FROM EARTH TO THE MOON AND MARS: A VIRTUAL WALK ON THE PLANETARY SURFACES. A CISAS-UNIPD OUTREACH ACTIVITY IN PLANETARY GEOLOGY. G. Tognon[1], S. Bertoli[2], N. Costa[3], F. Ferri[1], M. Massironi[3], C. Giacomuzzo[1], and G. Quadro[1], [1]Centro di Ateneo di Studi e Attività per lo Spazio «Giuseppe Colombo» (CISAS), Università di Padova, [2]INAF-Osservatorio Astronomico di Padova, [3]Dipartimento di Geoscienze, Università di Padova.

Introduction: For the second consecutive year, the University of Padua organized a scientific communication project named *Science4All*, which collects the legacy of the previous *Venetonight* and *KidsUniversity*. The aim of the project is to communicate science in a simple and fun way and is dedicated both to citizens and schools.

The *Science4All* consists of two main outreach events. The first is a full-day experience at the end of September in which the young researchers and staff of the University of Padua organize dedicated workshops, scientific cafés, games, quizzes, and shows open to all citizens. Several stands are spread within the historic center of Padua according to thematic paths, but also museums and university departments open their doors for guided tours. The second outreach event is dedicated to school groups and, this year, took place in the two last weeks of November. Depending on the proposed activity, the students can access the university facilities or meet up with the university staff at their own schools to enjoy dedicated workshops or seminars.

The Center of Studies and Activities for Space (CISAS) «Giuseppe Colombo» being an interdepartment interdisciplinary center decided to contribute to this project by proposing different activities. Among the different proposals, CISAS supported the organization of workshops in the field of planetary geology which, with the renewed interest in exploring and settling on the Moon and the success of the past (e.g. Rosetta) and current (e.g. Perseverance) space missions, enthralls with its discoveries and applications.

Here we present an overview of the activities organized for *Science4All* and, in particular, we focus on the dissemination of planetary geology.

Organization: As CISAS, we decided to propose different outreach activities organized according to the type of audience, the location and the amount of time at disposal.

Public outreach event. An all-day long workshop dedicated to all citizens needs to find a simple, funny and speedy way to release its take-home messages. At the same time, the workshop activities need to be accessible and engaging for all ages and, why not, also captivating. Keeping this in mind, in our public stand located close to the main campus of the University of Padua, for planetary geology we organized a game session of Planetary Bingo. During the game, each participant was provided with a bingo card and, in order to place a marker, had to answer a series of questions on small curiosities about the geology of planetary bodies in our Solar System and beyond (e.g. Mars, Earth, Jupiter, comets). The explanation of each answer was assisted by the presentation of an explanatory image displayed on a large screen. Participants were granted the possibility to join the game anytime so that everyone could win and be rewarded with a "planetary" prize.

Educational activities for schools. In November, we organized a full-on immersion in planetary geology dedicated to students from 5th-grade elementary school to 3rd-grade middle school. The activity was structured with an introductory part in the form of a seminar followed by a workshop in which the students had the possibility to walk on Mars and the Moon in a virtual reality (VR) environment. More in detail, during our geoplanetary seminars we held an introduction showcasing the most interesting and fascinating facts in terms of geology and exploration for the Moon, Mars and Mercury. We focused also on the training undertaken by astronauts to be able to analyze, sample and report on a planetary surface, as an expert geologist would do, through the study of terrestrial analogs. Just like the astronauts, the students were then able to touch and try to recognize which (analog) rocks might be found on Mars, Mercury or the Moon. To conclude our activity, we accompanied the students on a virtual walk on the river delta deposits within the Jezero crater (Mars), the lacustrine deposits within the Crommelin crater (Mars), the central peak of the Copernicus crater, and the site of the Extravehicular Activity 3 held during the Apollo 17 mission. Simultaneously to the VR experience, we organized a parallel session of planetary mapping dedicated, in case of necessity, to students with cognitive or learning disorders, or unable to use the VR.

General assessments: The activities of planetary geology proposed for *Science4All* seem to have met the requirements for an engaging scientific activity.

Overall, a number of strengths that we intend to keep for the upcoming years emerged from this experience, namely:

- the activities were adequate to the audience, its age and general knowledge, not taking for granted the basics of astronomy and geology
- the eagerness and savoir-faire of the team was really appreciated and considered adequate for a school group

- the use of didactic tools, such as images, presentations, rocks and virtual environments, were greatly appreciated for their intuitiveness and thoroughness

At the same time, this experience gave us hints for future improvements such as the implementation of more easy-to-use and eye-catching tools for inclusive activities, and a better arrangement of the timeframes allocated for each activity in the given amount of time.

Acknowledgements: We acknowledge funding and support from the Società Italiana Scienze Planetarie – Angioletta Coradini (SISP-AC) and from the Centro di Ateneo di Studi e Attività per lo Spazio «Giuseppe Colombo» (CISAS) of the University of Padua.