Do galactic cosmic rays influence cloud formation?

In the atmosphere, some molecules can agglomerate to form a "big" particle which can act as a seed for a cloud droplet. The number and size of droplets affect the clouds' properties, such as brightness or lifetime, and therefore influence the climate. Using the CLOUD chamber, different mechanisms of particle formation are being investigated under various controlled atmospheric conditions, including temperature, humidity, air purity and ion concentration. The CERN Proton Synchrotron beam is used to vary the ionization rate of molecules inside the CLOUD chamber, like natural galactic cosmic rays do in the atmosphere. This allows us to quantify the effect of the variation of galactic cosmic rays on cloud seed formation.

As a part of CLOUD-ITN, 10 Marie Curie fellows run the project, together with scientists from 19 institutes from across Europe, Russia and the USA. The CLOUD chamber is based at CERN, whereas the detectors are brought to CERN by the CLOUD-ITN fellows during the data acquisition phase. Within the ITN fellow network, weekly Skype meetings are organized for campaign preparation and data evaluation, and regular summer/winter schools and data workshops are held in different host institutions.

Training for Europe
13-17 September 2010

This research has received funding from the EC’s Seventh Framework Programme under grant agreement no. 215072 (Marie Curie Initial Training Network "CLOUD-ITN").