# Overview of Jezero Crater as the Mars 2020 Rover Landing Site

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**Bio:** Tim Goudge is an Assistant Professor in the Department of Geological Sciences at the University of Texas at Austin. Dr. Goudge's scientific interests focus on the role of surface processes in controlling the evolution of planetary landscapes. Dr. Goudge acted as one of the primary advocates for Jezero crater as the landing site for the Mars 2020 Rover. Dr. Goudge received a BSc in geological engineering from Queen's University, and a ScM and PhD from Brown University.

**Abstract:** Jezero is a ~45 km diameter impact crater located in the Nili Fossae region of Mars, and was recently selected as the landing site for the upcoming NASA Mars 2020 Rover. Jezero provides a landing site that will enable scientific investigations addressing key questions of ancient Mars climate, habitability, and geologic history. In this talk, I will provide a summary of our current understanding of the geology and evolution of Jezero crater based on past research, as well as example science questions and hypotheses that can be tested by *in situ* rover analyses.

Key aspects of the geology of Jezero crater that will be discussed in this talk include observations that it: (i) hosted an open-basin lake during the era of valley network formation [*1,2*], which ceased >3.7 Ga, at approximately the Noachian-Hesperian boundary [*3*]; (ii) contains outcrop of a delta deposit, with Fe/Mg-smectite and Mg-carbonate sediment [*1,4-8*], which preserves the fluvial record of early Mars and had high biosignature concentration and preservation potential [*4,8,9*]; (iii) contains broad exposures of an Mg-carbonate-bearing lithology [*5,7,10*], which is similar to a regional carbonate unit found in Nili Fossae [*5,10*]; and (iv) has been resurfaced by a mafic-rich floor unit that was emplaced ~2-3 Ga, during the Early Amazonian [*6,7,11*].

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