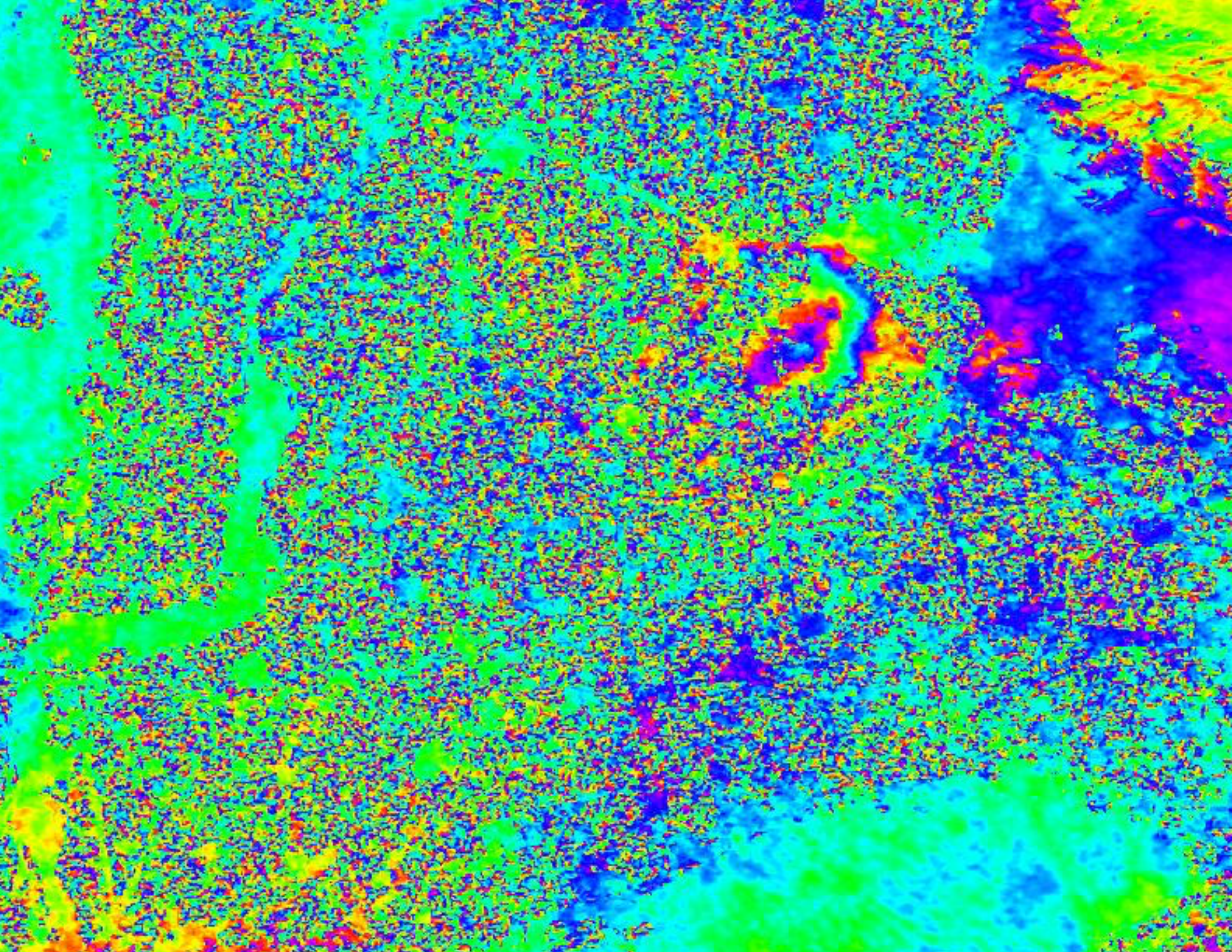

Phase unwrapping for the impatient

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GMTSAR workshop, August 2015

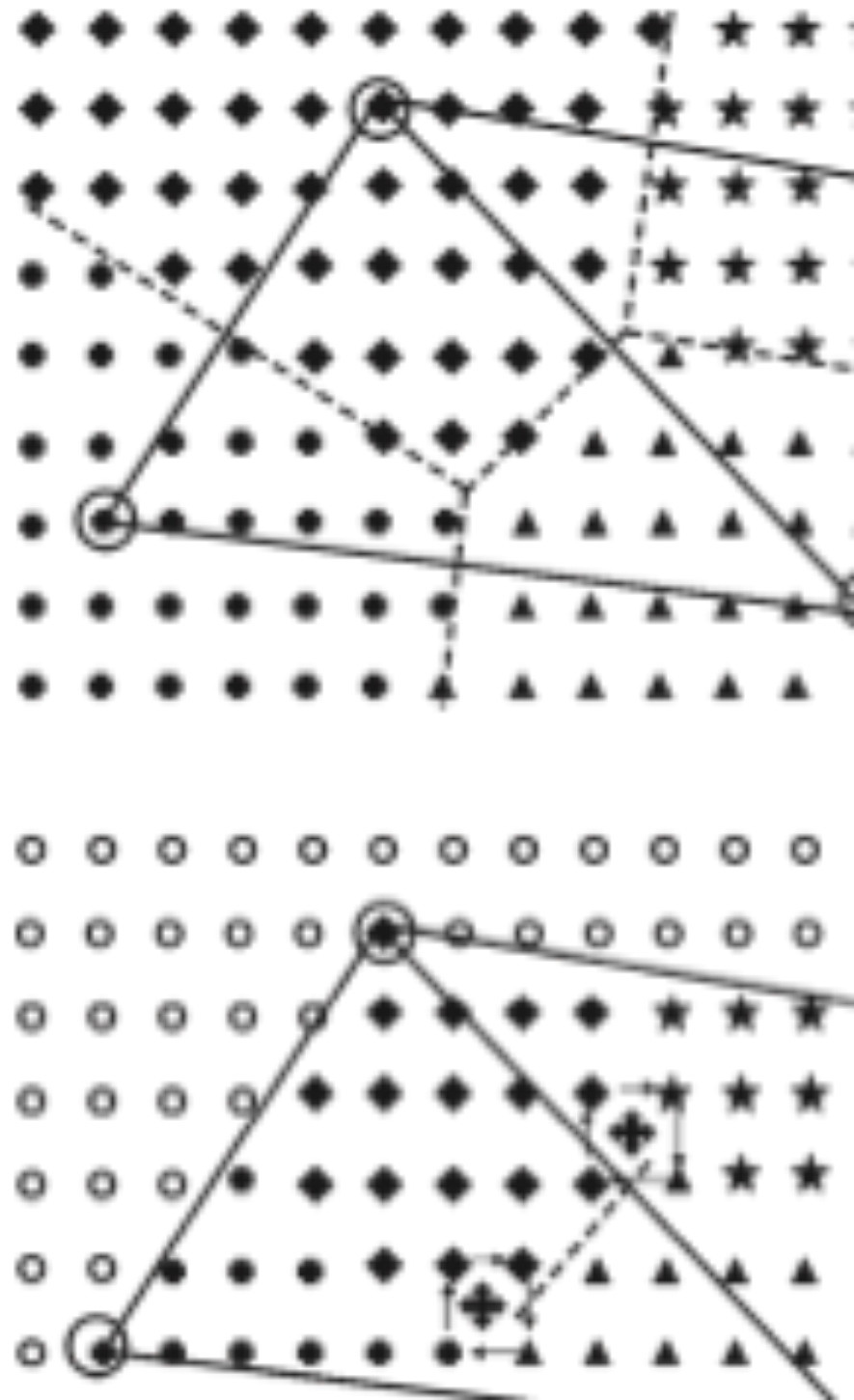
- Sometimes you have a scene with large decorrelated areas
- In these cases, SNAPHU can take ~forever
- Setting the correlation threshold higher won't help (why?)
- We can use interpolation to speed the computation and improve the results

We can think of the correlated pixels as a sparse dataset

Nearest neighbor interpolation preserves the topology of any loops containing residues

This means the unwrapped, masked result should be the same, whether or not we interpolate first

Reference:
P.S. Agram and H.A. Zebker, “Sparse two-dimensional phase unwrapping using regular grid methods,” *IEEE Geosci. Rem. Sens.*, 2009.



```
t x,y bounds
minx = `grdinfo -C $in.grd |cut -f 2`
maxx = `grdinfo -C $in.grd |cut -f 3`
nx = `grdinfo -C $in.grd |cut -f 10`
boundsx = "$minx $maxx"
miny = `grdinfo -C $in.grd |cut -f 4`
maxy = `grdinfo -C $in.grd |cut -f 5`
ny = `grdinfo -C $in.grd |cut -f 11`
r some reason we have to reverse these two
boundsy = "$maxy $miny"

rst convert to ascii
xyz $in.grd -S -V > $in.gmt

n gdal, then convert back to grd
_grid -of GTiff -txe $boundsx -tye $boundsy -outsize $nx $
in -a nearest $in.gmt $out.tiff
_translate -of GMT -ot Float32 $out.tiff $out.grd

x the grd header metadata
dit $out.grd -T #(note: must be pixel node registration fo
ou)
```