

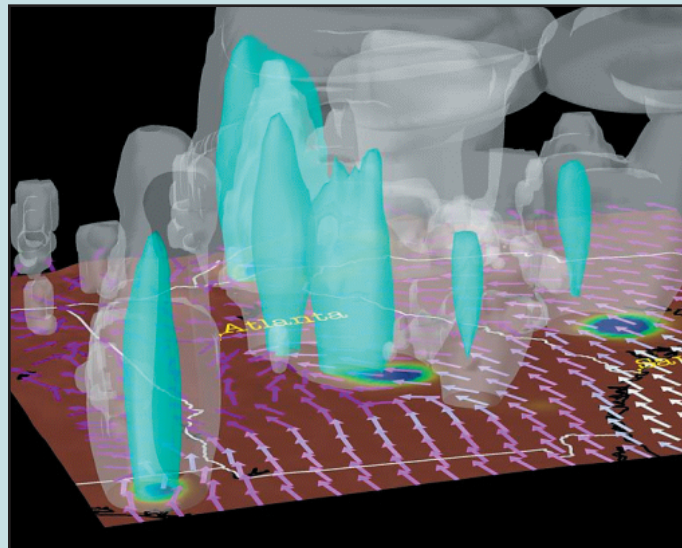
# Forecasting Weather

Forecasting the weather requires enormous amounts of data and computation. In order to have an accurate model of the weather, one must know the temperature, humidity, air pressure and wind speed (among other things) at different points and elevations. Although incorrect forecasts may be more memorable, current three- to seven-day forecasts are better than 36-hour forecasts were just 20 years ago. Increases in computing power have helped improve weather forecasts, but it's the mathematics behind the models that has led to the great increase in accuracy.

Collected information is the basis for numerical calculations that output approximate solutions to the relevant nonlinear partial differential equations. Weather models take into account the rotation of the Earth and the perpetual interaction among land, sea, and air. While more data and better computers are obvious sources of improved forecasting, the not-so-obvious sources of better sampling techniques and better use of data have helped as well.

**For More Information:**

“Weather Analysis and Forecasting,” *Bulletin of the American Meteorological Society*, 1999.



Photograph courtesy of Lloyd Treinish,  
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