ON THE IMPACT OF MULTIPATH IN GPS-BASED TIME AND FREQUENCY TRANSFER

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GPS-based time and frequency transfer is presently performed either with a code-only analysis (as done for TAI, using C/A or P codes), or with a combined analysis of code and carrier phase measurements using geodetic analysis techniques (as used for the generation of the IGS time scale). When neglecting calibration issues, the accuracy of both solutions highly depends on the noise of the GPS codes. An important part of this code noise is caused by multipath. Using a linear combination of GPS codes and carrier phases, the behavior of code multipath in a specific station can be monitored and mitigated. The impact of code multipath on the time transfer results can then be estimated. On one hand, we investigate a possible reduction of the rms of the code-only CGGTTS results. On the other hand we evaluate the influence of the multipath mitigation on the results obtained from the combined code and carrier phase time transfer. In that case, a particular attention is drawn to the day boundary jumps appearing in the solution. These day boundary jumps show large dispersion between stations, which reflects stations code performances, but of which the origin is not yet fully understood. The hypothesis of a multipath origin is therefore tested.