spcsac-v0.1.0 Manual

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1   Introduction

'spcsac' is a tool to transform frequency spectrum in a spc ascii format, computed by DSM software (versions above tish-1.5.2 and tipsv-1.4.2 are required), to time domain data in a SAC binary format. You have to prepare spc files by computing DSM software in order to use 'spcsac'. No filter or taper are applied. You should filter in a time domain properly.

2   Installation

Once you download 'spcsac-v0.1.0.tar.gz', you ought to make configuration and defrost the file. You had better change the CC and CFLAGS in the makefile.

% setenv SACDIR where_you_installed_SAC (e.g. /usr/local/sac)

% tar xvzf spcsac-v0.1.0.tar.gz

% cd spcsac-v0.1.0

% make

You can install anywhere and if you are to become a frequent DSM user, you can set path to the spcsac-v0.1.0 directory.

3   Usage

3.1   LSMOOTH determination

In order to obtain seismograms whose sampling frequency is just as you expected, you have to decide the parameter LSMOOTH. You can evaluate LSMOOTH by doing follows:
   % spcsac -i

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<< spcsac, Release 0.1.0 >>

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This is LSMOOTH finder.

Which scp file? YOUR_SPC_FILE

How much do you expect as a sampling frequency? (in Hz) 20

You should set lsmooth as 32

You can realize this by putting -l option.

e.g. % spcsac -l 8

3.2 With no option

If you 'spcsac' in a certain directory which has "ABCpsv.spc", "ABCsh.spc" and "DEFpsv.spc", with no options, you will get "ABC.Rs", "ABC.Ts" and "ABC.Zs" with a parameter LSMOOTH = 4. 'spcsac' will find pairs of PSV-SH spc files (named *psv.spc and *sh.spc) and transform them into complete seismograms. You can change this situation by adding options. See below.

3.3 Command Line Mode

'spcsac' has lots of options so that various kinds of requests will be available. You can briefly check what the meanings of some options are by:

  % spcsac -h

you are to read help file. Here you can understand more about spcsac options.

-v

If you are so lucky, you can see the version of this software :-) The problem is that because you have already known about the version, you might be luckier if you get some tips about seismology or science rather than the version. We strongly recommend you to type "spcsac -v" twice at least.

-h

If you want to call help file, you can type "spcsac -h", you can briefly understand how the options do work.

-e
If you hesitate to work in a command line mode, spcsac provides you with prompt mode. See the next subsection.

-l LSMOOTH
Smoothness parameter LSMOOTH can be changed from the default value 4. In practice, you have to change it so that you obtain seismograms with sampling frequency you expected. LSMOOTH can be calculated with spcsac. See the previous subsection.

-i
Smoothness parameter LSMOOTH can be evaluated if you put your spcfile name and sampling frequency you are expecting. You can do this in prompt mode. More details are available in the previous subsection.

-d DIRECTORY
All spc files in DIRECTORY will be transformed. Default value is "./" (current directory).

-f FILE
If you wan to transform one specified spc file only, you can type "spcsac -f ABC.spc". As a default setting, you will obtain "tmpsac.Rs", "tmpsac.Ts", "tmpsac.Zs". You can change the output sac files' names with "-r/-t/-z" option. You can change components of the output sac files with "-c" option. For example, if you type "spcsac -f ABC.spc -c ZR -z ABC.sh.Z.sac -r ABC.sh.R.sac" you will obtain two sac files "ABC.sh.Z.sac" and "ABC.sh.R.sac".

-p/-s STRINGS
This is not valid if you put "-f" option togather. In order to discriminate PSV or SH spcfiles, you have to put common strings back in the file names. "*psv.spc" and "*sh.spc" are default settings for PSV and SH spcfile respectively. You can change them like "spcsac -p .psv.spc".

-c RTZ
You can choose which component to be transformed. As a default set-

ting, spcsac will transform all components (R for radial, T for transverse, Z for vertical), but sac files occupy huge bytes, so if you would like to look at some component of seismograms only, this option will be helpful. You can type like "spcsac -c TZ" in order to obtain transverse and vertical component. Alphabetical order of "RTZ" is not necessarily required (you do not have to care for it at all).

-m MODE

This is not valid if you put "-f" option togather. You can choose PSV/SH channel output. If you would like to see either of two or you do not have spc files of both, you can do by typing "spcsac -m PSV" or "spcsac -m SH".

-r/-t/-z STR

In order to discriminate radial/transverse/vertical component output sac files. If you put "-f" option togather, you can change full names of output sac files. See the "-f" option explanation above please. Otherwise this option will change the common strings back in output sac files. If you have "ABCDpsv.spc" and "ABCDsh.spc", you will obtain "ABCD.Rs" and "ABCD.Zs" and "ABCD.Ts" as a default result. If you type "spcsac -cR -r radial.sac", you will obtain "ABCDradial.sac".

3.4   User Prompt Mode

'spcsac' wil help you out with prompt mode. You can just type

  % spcsac -e

  then you will be asked question. You can do here anything you can do with the commandline mode. When encountering the question which you do not care, which you do not even have to think of or whose default answer you agree, please just press "

"key (back slush) in order to skip the question.