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A research and training expedition preparing for a human mission to the Moon

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The presentation describes a field simulation of a manned mission on extra-terrestrial planetary surface, performed in April 2010 by a self-organized team of young researchers from Belgium. Mission goals included:
1. Perform a high fidelity simulation of a manned extra-planetary surface mission;
2. Perform science and technology experiments in the simulation context that are relevant to extra-planetary exploration, including geological sampling, particle detection, radioastronomy, human factor, etc.;
3. Learn lessons relevant for manned extra-planetary surface.

The simulation was conducted at the Mars Deserst Research Sation (MDRS), in the San Rafael desert located in South-central Utah (38°24′23″N 110°47′31″W) near the village of Hanksville, Utah. It offers isolation, confinement, and all the necessary facilities for a simulation: habitat, laboratory, workshop, greenhouse, all terrain vehicles (ATV), and extra-vehicular activity (EVA) suits. The surrounding area mainly dates from the Jurassic and Cretaceous geologic period.

The mission was successful in achieving its goals.

The team learnt lessons relevant for a human mission to Mars relevant to several topics, including crew roles, communication with mission support, time organisation, etc. These lessons are presented in the form of guidelines for future simulation crews or manned missions.

The team managed to conduct scientific research and technology demonstration in several fields relevant for manned extra-planetary exploration. Indeed, the crew performed field operations and provided interesting results in geology, exobiology, psychology, radiation, robotics, architecture, etc. An insight on the results related to geosciences is presented as a demonstration of what can be done during such a simulation.