Subject: How to build ASCII File
Posted by Marshad2 on Tue, 20 Nov 2007 17:19:22 GMT
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Hi Guys:

I tried to make ASCII file for Spectral Response Curves obtained at ftp://asapdata.arc.nasa.gov/MASTER/srf/May_03/ however, it is not working. Can someone give suggestions how to build ASCII file for Spectral Response Curves.

Best Regards,

Arshad

Subject: Re: How to build ASCII File
Posted by Marshad2 on Tue, 20 Nov 2007 21:47:45 GMT
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On Nov 20, 12:19 pm, Marsh...@gmu.edu wrote:
> Hi Guys:
>
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> working. Can someone give suggestions how to build ASCII file for
> Spectral Response Curves.
>
> Best Regards,
>
> Arshad

Yes, they are ASCII files containing two columns: one is set of wavelengths, and the other the spectral response for that band at each of those wavelengths. Each file has a different set of wavelengths. What I want to do is take the data from different bands, and compile them into one ASCII file, with one wavelength column that contains all the wavelengths from any of the 50 spectral response files, and then one column for each band, containing the spectral responses at each wavelength in the wavelength column. Where a given file does'nt include values for some wavelengths, those wavelengths will end with values of zero for that band in the big ccompiled ASCII file. This is the detail regarding which I need help.

Regards,

Subject: Re: How to build ASCII File
Posted by Paul Van Delst[1] on Tue, 20 Nov 2007 23:42:34 GMT
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Marshad2@gmu.edu wrote:
> On Nov 20, 12:19 pm, Marsh...@gmu.edu wrote:
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> wavelength in the wavelength column. Where a given file does'nt
> include values for some wavelengths, those wavelengths will end with
> values of zero for that band in the big ccompiled ASCII file. This is
> the detail regarding which I need help.

I can't imagine why you'd want to do that, but since I don't know anything about your application, off the top of my head I would say you should:

1) Read all the files through once to get the minimum and maximum wavelengths.
2) Select a suitable wavelength interval (I assume it's different for every file/channel)
3) Create master array to hold SRFs for all wavelengths (for your common grid), all channels.
4) Loop over input files i=1,N
   4a) Read channel file #i
   4b) Interpolate SRF data to your common grid
   4c) Slot the result into your master array for the i'th channel
5) Output master array to file.

cheers,

paulv

Subject: Re: How to build ASCII File
Posted by Marshad2 on Wed, 21 Nov 2007 16:38:41 GMT
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On Nov 20, 6:42 pm, Paul van Delst <Paul.vanDe...@noaa.gov> wrote:
> Marsh...@gmu.edu wrote:
>> On Nov 20, 12:19 pm, Marsh...@gmu.edu wrote:
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>
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atftp://asapdata.arc.nasa.gov/MASTER/srf/May_03/however, it is not
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> 4c) Slot the result into your master array for the i'th channel
> 5) Output master array to file.
>
> cheers,
>
> paulv- Hide quoted text -
>
> - Show quoted text -

Thank you Paul. Let me try it.

Arshad

Subject: Re: How to build ASCII File
Posted by devin.white on Sat, 24 Nov 2007 16:33:54 GMT
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I see what you're trying to do, but there's definitely an easier way to go about it. You're attempting to create a binary ENVI Spectral Library file that contains the spectral response curves for MASTER's first 25 channels (VNIR and SWIR) from the individual SRF ASCII files. Because of how ENVI Spectral Library files are constructed, an entry for a particular channel must contain response values for the entire wavelength range of the 25 channels, combined--even if the recorded values for a channel (in a single SRF file) fall over a much smaller range. As a result, you have to provide "filler" values of 0 to compensate. Because each SRF file covers a different range and contains a variable number of entries, getting everything into one ENVI Spectral Library file is a bit challenging. The program below will build the library for you, as long as all of the individual SRF files and the associated header file (*.ph) are in the same folder on your computer. It makes liberal use of array and structure concatenation, subscripting, and the WHERE function to build the library. SORT is used in a few places to ensure that all response values end up in the right locations. The program is provided as is.

```
pro create_master_spectral_reponse_sli
 compile_opt idl2

 header_file = dialog_pickfile(title='Select Spectral Response Header
File', filter='*.ph', $
  get_path=header_path)
 if header_file eq '' then return
 out_name = dialog_pickfile(title='Select Output Library Name',
path=header_path)
 if out_name eq '' then return

 spec_search = file_search(header_path, '*.c*', count=spec_count)
 if spec_count ne 50 then begin
  ok = dialog_message('You must have all 50 MASTER spectral response
curve files to proceed', $
   /error)
  return
 endif
```

```
 ;Sort response files from lowest to highest band
 spec_sort = sort(spec_search)
 spec_search = spec_search[spec_sort]

 envi_read_cols, header_file, parameters

 band_nums = lindgen(25)+1
 band_names = replicate('Band',25) + ' ' + strtrim(string(band_nums),
2)

 ;Read in spectral response files and create
 ;structure array to hold all returned info
 spec_struct = {sensor_type:'MASTER'}
 wl_array = dblarr(1)
 for i=0,24 do begin
  envi_read_cols, spec_search[i], spec_data
  spec_struct = create_struct(spec_struct, band_names[i], spec_data)
  wl_array = [wl_array, reform(transpose(spec_data[0,*]))]
 endfor

 wl_array = wl_array[1:*]
 wl_array = wl_array[sort(wl_array)]
 num_measure = n_elements(wl_array)

 openw, lun, out_name, /get_lun

 ;Write out band-specific spectral response library entries
 for j=1,25 do begin
  cur_wl = (spec_struct.(j))[0,*]
  sort_cur = sort(cur_wl)
  num_cur = n_elements(cur_wl)
  where_cur = where(wl_array eq cur_wl[sort_cur[0]], where_count)
  response = reform((spec_struct.(j))[1,sort_cur])
  response_array = dblarr(num_measure)
  response_array[where_cur[0]:(where_cur[0]+num_cur-1)] = response
  writeu, lun, response_array
 endfor

 free_lun, lun

 file_type=envi_file_type('ENVI Spectral Library')
 envi_setup_head, fname=out_name, data_type=5, file_type=file_type, $
  interleave=0, nb=1, ns=num_measure, $
  nl=25, wl=wl_array, /write, /open, r_fid=lib_fid, $
  wavelength_unit=0, spec_names=band_names

end
```

On Nov 20, 12:19 pm, Marsh...@gmu.edu wrote:
> Hi Guys:
>
> I tried to make ASCII file for Spectral Response Curves obtained
atftp://asapdata.arc.nasa.gov/MASTER/srf/May_03/however, it is not
> working. Can someone give suggestions how to build ASCII file for
> Spectral Response Curves.
>
> Best Regards,
>
> Arshad

Subject: Re: How to build ASCII File
Posted by Marshad2 on Wed, 28 Nov 2007 21:37:55 GMT
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On Nov 24, 11:33 am, "devin.wh...@gmail.com" <devin.wh...@gmail.com>
wrote:
> I see what you're trying to do, but there's definitely an easier way
> to go about it. You're attempting to create a binary ENVI Spectral
> Library file that contains the spectral response curves for MASTER's
> first 25 channels (VNIR and SWIR) from the individual SRF ASCII
> files. Because of how ENVI Spectral Library files are constructed, an
> entry for a particular channel must contain response values for the
> entire wavelength range of the 25 channels, combined--even if the
> recorded values for a channel (in a single SRF file) fall over a much
> smaller range. As a result, you have to provide "filler" values of 0
> to compensate. Because each SRF file covers a different range and
> contains a variable number of entries, getting everything into one
> ENVI Spectral Library file is a bit challenging. The program below
> will build the library for you, as long as all of the individual SRF
> files and the associated header file (*.ph) are in the same folder on
> your computer. It makes liberal use of array and structure
> concatenation, subscripting, and the WHERE function to build the
> library. SORT is used in a few places to ensure that all response
> values end up in the right locations. The program is provided as is.
>
> pro create_master_spectral_reponse_sli
> compile_opt idl2
>
> header_file = dialog_pickfile(title='Select Spectral Response Header
> File', filter='*.ph', $
> get_path=header_path)
> if header_file eq '' then return
> out_name = dialog_pickfile(title='Select Output Library Name',

```
> path=header_path)
>       if out_name eq '' then return
>
>       spec_search = file_search(header_path, '*.c*', count=spec_count)
>       if spec_count ne 50 then begin
>             ok = dialog_message('You must have all 50 MASTER spectral response
> curve files to proceed', $
>                   /error)
>             return
>       endif
>
>       ;Sort response files from lowest to highest band
>       spec_sort = sort(spec_search)
>       spec_search = spec_search[spec_sort]
>
>       envi_read_cols, header_file, parameters
>
>       band_nums = lindgen(25)+1
>       band_names = replicate('Band',25) + ' ' + strtrim(string(band_nums),
> 2)
>
>       ;Read in spectral response files and create
>       ;structure array to hold all returned info
>       spec_struct = {sensor_type:'MASTER'}
>       wl_array = dblarr(1)
>       for i=0,24 do begin
>             envi_read_cols, spec_search[i], spec_data
>             spec_struct = create_struct(spec_struct, band_names[i], spec_data)
>             wl_array = [wl_array, reform(transpose(spec_data[0,*]))]
>       endfor
>
>       wl_array = wl_array[1:*]
>       wl_array = wl_array[sort(wl_array)]
>       num_measure = n_elements(wl_array)
>
>       openw, lun, out_name, /get_lun
>
>       ;Write out band-specific spectral response library entries
>       for j=1,25 do begin
>             cur_wl = (spec_struct.(j))[0,*]
>             sort_cur = sort(cur_wl)
>             num_cur = n_elements(cur_wl)
>             where_cur = where(wl_array eq cur_wl[sort_cur[0]], where_count)
>             response = reform((spec_struct.(j))[1,sort_cur])
>             response_array = dblarr(num_measure)
>             response_array[where_cur[0]:(where_cur[0]+num_cur-1)] = response
>             writeu, lun, response_array
>       endfor
```

>
>   free_lun, lun
>
>   file_type=envi_file_type('ENVI Spectral Library')
>   envi_setup_head, fname=out_name, data_type=5, file_type=file_type, $
>   interleave=0, nb=1, ns=num_measure, $
>   nl=25, wl=wl_array, /write, /open, r_fid=lib_fid, $
>   wavelength_unit=0, spec_names=band_names
>
> end
>
> On Nov 20, 12:19 pm, Marsh...@gmu.edu wrote:
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>> Hi Guys:
>
>> I tried to make ASCII file for Spectral Response Curves obtained
atftp://asapdata.arc.nasa.gov/MASTER/srf/May_03/however, it is not
>> working. Can someone give suggestions how to build ASCII file for
>> Spectral Response Curves.
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>> Best Regards,
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>> Arshad- Hide quoted text -
>
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Thank You, Devin White. I really appreciate your respose.

Arshad