

Modeling the factors affecting thermal regime in alpine vegetation under different degradation stages on the northeastern Qinghai-Tibet Plateau

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The main objective

Our goals were:

1. Evaluate the performance of the CLASSIC model for solving heat flux modeling problems for Qinghai grassland soils of varying degrees of degradation
2. Understand the differences in heat flux for different stages of soil and grass degradation

The scenarios

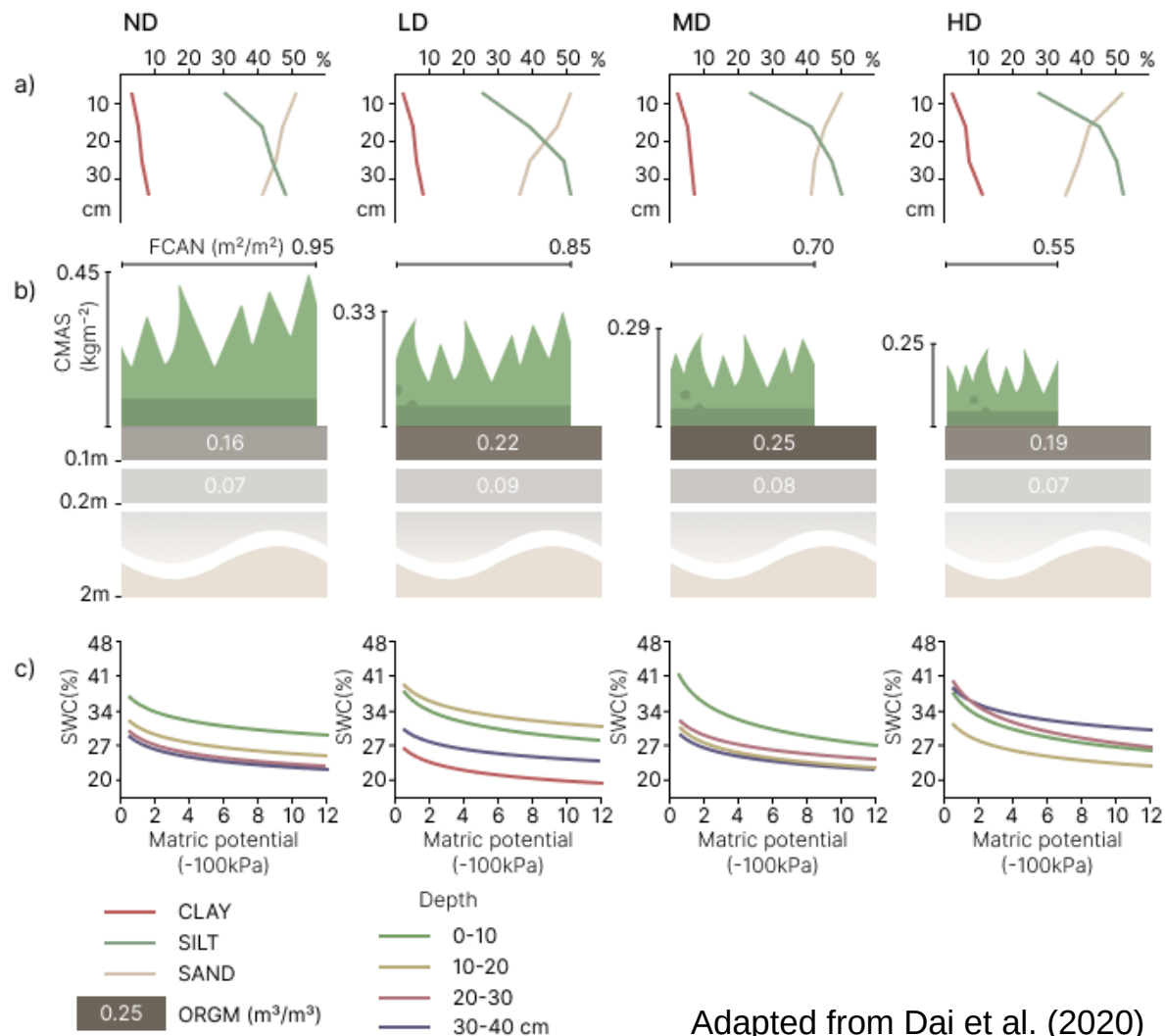
4 degradation stages:

ND: no degradation

LD: low degradation

MD: medium degradation

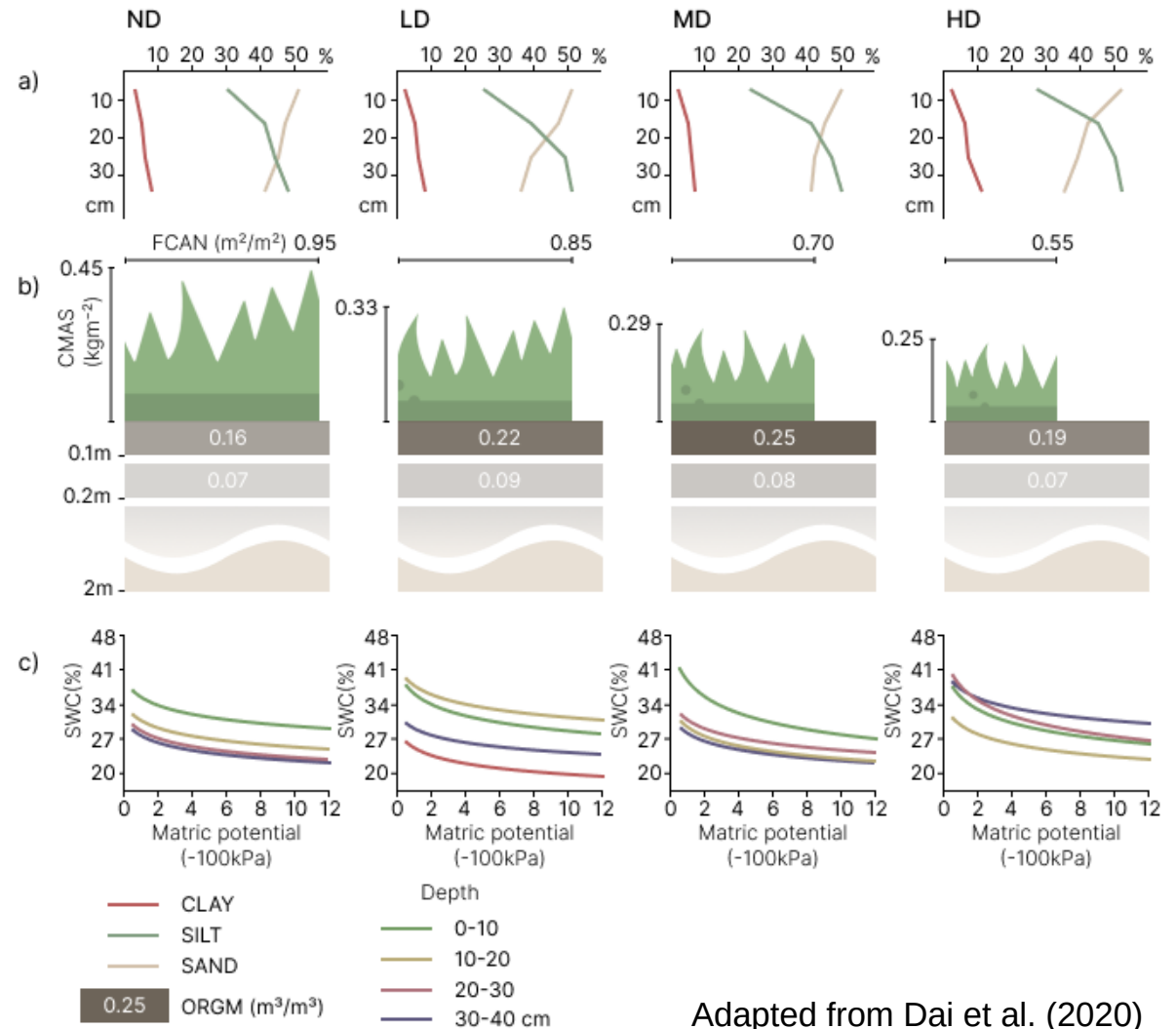
HD: high degradation



Adapted from Dai et al. (2020)

What we did

1. Gather data from open sources online.
Use data from Dai et al. (2020) for different degradation parameters.
2. Gather biomass data from the field to ensure the verification.
3. Run the model for scenario with no degradation and verify the results with the observation data
4. Run the test experiment for four scenarios gradually adding new factors to add more difference between the scenarios (*soil*, *grass* and *water retention*)
5. Run the isolated experiment, where only one of the parameters would differ and other two would stay the same (*soil*, *grass* and *water retention*)
6. Compare the results



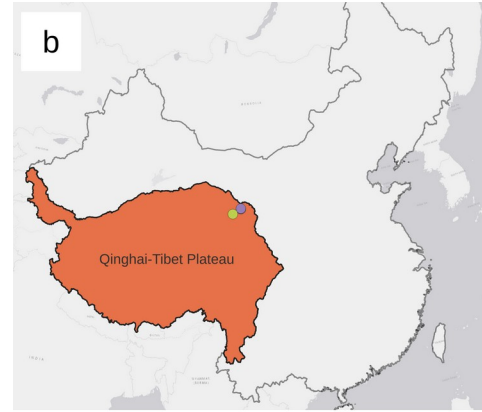
Adapted from Dai et al. (2020)

The research site

Northeast of Qinghai-Tibetan Plateau.

Weather observations and grass samples **for verification** were taken from **steppe**.

Soil and grass parameters **for test experiments** were taken from Dai et al. (2020) **alpine meadow**.



Methods

CLASSIC – The Canadian Land Surface Scheme with Biochemical Cycles.

Numerical model of land-atmosphere relationship.

Primary water, energy, CO_2 , and CH_4 , fluxes in CLASSIC

