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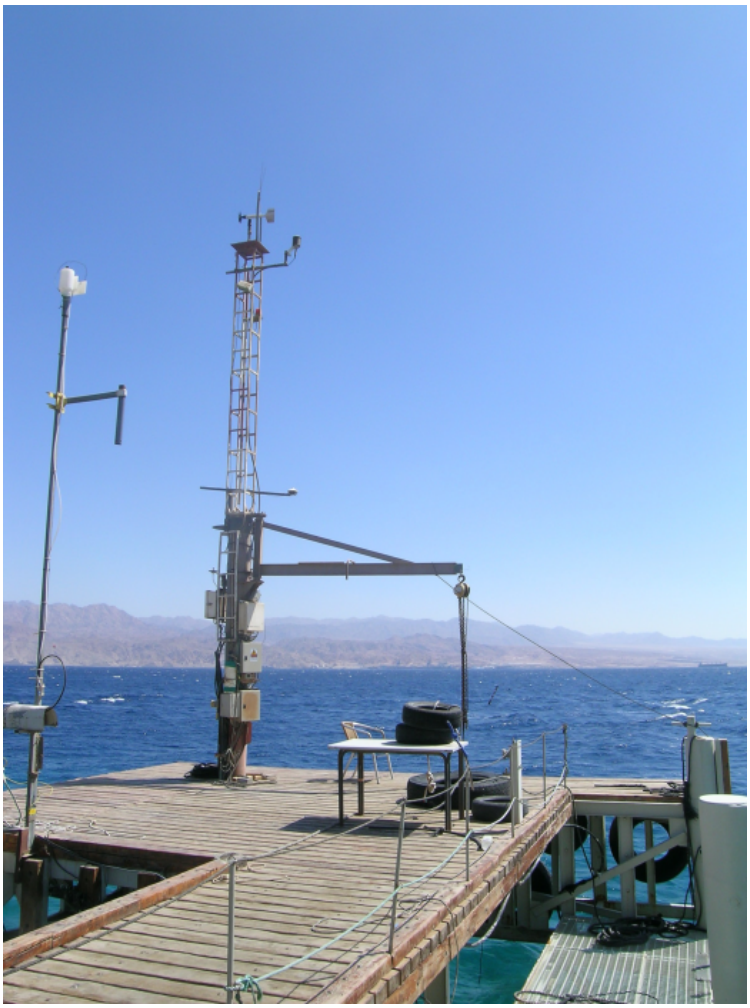
Israel: Marine Meteorology on the Red Sea

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. 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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