yyyZZZZ_dfestimates.gdb README

The debris flow estimates geodatabase for fire yyy, during fire year ZZZZ, contains several feature classes:

All datasets are in UTM coordinates, Distance Unit = Meter, Angular Unit = Decimal Degree.

DISCLAIMER: The data included in this geodatabase may be preliminary in nature and have not received Director's approval. As such, these data are provisional and subject to revision. This information is provided with the understanding that revisions may be made, and conclusions drawn from such information are the sole responsibility of the user. Please see contact information below if you require additional information.

Feature Datasets

Relevant Feature Data:

yyyZZZZ_basinpt_feat: point feature class representing the basin outlets (pour points) used for calculating the basin-scale predictions.

yyyZZZZ_centroid: point feature class representing the geographic center of the fire perimeter.

yyyZZZZ_perim_feat: most recent burn perimeter, obtained from geomac.gov

yyyZZZZ_debrisbasins_feat: sediment retention structures located within or downstream of burn area. These data do not exist for every fire.

yyyZZZZ_dbstreams_feat: stream segments downstream or intersection sediment retention basins. These data do not exist for every fire.

Basin Scale Predictions:

yyyZZZZ_basin_df_predictions_15min_12mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 12 mm/h

yyyZZZZ_basin_df_predictions_15min_16mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 16 mm/h

yyyZZZZ_basin_df_predictions_15min_20mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 20 mm/h

yyyZZZZ_basin_df_predictions_15min_24mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 24 mm/h

yyyZZZZ_basin_df_predictions_15min_28mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 28 mm/h yyyZZZZ_basin_df_predictions_15min_32mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 32 mm/h

yyyZZZZ_basin_df_predictions_15min_36mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 36 mm/h

yyyZZZZ_basin_df_predictions_15min_40mmh: Predictions at the basin scale for a rainstorm that has a peak 15-minute intensity of 40 mm/h

Stream Segment Scale Predictions:

yyyZZZZ_segment_df_predictions_15min_12mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 12 mm/h

yyyZZZZ_segment_df_predictions_15min_16mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 16 mm/h

yyyZZZZ_segment_df_predictions_15min_20mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 20 mm/h

yyyZZZZ_segment_df_predictions_15min_24mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 24 mm/h

yyyZZZZ_segment_df_predictions_15min_28mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 28 mm/h

yyyZZZZ_segment_df_predictions_15min_32mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 32 mm/h

yyyZZZZ_segment_df_predictions_15min_36mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 36 mm/h

yyyZZZZ_segment_df_predictions_15min_40mmh: Predictions at the stream segment scale for a rainstorm that has a peak 15-minute intensity of 40 mm/h

Tabular Information within Feature Classes

Within the basin and segment prediction feature classes listed above, the tables for each feature class provide the data used to make the calculations, as well as the calculated estimates of probability, volume, and combined hazard.   Here is a description of the relevant fields within the table:

Basin_ID: unique basin identifier used in modeling (unique to these data only). Field is included only in the basin features.

Segment_ID: unique stream segment identifier used in modeling (unique to these data only). Field is included only in the segment features.

M1_X1: The proportion of upslope area burned at high or moderate severity and with gradients in excess of 23 degrees.

M1_X2: The average dNBR of the upslope area, divided by 1000.

M1_X3: The average KF-factor of the upslope area.

V_X1: square root of the total upstream relief, used in volume calcs (m)

V_X2: natural log of the total upstream area burned at high and moderate severity (km)

M1_R: Peak 15-minute rainfall intensity of design storm (mm/h)

V_X3: The square root of the peak 15-minute rainfall intensity

X: x values used to calculate the statistical likelihood of debris flow occurrence, where:

$$x = -3.63 + (0.41 \times M1\_X1 \times M1\_R) + (0.67 \times M1\_X2 \times M1\_R) + (0.67 \times M1\_X3 \times M1\_R)$$

ExpX: e^x, used for calculating likelihood

P: Logistic regression estimates statistical likelihood of debris-flow occurrence, where:

$$P = e^{x} / (1 + e^{x}),$$

PCl: Classifed probabilities, where 1 = 0-20%, 2 = 20-40%, 3 = 40-60%, 4 = 60-80%, 5 = 80-100%

PCl_Legend: field used to make probability layer legend.

LnV: natural log of the predicted volume for the design storm, calculated as:

$$\ln(V) = 2.89 + (0.17 \times V\_X1) + (0.30 \times V\_X2) + (0.47 \times V\_X3)$$

Volume: predicted volume for the design storm, in m^3

VolMin: lower confidence limit of the volume prediction for the design storm (based on -1 Standard Error)

VolMax: upper confidence limit of the volume prediction for the design storm (based on +1 Standard Error)

VolCl: Classifed volume predictions, where 1 = <1,000m^3, 2 = 1,000-10,000m^3, 3 = 10,000-100,000m^3, 4 >100,000m^3

VolCl_Legend: field used to make volume layer legend.

CombHaz: relative hazard ranking, where CombHaz_XXyr = VolCl_XXyr + PCl_XXyr

CombHazCl: classified relative hazard ranking, where: 2 – 3 = 1, 4 – 6 = 2, and 7 – 9 = 3.

CombHazCl_Legend: field used to make combined hazard class legend, where Low = CombHazCl = 1, Moderate = CombHazCl = 2, and High = CombHazCl = 3.

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