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The International Space Analogue Rock Store (ISAR): A key tool for future planetary exploration.

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In order to prepare the next in situ space missions we have created a « lithothèque » of analogue rocks for calibrating and testing future (and existing) space flight instruments. This rock collection is called the International Space Analogue Rockstore (ISAR) and is hosted in the CNRS and the Observatoire des Sciences de l'Univers en Region Centre (OSUC) in Orléans. For maximum science return, all instruments on a single mission should ideally be tested with the same suite of relevant analogue materials. The ISAR lithothéque aims to fulfill this role by providing suitable materials to instrument teams [1]. The lithothèque is accompanied by an online database of all relevant structural, textural, and geochemical data (www.isar.cnrs-orleans.fr).The data base will also be available during missions to aid interpretation of data obtained in situ.
Mars is the immediate goal for MSL-2011 and the new international Mars 2018 mission. The lithothèque thus presently contains relevant Mars-analogue rock and mineral samples, a preliminary range of which is now available to the scientific community for instrument testing [2]. The preliminary group of samples covers a range of lithologies to be found on Mars, especially those in Noachain/Hesperian terrains where MSL will land (Gale Crater) and where the 2018 landing site will most likely be located. It includes a variety of basalts (tephrite, primitive basalt, silicified basalt; plus cumulates), komatiites, artificially synthesized martian basalts [3], volcanic sands, a banded iron formation, carbonates associated with volcanic lithologies and hydrothermalism, the clay Nontronite, and hydrothermal cherts. Some of the silicified volcanic sands contain traces of early life that are good analogues for potential martian life [4].

[1] Westall F. et al., LPI contribution 1608, 1346, 42nd LPSC, 2011; [2] Bost N. et al., in review (Icarus); [3] Bost N. et al., in review (Meteoritics); [4] Westall et al., 2011, Planetary and Space Science 59.

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