

International Field Year on the Great Lakes

A Short Report

by

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(Note: Only a brief commentary was presented at the meeting, since the "Blizzard of '72" was already under way. Personal concerns were keen in respect to departures, rather than about the Canadian-U.S. effort to study Lake Ontario and its Basin. Therefore, the scheduled presentation was modified to include a brief overview about the International Field Year for the Great Lakes (IFYGL) and to identify where the Oswego Area fitted in with the basic objectives, including both the physical and, the chemical and biological grouped studies. The major U. S. project under NOAA contract relating to operation of the Oswego Weather Radar by the Lake Ontario Environmental Laboratory of Oswego College (Robert B. Sykes, Jr. as Project Director) was summarized. Also summarized was the dropping, due to lack of funds from the U. S. committment, of the entire Lake Effect Snow Storm studies and related Lake Weather studies to which the Oswego Area would have been vitally important. Since the Field year is an on-going effort for which the data gathering will cover mainly the period 1 April, 1972 through 31 March, 1973 followed by several years of detailed evaluations, studies and reportings, only a short synopsis was prepared for the record here. IFYGL Bulletin #1, dated January 1972, was drawn upon heavily.)

Progress of the IFYGL can be followed through IFYGL Bulletins. Queries, in respect to these, can be directed

appropriately to:

IFYGL Centre
Canada Centre for Inland Waters
P.O. Box 505
Burlington, Ontario

or

National Oceanic and Atmospheric Administration
Code EM&P-IFYGL, Room 805, Building 5
6010 Executive Boulevard
Rockville, Md. 20852

The IFYGL Bulletin concept purports to fulfill needs for reporting upon planning, progress and results. Bulletin #1 "gives a preliminary overview of the present status of the organization and planning for the scientific program to be conducted by the United States." Bulletin #2 is a similar presentation on Canadian participation.

From Bulletin #1 is quoted a summary of the basic IFYGL objectives:

The central objective of IFYGL is the development of a sound scientific basis for water resource management on the Great Lakes as an aid in solving problems of water quality and quantity. Lake Ontario and the Ontario Basin were selected as representative of physical characteristics typical of the Great Lakes, and, more generally, as offering the opportunity for investigating typical water resource problems. A series of hydrological and limnological studies, as well as special phenomenological investigations associated with the effects of ice and lake storms (see comment below). will serve to meet management requirements for environmental factors pertinent to navigation, hydropower, public water supply, waste disposal, recreation,

fish productivity, highway transportation, and the operation of port facilities. Undertaken during a period when the currents and thermal structure of the lake will be known in some detail, IFYGL will offer an opportunity for important chemical and biological studies. It is anticipated not only that all the interlocking scientific programs as now planned will yield better knowledge of the physical, chemical, and biological processes occurring in Lake Ontario, but that this knowledge will be useful in resolving water resource problems as they apply to Lake Ontario and to other, smaller or larger, lakes.

The study of Lake Stoms was originally an important objective (dating from the very beginning of the IFYGL concept). The peripheral land area to the east and south east of Lake Ontario is especially adapted to meso-scale networks, since so many of the lake weather effects are most dramatically experienced "downwind" of the Lake. Much water, which enters the atmosphere from the lake returns to the surface in specialized ways, such as illustrated during this conference by our own somewhat personalized "Lake Effect Snowstorms," locally of blizzard proportions. However, the costs incident to establishment, operation and maintenance of useful networks appropriate in scale, were beyond the capabilities of the U.S. funding finally acquired. These studies, therefore, comprising the lowest of the four main project areas on the U.S. - side, were dropped. Some usefully related information will, of course, be recoverable in connection with other data gathering from the Lake and peripheral locations. However, during most active seasons for "Lake Storms"-- November through March-- on-the-Lake facilities will largely not be in place as will the rawinsonde net not be in operation. Further, regular National Weather Service land stations are too widely spaced to provide the needed continuity. Data from climatological stations are somewhat helpful, but fall short of what is

needed for realistic and accurate space and time appraisals. Continuous wind and observable (cloud, visibility, etc.) conditions are seldom available in much detail.

A major objective is the study of the Atmospheric Water Balance, through determining "the magnitude of the terms in the atmospheric water balance equation and their contribution to the hydrologic cycle of Lake Ontario." Contributing toward this objective is a weather radar network, which can provide realistic quantitative measurements of precipitation over the Lake.

Three radars are involved: The NWS operational radar at Buffalo; the IFYGL project radar near Oswego, N.Y.; and, the Canadian radar at Woodbridge, Ontario Canada. Within the range of all three radars is a sixteen station precipitation network near Rochester, N.Y. The Oswego Radar and operation of the precipitation network are projects for Oswego College and involve student participation.

The radars are equipped with mechanisms to record and store the vast amount of possible data. The Oswego and Buffalo equipments include a video intergrator and processor (VIP); a radar data digitizer backed up with an automatic 16-mm picture camera system (5 minute intervals at Oswego); and, a digital magnetic tape recorder. These technical parts will aid in the massive job of organizing and analyzing the vast volume of data possible from 24 hour operational schedules.

The radar operations at Oswego will include 24 hour weather observation. Also, sketches of significant PPI scope pictures during active weather periods, will be made and used locally.

REFERENCES

1. International Field Year for the Great Lakes, Bulletin #1, January 1972.