



## Walking on a carpet of stars under the moonlight

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Can a touch of romanticism in the real life of an adolescent boy or girl come from Science? We say yes, it can. We are using the beauty of the natural world to move young students into the rich and intriguing world of Geology. Starting from a scenery in the moonlight (i.e. walking on selenite, reflecting the light of the moon), we elicit the desire to approach a series of topics, linked to each other. The final aim is to introduce an important, easy to reach and observe, local example of outstanding geological significance, the gypsum vein, while opening a window on the evolution of the Mediterranean basin. The main feature of the teaching project is an excursion to the places of geological importance, where it is easier to appreciate the subject at hand and learn on the spot.

- Before the real excursion, the following lab experiences are to be carried out:
  - a) Firstly, examination of minerals and gypsum crystals samples, paying attention to physical properties, crystal varieties and chemical composition. We compare gypsum with some other minerals, like halite.
  - b) Secondly, a bit of chemistry, to examine solubility of salts and their precipitation, one after the other, the least soluble first. All the observations are immediately connected with evaporitic phenomena of the past causing deposition of strata. Emphasis is necessary in order to help students realize and appreciate the length of time taken for this development to occur and the extraordinary change in scenery as a consequence.
- Then the excursion. The geological set of the gypsum vein as it shows, is one of the best examples in order to:
  - a) introduce the stratigraphic principles and relative dating
  - b) focus later on the causes of its origin
  - c) observe the territory characterized by the very noticeable strata of sedimentary gypsum deposits, and by the presence of dolines, close valleys, swallow holes, caves and vertical furrows.
  - d) observe fauna and flora of the outcrops, which includes Mediterranean species in the warm areas, typical species of the hills and mountain species in the cool areas surrounding the swallow holes. Attention will be given to adaptations to the hypogean environment: some species of Chiropters and rare invertebrates are interesting examples.
- Finally the human dimension of Earth Science comes into the teaching project:
  - a) by visiting the city of Bologna to see the use of selenite in medieval architecture. The city is located close to major gypsum outcrops, and so the use of selenite has spread since ancient times. Blocks of selenite were used for their beauty, while the dehydrated mineral has been used for a long time to obtain mortars and plasters. We can still observe selenite in the remains of the city walls, in the bases of the XII century towers, in architraves, in Romanesque churches.
  - b) by acknowledging that the gypsum vein is the main feature of the Gessi Bolognesi Park and Gessi Romagnoli Park, both protected areas of the Emilia Romagna region. The first one is related to the names of Luigi Fantini (1895-1978), whose studies promoted the environmental value of the Bolognese gypsum vein. The second one was created in 2005, on the 100th anniversary of the death of Giuseppe Scarabelli (1820-1905) of Imola, who was the first to have the correct insight about the origin of the gypsum deposits. As a consequence he realized the geological importance of the most significant gypsum vein in Europe.