



Figure 1.5 *Top panel:* Illustration of hierarchical structure formation. *Bottom panel:* Snapshots from the simulation of a galaxy cluster forming. Each pane is 10 Mpc on a side. Color coding represents gas density along the line of sight (deep red is highest, dark blue is lowest). Each snapshot is numbered on the illustration at the approximate epoch each stage of cluster collapse occurs. Notice that, at first (1-2), very small objects like the first stars and protogalaxies collapse and then these smaller objects slowly merge into much larger halos (3-5). The hierarchical merging process ultimately results in a massive galaxy cluster (6) which continues to grow as sub-clusters near the box edge creep toward the cluster main body. Illustration taken from NASA/WMAP Science Team and modified by author. Simulation snapshots taken from images distributed to the public by the Virgo Consortium on behalf of Dr. Craig Booth: <http://www.virgo.dur.ac.uk>