



Soil Moisture Extremes Observed by METOP ASCAT: Was 2012 an Exceptional Year?

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In summer 2012 the international press reported widely about the severe drought that had befallen large parts of the United States. Yet, the US drought was only one of several major droughts that occurred in 2012: Southeastern Europe, Central Asia, Brazil, India, Southern Australia and several other regions suffered from similarly dry soil conditions. This raises the question whether 2012 was an exceptionally dry year? In this presentation we will address this question by analyzing global soil moisture patterns as observed by the Advanced Scatterometer (ASCAT) flown on board of the METOP-A satellite. We firstly compare the 2012 ASCAT soil moisture data to all available ASCAT measurements acquired by the instrument since the launch of METOP-A in November 2006. Secondly, we compare the 2012 data to a long-term soil moisture data set derived by merging the ASCAT soil moisture data with other active and passive microwave soil moisture retrievals as described by Liu et al. (2012) and Wagner et al. (2012) (see also <http://www.esa-soilmoisture-cci.org/>). A first trend analysis of the latter long-term soil moisture data set carried out by Dorigo et al. (2012) has revealed that over the period 1988-2010 significant trends were observed over 27 % of the area covered by the data set, of which 73 % were negative (soil drying) and only 27 % were positive (soil wetting). In this presentation we will show how the inclusion of the years 2011 and 2012 affects the areal extent and strengths of these significant trends.

REFERENCES

Dorigo, W., R. de Jeu, D. Chung, R. Parinussa, Y. Liu, W. Wagner, D. Fernández-Prieto (2012) Evaluating global trends (1988-2010) in harmonized multi-satellite surface soil moisture, *Geophysical Research Letters*, 39, L18405, 1-7.

Liu, Y.Y., W.A. Dorigo, R.M. Parinussa, R.A.M. de Jeu, W. Wagner, M.F. McCabe, J.P. Evans, A.I.J.M. van Dijk (2012) Trend-preserving blending of passive and active microwave soil moisture retrievals, *Remote Sensing of Environment*, 123, 280-297.

Wagner, W., W. Dorigo, R. de Jeu, D. Fernandez, J. Benveniste, E. Haas, M. Ertl (2012) Fusion of active and passive microwave observations to create an Essential Climate Variable data record on soil moisture, *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS Annals)*, Volume I-7, XXII ISPRS Congress, Melbourne, Australia, 25 August-1 September 2012, 315-321.