### GRACE Equivalent Water Mass Balance of the Himalayas and Tibet Plateau

Reginald R. Muskett, Geophysical Institute & the International Arctic Research Center, University of Alaska Fairbanks, AK, USA

**Abstract**

The Himalayan and the Tibetan Plateau region is one of the most rapid mountainous regions on earth, and the site of one of the world’s largest glacial systems. The GRACE satellite mission was designed specifically to measure the mass variations of the Earth’s land surface in order to monitor processes that contribute to climate change and water storage. Its dual-mission objective is to return data to the scientific community, and the Himalayan and Tibetan Plateau region is the area of focus for this analysis. The results of this study provide a comprehensive picture of the mass changes in this region over time.

### GRACE Sub-Region Secular Trends and Variations from 8-2002 through 12-2006

The plot shows the secular trend of water mass changes in the Himalayas and Tibet Plateau region from August 2002 through December 2006. A significant trend is visible in the region, and the trend is consistent with the secular trend in the Himalayas and Tibet region as a whole.

### GRACE Region Secular Trends and Variations

The plot shows the secular trend of water mass changes in the Himalayas and Tibet Plateau region from August 2002 through December 2006. A significant trend is visible in the region, and the trend is consistent with the secular trend in the Himalayas and Tibet region as a whole.

### Least-Squares Fitted Sinusoidal Model

A simple and straightforward model was applied to the GRACE time series to extract the long-term periodic signature of the Himalayas and Tibet region.

### Residual Trend (GRACE - Model)

The plot shows the residual trend of water mass changes in the Himalayas and Tibet Plateau region from August 2002 through December 2006. The residual trend is consistent with the secular trend in the Himalayas and Tibet region as a whole.

### Acknowledgements

Reginald R. Muskett, Geophysical Institute & the International Arctic Research Center, University of Alaska Fairbanks, AK, USA

This study was supported by the National Science Foundation under award number 0708448, and the EarthScope program of the AGU.

### References

