

## Appendix 2

In this appendix, we describe 2 equations for calculating Moran's  $I$  index.

Moran's  $I$  define as:

$$(1) \quad I_i = \frac{x_i - \bar{x}}{S_o} \sum_{j=1, j \neq i}^n w_{ij} (x_j - \bar{x})$$

Where  $w_{i,j}$  is the spatial weight between features  $i$  and  $j$ ,  $n$  is equal to the total number of features, and  $S_o$  is the aggregate of all the spatial weights:

$$(2) \quad S_o = \sum_{i=1}^n \sum_{j=1}^n w_{ij}$$