APPLICATION OF LINKED THREE-DIMENSIONAL PBL AND DISPERSION MODELS TO NEW YORK CITY

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1. INTRODUCTION

The two-dimensional vorticity mode urban PBL model (called URBMET) of Bornstein (1975) has been extended to three dimensions. The model is used to simulate sea breeze circulations in the coastal urban environment of New York City (NYC). Output from the PBL model is used as input to a modified form of the three-dimensional Eulerian urban air pollution model developed by Shir and Shieh (1974). The dispersion model is used to simulate the distribution of sulfur dioxide concentrations in the NYC area resulting from point and area source emissions into the sea breeze circulation.

2. FORMULATION OF PBL MODEL

URBMET simulates time-varying three-dimensional distributions of velocity, temperature, and (sub-saturation) moisture in the planetary