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## Slowness-wavenumber analysis on array traces

**command:** FK <trclist> <starttime> <endtime> [<minfreq>] [<maxfreq>] [<maxslowness>] [<sloresult>] [<azresult>]

Perform FK analysis on array traces, determine slowness and azimuth of incoming plane wave. Based on obspy routine "array\_processing".

### parameters

- <trclist> *parameter type: trace list*  
List of input traces for FK algorithm.
- <starttime> *parameter type: float*  
Start time of time window in seconds read from time axis.
- <endtime> *parameter type: float*  
End time of time window in seconds read from time axis.
- <minfreq> *parameter type: float*  
Lower bound of frequency window for FK in Hz.
- <maxfreq> *parameter type: float*  
Upper bound of frequency window for FK in Hz.
- <maxslowness> *parameter type: float*  
Upper bound of slowness in s/deg in x and y direction.
- <sloresult> *parameter type: output variable*  
Name of output variable for slowness result in s/deg.
- <azresult> *parameter type: output variable*  
Name of output variable for azimuth result.

### qualifiers

- /winlen=<winlen>  
Window length in s for segments put into FK algorithm. Default: <endtime> - <starttime>, i.e. only one time step is computed.
- /winfrac=<winfrac>  
Fraction of window used as step size (see description of obspy array\_processing routine). Default 0.05.
- /slostep=<slostep>  
Slowness step size, determines resolution of output matrix, default <maxslowness>/100.

- /scatter=<outfile>  
Output filename for scatter plot. The scatter plot contains the results of each time step.
- /polar=<outfile>  
Output filename for polar plot. The polar plot contains a histogram of the results of all time steps.
- /slownessmap=<outfile>  
Output filename for slowness map. The slowness map contains the slowness matrix of a single time step.
- /kmunits  
Input numbers and plot scalings are given in s/km instead of s/deg.

## example

```
fk 17-51 53. 69. 0.4 3.0 15.0 &slo &az /slownessmap=slmap.png
```

Compute slowness and azimuth for signals between seconds 53. and 69. for traces 17 to 51 in a frequency range between 0.4 and 3 Hz and a maximum slowness of 15 s/deg. The results are copied into variables "slo" and "az". The slownessmap of this single time step is produced in file "slmap.png".