List of three tropical cyclone intensity products

1. Multiple regression schemes
    a. Atlantic, Eastern Pacific, Central Pacific – Statistical Hurricane Intensity Prediction Scheme (SHIPS)
    b. Western Pacific, Indian Ocean, Southern Hemisphere – Statistical Typhoon Intensity Prediction Scheme (STIPS)
    c. The equation is:

$$(y - \bar{y})/\sigma_y = \sum_{i=1}^{k} c_i(x_i - \bar{x}_i)/\sigma_i.$$

where σ is the standard deviation of a variable, $y = \Delta V_{max}$, x_i is each predictor, $\bar{x}$ is each predictor mean, $\bar{y}$ is the mean ΔV_{max}, and c_i is the normalized coefficient between 0 and 1. $\bar{x}$ can also be roughly interpreted as a threshold value. The coefficient is a handy way of comparing the importance of a predictor relative to each other and for different forecast periods. Typically, POT is the most important term, followed by a satellite term, then followed by a shear term.

2. Logistical Growth Equation Model (LGEM)
    a. LGEM uses a simple nonlinear differential equation commonly used to model population growth. LGEM is more sensitive to time variations in the predictors, and overcomes some of the limitations of the linear assumptions in the SHIPS model, in particular towards rapid intensification.

$$\frac{dV}{dt} = \kappa V - \beta V\left(\frac{V}{V_{\text{mpi}}}\right)^n,$$

where V_{MPI} is the MPI maximum surface wind, and β and *n* are positive constants that determine how rapidly and how closely V_{max} approaches its MPI. K is a time dependent terms that is a function of environmental terms like shear, and also includes rapid intensification probabilities

3. Rapid Intensification Index