

Table 1. Most sensitive local variation. This table lists the highest sensitivity indices that we found over all ranging behaviors, input parameters, and output variables for the test problem described in the text. The second column has the name of the output variable being measured and its value at the unvaried parameter set given in Table ?? . Input parameters that caused the highest sensitivity indices are in column three. P is proportion of mosquitoes that found a host and T_{avg} is average number of navigation decisions a mosquito makes before finding a host. The fourth and fifth columns are the sensitivity index and its error (see the text for details of calculation). The sixth column translates SI into a percentage change in the output variable for a 10% change in the input variable. If the sixth column is small compared to 10%, then the measured output *is not sensitive* to small variations in the input parameter. All combinations of ranging behavior, input parameter, and output variable not given in this table have sixth column values less than 3.0%. T_{avg} exhibits the highest sensitivity and has high relative error in the SI estimate. P is most sensitive during crosswind ranging behavior in response to changes in the maximum flying speed of the mosquitoes, S_{max} . Variations in S_{max} also cause sensitive responses in the average time to a host in upwind and downwind ranging behaviors, along with host radius, host CO₂ emission rate, and mosquito sensing threshold for CO₂. Downwind ranging behavior is sensitive to the largest number of parameters in this test problem, while upwind behavior has the highest single sensitivity (to S_{max}).

Ranging behavior	output (baseline value)	input	SI	Error	% output change for 10% input change
upwind	T_{avg} (116)	S_{max}	-210.7	36.64	-18.1%
		\hat{J}_0	35.25	19.29	3.0%
downwind	T_{avg} (46)	S_{max}	-29.2867	27.7440	-6.4%
		r_c	-46.7404	37.4326	-10.3%
		C_0	-28.7421	30.6952	-6.3%
	P (0.20)	r_c	0.0642	0.0076	3.2%
		C_0	-0.0602	0.0239	-3.0%
crosswind	P (0.36)	S_{max}	0.2604	0.0952	7.3%