

Biomolecular composition changes and biochemical processes associated with indicators of organic matter degradation

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Degrading organic matter is the dominant carbon form in the Earth's surface, and an essential source of energy and nutrients for organisms. The availability of degrading organic matter is strongly constrained by its chemical composition. Many studies conducted for terrestrial and marine environment have found that degradation process usually lead to changes in these biomolecular compositions of organic matter. However, little is understood on its factors controlling the changes. In addition, few reports are available on the difference in features of useful indicators representing the decomposition stage. In this study, we review and compare the known degradation indicators based on biomolecules of decomposed organic matter and also develop more simple and useful indicators. We observed unidirectional increase/decrease in some of the well-analyzed amino acids in organic matter through decomposition, suggesting that it occurred regardless of short-term or long-term, and land or ocean, spatio-temporally. By investigating the amino acids increased or decreased during degradation, various biochemical processes occurring in the background of decomposition which has not been discussed were newly suggested.

Keywords: degradation indicators, Amino acids, land and ocean, Amino sugars