

Enhanced AASPI Algorithms: September 2017

Application Name	Application Description	Software Documentation	AASPI References
curvature3d	Vector aberrancy option updated and deployed	http://mcee.ou.edu/aaspi/documentation/Volumetric_Attributes-curvature3d.pdf	http://mcee.ou.edu/aaspi/submitted/2017/XuanQi-Aberrancy.pdf
dip3d	Added the gradient structure tensor as an option. In general, this computation exhibits lower resolution, but is added for both completeness, or for applications where the dip becomes very steep (>70°). Chaos is an optional output.	http://mcee.ou.edu/aaspi/documentation/Volumetric_Attributes-dip3d.pdf	Algorithm described by Bakker (2002) in a Delft U dissertation. Common to many commercial interpretation software packages
fault_enhancement	Modified fault probability including the probability value to be from 0 to 1 and scaled the value in its iteration; added the ability to handle sculpted data with lots of zeros or nulls; added a new output called fault strike which is 90 degree shift of fault azimuth.	http://mcee.ou.edu/aaspi/documentation/Image_Processing-fault_enhancement.pdf	http://mcee.ou.edu/aaspi/publications/2016/Gabe1.pdf
generate_training_data	Added a third panel to generate .H format mask volumes. The mask volume can from uniform samples, or polygon files generated in the first panel. The mask volume can also assign different weights to different polygonal regions.	http://mcee.ou.edu/aaspi/documentation/Volumetric_Classification_make_training_clusters_documentation.pdf	software development only - no scientific innovations
similarity3d	multispectral coherence and amplitude gradients updated and deployed	http://mcee.ou.edu/aaspi/documentation/Volumetric_Attributes-similarity3d.pdf	http://mcee.ou.edu/aaspi/submitted/2017/FangyuLi-Multispectral_Coherence.pdf
som3d	Added data-adaptive attribute weighting option to better preserve geologically meaningful features from input attributes. Added a training data selection option to use customly generated mask files. Added the option to use Mahalanobis distance instead of the z-score Euclidean distance.	http://mcee.ou.edu/aaspi/documentation/Volumetric_Classification-som3d.pdf	http://mcee.ou.edu/aaspi/upload/AASPI_Theses/2017_AASPI_Theses/Zhoa_Tao_Dissertation_PHD_Summer_2017.pdf