# proland介绍

http://proland.inrialpes.fr/

A C++/OpenGL library for the real-time realistic rendering of very large and detailed 3D natural scenes on GPU

Proland is a C++/OpenGL library for the real-time rendering of multi-resolution terrains (up to whole planets), the real-time management and edition of vector data (representing for instance roads or rivers), the rendering of atmosphere and clouds, the rendering and animation of the oceans, and the rendering of forests. All data are loaded or generated on the fly according to the viewpoint, and can be combined procedurally. For instance the shape and texture of a terrain can be modified using vector data representing roads and rivers.

## 特点

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| terrains | Terrain data can be stored on disk, procedural, or a mix of the two (e.g., to amplify real data with fractal details); Terrain data can be used for anything (elevation, normals, horizon maps, color texture, tree density maps, etc); preprocessing tools are provided to convert terrain data to our internal format, to precompute horizon maps for terrain shadows, etc. Proland comes with precomputed data for the whole Earth, at 500m/pixel for colors and 90m/pixel for elevations. |
| roads | Roads are specified with Bezier curves, and are automatically integrated in the terrain shape (to get flat and horizontal roads even on bumpy terrains) and in the terrain texture. The Bezier curves can be edited interactively; the roads are recomputed in real-time after each edit. |
| atmosphere | The atmosphere is rendered in real time from any viewpoint from ground level to outer space, while taking Rayleigh and Mie multiple scattering into account. It correctly reproduces daylight and twilight sky color and aerial perspective for all view and light directions. |
| oceans | The ocean is rendered, animated and illuminated in real-time, at all scales and for all viewing distances. Our ocean correctly reflects the Sun and the sky light at all scales, yielding very realistic results. |
| edition | Any terrain data can be edited on the fly, while navigating in the 3D scene: the terrain shape, its texture, the roads, the tree density maps, etc. |
| forests | Forests are rendered with hundreds of thousands of instantiated billboards, in real-time. |
| modularity | Proland is made of a core library and of 7 predefined and independent plugins, each in its own dynamic library (DLL). You can easily add your own plugins to add new functionalities to Proland. |

For all technical questions about Proland, please use [proland-contact@inria.fr](mailto:proland-contact@inria.fr)  
You can also check the [archives of the technical mailing-list [soon]](https://sympa.inria.fr/sympa/arc/proland-info)  
  
For other requests that INRIA might be able to address, please use [proland-licensing@inria.fr](mailto:proland-licensing@inria.fr).  
( [Reminder](http://proland.inrialpes.fr/#license): Proland is free software under BSD 3 license, for both non-commercial and commercial use ).

## Windows系统下的Demo

下载二进制程序proland-4.0.zip，包含了预编译的DLL文件、头文件和开发者文档，以及预编译的demo应用程序和示例。可直接运行，除了Earth scenes。

还需要下载地形数据（~20 GB）：

wget -r -A .dat,.graph http://proland.inrialpes.fr/data/

然后编辑init.bat文件，指定proland-4.0的路径。

This data comes [Blue Marble Next Generation](http://earthobservatory.nasa.gov/Features/BlueMarble/), [CIAT-CSI SRTM v4](http://srtm.csi.cgiar.org/), [Global Land Cover Facility AVHRR](http://www.glcf.umd.edu/data/landcover/) and [ArcGIS](http://aprsworld.net/gisdata/world/), and is redistributed here in the Proland internal format with the permission of CIAT-CSI and GLCF (no authorization is required to redistribute the Blue Marble Data, and the world borders map from ArcGIS has a creative commons license).

## 下载源码

svn checkout https://scm.gforge.inria.fr/anonscm/svn/proland/