

### First graph : Three-level boxplot

Characterization Factor (CF) is a function that depends on many variables and is specific to a country:

$$CF = f(Pi, MEAN\_FG_, Q\_90\_yr, CU\_yr\_gw, CU\_yr\_Surf, SUM\_GWR\_K, livestock_{calories}, domestic, malnutrition, WR_{agriculture}, WR_{fisheries}, Fisheries, Dom1)$$

There are deterministic values related to each country for all the variables. Consequently, there are deterministic CF for each country. The purpose of this graph is to visualize the spread of the uncertainty of each variable one-at-a-time (OAT):

- At the first level we can see the range of all the deterministic value relative to a variable. The scale here is logarithmic.
- At the second level, we vary the variable by 1% and we calculate the relative uncertainty of the CF using the deterministic value for each country.
- At the third level, we vary the variable from the minimum to maximum and we calculate the relative CF. Then we present the ratio of those two values (CFmax/CFmin), where CFmax represent the CF calculated using maximum value for the variable and the same for the minimum. This give another idea about the spread of the uncertainty. The scale here is logarithmic.

### Second Graph: S-curve fit

Alpha star is a deterministic variable depending on a country. Alpha is a ratio between 0 and 1, and alpha is related to alpha star.

The purpose of this graphic is to show the fit of the relation between those two variables using a Sigmoid curve. This graphic has the advantage to show the distribution of each variable allowing the observation of its impact on the curvature of the S-curve. This graph was made using Python