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STATEMENT OF PURPOSE:

The work I'm presenting is new and of high value to the Mars science community, but it should also interest any audience member at AGU. NASA has sent several missions to Mars to look for ancient environments that could have hosted life, and one of the oldest debates (still being debated today) is whether Mars once had an ocean. My research directly addresses this important question, since I created a high resolution 3D model of a potential river delta which has never before been analyzed in detail. I tested the hypothesis of whether this feature necessarily formed slowly underwater, and how large this body of water once was on the surface of Mars. During my session at the meeting, I am also presenting my geologic map of the catchment region of the ancient river valleys that fed the delta, and will show that this location has a great diversity of rock types due to a complicated history of volcanoes and water bodies. I believe the results are very exciting as they support the idea of a Chryse sea or ocean on Mars. This site is one of the proposed human landing sites for a potential Mars 2035 NASA mission, and was also an ExoMars and Mars 2020 rover candidate landing site. I would like for other scientists to hear about this region on Mars so they can get involved in NASA missions, collaborate on with our team, and inspire the next generation who will have to decide whether to send humans there. Presenting at the Hyperwall would also inform scientists who aren't very familiar with Mars about the wealth of data that is publicly available and how it can be used. I will try to present the data in a unique way by highlighting 1) the usefulness of overlaying multiple datasets in order to classify geologic features, and 2) the usefulness of 3D visualization in understanding stratigraphy. The visualizations I plan to show will demonstrate where on Mars Hypanis is located, and how large it is. The visualizations will also show how rounded buttes are the tallest landforms in the region, and that the deltaic deposit ends at a rough cliff border exposing internal strata. The 3D scenes I show will demonstrate that the sedimentary beds are very flat (gently sloping) and were likely capped by a darker unit, which protected it for ~3.6 billion years. I'm excited to share overlays of my geologic map in 3D, which is something that is severely limited in a published article, but can be fully explored in a video/fly-over. Finally, I found out today that my entire AGU session (Using Topography to Investigate the Evolution of Solar System Bodies) was assigned posters, so I will not be able to show the incredible 3D views in a talk this year. The Hyperwall opportunity would be great for my career, and allow me to briefly tell the story of this important spot on Mars, and show some of the datasets that contributed to my results.

DESCRIPTION OF DATA SETS:

The data sets I am proposing to use are all free, publicly available NASA orbital data sets of Mars from various NASA missions (Mars Odyssey, and Mars Reconnaissance Orbiter, Mars Global Surveyor, and Viking 1/2) as well HRSC data from ESA's Mars Express orbiter. All of these datasets are free to use and I will properly cite the source in my narration and on the hyperwall. Scene 1 uses Viking orbital images on a spherical globe model of Mars. Viking MDIM 2.1 Color Mosaic [NASA/JPL/USGS]. Scene 2 uses elevation data from the USGS of a blended MOLA and HRSC elevation model [NASA/JPL/GSFC ESA/DLR/FU Berlin]. Scene 3 alternates between the THEMIS nighttime and daytime infrared mosaics [NASA/JPL/ASU], and the CTX image mosaic our team made [NASA/JPL/MSSS] overlain on a regional DEM mosaic I created from CTX stereopair DEMs [NASA/JPL/MSSS] and HiRISE DEMs [NASA/JPL/Univ. of Arizona] which are available online and from the author [me]. Scene 4 uses HiRISE images, and DEMs [NASA/JPL/Univ. of Arizona] and Scene 5 uses HiRISE Anaglyphs, all publicly available on the HiRISE website. Other datasets include lat/lon points of a database of deltas, and similar science survey data that has been published and authorized to use by the authors. Subsequent scenes use the datasets already listed.