

Three authors, Robin Lambert Graham, Monica G. Turner, and Virginia H. Dale, explore the dramatic and exceedingly complex changes likely to occur in the forests of the world as a consequence of elevated CO₂ and climate changes. In an article in the September 1990 issue of **BioScience** (40:8, pp 575-587), they look at the ways forests directly affect climate at the global scale (by altering the earth's albedo, hydrological regimes, and atmospheric CO₂) and at a local scale (by altering temperature, humidity, and solar radiation). They also examine forest *responses* at many scales. They use, as a framework, four levels of biotic organization – the biosphere, the biome, the ecosystem, and the tree, taking into consideration forest responses that cross these scales.

The article, which also is available as Publication #3476, Environmental Sciences Division, Oak Ridge National Laboratory, examines the potential forest responses to elevated CO₂ in conjunction with climate change. For each level of biotic organization (illustrated with excellent graphics), the authors discuss the potential effects on key ecological processes, how human intervention can affect those processes, and the role of modeling in elucidating and predicting forest responses. The article concludes with a discussion of future research needs.