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# Global variability of crustal stress pattern deduced from the 2008 World Stress Map database release

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The 2008 WSM database release contains 21,750 stress data records and thus allows for analysis of the global stress pattern at far greater scales than was previously possible. Using a subset of more than 11,300 A-C quality stress data records we accomplished a global spatial wave-length analysis of the mean orientation of maximum horizontal compressional stress SH on a 0.5° grid. The resulting hybrid smoothed global stress map displays both the mean SH orientation on the grid and the maximum smoothing radius for which the standard deviation of the mean SH orientation is < 25°. This hybrid global map confirms that long spatial wave-length stress patterns (>1000 km) exist in some areas (e.g. North America, NE Asia). Such large wave-length SH orientations have been used in earlier analyses to conclude that the global stress pattern is primarily controlled by plate boundary forces that are transmitted throughout the intraplate region. In our analysis the stress patterns of western Europe, Alaska and the Aleutians, the southern Rocky Mountains, Basin and Range, Scandinavia, Caucasus, most of the Himalayas, and Indonesia show smaller wave-lengths, namely in the order of less than 100 km. This smaller spatial wave-lengths could imply that the forces that are transmitted across the plates act either over shorter distances then previously suggested and that regional and local stress sources such as density contrasts and active faults systems control the stress pattern.