CSI DEBLY Augustin 2nd year

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State of the art

NDVI-Biomass relationship in microphytobenthic studies : a review

Standardized framework choosen

The non-linear function choosen here has to be asymptotic

$$B_{a,b,c}(NDVI) = \frac{1}{c}ln\left(\frac{b}{a+b-NDVI}\right) \tag{1}$$

From linear assumptions to the non-linear framework

$$
\begin{aligned}
B_{a,b,c}(NDVI) &= \frac{1}{c}ln\left(\frac{b}{a+b-(x+NDVI_{mean})}\right) \\
&= \frac{1}{c}\left[ln\left(\frac{b}{a+b-NDVI_{mean}}\right) - ln\left(1 - \frac{x}{a+b-NDVI_{mean}}\right)\right] \\
&= \frac{1}{c}\left[ln\left(\frac{b}{a+b-NDVI_{mean}}\right) + \frac{x}{a+b-NDVI_{mean}}\right] \\
&= \frac{1}{c}\left[ln\left(\frac{b}{a+b-NDVI_{mean}}\right) + \frac{NDVI-NDVI_{mean}}{a+b-NDVI_{mean}}\right] \\
&= \left[\frac{1}{c(a+b-NDVI_{mean})}\right]NDVI \\
&+ \left[\frac{1}{c}ln\left(\frac{b}{a+b-NDVI_{mean}}\right) - \frac{NDVI_{mean}}{c(a+b-NDVI_{mean})}\right]
\end{aligned}
\tag{2}
$$

So we have

$$a_{linear} = \frac{1}{c(a+b-NDVI_{mean})} \tag{3}$$

and

$$b_{linear} = \frac{1}{c} ln \left(\frac{b}{a + b - NDVI_{mean}} \right) - \frac{NDVI_{mean}}{c(a + b - NDVI_{mean})} \qquad (4)$$

Scaling Bias