Bubble plots on PCA

Of the other options on the **Graph>Special** menu, overlaying groups from a CLUSTER run (which to be consistent must use Euclidean distance) is no different than for MDS ordination, in Section 8, and bubble plots likewise are executed in just the same way as for MDS. Though segmented bubble plots (at least for a selection of the 11 variables) will be visually clear-cut, they are not essential in this case in order to judge the contribution of individual environmental variables to a PCA derived from all of them – the vector plot provides that simultaneous information correctly for all variables. This is because the relationship of a single variable to the PC axes has to be a simple linear one, by definition of PCA, and this is the (•Base variables) option under (✓Overlay vectors), distinctive to a PCA plot. This is very different from a typical biotic *n*MDS, where the relation of single species to directions in MDS space derived from all species can often be non-linear and sometimes not even monotonic (but increasing and decreasing, impossible to represent by a vector! – Section 8). The (•Base variables) option is greyed out for MDS (or PCO) ordinations, since it only applies to PCA, but all ordinations offer vectors based on correlations with (•Worksheet variables). But the strong potential for non-linearity, e.g. of counts for a particular species across the PCA axes, makes bubble plots a much more attractive option than vectors for both PCA and other ordination types.

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