

# vivifeye

## Magic Planet™ – digital globes

*Give your class an astronaut's view of Earth, Mars, Jupiter...*

### 1. What is a Magic Planet?

Imagine being able to kick-start your lessons with your own 3D digital Earth (or any other planet for that matter) on your desk – giving your students an astronaut's view of the Earth in the classroom.

This is now possible with The Magic Planet, a new technology that started making its way into UK classrooms this year.

These are not just static snapshots of the Earth, but moving images showing, well, just about anything! Real time global weather, satellite observations of human activity, biological systems, environmental damage, models of temperature change, the 2004 Tsunami, tectonic plate movements and continental drift, El Niño, ocean currents, real time seismic activity, etc., etc., etc.

What a way to get the class's attention and to demonstrate how the Earth's systems really operate - in the round.

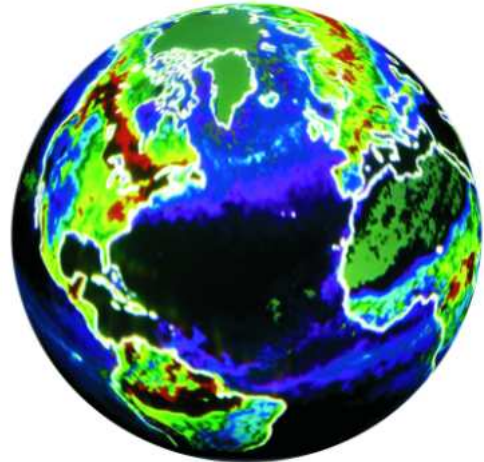
David Lambert, Chief Executive of The Geographical Association said:

"The Magic Planet has instant appeal. It draws people in and stimulates curiosity. This is a fantastic tool for teaching and learning about planet Earth, not least because it takes the technology away from the flat screen and onto a three dimensional globe."

### 2. How does it work?

The Magic Planet is a physical globe – not a 2D software representation - attached to computer and a projector. Images are stored on the computer and played through special software either as single images (for example, showing the population density on Earth for a given year) or as animations of a sequence of images. An example of the latter would be the Earth's weather, which is shown using a sequence of 3-hourly updates from five geostationary satellites that together provide a global composite. These updates are available as a subscription, giving you access to near real-time weather in the classroom.

Teachers can easily choose the specific subject using the software controller.



The movement of the images and the rotation of the Earth is all software created – there is no mechanical movement. That means that you can control at the touch of a button the speed of the Earth's rotation, the speed of the animation, even the angle of the Earth, including inverting the poles!

### 3. Does it come with ready to use content?

Yes. There are over 150 ready to use exhibits either pre-installed or available for free download at The Magic Planet Community (you can see a preview at <http://globalimagination.com/phpBB2/>).

You can also find or make your own new content.

An exhibit is either a single image (e.g. JPEG, BMP, TIFF, etc.) or a time-lapse sequence of images. To project correctly these should be Cylindrical Equidistant projection maps with a 2:1 aspect ratio.

These are easy to find on the web. For example, go to the NASA Earth Observations (NEO) website (<http://neo.sci.gsfc.nasa.gov/Search.html>). This is a fantastic free resource for owners of Magic Planets. Here you will find a wealth of satellite views that are available for immediate use on your Magic Planet to help you picture climate change and environmental changes happening on Earth. When you get to the site you will see that it has 5 tabs - Ocean, Atmosphere, Energy, Land and Life. Have a look around and see what is there – over 29 databases of images stretching back to 2002 and beyond.

To download the images, first of all select the relevant month by clicking the 'view' button. Then use the "Get Image" tools on the

right hand side of the page to download the full size colour JPEG files. Store a sequence of images as shown during your training session and - hey presto - you have a new exhibit. The images available in NEO are freely available for public use. Please credit NASA as the source.

There are many public websites with imagery that can be downloaded and used, free, for educational use. For example, see:

- o EarthTrends (from the World Resources Institute): <http://www.earthtrends.wri.org/>
- o National Center for Atmospheric Research: <http://www.vets.ucar.edu/vg/categories/globalchange.shtml>
- o Sheffield University's WorldMapper: [www.worldmapper.org](http://www.worldmapper.org)
- o National Geophysical Data Center: <http://www.ngdc.noaa.gov/maps/interactivemaps.html>

#### 4. Is the Magic Planet relevant to the National Curriculum?

Yes. In Geography Key Stage 3, for example, the Magic Planet is directly relevant in 13 of the 24 QCA units (find out also about the free teachers' lesson plans in the next section).

The technology is also relevant for the history, science, astronomy and environmental science curricula (see also "Would other departments be interested?", below).

#### 5. How do I use it in the classroom?

In terms of operating the system, we provide on-site training packages to familiarise teachers with the easy equipment set up and how to use the software.

We have been working hard to ensure that this is a technology that goes beyond "wow" and that teachers can use it easily and regularly in the classroom. To that end we have commissioned 26 lesson plans for Geography KS3 from Longton CLC Manager Steve Johnson, who is a geographer.

These lesson plans are provided free of charge for Magic Planet owners.

#### 6. Can I make my own content?

Yes. An exhibit is basically a Cylindrical Equidistant projection map with a 2:1 aspect ratio.

We have already seen that these are readily available on the internet (see Does it come with ready to use content?, above).

You can either adapt this content for specific uses by taking the images into your usual graphics package – PhotoShop, FireWorks, GIMP, etc.) and making any notes or diagrams you want. For example, we have prepared a sequence of the hurricane season of 2005, in which the names of the major hurricanes and tropical cyclones track across the globe alongside those storms.

Another way of approaching content is to create it from data. Any department with access to GIS software (e.g. Esri's ArcGIS) will be able to take data from any source that provides information at a country level (or finer granularity) and output

maps for use on their Magic Planet, either as single images or as animations.

For example, the UN's annual Human Development Reports (for 2006 see <http://hdr.undp.org/hdr2006/statistics/indicators/default.cfm>) lists many (well over 100) global statistics, each of which can be pasted into GIS software capable of outputting global maps in the relevant projection (Cylindrical Equidistant), which will show the data mapped into differentiated coloured areas by country.

If the data were, for example, CO<sub>2</sub> emissions per head (<http://hdr.undp.org/hdr2006/statistics/indicators/202.html>) then the students could be given the task of extrapolating the data for 20 years ahead at a rate of, say 3% p.a. or -3% p.a. to show long term trends. With each year outputted as a global map, the students have now created an animation for their Magic Planet!

#### 7. Would other departments be interested?

You might also be aware that the new Science KS4 curriculum places much more emphasis on Earth science issues such as climate change and global warming, where the Magic Planet offers a lot (and a growing amount) of content. And we are working on lesson plans to cover GCSE Astronomy (which overlaps with the physics components of GCSE Science). Astronomy is one of the fastest growing GCSE subjects, with rates of increase of about 30% p.a., albeit from a low base.

The History curriculum is supported with the use of the Timemaps ([www.timemaps.com](http://www.timemaps.com)) *Interactive Map of World History*, which offers an unparalleled opportunity for pupils to gain a broad overview of history. Brightly coloured, animated maps placed on an interactive timeline introduce the whole sweep of human history. This enables students to place key events in their chronological framework and make links between different periods. Interactive modules include:

- The rise and fall of the Roman Empire
- Medieval England, Wales, Scotland and Ireland
- Exploration and discovery
- The rise of European Empires
- The causes and course of the 2nd World War
- The causes and course of the 1st World War
- The Cold War

and much more...

#### 8. Other questions not listed here?

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