If I invert for grain size, I get decent albedo with specular delta-Eddington, especially if I adjust omega (and I think if I use 15% surface loss)

If I invert for SSA, I get albedo that is way too low, because the SSA is way too low.

Perhaps this is because in the ice interior, extinction is dominated by absorption, whereas albedo is dominated by scattering. By optimizing SSA with the transmittance measurements, I dramatically underestimate the SSA of the near-surface white ic

2/2/2020

I spent a lot of time thinking about an alternative empirical form for Beer’s Law, thinking of something like a sigmoid curve. At some point in the last few weeks I must hve come across the Mittag-Leffler function, see the Wikipedia link below. It appears to have the right shape.

https://en.wikipedia.org/wiki/Mittag-Leffler\_function

3/2/2020

Various notes:

I think the SSL (both snow and sea ice) are treated as phantom layers but I am not sure, based on the diagram at line 1650

It looks as though even though loops are defined as 0:n, the indexing would be 1, 2, … , n+1

They march through the layers, then when they hit the Fresnel layer, they just replace the layer 1 terms with the Fresnel layer terms, and the resultant R and T values are assigned to the actual physical layer, which matches the index

They compute T12dir, R12dir, T12dif, R12dif etc. as though there is no r.b., then they combine the refractive boundary with the layer it is on top of. Since they’re in a loop, it is just an extra if statement

They cycle through and compute the coefficients, and then they combine the layers

From what I can tell my original code is equivalent to theres with the exception that I need to combine the r.b. with the layer below and then combine that with the layer below to get the final solution, then the fluxes will take into account the interaction between the layer above the r.b. and the combined

So that means I can proceed with my current edits where I keep the r.b. coefs separate and then combine them and then insert them back in

I jus tneed to make sure my T1dir = Tdrs trick still works

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Thinking about d-E vs two-stream. In Glen’s model, he computes asymptotic spectral extinction coefficients and from those computes the bulk extinction coefficient and from that gets the a and r coefficients that are used to solve the two-stream equations. In d-E, I compute spectral transmittance and reflectivity. I suppose instead of using Glen’s asymptotic coefficients, I could compute bulk coefficients using my model, have those read into his model, and use his flux parameterization.