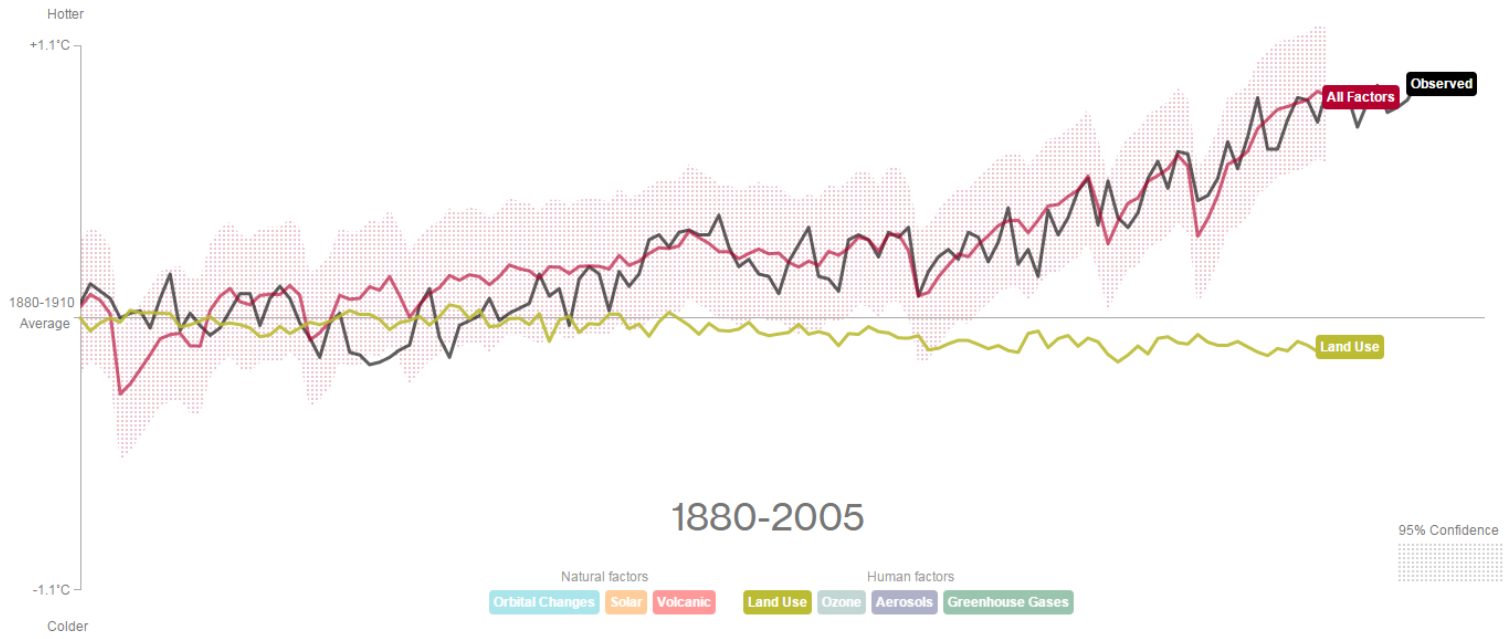
Readings week 3, Pim van Alphen, 11082887



http://www.bloomberg.com/graphics/2015-whats-warming-the-world/

1. Ware describes bottom up and top down processing of visual information in the brain. Give a concrete and detailed example of how bottom up processing is influenced by top down processing, leading to a potentially wrong interpretation of "reality" by the viewer. Your example can include a screenshot, photo, or web site URL to refer to the scene that is being viewed.

Bottom up processing is the most intuitive way of thinking about viewing. The first steps of viewing consist of light falling through the lens of your eye on the retina, where it is observed by the rods and cones and passed through the optic nerve to the brain, where it is processed from a vague colored view to a more vivid internal image. The brain enhances those features of what is viewed which are important or necessary for the tasks given, and it diminishes the features which are of lesser importance. In this way, the light from the outside world is translated to mental objects in our inside world, thus giving shape to the outside world and making us perceive it the way we perceive it. But the brain isn't just a passive consumer of the information giving by the eye, it rather uses the eye as a tool to perceive the outside world. The brain is capable of giving instructions to the eye, by making the eye focus on particular interesting parts of the outside world, and leaving other parts for what they are. The brain decides what is important based on the tasks in mind. If you would need to focus on a particular shape or color, the brain enhances the processing of those shapes or colors when perceived by the eye (or rather, when constructed from the information given by the eye), and ignores the other features of the given image, to a certain extent. The process of adjusting the focus of the eye and the information supplied by the eye is called top down processing.

I have included an example of a visualization of the causes of global warning and will relate the concepts of bottom up and top down processing to this visualisation. I recommend the reader to view the visualisation itself, because a screenshot fails at capturing motion, which is an important factor in reviewing both processes. If we look at the graphs given in the visualisation we see a constant black line which shows the observed temperatures and depending on the topic discussed we see one or multiple lines being drawn on the screen, possibly merging into one line, with an optional 95% confidence grid. Being able to describe what is seen in the visualisation is a display of bottom up processing, we see a total of lines, a grid, and an axis drawn in a single image. It is also possible to view one of these lines, to watch its course with its peaks while traversing through it. You could try to find the highest peak of the line if I asked you to, but while carrying out this task, you would lose sight of the other lines. Because your brain is focussed on the course of one line, it adjusts the information given by the eye, enhancing the images of the line you look for and lessen the other information. This is an example of top down processing, the brain decides what information is used to shape mental objects. An even more outstanding example of top down processing is the movement of the colored line, which is drawn from left to right after you scroll down. The black line is already drawn when the colored line starts to appear, but it is almost impossible to miss the colored line being drawn. Because of its sudden appearance and movement, it immediately draws the attention. An explanation for this event is an evolutionary one. In the past it was necessary for prey to keep close attention to movement in their surroundings, because an predator could be lurking. A subtle movement of a patch of grass could be the only signal of your oncoming death. These movements, when caught by the eye, would be enhanced greatly by the brain because of the importance of this information in the task of surviving. This reaction of the brain to the eye viewing movement still exists in today's dull life, but it remains a good example of top down processing.