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Spherical Wavelet Analysis of temporal Variations in the Earth's Gravitational Field observed by GRACE

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In this talk we show a multiscale analysis of monthly gravitational field models which were derived from GRACE satellite observations. For this purpose we use different spherical wavelets and scaling functions. It turns out that temporal variations, e.g. due to hydrological effects, can be observed very well in certain wavelet scales. Since wavelets allow, by varying the scales, the modification of the spatial resolution it is clear that this method allows the separation of phenomena of different volume extension. Moreover, with this approach we calculate wavelet scale variances which are space-dependent in contrast to classical degree variances which are mean values over the whole sphere.