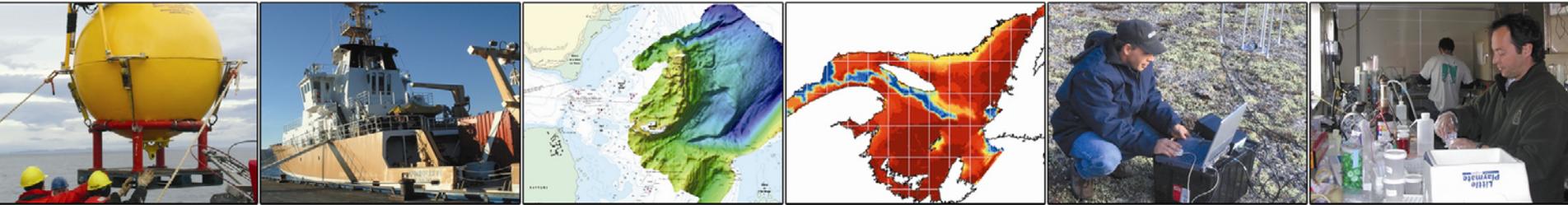


# The St. Lawrence Global Observatory:

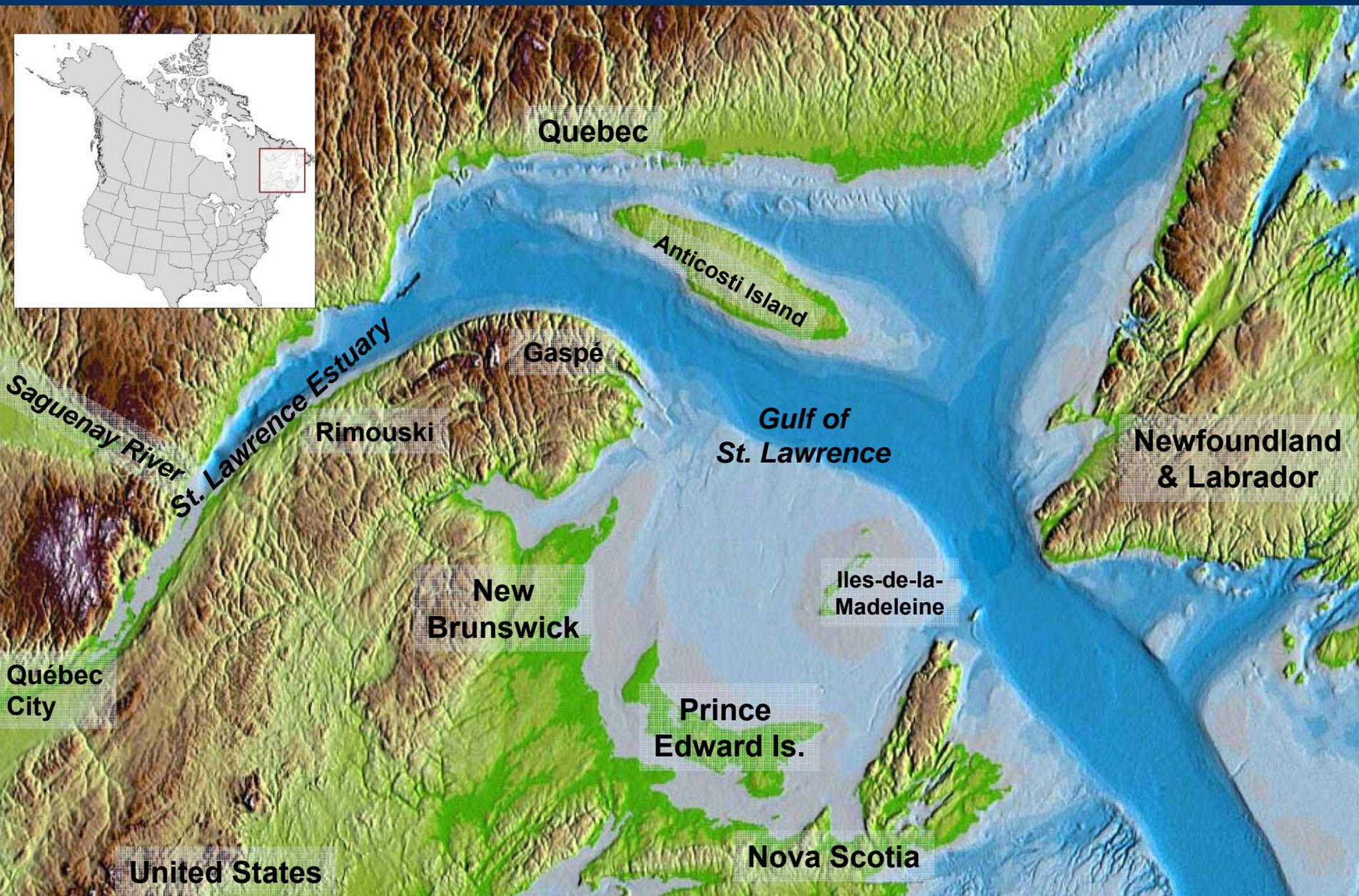
Inter-jurisdictional cooperation  
for the sustainable management  
of the St. Lawrence ecosystem



**Prepared by: Paul Bellemare - SLGO Steering Committee  
Harry Weiler - AXYS Technologies Inc.**

**Presented by: Jeremy Hancyk - AXYS Technologies Inc.**

# Geographic location



# St. Lawrence characteristics

## Physical

- **inland ocean: 250,000 km<sup>2</sup>**
- **extreme physical properties:** tides (1-7 m), currents, ice, winds, temperature
- **sensitive coast:** erosion, storm surges, etc..
- **highly productive ecosystem and rich biodiversity**
- **extensive dredging, coastal engineering**
- **80% of population living in coastal areas**

## Main socio-economics

### **Marine transportation**

- marine gateway the mid US & Canada, over 200,000 ship movements
- all goods: oil, grain, ore, containers, bulk, etc...
- over \$3 billion and 25,000 jobs
- major port network

### **Fishing and aquaculture**

- groundfish & shellfish (shrimp, lobster, crab, scallop, redfish, halibut,...)
- livelihood of many coastal communities

### **Tourism**

- cruise ships, unique whale watching activities
- sailing, kayaking, ...
- over 1,000,000 passengers and 1,800 jobs

### **Natural resources**

- hydro electricity
- oil and gas exploration
- clean energy (wind turbines, underwater current turbines)



# Vision & objectives

To offer an **integrated Web access** to the **most accurate and complete data and information** about the **St. Lawrence ecosystem** by

fostering the **clustering and networking of data producers** (federal, provincial, academic, communities, etc)

in **response to the needs** of member organizations and their client groups for a

**sustainable management of the St. Lawrence global ecosystem**

→ (marine, freshwater, watersheds).



integrated access • distributed data • networking • quality • efficiency

# SLGO objectives & values

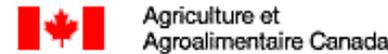
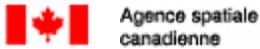
common objectives	common values
<p>▶ <b>To offer an integrated information infrastructure</b> autonomous, not based on organizational structures, but based on common areas of interest and on the respect of the mandates of member organization</p>	<ul style="list-style-type: none"><li>• neutrality</li><li>• respect of mandates</li></ul>
<p>▶ <b>To adopt a collaborative governance model</b> allowing members to take an active part in defining the orientations and the development of the corporation</p>	<ul style="list-style-type: none"><li>• consultation</li><li>• participation</li></ul>
<p>▶ <b>To offer scientific products and services in an innovative and multidisciplinary approach</b> through sharing expertise, tools, information assets in support of an efficient use of the collective infrastructure</p>	<ul style="list-style-type: none"><li>• innovation</li><li>• multidisciplinary</li><li>• sharing</li><li>• efficiency</li></ul>
<p>▶ <b>To carry out development to better use information technologies</b> in the areas of data visualization and data exchange in order to offer efficient access to products</p>	<ul style="list-style-type: none"><li>• optimization</li><li>• interoperability</li><li>• recognised standards</li><li>• accessibility</li></ul>
<p>▶ <b>To foster and support the development of expertise</b> in the areas of data and information handling and diffusion, and in the development of applications, value-added products and services related to SLGO activities</p>	<ul style="list-style-type: none"><li>• development of expertise</li><li>• economic development</li><li>• emphasis on data asset value</li></ul>
<p>▶ <b>To position the SLGO nationally and internationally</b> with other organizations, global initiatives or ocean observation systems</p>	<ul style="list-style-type: none"><li>• visibility</li><li>• exchanges</li><li>• collaborations</li></ul>

# Community of prospective members

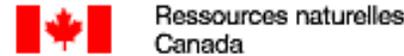
universities • R&D • governments (fed. & prov.) • community groups • industry



Développement durable, Environnement et Parcs



Centre Interdisciplinaire de Développement en Cartographie des Déserts



j2

## CLIENT GROUPS

### Departments

federal (EC, DFO, NRCan, Parks, Health, Transport,..), provincial (environment, natural resources, transports, public security, agriculture & fisheries, ...)

### Communities of practice (CoP)

environmental assessment CoP, maritime transportation CoP, geomatics CoP, etc.

### Municipalities

### Scientists & researchers

universities (ISMER, UQAR, UQAM, McGill, UQTR, ULaval,...), research centers, R&D, etc.

### Citizens & users of the St. Lawrence

public, youth, recreational users, etc.

### Decision-makers, commercial & industrial

fishers/fishing industry, tourism industry, maritime transportation/shipping, port authorities, etc.

### Consultants

expert advisors, environment consultants, ...

### Non governmental organizations (NGO's)

Coastal zone management committees, environmental action groups, etc.

### Academic & educational institutions

### Public

### Media

jhancyk, 11/8/2007

## Themes (are a function of membership agreements)

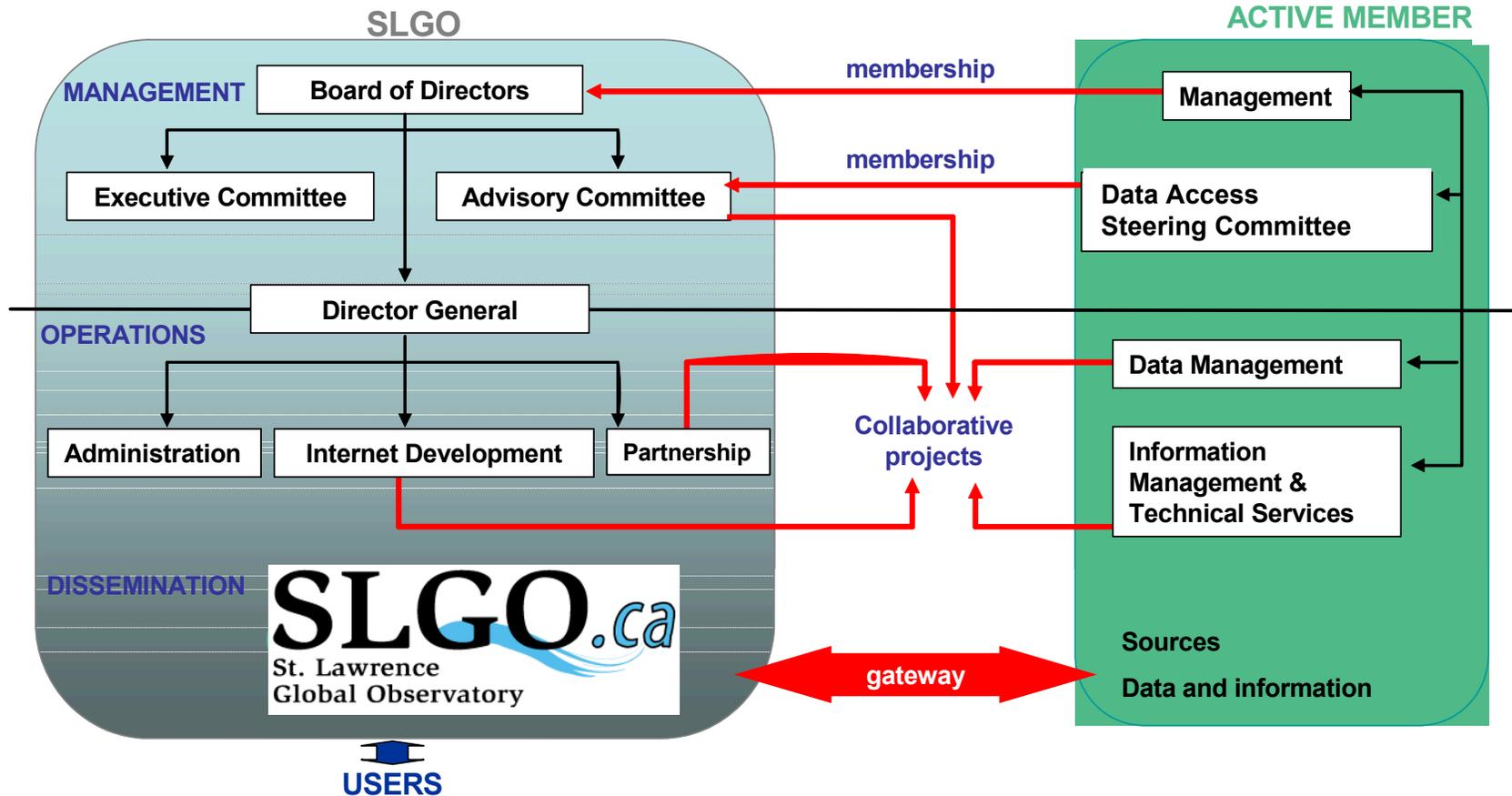
- **environment:** water, air, contaminants, living resources, bottom types, etc.
- **natural habitats:** wetlands, ecological units, etc.
- **economic activities:** agriculture, fisheries, transports, etc.
- **usage:** recreational use, waste & sewage, etc.
- **descriptive information:** administrative zones, management units, infrastructures, etc.
- **policies & legislations**
- **directories of organizations & programs related to the St. Lawrence system**

## Types of products, services et functionalities

- **search engine:** by keyword, geographical area, geo-reference, theme, etc.
- **standardized access to data, products & information of member organizations**
- **on-line mapping**
- **content management system allowing distributed posting of information by members**

# Governance

non-profit organization • board of directors • business plan • membership agreement



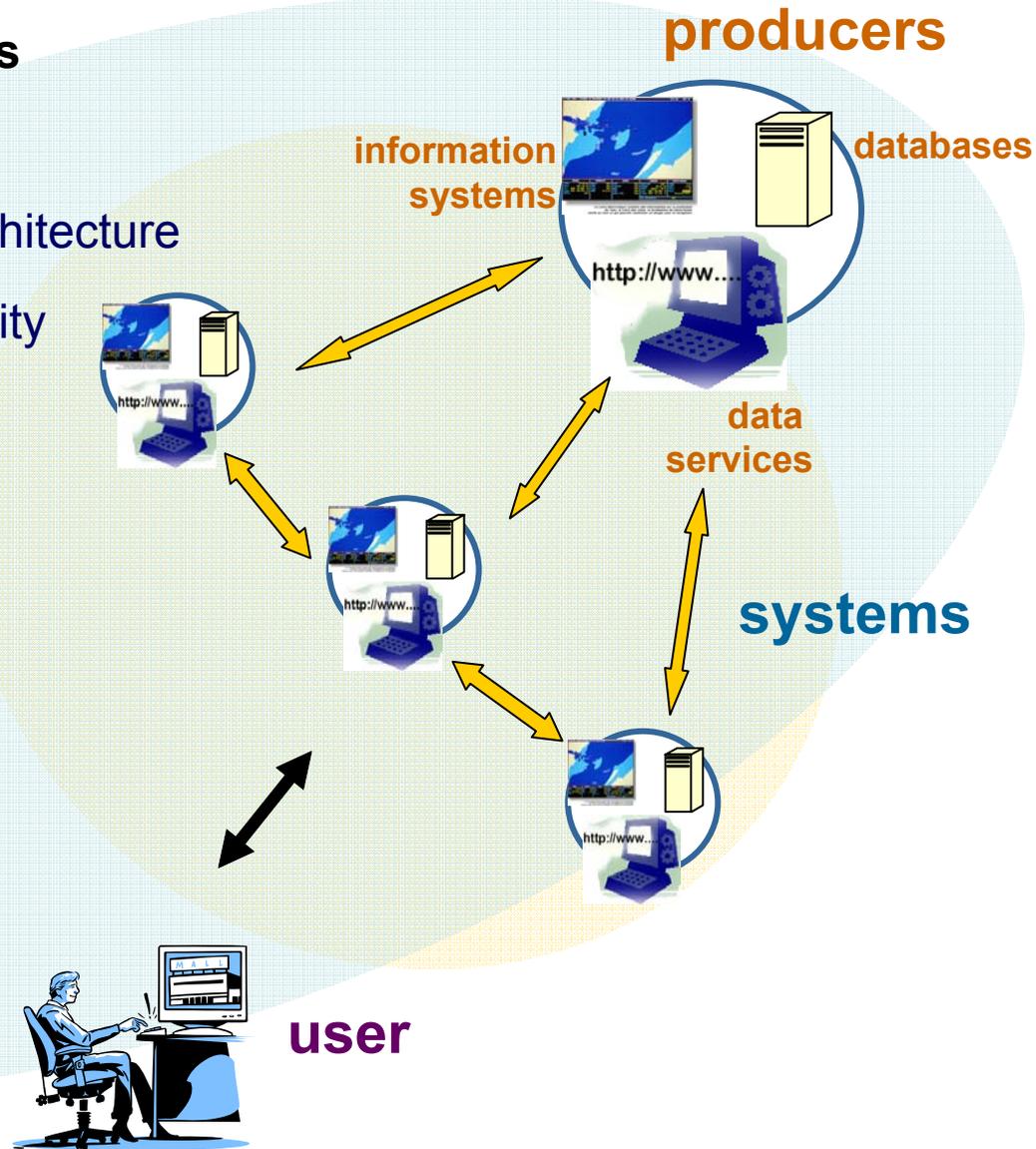
- membership agreement:  
validated by legal experts (government of Canada & Quebec)  
and intellectual property specialists

# Components of a common solution

producers ◀ ▶ systems ◀ ▶ users

## Governance model

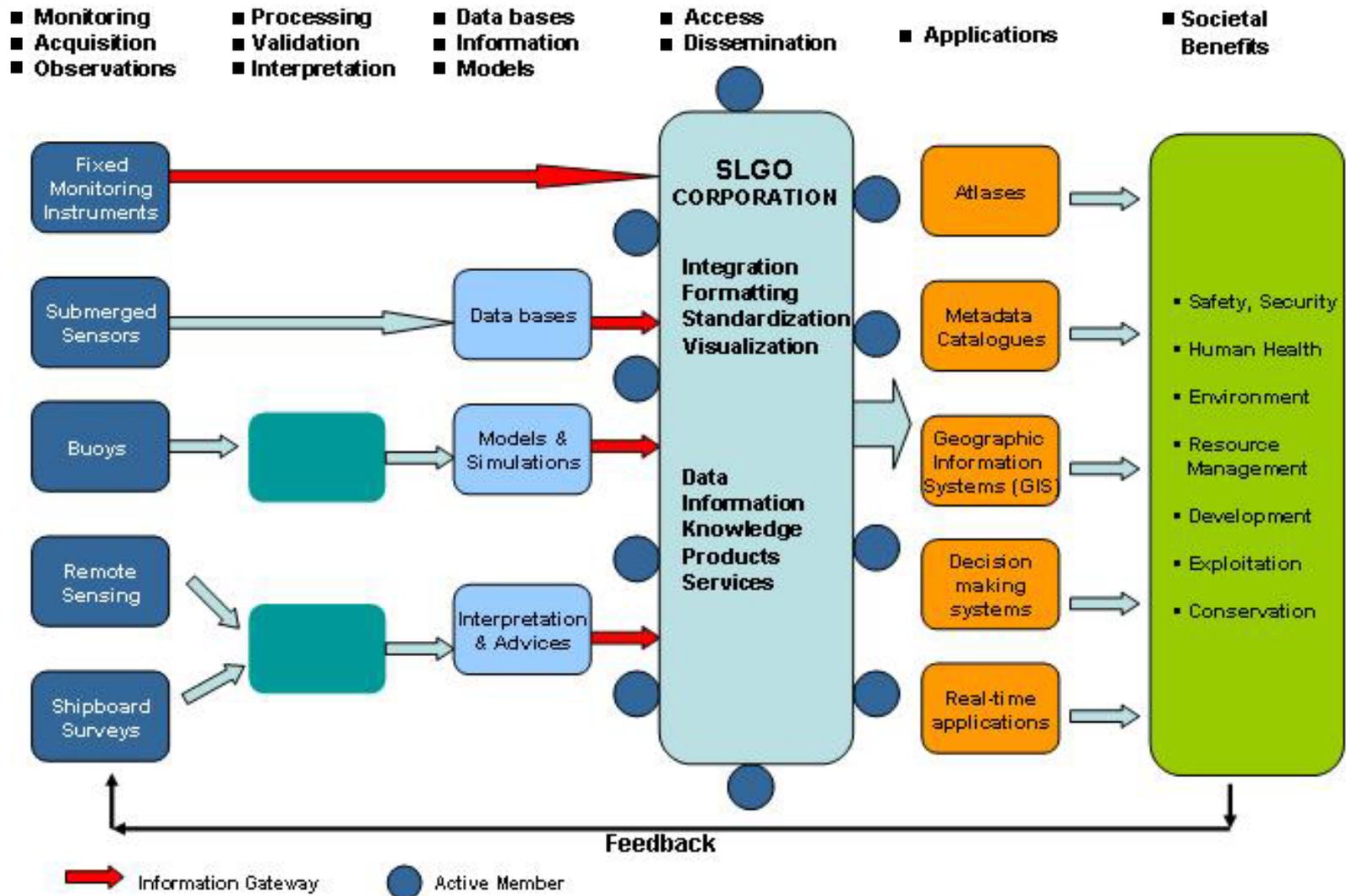
- distributed architecture
- systems interoperability
- common standards (data exchange protocols, metadata, security, etc...)
- discovery services, directories, catalogues
- increased accessibility to data and information assets
- more efficient access by users
- quality products and services
- secure architecture



# Observatory concept

Integrated access – distributed data – interoperability – quality products & services

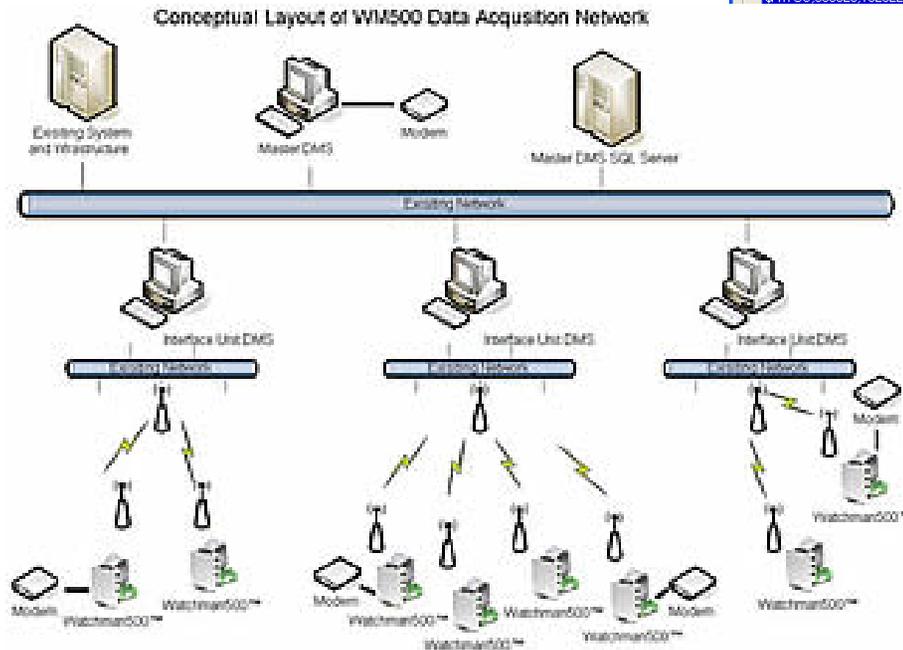
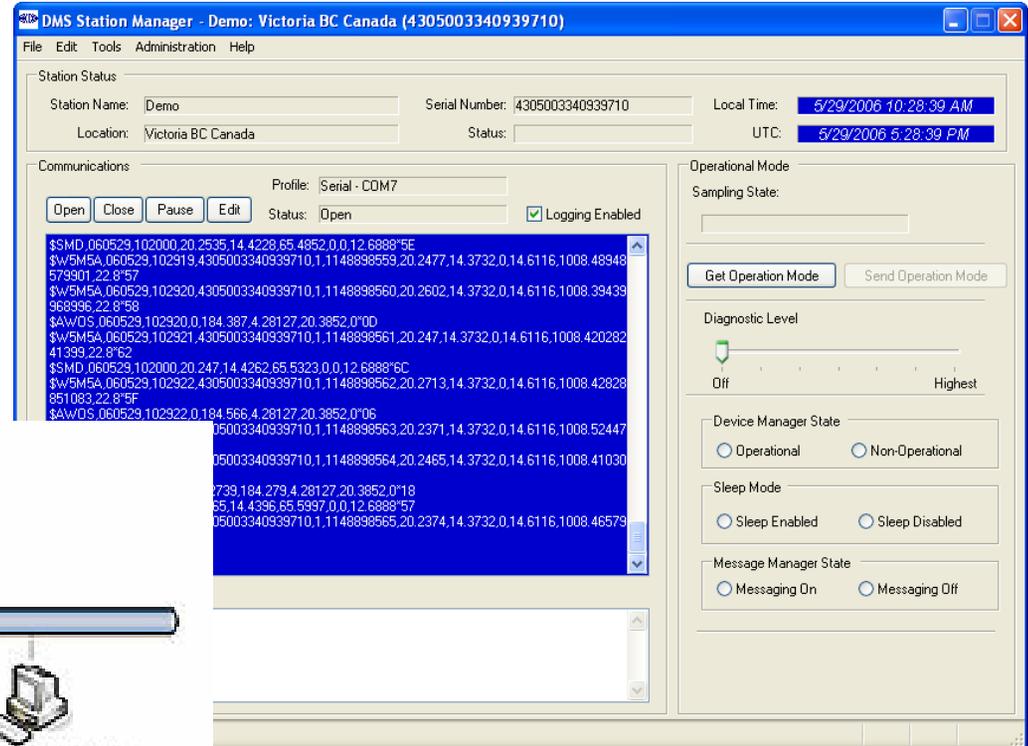
## OBSERVATORY



## WatchMan500™ Network Solution

### Major Functions:

- **Communications management**
- **WatchMan500™ station configuration & management**
- **Data Collection to a DBMS**
- **Data dissemination**  
(DBMS, serial, TCP/IP etc)



# Milestones

1990 -1998	Operation of real-time water level system and hydrodynamic model (SINECO)
1998-2005	Development of various initiatives including: <ul style="list-style-type: none"> <li>❑ St. Lawrence Observatory – DFO, EDC, SLV2000</li> <li>❑ Cyber Saint-Laurent – EC</li> <li>❑ Système géomatique pour la gouvernance de l'eau – MDDEP</li> <li>❑ lesaintlaurent. com – MTQ, SODES</li> <li>❑ GEOSS, GoMOOS, COIN, etc...</li> </ul>
April 2005	Proposal for the development of the St. Lawrence Global Observatory (SLGO) by Technopole maritime du Québec (TMQ) 
June 2005	Agreement regarding the development of the SLGO by a community of prospective member organizations
November 2005	Creation of the SLGO corporation – non profit organization 
April 2006	Presentation of the business plan to the community of prospective members : <i>42 participants representing 28 organizations</i>
June 2007 and Ongoing	Signature of the SLGO Membership Agreements

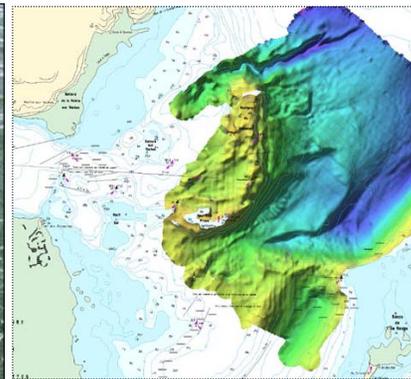
# Benefits

- ❑ **INITIATIVE IN LINE WITH OBJECTIVES OF LARGE PROGRAMS SUCH AS CANADA-QUÉBEC AGREEMENT ON THE ST. LAWRENCE**
- ❑ **EASIER ACCESS TO COLLECTIVE WEALTH OF INFORMATION**
- ❑ **INCREASED ACCESSIBILITY TO A VARIETY OF PRODUCTS AND SERVICES**
- ❑ **INCREASED CAPACITY TO DELIVER MANDATES THROUGH COLLABORATION, SHARING, EXCHANGES AND IMPROVED RELATIONS BETWEEN DATA PRODUCERS**
- ❑ **IDENTIFICATION OF INFORMATION GAPS AND DEVELOPMENT OF JOINT MONITORING & RESEARCH PROGRAMS**
- ❑ **SAVINGS & BETTER RETURN ON INVESTMENT THROUGH POOLING OF MEANS AND EXPERTISE**
- ❑ **GLOBAL VISION OF THE ECOSYSTEM FACILITATING INTEGRATED MANAGEMENT**
- ❑ **INCREASED VISIBILITY FOR THE COMMUNITY OF PARTNERS AND NATIONAL & INTERNATIONAL EXPOSURE**

# Deployed monitoring instrumentation & current initiatives

Including:

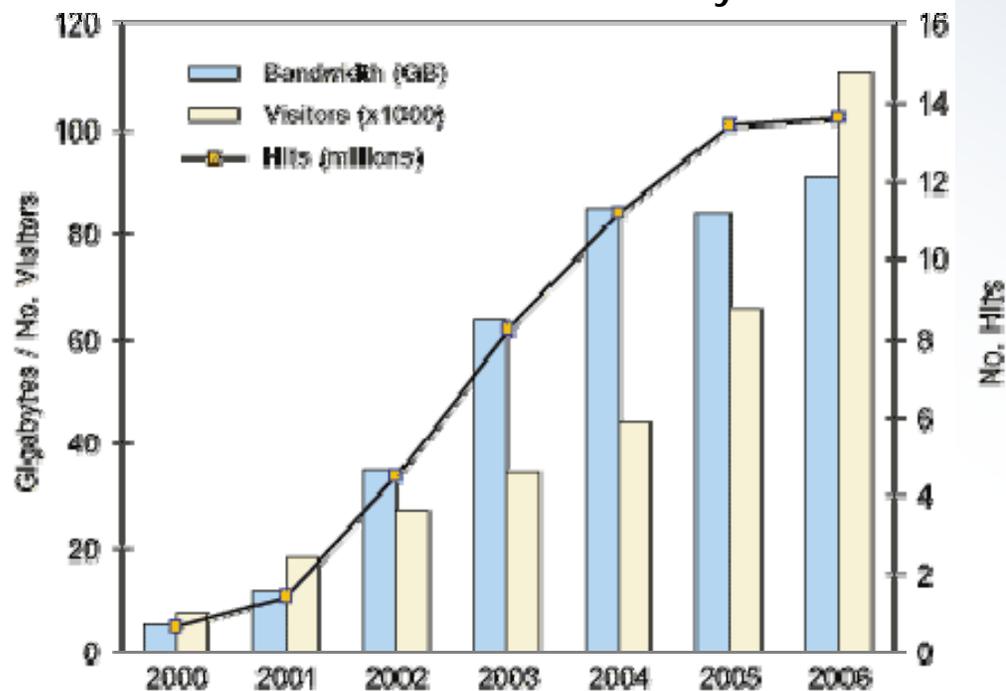
- Accurate forecast models: water levels, currents, sea-ice, winds, waves, freezing spray, ecosystem
- Real-time water level network (SINECO)
- Real-time environmental buoy network
- Dedicated and ship of opportunity at-sea data collection
- Electronic chart coverage
- Automated Identification System (AIS) network
- Multibeam bathymetry and bottom characterisation
- Satellite imagery (sea-surface temperatures)
- Glider project (dissolved oxygen)
- Real-time marine mammal detection system
- & more



# Example: OSL portal usage & clientele

based on existing St. Lawrence Observatory (OSL) Internet portal at [www.osl.gc.ca](http://www.osl.gc.ca)

## OSL Portal launched January 2000



Client groups/sectors of activity:  
governments,  
research organisations,  
universities & colleges,  
industry (navigation, ecotourism,  
coastal zone management,  
fisheries, consultants, etc.),  
interest groups,  
communities  
and general public.

### Most popular themes and data types:

1. Ocean Forecasts (sea ice, surface currents)
2. Ecosystem Modelling
3. Remote Sensing (sea surface temperature)
4. Real-Time/On-Line Buoy Data
5. Marine Mammal Research
6. Sentinel Fisheries
7. Tides & Water Levels
8. Oceanographic Data Management System
9. Georeferenced Images
10. Marine Species Identification Guide.

Multiplatform accessibility to reflect the diversity of client environments:

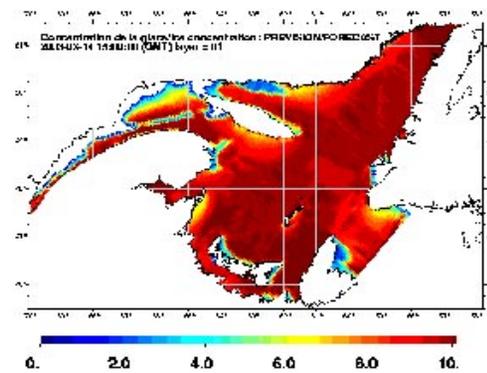
- ▶ Internet Explorer, Firefox, Opera, Netscape...
- ▶ Windows 95, 98, NT, 2000, XP...
- ▶ Macintosh, Linux, SunOS, UNIX...

# Example: OSL portal products & services

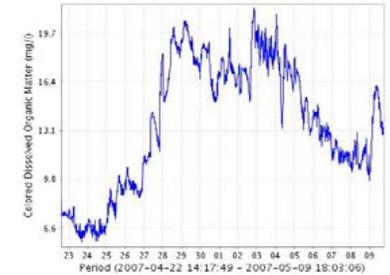
based on existing St. Lawrence Observatory (OSL) Internet portal at [www.osl.gc.ca](http://www.osl.gc.ca)

- **Data Access:**  
real-time data,  
databases, information  
systems, ...;
- **Dynamic products:**  
ocean forecasts, sea  
surface temperature  
maps, modelling,  
georeferenced image  
collections, ...;
- **Thematic Web sites;**
- **Collaborative  
projects:**  
governments,  
universities, industry;
- **On-line resources:**  
reports, glossary,  
search engine, ...

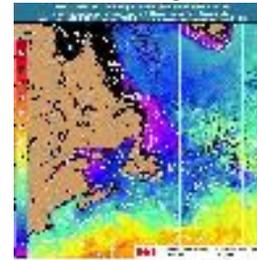
Sea ice forecasts



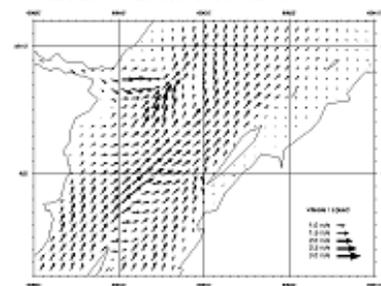
Buoy network



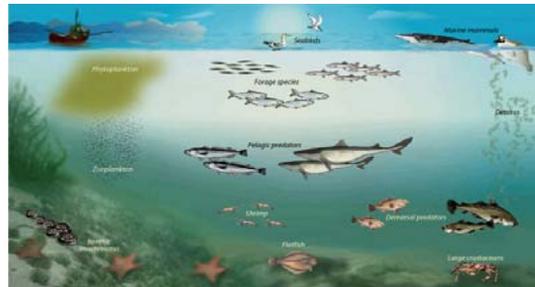
Remote sensing - SST



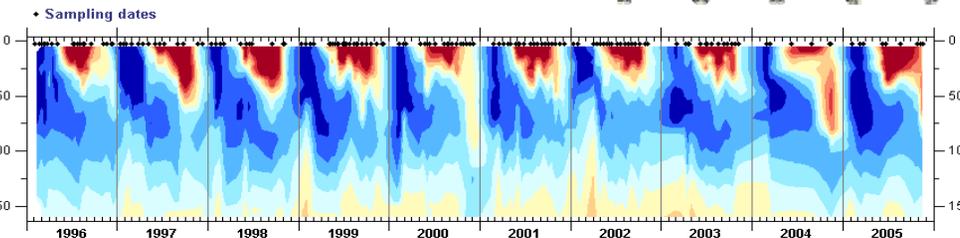
Surface current forecasts



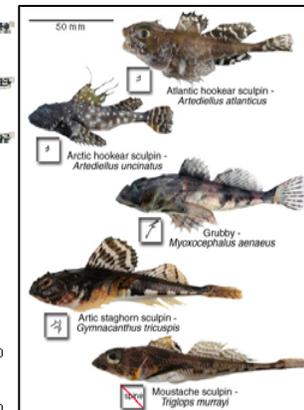
Ecosystem modelling



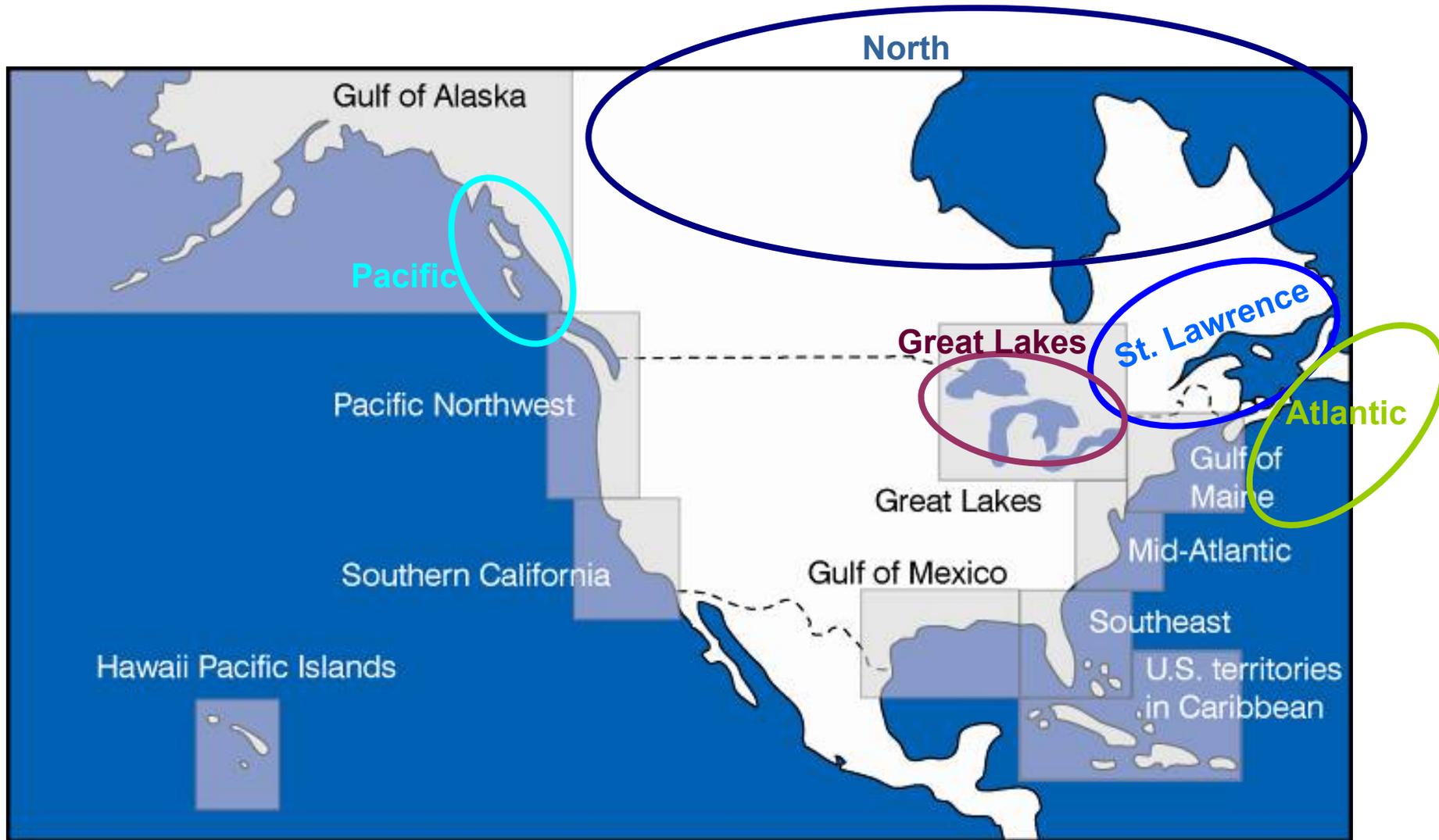
Gaspé Current - Seawater temperature



Marine species  
identification guide



# Integration to a network of observatories

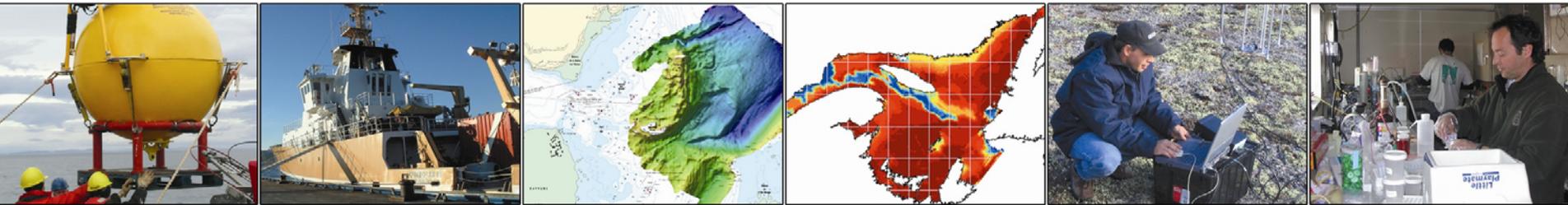


- Links with Great Lakes Observing System (GLOS) & Northwest Atlantic Ocean Observing System (NWAOOS)
- Positioned with north-american network: Integrated Ocean Observing System (IOOS)
- In line with international earth observation initiatives: CGEO / GEOSS

# In Summary



... a model for Inter-jurisdictional cooperation



For Other Integrated Solutions visit: [www.axystechnologies.com](http://www.axystechnologies.com)