

SELECTED WEB BIBLIOGRAPHY

Sites of interest to navigation
in the St. Lawrence Gulf, River and Seaway
and Great Lakes

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This is a selected bibliography. It is far from exhaustive, but should provide a good introduction to some of the resources available on the internet that are relevant to ocean-going navigation into the inland waters of North America. Many of the sites listed provide links to others of equal interest.



1. **The economic environment**

On economic issues facing the St. Lawrence Seaway & Great Lakes, see the proceedings of a national marine conference sponsored by Transport Canada last May:

- <http://www.fromvisiontoreality.ca/proceedings.html>

The Ottawa-based Chamber of Maritime Commerce provides links to recent studies on policy issues affecting the Great Lakes and Seaway waterway:

- <http://www.cmc-ccm.com/report-policy-vision.html>

On the development of a sustainable navigation strategy for the St. Lawrence:

- http://www.slv2000.qc.ca/plan_action/phase3/navigation/pdf/Art_maritime_mag_a.pdf

On the economics of the Great Lakes/ Seaway trade and infrastructure renewal required to stay competitive:

- <http://gulliver.trb.org/publications/mb/2002Ports/03Nekvasil.pdf>

The St. Lawrence Economic Development Council (SODES) has a website with links to Canadian and Quebec government entities involved in marine issues:

- <http://www.st-laurent.org/>

See also the website of the Shipping Federation of Canada:

- <http://www.shipfed.ca/>

I. The Gulf of St. Lawrence and River to Montreal

A. The physical environment:

Long range ice forecasts and current and water temperature charts for the St. Lawrence Gulf and Estuary can be found at:

- <http://www.osl.gc.ca/servlets/previsions-oceaniques/en/menu-previsions.jsp>

The weather underground posts the Canadian Ice Service daily ice forecasts for the Gulf of St. Lawrence on its website:

- <http://www.wunderground.com/MAR/CN/013.html>

For data in graph form on total ice severity and coverage in the Gulf of St. Lawrence, 1969 to 2001, go to:

- <http://www.cccma.bc.ec.gc.ca/~bmiville/seaice/>

The same website provides access to a number of scientific papers on sea ice generally.

For up-to-date marine conditions across Canada, ranging from regional weather to ice information:

- <http://www.marineservices.gc.ca/en/Con01.asp?Div=com&Info=Mar>

See also the very useful paper prepared by Bob Gorman of Enfotec on the ice regime of the Gulf of St. Lawrence, including the use of radar imagery as an analytical tool:

- <http://www.amac.ca/enfotec.htm>

Oceanic conditions in the Gulf of St. Lawrence in the year 2000 can be found at:

- http://www.ncr.dfo.ca/CSAS/CSAS/status/2001/SSR2001_G4-01e.pdf

On sea ice generally, including charts showing current coverage on the Canadian east coast:

- http://www.socc.uwaterloo.ca/seaice/seaice_current_e.cfm

For a historical record of the incidence of sea ice for the Scotian shelf and Gulf of St. Lawrence, from 1769 to 1962, see:

- http://www.nrc.ca/idm/st_lawrence/ice_report3a.pdf

For climatological charts of the St. Lawrence showing the monthly means for wind, waves, freezing spray, visibility, atmospheric pressure, and water and air temperatures over the river and the gulf, go to:

- <http://criacc.qc.ca/climat/suivi/cartes/indexe.html>

Further climatological charts of the Gulf can be found at:

- <http://www.mar.dfo-mpo.gc.ca/science/ocean/gsl/gslmap.html>

B. Regulation of and assistance to navigation

Transport Canada Marine Safety Division, with links to construction and equipment standards, ships and operations standards, personnel standards and pilotage :

- <http://www.tc.gc.ca/MarineSafety/ms-site-map.htm>

Fisheries and Oceans Canada, including links to icebreaking programme, marine communication and traffic services, Great Lakes water-level emergency response programme, and notices to mariners:

- http://www.ncr.dfo.ca/marine_e.htm

The Canadian Coast Guard:

- http://www.ccg-gcc.gc.ca/main_e.htm

On pilotage between Quebec City and Les Escoumins, see the website of the lower St. Lawrence pilots:

- <http://www.pilotesbsl.qc.ca/en/default.html>

More specifically on pilotage certificate training for the same region:

- <http://www.tc.gc.ca/tdc/publication/pdf/13400/13458evol1.pdf>

On icebreaking in the St. Lawrence Gulf and Estuary, see Fisheries and Oceans Canada, Coast Guard, “Icebreaking Operations Levels of Service: Icebreaking Program 2001”:

- <http://www.ccg-gcc.gc.ca/ice-gla/IcebreakingLOS.pdf>

For measures taken by the port of Montreal to ensure safe navigation in winter:

- <http://www.port-montreal.com/english/features/winter.htm>

For a good overview of the activities of the Canadian Ice Service:

- [http://www.wmo.ch/web/aom/marprog/Wordpdfs/si1%20Doc%202.2\(5\)%20Canada.pdf](http://www.wmo.ch/web/aom/marprog/Wordpdfs/si1%20Doc%202.2(5)%20Canada.pdf)

The Canadian Ice Service site features daily ice hazard bulletins and charts, extreme ice event warnings, weekly and monthly analysis of Canadian ice areas, historical ice charts, ice codes and ice terminology, and other facts of interest about ice in Canada:

- http://collection.nlc-bnc.ca/100/201/301/science_environ-e/html/2002/03-04/article5_e.html
- <http://ice-glaces.ec.gc.ca/>

On the use of RADARSAT to assist navigation in the Gulf of St. Lawrence:

- http://www.space.gc.ca/_publications/pdf/whatsnew/backgrounder/Coastal%20Ocean%20Science.pdf

On mapping sea ice properties in the Gulf of St. Lawrence with a helicopter borne electromagnetic-induction and video system:

- <http://www.mar.dfo-mpo.gc.ca/science/ocean/seaice/Publications/peterson07.pdf>

II. The St. Lawrence Seaway

The St. Lawrence Seaway Management Corp. and the St. Lawrence Seaway Development Corp. maintain a joint website, where you will find a detailed history, description, and map of the System, applicable rules and regulations, Seaway handbook, notices to mariners, and useful links to local operators and service providers:

- <http://www.greatlakes-seaway.com>

For real time chart display of all vessels in the Great Lakes and Seaway, as well as their estimated turn time at the locks, see:

- <http://www.greatlakes-seaway.com/R2/jsp/R2.jsp?language=E&loc=VT00.jsp>

For a widely used, highly reliable source of information on current vessel positions in the Seaway and Great lakes, photos of virtually all ships that have transited the area, Great Lakes distance tables, local notices to mariners, casualties in the area, lists of owners and operators, and a wealth of other miscellaneous information, go to:

- <http://boatnerd.com/>

On the Marine Electronic Highway: the use of the Electronic Chart Display Information System to allow navigation assisted by real time information on weather routing, tides, currents, winds, waves and ice:

- <http://www.tc.gc.ca/cmac/documents/ecvision.htm>

On the international St. Lawrence River board of control, which regulates water outflows from Lake Ontario so as to control water levels in the St. Lawrence river:

- <http://www.islrbc.org/new-Version/brochure.html>
- http://www.lrd.usace.army.mil/gl/st_lawr.htm

III. The Great Lakes

A. The physical environment

For a geographic, environmental and economic overview of the Great Lakes, with many useful links, start with:

- <http://www.great-lakes.net/>

Reduced resolution versions of the NOAA navigating charts for the Great Lakes are available at:

- <http://www.usboating.com/stchartpg.asp?loc=13>

Great Lakes hydraulics and hydrology web site: forecast and historic water level information for all five Great Lakes:

- <http://huron.lre.usace.army.mil/hmpggh.html>

On water levels and related Great Lakes data, including daily and monthly bulletins:

- <http://www.on.ec.gc.ca/water/greatlakes/water-levels/intro.html>

Although the site is Canadian there are links providing data for the American Great Lakes as well.

The different types of water level fluctuations, as well as how these levels are measured on the Great Lakes, are explained at:

- http://www.great-lakes.net/teach/envt/level/lev_1.html

The Great Lakes Environmental Lab Climate Change and Variability Programme website provides a wealth of information of the Great Lakes ice cycle and water levels:

- <http://www.glerl.noaa.gov/res/Programs/ccmain.html>

For animations showing the seasonal progression of ice cover and decay in the Great Lakes, from 1973 to 2000:

- http://www.agu.org/eos_elec/00259e.html (on how the data is gathered)
- <ftp://ftp.glerl.noaa.gov/ice/animations/>

Ice charts and forecasts for the Great Lakes, both current and archived from 1995/96 onwards:

- <http://www.natice.noaa.gov/greatlakes.htm>

B. Navigation on the Great Lakes

The American Great Lakes Port Association:

- http://www.porterie.org/great_lakes_ports.html

The US Army Corps of Engineers is responsible for planning, designing, constructing, operating and maintaining navigational channels and flood control measures in the Great Lakes basin:

- <http://www.lrd.usace.army.mil/gl/gl.htm>

The U.S. Army Corps of Engineers on the effects of ice cover on the Great Lakes, with particular emphasis on recent years:

- <http://huron.lre.usace.army.mil/levels/Update147.PDF>

The Soo locks have their own web page:

- <http://huron.lre.usace.army.mil/SOO/soohmpg.html>

For a good assessment by the U.S. Coast Guard of the winter ice risks in the Great Lakes and the icebreaking capability required to address it, see Great Lakes Icebreaking Replacement Capability Project: Mission Analysis:

- <http://www.uscg.mil/ff21/docs/glib/GLIB-misson-analysis.pdf>

On pilotage on the Great Lakes, see:

- http://infosource.gc.ca/Info_1/GLP-e.html
- <http://www.canlii.org/ca/regu/crc1266/>
- <http://www.cmc-ccm.com/marine-pilot.html>
- http://www.tc.gc.ca/Pilotage/English/ar&cp_e.htm
- <http://www.wglpa.com/>

IV. **General resources on geography, ice and navigation in ice:**

The Canadian Atlas is a good launching pad:

- <http://atlas.gc.ca/site/index.html>

An introduction to navigation in ice:

- http://www.ec.gc.ca/science/sandenov/article5_e.html

More than you ever wanted to know about fresh water ice properties (chapter 2), the monitoring and control of ice on U.S. rivers to prevent ice jams, ice formation on navigational structures including locks (chapter 14), and navigation in ice (chapter 17), for the more theoretically minded:

- <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em1110-2-1612/c-18.pdf>

Explanation of datums used for water levels and navigational charts by the Department of Fisheries and Oceans, Canadian Hydrographic Service:

- http://chswww.bur.dfo.ca/danp/datums_e.html

Ice terminology:

- <http://www.cis.ec.gc.ca/about/term.html>

For an introductory tutorial produced by Natural Resources Canada on the fundamentals of remote sensing to determine the type and concentration of sea ice and its motion, see

- http://www.ccrs.nrcan.gc.ca/ccrs/learn/tutorials/fundam/chapter5/chapter5_15_e.html

On Radarsat 1 and 2, then follow the links for ice imaging applications in general, and more specifically for vessel routing:

- <http://www.rsi.ca>
- <http://www.ccrs.nrcan.gc.ca>

At the second of these sites you will also find a research paper on the utilization of radarsat data by the Canadian ice service. The link to that page is:

- <http://www.ccrs.nrcan.gc.ca/ccrs/rd/apps/marine/current/ice.pdf>

On the presentation of ice information in Electronic Chart Display Information Services (ECDIS):

- <http://www.sevencs.com/ecdis/iceinformation.htm>

- <http://www.nfl.dfo-mpo.gc.ca>

Casualty Data

Lloyd's Register's sea-web (<http://www.sea-web.org>) is the best source. The following are also interesting:

Database of Ship collisions with icebergs:

- http://www.nrc.ca/imd/ice/bergs2_01e.html

The Canadian Transportation Safety Board investigates all major marine casualties in Canadian waters. Reports of their findings are published at:

- <http://www.bst.gc.ca/en/reports/marine/index.asp?section=1>

