

SP_Average_Slipface.doc
Mars Global Digital Dune Database: MC-30
By R.K. Hayward, L.K. Fenton,
T.N. Titus, A. Colaprete, and P.R. Christensen
2012
(<http://pubs.usgs.gov/of/2012/1259>)

Summary

See Pamphlet.doc, Mars Global Digital Dune Database Purpose.

Description

See Pamphlet.doc, Mars Global Digital Dune Database Abstract.

Credits

There are no credits for this item.

Access and use limitations

There are no restrictions.

ArcGIS Metadata

Resource Identification

Citation Title: Sp_Average_Slipface_Geog
Alternate Titles: South Pole Average Slipface
Presentation Format: digital map
Collection Title: Mars Global Digital Dune Database
Responsible Party:
Individual's Name: Rosalyn K. Hayward
Organization's Name: USGS,
Astrogeology Contact's Position:
Geologist
Contact's Role: Originator
Contact Information:
Phone:
Voice: (928) 566-7022
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Address:
Delivery Point: 2255 N. Gemini Dr.
City: Flagstaff
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Postal Code: 86001
Country: United States
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Publication Information:

Publication_Place: Reston, Virginia
Publisher: U.S. Geological Survey
Online_Linkage: <http://pubs.usgs.gov/of/2012/1259>

Themes Or Categories Of The Resource :
geoscientificInformation

Tags For Searching: Dune, Aeolian, Mars, Database, Gcm

Discipline Keywords: Planetary Science

Place Keywords: Mars

Theme Keywords: Dune

Theme Keywords: Aeolian

Theme Keywords: Database

Theme Keywords: GCM

Dataset Languages: English (United States)

Dataset Character Set Utf8 - 8 Bit Ucs Transfer Format

Status: Completed

Resource Maintenance:

Update Frequency: Not Planned

Scope Of The Updates: Dataset

Resource Constraints:

Constraints:

Limitations Of Use:

There are no restrictions.

Spatial Representation Type: Vector

* Processing Environment: Microsoft Windows Server 2008 R2 Version 6.1 (Build 7601) Service

Pack 1; Esri Arcgis 10.0.2.3200

Other Extent Information:

Geographic Extent:

Bounding Rectangle:

* Extent Type Extent Used For Searching

* West Longitude -179.660300

* East Longitude 178.822300

* North Latitude -65.000300

* South Latitude -80.860800

* Extent Contains The Resource: Yes

Point Of Contact:

Individual's Name: Rosalyn K. Hayward

Organization's Name: USGS, Astrogeology

Contact's Position: Geologist

Contact's Role: Originator

Contact Information:

Phone:

Voice: (928) 566-7022

Fax: (928) 566-7014

Address:

Delivery Point: 2255 N. Gemini Dr.

City: Flagstaff

Administrative

Area: Az

Postal Code:86001

Country: United States

E-Mail Address: rhayward@usgs.Gov

Reference System

Reference System Identifier

Value 104905

* Codespace Esri

* Version 10.0.0

Data Quality

Scope Of Quality Information

Resource Level: dataset

Lineage:

Process Step:

See Pamphlet.doc, Mars Global Digital Dune Database Process.

Data Quality Report - Completeness Omission:

See Pamphlet.doc, Mars Global Digital Dune Database – Completeness of Database.

Data Quality Report - Conceptual Consistency

Measure Description:

All attributes were verified by displaying the lines in both the database and the spatial coverage and they are believed to be logically consistent.

Data Quality Report - Topological Consistency

Measure Description:

These data are believed to be logically consistent. Line geometry is topologically clean.

Data Quality Report - Absolute External Positional Accuracy:

Measure Description:

The horizontal accuracy is derived from the accuracy of the Mars Orbiter Laser Altimeter (MOLA) dataset [Smith and others, 2001]. The globally adjusted MOLA dataset has an absolute horizontal accuracy on the order of 100 m, but individual features in images can probably only be tied to MOLA-derived shaded-relief digital image models with a precision on the order of 200 m. Other bases used included Thermal Emission Imaging System (THEMIS) digital images [Archinal and others, 2003, Christensen and others, 2004]. The digital features were drawn at 20K to 100K scale with a node spacing of approximately 0.3 km to 2 km.

ESRI Metadata and Item Properties

Metadata Properties:

Arcgis: Arcgis1.0
Metadata Style: FGDC CSDGM Metadata
Metadata Standard Or Profile: FGDC
Created In Arcgis: 2012-05-14t13:03:12
Last Modified In Arcgis: 2012-06-03t15:08:05
Automatic Updates:
Last Update: 2012-06-03t15:06:39
Have Been Performed: Yes

Item Properties

Name: Sp_Average_Slipface_Geog
Content Type: Downloadable Data

ESRI Spatial Information

Extent In The Item's Coordinate Reference

Bounding Rectangle:

* West Longitude -179.660300
* East Longitude 178.822300
* North Latitude -65.000300
* South Latitude -80.860800
* Extent Contains The Resource: Yes

Coordinate Reference

Type: Geographic
Geographic Coordinate Reference: GCS_Mars_2000
Coordinate Reference Details

Geographic Coordinate
System

Well-Known Identifier: 104905
X Origin: -399.99999999999989
Y Origin: -399.99999999999989
XY Scale: 1000000000.0000001
Z Origin: -100000
Z Scale: 10000
M Origin: -100000
M Scale: 10000
XY Tolerance: 1.6870604858115214e-008
Z Tolerance: 0.001
M Tolerance: 0.001
High Precision: True
Left Longitude: -180
Well-Known Text
GEOGCS["GCS_Mars_2000",DATUM["D_Mars_2000",SPHEROID
["Mars_2000_IAU_IAG",3396190.0,169.8944472236118]],PRIMEM

["Reference_Meridian",0.0],UNIT["Degree",0.0174532925199433],AUTHORITY ["ESRI",104905]]

ESRI Feature Class

Feature Class Name: Sp_Average_Slipface_Geog

- * Feature Type: Simple
- * Geometry Type: Point
- * Has Topology: False
- * Feature Count: 209
- * Spatial Index: True
- * Linear Referencing: False

ESRI Fields and Subtypes

SP_Average_Slipface_Geog

Feature Class

* ROW COUNT 209

DEFINITION

(shape - point) An average slipface azimuth was calculated for dune fields with raw slipface measurements. That average is plotted in the average location of the group of raw slipfaces as an arrow (~200 records).

FIELD OBJECTID

* ALIAS OBJECTID

* DATA TYPE OID

* WIDTH 4

* FIELD DESCRIPTION

Internal feature
number.

* DESCRIPTION SOURCE

ESRI

* DESCRIPTION OF VALUES Sequential unique whole numbers
that are automatically generated.

FIELD Shape

* ALIAS Shape

* DATA TYPE Geometry

* FIELD DESCRIPTION

Feature geometry.

* DESCRIPTION SOURCE

ESRI

* DESCRIPTION OF VALUES Coordinates defining the features.

FIELD DuneBID

ALIAS Dune_Lon_Lat_ID

* DATA TYPE String

* WIDTH 20

FIELD DESCRIPTION

The ID number of the dune field in which the average slipface point is located. Each dune field has a unique ID number constructed after the method used by Barlow (2003) to assign ID numbers to craters. Longitude is listed first and both values are extended to one decimal place. The + or – sign of the latitude is given, indicating the break between the two values. Thus 122.5 east longitude, - 34.5 south latitude, becomes 1225-345. The longitude is always four digits and the latitude is always three digits, filling in with leading zeroes where necessary.

FIELD Avg_SF_Lon
ALIAS Average_Longitude_East
*DATA TYPE Double
*WIDTH 8
FIELD DESCRIPTION
Records the position of the point that represents the average slipface, in decimal degrees east longitude.

FIELD Avg_SF_Lat
ALIAS Average_Latitude_Aerocentric
*DATA TYPE Double
*WIDTH 8
FIELD DESCRIPTION
Records the position of the point that represents the average slipface, in decimal degrees latitude (aerocentric).

FIELD SF_ID
ALIAS Slipface_ID
*DATA TYPE String
*WIDTH 20
FIELD DESCRIPTION
The Dune_lat_lon_ID with a, b, c or d appended when multiple averages are calculated for a single dune field. This occurs when winds are multidirectional.

FIELD SF_Count
ALIAS Slipface_Count
*DATA TYPE Integer
*WIDTH 4
FIELD DESCRIPTION
The number of raw slipfaces used to calculate the average slipface.

FIELD AvgSF_Geog
ALIAS Slipface_Azimuth_Geographic
*DATA TYPE Double
*WIDTH 8
FIELD DESCRIPTION
The average slipface, in decimal degrees, for a given group of raw slipface measurements. It is calculated in the Geographic coordinate system (for compatibility with the EQ and NP parts

of MGD3). We recommend that numerical comparisons be made in the Mercator projection because the Mercator projection preserves direction.

FIELD AvgSF_Merc
ALIAS Slipface_Azimuth_Mercator
*DATA TYPE Double
*WIDTH 8

FIELD DESCRIPTION

The average slipface, in decimal degrees, for a given group of raw slipface measurements. It is calculated in the Mercator projection. This value for the average slipface azimuth can be compared to the crater centroid to dune centroid azimuth because they were both calculated in the Mercator projection. We recommend that numerical comparisons be made in the Mercator projection because the Mercator projection preserves direction.

FIELD AvgSF_Ster
ALIAS Slipface_Azimuth_Stereographic
*DATA TYPE Double
*WIDTH 8

FIELD DESCRIPTION

The average slipface, in decimal degrees, for a given group of raw slipface measurements, as calculated in the South Polar Stereographic projection. The average azimuth was calculated by (1) displaying the raw slipface lines in Stereographic projection, (2) using ArcMap to calculate the azimuth in the Stereographic projection, and (3) averaging the individual raw slipface azimuths within a given group. The Stereographic azimuth should be used to rotate the arrow when being displayed in the South Polar Stereographic projection. We recommend that numerical comparisons be made in the Mercator projection because the Mercator projection preserves direction.

FIELD CcDcAz_Geo
ALIAS CcDcAzimuth_Geographic
*DATA TYPE Double
*WIDTH 8

FIELD DESCRIPTION

ArcMap tools were used to create polylines that extend from crater centroid to dune centroid. The azimuth is calculated in decimal degrees in the Geographic coordinate (for compatibility with the EQ and NP parts of MGD3). We recommend that numerical comparisons be made in the Mercator projection because the Mercator projection preserves direction. Note that the term "crater" was used for simplicity, even though a small number of the circular depressions containing dunes may not be impact craters.

FIELD CcDcAz_Mer
ALIAS CcDcAzimuth_Mercator

* DATA TYPE Double

* WIDTH 8

FIELD DESCRIPTION

ArcMap tools were used to create polylines that extend from crater centroid to dune centroid. The azimuth is calculated in decimal degrees in the Mercator projection and so can be used for comparison to AvgSF_Merc. Note that the term "crater" was used for simplicity, even though a small number of the circular depressions containing dunes may not be impact craters. We recommend that numerical comparisons be made in the Mercator projection because the Mercator projection preserves direction.

FIELD CraterID

ALIAS Crater_ "BarlowID"

* DATA TYPE String

* WIDTH 20

FIELD DESCRIPTION

A unique ID number constructed after the method used by Barlow (2003) to assign ID numbers to craters. Longitude is listed first and both values are extended to one decimal place. The + or – sign of the latitude is given, indicating the break between the two values. Thus 122.5 east longitude, -34.5 south latitude, becomes 1225-345. The longitude is always four digits and the latitude is always three digits, filling in with leading zeroes where necessary. Note that the term "crater" was used for simplicity, even though a small number of the circular depressions containing dunes may not be impact craters. This information is only provided when the slipface average is associated with dunes in a crater that also has a CcDcAzimuth.

Metadata Details

Metadata Language: English

Metadata Character Set: Utf8 - 8 Bit Ucs Transfer Format

Scope Of The Data Described By The Metadata: Dataset

* Scope Name: Dataset

Metadata Contact:

Individual's Name: Rosalyn K. Hayward

Organization's Name: USGS, Astrogeology

Contact's Position: Geologist

Contact's Role: Originator

Contact Information:

Phone:

Voice: (928) 566-7022

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Delivery Point: 2255 N. Gemini Dr.

City: Flagstaff

Administrative Area: Az

Postal Code: 86001

Country: United States

E-Mail Address: rhayward@usgs.gov

* Last Update: 2012-06-03

Maintenance:

Update Frequency: Not Planned

Scope Of The Updates: Dataset