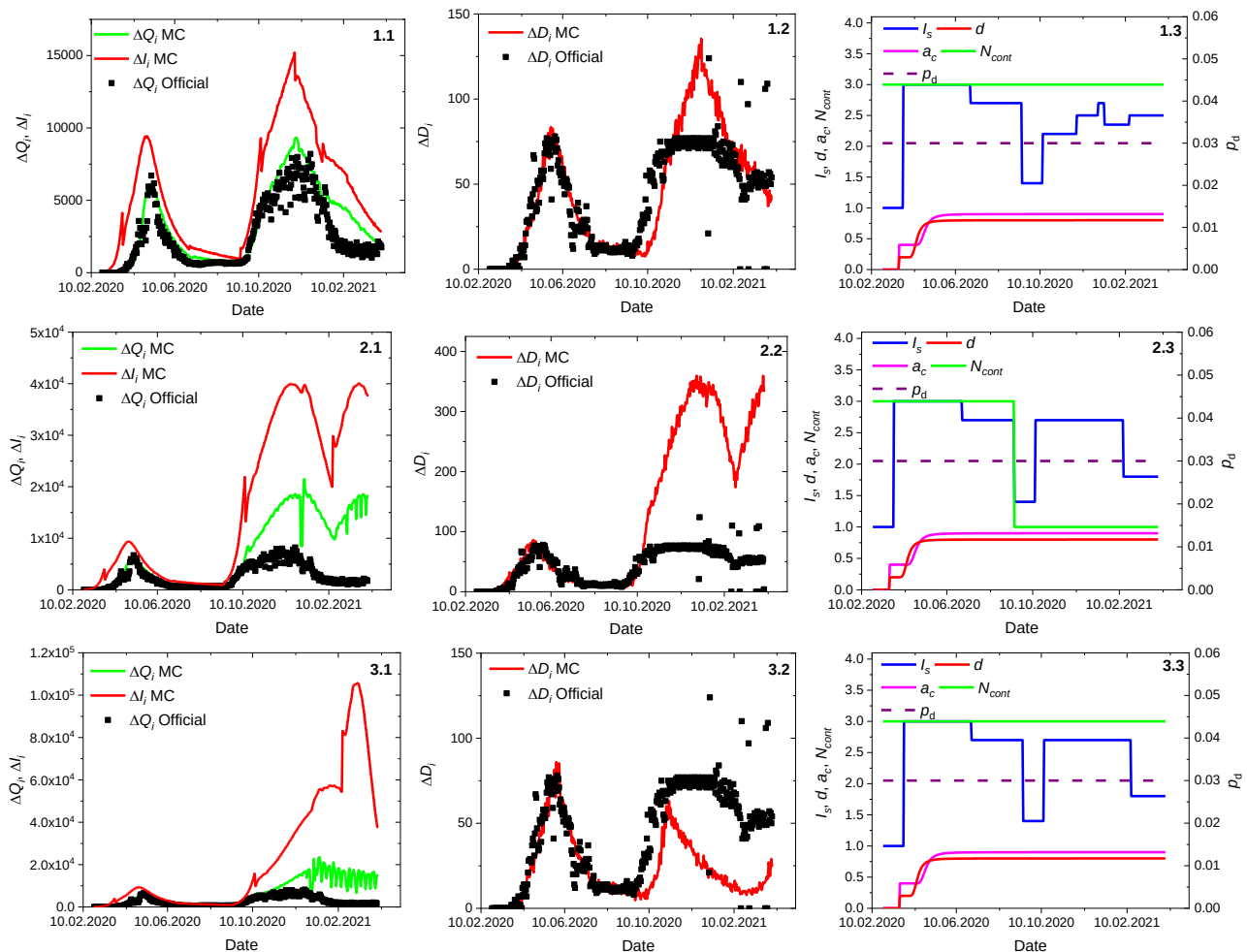
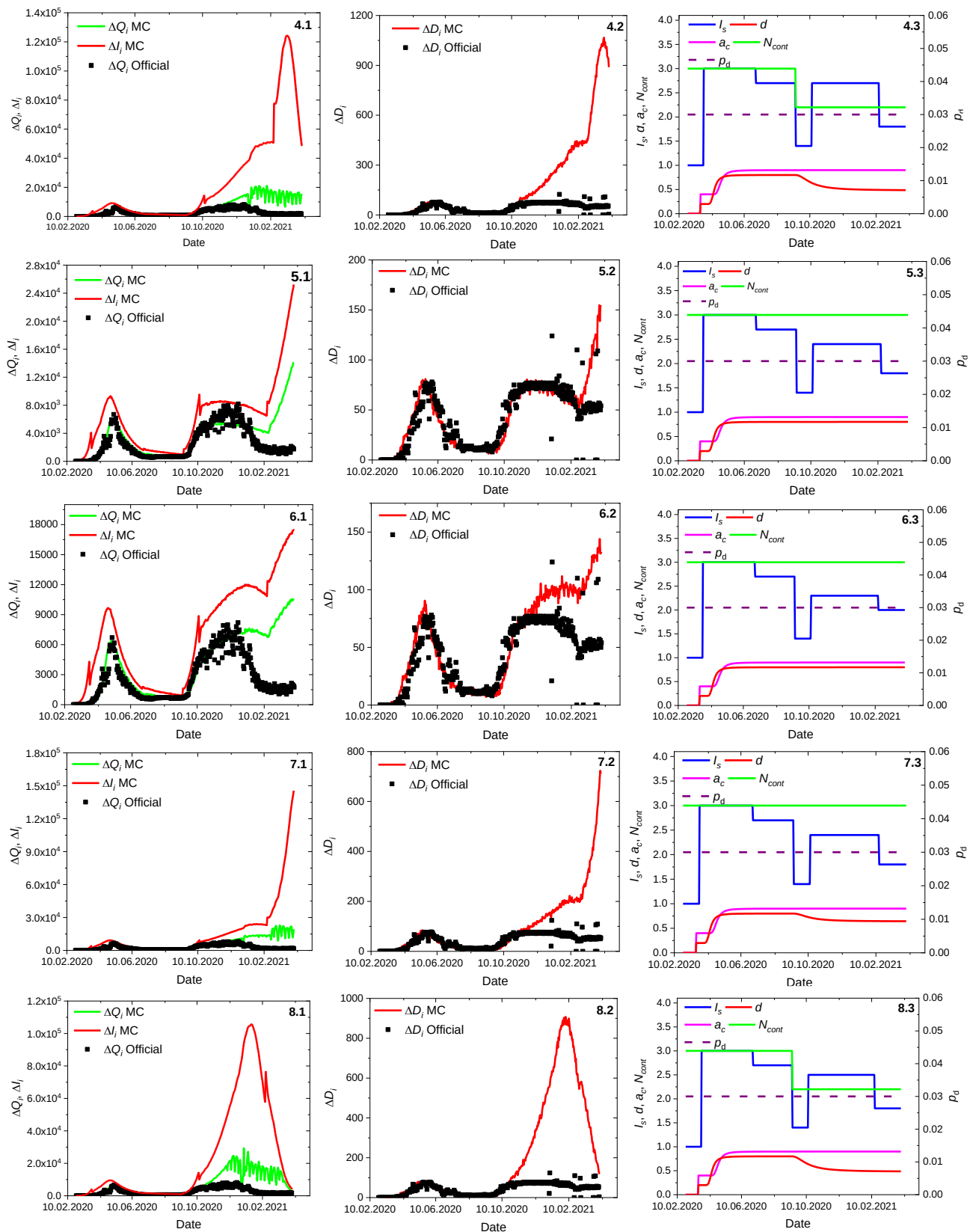


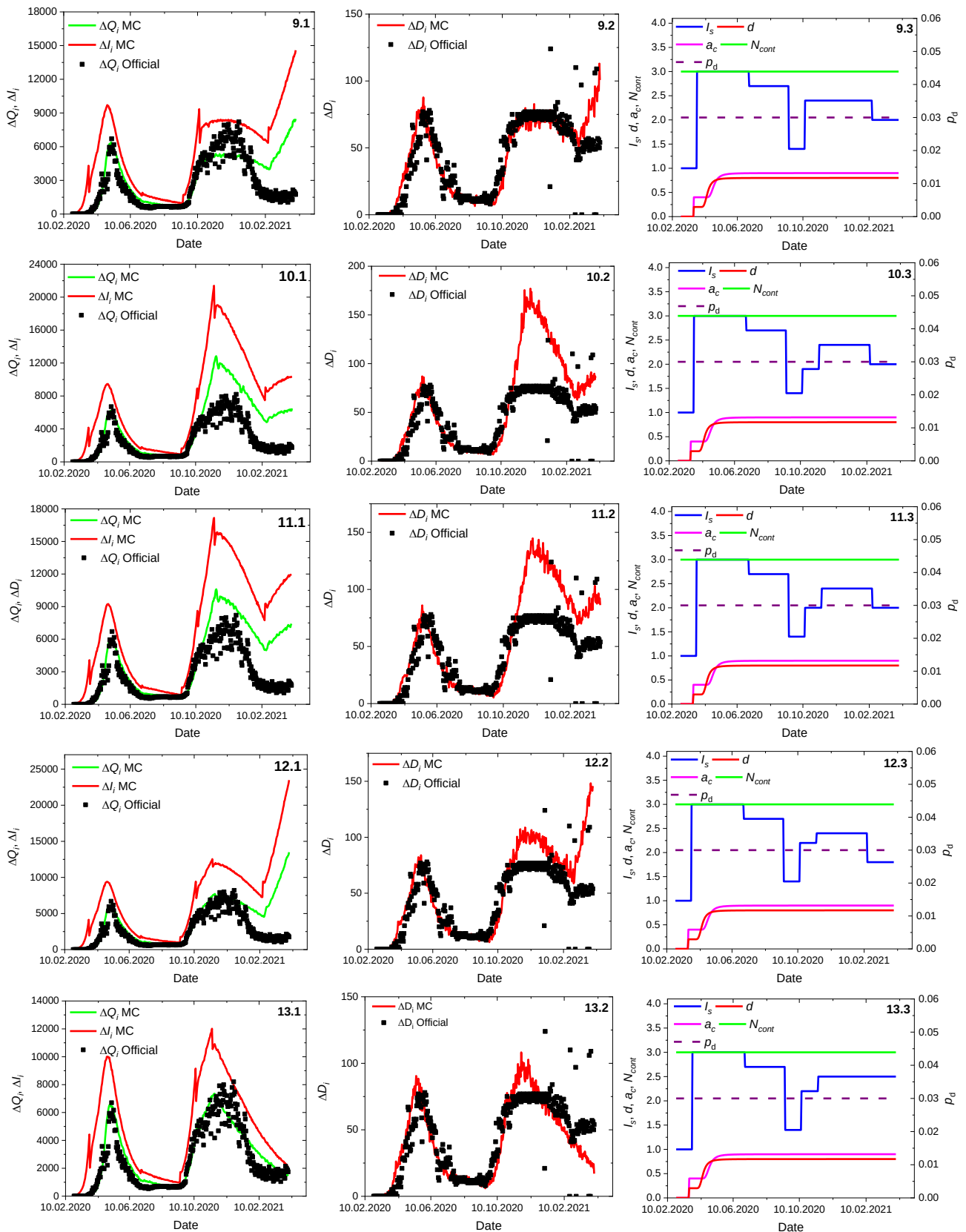
Appendix: Simulation of the First and the Second Waves of COVID-19 Spreading in Russian Federation Regions Using an Agent-Based Model

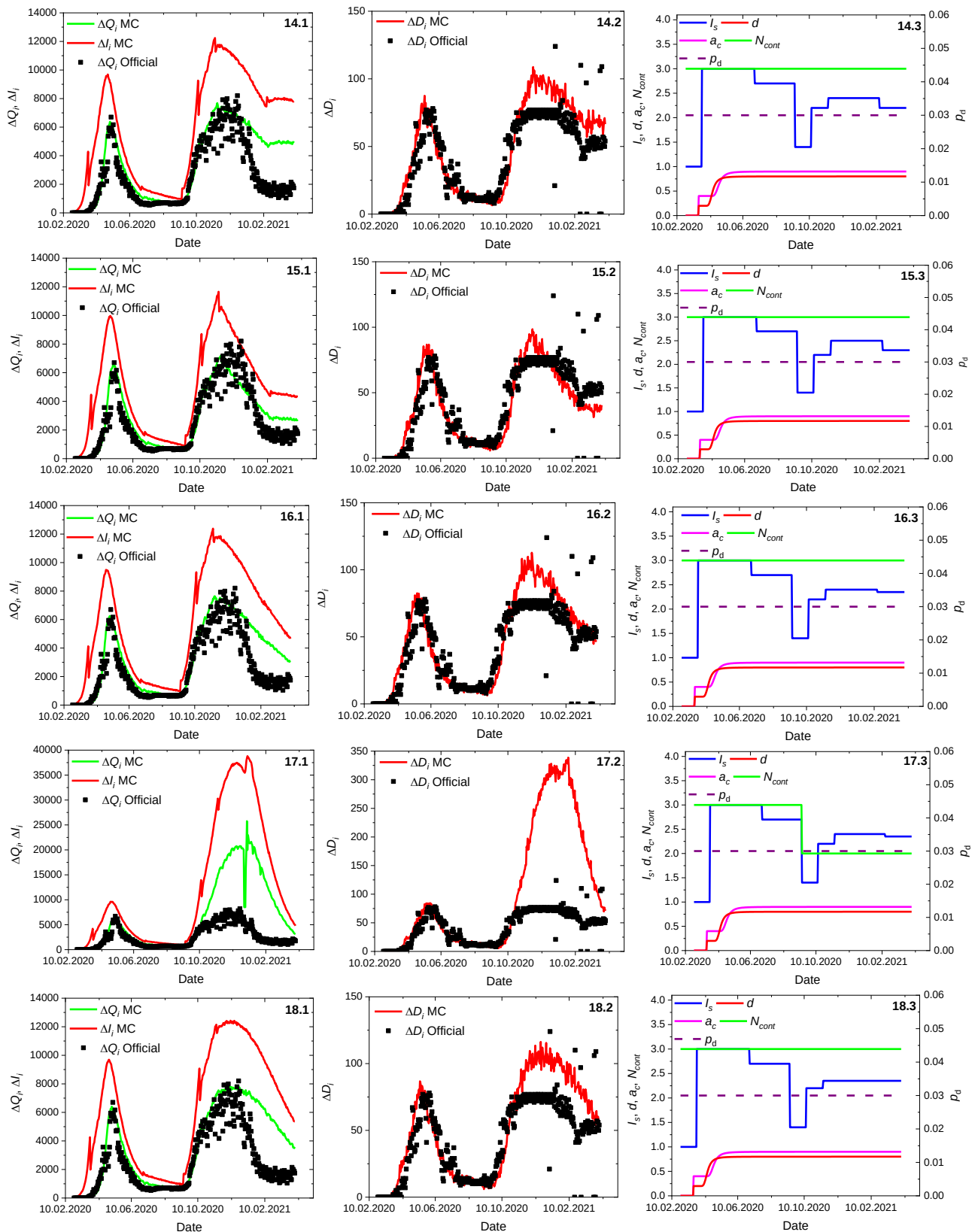
This section demonstrates different sets of results of agent-based Monte Carlo (MC) simulation of COVID-19 spread in Moscow and Novosibirsk region in the period of 26 February 2020 – 06 April 2021 with variations of self-isolation index (I_s), tests sensitivity (a_c), fraction of tested agents with symptoms (d), number of traced contacts of an agent with positive COVID-19 test (N_{cont}), daily death probability in critical state (p_d). All the results are shown in sets of three figures: daily dynamics of newly revealed (ΔQ_i) and total (ΔI_i) COVID-19 cases (left), daily dynamics of COVID-19 associated lethal cases (ΔD_i) (middle) and simulation parameters (right). The results are shown with the comparison of official statistics data (Official). The results demonstrate the impact of the variations of different parameters on daily dynamics of revealed, total and lethal cases.

1 SI1 Simulation of COVID-19 spread in Moscow









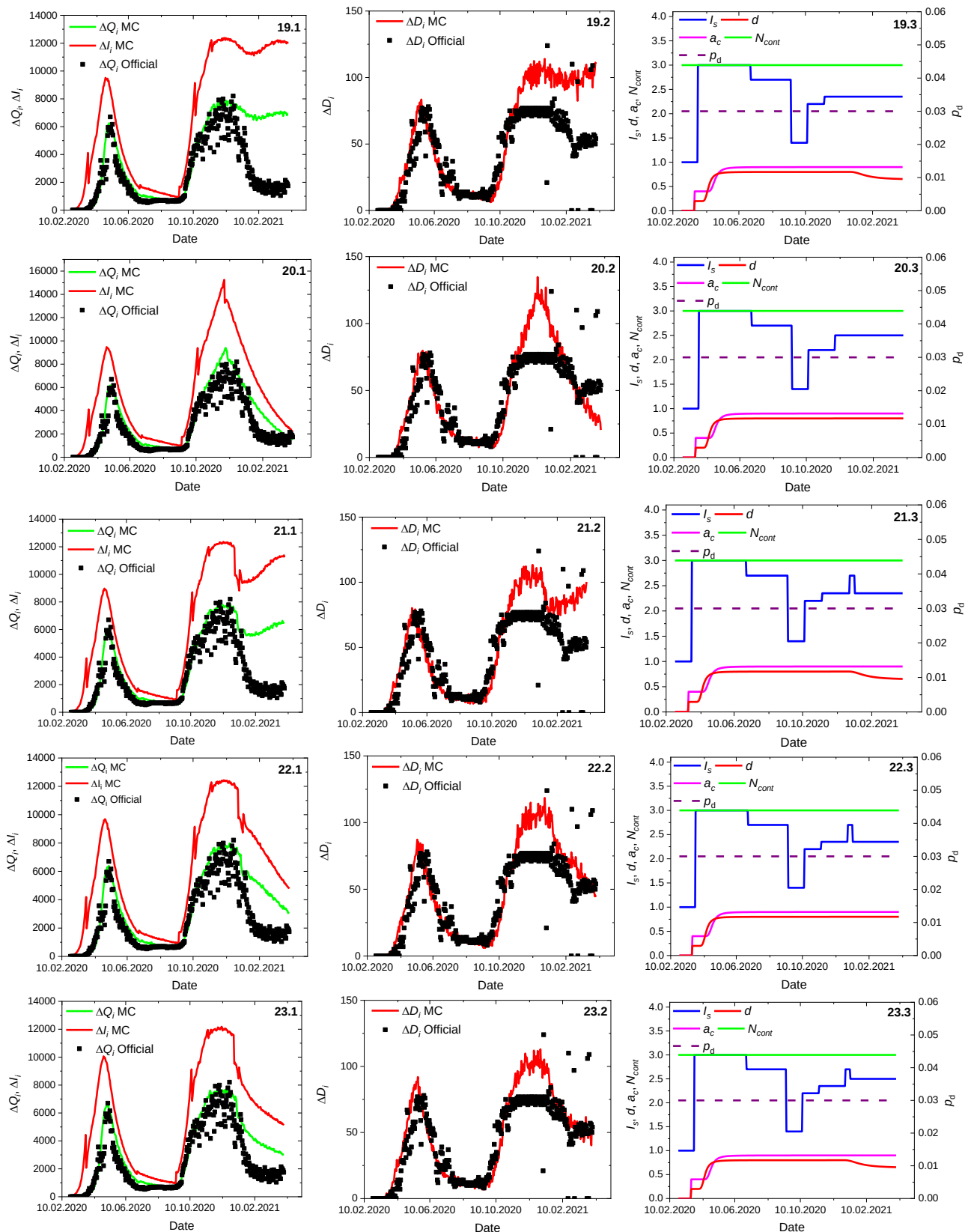


Fig. S1 Comparison of simulated scenarios (MC) and real statistical data (Official) for daily numbers of newly revealed COVID-19 (left column) and lethal COVID-19 associated (middle column) cases for different sets of non-realistic parameters (right column) for Moscow in the period of 26 February 2020 – 06 April 2021. Figs. X.1 and X.2 present a separate scenario with parameters shown in X.3.

2 SI2 Simulation of COVID-19 spread in Novosibirsk Region

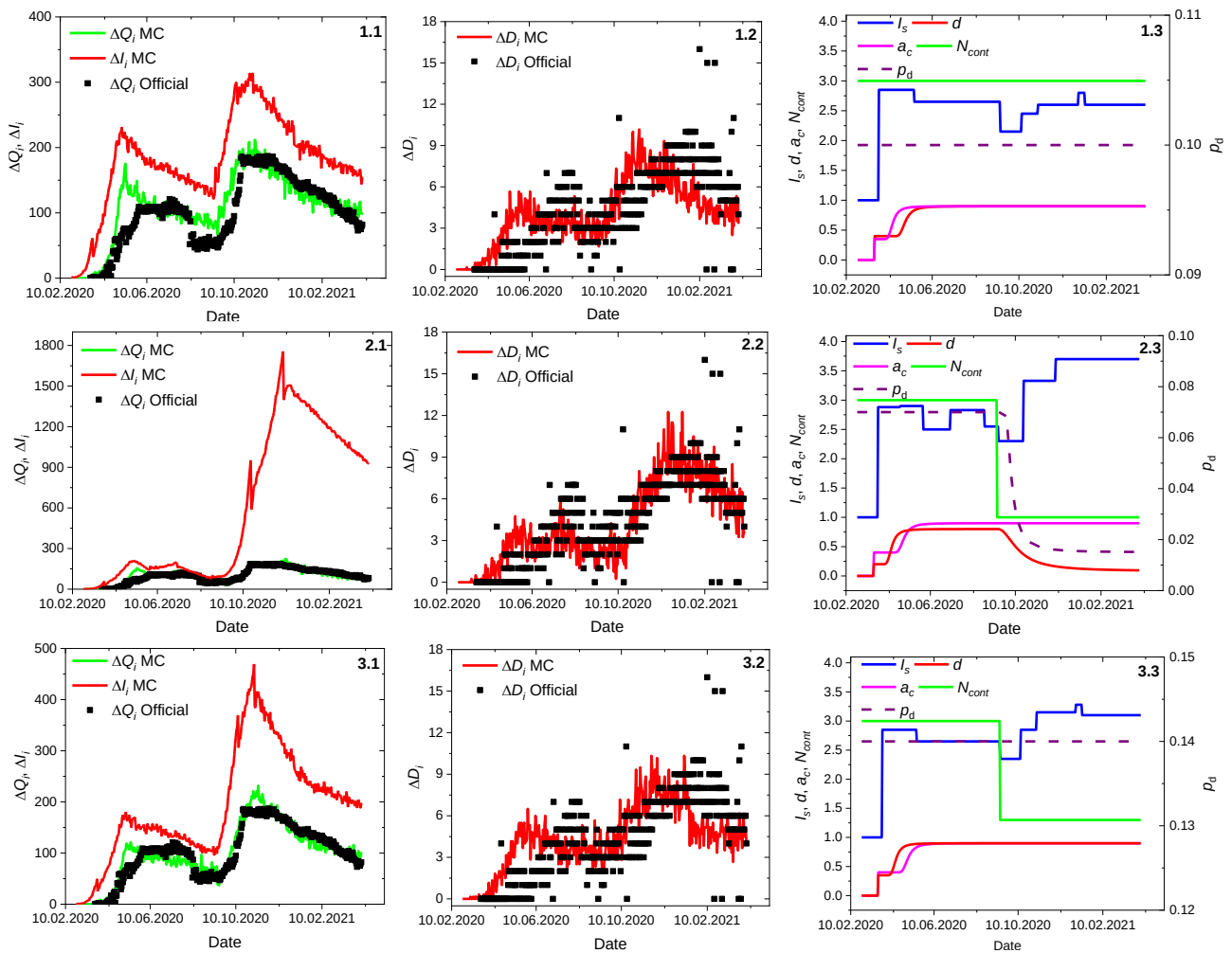


Fig. S2 Comparison of simulated scenarios (MC) and real statistical data (Official) for daily numbers of newly revealed COVID-19 (left column) and lethal COVID-19 associated (middle column) cases for different sets of non-realistic parameters (right column) for Novosibirsk Region in the period of 26 February 2020 – 06 April 2021. Figs. X.1 and X.2 present a separate scenario with parameters shown in X.3.