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AGDISP as a Source Term in Far Field Atmospheric Transport Modeling and Near Field Geometric Assumptions

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Authors: Harold W. Thistle, Milton E. Teske, James G. Droppo, C. Jerry Allwine, Sandra L. Bird, Richard J. Londergan
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Modeling considerations to extend the AGDISP model into the far field as well as to integrate it into a GIS platform are discussed. Modifications made to the model to address problems raised in a recent, independent QA/QC exercise are also presented. To use AGDISP as a source model for far-field deposition and dispersion modeling, we calculate the fraction of material left aloft after the wing-tip vortices have dissipated and evaporation has ceased (slowed). This aloft fraction is then assumed available for far field drift and is used as the source strength that is passed to the farfield algorithm. In this paper, hand-off to the CalPuff model (as accessed in the SprayTrans system) is discussed. Also discussed is the modification of the line source algorithm as the model is converted from a two dimensional to a three dimensional model facilitating movement to a GIS platform. The lineal source strength must be increased using a sine adjustment as the wind moves off of perpendicular to the spray line. The projected line (the cross section of the area affected by the plume) becomes shorter and deposition values are higher under the narrower plume. A further adjustment in model geometry discussed here is the removal of the dependence of near field deposition on swath width. This is an artifact of dimensional requirements in the modeling, though it reflects applicator practice in certain respects.

American Society of Agricultural and Biological Engineers
2950 Niles Road, St. Joseph, MI 49085 | phone 269.429.0300 | fax 269.429.3852 | hq@asabe.org