



## **Understand the phenomenon of subduction using seismic data collected on a site (IRIS)**

Damien Berthollet

France (damien.berthollet@ac-lyon.fr)

Plate tectonics is a recent scientific concept compared to the history of science. The knowledge of the scientific techniques of investigation is fundamental to understand the current vision of the functioning of the Earth. Human has always been based on observations to construct his representations of his environment. The evolution of the techniques gradually made it possible to move from a static flat Earth model to a more dynamic spherical model.

14 year-old students are interested in science but for many of them, only knowledge is important. However, the link between scientific investigation and knowledge is not to be neglected. This allows us to understand that science is not a fixed discipline: the models of planet Earth have evolved enormously and may still change with technological evolution.

To make the discovery of the subduction phenomenon more attractive and more ingrained in the current era, students will use a website that collects and shares seismological data. This site, which provides three-dimensional earthquake distribution images, is updated daily, allowing students to link to current events: IRIS (Incorporated Research Institutions for Seismology; <http://ds.iris.edu/seismon>).

The starting problem proposed to students is explain why Japan is so often affected by earthquakes (1 / 5th earthquakes with a magnitude equal to or greater than 6 recorded in the world occur in Japan).

Students have at their disposal:

- A technical sheet allowing them to quickly take in hand the tools proposed by the site
- A review of knowledge on the physical properties of the lithosphere and the asthenosphere

Students have to produce:

- A text proposing an explanation to the recurrent geological phenomena observed in Japan (use of imposed vocabulary words: lithospheric plate, asthenosphere, earthquake).
- A legendary dynamic scheme based on the interpretation of the three-dimensional images generated by the website.

Once the time is up, one of the groups presents their work to the class and the word "subduction" is finally given to the students.