Subject: Labelling Highs/Lows in contour
Posted by Amit Ghosh on Thu, 13 Aug 1998 07:00:00 GMT
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Is there a way to automatically label highs and lows on a contour plot ? For
example place an L or H in a trough or peak respectively.

Amit

Subject: Re: Labelling Highs/Lows in contour
Posted by Amit Ghosh on Fri, 14 Aug 1998 07:00:00 GMT
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In article <35D3CD90.E94C3B56@earthling.nospam.net>,
  Phillip & Suzanne David <pdavid@earthling.nospam.net> wrote:
> David Fanning wrote:
>>
>> Amit (amit@physics.utoronto.ca) writes:
>>
>>> Is there a way to automatically label highs and lows on a contour plot ?
For
>>> example place an L or H in a trough or peak respectively.
>>
> At a guess, I would write the contour the usual way, then find the max and min
> of the underlying data, calculate coordinates into the plot based on the
> locations of the max and min, and place (in overplot mode -- I don't remember
> the name of the function to do this) an L at the min and an H at the max.
> That's the simplest algorithm I can think of.
>
>> P.S. Does anyone know how to find the slope of
>> a 2D array. :-(
>

Finding maxes and mins in the data (I guess what David was hinting at by
asking to find the deriv of a 2D array) and labelling every one of them is
easy, but that's not the question I asked. I only want to determine if the
contour surrounds a high or low and label it appropriately. I don't want to
label extrema between contours or multiple extrema within one contour. Of
course only simple and elegant solutions are acceptable. :)

Subject: Re: Labelling Highs/Lows in contour
Posted by Martin Schultz on Sat, 15 Aug 1998 07:00:00 GMT
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amit@physics.utoronto.ca wrote:
>
> [..]

> Finding maxes and mins in the data (I guess what David was hinting at by
> asking to find the deriv of a 2D array) and labelling every one of them is
> easy, but that's not the question I asked. I only want to determine if the
> contour surrounds a high or low and label it appropriately. I don't want to
> label extrema between contours or multiple extrema within one contour. Of
> course only simple and elegant solutions are acceptable. :)
>
>

Just a thought: how about retrieving the contour coordinates (something like the PATHXY keyword), checking for closed contours (first and last point identical or very close), and then using the length of the contour line (number of points) to find the smallest ones which should surround your highs and lows. You would probably have to play around a little and also find a way to determine how many highs and lows you have, but this would be something you could try. Another "trick" once you found the closed contour lines could be to fill these contours additively (treating them as image - instead of replacing a group of pixels with a color value as POLYFILL does, you would have to add 1 to the pixel value). Then it should be easy enough to find the relative minima and maxima.

On the other hand: since contour lines are somewhat arbitrary... You could smooth your data before looking for minima and maxima. In order to exclude extrema "between contours" (saddle points ?) you would have to test each extremum in all directions (i.e. are ALL neighbouring points higher or lower than the point in question). Hence you could look for extrema say in x direction and then test them for y and the diagonals. If you have concerns about speed (i.e. a huuuuge data array), you could first "transform" your data into an "image" array (BYTSCL and CONGRID). That should be precise enough if you are only looking for spots to label your plot.

Hope this helps a little and I don't blame myself too much in front of the experts,

Martin.

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