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Cyanobacteria and diatoms as indicators of geothermal and anthropogenic impact in Los Negritos, Michoacán, México

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Microbial taxonomy and water chemistry analysis for geothermal zone of Los Negritos, Michoacán, Mexico were performed in rain and spring 2015, in order to identify cyanobacteriae and diatoms as bio-indicators of anthropogenic activities and geothermal influence for future environmental monitoring. Water samples were taken to analyze environmental variables. Analysis of 15 metal elements in water samples were determined, cyanobacterias and diatoms were identified by microscopy and DNA 16S in order to relate environment pressures. Physical and chemical analysis indicates basic waters for the zone, recording the highest temperatures in mud geothermal expressions. Sulfate concentration, total dissolved solids, and chloride concentration were the main environmental factors characterizing geothermal pressures. Phosphate and nitrate concentrations were indicators of agricultural and wastewaters loadings in radar and control areas. A total of 16 *cyanobacteria* species and 8 diatom genera were identified. *Crocosphaera watsonii, Planktothrix mougeotii, Eucapsis alpina* and *Cymbella* sp. presented a high correlation with B, Mo, and U values being characteristic of geothermal expressions. Meanwhile, *Nostoc microscopicum, Calothrix parietina, Leptolyngbya laminosa, Prochlorococcus marinus, Snowella rosea,* and *Pinullaria* sp. were presented in radar area with high correlation with ions of phosphate, nitrate, and Mg. Chemical analysis determined presence of Ba, V, Mn, Ni, Cu, Zn, As, and Pb in all water samples, this could indicate possible metal exposure to human population, soil, and economic activities exposed in the zone, more studies of environmental impact assessment must be done to identify different level of environmental risk.

Biography

Estrella Azalia Nunez-Zarco has completed her MSc in the Autonomous University of Baja California (UABC), Mexico. She is Oceanographer from the Faculty of Marine Sciences of UABC and studied her Masters in Management of Arid Ecosystems, Faculty of Science, UABC. She has published a total of 3 papers in reputed journals and has been working at the Center of Investigation and Higher Education of Ensenada and the Mexican Center of Innovation of Geothermal Energy as biochemical and microbiology technician.

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