[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 **REDUCER** [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)

A reducer is an Earth Engine parameter object that represents a procedure by which a set of numerical values in an array, a feature collection, an image, or an image collection is summarized to generate a single value. Reducers can be processed by using operations of the types listed below, which vary according to the nature of that processing. Each operation name is linked to a separate page describing that operation.

**CREATING** REDUCERS

FOR **QUALITATIVE DATA** [ee.Reducer.count](#count) [ee.Reducer.countEvery](#countEvery) [ee.Reducer.first](#first)

[ee.Reducer.histogram](#histogram) [ee.Reducer.allNonZero](#allNonZero) [ee.Reducer.anyNonZero](#anyNonZero) [ee.Reducer.frequencyHistogram](#frequencyHistogram) [ee.Reducer.toList](#toList) [ee.Reducer.toCollection](#toCollection)

FOR **QUANTITATIVE DATA** [ee.Reducer.sum](#sum_) [ee.Reducer.product](#sum_)  [ee.Reducer.mean](#sum_)

[ee.Reducer.variance](#sum_)  [ee.Reducer.std\_dev](#sum_)

[ee.Reducer.sampleVariance](#sum_) [ee.Reducer.sampleStdDev](#sum_)

[ee.Reducer.max](#max_min) [ee.Reducer.min](#max_min) [ee.Reducer.minMax](#minMax)  [ee.Reducer.median](#median_mode) [ee.Reducer.mode](#median_mode)

[ee.Reducer.intervalMean](#intervalMean) [ee.Reducer.percentile](#percentile)

[ee.Reducer.covariance](#covariance) [ee.Reducer.centeredCovariance](#centeredCovariance)

[ee.Reducer.linearFit](#linearFit)

**EDITING** REDUCERS

BY **RENAMING OUTPUTS** [reducer.setOutputs](#setOutputs)

**TRANSFORMING** REDUCERS [reducer.combine](#combine)

[reducer.forEachElement](#forEachElement) [reducer.forEach](#forEach) [reducer.forEachBand](#forEachBand)

[reducer.repeat](#repeat) [reducer.group](#group)

[reducer.splitWeights](#splitWeights) [reducer.unweighted](#unweighted)

**QUERYING** REDUCERS

FOR **OUTPUT NAMES** [reducer.getOutputs](#getOutputs)

**DOCUMENTING** REDUCERS reducer.getInfo ee.Algorithms.Describe(reducer)

reducer.toString reducer.serialize

**PRESENTING** REDUCERS

IN **PRINT** print(reducer) console.log(reducer)

alert(reducer) confirm(reducer)

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUALITATIVE DATA**

ee.Reducer.count creates a reducer that returns an object indicating how many non-null values are among its inputs.

newReducer = ee.Reducer.count()

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

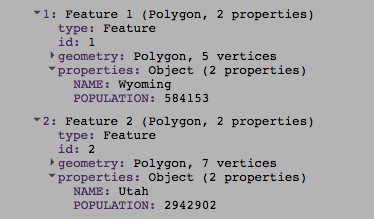
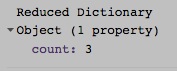
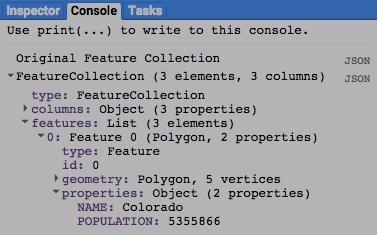
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

var TheREDUCER = ee.Reducer.count( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );

****

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUALITATIVE DATA**

ee.Reducer.countEvery creates a reducer that returns an object indicating the number of (both null and non-null) values among its inputs.

newReducer = ee.Reducer.countEvery()

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

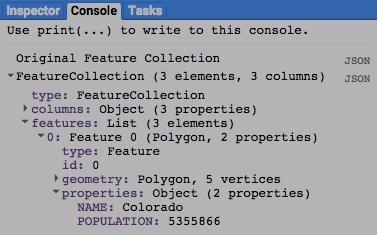
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, null, null, UtahFEATURE] );

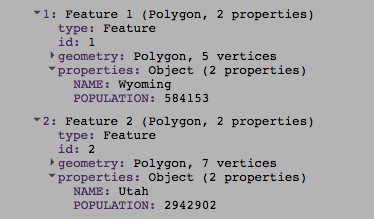
var TheREDUCER = ee.Reducer.countEvery( );

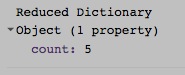
var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, [ ] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );







[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUALITATIVE DATA**

ee.Reducer.first creates a reducer that returns an object indicating the first of its input values.

newReducer = ee.Reducer.first()

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

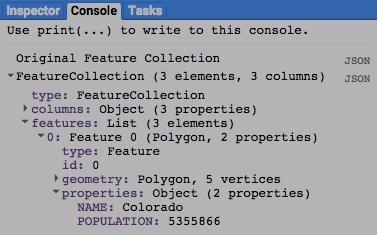
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

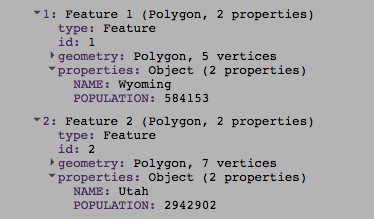
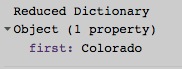
var TheREDUCER = ee.Reducer.first( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['NAME'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );





[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUALITATIVE DATA**

ee.Reducer.frequencyHistogram creates a reducer that returns an object presenting a weighted frequency table of its input values.

newReducer = ee.Reducer.frequencyHistogram()

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POLITICAL\_ORIENTATION:'More Liberal'} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POLITICAL\_ORIENTATION:'More Conservative'} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POLITICAL\_ORIENTATION:'More Conservative'} );

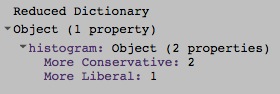
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

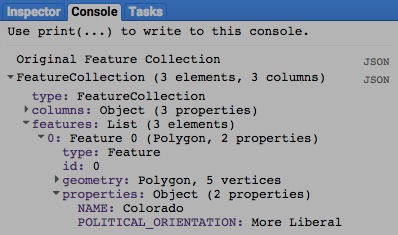
var TheREDUCER = ee.Reducer.frequencyHistogram( );

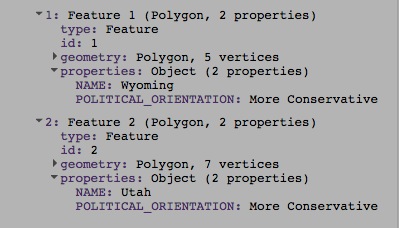
var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POLITICAL\_ORIENTATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );





****

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.histogram creates a reducer that returns an object presenting a frequency table of its inputs.

the median or the mode for each of a specified number of input value sets.

calculating standard statistics.

newReducer = ee.Reducer.histogram( *maxBuckets, minBucketWidth, maxInputs* )

A maximum limit on the width of the intervals to be used when deriving a histogram to estimate the distribution of input values, given as an float.

The new

reducer

A maximum limit on the number input values

allowed before a histogram will be generated

in order to estimate the distribution of those values

A maximum limit on the number of intervals to be used when deriving

a histogram to estimate the distribution of input values, given as an

integer that will be rounded upward to the nearest power of 2.

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

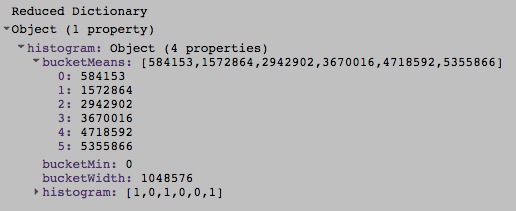
var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

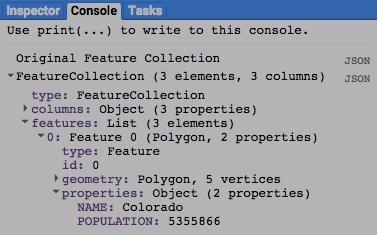
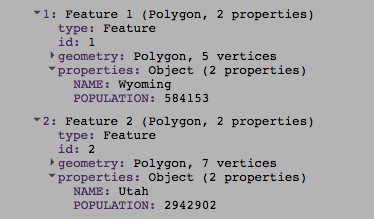
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

var TheREDUCER = ee.Reducer.histogram( 8 );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );



[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.allNonZero creates a reducer that returns an object set to

- a value of 1 if none of its inputs are equal to 0, or

- a value of 0 if any of its inputs is equal to 0.

calculating standard statistics.

newReducer = ee.Reducer.allNonZero()

The new reducer

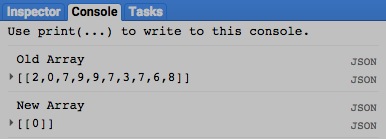
var TheREDUCER = ee.Reducer.allNonZero( );

var OldARRAY = ee.Array( [ [2,0,7,9,9,7,3,7,6,8] ] );

var NewARRAY = OldARRAY.reduce( TheREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );



[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.anyNonZero creates a reducer that returns an object set to

- a value of 1 if any of its inputs is not equal to 0, or

- a value of 0 if all of its inputs are equal to 0.

calculating standard statistics.

newReducer = ee.Reducer.anyNonZero()

The new reducer

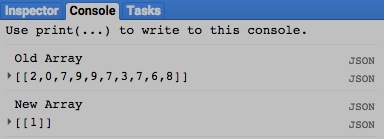
var TheREDUCER = ee.Reducer.anyNonZero( );

var OldARRAY = ee.Array( [ [2,0,7,9,9,7,3,7,6,8] ] );

var NewARRAY = OldARRAY.reduce( TheREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );



[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.toList creates a reducer that returns a list of its non-null input values, optionally grouped into tuples.

newReducer = ee.Reducer.toList( *tupleSize, numOptional* )

The new

reducer

An integer specifying the number of additional inputs that can be ignored. Default: 0

An integer specifying the number of inputs

to be grouped per tuple. Default: 1

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

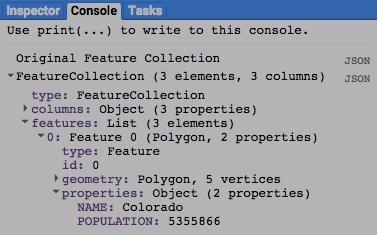
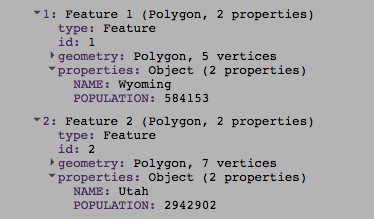
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

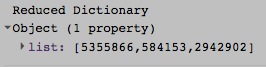
var TheREDUCER = ee.Reducer.toList( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );

****



[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.toCollection creates a reducer that returns a feature collection of its non-null input values with specified property names.

newReducer = ee.Reducer.toCollection( propertyNames*, numOptional* )

The new reducer

The specified property names, given as a list

An integer specifying the number of additional

inputs that can be ignored. Default: 0

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

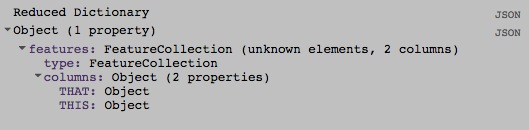
var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

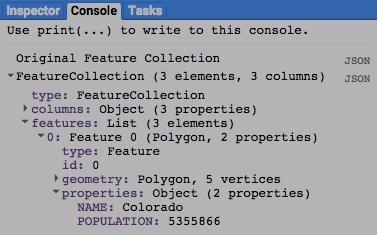
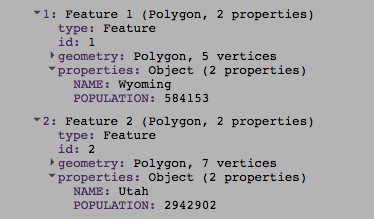
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

var TheREDUCER = ee.Reducer.toCollection( ['THIS', 'THAT'] );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['NAME', 'POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );



[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.sum, .product , .mean , .variance , .std\_dev , all create reducers that return objects

calculated by applying specified statistical functions to their inputs.

calculating standard statistics.

.sampleVariance, and .sampleStdDev

newReducer = ee.Reducer.sum( ) or .product( ) or .mean( ) or .variance( ) or .std\_dev( )

or .sampleVariance( ) or .sampleStdDev( )

The new reducer

The specified statistical function

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

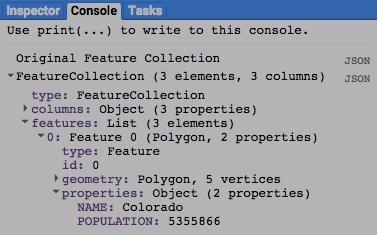
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

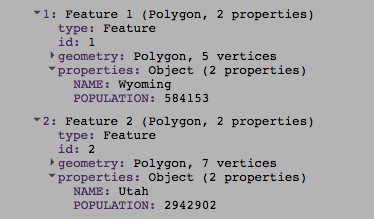
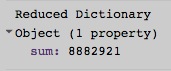
var TheREDUCER = ee.Reducer.sum( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );





[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.max, and .min create reducers that return objects indicating the minimum or the

maximum value in each of a specified number of input value sets.

calculating standard statistics.

newReducer = ee.Reducer.max( *numberOfInputSets* )

or.min( *numberOfInputSets* )

A specified number of input sets. Default: 1

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

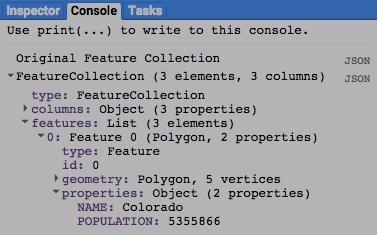
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

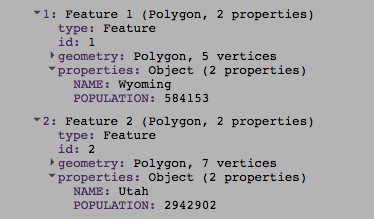
var TheREDUCER = ee.Reducer.min( );

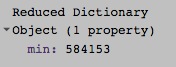
var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );







[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.minMax creates a reducer that returns an object indicating its minimum and maximum input values.

newReducer = ee.Reducer.minMax()

The new reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

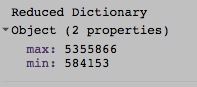
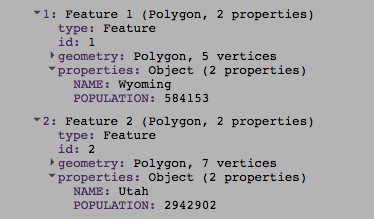
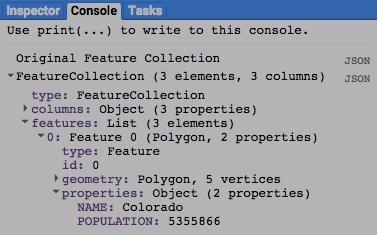
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

var TheREDUCER = ee.Reducer.minMax( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );

****[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.median and .mode create reducers that return objects indicating the median or

the mode for each of a specified number of input value sets.

calculating standard statistics.

newReducer = ee.Reducer.median( *maxBuckets, minBucketWidth, maxInputs* )

or . mode( *maxBuckets, minBucketWidth, maxInputs* )

The new

reducer

A maximum limit on the number input values

allowed before a histogram will be generated

in order to estimate the distribution of those values

A maximum limit on the number of intervals to be used when deriving

a histogram to estimate the distribution of input values, given as an

integer that will be rounded upward to the nearest power of 2.

A maximum limit on the width of the intervals to be used when deriving a histogram to estimate the distribution of input values, given as an float.

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

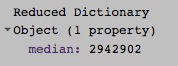
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

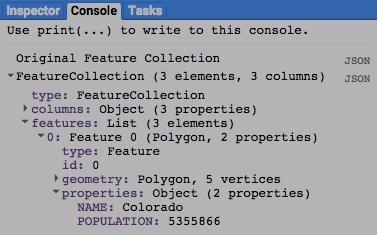
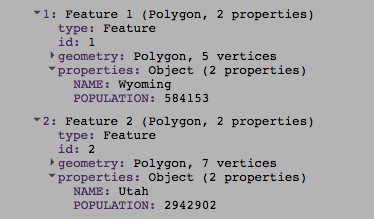
var TheREDUCER = ee.Reducer.median( );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );





[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.intervalMean creates a reducer that returns an object the mean of all input values

lying between specified minimum and maximum percentiles.

calculating standard statistics.

newReducer = ee.Reducer.intervalMean( min%, max%, *maxBuckets, minBucketWidth, maxInputs* )

The new reducer

The specified minimum and maximum percentiles

A maximum limit on the

width of the intervals to

be used when deriving

a histogram to estimate

the distribution of input

values, given as an float.

A maximum limit on the

number input values

allowed before a histogram

will be generated in order to

estimate the distribution of

those values

A maximum limit on the number of intervals to be used when deriving a histogram

to estimate the distribution of input values, given as an integer that will be rounded

upward to the nearest power of 2.

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

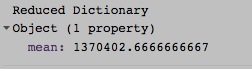
var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

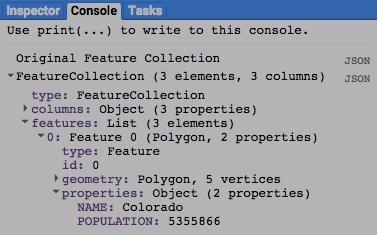
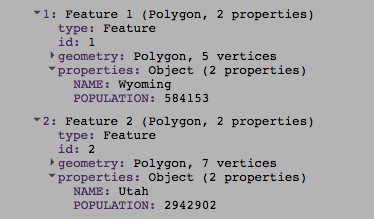
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

var TheREDUCER = ee.Reducer.intervalMean( 0, 50 );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );

****

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.percentile creates a reducer that returns an object indicating specified percentiles of its input values.

newReducer = ee.Reducer.percentile( listOf%, *outputNames*, *maxBuckets, minBucketWidth, maxInputs* )

A maximum limit on the

width of the intervals to

be used when deriving

a histogram to estimate

the distribution of input

values, given as an float.

Output names, given

as a list. Default: null

The specified percentiles, given as a list

The new reducer

A maximum limit on the

number input values

allowed before a histogram

will be generated in order to

estimate the distribution of

those values

A maximum limit on the number of intervals to be used when deriving a histogram

to estimate the distribution of input values, given as an integer that will be rounded

upward to the nearest power of 2.

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

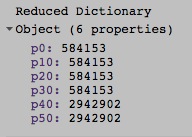
var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

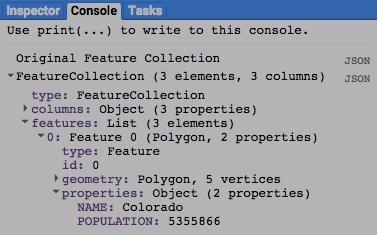
var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

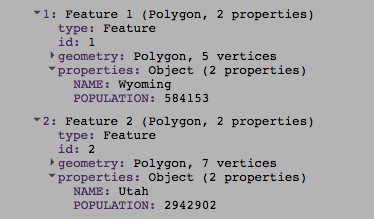
var TheREDUCER = ee.Reducer.percentile( [0,10, 20, 30, 40, 50] );

var NewDICTIONARY = TheFEATURES.reduceColumns( TheREDUCER, ['POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );





[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.covariance creates a reducer that returns an array representing the covariance matrix for a specified one-dimensional array.

newReducer = ee.Reducer.covariance( )

The new reducer

var TheREDUCER = ee.Reducer.covariance( );

var OldARRAY = ee.Array( [0,1,1,2,3,3,3,4,5,5,6,6,6,7,7,7,7,7,8,9] );

var NewARRAY = OldARRAY.reduce( TheREDUCER, [0] );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );

Not yet accepting a 1-D EE array

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.centeredCovariance creates a reducer that returns an array representing the covariance matrix

for a specified one-dimensional array.

calculating standard statistics.

newReducer = ee.Reducer.centeredCovariance( )

The new reducer

var TheREDUCER = ee.Reducer.covariance( );

var OldARRAY = ee.Array( [0,1,1,2,3,3,3,4,5,5,6,6,6,7,7,7,7,7,8,9] );

var NewARRAY = OldARRAY.reduce( TheREDUCER, [0] );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );

Not yet accepting a 1-D EE array

[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)

**CREATING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **QUANTITATIVE DATA**

ee.Reducer.linearFit creates a reducer that returns two values respecyively indicating the slope and the offest of a regression line

reflecting the generaal trend of a specified sequence of input values.

calculating standard statistics.

newReducer = ee.Reducer.linearfFt( )

The new reducer

var OldARRAY = ee.Array( [ [ 9,8,7,6,5,4,3,2,1,0 ],

[ 0,1,2,3,4,5,6,7,8,9 ]

]

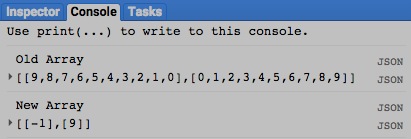
);

var TheREDUCER = ee.Reducer.linearFit( );

var NewARRAY = OldARRAY.reduce( TheREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY ); NOT YET CLEAR EXACTLY HOW OUTPUTS RELATE TO INPUTS



[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)

**EDITING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) BY **RENAMING OUTPUTS**

reducer.setOutputs creates a new reducer with the same inputs as those of a specified reducer but with each of its outputs renamed and/or removed.

newReducer = oldReducer.setOutputs( outputs )

The new output names, given as a list of Strings. Any output whose name is null or empty is omitted.

The specified reducer

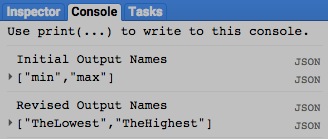
The new reducer

var OldREDUCER = ee.Reducer.minMax( );

var NewREDUCER = OldREDUCER.setOutputs( ['TheLowest','TheHighest'] );

print( 'Initial Output Names', OldREDUCER.getOutputs( ) );

print( 'Revised Output Names', NewREDUCER.getOutputs( ) );



[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.combine creates a reducer that simultaneously applies each of two specified reducers to a common input or, alternatively, to two respective inputs.

newReducer = 1stOldReducer.combine( 2ndOldReducer*, outputPrefix, sharedInputs?* )

A Boolean set to true (only) if both specified reducers are to be applied to the same input.

Default: false

A prefix for the second

reducer’s output, given

as a string. Default: ""

The second of the two specified reducers

The first of the two

specified reducers

The new

reducer

var MaximumREDUCER = ee.Reducer.max( );

var MinimumREDUCER = ee.Reducer.min( );

var CombinedREDUCER = MaximumREDUCER.combine( MinimumREDUCER, 'xyz', false );

var OldARRAY = ee.Array( [ [10,20],

[ 4, 5]

]

);

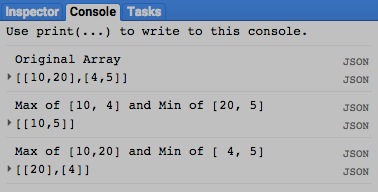
var MaxMinAxis0ARRAY = OldARRAY.reduce( CombinedREDUCER, [0], 1 );

var MaxMinAxis1ARRAY = OldARRAY.reduce( CombinedREDUCER, [1], 0 );

print( 'Original Array', OldARRAY );

print( 'Max of [10, 4] and Min of [20, 5]', MaxMinAxis0ARRAY );

print( 'Max of [10,20] and Min of [ 4, 5]', MaxMinAxis1ARRAY );



[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.forEachElement creates a new reducer that applies a specified reducer to a set of specified arrays (all having the same dimensions).

This new reducer generates a new array (of the same dimensions) in which the value at any given position is computed

by reducing all values at the same position in each of the specified arrays.

newReducer = oldReducer.forEachElement( )

The specified reducer

The new reducer

var MaximumREDUCER = ee.Reducer.max( );

var ElementWiseREDUCER = MaximumREDUCER.forEachElement( );

var OldARRAY = ee.Array( [ [1, 2, 3],

[4, 5, 6],

[7, 8, 9] ] );

var NewARRAY = OldARRAY.reduce( ElementWiseREDUCER, [0], 1 );

print( 'Original Array', OldARRAY );

print( 'Reduced Array' , NewARRAY );

How to apply this to multiple input arrays?

[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.forEach creates a new reducer that applies a separate copy of a specified reducer for each output name in the specified list. If the reducer

has a single output, the output names are used in their initial form. Otherwise they are prefixed to the original output names.

newReducer = oldReducer.forEach( listOfOutputNames )

The specified list

The specified reducer

The new reducer

var MaximumREDUCER = ee.Reducer.max( );

var ElementWiseREDUCER = MaximumREDUCER.forEach( ['first','second'] );

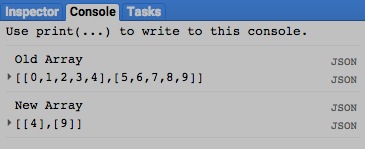
var OldARRAY = ee.Array( [ [0,1,2,3,4],

[5,6,7,8,9] ] );

var NewARRAY = OldARRAY.reduce( ElementWiseREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );



[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.forEachBand creates a new reducer that applies a separate copy of a specified reducer for each band of the specified image.

newReducer = oldReducer.forEachBand( oldImage )

The specified image

The specified reducer

The new reducer

var OldIMAGE = ee.Image('MOD09GA/MOD09GA\_005\_2012\_03\_09').select(['sur\_refl\_b01', 'sur\_refl\_b04', 'sur\_refl\_b03']);

//var OldIMAGE = ee.Image('MOD09GA/MOD09GA\_005\_2012\_03\_09').select(['sur\_refl\_b01']);

var MaxREDUCER = ee.Reducer.max( );

var MultiREDUCER = MaxREDUCER.forEachBand( OldIMAGE );

var NewIMAGE = OldIMAGE.reduce( MultiREDUCER );

print( OldIMAGE, NewIMAGE );

Map.setCenter( 35.2, 32.361, 7 );

Map.addLayer(OldIMAGE, {min:0, max:4000}, 'Old Image');

Map.addLayer(NewIMAGE, {min:0, max:4000}, 'New Image');

Not yet running for multiple bands

[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.repeat creates a new reducer by combining a specified number of copies of a specified reducer. Each output is a list

of the copied-reducer outputs, and output names are the same as those of the specified reducer.

newReducer = oldReducer.repeat( count )

The specified number of copies, given as an integer

The new reducer

The specified reducer

var ColoGEOMETRY = ee.Geometry.Polygon( [[-109.05,41],[-109.05,37],[-102.05,37],[-102.05,41] ] );

var WyomGEOMETRY = ee.Geometry.Polygon( [[-111.05,41],[-111.05,45],[-104.10,45],[-104.10,41] ] );

var UtahGEOMETRY = ee.Geometry.Polygon( [[-114.05,37],[-109.05,37],[-109.05,41],[-111.05,41],[-111.05,42],[-114.05,42]] );

var ColoFEATURE = ee.Feature( ColoGEOMETRY, {NAME:'Colorado', POPULATION:5355866} );

var WyomFEATURE = ee.Feature( WyomGEOMETRY, {NAME:'Wyoming', POPULATION: 584153} );

var UtahFEATURE = ee.Feature( UtahGEOMETRY, {NAME:'Utah', POPULATION:2942902} );

var TheFEATURES = ee.FeatureCollection( [ColoFEATURE, WyomFEATURE, UtahFEATURE] );

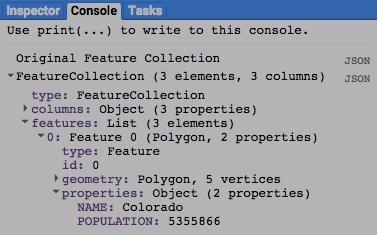
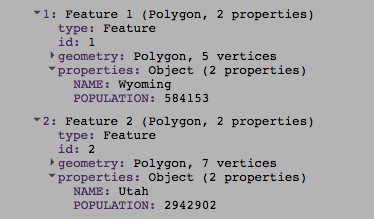
var TheREDUCER = ee.Reducer.first( );

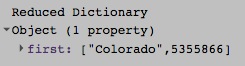
var RepeatREDUCER = TheREDUCER.repeat( 2 );

var NewDICTIONARY = TheFEATURES.reduceColumns( RepeatREDUCER, ['NAME','POPULATION'] );

print( 'Original Feature Collection', TheFEATURES );

print( 'Reduced Dictionary', NewDICTIONARY );



[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.group creates a new reducer that applies a specified reducer to each of a group of values, with groups defined by the values of a specified input.

newReducer = oldReducer.group( *groupField, groupName* )

A dictionary key to be used to identify the

group, given as a string. Default: “group”

A field containing record groups, given as an integer. Default: 0

The specified

reducer

The new

reducer

var SatelliteIMAGE = ee.Image( 'LANDSAT/LC8\_L1T\_32DAY\_TOA/20130407' );

var LandcoverIMAGE = ee.Image( 'MCD12Q1/MCD12Q1\_005\_2001\_01\_01').select('Land\_Cover\_Type\_1' );

var CombinedIMAGE = SatelliteIMAGE.addBands( LandcoverIMAGE );

var TheGEOMETRY = ee.Geometry.Rectangle( -100, 19, -99, 20 );

var BandMeanREDUCER = ee.Reducer.mean( ).unweighted( ).forEachBand( SatelliteIMAGE );

var TheDICTIONARY = SatelliteIMAGE.reduceRegion( BandMeanREDUCER, TheGEOMETRY, 1000);

var TheGroupedREDUCER = BandMeanREDUCER.group( 12 );

var GroupedDICTIONARY = CombinedIMAGE.reduceRegion( TheGroupedREDUCER, TheGEOMETRY, 1000);

print(' The Satellite Image', SatelliteIMAGE );

print(' The Landcover Image', LandcoverIMAGE );

print(' The Combined Image', CombinedIMAGE );

print(' The Initial Output of ReduceRegion', TheDICTIONARY );

print(' The Grouped Output of ReduceRegion', GroupedDICTIONARY );

Map.centerObject( TheGEOMETRY, 9 );

Map.addLayer( TheGEOMETRY, {color:'000000'}, 'The Region' );

Map.addLayer( SatelliteIMAGE, {min:0, max:0.3, opacity:0.6, bands:['B4,B3,B2']}, 'The Satellite Image' );

Map.addLayer( LandcoverIMAGE, {min:0, max:17, opacity:0.3}, 'The Landcover Image' );

SIMPLIFY THIS EXAMPLE

[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.splitWeights creates a new reducer that applies a specified reducer after replacing each of its weighted inputs with a pair of unweighted inputs.

newReducer = oldReducer.splitWeights()

The specified reducer

The new reducer

var MaximumREDUCER = ee.Reducer.max( );

var ElementWiseREDUCER = MaximumREDUCER.forEach( ['first','second'] );

var SplitWeightREDUCER = ElementWiseREDUCER.splitWeights( );

var OldARRAY = ee.Array( [ [0,1,2,3,4],

[5,6,7,8,9] ] );

var NewARRAY = OldARRAY.reduce( ElementWiseREDUCER, [1], 0 );

var NewerARRAY = OldARRAY.reduce( SplitWeightREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );

print( 'Newer Array', NewARRAY );

This is waiting to be applied to weighted inputs,

[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)

**TRANSFORMING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.unweighted creates a new reducer that applies a specified reducer after removing the weights from each of its weighted inputs.

newReducer = oldReducer.unweighted()

The specified reducer

The new reducer

var MaximumREDUCER = ee.Reducer.max( );

var ElementWiseREDUCER = MaximumREDUCER.forEach( ['first','second'] );

var UnweightedREDUCER = ElementWiseREDUCER.unweighted( );

var OldARRAY = ee.Array( [ [0,1,2,3,4],

[5,6,7,8,9] ] );

var NewARRAY = OldARRAY.reduce( ElementWiseREDUCER, [1], 0 );

var NewerARRAY = OldARRAY.reduce( UnweightedREDUCER, [1], 0 );

print( 'Old Array', OldARRAY );

print( 'New Array', NewARRAY );

print( 'Newer Array', NewARRAY );

This is waiting to be applied to weighted inputs,

[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)

**QUERYING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) FOR **OUTPUT NAMES**

reducer.getOutputs creates a new list of the names that will be used to identify the output(s) of a specified reducer.

newList = oldReducer.getOutputs( )

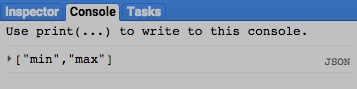
The specified reducer

The new list

var SumREDUCER = ee.Reducer.minMax( );

var NewLIST = SumREDUCER.getOutputs( );

print( NewLIST );



[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)

**DOCUMENTING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

ee.Algorithms.Describe and reduce.getInfo

each creates a JSON-compatible text object representing a specified reducer.

newObject = ee.Algorithms.Describe( oldReducer )

and oldReducer.getInfo( )

The specified reducer

The new object

var TheREDUCER = ee.Reducer.sum( );

print( 'From print:', TheREDUCER );

print( 'From ee.Algorithms.Describe( ):', ee.Algorithms.Describe( TheREDUCER ) );

print( 'From getInfo( ):', TheREDUCER.getInfo( ) );

[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)

**DOCUMENTING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx)

reducer.toString and .serialize each creates a new string presenting information on a specified reducer.

newString = oldReducer.toString ( )

and oldReducer.serialize( )

The specified reducer

The new string

var TheREDUCER = ee.Reducer.sum( );

print( 'From print:', TheREDUCER );

print( 'From toString( ):', TheREDUCER.toString( ) );

print( 'From serialize( ):', TheREDUCER.serialize( ) );

[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)

**PRESENTING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) IN **PRINT**

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

print( oldReducer ) or console.log( oldReducer )

The specified reducer

var TheREDUCER = ee.Reducer.sum( );

print( 'From print:', TheREDUCER );

console.log( 'From console.log:', TheREDUCER );

[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)

**PRESENTING** [REDUCER](#_top) [[PARAMETERS](EE26%20%20%20%20%20%20%20%20%20Parameters.docx)](EE25%20%20%20%20%20%20%20%20%20Parameters.docx) IN **PRINT**

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

reducer in a pop-up message box.

alert( oldReducer ) or confirm( oldReducer )

The specified reducer

var TheREDUCER = ee.Reducer.sum( );

alert( TheREDUCER );

confirm( TheREDUCER );