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A brief review of the current status and future requirements of satellite microwave data for NWP

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Currently, the global NWP assimilation systems benefit the data from satellites in the early morning (FY-3E: 6 am ECT), mid-morning (MetOp: 9.30 am ECT), and afternoon (JPSS:1.30 pm ECT) orbits. The mid-morning and afternoon orbits cover the data in both ends of the 06/18 Z (± 3 hours) assimilation cycles leaving a gap in the middle (Figure 1). FY-3E and NOAA series of satellites (up to NOAA-19) provide data in the latter half of the 00/12 Z (± 3 hours) assimilation cycles. In the current scenario, the data gap is in the centre of 06/18Z cycles while soon more gap areas may emerge in the 00/12Z cycles too (Figure 2). Many of the global operational centres have explored the potential of Megha-Tropiques SAPHIR radiances in the low inclination orbit and reported beneficial impact over the Tropics because of the improved temporal sampling of moisture and cloud fields in the Tropics. Space agencies in collaboration with the NWP centres should ensure full global coverage of satellite microwave observations including sea surface scatterometer winds in every six hourly NWP assimilation cycles for improved weather prediction, particularly over the Tropics.

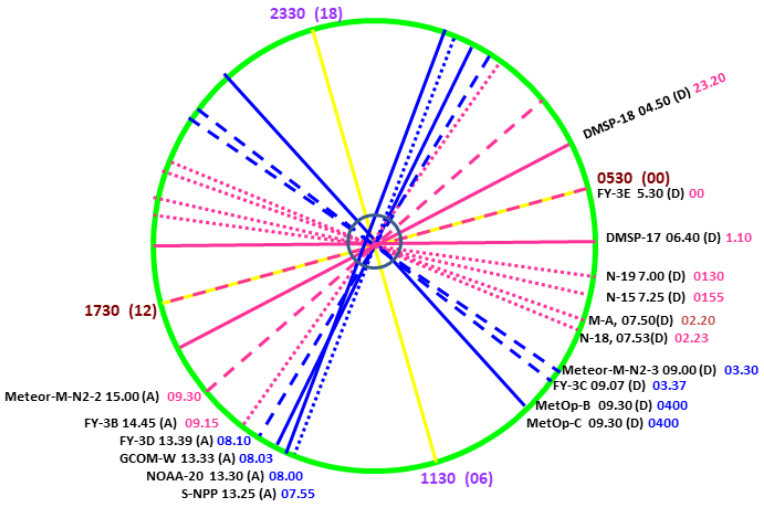

Figure 1: Current space based MW instrument constellation Equator Crossing Time