Technical Note for the Precipitation - CMORPH CDR v1.0 (01B-23)

Due to the retirement of the NESDIS MSPPS (Microwave Surface and Precipitation Products System) the *Precipitation - CMORPH CDR v1.0* required a change in inputs. CMORPH v1.0 data from January 1, 2021 to present now uses the NASA GPROF data (Goddard Profiling Algorithm).

Comparisons between the old (using NESDIS MSPPS) and the new (using NASA GPROF) versions of the bias-uncorrected CMORPH (i.e. CMORPH RAW) have shown minor changes between the old and the new versions (Figure 1). For instance, the instantaneous hourly precipitation comparison at 06:00Z (left column) and 18:00Z (right column) on December 15, 2020, between the new (top row) and old (middle row) versions, indicate similar precipitation patterns. The largest differences between the new and old versions of CMORPH RAW (bottom row) being within a range of ±0.7 mm/h.

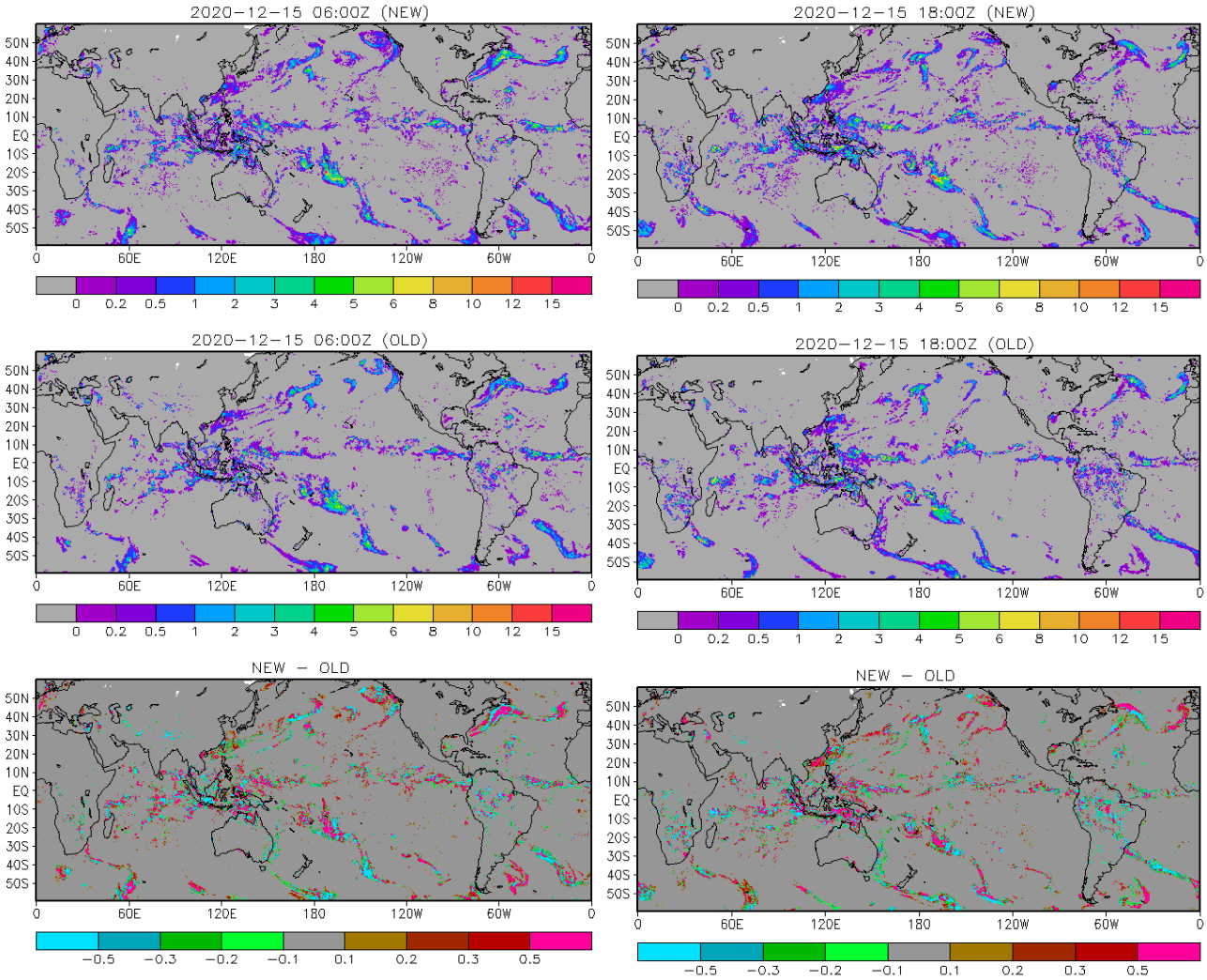

Figure 1: Instantaneous hourly precipitation comparison (bottom row) between the NEW CMORPH RAW (top row) and the OLD CMORPH RAW (middle row) at 06:00Z (left column) and 18:00Z (right column) on December 15, 2020.

A comparison of the Biases, RMSD (Root Mean Square Deviation), and Correlations between the new and old CMORPH RAW, indicate a good agreement at the hourly and daily scales (not shown). The most significant differences for Biases, RMSD, and correlations are found over ocean in particular over areas of convective activity (ITCZ). Overall, there seem to have a slight negative bias between the new and old versions. We also noted lower correlations (0.5-0.8) over land along the tropical band in the southern hemisphere.

The monthly mean (mm) between the new (GPROF) and old (MSPPS) display similar patterns. 2) Differences are similar than biases (hourly and daily). Positive and negative differences are found between the new and old CMORPH RAW. Those monthly differences are within the range of ±7 mm for the example presented (Figure 2).

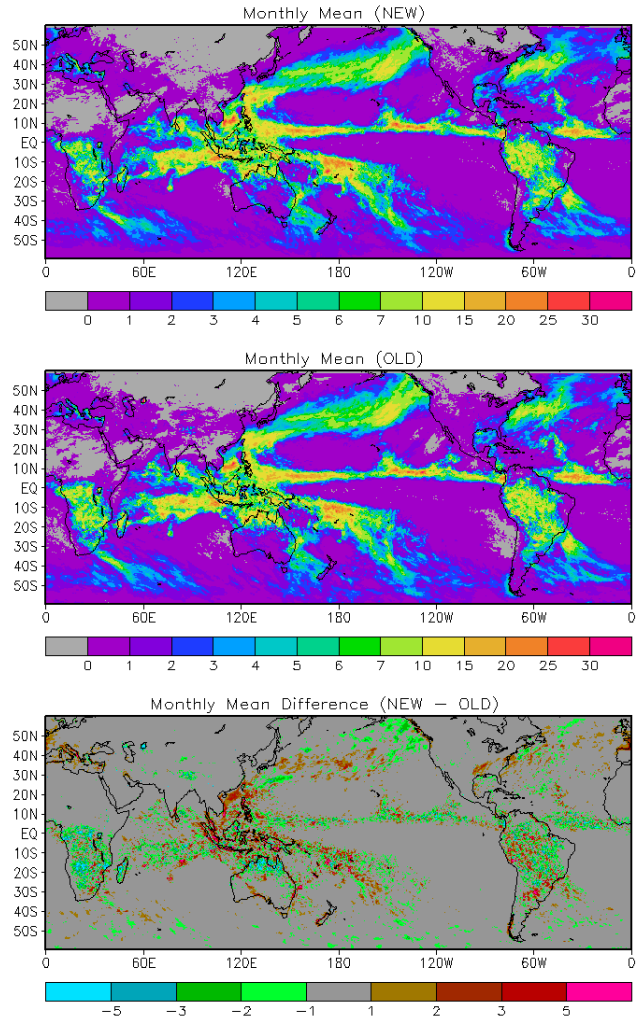

Figure 2: Monthly mean (mm/day) and differences (mm/day) of precipitation between new (GPROF) and old (MSPPS) CMORPH RAW in December 2020.

Based on these comparisons, the new and old versions of CMORPH RAW that result from the replacement of MSPPS by GPROF as input data, present limited qualitative and quantitative differences. The procedure used to produce the final bias-adjusted CMORPH CDR from the RAW version remaining

unchanged, the impact of this change on the final bias adjusted CMORPH CDR is expected to be limited in magnitude.