



Oasis montaj How-To Guide

3D Voxel Conversions - Convert between Lithology and Numeric Voxels



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Geosoft Incorporated
Queen's Quay Terminal
207 Queen's Quay West
Suite 810, PO Box 131
Toronto, Ontario
M5J 1A7
Canada
Tel: (416) 369-0111
Fax: (416) 369-9599

Website: www.geosoft.com

E-mail: info@geosoft.com

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How to Convert between Lithology and Numeric Voxels

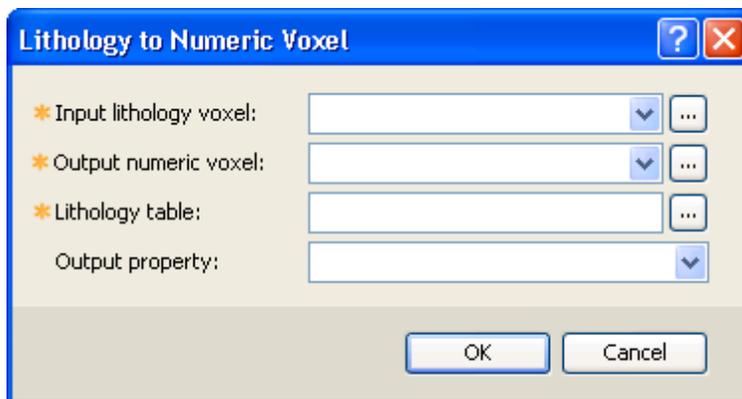
You may want to convert a known voxel attribute to a different attribute through the use of a lookup table. For example, you may have a lithology voxel compiled from drillhole or other information, and you may want to represent the rock densities, electric conductivity or seismic velocity of this voxel. The voxel conversion would call upon a lookup file to make the one-to-one conversion.

The lookup file tabulates the relationship between the rock types and their density and/or conductivity and/or velocity. Such tables are widely available through geo-scientific publications.

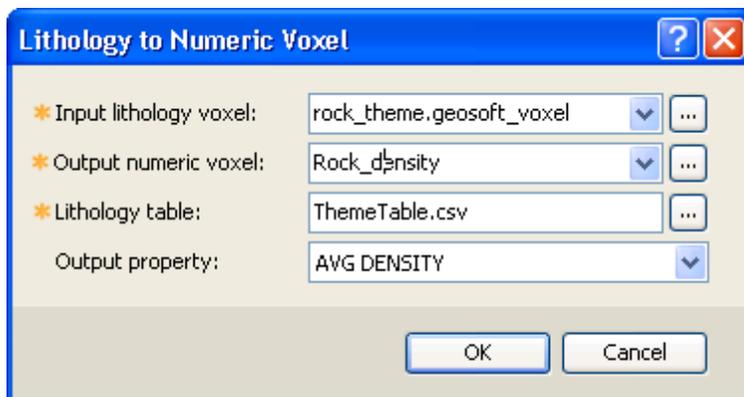
To Convert from a Lithology to a Density Voxel

1. From the *3D* menu, select **Voxel Conversions | Lithology to Numeric Voxel**.

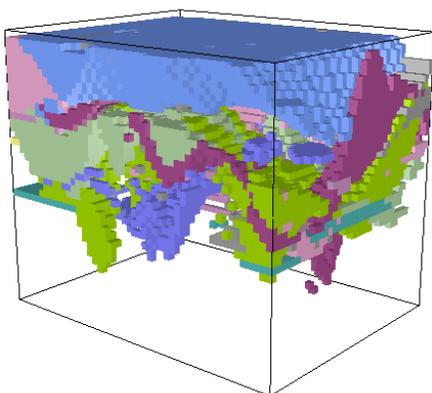
The *Lithology to Numeric Voxel* dialog opens.



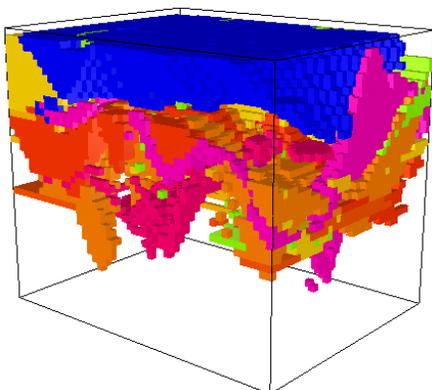
2. Click the  button to select the *Input Lithology voxel* to convert, followed by the *Output numeric voxel*. In this document we will assume lithology to density conversion.
3. Select the *Lithology table* previously compiled in a CSV format.
4. The numeric fields in the lookup table are displayed in a drop-down list of the *Output property* entry. Select the field that contains the desired density information.



5. Click **OK** and the output voxel will be displayed.



Input Lithology voxel



Output density voxel



The lookup table must have a header clearly indicating the lithology, index and density fields. Additional fields may be present. A sample lookup file is illustrated on the next page:

CODE	LABEL	DESCRIPTION	Index	Min Density	Max Density	Avg Density	COLOR
Ca	Ca	Alluvium - depositional	0	2.2	2.9	2.55	R119G159B
U	U	Ultramafic Rocks, Undifferentiated	1	2.65	2.75	2.7	R230G164B205
Us	Us	Serpentinite	2	2.7	3.3	3	R230G164B205
Upd	Upd	Peridotite	3	3.1	3.4	3.25	R230G164B205
Uk	Uk	Komatiite	4	2.67	2.67	2.67	R230G164B205
Upx	Upx	Pyroxenite	5	3.1	3.2	3.15	R140G108B137
Usc	Usc	Ultramafic Schist, undifferentiated	6	2.67	2.97	2.82	R198G145B191
Uta	Uta	Talc-tremolite (-carbonate) schist / rock	7	2.04	2.98	2.51	R198G145B191
Utc	Utc	Talc-chlorite-carbonate schist / rock	8	2.67	2.75	2.71	R198G145B191
Uts	Uts	Talc-serpentine (-carbonate) schist / rock	9	2.08	2.3	2.19	R198G145B191
Uac	Uac	Tremolite (-chlorite) schist / rock	10	2.9	3.2	3.05	R164G74B139
Uaf	Uaf	Tremolite-forsterite rock	11	2.9	3.2	3.05	R139G33B102
M	M	Mafic Rocks, Undifferentiated	12	2.7	2.98	2.84	R158G210
Mb	Mb	Basalt	13	2.8	3	2.9	R173G207B158
Mbm	Mbm	High - Mg Basalt	14	2.34	3.2	2.77	R81G140B72
Md	Md	Dolerite	15	2.58	2.64	2.61	G170B85
Mg	Mg	Gabbro	16	2.7	3.3	3	G170B85
Mm	Mm	Amphibolite	17	2.93	3.3	3.115	R1G163B209
Mac	Mac	Chlorite-amphibole (-plagioclase) schist/rock	18	3.07	3.55	3.31	G159B159
Msc	Msc	Mafic Schist, undifferentiated	19	2.7	3	2.85	R78G177B177
F	F	Felsic rocks, undifferentiated	20	2.65	2.9	2.775	RG249B130
Fv	Fv	Felsic - coherent, undifferentiated	21	2.65	2.9	2.775	RG249B130
Fi	Fi	Felsic intrusive (dyke, sill, etc)	22	2.65	2.9	2.775	R171G1B48
Fg	Fg	Felsic granitoid, undifferentiated	23	2.65	2.9	2.775	RG204B189
Fgg	Fgg	Syenogranite, Monzogranite, Alkali Feldspar Granite	24	2.6	2.7	2.65	RG204B189
Fgp	Fgp	Pegmatite	25	2.51	2.6	2.555	RG204B189
S	S	Sedimentary Rocks, Undifferentiated	26	2.36	2.55	2.455	R217G217B
Sct	Sct	Chert	27	2.16	2.61	2.385	R79G198B204
Sif	Sif	Iron formation	28	2.8	3.2	3	R128G128B
Sl	Sl	Metapelite, undifferentiated	29	2.5	2.7	2.6	R226G205B165
Sp	Sp	Metapsammite, undifferentiated	30	2.67	2.67	2.67	R198G165B98
Ssh	Ssh	Shale	31	2.4	2.6	2.5	R192G192B192
Ssq	Ssq	Quartzite	32	2.62	2.68	2.65	R192G192B192
Tc	Tc	Cataclasite	33	2.67	2.67	2.67	R250G250B5
Tx	Tx	Tectonic breccia, cataclasite, brittle fault	34	2.33	2.59	2.46	R250G250B5
V	V	Vein	35	2.67	2.67	2.67	R154G154B154
X	X	Unkown rock	36	2.67	2.67	2.67	R154G154B154
Cx	Cx	Contaminated, disturbed ground	37	2.67	2.67	2.67	R154G154B154
Stope	Stope	Stope, mine workings	38	2.67	2.67	2.67	CMY



The lithology voxel is stored as the rock index values and not strings.



There is a one-to-one relationship going from a rock code to a numeric density. However, at this time, when going from densities to rock indices, the rock densities in the table are sorted and for each voxel point, the first rock type associated with a density is assigned on output. Rocks have a wide range of densities and different rock types may have overlapping densities. Currently, this tool does not address this complexity.



All rock codes present in the voxel but not in the lookup table will be set to dummies on output.