About the Coral Monitoring Network.

Coral reefs experience significant direct and indirect anthropogenic pressures, including rising sea temperatures, ocean acidification, and pollution (chemical and physical). Monitoring coral health and how they are affected by environmental conditions is essential to better inform science, management, and policy. The fragile state of most reef ecosystems in the upcoming decades makes it urgent to generate accurate and actionable monitoring data at the temporal and spatial scales at which the stressors act. This is particularly true in the Gulf of Aqaba (GoA), which is considered one of the planets only marine refuges from climate change, due to the tolerance of its reef-building corals to rising ocean temperatures. Urgent need in scientific data and science based management in the Red Sea region motivated us to create a network of coral monitoring stations.

The world's first real time, open data **coral monitoring network** was established to collect multiple streams of data to be curated in an open-access online database. This open-access database will enable researchers from the region and around the world to collaborate and to advance the understanding of effects of environment on coral function and wellbeing. Our vision is to expand this network of monitoring stations to strategic localities in the Gulf of Aqaba and the Red Sea.

CMS III collects valuable real-time data of coral photosynthetic performance (chlorophyll fluorescence based) of 8 coral colonies, 4 *Stylophora pistillata,* a branching*,* depth generalist and 4 *Leptoseris Glabra,* a laminar growth form, depth specialist sp) located in a mesophotic reef in Eilat at a depth of **42 m**.
Several environmental parameters (e.g., air and water temperature, wind speed and direction, light intensity at surface and underwater) are measured nearby by Israel's National Monitoring Program of the Gulf of Eilat.

These multiple streams of data are complemented by periodic physiological and genetic profiles of the selected monitored corals.

An underwater camera feed shows real-time conditions and record additional information on reef-fish activity and diversity and coral pigmentation.

The archived collected data allows researchers, managers, students, and teachers – as well as the public to watch streaming or download data.

As the network develops, scientists from the Red Sea region may plug-in additional instruments and sensors on an open-access basis.

We believe that open-science data will not only contribute to conservation of one of the last reef standings, but also strengthen regional scientific collaboration.

Additional information on the CMS III

	Lat	Long	Depth
Location	34°55.02	29°30.07	42m

	Sampling rate	Saturation pulse
PAM	1/10s	1/30 min during daytime and 1/60 min at night.

What parameters are displayed?

PAR (micromole quanta/m^2/sec) Quantum flux density of photosynthetically active radiation impinging on the sample.

TEMP Temperature (°C) measured next to the monitored colonies

chlorophyll fluorescence
F corresponds to the momentary fluorescence level (Ft) of an illuminated sample measured shortly before application of a saturation pulse.

Y (II) is the effective photochemical yield of Photo System II. The Y (II) value estimates the photochemical use of excitation energy in the light.

ETR is the relative electron transfer rate in PS II.

For more information on pulse amplitude modulated fluorometry, please visit the WALZ website at
https://www.walz.com/index.html