
Subject: Re: STANDARD DEVIATON

Posted by [Struan Gray](#) on Tue, 01 Aug 2000 07:00:00 GMT

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Ben Marriage, ben@met.ed.ac.uk writes:

- > I want to calculate the standard deviation of a 3x3
- > pixel area for each element of a satellite image
- >
- > Does anyone know of a simple and elegant (read "quick")
- > method of doing this without using loops?

You can use a box smooth to do the local averaging and renormalisation, with variable widths if needed. If you use the fact that the s.d. is the square root of the local variance, you'll need to smooth twice: once when calculating a local mean, and again when creating the s.d. array.

```
function imageSD, image
```

```
    localmean = smooth(float(image), 3, /edge_truncate)
    localsd = sqrt((float(image)-temporary(localmean))^2)
    localsd = smooth(temporary(localsd), 3, /edge_truncate)
```

```
    return, localsd
```

```
end
```

You can set different edge-effects and averaging widths by passing different parameters to the box smooth function. The box smooth normalises by the square of the smoothing width, so if you want to treat the image as a estimate of a population you'll have to renormalise - but this is pretty unlikely with image data.

Struan
