Variational formulae for the total mean curvatures of codimension-one distributions

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We are based on the integral formulae of our recent work to develop variational formulae for the total m-th mean curvatures of codimension-one distributions (or foliations) on a compact Riemannian locally symmetric manifold (M^n, g). We extend our integral formulae for a finite set of orthonormal vector fields on (M^n, g) and calculate the variations of the total generalized mean curvatures in this case. We show that the total generalized mean curvatures over $M^n(c)$ of constant curvature c don't depend on the choice of k orthonormal vector fields, that for $k = 1$ was proved by Brito–Langevin–Rosenberg (1981). We extend our method in case of $m = 2$ to calculate the 1-st and 2-nd variations of the total mixed scalar curvature of a distribution of arbitrary codimension.