

Diversity of airborne fungi in the air masses over the Mediterranean Sea

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Fungi and fungal spores can be uplifted and transported by air to be deposited into surface seawater. The role of these fungi in seawater and their impact on marine ecosystems is largely unknown. However, it is important to study airborne fungal communities, because they can stay viable and effect the ambient microbial populations, which are key players in biogeochemical cycles. The Mediterranean Sea is subject to frequent aerosol deposition from dust storms originating in the Sahara Desert and Arabian Peninsula, as well as from air masses originating in Europe. We determined the diversity of fungi being deposited into the various regions of the Mediterranean Sea. Aerosol samples were collected aboard the R/V Meteor April 4-28, 2011, and integrated 24 hour samples were collected onto polycarbonate filters and frozen immediately to preserve genetic materials. Total DNA was extracted from the samples using the phenol-chloroform method, DNA was amplified using universal 18S rRNA primers, and DNA was sequenced using the Illumina MiSeq platform. The data was processed using the MR DNA ribosomal and functional gene analysis pipeline and analysed using R. The results show that airborne fungal communities collected in different parts of the Mediterranean are distinct although some species are observed at all sites. The results from our project can be used as a baseline for future studies on fungi in aerosols and how they can effect the microbial ecology of marine ecosystems.