How to Automate the Availability Checking and Download of TSR Business Products

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Summary

This document describes the methods and protocols to automate the availability checking and download of products from the TSR Business website http://www.tropicalstormrisk.com/business. The ability to check and download files at regular intervals will allow clients to receive their new TSR subscription products in the most timely and efficient manner. Clients who do not require automated downloads may access their TSR product data through manual login on the TSR Business website. Example code is provided for each automation step.

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1. Client Requirements

To configure their system to automate the checking and download of TSR Business products a client will require a knowledge of the TSR products, a good understanding of internet protocols, and good programming and/or scripting skills on their chosen (client) computing platform. It should take a competent systems/programmer 3 to 4 hours of work (including testing) to complete this configuration, depending upon their platform and local requirements.

To download TSR products through the http://www.tropicalstormrisk.com/business web interface clients must first have registered and received a **valid TSR client account** (username and password). Information on how to register for a trial account is available on the website.

2. Automation Steps

TSR clients requiring automated script access are recommended to use the methods, protocols and tools described in this section, along with the example script provided in §3. Automating the checking and download of TSR Business products is a **three step process**. The first step involves automating the TSR Business login. The second step involves automating the download of a client-specific XML file which lists current tropical cyclone(s) and current TSR subscription product availability. The third step involves automating the download of the TSR subscription

product files.

Command line (non-interactive) HTTP/HTTPS file retrieval tools are available widely to perform the automation steps. These tools can be scripted (programmed) to download files of your choice at regular intervals. The examples given in this document use the free GNU utility HTTP/HTTPS retrieval tool **wget**. This utility is available on most computing platforms (see http://www.gnu.org/software/wget/ for further information on downloading and using **wget**). Clients who prefer to use other similar tools or their own computer programs should be able to easily adapt the method shown for **wget**.

Step 1: Login

In order to automate their TSR product access a client must first automate their login. This is achieved by using the TSR Business website login form and saving the resulting session and cookie information to a file. With **wget** this would be done using the following syntax (substituting your actual username and password for the names in bold):

```
wget --no-check-certificate \
--keep-session-cookies --save-cookies tsr_cookies.txt \
--post-data "user=yourusername&pass=yourpassword" \
-O loginresult.txt \
https://www.tropicalstormrisk.com/business/checkclientlogin.php?script=true
```

This procedure will attempt to login to the TSR Business site and store session and cookie information in a file called `tsr_cookies.txt`. The success or failure of the login attempt is stored in a file called `loginresult.txt`. This file will contain the ASCII text string: "**login_ok**", "**login_failure**" or "**login_denied**".

Your script/program should test whether login has succeeded (**login_ok**) before continuing.

Step 2: Downloading XML File to Check for Current Storm(s) and TSR Product Availability

After automated login clients may regularly check the current availability of TSR product files for the basin(s) and products they are subscribed to. This is done by automatically downloading a client-specific XML file.

The syntax to automatically download the XML file following login (Step 1) is:

```
wget --no-check-certificate \
-c --load-cookies tsr_cookies.txt -O yourusername.xml \
'https://www.tropicalstormrisk.com/business/include/dlxml.php?f=yourusername.xml'
```

The XML file contains the latest update time, storm name, storm ID, advisory date and a list of the client's TSR subscription product(s) available for each active storm in the basin(s) subscribed to. Any new storms that have formed since the last update time are also listed. The file format is as follows:

```
<?xml version="1.0”>
  <ActiveStorms>
```

```
      <TSRBasinDesc>BBB</TSRBasinDesc>
      <LatestUpdate>LATEST UPDATE</LatestUpdate>
      <NewStormsLast24hrs>NEW STORM(S)</NewStormsLast24hrs>
      <ActiveStorm>
         <StormName>STORM NAME</StormName>
         <StormID>YYYYNNB</StormID>
         <AdvisoryDateID>YYYYMMDDHH</AdvisoryDateID>
         <TSRProductAvailability>PP<TSRProductAvailability>
      </ActiveStorm>
   </ActiveStorms>
</xml>
```

where

BBB is the **TSR Basin acronym** name, where:

"ATL" is the North Atlantic
"NEP" is the Northeast Pacific
"NWP" is the Northwest Pacific
"SWP" is the Southwest Pacific
"SIO" is the South Indian Ocean
"NIO" is the North Indian Ocean.

LATEST UPDATE is the time of the **most recent storm advisory** for the Basin(s) subscribed to.

NEW STORM(S) is a list of any **new storms** that have formed in the previous 24 hours. It will be blank if no new storms have formed.

STORM NAME is the name of each **current active storm** in the Basin(s) subscribed to. If the Storm Name is followed by "FINAL WARNING" this indicates the current update is the last to be issued for that storm.

YYYYNNB is the TSR **Storm ID**, where:

YYYY is the year (eg 2009) in which the tropical cyclone formed

NN is the tropical cyclone number within the year

B is the sub-basin code *{"N", "W", "A", "B", "E", "C", "P", "S"}* defined as follows:

"*N"* is the North Atlantic
"*W"* is the Northwest Pacific
"*A"* is the Arabian Sea
"*B"* is the Bay of Bengal
"*E"* is the Northeast Pacific
"*C"* is the Central Pacific
"*P"* is the Southwest Pacific
"*S"* is the South Indian

(For reference sub-basins *E* and *C* are amalgamated within TSR Basin "NEP", and sub-basins *A* and *B* are amalgamated within TSR Basin "NIO").

For example, the TSR Storm ID for the third North Atlantic tropical cyclone of 2009 is 200903N.

YYYYMMDDHH is the **date/time of the current (latest) TSR storm advisory** for the active storm in question, where:

MM is the advisory month (0 = Jan, 1 = Feb etc)

DD is the advisory day number in the month

HH is the advisory hour in the day (in UT).

PP is the **list of available TSR products** for the active storm and current TSR advisory in question. Product availability is shown by the listing of its two-letter acronym, where:

"WH" is the Wind History product
"GH" is the Gust History product
"WF" is the Wind Forecast product
"GF" is the Gust Forecast product
"WP0" is the Wind Probability product at 0 hrs lead
"WP1" is the Wind Probability product to 12 hrs lead
"WP2" is the Wind Probability product to 24 hrs lead
"WP3" is the Wind Probability product to 36 hrs lead
"WP4" is the Wind Probability product to 48 hrs lead
"WP5" is the Wind Probability product to 72 hrs lead
"WP6" is the Wind Probability product to 96 hrs lead
"WP7" is the Wind Probability product to 120 hrs lead

The total number of active tropical cyclones in the Basin(s) subscribed to is given by the elements under `<ActiveStorms>`. If no tropical cyclone is active the XML file would read simply:

```
<xml version="1.0">
  <ActiveStorms>
  </ActiveStorms>
</xml>
```

Step 3: Downloading TSR Product File(s)

Having checked their client-specific XML file (Step 2) and established there are new TSR products they wish to access, the client may automatically download these files from the TSR Business product file repository. File download **must begin within 24 minutes of a login session starting.** Login (Step 1) will need to be repeated if the delay is more than 24 minutes.

The syntax to automatically download TSR product files is:

```
wget --no-check-certificate \
 -c --load-cookies tsr_cookies.txt -O TSRPRODUCT_FILENAME \
'https://www.tropicalstormrisk.com/business/include/dl.php?y=YYYY&
b=BBB&p=PP&f=TSRPRODUCT_FILENAME'
```

where

TSRPRODUCT_FILENAME is the file name of the TSR tropical storm product in question. e.g. `200903N_wind_2009081715.kml`

YYYY, ***BBB*** and ***PP*** are defined as in Step 2.

The syntax of ***TSRPRODUCT_FILENAME*** is: ***YYYYNNB_{PTYPE}_YYYYMMDDHH.EXT***

where

YYYY,NN,B,MM,DD and ***HH*** are defined as in Step 2.

EXT is the TSR product format type (kml, html, txt, shp, shx, dbf; the last three comprising a shapefile).

{PTYPE} is the TSR product type defined as follows:

"wind" is the forecast wind swathe
"winda" is the forecast wind swathe (ArcGIS attribute file)
"gust" is the forecast gust swathe
"gusta" is the forecast gust swathe (ArcGIS attribute file)
"windpast" is the wind history
"windapast" is the wind history (ArcGIS attribute file)
"gustpast" is the gust history
"gustapast" is the gust history (ArcGIS attribute file)
"L_TSprob" are the TS wind probabilities
"L_TSprob_d00" are the TS wind probabilities (ArcGIS polygon and shapefiles)
"L_TSprob_d00a" are the TS wind probabilities (ArcGIS attribute files)
"L_cat1prob" are the Cat 1 wind probabilities
"L_cat1prob_d00" are the TS wind probabilities (ArcGIS polygon and shapefiles)
"L_cat1prob_d00a" are the Cat 1 wind probabilities (ArcGIS attribute files)

and where *L* is an integer representing lead time defined as follows:

0 for 0 hrs lead
1 for 12 hrs lead
2 for 24 hrs lead
3 for 36 hrs lead
4 for 48 hrs lead
5 for 72 hrs lead
6 for 96 hrs lead
7 for 120 hrs lead

3. Example Script for Automation Steps

An example script for all automation steps in §2 (login, downloading the XML file, and downloading a TSR product file) is provided below. The example is written using the **wget** utility on unix/linux systems. To use the script you will need to ensure the **wget** utility is installed on your system. Please click this link to access the example:

http://www.tropicalstormrisk.com/business/examples/wget_tsrproduct.csh

As the TSR product files are security-protected you will need to edit the first two lines of the script to add your own TSR Business username and password.

The example script does not include code for opening the XML file or for reading/checking which TSR products are available. Clients will have to write their own code for these tasks.

4. Getting Help

If you experience problems implementing the automation of TSR Business product downloads, please contact TSRhelpdesk@tropicalstormrisk.com for assistance and advice.