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Coupled 3-D hot particle and exosphere modelling of Venus day and nightside exosphere

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We developed a 3-D hot particle Monte Carlo code which can be coupled to a 3-D exosphere test particle model. This codes can be used for studying expected asymmetries related to the day and nightside production rates and distributions of hot particles in planetary exospheres. The newly photochemically generated energetic neutral atoms are traced from their point of origin up to the exobase as a function of longitude, latitude, production process, collision probability with the cool background atmosphere, change of direction (altitude and angles) and energy. For modelling the Venusian day and nightside background atmospheric and temperature profiles from the mesopause to the exobase we apply a diffusive gravitational equilibrium and thermal balance model. The hot particles which arrive at the exobase with energies higher than the corresponding exobase temperature of the background gas are divided into energy bins and used for the calculation of the energy density distributions as a function of latitude and longitude. These calculated energy density distributions of photochemically produced hot atoms at the Venusian exobase are used as inputs for 3-D hot particle exosphere simulations. Finally we present preliminary results of hot and cold atomic oxygen particle populations in the Venus day and nightside exosphere.