Continuous monitoring for measuring and mitigating methane emissions from oil and gas production operations

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The global energy sector emits approximately 135 Tg/year of methane, and oil and gas production operations are among the largest sources, accounting for approximately 80 Tg/year, or 60%, of energy sector methane emissions. These methane emissions drive atmospheric radiative forcing (global warming) that is equivalent to the carbon dioxide emissions of billions of vehicles. In most production regions, a small number of sources, emitting at high rates, account for a large proportion of emissions. These sources are generally intermittent and often due to equipment malfunction. Recognition of the role of large emission events has led to interest in continuous monitoring of methane emissions at oil and gas production sites. This presentation will describe the design and operation of a proof of concept methane monitoring network in the Permian Basin of West Texas, covering a group of approximately 50 production sites using approximately 70 sensing systems. Approaches to sensor selection and network design will be described. Methods for differentiating routine emissions from emissions associated with equipment malfunctions will also be presented.