

Automated Image based Biomass Quantification in Mesocosm Studies

Jonas Osterloff¹ (jonas@cebitec.uni-bielefeld.de), Ingunn Nilssen^{2,3}, Marcia Abreu de Oliveira Figueiredo^{4,5}, Frederico Tapajós de Souza Tâmega⁵, Torben Möller¹, Tim W. Nattkemper¹

¹Biodata Mining Group, Biodata Mining Group, Bielefeld University, 33615 Bielefeld, Germany

²Statoil ASA, Research, Development and Innovation, N-7005 Trondheim

³Trondhjem Biological Station, Department of Biology, Norwegian University of Science and Technology, N-7491 Trondheim, Norway

⁴Instituto de Pesquisa Jardim Botânico do Rio de Janeiro, CEP 22.460-030, Rio de Janeiro, RJ, Brazil

⁵Instituto Biodiversidade Marinha, CEP 22.793-000, Rio de Janeiro, RJ, Brazil

Image analysis is a powerful tool to evaluate mesocosm studies in which for example biomass quantification or color changes are examined. Imaging the experiment samples is a comfortable way of conserving results.

Before making a mesocosm study the experimentalist should fulfill specific needs for the later automated image analysis. Having a good working system of automated image analysis is a desirable goal as it makes analyzing images highly reproducible, easier and faster than it can be done by human experts.

From the computer scientist's point of view it is necessary to have a specific amount of images that are comparable to each other in reference to light, rotation of the object and zoom factor.

In the oral presentation different means of dealing with problems that occur when imaging experiment samples are given. From the computer scientist's point of view those problems can be divided into post-solvable and post-unsolvable problems. Those problems are presented by exemplary referring to a stress calc. algae mesocosm study. Suggestions how to avoid problems that cannot be post-solved are presented.