EnergyPrognosis_ MarketDocument in ESMP

How we can handle uncertainty in ESMP

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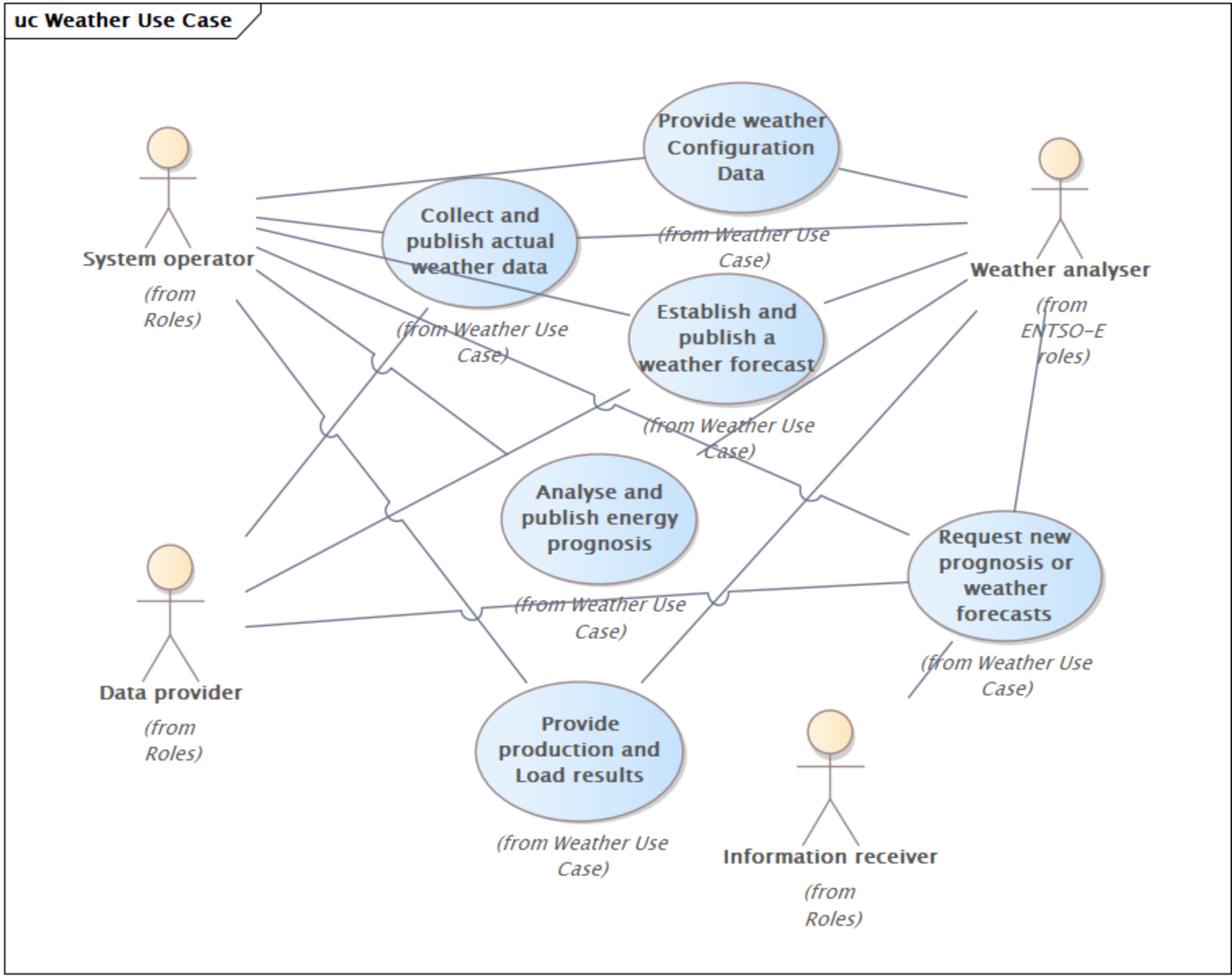
Using EnergyPrognosis for confidence levels

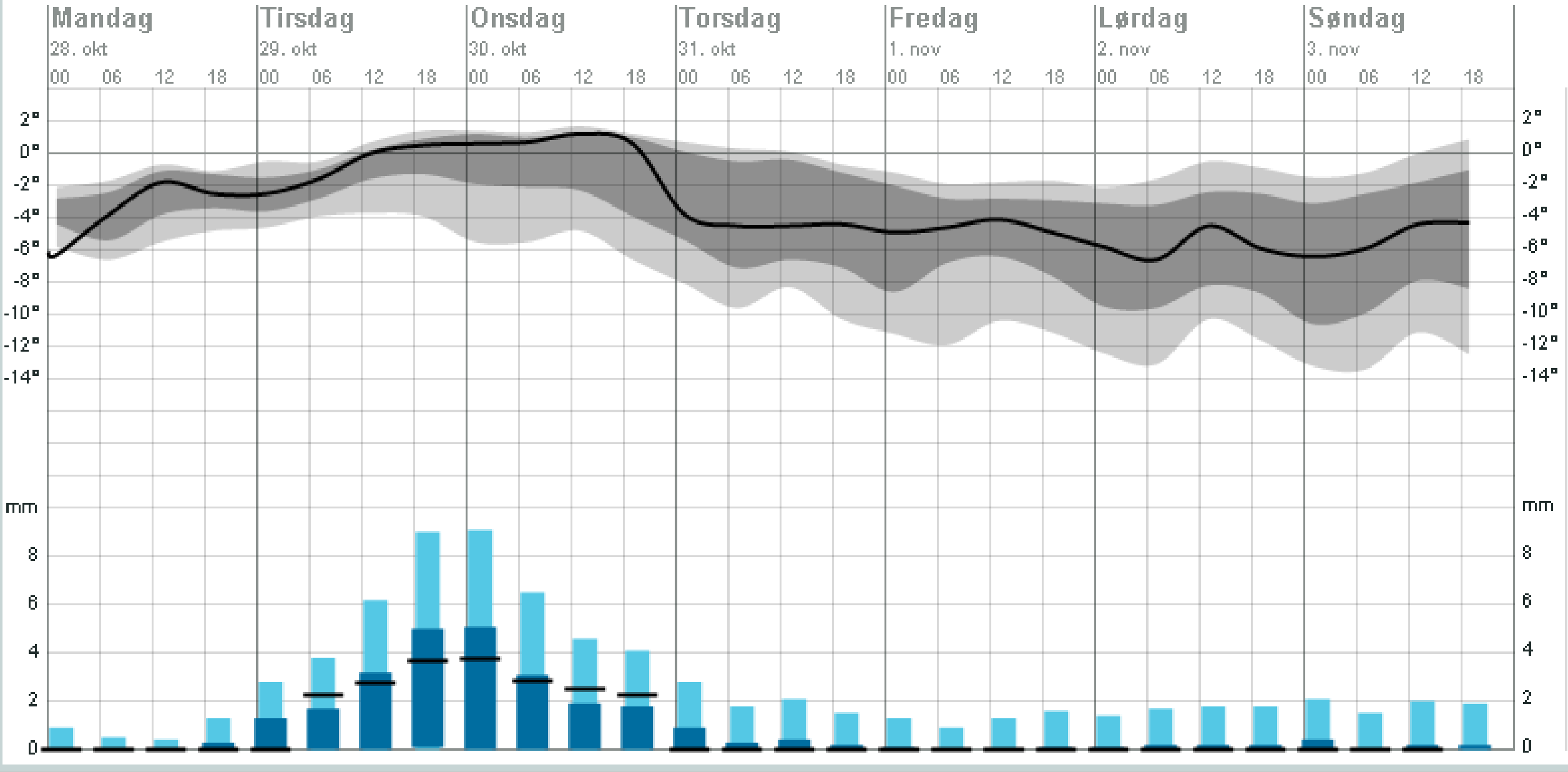
- This presentation describes the ESMP EnergyPrognosis_MarketDocument
  - Let us look at an example, however not for energy ☺
  - But the degrees Celsius could have been values in MW or MWh
- Se further https://eepublicdownloads.entsoe.eu/clean-documents/EDI/Library/cim_based/schema/Energy_Prognosis_document_UML_model_and_schema_v.1.0.pdf
- And https://eepublicdownloads.entsoe.eu/clean-documents/EDI/Library/cim_based/Weather_Process_Energy_Prognosis_IG_v1.3.pdf

Roles and use cases

Further described in the ENTSO-E ”Weather process and energy prognosis implementation guide”



Sannsynlighetsvarsel for Umbukta

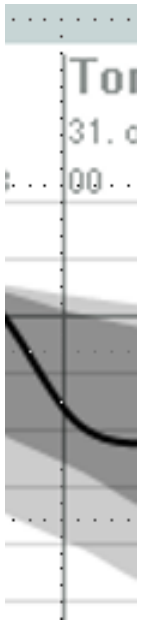


What do we find in the diagram

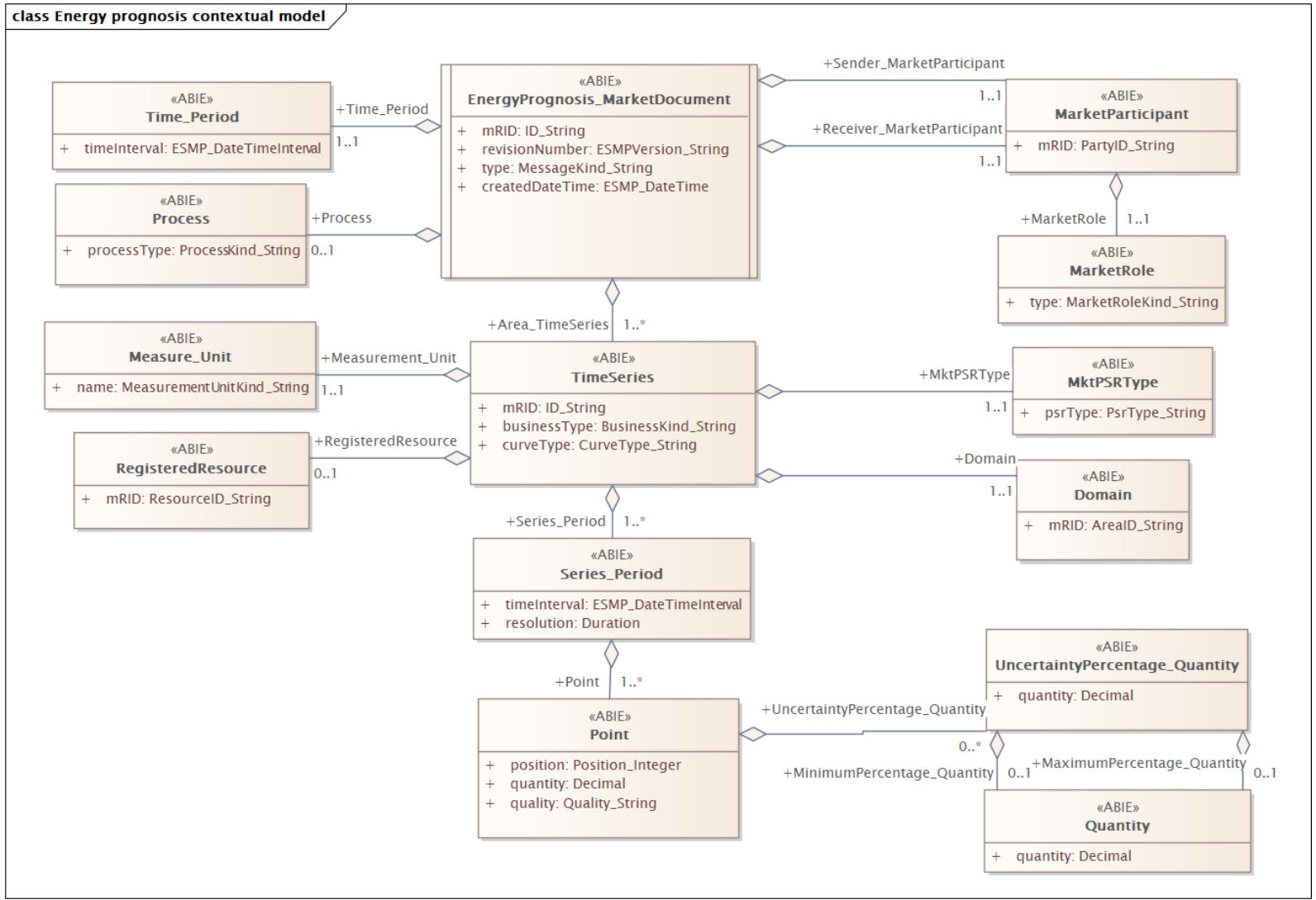
- A prognosis for one week
- The light grey part, plus the dark grey part of the curve describes the interval with 80% probability for the temperature (confidence interval)
- The dark grey part of the curve describes the interval with 50% probability for the temperature (confidence interval)
  - This means also that with 30% probability the temperature is *just* within the light gray part of the curve
- And similar then at the bottom for precipitation (rain in mm or snow in melted form)

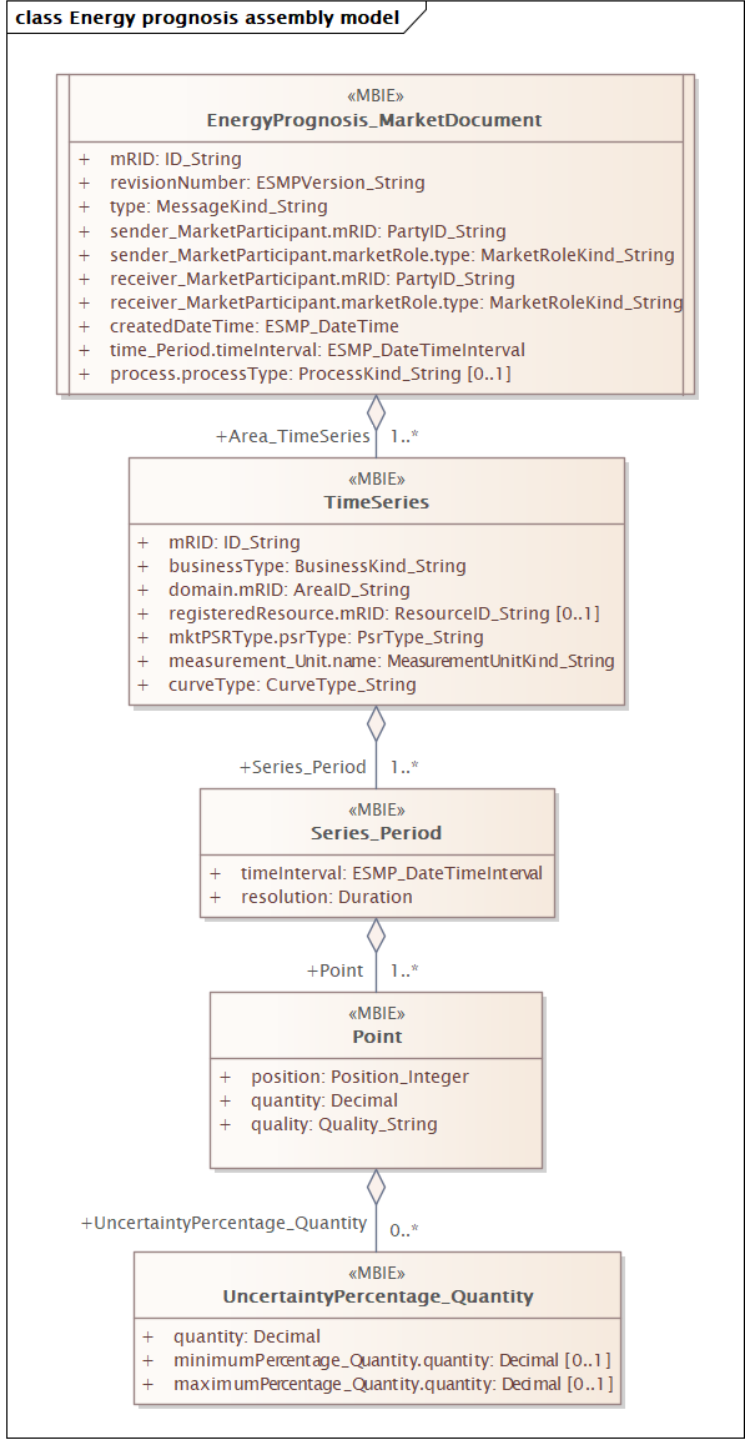
Let us look at one point in the diagram

- Assume we would like to send/get the probability for the temperature at 00:00 October 31st.
- The light grey part goes from -8 °C to +0.5 °C
- The dark grey part goes from -5 °C to 0.0 °C
- The expected value is somewhere in between, i.e. the estimated temperature is -3.8 °C
- The two confidence intervals are 50 (dark grey) and 80 (incl. light grey)

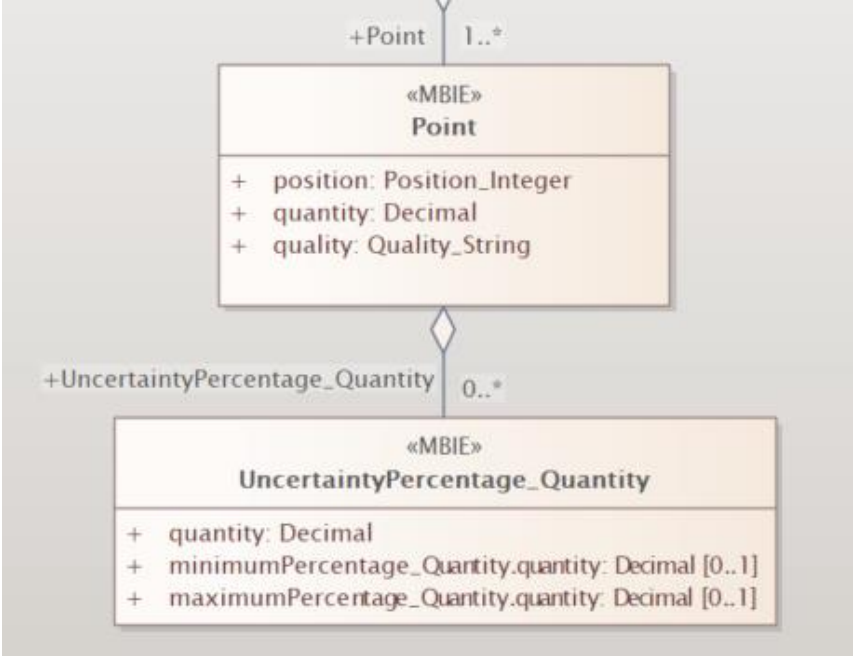


The message that could contain this





Putting the data into the message

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        </UncertaintyPercentage_Quantity>
</Point>
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And the values could of course be something representing power, and not temperature. The measurement unit is specified higher up for the timeseries.

Another ESMP message

- In the ENTSO-E ”Short Medium Term Adequacy Prognosis document” we find *percentile* instead of “UncertaintyPercentage”
- E.g. a confidence interval of 90% would be expressed specifying two percentiles in such a message: ”P05” and ”P95”.

- In a more general message including information like this we could perhaps include both the possibility to specify percentiles and confidence intervals