

## **Prof. Dr. rer. nat. Joachim Hill**

### **Leiter der Abteilung Fernerkundung**

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### **Projekte**

#### **SASSCAL**

Southern African Science Service Center for Climate Change and Adaptive Land Management in Southern Africa, Bundesministerium für Bildung und Forschung, 2013-2016

#### **The Future Okavango (TFO)**

Sustainable land management strategies in a transnational catchment in Southern Africa, Bundesministerium für Bildung und Forschung, 2010-2015

#### **SuMaRiO**

Sustainable Management of River Oases in the Tarim Basin (China)  
Bundesministerium für Bildung und Forschung, 2011-2016

#### **WTZ YangtzeGEO II**

Land use change, soil erosion, mass movements and nutrient fluxes in the Three-Gorges-Dam area, Yangtze River (China), Bundesministerium für Bildung und Forschung, 2012-2015

#### **EnMAP Core Science Team**

Algorithmenentwicklung im Bereich Forstökosysteme, forstliches Ressourcenmanagement und Biodiversität

### **Regiowood**

Grenzübergreifende Zusammenarbeit zur Entwicklung der forst- und holzwirtschaftlichen Branche in der Großregion

### **ForeStClim**

Transnationale Waldbewirtschaftungsstrategien unter den Bedingungen regionaler Klimaänderungen

### **LADAMER**

Land Degradation Assessment in Mediterranean Europe

### **Geomatics in the assessment and sustainable management of mediterranean rangelands (GEORANGE)**

GeoRange, funded by the European Union, has been set up by experts in range ecology and management, ecosystem conservation and restoration, remote sensing and spatial information systems. With the direct involvement of responsible land managers, it aims at the definition of optimised management strategies for multi-functional rangelands.

### **EON2000+ - Earth Observation for Natura2000+**

EU gefördertes Drittmittelprojekt. Entwicklung eines europaweiten Indikatoren-systems zur Überwachung von Natura 2000 Flächen und Berichterstattung im Sinne des Artikels 17 der FFH-Richtlinie unter Verwendung von Fernerkundung und GIS

### **Sonderforschungsbereich 522: Umwelt und Region**

**Teilprojekt B8:** Fernerkundliche Erfassung, Quantifizierung und Modellierung umweltrelevanter Indikatoren und ihre Integration in ein Umweltinformationssystem.

### **Land Use Change Interactions with Fire (LUCIFER)**

Within the LUCIFER project the Remote Sensing Department at the University of Trier worked on methods to detect structural changes on landscape scale which are due to the influence of large fires.

### **DEMON 2**

Integrated Approach to Desertification Mapping and Monitoring in the Mediterranean Basin.

**ERMES 2**

An Assessment of Organic Matter Contents in Xeromorphic Soils from Mediterranean Ecosystems through Multi- and Hyperspectral Remote Sensing.

**DEMON**

Satellite-based Desertification Monitoring in the Mediterranean Basin.

## Akademischer Werdegang

|            |  |
|------------|--|
| 2009-2014  | Vizepräsident der Universität Trier  |
| seit 2009  | Mitglied im "Core Science Team" der EnMAP-Mission zur Entwicklung eines satellitengestützten Hyperspektralsensors  |
| 2008       | Berufung an die Freie Universität Berlin (Ruf abgelehnt)   |
| 2006       | 6-wöchiges DAAD Trainingsprogramm, Nong Lam University (University for Agriculture and Forestry) in Thu Duc (Ho Chi Minh City), Vietnam  |
| 2004-2011  | Mitglied des "Scientific Advisory Committee" des „Institute for Biodiversity and Ecosystem Dynamics" (IBED), University of Amsterdam   |
| 2003-2012  | Mitglied im Advisory Board und im Steering Committee von DesertNet International, eines europäischen Netzwerks zur globalen Desertifikationsforschung  |
| 1996       | Berufung an die Universität Bonn (Ruf abgelehnt)   |
| 25.03.1994 | Berufung auf den Lehrstuhl für Fernerkundung an die Universität Trier  |
| 20.07.1994 | Habilitation an der Ludwig-Maximilians-Universität München. Habilitationsarbeit "Der Einsatz optischer Fernerkundungssysteme zur Kartierung und Überwachung von Degradations- und Boden-erosionsphänomenen in mediterranen Ökosystemen". |
| 26.02.1993 | Promotion mit "Summa cum laude" zum Dr. rer.nat.   |
| 1987-1994  | Wissenschaftlicher Bediensteter der Gemeinsamen Forschungsstelle der EU in Ispra, Italien (Inst. für Anwendungen der Fernerkundung)  |
| 1984-1987  | Promotionsstipendiat der Europäischen Union  |
| 1983       | 2. Staatsexamen  |
| 1975-1981  | Studium der Geographie und Geschichte (Lehramt und Gymnasien) mit Abschlüssen 1. Staatsexamen und Magister Artium.   |
| 12.12.1953 | in Trier (Deutschland) geboren   |

## **Besondere Aktivitäten**

Gutachter für das Environment & Climate Programme der EU, sowie für die German-Israeli Foundation for Scientific Research & Development

Koordinator der interdisziplinären EU-geförderten Forschungsprojekte GeoRange und LADAMER

## **Persönliches**

Seit 1978 verheiratet mit Elfriede Könen-Hill und Vater von zwei Kindern

## Publikationen (seit 2008)

### Beiträge in Zeitschriften

H. Buddenbaum, S. Seeling & J. Hill (2013): Fusion of full waveform LiDAR and imaging spectroscopy remote sensing data for the characterization of forest stands. *International Journal of Remote Sensing*, 34 (13): 4511-4524. [DOI](#)

P. Poeschel, G. Newnham, G. Rock, T. Udelhoven, W. Werner & J. Hill (2013): The influence of scan mode and circle fitting on tree stem detection, stem diameter and volume extraction from terrestrial laser scans. *ISPRS Journal of Photogrammetry and Remote Sensing*, 77: 44-56. [DOI](#)

Stellmes, M., Röder, A., Udelhoven, T. & Hill, J. (2013): Mapping syndromes of land change in Spain with remote sensing time series, demographic and climatic data. *Land Use Policy*, 30, 685-702. doi:10.1016/j.landusepol.2012.05.007

Buddenbaum, H., O. Stern, M. Stellmes, J. Stoffels, P. Poeschel, J. Hill & W. Werner (2012): Field Imaging Spectroscopy of Beech Seedlings under Dryness Stress. *Remote Sensing*, 4: 3721-3740. doi:10.3390/rs4123721

Poeschel, P., H. Buddenbaum & J. Hill (2012): An efficient approach to standardizing the processing of hemispherical images for the estimation of forest structural attributes. *Agricultural and Forest Meteorology*, 160: 1-13.

Stoffels, J., S. Mader, J. Hill, W. Werner & G. Ontrup (2012): Satellite-based stand-wise forest cover type mapping using a spatially adaptive classification approach. *European Journal of Forest Research*, 131 (4): 1071-1089. DOI: 10.1007/s10342-011-0577-2

Vohland, M., Besold, J., Hill, J. & Fründ, H.-C. (2011): Comparing different multivariate calibration methods for the determination of soil organic carbon pools with visible to near infrared spectroscopy. *Geoderma* 166, 198-205.

Buddenbaum, H., P. Poeschel, M. Stellmes, W. Werner & J. Hill (2011): Measuring water and Chlorophyll content on the leaf and canopy scale. *EARSel eProceedings*, 10 (1): 66-72.

Vogt, J.V., Safriel, U., Von Maltitz, G., Sokona, Y., Zougmore, R., Bastin, G. & Hill, J (2011): Monitoring and assessment of land degradation and desertification: Towards new conceptual and integrated approaches. *Land Degradation & Development*, Special Issue: Special Issue on Understanding Dryland Degradation Trends, 22 (2), 150–165.

Sommer, S., Zucca, C., Grainger, A., Cherlet, M., Zougmore, R., Sokona, Y., Hill, J., Della Peruta, R., Roehrig, J. & Wang, G. (2011): Application of indicator systems for monitoring and assessment of desertification from national to global scales. *Land Degradation & Development*, Special Issue: Special Issue on Understanding Dryland Degradation Trends, 22 (2): 184-197.

Förster, M., D. Spengler, H. Buddenbaum, J. Hill & B. Kleinschmit (2010): A review of the combination of spectral and geometric modelling for the application in forest remote sensing - Ein Überblick über die Kombination spektraler und geometrischer Modellierung zur Anwendung in der forstlichen Fernerkundung. *Photogrammetrie - Fernerkundung - Geoinformation*, 2010 (4): 253-265.

Stellmes, M., T. Udelhoven, A. Röder, R. Sonnenschein & J. Hill (2010): Dryland observation at local and regional scale - comparison of Landsat TM/ETM+ and NOAA AVHRR time series. *Remote Sensing of Environment*, 114 (10): 2111-2125, doi:10.1016/j.rse.2010.04.016.

Schlerf, M., C. Atzberger, J. Hill, H. Buddenbaum, W. Werner & G. Schüller (2010): Retrieval of chlorophyll and nitrogen in Norway spruce (*Picea abies* L. Karst.) using imaging spectroscopy. *International Journal of Applied Earth Observation and Geoinformation*, 12 (1): 17-26.

Jarmer, T., Hill, J., Lavee, H. & Sarah, P. (2010): Mapping Topsoil Organic Carbon in Non-agricultural Semi-arid and Arid Ecosystems of Israel. *Photogrammetric Engineering and Remote Sensing*, 76 (1): 85-94.

Ben-Dor, E., S. Chabrillat, J.A.M. Demattê, G.R. Taylor, J. Hill, M.L. Whiting & S. Sommer (2009): Using Imaging Spectroscopy to study soil properties. *Remote Sensing of Environment*, 113: S38-S55.

Udelhoven, T., M. Stellmes, G. del Barrio & J. Hill (2009): Assessment of rainfall and NDVI anomalies in Spain (1989-1999) using distributed lag models. *International Journal of Remote Sensing*, 30 (8), 1961-1976, DOI: 10.1080/0143116080254682.

Ben-Dor, E., R.G. Taylor, J. Hill, J.A.M. Demattê, M.L. Whiting, S. Chabrillat & S. Sommer (2008): Imaging Spectrometry for Soil Applications. *Advances in Agronomy*, 97: 321-392, doi:10.1016/S0065-2113(07)00008-9.

Röder, A., Th. Udelhoven, J. Hill, G. del Barrio & G. Tsiourlis (2008): Trend analysis of Landsat-TM and -ETM+ imagery to monitor grazing impact in a rangeland ecosystem in Northern Greece. *Remote Sensing of Environment*, 112: 2863-2875.

Hill, J., Stellmes, M., Udelhoven, T., Röder, A. & Sommer, S. (2008): Mediterranean desertification and land degradation Mapping related land use change syndromes based on satellite observations. *Global and Planetary Change*, 64: 146-157.

Lorent, H., Evangelou, C., Stellmes, M., Hill, J., Papanastasis, V.P., Tsiourlis, G., Röder, A. & Lambin, E.F. (2008): Land degradation and economic conditions of agricultural households in a marginal region of northern Greece. *Global and Planetary Change*, 64: 198-209.

Weber, B., C. Olehowski, T. Knerr, J. Hill, K. Deutschewitz, D.C.J. Wessels, B. Eitel & B. Büdel (2008): A new approach for mapping of Biological Soil Crusts in semidesert areas with hyperspectral imagery. *Remote Sensing of Environment*, 112 (5): 2187-2201.

### **Buchbeiträge**

G. Schüler, L. Pfister, M. Vohland, S. Seeling & J. Hill (2011): Large scale approaches to forest and water interactions. In: M. Bredemeier, S. Cohen., D. Godbold, E. Lode, V. Pichler & P. Schleppi (Eds.): *Forest management and the water cycle - An ecosystem-based approach*. Ecological Studies, Vol. 212, S. 435-452, Berlin, Heidelberg & New York.

Hill, J. (2010): State-of-the-Art and Review of Algorithms with Relevance for Retrieving Biophysical and Structural Information on Forests and Natural Vegetation with Hyperspectral Remote Sensing Systems. In: H. Kaufmann et al. (eds.): *Hyperspectral algorithms: report in the frame of EnMAP preparation activities*. Scientific Technical Report STR10/08. Potsdam. DOI: 10.2312/GFZ.b103-10089.

Hill, J., Udelhoven, T., Vohland, M. & Stevens, A. (2010): The Use of Laboratory Spectroscopy and Optical Remote Sensing for Estimating Soil properties. In: Oerke, E. et al. (eds), *Precision Crop Protection - The Challenge and Use of Heterogeneity*. Springer Science, 67-86. DOI 10.1007/978-90-481-9277-9\_5

Röder, A., Hill, J., Kuemmerle, T., del Barrio, G., Papanastasis, V.P., & Tsiourlis, G.M. (2009): Geomatics-based characterization of spatial and temporal trends in heterogeneous Mediterranean rangelands of Northern Greece. In: A. Röder & J. Hill (Eds.), *Recent Advances in Remote Sensing and Geoinformation Processing for Land Degradation Assessment* (pp. 281-300). London: Taylor & Francis.

Hill, J., Röder, A., Mehl, W., & Tsiourlis, G.M. (2009): Retrieving rangeland vegetation characteristics through constrained inverse reflectance modelling of earth observation



satellite imagery. In: A. Röder & J. Hill (Eds.), *Recent Advances in Remote Sensing and Geoinformation Processing for Land Degradation Assessment* (pp. 211-226). London: Taylor & Francis.

T. Udelhoven, J. Hill (2009): Change detection in Syria's rangelands using long-term AVHRR data (1982 – 2004). In: A. Röder & J. Hill (Eds.), *Recent Advances in Remote Sensing and Geoinformation Processing for Land Degradation Assessment* (pp. 117-132). London: Taylor & Francis.

T. Jarmer, H. Lavée, P. Sarah & J. Hill (2009): Using reflectance spectroscopy and Landsat data to assess soil inorganic carbon in the Judean desert (Israel). In: A. Röder & J. Hill (Eds.), *Recent Advances in Remote Sensing and Geoinformation Processing for Land Degradation Assessment* (pp. 211-226). London: Taylor & Francis.

### **Monographien/Bücher**

H. Kaufmann, K. Segl, S. Itzerott, H. Bach, A. Wagner, J. Hill, B. Heim, K. Oppermann, W. Heldens, E. Stein, A. Müller, S. van der Linden, P. J. Leitão, A. Rabe & P. Hostert (2010): *Hyperspectral algorithms: report in the frame of EnMAP preparation activities*. Scientific Technical Report STR10/08. Potsdam. DOI: 10.2312/GFZ.b103-10089. <http://ebooks.gfz-potsdam.de/pubman/item/escidoc:18089>

Röder, A. & Hill, J. (2009). *Recent Advances in Remote Sensing and Geoinformation Processing for Land Degradation Assessment*. London: Taylor & Francis.

### **Konferenzbeiträge**

J. Hill, H. Buddenbaum, P. Puschel, J. Stoffels, T. Sachtler, O. Stern, S. Nink, S. Mader & A. Mandelkow (2013): *Building Regional Forest Monitoring Strategies on Multi-Sensor Integration Concepts*. ESA Living Planet Symposium, Edinburgh, UK, 9-13 September 2013. (Oral Presentation)

Hill, J., Stellmes, M., Stoffels, J., Werner, W., Shtern, O. & Frantz, D. (2011): *Assessing the Sensitivity of European Beech (Fagus sylvatica L.) Stands to Severe Drought Based on Measurements from Earth Observation Satellites*. In, 1st Forestry Workshop: Operational Remote Sensing in Forest Management. 2-3 June 2011, Prague, Czech Republic. [Link](#)

H. Buddenbaum, P. Poeschel, M. Stellmes, W. Werner & J. Hill (2011): Measuring water and chlorophyll content on the leaf and canopy scale. EARSeL 7th SIG-Imaging Spectroscopy Workshop, April 11-13, Edinburgh, UK.

P. Poeschel, H. Buddenbaum & J. Hill (2011): Estimation of Leaf Area Index from airborne Laser scanning and imaging spectroscopy and comparison with ground-based methods. EARSeL 7th SIG-Imaging Spectroscopy Workshop, April 11-13, Edinburgh, UK.

P. Poeschel, H. Buddenbaum & J. Hill (2011): Estimation of Leaf Area Index from ground-based methods - Standardized processing of digital hemispherical images. EARSeL 7th SIG-Imaging Spectroscopy Workshop, April 11-13, Edinburgh, UK.

Hill, J., Dach, C., del Barrio, G., Stellmes, M., Helldén, U. & Wang, C. (2010): Integrating MODIS-EVI and Gridded Rainfall/temperature Fields for Assessing Land Degradation Dynamics in Horqin Sandy Lands, Inner Mongolia (China). In, Proceedings of the 30th EARSeL Symposium for "Remote Sensing for Science, Education and Natural and Cultural Heritage", May 31-June 3 2010, Paris, France.

Röder, A., Stellmes, M., Hill, J., Kuemmerle, T., & Tsiourlis, G. (2008): Analysing land cover change using time series analysis of Landsat data and geoinformation processing: a natural experiment in Northern Greece. In, SPIE, Remote Sensing for Agriculture, Ecosystems, and Hydrology X (DOI:10.1117/1112.800265). Cardiff.

Stellmes, M., Udelhoven, T., Röder, A., & Hill, J. (2008): Dryland observation at local and regional scale: comparison of Landsat TM and NOAA AVHRR time series. In, SPIE, Remote Sensing for Agriculture, Ecosystems, and Hydrology X (DOI:10.1117/1112.800266). Cardiff.

## **Sonstige**

H. Kaufmann, S. Förster, H. Wulf, K. Segl, L. Guanter, M. Bochow, U. Heiden, A. Müller, W. Heldens, T. Schneiderhan, P.J. Leitão, S. van der Linden, P. Hostert, J. Hill, H. Buddenbaum, W. Mauser, T. Hank, H. Krasemann, R. Röttgers, N. Oppelt & B. Heim (2012): Science Plan of the Environmental Mapping and Analysis Program (EnMAP). Potsdam: Deutsches GeoForschungsZentrum GFZ, 64 pp. Scientific Technical Report. (PDF)

H. Kaufmann, H. Buddenbaum, S. Chabrillat, R. Doerffer, S. Förster, T. Hank, U. Heiden, W. Heldens, J. Hill, P. Hostert, S. Itzerott, U. Kleeberg, H. Krasemann, T.

Küster, P. J. Leitão, S. van der Linden, W. Mauser, A. Müller, K. Segl, S. Suess, H. Wulf (2012): Environmental Mapping and Analysis Program - Wissenschaftliche Anwendungspotentiale und Nutzungsvorbereitung (Broschüre). (PDF)