Some linear models to biodiversity data from organic carbon in Puebla, Mexico

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Climate change is an important problem in the world. The increasing amount of gases of the greenhouse effect within the atmosphere is the main cause of this change. One proposal to reduce these gases is storing up organic carbon (OC) in the soil by means of forest managing and woodlands conservation. Puebla, in Mexico, has rich ecosystems; they are kept as a special zones called *zonas terrestres prioritarias* (RTP's). Due to OC is an important element to measure the impact due to climate change in a region, in this work, we employed some mixed and random models in order to explain the OC in samples (litter), in Puebla, Mexico, RPT-105. Five *sites* or profiles (P30F, P35F, P36F, Pinhonero and Yucca) were analyzed; covariates include chemical and physical properties such as pH in water, pH in potassium chloride, *temperature* and *humidity*. Some of the results indicate that pH was an important covariate to explain the OC in a regression model, instead *temperature* and *humidity* were very important covariates to explain the OC in both fixed and mixed models ($p - values < 0.05$). Also, *sites* was a significative random effect to explain the organic carbon ($p - value < 0.05$).

Keywords: linear models, climate change, mixed linear models.