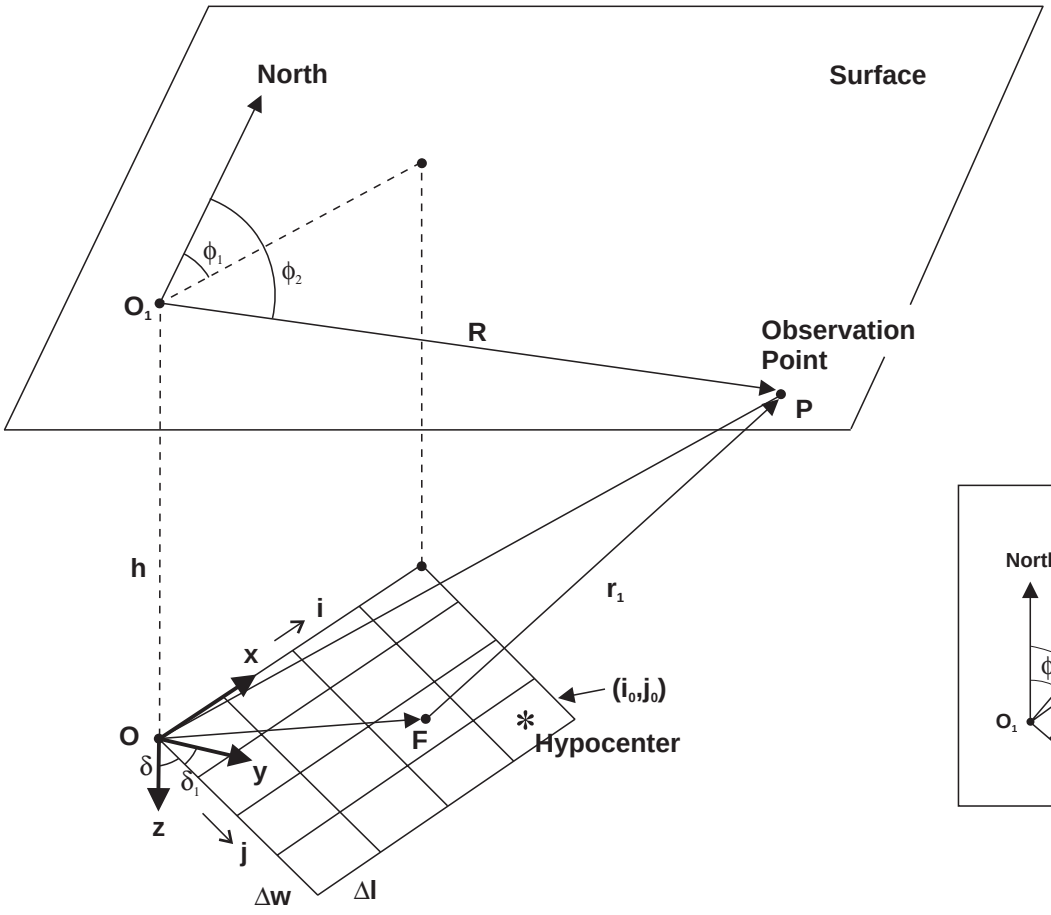
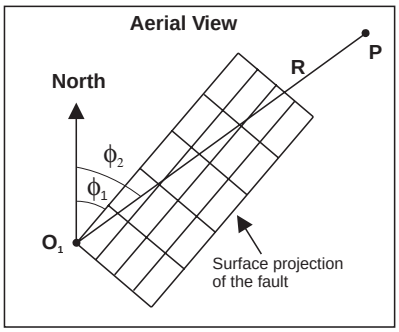
Figure 1. Finite-Fault Geometry





O origin
δ_1 fault dip
ϕ_1 fault strike
ϕ_2 azimuth to observation point
h depth to fault upper edge
F center of subfault
Δw subfault width
Δl subfault length
i, j subfault number
r_1 distance from subfault to observation point

$$\overrightarrow{OP} = \{R\cos(\phi_2 - \phi_1),\ R\sin(\phi_2 - \phi_1),\ -h\}$$

$$\overrightarrow{OF} = \{(2i - 1)\Delta l/2,\ (2j - 1)(\Delta w/2)\sin\delta,\ (2j - 1)(\Delta w/2)\cos\delta\}$$

$$\vec{r}_1 = \overrightarrow{OP} - \overrightarrow{OF}$$

$$r_1 = \{[R\cos(\phi_2 - \phi_1) - (2i - 1)\Delta l/2]^2 + [R\sin(\phi_2 - \phi_1) - (2j - 1)(\Delta w/2)\sin\delta]^2 + [h + (2j - 1)(\Delta w/2)\cos\delta]^2\}^{1/2} \quad (1)$$