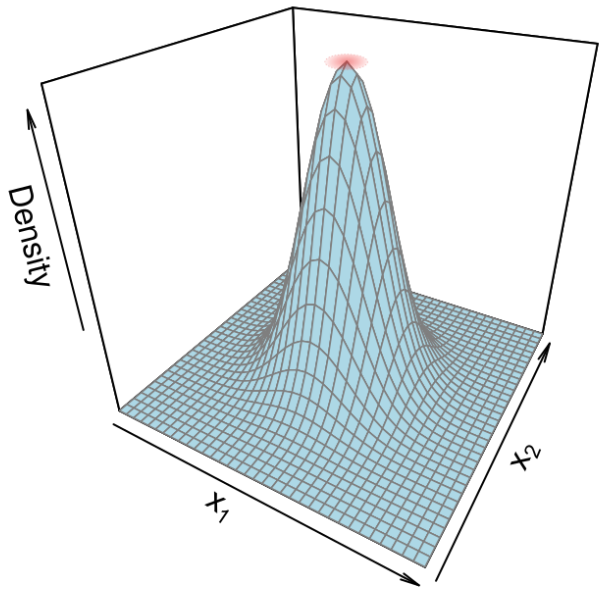
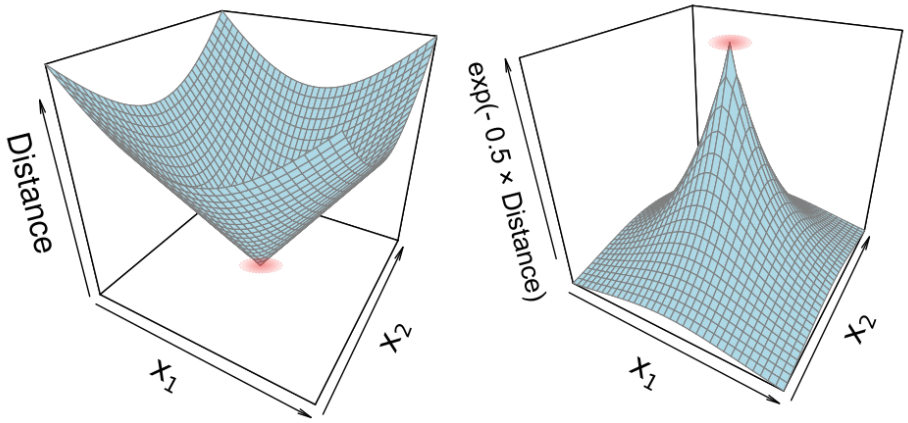
Statistical density



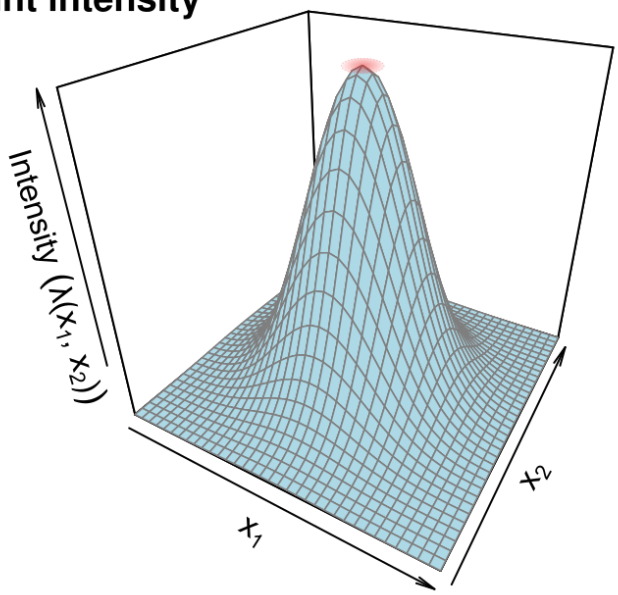
The density of climatic condidions among occurrence records is the basis for estimating the multivariate centroid. When occurrences are associated with two normally distributed and uncorrelated environmental dimensions, such as x_1 and x_2, the centroid is the pair of values [$E(x_1)$, $E(x_2)$] (represented with the red disc).

Distance to centroid



After estimating the centroid (as per above), the MVE is frequently represented in space as the Mahalanobis distance from each pair of values of the covariates per spatial unit to the centroid (left), or converted into suitability via the exponential function (right).

Point intensity



When data are modelled as a Poisson point process, point intensity is a function of environmental covariates, and resembles the density of climatic conditions in which species have been observed if they follow a normal or approximately symmetric distribution (top). The model formula that generated this surface was the log-linear function:

$$\ln(\lambda(x_1, x_2)) = \beta_1 x_1 + \beta_1' x_1^2 + \beta_2 x_2 + \beta_2' x_2^2$$

where $\{\beta'_1\ \beta'_2\} < 0$.