A brief overview of the GFDL prototype global cloud-resolving modeling system that is constructed for both weather and climate applications will be presented. At the very low end of the resolution-range for the application of such model, the simulated global tropical cyclone climatology (geographical distribution, seasonal and inter-annual cycles) from an ensemble of AMIP-type 20-year runs at the C180 and C360 resolutions (50 km and 25 km, respectively) will be presented. At this stage of our research and development, higher resolutions (12km and 4.5 km) experiments are made only for the short-term (5-10 day) deterministic forecasts. We will show statistics (track and intensity errors) from the 2008 and 2009 hurricane seasons and compared directly to operational hurricane prediction models.