Figures

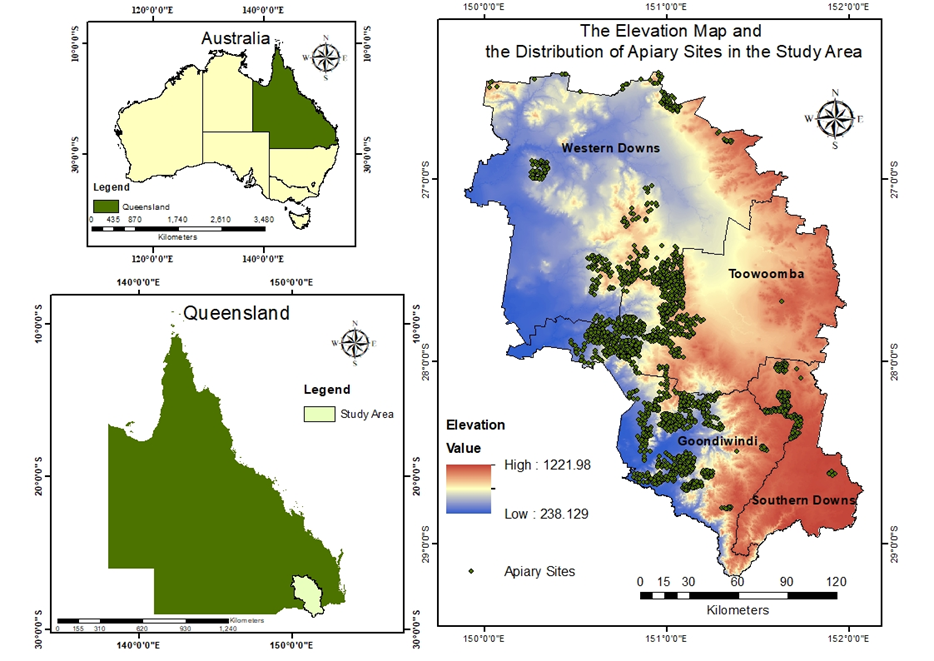


Figure 1. Elevation map and the apiary site locations in the study area

Honey bee presence data

n = 1,598

Spatial Thinning

(SpThin package in R4.2.2)

Bioclimatic variables

n = 35

Environmental variables

n = 8

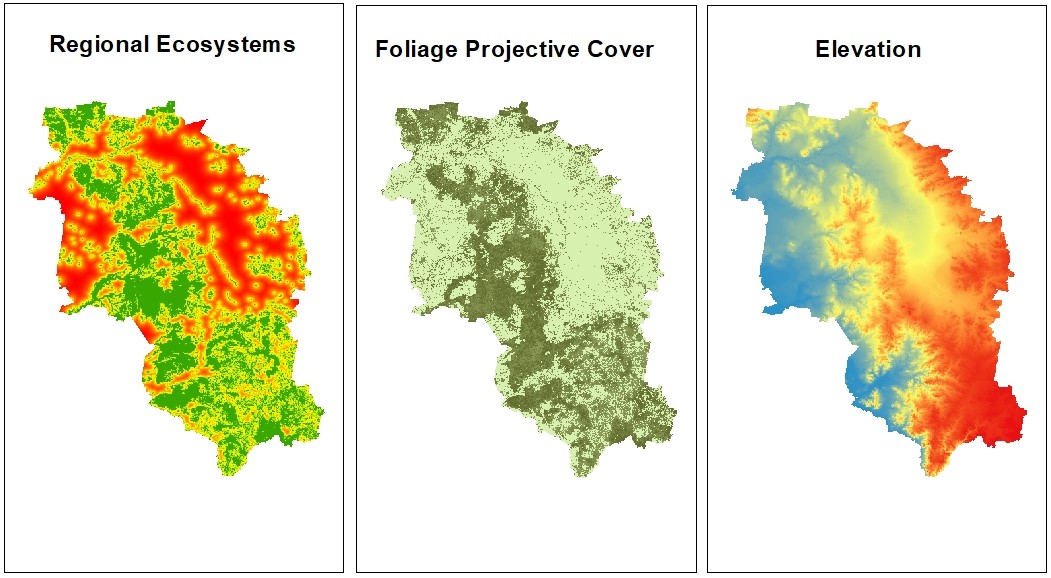
Spatial Autocorrelation

(USDM package in R4.2.2)



Bioclimatic variables

n = 3



Environmental variables

n = 3

ANN

CTA

FDA

GAM

GBM

GLM

MARS

MAXENT

RF

SRE

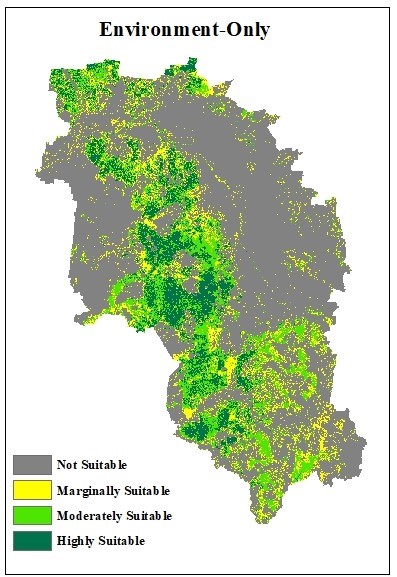
Species distribution modelling algorithms

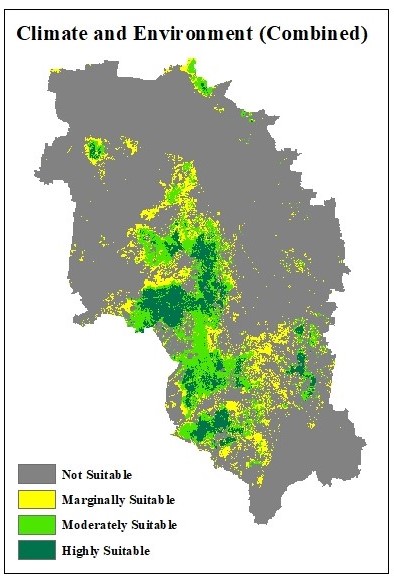
Ensemble Modelling

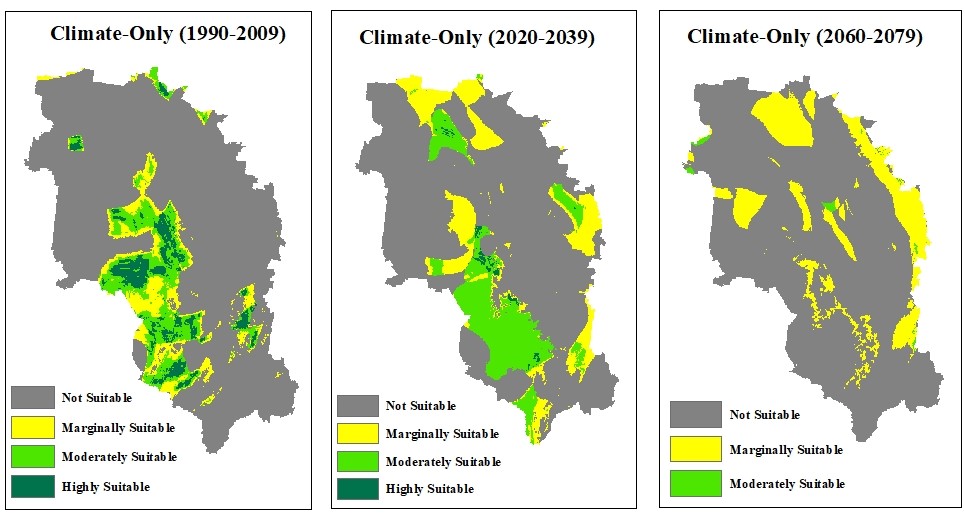
Climate-only model

Environment-only model

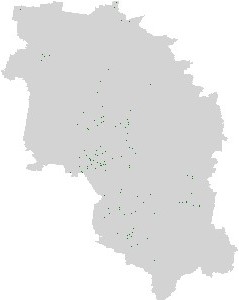
Combined climate and environment model







2000, 2030, and 2070



n = 1,595

Figure 2. Overview of the research methods

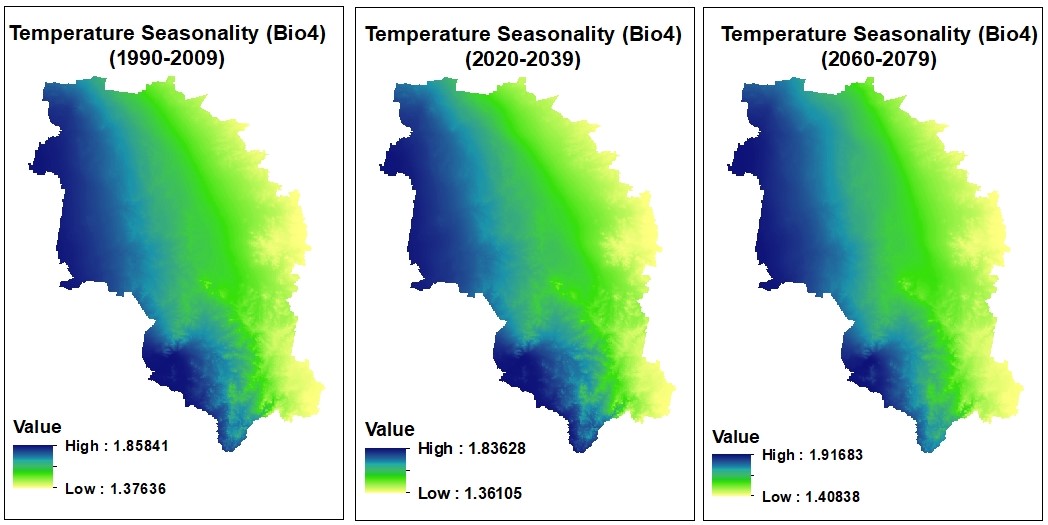


Figure 3. Temperature seasonality maps of 1990-2009, 2020-2039 and 2060-2079

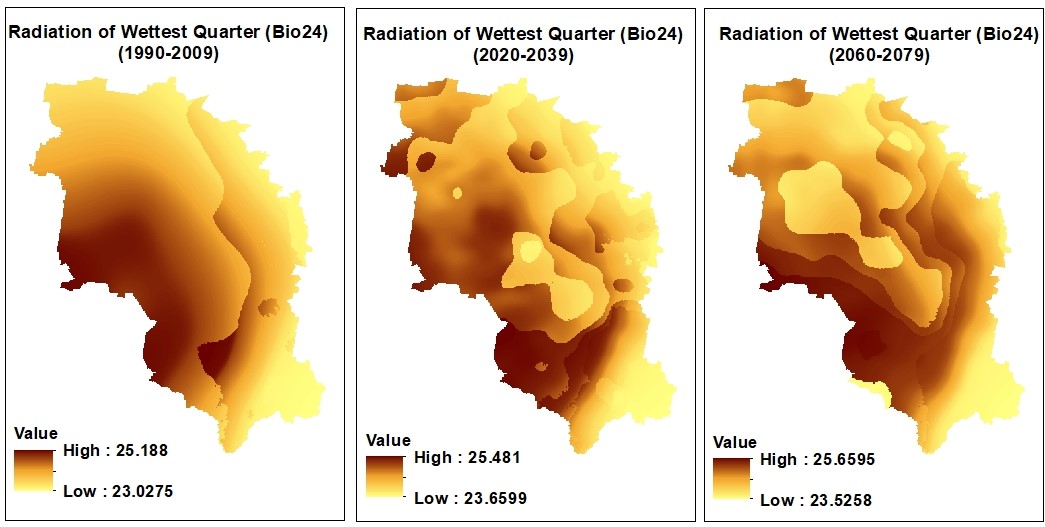


Figure 4. Radiation of wettest quarter (Bio24) maps of 1990-2009, 2020-2039 and 2060-2079

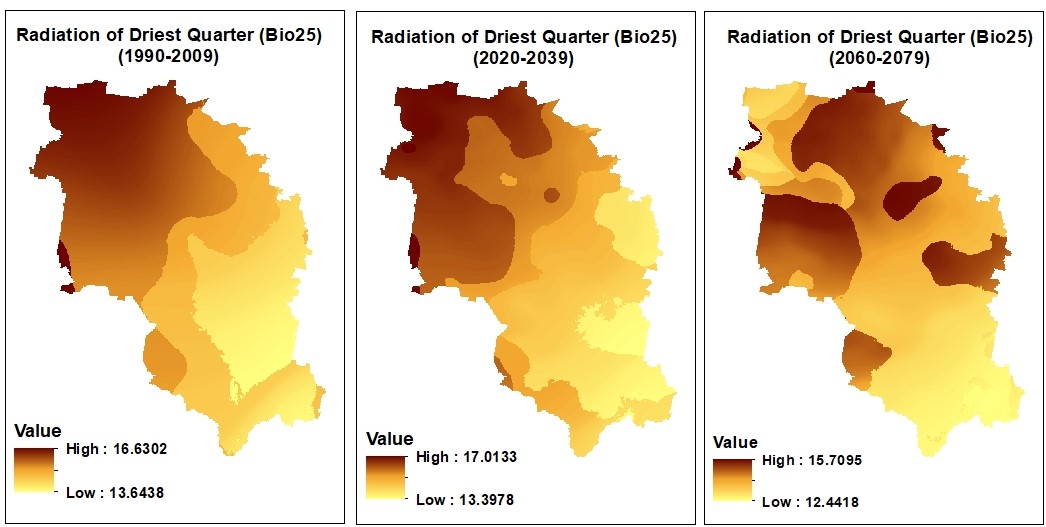


Figure 5. Radiation of driest quarter (Bio25) maps of 1990-2009, 2020-2039 and 2060-2079

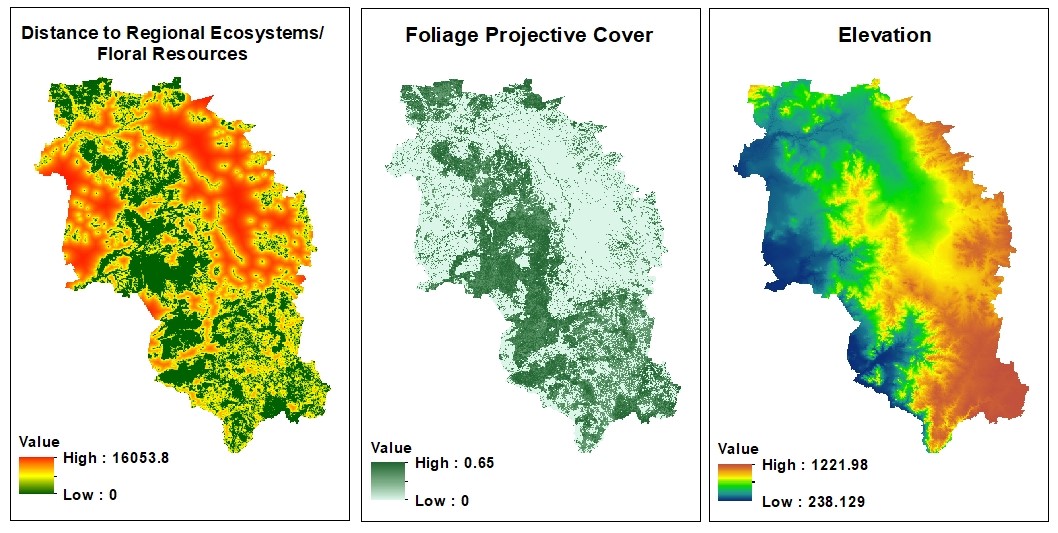


Figure 6. Environmental variables (Distance to regional ecosystems (floral resources), Foliage projective Cover (FPC) and elevation)

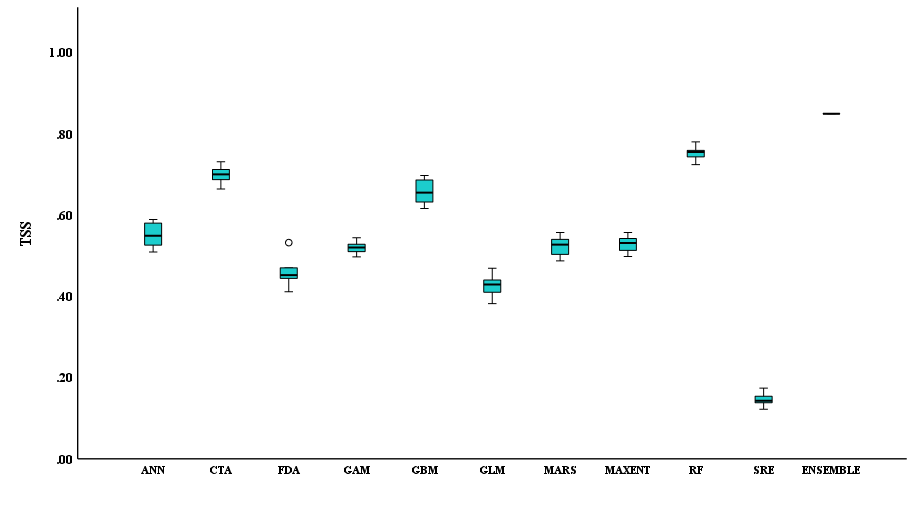
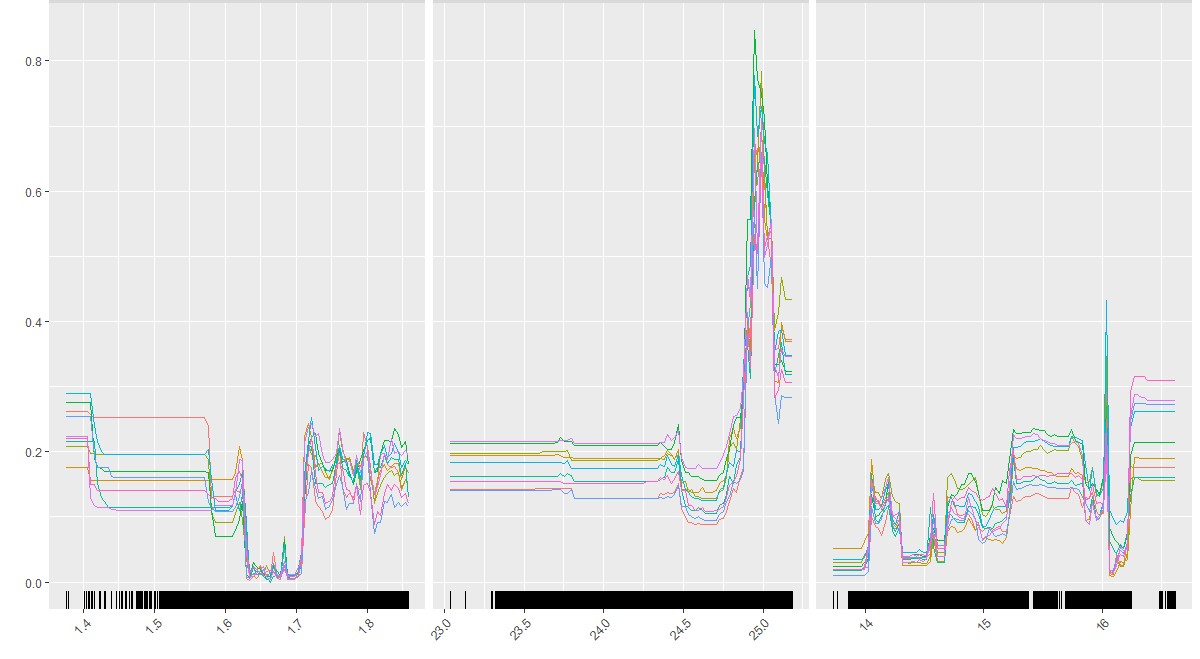


Figure 7. TSS scores of individual algorithms and the ensemble model (climate-only)



**Bio25 (Radiation of the driest quarter)**

**Contribution: 37.73%**

**Bio24 (Radiation of the**

**wettest quarter) Contribution: 35.57%**

**Bio4 (Temperature seasonality)**

**Contribution: 26.7%**

Figure 8. Response curves of bioclimatic variables in the climate-only model

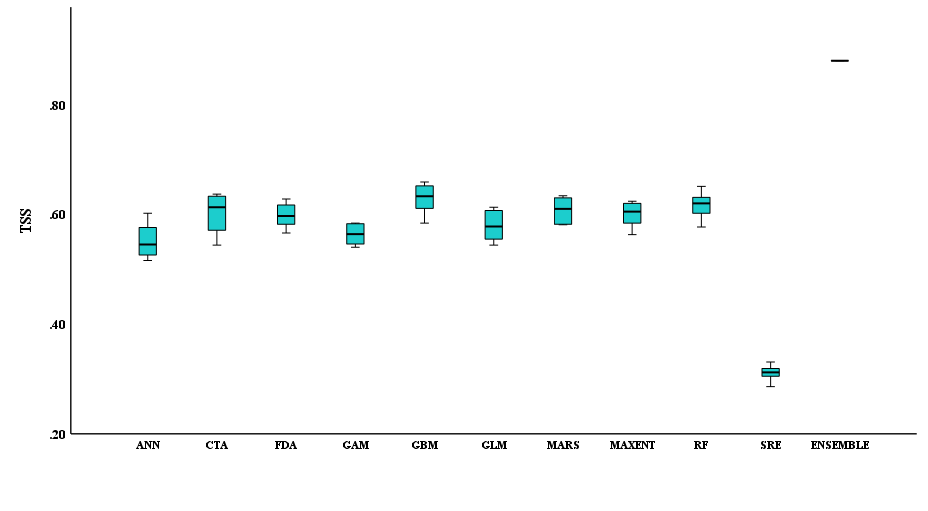
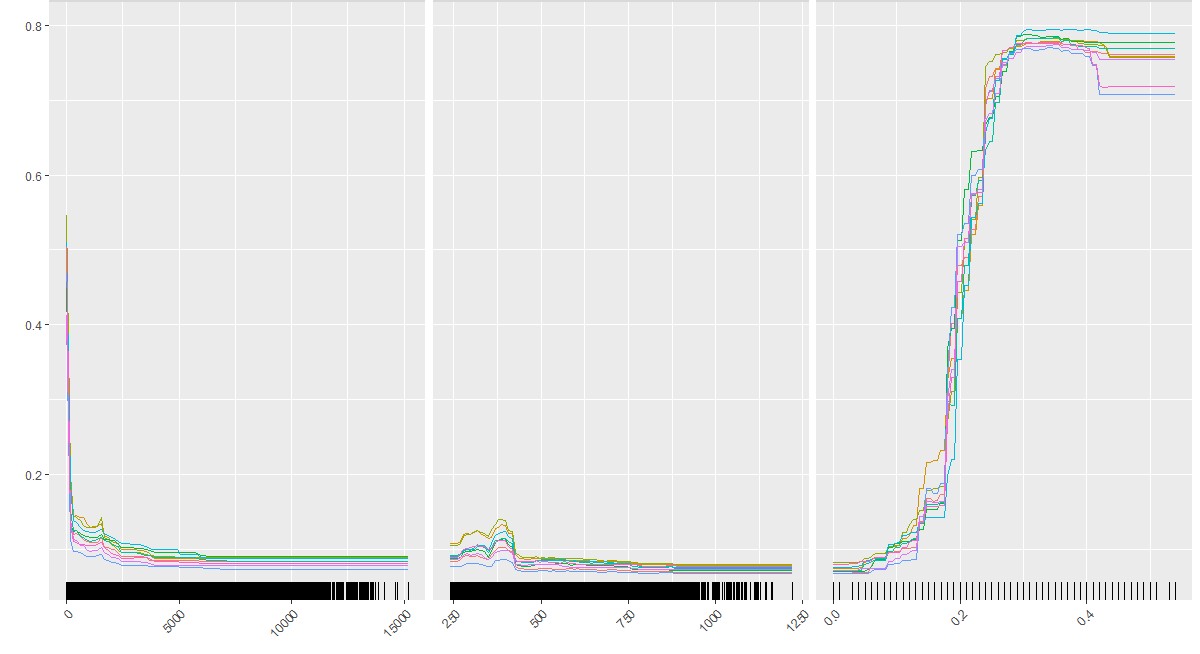


Figure 9. TSS scores of individual algorithms and the ensemble model (environment-only)



**FPC**

**Contribution: 57.36%**

**Elevation**

**Contribution: 8.54%**

**Distance to Regional Ecosystems (Floral resources)**

**Contribution: 34.1%**

Figure 10: Response curves of environmental variables in the environment-only model

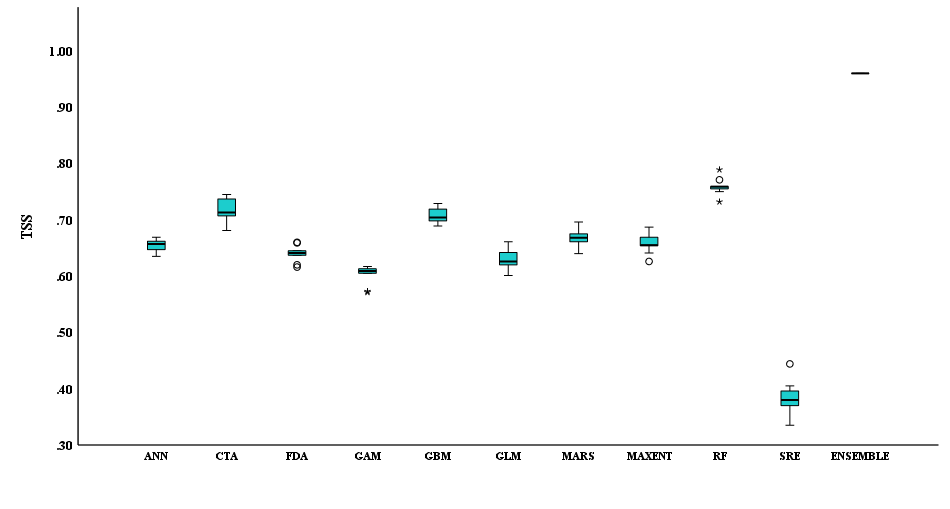


Figure 11. TSS scores of individual algorithms and the ensemble model (combined)

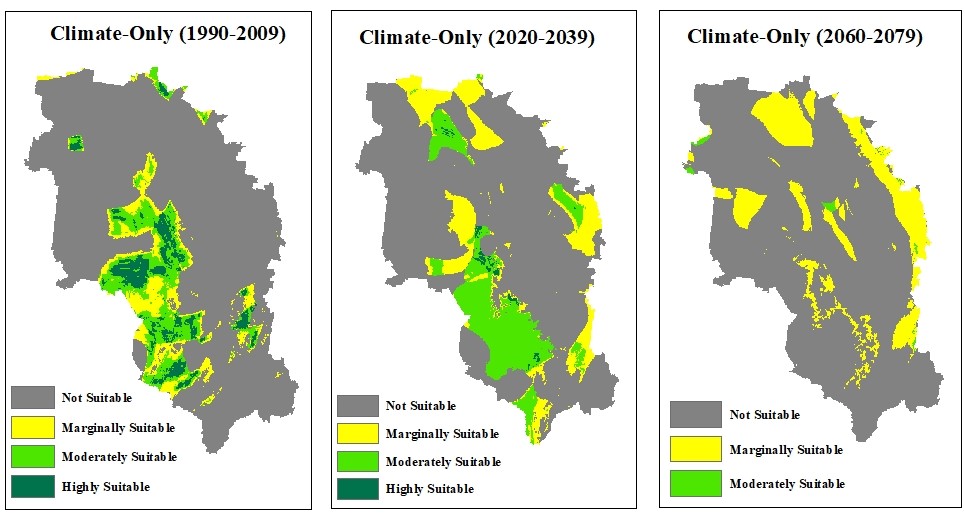


Figure 12. Suitability maps for honey bees: Climate-only scenario in 1990-2009, 2020-2039 and 2060-2079

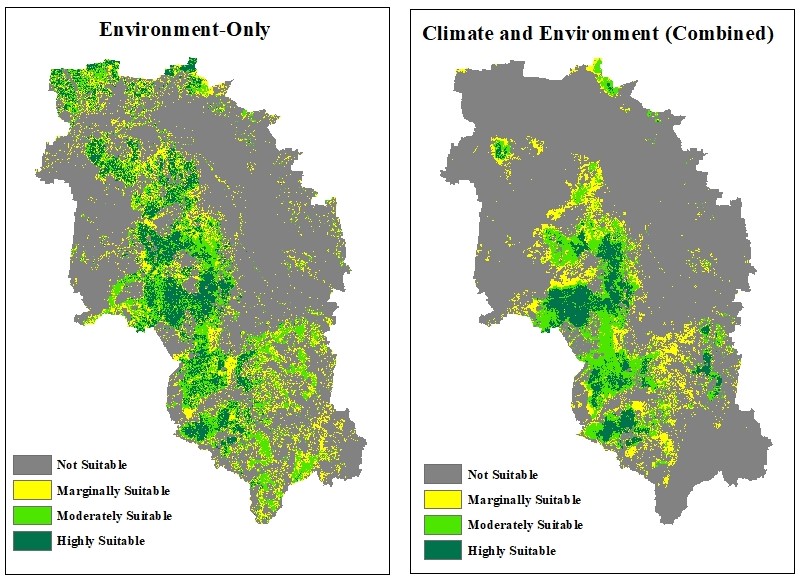


Figure 13. Suitability maps for honey bee habitat: environment-only and combined (Climate and Environment) scenarios