ANNUAL REPORT ON GEOTRACES ACTIVITIES IN ISRAEL
April 1st, 2018 to March 31st, 2019

New scientific results

- Adi Torfstein’s research group (Institute of Earth Sciences at the Hebrew University and Interuniversity Institute (IUI) for Marine Sciences of Eilat) operates a sediment trap mooring that has been deployed continuously in the centre of the north Gulf of Aqaba/Eilat since January 2014. This mooring combines monthly profiles with daily-timescale sample collection. The particulate samples are measured for organic C and N and their isotope composition, as well as major and trace element concentrations and foraminifera assemblages. Coeval seawater profiles are sampled using a Kevlar cable and Teflon-coated Go-Flo bottles, with emphasis on monitoring the short-term impact of dust storms on seawater trace element cycling. The dissolved samples are analysed trace element concentrations, Pb isotopic compositions and 230Th/232Th ratios. In addition, two dust samplers are deployed at the IUI, and collect dust samples continuously. During the reporting period, the research group included two postdocs (Daniel Palchan, David Weinstein), two PhD students (Natalie Tchernihovsky, Tal Ben-Altabet), 2 MSc students (Gil Lapid, Merav Gilboa), and a lab technician (Barak Yarden).

- Yeala Shaked’s research group (Institute of Earth Sciences at the Hebrew University and IUI) with 1 PhD students (Siuyuan Wang), 3 post-docs (Sunhajit Basu, Tzachi Yaccobson and Meri Eichenr), and a research technician (Murielle Dray) continue investigating the bioavailability of dust and mineral iron to cyanobacteria. The study of dust as a source of iron to Trichodesmium is conducted with various international collaborators, including Satish Myineni from Princeton (Synchrotron analysis of bioinduced transformations of dust), Rhona Stuart from Livermore National Laboratories (Fe uptake from dust using Nano-Sims), Martha Gledhill from GeoMar (siderophore identification with Orbitrap mass spectrometer), Dirk De Baar from Max Plank Inst for Microbiology (microelectrode measurements in trichodesmum colonies).

- The National Monitoring Program (NMP) for the Gulf of Eilat/Aqaba operates out of the IUI (http://www.iui-eilat.ac.il/Research/NMPAbout.aspx). Activities include monthly cruises across the north Gulf of Eilat/Aqaba, during which physical, chemical and biological measurements are performed in depth profiles (at a water depth of 700 meters) together with spatial-surface coverage. The main-relevant parameters monitored are: Temperature, salinity, dissolved oxygen, pH, alkalinity, POC, NO2, NO3, Si(OH)4, PO4, Chl-a. The samples are collected with the IUI Research Vessel, which has a powder coated aluminium Rosette (SeaBird) with 12 niskin bottles (12 liters each), and a CTD (SeaBird electronics). These measurements have been performed continuously since the year 2000. Analyses are performed at the IUI labs.

New projects and/or funding

- “Carbon export at the southeastern Levantine basin” (Weinstein and Berman-Frank). The initial results of this project were submitted for publication (see Alkalay et al. in the publication list below).
- “Bioavailability of particulate Fe to planktonic cyanobacteria”, funded by the Israel
Science Foundation (Shaked).

• “Dust iron utilization by natural Trichodesmium colonies“, funded by the German-Israeli Foundation (Shaked, Gledhill, Achterberg).

• “Marine particle dynamics across abrupt storm events in the Gulf of Aqaba, north Red Sea: A unified Thorium isotope study” funded by the Israel Science Foundation (Torfstein)

• “The magnitude and distribution of anthropogenic pollution in the Gulf of Eilat”, funded by the Ring Foundation (Torfstein, Shaar).

**GEOTRACES workshops and meetings organised**

• The 7th Kaplan Symposium was convened in Eilat during February 2019, titled: “Tracers in the Sea: Trace Elements and their Isotopes in the Oceans, Future Directions and Instrumental Frontiers”. The meeting convened by Torfstein and Shaked hosted 8 international invited speakers with a total of 81 participants. More details on the website: https://sites.google.com/view/7th-kaplan-symposium

**Other GEOTRACES activities**


• Adi Torfstein participated in the GEOTRACES-PAGES workshop in France.

• Yeala Shaked participated in the GEOTRACES SSC meeting in Taipei.

• Yeala Shaked attended a workshop in WHOI on a follow-up program, a Bio-Geotraces like initiative involving trace elements, nutrients and omics (Biogeoscapes).

**New GEOTRACES publications**


• Basu S and Y. Shaked. 2018 Mineral iron utilization by natural and cultured Trichodesmium and associated bacteria, Limnology and Oceanography 63 (6), 2307-2320


**GEOTRACES presentations in international conferences**


• Torfstein A. and Kienast S.S. (2018) Trace element fluxes and export production across daily-, seasonal- and multiannual- timescales in the oligotrophic Gulf of Aqaba, Red Sea,
Goldschmidt meeting.


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