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STUDY OF ORGANIC MATTER IN SOILS OF THE AMAZON REGION EMPLOYING LASER INDUCED FLUORESCENCE SPECTROSCOPY

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In the face of climate change and increasing CO_2 levels in the atmosphere, the global carbon cycle, soil organic carbon (SOC) sequestration, and the role of different world biomes as potential sources and sinks of carbon are receiving increasing attention. Carbon quantification is an important environmental indicator, but the structure of organic matter is also important because is related to carbon stability. The synthesis of soil organic matter (SOM), as presented in soils of forest vegetation, can be originated from condensation polymeric polyphenols and quinones that are responsible for controlling the main physical-chemical properties of soils. These systems are present in humic substances, representing the major fluorophore of SOM[1-3]. Abiotic factors, such as soil texture, use and occupation of soil, can influence on the process of SOM formation, molecular structure and in its humification index[4]. Laser Induced Fluorescence Spectroscopy (LIFS) have become a promising technique for assessing humification index of SOM (HLIFS). In this context, the aim of this study was to analyze the humification index of the SOM in the region of Barcelos (Amazon) employing LIFS. The study area was the region of Barcelos, close the river Demeni. The whose vegetation distribution in this area, is two biomes the Dense Ombrophylous Forest (DPQD) and Campinarana (DPQT), with areas of edaphic contacts between these two phytophysiognomies, which ranged from Open field (FDE) to closed Depression (DPQ). Preliminary results showed that the area closed Depression (DPQ) there was a continuous gradient of humification with increasing soil depth. A similar behavior was verified for area Forest (DPQD), where the highest values of HLIFS were obtained between the four points analyzed, indicating the magnitude of the molecular recalcitrance this organic matter in this area. The results obtained for area Campinarana (DPQT) and Open field (FDE) showed an opposite behavior. These points there were a discontinuity in the accumulation of humified organic matter in the progress of depth. A hypothesis for occurrence of this behavior might be due to texture sandy and aggregate stability present in these soils, which can be difficulty the degradation of labile chains organic matter, thus promoting carbon sequestration in the long time in these soils.

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