**NASA DEVELOP National Program**

****NASA Jet Propulsion Laboratory

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**Short Title: Los Angeles Health and Air Quality**

**Updated Abstract**

Combining greenhouse gas (GHG) datasets with GIS spatial modeling is a viable method for analyzing the distribution of GHG emissions. Understanding the spatial dynamics of GHG emissions is important for global climate modeling and forecasting, especially as it relates to predicting the effects of global warming and the development of state and federal policies. Our research presents a spatial model of methane (CH4) emissions in the Southern California Air Basin. Point sources of CH4 emissions are established through the development of a geospatial database. We estimated CH4 emission factors using a combination of the GHG inventory developed by the California Air Resources Board (CARB) and other statistical methods derived from previous GHG studies to tabulate these spatial datasets in order to create a raster-based visualization of CH4 emissions. Our spatial map of CH4 emissions illustrates the potential of spatial modeling for accurately depicting GHG emissions in a megacity, such as greater Los Angeles. This data provides a baseline against which measurements collected by NASA Jet Propulsion Laboratory’s Climate Science Department, chiefly the Megacities Carbon Project, can be evaluated.