Gotze Kalsbeek
University of Amsterdam
School of Education
On X : @Geobronnen

Interactive Geoanimations

In 2022 / 2023 the University of Amsterdam (UvA) provided funding for implementation of ICT in the geography education programme to build a new series of interactive Geoanimations that would support the teaching methodology of Geography at the University of Amsterdam Teacher Training Courses.

What is an interactive Geoanimation?

An interactive **Geoanimation** is not a self-running cartoon or film animation, but an online model about a geographical process that has clickable parts or layers. Through the model a spatial pattern or geographical process becomes visible and can be built up step by step.

Geoanimations is the term we have coined for the models, maps and fact-sheets that we developed because we considered **Geoanimation** a powerfully descriptive and apt term for these ICT models that demand interaction and geographical focus from the student.

Why make new Geoanimations?

From 2000 until 2015 geography classrooms had access to several great interactive animations like the Cannock Chase and the Weatherpat ITCZ model to explain a wide range of geographical features, landforms and processes.

But suddenly none of them could be used anymore. Shockwave Flash was discontinued and the SWF player was taken offline. I managed to keep the shockwave player a bit longer on an old laptop and I know there is the Ruffle website to sideload swf files. But after 2015 we lost a huge collection of Geography lesson resources.

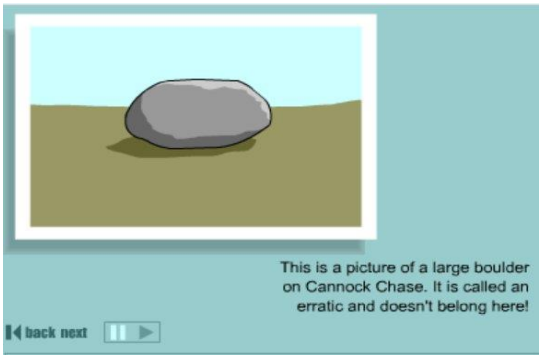


Figure 1 One of the first Interactive Geoanimations I used in my Geography teaching was The Cannock Chase which I found on the geography pages from the Staffordshire Learning Net (SLN)

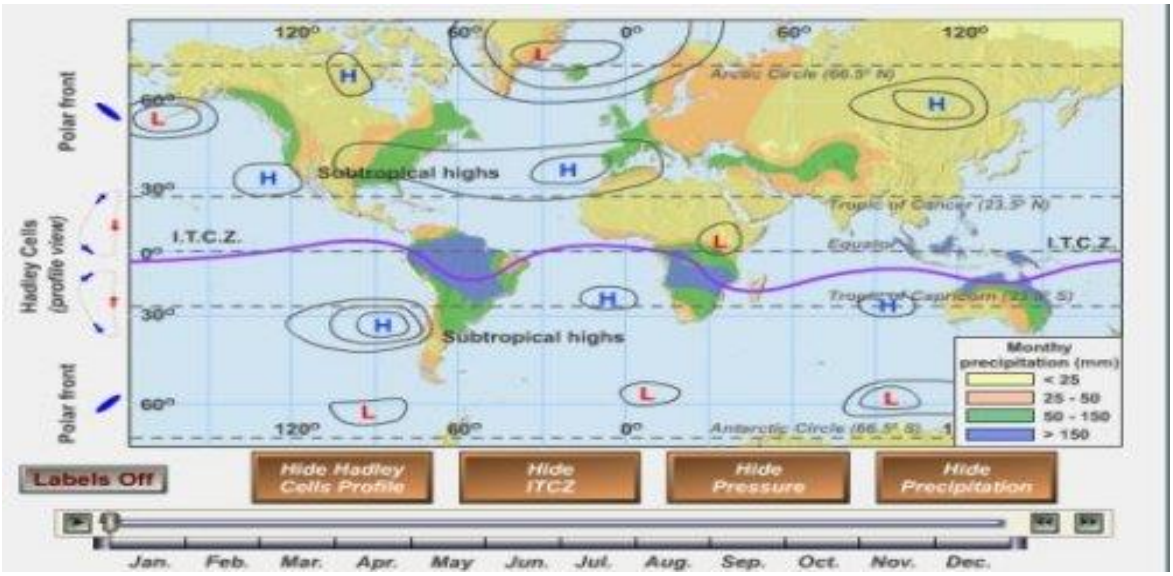


Figure 2. Perhaps the most successful Flash model was the ITCZ Weatherpat animation designed by Pearson

The first series of Geoanimations

It became extremely quiet following the disappearance of Shockwave Flash Player and hundreds of interactive animations. No publisher filled the gap. So I came up with the idea to design and develop our own Interactive Geographical animations. I found a Cartographer with experience in interactive applications and a background in physical geography. He understood what I wanted to make and achieve. And at the same time we discovered Belgian teacher Bart van Bossuyt, who was working on the same idea and gave us a lot of inspiration.

In 2021/2022 we developed a small series of **Geoanimations** with a first phase of UvA Grassroots funding. We tested these first animations in our curriculum at the School of Education, as teaching material to be used for direct instruction. So this second series was developed mainly to address how to use these interactive models in classroom teaching more effectively.

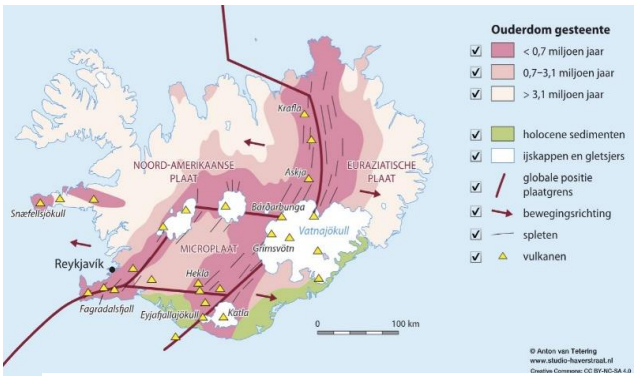
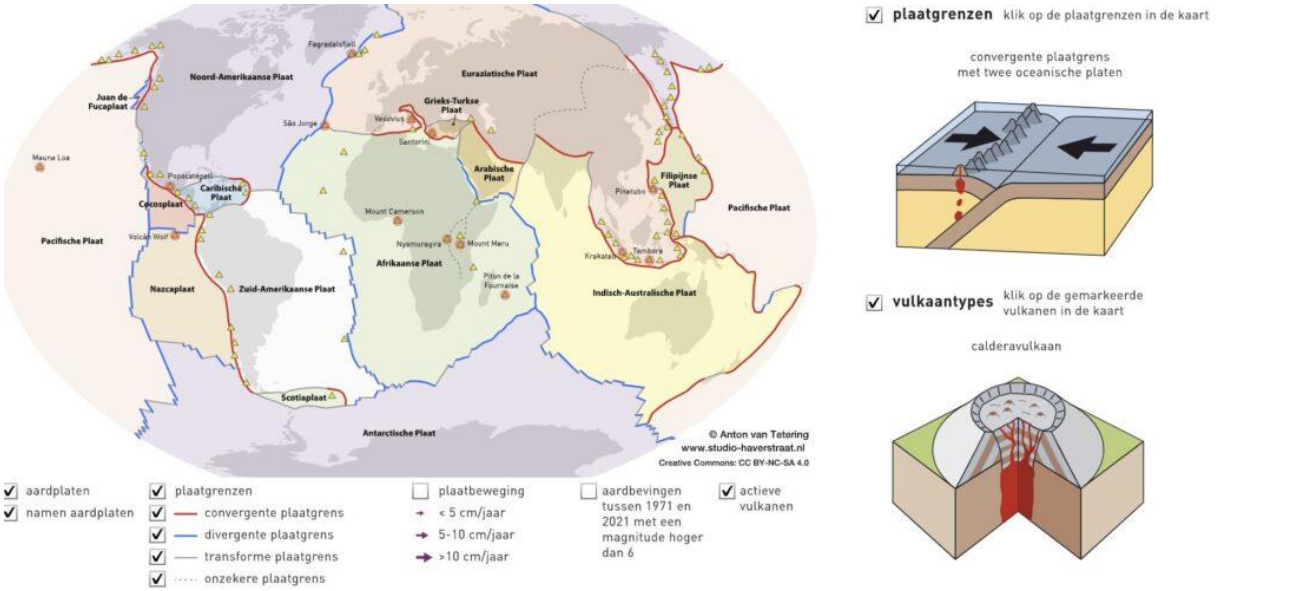


Figure 3. The Iceland interactive Geology map was one of the first Grassroots animation. Based on a simple one layered map we transformed it in a click on click off model.

We designed and published ten **Geoanimations** and shared the most useful of the series with Geography teachers in the Netherlands and Belgium by using Twitter, LinkedIn and the Geobronnen website.



Interactieve wereldkaart Platentektoniek *Eén van de laatste Interactieve Geoanimaties uit de Grassroots serie 2021 / 2022*

The second series of UvA Grassroots Geoanimations

The second series required more careful thought and design because now the aim was to produce several animations for our online courses and that would be useful and effective teaching tools (provoking student interaction and focus) in the geography school curriculum.

We made seven new animations. The models of **Santorini**, the **Turkey tectonic**s map and the interactive **North Pole** resource set where pretty good but the most successful model was the **Mantle Dynamics animation**. The inspiration for this interactive model were from GA *Teaching Geography* articles by Duncan Hawley (2017) Alistair Hamill (2023) and ideas from the Dutch plate tectonics professor Douwe van Hinsbergen (University of Utrecht). My colleague Mathijs Booden produced the first drawing and cartographer Anton van Tetering handled the technical process.

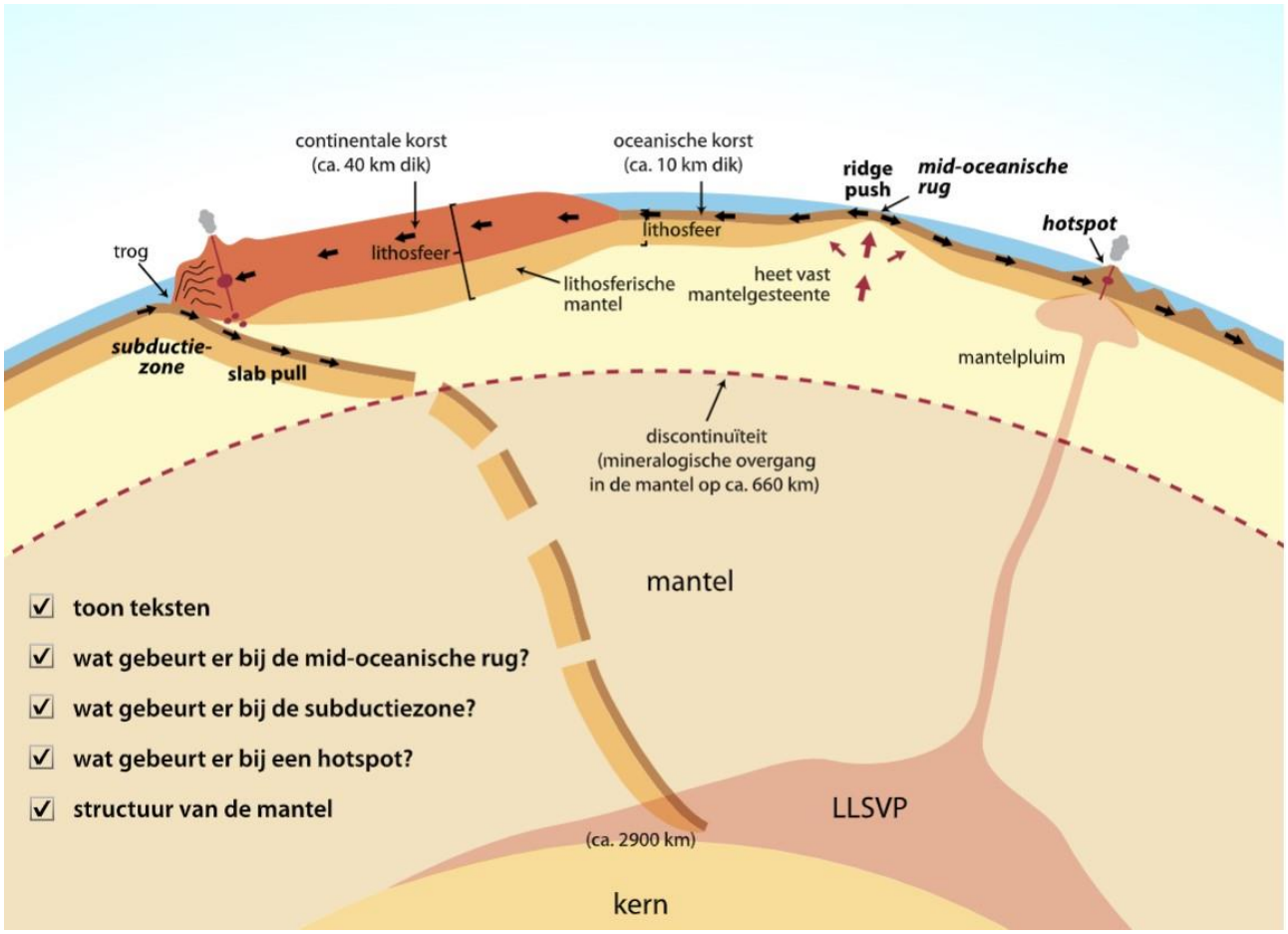


Figure 4. After reading several articles in the Dutch Geography magazine and the GA teaching articles by Hawley and Hamill we wondered what a model of these new ideas about plate tectonics might look like. So we decided to design one.

Effective use of an Interactive Geoanimation

An interactive **Geoanimation** can be a very powerful tool for teaching geography. The clickable parts and layers allow the teacher to create their own pedagogical approach matched appropriately to their students and/or the topic. It could be used step-by-step, i.e. click-by click (inductive teaching approach) or by showing the whole model at once (deductive teaching approach). So a key (planning) question for the teacher is: what is the best starting point to help students construct and build the knowledge and understanding illustrated by the models?

For example, with the World Plate Tectonics maps, the teacher could decide to start with plates and plate borders displayed so that students have an overview of the global plate pattern in mind to which they can relate other features. Alternatively, teaching could start with only the volcanoes on the map and build up knowledge with enquiry questions such as: Is there a spatial pattern of volcanoes pattern across the globe?; What is their distribution?; What causes the geographical pattern that can be observed?. The starting point of this use of the **Geoanimation** is like a blank map, and the full understanding - including spatial patterns and geographical processes - becomes visible by clicking on the elements sequentially and building up knowledge step-by-step.

So, for experienced geography teachers **Geoanimations** enable freedom to choose and decide the starting point and how to construct the topic and build learning towards the end goal. We discovered these choices impelled by using a **Geoanimation** are also of great value for students at the School of Education, as they have to consider how to shape and structure their teaching approaches and learn how to choose the appropriate lesson materials.

Geoanimations are versatile: they can be used as a useful tool for teacher-led exposition or explanation, as an online resources for student-centred learning and embedded in school e-learning modules, or used with a worksheet in the classroom, or shared as a student revision tool.

A selection of the UvA Grassroots Interactive maps models and animations:

[] Iceland Geological interactive map :
https://lesmateriaal.geobronnen.com/index.php/geologische-kaart-ijsland/

[] Interactive world plate tectonics map :
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/platentektoniek.html

[] Interactive model of Demographical Transition :
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/demografisch_transitiemodel.html

[] Interactive model of a Hydrograph :
http://lesmateriaal.geobronnen.com/interactievegeoanimaties/hydrograph.html

[] Santorini resource set:
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/bronnenset_santorini.html

[] Physical Geography of the Nijmegen area
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/nijmegen_stuwwallen.html

[] **Physical Geography of the Nijmegen area (in detail)**
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/nijmegen_ingezoomd.html

[] North Pole interactive map >>>
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/noordpoolgebied.html

[] Turkey Plate Tectonics interactive
https://lesmateriaal.geobronnen.com/index.php/interactieve-kaart-aardbeving-turkije/

[] Earth mantle dynamics interactive >>>
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/platentektoniek_doorsnee_aarde.html

[] Hydrological Cycle Interactive >>>
https://lesmateriaal.geobronnen.com/interactievegeoanimaties/watercyclus.html