

Dissimilarity preservation as a matrix correlation

One can also ask how well the (Euclidean) distances among points in the n MDS plot correlate with the dissimilarities in the resemblance matrix. The former are calculated by running the ordination co-ordinates (output to **Data4** and **Data5** by the ✓ Ordinations to worksheet instruction in the above example) through **Analyse>Resemblance>(•Euclidean distance)**. Then, just as for the **Cophenetic correlation** heading in the Section 6 cluster analyses, which was carried out on the same Exe data, a matrix correlation between these two triangular matrices requires a run of the **Analyse>RELATE** routine (Section 14), e.g. with the distance matrix as the active sheet and the dissimilarities **Resem1** as the secondary data (or vice-versa). The only difference this time is that the option to compute a rank correlation such as Spearman should be taken (a *rank Mantel*-type correlation), since this is n MDS and the Shepard plot is not linear. (It is often overlooked that Pearson correlation measures only linearity of a relationship – a stress of zero corresponds to Spearman $\rho_S = 1$ but Pearson $\rho < 1$, when the increasing relationship is perfect but not linear). The permutation test in RELATE is not required since $\rho = 0$ is not a sensible null hypothesis, so set Max permutations: **1** and uncheck the Plot Histogram box, giving $\rho_S = 0.956$ for the 2-d n MDS and 0.965 for the 3-d configuration.

The screenshot displays the RELATE dialog box with the following settings:

- Correlation method:** Spearman rank
- Sample statistic (Rho):** 0.956
- Secondary Data:** Resemblance/model matrix: Resem1
- Max permutations:** 1
- Plot Histogram:** unchecked
- Rho values to file:** unchecked

Background windows show:

- Data5:** Exe 2-d MDS co-ords. Other. Variables: 1, 2. Samples: 1 to 10.
- Resem5:** Exe 2-d MDS distances. Distance (0 to inf). Sample: 1 to 10.
- Analyse menu:** Resemblance, Measure (Euclidean distance selected), RELATE.

Revision #2

Created 26 June 2024 22:03:15 by Arden

Updated 26 June 2024 22:12:44 by Arden