# Package: mgrs (via r-universe)

February 13, 2025

**Type** Package

**Title** Convert 'MGRS' ('Military Grid Reference System') Coordinates From/To Other Coordinate Systems

**Version** 0.2.4

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**Maintainer** Bob Rudis <bob@rud.is>

**Description** The 'Military Grid Reference System' ('MGRS') is the geocoordinate standard used by 'NATO' militaries for locating points on the earth. The 'MGRS' is derived from the 'Universal Transverse Mercator' ('UTM') grid system and the universal polar stereographic ('UPS') grid system, but uses a different labeling convention. The 'MGRS' is used for the entire earth. Methods are provided to convert 'MGRS' coordinates to and from other coordinate systems.

**URL** https://gitlab.com/hrbrmstr/mgrs

**BugReports** https://gitlab.com/hrbrmstr/mgrs/issues

**Encoding** UTF-8

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**Suggests** tinytest

**Depends** R (>= 4.0.0)

**Imports** Rcpp

**LinkingTo** Rcpp

**RoxygenNote** 7.2.3

**Repository** https://b-cubed-eu.r-universe.dev

**RemoteUrl** https://github.com/hrbrmstr/mgrs

**RemoteRef** HEAD

**RemoteSha** 6ad14411cdac5195547f579f10b793a7f7f75ef1

# Contents



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`latlng_to_mgrs` *Convert latitude/longitude to MGRS string*

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## Description

Convert latitude/longitude to MGRS string

## Usage

```
latlng_to_mgrs(latitude, longitude, degrees = TRUE, precision = 5L)
```

## Arguments

| | |
|---|---|
| `latitude`, `longitude` | coordinates |
| `degrees` | are latitude/longitude in degrees? Default: `TRUE` |
| `precision` | 0:5; level of precision for the conversion. Default `5` |

## Examples

```
latlng_to_mgrs(42, -93)
```

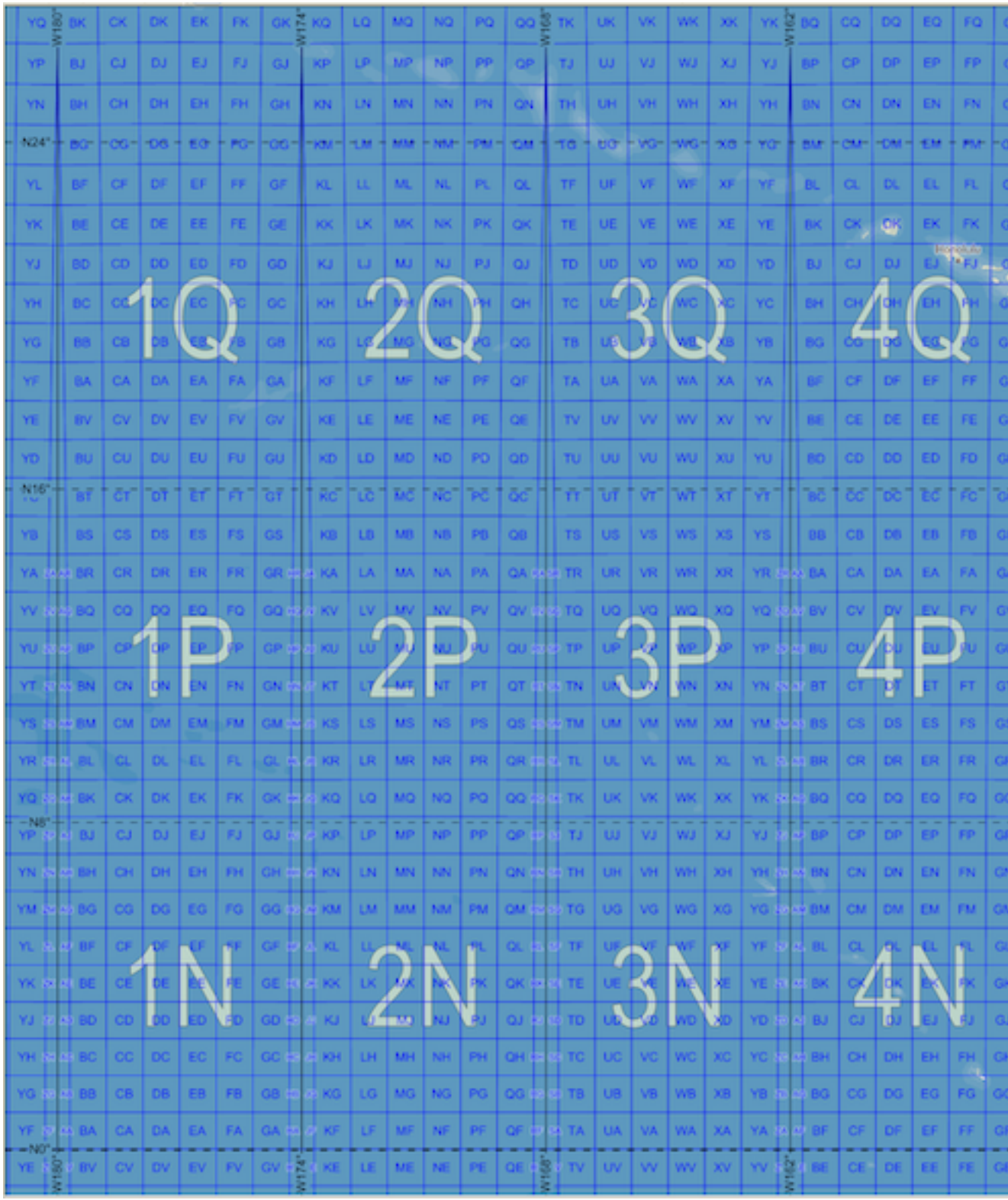
mgrs *Convert 'MGRS' ('Military Grid Reference System') Coordinates From/To Other Coordinate Systems*

## Description

The 'Military Grid Reference System' ('MGRS') is the geocoordinate standard used by 'NATO' militaries for locating points on the earth. The 'MGRS' is derived from the 'Universal Transverse Mercator' ('UTM') grid system and the universal polar stereographic ('UPS') grid system, but uses a different labeling convention. The 'MGRS' is used for the entire earth. Methods are provided to convert 'MGRS' coordinates to and from other coordinate systems.

## Details

The origin of the MGRS grid, in the Pacific. Honolulu is in 4QFJ.


1Q
2Q
3Q
4Q
1P
2P
3P
4P
1N
2N
3N
4N

### Author(s)

boB Rudis (bob@rud.is)

### See Also

Useful links:

- https://gitlab.com/hrbrmstr/mgrs
- Report bugs at https://gitlab.com/hrbrmstr/mgrs/issues

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## mgrs_precision *Return MGRS grid reference precision (in meters)*

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### Description

MGRS coordinates represent a "square" with a certain level of precision. See Details for more info.

### Usage

```
mgrs_precision(x)
```

### Arguments

| | |
|---|---|
| x | character vector of MGRS grid references |

### Details

An MGRS grid reference is a point reference system. When the term 'grid square' is used, it can refer to a square with a side length of 10 km (6 mi), 1 km, 100 m (328 ft), 10 m or 1 m, depending on the precision of the coordinates provided. (In some cases, squares adjacent to a Grid Zone Junction (GZJ) are clipped, so polygon is a better descriptor of these areas.) The number of digits in the numerical location must be even: 0, 2, 4, 6, 8 or 10, depending on the desired precision. When changing precision levels, it is important to truncate rather than round the easting and northing values to ensure the more precise polygon will remain within the boundaries of the less precise polygon. Related to this is the primacy of the southwest corner of the polygon being the labeling point for an entire polygon. In instances where the polygon is not a square and has been clipped by a grid zone junction, the polygon keeps the label of the southwest corner as if it had not been clipped.

For example (spaces used for clarity):

**4Q** precision level 6x8 degrees (in most cases) - function returns NA for this

**4QFJ** precision level 100 km

**4QFJ 1 6** precision level 10 km

**4QFJ 12 67** precision level 1 km

**4QFJ 123 678** precision level 100 m

**4QFJ 1234 6789** precision level 10 m

**4QFJ 12345 67890** precision level 1 m

## Value

data frame with `grid_ref` and `precision` columns. `precision` is in meters.

## References

https://en.wikipedia.org/wiki/Military_Grid_Reference_System#Grid_zone_designation

## Examples

```
grefs <- c("4Q", "4QFJ", "4QFJ16", "4QFJ1267", "4QFJ123678",
           "4QFJ12346789", "4QFJ1234567890")
mgrs_precision(grefs)
```

---

`mgrs_to_latlng` *Convert an MGRS string to latitude/longitude*

---

## Description

Convert an MGRS string to latitude/longitude

## Usage

```
mgrs_to_latlng(MGRS, degrees = TRUE, include_mgrs_ref = TRUE)
```

## Arguments

| | |
|---|---|
| `MGRS` | an MGRS string |
| `degrees` | convert to degrees? Default: `TRUE` |
| `include_mgrs_ref` | if `TRUE` the data frame returned fill include the MGRS reference in a column named `mgrs`. Default: `TRUE`. |

## Value

`data.frame`

## Note

vectorized

## Examples

```
mgrs_to_latlng("15TWG0000049776")
```

## mgrs_to_ups *Convert MGRS to UPS*

### Description

Convert MGRS to UPS

### Usage

```
mgrs_to_ups(mgrs_string, include_mgrs_ref = TRUE)
```

### Arguments

| | |
|---|---|
| mgrs_string | a character vector of MGRS strings |
| include_mgrs_ref | if TRUE the data frame returned fill include the MGRS reference in a column named mgrs. Default: TRUE. |

### Value

data.frame

### Note

vectorized

### Examples

```
mgrs_to_ups("ZGC2677330125")
```

## mgrs_to_utm *Convert MGRS to UTM*

### Description

Convert MGRS to UTM

### Usage

```
mgrs_to_utm(mgrs_string, include_mgrs_ref = TRUE)
```

### Arguments

| | |
|---|---|
| mgrs_string | acharacter vector of MGRS strings |
| include_mgrs_ref | if TRUE the data frame returned fill include the MGRS reference in a column named mgrs. Default: TRUE. |

## Value

data.frame

## Note

vectorized

## Examples

```
mgrs_to_utm("48PUV7729883034")
```

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# ups_to_latlng *Convert UPS to Latitude/Longitude*

---

## Description

Convert UPS to Latitude/Longitude

## Usage

```
ups_to_latlng(hemisphere, easting, northing, degrees = TRUE)
```

## Arguments

| | |
|---|---|
| hemisphere | South (S) or North (N) |
| easting, northing | easting (X) / northing (Y) (meters) |
| degrees | convert to degrees? Default: TRUE |

## Examples

```
ups_to_latlng("N", 2426773, 1530125)
```

---

# ups_to_mgrs *Convert UPS to MGRS*

---

## Description

Convert UPS to MGRS

## Usage

```
ups_to_mgrs(hemisphere, easting, northing, precision = 5L)
```

### Arguments

| | |
|---|---|
| hemisphere | South (S) or North (N) |
| easting, northing | easting (X) / northing (Y) (meters) |
| precision | 0:5; level of precision for the conversion. Default 5 |

### Examples

```
ups_to_mgrs("N", 2426773, 1530125)
```

---

## utm_to_latlng *Convert UTM to Latitude/Longitude*

---

### Description

Convert UTM to Latitude/Longitude

### Usage

```
utm_to_latlng(zone, hemisphere, easting, northing, degrees = TRUE)
```

### Arguments

| | |
|---|---|
| zone | 1:60 |
| hemisphere | South (S) or North (N) |
| easting, northing | easting (X) / northing (Y) (meters) |
| degrees | convert to degrees? Default: TRUE |

### Examples

```
utm_to_latlng(48, "N", 377299, 1483035)
```

`utm_to_mgrs` *Convert UTM to MGRS*

## Description

Convert UTM to MGRS

## Usage

```
utm_to_mgrs(zone, hemisphere, easting, northing, precision = 5L)
```

## Arguments

| | |
|---|---|
| `zone` | 1:60 |
| `hemisphere` | South (`S`) or North (`N`) |
| `easting`, `northing` | easting (X) / northing (Y) (meters) |
| `precision` | 0:5; level of precision for the conversion. Default `5` |

## Examples

```
utm_to_mgrs(48, "N", 377299, 1483035)
```

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