

CCTF Capacity Building for Time & Frequency Metrology

Overview and First Results

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The Consultative Committee for Time and Frequency (CCTF) started a Time and Frequency Capacity Building project to enhance the capacity of the Coordinated Universal Time (UTC) laboratories to improve their national time scale and hence the quality of UTC. This program has been sponsored also by the Ultrasonics, Ferroelectrics and Frequency Control (UFFC) society of IEEE, to enhance the capability in time and frequency metrology. The Capacity Building program has a long-term plan to develop software modules/compile available information/organize technical exchanges/summer schools relating to Time & Frequency metrology and host these various modules as courses on the BIPM e-Learning platform¹. The leading idea is to share the resources, with the development of some new tools, but also the collection of training material made available by UTC laboratories. This work is carried out in coordination with the CCTF WG TAI and Algorithm.

As a first step, a CGGTTS data analyser was developed. This is an online software tool, allowing to compare clocks by the GNSS measures contained in the CGGTTS² files and download the results. The CGGTTS data analyser is a web-based application developed in Python Streamlit platform and deployed in the cloud which can be used to process the CGGTTS files and evaluate the GNSS Common -View (CV) and All-in-View (AV) Time transfer (Fig 1). An interactive webpage of the CGGTTS data format description, a tutorial, and relevant references are provided. The source code is also available under a Creative Common (CC) licence.

The overall program will be presented also inviting the time and frequency community to contribute by sharing possible resources.

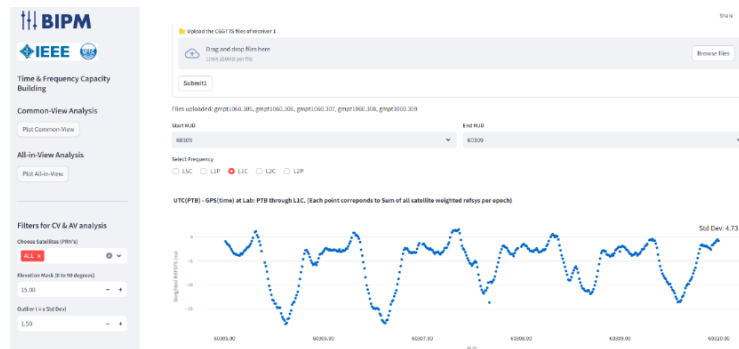


Fig 1: Screenshot of the CGGTTS analyser application plotting the difference between the receiver clock and the GNSS system time (REFSYS). The provided options allow to select the different GNSS code measurements and the analyzed period

References:

1. BIPM e-Learning Platform, <https://e-learning.bipm.org/>
2. P. Defraigne, G. Petit, "CGGTTS- Version 2E: an extended standard for GNSS Time Transfer" Metrologia 2015 52 G1

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