pspec.f90 v1.0 July 2013 / sfit4 version 0.9.4.1

pspec converts a bnr to a t15asc file. It takes a separate input file <pspec.input> as well as reading the sfit4.ctl file. It looks for both files in the local directory. It reads the microwindows and opdmax values from the sfit4.ctl file. Below is a key to the pspec.input file.

The program can read from any number of bnr files and accumulates in the t15asc file and blocks that match the desired bands given in the sfit4.ctl file. It assumes the lat, lon and alt of all the bnrs are the same.

It calculates the snr for a band by looking for the nearest snr region that is given in a list that can be appended to by the user (up to 100). In that band it calculates the rms noise. then the snr is the peak signal in the fit band / noise in the nearest snr band. This may or may not be appropriate, user beware.

It can resample the spectra adding points or reducing the resolution.

It can ratio the spectra with another envelope function eg a low resolution spectra of the filter.

It reads required information from the header of the bnr file. This is problematic since there is no standard header format. Fortunately most users of the bnr file (or any spectral data file have the same data in some format - mostly this the date and time info. A user may need to edit the routine parsetitle in module spec.f90 to retrieve this data from their formatted header.

Use at you own risk, report bugs to the sfit wiki!

-jwh

The following is a sample pspec.input file. any line with a # symbol as the first character will be ignored otherwise the data are read line-by-line. For the snr bands the first 2char word is a designator and ignored by the program.

```
# pspec.input : input file for pspec.f90
#
# version V1.0 for sfit4 v0.9.4.1 July 1 2013
#
# pspec.f90 loops through this file and creates an ascii file with a spectra block for
# each spectrum that will be fit by sfit4 - the t15asc.4 file
# the observation lat lon and altitude are required for each spectrum
# Latitude of Observation [+N, 90 - -90]
76.53
# Longitude of Observation[+E, 0 - 360]
291.26
# Altitude of Observation [masl]
225.
```

```
# filter bands and regions for calculating SNR (max 100)
# noise value is calculate in the region below that is nearest to the fit microwindow
#  SNR = (Peak signal in microwindow) / noise
#
7
f1  4038.727 4038.871
f2  3381.155 3381.536
f3  2924.866 2925.100
f4  2526.228 2526.618
f5  1985.260 1985.510
f6  1139.075 1139.168
f8  907.854  907.977
#
# number of data blocks in the output ascii file
# = [# binary formatted spectra] X [# fit regions] (often but not necessarily)
# fit regions are read from sfit4.ctl file
# number of bnr files
1
#
# each block here contains:
# bnr spectra file name
# radius of earth [km], zero fill factor, ratio flag
# ratio file name (bnr format) if ratio flag = 1, skipped if ratio flag = 0
# OPDMAX is taken from sfit4.ctl file
# nterp =  0 - skip resample and resolution degradation
# nterp =  1 - minimally sample at opdmax
# nterp >  1 - interpolate nterp-1 points upon minimal sampled spacing
#
temp.bnr.00
6396.2   1     0
```