



## **JavaGenes Molecular Evolution**

JavaGenes is a general-purpose, evolutionary software system written in Java. It implements several versions of a genetic algorithm, simulated annealing, stochastic hill climbing, and other search techniques. This software has been used to evolve molecules, atomic force field parameters, digital circuits, Earth Observing Satellite schedules, and antennas. This version differs from version 0.7.28 in that it includes the molecule evolution code and other improvements. Except for the antenna code, JavaGenes is available for NASA Open Source distribution.

*This program was written by Jason Lohn, David Smith, and Jeremy Frank of Ames Research Center; Al Globus of Computer Science Corp.; and James Crawford of Universities Space Research Association. For further information, access <http://opensource.arc.nasa.gov> or contact the Ames Technology Partnerships Division at (650) 604-2954. ARC-15103-1*

## **World Wind 3D Earth Viewing**

World Wind allows users to zoom from satellite altitude down to any place on Earth, leveraging high-resolution LandSat imagery and SRTM (Shuttle Radar Topography Mission) elevation data to experience Earth in visually rich 3D. In addition to Earth, World Wind can also visualize other planets, and there are already comprehensive data sets for Mars and the Earth's moon, which are as easily accessible as those of Earth.

There have been more than 20 million downloads to date, and the software is being used heavily by the Department of Defense due to the code's ability to be extended and the evolution of the code courtesy of NASA and the user community. Primary features include the dynamic access to public domain imagery and its ease of use. All one needs to control World Wind is a two-button mouse. Additional guides and features can be accessed through a

simplified menu. A JAVA version will be available soon. Navigation is automated with single clicks of a mouse, or by typing in any location to automatically zoom in to see it.

The World Wind install package contains the necessary requirements such as the .NET runtime and managed DirectX library. World Wind can display combinations of data from a variety of sources, including Blue Marble, LandSat 7, SRTM, NASA Scientific Visualization Studio, GLOBE, and much more. A thorough list of features, the user manual, a key chart, and screen shots are available at <http://worldwind.arc.nasa.gov>.

*This program was written by Patrick Hogan of Ames Research Center, Christopher Maxwell and Randolph Kim of National Space Grant Foundation, and Tom Gaskins. For further information, access <http://worldwind.arc.nasa.gov/> or contact the Ames Technology Partnerships Division at (650) 604-2954. ARC-15166-1.*