

Some thoughts in advance of the forthcoming workshop on CAP and Impact-Based Forecast and Warning Services.

WMO have for many years promoted the CAP standard for the exchange and dissemination of weather warnings, as a means to improve the effectiveness and efficiency of warning systems, and especially to improve public alerting. It is stating the obvious that warnings need to reach those who must take decisions (either personal decisions of an individual or the broader decisions of an Emergency Manager) as quickly as possible, and that the warning must convey the intended message with full clarity and detail. CAP provides the framework to carry warning messages in such a clear and timely manner, while also having the capability of triggering warning devices, of adding the warning information to a display or of otherwise integrating the warning information with other information of relevance to decision-makers.

The promotion by WMO of the CAP standard has included the establishment of the “WMO Register of Alerting Authorities” which provides a global framework for the designation of official, authoritative Alerting Authorities. CAP facilitates warning messages from these official authorities to be discriminated from warnings originating from other sources, supporting the credibility of the warning message and thus increasing the probability that the intended recipient will take the desired actions.

With the advent of a move towards Impact-Based Forecast and Warnings Services (IBFWS), it has become clear that there are some problems of alignment between this new paradigm and the use of CAP to communicate and disseminate warning information. The purpose of this workshop is to identify clearly these areas of mis-alignment, to propose formulations or adjustments that will help to overcome these difficulties, and to formulate appropriate advice and guidance to WMO Members to assist them with these issues.

It should be noted that the “source document” for IBFWS, published as WMO No. 1150, will most likely be revised and updated in 2020 based on the experiences gained thus far with the implementation of IBFWS. This provides an added opportunity to clarify how the implementation of IBFWS can be adjusted to take full advantage of the strengths of CAP.

It is also worthy of note that the body that oversees the CAP protocol, the “OASIS Emergency Management Technical Committee” does provide for revisions and evolution of the CAP protocol over time. Some WMO Members contribute to the work of this committee and this provides an opportunity to ensure that the evolution of CAP takes the needs of the meteorological community fully into account.

One example of the issues to discuss is that CAP requires, within the <info> segment of a CAP message, that the elements of “Urgency”, “Severity” and “Certainty” be mandatory, and that each of these elements be given a value along a four-point scale from low to high (or a value of “unknown”, which is not a specified value to add clarity to any warning message!).

However many NMHSs have well-established national warning systems that use more (or fewer) than four points on their severity scales, and moreover are reluctant to change these systems as their users are familiar with them. How best can we map these warnings systems onto a four-point scale that would facilitate aggregation of warnings regionally and globally, as the Global Multi-Hazard Alerting System (GMAS) project is attempting to do?

In the context of traditional weather warnings, the element of Severity maps easily onto the level of the anticipated hazard (strength of wind, amount of rain etc) while the element Certainty maps onto the probability of the hazard occurring. The element of Urgency is used by only a few NMHSs to distinguish “short-fuse” warnings from others. When we consider Impact-Based Warnings, where should we accommodate the concepts of Vulnerability and Exposure? If CAP is to be used to drive a four-colour display of warnings status, should the colour to be displayed be defined explicitly by the NMHS who issues the warning, or implicitly by the assignment of colours to an aggregation of the values for Urgency/Severity/Certainty?

We will need also to consider the different contexts in which CAP might be used; the national context, to enable the efficient communication and dissemination of warnings to those who need to receive them, and the trans-national context, where CAP facilitates an aggregation of nationally-produced warnings. For weather warnings, national needs will always have priority. Warnings are a service from an NMHS to its government. Thus the specification of what is provided will be decided at national level, *informed* by WMO guidelines and recommended standards. There is no mechanism to impose WMO standards on NMHSs for national-level services. However an aggregation system, as is envisaged by GMAS, can (indeed must) impose some common standard (including standard use of the CAP protocol) on those Members who wish to have their warnings aggregated and disseminated through this mechanism. Thus a “minimum standard” of the CAP protocol to facilitate such aggregation of warnings might be specified as an outcome of the meeting.

So, a set of possible outcomes for the meeting (and subsequent work) might look be:

- Agree minimum standard approach
- Explore what this means for WMO-led CAP implementation (eg regional workshops, GMAS)
- Effectively this might mean endorsing a two tier approach, but where only the bottom tier is defined
- Agree process for alignment of terminology
- Perhaps agree to explore formalising the link between CAP, IBF and the WMO Official List of Alerting Authorities. So to ‘register’ for the OLAA, a Member should acknowledge that its NMHS meets IBF principles, maybe including core CAP

There are a number of papers circulated with this note which may help to give some background:

1. Emergency Alerting Policy and Technical Issues – by Eliot Christian
2. WMO CAP Guidelines (Tech Doc No. 1109)
3. OASIS Common Alerting Protocol Version 1.2
4. Summary report of the Meteoalarm Task Team on CAP

Perusal of these will help to define and inform some of the issues we will tackle at our meeting next week. I look forward to meeting you there.

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