Consider that, from the mean value theorem, there is a characteristic daily production (P^*) that, when multiplied by 365 d gives the annual production for a system. P^* can be expressed as the depth integral of the vertical photosynthesis profile over the day, which is given by equations 2-4 in the text. The solution for daily production was shown by Platt et al. (1990, all citations in text unless otherwise noted) to be

$P^* = \frac{Bp_{\max}D}{k}F\left(\frac{I_{\max}}{I_k}\right)$, where $I_k=p_{max}/\alpha$, and F is the integral over depth and photoperiod of the non-dimensionalized photosynthesis profile, and all other notation is as used in the text. For typical annual medians we may take $F\approx1.6$ (dimensionless, Bouman et al. 2010), D=12 (h), and $p_{max}\approx3.5$ (mg C mg^{-1} chl *a* h^{-1}, Pennock and Sharp 1986, Gallegos 2012), leaving biomass, B (3 orders of magnitude, OM, variability, Cloern and Jassby 2008) and k (≈1+ OM variability) as the main source of variability across systems. For properly constraining possible values it is advisable to partition k into abiotic and biotic components, e.g. $k=k_t+k_cB$, allowing abiotic attenuation, k_t to vary (widely) among systems and taking biomass-specific attenuation, $k_c\approx0.014$ (m^2 mg^{-1} Chl*a*, Wofsy 1983) as a representative value. Combining constants and multiplying by 365/1000 (to convert to an annual rate in g C) we get that the scale of annual production for a system could be estimated as

$$\text{Annual Production} \cong 24.5\frac{B}{k_t + 0.014B} \text{ g C m}^{-2}.$$

For a low biomass (B=1 mg m^{-3}) turbid (k_t=3 m^{-1}) we would get annual production of about 8.1 g C m^{-2}, compared with a high biomass (B=100 mg m^{-3}) low turbidity (k_t=0.3 m^{-1}) we would estimate annual production at about 1440 g C m^{-2}, spanning an appreciable portion of the range in the assembled data. The ensuing discussion elaborates on precisely these terms—biomass and turbidity—and is comprehensive and well-illustrated with examples. There could be an additional factor of 2 cross-system variation attributable to p_{max} and $F(I_{max}/I_k)$ (Lohrenz et al. 1994, *Estuaries* 17:779-795), but here again, there is better basis in published measurements of P-I parameters for cross-system comparisons (a potential topic for another review), compared with growth rate.