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A catalog of bipolar active regions violating the Hale's polarity law

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We present a catalog of bipolar active regions (ARs) violating Hale's polarity law over the period 1989–2018. The catalog is compiled based on visual inspection of solar data in web applications Debrecen Photoheliographic Data, Heliviewer and Solar Monitor. Also, data from catalogs of the Mount Wilson Observatory, Crimean Astrophysical Observatory (CrAO) and USAF/NOAA SRS were used. The compiled catalog includes bipolar ARs reverse to Hale's polarity law with sunspots/pores of both polarities and magnetic couplings between opposite polarities (in cases with available EUV data). Ambiguous and complex cases of ARs with violation of Hale's polarity law included in the catalog are labeled with special marks. The catalog contains 275 ARs. This is about 3% of all observed ARs. For each AR, there are three information blocks in the catalog: USAF/NOAA SRS data, DPD data, and our special marks. The first and second blocks include data at the maximum of AR evolution (at the maximum of the area of sunspots). The catalog is available at the CrAO website <https://sun.crao.ru/databases/catalog-anti-hale/>. For details, see Zhukova et al. (2020, Solar Physics, Volume 295, Issue 12, article id 165). The AR classification by AZh was supported by RSF (Project 18-12-00131). VA is grateful to MSHE of RF (Research 0831-2019-0006). AKh is grateful to RFBR for awarding grant 19-52-45002.

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