

This is a set of obsolete matlab scripts to calculate the slice numbers, which have been replaced by much faster Fortran programs. I leave them here because they can still be useful if you write matlab scripts.

```
slice_number($elon,$elat,$slon,$slat,$nproc,[0 or 1])
```

- elon,elat,slon,slat => normal plane -> rotation => new\_elon, new\_slon  
=> lon\_array along gcArc
- for every point in the lon\_array -> check for each chunk, the possible  $(\xi, \eta)$ , and figure out the chunk number as well as the slice number => print out the slice number
- 0 for minor arc, and 1 for major arc
- use tp2norm(), norm\_rot(), norm\_rot\_back(), tp2xyz(), chunk\_map()
- extra auxilliary functions:
  - slice\_number2(elon,elat,slon,slat,nproc,[0,1],lat0) – get the slice number for points on a 'belt' between source and receiver points.
  - [nx,ny,nz] = tp2norm2(th,ph,thr,phr) to get the coordinates of the unit normal vector
  - [th,ph] = xyz2tp(x,y,z)
  - [th,ph] = gcArc\_station(lats,lons,latr,lonr,[0,1]) – output stations with 1 degree apart
  - [x,y,z] = xsection\_translate(lats,lons,latr,lonr,[0,1],scale) – to move xsections up and down for S,P Kernels to be aligned on the same plot
  - new\_array = compact\_array(old\_array) – compacts an array by sorting and removing the repeated entries