disk. These ν values combined with the adopted infall rate reproduce the chemical abundances shown by halo and disk stars (see Figure 2).

(viii) The only difference between the HWY and the LWY sets is the assumed mass-loss rate due to stellar winds by massive stars with $Z = 0.02$, see Figure 1 of Carigi & Peimbert (2008). All stellar yields are metal-dependent. We interpolate and extrapolate linearly the yields by mass and metallicity.

The HWY set includes:

(A) For massive stars (MS), those with $8 < m/M_{\odot} < 80$, the yields by: (a) Hirschi (2007) for $Z = 10^{-8}$ (with rotation velocity between 500 and 800 km s^{-1}, depending on stellar mass); (b) Meynet & Maeder (2002) for $Z = 10^{-5}$ and $Z = 0.004$ (with rotation velocity = 300 km s^{-1}); (c) Maeder (1992) for $Z = 0.02$ (high mass-loss rate with no rotation); (d) Since Fe is a chemical element used as observational constraint in most of the chemical evolution models and the Fe yield is not computed by Hirschi (2007), Meynet & Maeder (2002), and Maeder (1992), we adopt Woosley & Weaver (1995) values only for the Fe yields (Models B, for 12 to 30 $M_{\odot}$; Models C, for 35 to 40 $M_{\odot}$; while for $m > 40$ $M_{\odot}$, we extrapolate the $m = 40$ $M_{\odot}$ Fe yields, following Carigi & Hernández 2008). Our models, which include the Fe yields and the O yields by Meynet & Maeder (2002), can reproduce the O/Fe-Fe/H trend of the halo stars (see Figure 2).

(B) For low and intermediate mass stars (LIMS), those with $0.8 \leq m/M_{\odot} \leq 8$, we used the yields by Marigo, Bressan, & Chiosi (1996, 1998) and Portinari, Chiosi, & Bressan (1998) for the $Z = 0.004$ to $Z = 0.02$ range.

(C) For Type Ia SNe we have used the yields by Thielemann, Nomoto, & Hashimoto (1993) in the the SNIa formulation of Greggio & Renzini (1983). A fraction, Abin, of the binary stars of LIMS with a total mass between 3 and 16 $M_{\odot}$ are progenitors of SNIa. We assumed Abin = 0.066 for HWY model, while Abin = 0.094 for LWY models. These fractions are needed to reproduce the age-[Fe/H] relation of the disk stars, the O/Fe-Fe/H relation of the disk stars of the solar vicinity, and the protosolar Fe/H value for each model (see Figure 2).

In the LWY set we have updated the yields of massive stars only for $Z = 0.02$ assuming the yields by Hirschi, Meynet, & Maeder (2005) with rotation velocity = 300 km s^{-1}. The rest of the stellar yields are those included in the high wind set.

(ix) For MS the models include the stellar lifetimes given by Hirschi (2007), Meynet & Maeder (2002), and Hirschi et al. (2005), while for LIMS include the main sequence lifetimes from Schaller et al. (1992).

(x) Due to its deep potential well the models do not consider any type of outflows from the Galaxy. In addition, we disregard outflows of C and O rich material from SNe, because of the small C/O ratios observed in H II regions. See Carigi et al. (1995) and Carigi, Colín, & Peimbert (1999).

(xi) We do not include radial flows of gas or stars.

Since the solar vicinity and the Galactic disk contain stars and H II regions of a broad range of metallicities, our galaxy is a proper laboratory to study the $\Delta Y/\Delta O$ and $\Delta C/\Delta O$ behavior at high Z values and to test observationally the predictions of the HWY and the LWY models. Furthermore, the main elements affected by the winds of massive stars are He, C, and O; therefore, a careful comparison of the abundances predicted by the chemical evolution models with the observed values will allow us to constrain the mass loss rate and consequently the yields of massive stars.

3. THE GALACTIC H II REGION GRADIENTS AND THE CHEMICAL HISTORY OF THE SOLAR VICINITY

In Figure 1 we show the present-day radial distribution of the gaseous mass and the O/H, C/H, and C/O gradients in the Galactic disk predicted by the HWY and LWY models.

For Figure 1 we have chosen observational constraints that represent the current gas mass and the abundances of the Galactic disk. We have taken the average surface density as a function of the Galactic radius derived from H I shown by Kalberla & Kerp (2009) in their Figure 5. We have assumed the abundance ratios of the gas component determined from H II regions based on recombination lines by García-Rojas & Esteban (2007) corrected for dust depletion. It should be noted that the H II regions used by García-Rojas & Esteban (2007) are high density young objects that do not contain WR stars; consequently they have not been polluted by the evolution of their ionizing stars and their O/H and C/H values are representative of the present value of the Galactic interstellar medium.

Based on Figure 1, it can be noted that both models successfully reproduce the current radial distribution of gas surface mass density and the C/H and O/H gradients at the one σ level but neither of them reproduce the C/O gradient for all Galactocentric distances. The HWY model fits the C/O values of H II regions for $r < 7.3$ kpc, while the LWY model does so for $7.5 < r(\mathrm{kpc}) < 9$.