Practical exploring a data set

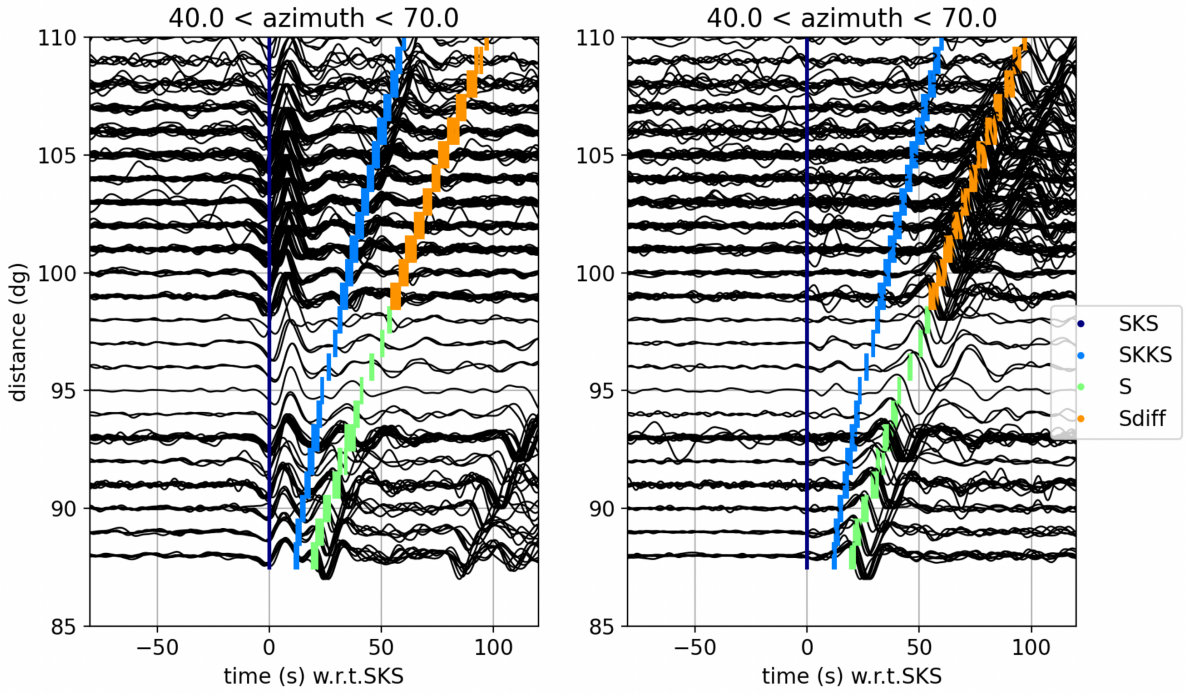
Exercise 1

Finding evidence for anisotropy:

Focus on the SKS phase, which without the presence of anisotropy should be polarised on the radial component. Any energy on the T component is evidence of receiver side mantle anisotropy. This energy appears more coherent at some distances than others.

Settings:

center_phase = ['SKS']
components = ['BHR', 'BHT']
tt_phases = ['SKS','SKKS', 'S', 'Sdiff']
fmin = 1. / 30.
fmax = 1. / 10.
yaxis = 'dist'
round = True
azmin = 40.
azmax = 70.
distmin = 85
distmax = 110
timemin = -80
timemax = 120
fact = 1.



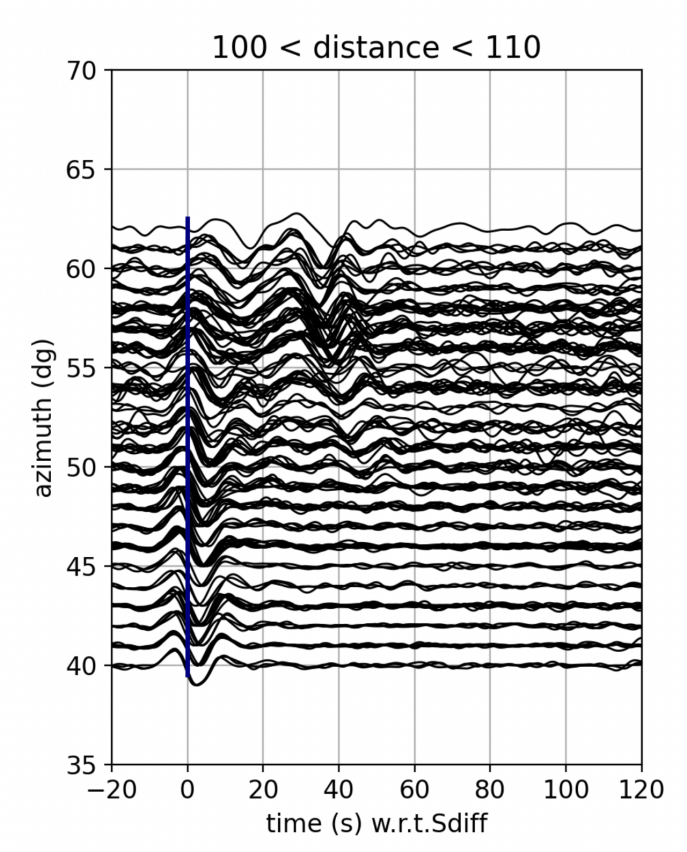
Exercise 2

Finding evidence for ULVZ:

This can be found as postcursors after the Sdiff phase (also after the ScS phase, but I have cut those out here to make the figure look better). The move-out of the phases is best seen as a function of azimuth, and appear scattered in a plot as a function of distance. The Sdiff phase and postcursor are best separated when filtering between 10-20s.

Settings:

```
center_phase = ['Sdiff']
components = ['BHT']
tt_phases = ['Sdiff']
fmin = 1. / 20.
fmax = 1. / 10.
yaxis = 'az'
round = True
azmin = 35.
azmax = 70.
distmin = 100
distmax = 110
timemin = -20
timemax = 120
fact = 1.
```



Exercise 3

Finding energy bouncing off the inner core:
This would come in as the PKiKP phase, which would mainly be polarised on the vertical components. Plotting as a function of distance shows that the phase is potentially visible at larger distances (the reflection coefficient increases with increasing incidence angle on the inner core boundary).

Settings:

center_phase = ['PKiKP']
components = ['BHZ']
tt_phases = ['PKiKP', 'PP']
fmin = 1./ 2.
fmax = 1./.5
yaxis = 'dist'
round = True
azmin = 40.
azmax = 70.
distmin = 85.
distmax = 110.
timemin = -20
timemax = 50
fact = 1.