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IMPROVED DISTRIBUTION/ACCESS METHODS OF SPECIALIZED PRODUCTS

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Summary Recommendations

- <u>Web Pages</u> - A single "point-of-entry" should be established, preferably at WMO, that will contain links to each Regional RSMC web site containing the products.
- <u>Passwords</u> – Web pages should be password protected and WMO should provide each RSMC with the same password to be used on its web site.
- <u>File names</u> - The naming of web page directories and files should be standardized to provide ancillary information such as pollutant species, location, etc.
- <u>Formats</u> – All products should be provided on the web sites as both Postscript files (for printing), GIF or JPEG (for viewing), and GRIB (for manipulation).

1. Introduction

To address the issue of current deficiencies in the use of facsimile as a means of distributing specialized emergency response products, the CBS Meeting of the Expert Team on Emergency Response and Related Activities (Beijing, 20-24 September 1999) recommended that WMO, IAEA and the RSMCs Montréal and Washington continue to jointly explore other and better means of transmitting information to the National Meteorological Services (NMS) that have the required technology (e-mail, www, ftp, etc.). RSMCs Montréal, Washington and Melbourne began using the UNIX-based File Transfer Protocol (FTP) to transfer each center's specialized products to the computer systems of the other two centers during their joint monthly tests. The FTP protocol allows the user to exchange any type of file, be it data or graphics, without loss of quality; the most frequently cited criticism associated with the facsimile method.

Shortly after beginning FTP distribution, the three RSMCs developed and individually hosted a common password-protected prototype web page. The common web page allows the RSMCs and the NMSs to view the emergency response products from the three RSMCs on a single web page as well as to provide alternative (backup) locations to access the products. While faxing of the products is still done by the three RSMCs during exercises, it has de facto essentially become a backup to the use of FTP and the Internet. An overview of the program and it's use during the 27 June 2000 WMO-IAEA international exercise was presented by RSMCs Montréal, Washington and Melbourne at the CBS Technical Conference on WMO Information Systems and Services (Geneva,   27-28   November   2000)   and   can   be   obtained   from

http://www.wmo.ch/web/www/BAS/ISS-Conference/Jean.html. Conclusions and recommendations from the international exercise regarding the use of the Internet included;

- Based on a user survey a strong preference was expressed for the use of Internet technologies or email, also reflecting capability; there was less support for the use of FTP alone. There was a preference for web-based image formats, such as GIF and JPEG, or those with widespread commercial support. There was also nearly the same level of support for GRIB data and gridded data in ASCII text format.

- RSMCs should make use of other appropriate distribution technologies, such as Internet based technologies, in addition to facsimile.

- RSMCs should develop operational facilities to allow the exchange of basic and other products using the web.

2. Passwords

During the June 2000 international exercise the account name and password to access the common web pages were distributed to the RSMCs, WMO, IAEA, and NMSs via email (for those with known email addresses) and facsimile once the products were available on the web site. This method worked well, however several issues became apparent.

- Distributing the password via facsimile is time consuming and is not the preferred method. The RSMCs are trying to move away from this technology in distributing products and email or some yet undefined electronic format is preferred.

- The password should be changed after each international exercise as it may have been distributed beyond the intended recipients. In addition, if a Delegated Authority requests services from the RSMCs and is given the same password used in a previous exercise or event, unauthorized or unintended parties may be able to access the products as well.

- An arrangement for the selection of a new password needs to be defined in advance in order to avoid confusion during an emergency. Questions that arise include;

  o   Who should be responsible for creating new passwords?
  o   How often or under what circumstances should the password(s) be changed?
  o   Should all RSMCs responsible for a Region(s) have similar passwords?
  o   Should RSMCs of different Regions have similar passwords?

2.1 Recommendations

- Emailing of passwords is preferred over facsimile whenever possible. All NMS contact point email addresses should be kept up-to-date by WMO and made available to the RSMCs.
- The password should be changed soon after any international exercise or emergency and at least annually.
- One organization should be responsible for providing a common password to those organizations that maintain the web site(s).
- If one entry point (web site) is provided for recipients with links to individual RSMC web sites (section 3.0) then the host organization of that entry point will be responsible for making sure each individual RSMC web site that is accessible from it's entry point will have the current password and it should be the same for all individual RSMC web sites (it may be possible to access the individual RSMC web sites without reentering the same password, however this needs to be

investigated). Likewise, if it is decided that only one web site will be used, in which all RSMC's products are contained therein, then the host organization is responsible for providing the password to all RSMCs, WMO, and IAEA immediately after being changed.

3. Hosting the web page on a web site

Now that a prototype web page has been successfully demonstrated during many regional exercises and an international exercise, the next logical step is to begin adopting the program at all RSMCs. The question then becomes, "Where should the final web page or pages be located and maintained?" Advantages of having redundant Regional web sites at each RSMC include;

- minimizing the possibility of saturating all the Regional web sites with requests,
- providing backups in the event that one site (RSMC) is inaccessible because of software or hardware failures,
- possibly providing the recipient with quicker access to one site over another due to internet connectivity problems between the NMS and the RSMC.

However, having a unique point of entry for all recipients, whether just providing links to Regional (RSMC) web sites or containing all RSMCs' products within, has several advantages as well, including;

- only one web site to remember or bookmark,
- less overall administration of web sites and issues with the passwords mentioned previously become less of a problem since only one organization maintains the entry point,
- the web page distribution method appears more coherent since all RSMC products can be accessed from one entry point.

This assumes, of course, that WMO can handle the load of a large number of accesses to the web page and the downloading of many large graphic files. The importance of server capacity was shown during the last international when it became difficult to access products from the IAEA single point of entry web site.

3.1 Recommendation

Initially, a single password-protected "point-of-entry" with enough capacity to handle the expected load should be established, preferably at WMO, that will contain links to each Regional RSMC web site containing the specialized products. WMO will provide each RSMC with the same password to be used on it's web site, thereby providing the NMSs with a single, coherent access point for RSMC specialized products. In the future, WMO should investigate the feasibility of establishing both a primary and alternative web site in which the individual RSMC's will FTP their products to for access by the NMSs during exercises and emergencies.

4. Updates to initial response products using common web pages

A procedure for updating the initial response model products has yet to be defined by WMO and the RSMCs. However, the use of a common web page makes the planning of this task much easier because the RSMCs are not restrained by the number of products that can be created and their frequency that facsimile demands. RSMCs Montréal, Washington, and Melbourne conducted a few monthly exercises that addressed the issue of updating the initial response products. Results of these tests suggested that although a fixed method of displaying the products on a web page was not appropriate, given the innumerable scenarios that may develop during a real emergency,

having a link or links on the common web page to a directory or directories of products gave the RSMC greater flexibility when generating update products and also gave the NMSs access to more products, both in number and detail, than they would have received if the products were faxed to them.

4.1 Recommendation

The RSMCs and WMO should begin exploring methods and flexible guidelines for posting updated specialized model products to common web pages to avoid delays in providing these services during an emergency. One area of concern is the naming of graphical files and directories given the pollutant species, the location, the time of release, the forecast initialization time, and the time the product was last issued. This task can be accomplished through email consultation with members of this group.

5. Postscript files

RSMCs Montréal, Washington, and Melbourne began providing a link on their common web pages to a single Postscript file containing all the model graphics and the cover sheet. Experience during exercises has shown that printing of the GIF graphics individually can take much longer to print and with less detail than printing the Postscript file. Postscript files can be viewed and printed using the free GNU package called Ghostview, available from http://www.gnu.org/software/ghostview/ghostview.html. One disadvantage, however, is that the files are much larger (1 to 10 Megabytes vs 8 to 100 Kilobytes). A solution is to compress the file using another free GNU package called Gzip, available from http://www.gnu.org/software/gzip/gzip.html. In addition, having all the graphics contained in a single Postscript file makes for very convenient emailing of the products to recipients, if desired.

5.1 Recommendation

During regular exercises RSMCs can evaluate the effectiveness of using Postscript files and whether compressing them helps to reduce the transfer time.

6. GRIB files

RSMC Montréal and RSMC Washington recently began experimenting with GRIB conversion of volcanic ash model plume forecasts. An advantage with using the GRIB format is that most graphics packages in use by the operational meteorologist can decode and display GRIB files. Also, some graphics packages can overlay several GRIB products, which may be beneficial when two or more RSMC products need to be compared.

6.1 Recommendation

Further experiments with GRIB conversion should continue and include RSMC model products. GRIB files should be made available on the common web page mentioned above so that RSMCs and NMSs can begin to use them during exercises. In addition, WMO needs to assign a global GRIB identification number(s) for transport model products; currently RSMC Montréal and RSMC Washington are using a number (#203, VAFTAD) that was assigned locally by the National Centers for Environmental Prediction (NCEP) in Washington.