A Systematic Search for Corotating Interaction Regions in Apparently Single Galactic Wolf-Rayet Stars. II. A Global View of the Wind Variability

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This study is the second part of a survey searching for large-scale spectroscopic variability in apparently single Wolf-Rayet (WR) stars. In a previous paper (Paper I), we described and characterized the spectroscopic variability level of 25 WR stars observable from the northern hemisphere and found 3 new candidates presenting large-scale wind variability, potentially originating from large-scale structures named Co-rotating Interaction Regions (CIRs). In this second paper, we discuss an additional 39 stars observable from the southern hemisphere. For each star in our sample, we obtained 4-5 high-resolution spectra with a signal-to-noise ratio of ~100 and determined its variability level using the approach described in Paper I. In total, 10 new stars are found to show large-scale spectral variability of which 7 present CIR-type changes (WR 8, WR 44, WR 55, WR 58, WR 61, WR 63, WR 100). Of the remaining stars, 20 were found to show small-amplitude changes and 9 were found to show no spectral variability as far as can be concluded from the data in hand. Also, we discuss the spectroscopic variability level of all single galactic WR stars that are brighter than v~12.5, and some WR stars with 12.5 < v <= 13.5; i.e. all the stars presented in our two papers and 4 more stars for which spectra have already been published in the literature. We find that 23/68 stars (33.8 %) present large-scale variability, but only 12/54 stars (~22.1 %) are potentially of CIR-type. Also, we find 31/68 stars (45.6 %) that only show small-scale variability, most likely due to clumping in the wind. Finally, no spectral variability is detected based on the data in hand for 14/68 (20.6 %) stars. Interestingly, the variability with the highest amplitude also have the widest mean velocity dispersion.

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