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Algae viability over time in a ballast water sample

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Introduction

The International Maritime Organization (IMO) developed guidelines for the land-based and shipboard tests of ballast water management systems, i.e. the G8 Guidelines (IMO, 2016), which includes to measure the biological performance of such systems. One of the logistical problems, especially when undertaking shipboard tests of ballast water treatment systems, is that sometimes only a limited amount of gear can be brought on board the test vessel. This is due to costs and weight limitations in cases the sampling team and gear needs to use air travel to get to the vessel, especially when considering intercontinental flights. In addition, some of the instruments used for sample processing are difficult to operate on vessels, such as microscopes, especially when using high magnifications the vibration induced by vessel propulsion and waves may be disturbing. Further, some sample processing is negatively impacted during bad weather when this results in rolling and pitching of the vessel. To overcome these problems, some samples were sometimes in the past sent to land-based laboratories after a voyage. However, concerns were expressed how the storage conditions of the sample may impact algae viability over time and what the most appropriate storage conditions were. This study was carried out to answer these concerns and, to our knowledge, it is the longest lasting algae viability study with daily sample analysis using Pulse-Amplitude Modulated (PAM) fluorometry.

Methods

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