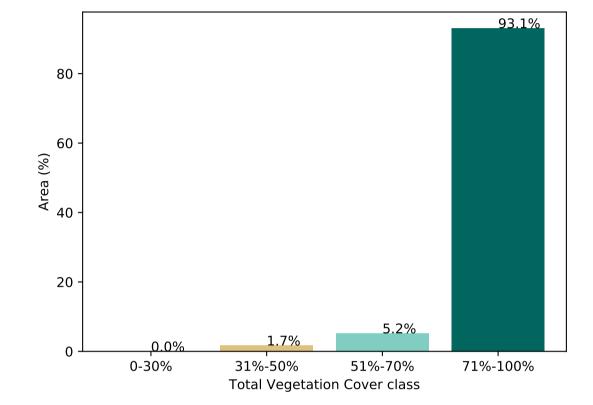
% Area protected from water erosion (>70%)





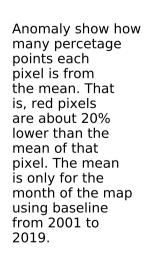


Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)

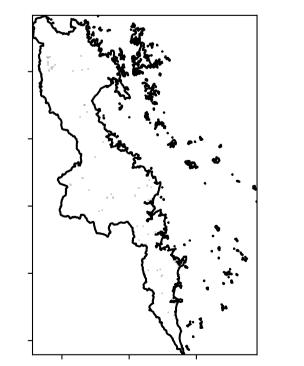
Total Vegetation Cover Anomaly [%]

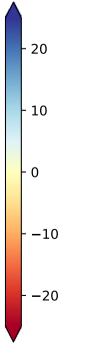


Catchment Scale Land Use and Forests of Australia (2018) Derived from

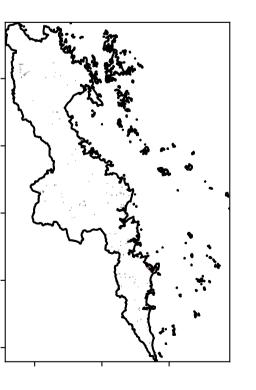
Use of Australia (2018) and Forests of Australia (2018)

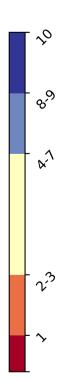
Catchment Scale Land



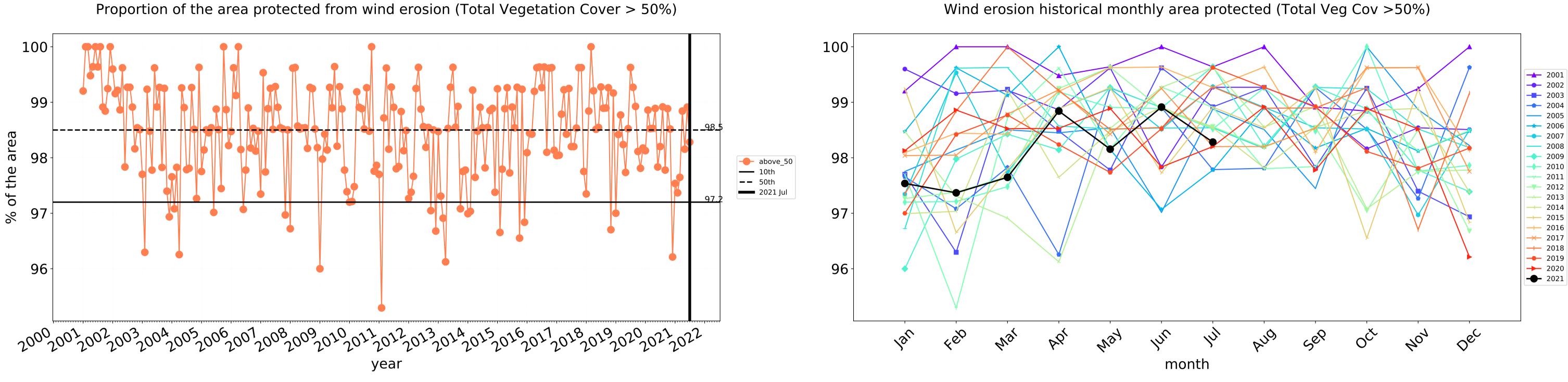


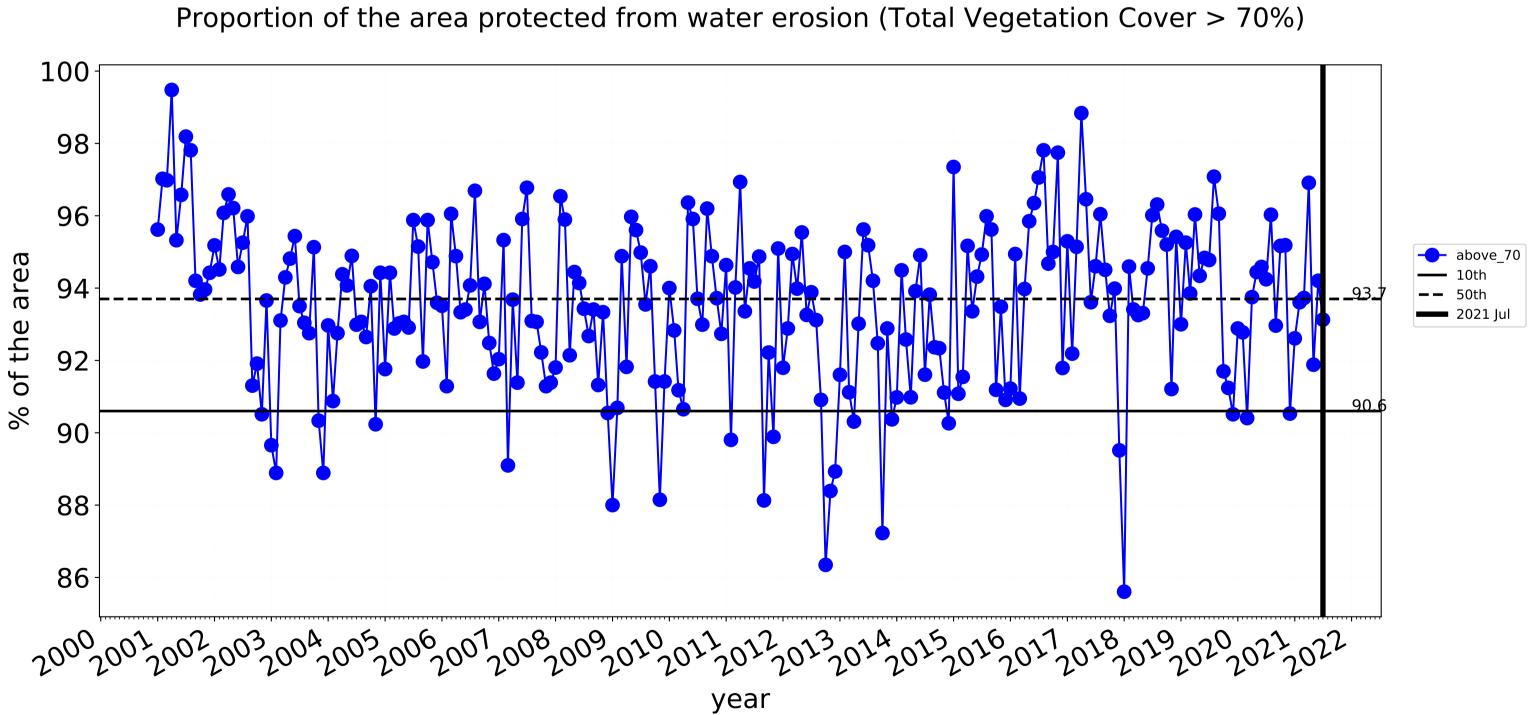




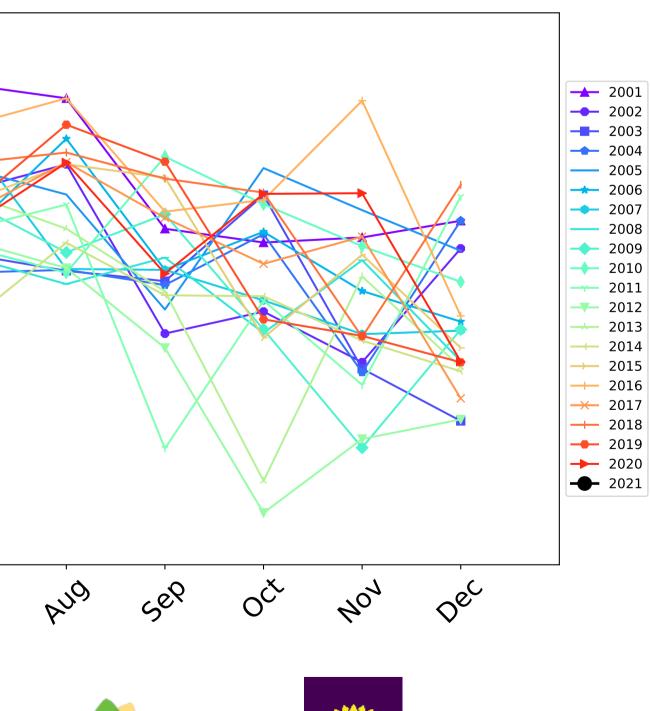


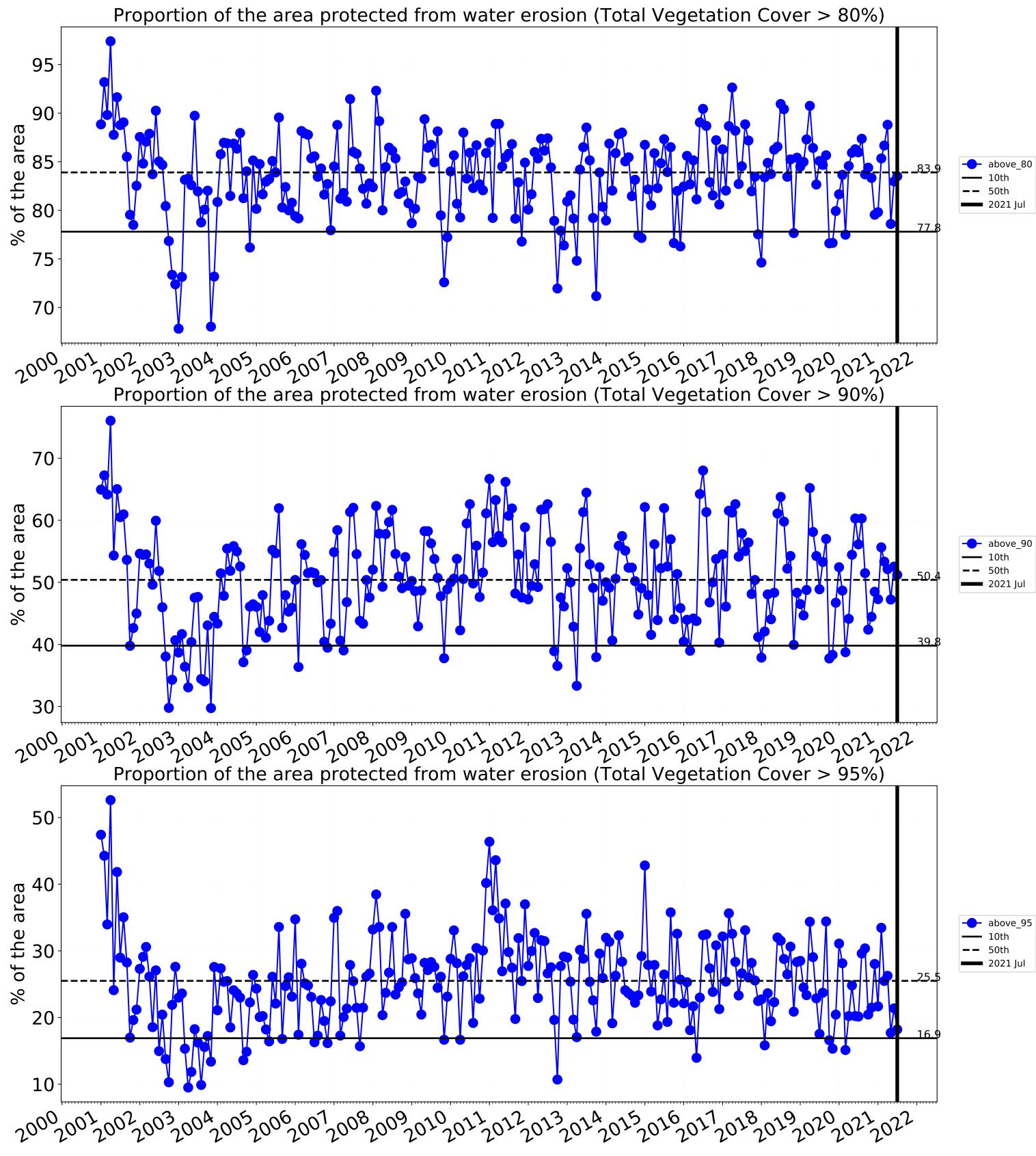


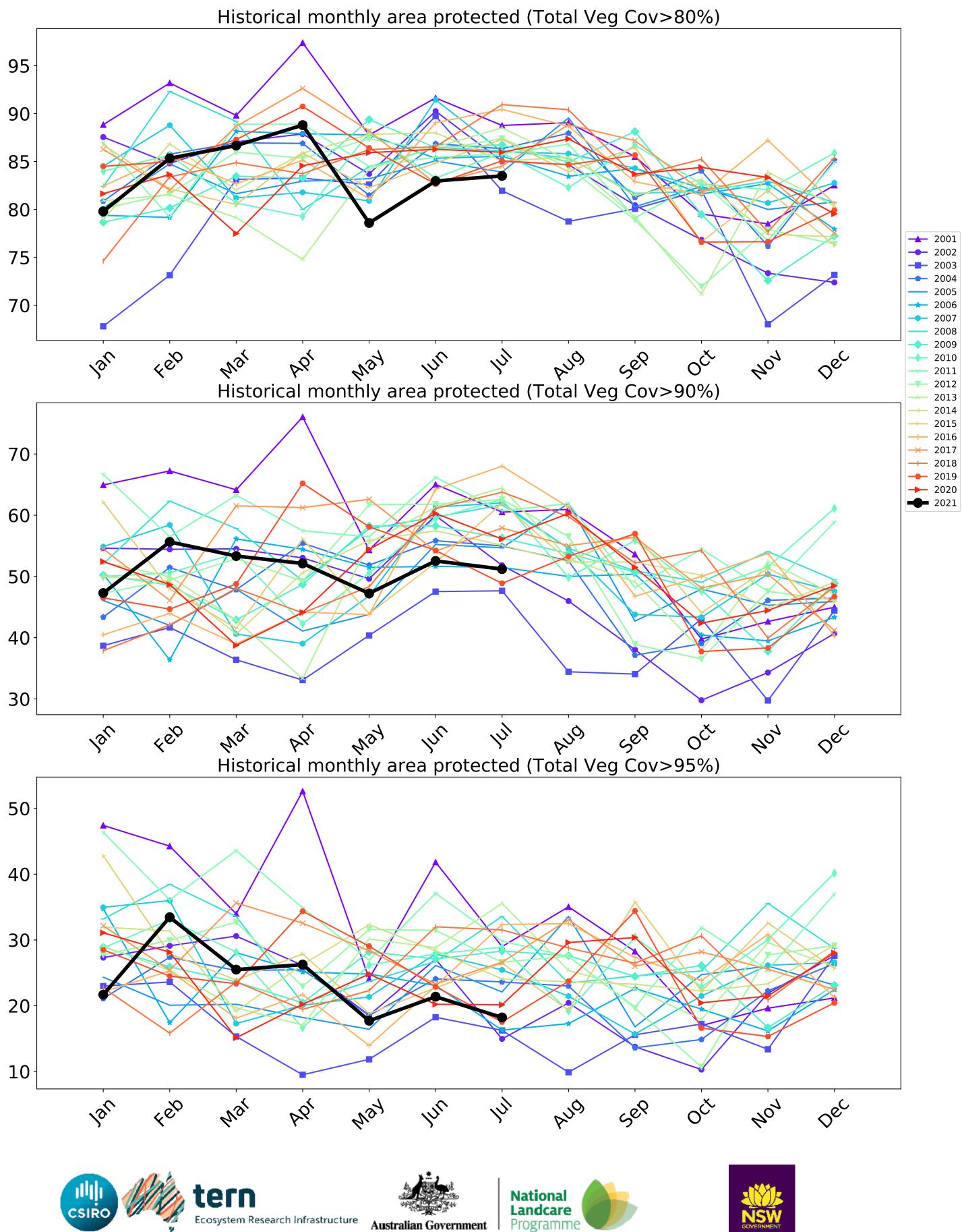




Water erosion historical monthly area protected (Total Veg Cov>70%) 100 { 98-96 94 92 90 88 86-AUG OČ Jan feb May In Ser (J) 291 Mai month National Landcare NSW Ecosystem Research Infrastructure Australian Government Programm



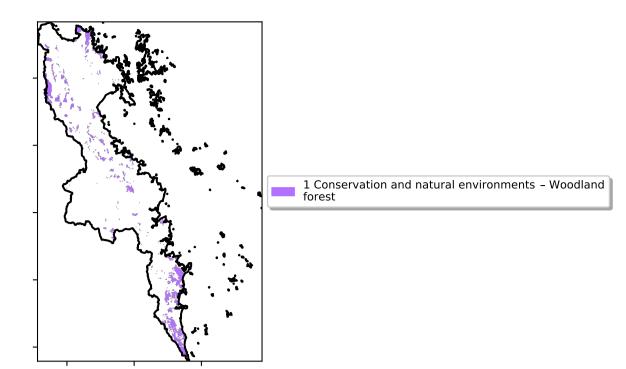




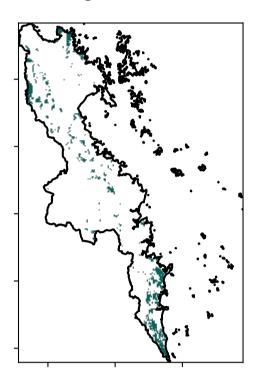


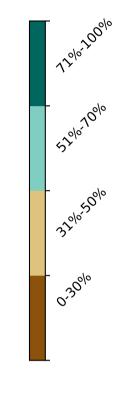
Conservation and natural environments Woodland forest

Land use and forest cover

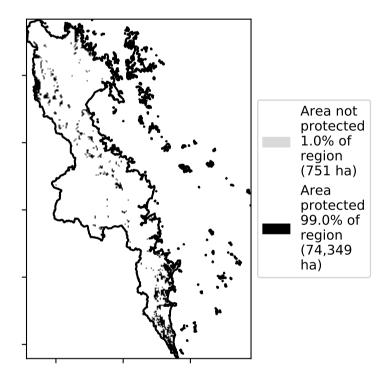


Total Vegetation Cover [%]

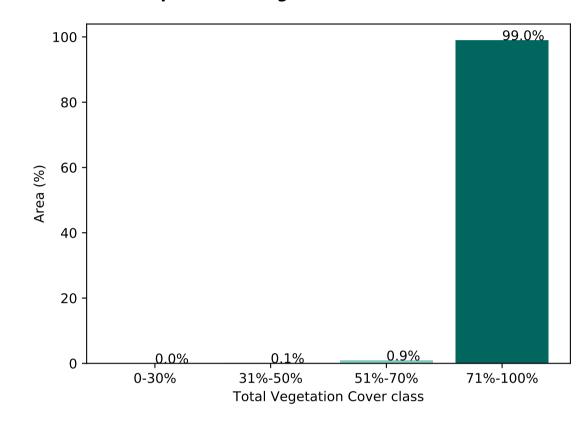




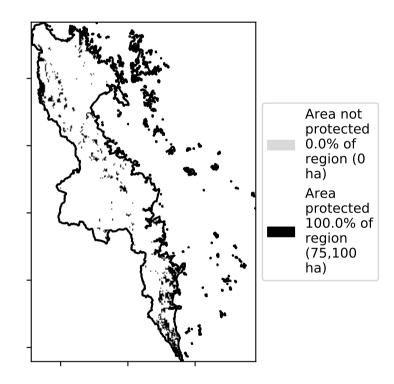
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



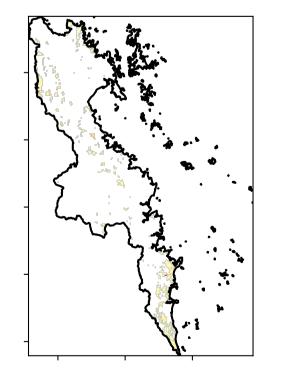
% Area protected from wind erosion (>50%)

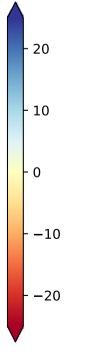


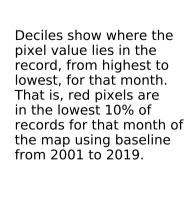
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

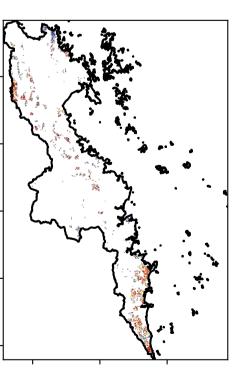
Total Vegetation Cover Anomaly [%]

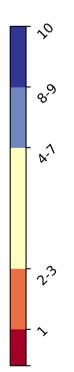
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



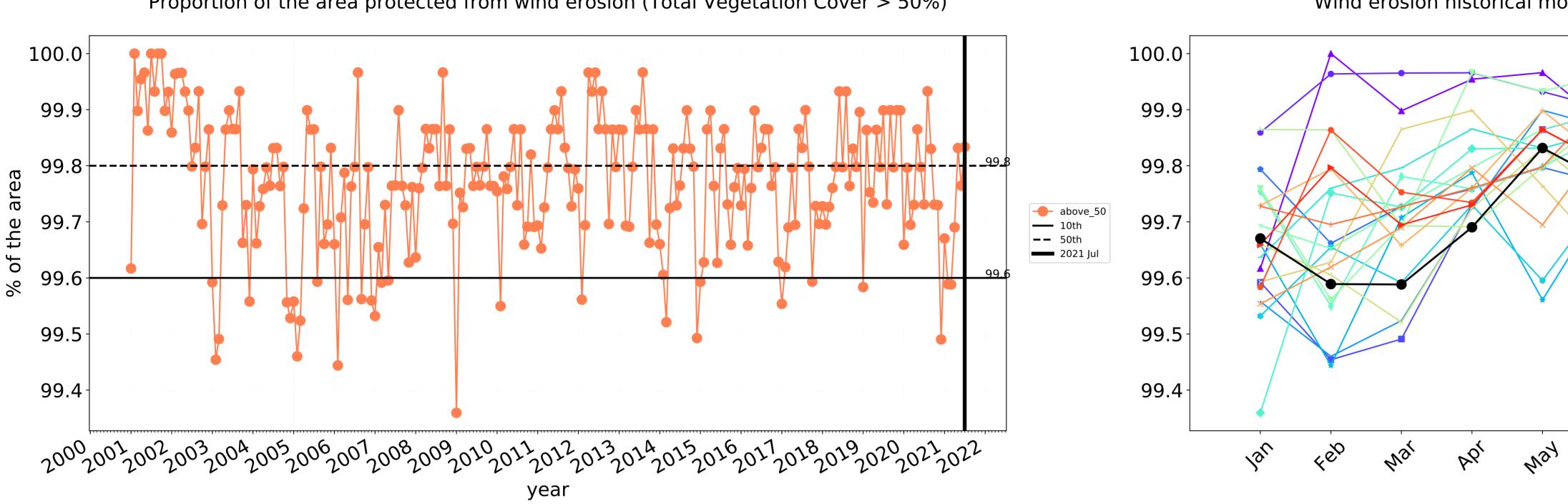






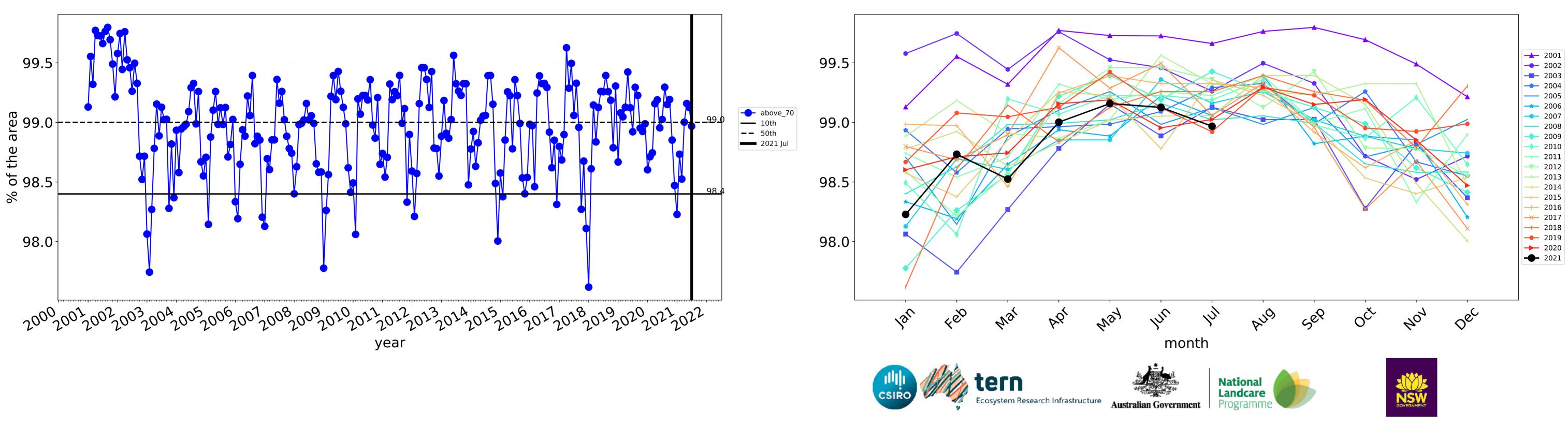






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

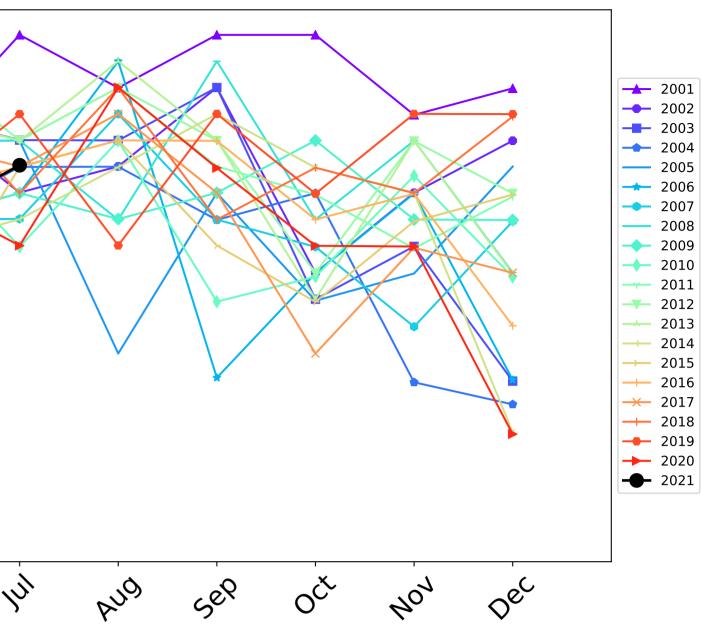
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

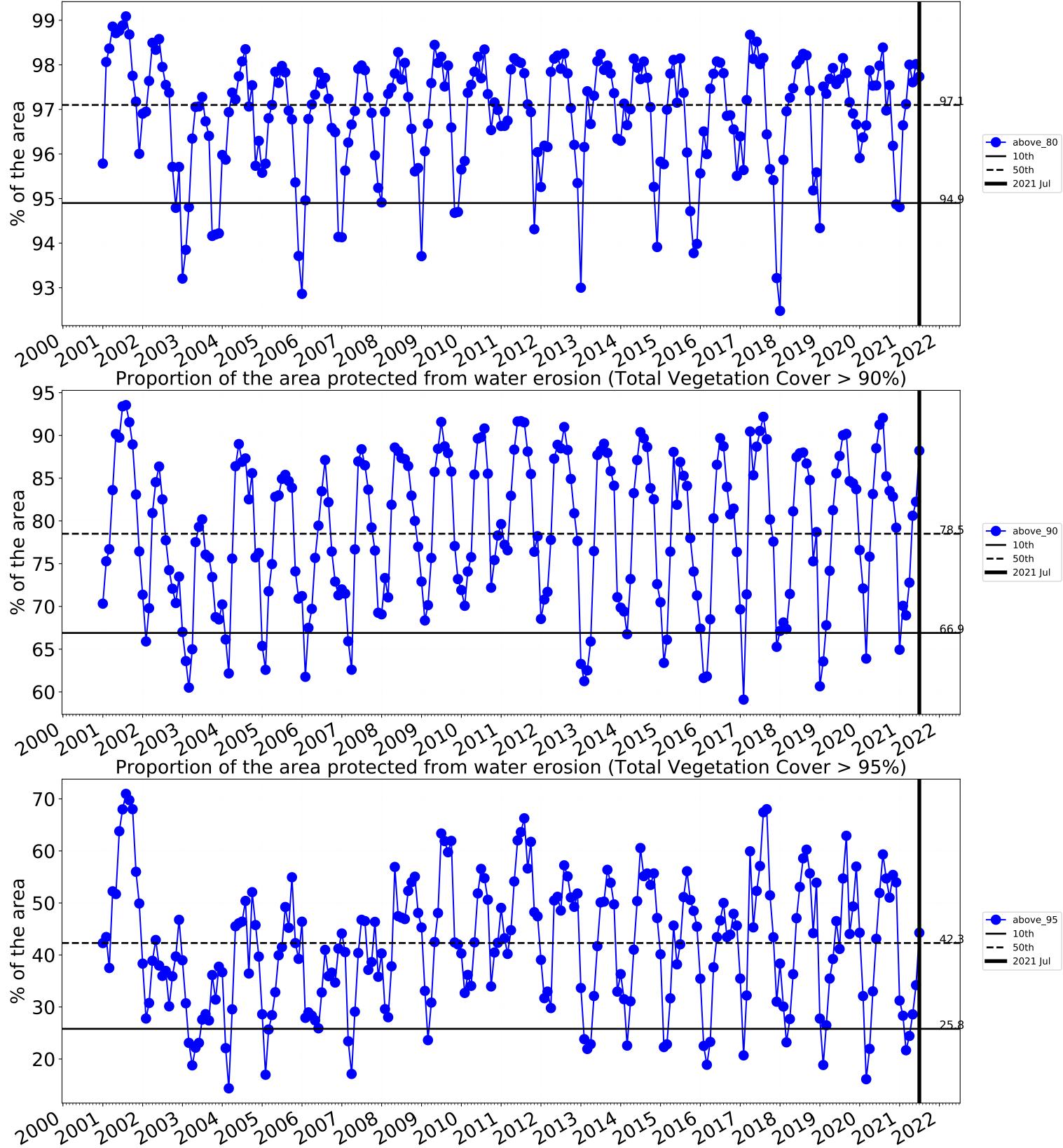


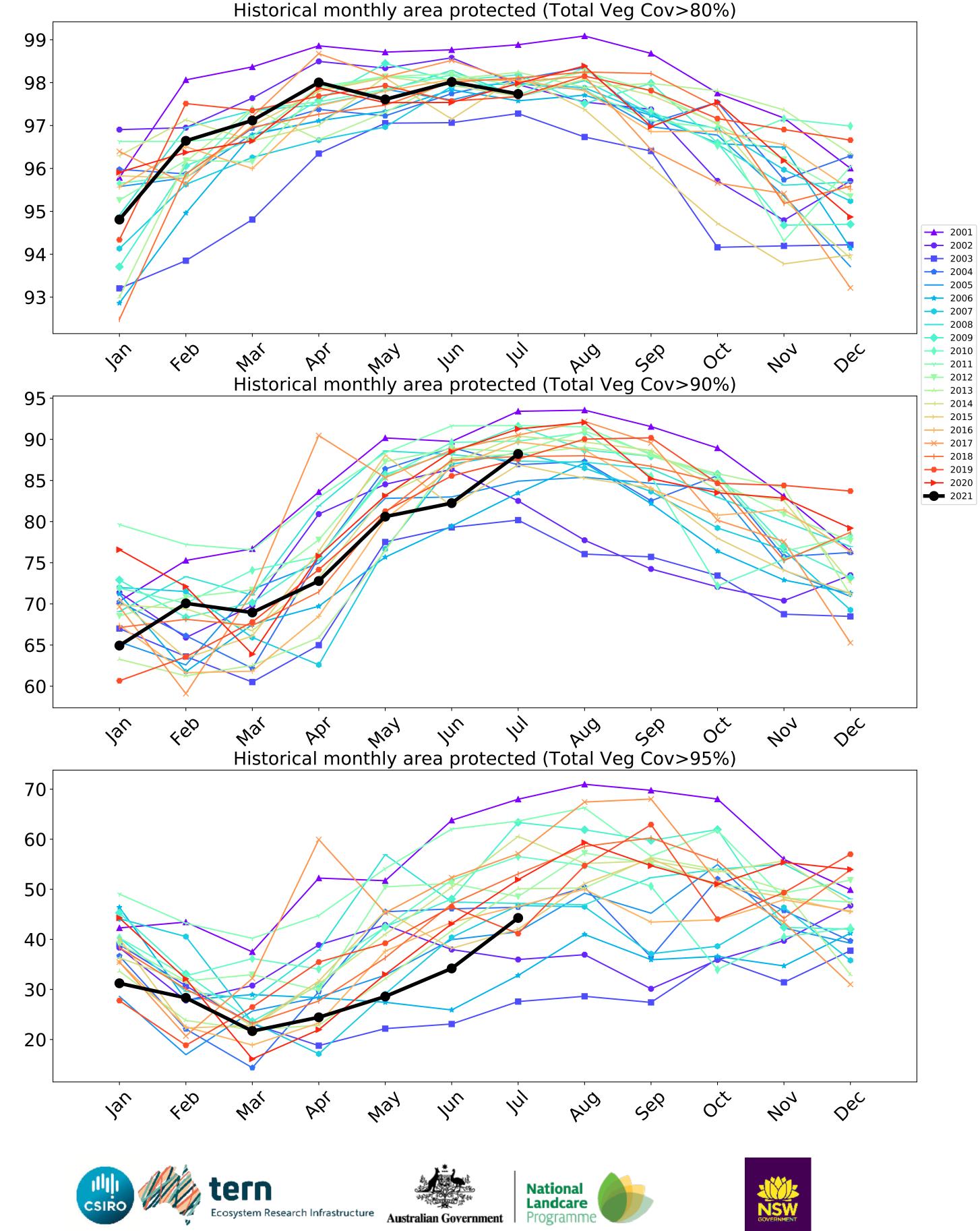
JUJ



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

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

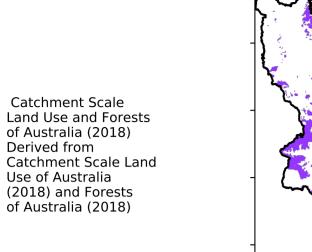






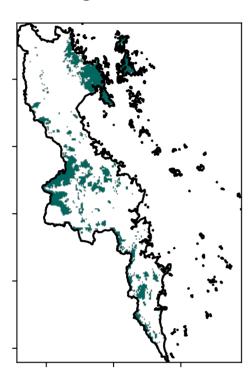
Conservation and natural environments Forest (non woodland)

Land use and forest cover

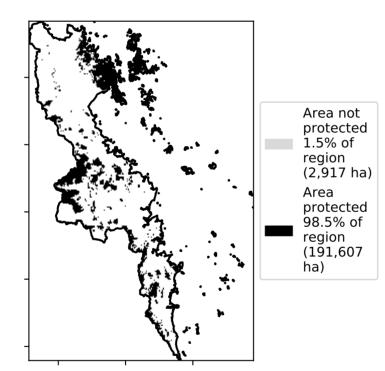


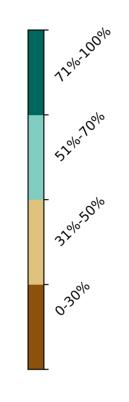
1 Conservation and natural environments – Nonwoodland forest

Total Vegetation Cover [%]

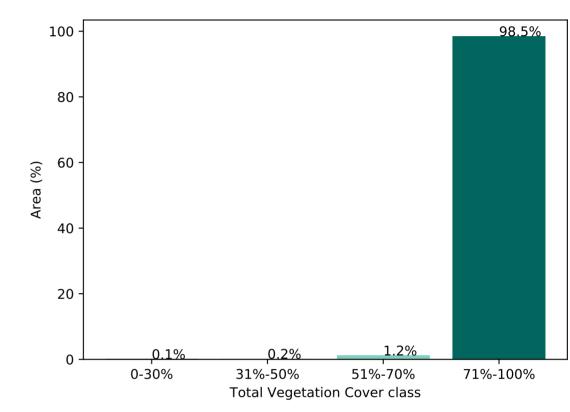




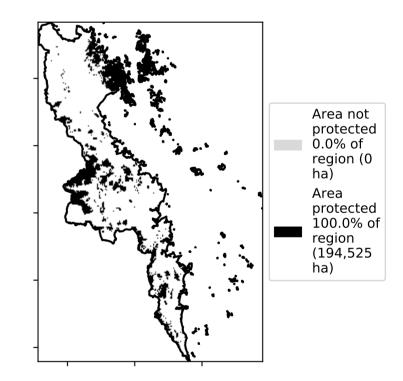




Proportion of vegetation cover class in area

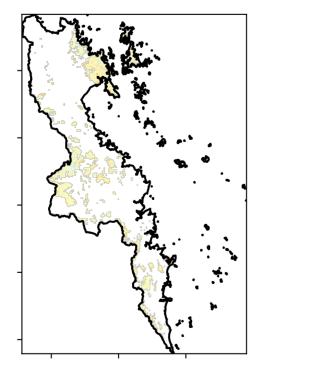


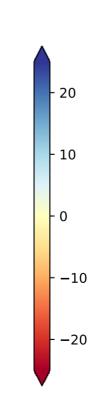
% Area protected from wind erosion (>50%)

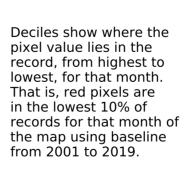


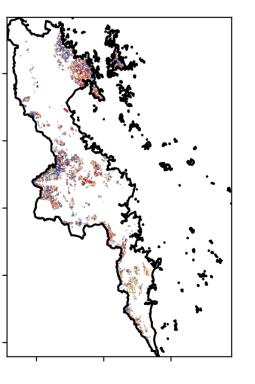
Total Vegetation Cover Anomaly [%]

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.



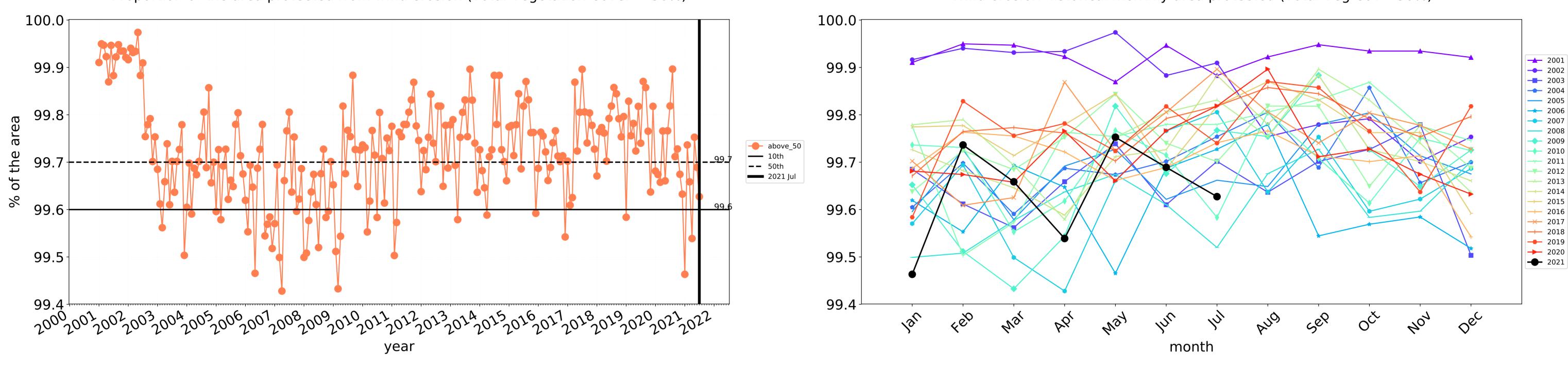




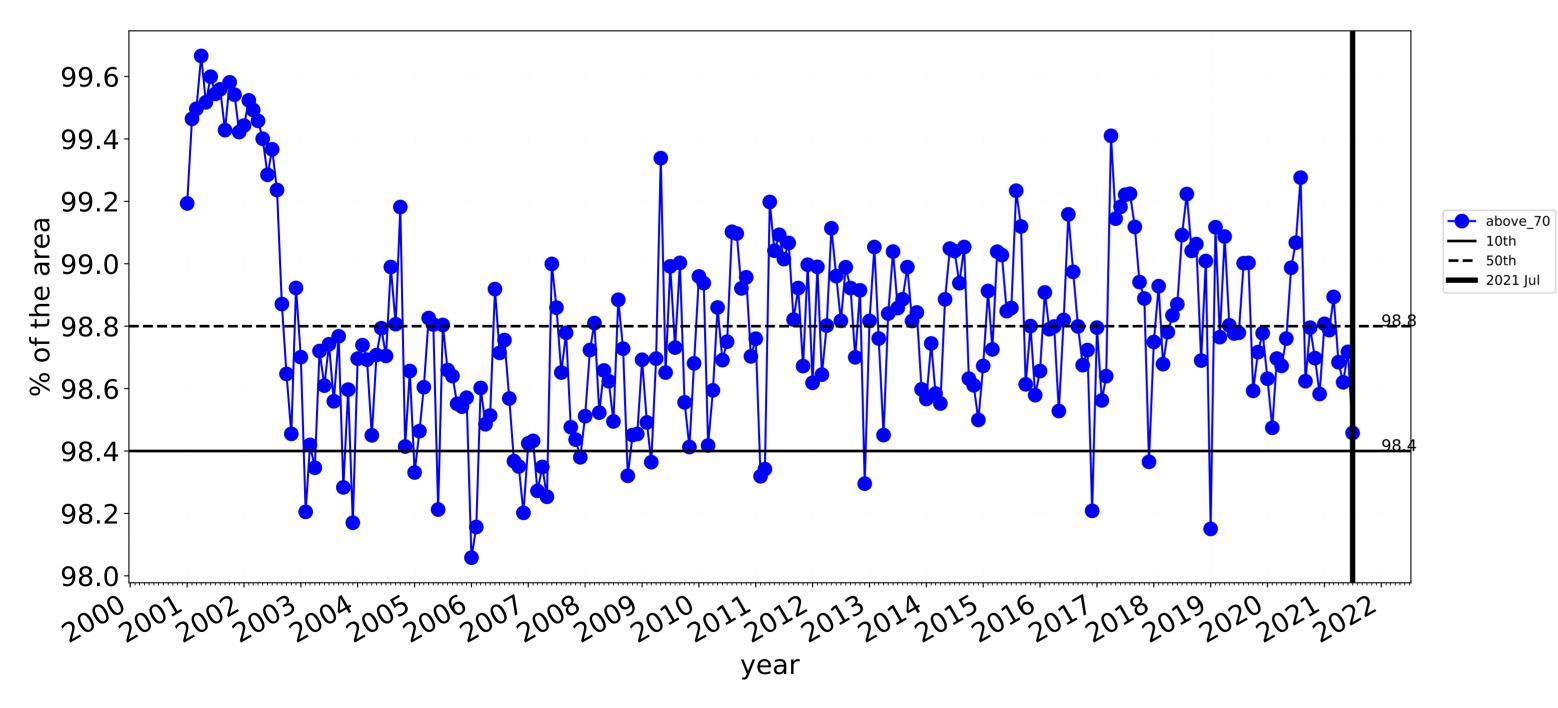








Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



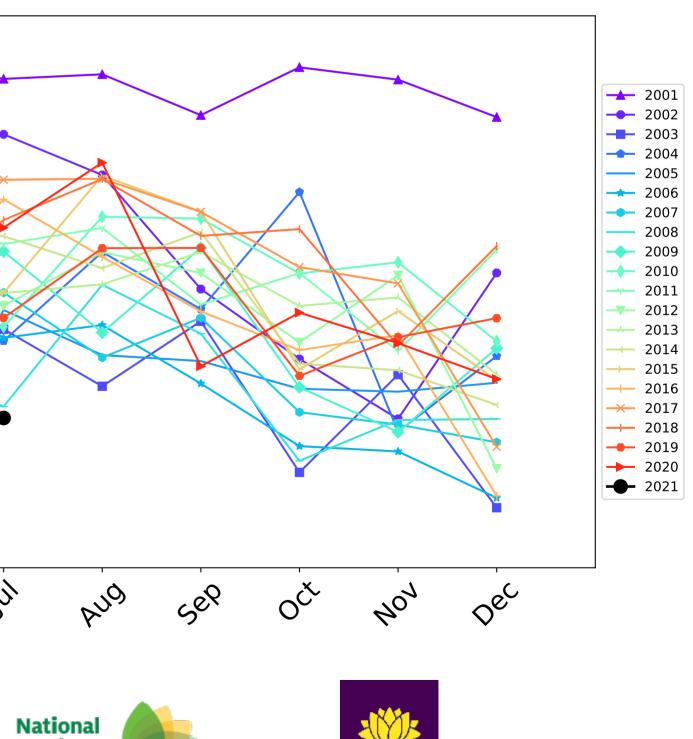
99.6 99.4 99.2 99.0 98.8 98.6 98.4 98.2 98.0 lar 4eb In May Jul 1 P.Q Mai month tern Ecosystem Research Infrastructure Australian Government

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

Landcare

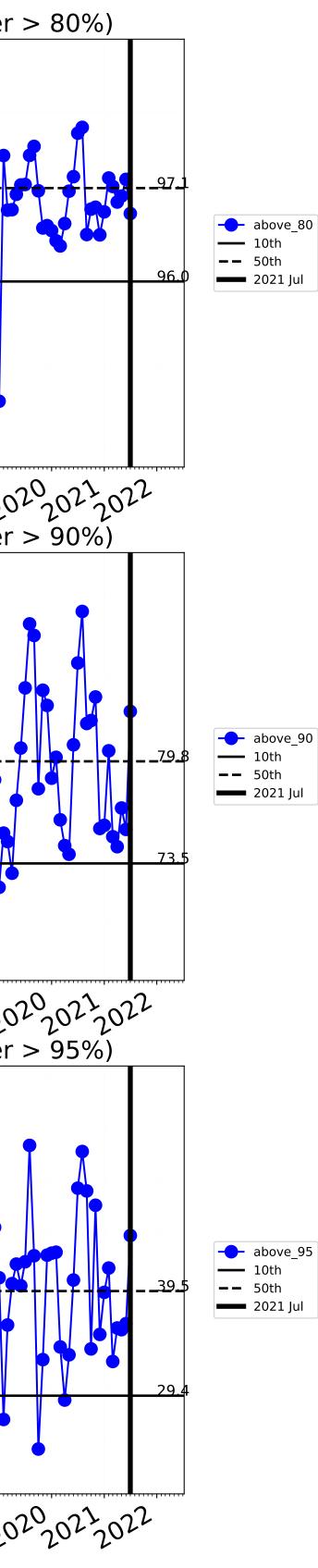
Programme

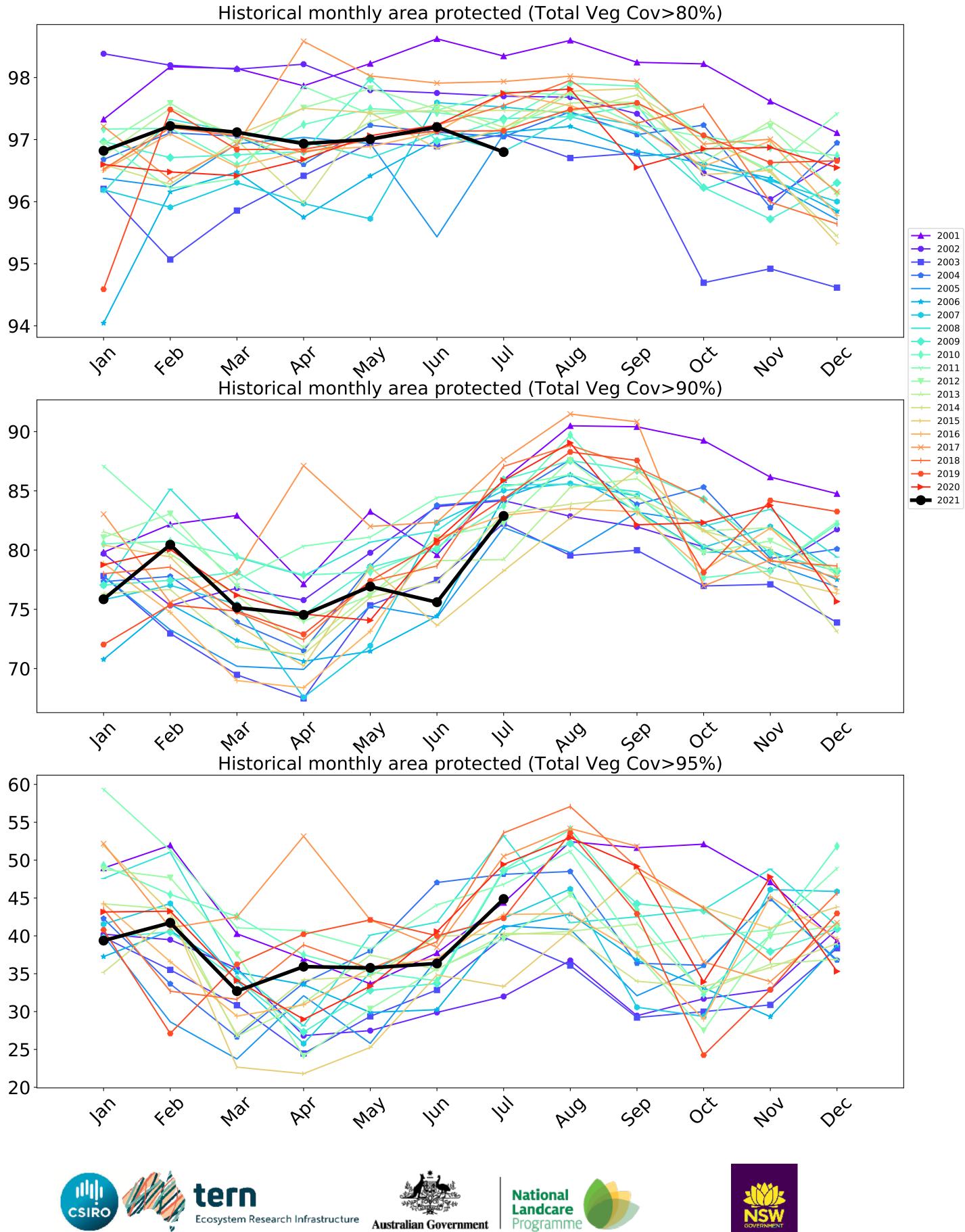
Water erosion historical monthly area protected (Total Veg Cov>70%)



98 a 97 97 of the % 95 94 2002002002002003200420052006200720082009201201201220132014201520162017201820192020212022 Proportion of the area protected from water erosion (Total Vegetation Cover > 90%) 90 area 58 s the of **%** 75 70 2000200120022003200420052006200120082009201201201220132014201520162011201820192020212022 Proportion of the area protected from water erosion (Total Vegetation Cover > 95%) 60 55 50 earea 42 of the % 35 30 • 25 20^{-1} $20^{$

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

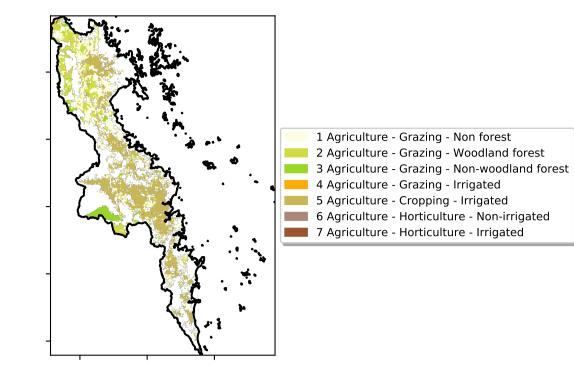




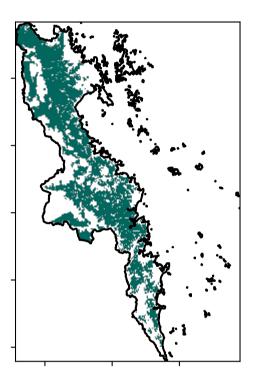


Agriculture

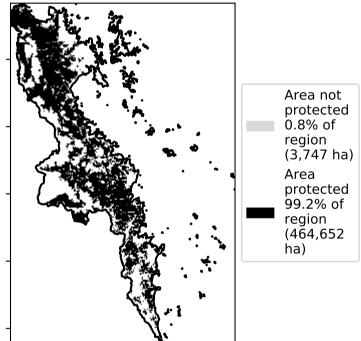
Land use and forest cover

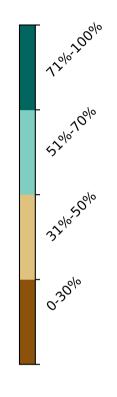


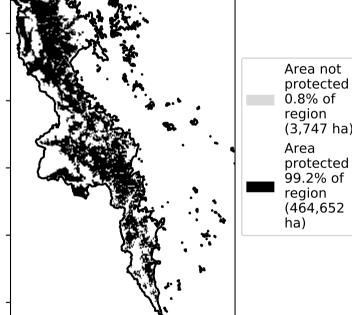
Total Vegetation Cover [%]

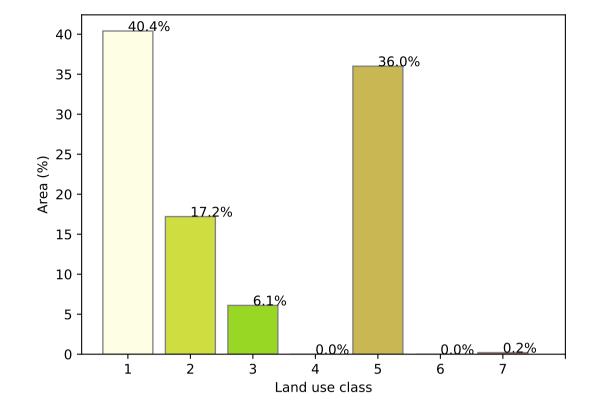






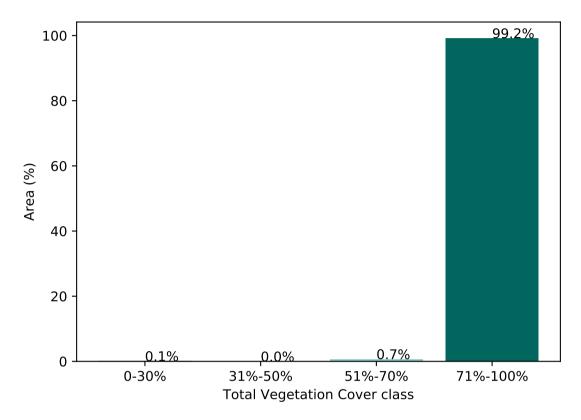




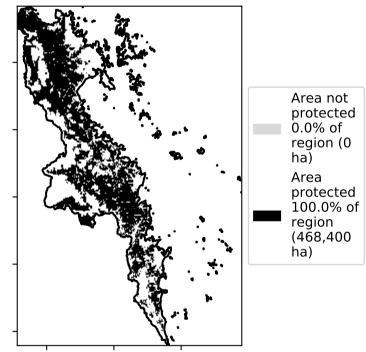


Proportion of each land class in area

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



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

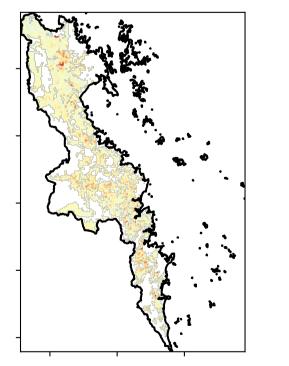
Use of Australia

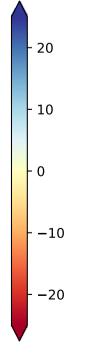
(2018) and Forests

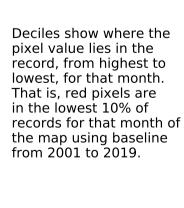
of Australia (2018)

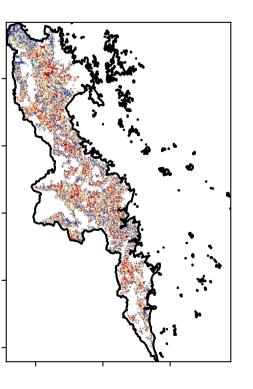
Land Use and Forests

Catchment Scale Land



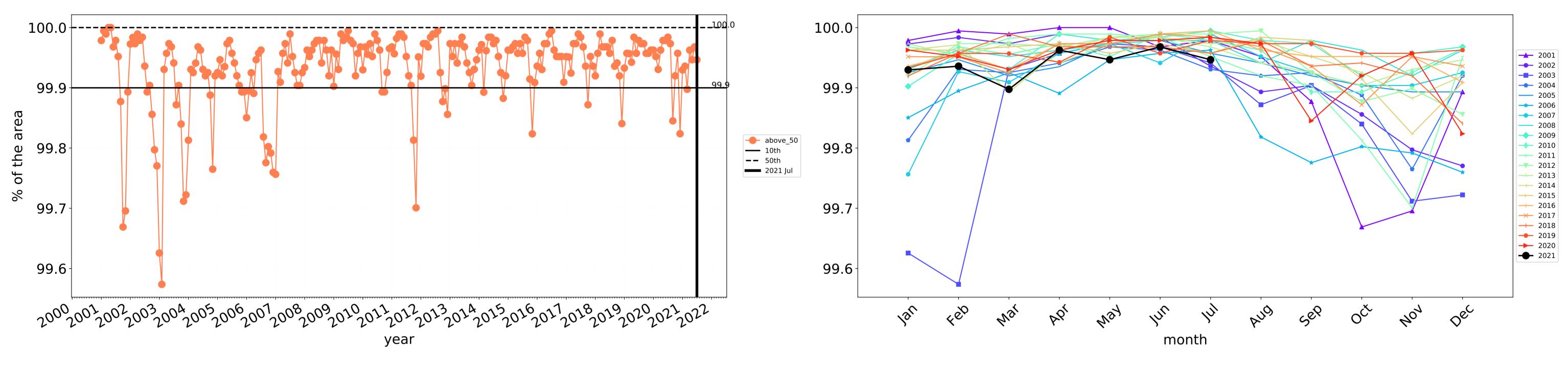












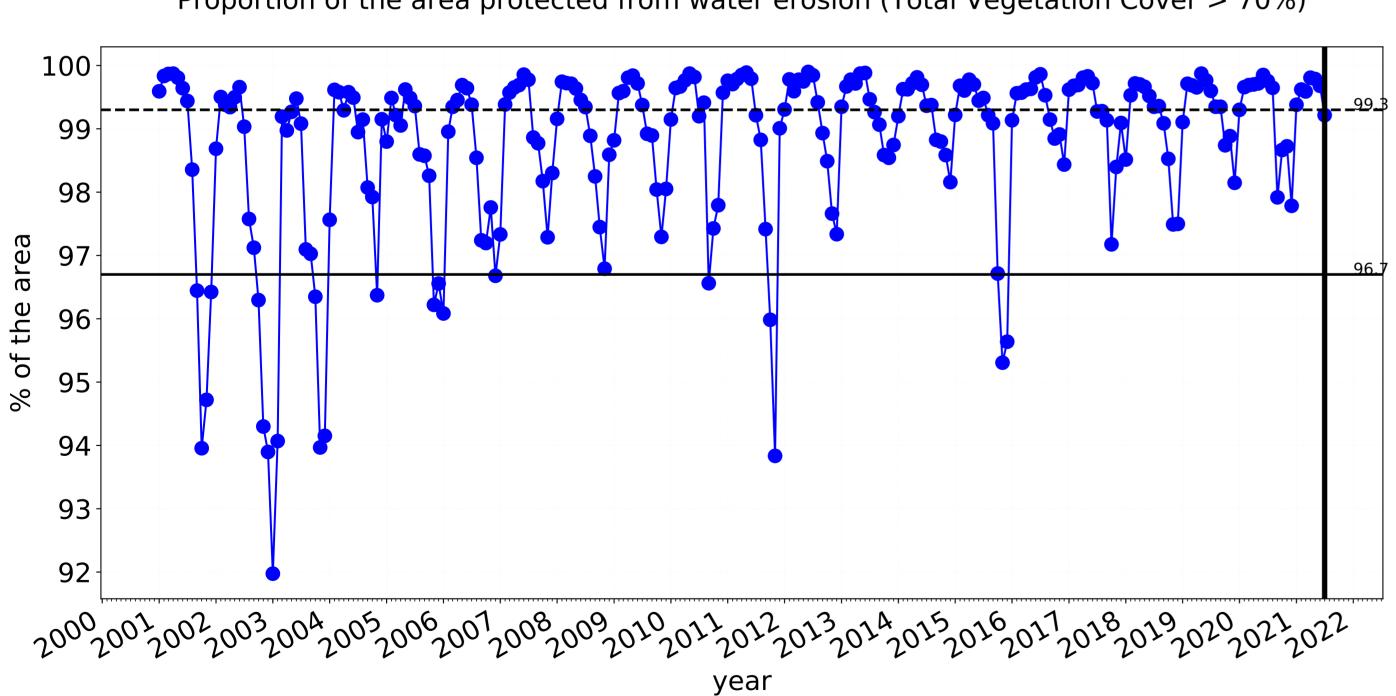
---- above_70

— 10th

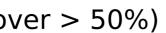
—— 50th

—— 2021 Jul

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

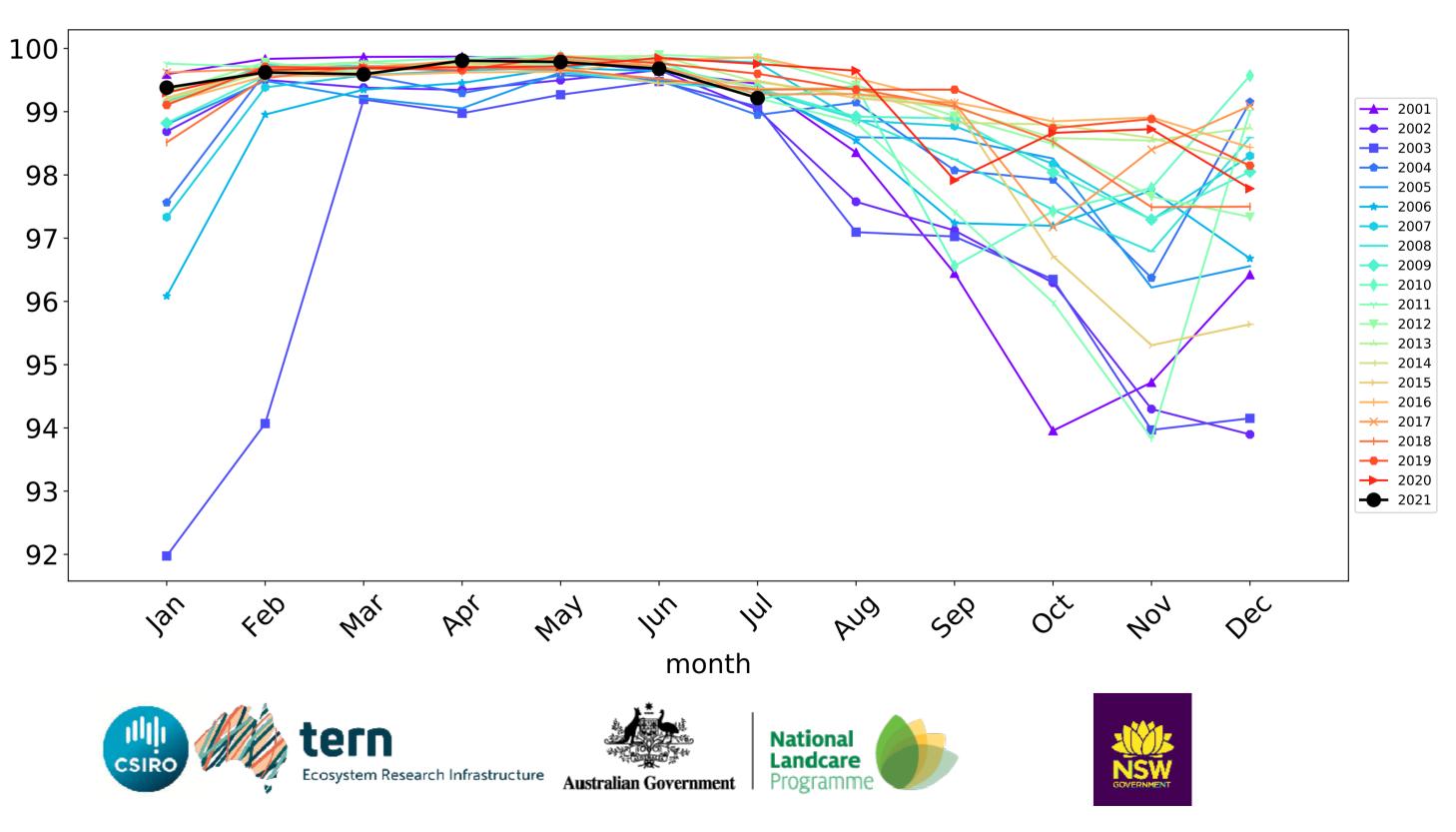


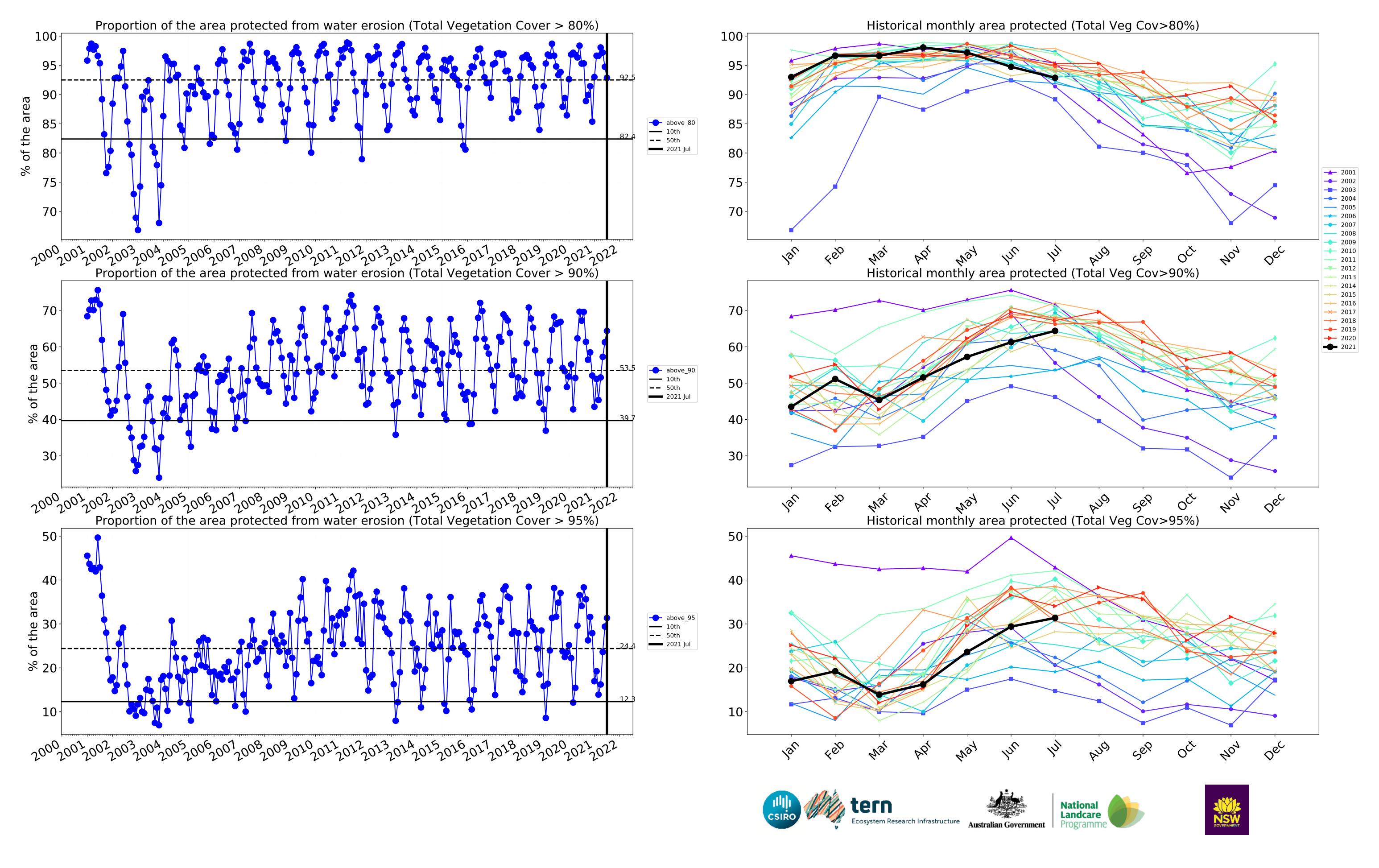
Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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

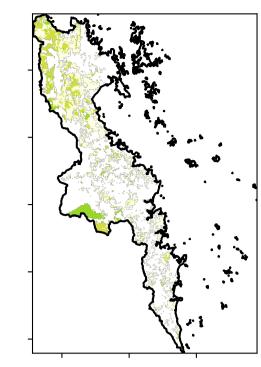
Water erosion historical monthly area protected (Total Veg Cov>70%)



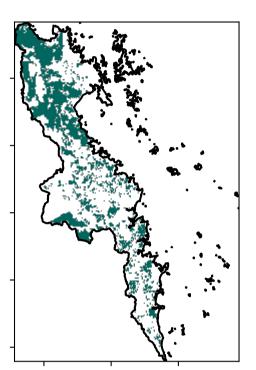


Grazing

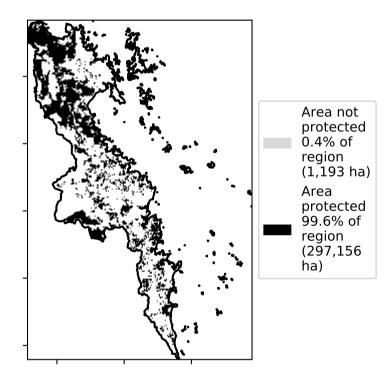
Land use and forest cover

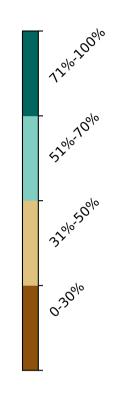


Total Vegetation Cover [%]





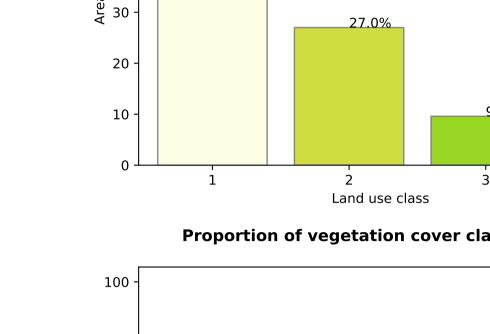




1 Agriculture - Grazing - Non forest

2 Agriculture - Grazing - Woodland forest

3 Agriculture - Grazing - Non-woodland forest



63.4%

60

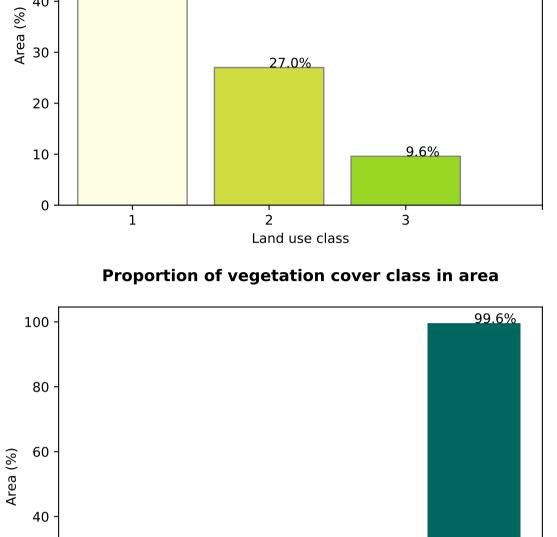
50

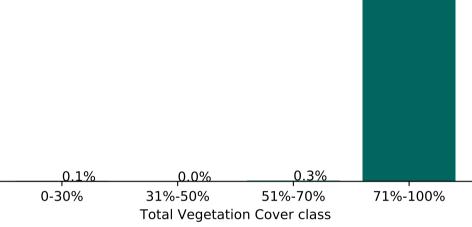
40

20

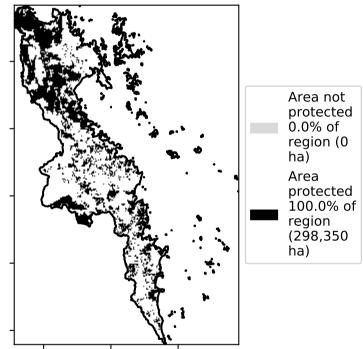
0

Proportion of each land 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.

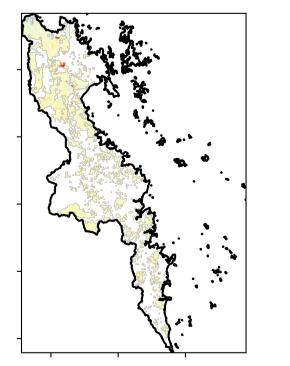
Catchment Scale Land Use and Forests of Australia (2018)

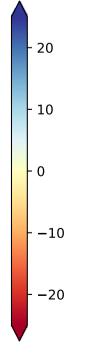
Catchment Scale Land

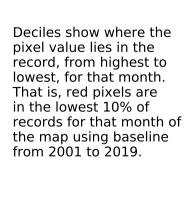
Derived from

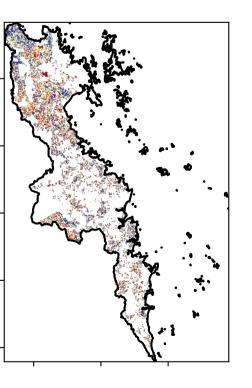
Use of Australia

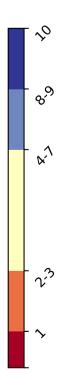
(2018) and Forests of Australia (2018)



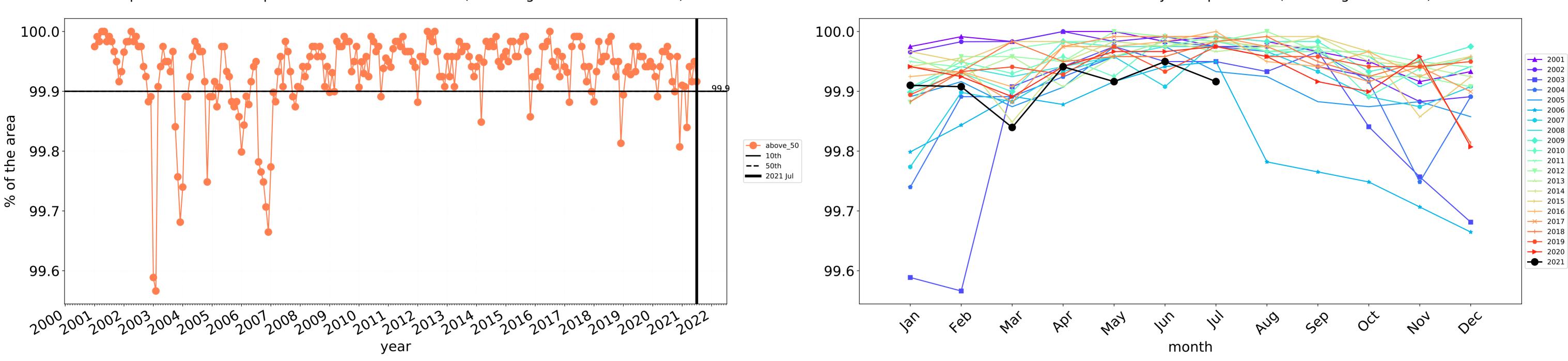






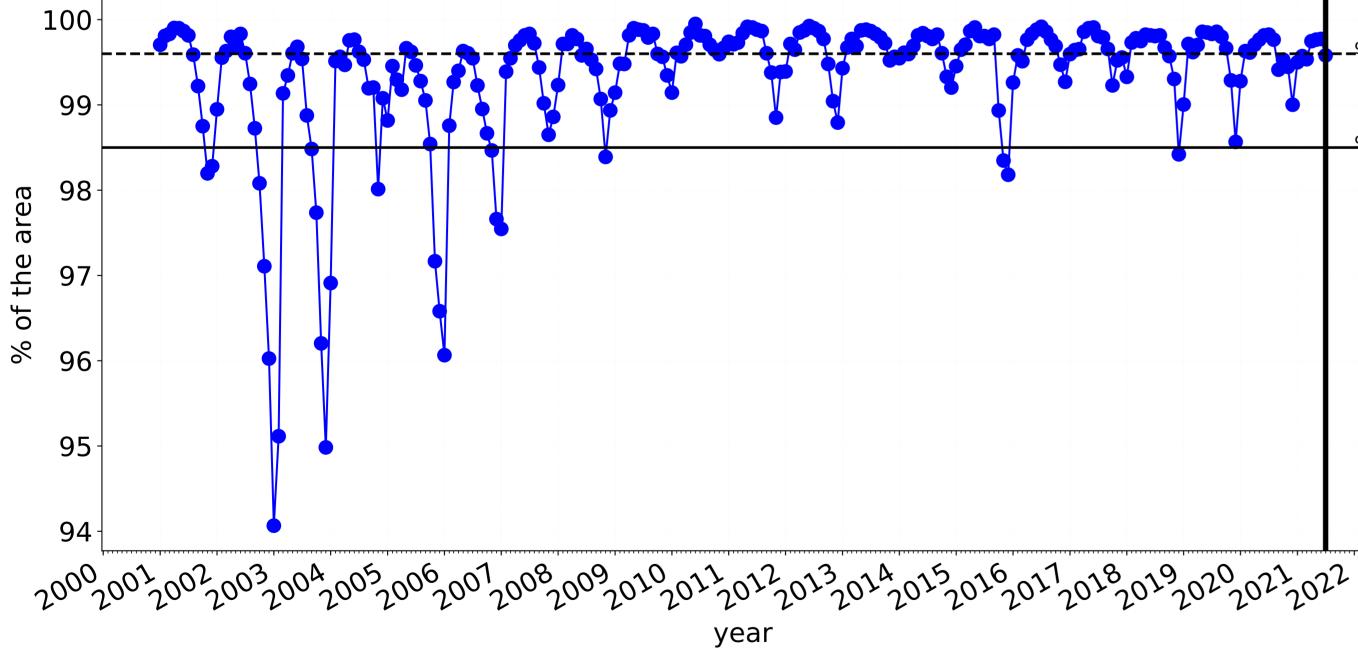






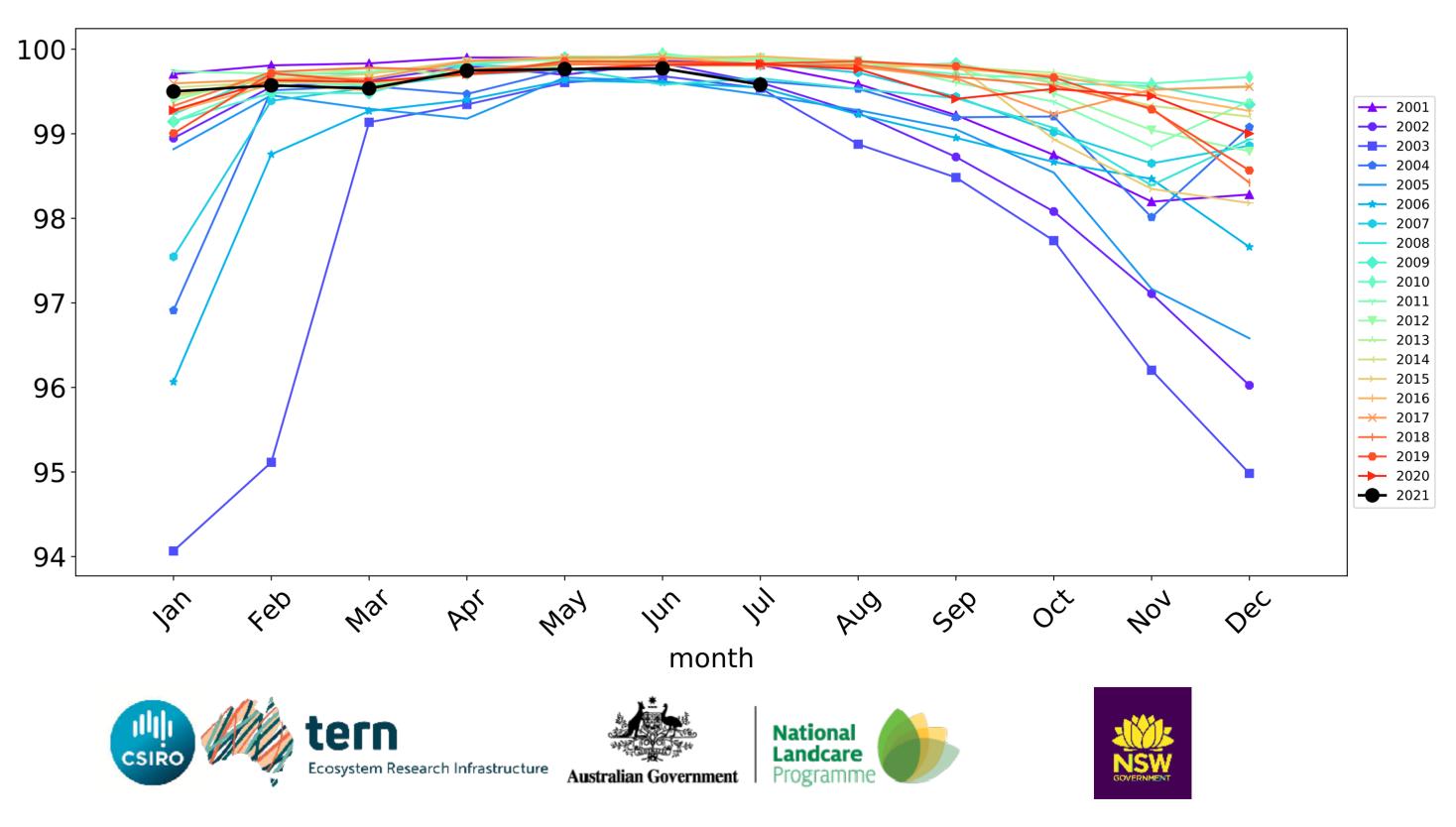
Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)



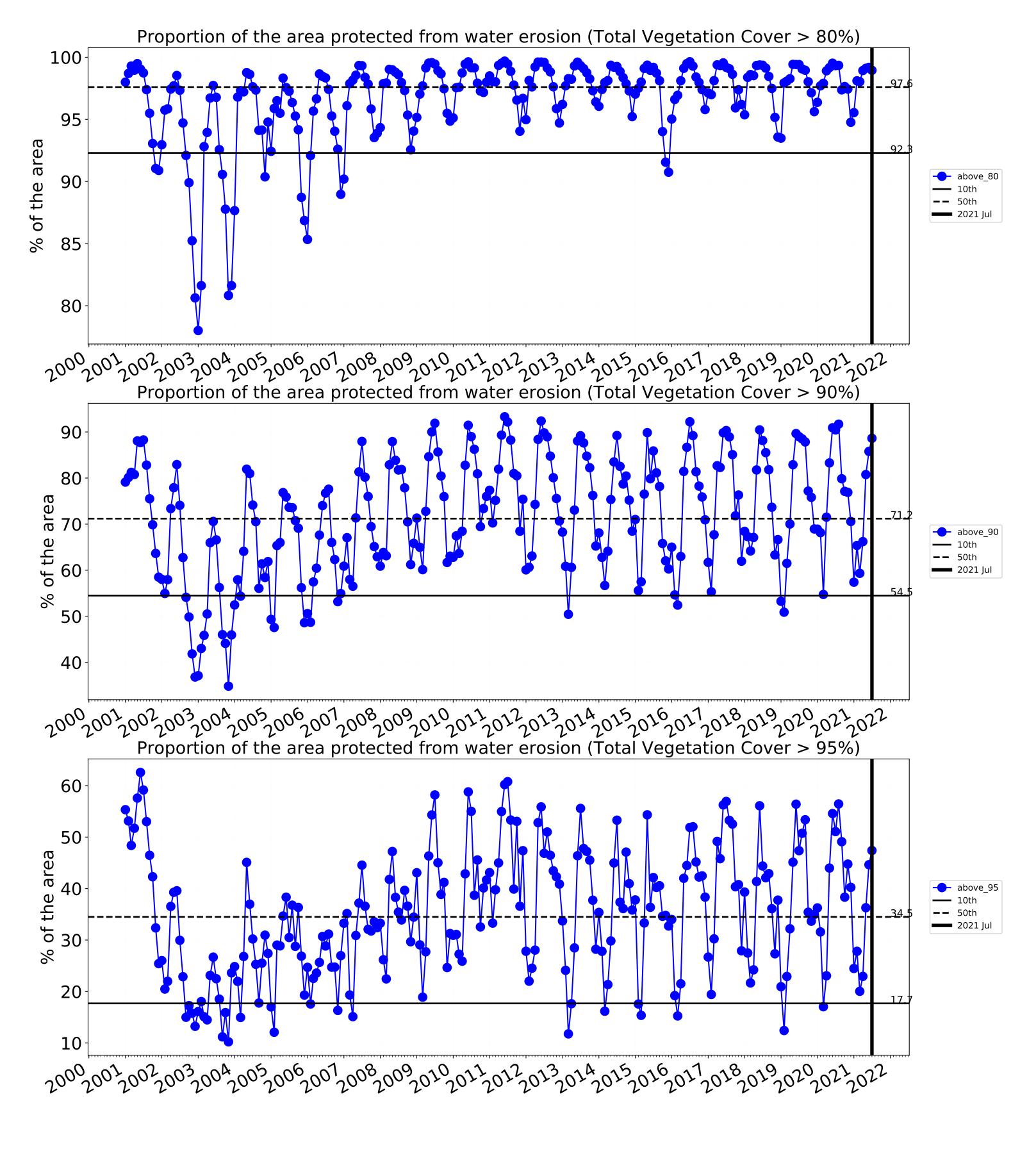


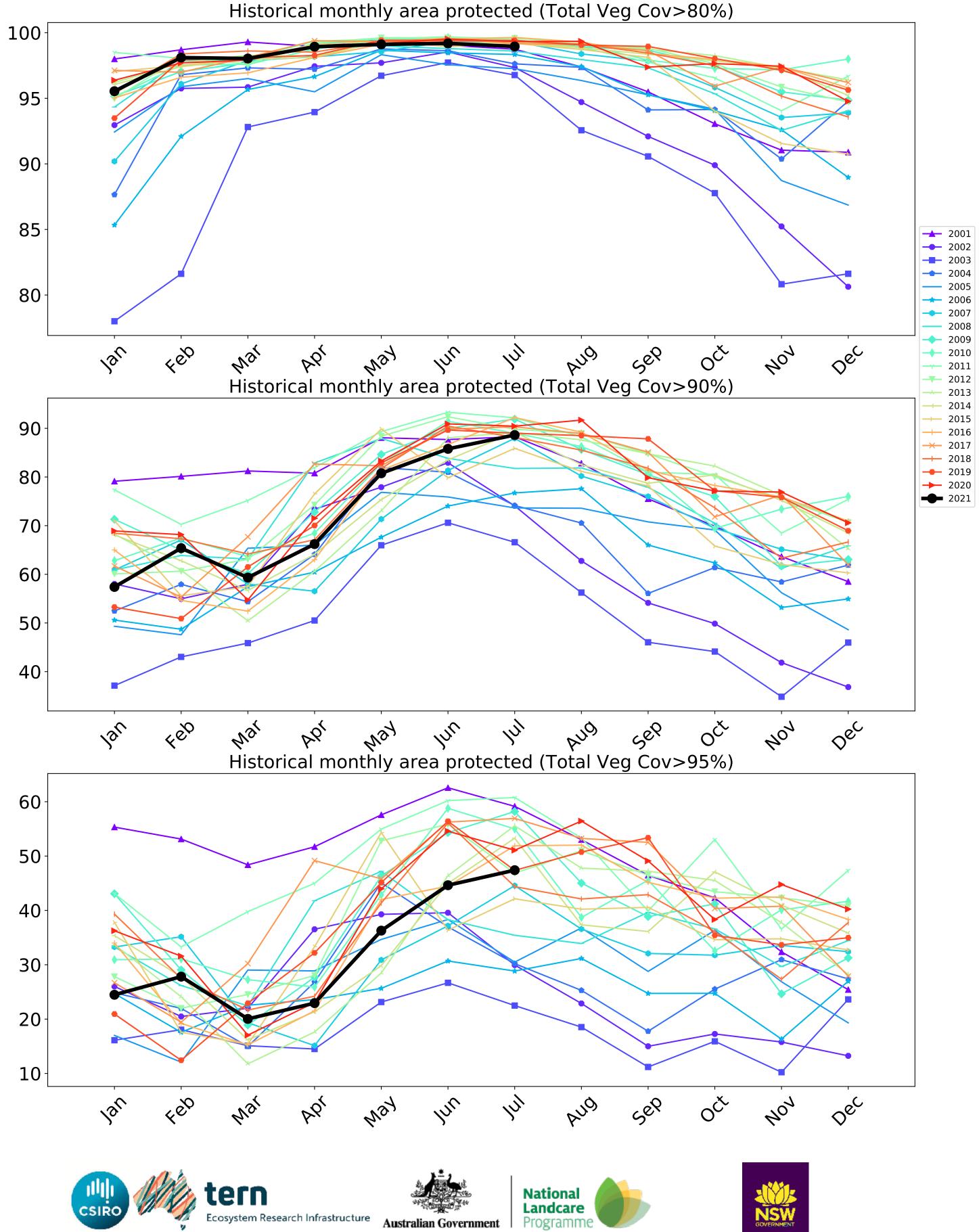
---- above_70 **—** 10th **——** 50th **——** 2021 Jul

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



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

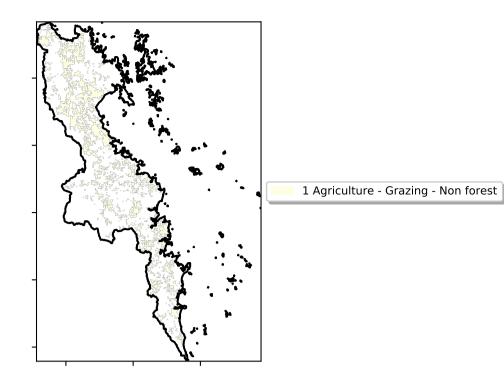




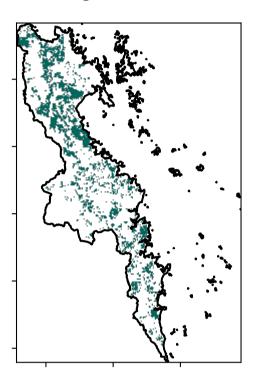


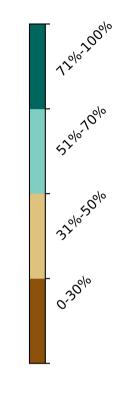
Grazing non forest

Land use and forest cover

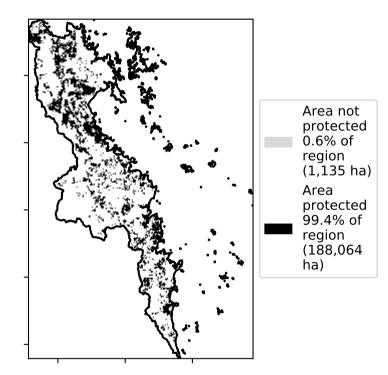


Total Vegetation Cover [%]

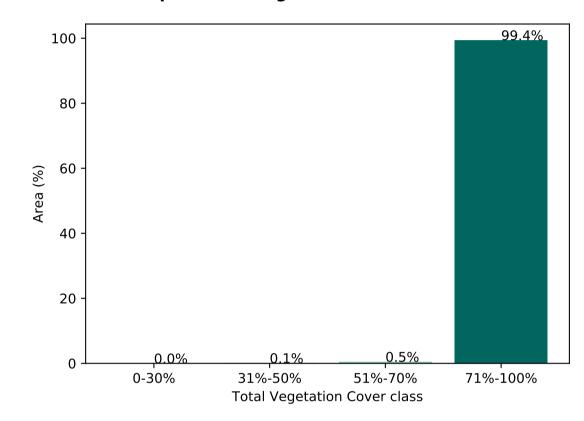




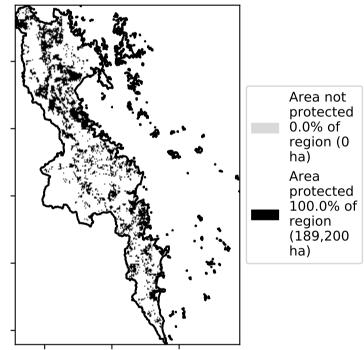
% Area protected from water erosion (>70%)



Proportion of vegetation cover class in area



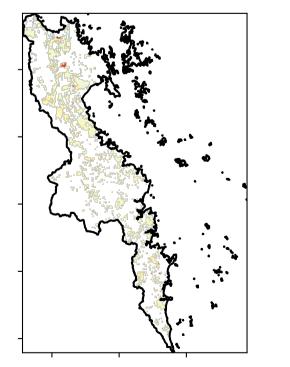
% Area protected from wind erosion (>50%)

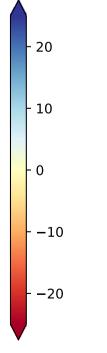


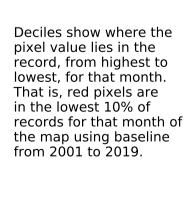
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

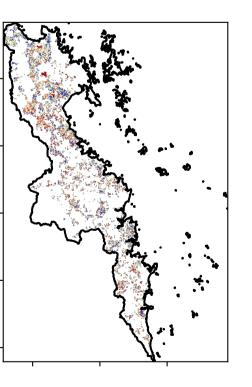
Total Vegetation Cover Anomaly [%]

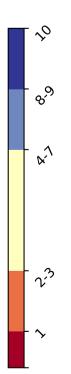
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



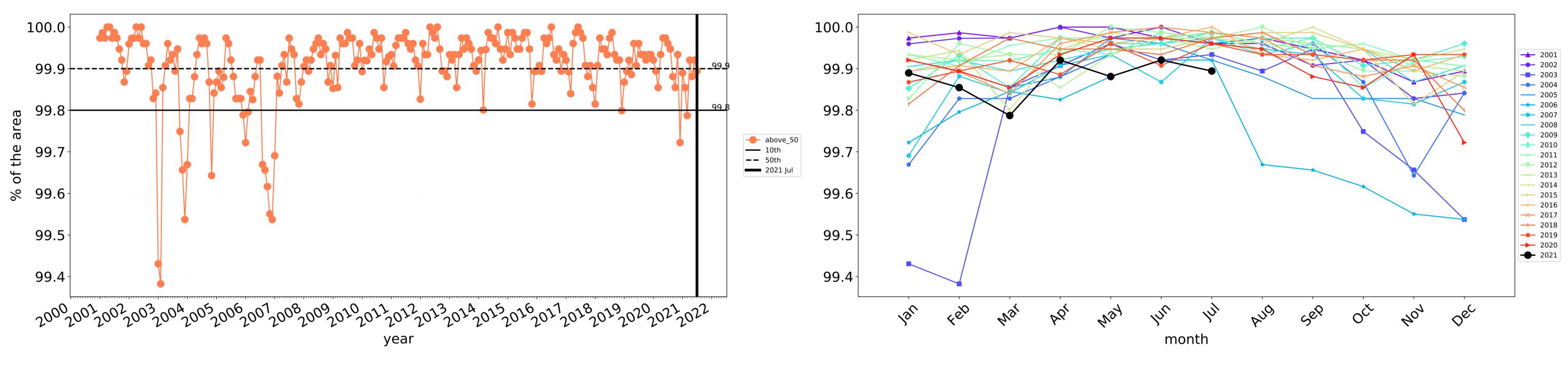






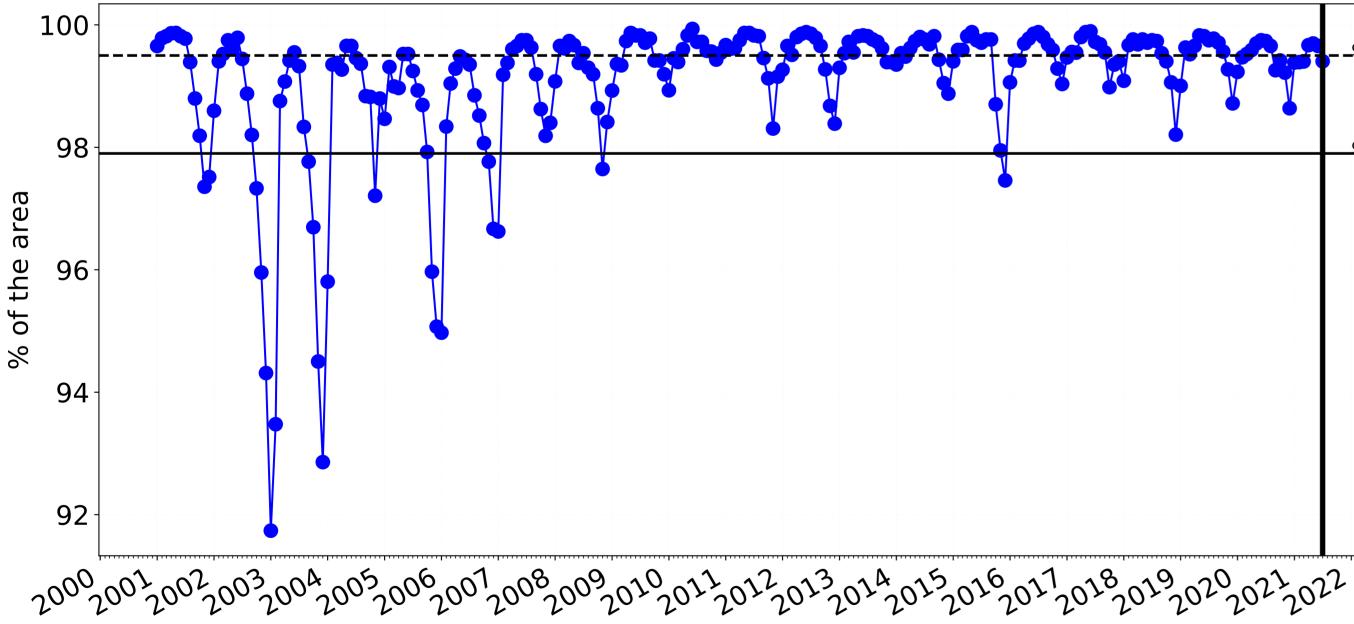






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

year



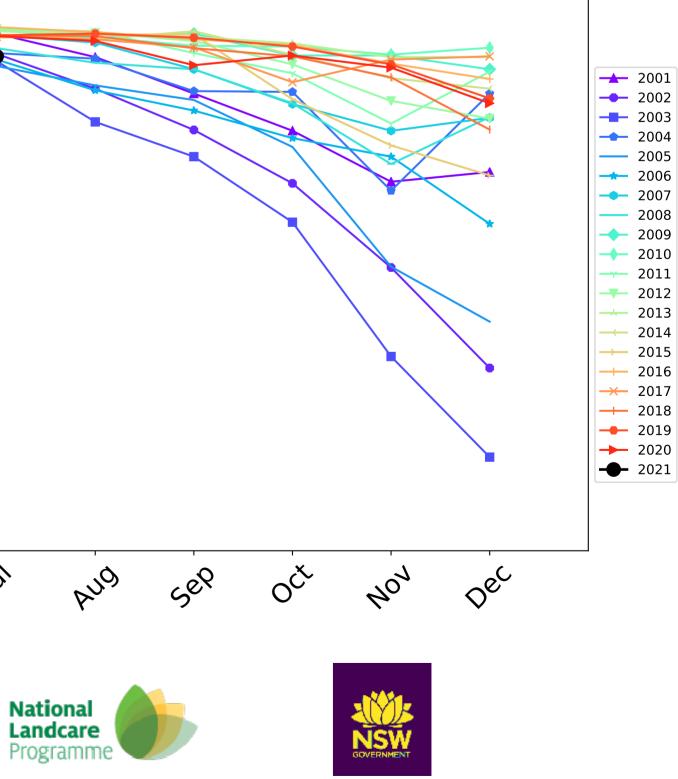
Grazing non forest timeseries

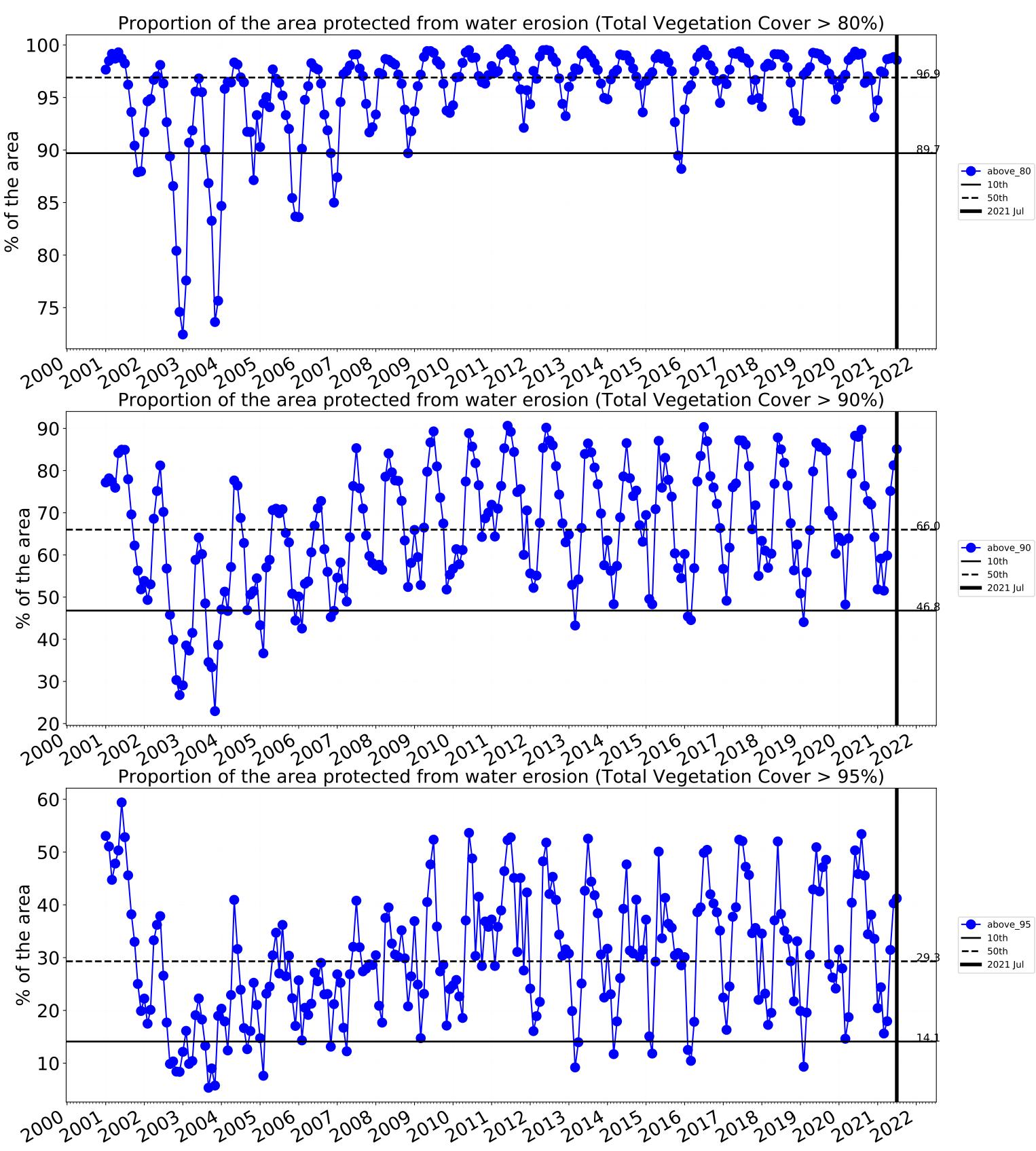


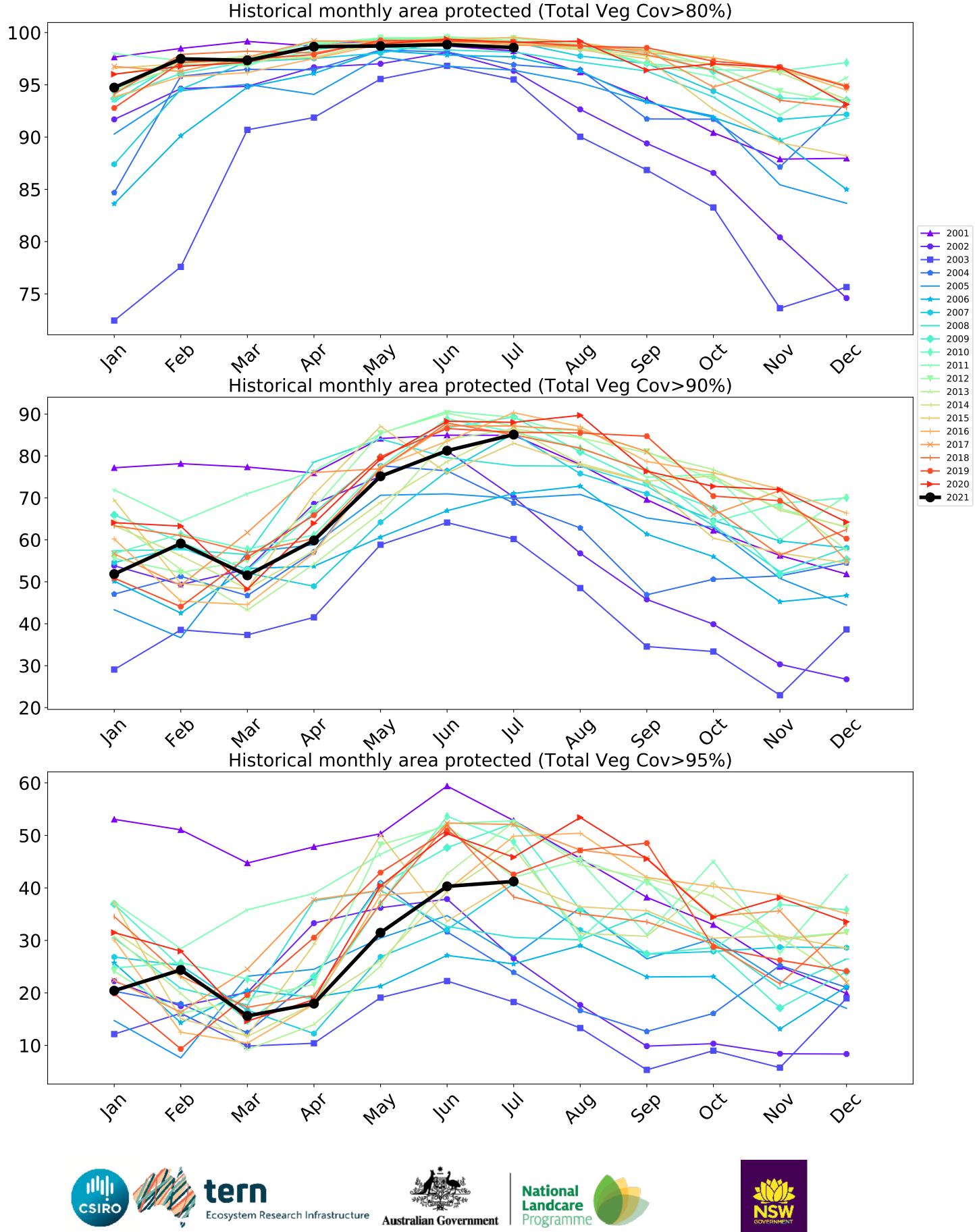
Wind erosion historical monthly area protected (Total Veg Cov >50%)

100-98 ---- above_70 **—** 10th **——** 50th **——** 2021 Jul 96 94 92 Jan 4eb way PQ In 1's Mai month tern Ecosystem Research Infrastructure Australian Government

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



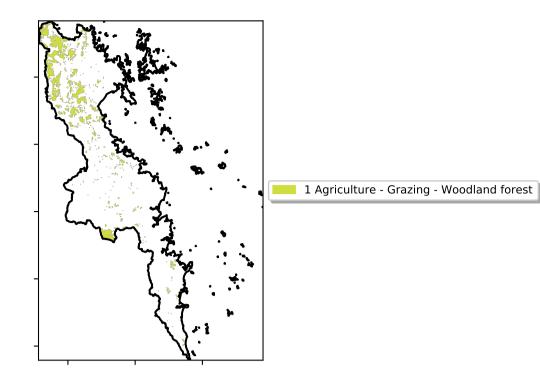




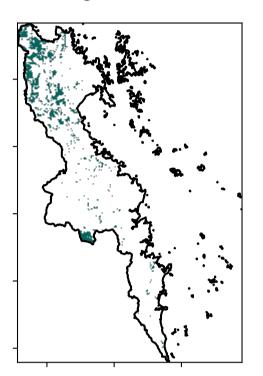


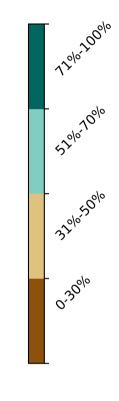
Grazing Woodland forest

Land use and forest cover

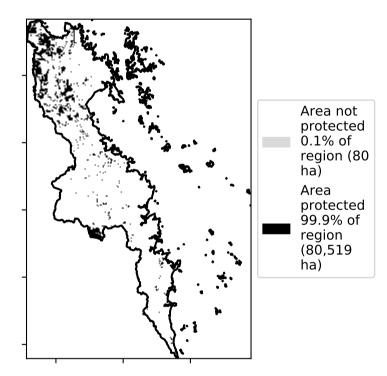


Total Vegetation Cover [%]

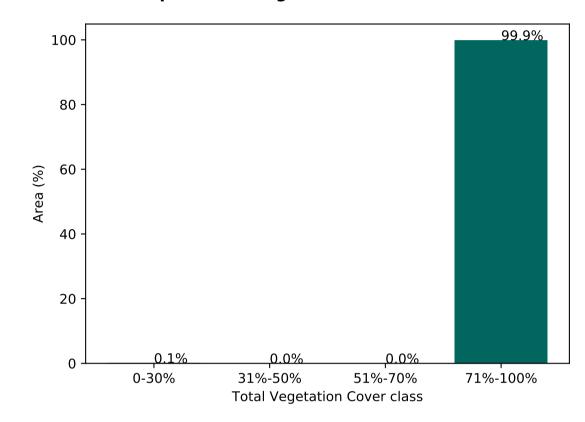




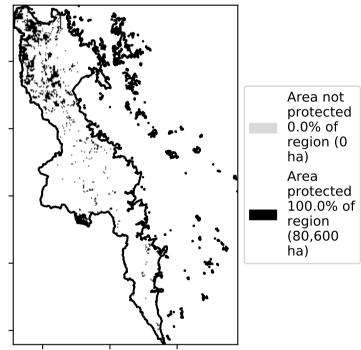
% Area protected from water erosion (>70%)

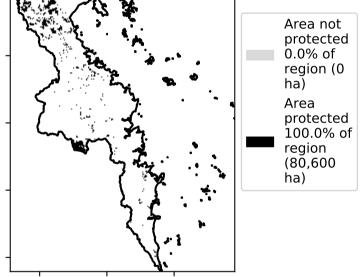


Proportion of vegetation cover class in area



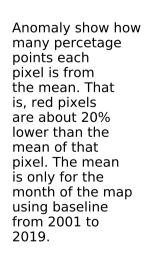
% Area protected from wind erosion (>50%)

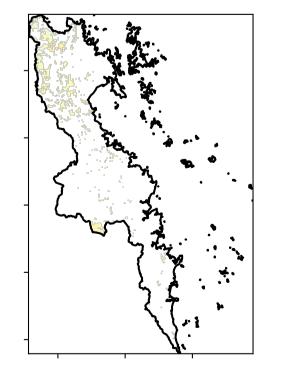


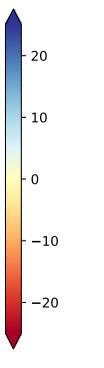


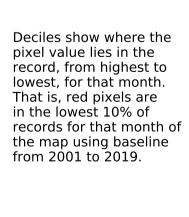
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

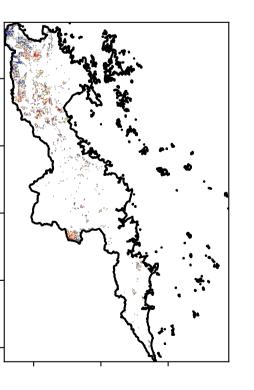
Total Vegetation Cover Anomaly [%]

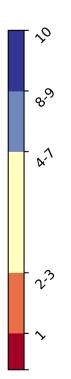




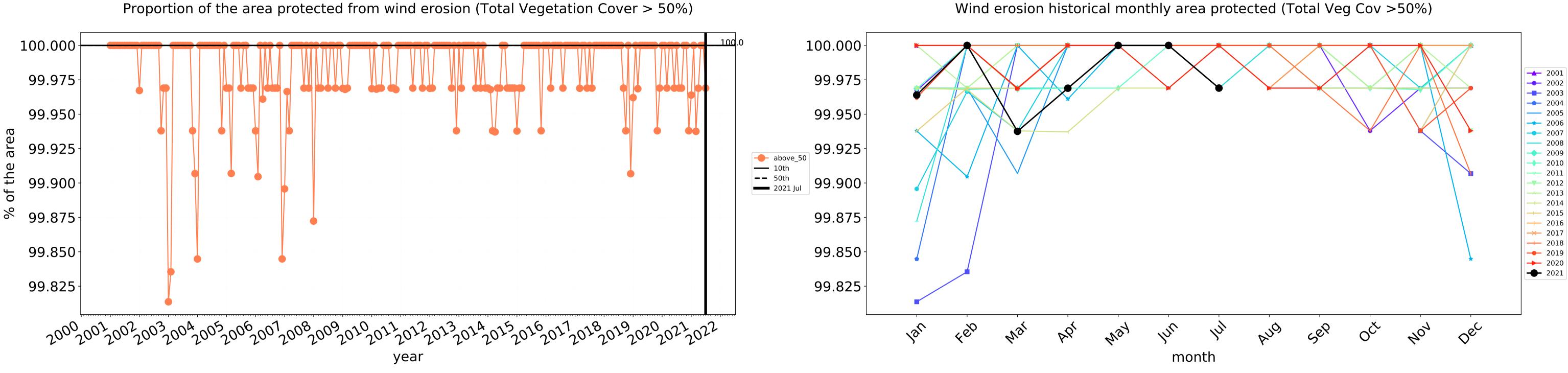


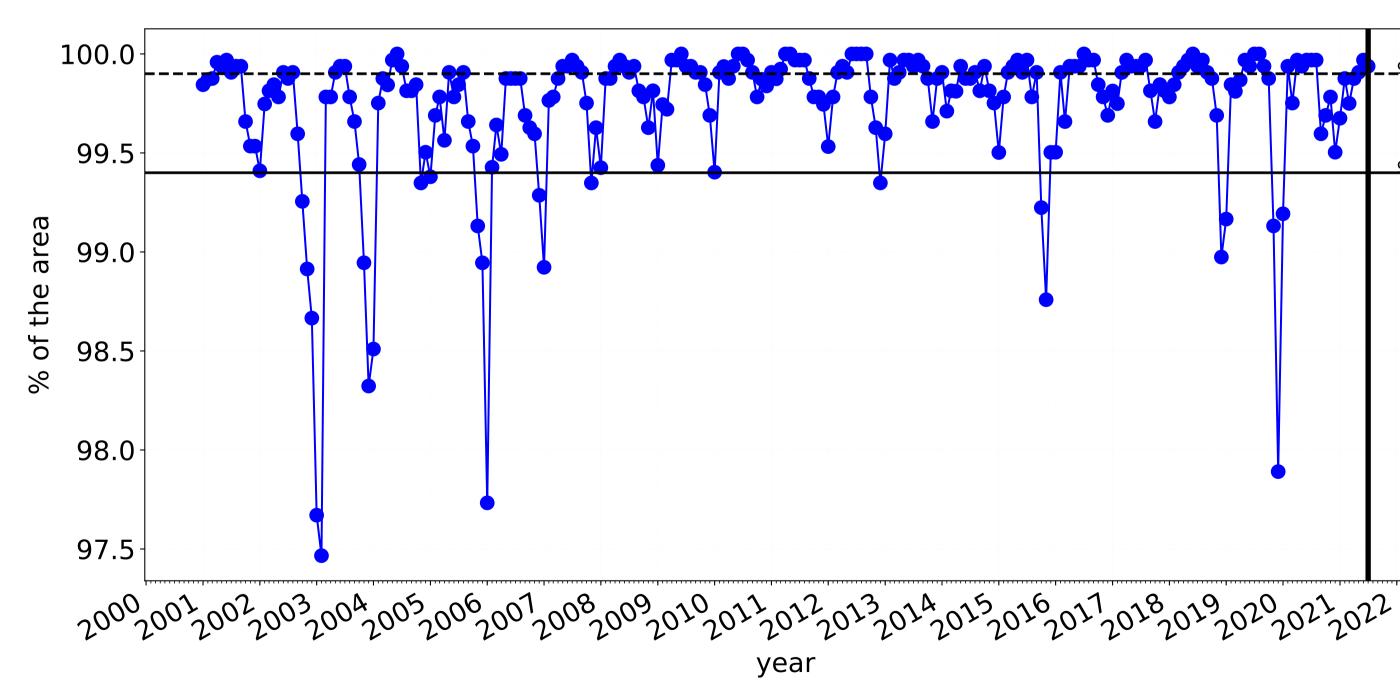








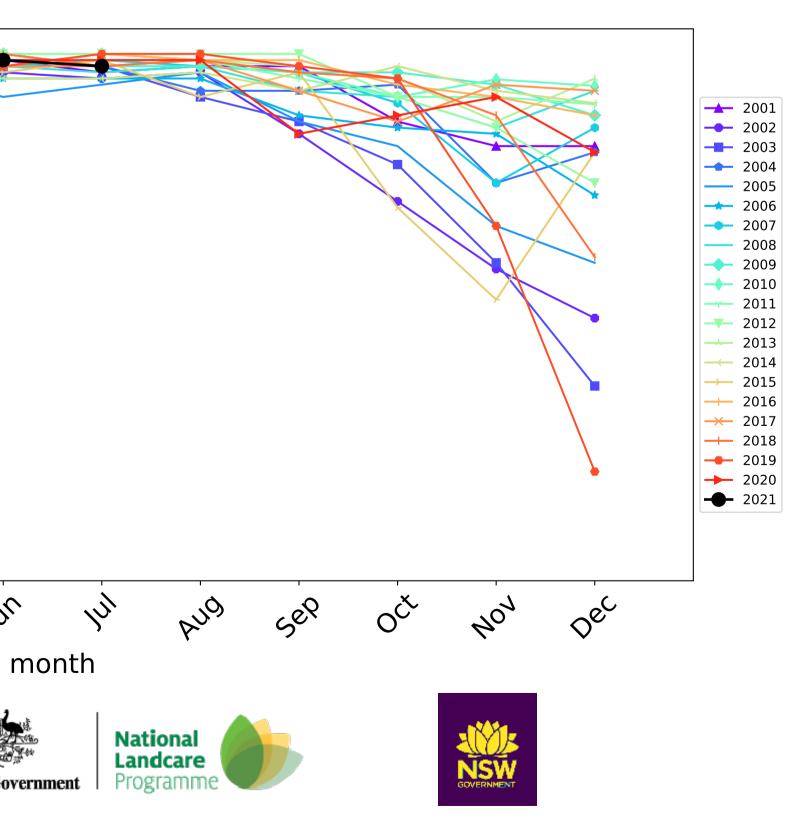


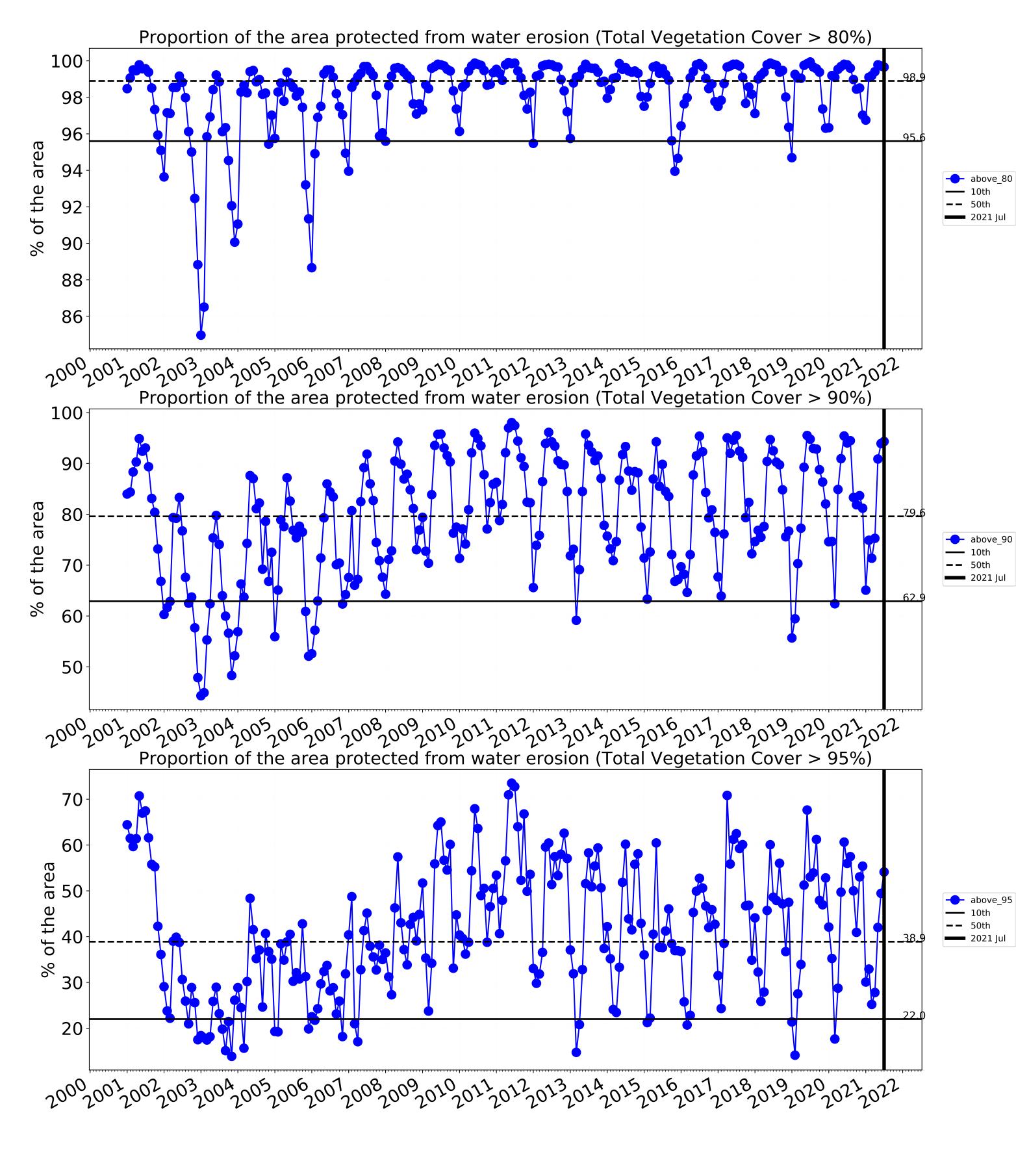


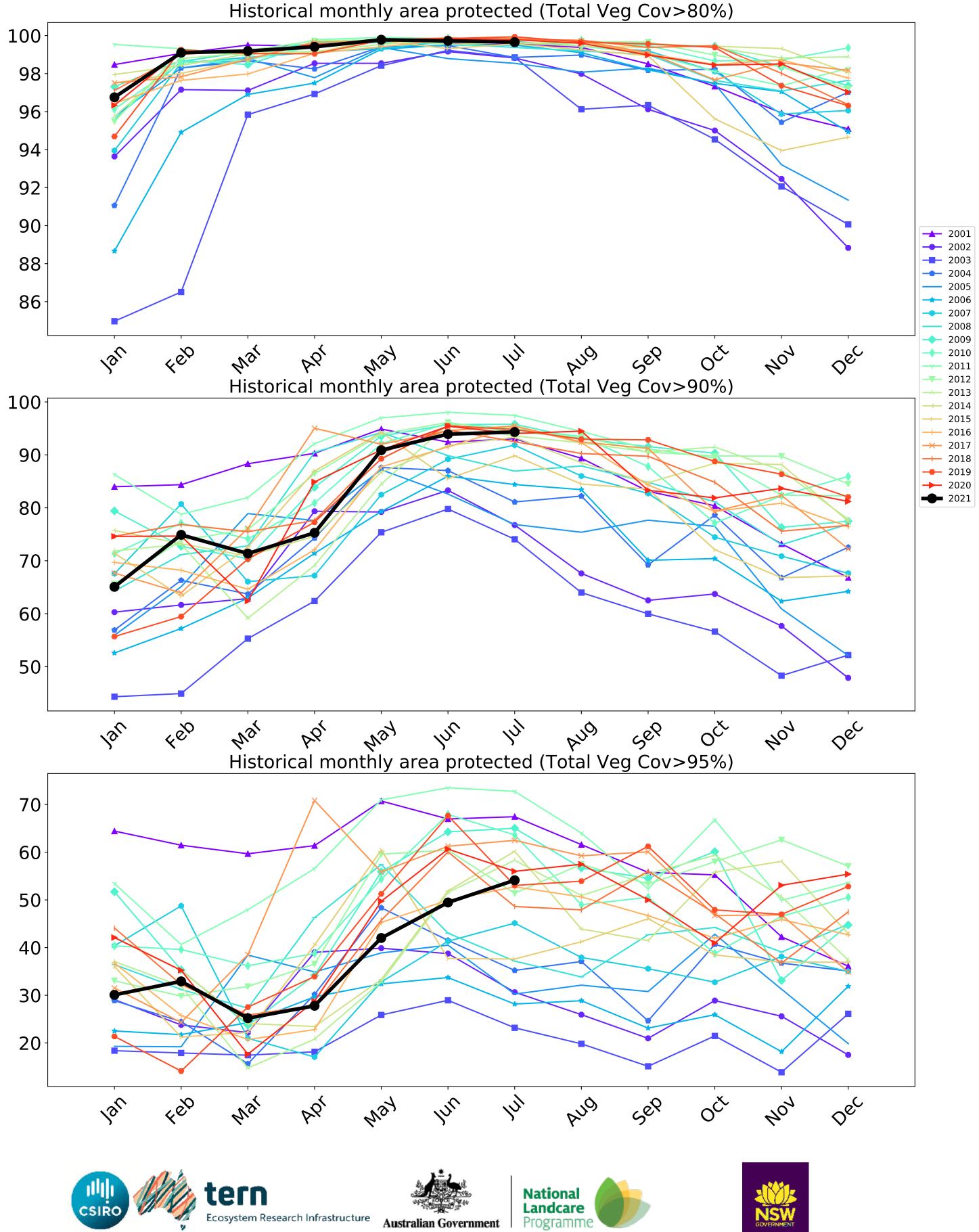
Grazing Woodland forest timeseries

100.0 99.5 ---- above_70 **——** 10th 99.0 **——** 50th **——** 2021 Jul 98.5 98.0 97.5 feb Jan In way War PQ' Ecosystem Research Infrastructure Australian Government

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



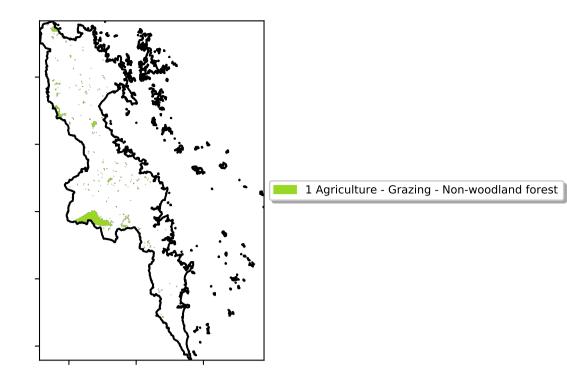




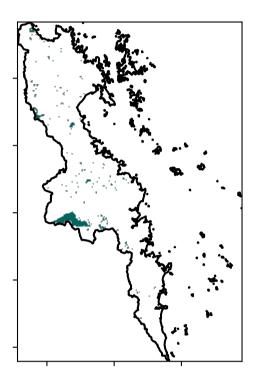


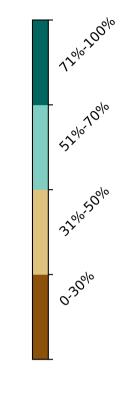
Grazing - Forest (non woodland)

Land use and forest cover

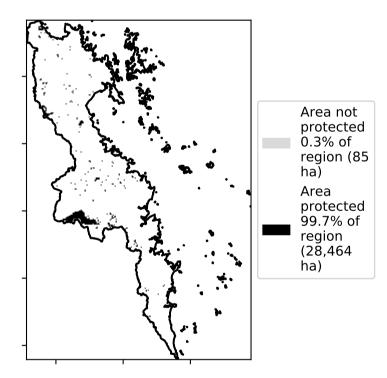


Total Vegetation Cover [%]

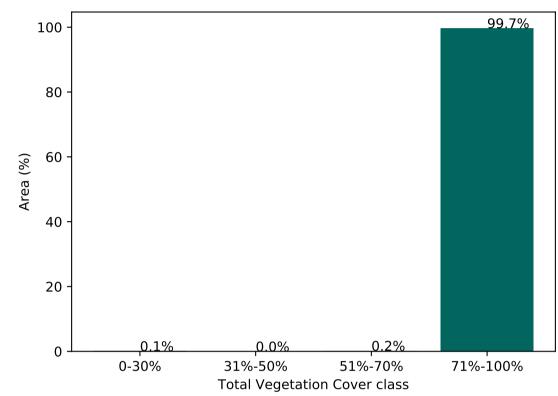




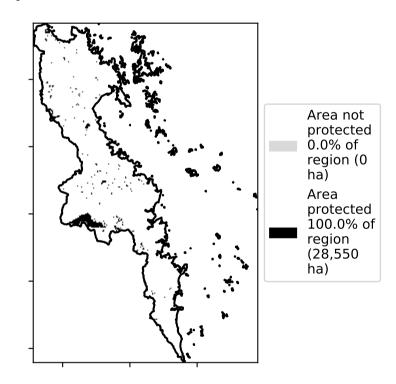
% Area protected from water erosion (>70%)







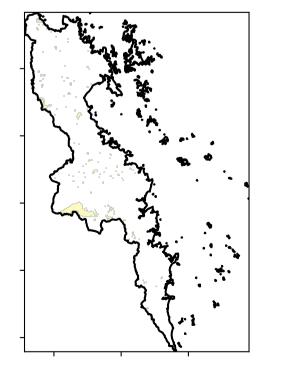
% Area protected from wind erosion (>50%)

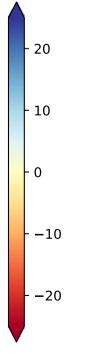


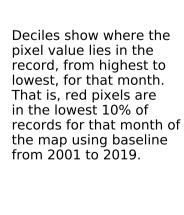
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

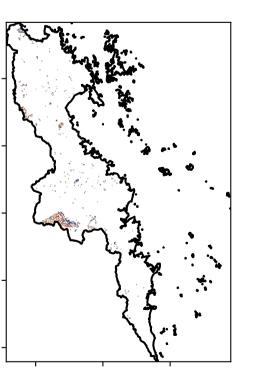
Total Vegetation Cover Anomaly [%]

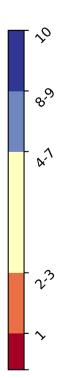
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



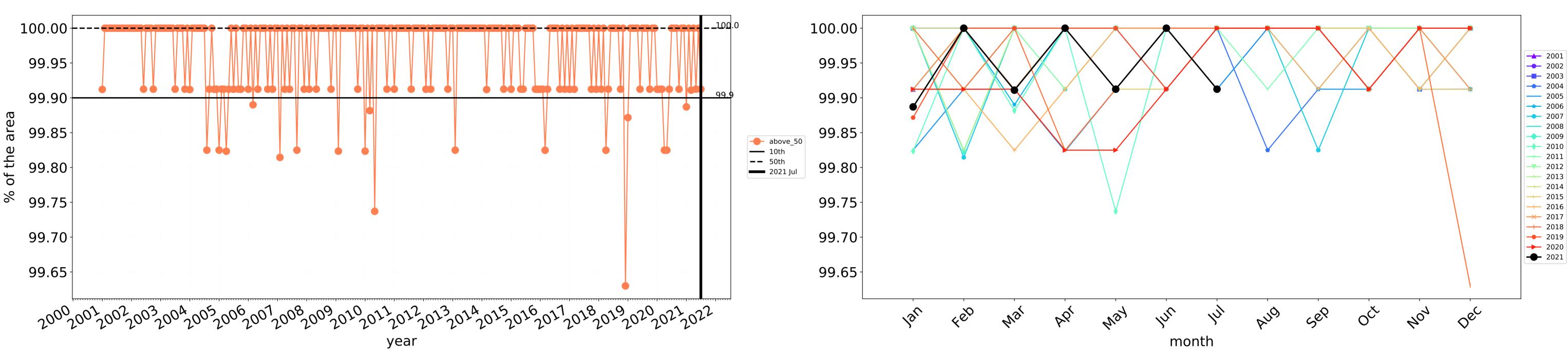




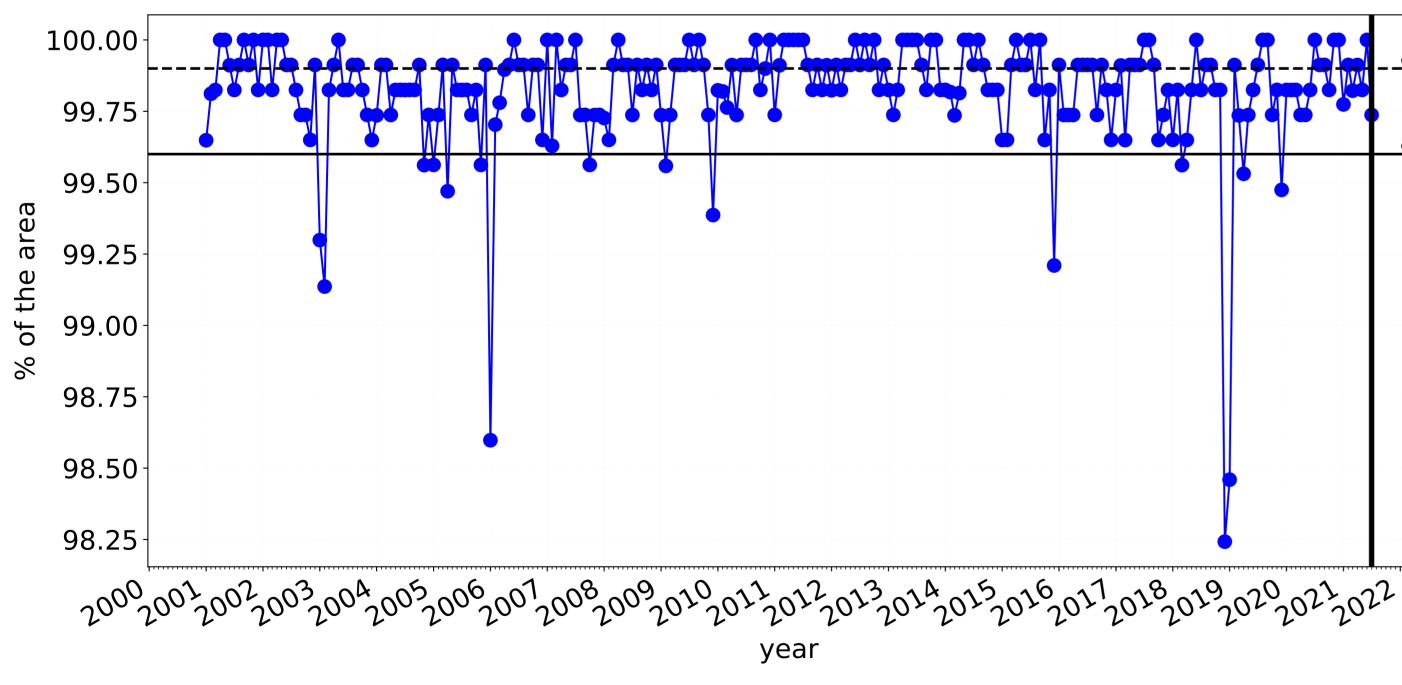


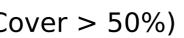






Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)

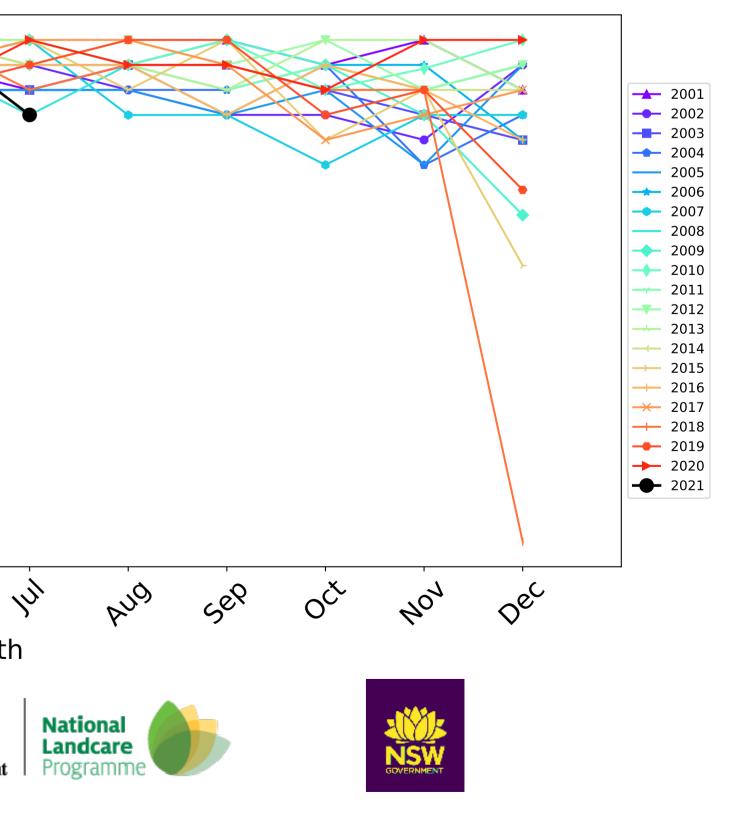


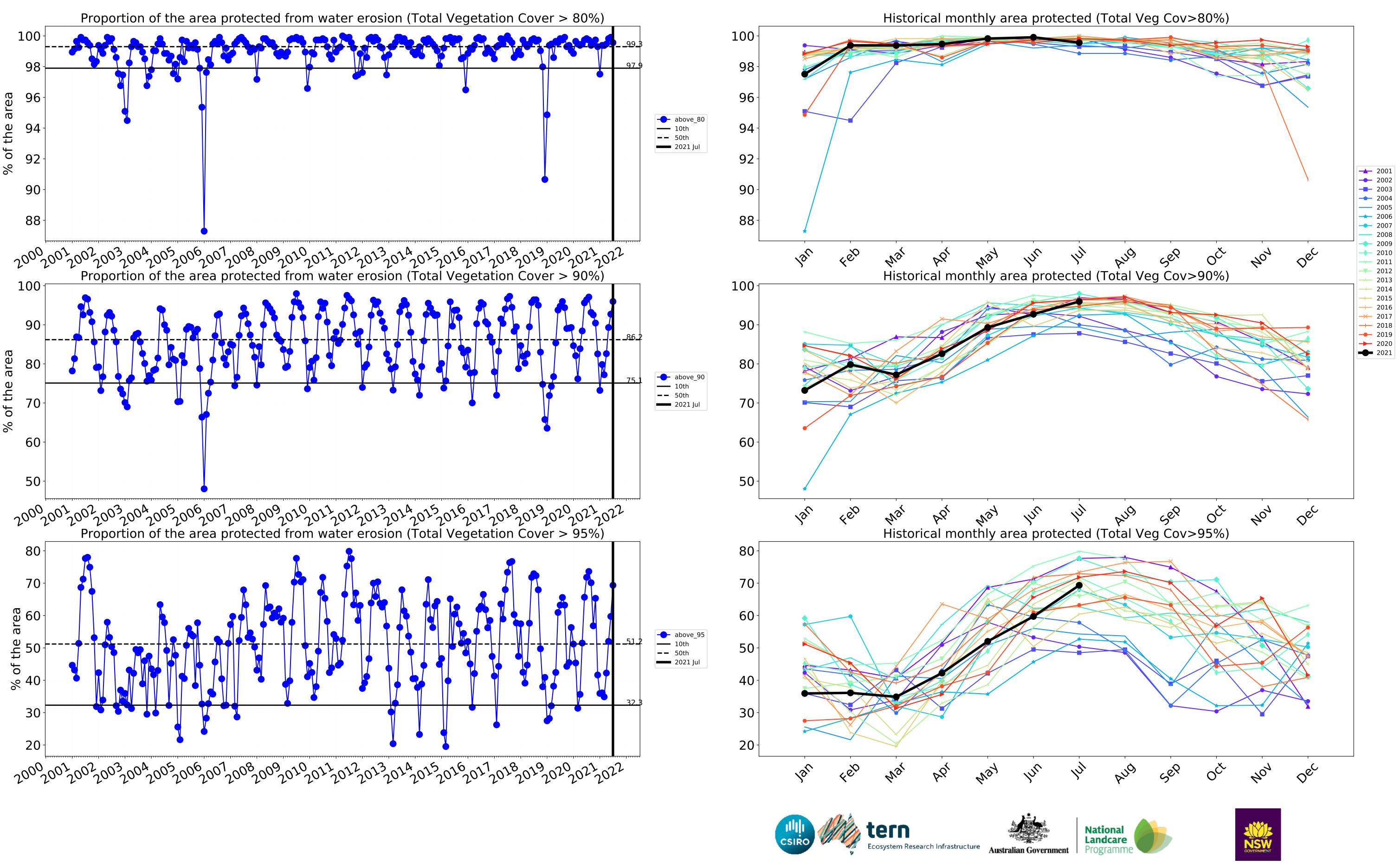


Wind erosion historical monthly area protected (Total Veg Cov >50%)

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

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

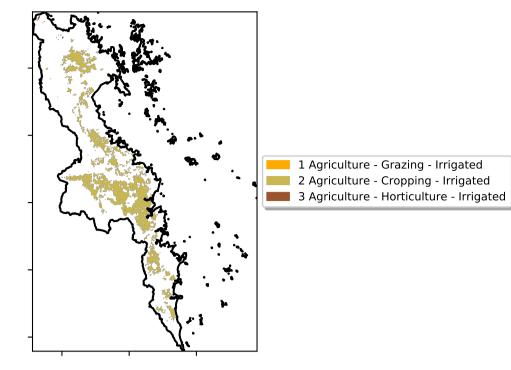




Irrigation

Land use and forest cover

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



1 Agriculture - Grazing - Irrigated

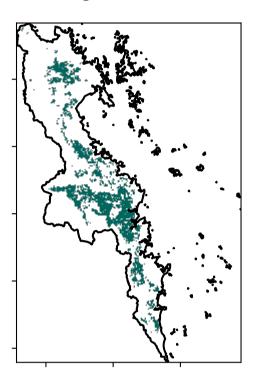
1210-200°

· 52% 70%

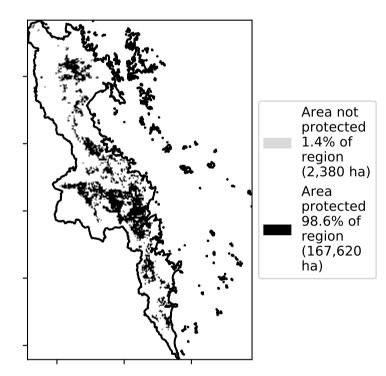
3201050010

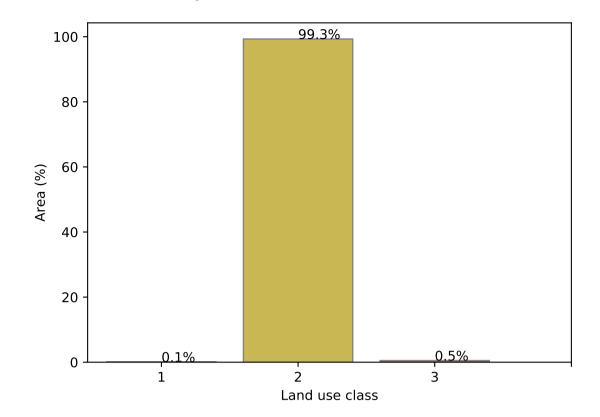
0.30%

Total Vegetation Cover [%]



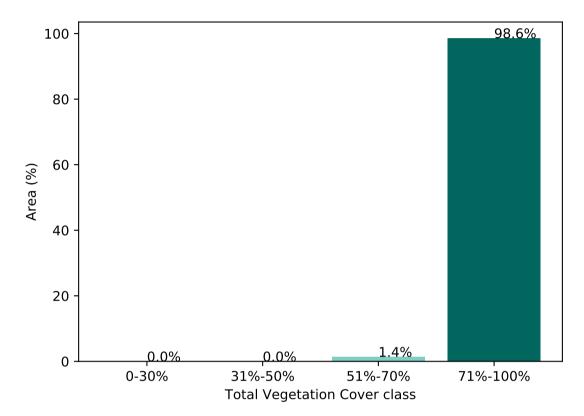
% Area protected from water erosion (>70%)



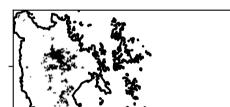


Proportion of each land class in area

Proportion of vegetation cover class in area

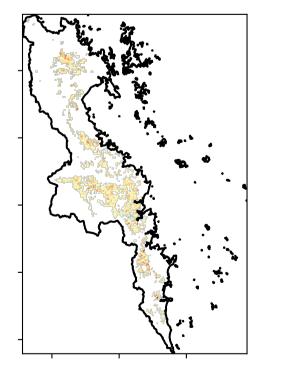


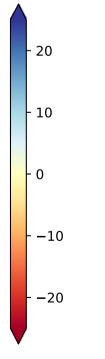
% Area protected from wind erosion (>50%)

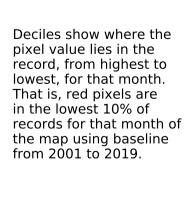


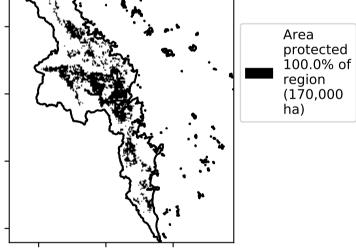
Total Vegetation Cover Anomaly [%]

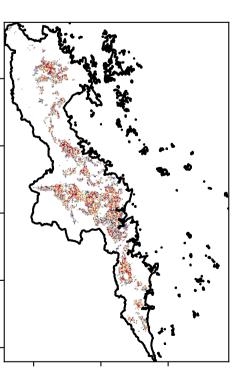
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

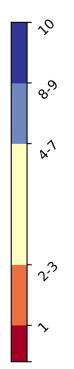




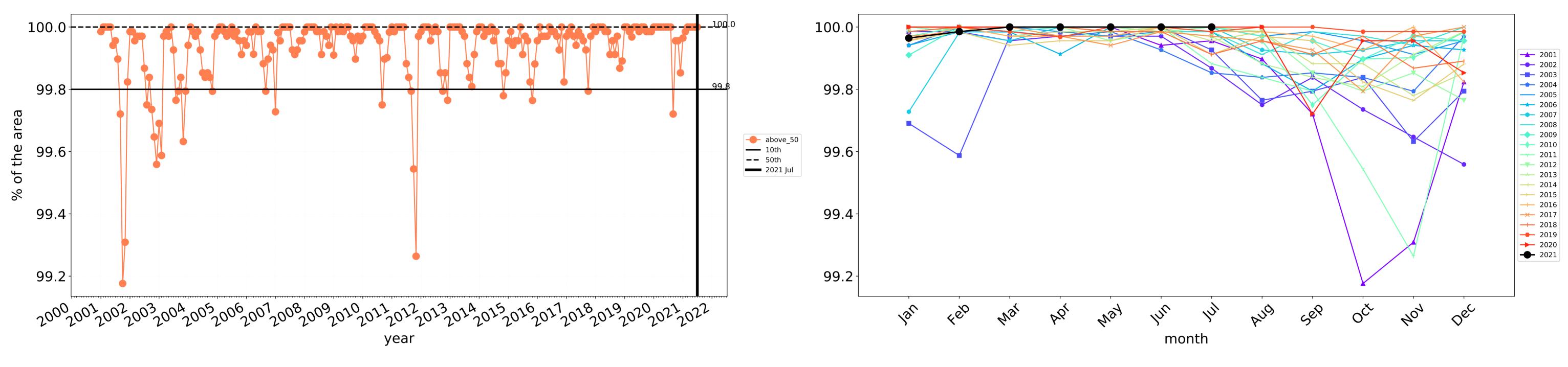






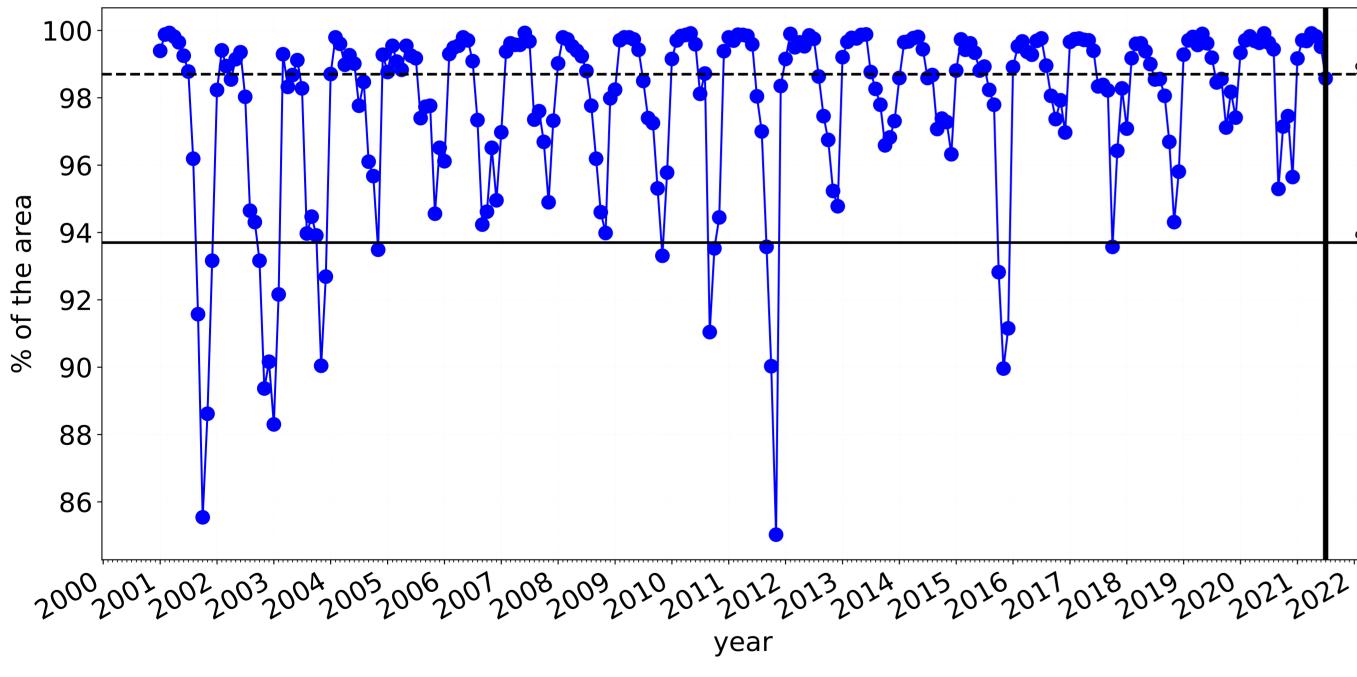


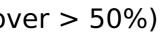




Proportion of the area protected from wind erosion (Total Vegetation Cover > 50%)





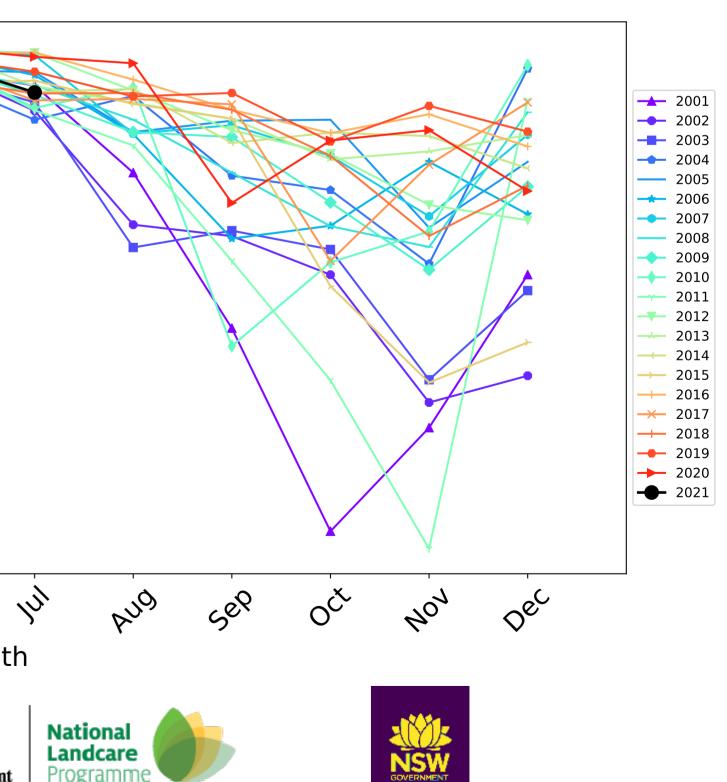


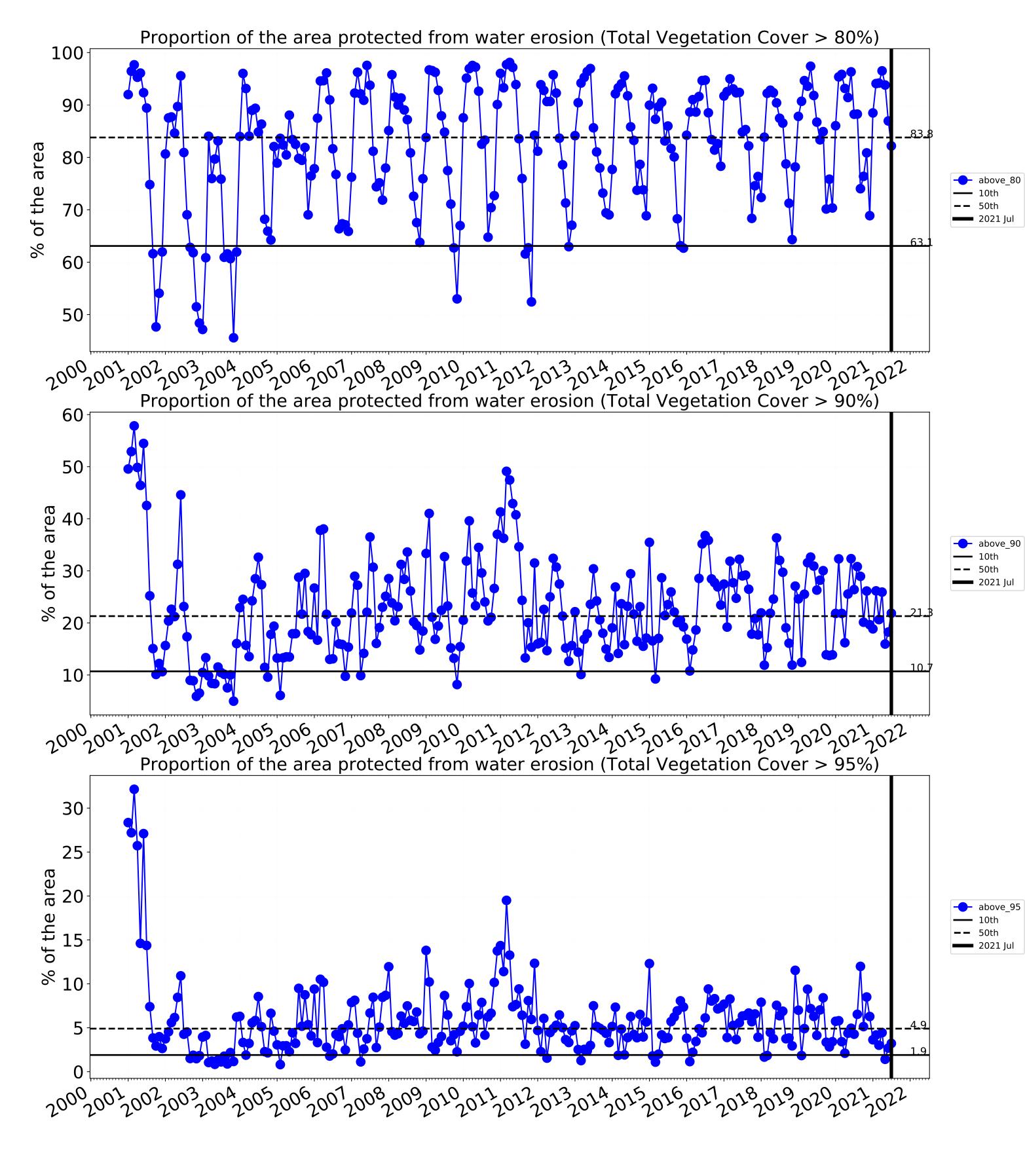
Wind erosion historical monthly area protected (Total Veg Cov >50%)

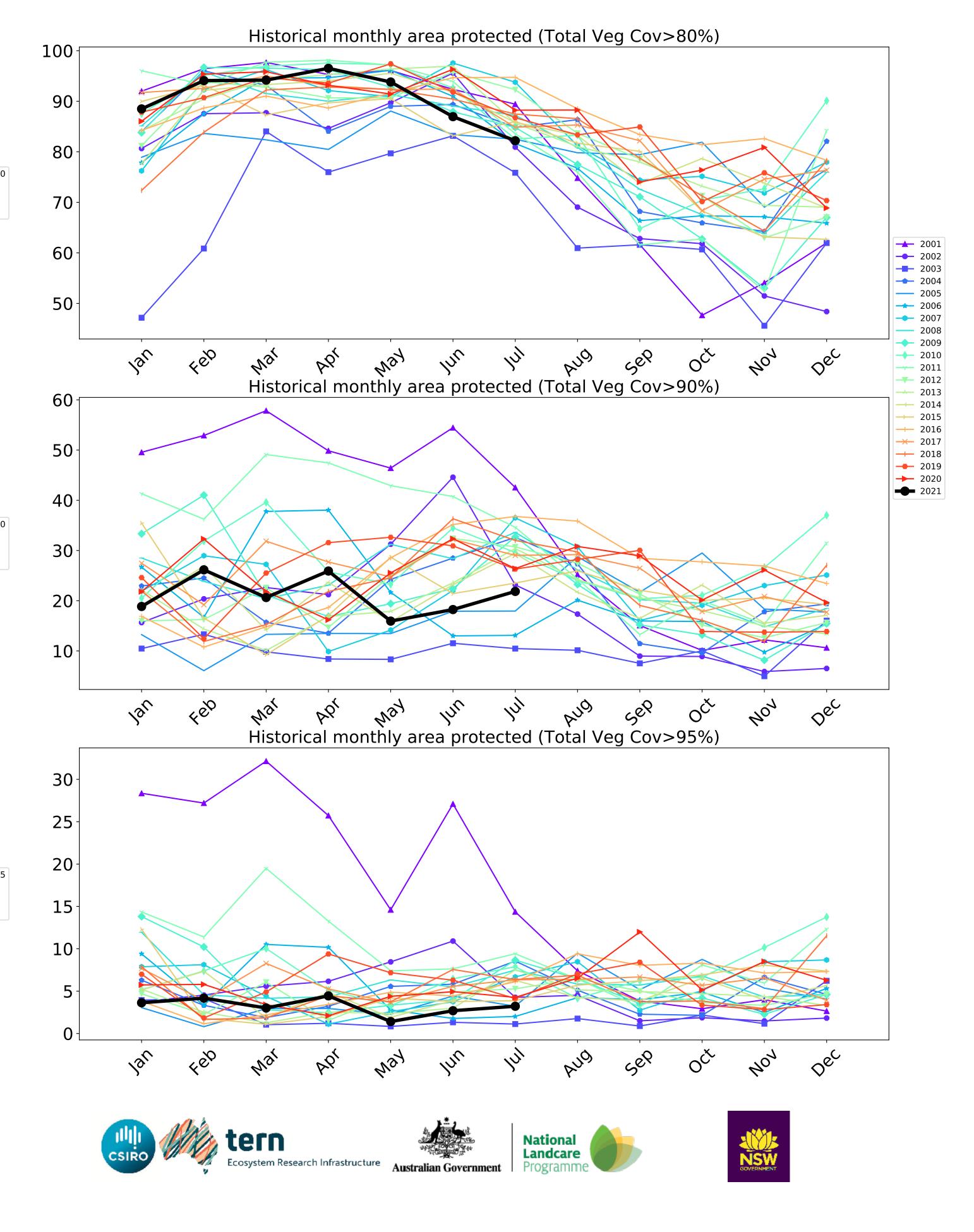
100-98 96 ---- above_70 **—** 10th 94 03 **——** 50th **——** 2021 Jul 92 90 88 86 Jan 4eb May In PQ Mar month tern Ecosystem Research Infrastructure Australian Government

Programme

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

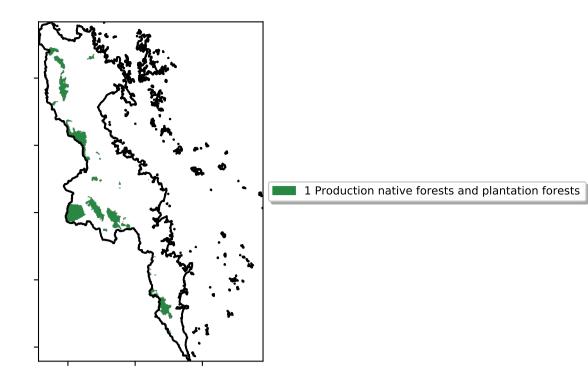




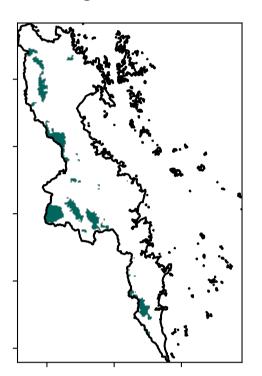


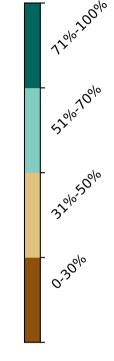
Production native forests and plantation forests

Land use and forest cover

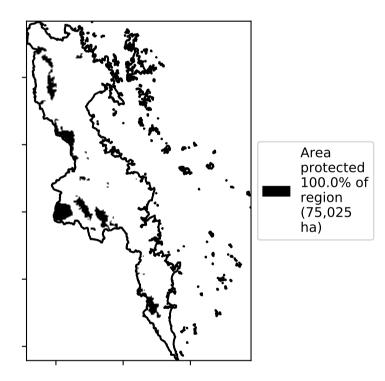


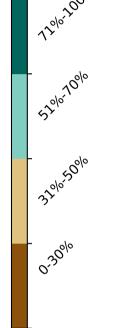
Total Vegetation Cover [%]



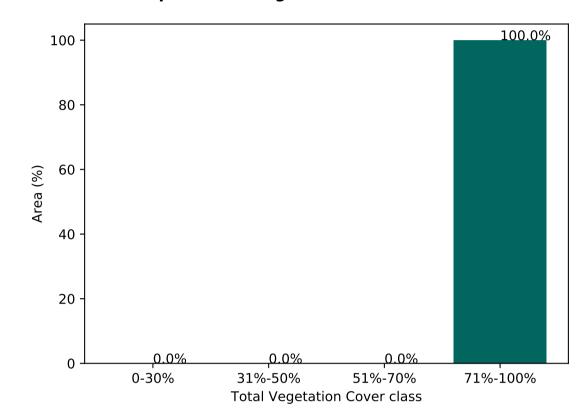


% Area protected from water erosion (>70%)

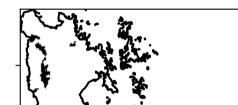




Proportion of vegetation cover class in area

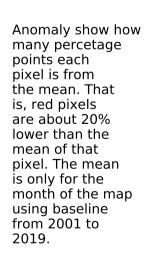


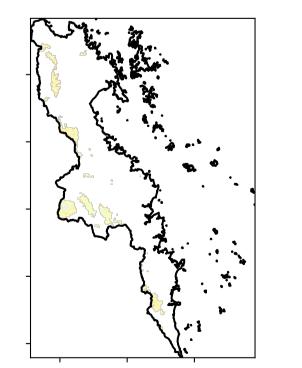
% Area protected from wind erosion (>50%)

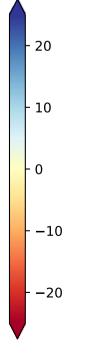


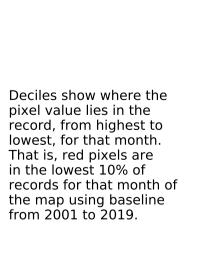
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

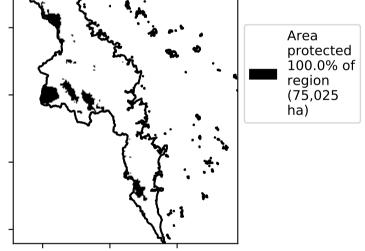
Total Vegetation Cover Anomaly [%]

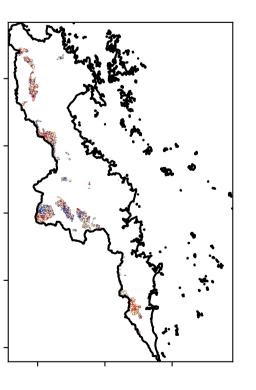


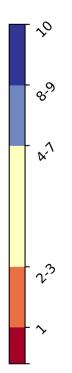




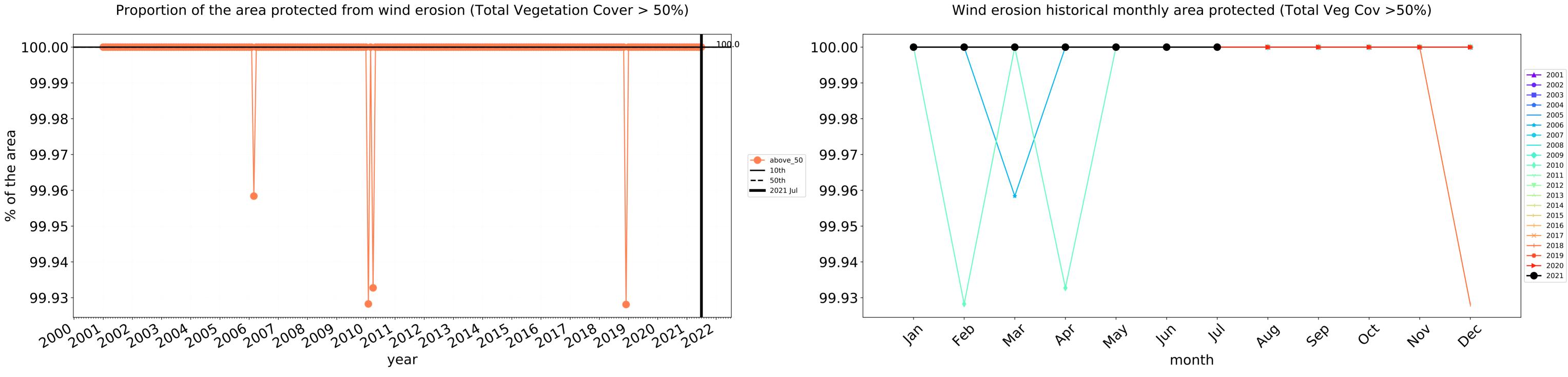


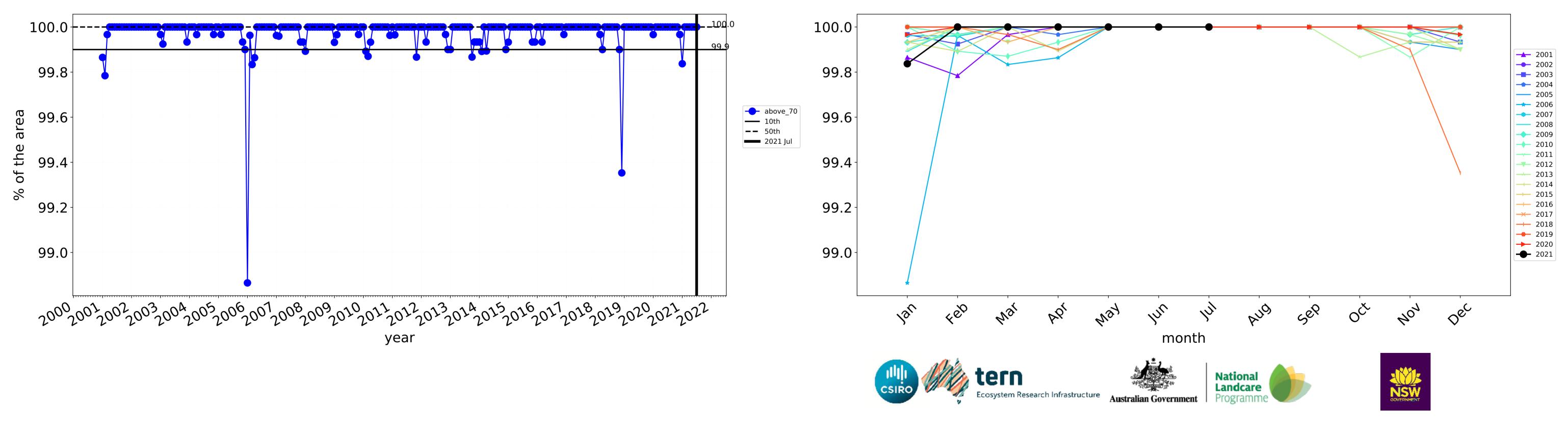




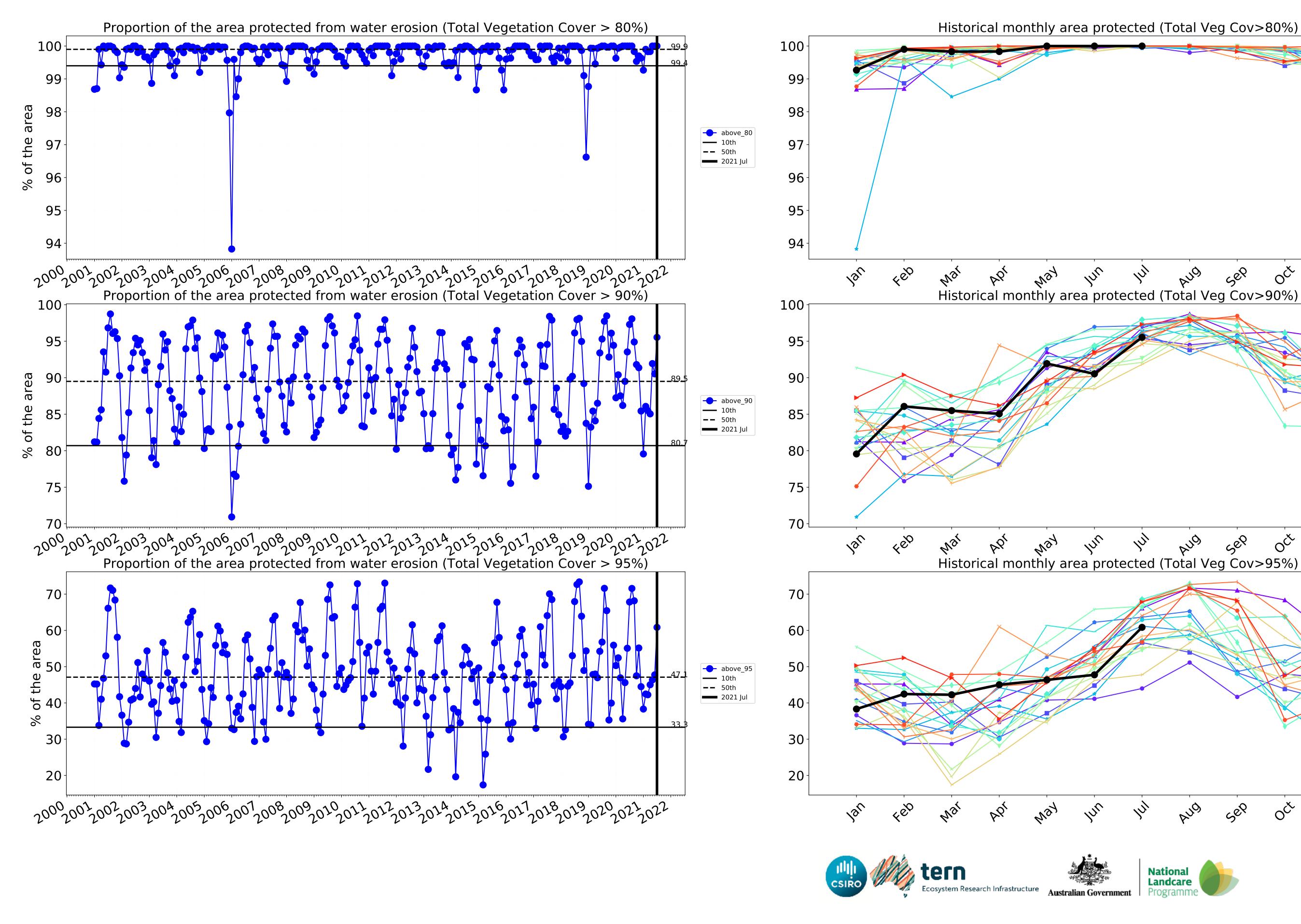


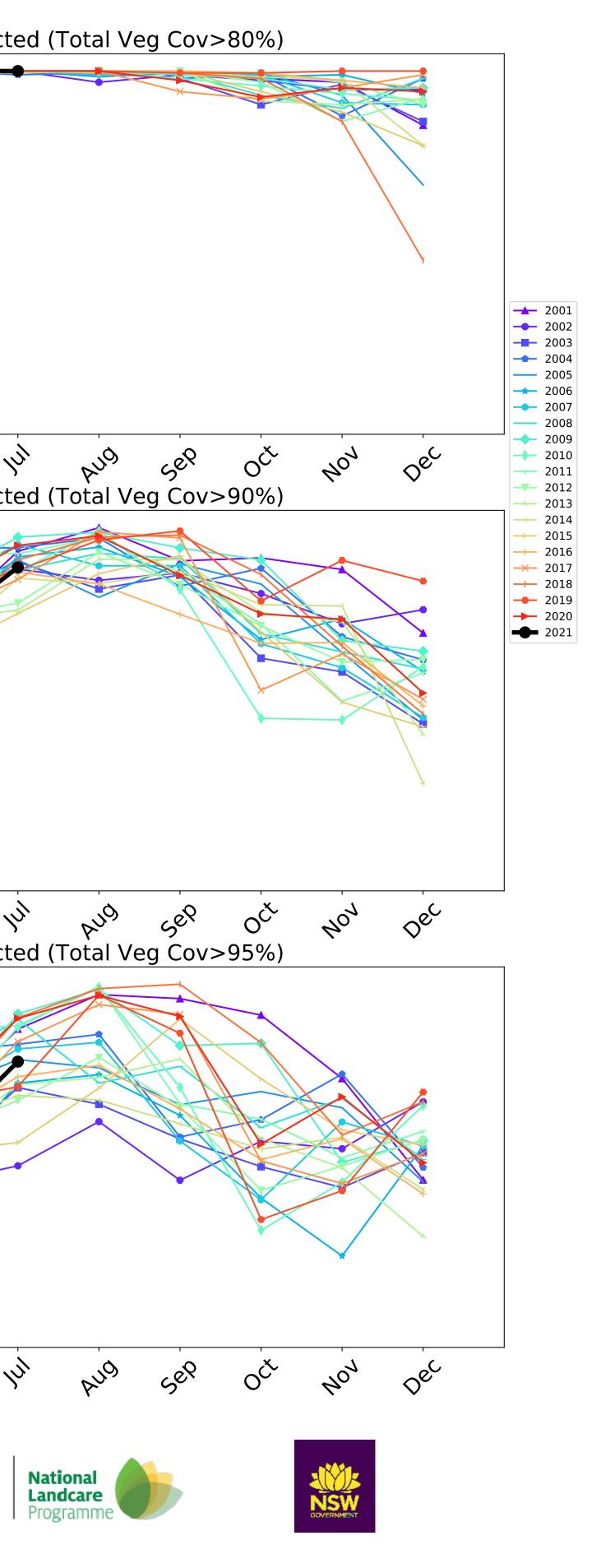






Water erosion historical monthly area protected (Total Veg Cov>70%)





Mackay Whitsunday (909,450 ha and no data 23,610 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	909,450	99.9% 908,750	99.8% 907,325	98.5% 895,650	93.1% 846,850	70.0% 636,450	35.5% 322,875
Conservation and natural environments	276,900	99.9% 276,525	99.6% 275,925	98.5% 272,625	96.7% 267,775	83.5% 231,200	44.0% 121,850
Conservation and natural environments non forest	7,275	100.0% 7,275	98.3% 7,150	93.1% 6,775	83.5% 6,075	51.2% 3,725	18.2% 1,325
Conservation and natural environments Woodland forest	75,100	99.9% 75,050	99.8% 74,975	99.0% 74,325	97.7% 73,400	88.2% 66,250	44.3% 33,250
Conservation and natural environments Forest (non woodland)	194,525	99.8% 194,200	99.6% 193,800	98.5% 191,525	96.8% 188,300	82.9% 161,225	44.9% 87,275
Agriculture	468,400	100.0% 468,275	99.9% 468,150	99.2% 464,725	92.9% 435,000	64.4% 301,600	31.4% 146,925
Grazing	298,350	100.0% 298,225	99.9% 298,100	99.6% 297,100	99.0% 295,225	88.6% 264,425	47.4% 141,425
Grazing non forest	189,200	99.9% 189,100	99.9% 189,000	99.4% 188,075	98.6% 186,475	85.1% 161,000	41.2% 78,000
Grazing Woodland forest	80,600	100.0% 80,600	100.0% 80,575	99.9% 80,550	99.7% 80,325	94.3% 76,025	54.1% 43,625
Grazing - Forest (non woodland)	28,550	99.9% 28,525	99.9% 28,525	99.7% 28,475	99.6% 28,425	96.0% 27,400	69.4% 19,800
Irrigation	170,000	100.0% 170,000	100.0% 170,000	98.6% 167,575	82.2% 139,725	21.9% 37,150	3.2% 5,475
Production native forests and plantation forests	75,025	100.0% 75,025	100.0% 75,025	100.0% 75,025	100.0% 75,025	95.5% 71,675	60.8% 45,650

