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Data from: Interweaving Recurring Slope Lineae on Mars: Do They Support a Wet Hypothesis?

Daniel P. Mason

Louis A. Scuderi

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Supplementary Materials for "Interweaving Recurring Slope Lineae on Mars: Do They Support a Wet Hypothesis?"

Authors: Daniel P. Mason and Louis. A. Scuderi

Affiliation: University of New Mexico, Department of Earth and Planetary Sciences

Corresponding author: Dan Mason (danmason@unm.edu)

Included in these supplementary materials is a manuscript citation (with DOI link) and manuscript keywords (all listed below) for the manuscript "Interweaving Recurring Slope Lineae on Mars: Do They Support a Wet Hypothesis?", as submitted to the scientific journal *Icarus*.

Manuscript Citation:

Description of the data and file structure:

JP2 Image Files and Digital Terrain Model

Included in these supplementary materials are a) the two Raga Crater JP2 image files used (listed below), b) a version of one of those files shifted to align with the DTM (denoted by "shift" in the filename), and c) the DTM file used (listed below).

Note that in all CSV files and shapefiles named, the use of "A", "ImgA", or "Image A" within filenames refers to HiRISE image ESP_014011_1315 and the use of "B", "ImgB", or "Image B" within filenames refers to HiRISE image ESP_031773_1315. Note also that JP2 and DTM files may fail to open properly if opened from a computer desktop. However, all JP2 and DTM files will open properly if each is opened within ArcGIS geospatial analysis software, such as ArcGIS 10.7.1.

JP2 Image Files:

· ESP_014011_1315

· ESP_031773_1315

· 031773_shift2

DTM File:

· DTEEC_014011_1315_014288_1315_A01

Shapefiles

Included in these supplementary materials are two shapefiles (listed below) of the digitized candidate RSL. Each shapefile includes data on channel length ("Length"), valley length ("length_1"), channel number ("TARGET_FID"), RSL number ("JOIN_FID"), minimum ("Z_Min"), maximum ("Z_Max"), and average ("Z_Mean") slope, and sinuosity ("Sinuosity") for the candidate RSL in each image.

Shapefile Names:

· InterweaveImageA

· InterweaveImageB

Quantification of Anabranching Channel Count

Included in these supplementary materials are six CSV files (listed below) which collectively detail the number of anabranches composing each individual RSL. Unless otherwise noted, distance is measured in meters and slope in degrees.

Anabranching CSV Files:

The two files below each contain one column denoting an identification number ("FID") and another containing a channel count ("Count_").

· AnabranchesPerRSL_A

· AnabranchesPerRSL_B

The two files below each contain one column denoting the number of channels present per lineae ("ChannelsPerRSL_A" or "ChannelsPerRSL_B") a column containing each channel count as a number ("Count"), and a column containing each channel count as a percentage of the total ("Percentage").

· AnabranchesPerRSL_Apercent

· AnabranchesPerRSL_Bpercent

The file below contains three columns—denoting which image the channel belongs to ("Image"), an identification number ("FID"), and whether the channel is part of a multichannel system ("MultiChannelSystem")-- denoting data regarding each of the ten sinuous channels found between both images.

· AnabranchesPerRSL_MultichannelSystems

The file below contain two columns—one with column headers describing attributes of the associated data, and another with the data for those described attributes.

· AnabranchesPerRSL_Combined

Quantification of Average Slope Angles

Included in these supplementary materials are five CSV files (listed below) which collectively detail the average slope angles of each individual channel and each indi-

vidual lineae. Unless otherwise noted, distance is measured in meters and slope angle is measured in degrees.

Slope Angle CSV Files:

The file below contain two columns—one with column headers describing attributes of the associated data, and another with the data for those described attributes.

· AverageSlopes_CombinedMetadata

The files below each contain eight columns, detailing which image the data belongs to ("Image"), an identification number ("FID"), the length of the individual channel listed ("Length"), the minimum slope angle for the individual channel listed ("MinimumSlope"), the maximum slope angle for the individual channel listed ("MaximumSlope"), the average slope angle for the individual channel listed ("AverageSlope"). the average slope angle for each multichannel system listed ("AverageSlope_Multichannel"), and the average slope angle for each single-channel system listed ("AverageSlope_SingleChannel").

· AverageSlopes_PerChannelImageA

· AverageSlopes_PerChannelImageB

The two files below each contain six columns, detailing which image the data is from ("Image"), an identification number ("FID"), the length of the sinuous channel listed ("Length"), the minimum slope angle for the sinuous channel listed ("MinimumSlope"), the maximum slope angle for the sinuous channel listed ("MaximumSlope"), and the average slope angle for the sinuous channel listed ("AverageSlope").

· AverageSlopes_SinuousSlopeImageA

· AverageSlopes_SinuousSlopeImageB

Quantification of Sinuosity Measurements

Included in these supplementary materials are twelve CSV files (listed below) which collectively detail sinuosity measurements of each individual channel, as well as

comparing the channel counts for the ten sinuous channels. Unless otherwise noted, distance is measured in meters and slope angle is measured in degrees.

Sinuosity CSV Files:

The two files below each contain five columns, detailing the image in question ("Image"), an identification number ("FID"), the length of each channel ("Length"), the sinuosity of each channel ("Sinuosity"), and the number of channels in this channel's RSL ("ChannelCount")

· SinuosityAndBraiding_ImageA

· SinuosityAndBraiding_ImageB

The file below contain two columns—one with column headers describing attributes of the associated data, and another with the data for those described attributes.

· SinuosityAndBraiding_Metadata

The two files listed below contain six columns, detailing the image in question ("Image"), identification numbers ("FID" and "TARGET_FID"), channel length as measured following each channel ("ChannelLength"), valley length as measured in a straight line distance from the beginning to end of each channel ("ValleyLength"), and sinuosity (channel length divided by valley length) ("Sinuosity").

· SinuosityMeasurements_ImageA

· SinuosityMeasurements_ImageB

The below file contains three tables, each detailing the sinuosity measurements for Image A, Image B, and both images collectively.

· SinuosityMeasurments_Combined

The below files contain two rows (in the case of image A) or a single row (in the case of Image B) with notes about the sinuosity measurements for each respective image.

· SinuosityNotes_ImageA

· SinuosityNotes_ImageB

The two files below each contain four columns, detailing the relevant image ("Image"), the degree of sinuosity ("Sinuosity"), the number of channels that fit that description ("Count"), and the percentage of channels that fit that description ("Percentage").

· SinuosityMetadata_ImageA

· SinuosityMetadata_ImageB

The two files below contain three columns, one denoting the image ("Image"), one denoting sinuosity, sorted from most to least sinuous ("SinuositySorted"), and one denoting sinuosity, sorted from most to least sinuous, and rounded to three decimal places ("SinuositySortedRound")

· SinuositySorted_ImageA

· SinuositySorted_ImageB

Quantification of Slope Change Along Multi-Channel System Profile Graphs

Included in these supplementary materials are twenty-five CSV files (listed below) that collectively detail the slope angle changes, bifurcation data, and confluence data for every channel comprising each multi-channel system. Unless otherwise noted, distance is measured in meters and slope angle is measured in degrees.

Slope Change CSV Files:

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and how the slope angle changes around the point(s) where notable changes occur ("AmountSlopeChange") within each channel.

· AmountOfSlopeChange_ImageA

· AmountOfSlopeChange_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("FID") for the channel, and the distance along the channel at which bifurcation(s) occur ("BifurcateDist").

· BifurDistance_ImageA

· BifurDistance_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and the slope angle at the point(s) of channel bifurcation ("BifurcateAngle").

· BifurSlope_ImageA

· BifurSlope_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("FID") for the channel, and how the slope angle changes around the channel bifurcation(s) ("BifurcateSlopeChange") within each channel.

· BifurSlopeChange_ImageA

· BifurSlopeChange_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and how the channel dynamics (slope angle, distance, etc.) change between the point(s) of bifurcation and point(s) of confluence ("ChannelBehavior").

· ChannelBehavior_ImageA

· ChannelBehavior_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and the distance along the channel at which confluence(s) occurs ("ConfluenceDist").

· ConfluenceDistance_ImageA

· ConfluenceDistance_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and the slope angle at the point of channel confluence ("ConfluenceSlope").

· ConfluenceSlopeAngle_ImageA

· ConfluenceSlopeAngle_ImageB

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and notes about how the channel changes slope-wise from the confluence point to the end of the channel ("PostConfluenceChange").

· PostConfluenceChange_ImageA

· PostConfluenceChange_ImageB

The two files below each contain seven columns, and list the channel number ("ChannelNumber"), the image in question ("Image"), an identification number ("Channel FID") for the channel, and notes on whether the channel is steepening ("Steepens"), shallowing ("Shallows"), plateauing ("Plateaus"), or doing some combination of the three ("Other") in the few meters around the bifurcation point(s).

· SlopeBifurcationInfo_ImgA

· SlopeBifurcationInfo_ImgB

The file below contain two columns—one with column headers describing attributes of the associated data, and another with the data for those described attributes.

· SlopeBifurcationInfo_Metadata

· SlopeConfluenceInfo_Metadata

The file below contains two columns that collectively detail the questions this set of files attempts to answer, as well as a key about the general topics covered. Both are the same for each image.

· SlopeBreakKeyAndQs_All

The two files below each contain three columns, and list the image in question ("Image"), an identification number ("Channel FID") for the channel, and how many meters along the channel the slope notably changes, which may be different from the bifurcation and/or confluence distances ("NotableSlopeChange").

· SlopeChangeDistance_ImageA

· SlopeChangeDistance_ImageB

The two files below each contain seven columns, and list the channel number ("ChannelNumber"), the image in question ("Image"), an identification number ("Channel FID") for the channel, and notes on whether the channel is steepening ("Steepens"), shallowing ("Shallows"), plateauing ("Plateaus"), or doing some combination of the three ("Other") in the few meters around the confluence point(s).

· SlopeConfluenceInfo_ImgA

· SlopeConfluenceInfo_ImgB