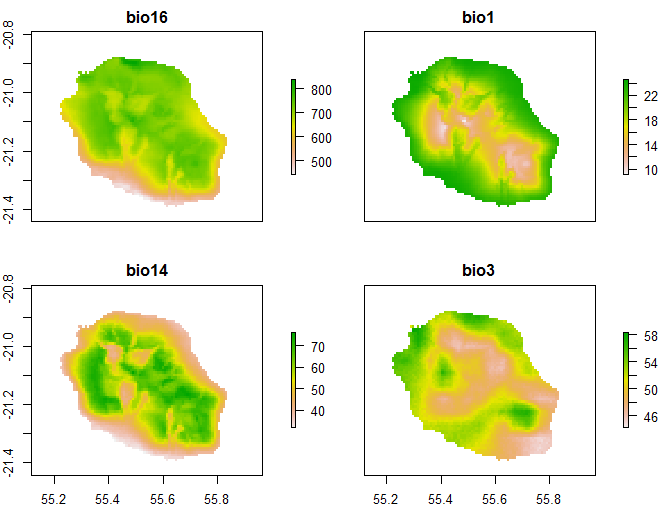
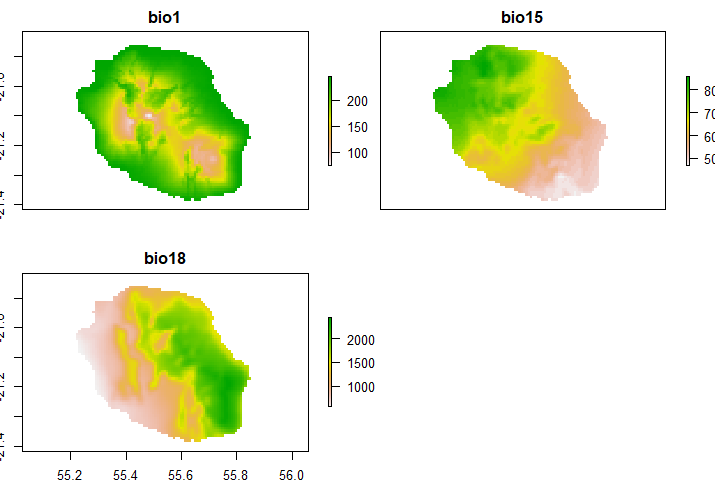
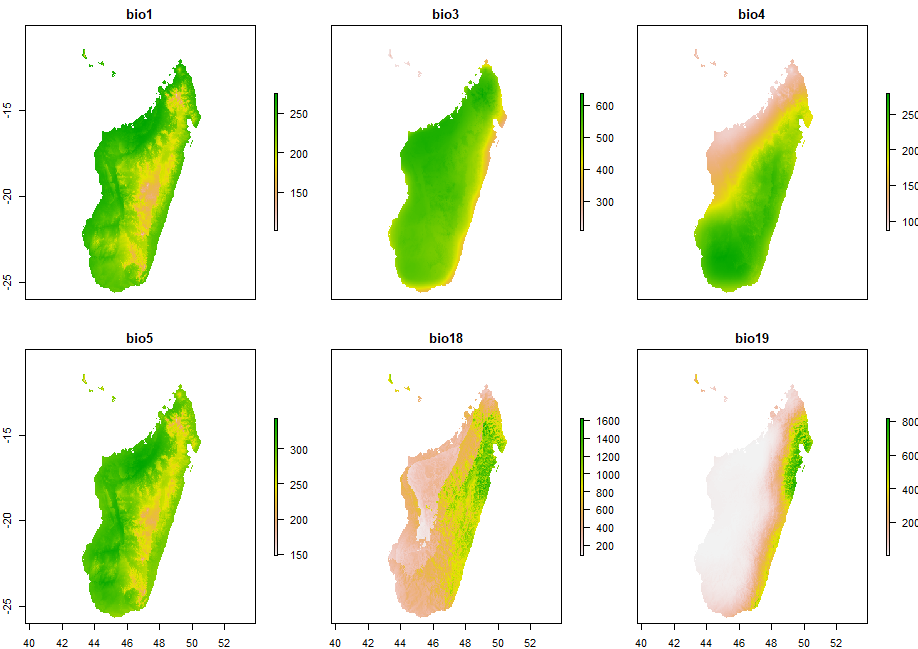
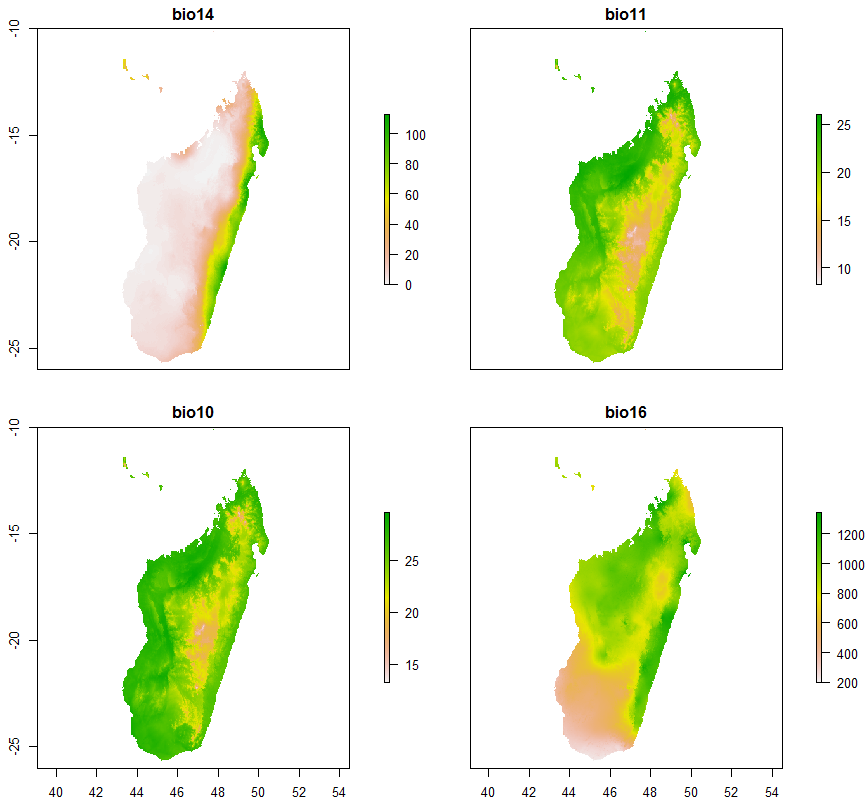
**Are narrow-ranging species doomed to extinction? Potentially dramatic and generalised decline in future climate suitability of highly threatened species**

**Supporting information**



Fig. S1 Selected current bioclimatic variables for *Phelsuma inexpectata* (Top: Chelsa; Bottom: Worldclim). Bio1: Annual mean temperature; Chelsa: Bio1: Annual mean temperature (°C \* 10); Bio15: precipitation seasonality; Bio18: summer precipitation. Worldclim: Bio3: Isothermality; Bio14: Precipitation of Driest Month; Bio16: Precipitation of Wettest Quarter.

Fig. S2 Selected current bioclimatic variables for *Mantella aurantiaca*. Top: Chelsa; Bottom: Worldclim. Chelsa: Bio1: Annual mean temperature (°C \* 10), Bio3: Isothermality; Bio4: Temperature seasonality: Bio5: Maximum temperature; Bio18: Summer precipitation; Bio19: Winter precipitation. Worldclim: Bio14: Winter precipitation; Bio11: Winter temperature; Bio10; Summer temperature; Bio16: Summer precipitation.

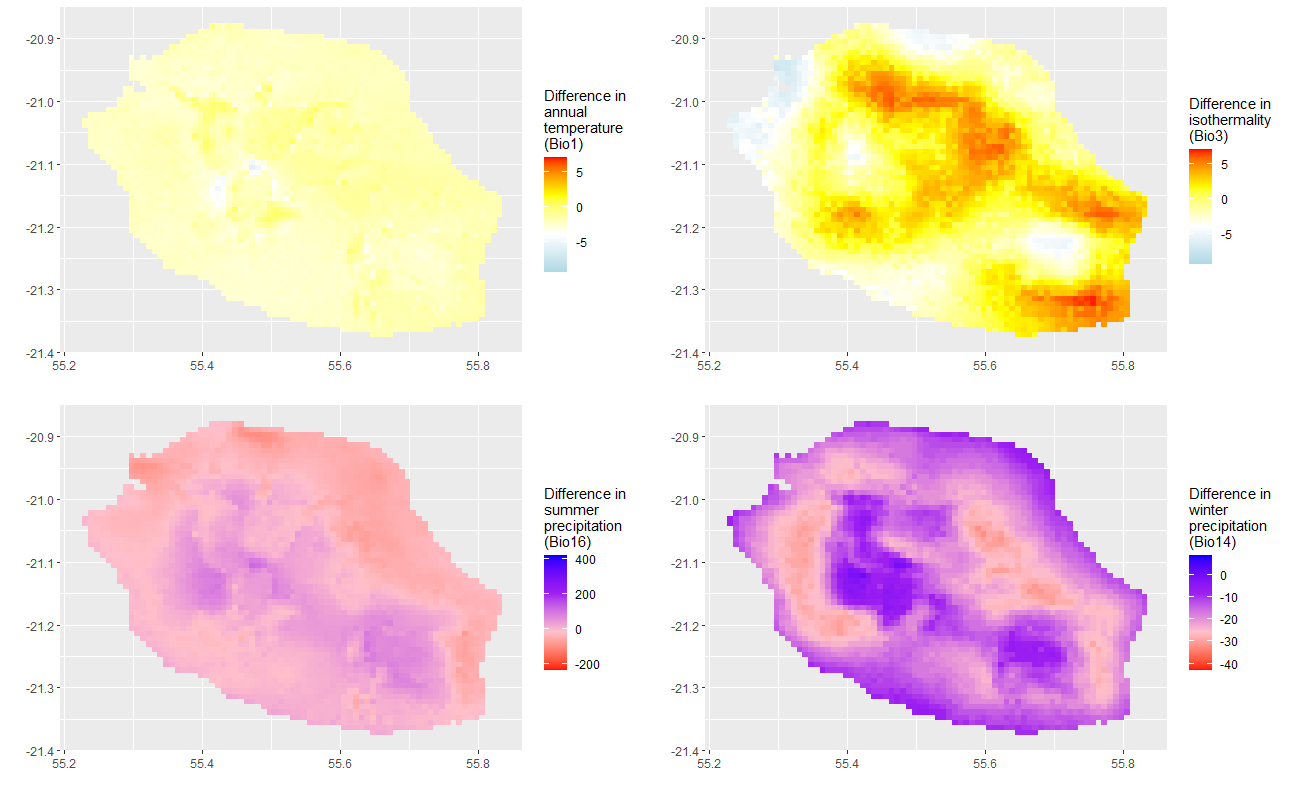
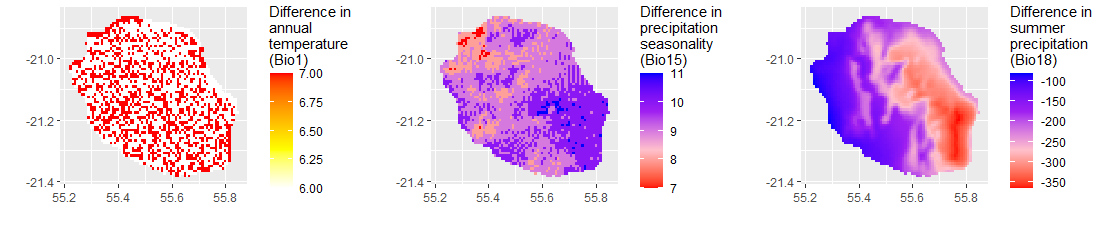
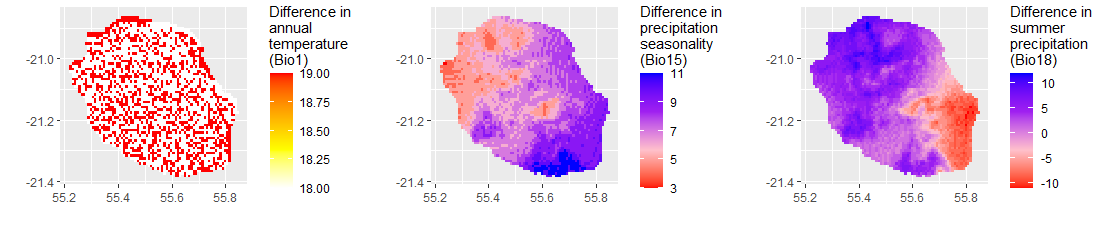


Fig. S3a scenario 2.6 GCM bcc-csm1-1 (top: Chelsa; bottom: Worldclim)



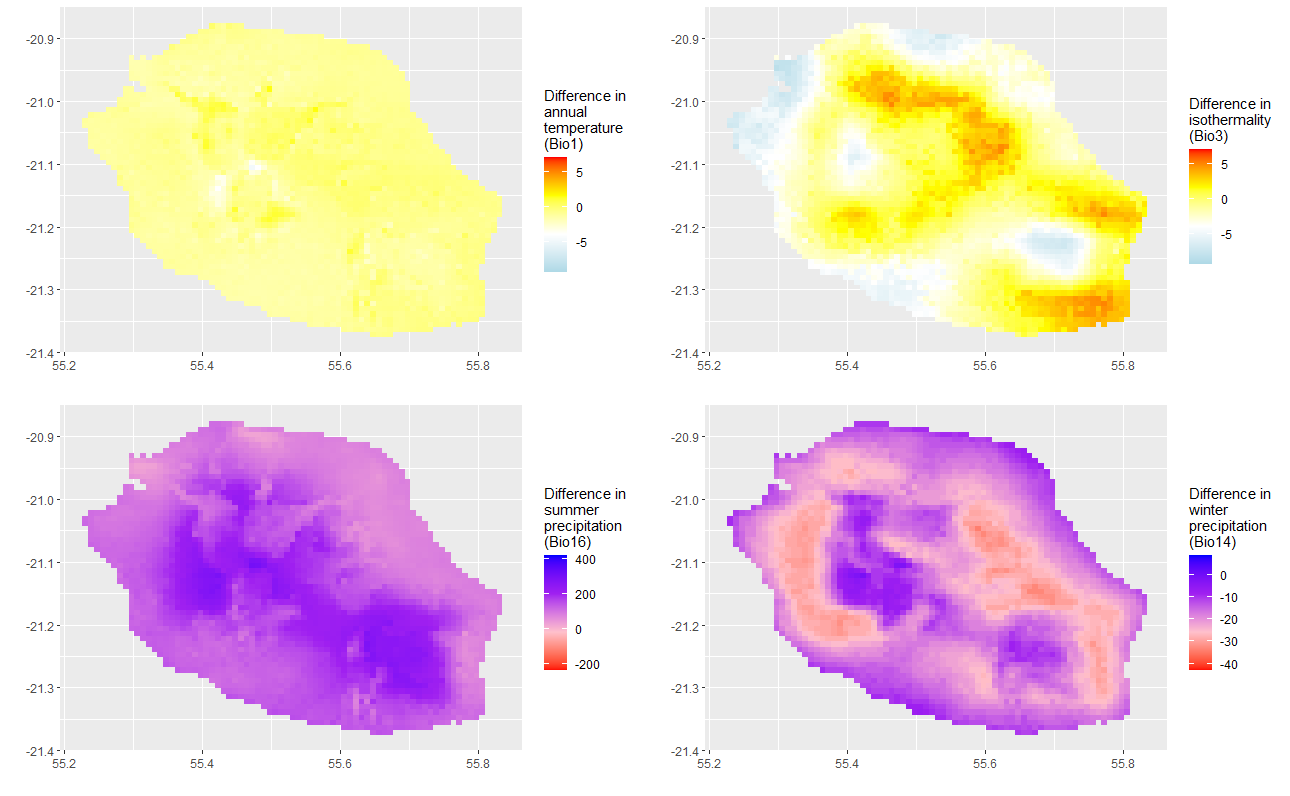


Fig S3b scenario 8.5 GCM bcc-csm1-1 (top: Chelsa; bottom: Worldclim)

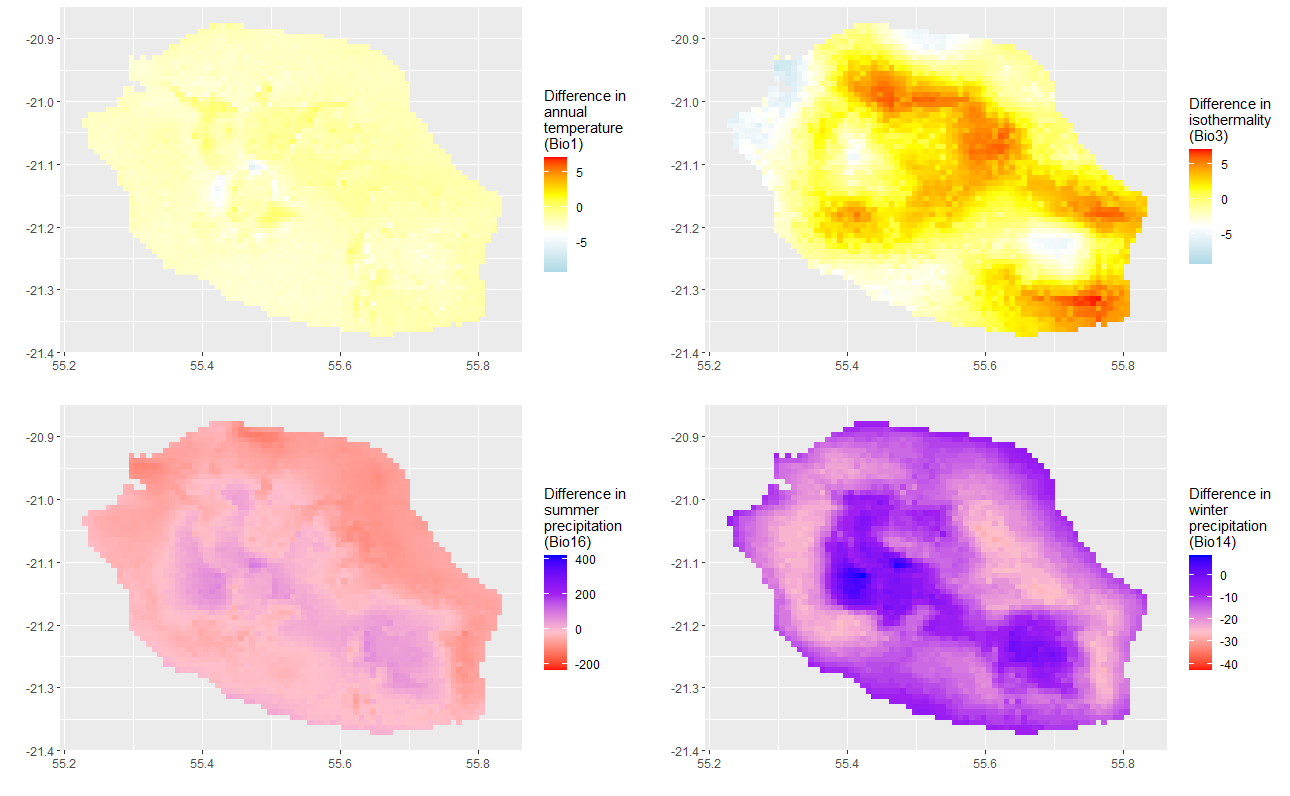
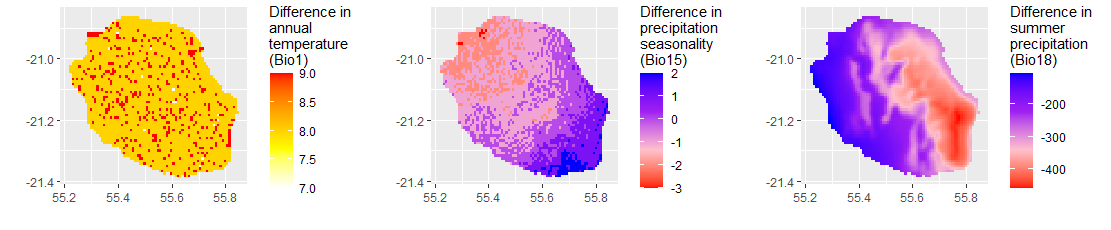
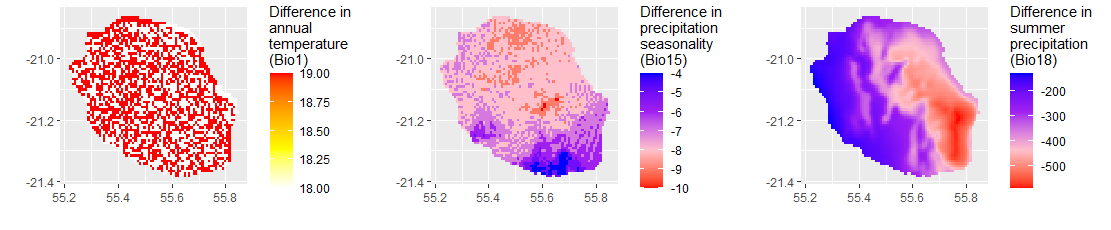


Fig S3c scenario 2.6 GCM Miroc5(top: Chelsa; bottom: Worldclim)



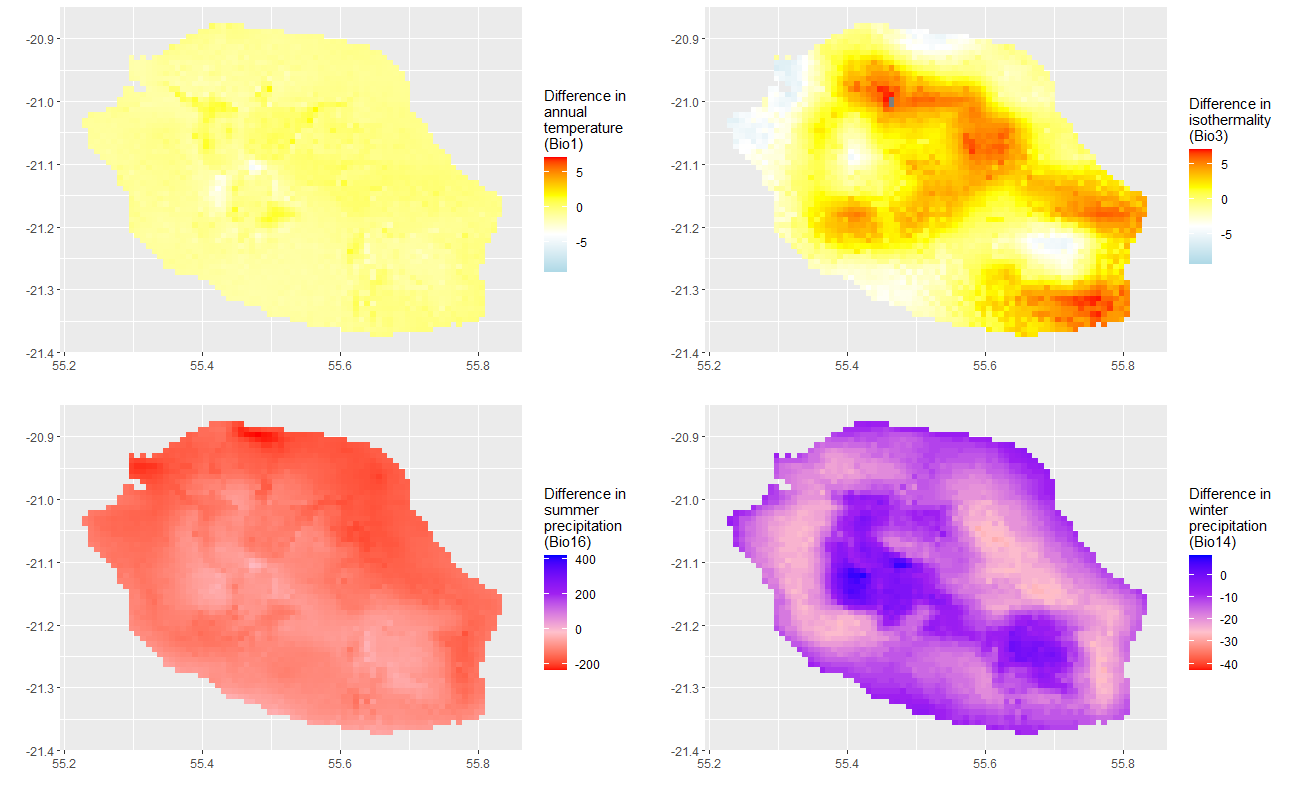


Fig S3d scenario 8.5 GCM Miroc5(top: Chelsa; bottom: Worldclim)

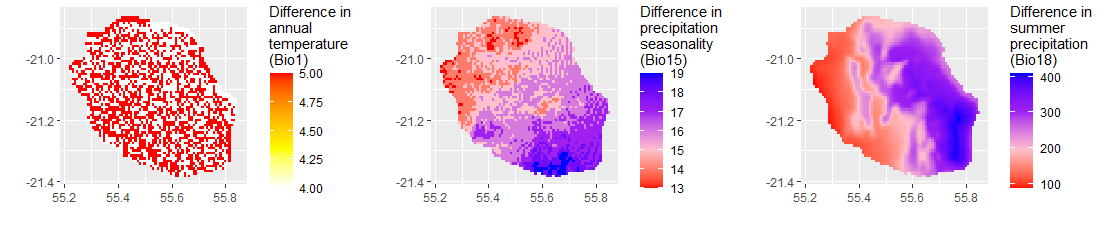
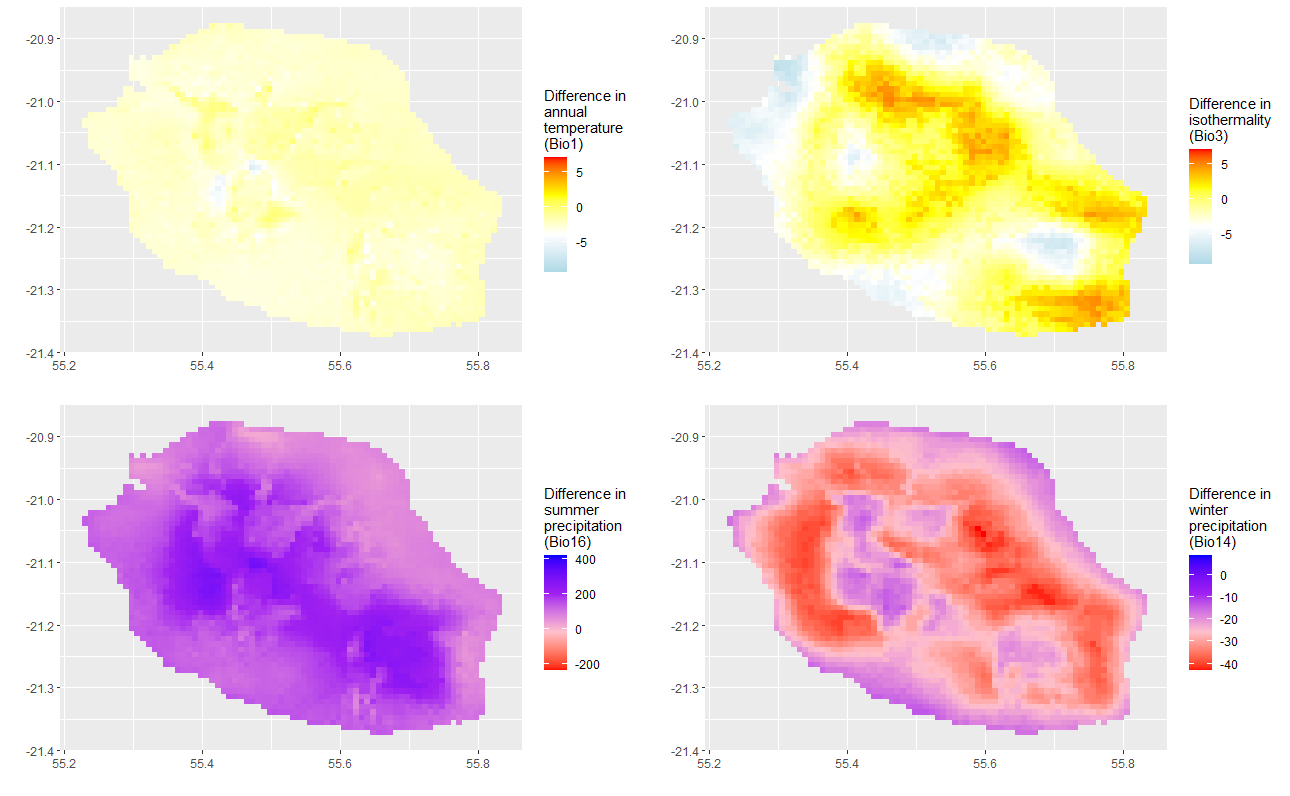
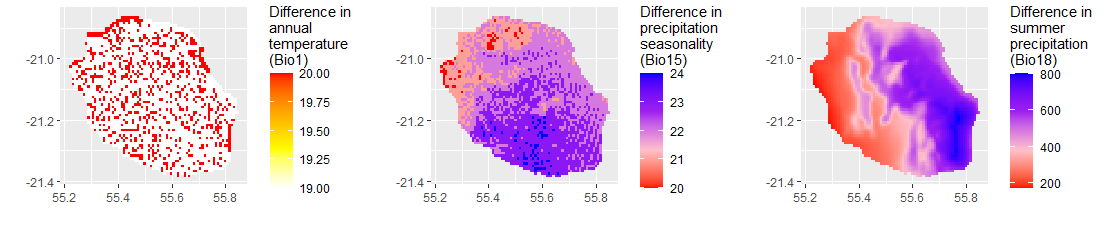
 

Fig S3e scenario 2.6 GCM HadGEM2(top: Chelsa; bottom: Worldclim)



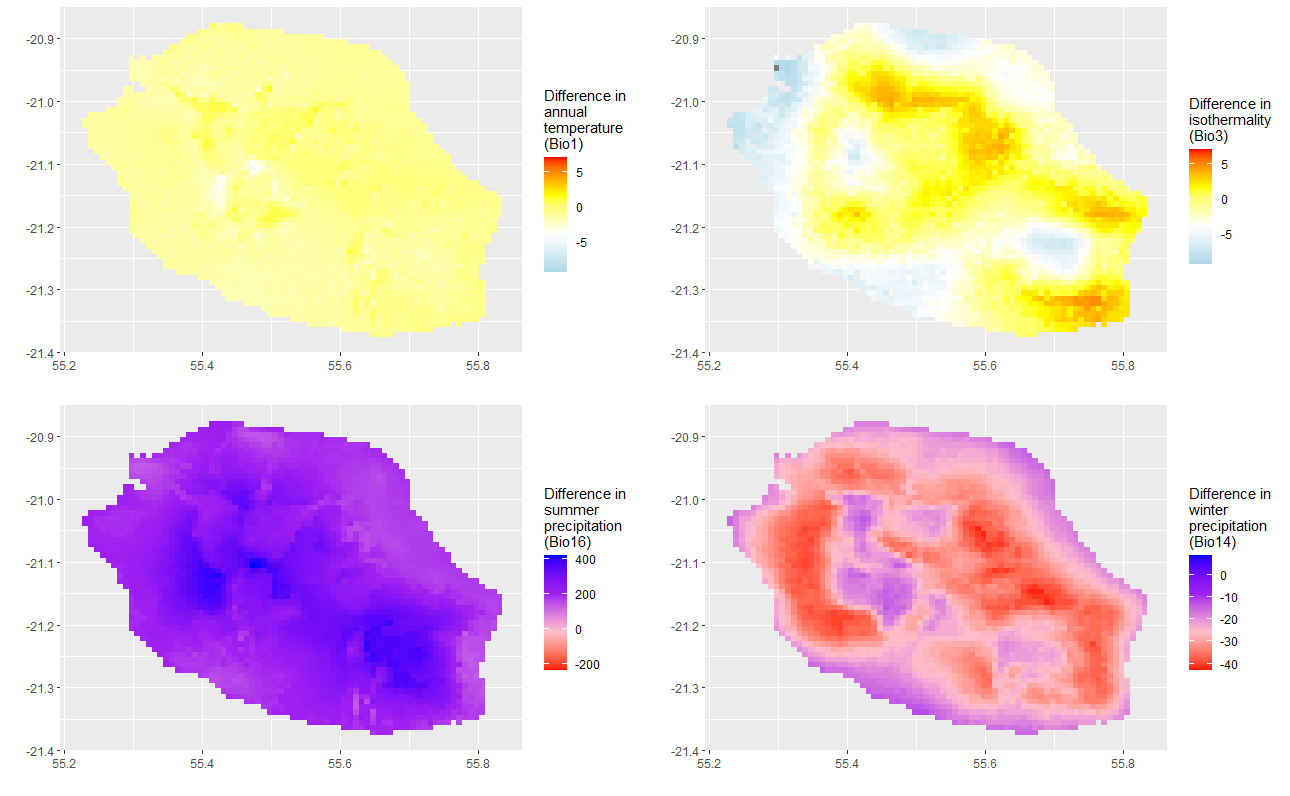
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Fig S3f scenario 8.5 GCM HadGEM2 (top: Chelsa; bottom: Worldclim)

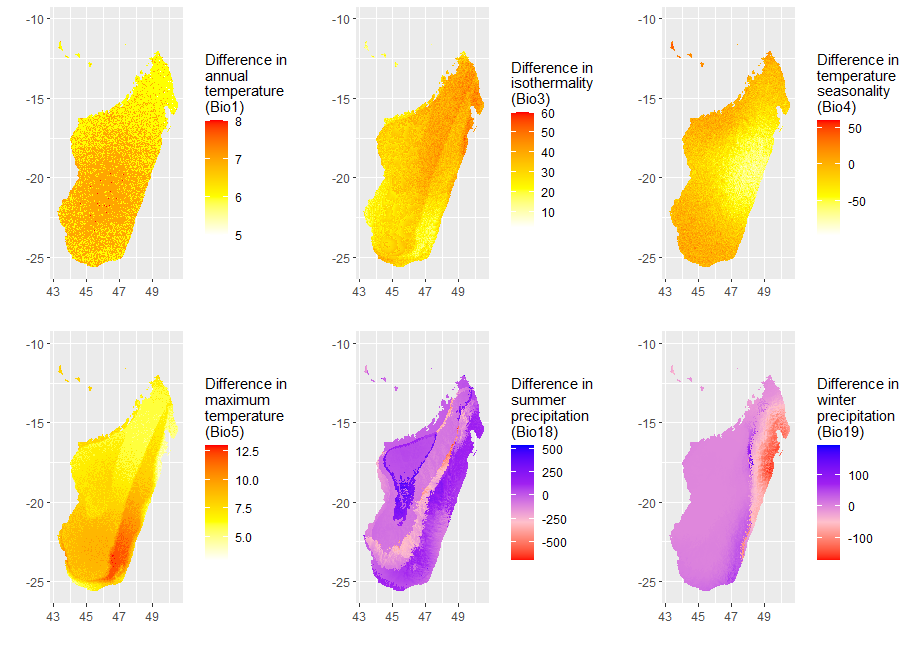
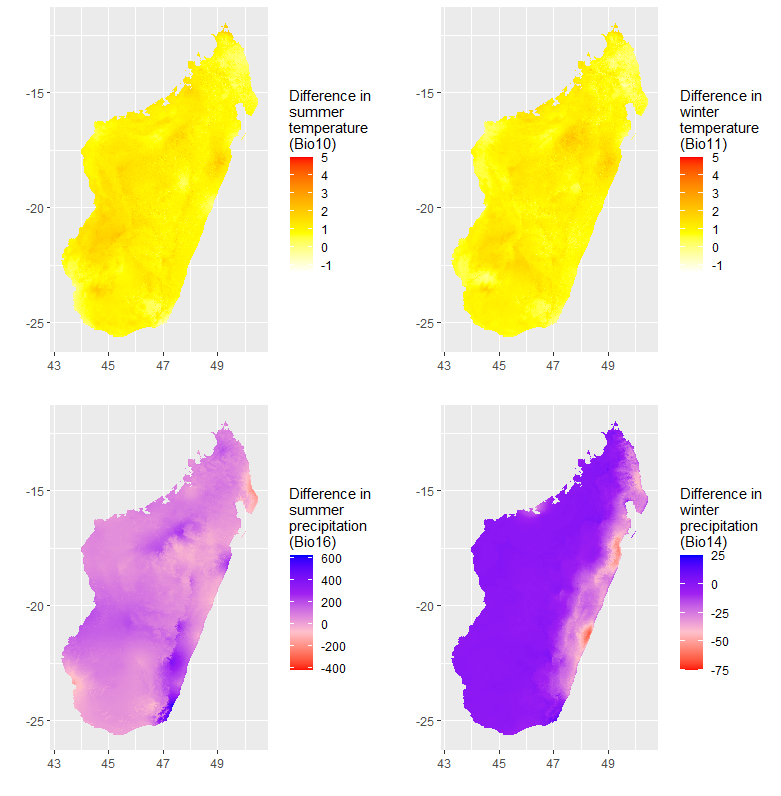
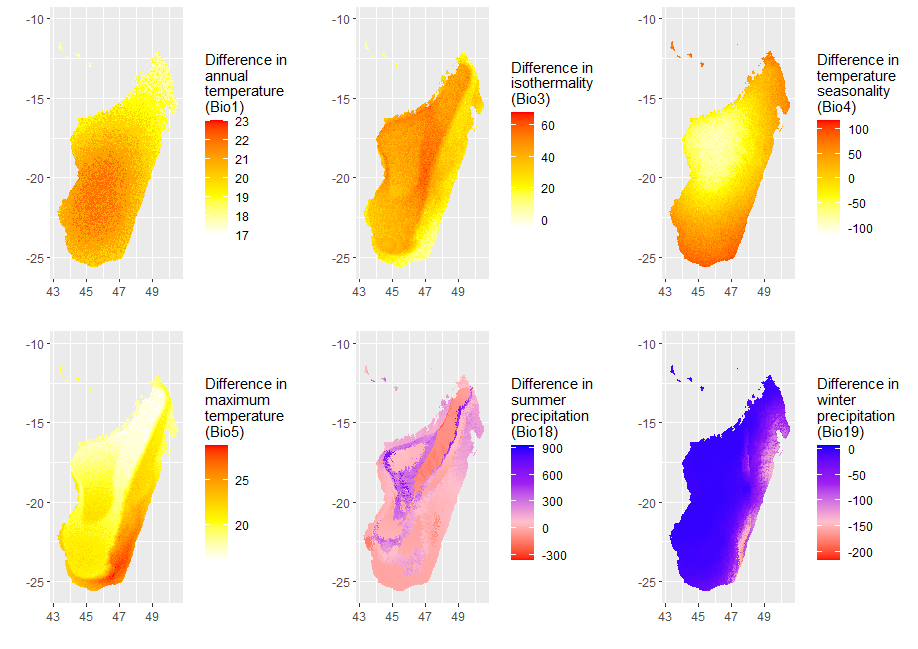
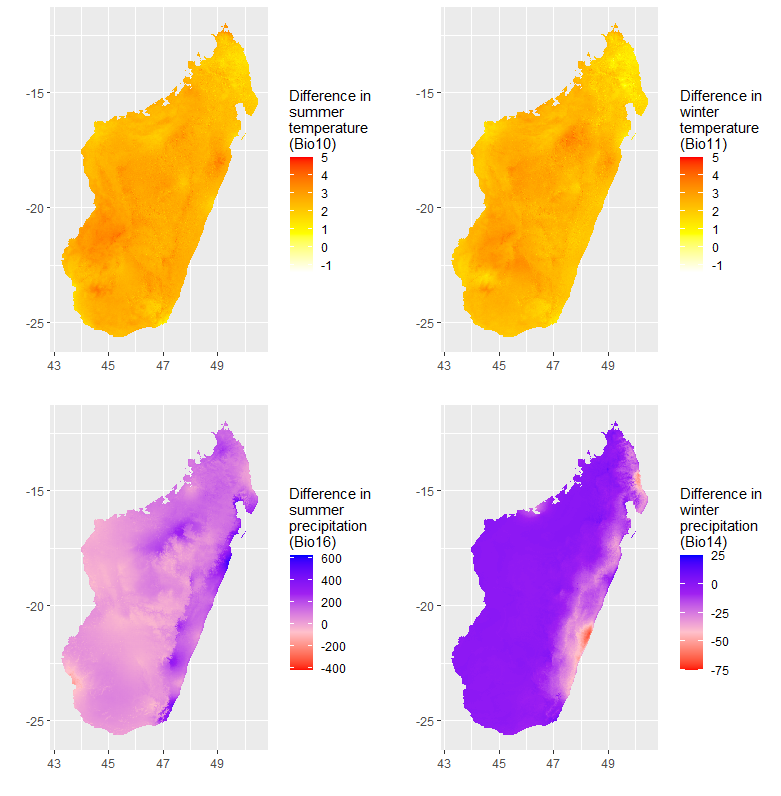
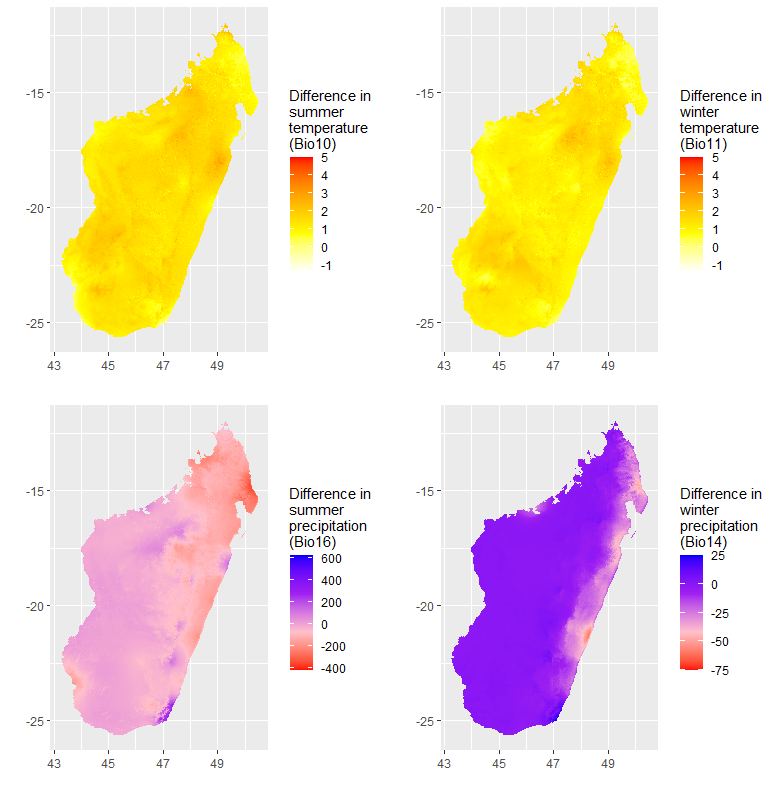
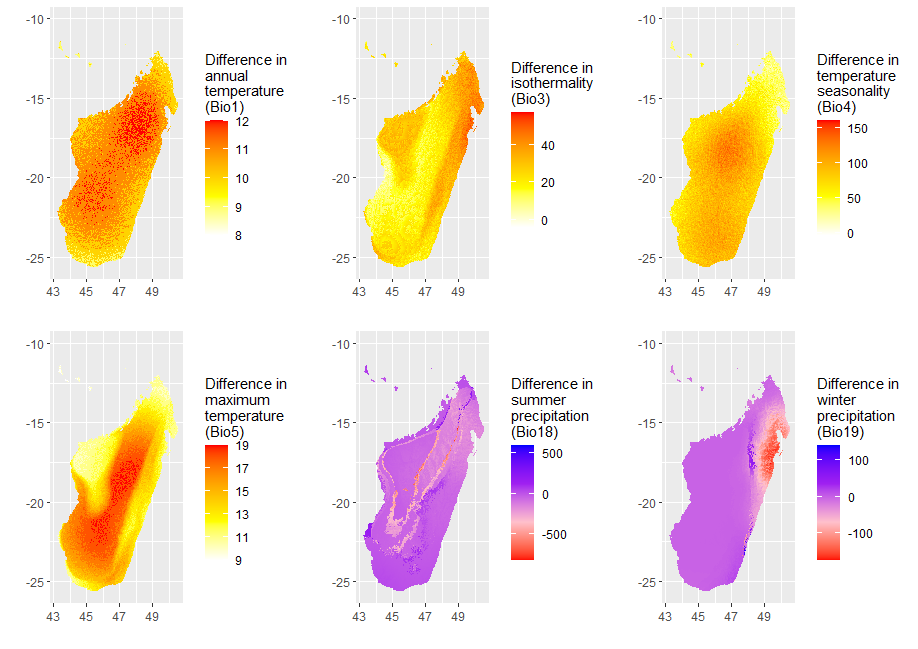
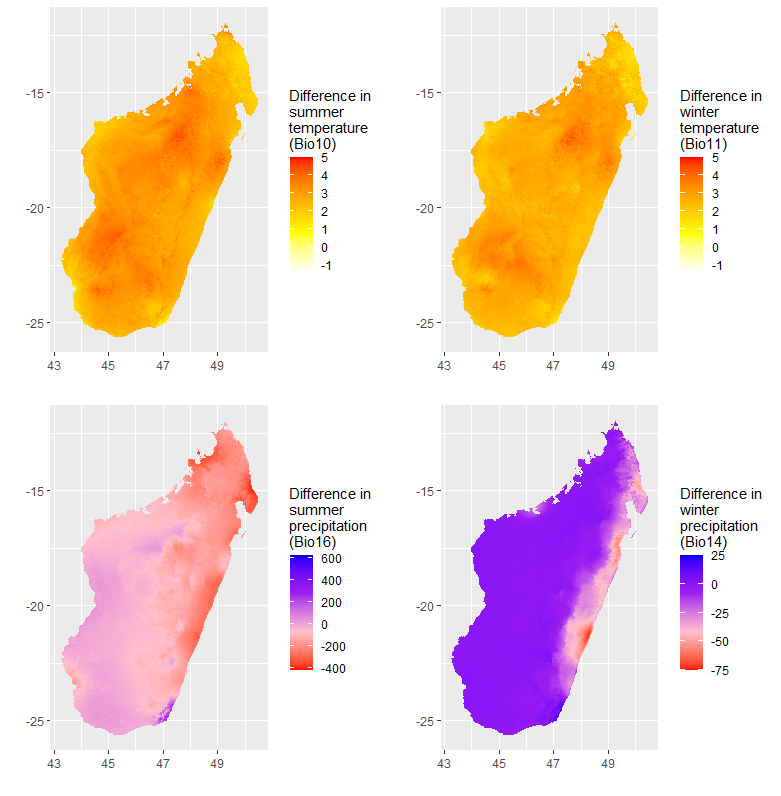


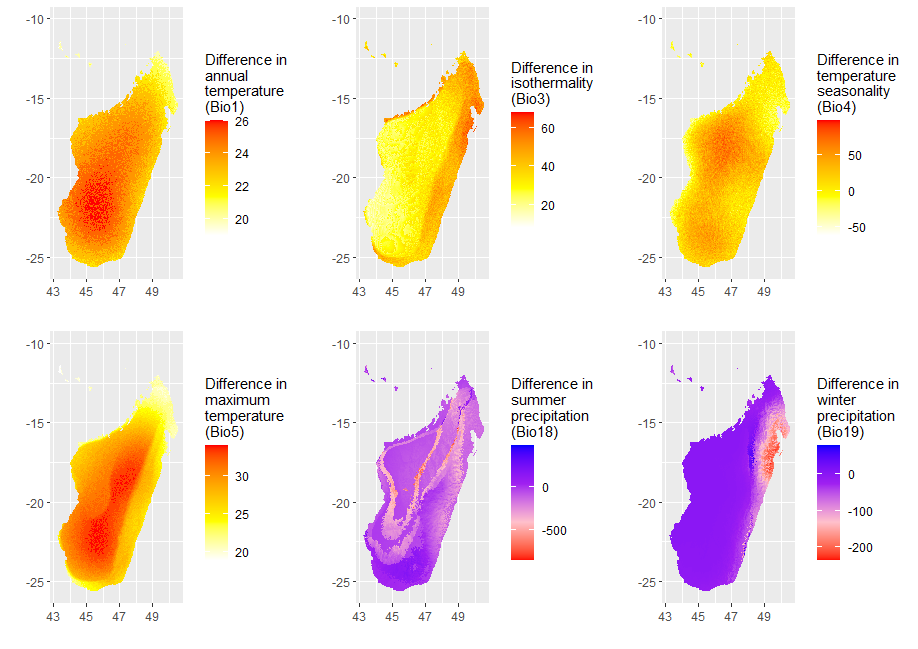
Fig S4a Scenario 2.6 BCC-csm1-1 (top: CHELSA; bottom: Worldclim)

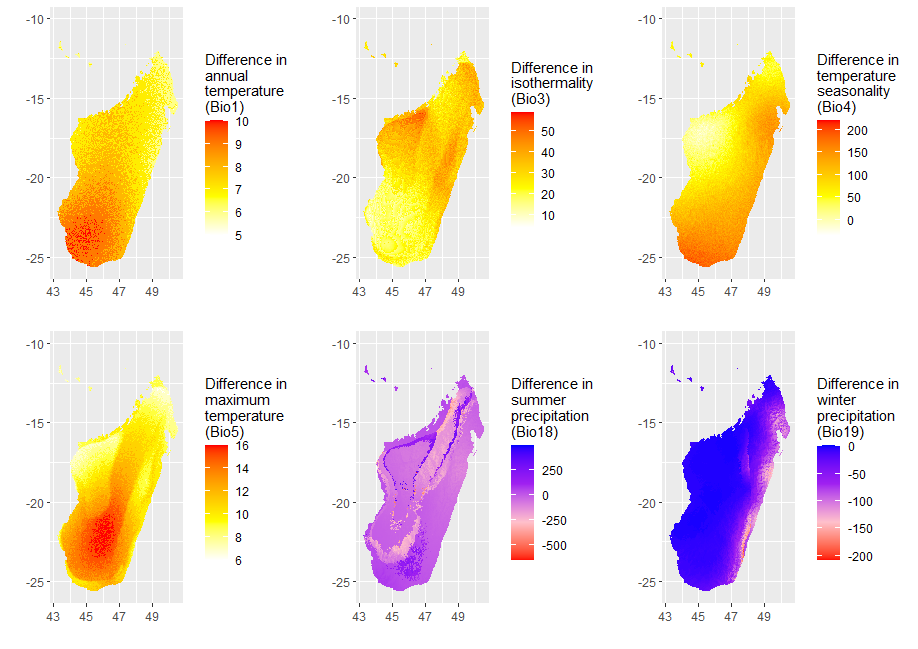
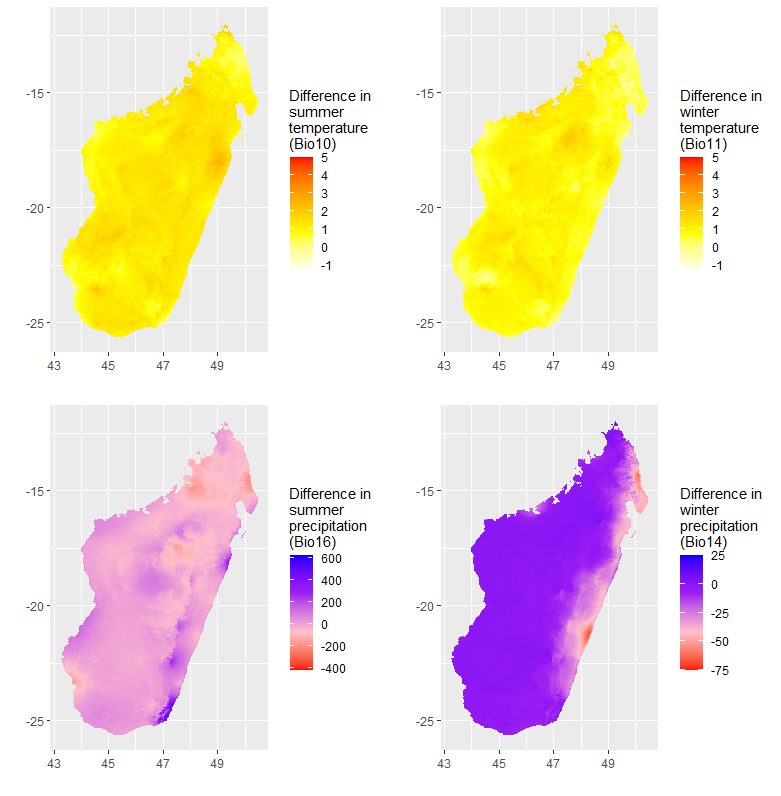
Fig. S4b Continued. BC85 (top: CHELSA; bottom: Worldclim)



Fig. S4c Continued. Miroc5 RCP26 (top: CHELSA; bottom: Worldclim)



Fig S4d continued. MIROC5 85 (top: CHELSA; bottom: Worldclim)

Fig S4e Scenario 2.6 HadGEM2 (top: CHELSA; bottom: Worldclim)

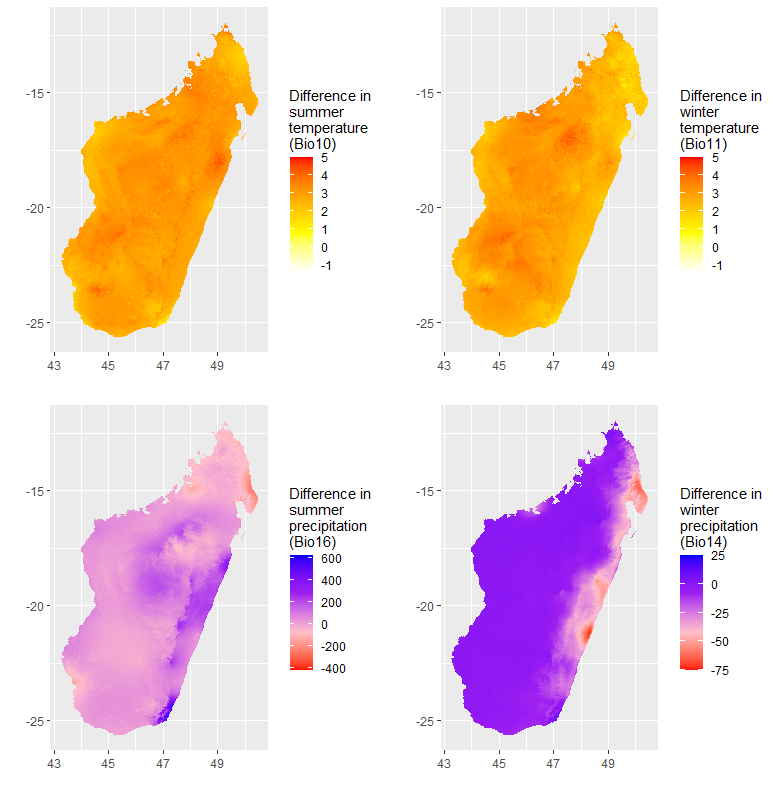
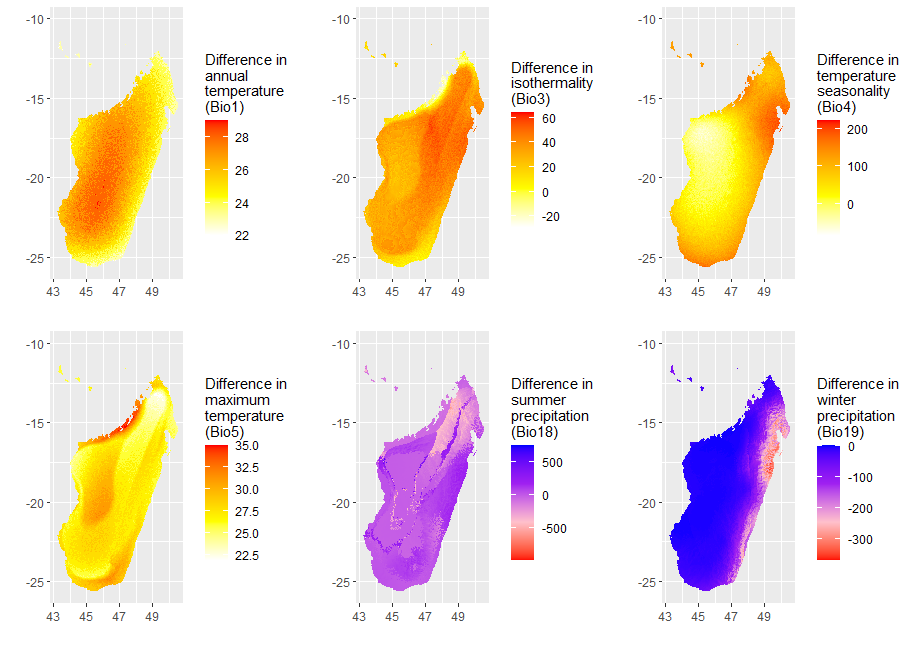


Fig S4f Scenario 8.5 HadGEM2 (top: CHELSA; bottom: Worldclim)

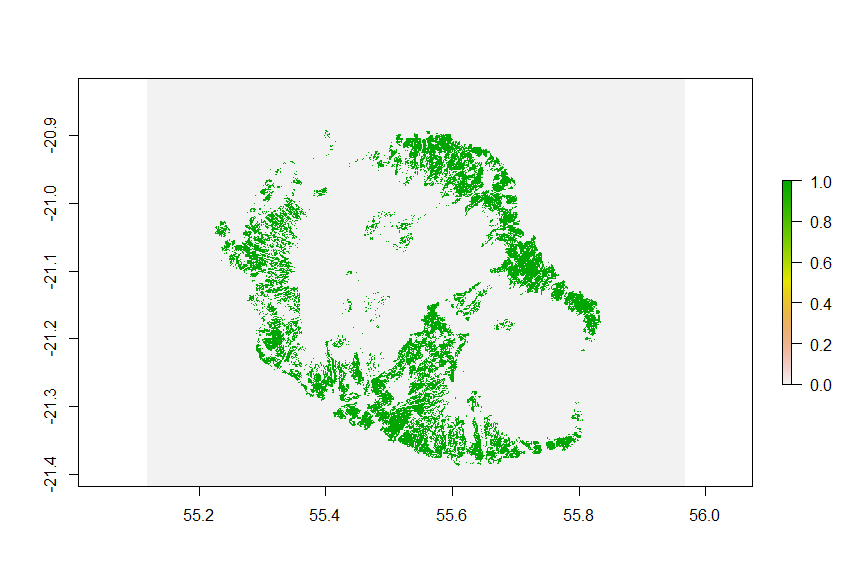
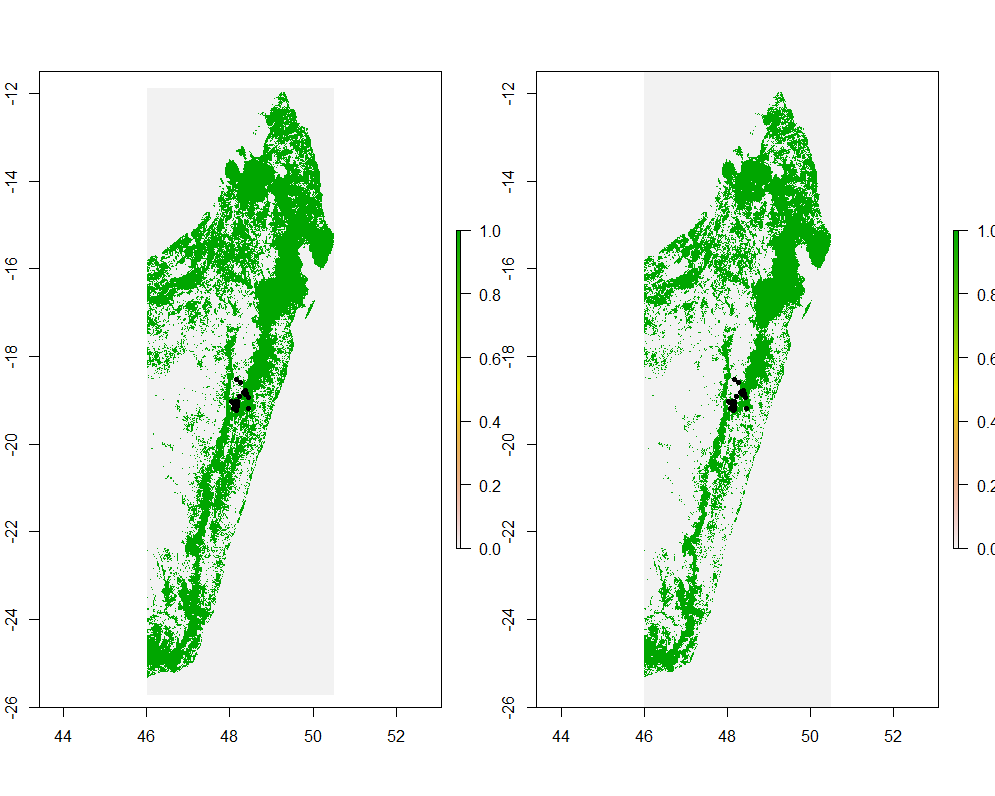
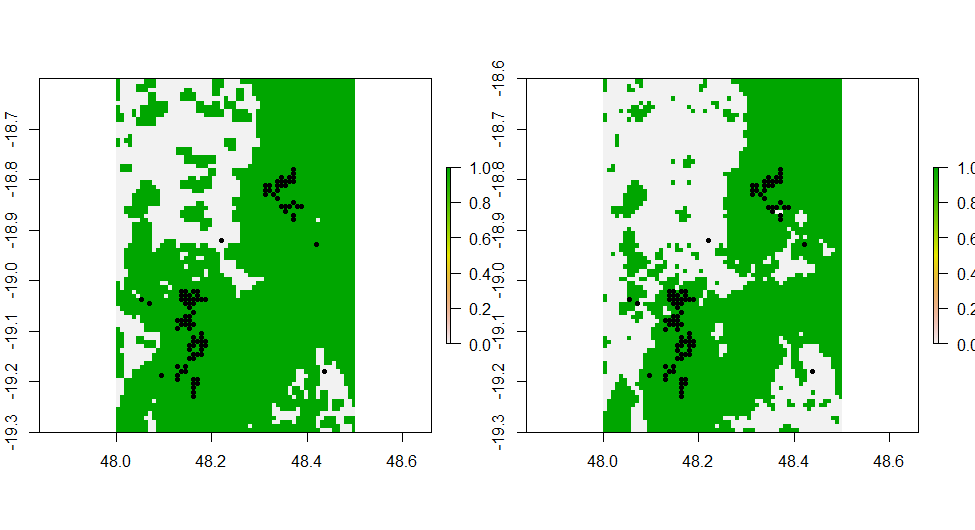
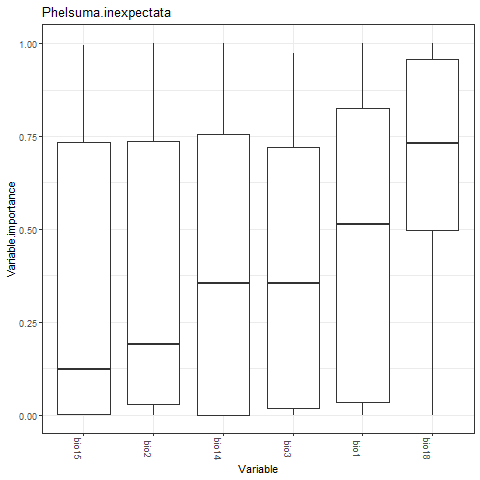
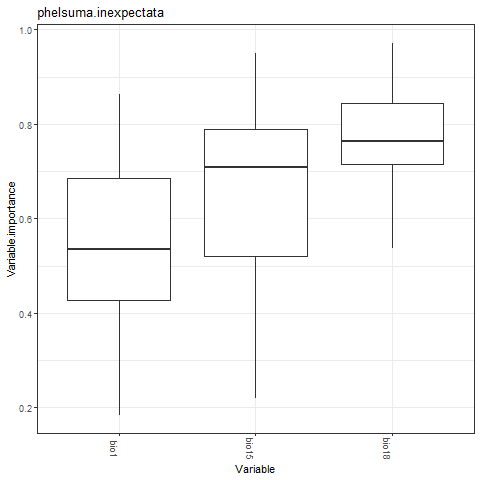


Fig.S5 Agricultural area cover in Reunion for 2017.

 Fig.S6 Madagascar forest cover for 1990 (left) and 2017 (right), with a zoom on the area occupied by *Mantella aurantiaca* (bottom). Black points indicate occurrence records.

Fig S7. Variable importance for *Phelsuma inexpectata* (top: Chelsa baseline; bottom: Worldclim baseline)*.* Variable importance was similar for Equal total weights and the two background extents.

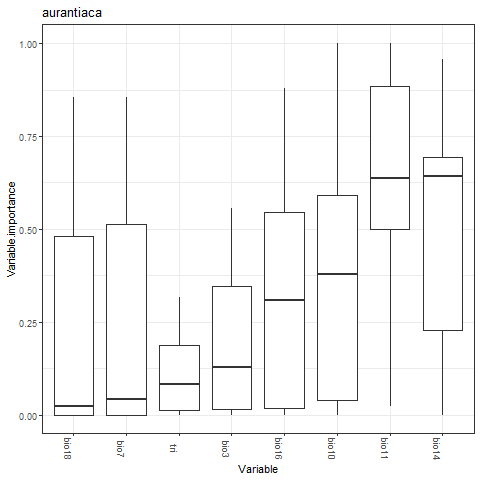
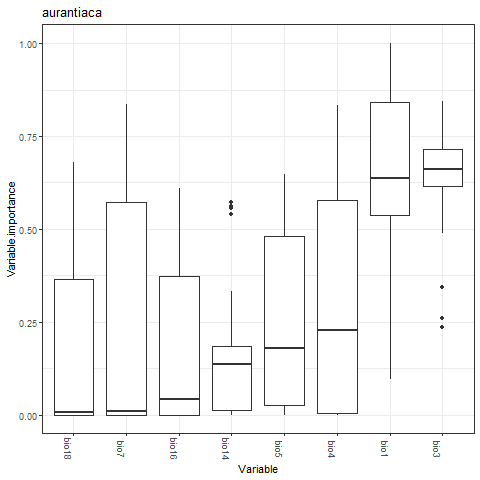
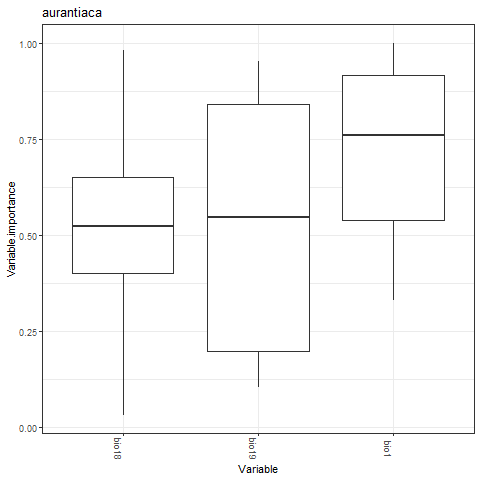
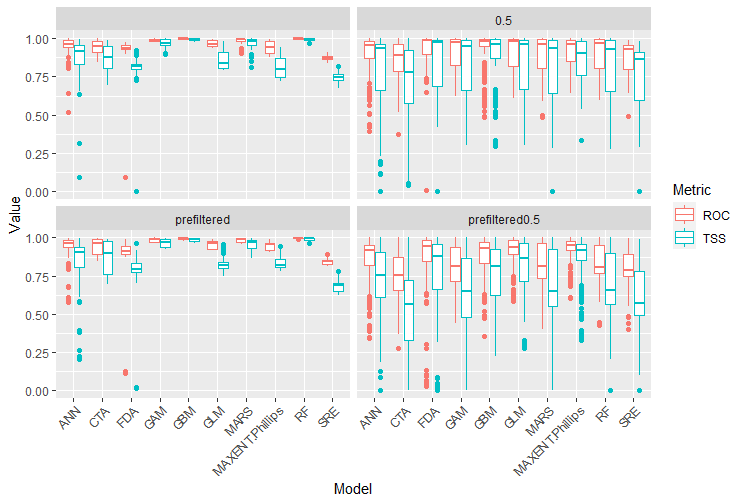
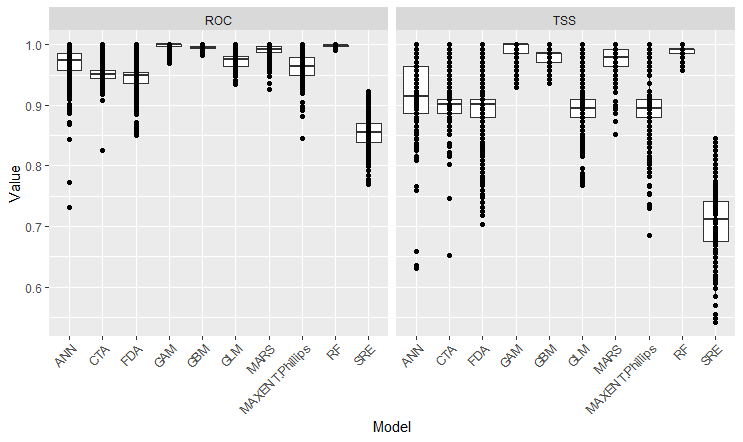
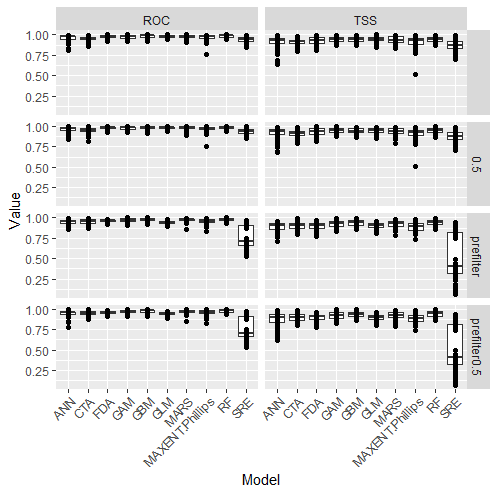
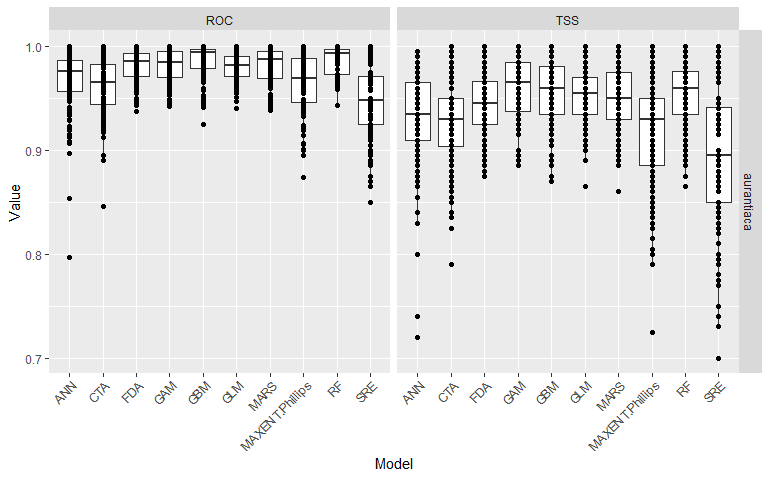
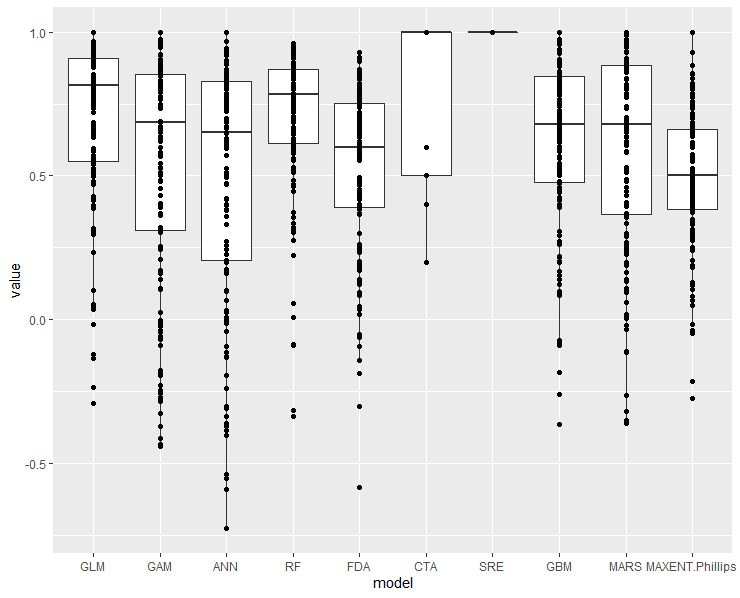
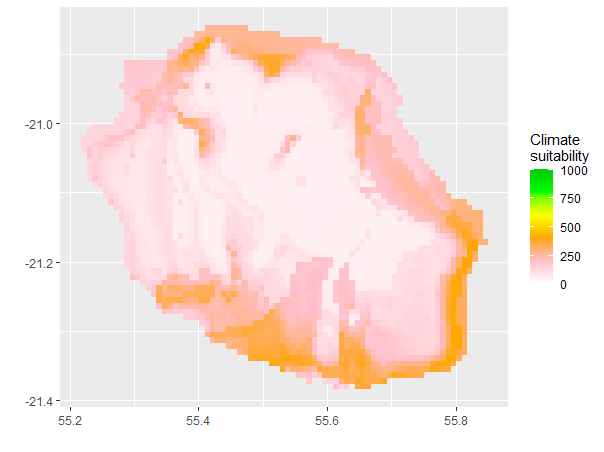
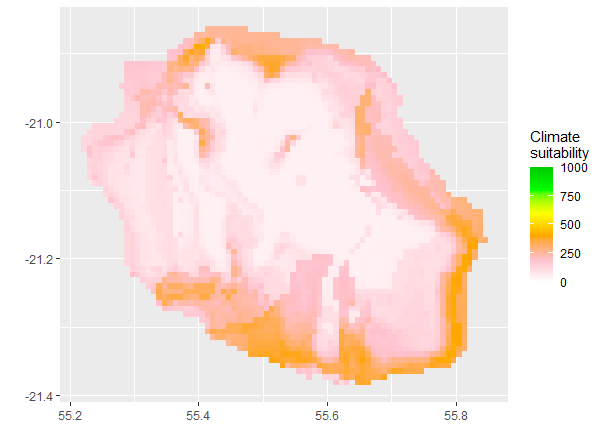
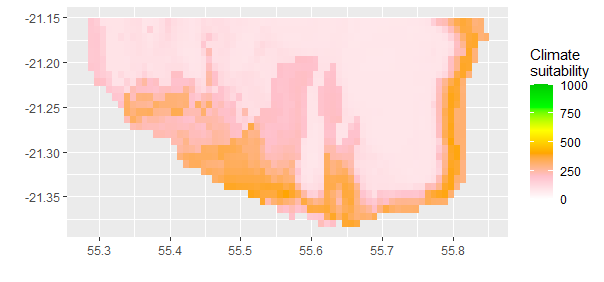
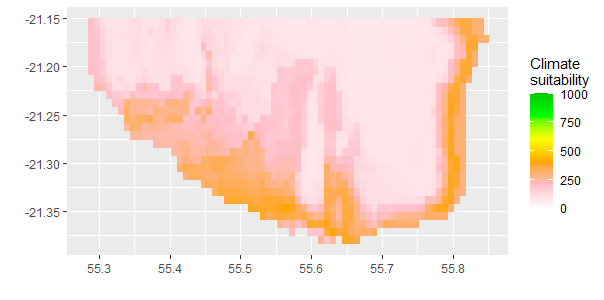
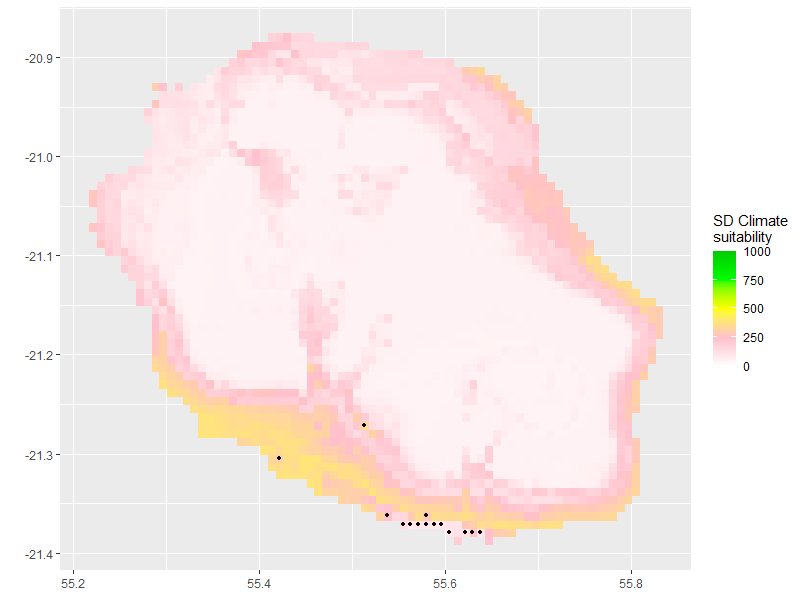


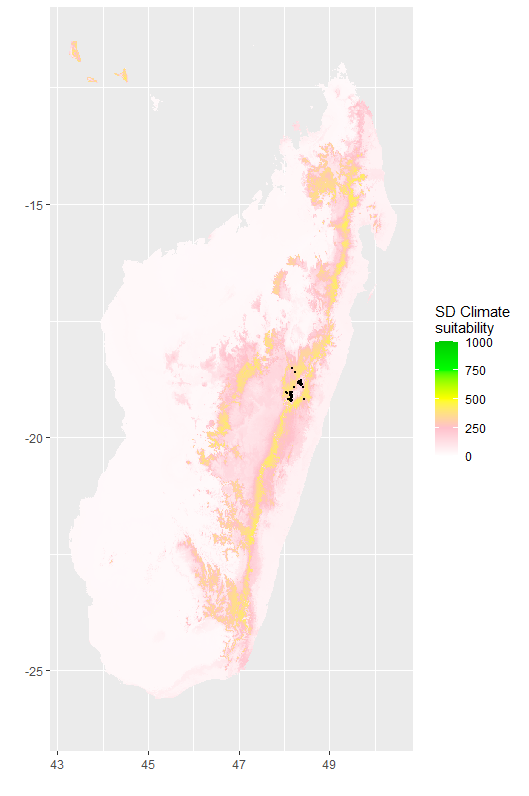
Fig. S8 Variable importance for *Mantella aurantiaca.* Top: Chelsa climate; Middle: Chelsa climate, restricted background; Bottom: Worldclim climate.



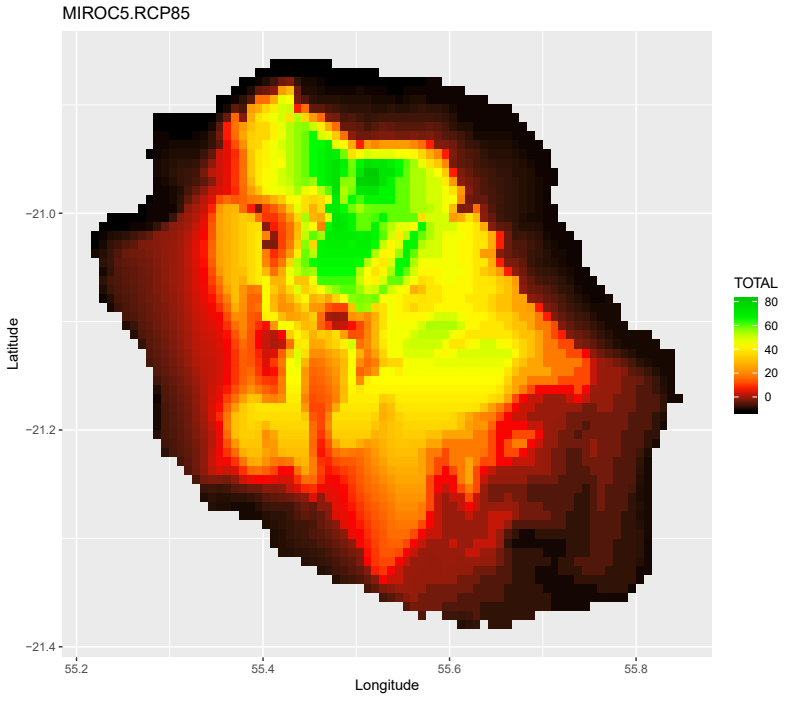
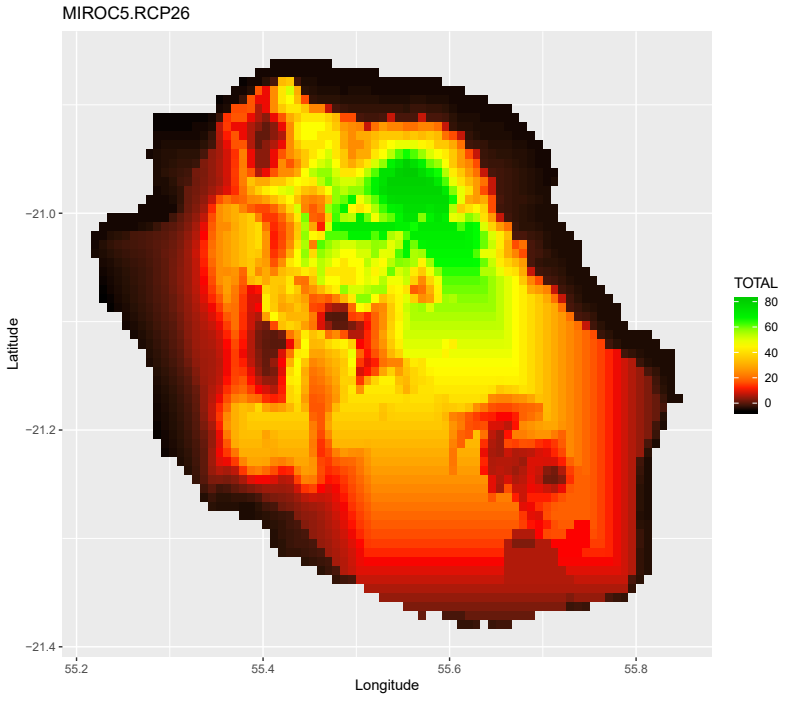
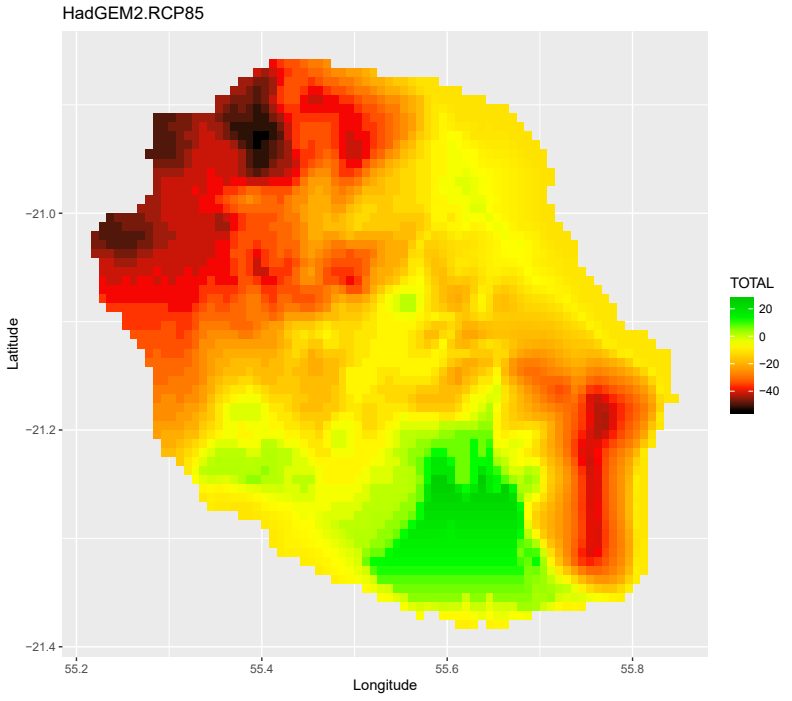
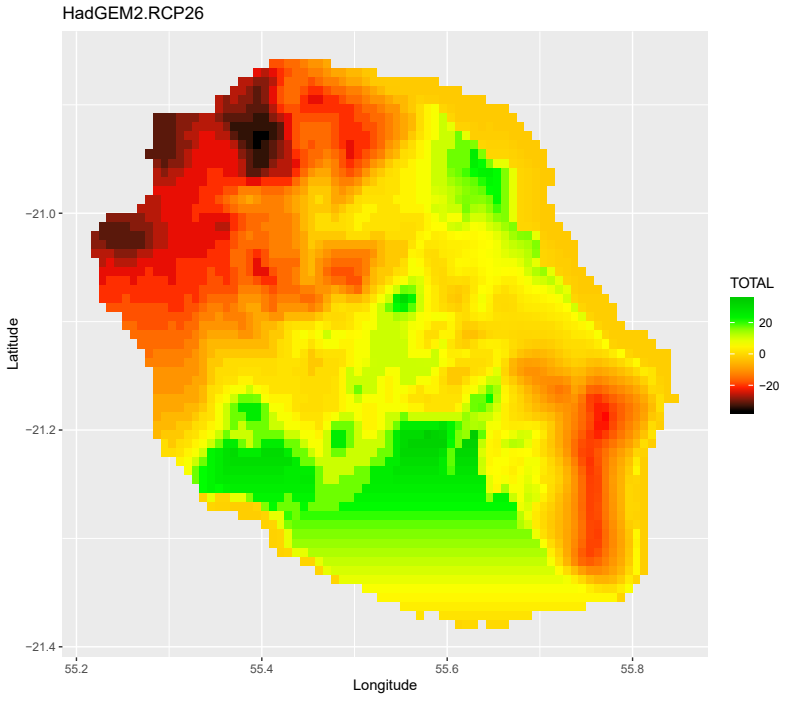
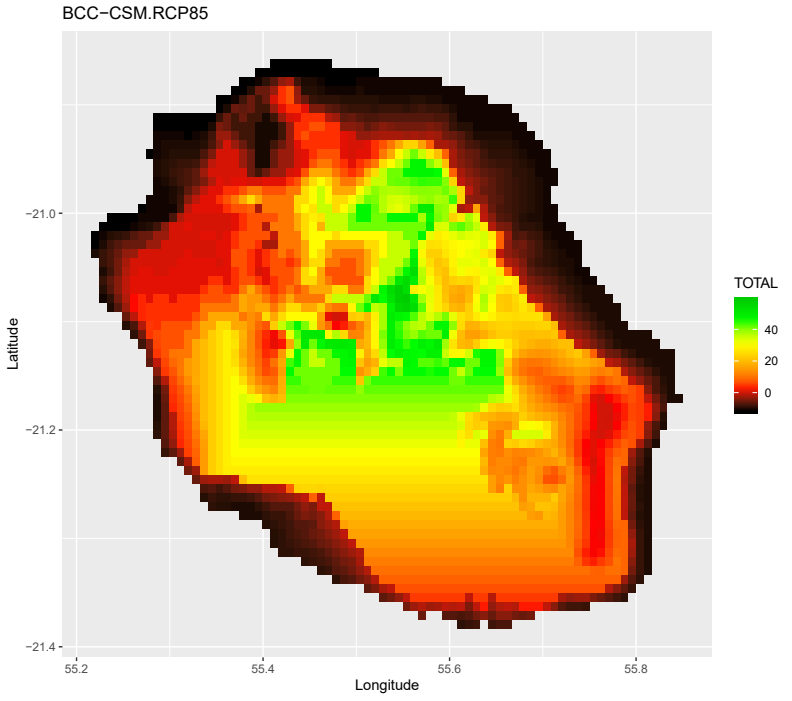
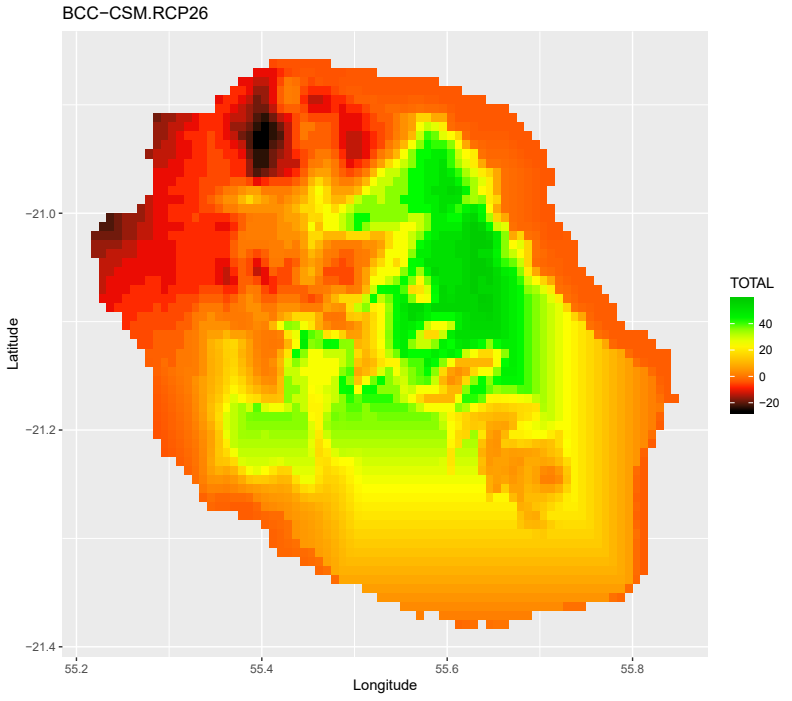
Fig. S9 Model performance for *P. inexpectata* (Ensemble of small models and jackknife procedure; Mean AUC = 0.96; Mean TSS = 0.90). In black: Worldclim baseline climate. In colour: Chelsa baseline climate. The groups refer to the extent of the background: restricted (prefiltered) versus large, and prevalence 0.5 (Equal Total Weights) versus no setting.

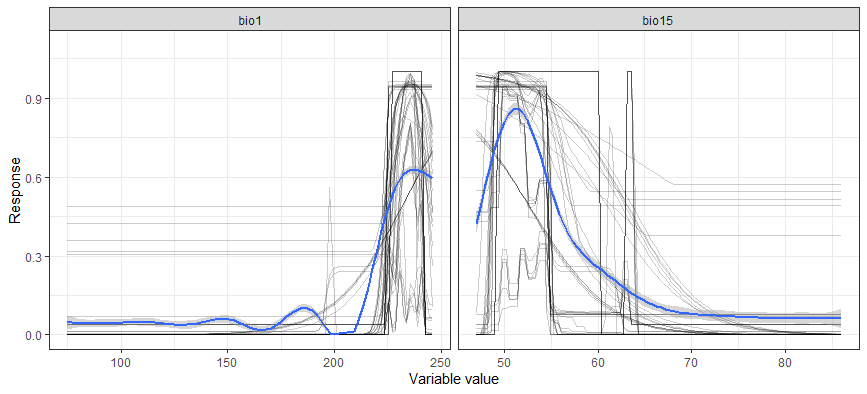
Fig. S10 Model performance for *Mantella aurantiaca* (Top: Chelsa baseline, Bottom: Worldclim baseline). Right: AUC (ROC) and TSS; Left: Boyce index.

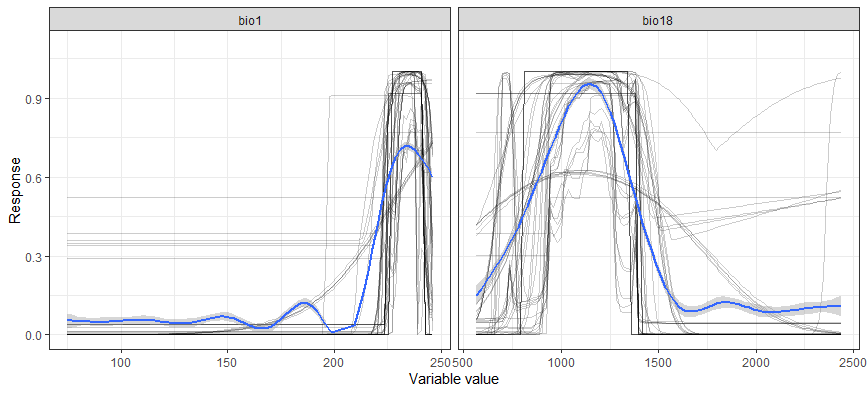
Fig. S11 Uncertainty map (intermodel variability as the standard deviation of suitability scores) for the distribution modelling of *Phelsuma inexpectata* (Top: wide background; Centre: restricted background; Bottom: Worldclim baseline; Left: Equal total weights; Right: No Equal Total Weights).

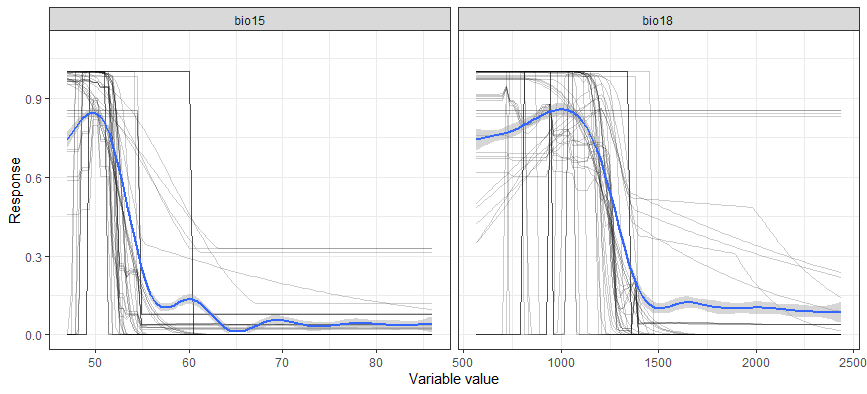


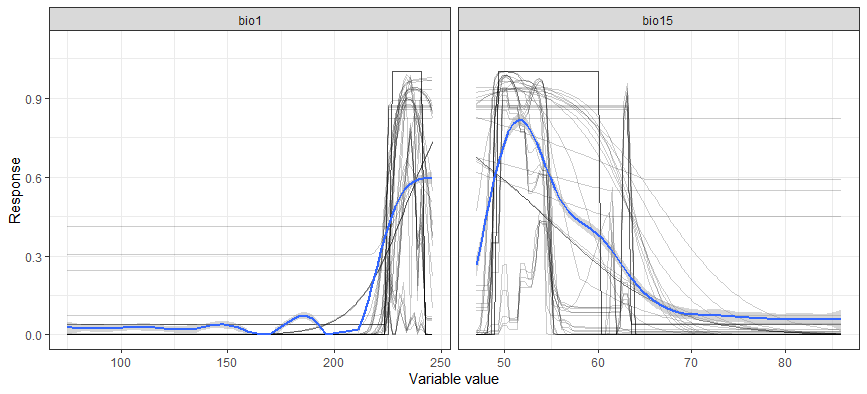
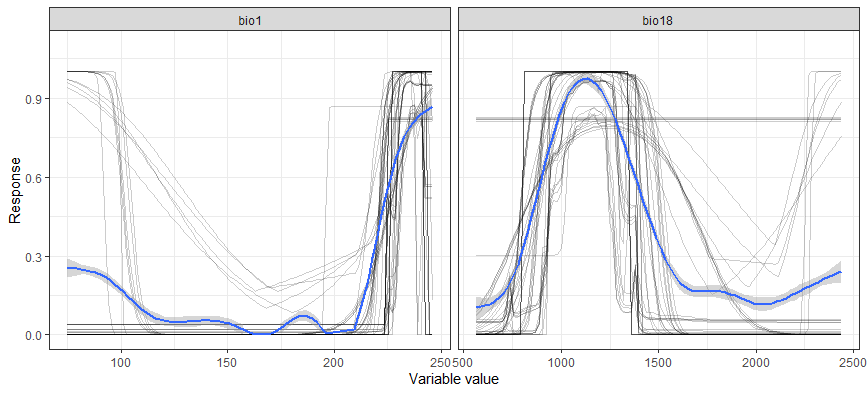
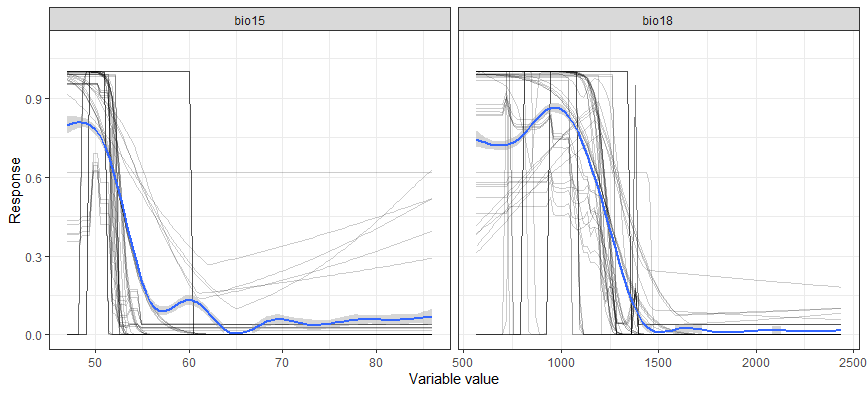
*Fig. S12 Uncertainty map (intermodel variability as the standard deviation of suitability scores) for the distribution modelling of Mantella aurantiaca.*

*Fig Sxa MESS analyses for 3 GCMs and 2 RCPs for the Reunion Island (for both backgrounds, the selected variables were bio1, bio15, bio18).*

**

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Fig S14a Examples of response plots for *Phelsuma inexpectata* obtained from bivariate models (Chelsa baseline, wide background)*.* Equal total weights and jackknife iterations produced similar responses.

Fig S14b Examples of response plots for *Phelsuma inexpectata* obtained from bivariate models (Chelsa baseline, restricted background)*.* Equal total weights and jackknife iterations produced similar responses.

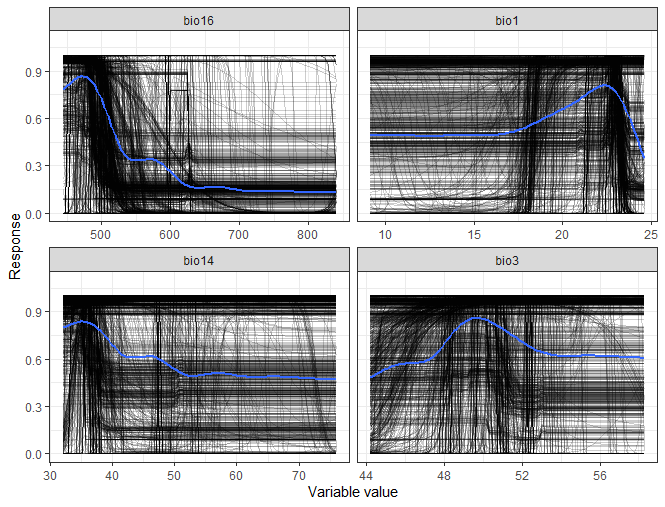
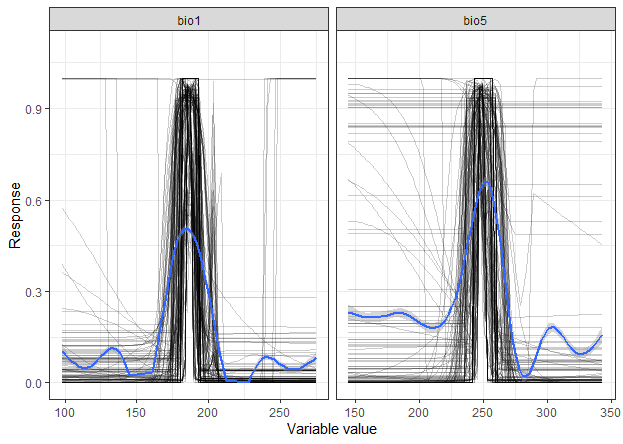
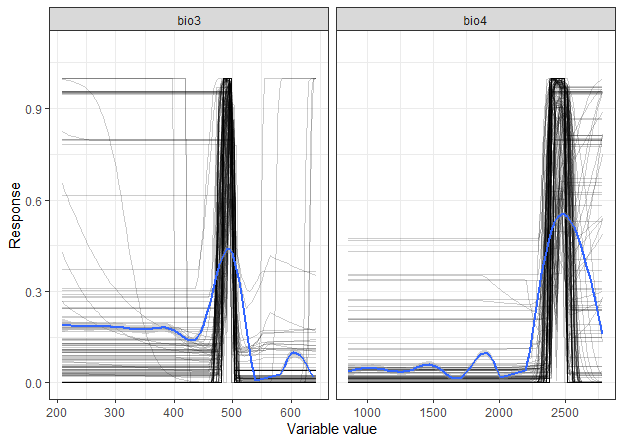
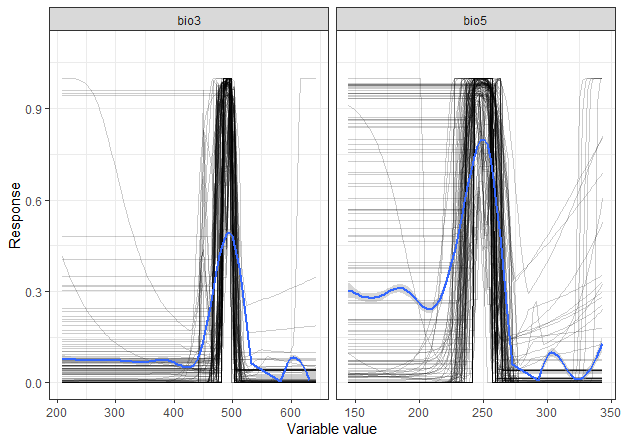
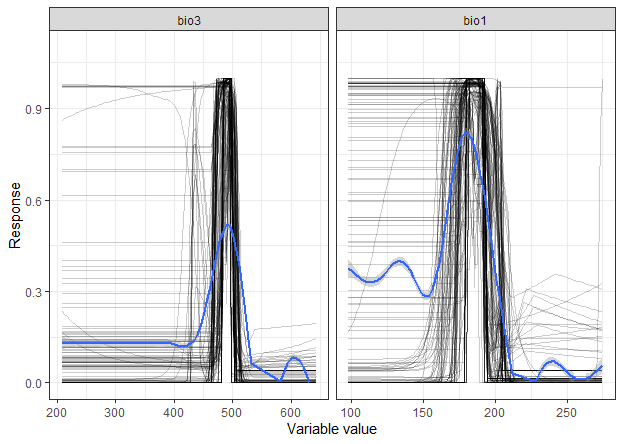
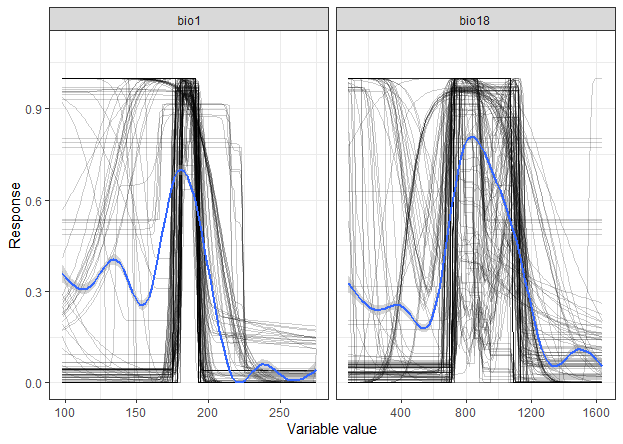
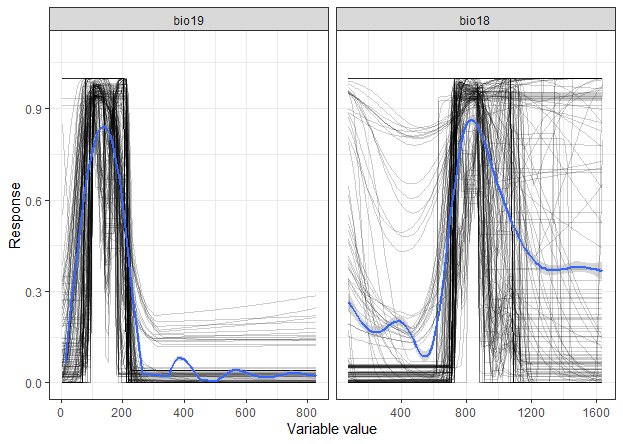
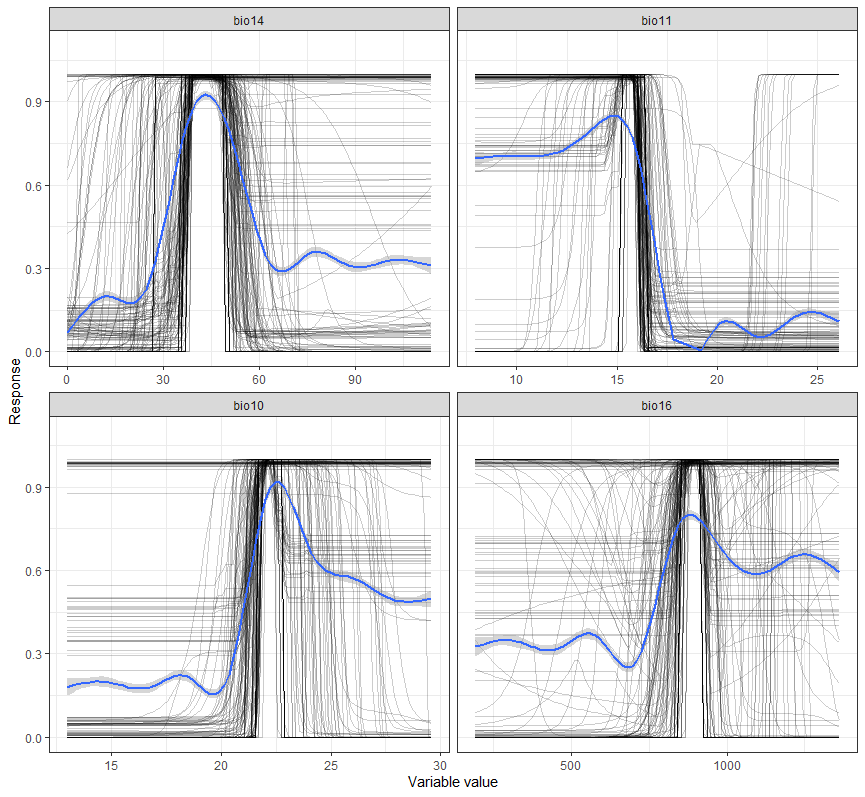


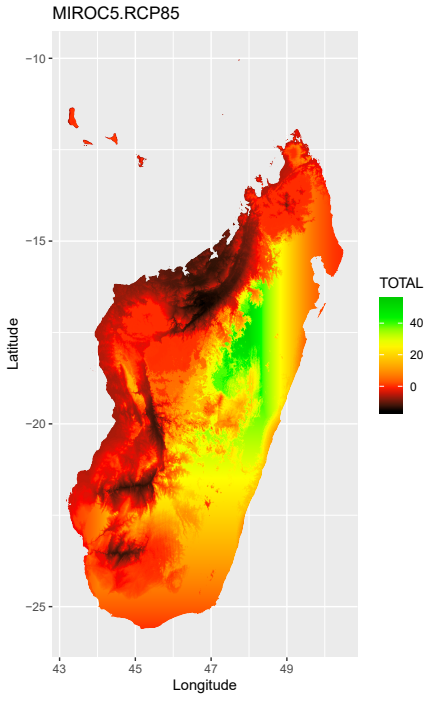
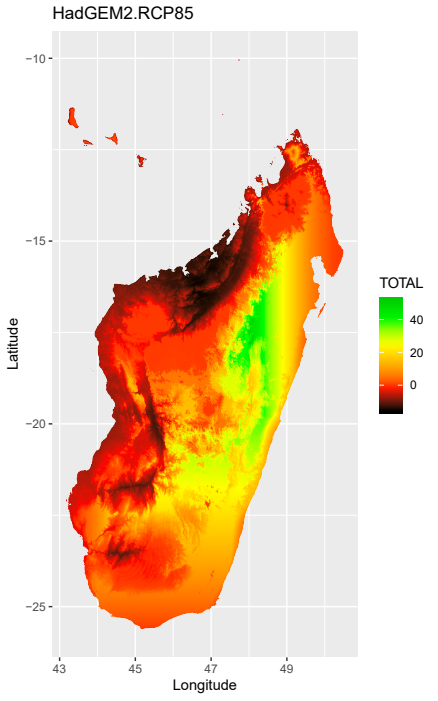
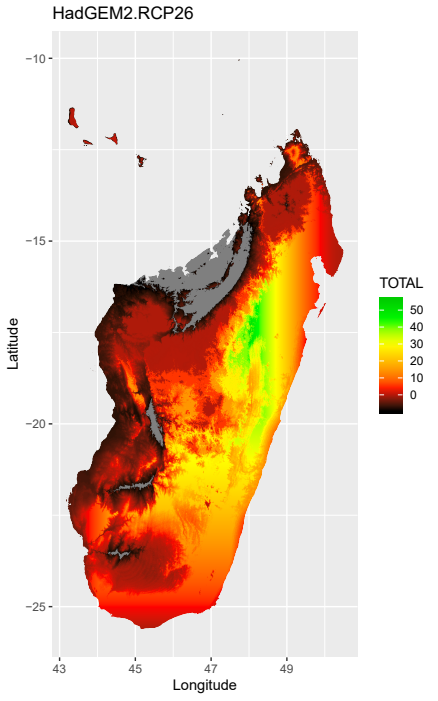
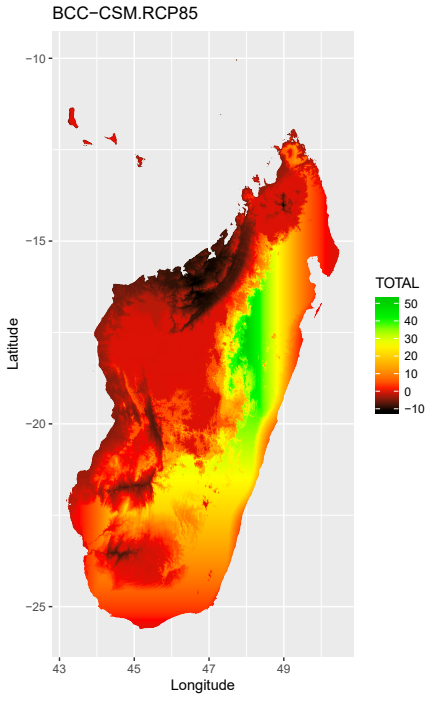
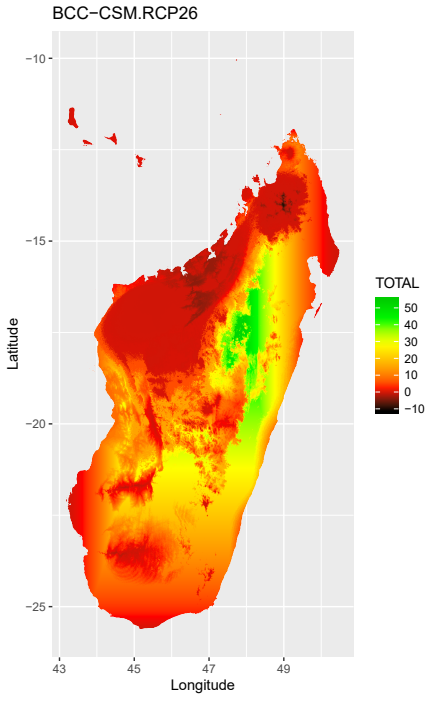
Fig S14c Mean response plots for *Phelsuma inexpectata* (Worldclim baseline)*.*

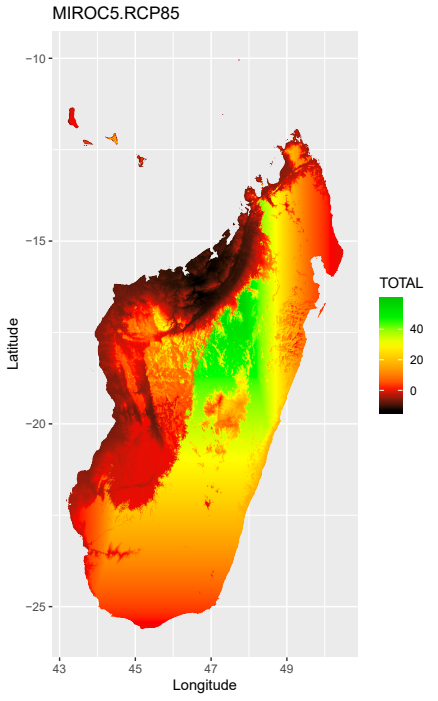
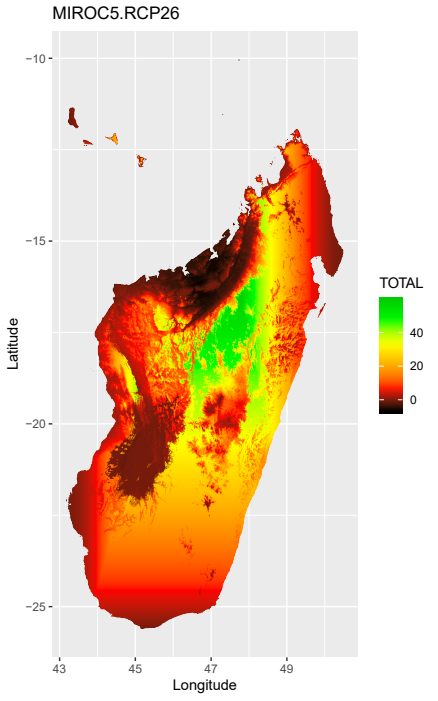
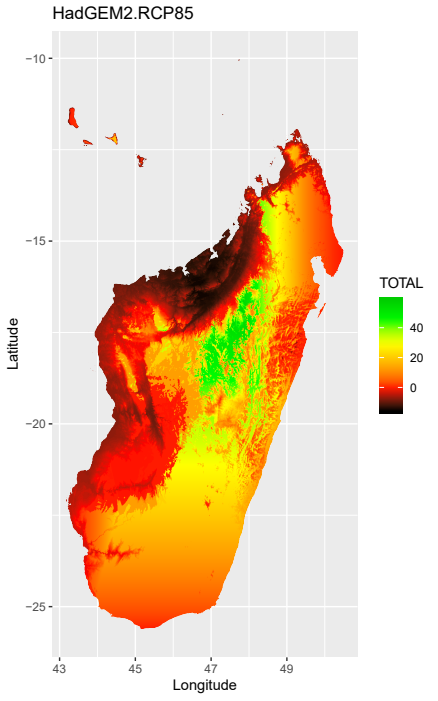
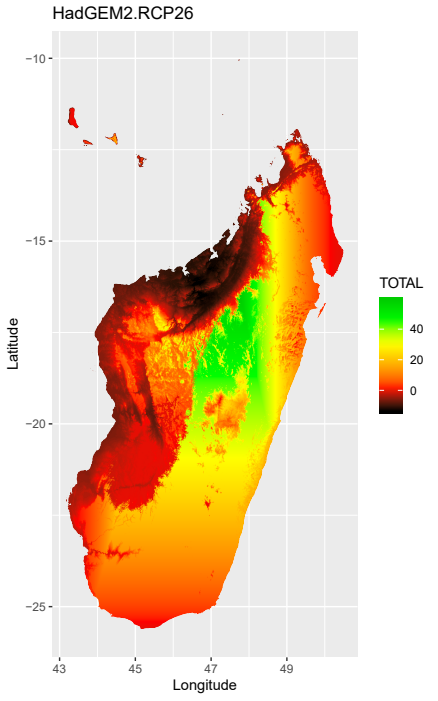
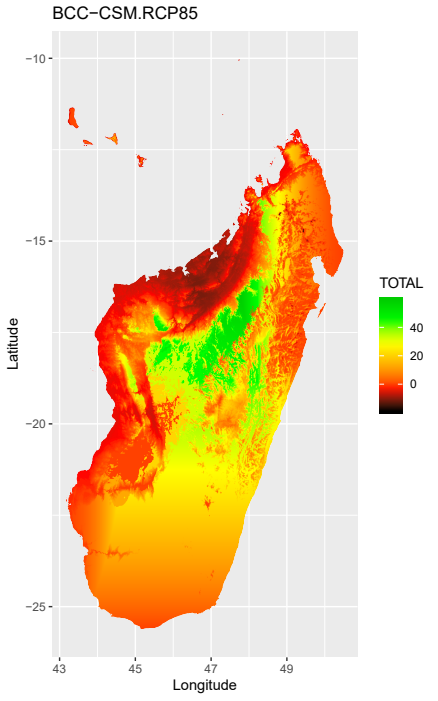
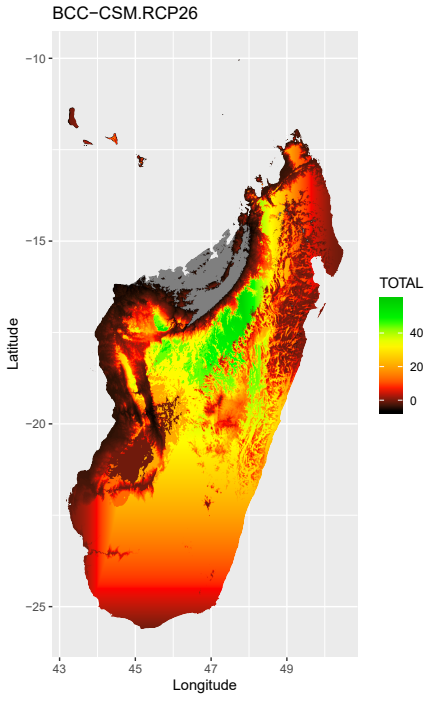
Fig. S15a Examples of response plots for *Mantella aurantiaca* obtained from bivariate models (Chelsa baseline, wide background)*.* Equal total weights and jackknife iterations produced similar responses.



Fig. S15b Examples of response plots for *Mantella aurantiaca* obtained from bivariate models (Chelsa baseline, restricted background)*.* Equal total weights and jackknife iterations produced similar responses.

Fig. S15 Response curve for *Mantella aurantiaca* (Worldclim baseline climate)*.*

Fig S16a MESS analyses for 3 GCMs and 2 RCPs for the ‘wide background’ (selected variables: bio1, bio3, bio4, bio5).

Fig S16b MESS analyses for 3 GCMs and 2 RCPs for the ‘restricted background’ (selected variables: bio1, bio18, bio19).

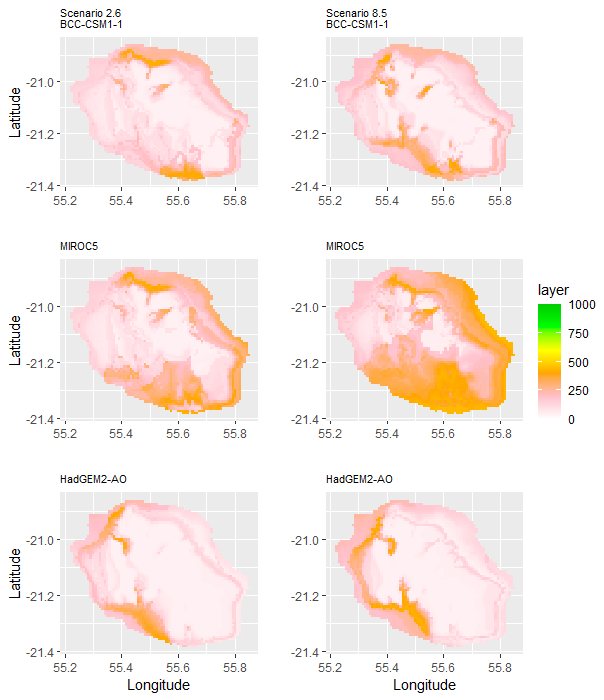
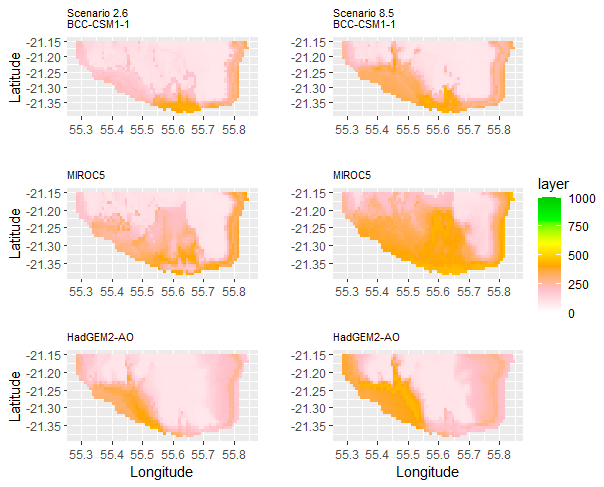
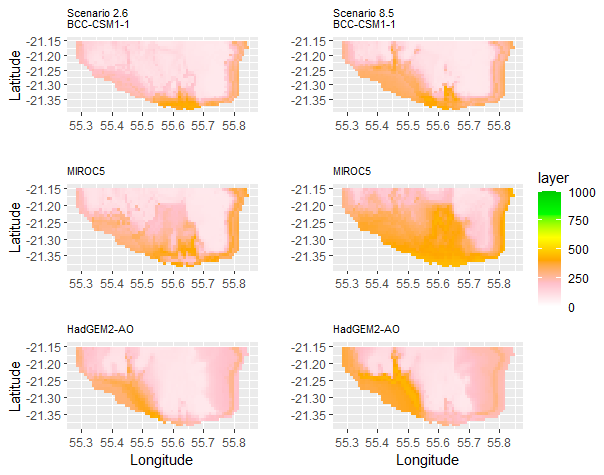
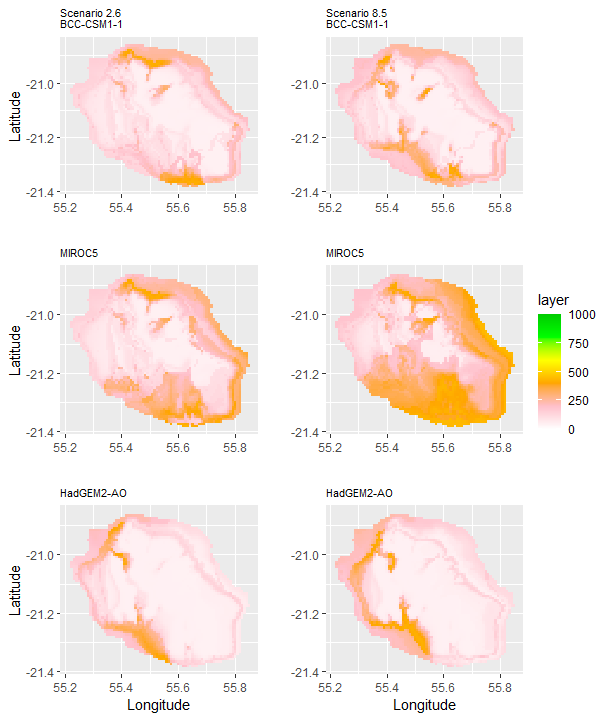
Fig. S17 Uncertainty maps for future distribution models of *Phelsuma inexpectata* (Top: wide background; Bottom: restricted background; Left: Equal total weights; Right: No Equal Total Weights: Bottom right: Worldclim baseline; )*.*

Fig. S18 Uncertainty maps for future distribution models of *Mantella aurantiaca*