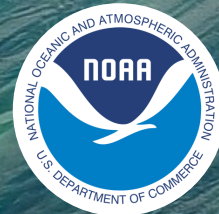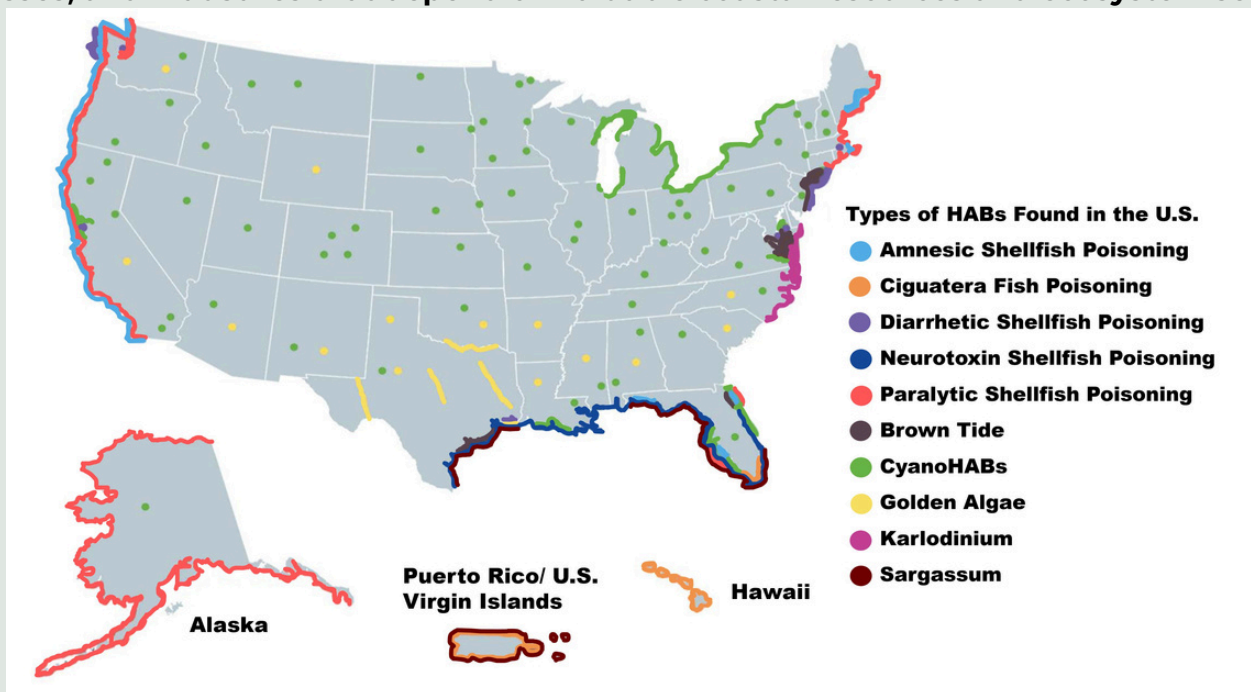# NOAA Harmful Algal Bloom
Observing & Forecasting

Increasing Harmful Algal Bloom (HAB) occurrence and the regionally-specific nature of their impacts highlight the need for improved, nationally coordinated operational HAB observing and forecasting services. HABs found in the coastal and Great Lakes waters of the United States can produce toxins that cause illnesses when consumed through seafood or drinking tainted water. Toxic and non-toxic HAB events along our beaches and in our estuaries are increasingly disrupting communities, businesses, and industries that depend on valuable coastal resources and ecosystem services.

Types of HABs Found in the U.S.
- Amnesic Shellfish Poisoning
- Ciguatera Fish Poisoning
- Diarrhetic Shellfish Poisoning
- Neurotoxin Shellfish Poisoning
- Paralytic Shellfish Poisoning
- Brown Tide
- CyanoHABs
- Golden Algae
- Karlodinium
- Sargassum

Alaska
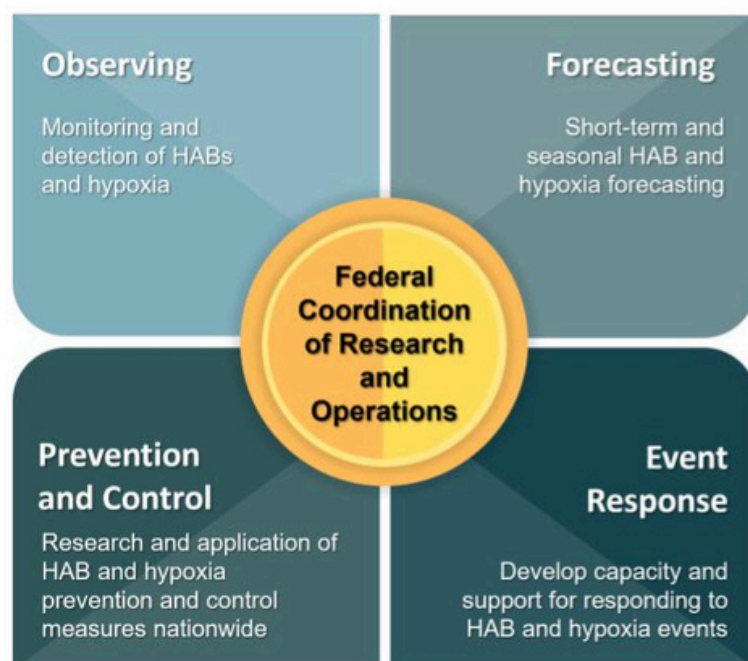
Puerto Rico/ U.S. Virgin Islands

Hawaii

HABs pose a significant and expanding threat to public health, recreation and tourism, shellfish farming, wild capture fisheries, and protected marine species.
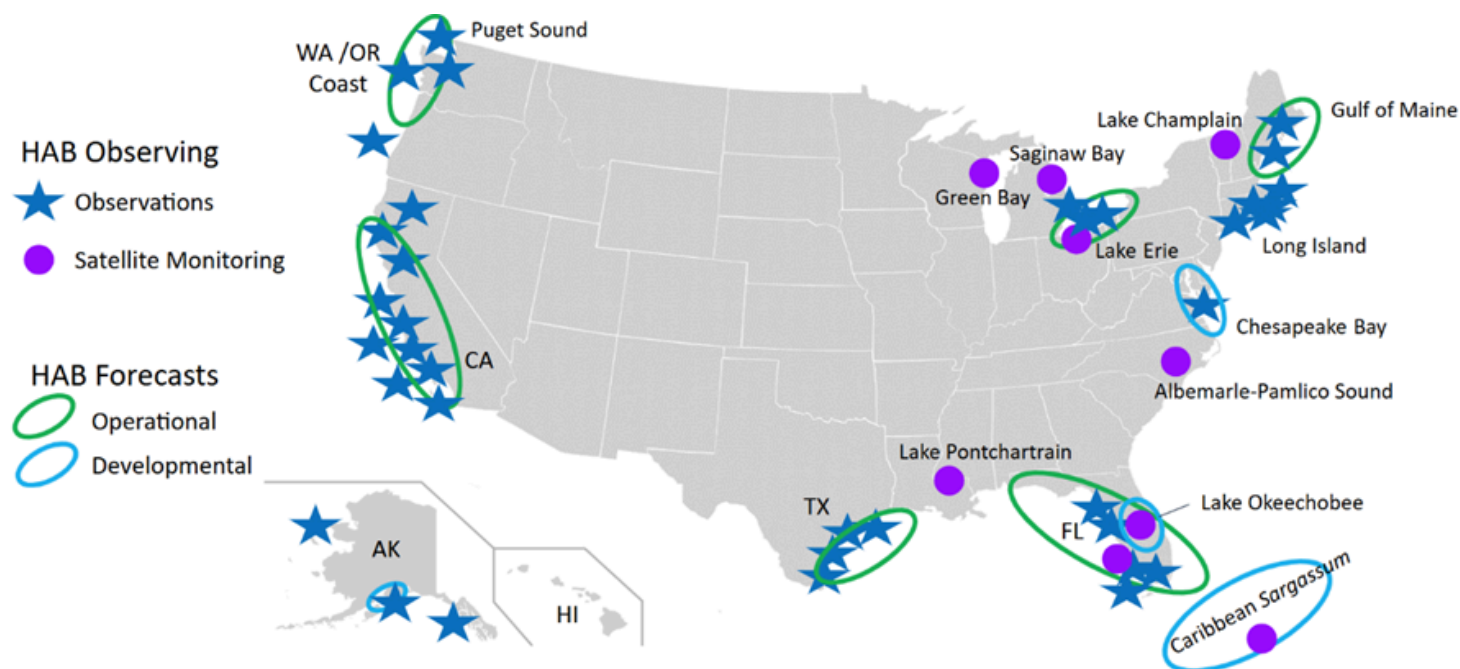
National HABs and Hypoxia Strategy

NOAA co-chairs the Interagency Working Group on Harmful Algal Bloom and Hypoxia Research and Control Act (IWG-HABHRCA). Through this group, NOAA coordinates with over a dozen agencies to contribute to the National HABs and Hypoxia Strategy that outlines four main elements to address the increasing severity of HABs and hypoxia issues facing our country.

NOAA's National HAB Observing Network (NHABON) and National HAB Forecasting Network (HAB-FN) provide sustained, operational services that deliver advance warnings and predictions to our federal, state, tribal and industry partners. NOAA and our stakeholders use these services to help communities and businesses anticipate and mitigate costly HAB impacts and illnesses. NOAA's HAB research investments are critical for responding to expanding HAB threats through coordinated improvements to state, regional and national observing, forecasting, response, and prevention and control capabilities.

Observing
Monitoring and detection of HABs and hypoxia

Forecasting
Short-term and seasonal HAB and hypoxia forecasting

Federal Coordination of Research and Operations

Prevention and Control
Research and application of HAB and hypoxia prevention and control measures nationwide

Event Response
Develop capacity and support for responding to HAB and hypoxia events

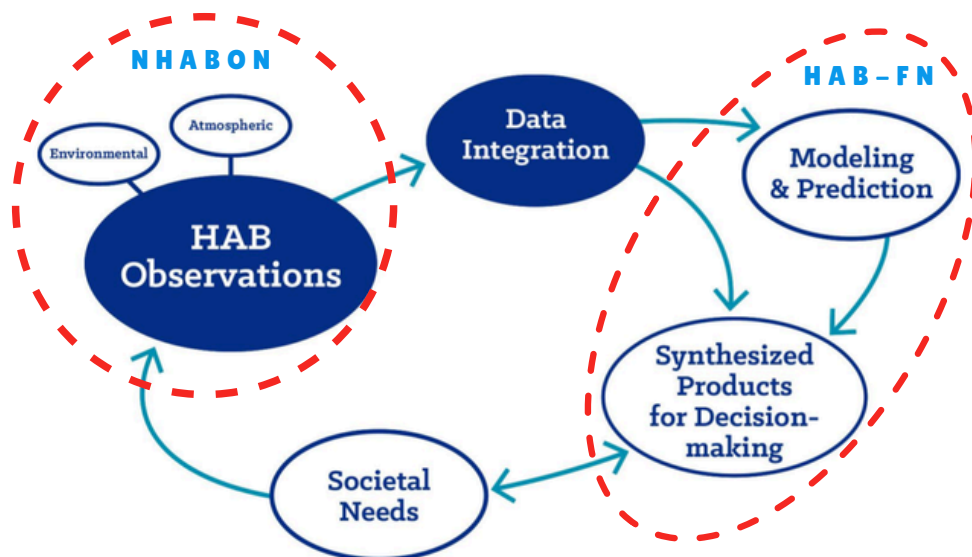# NOAA's National Observing and Forecasting Services

National HAB Observing Network (NHABON)

The National HAB Observing Network (NHABON) integrates local, state, regional, and federal HAB observing capabilities through a national network of regional nodes. The regional approach is adaptable to stakeholder needs, while taking advantage of economies of scale and coordination at a national level. This shared capacity strengthens HAB early warnings, discerns patterns and trends in HAB occurrence, and provides observations to relevant stakeholders to understand, predict, mitigate, and manage HABs. NOAA and its partners also develop and validate tools and strategies to accurately measure HAB toxins and share toxin testing capacity with regional stakeholders.

National HAB Forecasting Network (HAB-FN)

The HAB Forecasting Network (HAB-FN) complements NHABON to alert coastal managers to blooms before they cause severe damage. Short-term forecasts identify which blooms may be harmful, where and how widespread they are, and where they may cause harm. Longer-term, seasonal forecasts predict the severity of HABs for the bloom season in a particular region. Early warning of a HAB event provides health officials, coastal resource managers, and drinking and recreational water managers with timely information to guide water treatment strategies or closures of beaches or shellfish harvest areas. Early warnings also allow the seafood and tourism industries to minimize HAB impacts. Current forecast capabilities include the Gulf Coast, Gulf of Maine, Lake Erie, California, and Pacific Northwest.

Providing sustained HAB observations and forecasting products

NOAA provides a sustained, coordinated system for delivering HAB observing and forecasting products. HAB observations are an integral part of improving HAB forecasts and are used for algal identification, model validation, and toxin measurement, among others. These services enable risk assessment and subsequent decision-making to protect public health.