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Expert Opinion on Satellite Analysis of Displacement in Southern Sudan

Lennart Olsson <lennart.olsson@lucsus.lu.se> 17. juni 2025 kl. 12.31
Til: Erik Prins <prinsengineering@gmail.com>

Hej Erik,

That was clearly a surprise, I remember vaguely some of our deliberations decades ago!

I would be happy to give a short review of the document you sent me. I would also like to point you a colleague of mine at Lund who is an expert on these issues, Lina Eklund at the Department of Physical Geography and Ecosystem Science at Lund (see her publications here: https://scholar.google.com/citations?view_op=list_works&hl=en&hl=en&user=D-TwoTEAAAAJ). I can put you in contact with Lina if you wish.

Best wishes

//Lennart

Remote sensing from sun-synchronous orbiting satellites (e.g. Landsat) has been used extensively since the mid-1970s to monitor changes of land surface and land cover, including natural and anthropogenic processes such as land use, infrastructure, and fire (both natural and human induced). The sun-synchronous orbit makes the satellite pass over the same area at the same time of the day, therefore making images directly comparable over long time periods (decades). Furthermore, advanced continuous calibration of sensor parameters and precision geo-referencing make time series of such imagery ideal for change detection. More recently, machine learning algorithms have greatly advanced our ability for systematic and unbiased analysis of these large datasets of images. When performing a search for scientific peer-reviewed articles on the database Scopus (key words: satellite AND remote AND sensing AND land AND cover AND change) I found almost 8000 relevant articles. In terms of geography, vast expanses of comparatively flat land (such as the Sahel and Sudano-Sahel region) make this kind of change detection particularly accurate and unbiased.

Remote sensing has provided substantial evidence of human rights abuses around the world, not least in Sudan and South Sudan. By monitoring settlement patterns and comparing with reports from ground observations, satellite imagery has become a crucial tool in understanding and addressing the humanitarian crises (see some representative articles below).

I find the compilation of imagery and interpretations of them by E. Prins both highly plausible and convincing.

Selected relevant references:

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