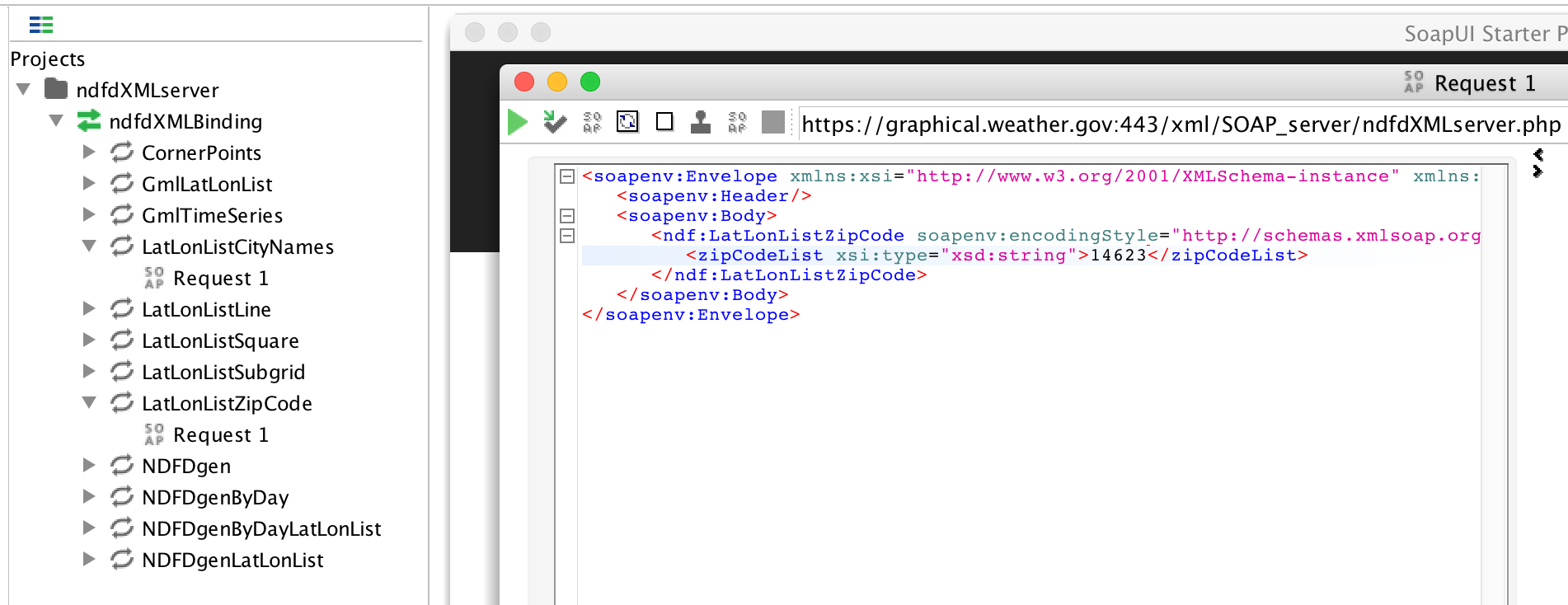
**Testing SOAP and RESTful services**

**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:

1. 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**.
2. 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/schema/DWML.xsd">

<head>

<product srsName="WGS 1984" concise-name="dwmlByDay" operational-mode="official">

<title>NOAA's National Weather Service Forecast by 12 Hour Period</title>

<field>meteorological</field>

<category>forecast</category>

<creation-date refresh-frequency="PT1H">2020-02-28T18:28:09Z</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</moreWeatherInformation>

<time-layout time-coordinate="local" summarization="12hourly">

<layout-key>k-p24h-n2-1</layout-key>

<start-valid-time period-name="Today">2020-02-28T06:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-28T18:00:00-05:00</end-valid-time>

<start-valid-time period-name="Tomorrow">2020-02-29T06:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-29T18:00:00-05:00</end-valid-time>

</time-layout>

<time-layout time-coordinate="local" summarization="12hourly">

<layout-key>k-p24h-n2-2</layout-key>

<start-valid-time period-name="Tonight">2020-02-28T18:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-29T06:00:00-05:00</end-valid-time>

<start-valid-time period-name="Tomorrow Night">2020-02-29T18:00:00-05:00</start-valid-time>

<end-valid-time>2020-03-01T06:00:00-05:00</end-valid-time>

</time-layout>

<time-layout time-coordinate="local" summarization="12hourly">

<layout-key>k-p12h-n4-3</layout-key>

<start-valid-time period-name="Today">2020-02-28T06:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-28T18:00:00-05:00</end-valid-time>

<start-valid-time period-name="Tonight">2020-02-28T18:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-29T06:00:00-05:00</end-valid-time>

<start-valid-time period-name="Tomorrow">2020-02-29T06:00:00-05:00</start-valid-time>

<end-valid-time>2020-02-29T18:00:00-05:00</end-valid-time>

<start-valid-time period-name="Tomorrow Night">2020-02-29T18:00:00-05:00</start-valid-time>

<end-valid-time>2020-03-01T06:00:00-05:00</end-valid-time>

</time-layout>

<time-layout time-coordinate="local" summarization="12hourly">

<layout-key>k-p2d-n1-4</layout-key>

<start-valid-time>2020-02-28T06:00:00-05:00</start-valid-time>

<end-valid-time>2020-03-01T06:00:00-05:00</end-valid-time>

</time-layout>

<parameters applicable-location="point1">

<temperature type="maximum" units="Fahrenheit" time-layout="k-p24h-n2-1">

<name>Daily Maximum Temperature</name>

<value>27</value>

<value>23</value>

</temperature>

<temperature type="minimum" units="Fahrenheit" time-layout="k-p24h-n2-2">

<name>Daily Minimum Temperature</name>

<value>15</value>

<value>19</value>

</temperature>

<probability-of-precipitation type="12 hour" units="percent" time-layout="k-p12h-n4-3">

<name>12 Hourly Probability of Precipitation</name>

<value>61</value>

<value>96</value>

<value>85</value>

<value>70</value>

</probability-of-precipitation>

<weather time-layout="k-p12h-n4-3">

<name>Weather Type, Coverage, and Intensity</name>

<weather-conditions weather-summary="Snow Showers">

<value coverage="scattered" intensity="light" weather-type="snow showers" qualifier="none"/>

</weather-conditions>

<weather-conditions weather-summary="Snow">

<value coverage="definitely" intensity="heavy" weather-type="snow" qualifier="none"/>

</weather-conditions>

<weather-conditions weather-summary="Snow">

<value coverage="definitely" intensity="light" weather-type="snow" qualifier="none"/>

<value coverage="areas" intensity="none" additive="and" weather-type="blowing snow" qualifier="none"/>

</weather-conditions>

<weather-conditions weather-summary="Snow Showers">

<value coverage="definitely" intensity="light" weather-type="snow showers" qualifier="none"/>

</weather-conditions>

</weather>

<conditions-icon type="forecast-NWS" time-layout="k-p12h-n4-3">

<name>Conditions Icons</name>

<icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn60.jpg</icon-link>

<icon-link>http://www.nws.noaa.gov/weather/images/fcicons/nsn100.jpg</icon-link>

<icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn90.jpg</icon-link>

<icon-link>http://www.nws.noaa.gov/weather/images/fcicons/nsn70.jpg</icon-link>

</conditions-icon>

<hazards time-layout="k-p2d-n1-4">

<name>Watches, Warnings, and Advisories</name>

<hazard-conditions xsi:nil="true"/>

</hazards>

</parameters>

</data>

</dwml>]]></dwmlByDayOut>

</ns1:NDFDgenByDayResponse>

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>

1. 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 = 43.1687 Longitude = 0 is not on an NDFD grid</detail>

</SOAP-ENV:Fault>

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>

1. Open <https://graphical.weather.gov/xml/SOAP_server/ndfdXMLserver.php?wsdl> in a browser.
2. Copy and paste the 2 **message** elements for the **NDFDgenByDay** method (one request and one response):

<message name="NDFDgenRequest">

<part name="latitude" type="xsd:decimal"/>

<part name="longitude" type="xsd:decimal"/>

<part name="product" type="xsd:string"/>

<part name="startTime" type="xsd:dateTime"/>

<part name="endTime" type="xsd:dateTime"/>

<part name="Unit" type="xsd:string"/>

<part name="weatherParameters" type="tns:weatherParametersType"/>

</message>

<message name="NDFDgenResponse">

<part name="dwmlOut" type="xsd:string"/>

</message>

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

<operation name=“NDFDgenByDay”>

<documentation>

Returns National Weather Service digital weather forecast data. Supports latitudes and longitudes for the Continental United States, Hawaii, Guam, and Puerto Rico only. Allowable values for the input variable "format" are "24 hourly" and "12 hourly". The input variable "startDate" is a date string representing the first day (Local) of data to be returned. The input variable "numDays" is the integer number of days for which the user wants data. Allowable values for the input variable "Unit" are "e" for U.S. Standare/English units and "m" for Metric units.

</documentation>

<input message="tns:NDFDgenByDayRequest"/>

<output message="tns:NDFDgenByDayResponse"/>

</operation>

1. Do the same for the entire **operation** element under the **binding** element with a name of “**ndfdXMLBinding**” for the **NDFDgenByDay** method:

<operation name="NDFDgenByDay">

<soap:operation soapAction="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl#NDFDgenByDay" style="rpc"/>

<input>

<soap:body use="encoded" namespace="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl" encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"/>

</input>

<output>

<soap:body use="encoded" namespace="https://graphical.weather.gov/xml/DWMLgen/wsdl/ndfdXML.wsdl" encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"/>

</output>

</operation>

1. Copy and paste the soap:address element that gives the url/location of the service:

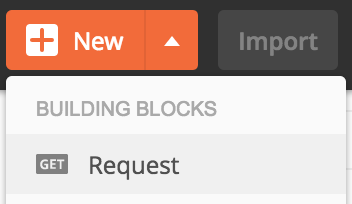
<port name="ndfdXMLPort" binding="tns:ndfdXMLBinding">

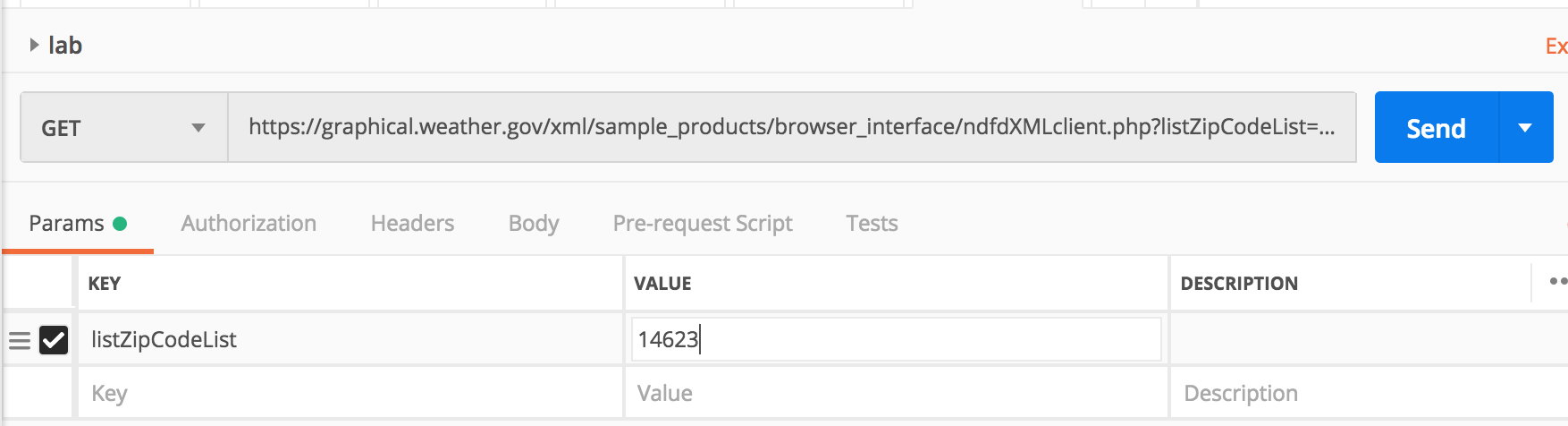
<soap:address location="https://graphical.weather.gov:443/xml/SOAP\_server/ndfdXMLserver.php"/>

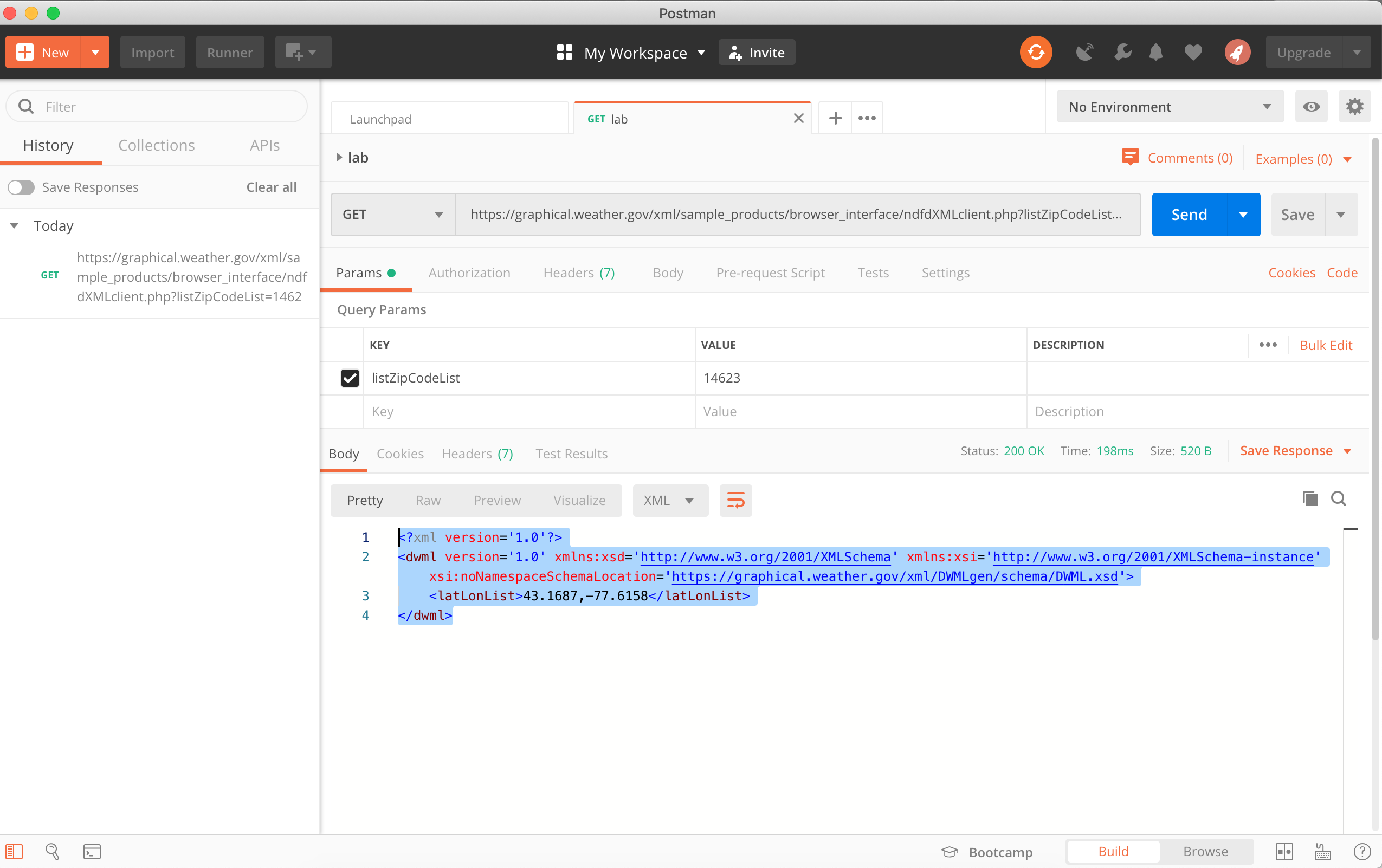
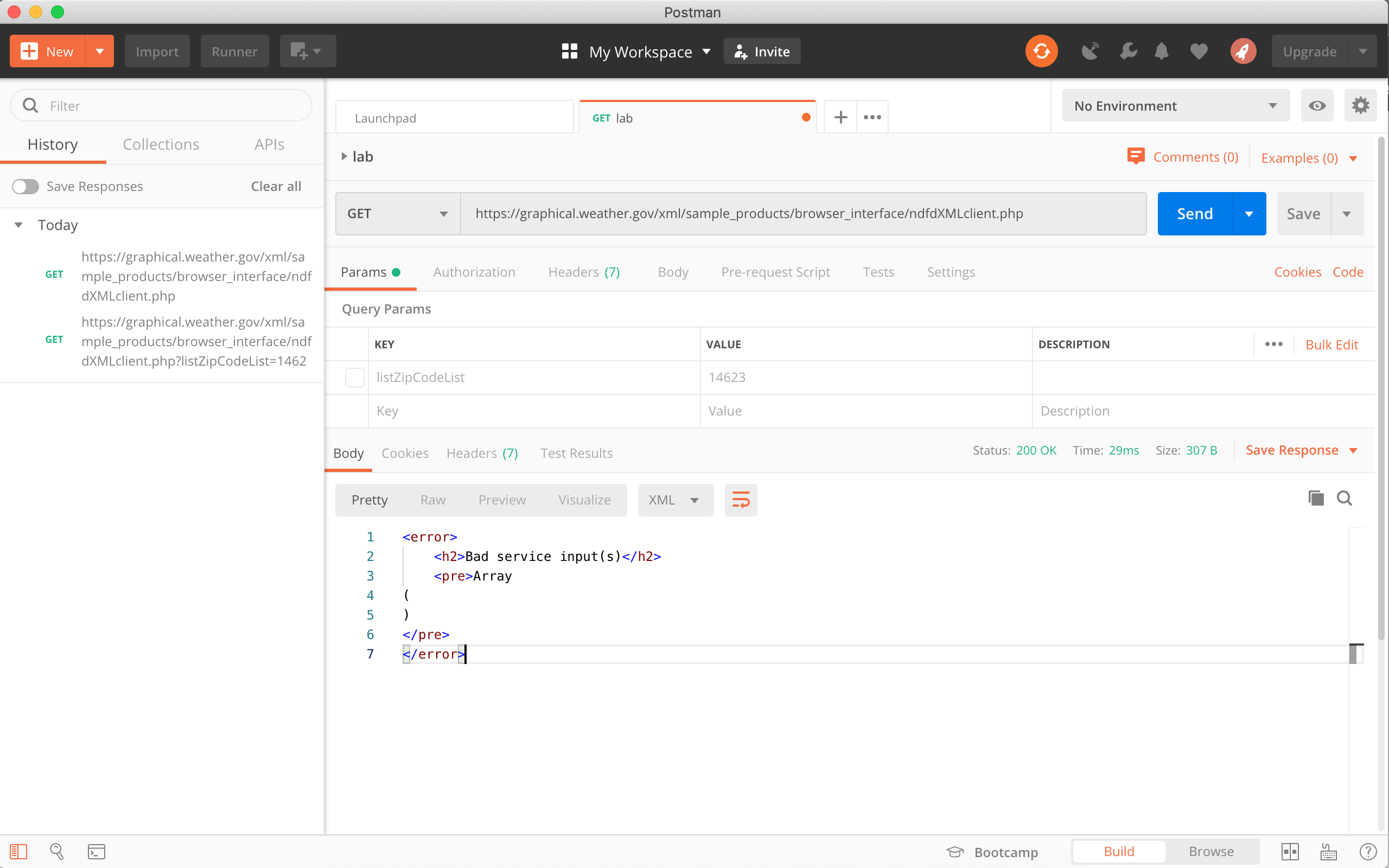
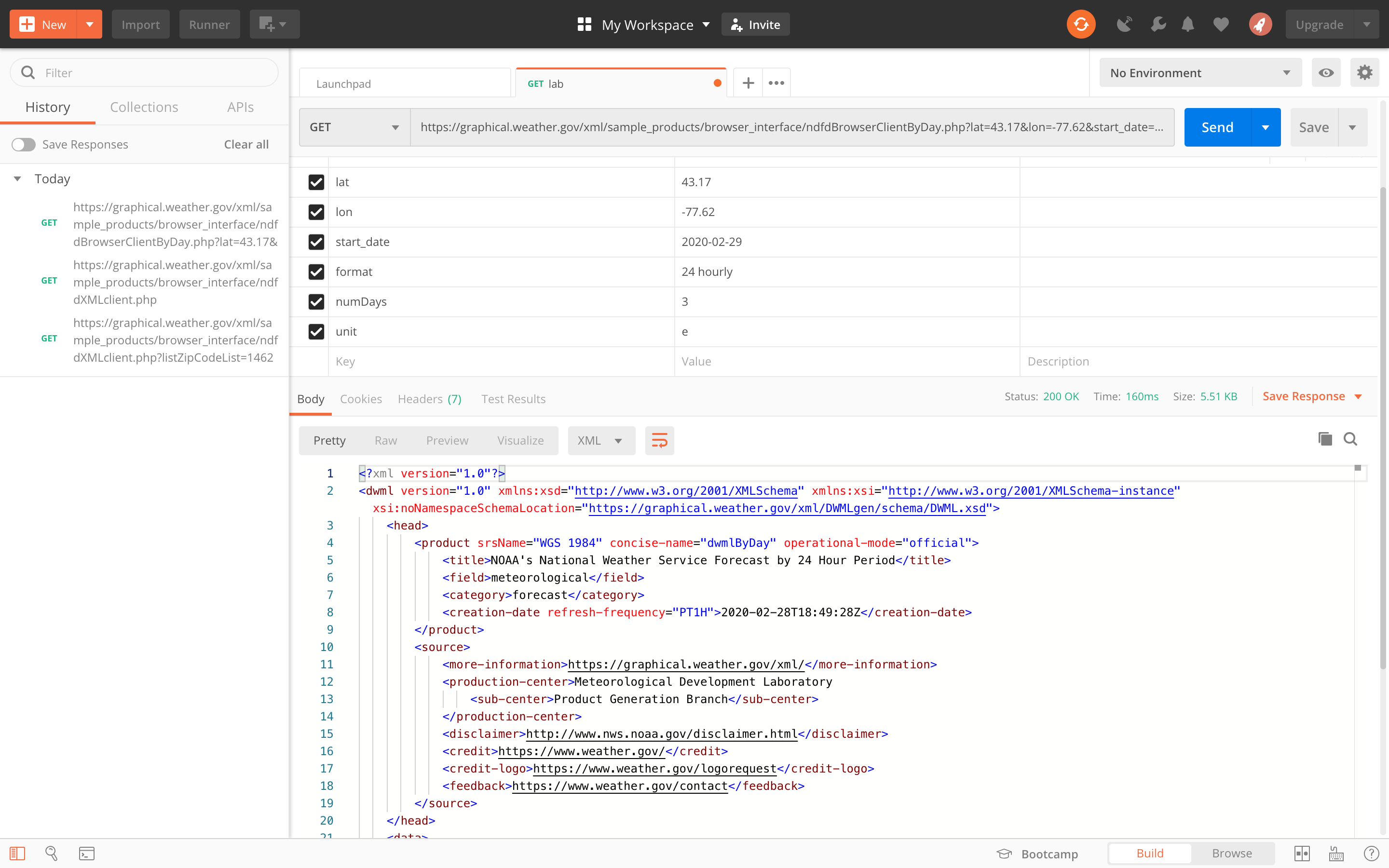
</port>

**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**:



1. Click **Send** and paste the results here:  
   
2. Uncheck **listZipCodeList**, click **Send** again and paste the error response here:
3. 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, unit: e**.
4. 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/schema/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">2020-02-28T18:49:28Z</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</moreWeatherInformation>

        <time-layout time-coordinate="local" summarization="24hourly">

            <layout-key>k-p24h-n3-1</layout-key>

            <start-valid-time>2020-02-28T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-02-29T06:00:00-05:00</end-valid-time>

            <start-valid-time>2020-02-29T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-01T06:00:00-05:00</end-valid-time>

            <start-valid-time>2020-03-01T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-02T06:00:00-05:00</end-valid-time>

        </time-layout>

        <time-layout time-coordinate="local" summarization="12hourly">

            <layout-key>k-p12h-n6-2</layout-key>

            <start-valid-time>2020-02-28T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-02-28T18:00:00-05:00</end-valid-time>

            <start-valid-time>2020-02-28T18:00:00-05:00</start-valid-time>

            <end-valid-time>2020-02-29T06:00:00-05:00</end-valid-time>

            <start-valid-time>2020-02-29T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-02-29T18:00:00-05:00</end-valid-time>

            <start-valid-time>2020-02-29T18:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-01T06:00:00-05:00</end-valid-time>

            <start-valid-time>2020-03-01T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-01T18:00:00-05:00</end-valid-time>

            <start-valid-time>2020-03-01T18:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-02T06:00:00-05:00</end-valid-time>

        </time-layout>

        <time-layout time-coordinate="local" summarization="24hourly">

            <layout-key>k-p3d-n1-3</layout-key>

            <start-valid-time>2020-02-28T06:00:00-05:00</start-valid-time>

            <end-valid-time>2020-03-02T06:00:00-05:00</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>27</value>

                <value>23</value>

                <value>36</value>

            </temperature>

            <temperature type="minimum" units="Fahrenheit" time-layout="k-p24h-n3-1">

                <name>Daily Minimum Temperature</name>

                <value>15</value>

                <value>19</value>

                <value>29</value>

            </temperature>

            <probability-of-precipitation type="12 hour" units="percent" time-layout="k-p12h-n6-2">

                <name>12 Hourly Probability of Precipitation</name>

                <value>61</value>

                <value>96</value>

                <value>85</value>

                <value>70</value>

                <value>21</value>

                <value>30</value>

            </probability-of-precipitation>

            <weather time-layout="k-p24h-n3-1">

                <name>Weather Type, Coverage, and Intensity</name>

                <weather-conditions weather-summary="Snow">

                    <value coverage="definitely" intensity="heavy" weather-type="snow" qualifier="none"/>

                </weather-conditions>

                <weather-conditions weather-summary="Snow">

                    <value coverage="definitely" intensity="light" weather-type="snow" qualifier="none"/>

                    <value coverage="areas" intensity="none" additive="and" weather-type="blowing snow" qualifier="none"/>

                </weather-conditions>

                <weather-conditions weather-summary="Chance Rain/Snow">

                    <value coverage="chance" intensity="light" weather-type="rain showers" qualifier="none"/>

                    <value coverage="chance" intensity="light" additive="and" weather-type="snow showers" 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/sn100.jpg</icon-link>

                <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/sn90.jpg</icon-link>

                <icon-link>http://www.nws.noaa.gov/weather/images/fcicons/rasn30.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.