Hunting rumours in earth sciences: understanding their origin for debunking and turning them into something useful

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Introduction

Rumours in social, economical, political and scientific communication indicate news, presumably true, that circulate without being confirmed or made evident. Planet Earth seems to be the elected place to give rise to frequent rumours about impending catastrophes. In this work we analyse some rumours related to Earth sciences and we give ideas on how turning them into something useful for communicating Earth sciences to the general public.

Since ancient times there are stories handed down orally and assuming each time new meanings. These stories are supposed to be true but nobody take into serious consideration to verify them, since rumours have different social functions. One is important for our planet, according to the following definition: rumours involve a group communicating in chains of transmission in order to make sense of some situation, event or issue, so as to help us to cope with anxieties. (Rosnow 2001, quoted in Hook, Franks & Martin 2010).

Since there are so many aspects of Earth still completely unknown, people try to find explanations to cope with the fear for the future. Very often natural hazards cause death and destruction even in countries where the fight against them have had excellent results. The recent earthquake in Japan (2011 Tohoku earthquake) showed that an earthquake could always surprise any studied attempt to contain a tsunami. Disasters may happen, but rumours very often exaggerate reality.

As a science communicator I believe that rumours are already popular, so in debunking them we convey science to a broad public already interested in the subject. A more personal approach is that rumours are also appealing from a narrative point of view.

In the following paragraphs I report some examples in Earth sciences. The first two cases show how we used them to organise public events of science communication. The third case maybe not a real rumour, but can be used to popularise the Earth atmosphere. The fourth case shows how sometimes what it is supposed to be a rumour is indeed just a prejudice.

2012: the end of the world according to the Maya

It is the rumour of the year: the impending end of the world as foreseen to happen on 21 December 2012 in the Maya calendar. Others say that it will simply mark the beginning of a new Era. The causes are an alignment of the planets in coincidence with the next solar maximum. The Earth’s collision with an object such as a black hole, or an asteroid or a planet called Nibiru. Astronomers and other scientists have rejected it, and even the Mayanist scholars have denied that in any Maya account this prediction of an impending doom exists.

Nevertheless, a lot of communication has been produced about it. In Italy 550 books have been written about this topic. Three billion websites talk about it. There is also a movie by
Roland Emmerich, 2012, which is the 38th in the worldwide list of highest-grossing-films. In it there is a funny cartoon done by one of the characters, a radio presenter, Charlie Frost, who in two minutes summarises the Maya prophecies. On the NASA website it is possible to find FAQs and the answers given by scientists on this same subject.

To transform a rumour into an opportunity for science education, science communicators should consider when is the right moment to use it, how to do it and where. Here we give an example of how to do it. During a public event that our Institute (INGV) organises every year, called “Open Science”, we organised a lab dedicated to 8-9-year-old children called “Let’s play to the end of the world”. The aim was through a playful approach promoting the knowledge of our planet to minimise the risk coming from natural hazards. The event started with an introduction to the day in the institute’s main hall where we showed a brief history of the universe following the Sagan method: from the big bang to present times in one-year scale. We then divided the students in four groups: volcanoes, earthquakes and tsunami, solar storms and magnetic field.

We asked students to imagine catastrophic events taking inspiration from a cartoon, the Xmen: Cyclops (volcanoes); Phoenix (earthquakes and tsunami); Tempest (solar storm); Magnet (earth magnetic field); Secondly, we invited them to write two stories: one for volcanoes, earthquakes and tsunami and the other for solar storm and earth magnetic field. After a break we asked the students to transform the stories introducing the anti-characters (i.e. for Tempest, Anti-Tempest) and according to some elements encouraging prevention and mitigation of natural hazards. Finally, we asked the students to tell the stories and their transformation. A rapid feedback at the end of the day suggested that the event was appreciated by almost all the students that loved to imagine what will happen to the Earth but also what we can do to protect themselves from catastrophic events.

**Rome 11 May 2011 Earthquake Prediction**

It is also important to choose the right moment to debunk a rumour. Some colleagues organized an Open Day the exact day of a catastrophic event predicted for the city of Rome (C. Nostro et al. 2012). Even if the seismic history of Rome suggests that no catastrophic event ever occurred in the past centuries, some inhabitants decided to live the town on the 11 May 2011 since a catastrophic quake was predicted for that day apparently by Raffaele Bendandi a self-trained scientist of the last century. Indeed even the prediction was wrongly attributed to him.

Before the Open Day, some pre-events took place as a press conference on 9 May. While a video to answer the question “Earthquake in Rome on 11 May?” was already uploaded in the INGV Terremoti YouTube Channel since 14 April. The Open Day was based on a traditional programme: meet the INGV scientists; visit the 24-hour earthquakes monitoring facilities and the permanent exhibits; lectures on the theme; 24-hour broadcasting of the day from the INGV YouTube Channel; distribution of gadgets, books, brochures and informative material to the participants. Some results based on a preliminary media analysis including press clips and the daily statistic views of the INGVTerremoti YT Channel revealed the effectiveness of the chosen timing.

**Haarp conspiracy a rumour? How to use it to popularise the Ionosphere**

The web is full of data about the supposed Haarp conspiracy. Is it a rumour? We are not able
to answer, since it is a complicated issue but we can start to shed a light by posing the right questions and using them to explore a lesser-known part of the planet.

Some say that Haarp facility provoked artificially the 2004 Sumatra tsunami and also the Sichuan earthquake. Some videos on YouTube show the so-called EQL 30 minutes before this earthquake. Concerning Haarp we can pose all this questions: what is the ionosphere? What is EQL (EarthQuake Light)? How can study and monitoring of the ionosphere improve the reliability of communication and navigation systems? Can the Haarp facility really influence the ionosphere to the point of provoking a natural disaster? And last but not least: can men use a scientific facility for military purposes in secrecy? In this way we can at least learn that the ionosphere is the highest part of the atmosphere, how it is used by modern technology for communication system (by satellites). We can also learn the science behind the beauty of Aurora borealis and so on.

Earthquake prediction by animal behaviour: a prejudice rather than a rumour

Can animals sense earthquakes? In the past it has been often considered a rumour, but in 1975 the Haicheng earthquake was predicted also observing the snakes’ abnormal behaviour. A milestone was the book of Helmut Tributsch, *When the Snakes Awake*, that narrated the successful prediction. Nevertheless, it was an isolated episode since no other earthquake has been predicted with the same precision in the following years. After the 1995 Kobe earthquake (Japan), Prof. Motoji Ikeya collected in a volume (Ikeya 2004) the lab experiments he did to understand the phenomenon of unusual animal behaviour before an earthquake. Today there are researchers of different disciplines all over the world investigating this particular field of study.

Conclusion

As we have seen in the last case, what was thought to be a rumour, a legend, is now a research field. Rumours can be dangerous sometimes because they make people behave irrationally even if they help people to cope with anxiety. On the contrary, we can use our creativity to communicate science debunking them. Debunking a rumour at the right time can also make the difference and contribute to successful science communication.

References


