The models are looking pretty good, as shown by this graph from Real Climate. The colored lines are different measurements of change in global temperature average. The black line is the average of the predictions from the models used by IPCC, and the gray band shows the 95% confidence level (only a 1/20 chance of being outside the band). There's obviously a some significant short-term bouncing-around, but the trend line looks quite good — better than one might expect given all the difficulties involved in modeling something as complex as the planet's climate. Even putting aside the models, the actual observations leave no doubt that there's been an upward temperature trend for the past thirty years.

