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Performance assessment of PPP with Multi-GNSS and integer ambiguity resolution

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With the rapid development of GNSS, the available number of satellites is significantly increased in recent years. It is necessary to assess the performance of PPP with current GNSS constellations. Furthermore, the benefit of multi-GNSS and integer ambiguity resolution (IAR) to GPS-only float PPP needs to be addressed. In the context of multi-GNSS, GPS/GLONASS/Galileo/BDS are combined for PPP solution. The improvements with regard to convergence time and positional accuracy are evaluated. PPP integer ambiguity resolution is expected to further enhance the performance. Therefore, with estimated FCBs, we resolve the PPP ambiguities of three CDMA-based GNSS, i.e. GPS/Galileo/BDS. The combined PPP performance of GPS/Galileo/BDS-IAR plus float GLONASS is assessed with 20 MGEX stations in thirty days. Results indicate that multi-GNSS shows a clear advantage over IAR in reducing the convergence from m to dm level. On the other hand, IAR is crucial for convergence to cm level. The combination of multi-GNSS and IAR achieves the best performance.