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OPTIONS FOR GOVERNING REGIONAL COASTAL OCEAN OBSERVING SYSTEMS

This brief paper reviews some of the options for structures to govern regional coastal ocean observing systems. In theory, an observing system could be owned and operated as a for-profit venture. However, the basic data acquisition, data management, and data analysis components of an observing system are unlikely to be profitable activities or attract the necessary private investment or sales to be self-supporting. This is because the data and information produced by an observing system are in the nature of "public goods." Many private companies will use the data to produce and sell value-added products and will provide observing systems with needed services, but the observing systems themselves will be, probably of necessity, not-for-profit.

Therefore, the options presented here focus on not-for-profit structures. We review five structures (three private, two public) in which two or more organizations might come together for the purpose of designing, deploying and operating a regional coastal ocean observing system:

- Formalized principal investigators – working group model
- Limited membership not-for-profit corporation
- Open membership not-for-profit corporation
- State-chartered organization
- Intergovernmental organization

This review does not pretend to cover all the options that may be available. Primarily, they were the options considered during the formation of the Gulf of Maine Ocean Observing System (GoMOOS) in 1999, plus one or two that were not considered but have since come to our attention.

Note on terminology: "Nonprofit" and "not-for-profit" are synonyms for an incorporated organization that exists for educational or charitable purposes, is governed by a volunteer board of directors whose members do not benefit financially, and that is tax-exempt under Internal Revenue Code section 501(c)(3). Contributions to the organization are tax-deductible.

Formalized PI – Working Group Model

This structure is a close relative of the way in which much large-scale scientific research is carried out. Major research projects frequently are executed through *ad hoc* consortia of investigators, led by one or more principal investigators, bound together by the terms of research grants, and organized into self-administered working groups to address major components of the effort. Applied to the organization and governance of a regional ocean observing system, which (1) is concerned with operations as well as research and (2) requires a strong orientation to users of data beyond the research community, a more formal version of this model appears to be evolving.

Legal structure: This model does not create a new or independent legal entity. It relies on a host institution (usually the university or agency of the lead PI and, by subcontract, the universities and agencies of other PIs) to accept and disburse funds, to enter into contracts, to be financially accountable for the funds, to be legally liable for the actions of their employees, and to protect against legal claims. Any new employees hired to implement the observing system are employees of the host institution(s).

Source of authority: The ultimate source of authority lies in the legal authority and organizational hierarchy of the institution(s) of the PIs. For the purpose of carrying out the observing system itself, the participating institutions sign a Memorandum of Understanding or "Articles of Collaboration," which spell out the management structure of the observing system, terms for adding signatories or withdrawing from the agreement, procedure for resolving disputes and for avoiding conflicts of interest, and terms for sharing information and intellectual property. The MOU typically is an abbreviated, looser, and less binding version of what, in a corporate setting, would be articles of incorporation and bylaws. Either a separate master agreement or a series of bilateral agreements between the host and each participant define the contractual arrangements between or among the participating institutions.

Membership and dues or fees: Membership is limited to the signatories. There are no set dues or fees for membership. It is generally assumed that all costs of operation will come through the grants funding the PIs, although in-kind contributions from participating institutions probably are common.

Governance: The governing body is a Board of Directors or Steering Committee that does not have standing as a legal entity but that is created and empowered via the MOU. This governing body typically is composed of the principal investigators, with the lead serving as chair or co-chair. Other interested parties with the ability to help advance the effort, such as representatives of user groups, parent institutions, or state agencies, may be invited to serve. Unlike a Board of Directors of an organization with legal standing, which would be bound by procedural rules (quorums, meeting schedules, voting procedures, etc.), the board is less formal, may or may not meet regularly, and is apt to operate by consensus. Working groups are formed to advise and manage various aspects of the system. Each working group typically is chaired by one of the principal investigators.

Involvement of users in the organization: Users outside of the research community are not signatories to the MOU and are not inherently part of the governance of the system but may be involved in several ways. It is possible for one or more representatives to serve on the Board of Directors, perhaps as nonvoting members. Users might be invited to serve on the working groups, either as voting or non-voting members. They may be invited to serve on a formal Advisory Committee that meets periodically with the Board of Directors or Steering Committee.

Major strengths and challenges: The major strength of this approach is its familiarity to the research institutions that have shown the primary interest around the country in organizing observing systems, that are motivated by urgent problems in need of continuous flows of oceanographic data, and that have the research and design capabilities to launch the data acquisition and data management subsystems. Another important strength is that the host institutions usually are well established with long track records in securing funding for research. If the observing system has visibility and is a priority within the host institutions, the institutions can bring credibility and authority in dealings with funding agencies.

The major challenge is involving user groups on a routine and long-term basis in a structure that is highly distributed, where users are not inherently part of the governance, and where a single point of contact and an effective external communications or marketing function may not exist. It also is unclear whether or how the structure provides for succession so that the observing system, which is intended to be continuous and long-term (compared with research grants that typically last 3, 5, or perhaps 10 years), will outlive its creators. Finally, it is important that the founders of the system consider how and by whom components of the system that move beyond research and pre-operations into routine operations will be managed on a 24/7 basis within institutions whose primary mission is research.

Examples (within and outside of ocean observing): Southeast Atlantic Coastal Ocean Observing System (SEA-COOS); Global Hydrology and Climate Center.

Limited Membership Not-for-Profit Corporation

A limited membership corporation may be employed when a finite set of organizations (businesses, NGOs, quasi-public agencies) want to come together to share expensive infrastructure, to share risk in the development of new technologies, to drive industry standards, or to conduct research or operations toward a common goal more efficiently than any one of the organizations could do on its own. When the purpose is public, educational, or charitable, as in the case of an ocean observing system producing data for public use, the corporation would be organized as not-for-profit.

Legal structure: The organization is a corporation, with all the powers, duties, and liabilities of a corporation. Although organized by a group of existing entities, it is legally independent of any other organization.

Source of authority: The source of authority is the laws governing corporations in the state in which the entity is organized. Tax-exempt status is pursuant to Internal Revenue Code Section 501(c)(3). Articles of Incorporation filed with the Secretary of State establish the purpose of the corporation, its legal address, the size of the Board of Directors, and the nature of the membership.

Membership and dues or fees: Membership is limited to the charter members who founded the corporation and such others as the membership may subsequently invite

to join. The membership is by definition limited to those organizations within a particular field of common interest, or with common or complementary skills that can be applied toward accomplishing the purposes of the organization. Membership fees or assessments are common and may comprise a large part of the corporation's budget. They may be scaled according to size of the member organization.

Governance: Governance is detailed in the by-laws of the corporation. The corporation is governed by a volunteer Board of Directors – volunteer in that the directors are not compensated for their participation, nor do they as individuals directly benefit financially by the decisions of the Board. The by-laws specify the duties and powers of the Board of Directors, how the Board of Directors is to be nominated and elected by the membership, and how vacancies are to be filled. The Board of Directors typically appoints an Executive Committee, comprising the officers of the Board and one to several other directors, which is charged with managing routine matters of the corporation. The by-laws also may specify the duties of an Executive Director who serves as the Chief Executive Officer of the corporation. The by-laws detail the way in which the Board of Directors is to conduct business and the timing of annual meetings of the membership.

Involvement of users in the organization: The users and the members of a limited membership corporation are synonymous. That is, the members come together to serve needs each of them has but that none can fulfill on its own. Broad, multi-faceted user involvement is not a motivation behind the organization, and so would have to be built in by careful design – for example, through a User Advisory Group. It is noteworthy that, in industry, the work of a limited membership not-for-profit corporation is driven by market concerns, by the needs of the industry to assure the development of a skilled labor force through universities, etc., and in this sense they are attuned to the "users" who represent their markets.

Major strengths and challenges: The major strength of a limited membership not-for-profit corporation as a vehicle for a regional coastal ocean observing system is the ability of entities from the academic and business sectors with common needs for technology and data to efficiently share resources; to leverage outside funding from agencies concerned that their investments are going toward development of uniform standards and infrastructure that will be shared; and that have the need to move more quickly and independently than might be possible when tied to the bureaucracies and policies of the member institutions. Another strength is that the limited number of members allows for easier coordination and communication among them, with less staff time devoted to nurturing the membership (although "limited" may not mean "a small number").

The major challenge is involving the multifaceted users who are meant to be the beneficiaries of a regional coastal ocean observing system. A limited member entity will naturally be focused on the needs of the members, may not be able to give attention to users' needs beyond these interests, and may be overly focused on the development of technologies and standards of interest to members and not on 24/7 operations of an

observing system. For the purposes of an ocean observing system, a limited membership corporation might be modified to include Associate Members from broad user groups. Associate Members would not have the same voting authority as full members but would serve as a continuous source of information on user needs.

Examples (within and outside of ocean observing): Sematech (a consortium of semi-conductor manufacturers that engages in pre-competitive, cooperative efforts to improve semi-conductor manufacturing technology and that serves as a unified voice to direct public and academic research); Marine Preservation Association and its Marine Spill Response Corporation (a standby oil response corporation organized to help its members fulfill the requirements of the Oil Pollution Act of 1990).

Open Membership Not-for-Profit Corporation

An open membership organization is perhaps more typical of non-profits with a broad public purpose. "Open" does not necessarily mean open to everybody. There may be limits on type of member – for example, organizations versus individuals. In any case members must be those with an interest in promoting the purposes of the organization and generally are those with an involvement in the field of interest.

Legal structure: The organization is an independent corporation, with all the powers, duties, and liabilities of a corporation.

Source of authority: The source of authority is the laws governing corporations in the state in which the entity is organized. Tax-exempt status is pursuant to Internal Revenue Code Section 501(c)(3). Articles of Incorporation filed with the Secretary of State establish the purpose of the corporation, its legal address, the size of the Board of Directors, and the nature of the membership.

Membership and dues or fees: Eligibility for membership is broad. It may be described as "legal entities such as corporations, associations, partnerships, local, state or federal agencies, and institutions of higher learning" but not individuals; or it may include individuals. Membership may a single class, or it may be classified into two or more tiers: for example, full (voting) members, limited (limited voting) and associate (nonvoting) members. The distinction frequently is based on the dues paid—giving entities unwilling or unable to pay full dues an opportunity to come to the table, and giving the organization the opportunity to expand its constituency and to ease its membership from one class up to another over time.

Dues normally are required of members. As a percentage of total budget, the dues range widely. However, for a technology- and research-intensive endeavor aiming at 24/7 operations, such as an ocean observing system, they likely will be a small part of the total. Whether or not there are multiple classes of members, it is usual (though not required) for membership dues to be tiered based on some measure of ability to pay. In a single class membership, all members have equal rights regardless of dues paid; where membership is in classes, rights and benefits are based on dues paid.

Governance: Governance is detailed in the by-laws of the corporation. The corporation is governed by a volunteer Board of Directors – volunteer in that the directors are not compensated for their participation, nor do they as individuals directly benefit financially by the decisions of the Board. The by-laws specify the duties and powers of the Board of Directors, how the Board of Directors is to be nominated and elected by the membership, and how vacancies are to be filled. The Board of Directors typically appoints an Executive Committee, comprising the officers of the Board and one to several other directors, which is charged with managing routine matters of the corporation. The by-laws also may specify the duties of an Executive Director who serves as the Chief Executive Officer of the corporation. The by-laws detail the way in which the Board of Directors is to conduct business and the timing of annual meetings of the membership.

Involvement of users in the organization: Broad involvement of users is one of the drivers behind an open membership nonprofit. The users typically are integral to the governance of the organization. They serve on the Board of Directors, help determine policies of the organization, and have a voice in design of the system. At the same time, it should be noted that user involvement is not as self-executing as the organizational structure may suggest. Users of an ocean observing system typically have their own businesses, organizations, or agencies to worry about, may simply want the data from the system, and may not have the time or desire to become seriously involved (or involved at all) in the governance of the system.

Major strengths and challenges: The great strengths of an open membership non-profit corporation are its clear public purpose and the integral involvement of users in its governance. The users *are* the governance. As a result, there is constant feedback to the operations of the system, and an ability and requirement to be agile in meeting the needs of users. The products flowing from the system are likely to be those needed by a broad and multifaceted public. Other important strengths are those inherent in a corporate structure, including an articulated system of succession and a legal structure that has the potential to outlive any one participant. Finally, an organization with a strong user-orientation, if successful in its delivery, builds a strong and loyal constituency and a credibility that are crucial to long-term funding.

Among the challenges to this type of organization as applied to a regional coastal ocean observing system, two stand out.

One is that a successful ocean observing system depends both on a structured organization of users who need the information from the system, and on the scientists who have the knowledge to design and deploy the system. However, there is not a natural alignment between the missions, expectations, decision-making styles, and concepts of intellectual property of a user-controlled organization versus the science community upon which the system depends. For example, scientists are use to working independently or in loose consortia, to raising their research funds for the purpose of discovery, directing decisions about the use of the funds, and being directly accountable to funders. A corporation in pursuit of its mission thinks in terms of reporting lines,

accountability to a Board of Directors, and contractual relationships with vendors who can perform services specified by staff, and owning the results upon completion of the work. Experience shows that these styles are entirely reconcilable – indeed, mutually advantageous -- but this requires early discussions among all involved about how the relationships will work and the expectations of each party.

The second challenge is also the earlier described strength: reliance on a broad array of users. The effort required to solicit, nurture, and maintain a user base is substantial. And if the users cover many sectors, from mariners to researchers to resource managers, with many informational needs, it is essential to manage expectations. It is easy for expectations to outrun capabilities and for underserved users to question the worth of their participation. It is equally easy for the focus to narrow to one or a few subsets of users based on the observations that can be readily produced. Over time, it is possible for an open membership organization to look like a limited membership organization in practice. Meeting this challenge requires a realistic business plan developed early in the process of establishing the system, building the organization in stages, and being constantly vigilant to membership development and communications.

Examples (within and outside of ocean observing): Gulf of Maine Ocean Observing System (GoMOOS); Consortium for Oceanographic and Research Education (CORE).

State-Chartered Organization

Many public and quasi-public organizations, including finance and industrial authorities and certain types of utilities, are state-chartered. The motivation behind this often involves a public purpose sufficiently compelling that government may have a unique authority and obligation to address it, but that also requires a business-like structure or approach apart from normal line agencies, and/or requires insulation from agency politics. It may also be motivated by the opportunity to leverage federal dollars.

Legal structure: The structure is established in the state law creating the organization. The structure may mimic or borrow from law governing corporations, or it may be customized to meet the need at hand.

Source of authority: The legislative act establishing the organization.

Membership and dues or fees: Typically, the organization is not a membership organization.

Governance: The governing structure is detailed in the state law creating the organization. Virtually always, the governing body is a Board of Directors or a Board of Trustees that is appointed by the Governor of the state in which the organization is formed. Its powers and duties frequently are similar to those of a Board of Directors of a nonprofit corporation. The state charter may specify if there are to be advisory groups associated with the organization; alternatively, the Board of Directors may have the

authority to establish advisory committees. The organization typically is led by an executive director, who may or may not also be the president or chair of the Board of Directors.

Involvement of users in the organization: The Governor may be directed in the state legislation to appoint a certain number of users from specified sectors to the Board of Directors of the observing system. The legislation may also direct the organization to conduct periodic reviews of its direction and operations with users. The organization, of its own accord, can create an advisory committee of users. Beyond these mechanisms, a state-chartered organization may have a natural tendency to pay attention to public constituencies (depending, perhaps, on the degree to which the organization also is receiving state funding).

Major strengths and challenges: An organization authorized by state legislation is positioned for a great deal of credibility out of the gate. There is no guarantee that it also will have state funding, but there would be a likelihood of at least seed funding. If user groups are specified as part of the governing board of the organization, it also will have a built-in constituency and a user orientation. The organization might also be in a position to take advantage of other resources in state government, such as public research universities, the state agencies concerned with marine and environmental affairs, and a GIS office. It would be natural for these entities to be represented on the governing board.

The major and very difficult challenge for a regional ocean observing system is that the organization will be entirely oriented to a single state, whereas the coastal ocean to be observed usually (with some notable exceptions in the west) spans multiple states. The legislation chartering the system would need to make specific provision for entering into agreements with entities outside of the state, with which the state system could cooperate in a multi-state venture. Even so, without care and early consideration of a regional approach, it may be difficult to attract out-of-state partners; and it would not be unexpected for a single-state system to fall into provincialism or a sense of competition vis a vis ocean observing entities in other states in the region.

Another challenge to a state-chartered organization is potential entanglement in politics – although that may be said of all ocean observing systems that rely on government funds. To the degree that this sharpens a focus on the needs of constituents, it is an advantage. To the degree that politics compromise the workings and mission of the organization, it is a disadvantage.

Examples (within and outside of ocean observing): Massachusetts Water Resources Authority; many state-level finance authorities and industrial development authorities.

Intergovernmental Organization

Another form of public entity is an Intergovernmental Organization. This can take a number of forms. The governments involved may be all of the same level (e.g., municipal or state), may be of different levels (municipal, state, federal), may be intrastate, or may be interstate or international.

Legal structure: The organization typically is a new, legal entity formed by agreement of two or more existing governmental entities. Its powers are only those that are inherent in the individual entities and that are granted by the individual entities through the agreement. The mission of the organization typically is relatively narrow and well specified. The powers include the raising, accepting, and disbursement of funds and the ability to enter into contracts for services.

Source of authority: The organization's authority derives from either law (for example, a state law governing inter-local or joint powers agreements) or from cooperative agreements into which agencies of government are authorized to enter. In the case of an underlying law, it typically specifies the kinds of powers that can be transferred and requires the agreement to spell out the ways in which additional entities may join or existing entities may withdraw from the agreement. It is important to note that no participating agency can enter into binding agreements carrying obligations or liabilities beyond its inherent authority or that may obligate the parent government in ways that only a higher authority (e.g., a legislative body) can do.

Governance: Governance typically is in the hands of a Board of Directors, Board of Trustees, or similar council comprising representatives of the member governmental agencies. As in a corporation, by-laws usually are adopted to guide the decision-making process and the divisions of duties within the organization. The organization virtually always is led by an executive director hired by the governing board.

Membership and user dues or fees: These public entities are not membership organizations in the normal sense of the term. Rather, the organization comprises signatory governmental agencies. Often provision is made to expand the participants if circumstances warrant. The participating agencies may, as part of the agreement, contribute specified funds toward the intergovernmental organization.

Involvement of users in the organization: Users are not an inherent part of the organization and are not part of its governance. However, it is not unusual for an intergovernmental organization to have a public advisory committee that could be largely composed of users. Moreover, as a public entity that enjoys public funds, the officials of the organization are advisedly sensitive (and usually are) to the requirements and demands of the public it is organized to serve.

Major strengths and weaknesses: A key strength is that an intergovernmental organization brings together, into a cooperative decision-making mode, multiple agencies

whose individual missions and interests either are similar or overlap. The result may be a more efficient coverage of geography, more efficient delivery of services, coordinated research, and/or more efficient gathering of commonly needed data and information. If key decision-makers of participating entities are directly involved, the entity is likely to have good credibility and visibility, with potential for strong loyalties. Further, this may be the most effective vehicle to bring together decision-makers from different levels or geographies of government to accomplish a particular mission.

Challenges to an intergovernmental approach, applied to a regional ocean observing system, is that frequently the entity is organized with a single-purpose mission (for example water quality monitoring or port safety, or particular areas of research) involving only one or a few of the potential groups of users of an observing system. It may be difficult, or by the terms of its agreement, impossible to expand that mission to the comprehensive objectives of an operating regional system. And, indeed, it may not want to dilute its well-defined mission. It may be able to evolve as part of a comprehensive ocean observing system only by entering into an alliance (or regional association) with complementary systems that are monitoring or observing other aspects of the coastal ocean, with agreements for data exchange and aggregation.

In addition, this approach does not explicitly include the private sector (for-profit and non-profit) in its governance. In order not to lose contact with outside users, some intergovernmental organizations make a concerted and continuous effort to involve them through advisory councils, market research, and informal interactions.

Examples (within and outside of ocean observing): Southern California Coastal Water Research Project (SCCWRP), an example of a joint powers agreement among municipal and quasi-municipal entities; the *Exxon Valdez* Trustee Oil Spill Council and its Gulf of Alaska Ecosystem Monitoring and Research Program (GEM), an example of a cooperative agreement among state and federal agencies.