sources including chemical fertilizers and animal wastes applied to croplands using the statistical approaches of PCA. In this respect, over 100 groundwater samples were collected from pre-existing wells, situated mainly in rural agricultural area from Romania, between September and November 2014. Sampling was performed in according with EPA Guide for Ground-Water Sampling. Dissolved cations including Ca, Mg, Cr, Fe, and Mn, were analysed using an iCAP™ Q ICP-MS. Dissolved anions (i.e. SO42-, NO3- and Cl-) were determined using ion chromatography. Alkalinity of groundwater samples was measured by titration method to quantify the carbonate species (mainly HCO3-). Quality control (QC) of chemical analyses was achieved by analyzing blanks duplicate samples as well as by calculating charge-balance error (CBE). A statistical analysis of quantitative source apportionment for the chemical investigated elements was performed. The chemical parameters were interpreted with Principal Component Analysis (PCA). Pearson correlation coefficient matrix using a Student's t distribution in MatLab is used to determine the linear dependence between the analysed parameters. Schoeller diagram achieved with the RockWare AqQA program is presented for analysed ions (SO42-, HCO3-, Cl-, Ca2+, Mg2+) behaviour interpretation.

31-P   Development of a full-life cycle and reproduction bioassay with the freshwater cyclopoid
Eucyclops serrulatus. _Marco Cifoni_ [1] - *Diana M.P. Galassi* [1] - *Cecilia Faraloni* [2] - *Barbara Fiasca* [1] - *Tiziana Di Lorenzo* [2]

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Groundwater dependent ecosystems (GDEs) worldwide are endangered by frequent and intense, large-scale disturbances due to chemical stressors. Toxicity tests are essential tools for biomonitoring and risk evaluation of chemical substances released in these environments.
Due to their dominance in aquatic environments, crustacean species (especially the Copepoda, that is the most abundant meiofaunal group in GDEs) are emphasized as target taxa in acute and chronic ecotoxicological bioassays. However, the attention on copepods in ecotoxicology had concerned almost exclusively marine or brackish species up to now. Only few ecotoxicological full life-cycle bioassays with freshwater copepods are available due to laboratory handling. Aside the requirement of experience and technical proficiency in handling these small-sized organisms, problems arise in selecting the most appropriate diet and temperature that assure at least 70% of survival in the control (test acceptability criteria) and minimize the developmental rates. Moreover, much relevance must be addressed to set up the conditions that maximize the fertility and reproduction of the target species.
This study was aimed at developing a full-life cycle (egg to adult to egg) and reproduction bioassay with the freshwater cyclopoid *Eucyclops serrulatus*. To this end, the effect of four different diets (two microalgae species: *Chlorella sorokiniana, Scenedesmus dimorphus*; a mix of the two algae and a prokaryotic diet) on the development and reproduction of E. serrulatus was investigated in two different culturing cells namely, glass vials (2 mL) and 96-polystyrene microwell plates (0.2 mL), at two diverse temperatures (18° and 25°C). Culturing cell water renewal and feeding were done every 3 days. We selected E. serrulatus since it is one of the most abundant epigean cyclopoids in GDEs and fulfils the requirements to be a good indicator such as a wide geographic distribution, resistance to manipulation, simple maintenance in the laboratory, short development, short life-span and high fecundity.
Survival (%) and developmental endpoints (days) were assessed monitoring the growth of newly hatched nauplii (1152), aged 24 hours, individually. Reproduction endpoints were assessed as: number of clutches, number of eggs, number of hatched nauplii/clutch. Estimations of population growth rates (λ) were modelled by a Lefkovich matrix. Survival, developmental and reproduction endpoints, as well as λs, were compared across treatments using permutational analyses of variance (PERMANOVA). Post hoc t-tests were applied when appropriate.
The results of this study showed that the bioassay performed with the algal mix diet, in 2-mL glass vials and at 25°C, assures the highest survival rates (88%), the shortest developmental rate (25 days), the maximum lifetime reproductive success and the highest population growth rate.

31-P   Earthquake-related changes in species niche overlaps in a karstic springwater copepod community. _Barbara Fiasca_ [1] - *Alessia Di Cioccio* [1] - *Tiziana Di Lorenzo* [2] - *Silvano Porfirio* [1] - *Diana M.P. Galassi* [1] - *Simone Fattorini* [1]