
Subject: Re: Satellite images and interpolation
Posted by [Martin Schultz](#) on Wed, 23 Jun 1999 07:00:00 GMT
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Ben Marriage wrote:

>
> Hey everybody,
>
> Was wondering if somebody could point me in the right direction (i.e.
> which procedures/functions to use) for this subscript problem:
>
> I have a 2D array of values and a corresponding 2D array of Latitudes and
> a 2D array of longitudes (Geo-registered Sea Surface Temperatures if
> anybody is interested). I also have a 2D satellite image with 2D arrays
> of latitude and longitude. How do I take the latitude/longitude pairs
> from the satellite image and interpolate these positions into the Sea
> Surface Temperatures?
>
> I would be extremely grateful for just a pointer to the correct
> functions if they already exist in IDL.
>

here's a list roughly ordered in successive complexity and with no
guarantee of completeness:

- rebin : only works when dimensions are integer multiples
and the grids perfectly aligned
- congrid : still needs the grids aligned
(if you are most interested in displaying these images
on the same scale, you can use `tvimage.pro` from
David Fanning's website www.dfanning.com which
internally uses `congrid`)
- bilinear : "The BILINEAR function uses a bilinear interpolation
algorithm to compute the value of a data array at each of a set of
subscript values. The function returns a two-dimensional, floating-point
interpolated array."
- interpolate : "The INTERPOLATE function returns an array of linear,
bilinear or trilinear interpolates, depending on the dimensions of the
input array P."
- krig2d : "The KRIG2D function interpolates a regularly- or
irregularly-gridded set of points $z = f(x, y)$ using kriging. It returns
a two dimensional floating-point array containing the interpolated
surface, sampled at the grid points."
- min_curve_surf : "The MIN_CURVE_SURF function interpolates a

regularly- or irregularly-gridded set of points with either a minimum curvature surface or a thin-plate-spline surface..."

- tri_surf : "The TRI_SURF function interpolates a regularly- or irregularly-gridded set of points with a smooth quintic surface. The result is a two-dimensional floating-point array containing the interpolated surface, sampled at the grid points. TRI_SURF is similar to MIN_CURVE_SURF but the surface fitted is a smooth surface, not a minimum curvature surface. TRI_SURF has the advantage of being much more efficient for larger numbers of points."

That's what IDL has to offer in terms of 2D interpolation. If you need a regridding routine that includes area weighting, you can contact me by email (but for SST that may not be necessary).

Regards,
Martin

— —

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Subject: Re: Satellite images and interpolation
Posted by [wmc](#) on Thu, 24 Jun 1999 07:00:00 GMT
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Martin Schultz <mgs@io.harvard.edu> wrote:

> Ben Marriage wrote:

```
>> I have a 2D array of values and a corresponding 2D array of Latitudes and
>> a 2D array of longitudes (Geo-registered Sea Surface Temperatures if
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>> of latitude and longitude. How do I take the latitude/longitude pairs
>> from the satellite image and interpolate these positions into the Sea
>> Surface Temperatures?
```

MS provided a nice list but I think he left out the ones you need: the pair triangulate and trigrid. Have a look at the help pages for these 2. Also, look (www.deja.com) for my recent post about sph_scatt and the helpful reply I received.

$-W.$

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Climate Modeller, British Antarctic Survey | Disclaimer: I speak for myself
