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Atmosphere as a geophysics laboratory

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The geophysical contents in the syllabus of the 4^{th} and of the 8^{th} years of the 1^{st} and 3^{rd} education cycles of the Portuguese education system, respectively, includes a set of concepts and processes of the atmospheric sciences domain like phase changes, the water cycle, weather and climate change. It is also planned to implement a set of simple experiments with water, air and materials of common use.

In the last years, some effort has been done to enhance the experimental teaching in schools specifically with the supply of laboratory equipment. In addition, it is intended that the instruction in sciences has a practical component as well the standard theoretical exposition. However, as a consequence of several factors the students not often take the opportunity of the experimental aspect of their education.

In this sense, it was proposed the realization of set of experiments with the aim of promoting a better understanding of the concepts and processes present in the curriculum of the physical sciences teaching and to stimulate the experimental work and education in geosciences recurring to the Atmosphere as physics laboratory. With this initiative, we also believe to be contributing to lead the students to become active element of their own education process.

The experiments selected to be presented are of two different clusters; the construction and calibration of simple meteorological instruments, using raw materials, like thermometer, pluviometer, barometer, anemometer and wind vanes; and, the realization of simple experiments, preferably using the instruments built before, on subjects related to the Atmosphere to improve the teaching/apprenticeship of science contents, especially of physics, on their own schools.

This initiative has been put into practice with students of three public schools, with their own teachers absolute collaboration. The work was divided in two different parts.

One, devoted to the evolvement of all elements required to implement the experiments in the classroom or school sciences laboratory, like students' protocols (with step-by-step instructions and illustrations) and teachers' guides (with technical notes and safety recommendations), and to gather and organize the experiments materials and instruments; and, another dedicated to the realization of the experiments and to the evaluate the impact of these initiative in the knowledge of the students of the two levels of scholarship.