

Revision of FAULTS, PLATES, and SHELLS, May 1998:

The following table replaces Table 2 of Bird (1989, J. Geophys. Res., v. 94, B4, 3967-3990):

TABLE 2. Recommended (Tactical) Partial Derivatives  
for the Frictional Layer(s) of the Lithosphere

Region	$\frac{\partial \sigma_1}{\partial \dot{e}_1}$	$\frac{\partial \sigma_1}{\partial \dot{e}_2}$	$\frac{\partial \sigma_2}{\partial \dot{e}_1}$	$\frac{\partial \sigma_2}{\partial \dot{e}_2}$
N/N	$\frac{\sigma'_{33}}{2\dot{e}_1} \left( \frac{1}{\gamma} - 1 \right) + 4P$	$2P$	$2P$	$\frac{\sigma'_{33}}{2\dot{e}_2} \left( \frac{1}{\gamma} - 1 \right) + 4P$
N	$4\eta_{\max} + 4P$	$2P$	$2P$	$4P$
N/S	$\frac{\sigma'_{33}}{2\dot{e}_1} \left( 1 - \frac{1}{\gamma} \right) + 4P$	$2P$	$2P$	$4P$
S/N	$\frac{Q}{(1-2R)} + 4P$	$\frac{Q}{(1-2R)} + 2P$	$\frac{Q}{\gamma(1-2R)} + 2P$	$\frac{Q}{\gamma(1-2R)} + 4P$
S	$Q + 4P$	$Q + 2P$	$\frac{Q}{\gamma} + 2P$	$\frac{Q}{\gamma} + 4P$
S/T	$\frac{Q}{(2R-1)} + 4P$	$\frac{Q}{(2R-1)} + 2P$	$\frac{Q}{\gamma(2R-1)} + 2P$	$\frac{Q}{\gamma(2R-1)} + 4P$
T/S	$4P$	$2P$	$2P$	$\frac{\sigma'_{33}}{2\dot{e}_2} (1-\gamma) + 4P$
T	$4P$	$2P$	$2P$	$4\eta_{\max} + 4P$
T/T	$\frac{\sigma'_{33}}{2\dot{e}_1} (\gamma-1) + 4P$	$2P$	$2P$	$\frac{\sigma'_{33}}{2\dot{e}_2} (\gamma-1) + 4P$

Definitions:

$$P = \inf \left( \eta_{\max}, \left( \frac{\sigma'_2 - \sigma'_1}{2(\dot{e}_2 - \dot{e}_1)} \right) [\text{if strike-slip}], \left( \frac{\sigma'_{33} - \sigma'_1}{2(\dot{e}_{33} - \dot{e}_1)} \right) [\text{if thrust}], \left( \frac{\sigma'_2 - \sigma'_{33}}{2(\dot{e}_2 - \dot{e}_{33})} \right) [\text{if normal}] \right);$$

$$Q = 6\eta_{\max} \frac{(\gamma-1)}{\left( \gamma - \frac{1}{\gamma} \right)}; \quad R = \frac{\left( 6\eta_{\max} \frac{(\dot{e}_1 + \dot{e}_2)}{\sigma'_{33}} + \left( 1 - \frac{1}{\gamma} \right) \right)}{\left( \gamma - \frac{1}{\gamma} \right)};$$