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Subject: Re: coherence test implementation  
Posted by [Dick Jackson](#) on Thu, 13 May 1999 07:00:00 GMT  
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Hi Mark,

Mark Rehbein wrote:

>  
> Hi,  
>  
> I'm doing some cloud detection on some rather large images using what  
> some people call a coherence test. To do a coherence test on a pixel  
> you take a 3x3 matrix around that pixel and assign that pixel the  
> standard deviation of the 3x3 matrix.

You piqued my curiosity, since you're right, there had to be a more efficient way! My attached coherence.pro should do the trick, and I clock it at about 60 times faster with a 300x300 test.

From your code, just call:

```
sddevimage = Coherence(ch4)
```

I return an image of the same size and leave the outer ring of pixels as 0.0, is that reasonable?

I used the formula for the SD of a set of 9 values:

$$SD = \sqrt{(\text{Sum}(X^2) - (\text{Sum}(X)^2 / 9)) / 8}$$

Generalizing coherence.pro to allow variable 'width' (not fixed at 3) is left as an exercise to the reader. :-) I guess it wouldn't be hard, changing all 'magic numbers' (3, 2, 9 and 8) to width, width-1, width^2 and width^2-1.

Cheers,

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-Dick

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Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

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### File Attachments

1) [coherence.pro](#), downloaded 145 times

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