NSW GOVERNMENT | Office of Environment & Heritage

THE 3C PROJECT: AN OVERVIEW

CSIRO

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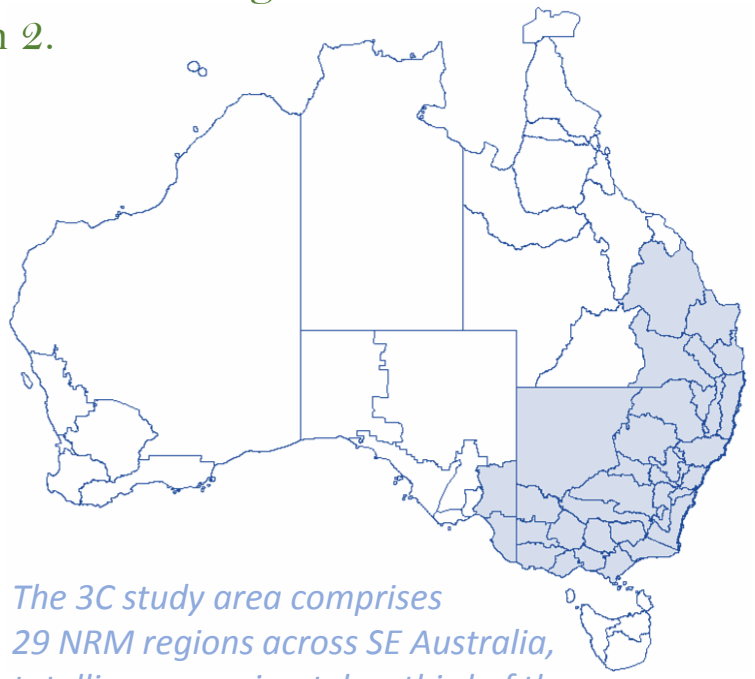
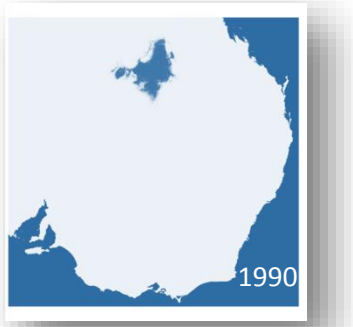
The 3C project is part of the Australian government's Regional Natural Resource Management Planning for Climate Change, stream 2.

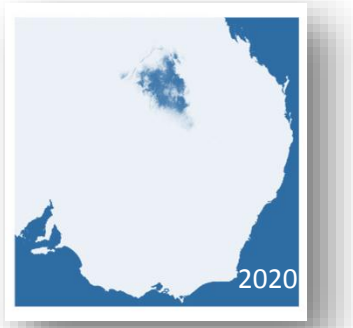
3C findings should be viewed alongside those of the Australia-wide ADAPTNRM tools and resources

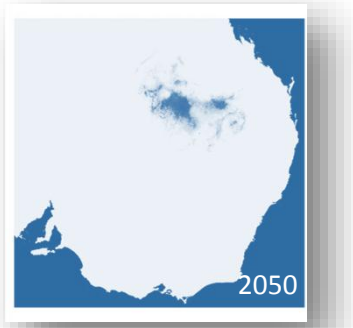


The 3C study area comprises 29 NRM regions across SE Australia, totalling approximately a third of the Australian continent (5.5M ha).

The 3C project modelled the **impacts of climate on biodiversity** at a broad scale and developed **information to guide biodiversity conservation** under a changing climate.







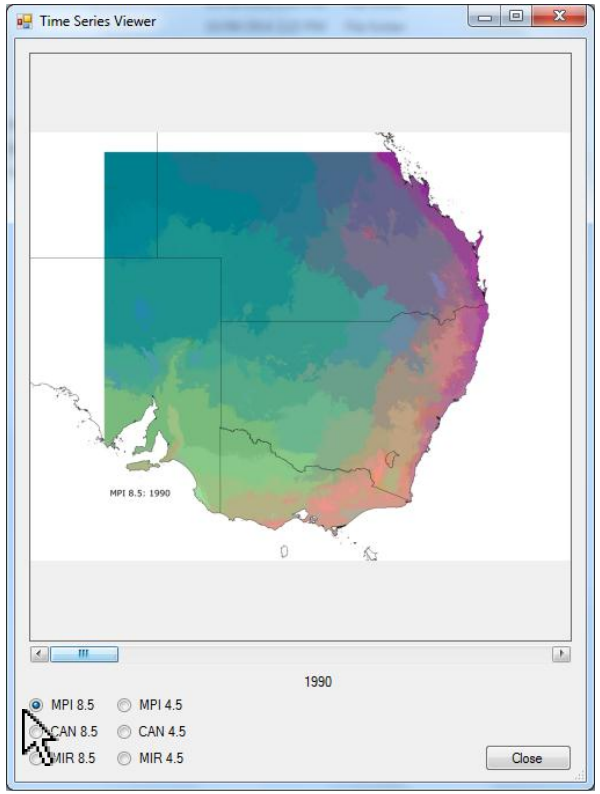
The 1990 predicted extent for this BCC 35 is primarily contained in the Mitchell Grass Downs bioregion of Queensland. The 2020 image shows this class moving in a SSE direction into the Mulga Lands. By 2050 this class has intruded into parts of the Southern Brigalow Belt and even extending further into the upper reaches of the Darling Riverine Plains on the NSW border

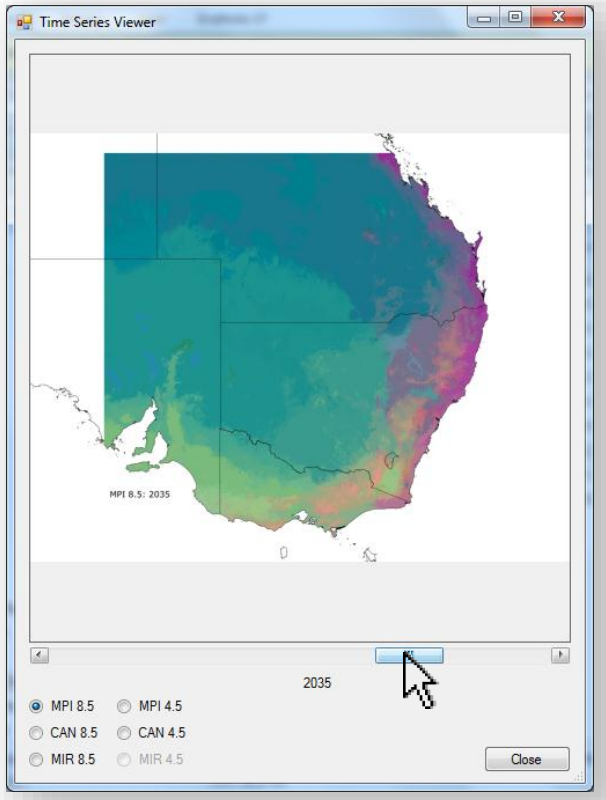
Impacts on 100 broad ecosystems, called

Bioclimatic Classes (BCCs) were

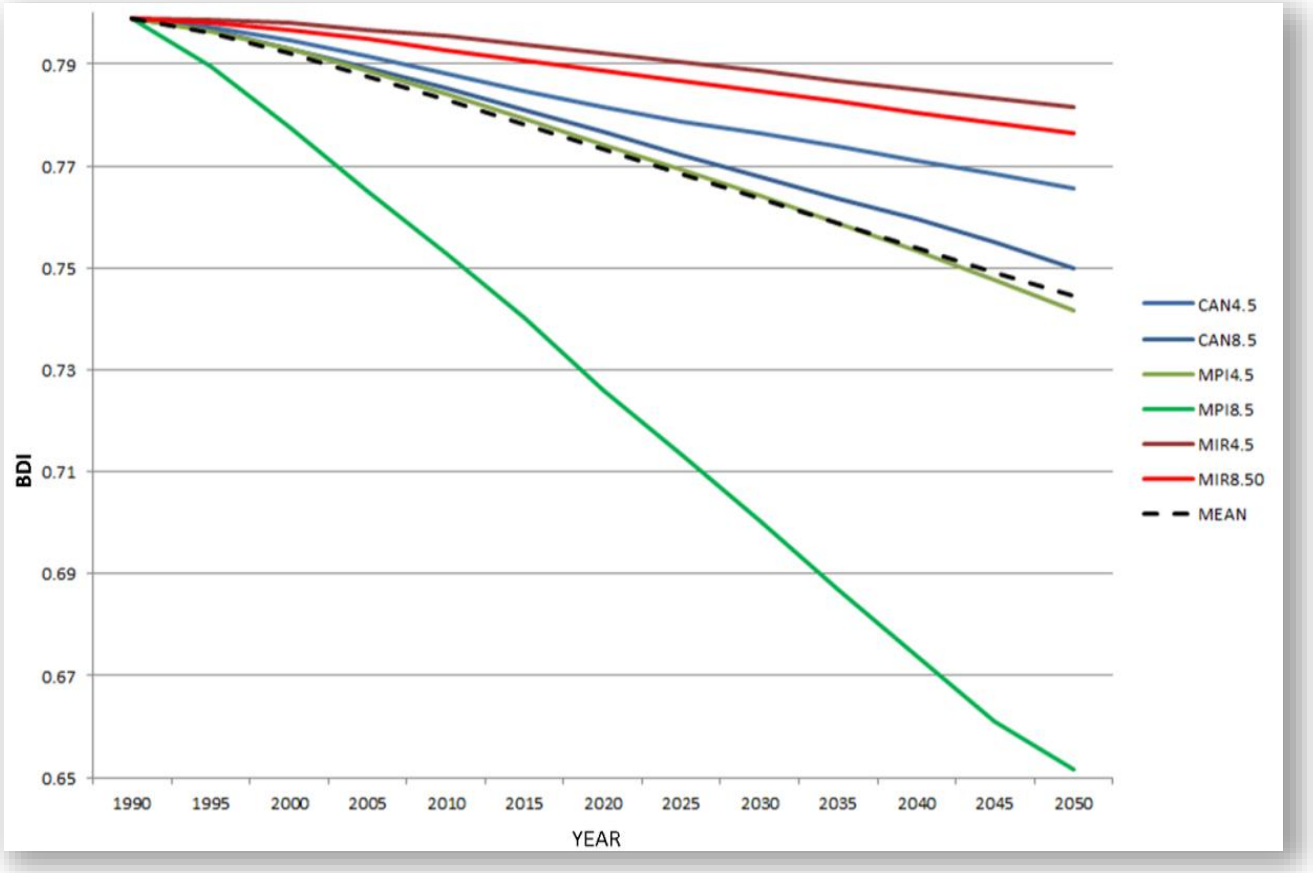
modelled for six alternative climate futures using a range of spatial-analytical approaches. Natural resource management agencies can now incorporate this information into their planning.

Visualisation products arising from the work have been designed to engage people in creative thinking and learning in relation to biodiversity in a changing climate



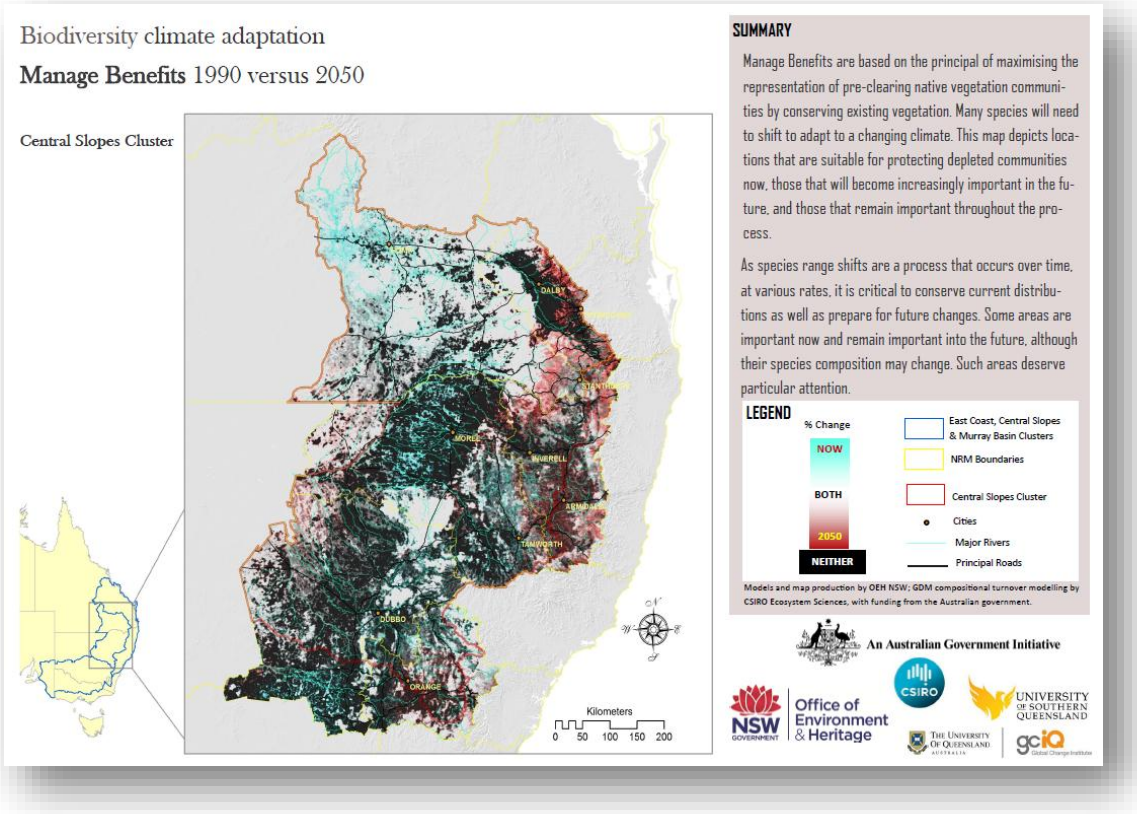


The time-series viewer allows interactive comparisons of BCC envelopes across time and between climate futures.



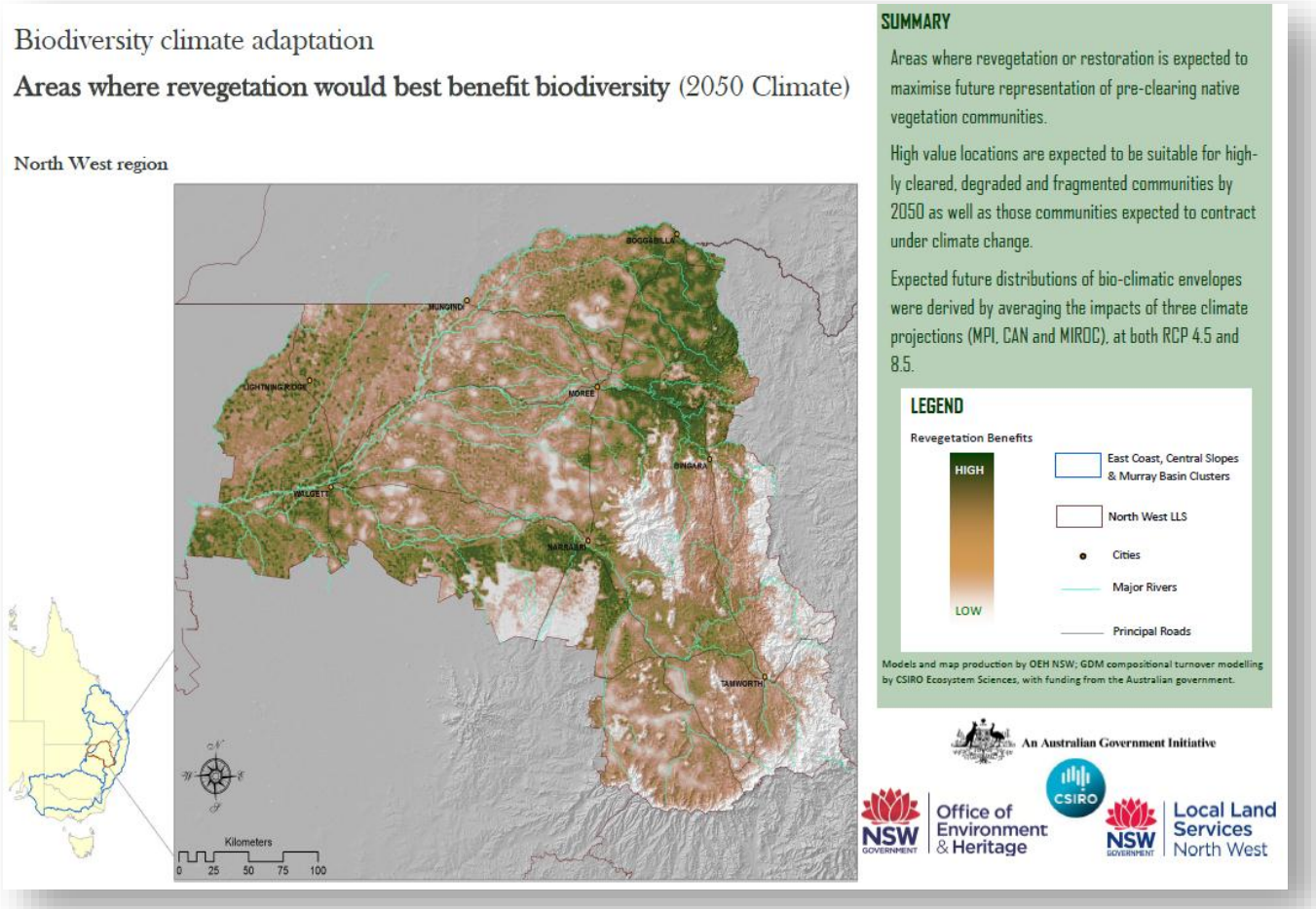
Projected biodiversity index for the 3C region from 1990–2050 for each of six alternative futures, and the mean

Six climate models were examined – most agreed on **the degree of biodiversity loss** projected to 2050



Manage benefits within the Central Slopes cluster; blue indicates areas with high benefit in 1990; red indicates high benefit in 2050; and white indicates high manage benefit across the timeframe. Black areas are substantially cleared of native vegetation.

…more detailed maps are provided for the three NRM clusters



Revegetation benefits within the Northwest Local Lands Service region NSW; darker greens indicate areas with high benefit in relation to 2050. White areas already have substantially intact native vegetation.

… even more detailed maps

are provided for some NRM regions

What we are finding

1. Collectively, losses to biodiversity arising from the impacts of climate change in the 3C region over the next 30–40 years could be comparable to losses due to land clearing and degradation from European settlement up to the present.

2. Benefits mapping across the 1990–2050 timeframe demonstrates a considerable geographic shift in areas most beneficial for conservation action as the conservation significance of individual ecosystems change and their modelled distributions shift.

3. When revegetating, 'focus on the future'; make use of high revegetation benefit mapping and select species that are likely to prosper under the emerging climate.

4. Additional work is needed at finer scales to synthesise 3C with other domains (e.g. agricultural production, carbon sequestration, water quality and quantity, public amenity) and with more detailed biodiversity information (e.g. species-level conservation, fine-scale connectivity, and fine-scale environmental variability).

The Office of Environment and Heritage NSW has published a 3C project report. It provides an in depth background to the project, a detailed description of its methodology and products.

Climate change adaptation is a clear example of the need for an adaptive management approach. With time, climate modelling will improve, and projections will be progressively superseded by actual outcomes.

The lessons learnt from the 3C project are already being applied to newly available NARCLiM projections. Rather than supercede the 3C findings, the new modelling will be combined with 3C modelling to improve confidence and realism. These combined findings will be available from the adaptNSW site.

File	Type	Description
Derived products		
Combined1990-2050 climate benefits	tif; lyr; pdf	Combined 1990–2050 climate adaptation native vegetation benefits
Relative Benefit Increase1990to2050	tif; lyr; pdf	Climate influence on benefits 1990–2050
Target Areas for habitat connectivity benefits	tif; lyr; pdf	3CLINKS benefits (climate corridors) 1990–2050
3CMP Links 1990-2050	GRID; zip	Colonisation by any class between 1990 and 2050 based on the MPI8.5 metapopulation model
Manage Benefits 1990 versus 2050	tif; lyr; pdf	Manage benefits 1990 versus 2050
Manage Benefits 1990-2050	tif; lyr; pdf	Manage benefits 1990–2050
Revegetate Benefits 1990-2050	tif; lyr; pdf	Revegetate benefits 1990–2050
Future ability to support existing biodiversity	tif; lyr; pdf	3CMP predicted 'degree of fit' of 1990 bioclimatic classes to 2050
3CMP Links	tif; lyr; pdf	3CMP areas of high biological turnover
Vegetation Condition 2014	tif; lyr; pdf	Estimated vegetation condition 2014
Raw benefits		
Manage Benefits	flt; hdr; zip& tif; zip	Conservation manage benefits derived for 1990, 2020 and 2050
Revegetate Benefits	flt; hdr; zip & tif; zip	Conservation revegetate benefits derived for 1990

File	Type	Description
GDM Bioclimatic classes		
BCC Classgrids	GRID; zip	Incremental GDM Climate Change Projection Bioclimatic Envelope Classifications
BCC profiles	PDFs	For each BCC a map where showing where it is the dominant class, and a species list
Nearest neighbour (dominant) classifications	Gifs and GRIDs; zip	Dominate class grids for each of the six future climate scenarios between 1990-2050 in 5 year intervals
Report		
3c_Report	pdf	3C MODELLING Biodiversity Management Under Future Climate To 2050 Report - PDF file
Tools		
The BFT Viewer	exe; zip	Biodiversity Forecasting Viewer
The Time Series Viewer	exe; zip	Generalised dissimilarity model Time Series Viewer
3C Cluster scale PDF maps		
East Coast Cluster	PDFs	PDF maps, as seen in the 3C report, zoomed into the East Coast Cluster
Murray-Basin Cluster	PDFs	PDF maps, as seen in the 3C report, zoomed into the Murray-Basin Coast Cluster
Central Slopes Cluster	PDFs	PDF maps, as seen in the 3C report, zoomed into the Central Slopes Cluster

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