



## LAKE MICHIGAN FIELD STATION - MUSKEGON, MI



NOAA GLERL's Lake Michigan Field Station (LMFS) is the home port for NOAA Great Lakes vessels, which operate throughout the Great Lakes. It is also the platform for the long-term observations research program on Lake Michigan.

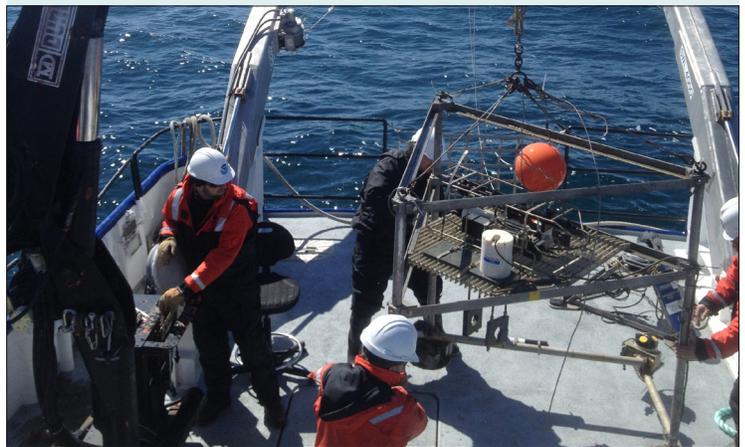
The LMFS is strategically positioned on Lake Michigan to provide support to the local and regional community by further developing NOAA's role in freshwater ecology, ecosystems management, coastal management, and water-based commerce. This field station promotes long-term observations, field work, and process studies essential for understanding and developing future ecological services. Additionally, the proximity of the field station to Lake Michigan provides a unique opportunity for engagement with tourists, recreational users, and members of the community.

Located on Lake Michigan's Muskegon Channel, GLERL's field station occupies three buildings. There are currently 12 employees at the facility, including research staff, vessel crew, a marine superintendent, and administrative personnel.

**Science:** The LMFS supports GLERL's Ecosystem Dynamics theme with on-site researchers, laboratory facilities and storage, and direct access to ship resources. The LMFS also provides a base and accommodations for offsite researchers from GLERL and partner agencies. Science at LMFS is primarily focused on field-based long-term observations and field-based shorter-term process studies in Lake Michigan.

**Vessel Operations:** Based at the LMFS, vessel operations support GLERL science branches by providing a safe and secure work environment in the conduct of scientific research. Additionally, vessel operations provide expertise to NOAA in small research vessel (SRV) operations. The mobility of GLERL vessels offers unique place-based opportunities for communications and education at Great Lakes Ports of Call.

**Partnerships/Outreach:** The physical location of the LMFS promotes partnerships with many other agencies and universities including the US Geological Survey - Great Lakes Science Center, Michigan Dept. of Natural Resources, Purdue University, Michigan Tech Univ., Univ. of Michigan, Little Traverse Bay Bands of Odawa Indians, and the Chippewa Ottawa Resource Authority.



### Connect with GLERL Social Media:



## GREEN SHIPS

NOAA operates a fleet of research vessels and small boats on the Great Lakes through its Great Lakes Environmental Research Laboratory (GLERL). As part of its larger stewardship mission in the marine environment, NOAA has converted its research vessels from petroleum-based fuels and lubricants to renewable and environmentally-friendly products that reduce fossil fuel emissions.

GLERL's Green Ship Initiative, begun in 1999, has led the nation by successfully converting the laboratory's entire diesel-powered vessel fleet to biofuels and bio-lubricants. This effort produced the first federal vessel to run completely on non-petroleum products. The marine diesel-powered vessels in the Great Lakes are now fueled by B100 (100%) soy biodiesel, a true renewable energy source. This is a significant advancement over the use of B20 petroleum blends (20% biodiesel and 80% petroleum diesel). All other shipboard mechanical and hydraulic systems on GLERL vessels have been converted to use bio-products (bio-based oils and lubricants made from rapeseed and canola oils) to meet the objective of totally petroleum-free vessels.

## Muskegon Web Cam and Met Observations



Meteorological observations are used in the GLERL's Great Lakes Coastal Forecasting System to improve nowcasts and forecasts of waves, water levels, water temperature, and circulation.

All meteorological observation stations measure and record wind speed, wind gust, wind direction, air temperature, and wind chill. In addition, instruments in Muskegon and Michigan City measure dew point, relative humidity, atmospheric pressure, and light level. Data is recorded every 5 seconds and averaged over 5-minute intervals. These data are then uploaded GLERL's website every 5 minutes. Webcam images are updated at 10-60 minute intervals.

Fishers, boaters, surfers, and other recreational users find the real-time conditions and WebCam images useful in making plans for when and where to venture out on the water.

[www.glerl.noaa.gov/metdata](http://www.glerl.noaa.gov/metdata)

## Advantages of Biofuels

B100 biodiesel has many benefits over traditional, petroleum-based diesel fuel. It reduces air pollution, costs less than petroleum diesel, and results in cleaner engines. Experts estimate that about 1/3 of our transportation fuel needs can be met by domestically-produced biofuels.

### Environmental and Social Benefits

- Decreases emissions of fossil fuels that contribute to climate change and air pollution
- Lessens risk of environmental harm in the event of a fuel spill
- Reduces dependence on imported oil
- Supports agriculture and the U.S. economy

### Operational Benefits

- Improves engine performance
- Extends engine life
- Reduces need for engine maintenance due to cleaning properties of biodiesel
- Reduces operating and maintenance costs by 20-40% vs. petroleum-based fuels

### Human Health Benefits

- Reduces exposure to harmful and cancer-causing chemicals
- Reduces seasickness due to less offensive odor



### For more information:

**Dennis Donahue, Marine Superintendent**  
**NOAA/GLERL - Lake Michigan Field Station**  
**1431 Beach Street, Muskegon, MI 49441-1098**  
**231-755-5173 [www.glerl.noaa.gov/lmfs](http://www.glerl.noaa.gov/lmfs)**