

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<!--Simplified DFG and DDG for Create Interpolation Model sequence in Cflux  
Analytic Web-->
```

```
<!--Though this excerpt contains references to other parts of the Analytic Web  
(e.g., Merge Data), the complete Analytic Web is self-contained.-->
```

```
<!--SciWalker performs the transformations required to exchange objects with R.  
In this case, data' (the object submitted to R) is created from data by extracting  
the dependent and independent variables (mco2flux and tsoil). Similarly, model  
is created from model' (the object returned by R) by extracting the regression  
coefficients (a and b). Though these transformations are not explicitly  
represented in the DFG and DDG, the code used to implement them would be  
archived and documented for a particular version of SciWalker.-->
```

```
<analytic-web>
```

```
<!--Type Declarations-->
```

```
<type-declarations>
```

```
<!--Data type for Selected Data node-->
```

```
<data-type name="cflux-data">
```

```
<table type="csv">
```

```
<attribute name="year" type="date"/>
```

```
<attribute name="doy" type="date"/>
```

```
<attribute name="u" type="real"/>
```

```
<attribute name="ustar" type="real"/>
```

```
<attribute name="wdir" type="real"/>
```

```
<attribute name="par" type="real"/>
```

```
<attribute name="tair" type="real"/>
```

```
<attribute name="dmintair" type="real"/>
```

```
<attribute name="tsoil" type="real"/>
```

```
<attribute name="vpd" type="real"/>
```

```
<attribute name="mco2flux" type="real"/>
```

```
<attribute name="eco2flux" type="real"/>
```

```
<attribute name="source" type="character"/>
```

```
</table>
```

```
</data-type>
```

```
<!--Data type for Interpolation Model node-->
```

```
<data-type name="nighttime-model">
```

```
<table type="csv">
```

```
<attribute name="a" type="real"/>
```

```
<attribute name="b" type="real"/>
```

```
</table>
```

```
</data-type>
```

```

<!--Activity type for Create Interpolation Model node-->
<activity-type name="create-model">
  <input name="data" type="cflux-data">
    <parameter name="dependent" attribute="mc02flux"/>
    <parameter name="independent" attribute="tsoil"/>
  </input>
  <output name="model" type="nighttime-model">
    <parameter name="a-coefficient" attribute="a"/>
    <parameter name="b-coefficient" attribute="b"/>
  </output>
  <description>Perform linear regression</description>
</activity-type>
</type-declarations>

<!--Data Flow Graph Declaration-->
<dfg name="nighttime-cflux">
  <!--Selected Data node-->
  <dfg-node name="selected-data" type="cflux-data"/>
  <!--Interpolation Model node-->
  <dfg-node name="interpolation-model" type="nighttime-model"/>
  <!--Create Interpolation Model node-->
  <dfg-node name="create-interpolation-model" type="create-model"/>
  <!--Node connections-->
  <connector type="fork">
    <binding from="selected-data" to="create-interpolation-model"
      port="data"/>
    <binding from="selected-data" to="merge-data" port="right"/>
  </connector>
  <connector type="simple">
    <binding from="create-interpolation-model" to="interpolation-model"
      port="model"/>
  </connector>
</dfg>

<!--Data Derivation Graph Declaration-->
<ddg name="nighttime-cflux-1" dfg="nighttime-cflux">
  <!--Selected Data 1 node-->
  <ddg-node id="selected-data-1" dfg-node="selected-data">
    <url>http://server/cflux-night/1324867403167/selected-data-1.csv</url>
  </ddg-node>
  <!--Interpolation Model 1 node-->
  <ddg-node id="interpolation-model-1" dfg-node="interpolation-model">
    <url>http://server/cflux-night/1324867404564/interpolation-model-
      1.csv</url>
  </ddg-node>

```

```
<!--Create Interpolation Model 1 node-->
<ddg-node id="create-interpolation-model-1" dfg-node="create-
interpolation-model">
  <!-- SciWalker creates data' from data by extracting mco2flux and
  tsoil-->
  <script language="R" version="1.9.0">
    model'=lm(log(mco2flux)~tsoil, data')
  </script>
  <!--SciWalker creates model from model' by extracting a and b
  coefficients-->
</ddg-node>
</ddg>

</analytic-web>
```