

Regional Class Research Vessel Science Mission Requirement (SMR) Workshop

August 15 & 16 in Salt Lake City

FOFC Report: new Regional Class vessels

1st in Gulf of Mexico by 2005

2nd and 3rd in Atlantic and Pacific by 2010

Vessels must meet present science needs *and* future
science needs for 20-30 years

Participants

Scientists

Larry Atkinson (ODU)

James Austin, Jr. (UT)

Curtis Collins (NPS)

Wilford Gardner (TAMU)

Ralf Goericke (SIO-UCSD)

Norman Guinasso (TAMU)

Robert Knox (UCSD-SIO)

John Morrison (NCSU)

Charles Paull (MBARI)

Thomas Shipley (UT)

Niall Slowey (TAMU)

David Townsend (UMe)

Denis Wiesenburg (USM)

Operators

Thomas Althouse (UCSD-SIO)

Lee Black (BBSR)

Matt Hawkins (UDel)

Randy Maxson (FIO)

Richard Muller (MLML)

Rodney Powell (LUMCON)

Steve Rabalais (LUMCON)

Joseph Ustach (Duke/UNC)

Louis Zimm (UCSD-SIO)

Agency/Other

Emma Dieter (NSF)

James Meehan (NMFS)

James Yoder (NSF)

Annette DeSilva (UNOLS)

Mike Prince (UNOLS-MLML)

Agenda

Regional Class Research Vessel SMR Workshop

- Overview of Fleet Renewal and SMR process
- NSF support for design and construction of Class vessels
- Reviewed: Purpose of SMRs
 - Existing SMRs
 - Current planning activities
 - Elements of SMRs
- Examined Class mission and requirements (FOFC report)
- Developed and refined SMR parameters for future Vessels:
 - Existing vessels and background information
 - Community input on needs and ways to meet them
 - Workshop participant input on needs and ways to meet them
- Assessed regional differences and requirements
- Identified key general requirements

Overview of some Regional Class SMRs

Accommodations

- 16-20 non-crew with overflow capability, optimized habitability

Operational characteristics

- Endurance: 21+ days (transit 15 days & 15 days station work)
- Range: 8,100 nautical miles
- Dynamic positioning with minimal noise essential
- Speed Control: (e.g. < 1.25 m wave height: 0.1 knot in 0-5 knot range)

Overview of some Regional Class SMRs (continued)

Over-the-side and weight handling

- 1-2 hydrographic-type winches for wire rope, electromechanical or fiber-optic cables
- heavy winch for interchangeable drums up to 10,000 m of 9/16" wire rope/0.68" electromechanical cable/fiber optics cable
- Consider suite of equipment (winches, wires, cranes, frames, booms, etc) as system
- Design to maximize safety & protection of equipment in heavy weather
- Cranes to handle heavier and larger equipment than can be handled at present (e.g. one that can reach all working deck areas and be capable of offloading vans and equipment weighing from 12-16,000 lbs to a pier or vehicle in port is desirable)

Overview of some Regional Class SMRs (continued)

Science working spaces

- 1,000 sq ft minimum working deck area aft of deck houses
- At least 1,000 sq ft lab space (1,500 sq. ft. desirable); 1-2 reconfigurable main labs
- Can carry 2 laboratory, berthing, storage, or other specialized 8 x 20 ft vans

Science and shipboard systems

- Modern & expandable data network and onboard computing integrated into all spaces
- Infrastructure for continuous underway sampling/data collection of as many environmental parameters as possible
- Acoustic capabilities and quiet operation important (e.g. 2-12 KHz single beam profilers, shallow depth multi-beam swath mapping, ADCP system)

Maintainability

- Ability to maintain, repair and overhaul vessels and installed machinery/systems efficiently and effectively with a small crew is a high priority

SMR Areas needing closer attention to details

Speed

- Ranges ok, speed control values realistic

Seakeeping

- May need better definitions of terms (RMS) and tied to existing vessel performance, check actual values, specify type of work and best heading for some criteria.

Station keeping

- Are limits realistic and required?

Trackline following

- Crab angle, speed, distance off track

Weight handling & Cranes

- Are values realistic and how do they compare to existing?
- Define minimum (required) and desired (maximum) values

Towing

- Do values relate to actual experience?

SMR Areas needing closer attention to details (continued)

Deck, labs & storage size (square or cubic footage)

- Review to be sure sizes are realistic and how they compare to existing.

Deck and bolt down strength

- Is ABS criteria for deck strength adequate, higher point loads?
- What is the required strength rating for 1” bolt down sockets?

HVAC, noise and other environmental standards

- Cite specific standards or references or at least refer to them as current examples.

Electrical for labs, vans and decks

- Verify required voltages, amps, etc. and specify quality (droop, freq)

Acoustic systems

- One degree resolution for multi-beam?
- Are we be specific enough or too specific for all system?

Maintainability, operability, life cycle costs and regulatory issues

- Need operator review and input on these sections

Mission scenarios and regional/ocean differences

- Need more scenarios and better definition of regional differences

Regional Class SMR Areas Lacking Consensus

How big?

- Middle of the range ~ 160 ft?
- Stay under 500 GT? <140ft?
- Need closer to 180 ft

of non-crew berths

- A few want 24
- Most are happy with the 16 - 20

Endurance & range

- Numbers are not a problem
- Some want these vessels to operate beyond the shelf

Berthing Vans

- Vans offer surge capacity
- Others hate vans, don't want them used

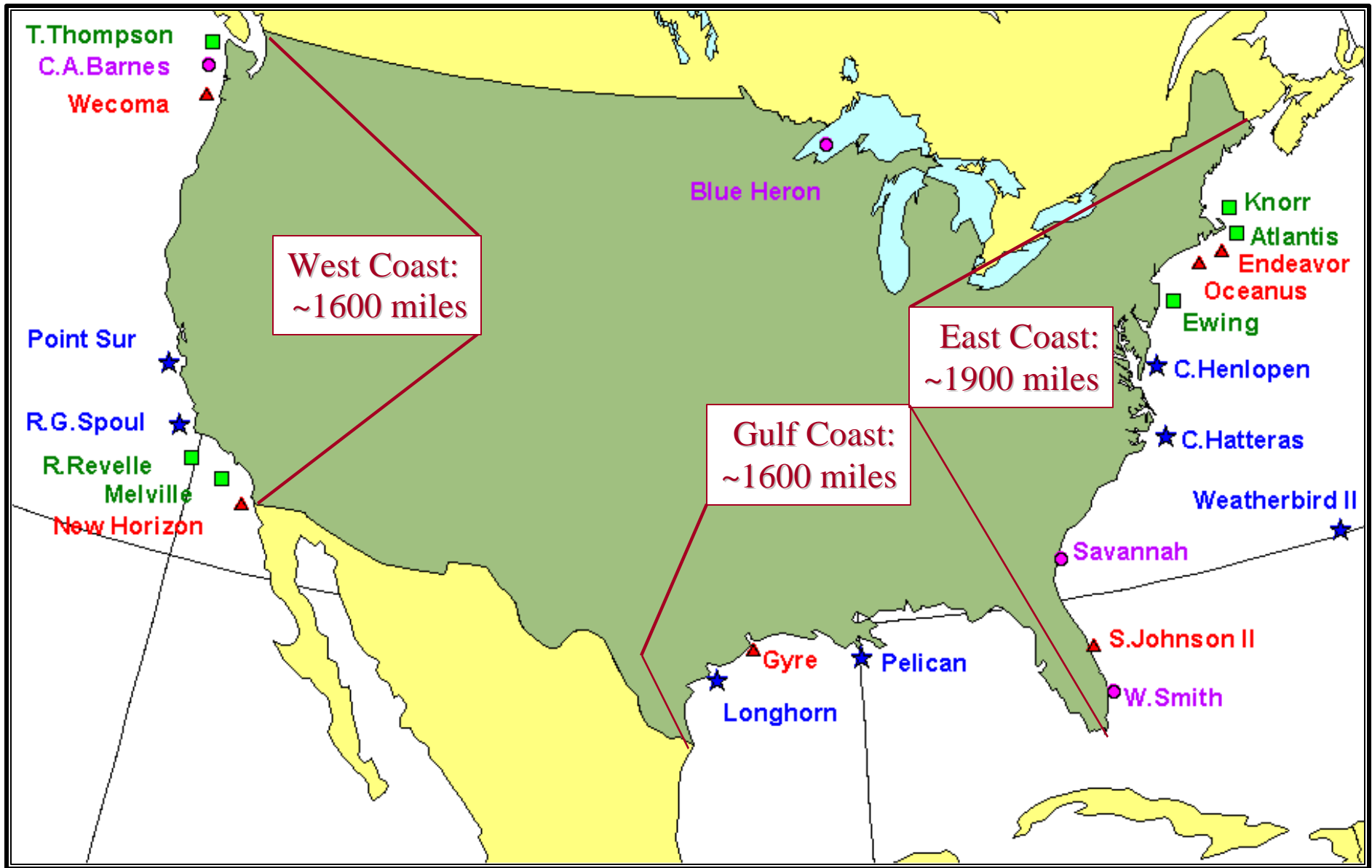
Lab types and sizes

- What type are needed, large or multiple

Storage & science load

- Are values too big?
- Do we need storage?
- Combine with other purposes?

Location of current UNOLS Vessels



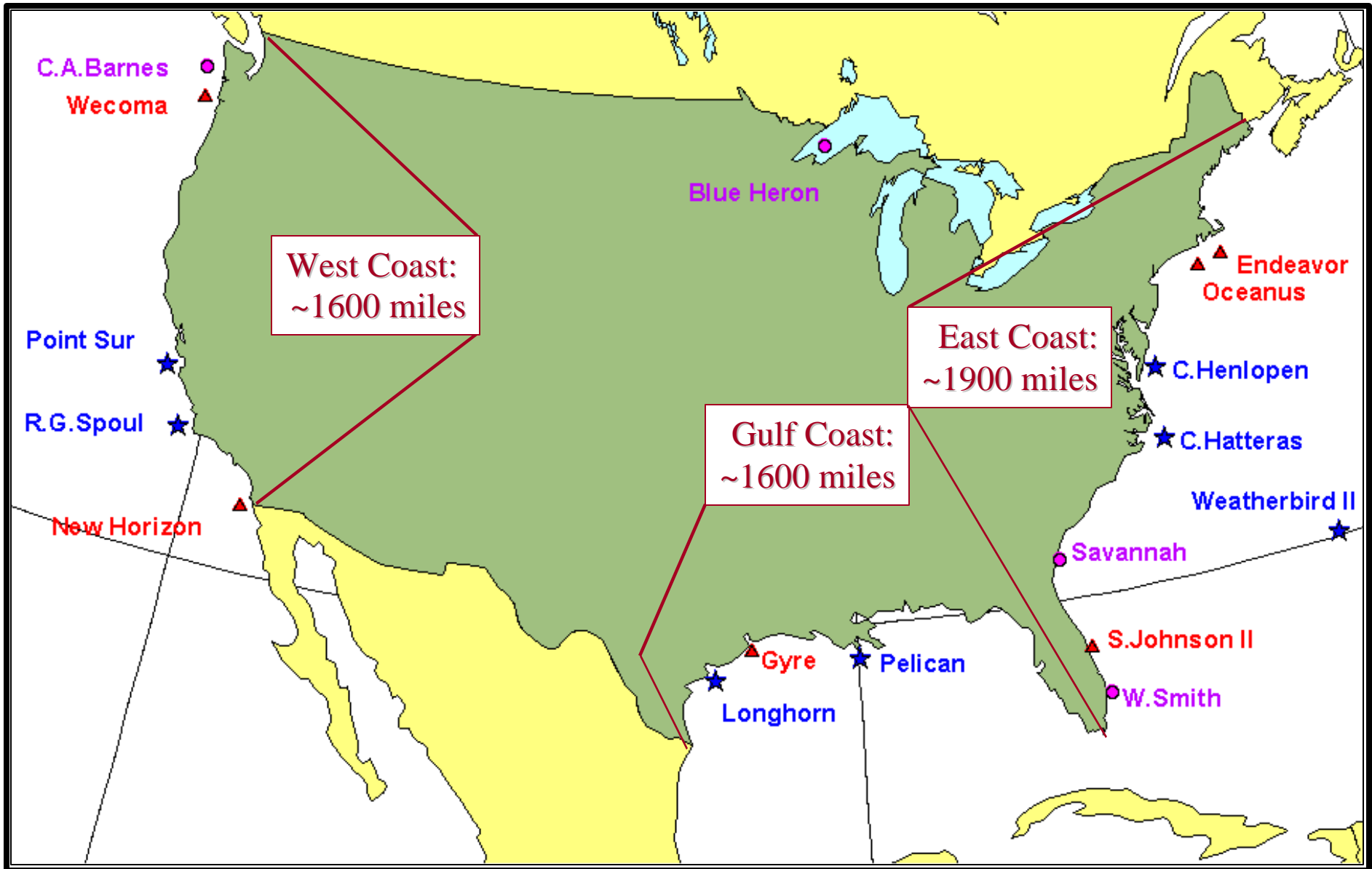
Large

Intermediate

Small Intermediate

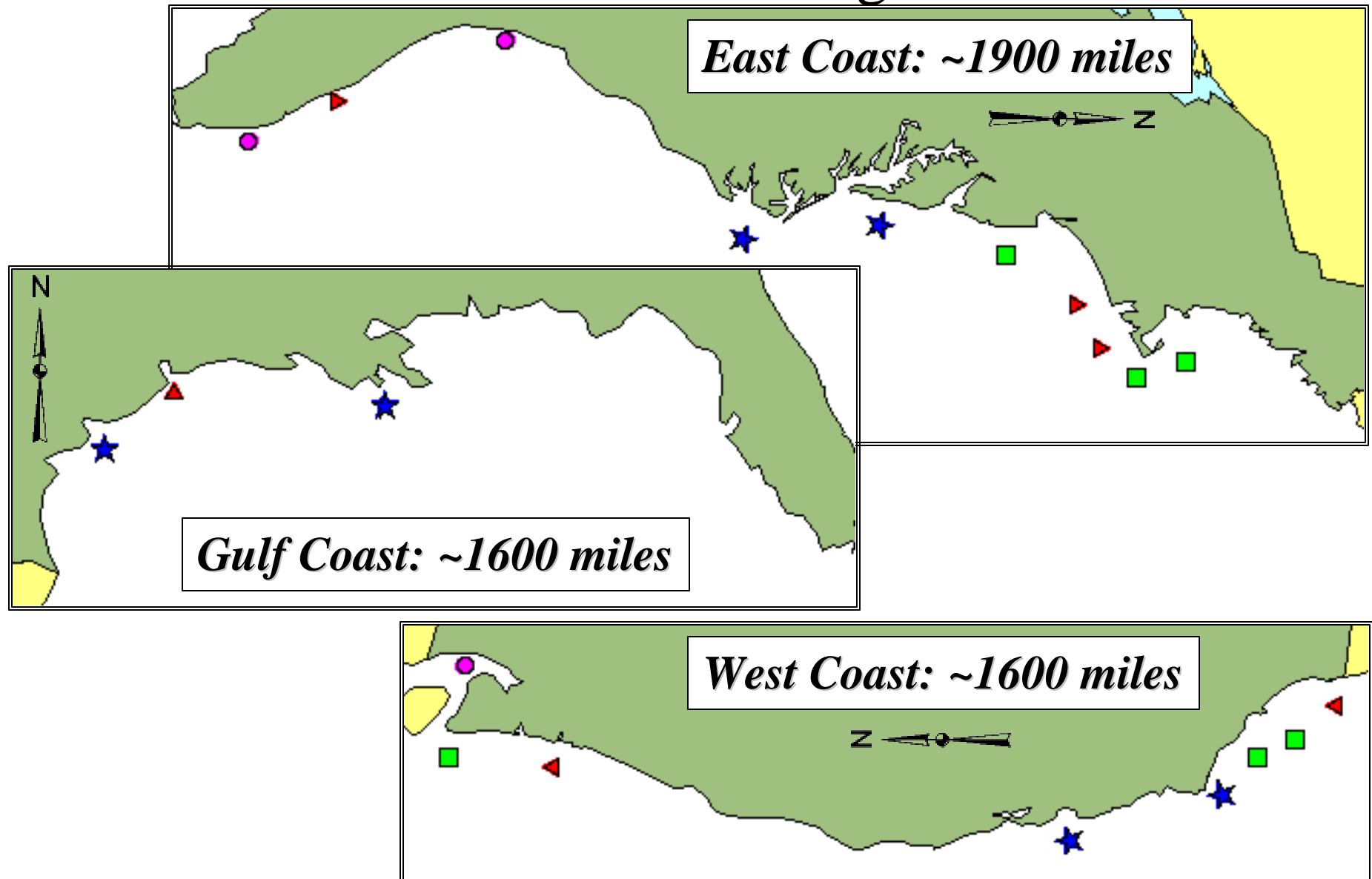
Small

Location of current UNOLS Vessels < Global

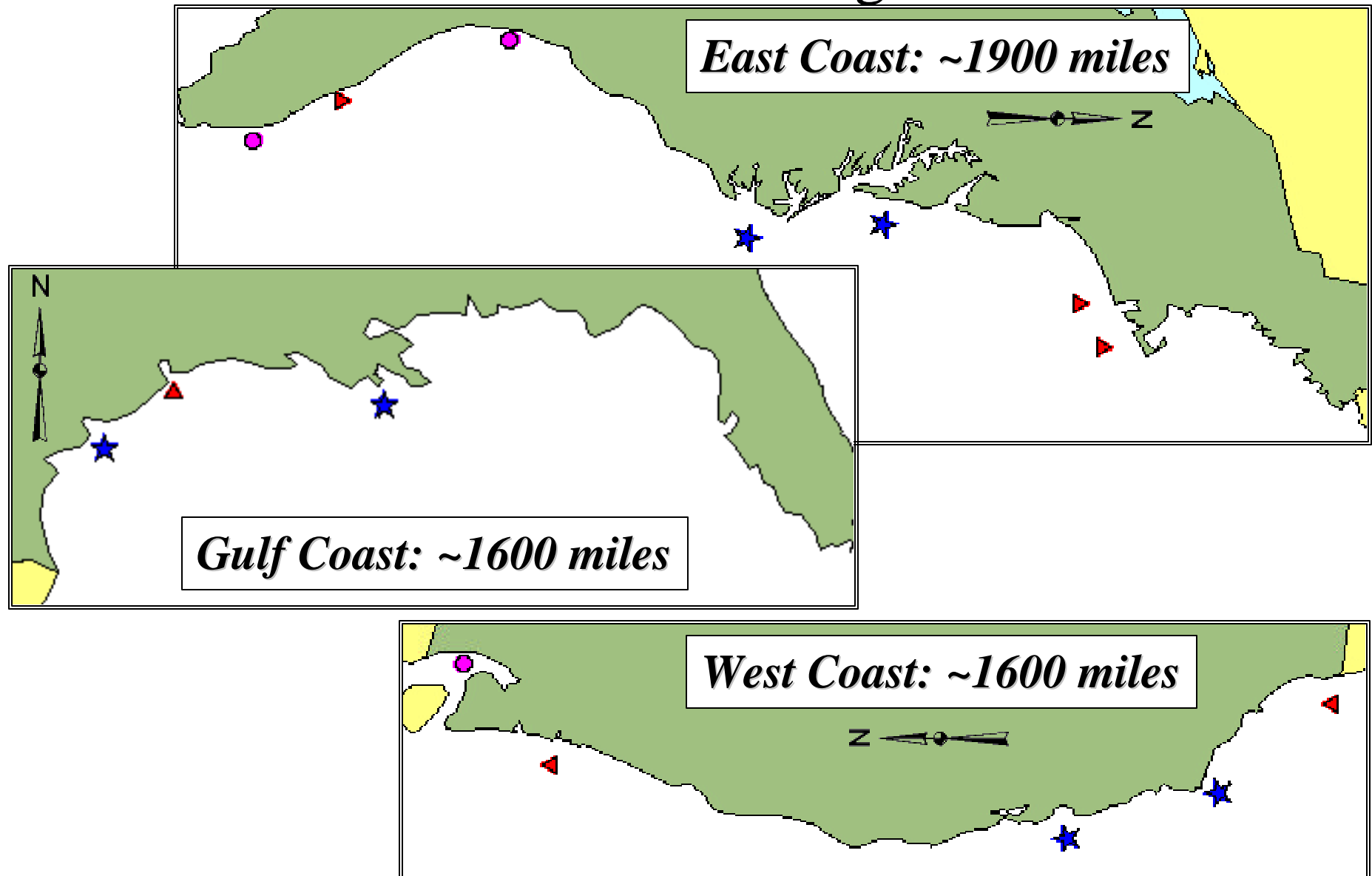


 Intermediate  Small Intermediate  Small

Location of current UNOLS Vessels: from Sea to Shining Sea



Location of current UNOLS Vessels < Global: from Sea to Shining Sea



- Regional differences in:
Environmental conditions
Accessibility to and abundance of vessels with
“smaller” and “larger” ship capabilities

Consequently:

Different scientific requirements of ships
Different priority placed on size-related operating cost
(i.e. 500 GT limit) versus scientific capabilities of
ships

Ocean Class and Regional Class SMRs

~ Issues Requiring Additional Attention ~

- Identify areas where consensus could not be reached
- Regulatory Concerns (<500 GT)
- The “Gap” - Should the Regional Class be a “class” of vessels that are identical or nearly identical?
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