

## Hydromet Data Processing and Analysis

**Class hours:** 7.30 am – 12.30 pm

**Pre-requisites:** Participants should have basic computer skills and experience using Ms Excel

**Course Description:** This training aims at improving the data processing and analytical skills of personnel working with water and land related datasets e.g. climate data. The training covers basic statistical skills, time series modelling, frequency analysis, data analysis and presentation among others.

Unit	Outline
<b>Basic concepts of data analysis and statistics</b>	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Types of data</li> <li>• Population and sample</li> <li>• Sampling - concepts and methods</li> <li>• Probability and return periods</li> </ul>
<b>Data collection, processing and presentation</b>	<ul style="list-style-type: none"> <li>• Using secondary data</li> <li>• Collecting primary data – measurements, interviewing and mapping</li> <li>• Presenting data – tabulations, percentage and frequencies, charting</li> </ul>
<b>Data analysis – measure of central tendency</b>	<ul style="list-style-type: none"> <li>• Arithmetic Mean</li> <li>• Median and Mode</li> <li>• Relation between Mean, Median and Mode</li> </ul>
<b>Data analysis - measures of dispersion</b>	<ul style="list-style-type: none"> <li>• Methods of computing dispersion</li> <li>• Range and mean deviation</li> <li>• Variance, standard deviation and co-efficient of variation</li> <li>• Percentile, quartiles and inter quartile range</li> </ul>
<b>Data analysis - correlation and regression</b>	<ul style="list-style-type: none"> <li>• Introduction to correlation</li> <li>• Types and degree of correlation</li> <li>• Methods of determining correlation</li> <li>• Linear regression</li> </ul>
<b>Data analysis – time series analysis</b>	<ul style="list-style-type: none"> <li>• Introduction to time series Analysis</li> <li>• Components of time Series</li> <li>• Trend component</li> <li>• Seasonal and cyclical variations</li> <li>• Random factors</li> <li>• Analysis of trend and seasonality</li> </ul>
<b>Application of MS Excel in data processing and analysis</b>	<ul style="list-style-type: none"> <li>• Using Excel for data processing</li> <li>• Using Excel for tabulation, frequency analysis and charting</li> <li>• Using Excel functions for descriptive statistics</li> <li>• Using Excel as a data analysis and statistical tool kit</li> </ul>