II. SYNOPTIC CHARTS OF SOLAR MAGNETIC FIELDS

Mount Wilson Observatory

These Synoptic Charts are constructed from the digital data of the daily magnetograms obtained at the 150-foot Tower Telescope at Mount Wilson. The spectrum line employed is 5250.2, Fe I. The megnetograph at the Tower Telescope measures only the longitudinal component of the Zeeman effect. The aperture is a square, 12.5 arc seconds on a side, and the whole area of the sun is generally covered in one magnetogram with no overlapping.

Each Synoptic Chart is made up of computer-drawn segments from individual day's observations. There is no averaging done at any point from more than one day's observation.

The solid horizontal lines represent the equator, $\pm 20°$, $\pm 40°$, and $\pm 60°$ latitude. This is an equal-area projection, so that the line at the top of the chart represents the north pole, and the line at the bottom of the chart represents the south pole.

The Carrington longitudes are given at the bottom of the chart. The solid vertical lines represent each even 10 degrees in longitude.

Straight horizontal dashed lines represent the dividing line between regions where there is data and regions where there is no data due to incomplete observations.

Vertical dashed lines represent the dividing lines between observations from different days.

The longitude of central meridian at the time of observation is indicated by a short vertical line at the bottom of the chart and a caret at the top of chart.

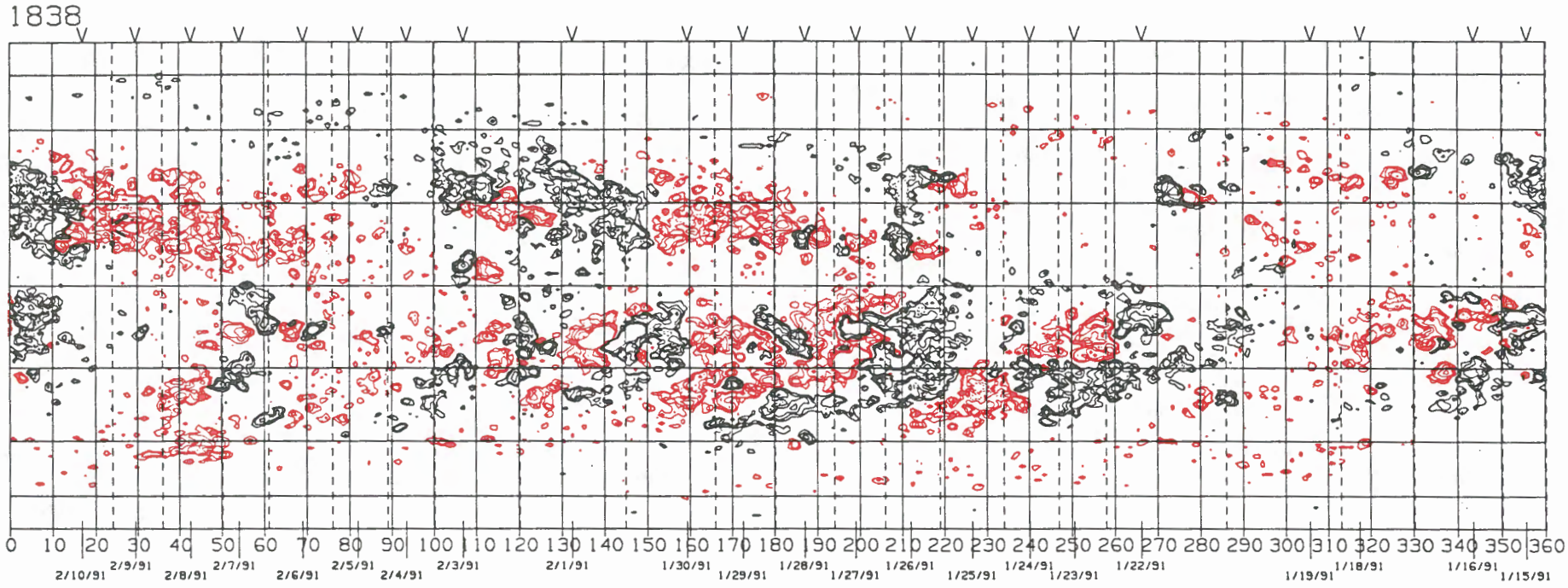
Black magnetic contour lines represent positive fields (magnetic vector pointed toward the observer), and red contour lines represent negative fields. When a contour line represents a lower rather than a higher value, the line is dashed. Thus if there is a positive 10 gauss contour line that is solid surrounding a dashed contour line, the latter represents positive 10 gauss, and within it is less than positive 10 gauss. This rule applies only to contours which are not open at a boundary between two days observations.

The gauss levels are ± 5, ± 10, ± 20, ± 40, ± 80 gauss. Corrections are made to compensate for limb darkening or any other decrease in the brightness of the light but no corrections are made for possible geometrical effects such as the inclination to the line of sight of the line of force at high latitudes, and no corrections are made for the fact that the spectum line is temperature sensitive. (cf. Howard and Stenflo, Solar Physics, 22, 402 (1972) for the necessary correction factor.)

Positions are generally accurate to about 12 arc seconds. Naturally there is some smearing of the data at high latitudes because of the geometry of the situation. Data greater than 40° from central meridian should be treated with some caution. Serious inaccuracies of fit at the boundary between two days' observations are normally due to rapid growth of a region.

This project was initiated under the auspicies of the Carnegie Institution of Washington through their Mount Wilson and Las Campanas Observatory in Pasadena, California. It is currently operated by UCLA with permission of the Mount Wilson Institute which has officies at 740 Holladay Road, Pasadena, California 91106. Partial support for the observation and reduction of this material comes from the National Aeronautics and Space Administration through grant NAGW-472, the National Science Foundation through grant AST88-13491 and the Office of Naval Research through contract ONR:N00014-86-K-0056.

ROGER K. ULRICH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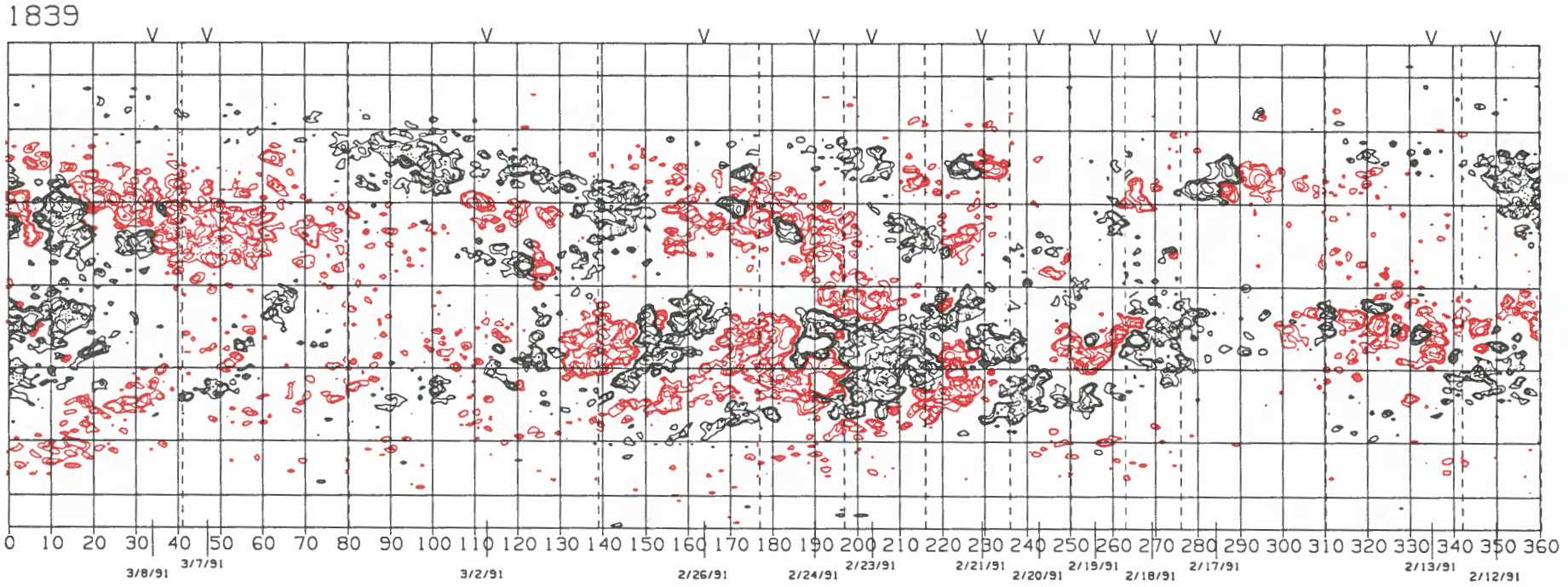
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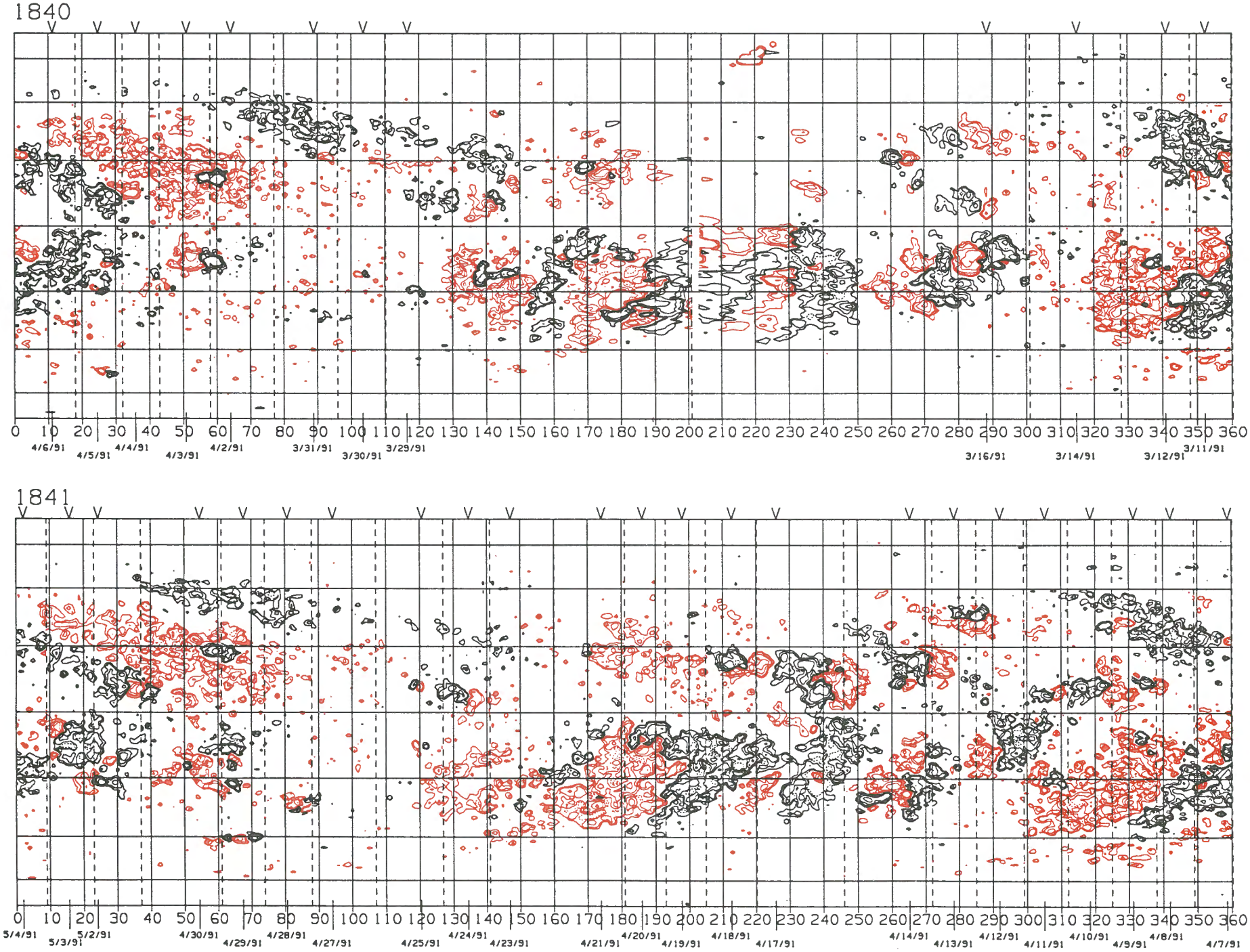
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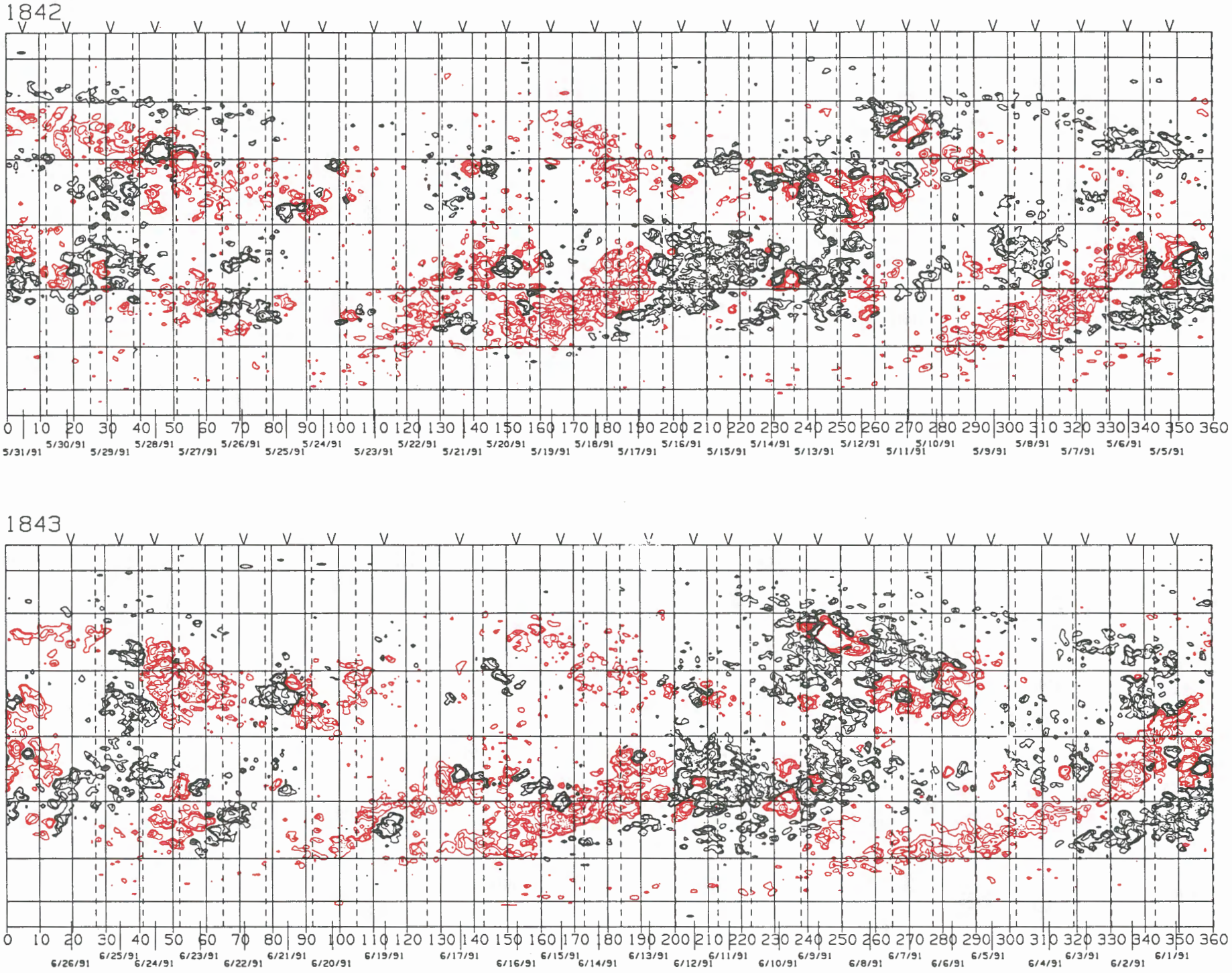
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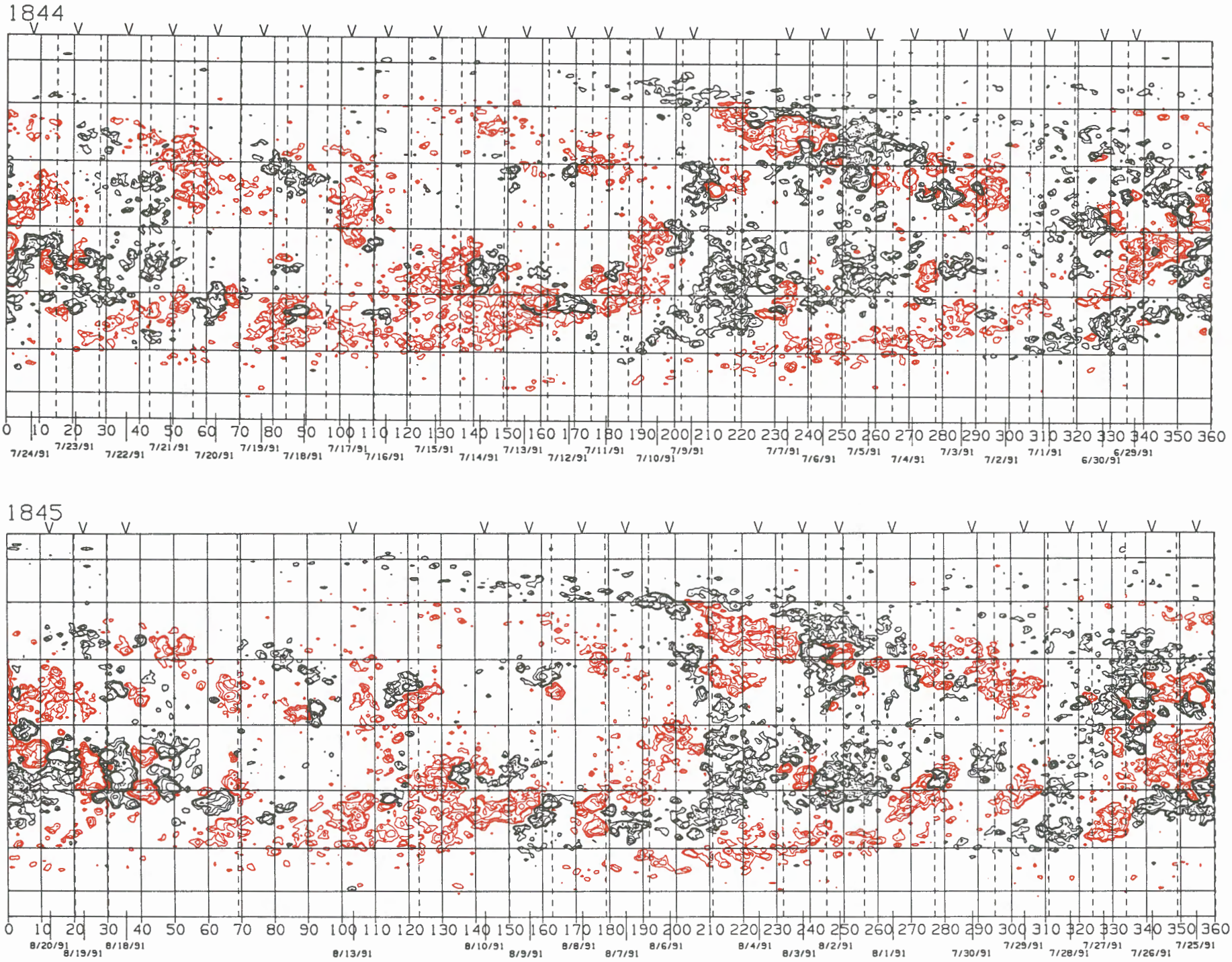
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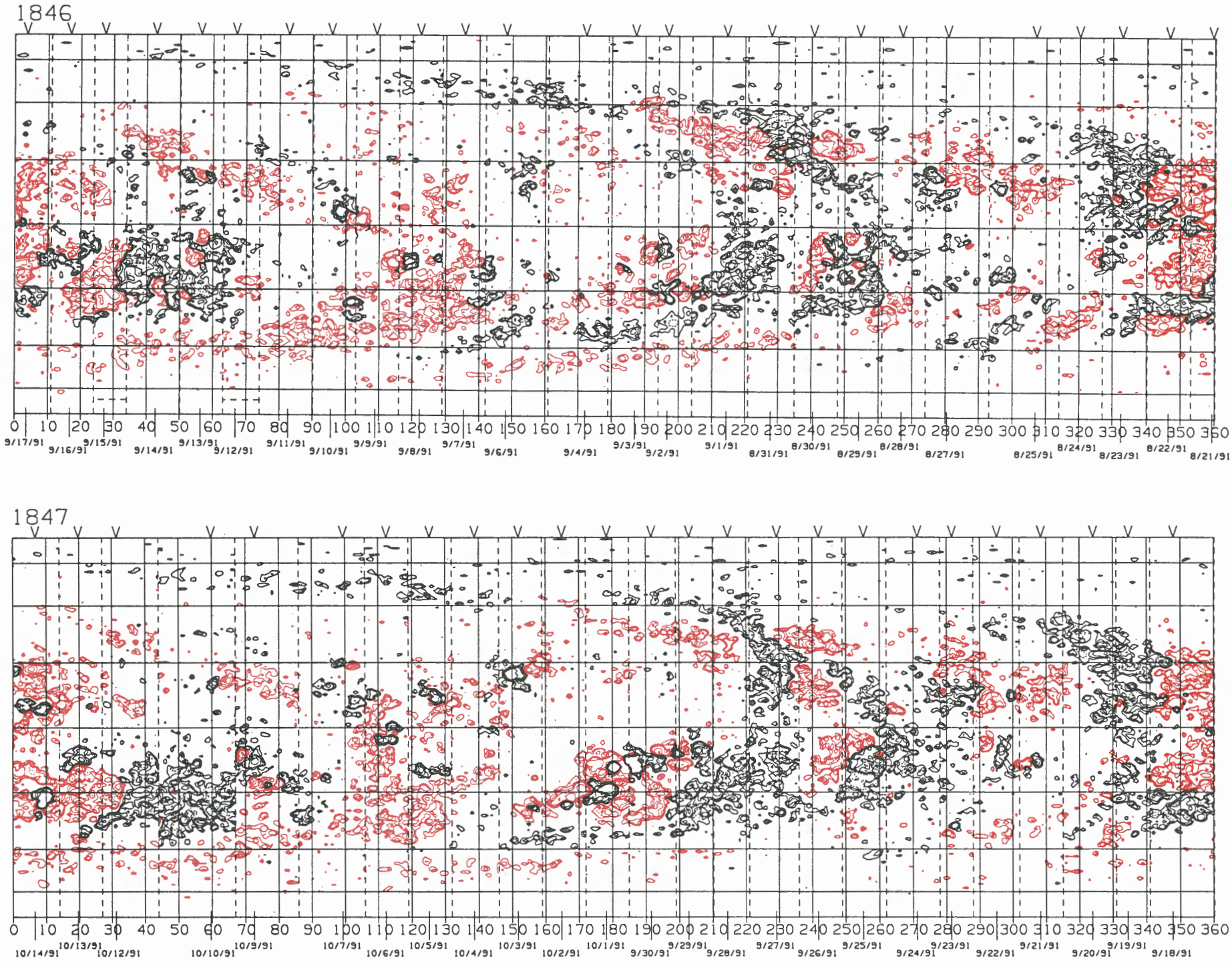
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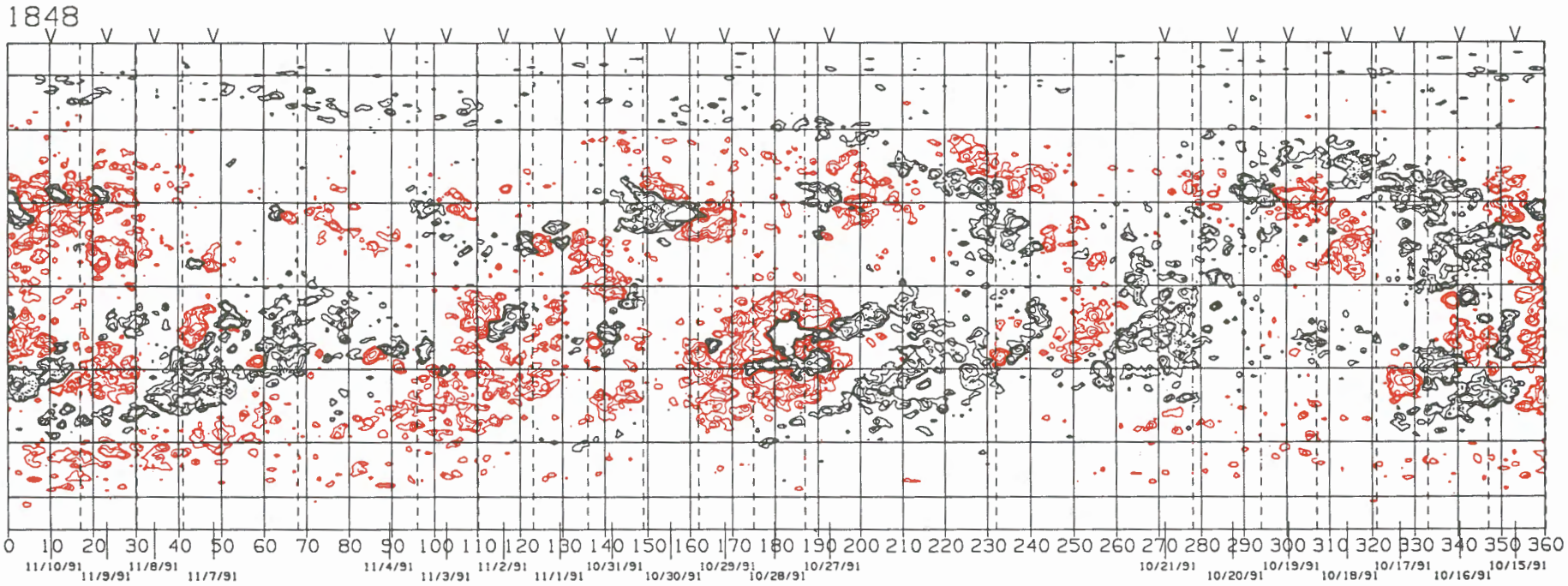
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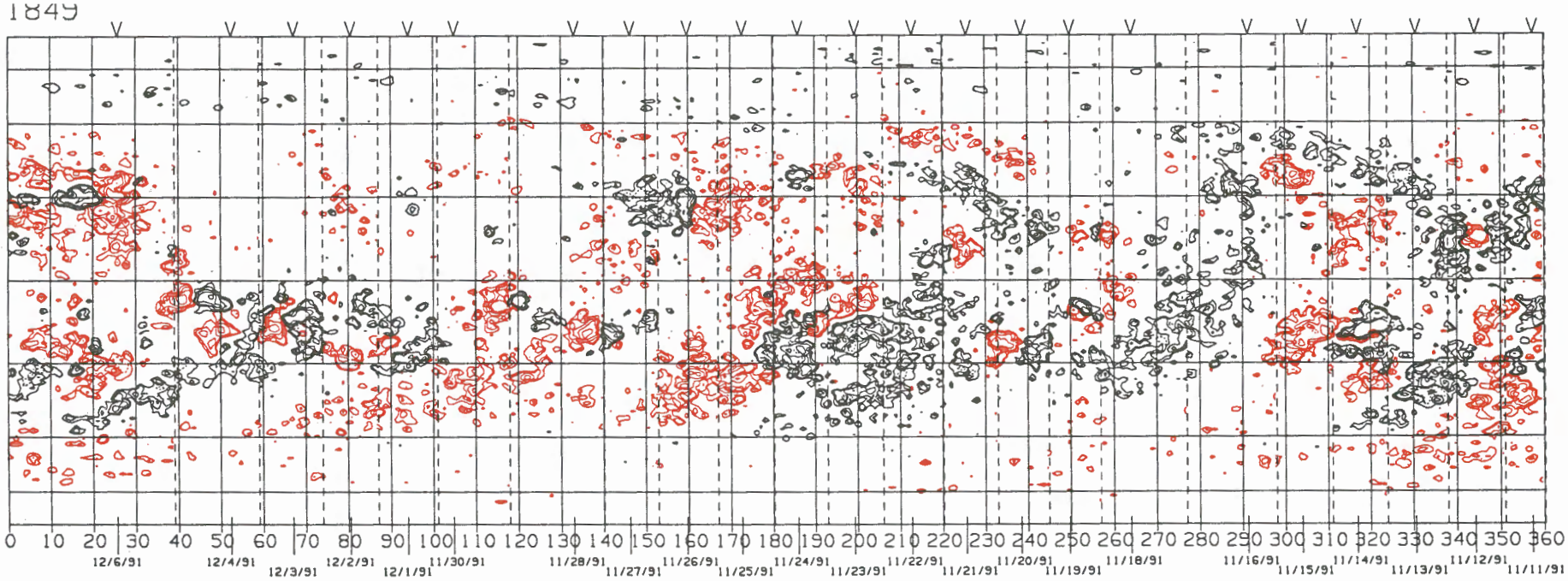
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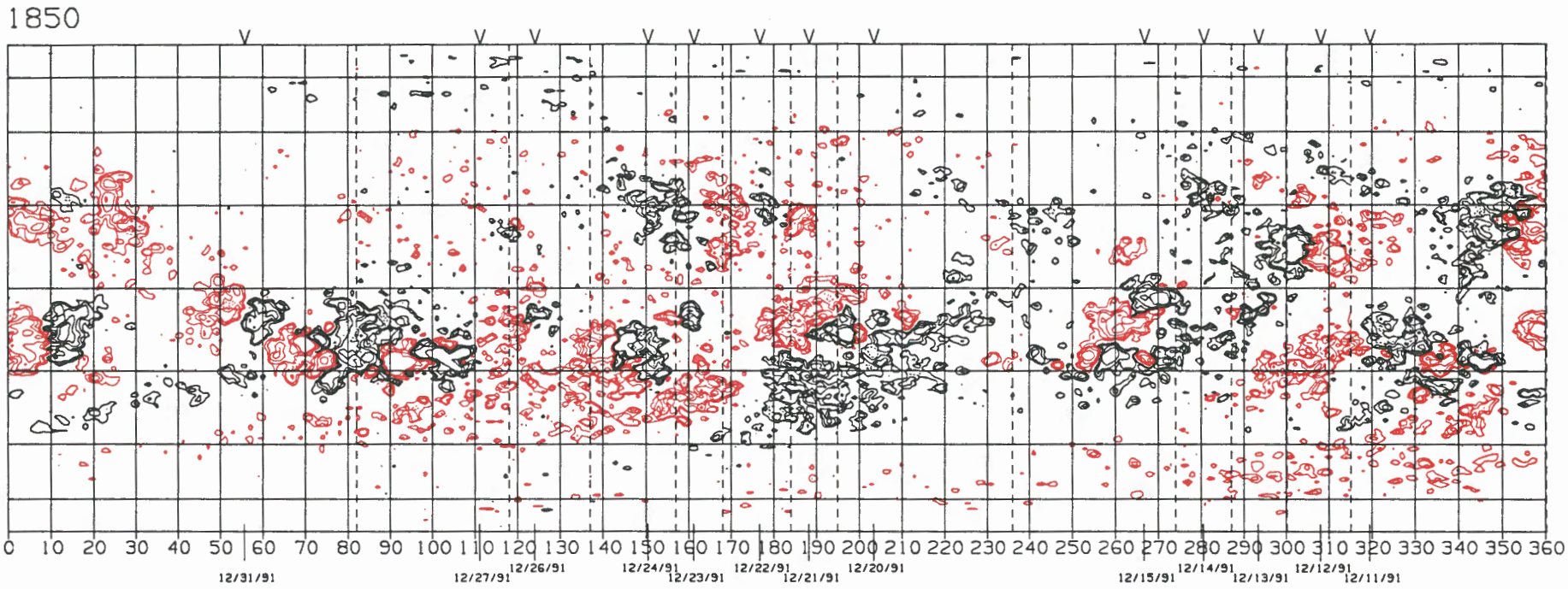
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