



## NAME

***i.landsat8.qc*** - Reclassifies Landsat8 QA band according to acceptable pixel quality as defined by the user.

## KEYWORDS

[imagery](#), [qc](#), [bitpattern](#), [mask](#), [landsat8](#)

## SYNOPSIS

**i.landsat8.qc**  
**i.landsat8.qc --help**  
**i.landsat8.qc** [**output**=*name*] [**designated\_fill**=*string*]  
[**dropped\_frame**=*string*] [**terrain\_occlusion**=*string*]  
[**water**=*string*[, *string*,...]] [**cloud\_shadow**=*string*[, *string*,...]]  
[**vegetation**=*string*[, *string*,...]] [**snow\_ice**=*string*[, *string*,...]]  
[**cirrus**=*string*[, *string*,...]] [**cloud**=*string*[, *string*,...]] [**--overwrite**] [**--help**] [**--verbose**] [**--quiet**] [**--ui**]

## Flags:

**--overwrite**  
Allow output files to overwrite existing files  
**--help**  
Print usage summary  
**--verbose**  
Verbose module output  
**--quiet**  
Quiet module output  
**--ui**  
Force launching GUI dialog

## Parameters:

**output**=*name*

Output file with reclass rules

**designated\_fill**=*string*  
 Unacceptable conditions for Designated Fill (bit 0)  
 Options: *No, Yes*

**dropped\_frame**=*string*  
 Unacceptable conditions for Dropped Frame (bit 1)  
 Options: *No, Yes*

**terrain\_occlusion**=*string*  
 Unacceptable conditions for Terrain Occlusion (bit 2)  
 Options: *No, Yes*

**water**=*string[,string,...]*  
 Unacceptable conditions for Water Confidence (bit 4-5)  
 Options: *Not Determined, No, Maybe, Yes*

**cloud\_shadow**=*string[,string,...]*  
 Unacceptable conditions for Cloud Shadow Confidence (bit 6-7)  
 Options: *Not Determined, No, Maybe, Yes*

**vegetation**=*string[,string,...]*  
 Unacceptable conditions for Vegetation Confidence (bit 8-9)  
 Options: *Not Determined, No, Maybe, Yes*

**snow\_ice**=*string[,string,...]*  
 Unacceptable conditions for Snow/Ice Confidence (bit 10-11)  
 Options: *Not Determined, No, Maybe, Yes*

**cirrus**=*string[,string,...]*  
 Unacceptable conditions for Cirrus Confidence (bit 12-13)  
 Options: *Not Determined, No, Maybe, Yes*

**cloud**=*string[,string,...]*  
 Unacceptable conditions for Cloud Confidence (bit 14-15)  
 Options: *Not Determined, No, Maybe, Yes*

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# DESCRIPTION

Removing unreliable pixels is a fundamental and one of the first steps in remote sensing. Landsat8 provides a Quality Assessment (QA) band which can be used for this purpose.

The *i.landsat8.qc* module generates reclassification rule files which can be used in [r.reclass](#) for filtering the QA band according to pixel quality characteristics the user defines as unacceptable.

Values defined as unacceptable for a given condition will be set to NULL in the output raster map. All other values will be set to 1.

The Quality Assessment (QA) band from Landsat8 contains 16bit integer values that represent "bit-packed combinations of surface, atmosphere, and sensor conditions that can affect the overall usefulness of a given pixel". The QA band is currently only available for Landsat 8 OLI/TIRS data.

The following quality relevant conditions are represented as "single bits" in the Landsat8 QA band:

Condition	QA Bit Position
Designated Fill	0
Dropped Frame	1
Terrain Occlusion	2
Reserved (not currently used)	3

Possible choices for the "single bits" are:

Value	Description	Bit representation
No	This condition does not exist	0
Yes	This condition exists	1

The following quality relevant conditions are represented as "double bits" in the Landsat8 QA band:

Condition	QA Bit Position
Water Confidence	4-5
Reserved (not currently used)	6-7
Vegetation Confidence	8-9
Snow/Ice Confidence	10-11
Cirrus Confidence	12-13
14-15	Cloud Confidence

Possible choices for the "double bits" are:

Value	Description	Bit representation
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Not Determined	Algorithm did not determine the status of this condition	00
No	Algorithm has low to no confidence that this condition exists (0-33 percent confidence)	01
Maybe	Algorithm has medium confidence that this condition exists (34-66 percent confidence)	10
Yes	Algorithm has high confidence that this condition exists (67-100 percent confidence)	11

## NOTES

The Landsat Quality Assessment band is an artificial band which represents an analysis based on [defined algorithms](#). The USGS provides the users with the following note on how the QA band should be used:

"Rigorous science applications seeking to optimize the value of pixels used in a study will find QA bits useful as a first level indicator of certain conditions. Otherwise, users are advised that this file contains information that can be easily misinterpreted and it is not recommended for general use."

## EXAMPLE

```
#Create a cloud mask:
i.landsat8.qc --overwrite --verbose cloud="Maybe,Yes" \
  output=./Cloud_Mask_rules.txt
r.reclass input=LC81980182015183LGN00_BQA \
  output=LC81980182015183LGN00_Cloud_Mask rules=./Cloud_Mask_rules.txt

#Create a water mask:
i.landsat8.qc --overwrite --verbose water="Maybe,Yes" \
  output=./Water_Mask_rules.txt
r.reclass input=LC81980182015183LGN00_BQA \
  output=LC81980182015183LGN00_Water_Mask rules=./Water_Mask_rules.txt
```

## SEE ALSO

[r.reclass](#), [i.modis.qc](#), [r.bitpattern](#), [i.landsat8.swlst](#)

## REFERENCES

<http://landsat.usgs.gov/qualityband.php> [https://landsat.usgs.gov/documents/LDCM\\_CVT\\_ADD.pdf](https://landsat.usgs.gov/documents/LDCM_CVT_ADD.pdf)

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# SOURCE CODE

Available at: [i.landsat8.qc source code](#) ([history](#))

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