

Staying connected: assessing the capacity of landscapes to retain biodiversity in a changing climate

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Supplementary Information

Table S1: Environmental variables selected in the GDM model. Landform and substrate layers are constant across all scenarios, whereas the climatic variables vary across scenarios. Climatic data was generated for all scenarios using ANUCLIM (Hutchinson and Xu 2015). Landform and substrate layers were drawn from a) Viscarra-Rossel and Chen (2011) b) Wilford (2012) and c) Gallant et al. (2012)

Temperature (°C)	Precipitation (mm)
<i>Temperature Seasonality (Coefficient of Variation)</i>	<i>Precipitation Seasonality(Coefficient of Variation)</i>
<i>Temperature Annual Range (P5-P6)</i>	<i>Precipitation of Wettest Quarter</i>
<i>Mean Temperature of Warmest Quarter</i>	<i>Precipitation of Warmest Quarter</i>
<i>Mean Temperature of Coldest Quarter</i>	
Radiation (Wm⁻²)	Seasonality (°C or Wm⁻²)
<i>Highest Period Radiation</i>	<i>Maximum Temperature – Monthly Maximum Temperature</i>
<i>Radiation of Driest Quarter</i>	<i>Minimum Annual Temperature – Monthly Minimum Temperature</i>
<i>Radiation of Warmest Quarter</i>	<i>Annual Evaporation – Maximum Monthly Evaporation</i>
<i>Radiation of Coldest Quarter</i>	<i>Annual Solar Radiation – Monthly Maximum Radiation</i>
Moisture (mm)	Landform/Substrate (static)
<i>Annual Mean Moisture Index</i>	<i>Spectra of surficial topsoils 0–20 cm – PC1_20^a</i>
<i>Highest Period Moisture Index</i>	<i>Spectra of surficial topsoils 60–80 cm – PC2_80^a</i>
<i>Mean Moisture Index of Warmest Quarter</i>	<i>Spectra of surficial topsoils 60–80 cm – PC3_80^a</i>
<i>Mean Moisture Index of Coldest Quarter</i>	<i>Weathering index^b</i>
<i>Monthly Minimum Potential Evaporation</i>	<i>Elevation focal range within 1000 m^c</i>

Table S2: Details of the formalised radial geometry. Band 0 represents the focal cell, and subsequent bands expand outward as defined by a radius (focal cell centre to surrounding cell centre). This generates an approximate doubling of segment area.

band	radius	band width	segment area	relative area
0	0.9		0.125	
1	1.5	1	1	8.0
2	3.5	2	3.5	3.5
3	5.5	2	7.5	2.1
4	8.5	3	16	2.1
5	12.5	4	33	2.1
6	18	5.5	67	2.0
7	25.7	7.7	133.5	2.0
8	36.7	11	269	2.0
9	52.1	15.4	537.5	2.0
10	73.8	21.7	1072	2.0
11	104.4	30.6	2144	2.0
12	147.6	43.2	4272	2.0
13	200	52.4	7148	1.7

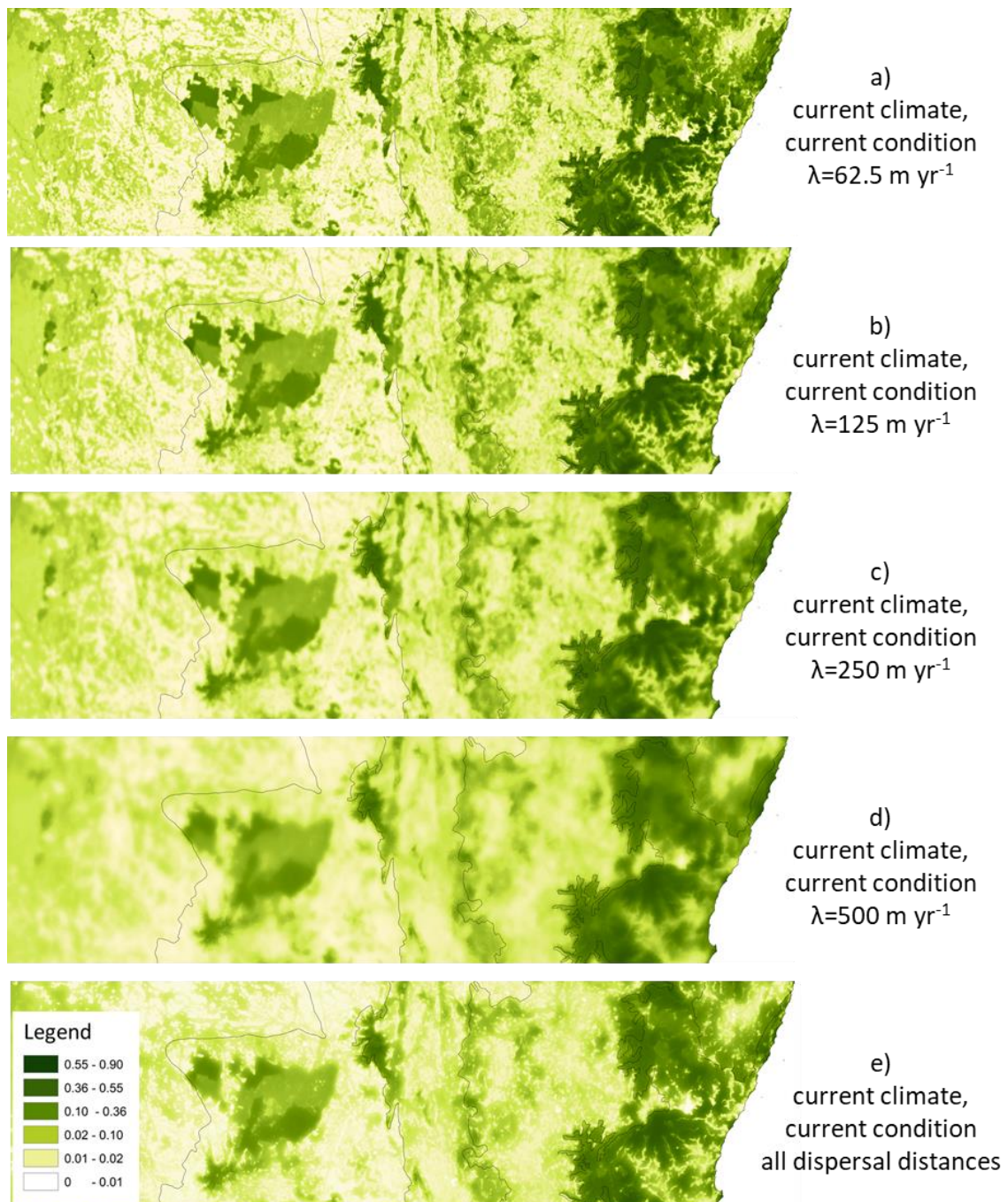


Fig. S1: The effect of multiple dispersal distances on the index under current conditions, showing the four distances (a to d) and the mean across distances (e).

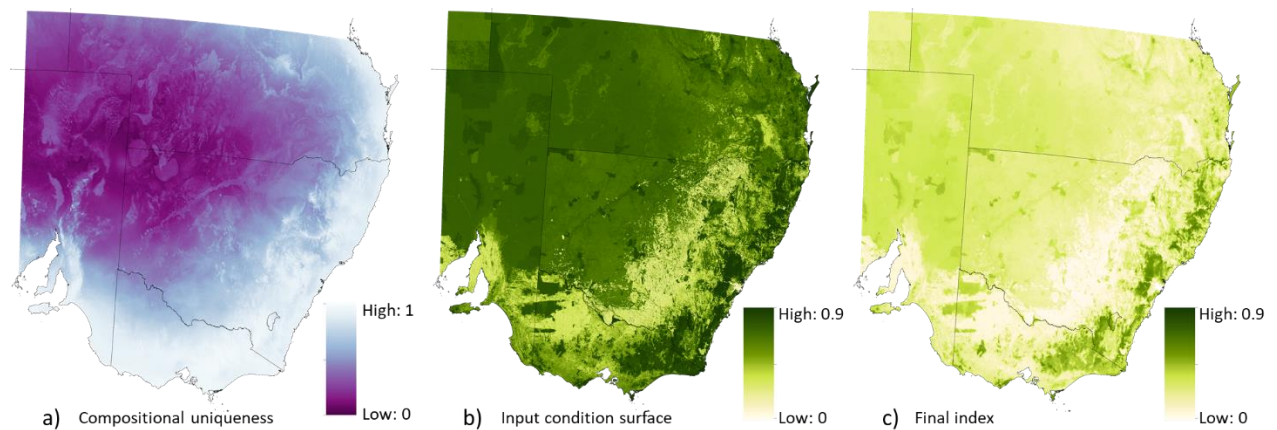


Fig. S2: Key layers at the buffered NARCLiM extent. a) baseline compositional uniqueness surface calculated for an intact landscape under current climate, used for spatial reporting b) the input condition surface, and c) the cellwise index for the whole NARCLiM extent as required for spatial reporting.

References

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- Viscarra-Rossel RA, Chen C (2011) Digitally mapping the information content of visible-near infrared spectra of surficial Australian soils. *Remote Sensing of Environment* 115(6):1443-1455
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