



## **Preliminary Interpretation of the Meteorological Gale Environment Cycle Year Through Mars Science Laboratory Rover Environmental Monitoring Station Observations and Mesoscale Modeling**

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Abstract:

In this study the Mars Regional Atmospheric Modeling System (MRAMS) has been applied to the Gale Crater region, the landing site of the Mars Science Laboratory (MSL) Rover Curiosity. The landing site is at one of the lowest elevations in Gale, between the crater rim and the  $\sim 4$  km high central mound known as Mt. Sharp. As Curiosity heads toward its long term target of Mt. Sharp, the meteorological conditions are expected to change due to the increasing influence of topographically-induced thermal circulations that have been predicted by numerous previous studies [1, 2, 3, 4]. The types of perturbations of pressure, air and ground temperature and wind measured by the Rover Environmental Monitoring Station (REMS) [5] have never been observed at other locations and these data provide a great opportunity to test the models at the most meteorological interesting area measured to date. We provide a comparison of MRAMS predictions (pressure, air temperature, winds and ground temperature) to the REMS data available at the location of the Rover for sols 21-25 (when first regular REMS measurements were obtained, Ls=163), sols 51-55 (Ls=180), sol 215 (Ls=270), sols 348-352 (Ls=0) and sols 541-545 (Ls=90) to complete a Mars year cycle, in order to provide a baseline of model performance.