The need to monitor air quality is recognized world-wide. This involves, inter alia, measurements of key pollutants (e.g. ozone and carbon monoxide) in the lowermost troposphere at spatio-temporal scales relevant to policy makers (temporal frequencies less than 1 hour; spatial scales less than 15 km). This presentation identifies the role of data assimilation observing system simulation experiments (OSSEs) in determining the future observing system to monitor air quality. Caveats associated with setting up and interpreting OSSEs are discussed. OSSEs performed to assess the added value of the proposed geostationary satellite platform MAGEAQ (Monitoring the Atmosphere from Geostationary orbit for European Air Quality) are presented to illustrate the concept.