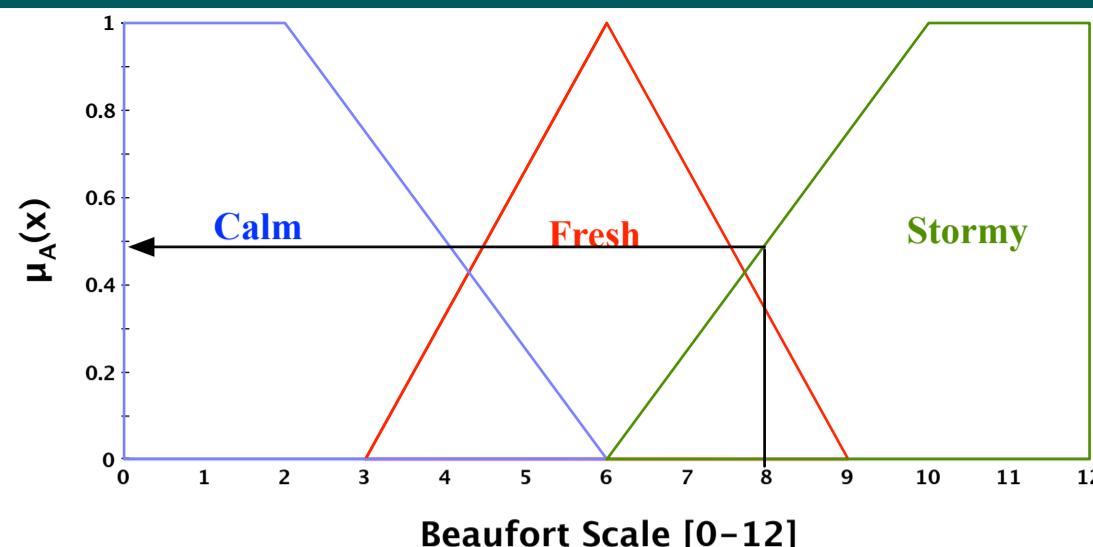
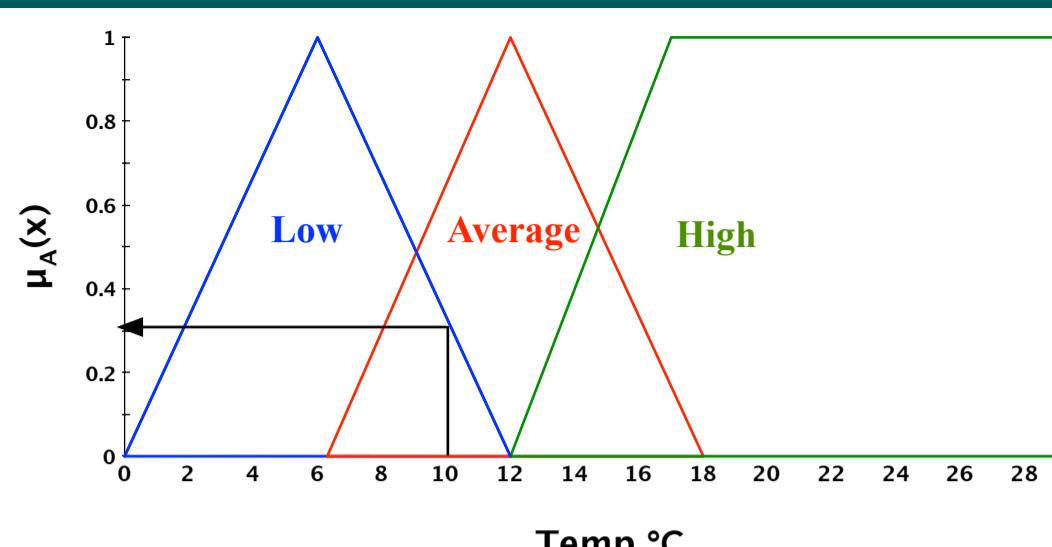


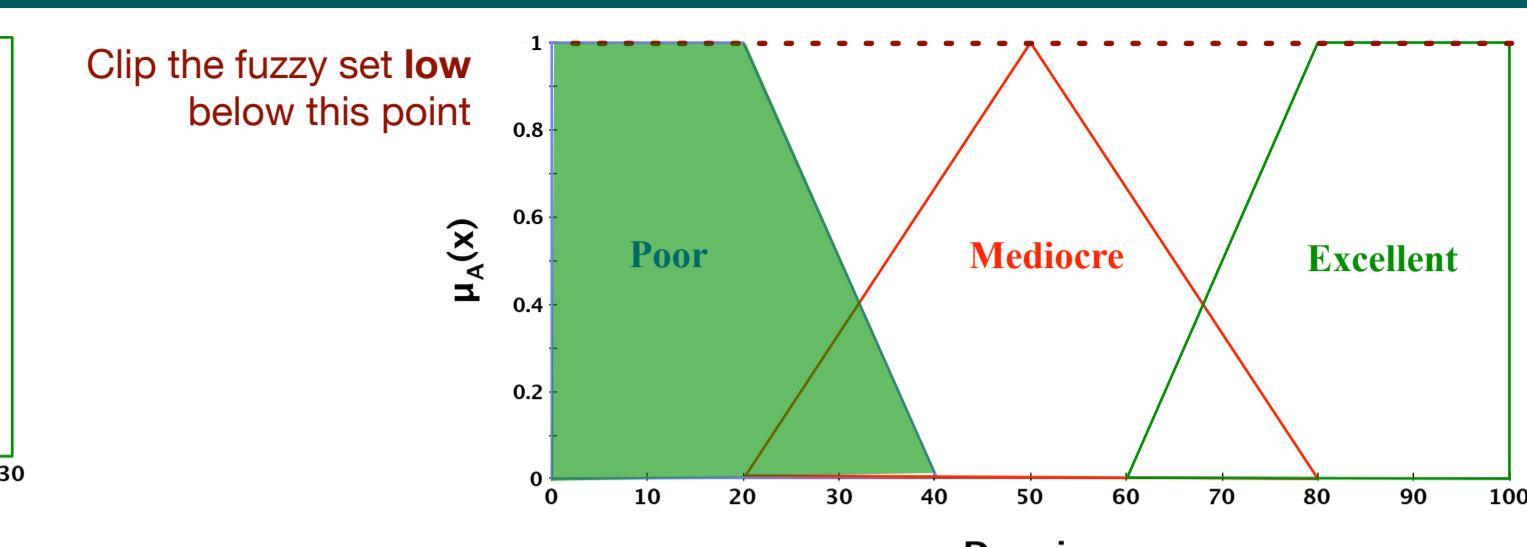
Mamdani Inference for Dapping using COG for inputs wind = 8, temperature = 10



$$\mu_{\text{stormy}}(8) = 0.5, \therefore \mu_{\text{extremely}}(0.5) = 0.5^3 = 0.125$$



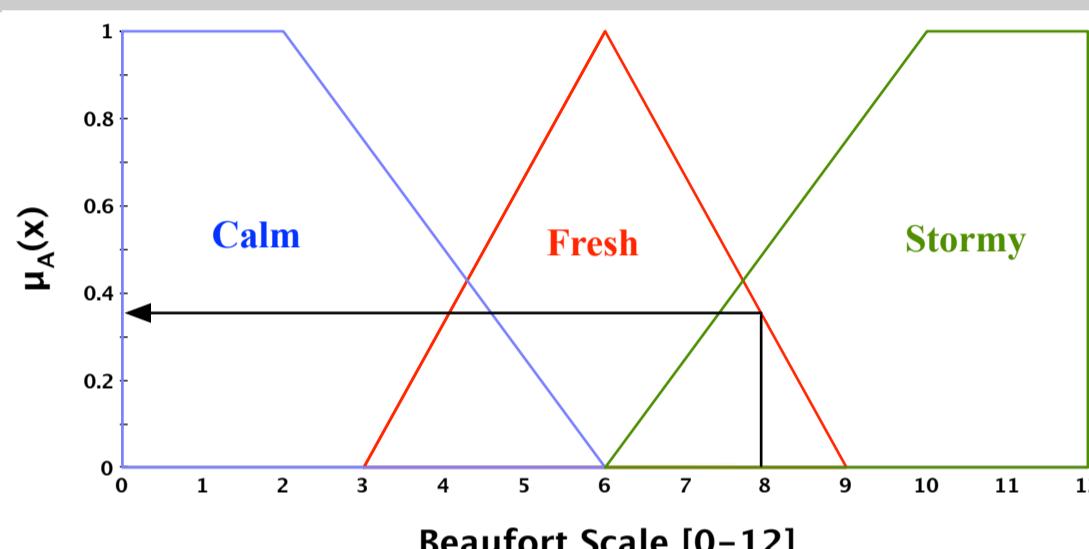
$$\mu_{\text{low}}(10) = 0.3, \therefore \mu_{\text{very}}(0.3) = 0.3^2 = 0.09$$



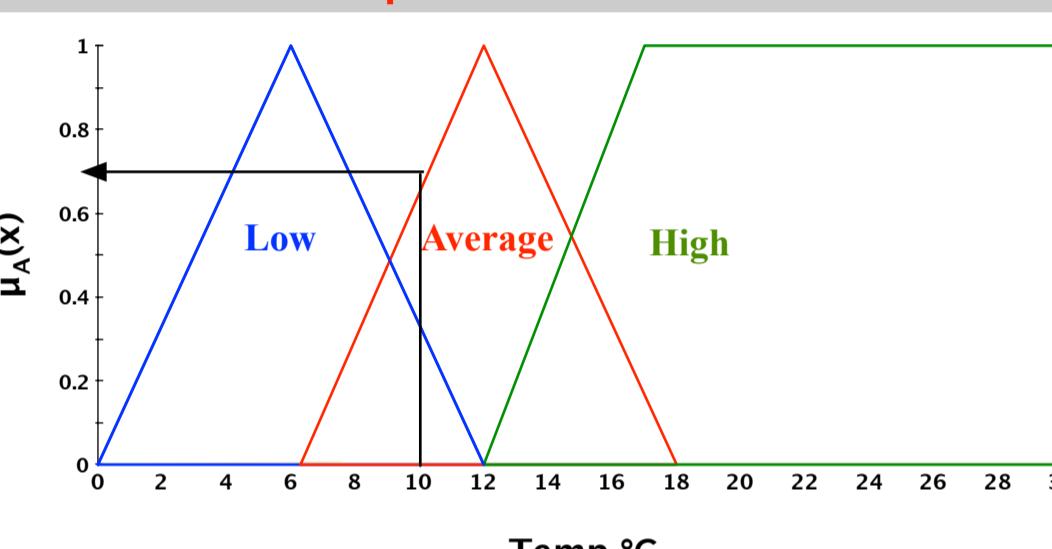
Clip the fuzzy set low below this point

$$\mu_{\text{poor}}(x) = \max(0.125, 0.09) = 0.125, \therefore \mu_{\text{very}}(0.125) = 0.125^2 = 0.015, \therefore \text{Not} = 1 - 0.015 = 1$$

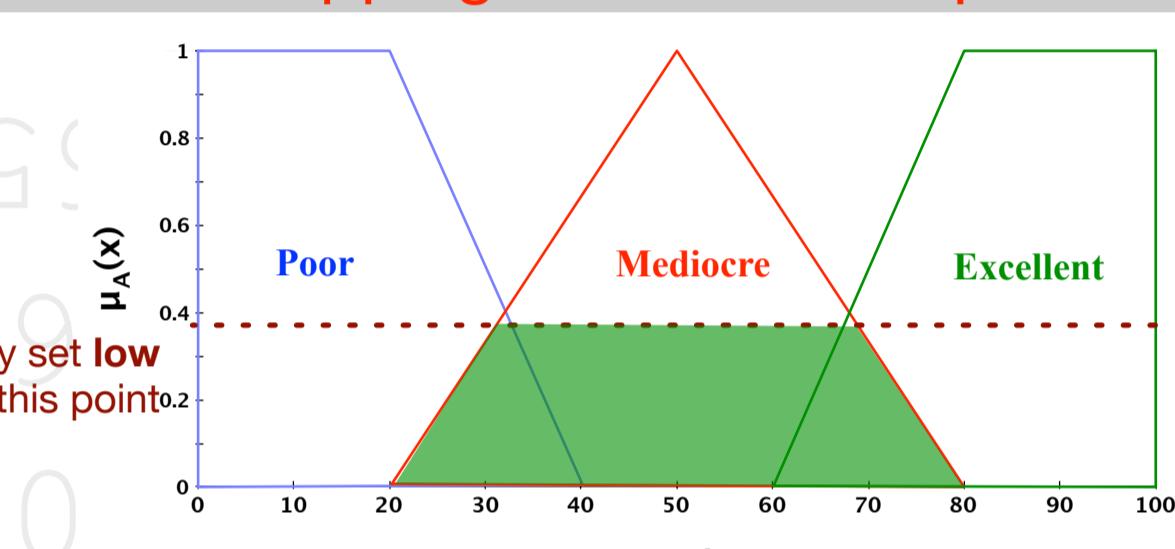
Rule 1: IF wind IS EXTREMELY stormy OR temp IS VERY low THEN dapping IS NOT VERY poor



$$\mu_{\text{fresh}}(8) = 0.38$$



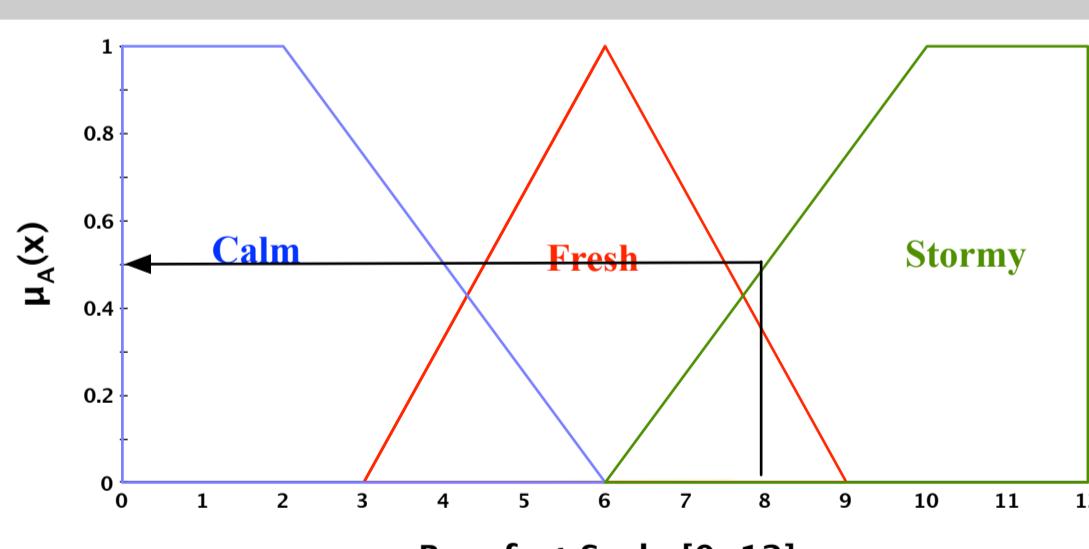
$$\mu_{\text{average}}(10) = 0.7, \therefore \mu_{\text{more-or-less}}(0.7) = \sqrt{0.7} = 0.836$$



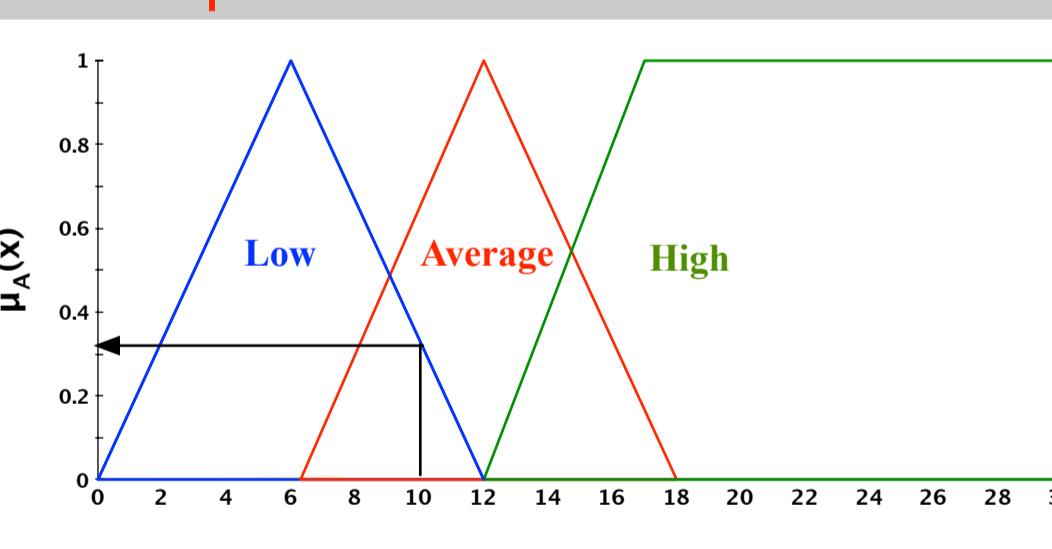
Clip the fuzzy set low below this point

$$\mu_{\text{mediocre}}(x) = \min(0.38, 0.836) = 0.38$$

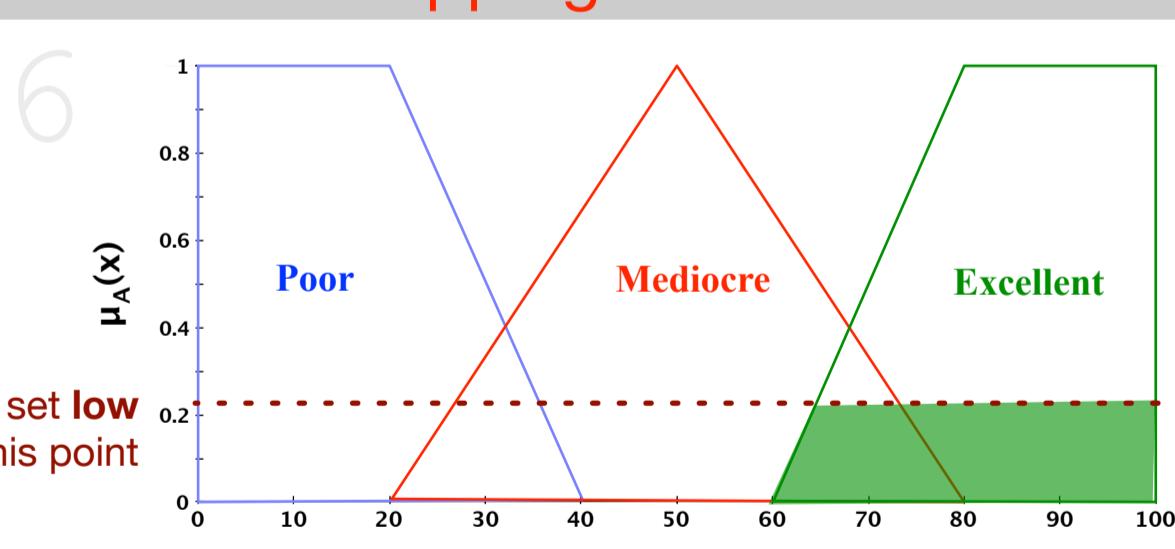
Rule 2: IF wind IS fresh AND temp IS MORE OR LESS average THEN dapping IS mediocre



$$\mu_{\text{stormy}}(8) = 0.5, \therefore \mu_{\text{slightly}}(0.5) = 0.5^{1.7} = 0.307$$



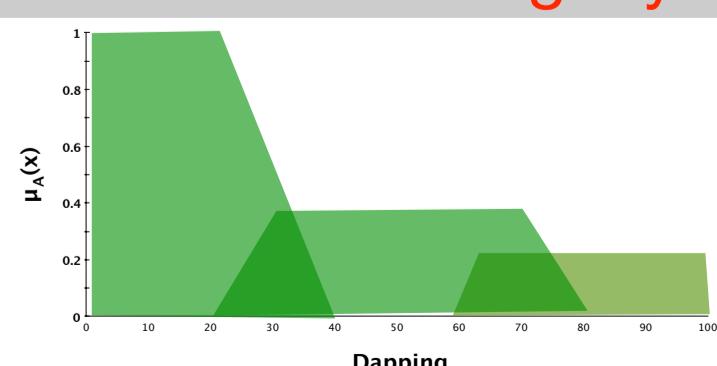
$$\mu_{\text{low}}(10) = 0.3, \therefore \text{Not Low} = 1 - 0.3 = 0.7$$



Clip the fuzzy set low below this point

$$\mu_{\text{low}}(x) = \min(0.307, 0.7) = 0.307, \therefore \mu_{\text{little}}(0.307) = 0.307^{1.3} = 0.215$$

Rule 3: IF wind IS slightly stormy AND temp IS NOT low THEN dapping IS A LITTLE excellent



$$COG = \frac{\sum_{x=a}^b \mu_A(x)x}{\sum_{x=a}^b \mu_A(x)} = \frac{(0 + 10 + 20) \times 1.0 + (35 + 40 + 50 + 60 + 70) \times 0.38 + (80 + 90 + 100) \times 0.215}{(1.0 + 1.0 + 1.0) + (0.38 + 0.38 + 0.38 + 0.38 + 0.38) + (0.215 + 0.215 + 0.215)} = \frac{183.05}{5.545} = 33.01\% \text{ Dappable}$$