

Chapter 1

The Earth According to Google

In This Chapter

- ▶ Getting to know Google Earth
 - ▶ Comparing versions
 - ▶ Understanding Google Earth's capabilities
 - ▶ Joining Google Earth communities
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Google Earth is not just another map program or some kind of digitized globe inside your computer, but rather, a social phenomenon. Although it can stand on its own with other Geographic Information System (GIS) software, its focus is on giving the public a unique experience.

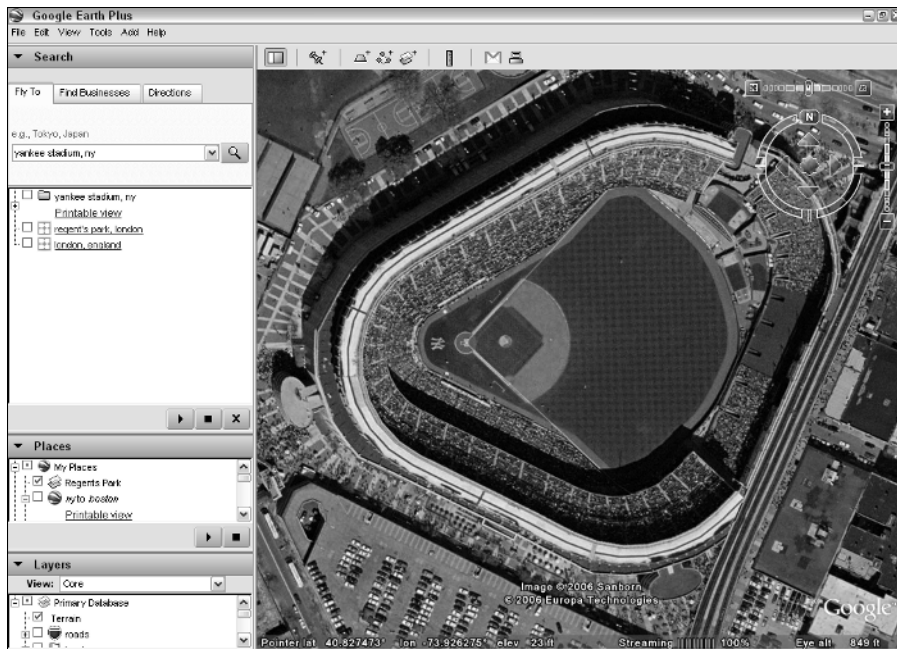
With everything from *National Geographic* articles to live Webcams to local commentaries built into it, the program doesn't just display maps and photos but launches the era of satellite tourism. Calling it a *3-D interface to the planet*, the folks at Google are backing it to the hilt with both their incredible wealth and their enviable marketing savvy, and it seems destined to grow into one of the largest of all the online communities.

With Google Earth, you have wings. You can fly high above the planet or zoom right down to the ground. In seconds, you can zip from the deserts of the American West to the tropic isle Tahiti. No tickets to buy, no bags to pack, no long lines or customs or anything else. Just go!

The View from Google Earth

Because Google relies upon many outside providers for its satellite and aerial imagery, the quality of images in different locations varies somewhat. Figure 1-1 shows the program's clean interface design as well as the kind of detail it can achieve. This close shot of New York's Yankee Stadium is typical of the world's major metropolitan areas.

Figure 1-1:
The Google
Earth
interface.



The same level of detail is not, of course, generally available in rural areas, which have not been as extensively photographed from space. This is not a limitation of Google Earth but rather of the current state of available data, and this constraint applies to all GIS programs. The simple rule is that the more expensive the real estate, the more likely it is to have been the subject of detailed — and costly — satellite analysis.

Although it relies upon imagery from satellite photos taken anytime in the past three years, Google Earth isn't merely a static collection of warmed-over satellite images from dusty sources. Rather, it's continuously kept current through a vigorous program of updates. Such attention to detail and timeliness is one of the reasons why people ranging from casual users to real estate professionals have come to rely upon the Google Earth service.

Google Earth also makes it a point to respond quickly to breaking news. As an example, when a deadly earthquake struck Pakistan, Google Earth had updated, higher-quality satellite imagery of the quake area available online in

less than a week, freely available to everybody from news junkies to international rescue workers. The first time such on-the-fly updating was used was during the Hurricane Katrina response. Google Earth, working with the National Oceanographic and Atmospheric Administration (NOAA), had very detailed imagery of the entire affected region online within five days after the event.

Exploring the Earth Online

The images in Google Earth are composed of zillions of separate photographs. Most were taken from orbit by satellites or the Space Shuttle, but there are also much more detailed close shots taken from airplanes.

Each of these images is a *tile*, and these tiles are laid together side by side to form a mosaic of the entire planet. In most cases, the tiles are seamless, but in some places, the structure is a bit more obvious because the tiles come from different sources and have varying appearances. Figure 1-2 shows an example of one of these areas with varying tiles.

It's nice to just buzz around the planet, seeing whatever there is to see. Sometimes, though, you need to get really specific, and the Search portion of Google Earth provides you with a tremendous helping hand.

You can enter an address and go right to it, or you can specify a particular set of longitude/latitude coordinates. You can find monuments, famous locations, cities, and just about anything else you can think of by just typing in the appropriate name. Want a look at the Eiffel Tower of Paris, France? Just tell Google Earth, as I did in Figure 1-3, and it'll take you right there. Even the names of major buildings are in the Google Earth location database.

Life isn't all about geography and satellite tourism, though. Sometimes you've just got to do simple, practical things — and once again, Google Earth comes through for you. You can do everything from hunting down the nearest Computer City to mapping out the locations of the seafood restaurants in your town. In Figure 1-4, you can see the results of my hunting for seafood restaurants in Honolulu.

You can even give Google Earth two locations and have it plan the best way for you to drive between them.

Figure 1-2:
Tiles are
more
evident in
some
places.

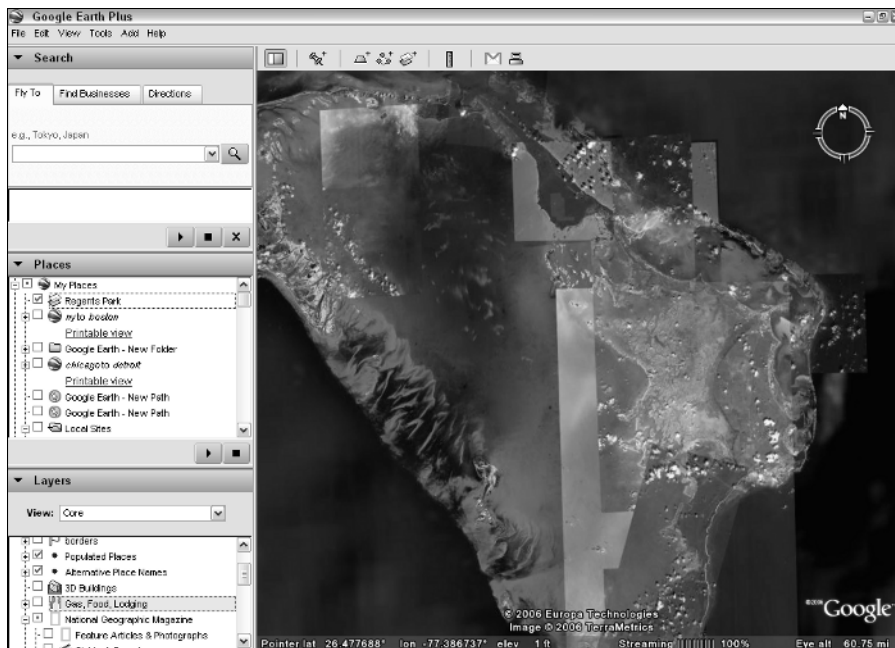


Figure 1-3:
Search for
locations
and famous
structures.



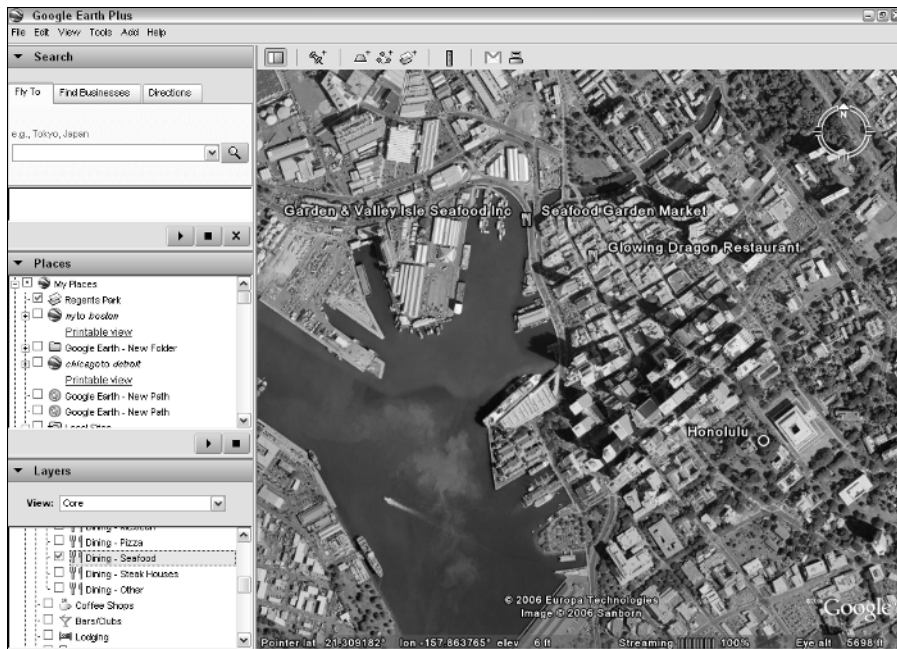


Figure 1-4:
Google
Earth has
day-to-day
uses as
well.

Google Earth Gives You Options

For the most part, sophisticated GIS software has always been out of reach of the public. It's generally very costly, and it isn't easy to use. In fact, you generally needed a Masters Degree in GIS to begin to comprehend how to work with it. Until Google Earth, that is.

However, Google Earth isn't a toy, either. It has three levels, each a bit more powerful than the last. The free version is simply called Google Earth; the mid-level one is Google Earth Plus; and the high-end, professional level is, of course, Google Earth Pro.

The cost of Google Earth Plus is a measly \$20 a year, and Google Earth Pro goes for \$495 a year.



If you're going to use the program for commercial purposes, the license agreement requires you to pop for the Pro version.

Starting with what's free

You get an astonishingly powerful piece of software for free with Google Earth. It's not some pathetic little wimp of a program that doesn't do much of anything; it's actually everything that the average person could need — and then some.

Not only do you get the program itself for zero bucks, but you get the *data* for free, too. This is perhaps the most incredible deal you will ever see because the cost of the satellite and aerial imagery alone would bankrupt the average citizen.

And you can spend all the time you want checking out every square inch of the Earth without ever buying one photo. You never have to learn what SRTM means or deal with the technicalities of geocoding or anything like that. Just fire up Google Earth, and you're ready to rock and roll.

The slick and intuitive interface lets you easily view whatever you want in various combinations of angles and altitudes. Zoom in and out and spin things around all you want; it's amazing what you can discover when you do that.

The Layers feature of Google Earth is one of its most impressive features. *Layers* are extra bits of information above and beyond the mere pictures — things like the locations of public parks or the incidence of earthquakes in an area. Other layers give you crime and population information for various locales or even let you step out of Google Earth and see through live Webcams, like the one in Figure 1-5.



Figure 1-5:
*National
Geographic
Live
WildCams
add a nice
touch.*

As if all this weren't enough, another freebie — the companion program, Google SketchUp (see Figure 1-6) — lets you make your own 3-D models and add them to Google Earth. Go ahead and design your dream house; then drop it right onto your vacant lot in the real world. You can read more about SketchUp in Chapters 11 and 12.

Looking at Plus and Pro versions

You can stick with the free version to do most things you'd like. However, upgrading has some advantages. With the Plus version, you get a few extras, like the Hurricane Katrina databases from ImageAmerica and NOAA, as shown in Figure 1-7.

Figure 1-6:
Google SketchUp is a companion program for adding 3-D models to Google Earth.

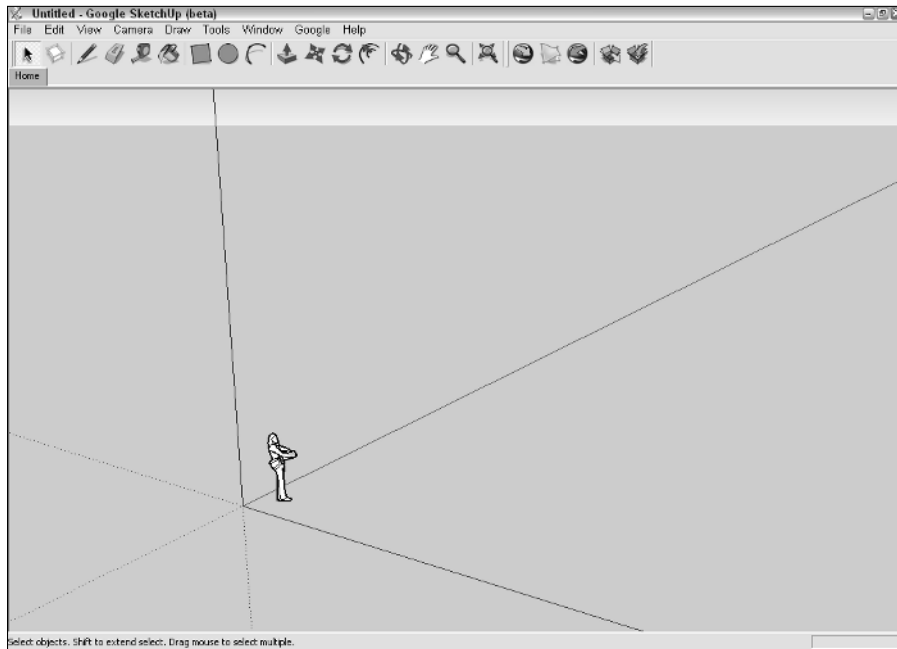


Figure 1-7:
The Plus version includes Hurricane Katrina databases.



You also get the ability to import several extra kinds of data (see Chapter 9) including image files and the output from your GPS (Global Positioning System) device. However, in my opinion, the best reason to go for Google Earth Plus is its greater speed and higher printing resolution. It's important to note here that this isn't a higher *screen* resolution — all versions of Google Earth share the same main database — but it can make a difference if you need to make hard copies.

The Pro version, as you might expect, is even faster and adds the ability to perform more sophisticated measurements such as area calculations. A few add-on modules at this level enable you to do things, such as print extremely high-resolution images or add traffic count information. You also get personalized tech support with Google Earth Pro.

So What Can I Really Do with Google Earth?

Google Earth is a tool and, just as with any other tool, you can use it for lots of things. Whether you're just playing around for the sheer fun of it or you desperately need it to perform your professional tasks, it'll take the challenge.

Of course, right off the bat, it's one of the best pieces of educational software out there, and it will doubtless quickly become a trusted part of every teacher's toolset, but it has so much more to offer as well.

Plenty of personal uses

I don't think I've seen too many homes that didn't have an atlas and a globe, and it's getting hard to imagine one that doesn't have Google Earth. The program has everything the old style approach does and adds so much more to boot.

The next time you're thinking of moving, fire up Google Earth and check out the boundaries of school districts, the location of fire stations, and all the other things that might help you choose your new neighborhood (see Figure 1-8). While you're at it, have Google Earth figure out the best route to your job from there.

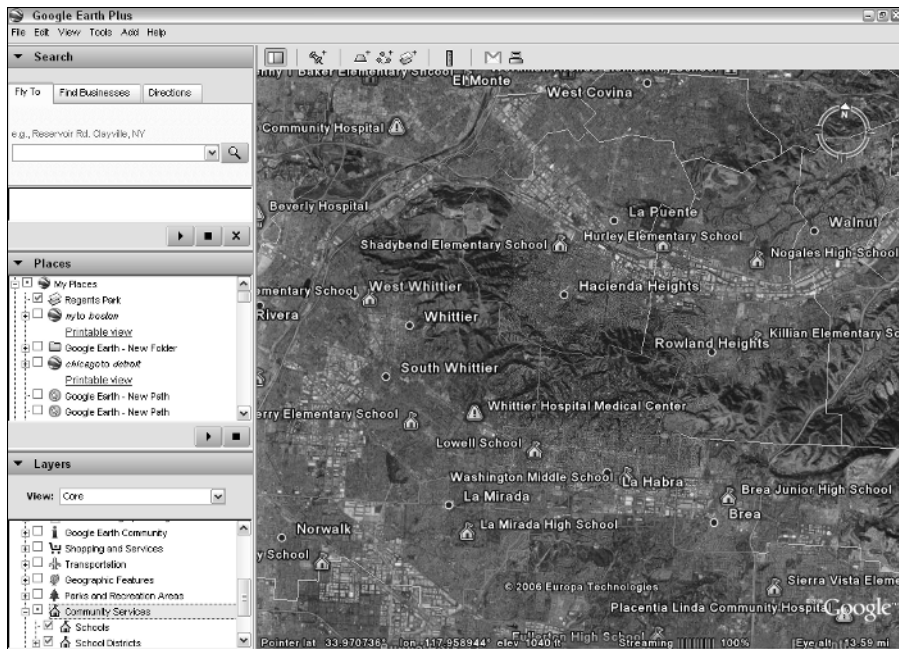


Figure 1-8:
Plan a
move.

Tired of watching the news and having only a vague idea of where something is happening? Now you can see for yourself. You can fly from China to Antarctica to Africa and back in seconds.

And businesses might want to . . .

Businesses of almost every kind can benefit from Google Earth, whether they're already using GIS technology or not. These are just a few of the uses to which it's already being put:

- ✓ Law firms can use it to investigate any location involved in a criminal or civil action.
- ✓ Civil planners can research traffic patterns.
- ✓ Real estate agents have a powerful sales and marketing tool in Google Earth, enabling them to pitch the virtues of any location.
- ✓ TV stations now have their own instant source of satellite images to supplement their newscasters' reports.

Don't forget, either, that the learning curve for Google Earth is a lot less steep than other GIS software. This means less time lost when training employees.

Joining the Google Earth Community

Professional GIS users, such as real estate developers, environmental engineers, law firms, and the like, aren't the only folks who find this program a wonderful tool, nor is it just a great new way to teach geography and history. Google Earth draws its users from a broad segment of the general population as well.

Many of the users of the program participate in an official community that keeps in close touch with one another, sharing both technical tips and interesting finds. The quest for unusual items is one of the high points of using Google Earth (see Figure 1-9). Hundreds of thousands of people are in the Google Earth Community's membership, which is growing fast, with thousands more signing up every week.

Of course, you don't have to register and participate in the official forums. There's also an ever-growing number of other user-supported sites that offer help and information as well as companionship.

Figure 1-9:
The Google
Earth
Community
is growing
fast.

Google Earth Community: Viewing list of forums - Microsoft Internet Explorer

Address: <http://bbs.keyhole.com/ubbthreads.php?Cat/0>

Google

Web bbs.keyhole.com earth.google.com

Google Earth Community

Entrance - Main Index - Search - Active Topics
New user - Who's Online - FAQ

You are not logged in. [Login]

	Threads	Posts	Last post
News			
Google Earth News (23 viewing) Headlines for the Entrance	52	85	New User Guide for Google ... (NW_jokirois) - 09/14/06 02:21 PM
Google Earth Sightseer (3 viewing) The Google Earth Sightseer Dilete newsletter and the Where in the World contest	20	32	Answer (Sightseer_Newsletter) - 09/09/06 06:34 PM
Earth			
National Geographic Content (9 viewing) The place for placemarks and discussions about content in the National Geographic Magazine layers.	143	1135	Re: Let's go camping! (Ver... (syzgy428) - 09/22/06 07:12 AM
Environment and Conservation (4 viewing) Using Google Earth to understand and illustrate today's environmental issues	139	405	Jane Goodall Bombe Chimpan... (Chmoz) - 09/22/06 01:30 PM
Earth Browsing (151 viewing) The primary forum for sharing and discussing places around the world	126971	156941	Re: Niger: what is this? (luisarunex) - 09/23/06 02:46 AM
Dynamic Data Layers (20 viewing) The home of user-published data layers that Google Earth users can easily install and enable: houses for sale, crime logs, today's weather, shared photographs, and many more.	587	3544	XML+XSL+KML Spreadsheets ... (Valery35) - 09/22/06 07:24 PM
Models and Annotations (10 viewing) Share and Discuss 3D models and geospatial annotations created with Google Earth Plus, Google Earth Pro, or KML	1389	3914	Re: Problem with placing m... (craab) - 08/22/06 05:52 PM

Getting Geekier with GPS, KML, and Overlays

If you want to get into some of the more advanced things about Google Earth, no problem. It can interface with a *GPS device*, which is a global positioning system that uses signals from satellites in orbit to determine your latitude, longitude, and (depending on how sophisticated it is) altitude (see Figure 1-10).



Figure 1-10:
A GPS
device.

As long as I'm going alphabetical, allow me to throw in KML. It's the language that Google Earth uses, and it's a lot like HTML. If you have any kind of experience creating even simple Web pages, you can go under the hood of Google Earth and really make it sing by controlling every little detail of its display.

And maybe you want to dress things up a bit with some outside data. Go ahead and pop in an *overlay*, which is an image that you add on top of the basic data in Google Earth. Figure 1-11 shows an 1827 map of Regent's Park in London on top of the satellite shot of the modern city.

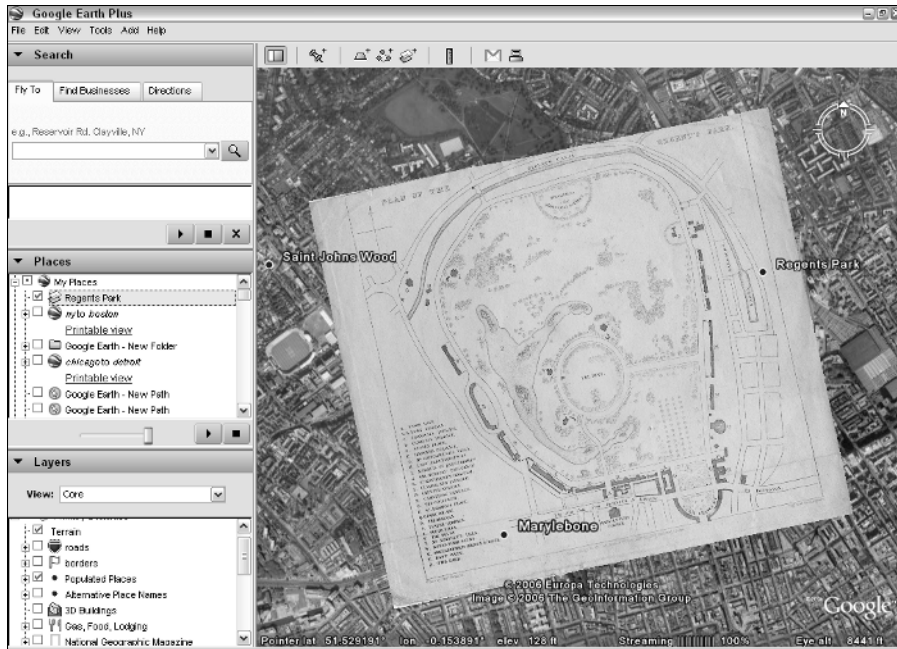


Figure 1-11:
Historical
maps can
be overlaid
on the
modern
world.

Downloading the Program

Before you can experience any of these wonderful things, you have to get your hands on Google Earth, of course. Fortunately, Google makes this an easy and painless task:

1. **Open your Web browser and go to <http://earth.google.com> (see Figure 1-12).**
2. **Click the Get Google Earth link on the upper-right side.**
3. **On the resulting Web page, as shown in Figure 1-13, select the check box if you want to subscribe to the Google Earth newsletter.**
4. **Select the appropriate radio button for the version of Google Earth for your operating system (Windows, Mac, or Linux).**
5. **Click the Download Google Earth button.**

This takes you to the Web page shown in Figure 1-14, and the download should start automatically. If you are using Windows, the download might fail to start. Either click the yellow information bar at the top of the Web page and select Download File from the options, or just click the Click Here to Start It link.

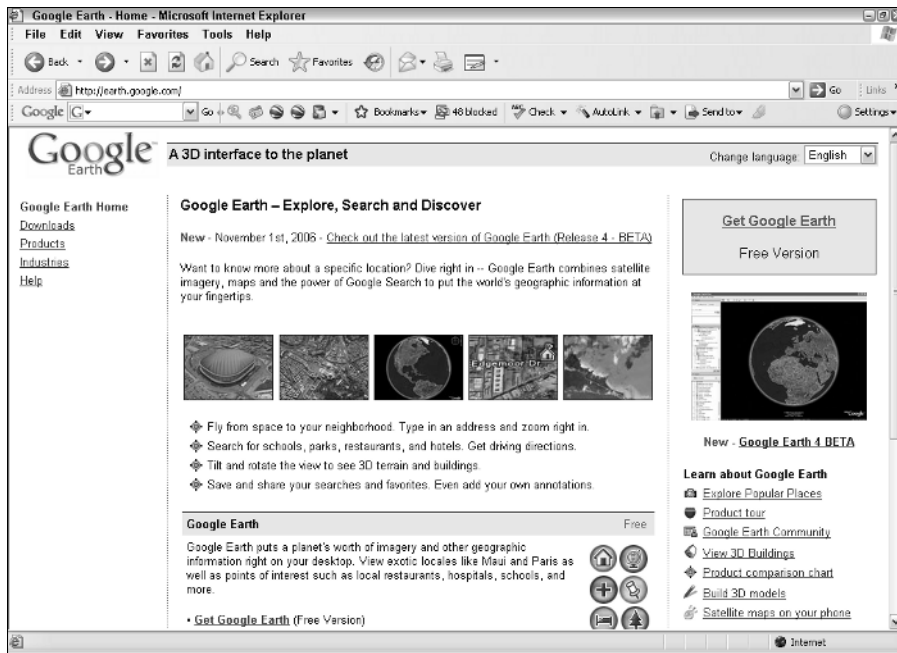


Figure 1-12:
The Google
Earth home
page.

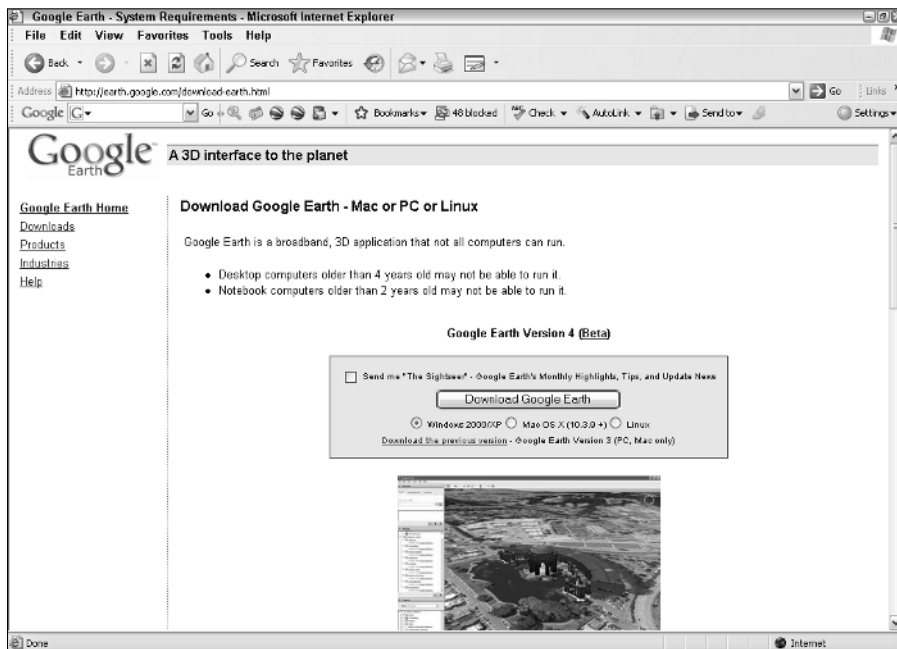
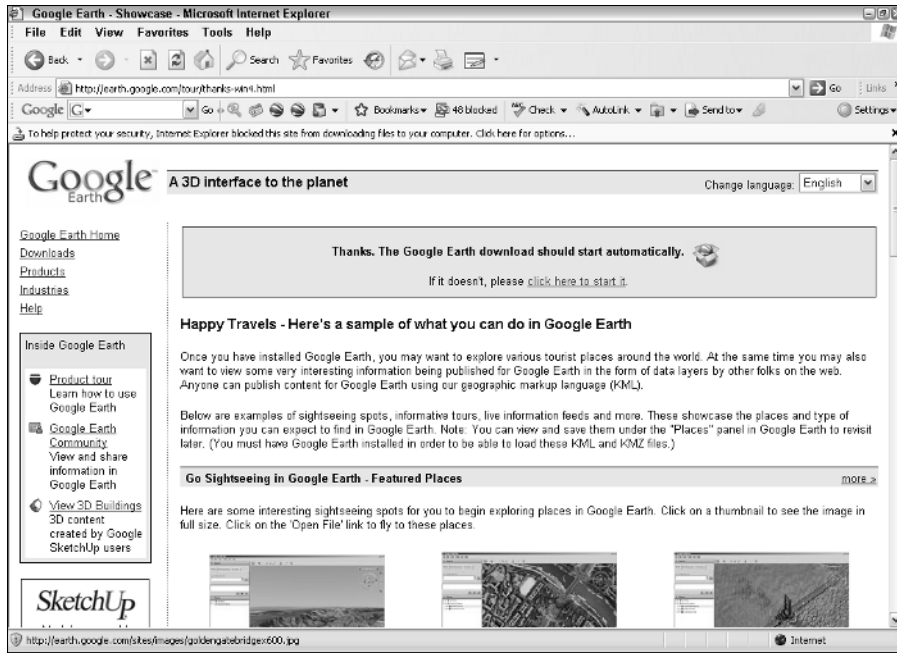


Figure 1-13:
Making
choices.

Figure 1-14:
The
download
Thank You
page.



6. When the File Download dialog box appears, click the Save button.
This brings up your computer's Save As dialog box.
7. Navigate to where you want to save the file and then click Save to complete the process.
8. To install Google Earth, double-click the downloaded file.

A Note for Mac and Linux Users

Google Earth's three versions are as close as a very skilled group of programmers can make them. In fact, the Windows commands are the same as the ones for Linux. For example, Alt+F opens the File menu in both systems. There is, however, no equivalent Mac key combination. For key combinations that use the Ctrl key in Windows or Linux, just use the corresponding Mac command (⌘) key instead.

A comprehensive and up-to-date list of the platform differences can be found at

http://earth.google.com/userguide/v4/ug_keyboard.html