IAF SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Science, Instruments and Technologies (3B)

Author: Mr. Ahmad Jalil
The National Space Science and Technology Center (NSSTC), United Arab Emirates,
ahmadjalil@uaeu.ac.ae

USING OBJECT BASED IMAGE ANALYSIS (OBIA) FOR MAPPING AND CHARACTERIZATION OF MARTIAN NORTHERN POLE DUNES

Abstract

New image processing techniques like (OBIA) Object Based Image Analysis can help to accelerate and automate the identification and extraction of targeted objects from high-resolution images. The Mars Global Digital Dune Database (MGD3) has been using THEMIS data with a coarse resolution of 100 m per pixel. In this paper, two high resolution images from the Context Camera (CTX) mounted on Mars Reconnaissance Orbiter (MRO) with a resolution of 6 m per pixel will be utilized. Two locations were observed and chosen with the assistance of Google Earth Pro (Mars); The first is at (77.91N 40.70E) and the second is at (76.63N 46.41E). Dunes are trapped in the crater and surrounding it. E-cognition software will be used to process the images and extract geometrical information such as: area, direction, perimeter, length. etc. Mapping Martian dunes can be very beneficial for other related disciplines such as atmosphere scientists to track the changes on the dunes with the seasonal variabilities. However, If the method proves to be reliable, it can be used for other images and to populate future dune databases.