THE INTERNATIONAL CENTRE FOR WATERSPOUT RESEARCH

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I. INTRODUCTION

Running a routine search for media material on waterspouts, international reports will be noticed every few days throughout the summer and fall season. In the Great Lakes area between Canada and USA, two waterspout outbreaks occurred on August 6 and 30, 2009 (Fig. 1). "Waterspout" is the historical label for a tornado over water/on the sea. Although there has been criticism about a name linking a meteorological phenomenon with its geographic frame, the traditional term is firmly rooted in common knowledge, used worldwide, and therefore cannot be abolished or changed easily.

With the classical work of Wegener (1917), Rossmann (1961), and Golden (1974a,b, 1977) , scientific research expanded internationally (Szilagyi, 1994, 2004, 2009; Reynolds, 1999; Dotzek, 2001, 2003; Tyrrell, 2001; Sioutas, 2003; Keul et al., 2009).

FIG. 1: Waterspout near small boat, Lake Erie, August 6, 2009 (photo Robert LaPlante).

First systematic case collections (e.g. TorDACH) led to the European Severe Weather Database (ESWD) in operation since 2000 where waterspout reports can be entered on-line. More recently some research initiatives have been focused on Mediterranean waterspouts concerning investigation of favour meteorological conditions and forecasting (Gaya et al., 2001; Giaiotti et al., 2007; Sioutas and Keul, 2007; Sioutas et al., 2008; Keul et al., 2009).

A first analysis of central-eastern Mediterranean waterspout cases was based on investigating typical synoptic features and conventional thermodynamic elements (Sioutas and Keul, 2007). Based on a data sample comprised of 28 reported waterspout cases from three sea regions, the Adriatic, the Ionian and the Aegean, the frequency of four basic synoptic types associated with waterspout events– south-west flow, long-wave trough, closed low and short-wave trough–was identified as well as the role of upper and lower level jets for increased wind shear. Out of a number of thermodynamic instability indices studied, KI and TT were good predictors.

FIG. 2: Central-Eastern Mediterranean waterspout locations (Keul et al., 2009).

An effort was made to develop a waterspout prognosis tool applied to a sample of 110 central-eastern Mediterranean waterspout cases (Fig. 2), from 96 days occurred in the period 2002-2006, by testing of the Szilagyi waterspout nomogram (Fig. 3). The results were very encouraged, indicating that the nomogram could be used as a valid waterspout prognostic tool for the Aegean, Ionian, and Adriatic Seas (Keul et al., 2009). Consideration should also be given to using the Szilagyi nomogram over the remainder of the Mediterranean and other European waters.

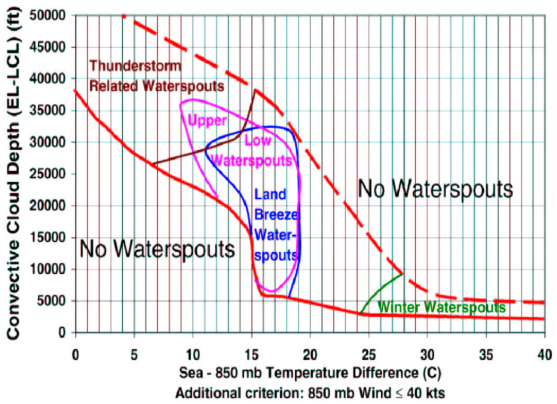

FIG. 3: The Szilagyi Waterspout Nomogram (2005).

The Szilagyi waterspout nomogram was initiated in 1994 and continues to the present was empirically derived

from a number of 172 waterspout events and tested by the Meteorological Service of Canada for the Great Lakes. It uses tephigram values, lake surface water and 850 hPa temperatures, to numerically define four waterspout types and their occurrence (Szilagyi, 2005). As a further improvement to the performance of the nomogram, a "fine tuning" could be considered.

II. PRESENTATION OF PROJECT

In 2008, the three authors decided that an international network would make sense–an independent, private organization comprised of individuals worldwide, interested in the field of waterspout research and its operational applications.

For this reason, the International Centre for Waterspout Research (ICWR), was founded. The second author suggested its title. The organizational goals are as follows:

1. Foster the advancement of scientific research and applications related to waterspout occurrence and prognosis.
2. Provide an international forum for the exchange of information and ideas among researchers, operational meteorologists, storm chasers and other weather observers.
3. This forum will also facilitate the reporting of waterspouts from around the world and help in the organizing and establishment of a global waterspout data base.
4. Promote, educate, and communicate ICWR outcomes to other interested institutions, the media and the marine community.

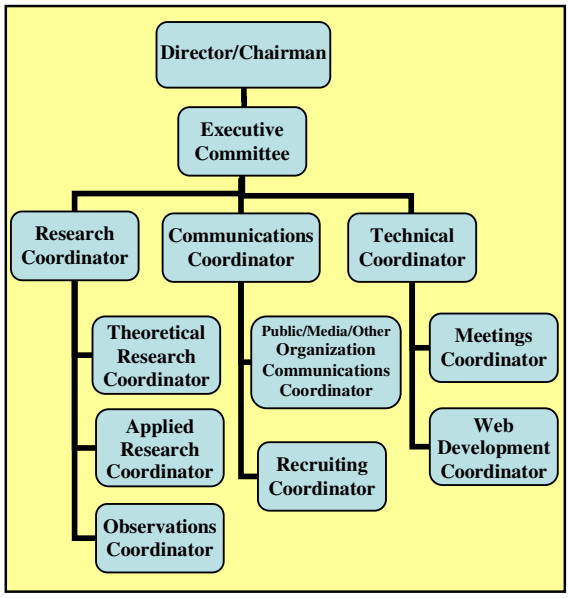

FIG. 4: ICWR organizational chart.

The current status of the ICWR is embryonic–three members from Canada and Europe, in contact via teleconference meetings, and a first small network of interested researchers. In Figure 4, the ICWR organizational chart is displayed.

III. CONCLUSIONS

Affiliations with other scientific bodies are underway. An ICWR web page is planned for 2009. With ICWR evolving and an expanding membership, its main projects will gradually materialize: Developing a global waterspout data base, a global waterspout reporting system, a digital waterspout publication library, a global waterspout climatology and fostering/collaborating new research papers and projects.

IV. ACKNOWLEDGMENTS

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