

# Package ‘ffaframework’

June 6, 2025

**Title** Flood Frequency Analysis Framework  
**Version** 0.1.0  
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**Description** Tools for exploratory data analysis and flood frequency analysis using L-moments, statistical tests, and model assessment. Implements several methods for distribution selection, trend detection, and uncertainty quantification.  
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**Encoding** UTF-8  
**LazyData** true  
**Imports** lmom,  
parallel,  
stats,  
graphics,  
utils,  
ggplot2,  
aTSA,  
randtests  
**Suggests** testthat,  
covr  
**Roxygen** list(markdown = TRUE)  
**RoxygenNote** 7.3.2

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mk.test	<i>Mann–Kendall Test for Monotonic Trends</i>
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### Description

Performs the Mann–Kendall trend test on a numeric vector to detect the presence of a monotonic trend (increasing or decreasing) over time. The test is non-parametric and accounts for tied observations in the data.

## Usage

```
mk.test(data, alpha = 0.05, quiet = TRUE)
```

## Arguments

<code>data</code>	A numeric vector of AMS values or their variances. Must not contain NA values.
<code>alpha</code>	A numeric value specifying the significance level (default is 0.05).
<code>quiet</code>	Logical. If FALSE, prints a summary of the test result to the console.

## Details

The statistic  $(S)$  is computed as the sum over all pairs  $(i < j)$  of the sign of the difference  $(x_j - x_i)$ . Ties are explicitly accounted for when calculating the variance of  $(S)$ , using grouped frequencies of tied observations.

The test statistic  $(Z)$  is then computed based on the sign and magnitude of  $(S)$ , and the p-value is derived from the standard normal distribution.

## Value

A named list with the following components:

**s.statistic** The raw Mann–Kendall test statistic  $(S)$ .

**s.variance** The variance of the test statistic under the null hypothesis.

**p.value** The p-value associated with the two-sided hypothesis test.

**reject** Logical. TRUE if the null hypothesis of no trend is rejected at `alpha`.

## See Also

[bbmk\\_test](#) for a bootstrap-based variant of this test.

# Index

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