Subject: Re: terrain normalisation
Posted by Marcel Droz on Fri, 30 Jun 2000 07:00:00 GMT
View Forum Message <> Reply to Message

<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>
Thanks a lot for your explanations! I actually see the problem...but as
our studies will cover the whole alps - means from France to Austria...
- its rather difficult to find a homogenous DEM of the whole region,
especially with limited finacial resources.

Do you know any organisation, research institute or whatever, who deals/dealt
with this kind of DEM (about 250m resolution or even better)?
<p>Thanks in advance, Marcel.
<p>richard hilton wrote:
<blockquote TYPE=CITE>I would be very careful with calculating the aspect
of a 1km DEM when you

are trying to use a 1km AVHRR image for sun angle/aspect/slope calculations.

You need to use a DEM that is of much higher resolution than that.
You only

have "mean" height values for the 1km squares and not any information
about

the slope/aspect. You can infer a slope/aspect from the surrounding
pixels

but this can result in increasing the errors in using this value instead
of

assuming that the alps are flat!!!!! (the information from the surrounding

pixels cannot give subpixel infomation about what is happening inside
the

central pixel.)
<p>eg.

          10
10
10

          10
5
10

          10
10
10
<p>A 3x3 grid. you would assume that the mean slope/aspect for the central

square are both 0 but.....
<p>
10   &nbs p;
10   &nbs p;   10

          10
10
5   ;   0 10

10   &nbs p;
10   &nbs p;   10
<p>in this case there is a linear slope to the right (the extra 10 and
0 are

the subpixel heights in the inner square in the extreme left and right
of

the square)
<p>but in this case the slope is reversed:
<p>
10   &nbs p;
10   &nbs p;   10

          10
0   ;
5   ;   10 10

10   &nbs p;
10   &nbs p;   10
<p>this is obviously a simple case but I hope you can see the difference.
If

you are trying to calculate the sun angle then assuming the area to
be flat

is potentially going to be more accurate (even in a mountainous area!!!).
<p>I think that you really need to be using a far heigher resolution DEM.
and

then rebin the slope/aspects up to the 1km required resolution.
<p>We are currently doing a lot of research into existing 1km (30 arc-second
to

be precise) DEMs (and creating our own, called ACE (Altimeter Corrected

Heights)) in particular GLOBE_v1, GTOPO30 and the 5 arc-minute JGP95E
and

have shown errors in heights of up to 1500m over parts of the world.
I must

however stress that I haven't looked at the swiss alps. I've had a
look at

the area, and the source data in GTOPO30 is DTED data. This is the
best type

of data in the DEM, but this uses a 3 arc second pixel to represent
the

whole 30 arc-second region and is not a mean over the whole area. This
gives

vertical errors (according to GLOBE_v1) of 18-120m (they used the same
data

but the stats are far more acuarate!!) What affect this will have on
a

calculation of the slope/aspect is difficult to assess but I assume
it would

be fairly devastating!!
<p>General features (rivers etc. always appear in the correct place

(horizontally but not vertically) but the topography is often supersampled

100-200m contours which gives rise to mathematical features and NOT
true

representations of the land surface. There should be accurately surveyed

maps of the swiss alps available since it is a developed country and
the

surveying has probable been done very well, but how much these cost
and who

owns them I'm afraid I don't know. I imagine that even a 50m resolution
DEM

for a relatively small area would be incrediably expensive.
<p>I hope this helps
<p>Let me know if you want anymore information.
<p>Richard</blockquote>
</html>
