



Figure 6-22 Scaling results for Barnes-Hut (left) and Ocean (right) on the SGI Challenge.

The graphs show the scaling of work done, data set size, and speedups under different scaling models. PC, TC, and MC refer to problem constrained, time constrained and memory constrained scaling, respectively. The top set of graphs shows that the work needed to solve the problem grows very quickly under realistic MC scaling for both applications. The middle set of graphs shows that the data set size that can be run grows much more quickly under MC or naive TC scaling than under realistic TC scaling. The impact of scaling model on speedup is much larger for Ocean than for Barnes-Hut, primarily because the communication to computation ratio is much more strongly dependent on problem size and number of processors in Ocean.