# Gradient Transformations

With this transformation a gradient of a timeserie can be calculated: (y1-y0) / (t1-t0). This is the change in the value per time unit (currently seconds).

Timeseries can be nonequidistant.

```
<transformation id="Calculate_the_gradient">
        <gradient>
            <firstOrder>
                <inputVariable>
                    <variableId>InputTimeSeries</variableId>
                </inputVariable>
                <outputVariable>
                    <variableId>OutputTimeSeries</variableId>
                </outputVariable>
            </firstOrder>
        </gradient>
    </transformation>
```

## Example:

```
        <variable>
                <variableId>niveau_5.nonequiAB</variableId>
                <timeSeriesSet>
                        <moduleInstanceId>ABBAberekening</moduleInstanceId>
                        <valueType>scalar</valueType>
                        <parameterId>ALMR006</parameterId>
                        <locationSetId>ABBA_vuldebiet</locationSetId>
                        <timeSeriesType>external historical</timeSeriesType>
                        <timeStep unit="nonequidistant"/>
                        <relativeViewPeriod unit="day" start="-7" end="0" startOverrulable="true"
endOverrulable="true"/>
                        <readWriteMode>add originals</readWriteMode>
                </timeSeriesSet>
        </variable>
        <variable>
                <variableId>stijging.nonequi</variableId>
                <timeSeriesSet>
                        <moduleInstanceId>ABBAberekening</moduleInstanceId>
                        <valueType>scalar</valueType>
                        <parameterId>stijging_niveaumeter</parameterId>
                        <locationSetId>ABBA_vuldebiet</locationSetId>
                        <timeSeriesType>external historical</timeSeriesType>
                        <timeStep unit="nonequidistant"/>
                        <relativeViewPeriod unit="day" start="-6" end="0" startOverrulable="true"
endOverrulable="true"/>
                        <readWriteMode>add originals</readWriteMode>
                </timeSeriesSet>
        </variable>
        <transformation id="stijging_niveaumeter">
                <gradient>
                        <firstOrder>
                                <inputVariable>
                                        <variableId>niveau_5.nonequiAB</variableId>
                                </inputVariable>
                                <outputVariable>
                                        <variableId>stijging.nonequi</variableId>
                                </outputVariable>
                        </firstOrder>
                </gradient>
        </transformation>
```