

## **The role of viable airborne microorganisms deposition in the southeastern Mediterranean Sea**

RAHAV EYAL<sup>1\*</sup>, HERUT BARAK<sup>1</sup> AND PAYTAN ADINA<sup>2</sup>

<sup>1</sup>Israel Oceanographic and Limnological Research, National Institute of Oceanography, Haifa 31080, Israel  
(correspondence: eyal.rahav@ocean.org.il)

<sup>2</sup>Institute of Marine Science, University of California, Santa Cruz, CA, USA 95064

A high diversity of bacteria, fungi and virus are carried by atmospheric dust and deposit into the ocean. The oligotrophic southeastern Mediterranean Sea (SEMS) is known to receive relatively high amounts of atmospheric dust, thereby potentially be impacted by transport of air-borne microorganisms of diverse biogeographic origin. In this study, we characterized the genetic fingerprinting of microorganisms attached to dust in representative samples collected between 2006-2012 during storm events in the SEMS. Statistical analysis showed that dust of common origin was clustered together based on its genetic signature. Thus, microorganisms picked up in diverse geographical areas can interact differently with ambient populations. Further, microcosm dust addition experiments with surface SEMS filtered (0.2  $\mu\text{m}$ ) and killed (autoclaved) seawater showed that airborne microorganisms originated in dust collected in the SEMS significantly enhanced system's bacterial productivity, introduced new species and altered the abundance and activity of ambient surface microbial populations. Our results demonstrate that dust-borne microorganisms may play a significant role in the SEMS ecology.