

# A GIS-based study on regional pesticide deposition

Theme: Water Framework Directive

BO-06-006-003

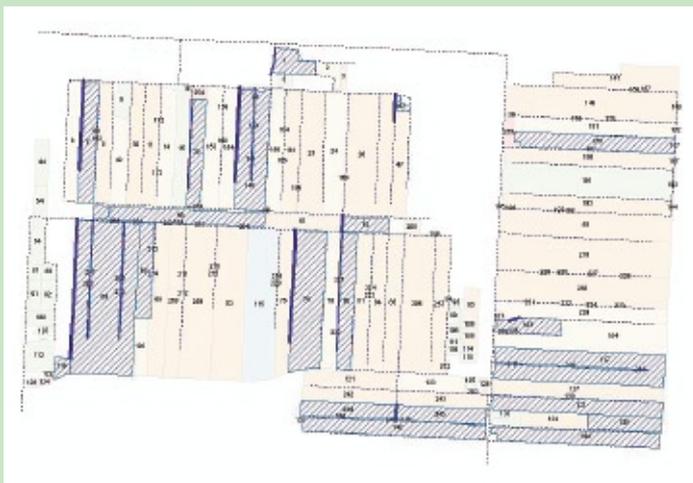
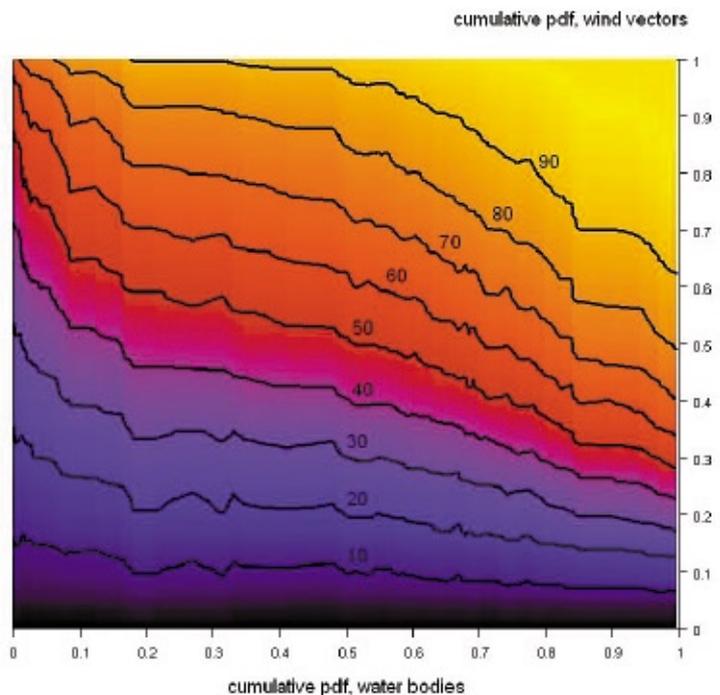
## Problem

Spray drift is still a major factor in contaminating surface waters in Europe. Many drift studies describe the single-field case only. A more realistic approach demands scaling-up to a regional study of drift hazards.

## Approach

The **Cascade Project** describes the modelling of spray drift and pesticide fate for a network of interconnected water bodies in a rural area. The **Cascade Drift Module** models the spatial and temporal distribution of spray drift deposits onto the water bodies in a realistic way. Results of the drift module are used as input for the Cascade Fate Module, which models the fate of pesticides in water bodies.

For the current set-up of the project a 10 km<sup>2</sup> pilot region was selected with primarily agricultural use. The region is well described geographically and hydrologically using GIS (TOP10Vector, LGN4).



Map of sprayed potato parcels (green polygons) and water body segments loaded with drift deposits (segments bounded by red dots); red arrow indicates wind direction (aanpassen naar quantiteit).

## Results

A prototype of Cascade Drift Module works well. Spray drift onto a network of water bodies can be computed under varying circumstances.

First sensitivity and uncertainty analysis give an impression of the effect of wind speed, wind direction and waterway dimensions on spray drift deposition in surface water. Additional field measurements are done to quantify the variation in spray drift deposition alongside a field edge.

## Future use in risk assessment

The Cascade Drift Module offers a more realistic insight in the problem of spray drift onto surface waters. Extension to other representative regions is possible when geographical information will be available for those regions.

Henk Jan Holterman, Jan van de Zande & Jan Huijsmans

Contact: Henk Jan Holterman  
Plant Research International  
P.O. Box 16, 6700 AA Wageningen, the Netherlands  
T +31 317 47 63 18 - F +31 317 42 31 10  
henkjan.holterman@wur.nl - www.pri.wur.nl