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Magnetospheric reconfiguration during the substorm cycle as inferred from the data-based modeling.

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First results are presented of reconstructing the evolution of magnetospheric configurations through the full cycle of isolated substorms. The modeling covers the low- and mid-latitude magnetosphere in the range of radial distances from 2 to 20 Re and is based on a synthesis of (1) a high-resolution representation of the magnetic field by cylindrical basis functions, (2) the ever largest pool of magnetospheric and interplanetary data spanning the last quarter century (1995-2019), (3) an archive of concurrent ground-based indices and their temporal trends, quantifying the geomagnetic activity over the full range of latitudes, including the low-latitude ring current SMR-index, the midlatitude positive bay MPB-index, the auroral SML-index, and the polar cap PC-index, (4) the data-mining nearest-neighbour (NN) technique of the data selection and weighting in the geometric and parametric spaces. The obtained successive diagrams of magnetic depression/compression, electric current, and field line maps demonstrate all the typical features of the substorm cycle: the initial relatively slow stretching of the nightside tail during the growth phase, followed by its sudden collapse associated with a dramatic disruption of the tail current at R~11-16 Re, and finally a gradual recovery of the configuration after the expansion phase is over.