

14 IHSS meeting “From molecular understanding to innovative applications of humic substances”

Round table discussion 2B “HS and NOM in the changing environment (soils)”  
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General:

HS and NOM are an important resource like water or oxygen that are of fundamental importance for the functioning of ecosystems and society. They are mainly responsible to maintain soil fertility and drinking water quality. We identified mainly three processes where HS and NOM provide ecosystem services that help to better understand the role of these substances in a changing world:

1. Storage

HS and NOM store or transport large amounts of carbon and nitrogen in or between reservoirs. So far we have only limited knowledge how this function will be affected by global change. Which of the different ecosystem types will gain or loose organic matter? Key issues like sustainable land use, GHG emissions, global network of long term research site were discussed.

2. Transformation

HS and NOM are ongoingly transformed in all kind of ecosystems and limitations to these transformations like presence of oxygen, pH value, nutrients or presence of certain organisms favour specific transformations, however, so far no “systematics” of these processes has been developed and their effects on the transformed organic matter is still unclear. It will be necessary to better understand the effect of different source materials on these transformation products. Keywords like terrestrial, aquatic, sedimentary origin and thermal or geological alterations were discussed. Industrial application as fertilizers were discussed and scientific research on the effects was requested.

3. Interaction

HS and NOM interact with each other with organic pollutants and heavy metals. These interactions can contribute to storage or transformation of these harmful components. So far research is mainly limited by the identification, modification or design of binding sites. The latter will have a great potential for industrial applications. Key issues like protection of drinking water or bioavailability were discussed.