



# Correspondence Analysis for Environmental and Ecological Data: Past, Present, and Future

**Keynote Speaker: Rosaria Lombardo**

**Abstract:** Correspondence analysis and its variants constitute a family of multidimensional quantification methods designed to analyze associations between two or more categorical variables. These methods are applicable to both symmetric and non-symmetric association structures and can accommodate nominal and ordinal variables, for which cell counts may exhibit overdispersion. When more than two categorical variables are analyzed, correspondence analysis can be performed using either multiple CA or multi-way CA. Over time, several variants of simple and multiple/multi-way CA have been developed to accommodate different data features and structures, such as outlying categories, fixed and random zero cell counts, external information, measures of association, and modeling assumptions that were not addressed in the early stages of CA's development.

This keynote lecture provides an overview of classical and modern approaches to simple and multiple/multi-way CA, with a focus on applications to environmental and ecological data.

**Short biography:** Rosaria Lombardo is currently Professor of Statistics and Machine Learning in the Department of Economics at University of Campania "Luigi Vanvitelli". Her research interests include computational statistics, multidimensional data analysis, linear and nonlinear partial least squares regression, quantification theory, and, in particular, correspondence analysis and data visualisation.

Since 2016, she has been an elected member of the International Statistical Institute and currently serves on the Executive Committee of the International Association for Statistical Computing for the 2025–2027 term.

She has authored or co-authored over 150 publications, including four books published by Wiley and Springer.

Prof. Lombardo's international experience includes appointments as a visiting researcher and professor at prestigious institutions such as University of Montpellier (France), the Institute of Mathematical Statistics in Tachikawa (Japan), Leiden University (the Netherlands), Erasmus University Rotterdam (the Netherlands), University of Newcastle (Australia), and Stellenbosch University (South Africa).