

Vessel Recruiting Best Practices

Version 1.2

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Abstract

Ships of opportunity, such as commercial transport, fishing, recreational, and research vessels, are excellent resources to reduce the costs of sea-going data collection. Because they are already operating in a given ocean region, they can provide a research equipment platform without the primary expense of chartering. While many vessel operators are eager to assist researchers for the good of society, if the operation is non-essential to their enterprise, the partnerships are susceptible to termination due to the slightest conflict. One bad incident can cause a company or an entire industry segment to enact policies against non-essential personnel, therefore, it is critical for users of ships of opportunity to carefully follow protocols designed to create a safe and positive experience for both parties. These best practices for successfully partnering with ships of opportunity to engage in meteorological and ocean observing activities emphasize the recruitment of commercial vessels including communication, etiquette, safety, installation, and logistics. The goal of promoting these techniques is to help assure a successful research endeavour and to foster greater participation from commercial industries.

The suggested methods were developed from the experiences of the Volunteer Observing Ship (VOS) Scheme and the Ship of Opportunity Program (SOOP) under the Ship Observations Team (SOT), a network of the Global Ocean Observing System, Observations Coordination Group ([GOOS](#), [OCG](#)) and Science Research on Commercial Ships (Science RoCS).

Introduction

Enduring weather data collection programs in place for well over 150 years, now operated under the SOT, currently support research, climate forecasting, numerical weather prediction and maritime safety services amongst other applications (SOT website). Volunteer observing ships act as sea-based weather observation stations. Originally, marine weather observations were logged by the ship's personnel and the data exchange was facilitated by the International Meteorological Organization. Today, manual observations are augmented by automated weather stations performing the bulk of the observations where the equipment is loaned under VOS and maintained by Port Meteorological Officers (PMOs) (TT-RPT, 2021)). Ships of opportunity have been employed since the 1980s as a platform for collecting ocean temperature profiles from expendable bathythermograph probes (XBTs). SOOP vessels now also support a variety of upper ocean measurement instruments including pCO₂ systems, thermosalinographs, continuous plankton recorders and additionally serve as deployment platforms for drifting buoys, automated floats, and underwater gliders equipped with a variety of sensors. All data is shared with global data centers whether it in real-time or delayed mode. As much as possible, VOS and SOOP data are distributed in near real time on the Global Telecommunication System (GTS) of the World Meteorological Organization (WMO) (Cook & Sy, 1970).

Vessels that partner with SOT programs are an invaluable resource for providing low-cost access to a huge area of the world's oceans, often on reliably repeatable routes, making it important to establish best practices for creating and maintaining these relationships. The seeming ubiquitousness of this resource should not be taken for granted. Instrument operators rely on the good will of vessel owners, managers and captains who may perceive no immediate incentive to participate, instead focusing only on possible liabilities. In the event a liability becomes reality, the outcome could trigger a blanket policy to end cooperation with all future scientific projects and, if that company happened to be a global giant, the impacts would be devastating to the programs. In addition to protecting these public/private partnerships, it is essential to use procedures that engender the success of the project and protect the safety of all personnel involved.

Identifying Potential Vessels

Before commencing the recruitment process, thoroughly investigate all available ships to identify the best candidate. Depending on the program requirements there are several considerations or identifying a suitable vessel. For example, an XBT program may need to operate frequently along a set shipping line, whereas VOS could have flexibility in where the ship operates. Below are some key factors to consider when identifying ships for recruitment:

Logistics

- Ability to regularly inspect and service the ship
- Shipping, immigration, or embargo restrictions
- Available port support
- Previous participation in other research programs

Operational Area

- The trading pattern or route of the ship including restrictions on the collection of observations within relevant protected areas or Exclusive Economic Zones (EEZs).
- The percentage of the time sailing in desired areas
- Length of charter on the route

Practicality

- Type of vessel (e.g. passenger, container ship, research)
- The amount of space aboard to house or store any sampling equipment
- The space or availability of a computer on the bridge on which to install relevant software
- The reliability of the ship's power supply
- The availability of a suitable communication system on the ship to send the observations
- The enthusiasm of the captain and officers to participate
- The suitability of the ship to carry and care for any loaned instruments
- Age and safety of the vessel (ships have a typical operational life of 30 years)
- Reputation of the shipping company to make sure they are in good standing so as not to tarnish the reputation of the scientific institution and funding agency.

There are a variety of freely available resources to identify potential vessel candidates including those described below.

OceanOPS

The first critical resource to identify potential ship partners is the OceanOPS database. It lists all ships in the global ocean observing networks (www.ocean-ops.org) and is also developing tools to identify suitable, non-recruited vessels. If the ship has had interactions with SOT or OCG programs (VOS, SOOP, DBCP, Argo, etc...) it will be in the database. Independently approaching a ship that is already recruited by another program reflects poorly on the global network and overwhelms ship operators. Search the OceanOPS database for the vessel of interest and if it is already recruited, first contact the person listed under the contact details from the search results. Discuss the suitability and best approach for an additional recruitment of that vessel. Communicating with these other program managers projects the image of the SOT and the science community as a professional and unified global observing program.

Shipping Schedules

Many shipping schedules are posted on the internet along with other information that can help narrow down the search.

- Shipping companies and charterers host websites with port-to-port and vessel shipping schedules.
- Some port authorities maintain schedules showing the expected arrivals/departures for that port over the next few days.
- Company and port schedules may also show vessels' previous and next ports of call.
- Sometimes the schedules provide the names of local shipping agents responsible for each vessel.

Agents

Build a rapport with desired port's local shipping agents for the port of interest. A shipping agency is a company hired by the vessel to coordinate local deliveries, personnel transfers, and resupply whilst the vessel is in port. Shipping agents are a valuable resource when trying to find a ship operating on a particular route because they have captain and superintendent contacts for each vessel they service.

AIS Ship Trackers

There are several online ship tracking providers that monitor all ship traffic using the global Automatic Identification System (AIS) network such as www.vesselfinder.com. This is also a good source for vessel photographs. Most of these providers offer both free and paid subscriptions for their services. These online services are useful for monitoring vessels operating in an area of interest and gain insight into ship routes, ship owners and some basic ship metadata.

Obtaining Permissions to Collect Data Aboard

Once a vessel has been selected as a potential partner, written approval from the ship's owners or managers must be obtained. This could be in the form of an email or something more formal, like a Memorandum of Understanding, which is preferred for proposals to funding agencies.

Identify the person of authority for permission

Identifying the relevant contact with the authority to grant permission is challenging because the identity of owners and operators tends to be opaque. Below is a list of potential avenues that can lead to the proper person for permission.

- First search the OceanOPS database. Vessels registered there include a contact point for the person or program managing the current recruitment who can give input.
- VOS and Science Research on Commercial Ships (ScienceRoCS), develop top-down relationships with major shipping companies obtaining blanket cooperation across their fleets. These programs have a dedicated contact point within their partner companies to help obtain permission and access. Contact the program managers for an introduction (find contact information under the Programs Operating with Volunteer Ships section of this manual).
- The VOS PMO in the region of interest might also help and should be listed. Perhaps a local PMO could visit the ship to make initial inquiries on your behalf. The list of PMOs is available [here](#).
- Other research program networks such as SOOP have a wealth of experience and contacts to draw upon. Contact the program chairs or regional managers to see if they can make any introductions. OceanExpert.org is a good resource to identify these contacts.
- Previous network contacts with owners, managers, shipping companies, charterers, agents, even captains, can all produce leads towards connecting with the person in authority for a new vessel.

- Agents that serve the vessels in the port of interest have access to the captains and their superintendents. Agent contacts can be found on their websites or sometimes on the port website and through the sea pilot office. A brief message often produces results to get at least one step closer.
- If you have good local knowledge of the port, a last resort is to try visiting a vessel personally. This is not possible in all locations or all vessel types. Introduce yourself to the captain including any history with the company to make a personal connection. If they seem willing to participate, request the contact information as well as an introduction from the captain to the relevant decision-maker by email.
- An AIS data subscription service includes information about ship owners and operators, but they are expensive, and the contacts may be incomplete or too general.
- Shipping company websites usually have some contact information. In addition to emailing a general address, try and find a company directory or search LinkedIn.com and email anyone with a job title that might be relevant, up to and including the owner/CEO.
- If email messages go unanswered, follow up by calling if a phone number is available.

Tips for Success in Receiving Permission

- Do not independently contact a ship that is already recruited by another network. Go through the current program manager.
- If the captain is the first point of contact, make a great first impression by following the advice in the section Etiquette and Conduct Aboard. Promote the benefits of the program and gauge their willingness to cooperate. Ask the captain to email a referral to the ship's superintendent, that way the message is sure to be read. Do not rely on the captain as the sole source for permission to work aboard unless they are the owner.
- For preliminary inquiries, keep email messages succinct and add a request for an alternate contact if they are not the correct authority.
- To the initial, very short introduction email, attach a formal letter of introduction in PDF format. Include the program scope and objectives, a timeline, its benefit to the company and to society, how impact on ship operations will be limited, and how all costs will be borne by the program.
- Permission may be granted with some stipulations such as:
 - An agreement of indemnity releasing the company of certain liabilities
 - Proof of individual insurance
 - Diversion insurance in case the ship must be diverted for a technician medical emergency. If required, it might be possible to purchase extra coverage from the vessel's policy.
 - Payment of a daily fee for meals aboard.
 - Some charter agreements also require the consent of the charterer for passengers.

Preparing for Installation

Registering a Recruitment or Equipment in OceanOPS

OceanOPS provides a repository for standardised metadata from across the global ocean observing networks. A key part of any ship recruitment contributing to ocean observations is the collection and reporting (including updates) of relevant metadata to the OceanOPS database. The responsibility for ship metadata is shared between all operators of instruments on the ships, while the responsibility for the individual instrument metadata lies with the individual operator. This process allows for a

good tracking of ship contributions to the GOOS across all networks in need of ship support (including deployment of autonomous instruments like floats or drifters).

- **Registering a New Ship:** The OceanOPS database has thousands of ships registered from both current and past interactions with ocean observing programs. First search for the ship in the database using the IMO number because it remains the same throughout the lifetime of the ship while the vessel name, flag, owner/ operator and callsign can change frequently. Another identifier which can change but is properly tracked with such changes throughout the lifetime of the ship is the ICES code for which OceanOPS is included in the allocation process and which is available to all ships, unlike the IMO number. If the ship is not in the database, it must be created before it can be recruited to the specific observing program.
- **Creating an SOT-ID:** An SOT-ID is a unique identifier for each observing platform installed on a ship. The SOT-ID should be used when sending data to the Global Telecommunications System (GTS) of the World Meteorological Organisation (WMO). Create the SOT-ID for each observing platform in the OceanOPS portal. Contact the Ship Technical Coordinator at OceanOPS via email ship-tc@ocean-ops.org for additional assistance.
- **Collecting Ship Metadata:** The ship metadata can be found online through one of the ship tracker web services or by requesting a copy of the ship's particulars from the vessel or vessel management. Collect remaining metadata related to the installation during the visit.
- **Submitting Ship and instrument Metadata:** Submit metadata to OceanOPS, either manually through the website or via a bulk upload if there is a large fleet of ships/instruments to manage. Regular contact with the ship ensures that any changes are maintained accurately in the OceanOPS database.
- **Restrict Ship Metadata visibility:** In particular cases (e.g. coast guard ships) it can be requested that only authorized users have access to the full ship metadata set. Reach out with a rationale to OceanOPS if this should be required.

Contacting the Ship

After obtaining permission to board the vessel, request an introduction to the ship's master via email. Management often prefers to be included in all emails to the captain. Balance thorough communication without overflowing their email inboxes.

Contact the captain as much in advance of arrival as possible every visit, even to the same ship. Be formal and respectful in all communications with the vessel. In the introductory email, be brief and use language with the assumption that the captain may not be fluent in English. Include the following information:

- Name of the program
- Full names, title & contacts of personnel attending.
- A single sentence objective of the program; consider a reference to UN agencies such as UNESCO-IOC and WMO.
- The date and port of embarkation (and disembarkation port if applicable).
- The date and port of equipment loading including an estimate of footprint size for storage.
- Briefly outline what equipment will be located where.
- Offer additional program information as an attachment such as the letter of introduction in PDF format.
- Shorter messages are better and more likely to receive a thorough response. Save detailed questions about the ship in a targeted follow-up message to the captain's reply such as:
 - Needs for modification or access such as loading crane, through hulls, seawater supply, bridge desk space, etc.
 - Any needs for ship's personnel assistance, preferably very minimal
 - Any need to share ship's equipment.

If the initial contact is more than a month in advance, send another reminder message about two weeks out and request notifications to the ship's local agent of the visit activities and permission to enter the port. Sometimes the captain will change in the interim and not all information gets communicated. About a week before arrival, send another message confirming the arrangements, asking last questions, and requesting updates for berthing time and pier location. Watch online schedules weekly and up until very last minute, sudden changes are common.

Testing

Reduce installation time aboard and the number of trips in and out of the ship, by pre-testing and pre-assembling equipment as much as possible.

- Have the complete set of equipment for installation under test for several days before packing up and sending to the ship. Setup under similar operating conditions that will be encountered on the ship.
- Verify equipment against the corresponding calibrated test devices as applicable.
- Pre-install and configure software, pre-lubricate moving parts, pre-connect cables, pre-mount fastening systems, charge batteries, etc., when practical.
- Get photos of the installation area from a site visit or ship's crew if possible.

Transportation Resources

Material and personnel resource requirements vary based on the needs of the specific type of data collection as well as the geographical region of operation. This section is intended to bring attention to some important considerations but cannot encompass all scenarios. Today more than ever, supervision, communication, and planning well in advance is crucial to overcome inevitable pitfalls of equipment freight and international imports as well as personnel travel and immigration.

- Apply these preparations to both the port of embarkation as well as debarkation because they will be different in different countries.
- The preferred start or end points may need to be changed if there is inadequate shore support, immigration restrictions, or embargos.
- The person in charge of logistics should be experienced in international travel and shipping with enough time allocated to keep close watch on every step of the process.
- Ensure that all costs associated with shipping and transportation are directed to the project and not to the shipping company or their agents.
- Establish relationships with local agencies. Get initial contacts for the Chandler and personnel agencies from the ship's captain and management. Agents can refer other appropriate companies.

Transporting Equipment

- Screen for restricted parties and embargoed nations in the recipient address.
- Determine shipping budget and method. For example, express air freight may be straightforward but can be costly and unavailable for large volumes or hazardous materials.
- Plan timetables for freighting of equipment to domestic and especially foreign ports.
- Consult local shipping agents to confirm they offer necessary import customs, transportation to the local destination and connections to a Chandler for loading aboard the vessel.
- Investigate ways to avoid taxes since goods are not being sold and will return to origin. If duties are unavoidable, make sure they will be within budget. Label shipping documents addressed to vessel's master "ship's spares in transit".
- Hazardous materials should be shipped by trained and certified personnel and appropriate for the mode of transportation.

Transporting Personnel

- Scientific personnel sailing aboard ships for scientific observations should have appropriate training with the equipment and experience at sea. They should be provided with this manual and instructed how to communicate professionally with captain, crew, charterers and ship agents.
- Plan for transportation of technician(s) to and from the vessel. In large and complex ports, use of a personnel agent is required.
- Clarify insurance coverage with the operator in advance. Will a rider be covered by the ship's protection and indemnity insurance, or do they have to get their own insurance for any health or diversion expenses? Joining as a "supernumerary" can qualify one for coverage under the ship's policies.
- Fulfill all immigration requirements including allowed nationals, passport expiration, visas, vaccinations. NOTE: immigration visas can be different whether entering by ship or by air.
- Give advance notice to the ship's personnel agent that the technician is joining the ship to make sure that appropriate immigration formalities are planned for both departure and arrival. Understand that regular ship's crew are subject to different immigration laws and documentation. For immigration in some countries, a letter explaining that the personnel are traveling in transit is needed to fulfill the required documentation showing onward travel. This can be provided by the operator and includes the ship's name, arrival/ departure, mission and name of the person in transit with agent details.

Visiting the Vessel

Etiquette and Conduct Aboard

Whenever aboard a ship, remember that this is the mariners' home and should be treated as such. Address the master respectfully using the honorific "Captain" with an attitude reflecting awareness that the captain is the ultimate authority aboard and their orders apply to visitors the same as they do for the crew. Even if there is a long partnership with the vessel, do not act aboard as though it is 'your' ship regardless of the history. Less than courteous or professional ship visitors or unreasonable demands can spoil a good working relationship for all future endeavours aboard, squandering a valuable resource (Cook, Sy 1970).

- Arrive attired professionally with appropriate clothing, e.g. long pants, closed toed shoes.
- Wear required security identification clearly visible.
- Introduce yourself and the reason for the visit first at the gangway and next at the ship's office to the captain and/or first mate.
- Behave as a representative for all ocean observing activities across many networks, particularly if the ship is involved in other observing activities.
- As a gesture of goodwill, arrive with a newspaper, pastries, or small gifts such as USB sticks, institution logo merchandise, torches, etcetera for key personnel at least.
- If it is not possible to see the captain and chief mate right away, then try and meet them at the first opportunity and before making significant impacts or entering restricted spaces such as the bridge or engine room.
- Strive to make the programs as unobtrusive as possible.
- Anticipate all tools, materials, and assistance needed so as not to borrow from the ship.
- If assistance from the crew is needed, follow the chain of command, you are not their boss.
- Be friendly and respectful in addressing all personnel. Be mindful that they come from a wide variety of social, ethnic and religious backgrounds.
- Be quiet in the passageways and observe the customs aboard such as removing shoes before entering certain spaces.

- Engage in conversation but do not get into conflict over sensitive topics such as politics and religion.
- Know the mealtimes to avoid lingering and considerately inform the steward if missing a meal.
- Participate in recreational opportunities without monopolizing resources such as videos or sports equipment.
- Consider giving a presentation about the research aboard to anyone interested using the actual equipment as props and speaking in plain language.
- A group photo with the research gear is a great opportunity for outreach to the company which they might appreciate including in their newsletter.

Safety

Safety is always the first priority. Safety considerations are not only for the health of program personnel, but also for the crew, ship operations, and for the reputation of the science programs.

- Perform a risk assessment specific to the work and brief all attending personnel.
- Wear appropriate attire and personal protective equipment (PPE) such as: sturdy long pants, non-slip safety shoes, high visibility vest, helmet, gloves, hearing protection, and safety glasses.
- Be actively aware of surroundings in all directions, chipping paint, overhead cargo, tripping hazards, slippery decks, winches and lines.
- If walking or driving in port, assume equipment operators cannot see you. Be mindful of lines, actively mooring vessels, heavy machinery, unfenced piers and do not go under cargo moving overhead.
- Never bring unknown people or packages into the port. Keep ID on hand, including any required port credentials.
- Keep all vaccinations current and do not go aboard ill.
- If staying aboard, maintain safety vigilance:
 - Participate in all safety/evacuation drills as required while on board the vessel.
 - Know the different alarm signals, where to report and what gear to bring for each one <https://www.marineinsight.com/wp-content/uploads/2011/02/Alarm-on-ship-1.png.webp>.
 - Get a current medical and dental check-up within the previous 12 months of arrival.
 - Passports must be valid for no less than 3 months from the end of travel, sometimes longer.
 - Do not go on deck if weather conditions are too dangerous; check-in with the mate on watch and follow the master's safety orders using extra precautions such as taking an escort and wearing a life preserver.
 - Keep one hand free to hold on under the ship's motion.
 - In case of injury or illness, alert the captain to monitor for worsening symptoms.
 - If ill, stay isolated from other crew.

Equipment Installation

Before beginning work, communicate and plan equipment and storage locations with the ship's master and/or Chief Engineer to obtain their approval, technical expertise, and to help avoid violations. Also plan a time for any needed training when installation is complete. It is important to project professionalism while working with program partners. Aesthetics matter to avoid a negative impact on the host vessel because an untidy installation is visually unappealing, looks unprofessional, and can attract the uncomfortable attention of inspectors.

- Where any modifications to the ship's hull, equipment, electronics or software are needed, obtain the specific approval of the captain and/or chief engineer first. A pre-acknowledged stamp of approval from a known authority for use of the instrument with the vessel's class society offers assurances to ship operators.
- If using a shared computer, install an electronic logbook, electronic instruction manual, and required software.
- Collect ship and instrument metadata including equipment models, serial numbers, and software versions.
- Document the installation visit with photos that show the location of the operational equipment, connections and other useful information in case instructions must be given remotely later. Also take photos of the installation and/or area where equipment is stored.
- Consider safety when choosing location and securing equipment.
- Secure equipment in a manner appropriate to the extreme weather and rolling encountered at sea. It should not inhibit the operation of hatches, safety equipment, nor personnel movement.
- Use a lanyard to tie off tools and equipment so they cannot fall below. Things dropped overboard are a hazard and can constitute harbor pollution causing hassles with the authorities and fines.
- Installed cabling should avoid: damage, tripping hazards, preventing the latching of hatches and portholes, and blocking the overboard access of lifeboats/life rafts and access to any lifesaving equipment. Cables should be taut, with frequent attachment points. Be aware that some spaces are forbidden for cable runs while other spaces require cable attachments to be metal. Cables crossing walkways should be routed overhead, otherwise, use a cable ramp.

Before leaving the ship, always talk again to the captain or first mate to report what exactly has been done and thank them for the support provided, even if it was only being allowed to visit the vessel. Provide a report afterwards so that the ship can document what has been done when and by whom.

Training

If the captain and crew will be tasked to perform some of the program duties, ask the captain which crew will be assigned and schedule a time for training.

- Speak clearly, slowly, and use plain language.
- Provide an easy-to-follow, step-by-step operation guide and all needed materials. Include a basic troubleshooting section for reference because ship-to-shore communications can be delayed.
- Put simple instructions and videos on a USB drive for the crew as appropriate.
- Label the equipment with its name, year installed, and a contact person.
- Have them practice with the software and equipment hands-on.
- Prominently post the contact email and phone for support. Reply promptly.
- When opportunities arise, engage interested people aboard to explain and demonstrate operations because interaction engenders cooperation.

Maintaining Communication

Maintaining regular communication with crews and/or company contacts creates an effective channel for giving and receiving feedback while providing long-term benefit to the operation of the program. Effective communication promotes performance on crew reporting tasks and willingness to assist remotely when a technical problem arises. Networking with the company keeps those contacts engaged. Below are some communication content ideas.

- Ship visit report
- Monthly reports with statistics such as number of measurements and quality evaluation. Consider consolidation if the ship is involved in multiple observing activities.
- A visual representation of recent data collected.
- Suggestions to improve the number and/or quality of the observations.
- An explanation of how the data is used for the benefit of the maritime and global community.
- A report containing relevant collected data if the observers are interested (some companies use it to cross check with their own observations).
- Be mindful of message sizes and attachment types when sending reports to a ship.

Follow-up Visits

Inevitably, it will be necessary to return to the vessel for follow-up visits. This is a good opportunity to strengthen relationships and reinforce training. Activities performed at follow-ups include:

- Collect data that has not been transmitted and delete old files to save computer disk space.
- Collect paper logs or other hard copy records.
- Restock expendable supplies and spare parts.
- Perform routine maintenance and necessary repairs, including software updates.
- Collect trash generated by the program.
- Train new ship personnel or new program personnel and make introductions.
- Update contacts for the ship, such as if there has been a change in management.
- Recover equipment if the ship is going offline.

Legal considerations

Note that there are a variety of legal considerations for both science as well as ship operators. Below are some of the considerations.

- Exclusive Economic Zones (EEZs) are the waters bordering a country's shoreline to 200 nm under their governance. In some cases, observing work within these boundaries requires diplomatic clearance. The application is done through either the vessel's flag state or through the Institution's embassy. It is a six to twelve month process with reporting obligations after the cruise. This is often a complicated process. To understand more, contact the institution's research vessel operator and/or see an example of the US State Department's guidelines here: <https://www.state.gov/guidance-on-supporting-documentation/>
- Countries can define differently what [Marine Scientific Research \(MSR\) means per the United Nations Convention on the Law of the Sea \(UNCLOS\)](#); additionally, it has not been ratified by all members. If the activity is considered as MSR by the owner of the EEZ, clearance must be requested well in advance. Weather observations are generally considered an operational application with even longer history than UNCLOS and are not affected, while other observations (e.g. bathymetry measurements) could be a very sensitive item. However, the ship can take such measurements for its own safe navigation.
- Currently, the use of iridium in India EEZs is banned. See DGS circular 02/2012 "Usage of Thuraya, Iridium and other such Satellite Communication in Indian Waters" (Mehta, 2012).
- The deployment of research instrumentation such as floats, buoys and XBTs does not constitute marine pollution (IMO). Article 1, 4.2: Dumping does not include:
 - .2 placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Protocol; and

- .3 notwithstanding paragraph 4.1.4, abandonment in the sea of matter (e.g., cables, pipelines and marine research devices) placed for a purpose other than the mere disposal thereof.
- Protected areas are indicated on charts. Know and follow all special regulations. Apply for special clearance if required (for example, Marine Parks Australia permitting is required for all SOOP data collection in Australian Marine Parks).
- Polar Code is the International code for ships operating in polar waters ([Polar Code](#)) covering the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the waters surrounding the two poles.
- Permits are required for deployment of instruments south of 60° according to the Antarctic Treaty (https://www.ats.ag/index_e.html). Permitting is under the jurisdiction of signatories to the Treaty.
- The shipping company may require a Letter of Indemnity releasing them for liability of injury to visitors and their property. It may be a prohibited agreement in some institutions, e.g. NOAA. By listing a ship rider as a supernumerary, they are covered under the ship's protection and indemnity but not if they are listed as a passenger.
- Culturally sensitive areas should also be considered.
- Agreements between the program and the company can alleviate some legal concerns. A Memorandum of Understanding describes the purpose of the work and the expectations and responsibilities of each party.
- Personnel may be required by their home organization to complete additional training or certification.

Programs Operating with Volunteer Ships

There are many institutions and networks working with volunteer ships, a few are listed below. Engagement with these programs is strongly encouraged for anyone currently planning to use any ship of opportunity. They hold regular meetings to share resources and information. Most of them are organized through the GOOS Observations Coordination Group (OCG) with its yearly [Report Card](#) being a good product to understand and promote the integrated system.

- The GOOS Observations Coordination Group ([OCG](#))
 - The Ship Observations Team ([SOT](#))
 - The Voluntary Observing Ship Scheme ([VOS](#))
 - The Ship of Opportunity Program ([SOOP](#))
 - The Automated Shipboard Aerological Programme ([ASAP](#))
 - The Data Buoy Cooperation Panel ([DBCP](#))
 - The [Argo](#) profiling float program
- Science Research on Commercial Ships ([Science RoCS](#)), a multi-institution group of scientists, engineers, data managers and administrators, whose goal is to transform ocean science by outfitting commercial ships with a suite of “Plug & Play” scientific sensors. Scientists have been working with commercial vessels on a small scale for 30+ years. Science RoCS aims to greatly expand these efforts globally.
- The [Ferrybox](#) network

Conclusion and Acknowledgements

This document, “Vessel Recruiting Best Practices” was compiled by industry experts with decades of experience to help advance scientific opportunities within the commercial shipping industry and all

types of vessel of opportunity from yachts to fishing boats, from coast guard ships to tankers. This document was distributed for review and acceptance by the Ship Observations Team Executive Committee including the Volunteer Observing Ships Port Meteorological Officers and the Ship Of Opportunity Implementation Panel. It was referenced in the SOT-12 meeting for adoption as a best practice on the SOOP website and endorsed by GOOS. Reading and training with these best practices is recommended by the SOT to create a professional and unified global observing program with enduring partnerships. Any data gathering mission's success will greatly benefit by learning from the mistakes, progress, and safety lessons of those before.

Citations

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