



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Beverly S. Levene	Project Number S1312
Project Title Reducing Atmospheric CO₂ by Iron Induced Phytoplankton Blooms: A Computer Model	
Abstract Objectives/Goals Iron seeding has been proposed as a solution to global warming. Iron seeding would cause a phytoplankton bloom which would absorb more atmospheric CO ₂ . The objective of this project was to create a computer model to see if the phytoplankton bloom would use up CO ₂ and if the amount of CO ₂ removed from the atmosphere would be a substantial amount and if the phytoplankton bloom would cause a bloom in other organisms thus disrupting the ecosystem. Methods/Materials The model was created using Starlogo TNG, a graphical programming language. Results After a simulated seeding, a phytoplankton bloom was produced that absorbed excess CO ₂ but realistic parameters could not be found that would produce a bloom as big as that observed in experiments and neither the modeled bloom nor the experimental bloom was large enough to reverse global warming. Starlogo was not able to directly link the phytoplankton bloom to changes in the ecosystem (e.g. copepod populations). Separate programs had to be used. Conclusions/Discussion My model suggested that iron seeding could not reduce CO ₂ enough to reduce global warming. However, it was decided that a more complex model would be needed to make accurate predictions on how effective iron seeding is and if it would disturb the fragile ecosystem.	
Summary Statement A computer model was created to see if iron seeding in the open ocean could cause a phytoplankton bloom that would fix enough CO ₂ to reverse global warming.	
Help Received Kathy Barbeau and Jerry Wanetick, both of Scripps Institute of Oceanography, provided me with background information. Dr. Neil McCurdy, my emergence teacher at High Tech High, introduced me to Starlogo and Dr. Jay Vavra, my biotech teacher at High Tech High, helped with the poster presentation.	