



Fluorescence EEM and FT-IR analyses for examination of soil organic matter compositions affected by incubation conditions

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This study investigated the effects of soil drying-rewetting, nitrogen deposition, and temperature rise on the changes in dissolved soil organic matter quantities and their compositions. A PARAFAC method was employed to analyze the changes in the sub-fractions of fluorescent DOM components, which revealed that the dry forest soil accumulated relatively more amino acid type DOM than humic-like substances whereas the other soil groups showed the opposite trend. Nitrogen deposition, and temperature rise did not induce significant changes in the fluorescent DOM components. FT-IR analysis results were compared with the fluorescence EEM results, which provided complementary information about the characteristic functional groups of DOM. A principal component analysis (PCA) with the PARAFAC component scores, and the intensity ratios of representative FT-IR peaks gave a comprehensive interpretation on the changes of DOM compositions in response to the variations in the incubation conditions.