
Subject: Re: gaussian air dispersion model
Posted by [Mark Hadfield](#) on Tue, 29 Nov 2005 00:04:29 GMT
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guillaume.drolet.1@ulaval.ca wrote:

- > [snip]
- > The footprint model will give me one dimension: the distance of the
- > footprint in the mean wind direction, for a given measurement period
- > and a given percentage (r) to be included. This distance will be the
- > major-axis of the ellipse. The length of the ellipse's minor-axis (i.e.
- > across-wind width) will be missing and this is what I want to estimate
- > with a gaussian function. How I will do that, honestly, I don't know???
- > This is where I need help.

Then you are probably asking these questions in the wrong forum.

But obviously the hard bit is calculating the width parameter to be used in the Gaussian function. The usual assumption is

$$\sigma_y = \sigma_\theta * x * f(x)$$

where x is downwind distance, sigma-theta is standard deviation of wind direction (in radians) and f(x) is a function that equals 1 at short distances and then slowly drops away. If the distances in question are small you can get away with

$$\sigma_y = \sigma_\theta * x$$

Do you have any info on sigma-theta?

- > As I said before, I need a way to estimate the 'across-wind width',
- > knowing the 'along-wind extent' and other variables measured by the
- > tower sensors (e.g., mean wind direction (x,y,z), etc.). I don't have a
- > clue how I'm gonna find this but one thing is sure, I'm gonna need help!

You're going to need to do a bit of reading.

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