Revised Parameterization

The current logistic function is parameterized in the usual way, but the logistic function is modified so that it asymptotes to 1. Consequently, the meaning of the logistic parameters do not apply to the modified function, and there are consistent convergence problems.

Here is an alternative, that defines x50 and x95 as values of x that make the exponentiated version of the modified function equal to 0.5 and 0.95, respectively:



where *z* is the value of the function (e.g. 0.5, 0.95).

we can solve for b0 and b1 from x50 and x95 by defining *a* and *b* as follows:



So that :



Brief Testing

I fit some simple non spatial data to the revised parameterization and the old parameterization. The revised parameterization had no NaN when inverting the hessian, but the old parameterization had several NaN (though not along the diagonal). Both fit the data the same.