

Exploring Quakes

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```
data(quakes)  
?quakes
```

1. The data set give the locations of 1000 seismic events of MB > 4.0. The events occurred in a cube near Fiji since 1964. There are two clear planes of seismic activity. One is a major plate junction; the other is the Tonga trench off New Zealand. These data constitute a subsample from a larger dataset of containing 5000 observations.
2. There are 5 variables recorded in the data set: lat (Latitude of event), long (Longitude), depth(Depth in km), mag(Richter Magnitude), stations(number of stations reporting).

```
lapply(quakes, class)
```

```
## $lat  
## [1] "numeric"  
##  
## $long  
## [1] "numeric"  
##  
## $depth  
## [1] "integer"  
##  
## $mag  
## [1] "numeric"  
##  
## $stations  
## [1] "integer"
```

```
typeof(quakes$lat)
```

```
## [1] "double"
```

```
typeof(quakes$long)
```

```
## [1] "double"
```

```
typeof(quakes$depth)
```

```
## [1] "integer"
```

```
typeof(quakes$mag)
```

```
## [1] "double"
```

```
typeof(quakes$stations)
```

```
## [1] "integer"
```

3. The variables lat, long, and mag are double. The variables depth and stations are integer.
4. Learn more about earthquakes and the type of damage is generally done based on the richtern magnitude. Understanding Fiji's geography could help with visualizing.

```
summary(quakes)
```

```
##          lat          long          depth          mag
##  Min.      :-38.59   Min.      :165.7   Min.      : 40.0   Min.      :4.00
## 1st Qu.: -23.47   1st Qu.:179.6   1st Qu.: 99.0   1st Qu.:4.30
##  Median :-20.30   Median :181.4   Median :247.0   Median :4.60
##  Mean    :-20.64   Mean    :179.5   Mean    :311.4   Mean    :4.62
## 3rd Qu.: -17.64   3rd Qu.:183.2   3rd Qu.:543.0   3rd Qu.:4.90
##  Max.     :-10.72   Max.     :188.1   Max.     :680.0   Max.     :6.40
##
##      stations
##  Min.      : 10.00
## 1st Qu.: 18.00
##  Median : 27.00
##  Mean     : 33.42
## 3rd Qu.: 42.00
##  Max.     :132.00
```

5. lat: minimum(-38.59), median(-20.30), maximum(188.1) long: minimum(165.7), median(181.4), maximum(188.1) depth: minimum(40.0), median(247.0), maximum(680.0) mag: minimum(4.00), median(4.60), maximum(6.40) stations: minimum(10.00), median(27.00), maximum(132.00)
6. How does the magnitude change depending on the lat/long? How many stations report depending on the magnitude? Is there a trend in magnitude and depth? How many stations report as time progresses?