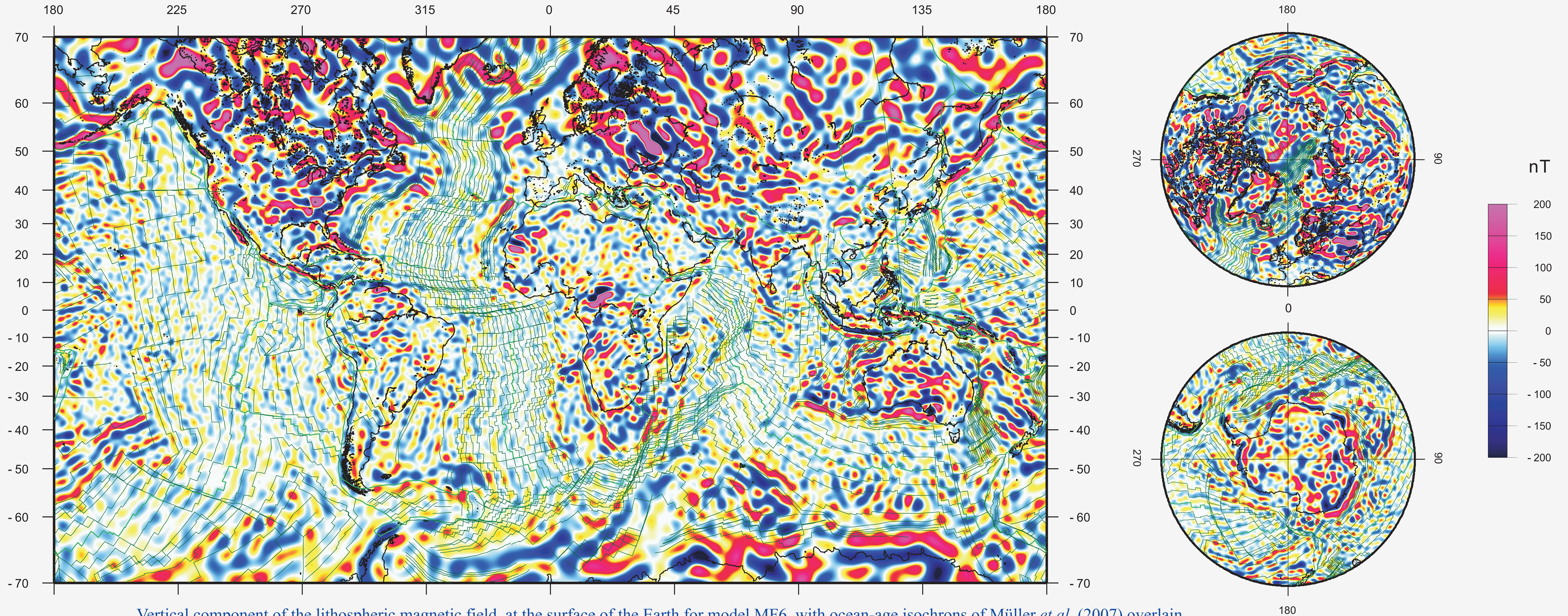


# Sixth generation lithospheric magnetic field model, MF6, from CHAMP satellite magnetic measurements

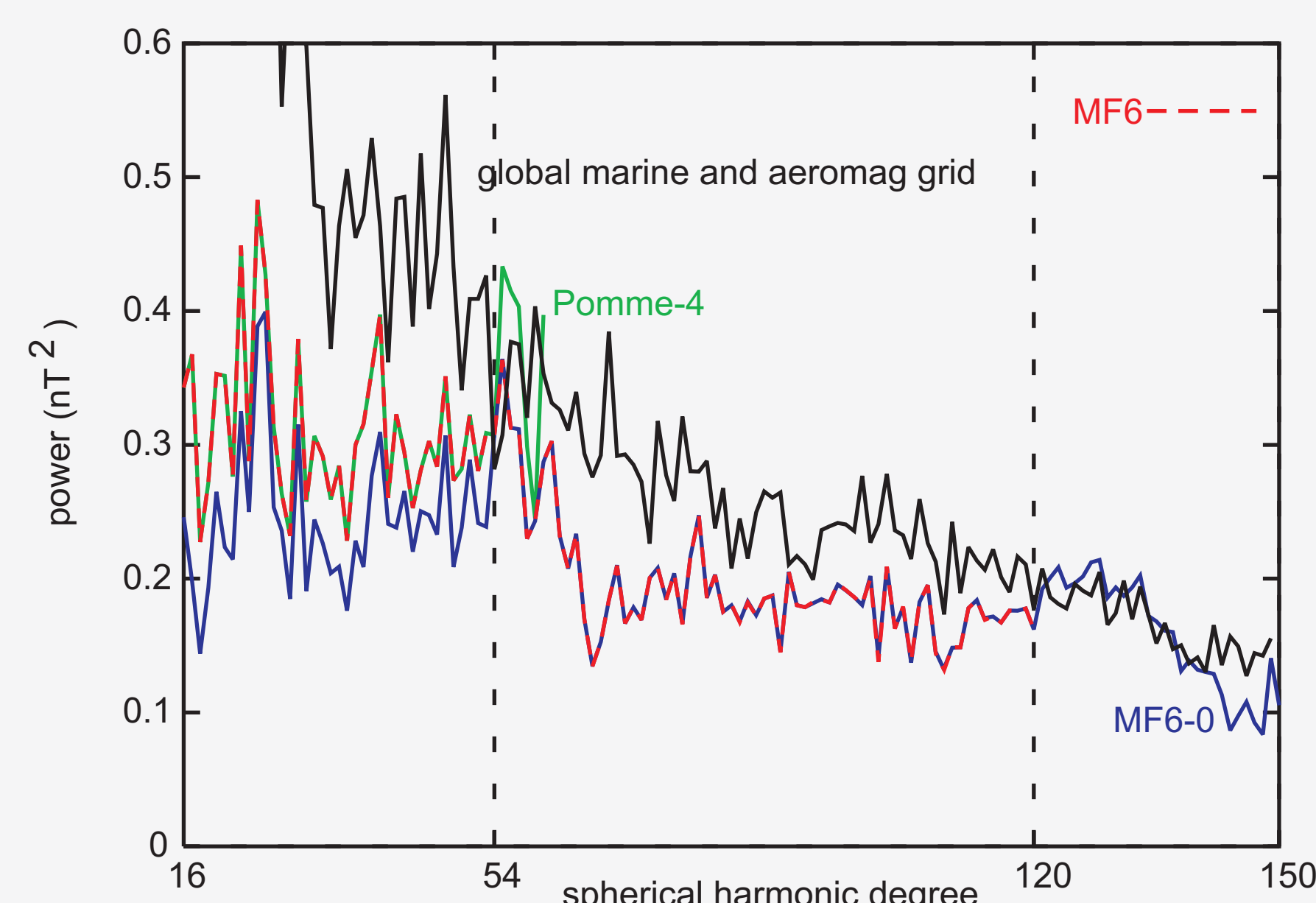
S. Maus (Stefan.Maus@noaa.gov) and C. Manoj, CIRES, University of Colorado  
 F. Yin, M. Rother, J. Rauberg, I. Michaelis, C. Stolle, and H. Lühr, GeoForschungsZentrum Potsdam  
 R. Dietmar Müller, University of Sydney



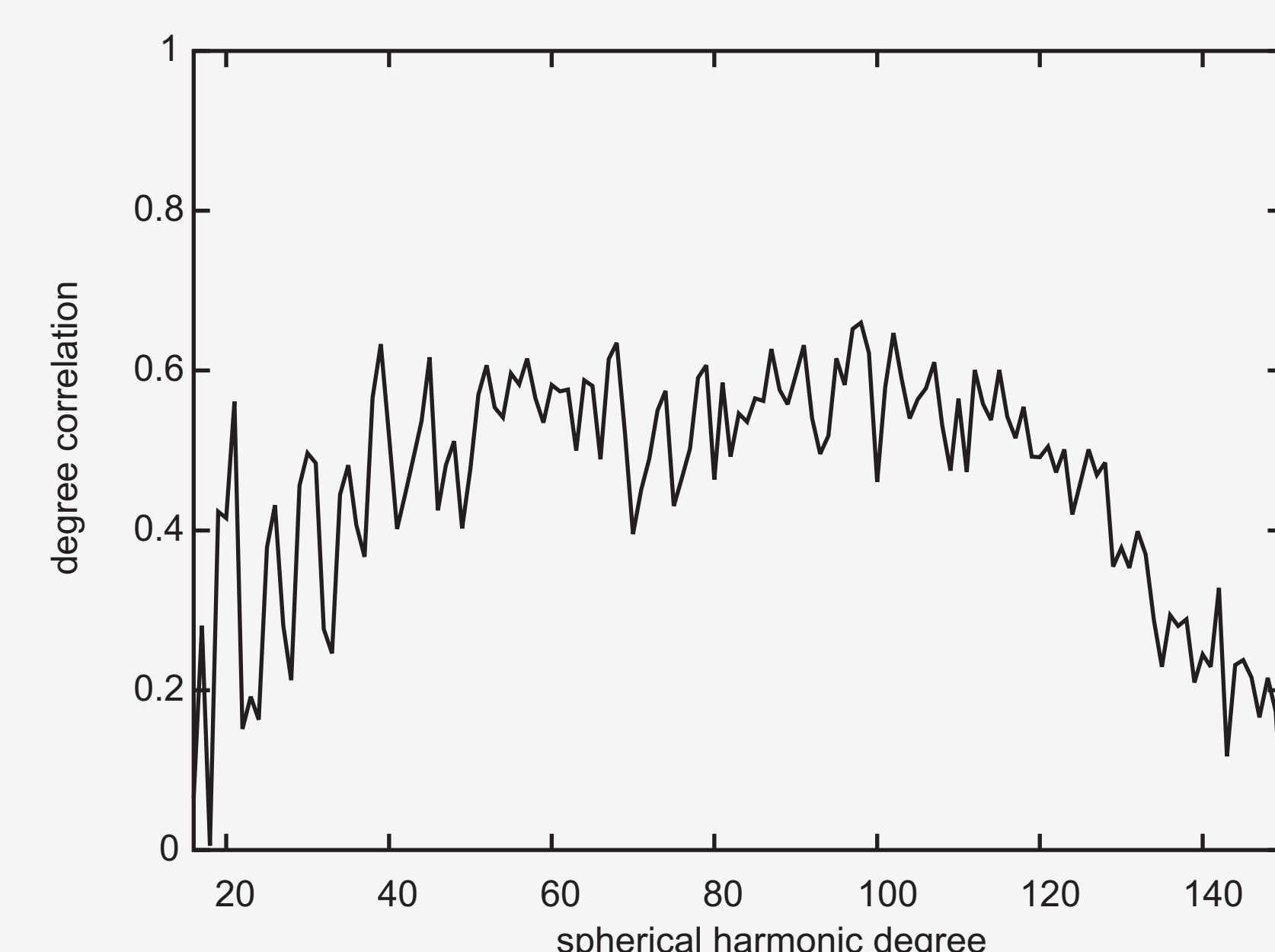
Vertical component of the lithospheric magnetic field at the surface of the Earth for model MF6, with ocean-age isochrons of Müller *et al.* (2007) overlain

The CHAMP satellite continues to provide highly accurate magnetic field measurements with decreasing orbital altitudes (<350km) at solar minimum conditions. A promising new CHAMP data product has become available, which provides the total field with one order of magnitude smaller noise amplitudes. The product is inferred from suitably merged Fluxgate and Overhauser magnetometer data and takes advantage of the low-noise Fluxgate measurements in the short-period range (<900sec, or <6000km wavelength).

The new data set was used here to generate an improved lithospheric magnetic field model MF6 to degree 120.



The MF6 model was synthesized from degrees 55-120 of an initial model MF6-0 and degrees 16-54 from Pomme-4 (<http://geomag.org/models/pomme4.html>)



Degree correlation between MF6-0 and a global grid of independent marine and aeromagnetic data

## Conclusions

Using a new scalar data product from the latest readings of the CHAMP FGM magnetometer, we have resolved the lithospheric magnetic field to degree 120, corresponding to 333 km wavelength. The data were found to be sensitive to crustal field variations up to degree 150 (down to 266 km wavelength), but a clean separation of the lithospheric signal from ionospheric and magnetospheric noise sources was only achieved to degree 120.

The MF6 model is the first satellite-based magnetic model to resolve the direction of oceanic magnetic lineations, revealing the age structure of oceanic crust. Model coefficients, grids and images are available at <http://geomag.org/models/MF6.html>.

## References

- Maus, S., H. Lühr, M. Rother, K. Hemant, G. Balasis, P. Ritter, and C. Stolle (2007), Fifth-generation lithospheric magnetic field model from CHAMP satellite measurements, *Geochem. Geophys. Geosyst.*, 8, Q05013, doi:10.1029/2006GC001521.
- Müller, R. D., M. Sdrolias, C. Gaina, and W. R. Roest (2007), Age, spreading rates and spreading asymmetry of the world's ocean crust, submitted to *Geochem. Geophys. Geosyst.*