TUPC15 Critical assessment of methods for organic carbon analysis: significance for predictions of trace metal speciation and bioavailability in surface waters B. Slootmaekers, Systemic Physiological and Ecotoxicological Research (SPHERE), University of Antwerp / Department of Biology; R.M. Town, Systemic Physiological and Ecotoxicological Research (SPHERE), University of Antwerp / Department of Biology (SPHERE Research Group); K. Van den Bergh, L. Bervoets, R. Blust, University of Antwerp / Department of Biology (SPHERE Research Group). The development of robust approaches and criteria for protection of ecosystem functioning and ecosystem services is a challenging task that requires consideration of multiple abiotic and biotic stressors, the nature and relative magnitude of which vary across locations. Consequently, a single absolute threshold value for a given pollutant might be protective in one scenario and underprotective in another. Fortunately, legislators are increasingly recognizing the importance of contaminant speciation and bioavailability in environmental risk assessment. Under the European Water Framework Directive, the Environmental Quality Standards of some trace metals are already set as bioavailable thresholds e.g. zinc and lead. Such thresholds are typically derived from empirical correlations between the free metal ion concentration in the water and lethal accumulation and/or effect levels in biota as determined under laboratory conditions. Typically equilibrium-based metal speciation codes are used to compute free metal ion concentrations for the given water conditions. A key input parameter in this regard is the Organic Carbon (OC) content. OC forms complexes with a wide range of trace metal ions, the thermodynamic and kinetic features of which are dependent on the metal-to-binding site ratio. Thus, the predictive capability of modelling strategies may be affected by the accuracy of the OC data. During a large scale field monitoring campaign to assess links between metal speciation, bioavailability and potential toxicity, we encountered a discrepancy in measurements between the Dissolved- and Total Organic Carbon contents (DOC/TOC) when using standard protocols. Specifically, we observed the theoretically impossible outcome that DOC was higher than TOC, which led us to dig deeper into the methodology for OC measurements. In our presentation we will show several protocols for measuring both DOC and TOC, and the consequent impacts on the (i) metal speciation computed by various chemical speciation codes, e.g. Visual MINTEQ, WHAM,… and (ii) toxicological risk assessment predicted by e.g. PNEC-PRO, BIO-MET…. The outcomes of our study provide greater insight into the validity of OC measurements and will contribute to the development of more robust approaches for linking metal speciation to bioavailability under field conditions.