## **Description of Substantive Changes**

### **N/A Adding TimePeriods to timeseriesDR.xsd schema**

Previously, the TimeseriesML Domain-Range schema only allowed for a list of instantaneous time positions to be encoded under the gml:domainSet element. An amendment to the *timeseriesDR.xsd* allows the encoding of a list of Time Periods, which contain both a beginning dateTime and and an ending dateTime. This has been added primarily to denote a parameter's valid time that spans a range in time. For example, a maximum temperature that is valid from 12Z to 00Z needs a valid time that is denoted by both a beginning and ending time.

### **N/A Adding metadata support for irregularly spaced timeseries to timeseriesDR.xsd schema**

There is insufficient metadata support to describe an irregularly-spaced time series in the Domain-Range timeseriesMetadata element. Currently, the reference to the timeseriesMetadata element has a cardinality of maxOccurs = 1 in the timeseriesDR.xsd schema. An amendment changes the cardinality to “unbounded”. This will allow a description of each individual regularly spaced segment that constitutes the irregularly spaced whole time series. We also propose to update the documentation of the timeseriesMetadata element in timeseriesDR.xsd, and it’s child element, TimeseriesMetadata, which resides in the timeseriesMetadata.xsd schema. Documentation will denote that metadata can now be applicable to the whole timeseries, or individual regularly spaced segments of an irregularly spaced whole timeseries.

The use case concerns the National Weather Service’s National Digital Forecast Database, in which certain meteorological elements, like temperature and wind speed, have changing time periods in between forecast data projections.

For example, for the first 36 hours of the forecast, temperature is forecast every hour. From hours 36 to 54, it is forecast every three hours. Beyond hour 54, it is forecast every six hours, out to seven days. Thus, there are three distinct time steps. Currently, we have no way of denoting these differing time steps associated with this “irregularly” spaced whole time series. We propose to break up the time steps into segments that **do** contain regularly spaced forecast projection time steps by increasing the cardinality of timeseriesMetadata to unbounded.