Introduction

WeatherCourier is an application that retrieves weather forecast information provided by the National Weather Service and enters it into a MYSQL database. This data is provided for free and they ask that the service not be abused by repeated pulls or multiple, simultaneous connections. Please see this link for more information: https://www.weather.gov/tg/general . Various PHP scripts are available that allow web developers to pull this weather data on demand. However, I feel that by pulling this data from NWS servers once, with all subsequent calls being to your own database, is the most responsible/efficient way to access this data.

To ensure cross-platform functionality, WeatherCourier was developed in Java using JavaFX. WeatherCourier will run on, and has been tested on, Windows, Linux, and macOS. However, only a Windows installer is available for download.

Disclaimer

This program comes as-is, with no warranties either expressed or implied. I am not, and can not, be held responsible for any damages or loss of data that occurs as a result of downloading and using this script. Only continue if you completely understand this, accept these risks, have read and understand the known issues listed below, and have the knowledge and skills necessary to implement this process.

Table of Contents

Required Components

To get a working installation of WeatherCourier, you will need the following:
- a working instance of MYSQL
- WeatherCourier setup executable, available for download from http:/www.hoosierweather.com/software
- database setup script, available for download from http://www.hoosierweather.com/software
- Java 8

Setting up the Databases for the First Time

It is outside of the scope of this document to provide a step-by-step guide to assist with the setup and configuration of a MYSQL server. There is plenty of good information readily available with a quick Google search. As we continue, we will operate under the assumption that you have a working instance of MYSQL.

In preparation of running our database script, please ensure the following steps have been completed.

- Create two databases, weathercourier_prod and weathercourier_test. One database will be used for 'production' data, while the other can be used for any testing you may want to do without affecting your production data.
- Create a user for each of these databases. Each user will need the following permissions:
  - ALTER
  - INSERT
  - SELECT
  - UPDATE
- Download the Database script and execute it. This script will setup, or update, the necessary Tables.

Installing WeatherCourier

WeatherCourier is a Java based application and has been tested on Linux, macOS, and Windows. However, as of the date of this documentation, only the Windows installer is available. If there is enough interest, I will look at packaging this on other platforms. To install WeatherCourier, download weathercourier_setup.exe from http://www.hoosierweather.com/software. Once downloaded, launch weathercourier_setup.exe.

Specify the **Destination Location**, then select **Next**. Please see **Figure 3-1**.
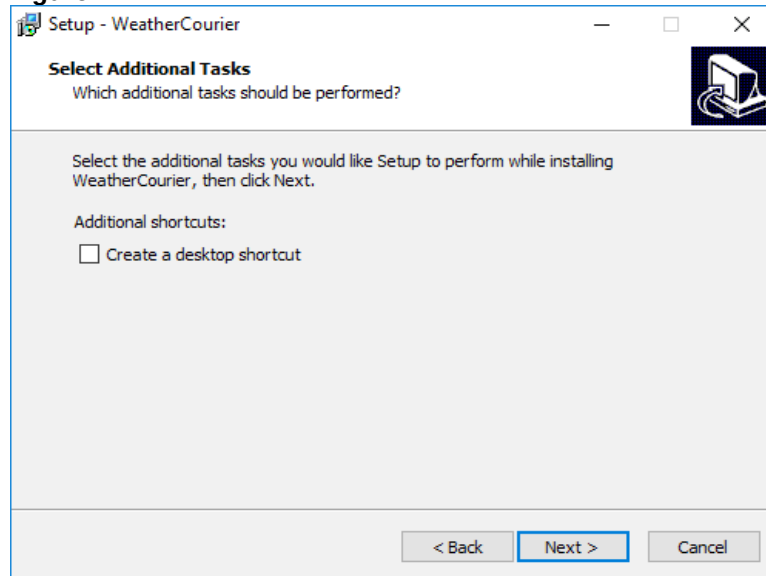
Figure 3-1.
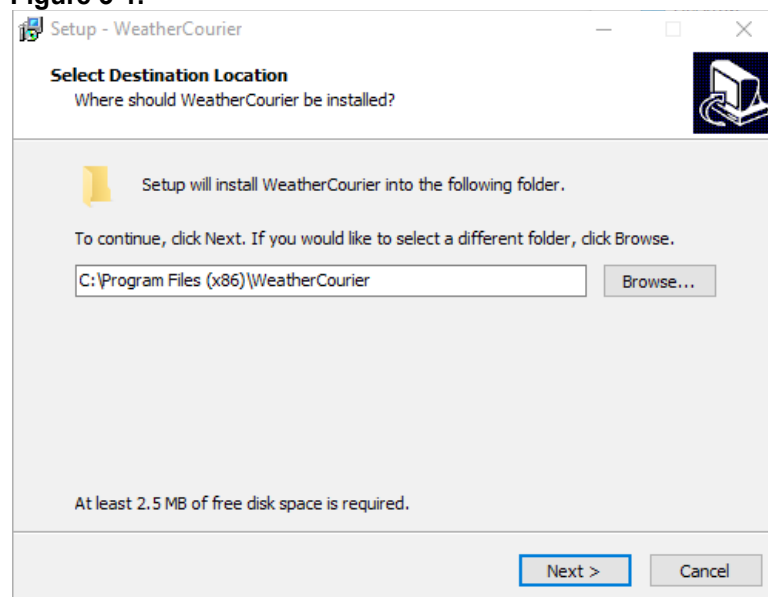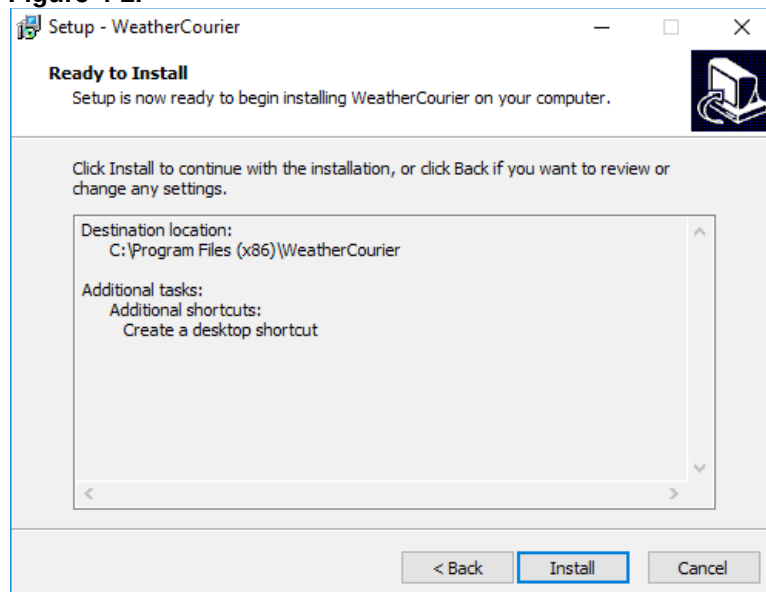
Installing WeatherCourier *(continued)*

Optionally, specify if you would like a desktop shortcut to be created, then select **Next**. Please see **Figure 4-1**.

Figure 4-1.

WeatherCourier is now ready to be installed Verify the installation details, and if correct, select **Install**.   Please see **Figure 4-2**.
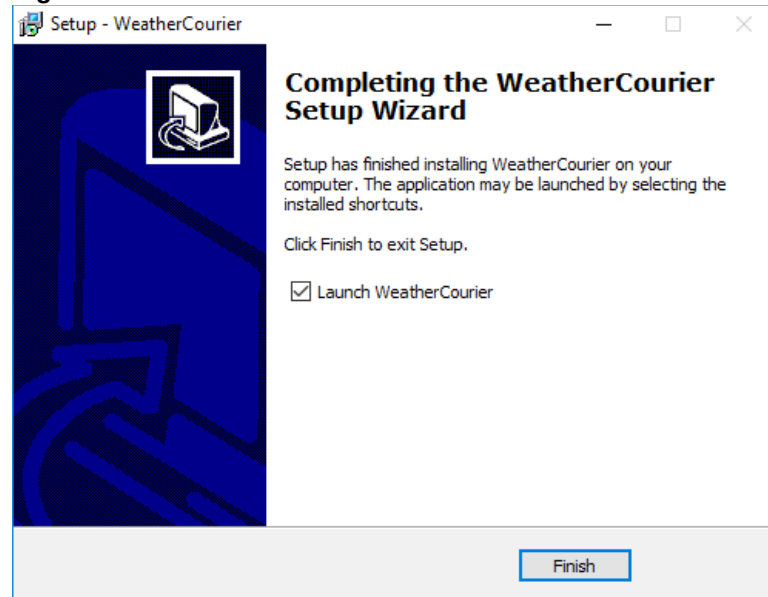
Figure 4-2.

Installing WeatherCourier *(continued)*

Installation is complete. Launch the application by selecting **Finish**. Please see **Figure 5.1**.

Figure 5-1.

Installed Files

Outside of files dropped in c:\Program Files (x86)\WeatherCourier\, a folder called WeatherCourier is created in the home directory the first time the application is launched. This folder will contain your configuration file, various job queue information, and forecast specific tracking files. Below is a detailed description of these items.

config.properties
This is the main configuration file for WeatherCourier. This is a straight-forward text file, and while it is not recommended, you can edit this file directly. Remember, no changes will take affect until you restart the application. Use caution when modifying the database password. Depending on your configuration setting, this could be an encrypted value. Incorrectly modifying this field will require you to reset the password from within the application.

tsfConfig.xml
This xml file is used to store the forecast target information. WeatherCourier will use this file to determine what Tabular State Forecasts will be downloaded This file should not be edited manually. To make modifications to this list, select **Edit → Preferences → Tabular State Forecast** tab.

tsfProgressTrack.xml
This xml file is used by WeatherCourier as a way to track release times of Tabular State Forecast files from the National Weather Service and the last time each file was processed. The information in this file is used to populate the file details table on the **Tabular State Forecast** detail page. This file is updated by WeatherCourier during file operations and should not be modified manually. For information on how to clear last processed time and force a file to be reprocessed, please refer to the **Tabular State Forecast** section in this document.

zfProgressTrack.xml
This xml file is used by WeatherCourier as a way to track release times of Zone Forecast files from the National Weather Service and the last time each file was processed. The information in this file is used to populate the file details table on the **Zone Forecast** detail page. This file is updated by WeatherCourier during file operations and should not be modified manually. For information on how to clear last processed time and force a file to be reprocessed, please refer to the **Zone Forecast** section in this document

Installed Files *(continued)*

zfConfig.xml
This xml file is used to store the forecast target information. WeatherCourier will use this file to determine what Zone Forecasts will be downloaded This file should not be edited manually. To make modifications to this list, select **Edit → Preferences → Zone Forecast** tab.

Preferences

Configuration settings are accessed from the **Preferences** window. To access **Preferences**, select **Edit → Preferences**. The **Preferences** window contains five tabs: Database, County Mapping, Tabular State Forecast, Zone Forecast, and Logging.

Database Tab

Connecting to the database will require four pieces of information:
- Database Username
- Database Password
- Hostname/IP Address of the MYSQL server
- Database type you wish to connect to, Production or Test

By default, Database Passwords are stored in clear text within the configuration. To store the password as an encrypted value, select the option **Store Password Securely**.

When these configured fields are populated, the **Test Connection** button will be enabled. After making changes to the connection settings, please test your connection. If your connection is successful, the server version and Database Schema version will be displayed. Please see **Figure 6-1**

Figure 6-1.

Preferences *(continued)*

County Mapping Tab

In order to retrieve a Zone Forecast product, WeatherCourier needs to know the available forecast zones for any given Weather Forecast Office. This information is provided by the National Weather Service in the **County-Public Forecast Zones Correlation File**. This file is available to download here:

http://www.nws.noaa.gov/geodata/catalog/wsom/html/cntyzone.htm

The naming convention for this file is bp ddmmyy.dbx.There are generally two files available for download. While either file will work, it is recommended that you use the latest file available. To load this information into our database, once the file has been downloaded, select **Browse**. Select the downloaded file, then click the **Import Selected File** button. To verify the data was inserted into the database correctly, select the **Get Info** button. The statistics for the file and database information should match. Please refer to **Figure 7-1**.

Figure 7-1.
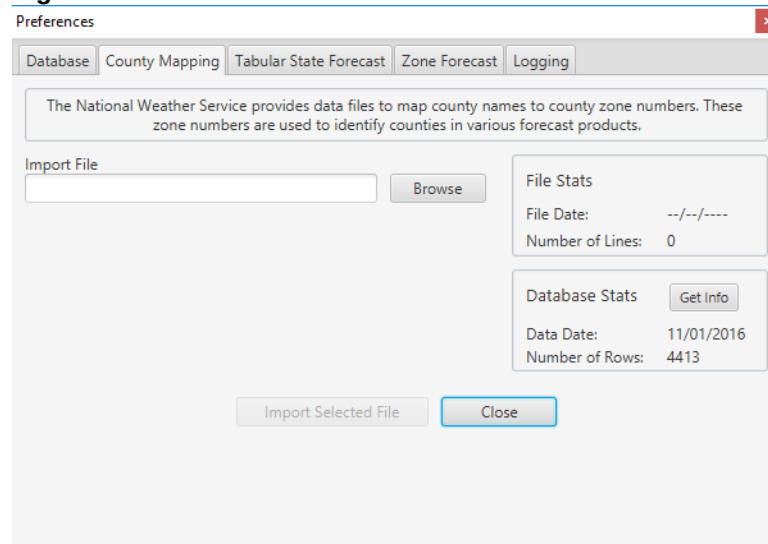
Tabular State Forecast Tab

Tabular State Forecasts are a seven day forecast product provided by the National Weather Service. Within the forecast product, the individual Weather Forecast Office organizes the forecast data by State/Regions and then by Cities. Unlike the Zone Forecast, the National Weather Service does not provide a mapping file to let us know the available State/Regions and Cities. In order to get this information, you must first provide WeatherCourier with the specific Weather Forecast Office that is providing the forecast. The application will then begin parsing the actual forecast files to discover the available State/Regions and Cities.

To specify the forecasts you want to download, follow these steps:
- Drop down the Weather Forecast Office list and select the desired office. Next, select the **Get Area List** button. WeatherCourier will then discover the possible State/Regions and Cities
- Select the target State/Region from the State/Region's list.
- Select the target City from the City's list.
- Click the **+** button to add the selection to the target list.
- Once all additions have been made, select the **Save** button.

Please refer to **Figure 8-1**.

Preferences *(continued)*

Figure 8-1

Zone Forecast Tab

The Zone Forecast is a detailed forecast product provided by the National Weather Service. Issued by individual Weather Forecast Offices, forecast bulletins are specific to counties/zones. In order to retrieve these forecasts, you will need to specify the Weather Forecast Office and County Zone number. This can be done by following these steps:

- Drop down the Weather Forecast Office list and select the desired office. Next, select the **Get County Zone List** button. WeatherCourier will then query the database to pull in all relevant county zones.
- Select the desired County/Zone, then select the **Add** button to add the selection to our target list.
- Once all additions have been made, select the **Save** button.

Please refer to **Figure 8-2**.

Figure 8-2.

Preferences *(continued)*

Preferences Tab - Logging

The logging subsystem of WeatherCourier manages log events generated by the application and will display these log entries on the application's main window in the Log Viewer. You can control how verbose the logging system is by setting the logging level to either **Normal** or **Debug**. For normal, day-to-day operation, the **Normal** setting will be sufficient. When experiencing an issue that requires troubleshooting, use the **Debug** setting to increase verbosity.

The number of log entries to be displayed can also be modified. WeatherCourier defaults to displaying 1000 log entries. This can be modified to display 50, 100, 250, 500, or 5000. After any modifications are made, select the **Save** button. Please refer to **Figure 9-1.**

Figure 9-1
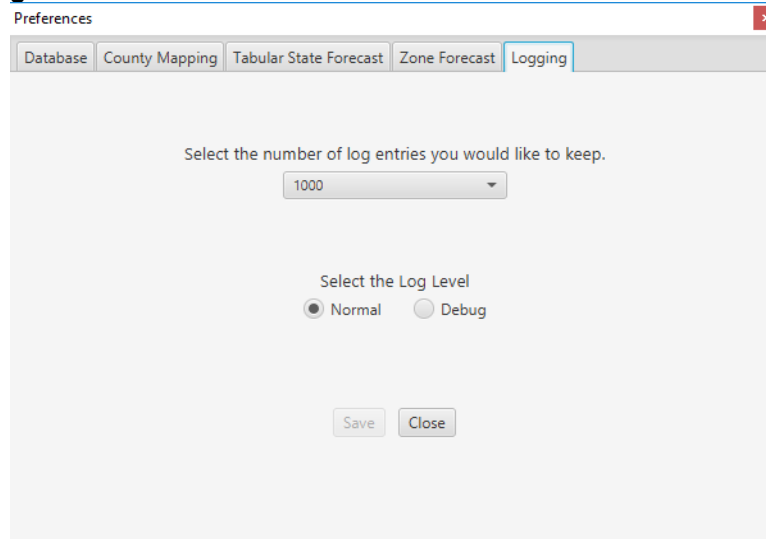
Working with WeatherCourier

WeatherCourier's main interface is broken apart into three parts, the product tree, details screen, and log viewer.

Product Tree

The product tree provides you with different views of the available weather products. The top selection in the hierarchy is **Weather Products**. Selecting **Weather Products** presents an overview screen. In this overview, all of the available weather products are visible along with a summary of each. The overview screen gives you the ability to:

- Start/Stop the timer individually for each product. This will start the timer using the already configured pull interval. The pull interval can not be modified from the overview screen.
- Initiate an immediate data pull for each individual product. This will cause an immediate pull of files from the National Weather Service.

Please refer to **Figure 10-1** for an example of the overview screen.

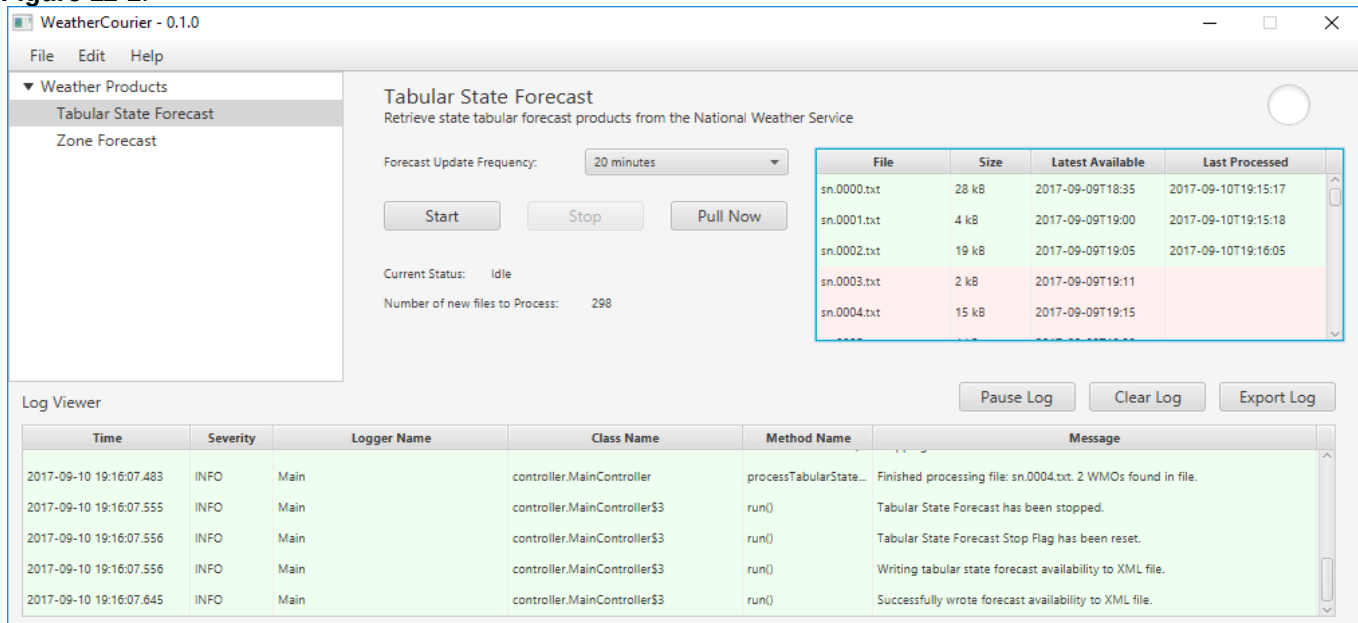# Working with WeatherCourier *(continued)*

Figure 10-1
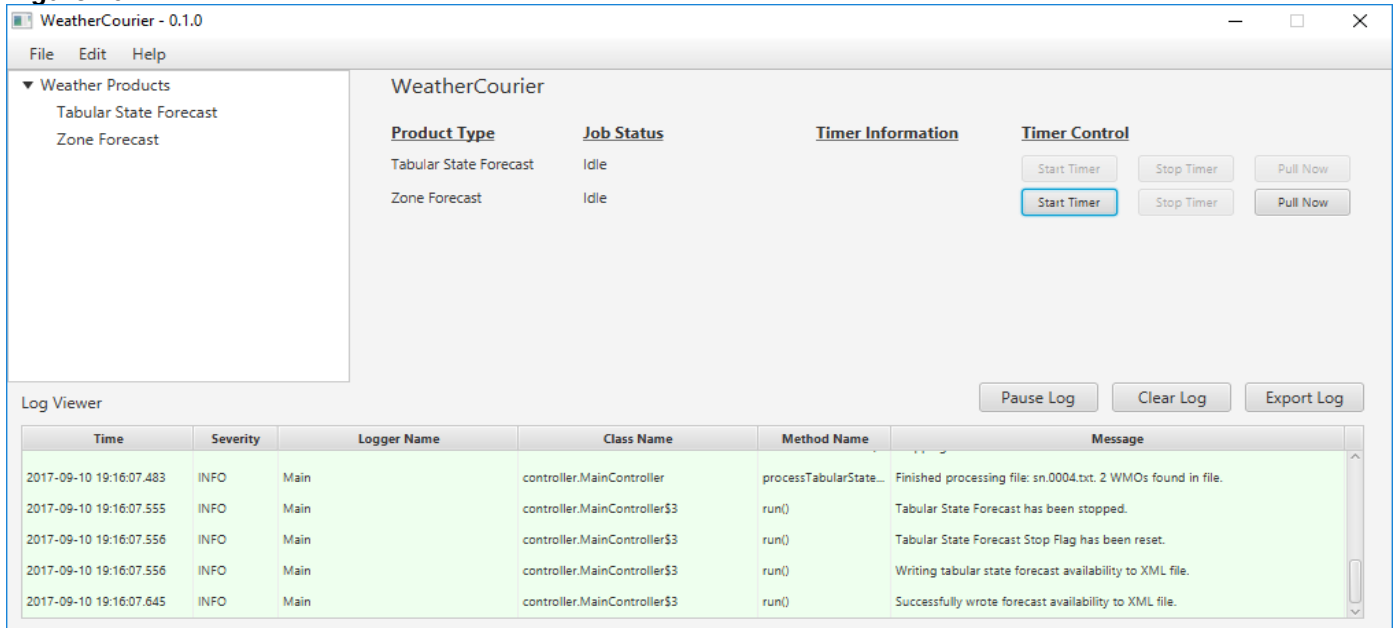
For a detailed view of each weather product, select the product from the hierarchy. The detailed screen gives you a much deeper look int each product. From this screen, you can make adjustments to how often the timer will initiate a data pull. The vaild options are 10, 15, 20, 30, 45, or 60 minutes. Like the overview screen, you also have the following options:

- Start/Stop the timer individually for each product. This will start the timer using the already configured pull interval. The pull interval can not be modified from the overview screen.
- Initiate an immediate data pull for each individual product. This will cause an immediate pull of files from the National Weather Service.

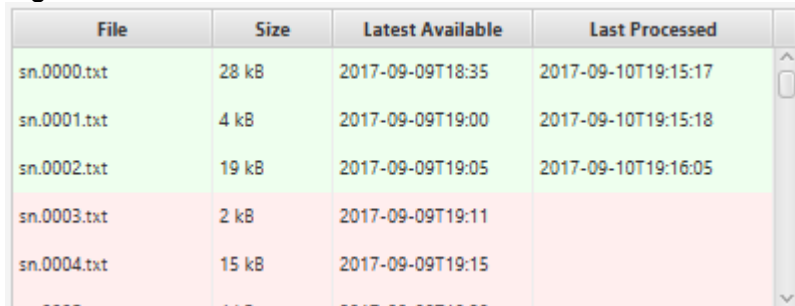Please refer to **Figure 11-1** for an example of the product detail screen.

Figure 11-1.

Working with WeatherCourier *(continued)*

Unique to the detailed product view, is the file detail table. To fully understand this table, an explanation of the files it is displaying is in order. The National Weather Service provides its data for free via an FTP site. Each product has its own folder on this site. For the forecast products we are processing, each of these folders contain 301 individual files containing forecast data. As the National Weather Service creates a new forecast file, they will overwrite the oldest file in that directory. WeatherCourier monitors each directory, watching for new files in order to process. Back to the file details table. Please refer to **Figure 11-1**.

Figure 11-1.

File	Size	Latest Available	Last Processed	
sn.0000.txt	28 kB	2017-09-09T18:35	2017-09-10T19:15:17	
sn.0001.txt	4 kB	2017-09-09T19:00	2017-09-10T19:15:18	
sn.0002.txt	19 kB	2017-09-09T19:05	2017-09-10T19:16:05	
sn.0003.txt	2 kB	2017-09-09T19:11		
sn.0004.txt	15 kB	2017-09-09T19:15		

The file details window displays details of each forecast file, displaying the filename, size of the file, time it was uploaded by the National Weather Service, and the last time WeatherCourier processed it. So it is easy to see at a glance, files that are green indicate that WeatherCourier has already processed the latest file, while red indicates a newer file that what WeatherCourier has already processed is available. Right-clicking on the file detail table will give you two options: **Process All Files on Next Pull** and **Process this file on Next Pull**. This gives you the ability to right-click an individual file and mark it to be processed on the next pull or to simply mark all of the files to be reprocessed on the next pull. These options are useful if you make changes to either forecast target list and wish WeatherCourier to reprocess any number of files.

Known Issues and Planned Improvements

- **Priority: Med** – Downloaded temporary forecast files do not get removed after processing on Windows.
- **Priority: Low** - Add Watch/Warning products.

If you have any additional issues that you encountered that you would like addressed, or have a suggestion for a new feature, please email them to webmaster@hoosierweather.com .