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A Fast Spherical Harmonics Transform for Global NWP and Climate Models

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A Fast Spherical Harmonics Transform for Global NWP and Climate Models

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Abstract

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Abstract

Very high-resolution spectral transform models are believed to become expensive because of the relative increase in computational cost of the transforms compared to the gridpoint computations. This article describes the implementation of a practical fast spherical harmonics transform into the Forecast System (IFS) at ECMWF. Details of the accuracy of the computation, parallelization, and memory use are discussed. Results are presented that show the cost effectiveness and accuracy of the fast spherical harmonics transform successfully mitigating the concern about the disproportionately growing cost. Using the new transforms, the first T7999 global weather forecast (≈2.5-km horizontal grid size) using a spectral transform model has been

Keywords: [Spectral analysis/models/distribution](#); [Climate models](#); [Numerical prediction/forecasting](#); [Spectral analysis/models/distribution](#)

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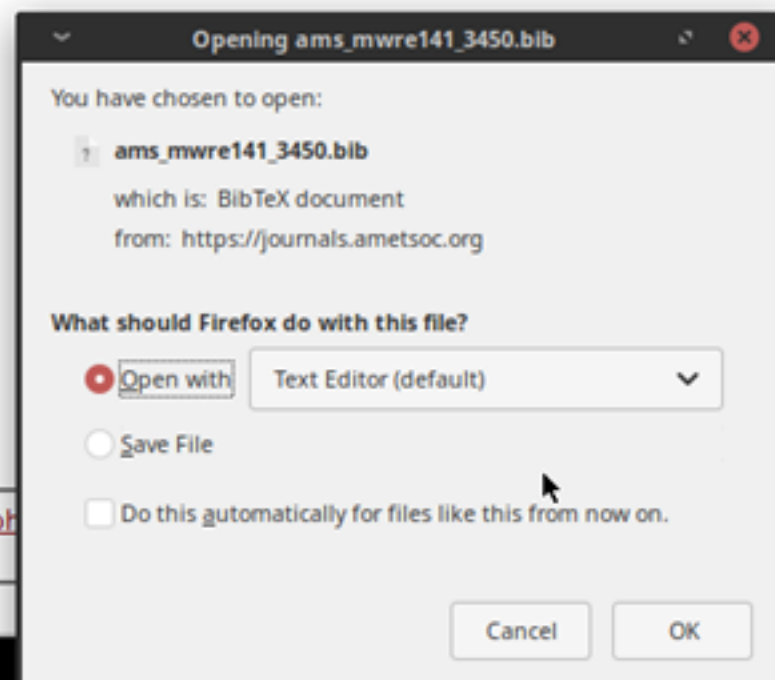
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