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Author: Ms. Anna Losiak
University of Vienna, Austria

Mrs. Andrea Boyd
Space Applications Services NV/SA, Belgium

Ms. Csilla Orgel
Eötvös Loránd University, Hungary

Ms. Linda Moser
Austrian Space Forum, Germany

Ms. Jane MacArthur
University College London (UCL), United Kingdom

Dr. Izabela Golebiowska
University of Warsaw, Poland

Mr. Steffen Wittek
University of Karlsruhe, ITE, Germany

Ms. Isabella Achorner
University of Innsbruck, Austria

Mr. Mike Rampey
Parhelion Aerospace GmbH, Switzerland

Mr. Thomas Bartenstein
University of Innsbruck, Austria

Ms. Natalie Jones
National Defence — Défense nationale Canada, Canada

Mr. Sebastian Hettrich
German Federal Office for Radiation Protection, Austrian Space Forum, Germany

Mr. Robert Terlevic
Austrian Space Forum, Croatia

Mr. Gernot Groemer
Austrian Space Forum, Austria

Mr. Quentin Scornet
Austrian Space Forum, France

PRACTICAL CHALLENGES AND REAL TIME EXECUTION OF MAPS AND MISSION PLANNING
ON A REMOTE MARS ANALOGUE LOCATION IN THE MOROCCO 2013 FIELD SIMULATION
(AUSTRIAN SPACE FORUM)

Abstract

During the Morocco 2013 Mars Analog Field Simulation, the Remote Science Support team (RSS) was responsible for data analysis and supporting Flight Plan team (through simplifying the process of site selection for the daily traverse planning) as well as Field Crew (through supporting process of decision making concerning autonomous traverses selection). To be as close as possible to a Mars mission, where

the terrain cannot be explored by the RSS team in advance, RSS was restricted to remote sensing imagery and digital elevation models to assess the suitability for each experiment to be carried out in a certain location. Google Maps was used as an open source tool, which could be shared amongst the different teams and extended/edited for post-mission analysis. RSS planned several maps to suggest suitable and avoid non-suitable locations for each experiment. However, the field team on the ground were to decide the exact daily operations.

Those aims were executed with the usage of a set of especially designed thematic maps. The source data for the prepared maps were from remote sensing satellite images (Landsat, GoogleEarth) and a digital elevation model (ASTER GDEM) and it covered an area of 5 km X 5 km centred on the Mission Base Camp. The set of maps consisted of 1) a geological map; 2) a set of experiment “suitability maps”, one for every experiment, presenting the suitability of the area for every experiment separately; 3) danger map showing locations of all potentially dangerous places e.g., cliffs; 4) a map of estimated wi-fi coverage; 5) a map showing locations of planned activities; 6) a map presenting performed activities – this map was updated based on data collected each day and included all basic information concerning experiments stored in the spatially referenced database. There were some challenges due to distance and working in virtual teams during the mission preparation and the varying quality of the initial maps. Maps were extensively used by the Flight Planning team however Field Crew applied them differently in practice and this became more synchronised over time. This presentation will look at the practical challenges and real time execution of maps and mission planning on a remote Mars Analogue location from a Support Centre, rather than a Control Centre. As a result the RSS team created a full map of locations plus basic scientific data, which by the end was an accurate visual representation of the entire mission.