

Response to the question to Raymond P. Motha, USDA Chief Meteorologist,
World Agricultural Outlook Board, U.S. Department of Agriculture

**At what spatial and temporal resolutions are climate forecasts useful
in agricultural planning?**

Climate forecasting for agricultural planning is most effective as a risk management tool for reducing production uncertainty or for sustaining the natural resource base. Effective applications of climate forecasts are a function of the quality of the forecast, the timing and mode of forecast delivery, and its suitability for influencing specific decisions. The agricultural user community ranges from an individual farmer or rancher to agricultural businesses to government agencies. Farmers may be focusing on local scales for their tactical decisions and strategic planning, but may also be interested in regional and global scales for strategic long-term planning. Similarly, agribusiness and government agencies may be more focused on regional to global scales for inventory planning and policy-level decisions regarding production and marketing potential. Thus, climate forecasts are useful to agricultural planning at all spatial scales.

Regarding the type of decision and appropriate temporal resolution necessary in climate forecasts, logistics (scheduling of planting and harvest operations) and tactical crop management (fertilizer/pesticide use, irrigation scheduling) require intraseasonal climate forecasts of the order of one to four months. Seasonal forecasts of 5 months to a year are useful for planning crop types while interannual forecasts may provide insight into crop sequence (eg. long or short fallows) and crop rotations (eg. winter or summer crops). Land use (eg. agriculture or natural systems) and adaptation of current systems required climate forecasts in the decadal to multidecadal timeframe.