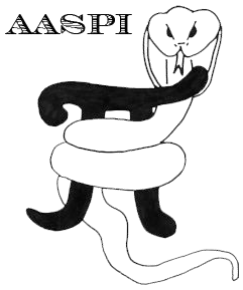
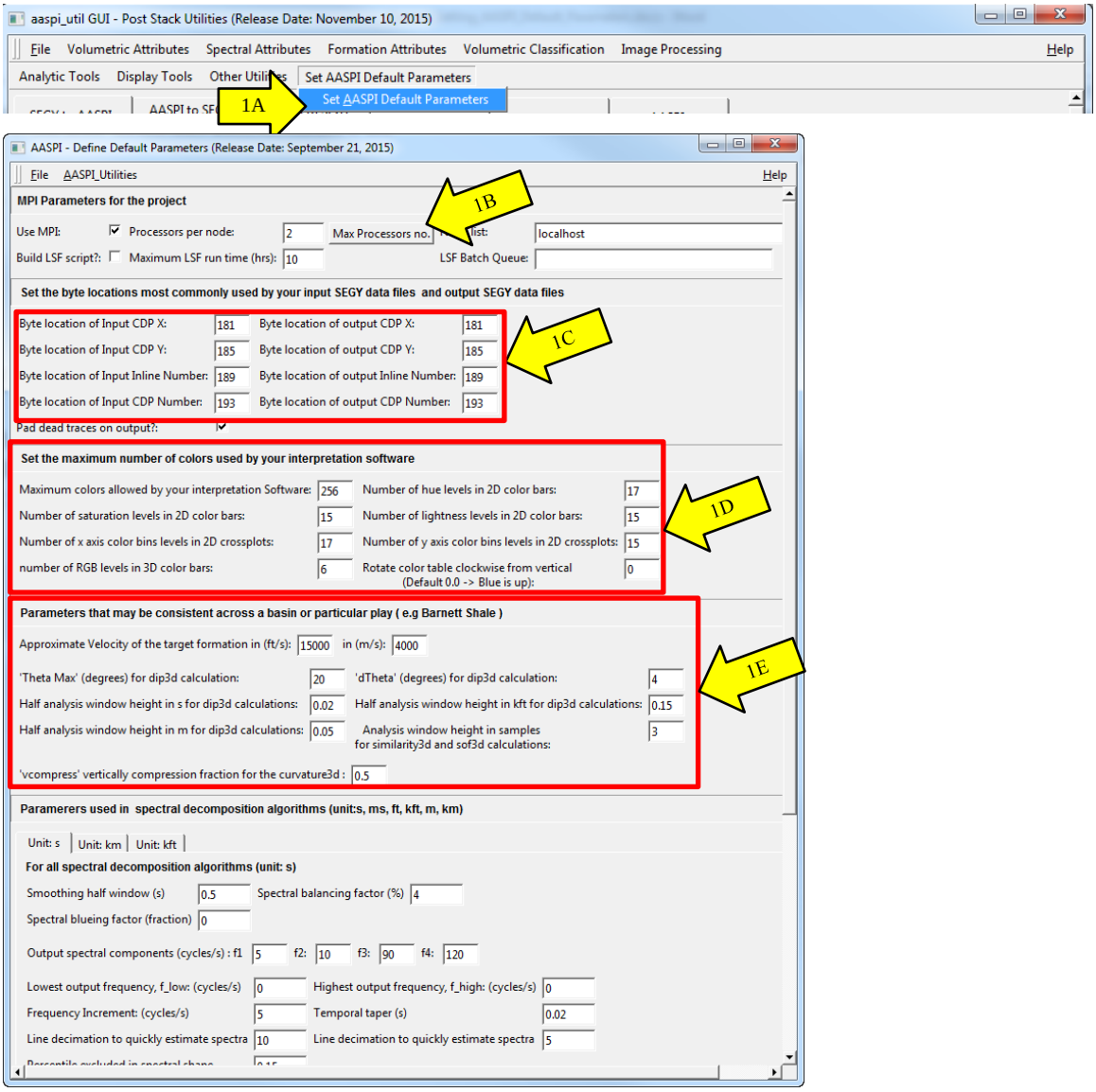
Software_Installation: Setting AASPI Default Parameters



There are some parameters in AASPI that will occur repeatedly through multiple programs such that you will benefit by setting them up once and for all. To do so, click on (1A) Set AASPI default parameters. One of the most common parameter used in AASPI programs is the "Processors per node". Since you are running on a laptop, you are running on only one node. The name of this node is "localhost". The default is set to 2; however, most laptops and PCs nowadays have more than 4 cores (or threads, to be more precise). It is highly recommended that you use the maximum available processors by clicking (1B) Max processors no. button. This will automatically determine the maximum number of processors your PC has.

We have set many of these parameters to be quite conservative. For instance, in a classroom environment with dozens of students, we restrict our students to run a local node (*node_list=localhost*) with just two processors (*processors_per_node*=2). Those students doing research will run on multiple nodes with more processors each (*node_list="d009 d010 d011 d012 d013 d014*" and *processors_per_node=8*). You can also specify the number of processors to be used for EACH node in the *node_list* with the following syntax:
<node1>:<number_of_processors1> <node2>:<number_of_processors2>…
Where node1, node2… are the name of each node, and number_of_processors1, number_of_processors2 are the number of processors to be used in node1 and node2, respectively. For example, if I want to use 16 processor in localhost and 8 processor in node "tripolite", I would type the following in the *node_list*:
localhost:16 tripolite:8
We recommend that your software installation administrator choose some reasonable defaults for your environment.

Another important default parameters are the header byte locations (1C). While companies will obtain seismic data from a multitude of sources, many of the have strategic alliances with different vendors such that data always come in with the same headers. Here, I have the byte locations for both the input SEGY data volumes and the output (AASPI attribute) SEGY volumes set to the SEG 2002 standard. If you are using your own dataset, the values are probably different from the defaults, so please change them to your need. This would make it faster and more consistent when you convert data from AASPI-format to SEGY and vice versa. For example, if you are loading data into Petrel, set the output bytes for line no., cdp no., x, and y to be 5, 21, 73, and 77. In this manner you can use the defaults in Petrel when data loading.



I have also defaulted the number of colors that can be used (1D). More modern systems, such as FFA, Transform, and TerraSpark use 24-bit color (32-bit color if you count transparency). However, most interpretation packages are built upon previously existing legacy software with most of them having a limitation of 256 colors. In principal, 256 colors allow a 16x16 2D color bar. I have set the defaults to be 17x15, which uses 255 colors. AASPI display applications like **hlplot** and **crossplot** will then set the remaining 256th color to white to display dead and padded traces.

At OU, we use Petrel for most of our seismic interpretation. While Petrel will not allow you to import more than 256 colors under their *Template* tab, internally, it can support 4096 colors. To achieve this we have written a simple Ocean utility called **aaspi_modulation_module_petrel_2011.1.64** that imports and assigns a 4096 color bar to a data volume that has been converted to 16-bit brick format. We will put this utility on our software directory for those of you who use Petrel. Note the 2D color bars used by programs

hlplot, hsplot, and crossplot will be 65*63, defining 4095 colors. As before, the remaining (4096^{th}) color will be set to white.

AASPI display program **rgbplot** works reasonably well with 16^3=4096 colors with the number of red, green, and blue values being set to *nrgb=16*. The results of **rgbplot** are almost worthless when using only 256 colors. Details on how to use these programs will be described in Section 8.

The next group of default parameters controls the behavior of programs **dip3d** and **curvature3d** (1E). For smaller companies focused on resource plays or carbonates, a reasonable installation-wide default might be chosen. However, it is more likely that one business unit will work on Tertiary basin plays and other on older, more consolidated resource plays. In the absence of depth migrated or depth converted data, the dip estimates and curvature computations need to have a reference velocity. We suggest using a velocity appropriate to your target of interest. Thus, for interpreters working the Barnett Shale or Mississippi Lime plays, a relatively high velocity of 17000 ft/s may be appropriate.

One observation that many of the AASPI software users have noticed is how the curvature anomalies are vertically smeared more than they would like to see. Part of this smearing is due to an inappropriate velocity, and part of the smearing is due to our choices in the implementing volumetric curvature operators. If our data are highly complex, with dips ranging to 60 degrees, it makes to design the curvature operators to be as isotropic as possible. Specifically, if a "long wavelength" operator reaches out to 2000 ft (or about 18 traces for 110 ft spacing), then it should also reach up and down 2000 ft. If our conversion velocity is 10000 ft/s this value we will reach up and down 0.4 s in two-way travel time, or 100 samples for a 2 ms sample increment. In faster, Paleozoic basins, this operator would be reduced to 0.22 s or 56 samples vertically. Examining the derivative operators discussed in Section 10, we realize that these extreme values have only a small effect. Nevertheless, the amount of vertical mixing is directly controlled by the conversion velocity. The second parameter, *vcompress*, provides additional control. Most of the shale gas plays have dips that rarely exceed 5 degrees. Given this insight, there is no great motivation to use an isotropic derivative operator such that we can choose to "compress" the vertical operator significantly, say to 50% or even 10% of its original value. Such increase in vertical resolution may help differentiate subtle changes in folding between adjacent vertically stacked lithologies. Currently, the default value of *vcompress=0.5* . We will discuss the impact of such parameters in curvature3d documentation.

Several of these defaults are application and perhaps even data specific. Specifically, those used by spectral decomposition programs **spec_cmp** and **spec_cwt** will depend on data quality representative of deepwater or Paleozoic basins.

Once you have chosen reasonable defaults for your environment, simply click the Save AASPI Default Parameters button in the lower right hand corner. A file named "aaspi_default_parameters" would be created in the current working directory. This file contain all the parameter configuration in ASCII text format. If you are doing this in your home directory, it will serve as a default for any jobs you run on the system, unless you create a similar file in a subdirectory. By default, AASPI will always search first for "aaspi_default_parameters"

in the current working directory, then the user home directory, then the *${AASPIHOME}/par* directory.