Ellie Parobek

Testing SOAP and RESTful services

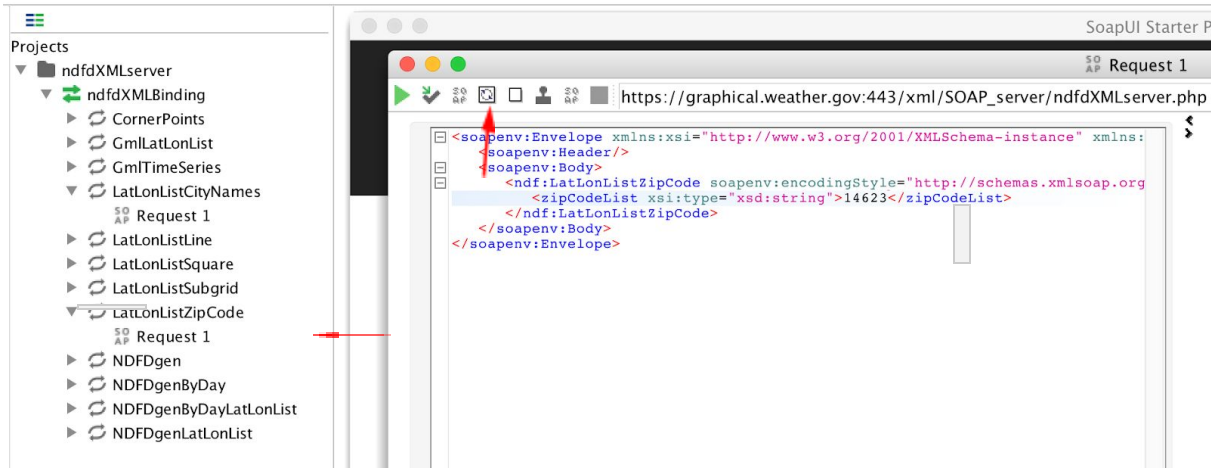
SOAP:

This part is to get you to see how SOAP requests and responses are formatted and finding those items in a WSDL.

1) Download and install SoapUI Open Source from (should be on lab computers): https://www.soapui.org/downloads/soapui.html

2) Click on "Soap" to create a new Soap Project and type: https://graphical.weather.gov/xml/SOAP_server/ndfdXMLserver.php?wsdl into the "Initial WSDL" box, check the "Create sample requests for all operations" if not already checked and then click "OK".

3) Expand the **LatLonListZipCode** method, double click on **Request 1** and enter a zipcode:



Click the green triangle to run the request, copy and paste the XML result here:

<SOAP-ENV:Envelope SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">
<SOAP-ENV:Body>
<ns1:LatLonListZipCodeResponse
xmlns:ns1="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl">
<listLatLonOut xsi:type="xsd:string"><?xml version='1.0'?><dwml version='1.0'
xmlns:xsd='http://www.w3.org/2001/XMLSchema'

```
        xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
        xsi:noNamespaceSchemaLocation='https://graphical.weather.gov/xml/DWMLgen/schema/D
        WML.xsd'>&lt;latLonList>43.1687,-77.6158&lt;/latLonList>&lt;/dwml></listLatLonOut>
    </ns1:LatLonListZipCodeResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```


4) Expand the **NDFDgenByDay** method, double click on **Request 1** and enter the **latitude** and **longitude** returned in the last step, enter a **startDate** in the format **yyyy-mm-dd**, enter a number for **numDays**, enter **e** for **Unit** (for US Standard or **m** for Metric), then enter either **12 hourly** or **24 hourly** for **format**.

5) Click the green triangle to make the request and paste the XML result here:


```
<SOAP-ENV:Envelope
        SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
        xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
        xmlns:xsd="http://www.w3.org/2001/XMLSchema"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">
  <SOAP-ENV:Body>
    <ns1:NDFDgenByDayResponse
        xmlns:ns1="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl">
      <dwmlByDayOut xsi:type="xsd:string"><![CDATA[<?xml version="1.0"?>
<dwml version="1.0" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="https://graphical.weather.gov/xml/DWMLgen/schem
        a/DWML.xsd">
  <head>
    <product srsName="WGS 1984" concise-name="dwmlByDay" operational-mode="official">
      <title>NOAA's National Weather Service Forecast by 24 Hour Period</title>
      <field>meteorological</field>
      <category>forecast</category>
      <creation-date refresh-frequency="PT1H">2019-03-01T18:11:59Z</creation-date>
    </product>
    <source>
      <more-information>https://graphical.weather.gov/xml/</more-information>
      <production-center>Meteorological Development Laboratory<sub-center>Product
        Generation Branch</sub-center></production-center>
      <disclaimer>http://www.nws.noaa.gov/disclaimer.html</disclaimer>
      <credit>https://www.weather.gov/</credit>
      <credit-logo>https://www.weather.gov/logorequest</credit-logo>
      <feedback>https://www.weather.gov/contact</feedback>
    </source>
```

```
</head>
<data>
  <location>
    <location-key>point1</location-key>
    <point latitude="43.17" longitude="-77.61"/>
  </location>
  <moreWeatherInformation
        applicable-location="point1">https://forecast-v3.weather.gov/point/43.17,-77.61</more
        WeatherInformation>
  <time-layout time-coordinate="local" summarization="24hourly">
    <layout-key>k-p24h-n6-1</layout-key>
    <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-02T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-02T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-03T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-03T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-04T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-04T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-05T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-05T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-06T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-06T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-07T06:00:00-05:00</end-valid-time>
  </time-layout>
  <time-layout time-coordinate="local" summarization="12hourly">
    <layout-key>k-p12h-n12-2</layout-key>
    <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-01T18:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-01T18:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-02T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-02T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-02T18:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-02T18:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-03T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-03T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-03T18:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-03T18:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-04T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-04T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-04T18:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-04T18:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-05T06:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-05T06:00:00-05:00</start-valid-time>
    <end-valid-time>2019-03-05T18:00:00-05:00</end-valid-time>
    <start-valid-time>2019-03-05T18:00:00-05:00</start-valid-time>
```

```
  <end-valid-time>2019-03-06T06:00:00-05:00</end-valid-time>
  <start-valid-time>2019-03-06T06:00:00-05:00</start-valid-time>
  <end-valid-time>2019-03-06T18:00:00-05:00</end-valid-time>
  <start-valid-time>2019-03-06T18:00:00-05:00</start-valid-time>
  <end-valid-time>2019-03-07T06:00:00-05:00</end-valid-time>
</time-layout>
<time-layout time-coordinate="local" summarization="24hourly">
  <layout-key>k-p6d-n1-3</layout-key>
  <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
  <end-valid-time>2019-03-07T06:00:00-05:00</end-valid-time>
</time-layout>
<parameters applicable-location="point1">
  <temperature type="maximum" units="Fahrenheit" time-layout="k-p24h-n6-1">
    <name>Daily Maximum Temperature</name>
    <value>35</value>
    <value>34</value>
    <value>30</value>
    <value>21</value>
    <value>19</value>
    <value>21</value>
  </temperature>
  <temperature type="minimum" units="Fahrenheit" time-layout="k-p24h-n6-1">
    <name>Daily Minimum Temperature</name>
    <value>26</value>
    <value>24</value>
    <value>18</value>
    <value>9</value>
    <value>11</value>
    <value>12</value>
  </temperature>
  <probability-of-precipitation type="12 hour" units="percent" time-layout="k-p12h-n12-2">
    <name>12 Hourly Probability of Precipitation</name>
    <value>0</value>
    <value>10</value>
    <value>80</value>
    <value>41</value>
    <value>37</value>
    <value>79</value>
    <value>48</value>
    <value>15</value>
    <value>40</value>
    <value>31</value>
    <value>31</value>
    <value>28</value>
  </probability-of-precipitation>
```

```
    <weather time-layout="k-p24h-n6-1">
      <name>Weather Type, Coverage, and Intensity</name>
      <weather-conditions weather-summary="Increasing Clouds"/>
      <weather-conditions weather-summary="Snow">
        <value coverage="definitely" intensity="light" weather-type="snow" qualifier="none"/>
      </weather-conditions>
      <weather-conditions weather-summary="Snow">
        <value coverage="definitely" intensity="light" weather-type="snow" qualifier="none"/>
      </weather-conditions>
      <weather-conditions weather-summary="Snow Showers">
        <value coverage="scattered" intensity="light" weather-type="snow showers"
          qualifier="none"/>
      </weather-conditions>
      <weather-conditions weather-summary="Snow Showers">
        <value coverage="scattered" intensity="light" weather-type="snow showers"
          qualifier="none"/>
      </weather-conditions>
      <weather-conditions weather-summary="Chance Snow Showers">
        <value coverage="chance" intensity="light" weather-type="snow showers"
          qualifier="none"/>
      </weather-conditions>
    </weather>
    <conditions-icon type="forecast-NWS" time-layout="k-p24h-n6-1">
      <name>Conditions Icons</name>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/bkn.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn80.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn80.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn50.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn40.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn30.jpg</icon-link>
    </conditions-icon>
    <hazards time-layout="k-p6d-n1-3">
      <name>Watches, Warnings, and Advisories</name>
      <hazard-conditions xsi:nil="true"/>
    </hazards>
   </parameters>
  </data>
</dwml>]]></dwmlByDayOut>
    </ns1:NDFDgenByDayResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

6) Now change the request so that you have an invalid value for one of the fields (e.g. enter an ‘a’ for the longitude) and paste the Soap Fault XML here:

```
<SOAP-ENV:Envelope
SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">
  <SOAP-ENV:Body>
    <SOAP-ENV:Fault>
      <faultcode xsi:type="xsd:string">SERVER</faultcode>
      <faultactor xsi:type="xsd:string"/>
      <faultstring xsi:type="xsd:string">Point is not on NDFD grid</faultstring>
      <detail xsi:type="xsd:string">Point with latitude = 0 Longitude = -77.615 is not on
an NDFD grid</detail>
    </SOAP-ENV:Fault>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

7) Open https://graphical.weather.gov/xml/SOAP_server/ndfdXMLserver.php?wsdl in a browser.

8) Copy and paste the 2 **message** elements for the **NDFDgenByDay** method (one request and one response):

```
<message name="NDFDgenByDayRequest">
  <part name="latitude" type="xsd:decimal"/>
  <part name="longitude" type="xsd:decimal"/>
  <part name="startDate" type="xsd:date"/>
  <part name="numDays" type="xsd:integer"/>
  <part name="Unit" type="xsd:string"/>
  <part name="format" type="xsd:string"/>
</message>
<message name="NDFDgenByDayResponse">
  <part name="dwmlByDayOut" type="xsd:string"/>
</message>
```

9) Copy and paste the entire **operation** element under the **portType** element with a name of “**ndfdXMLPortType**” for the **NDFDgenByDay** method:

```
<portType name="ndfdXMLPortType">
  <operation name="NDFDgen">
    <documentation>
      Returns National Weather Service digital weather forecast data. Supports
      latitudes and longitudes for the Continental United States, Alaska,
      Hawaii, Guam, and Puerto Rico only. Allowable values for the input
```

```
      variable "product" are "time-series" and "glance". Allowable values for
      the input variable "Unit" are "e" for U.S. Standare/English units and "m"
      for Metric units. For both products, a start and end time (Local) are
      required. For the time-series product, the input variable
      "weatherParameters" has array elements set to "true" to indicate which
      weather parameters are being requested. If an array element is set to
      "false", data for that weather parameter are not to be returned.
    </documentation>
    <input message="tns:NDFDgenRequest"/>
    <output message="tns:NDFDgenResponse"/>
  </operation>
```

10) Do the same for the entire **operation** element under the **binding** element with a name of "**ndfdXMLBinding**" for the **NDFDgenByDay** method:

```
<binding name="ndfdXMLBinding" type="tns:ndfdXMLPortType">
  <soap:binding style="rpc" transport="http://schemas.xmlsoap.org/soap/http"/>
  <operation name="NDFDgen">
    <soap:operation
    soapAction="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl#NDFD
    gen"style="rpc"/>
    <input>
      <soap:body use="encoded"
      namespace="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl"enc
      odingStyle="http://schemas.xmlsoap.org/soap/encoding/"/>
    </input>
    <output>
      <soap:body use="encoded"
      namespace="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl"enc
      odingStyle="http://schemas.xmlsoap.org/soap/encoding/"/>
    </output>
  </operation>
```

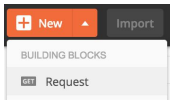
11) Copy and paste the soap:address element that gives the url/location of the service:

```
<soap:address
      location="https://graphical.weather.gov:443/xml/SOAP_server/ndfdXMLserver
      .php"/>
```

RESTful:

This part is to see how to use Postman to test a RESTful service and compare the responses to the SOAP responses.

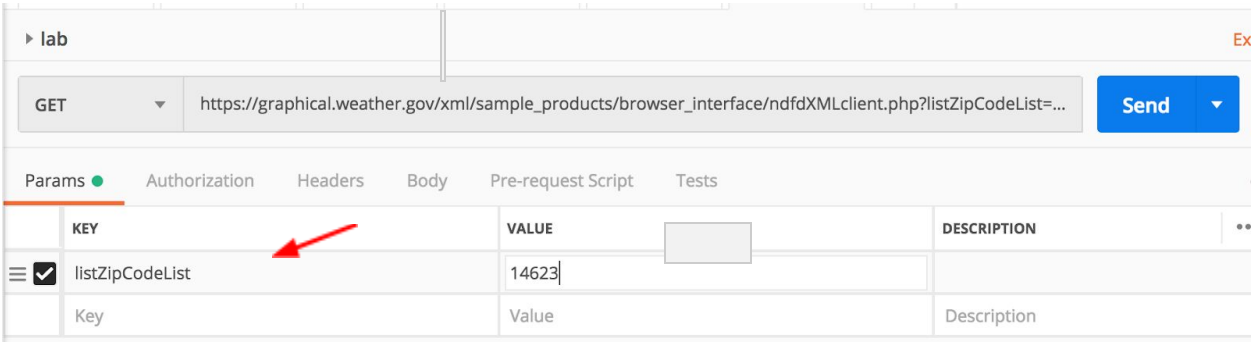
1) Go to https://www.getpostman.com/apps and download the application for your platform (should be on lab computers).

2) Click on 

, enter "**lab**" for the **Request Name**. Click on 

and name it **lab** as well. Select "**lab**" for the **collection** and click "**Save**".

3) Enter https://graphical.weather.gov/xml/sample_products/browser_interface/ndfdXMLclient.php in the field next to "**GET**" and **listZipCodeList** as a **key** and **some zipcode** as the **value**:



4) Click **Send** and paste the results here:

<?xml version='1.0'?>
<dwml version='1.0' xmlns:xsd='http://www.w3.org/2001/XMLSchema'
xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:noNamespaceSchemaLocation='https://graphical.weather.gov/xml/DWMLgen/schema/DWML.xsd'>
<latLonList>43.1687,-77.6158</latLonList>
</dwml>

5) Uncheck **listZipCodeList**, click **Send** again and paste the error response here:

<error>
<h2>Bad service input(s)</h2>
<pre>Array
(
)
</pre>
</error>

6) Uncheck the **listZipCodeList** key and change the location to:
https://graphical.weather.gov/xml/sample_products/browser_interface/ndfdBrowserClientByDay.php

and enter the following **key**/**value** pairs: **lat**: <**latitude** returned from before>, **lon**: <**longitude** returned from before>, **format**: **24-hourly**, **numDays**: **3**.

7) Click **Send** and paste the response here:


```
<?xml version="1.0"?>
<dwml version="1.0" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="https://graphical.weather.gov/xml/DWMLgen/schem
        a/DWML.xsd">
   <head>
      <product srsName="WGS 1984" concise-name="dwmlByDay"
         operational-mode="official">
         <title>NOAA's National Weather Service Forecast by 24 Hour Period</title>
         <field>meteorological</field>
         <category>forecast</category>
         <creation-date refresh-frequency="PT1H">2019-03-01T18:21:08Z</creation-date>
      </product>
      <source>
         <more-information>https://graphical.weather.gov/xml/</more-information>
         <production-center>Meteorological Development Laboratory
            <sub-center>Product Generation Branch</sub-center>
         </production-center>
         <disclaimer>http://www.nws.noaa.gov/disclaimer.html</disclaimer>
         <credit>https://www.weather.gov/</credit>
         <credit-logo>https://www.weather.gov/logorequest</credit-logo>
         <feedback>https://www.weather.gov/contact</feedback>
      </source>
   </head>
   <data>
      <location>
         <location-key>point1</location-key>
         <point latitude="43.17" longitude="-77.62"/>
      </location>
      <moreWeatherInformation
         applicable-location="point1">https://forecast-v3.weather.gov/point/43.17,-77.62</more
         WeatherInformation>
      <time-layout time-coordinate="local" summarization="24hourly">
         <layout-key>k-p24h-n3-1</layout-key>
         <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
         <end-valid-time>2019-03-02T06:00:00-05:00</end-valid-time>
         <start-valid-time>2019-03-02T06:00:00-05:00</start-valid-time>
         <end-valid-time>2019-03-03T06:00:00-05:00</end-valid-time>
         <start-valid-time>2019-03-03T06:00:00-05:00</start-valid-time>
         <end-valid-time>2019-03-04T06:00:00-05:00</end-valid-time>
```

```
</time-layout>
<time-layout time-coordinate="local" summarization="12hourly">
   <layout-key>k-p12h-n6-2</layout-key>
   <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-01T18:00:00-05:00</end-valid-time>
   <start-valid-time>2019-03-01T18:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-02T06:00:00-05:00</end-valid-time>
   <start-valid-time>2019-03-02T06:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-02T18:00:00-05:00</end-valid-time>
   <start-valid-time>2019-03-02T18:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-03T06:00:00-05:00</end-valid-time>
   <start-valid-time>2019-03-03T06:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-03T18:00:00-05:00</end-valid-time>
   <start-valid-time>2019-03-03T18:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-04T06:00:00-05:00</end-valid-time>
</time-layout>
<time-layout time-coordinate="local" summarization="24hourly">
   <layout-key>k-p3d-n1-3</layout-key>
   <start-valid-time>2019-03-01T06:00:00-05:00</start-valid-time>
   <end-valid-time>2019-03-04T06:00:00-05:00</end-valid-time>
</time-layout>
<parameters applicable-location="point1">
   <temperature type="maximum" units="Fahrenheit" time-layout="k-p24h-n3-1">
      <name>Daily Maximum Temperature</name>
      <value>35</value>
      <value>34</value>
      <value>30</value>
   </temperature>
   <temperature type="minimum" units="Fahrenheit" time-layout="k-p24h-n3-1">
      <name>Daily Minimum Temperature</name>
      <value>24</value>
      <value>24</value>
      <value>18</value>
   </temperature>
   <probability-of-precipitation type="12 hour" units="percent"
   time-layout="k-p12h-n6-2">
      <name>12 Hourly Probability of Precipitation</name>
      <value>0</value>
      <value>10</value>
      <value>80</value>
      <value>41</value>
      <value>37</value>
      <value>79</value>
   </probability-of-precipitation>
   <weather time-layout="k-p24h-n3-1">
```

```
      <name>Weather Type, Coverage, and Intensity</name>
      <weather-conditions weather-summary="Mostly Cloudy"/>
      <weather-conditions weather-summary="Flurries">
        <value coverage="definitely" intensity="very light" weather-type="snow"
    qualifier="none"/>
      </weather-conditions>
      <weather-conditions weather-summary="Snow">
        <value coverage="definitely" intensity="light" weather-type="snow"
    qualifier="none"/>
      </weather-conditions>
    </weather>
    <conditions-icon type="forecast-NWS" time-layout="k-p24h-n3-1">
      <name>Conditions Icons</name>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/bkn.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn.jpg</icon-link>
      <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn80.jpg</icon-link>
    </conditions-icon>
    <hazards time-layout="k-p3d-n1-3">
      <name>Watches, Warnings, and Advisories</name>
      <hazard-conditions xsi:nil="true"/>
    </hazards>
  </parameters>
 </data>
</dwml>
```

Put this completed Word Document in the appropriate dropbox on MyCourses.