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A Tale of Two Cities - Differences and Similarities in GHG Observations for Two Coastal Sites from Earth Networks

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Over the next five years, Earth Networks (EN) will deploy 100 cavity ring-down spectrometers (CRDS) continuously measuring CO_2 and CH4. The current plan is to place sensors on 50 tall towers in the United States, 25 in Europe and 25 around the world. Data from two EN sites located in coastal settings have been available since January 2011: from a site at SCRIPPS Institution of Oceanography near San Diego, California, and from a rural area location on the eastern shore in Maryland. Accumulated continuous observations at a sub-minute sampling rate provided basis for analysis of temporal patterns in GHG measurements and comparison of distinct features identified for each site. The San Diego site on the Pacific coast has a less pronounced influence of vegetation sinks and the patterns in both CO_2 and CH4 signals show clear dependence on a group of anthropogenic factors. For the Atlantic coast, observations reveal more complicated dynamics and suggest analysis of each season and month separately. Advantages of using both CO_2 and CH4 measurements in combination with weather observations at collocated stations to better understand contributions from sources and sinks, which have various temporal patterns as well as different geography and spatial distribution, are explored in this study.