

Air Quality Monitoring Dashboard Report

February 2020



LICA
ENVIRONMENTAL STEWARDS

Photo by Mason Unrau

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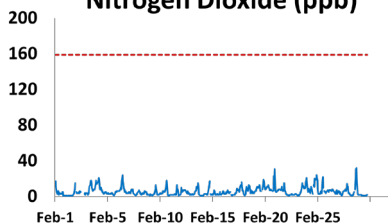
Continuous Monitoring

February 2020

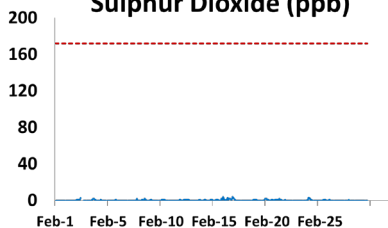
Cold Lake

City of Cold Lake

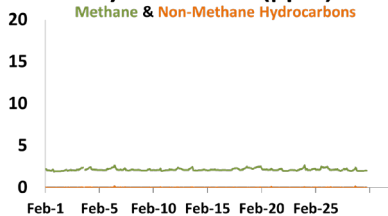
Nitrogen Dioxide (ppb)



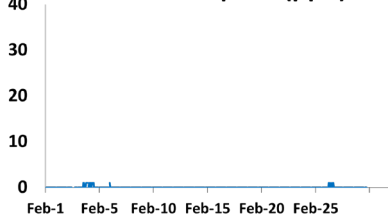
Sulphur Dioxide (ppb)



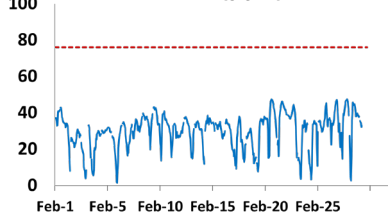
Hydrocarbons (ppm)



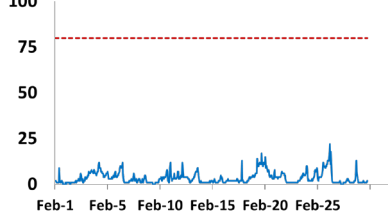
Reduced Sulphur (ppb)



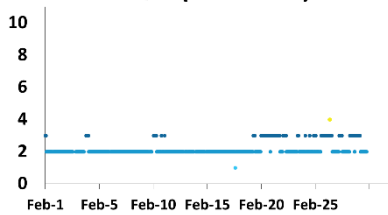
Ozone (ppb)



Fine Particulates (µg/m³)



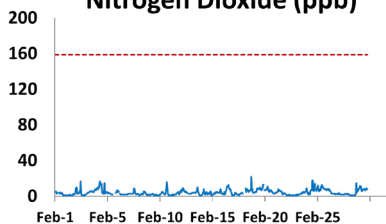
AQHI (risk value)



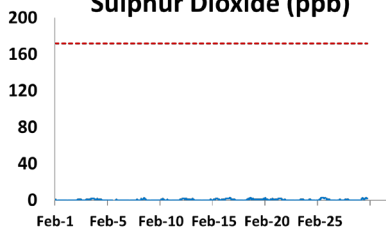
PAMS

Town of Bonnyville - Charlotte Lake

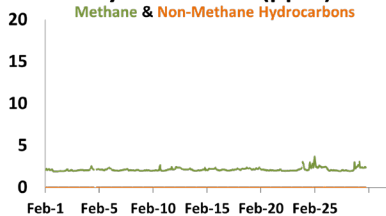
Nitrogen Dioxide (ppb)



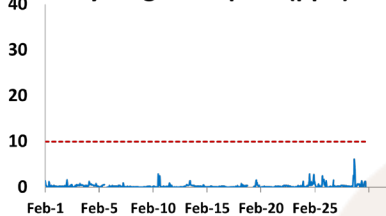
Sulphur Dioxide (ppb)



Hydrocarbons (ppm)



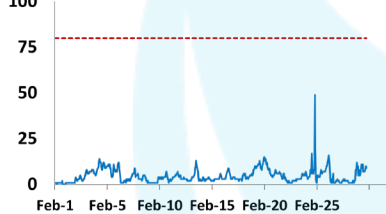
Hydrogen Sulphide (ppb)



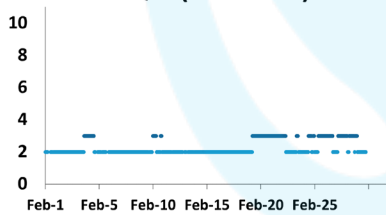
Ozone (ppb)



Fine Particulates (µg/m³)



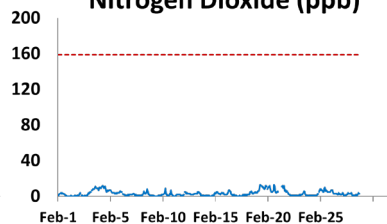
AQHI (risk value)



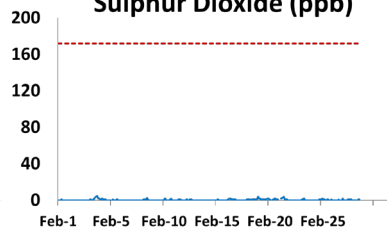
St. Lina

County of St. Paul - North

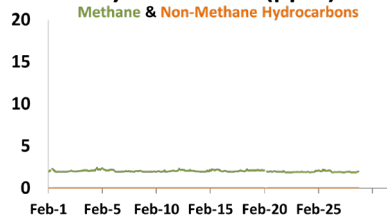
Nitrogen Dioxide (ppb)



Sulphur Dioxide (ppb)



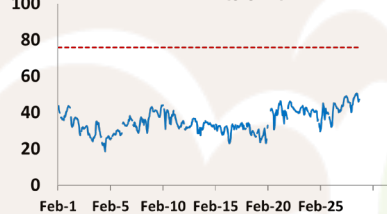
Hydrocarbons (ppm)



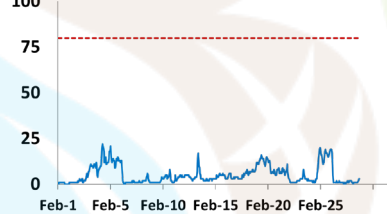
Hydrogen Sulphide (ppb)



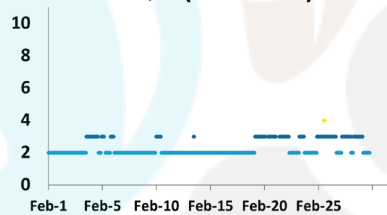
Ozone (ppb)



Fine Particulates (µg/m³)



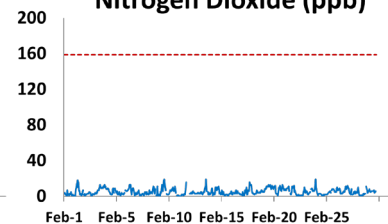
AQHI (risk value)



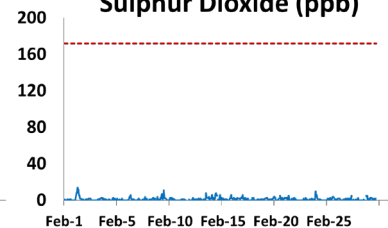
Maskwa

Cold Lake Oil Sands Area

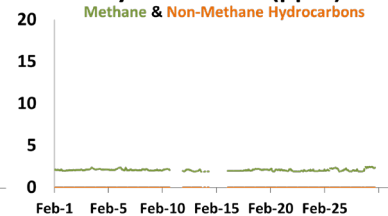
Nitrogen Dioxide (ppb)



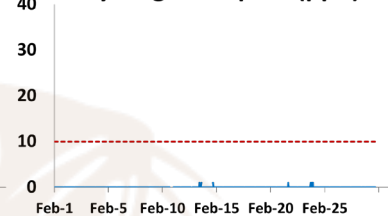
Sulphur Dioxide (ppb)



Hydrocarbons (ppm)



Hydrogen Sulphide (ppb)



Ozone (ppb)



Fine Particulates (µg/m³)



Fine Particulates (µg/m³)



Monitoring data are presented as 1-hour averages. Dashed red lines indicate the applicable Alberta Ambient Air Quality Objective or Guideline (AAAQO/G). AAAQOs presented in these charts: sulphur dioxide 1-hour = 172 ppb, ozone 1-hour = 76 ppb, nitrogen dioxide 1-hour = 159 ppb. AAAQGs presented in these charts: particulate matter_{2.5} 1-hour = 80 µg/m³. Air Quality Health Index (AQHI) Risk Range = 1-3 Low, 4-6 Moderate, 7-9 High, 10+ Very High (www.alberta.ca/air-quality-health-index.aspx).

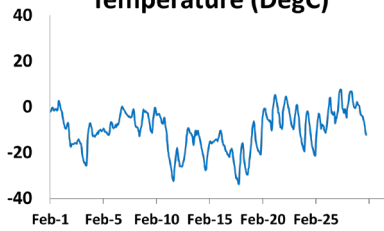
Continuous Monitoring

February 2020

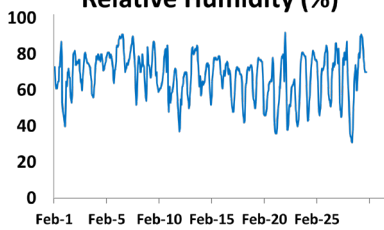
Cold Lake

City of Cold Lake

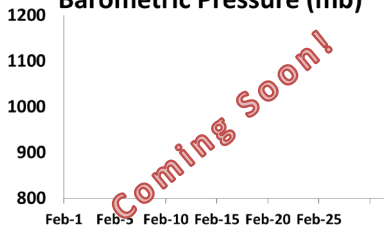
Temperature (DegC)



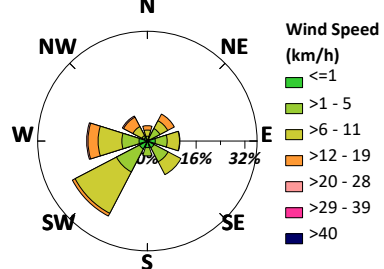
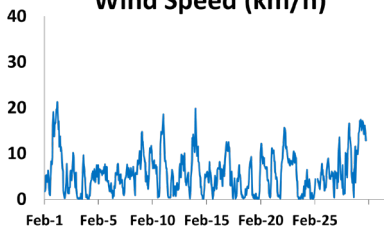
Relative Humidity (%)



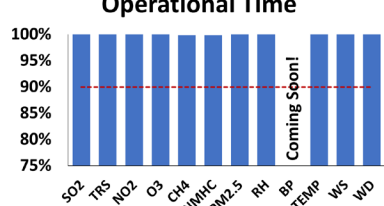
Barometric Pressure (mb)



Wind Speed (km/h)



Operational Time



PAMS

Town of Bonnyville - Charlotte Lake

Temperature (DegC)



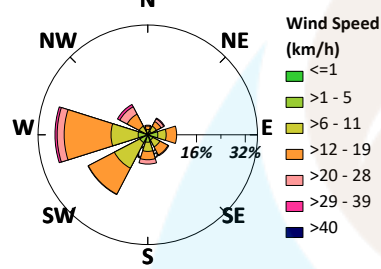
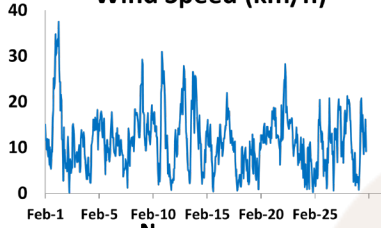
Relative Humidity (%)



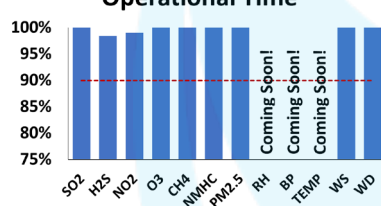
Barometric Pressure (mb)



Wind Speed (km/h)



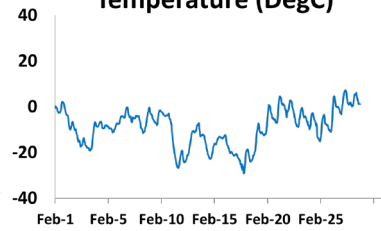
Operational Time



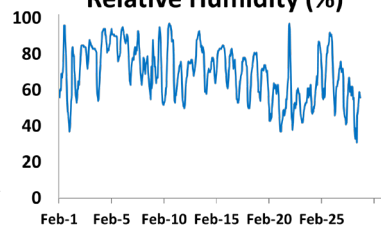
St. Lina

County of St. Paul - North

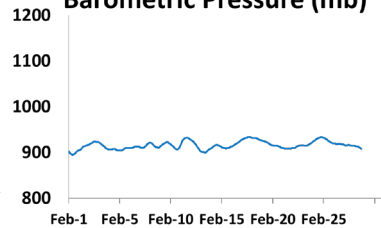
Temperature (DegC)



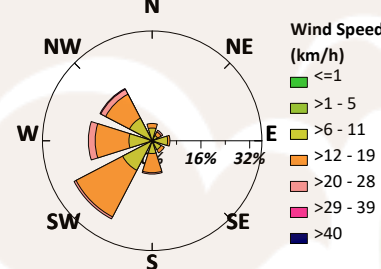
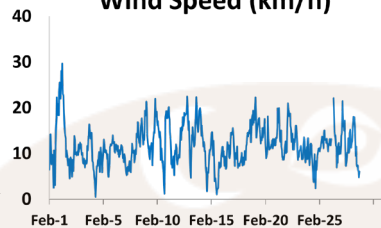
Relative Humidity (%)



Barometric Pressure (mb)



Wind Speed (km/h)



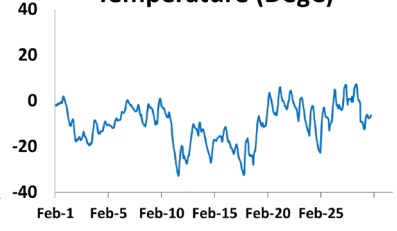
Operational Time



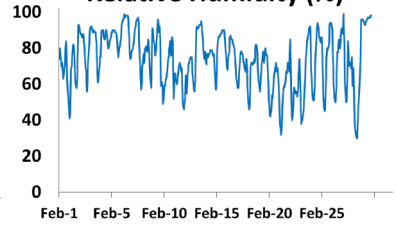
Maskwa

Cold Lake Oil Sands Area

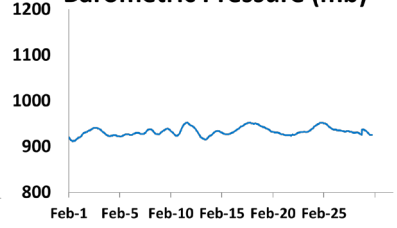
Temperature (DegC)



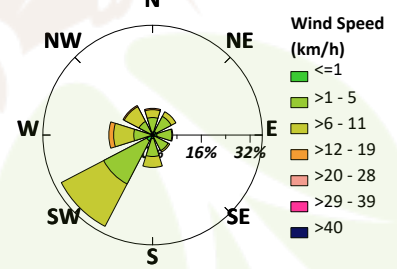
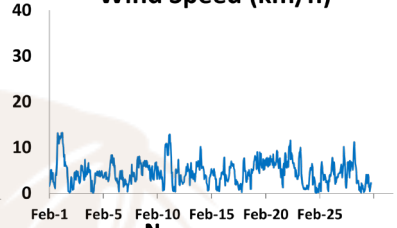
Relative Humidity (%)



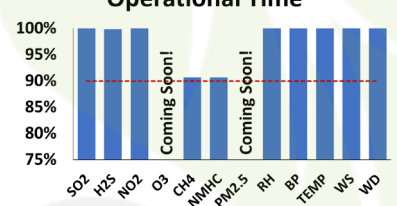
Barometric Pressure (mb)



Wind Speed (km/h)



Operational Time

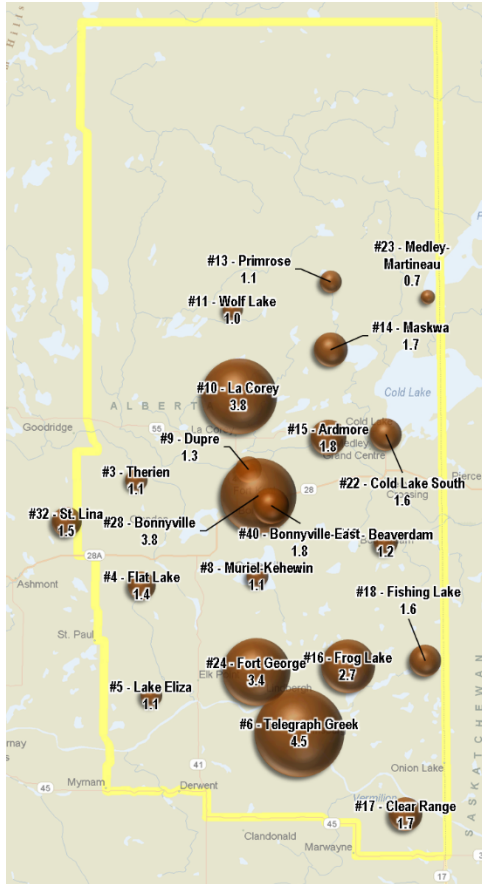


Operations Notes: Parameters noted as "Coming Soon" will be added in 2020. For **Operational Time**, the minimum requirement is 90% (indicated by the dashed red line on the above charts). **Cold Lake South:** No operational issues this month. **Cold Lake South:** THC/CH₄/NMHC: A repeat zero-span check was initiated following a span gas bottle replacement on February 19 hour 9. One hour of downtime was recorded as a result. **Maskwa:** HC: Following a successful shut-down calibration on February 11, a new hydrocarbon analyzer was installed. The analyzer failed the daily span check on February 14 hour 7 due to sample injection issues. Poor sample injections started being recorded on February 14 hour 23. Addressing these issues resulted in 65 hours of downtime. **St. Lina:** No major operational issues to report. **PAMS:** H₂S: The analyzer exhibited span issues throughout the month which required additional checks and calibration work. Addressing these issues resulted in ten hours of downtime. NO_x/NO/NO₂: The analyzer has a history of unstable span results, numerous as-found point checks and repeat calibrations have been completed since this analyzer was installed. All the check results have demonstrated that this is a problem with the IZS circuit. The analyzer will be replaced in March for offsite troubleshooting and investigation. **Acronyms:** PAMS = Portable Air Monitoring System, SO₂ = sulphur dioxide, TRS = total reduced sulphur, NO₂ = nitrogen dioxide, O₃ = ozone, THC = total hydrocarbons, CH₄ = methane, NMHC = non-methane hydrocarbons, PM_{2.5} = fine particulate matter, RH = relative humidity, H₂S = hydrogen sulphide, BP = barometric pressure, TEMP = temperature, WS = wind speed, WD = wind direction, AQHI = air quality health index.

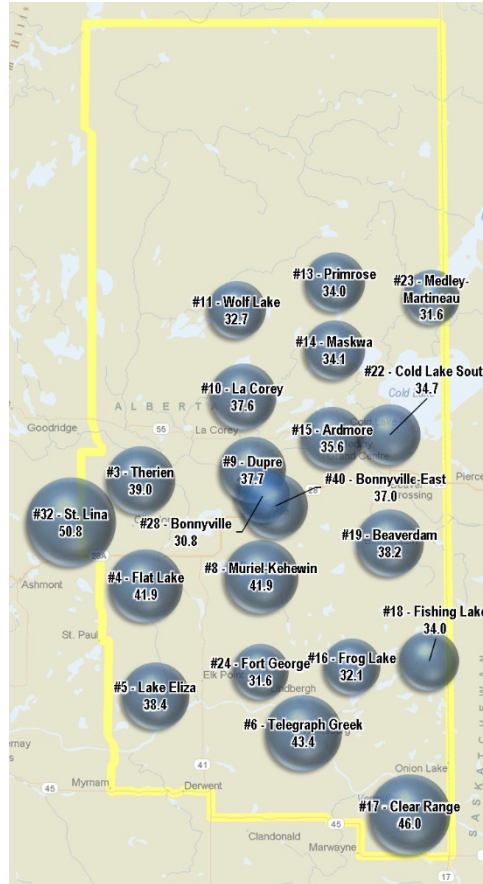
Passive Monitoring

February 2020

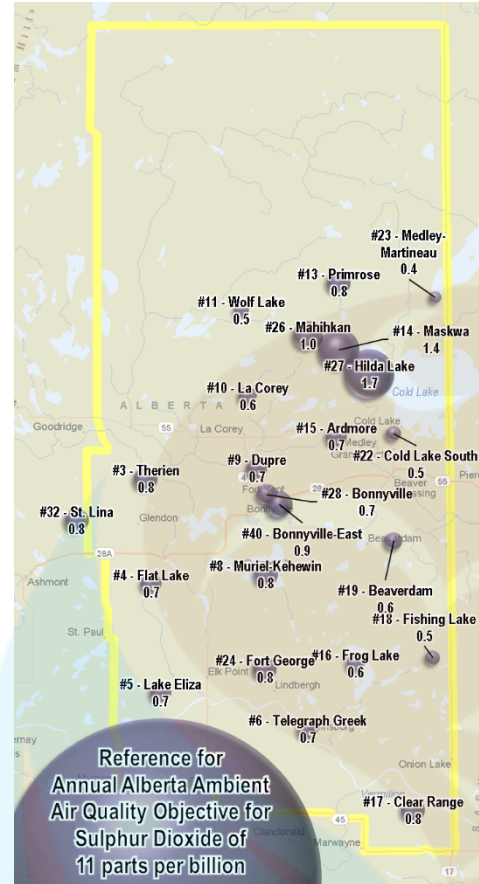
Nitrogen Dioxide



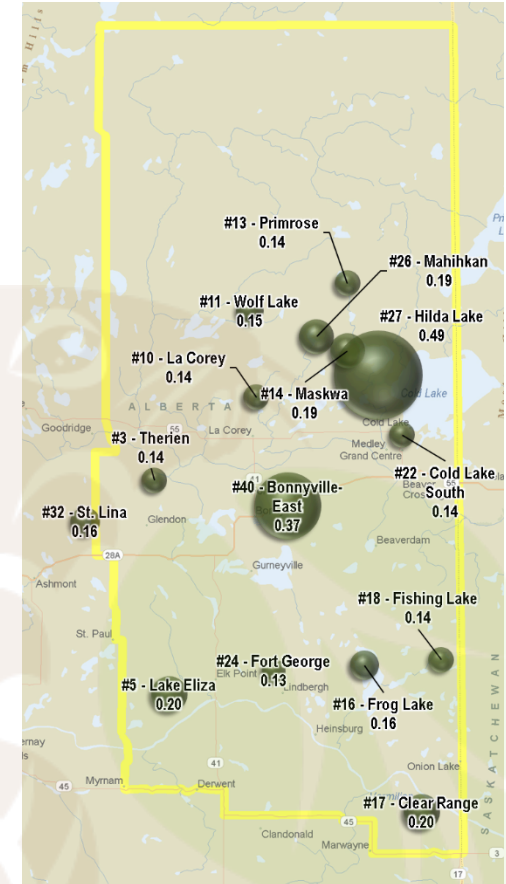
Ozone



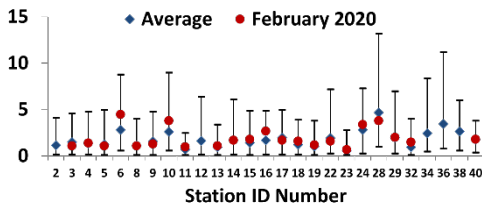
Sulphur Dioxide



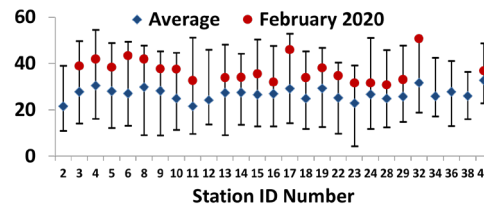
Hydrogen Sulphide



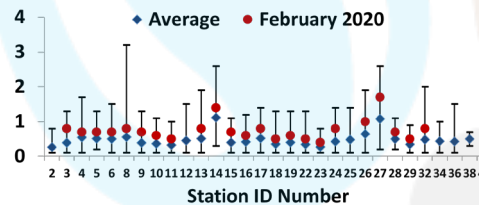
Minimum-Maximum-Average (ppb)
Monthly Nitrogen Dioxide: 2007 - 2019



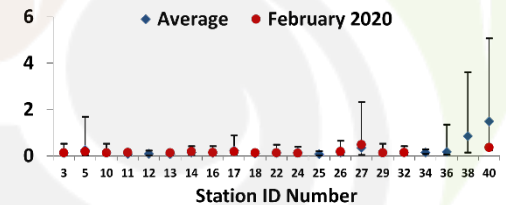
Minimum-Maximum-Average (ppb)
Monthly Ozone: 2007 - 2019



Minimum-Maximum-Average (ppb)
Monthly Sulphur Dioxide: 2007 - 2019



Minimum-Maximum-Average (ppb)
Monthly Hydrogen Sulphide: 2007 - 2019



This series of bubble maps present monthly average concentrations in parts per billion (ppb) over a one-month period. Displaying data this way illustrates the spatial patterns of the parameters monitored in the LICA passive monitoring network. The 1-month Ambient Air Quality Objective for sulphur dioxide is 11 ppb.