

**SOFTWARE TOOLS
PROJECT**



**UNIVERSITÉ
TOULOUSE III**
PAUL SABATIER



Analysis and Production of Time Series

Presented By -

DUGGAL Pamit

Under The Guidance Of-

Prof. Jean-Marc Pierson

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Introduction

- Time series is a sequence of observations recorded at regular time intervals.
 - Depending on the frequency of observations, a time series may typically be hourly, daily, weekly, monthly, quarterly and annual.
 - Time series analysis involves understanding the various aspects about the inherent nature of the series so that we are better informed to create meaningful and accurate forecasts.
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Studying- Nartuby River and La Pique

- The Nartuby is a French river , flowing in the department of Var , in the region Provence-Alpes-Côte d'Azur.
 - La Pique is a river of southern France flowing in the department of Haute-Garonne , in the former region Midi-Pyrénées.
 - The Aim Of This Project is to Study the 2 rivers and Analyze the temporal series of water levels during flooding episodes.
 - To Create a Model of the Time Series
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Tools Used-

- For Retrieving the Flood Data (.csv)
 - www.vigicrues.gouv.fr
 - For Visualizing/Analyzing The Data
 - Pandas
 - Jupyter Notebook/ Anaconda
 - Matplotlib
 - Coding Language
 - Python
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What Is Pandas ?

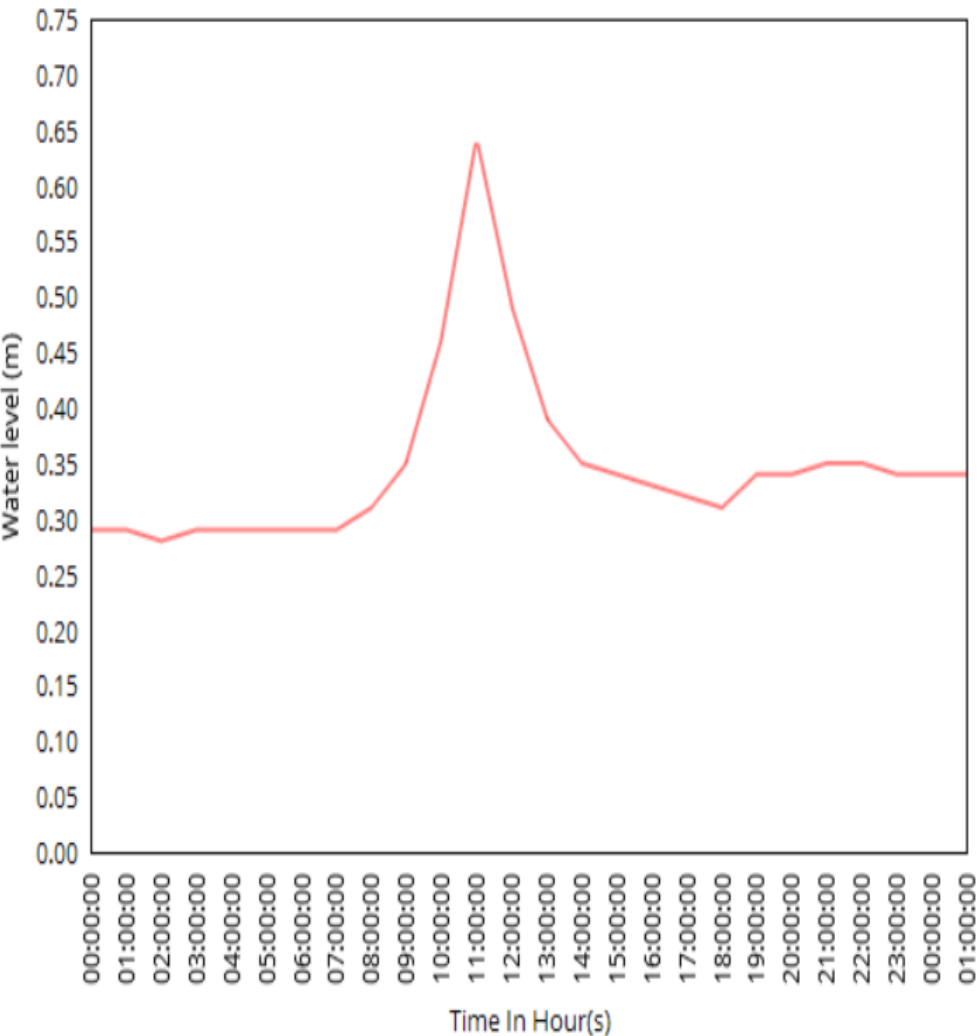
- Pandas is a software library written for the Python programming language
 - Used for data manipulation and analysis.
 - Used for manipulating numerical tables and time series.
 - It Can be imported By -
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
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What Is Jupyter Notebook and Matplotlib ?

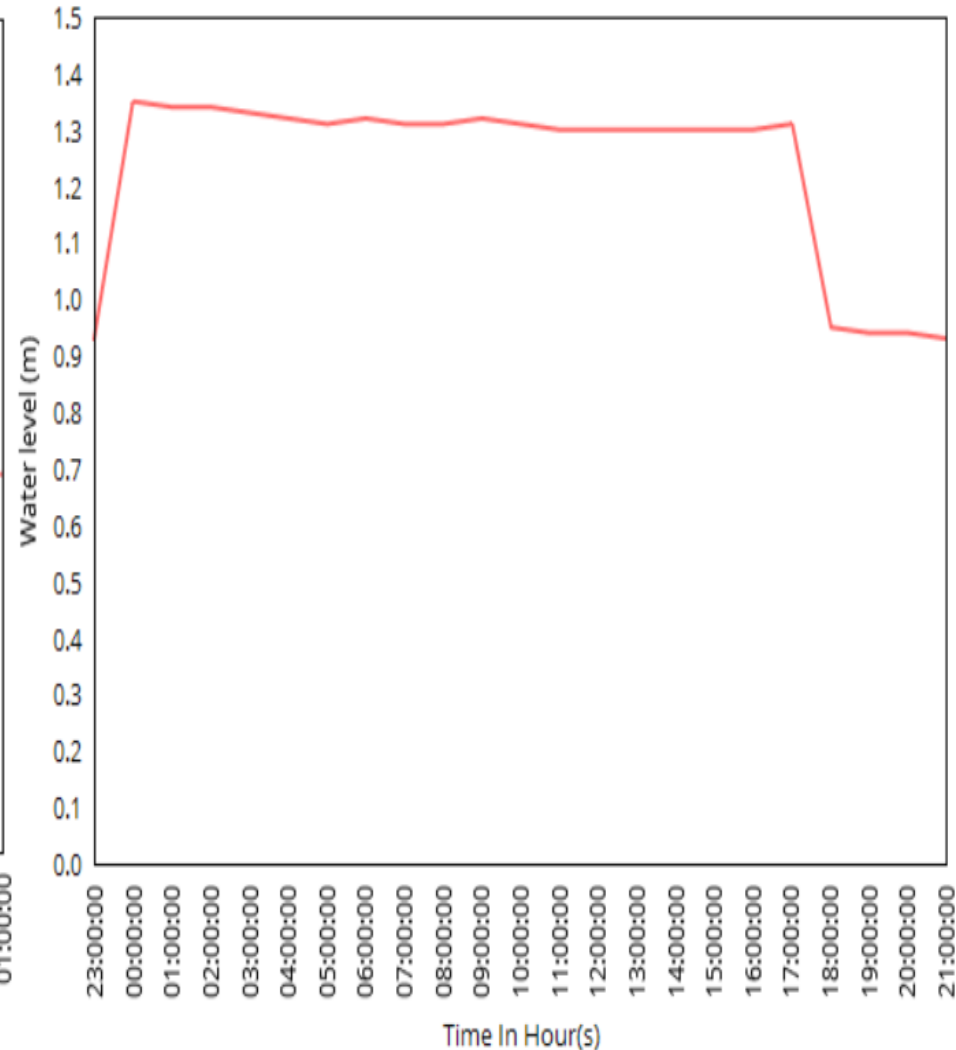
- Jupyter Notebook is an open-source web application that allows to create and share documents that contain live code, equations, visualizations etc.
 - Uses include: data visualization, machine learning etc.
 - Matplotlib is a plotting library for the Python programming language and its numerical mathematics extension .
 - Matplotlib can be used for Line Plot , Histogram etc.
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Nartuby River and La Pique River

Nartuby River

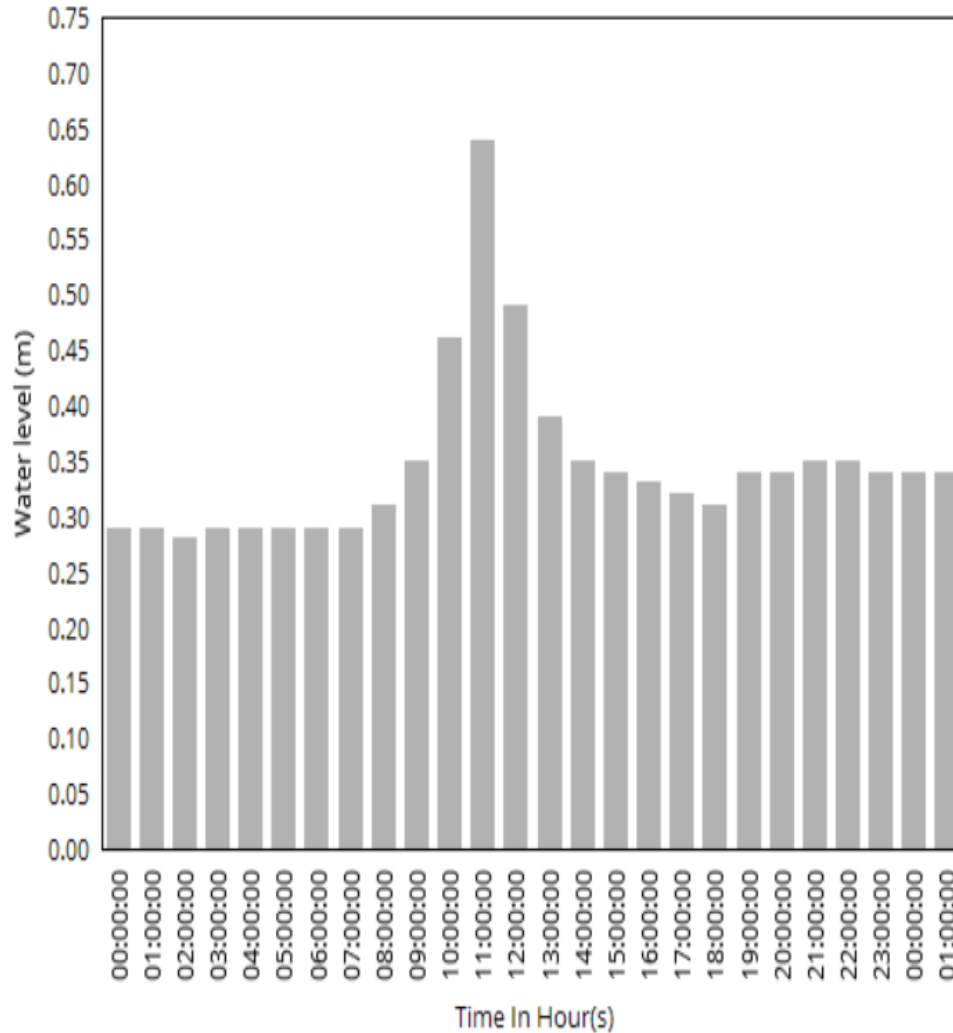


La Pique River

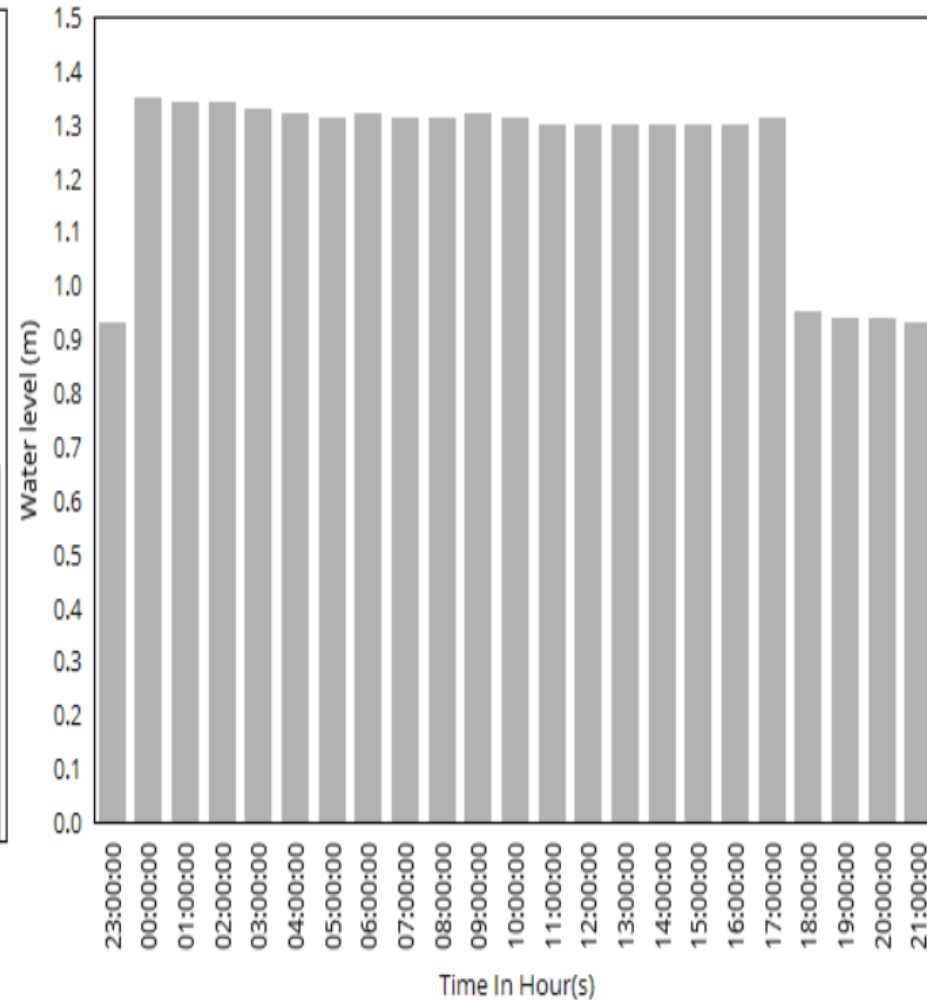


Nartuby River and La Pique River

Nartuby River



La Pique River



Working with Time Series

- We can visualize the data represented by the Line Plot's and Histogram's representing Change in water levels with Increasing time .
 - The Graphs give an Idea of the Flood episode that happened at Nartuby River and water levels at La Pique River
 - The Code is Developed using Python.
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Challenges Faced ?

- It's a completely New Experience for me to work on Time Series , I'm actively improving my skills.
 - Python is a Completely New Programming Language for me ,but Thanks to Previous knowledge of HTML,C,C++,Android, Java these help me Understand Python.
 - Jupyter Notebook and Matplotlib are also New Platforms for Programming to me . I'm actively Learning them.
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A soft, abstract watercolor background in shades of light blue and teal, with a textured, painterly appearance. The colors blend together, creating a gentle gradient. A thin, dark blue horizontal line is positioned below the word 'THANKYOU'.

THANKYOU
