

Abstract

Coccolithophyceae is a group of protists belonging to Haptophyta. It is a lineage found in most of the world's oceans, however it prefers cold water with high nutrition concentration. Coccolithophyceae are microscopic algae often forming colonies or symbiotic relationships. Most of this group is phototrophic but heterotrophic species can also be found. Their most important plesiomorphy is haptonema - a flagellar-like structure and their calcified shells - coccospheres. Haptonema is a so called third flagella that mostly serves a feeding purpose. Coccospheres are composed of individual CaCO_3 plates - coccoliths. Coccoliths can be observed in three morphotypes - heterococcoliths, holococcoliths and nannoliths. Morphology of coccoliths depend on a haplo-diplotic life cycle of Coccolithophyceae, which participate in deposition of CaCO_3 deep into the ocean water column. Alongside with other processes (DMS production, photosynthesis) they help regulate the planetary climate. It is the different environmental factors like pH, CO_2 concentration, concentration of different elements or dissolution rate that are likely the most determining in coccolith morphology and its' changes. Decreasing of oceanic pH causes inability of coccolithophyceae to mineralize new coccoliths and assemble them into a coccosphere. Coccolithophyceae react in a similar manner to increased CO_2 concentration, increased level of dissolution or for exemple to increased concentration of copper. All of these phenomenons are completely or partially affected by anthropogenic activity.