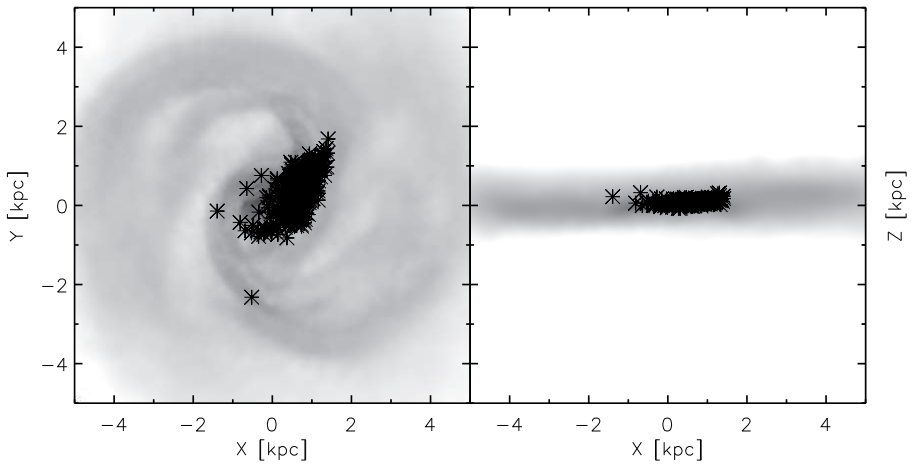

Fig. 6. Distribution of the SPH particles ejected by the central starburst for model S7+G9 after 1 Gyr. The inner region of the domain is shown, and the location of the SPH particles gives the spatial distribution of the metals that have been deposited back on the galactic disk. The left plot shows the distribution of positions projected onto the galactic disk, and the right plot shows the positions of the SPH particles projected onto a plane which includes the rotation axis of the galactic disk. The greyscale shows the distribution of the mass density on these two planes.

metal redistribution efficiency, values above ∼70% are obtained for the adiabatic models, while maximum values of only ∼20% are obtained from the radiative models.

In Figure 6, we show the distribution of metals that have fallen back onto the galactic disk from the starburst ejection of model S7+G9, after a 1 Gyr time evolution. The SPH particles corresponding to the collapsed material form a distribution with a height of ∼300 pc (about the initial scale height of the galactic disk), and with a radial extent of ∼2 kpc (see Figure 6), which is about twice the size of the initial scale of length (R_0) of the G9 galaxy (see Table 1). This is an illustration of the fact that in all of our models the infalling metals are redistributed over a large region of the galactic plane.

6. THE EFFECTS OF VARYING THE RADIUS OF THE INJECTION REGION AND THE RESOLUTION OF THE INITIAL STARBURST

In all of the models presented above, we have assumed that the energy from the starburst is injected in a spherical region of radius $R_c = 150$ pc (which is a representative value of the observed sizes of starburst regions, see § 4.3). In this section, we explore the effects on the ejection efficiencies of varying the value of R_c.

We focus on three of the starburst+host galaxy combinations which we have studied above (see Tables 1 and 2). We choose models S5+G3 (a small mass galaxy with an intermediate energy starburst, S10+G7 (an intermediate mass galaxy with a strong starburst) and S11+G9 (a high mass galaxy with a strong starburst). For these three models, we compute radiative simulations in which the starburst energies are injected in spheres of radii $R_c = 50$ to 150 pc (in 20 pc steps). The number of SPH particles within the spheres scales as the volume of the initial starburst (45 particles for $R_c = 50$ pc to 550 particles for $R_c = 150$ pc).

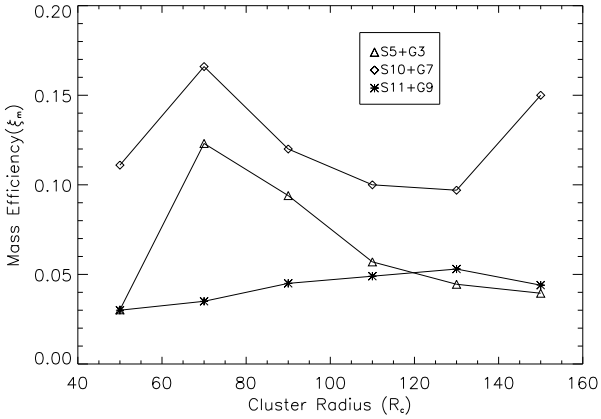

Fig. 7. The mass ejection efficiency ξ_m computed for models S5+G3, S10+G7 and S11+G9 as a function of the initial radius R_c of the starburst.

In Figure 7, we show the mass ejection efficiency ξ_m (see equation 11) computed for models S5+G3,