

Pressure decay after landfall

- General formulation in most studies is:

$$p_{inland} = p_{env} - \Delta p e^{-at}$$

$$\Delta p = p_{env} - p_{landfall}$$

- Used Vickery (2005), which varies a regionally and includes an error term for the empirical fit

$$a = a_0 + a_1 \Delta p$$

- Vickery provides values for a_0 and a_1 for New England, mid-Atlantic, Florida, and Gulf Coast

TABLE 5. Decay constant a , regression parameters (RMW, km; translation speed c , m s⁻¹; and Δp_o , mb; a_0 is the intercept and a_1 is the slope). The largest value of r^2 for each region is in boldface.

Landfall region	N	$a = a_0 + a_1 \Delta p_o$				$a = a_0 + a_1 \Delta p_o / \text{RMW}$				$a = a_0 + a_1 \Delta p_o c / \text{RMW}$			
		a_1	a_0	r^2	σ_ε	a_1	a_0	r^2	σ_ε	a_1	a_0	r^2	σ_ε
Gulf Coast	26	0.00068	0.0244	0.2683	0.0225	0.0120	0.0400	0.4839	0.0189	0.00181	0.0414	0.5884	0.0169
Florida Peninsula	13	0.00116	-0.0213	0.3149	0.0325	0.0172	0.0115	0.7442	0.0120	0.00167	0.0225	0.8378	0.0158
Atlantic Coast	19	0.00080	0.0110	0.3660	0.0156	0.0245	0.0286	0.2499	0.0170	0.00153	0.0364	0.3921	0.0153
Mid-Atlantic Coast	13	0.00074	0.0128	0.3212	0.0174	0.0290	0.0213	0.3776	0.0166	0.00156	0.0370	0.4206	0.0161
New England Coast	6	0.00099	0.0034	0.5471	0.0114	0.0100	0.0470	0.0287	0.0167	0.00184	0.0304	0.2621	0.0146