

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Behaviour, Performance and Psychosocial Issues in Space (1)

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SOCIOMAPPING - QUALITATIVE ANALYSIS OF THE STRUCTURE AND DYNAMICS OF  
RELATIONSHIPS AND TIES IN THE CREWS OF SIRIUS-18/19 AND SIRIUS-21 DURING A  
SIMULATED SPACE MISSION TO THE MOON THROUGH THE LENS OF COMPARISON

**Abstract**

**INTRODUCTION** The contribution is based on the author's own MODEL OF SOCIAL RESEARCH in EXPOSED PROFESSIONS based on a set of diagnostic, analytical methods and mathematical modeling in the measurement of human attitudes. Its subject is a comprehensive analysis of the functioning of humans and small social groups in specific conditions of long-term isolation, from a bio-psycho-social point of view. He will present the outputs of the international research project "SIRIUS 2017-2023", from the 4-month and 8-month isolation experiment organized by the IBMP RAS institute and NASA.

**METHODS** SOCIOMAPPING is a technique suitable for the analysis of non-linear dynamic systems - groups, organizations, population. The method of the Czech author Radvan Bahbouch makes it possible to analyze the relationships and links between system elements, to reveal stable and recurring structural patterns and to monitor their dynamics. As part of the 2nd and 3rd stages of the "SIRIUS" project, the method was deployed in 3 stages during both experiments. **QUALITATIVE ANALYSIS** of the data provided detailed insight into the structure and dynamics of relationships and bonds in both crews in 35 areas.

**RESULTS** **QUALITATIVE ANALYSIS** shows highly favorable findings in the structure and dynamics of relationships in both crews during isolation. Greater dynamics of relations appear in the area of **WORK PERFORMANCE**, a slightly downward trend is noted for both crews in the 3rd stage of the mission with a still positive evaluation. In the field of **PROFESSIONALISM**, the crew of SIRIUS-18/19 maintains a continuously high rating, higher at the end of the mission than at the beginning. A slightly opposite tendency was found for the SIRIUS-21 crew, the "definitely yes" rating shifts to "rather yes" or "can't judge" after 8 months of the mission. The **LOAD HANDLING** area indicates a highly positive assessment of SIRIUS-18/19 members, "mostly to definitely handle" the load, "definitely handle" at the end of the mission. A slightly opposite tendency was found for the crew of SIRIUS-21, "before" the mission the team sees itself as "definitely coping" with the load, at the end of it "mostly or quite coping". It is confirmed once again that the highly positive mutual evaluation of crew members has a fundamental influence on work performance, social atmosphere, decision-making, occurrence of misunderstandings, task performance, load management, quality of communication, cooperation, and in real space missions, also an influence on the issue of "survival" of crews.