Trout Documentation

1. skincav(cavgroup,cavslot,mediumgroup,mediumslot,newgroup,newslot)

1.1. Version: 1.0

1.2. Date: 2022/08/31

1.3. Description:

Create a new group for the zones on the skin of a group. Good for MIT skin plots.

1.4. <u>Inputs:</u>

cavgroup: cavern group
cavslot: cavern slot

mediumgroup: medium group that cavgroup zones are also grouped into e.g. ('Salt')

mediumslot: medium slot that the cavgroup zones are also grouped into

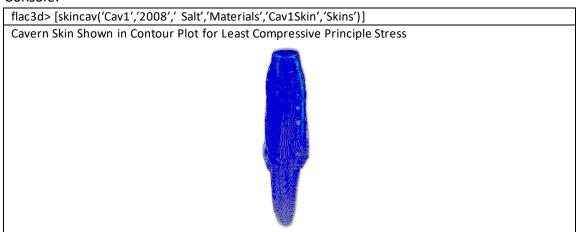
newgroup: new group name **newslot:** new slot name

1.5. Returns:

N/A

1.6. Example:

Console:



2. lodeang(s1,s2,s3)

2.1. Version: 1.0

2.2. Date: 2022/08/31

2.3. Description:

Calculate the lode angle given principal stresses (sign convention: (-) compression)

2.4. Inputs:

s1: maximum principal stress

s2: intermediate principal stress

s3: minimum principal stress

2.5. Returns:

Lode angle (radians)

2.6. Example:

Console:

```
flac3d> [lodeang(-1.0e6,-2.0e6,-20.0e6)]
0.476821
```

3. rdc(s1,s2,s3,D1,D2,n,T0,s0)

- 3.1. Version: 1.0
- 3.2. Date: 2022/08/31
- 3.3. Description:
- 3.4. Calculate the factor of safety against the RESPEC dilation criterion (sign convention: (-) compression)
- 3.5. <u>Inputs:</u>
 - **s1:** maximum principal stress
 - **s2:** intermediate principal stress
 - s3: minimum principal stress
 - **D1**: D1
 - **D2:** D2
 - **n:** n
 - **T0**: T0

3.6. Returns:

Factor of safety against RESPEC dilation criterion

3.7. Example:

Code:

```
fish define CalcExtras()
local m, D1, D2, T0, n, s0, PS1, PS2, PS3
m=1/144
loop foreach local zp zone.list()
PS1 = zone.stress.prin.x(zp)*m
PS2 = zone.stress.prin.y(zp)*m
PS3 = zone.stress.prin.z(zp)*m
if zone.group(zp,'Mats')=='Salt'
zone.extra(zp,1)=rdc(PS1,PS2,PS3,0.779,1.174,0.839,227,1)
endif
endloop
end
@CalcExtras()
```

4. mcfs3d(s1,s2,s3,Co,phi)

- 4.1. Version: 1.0
- 4.2. <u>Date:</u> 2022/08/31
- 4.3. Description:
- 4.4. Calculate the factor of safety against the 3D mohr-coulomb failure criterion (sign convention: (-) compression)
- 4.5. <u>Inputs:</u>
 - s1: maximum principal stress
 - **s2:** intermediate principal stress

s3: minimum principal stress

Co: Cohesion

phi: friction angle (radians)

4.6. Returns:

Factor of safety against the 3D mohr-coulomb failure criterion

4.7. Example:

Code:

```
fish define CalcExtras()
local m
m=1/144
loop foreach local zp zone.list()
PS1 = zone.stress.prin.x(zp)*m
PS2 = zone.stress.prin.y(zp)*m
PS3 = zone.stress.prin.z(zp)*m
if zone.group(zp,'Mats')=='Dolomite'
zone.extra(zp,1)=mcfs3d(PS1,PS2,PS3,1000,30*math.pi/180)
endif
endloop
end
@CalcExtras()
```

5. dp(s1,s2,s3,lim)

- 5.1. Version: 1.0
- 5.2. <u>Date:</u> 2022/08/31
- 5.3. Description:
- 5.4. Calculate the factor of safety against dilation potential (sign convention: (-) compression)
- 5.5. Inputs:
 - s1: maximum principal stress
 - s2: intermediate principal stress
 - **s3:** minimum principal stress

lim: dilation limit (maximum $\frac{\sqrt{J_2}}{I_1}$ value) e.g.(0.18,0.27,0.54)

5.6. Returns:

Factor of safety against dilation potential

5.7. Example:

Code:

```
fish define CalcExtras()
local m, D1, D2, T0, n, s0, PS1, PS2, PS3
m=1/144
loop foreach local zp zone.list()
PS1 = zone.stress.prin.x(zp)*m
PS2 = zone.stress.prin.y(zp)*m
```

```
PS3 = zone.stress.prin.z(zp)*m
if zone.group(zp,'Mats')=='Salt'
zone.extra(zp,1)=dp(PS1,PS2,PS3,0.18)
zone.extra(zp,2)=dp(PS1,PS2,PS3,0.27)
endif
endloop
end
@CalcExtras()
```