Aggregation & transforms (Morlaix macrofauna)

Chapter 10 of CiMC gives several examples of aggregating species matrices to higher taxa – using the **Tools>Aggregate** routine – and the effect this has on the resulting multivariate (and univariate) analyses. We shall illustrate this with the benthic macrofauna data from the sediments of the Bay of Morlaix, sampled at 21 times over April 1977 to February 1982, covering the period of the Amoco-Cadiz oil tanker wreck in March 1978. This was last seen in Section 10 and introduced in Section 8 where the species-level *n*MDS (and *tm*MDS) showed the strong community change following the oil-spill and the subsequent partial recovery, with the re-establishment of a clear seasonal cycle. Open that workspace, Morlaix ws in C:\Examples v7\Morlaix macrofauna, or if unavailable, open the species data matrix Morlaix macrofauna abundance and the variable information (aggregation) file Morlaix macrofauna taxonomy. Calculate a couple of aggregation and transformation options, computing Bray-Curtis similarities and running *n*MDS, e.g. contrast plots for species-level, square-root transformed and family-level log transformed data (similarities sp-sqr and fm-log). The latter requires, on the active sheet Morlaix macrofauna abundance, **Tools>Aggregate**>(Variable information worksheet: Morlaix macrofauna taxonomy) & (From level: species) & (To level: family), followed by **Pre-treatment>Transform(overall)** >(Transformation: Log(X+1)) and resemblance etc. as usual. On the resulting *n*MDS plot, take **Graph>Samp. Labels & Symbols** to remove labels and the (✓By factor) on symbols, and **Special>Overlays**>(✓Overlay trajectory: time). A similar pattern is seen to that for the species-level root-transformed case but showing an apparently greater degree of recovery. One possible explanation for this is seen in the line plots (*coherent curves*) of Section 10 – the effect of the highly abundant Ampelisca species prior to the spill, whose numbers crash and do not recover well, is more heavily down-weighted with the severe log transformation.

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