

develoPPP.de

TerraSAR-X - the German tandem - insights from a public-private partnership in Ghana



Bonn, October 5th, 2012

**Steffen Kuntz, Robert Bamfo, Edward Obiaw, Foster K. Mensah,
Michael Köhl, & Felicitas v. Poncet**

All the space you need

giz

develoPPP.de



ASTRIUM
AN EADS COMPANY

Objective of the project

- To improve the national REDD+ monitoring, reporting and verification capabilities by training on the job
- To quantify deforestation and forest degradation
- To support forest resource management in Ghana



Technical Work / Training Blocks

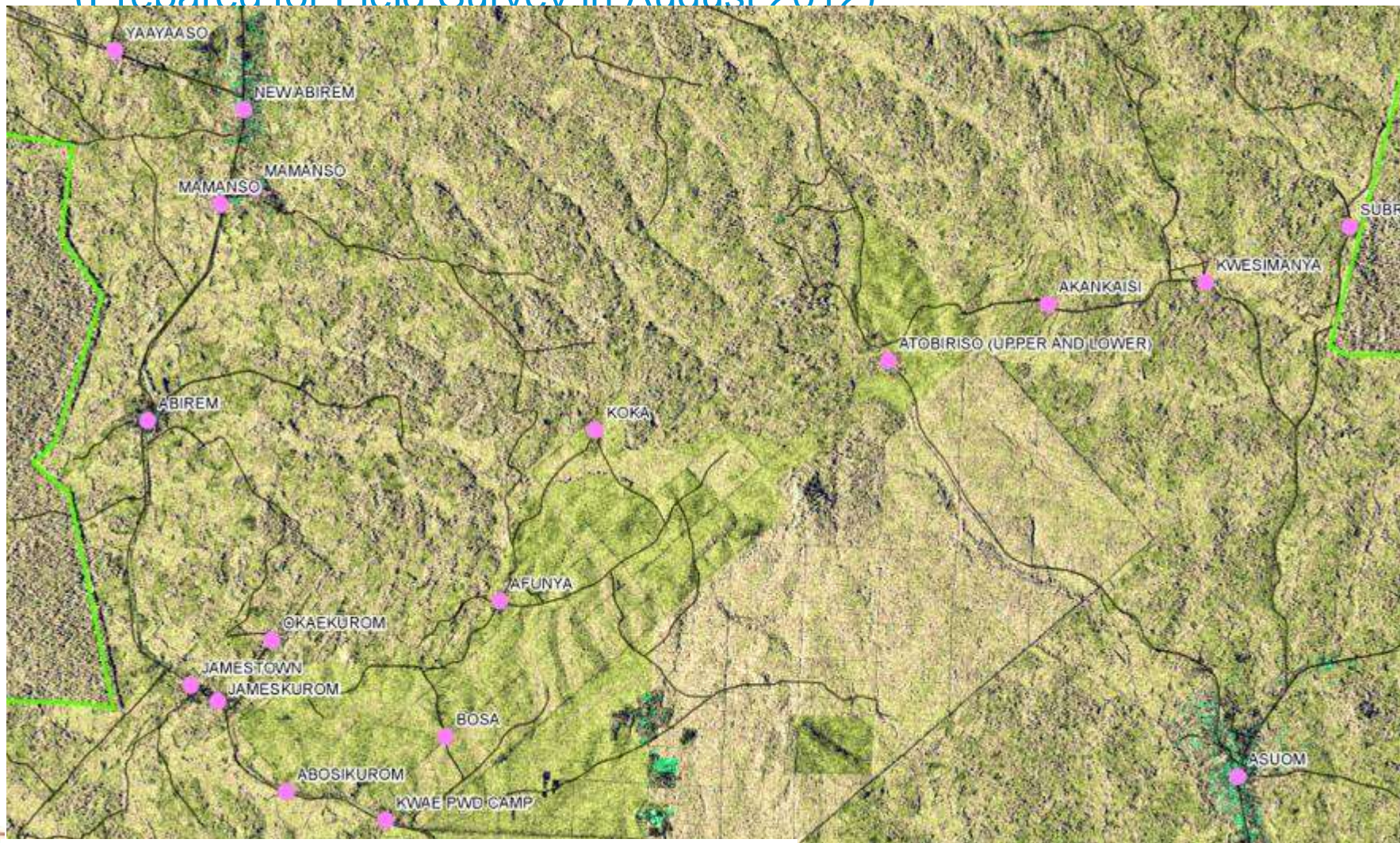
- Automated optical data pre-processing
- Very high resolution SAR image data analysis
 - In representative **training sites** TerraSAR-X StripMap and SpotLight data will be acquired and analysed for forest cover & forest degradation change detection
 - Selection of final sites together with CERSGIS and the Forestry Commission
- Link of remote sensing and field survey
 - Statistical concept: multi-stage forest inventory
 - field measurements to obtain carbon stock information → Link with FPP activities
- Reporting and verification means
 - Verification will be based on in-situ measurements
 - Validation of approach by error budget estimation

Why SAR-Technology for Forest Applications?

- Optical image processing is well known based on e.g. SPOT or Landsat data analysis for more than 20 years
- SAR signals
 - illuminate the surface by transmitting active energy pulses
 - can penetrate clouds
 - can operate at any time
 - offer 3-dimensional representation of objects
 - are very sensitive for changes over time
- **BUT:** SAR technology is more complex and less known by many users → special emphasis of Developpp.DE is capacity building for SAR Image Analysis for Forestry

SAR Data Interpretation Training in Kade Site

(Prepared for Field Survey in August 2012)



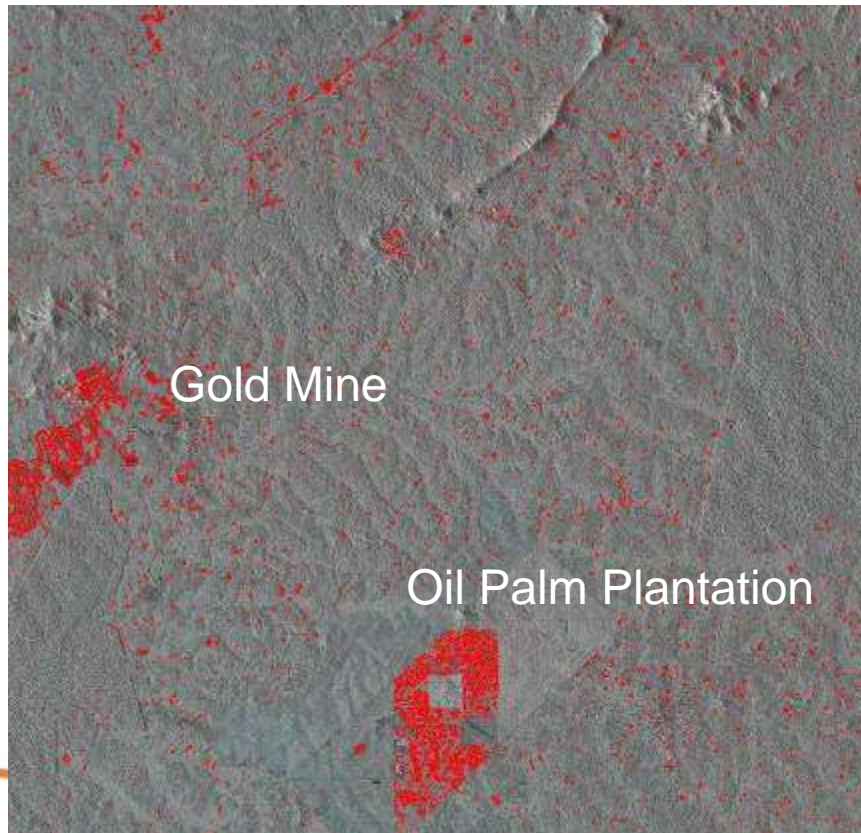
This document is the property of Astrium. It shall not be communicated to third parties without prior written agreement. Its content shall not be disclosed.

Zoom-in of Colour SAR 3 m StripMap Data from the Kade Site

Kade Site

The greatest advantage of SAR imagery:

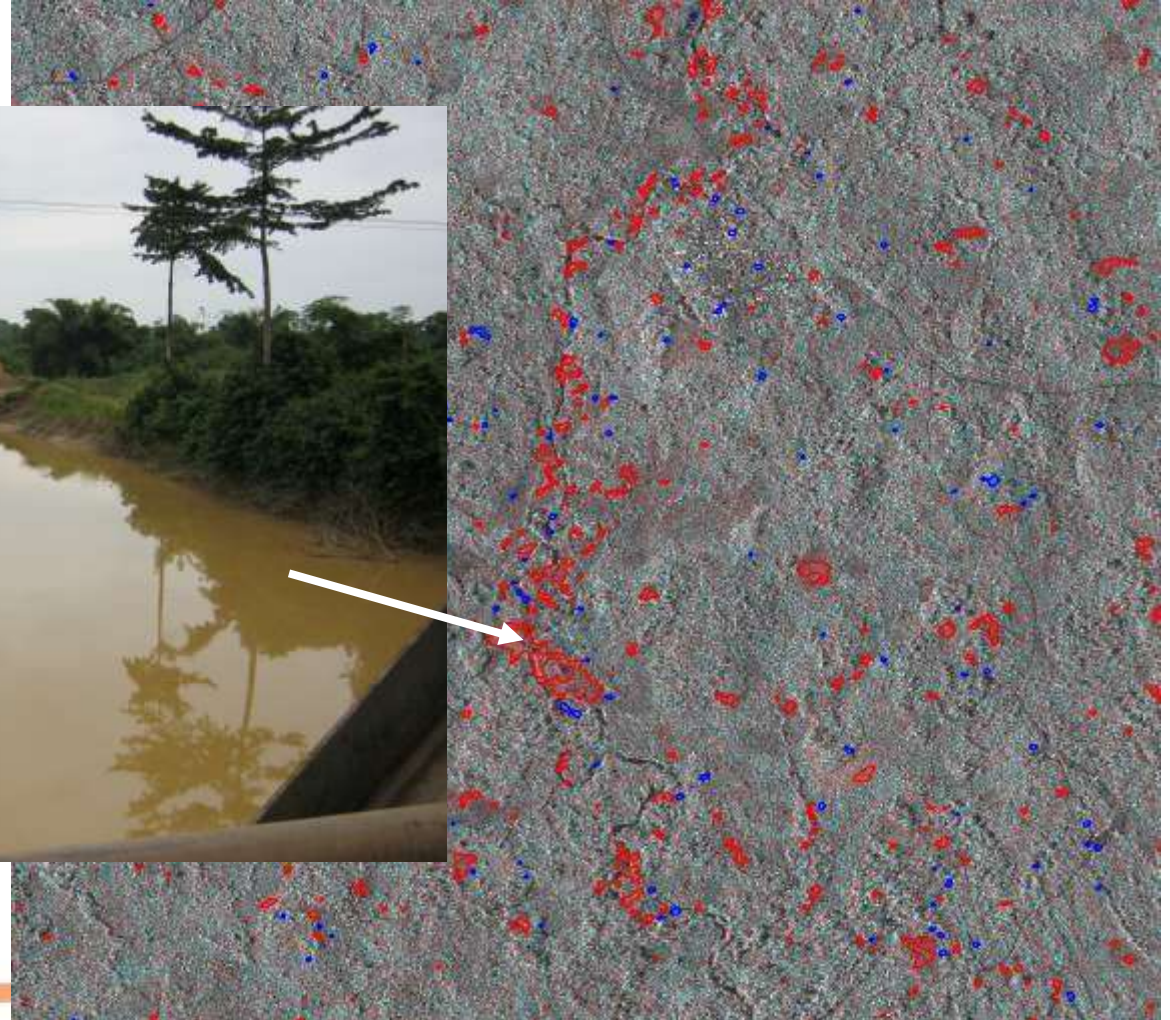
Weather independent change detection monitoring over forests



Obvious changes in red from plantations and a goldmine (2010 – 2012) in Ghana.

Many other small and scattered changes from various reasons (clear cuts, construction works, agri-culture, etc.) are visible all over the region

Change example from Kade region: deforestation & degradation



Illegal alluvial gold mining
along the river.

- RGB color composite and indicator polygons for backscatter increased (blue) and decreased (red)

Basic Approach: „Training of the Trainer“ concept

- **Trainees** selected by the Forestry Commission, as legal national REDD+ entity & CERSGIS (University) to guarantee long-term sustainability
- The **training** comprises different training blocks (theoretical and practical; in total 8 weeks).
 - **Data analysis** part (theoretical & practical) will be carried out at the CERSGIS' Training facility located at the University of Ghana.
 - **Training of in-situ measurements** (practical) will be done in the selected test site(s)
- The **adaptation of the methodologies** according to local conditions of Ghana is an essential part of this project.
- **Sensitization workshops** are foreseen to inform in good time all interested national stakeholders



Field training in Kade, August 2012

Thank you for your attention

Contact:

Prof. Dr. Steffen Kuntz *
Institutional Relations & Climate Change Programmes
Astrium GEO-information Services /
Infoterra GmbH

Phone: +49 7545 8 9966
Mobile: +49 171 711 0340
Email: steffen.kuntz@astrium.eads.net

- Faculty of Forestry and Environmental Science, University of Freiburg, Germany
- Member of GOFC-GOLD Land Cover Group

Astrium Services
GEO-Information Business Division

15, avenue de l'Europe
31522 Ramonville Saint-Agne, France
+33 (0)5 62 19 66 36