

## Le equazioni

$$V_{M2} = \sum_{k=0}^n \binom{n}{k} h^{DSMpost} - \sum_{k=0}^n \binom{n}{k} h^{DTMpre} \quad [m^3]$$

$$V_{M1} = B \cdot \sum_{k=0}^n \binom{n}{k} h^{DSMpost} \quad [m^3]$$

where  $B$  is the elevation value of the rubble heap's base and  $h$  is the elevation value (in  $m$ ) extracted from the  $DSMpost$  for each pixel,  $n$  = number of pixel.

$$b_j = \frac{\sum f_{ij} R_i}{\sum f_{ij}}$$

where  $b_j$  stands for multispectral response in band  $j$ ,  $f_{ij}$  is the filter function of  $j$  band of satellite sensor (available from the data provider) and  $R_i$  the hyperspectral reflectance data.

$$Y(i, k) = \sum_{j=1}^n f_j(i) X_j(i, k) + v(i, k)$$

where:

$Y(i, k)$  =  $i$ th pixel spectral response in  $k$ th spectral band;

$X_j(i, k)$  =  $i$ th pixel spectral response of  $j$ th endmember in  $k$ th spectral band;

$f_j(i)$  = pixel fractional abundance of  $j$ th endmember;

$v(i, k)$  = pixel residual noise in the  $k$ th band;

with  $\sum_j^n f_j(i) = 1$  as basic constraint to fractional pixel reflectance contributions.