Additional evidence for complex 2-site polarons in CMR manganites. FRANK BRIDGES, GEZA KURCZVEIL, LISA DOWNWARD, UC Santa Cruz, JOHN J. NEUMEIER, Montana State University — Recently we have proposed a complex 2-site polaron model (which we call a dimeron) that exists for temperatures near and above the ferromagnetic transition temperature, \( T_c \) [1]. The dimeron has a hole delocalized over two Mn sites (i.e. a hole and an electron share the two Mn sites) and the two Mn sites have a reduced distortion compared to the remaining Jahn-Teller distorted electron sites. Magnetic clusters just above \( T_c \) are likely clusters of these dimeron quasiparticles. The average valance of the two Mn sites in the dimeron is 3.5 and the spin is 7/2. We show that the Mn K-absorption edge is much better described as a sum of a 3.5 valence edge (fraction 2x) plus a 3 valance edge (fraction 1-2x), compared to earlier simulations using \( x \) CaMnO\(_3\) plus 1-x LaMnO\(_3\). We also show that fitting the Mn-O peak to a sum of two experimental Mn-O standards leads to a similar result as in the earlier study - a fraction 2x of lower distorted Mn sites (dimerons) and a fraction 1-2x of more distorted sites with 1 \( e_g \) electron. Both support the proposed complex - 2-site polaron model. Supported under NSF grant DMR0301971.