[GOOGLE EARTH ENGINE](EE01%20Earth%20Engine%20(EE).docx) [APPLICATION PROGRAMMING INTERFACE](EE05%20%20%20The%20EE%20API.docx) [CAPABILITIES](EE07%20%20%20%20%20%20API%20Capabilities.docx)

PROCESSING **CONFUSION MATRIX** [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

A confusion matrix is an Earth Engine variable object that represents what is sometimes called an “error matrix” or a “contingency table.”

It is an array of two similar axes, one representing a set of known values and the other representing a corresponding set of predicted values.

The array then records how often each of a set of predictions associates a particular known value with a particular predicted value. These predictions are usually those generated by a classifier or stored as a collection of trained features for multispectral satellite image classification.

Confusion matrices can be processed by using operations of the types listed below.

**CREATING** CONFUSION MATRICES [ee.ConfusionMatrix](#eeConfusionMatrix)

**REPRODUCING** CONFUSION MATRICES [confusionMatrix.array](#array)

**DESCRIBING** CONFUSION MATRICES [confusionMatrix.kappa](#kappa) [confusionMatrix.accuracy](#accuracy)

[confusionMatrix.producersAccuracy](#producersAccuracy) [confusionMatrix.consumersAccuracy](#consumersAccuracy)

[confusionMatrix.order](#order)

**DOCUMENTING** CONFUSION MATRICES [confusionMatrix.getInfo](#Describe_getInfo) [ee.Algorithms.Describe(confusionMatrix)](#Describe_getInfo)

[confusionMatrix.toString](#toString_serialize) [confusionMatrix.serialize](#toString_serialize)

**PRESENTING** CONFUSION MATRICES

IN **PRINT** [print(confusionMatrix)](#print_console) [console.log(confusionMatrix)](#print_console)

[alert(confusionMatrix)](#alert_confirm) [confirm(confusionMatrix)](#alert_confirm)

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**CREATING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx) FROM **ARRAYS**

ee.ConfusionMatrix creates a new confusion matrix from a specified two-dimensional array

- whose horizontal rows (axis 1) represent known classes,

- whose vertical columns (axis 0) represent predicted classes, and

- whose values indicate the number cases in which a given known

value was classified as a given predicted value.

newConfusionMatrix = ee.ConfusionMatrix( array, *order* )

The row and column size and order of a

non-contiguous or non-zero matrix, given as a list

The specified array

The new confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

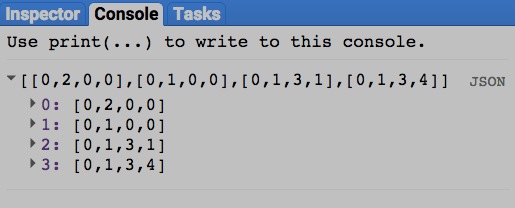
[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

print( TheCONFUSIONMATRIX );



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**REPRODUCING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.array creates a new two-dimensional array from a specified confusion matrix.

newArray = oldConfusionMatrix.array()

The specified confusion matrix

The new array

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

var NewARRAY = TheCONFUSIONMATRIX.array();

print( NewARRAY );

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**DESCRIBING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.kappa creates a new floating-point number indicating the Kappa statistic for a specified confusion matrix,.

This measures the agreement between two datasets on a scale that generally ranges from 0 to 1.

newNumber = oldConfusionMatrix.kappa()

The new number

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

var TheARRAY = TheCONFUSIONMATRIX.kappa();

print( TheCONFUSIONMATRIX );

print( TheARRAY );

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**DESCRIBING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.accuracy creates a new floating-point number indicating the accuracy of a specified confusion matrix,.

computed as the number of correct classifications divided by the total number of classifications.

newNumber = oldConfusionMatrix.accuracy()

The new number

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

var TheARRAY = TheCONFUSIONMATRIX.accuracy();

print( TheCONFUSIONMATRIX );

print( TheARRAY );

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**DESCRIBING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.consumersAccuracy creates a new array indicating the consumer’s accuracy (reliability) of a specified confusion matrix,.

computed as the number of correct classifications divided by

the total number of classifications for each row..

newArray = oldConfusionMatrix.consumersAccuracy()

The new array

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

var TheARRAY = TheCONFUSIONMATRIX.consumersAccuracy();

print( TheCONFUSIONMATRIX );

print( TheARRAY );

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**DESCRIBING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.producersAccuracy creates a new array indicating the consumer’s accuracy of a specified confusion matrix,.

computed as the number of correct classifications divided by

the total number of classifications for each columns.

newArray = oldConfusionMatrix.producerssAccuracy()

The new array

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

var TheARRAY = TheCONFUSIONMATRIX.producersAccuracy();

print( TheCONFUSIONMATRIX );

print( TheARRAY );

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**DESCRIBING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.order creates a new list indicating the name and order of the rows and columns of a specified confusion matrix,.

newList = oldConfusionMatrix.order()

The new list

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY, [3,2,1,0] );

var TheLIST = TheCONFUSIONMATRIX.order();

print( TheCONFUSIONMATRIX );

print( TheLIST );

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**DOCUMENTING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

ee.Algorithms.Describe and confusionMatrix.getInfo

representing a specified confusion matrix.

each creates a JSON-compatible text object

newObject = ee.Algorithms.Describe( oldConfusionMatrix )

and oldConfusionMatrix.getInfo( )

The specified confusion matrix

The new object

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

print( ee.Algorithms.Describe( TheCONFUSIONMATRIX ) );

print( TheCONFUSIONMATRIX.getInfo( ) );

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**DOCUMENTING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx)

confusionMatrix.toString and .serialize each creates a new string presenting information on a specified confusion matrix.

newString = oldConfusionMatrix.toString ( )

and oldConfusionMatrix.serialize( )

The specified confusion matrix

The new string

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

print( TheCONFUSIONMATRIX.toString( ) );

print( TheCONFUSIONMATRIX.serialize( ) );

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**PRESENTING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx) IN **PRINT**

print ( confusionMatrix ) and console.log ( confusionMatrix ) present JSON-formatted text renditions of a specified

confusion matrix in the console.

print( oldConfusionMatrix ) or console.log( oldConfusionMatrix )

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

print( TheCONFUSIONMATRIX );

console.log( TheCONFUSIONMATRIX );

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**PRESENTING** [CONFUSION MATRIX](#_top) [VARIABLES](EE13%20%20%20%20%20%20%20%20%20Variables.docx) IN **PRINT**

alert ( confusionMatrix ) and confirm ( confusionMatrix ) present JSON-formatted text renditions of a specified

confusion matrix in a pop-up message box.

alert( oldConfusionMatrix ) or confirm( oldConfusionMatrix )

The specified confusion matrix

var TheARRAY = ee.Array( [ [0,2,0,0],

[0,1,0,0],

[0,1,3,1],

[0,1,3,4] ] );

var TheCONFUSIONMATRIX = ee.ConfusionMatrix( TheARRAY );

alert( TheCONFUSIONMATRIX );

confirm( TheCONFUSIONMATRIX );