

International Upper Great Lakes Study

SEMCOG

Public Meeting

February 20, 2008



Presenters

- **Kay Felt**
 - U.S. co-chair, Public Interest Advisory Group
- **Dr. Eugene Stakhiv**
 - U.S. co-chair, IUGL Study Board
- **Dr. Jim Bruce**
 - Canadian co-chair, IUGL Study Board
- **John Nevin**
 - IJC Senior Advisor
 - IUGLS Communications Advisor

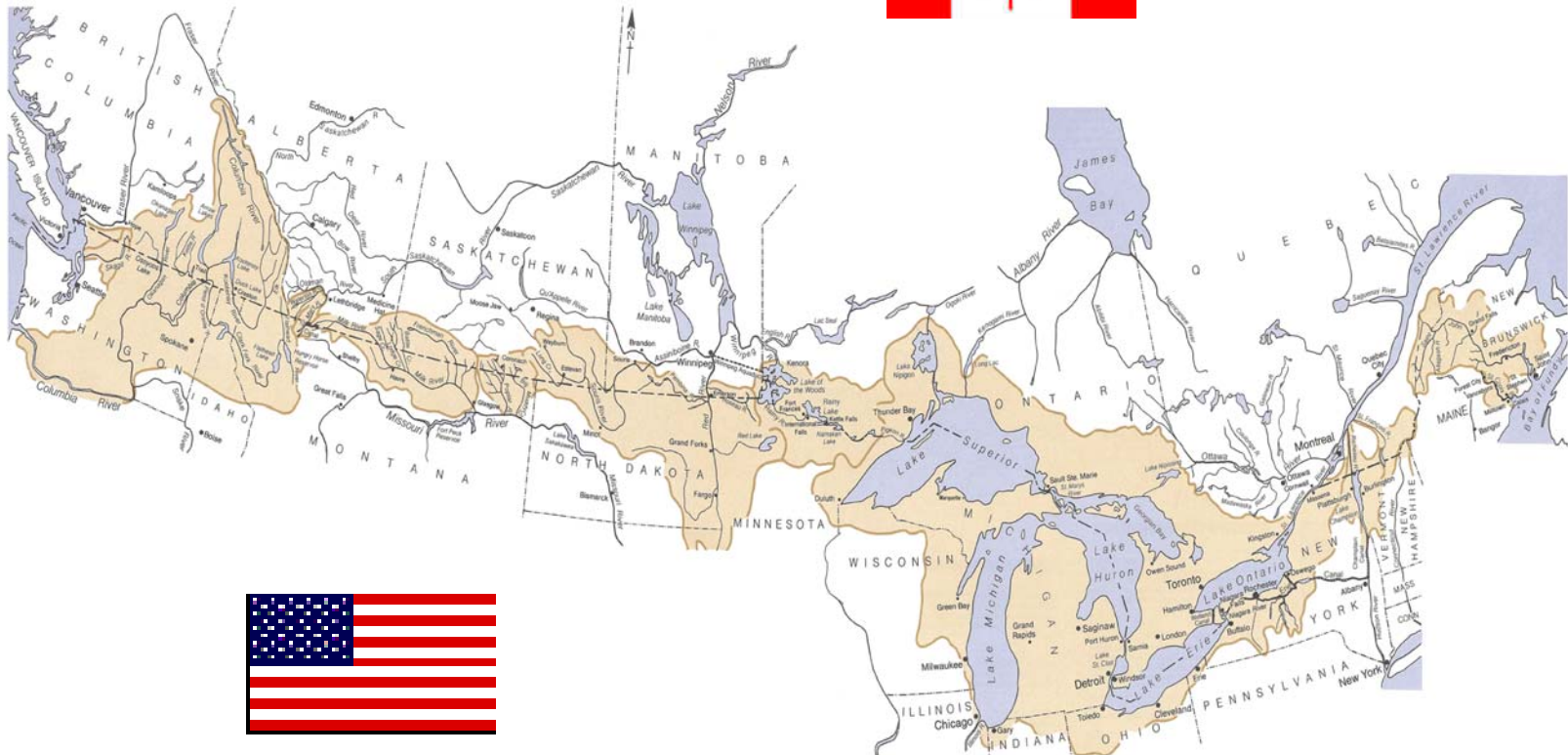
Today's Presentation

- **What is the IJC?**
- **Purpose and objectives of the Study**
- **Management and task structure**
- **Public outreach plans**
- **Growing public interest and government involvement**

- **Previous work and recommendations of IJC**
- **Current conditions**
- **Work underway and plans to expedite**
- **International gauges**
- **Initial findings**
- **Conclusions**

- **Questions & comments**

What is the IJC?



What is the IJC?

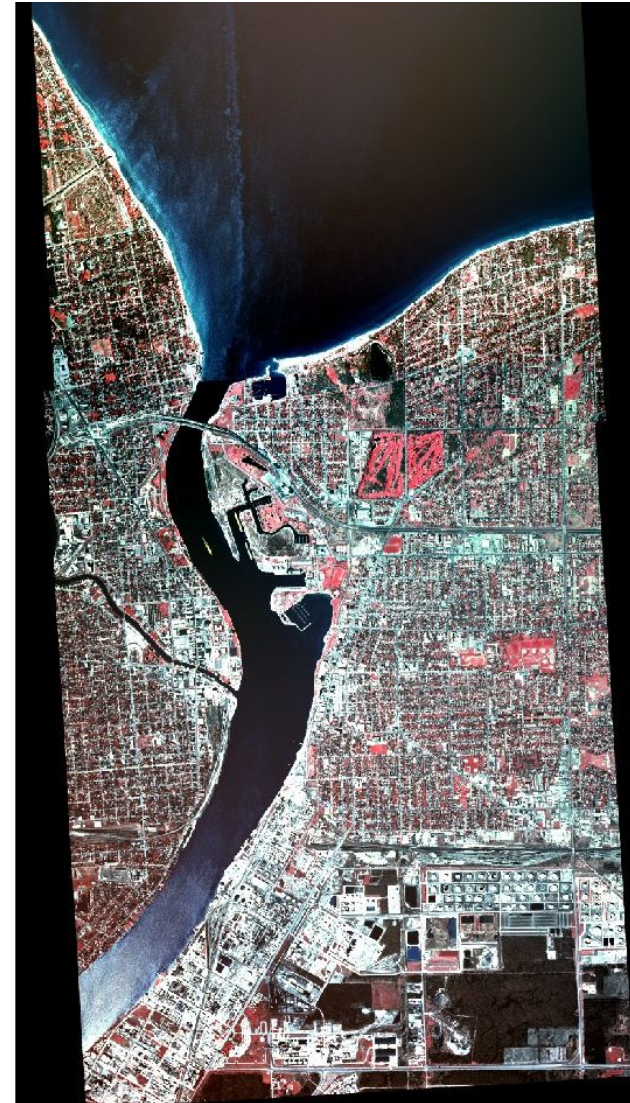
- Unitary Body Created by Boundary Waters Treaty of 1909
- Six Commissioners
- Operates Along the Entire Boundary
- Regulates Flows in Boundary Waters
- Prevents and Resolves Disputes
- Alerts Governments to Emerging Issues
- Watchdog of Great Lakes Restoration Efforts
- Conducts Studies for Governments

Purpose of the Study

- Determine how water level changes affect resource groups including the environment.
- Develop improved knowledge of hydrologic and hydraulic processes of the Great Lakes system under the present climate regime and considering climate change.
- Involve governments, industry, academia and Native Americans and the public.

Study Objectives

- To investigate St. Clair River flow characteristics and determine how the natural regime of the river has been changed by human activities. Further on-going changes may change the water level relationship between Lakes Michigan-Huron and Erie.

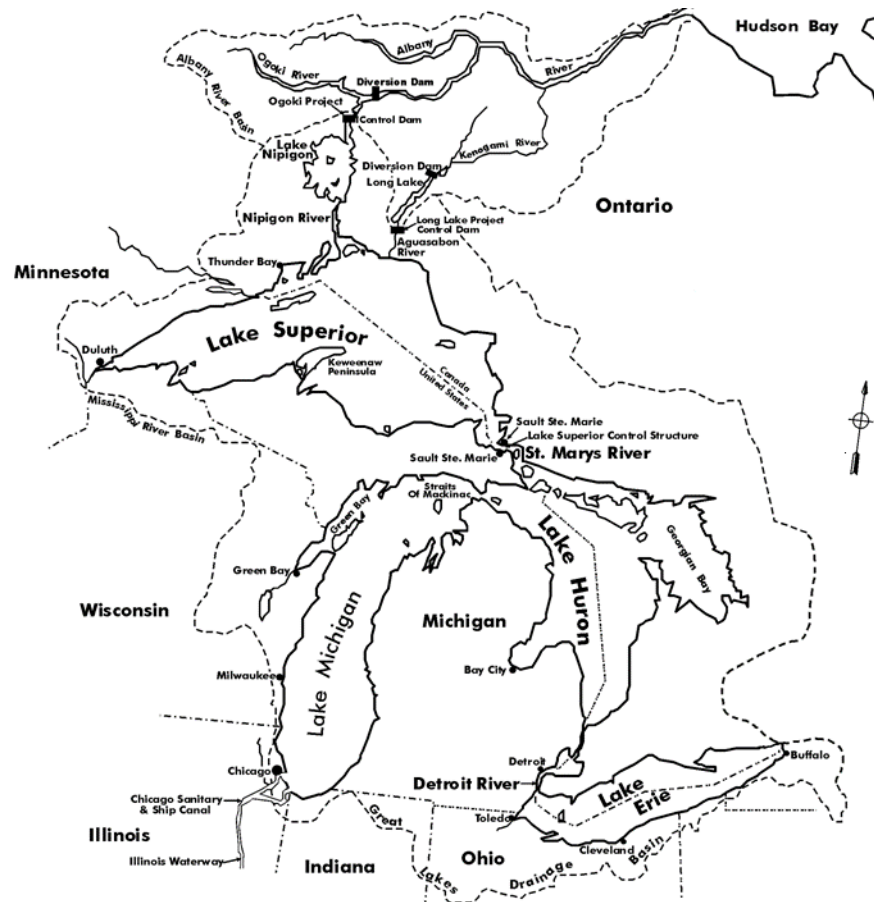


Study Objectives

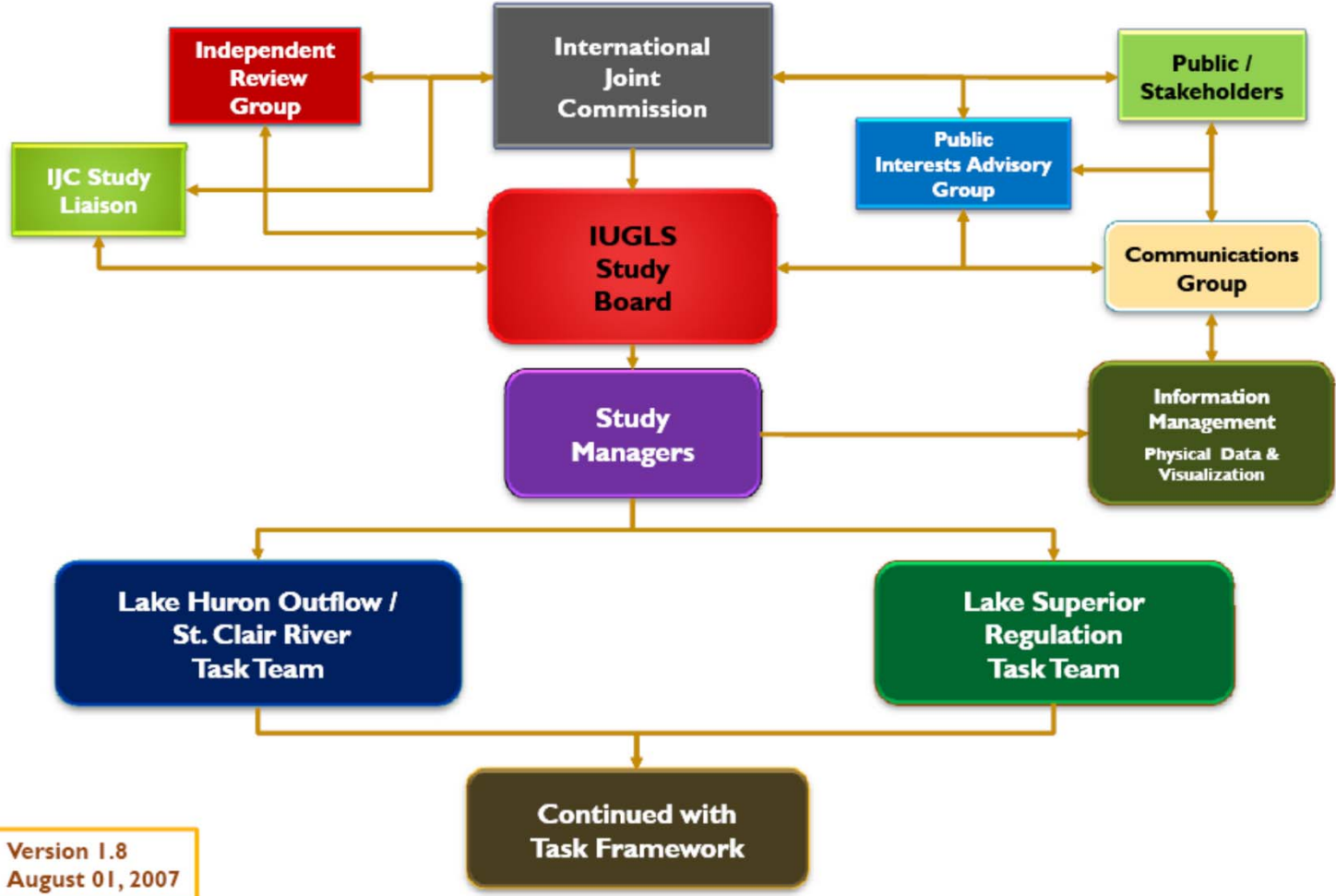
- To investigate whether the current Lake Superior outflow management procedures could be improved considering evolving upper Great Lakes interests and climate change.
- To make recommendations to the IJC on changes and actions that may be necessary.



Geographic Scope

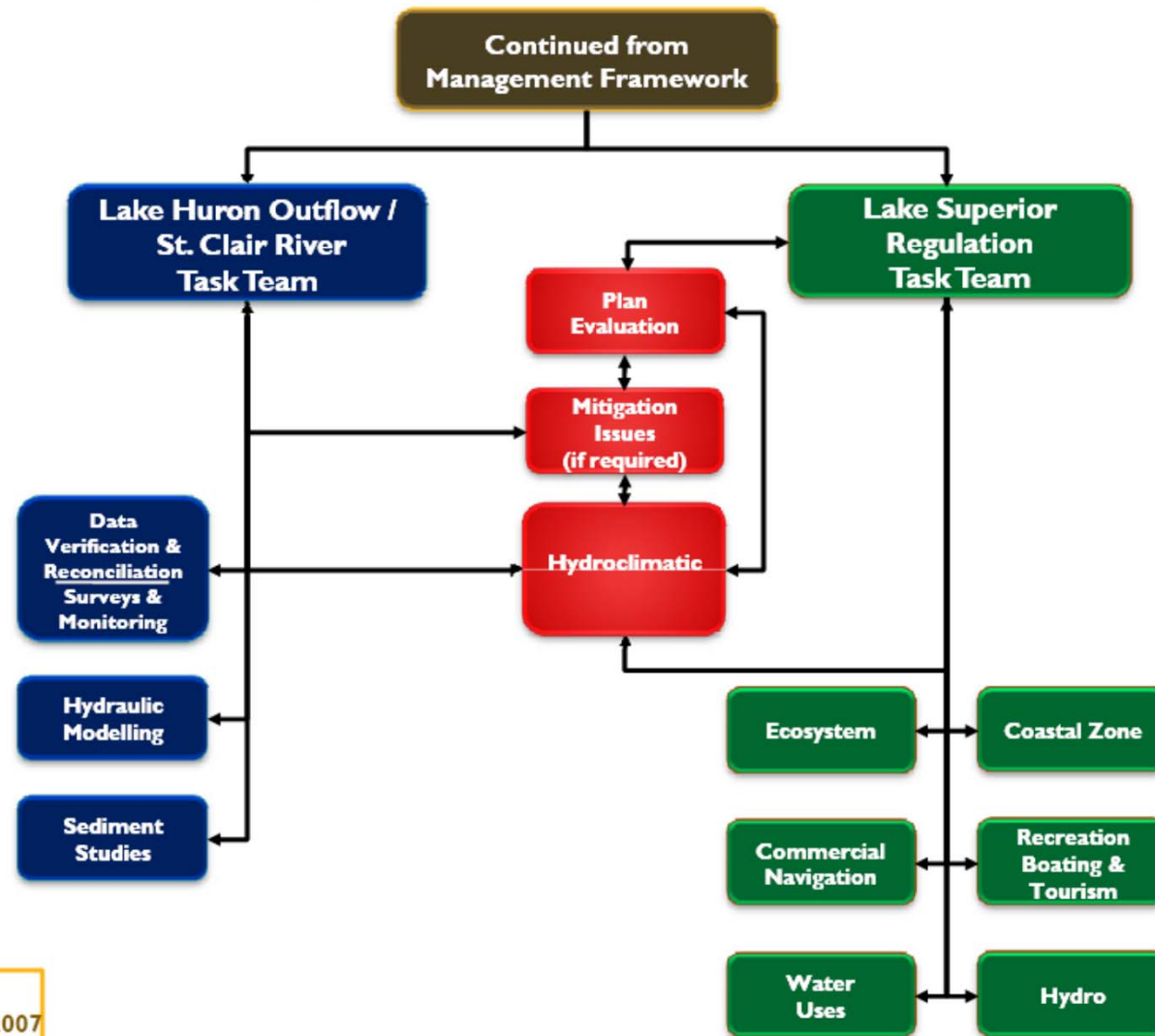


IUGLS Study Organization - Management Framework



Version 1.8
August 01, 2007

IUGLS Study Organization - Task Framework



Version 1.8
August 01, 2007

Public Interest Advisory Group (PIAG)

- **Gives public the opportunity to provide input to the study regarding values associated with different Great Lakes water levels.**
- **Provides vehicle for study to provide information to the public.**
- **Advises study on outreach and communications.**
- **Advises study on broad direction of work.**
- **Study benefits from experience and expertise of PIAG members**

PIAG Reflects Broad Range of Interests

- **Ecosystem/environment**
- **Recreational boating and tourism**
- **Hydropower**
- **Commercial navigation**
- **Municipal, industrial and domestic water uses**
- **Coastal and shoreline interests**

PIAG Membership

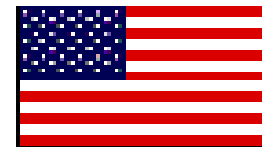
Canada

James Bruce (**PIAG Co-Chair**)
James Anderson, **Ducks Unlimited**
Doug Cuddy, **Lake Superior Conservancy
and Watershed Council**
Dick Hibma, **Conservation Ontario**
Kenneth Higgs, **Property Owner**
William Hryb, **Lakehead Shipping Co. Ltd.**
John Jackson, **Great Lakes United**
Don Marles, **Lake Superior Advisory
Committee**
Mary Muter, **Georgian Bay Association**



United States

Kay Felt, **Co-Chair**
David Powers – **Save our Shoreline**
Roger Smithe – **Int’l Great Lakes Coalition**
Dan Tadgerson – **Sault Ste. Marie Tribe,
Chippewa Indians**
Alan Steinman – **Annis WRI**
Samuel Speck – **Ohio DNR**
Jim Weakley – **Lake Carriers’ Assn.**
Jeff Vito – **Cities Initiative**
Dan Thomas – **GL Sport Fishing Council**
David Irish – **boat shop owner**



Outreach strategy highlights

- **Public Meetings**
- **Internet/web dialogues**
- **Targeted interest-based workshops**
- **Regular progress reports**
- **PIAG liaison to Technical Work Groups**
- **Congressional/Parliamentary Briefings**
- **Meetings with federal/state/provincial officials**
- **Newsletter**
- **Interactive web page**

Public Interest is High

- **Seven Great Lakes senators wrote to IJC urging that the study be expedited and special attention given to public involvement (September, 2007)**
- **Senator Stabenow wrote to ACOE, asking:**
 - **whether ACOE had evaluated the validity of the Baird study;**
 - **whether ACOE intends to take any remedial action prior to the completion of the IJC study**
 - **why was the 1962 weir never built and what would the impacts be today.**

Public Interest is High (cont.)

- **Great Lakes Commission passed resolution urging:**
 - **governments to fully fund investigations of the cause of low water levels;**
 - **ACOE, EC, and IJC begin investigations of possible remedial measures to address erosion; and,**
 - **the IJC to expedite the St. Clair River portion of the study and to provide an interim report by the end of 2008.**
- **Governor Granholm wrote to ACOE asking them to immediately evaluate the effectiveness of mitigation measures recommended following the 1962 dredging project.**

Historical Background (key reports)

- *“Further Regulation of the Great Lakes” (RGL) 1976 IJC Report to the Governments of Canada and the U.S.* (began with record lows and ended with record highs)
- *“Levels Reference Study: Great Lakes- St. Lawrence River Basin” (LLR) – 1993 Levels Reference Study Board Report submitted to the IJC* (focused on reducing extreme high levels)

IJC – RGL Report

- Study Board considered 5-, 4-, 3-, & 2- Lake regulation plans, with hundreds of combinations
- Study used 1933 Lake Huron outlet conditions as baseline, for evaluation purposes, and calculated that returning Lake levels to that condition (+ 7”) would result in higher water levels that would cause an increase in shoreline property damages of ~\$12M/yr (\$1970)
- 5- and 4-lake plans were not economically feasible
- “Regulation of L. Michigan & Huron requires not only an increase in the capacity of the channels of the St. Clair and Detroit R., but also the ability to restrict the outflows below the capacity of the channel”

IJC – RGL Report

- Additional dredging and control structures would be required for St. Clair and Detroit, but not locks
- Gated structures to control flow and training walls to separate recreational boating from main channel commercial navigation.
- **“The Commission believes...that no amount of structural innovation, within the realm of economic feasibility, can bring about a dramatic compression of the range of lake levels (*reducing highs and raising lows*) that people seem to expect and demand.”**

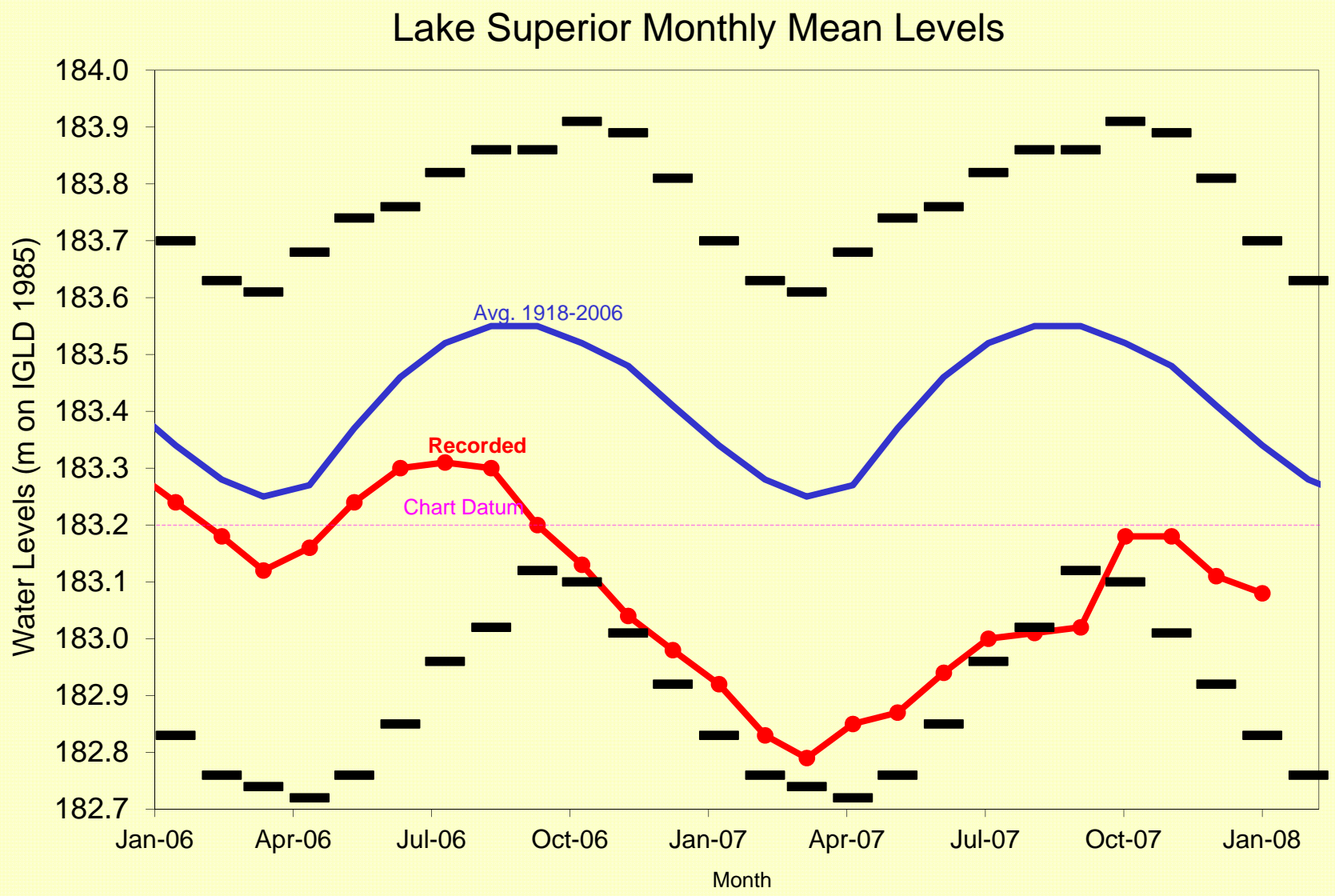
LLR recommendations

- “The Board recommends that Governments give no further consideration to 3-lake regulation”
- “The Board recommends that the Orders of Approval for the regulation of L. Superior be reviewed to determine if the current criteria are consistent with the current uses and needs of the users and interests of the system”
- “The Board recommends that the Int’l Lake Superior Board of Control be authorized to use its discretion in regulating the outflows...similar to those of the St. Lawrence Control Board”

Overall Conclusions from the RGL and LLR

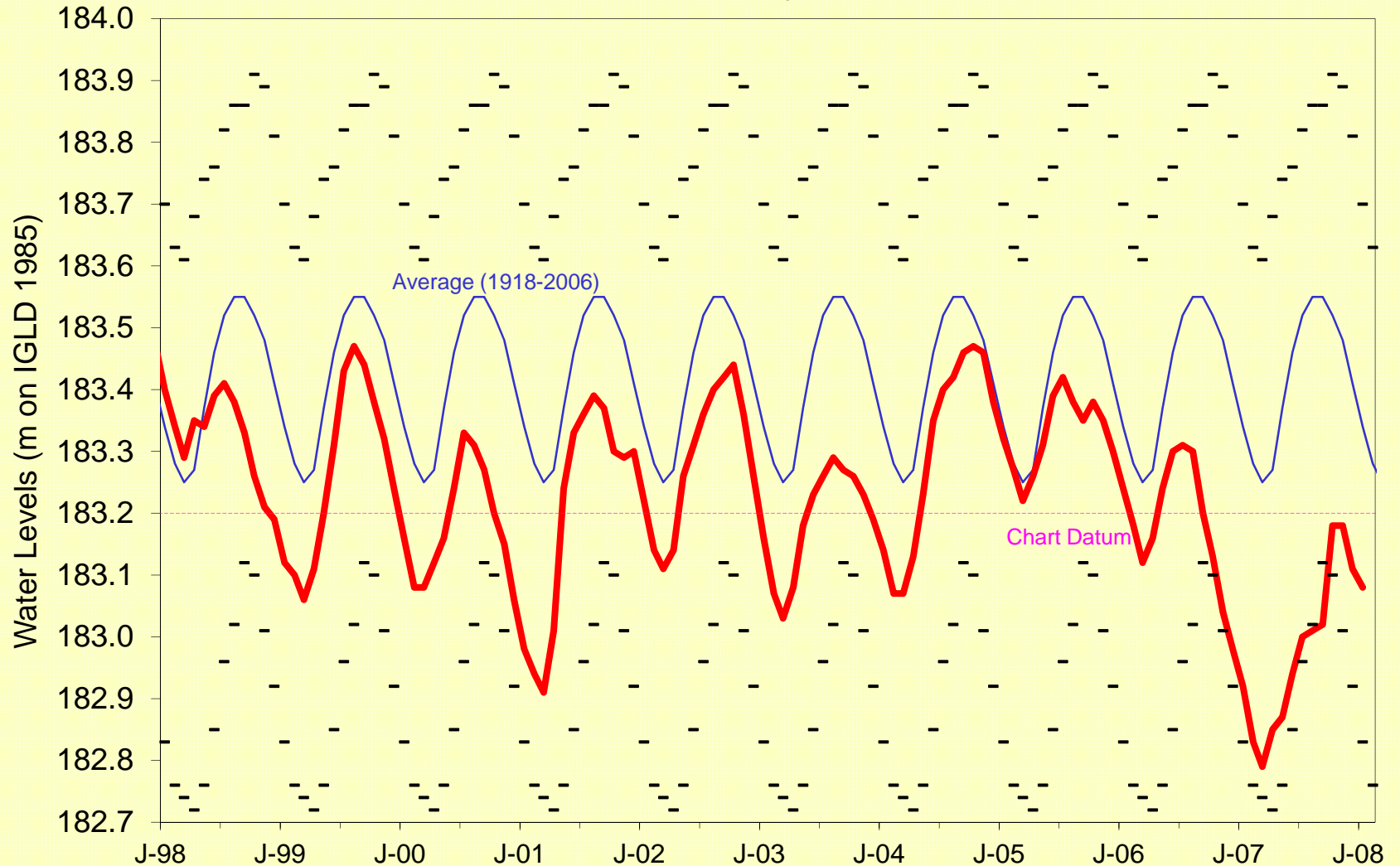
- GL must be managed as system, maximizing net benefits to all, without unduly harming any single interest
- IJC has authority to revise “Orders” for **operating existing control structures**, but must refer all other new structural and non-structural measures that could alleviate damages to respective countries, states, provinces for implementation
- Most proposed water control structures that could deal with extreme lake level fluctuations have $BCR \ll 1$
- GL are a large, self-regulating system – human intervention cannot significantly modify extremes

Lake Superior current conditions

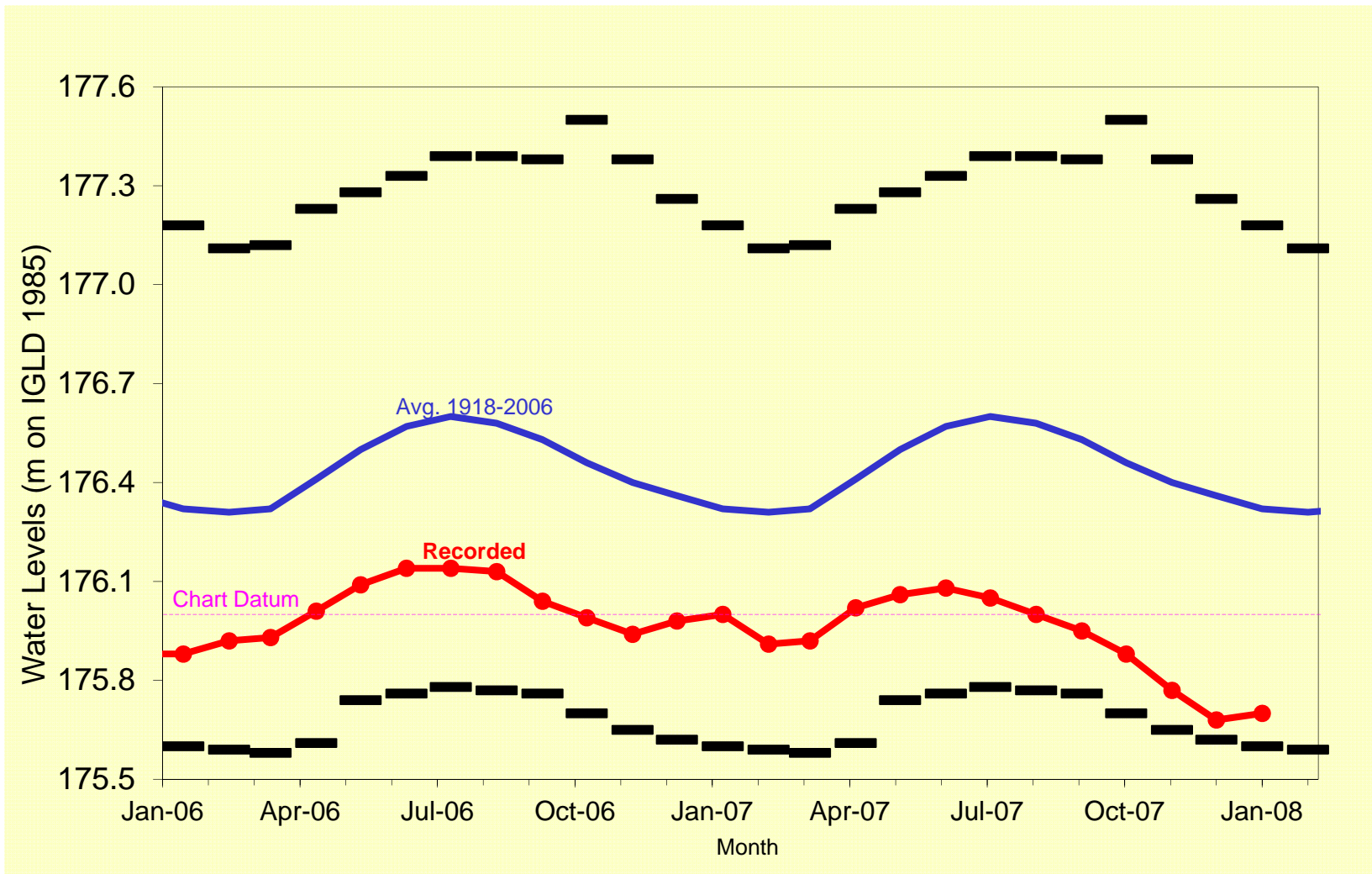


Lake Superior 1998 – 2008

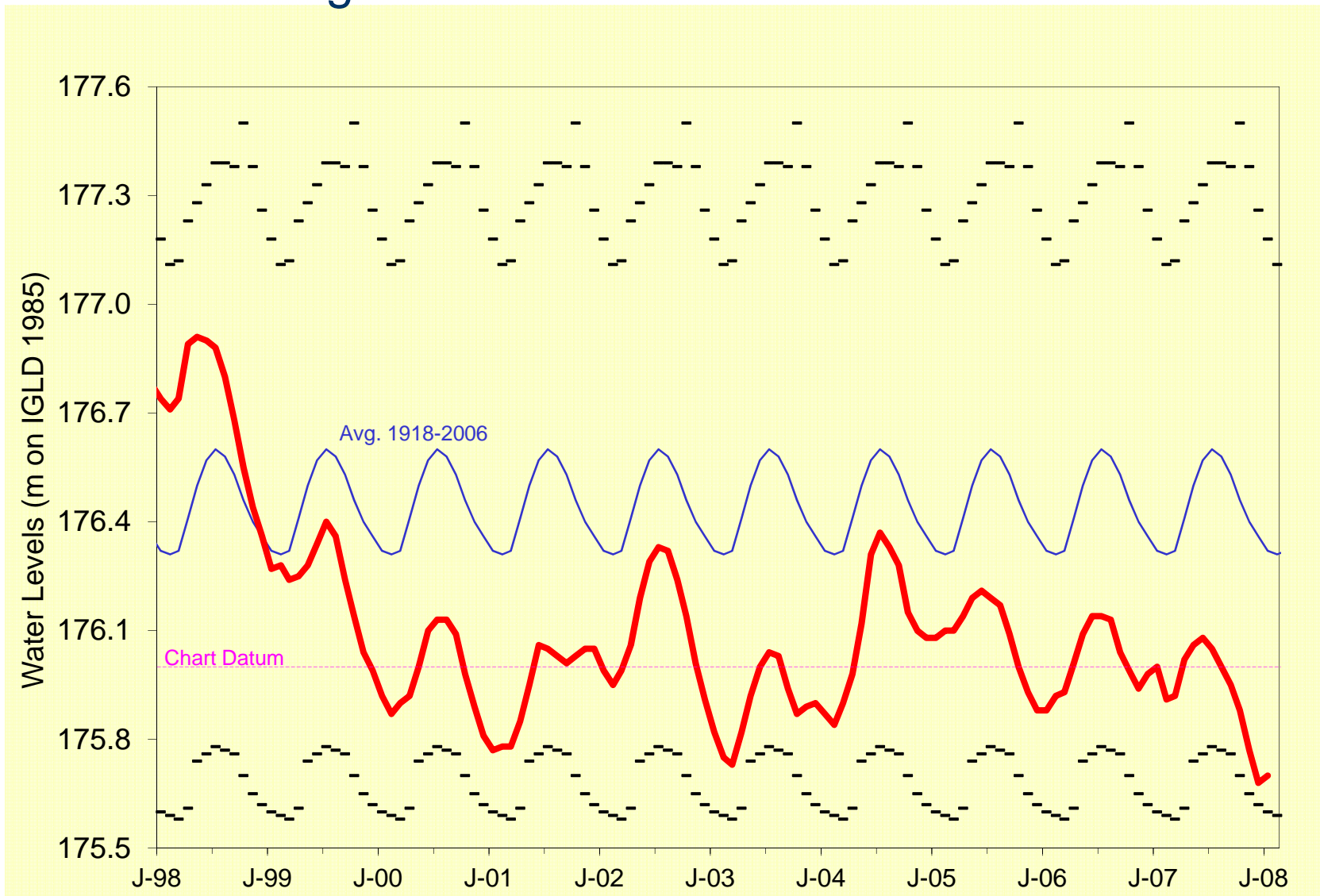
Lake Superior Monthly Mean Levels



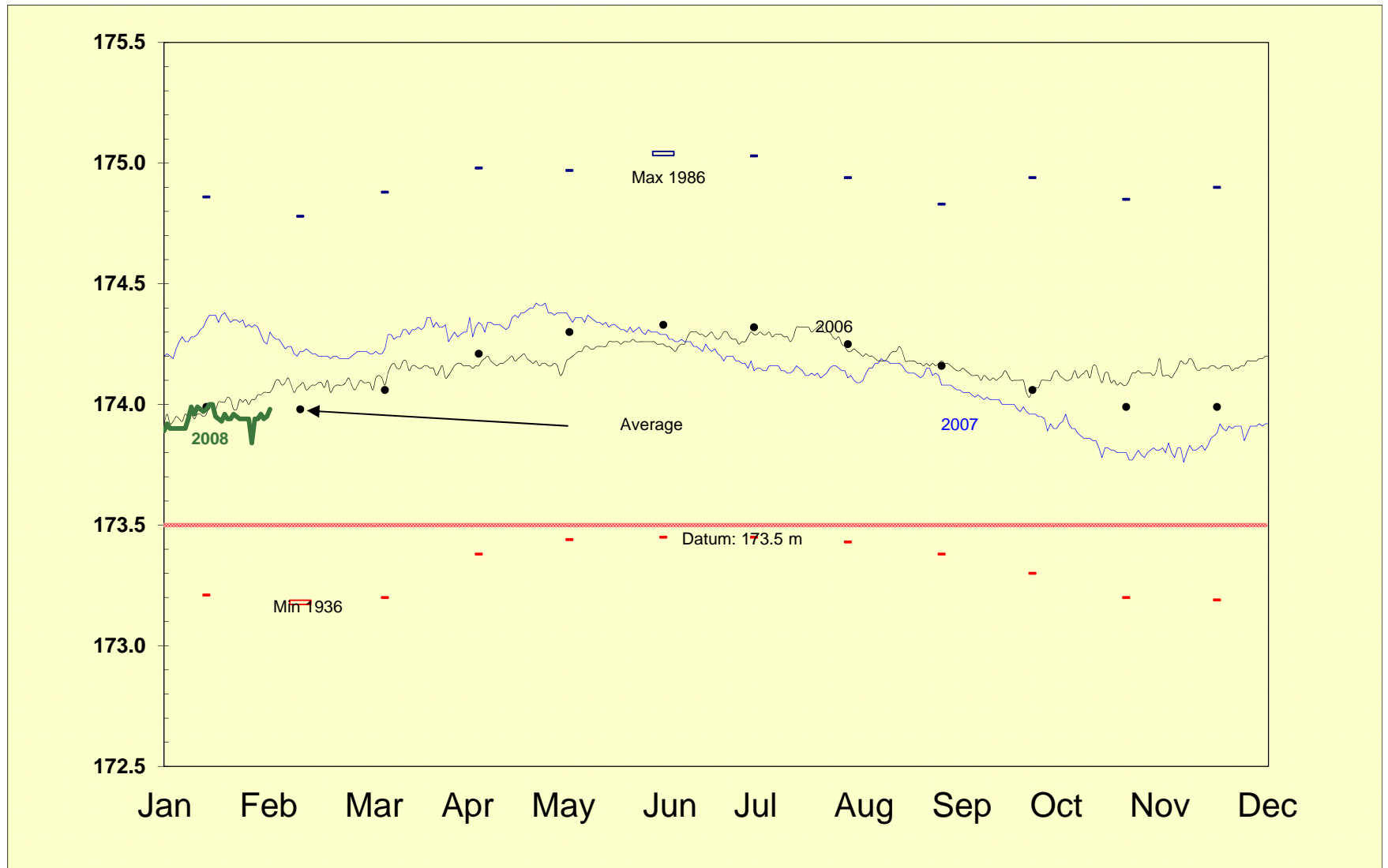
Lakes Michigan and Huron current conditions



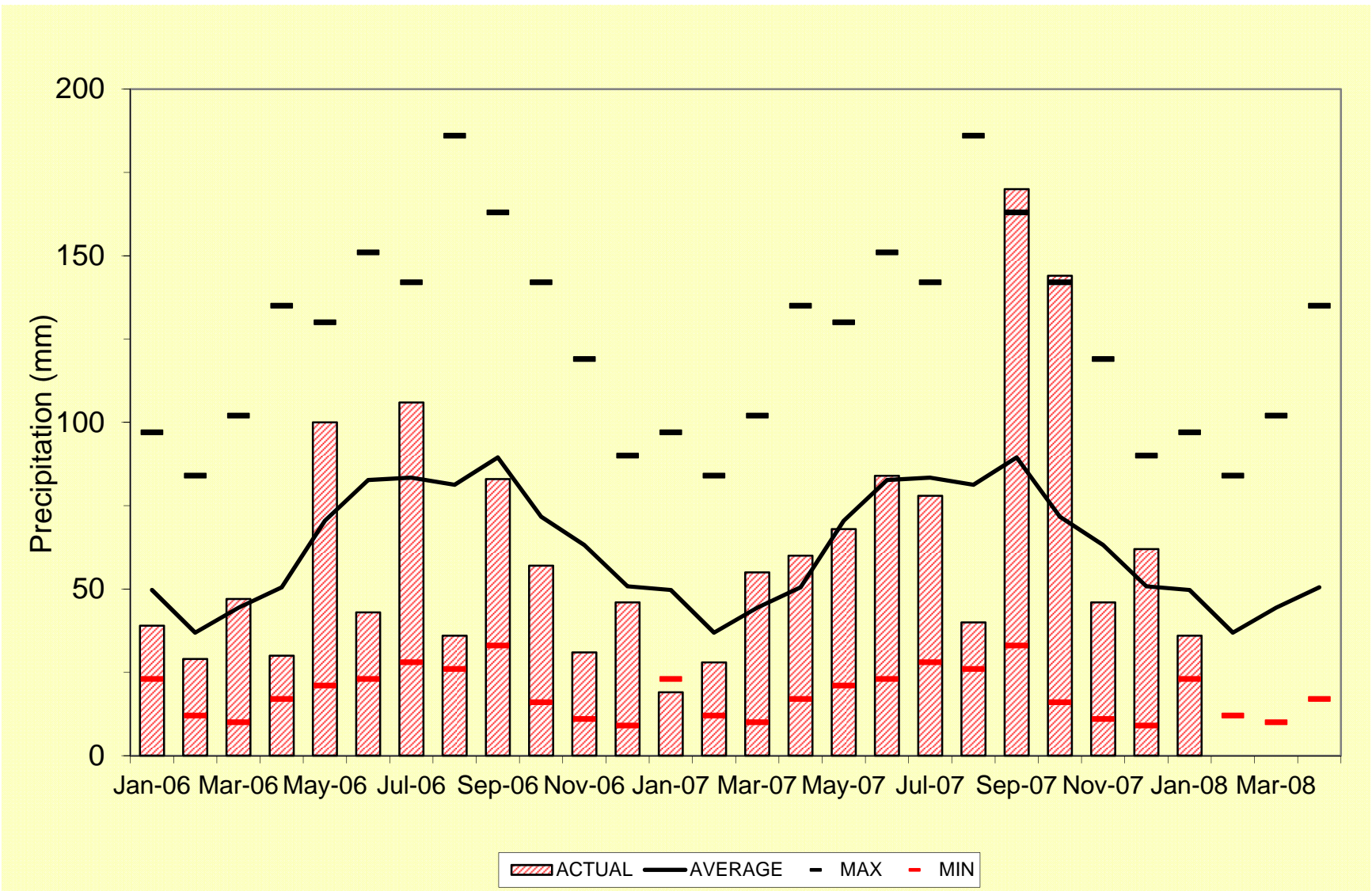
Lakes Michigan and Huron 1998-2008



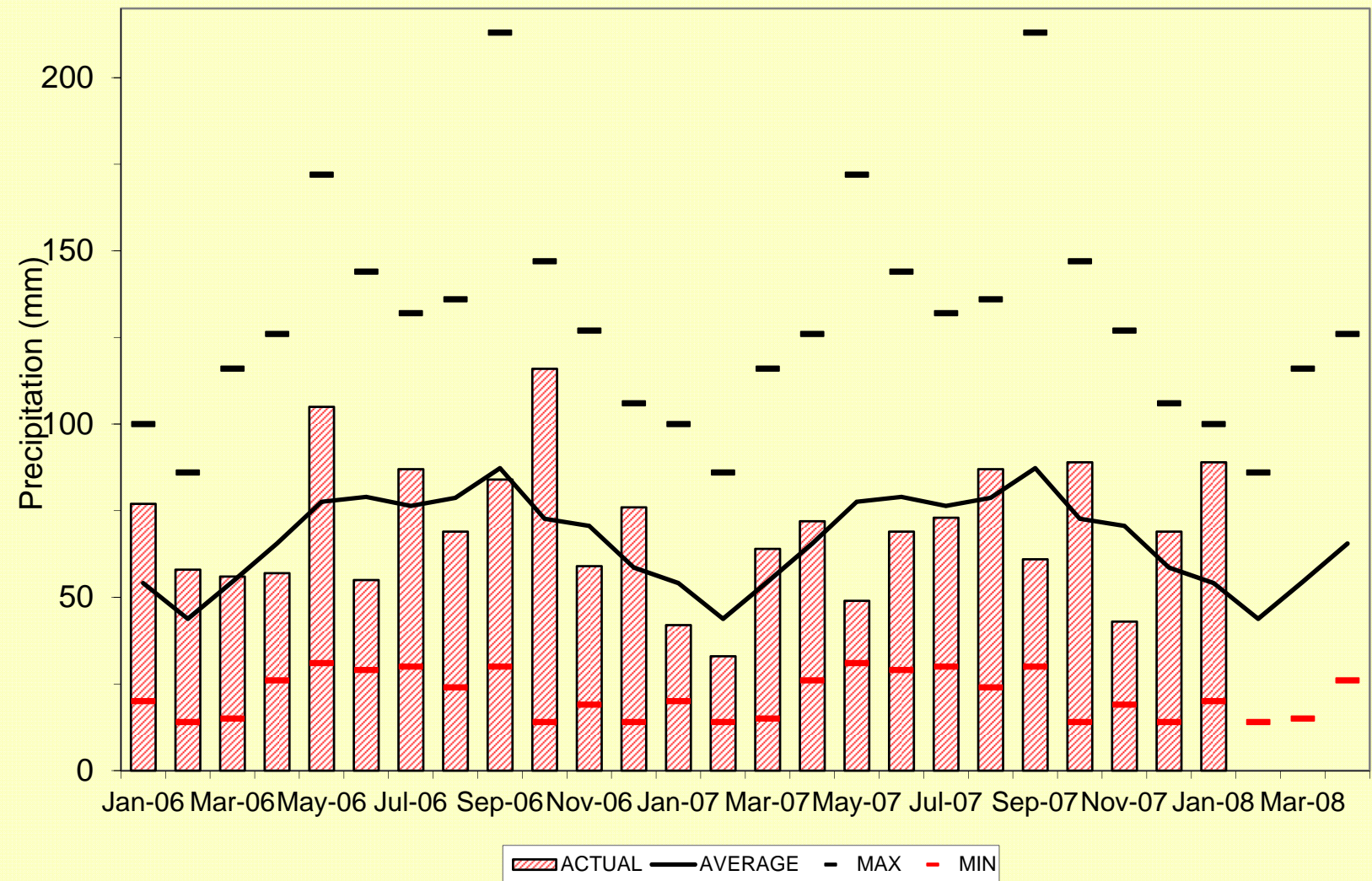
Lake Erie current conditions



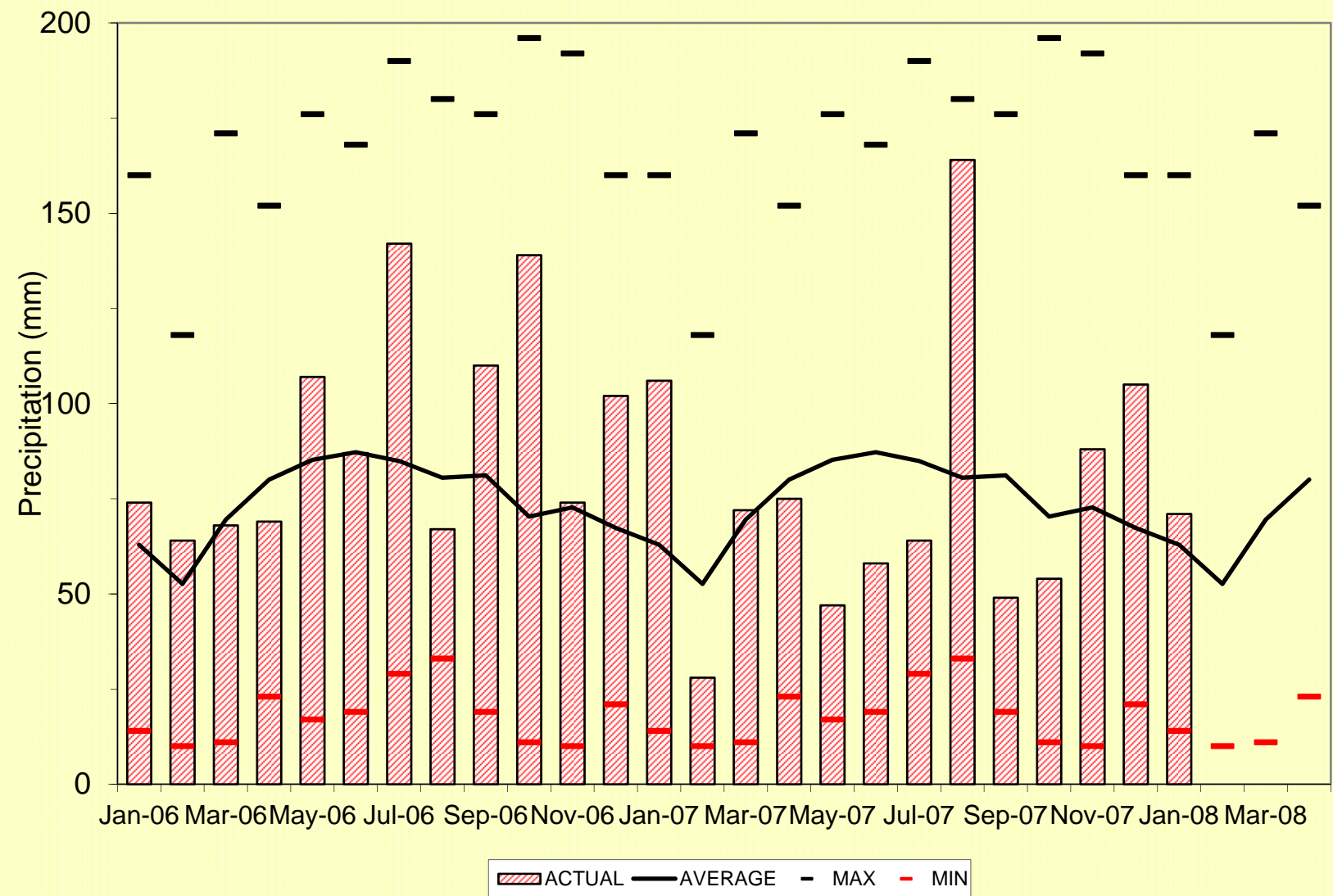
Lakes Superior precipitation



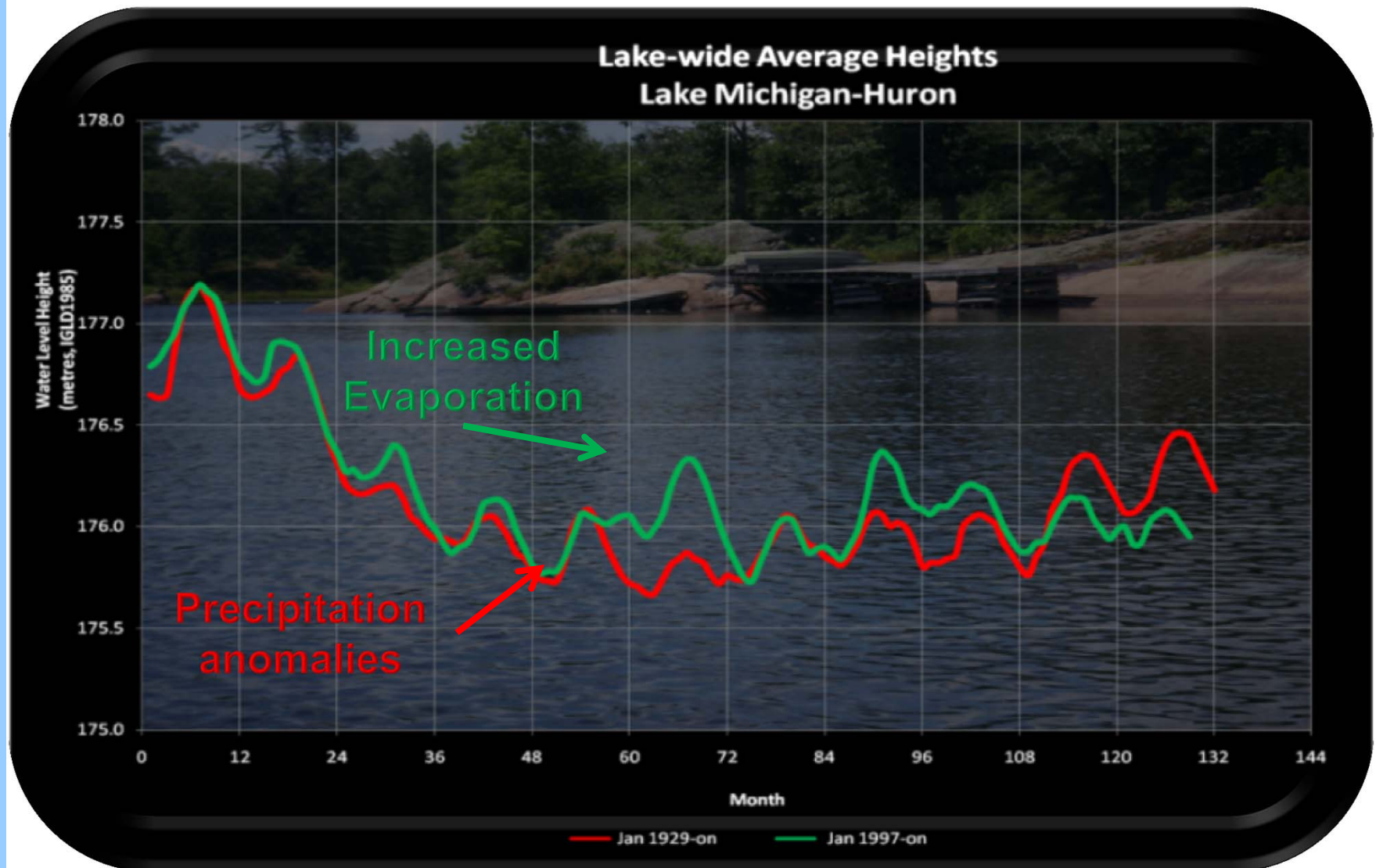
Lakes Michigan and Huron precipitation



Lake Erie precipitation



Current era compared to “Dust Bowl”



Some Basic Facts

- Diversion of water from L. Michigan at Chicago = **3,200 ft³/sec** (90 m³/sec)
- Long Lac & Ogoki diversions into L. Superior = **5,400 ft³/sec** (154 m³/sec)
- Flow through St. Clair R. = **188,000 ft³/sec (cfs)** (5,310m³/sec)
- 2 bgd 'loss due to 'drain hole' = **3,040 cfs** or 1.6% of daily St. Clair R. flow.
- Avg daily evaporation from L. M-H ~ **87,000 cfs**
- IJC reports (2000) that in 1998, about **2.6 mill. gal** (~10 mill. Liters) of water were **exported** from the GL basin, while **37 mill. gal.** (141 MegaL) were **imported**.

Science Questions

- 1. Is the St. Clair bed eroding?**
- 2. Has the conveyance of the St. Clair changed? If so, what are the factors/processes that have led to change?**
- 3. Is the change in the head relationship between Lake M-H and Erie attributable to a change in conveyance and/or Net Basin Supply?**

The Baird Report

Requested by the Georgian Bay Associations to investigate causes of the “significant and ongoing drop in the level of Lake Michigan-Huron relative to levels of Lakes St. Clair and Erie.”

Conclusions

- Glacial rebound is negligible
- Net basin supply (NBS) shift unsubstantiated
- Primary cause is river bed erosion due to:
 - dredging of the 27 foot channel
 - loss of sand supply because of shore protection
 - Changes in the position of the outer channel

Work underway to address questions:

Scientific and Technical:

- **Collection of suite of bathymetric data**
- **GIS analysis of all the cross-sectional data**
- **Application and calibration of 1-D model**
- **Net basin supply component sensitivity analyses**
- **Review and QA/QC of data sets, datums, etc.**
- **Reconnaissance for installation of 3 hydrometric gauges**
- **Bed material sampling and videoing of St. Clair bed**

International Gauging Stations (IGS)

- **First flow/water level stations for connecting channels in the Great Lakes**
- **Designated as IGS**
 - **Utilize bi-nationally agreed data collection standards and methods**
 - **Data are archived in national databases of both U.S. and Canada**
 - **Established to meet international commitments**
- **IJC has requested governments to designate and fund beyond the Study.**



Expedited Reporting Schedule

- April, 2008* **Interim Progress Report focusing on findings and interpretation of the St. Clair River sediment regime and whether the bed is stable or eroding. Initial results from hydraulic models and Net Basin Supply analysis.**
- October, 2008* **Interim Progress Report providing further analyses in these three areas and tentative conclusions and potential remedial actions identified.**
- February, 2009* **Draft Final Report on St Clair River completed and distributed for comments to all the key groups.**
- June, 2009* **Final Report for the St. Clair River portion of IUGLS submitted to the IJC.**

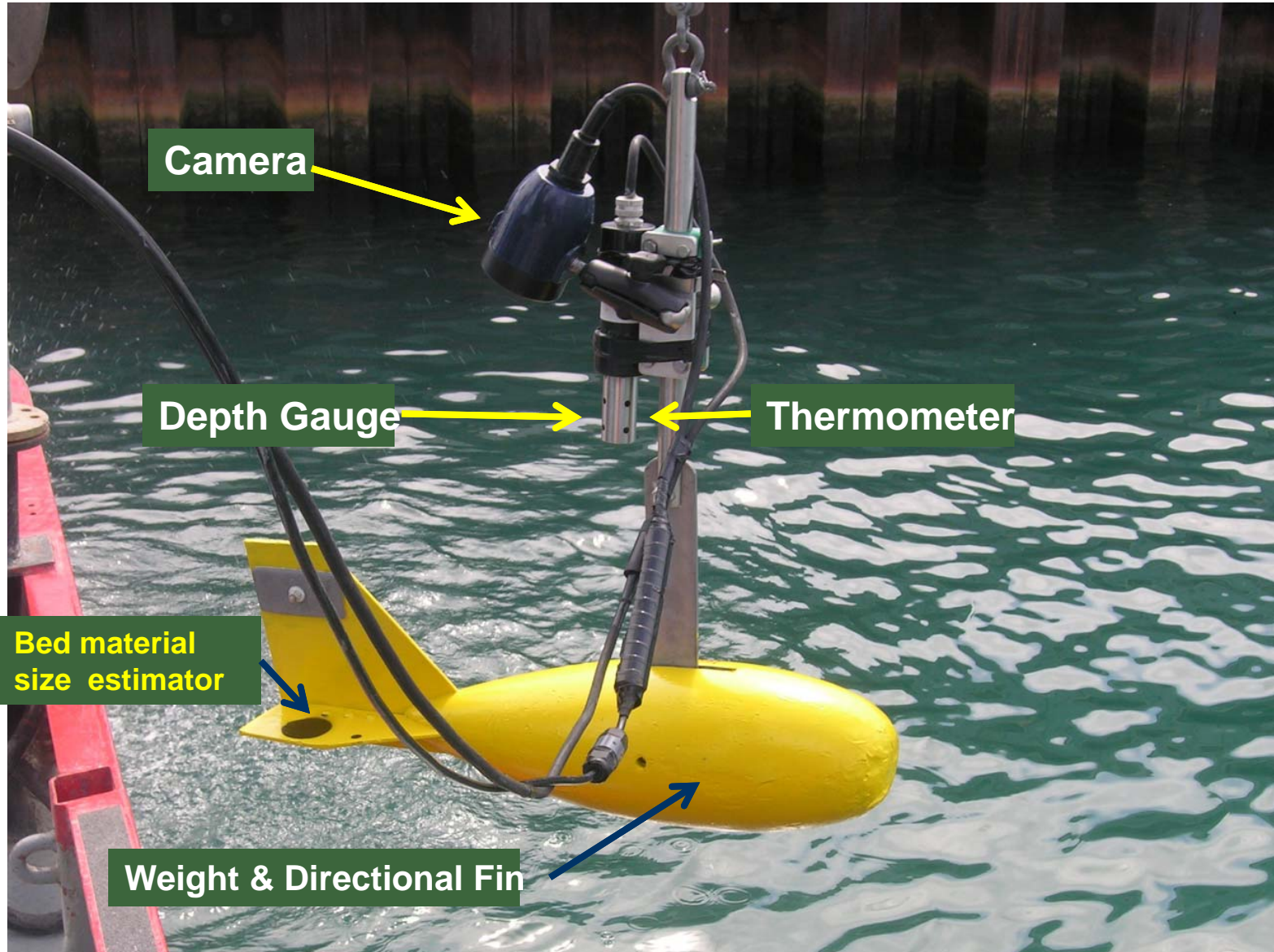
IJC Alerts Governments regarding requests for immediate mitigation

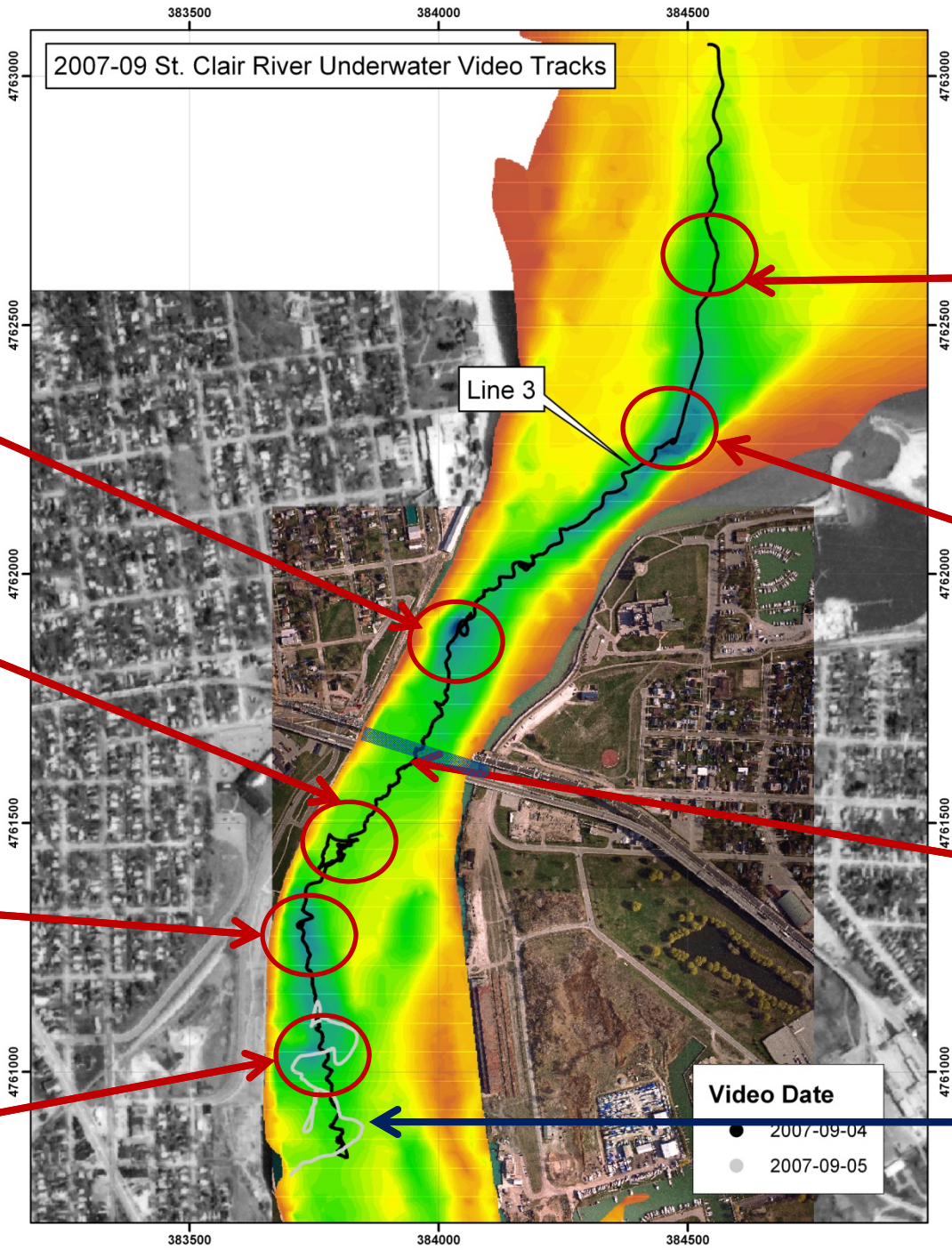
In a recent letter to both governments, the IJC highlights the limitations of its mandate:

“The Commission’s authority under IUGLS with respect to flow capacity is limited to providing advice to governments on remediation options in the St. Clair River where it is found that there are ongoing changes in the river bed. The IUGLS is not set up to consider mitigation of low water levels regardless of cause, nor does the authority from governments to date provide for such. However, governments could provide the Commission with additional authority by issuing a formal reference, if desired.”

St. Clair River Animation







Blue Water Bridge



Conclusions

- **Study is well under way – previous work is being reviewed, new research pursued, with a focus on getting the facts first.**
- **The public will be heavily engaged and their input will help drive study activities and outcomes.**
- **The scientific issues related to climate and physical processes are complex and demand serious, peer-reviewed science.**
- **Immediate mitigation is premature and not within the current mandate.**
- **Study results will reflect independent, binational work that is credible and on the level.**

Questions?

To submit written comments, visit:

www.iugls.org