**Perspectives on the Future of Land Surface Models and the Challenges of Representing Complex Terrestrial Systems**

“Perspectives on the Future… of Land Surface Models… and the Challenges… of Representing… Complex.. Terrestrial.. Systems…” is the name of the paper I’ll be introducing today. It was published in 2020 in the Journal of Advances in Modeling Earth Systems. These are the authors: ~~and I will start off by critiquing them – I think the title of this paper is so. Verbose…!~~

So what is a Land Surface Model? Well, they are representations of the surface of our Earth and everything on it that interacts… for this reason of interaction, I like to think of them as “ecological models…”

What makes a perfect land surface model? A perfect model could project and predict everything that will happen in the future (or even the past)… it can predict what happens to this building in 200 years, what will happen to every blade of grass on the lawn outside, what fish will flow in what direction… but we don’t have a perfect model… so, this paper focuses on what’s between us and a perfect land surface model…

Fisher and Koven present “Three Grand Challenges” in developing land surface models… \*\*1… 2... 3… on board\*\*…

1. Managing and understanding process complexity of LSMs
2. Heterogeneity and the dimensionality of the land surface
3. Projecting the temporal and spatial dynamics of model parameters

I’d like to note that I consider challenges 1 and 2 as similar, particularly with 2 contributing to 1 (draw arrow from 2 into 1).

I will focus my talk on challenges 1 and 2, but will begin by discussing challenge 3 first to get it out of the way, while it is still interesting. Let’s look at Assignment 2… most of our model parameters stay constant through time; the only exception is really phi(t).

hey, … given the fact that the grass will grow greener during Spring… where’s the challenge in modelling that?