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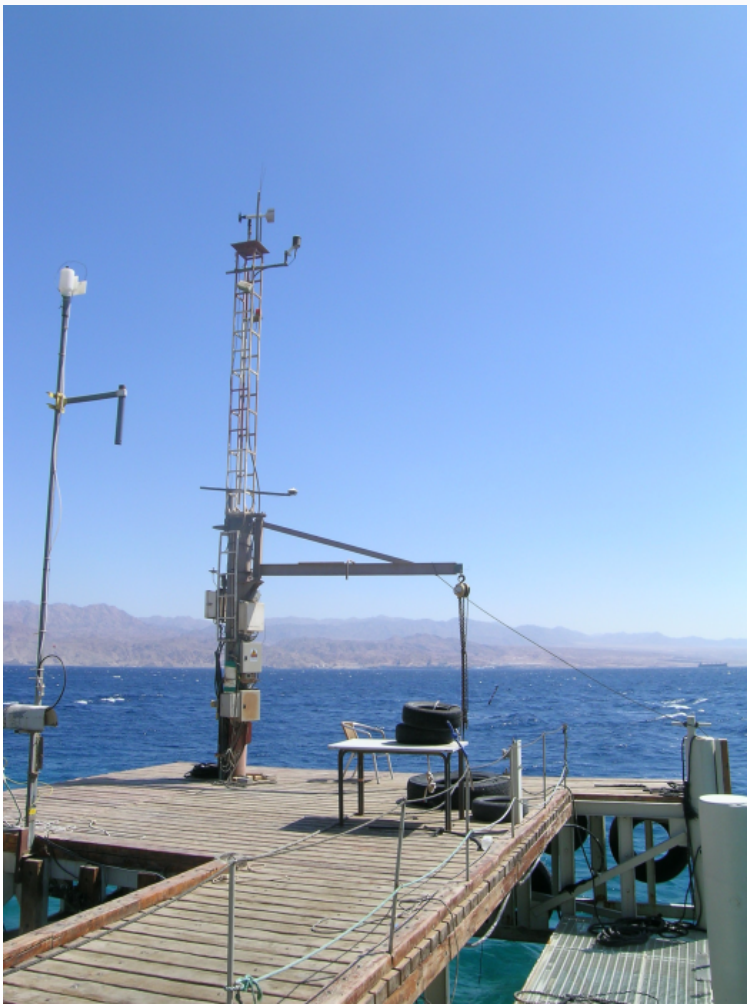
WHEN MEASUREMENTS MATTER

# Israel: Marine Meteorology on the Red Sea

*Meteo-Tech installs Campbell Scientific weather gear at IUI Marine Sciences locations*



The meteorological stations at the Interuniversity Institute for Marine Sciences at Eilat (IUI) in Israel include continuous measurements, both at the coast and over open water, of the following:

- Air temperature
- Relative humidity
- Wind speed and wind direction
- Water temperature

Additionally, the coast station measures barometric pressure, solar radiation, and sea level (by measuring water pressure).

## Case Study Summary

### Application
Meteorological and oceanographic monitoring of conditions in the Gulf of Eilat

### Location
Israel, Red Sea

### Products Used
CR800, 05106-L, 05106-LC, HMP45C-L, CS408-L, 108, HMP50-L, CR1000

### Contributors
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### Participating Organizations
The Interuniversity Institute for Marine Sciences at Eilat

### Measured Parameters
Wind speed and direction, air temperature, humidity, barometric pressure, water temperature and level, solar radiation

### Participating Consultants/ Integrators
Meteo-Tech Ltd.

## System Description

All measurements are collected by data loggers on the stations. All variables, excluding water level, are sampled at one-second intervals (water-level values are sampled at one-minute intervals).

The measured values are averaged over a ten-minute period and a dedicated computer retrieves the averages every hour. The data are stored on Meteo-Tech's server (www.meteo-tech.co.il/eilat-yam/eilat_en.asp). The coast station's data is free and available for public use. The open-water station is restricted to registered users only.

## Coast Station

The coast station is situated on the IUI pier, about 30 m off shore. The station started operating in September 2006 and operates on Israel Winter Time (GMT+2). Twice a year Meteo-Tech performs preventive maintenance, including accuracy checks, cleaning, and bearing replacement.

- Power supply: 220 Vac
- Communication method: IP
- Equipment list:
  - Data logger—Campbell CR1000
  - Wind monitor—Young 05106MA
  - Air temperature and relative humidity—Campbell HMP45C
  - Barometric pressure—Young 61002
  - Global radiation—Kipp & Zonen CM11B
  - Water pressure (level)—Campbell CS408
  - Water temperature—Campbell 108

## Open-Water Station

The open-water station is situated on a floating buoy about 1 km off shore. The station started operating on July 2008. Unfortunately, a commercial ship collided with the buoy and heavily damaged it. The station was insured, so a rebuilding of the station is expected soon.

- Power supply: 10-W solar panel
- Communication method: GSM cellular
- Equipment list:
  - Data logger—Campbell CR800
  - Wind monitor—Young 05106MA
  - Electronic compass—Young 32500
  - Air temperature and relative humidity—Campbell HMP50
  - Water temperature—Campbell 108

## Coast Station Description

Wind speed and direction, air temperature, and relative humidity are measured from the top of the main mast on the pier, 10 m above sea level (at low tide).

The sensor for barometric pressure is located 5 m above sea level and the measurement is corrected for sea level.

The sensor for solar radiation is fixed on a cross-arm extending 0.7 m due south from the main mast, some 6 m above sea level.

The water pressure sensor is encased in a 3-m-long vertical metal tube 3 in. in diameter, fixed to the main supporting pole of the pier (which is a downward extension of the main mast). The encasing metal tube is meant to attenuate high frequency oscillations (i.e., waves). The sensor is located 0.79 m below sea level (calibration to Israel sea-level datum is courtesy of Dr. Dov Rosen) and also measures water temperature.

An additional, dedicated, water-temperature probe is located approximately 1 m deeper, fixed to the main pole supporting the pier.

View online at: www.campbellsci.com/israel-marine-meteorology

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