Joint Experiment for Crop Assessment and Monitoring (JECAM)

DEMMIN - Test Site for Remote Sensing in Agricultural Application

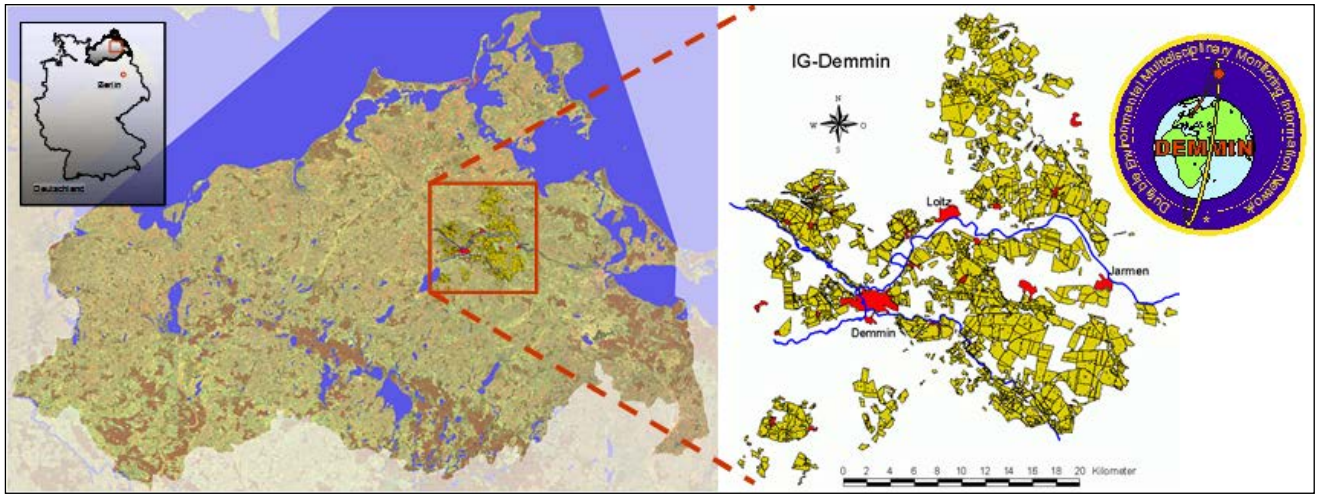
Belgium, Brussels, 16-17 November 2015

German Aerospace Center (DLR)
German Remote Sensing Data Center (DFD)

Borg, E., B., Vajen, H.-H., Fichtelmann, Kuehnlenz, S., Renke, F., Jahncke, D.

DLR

Test Site DEMMIN



Geographical position of DEMMIN (Durable Environmental Multidisciplinary Monitoring Information Network) in Mecklenburg-Vorpommern (left), farmland of the interest group of farmers around small city Demmin (right) (Borg et al. 2009).

Strategic Aspects

- The DEMMIN-team is interested in cooperating with the JECAM-team. At present all possibilities for financing/funding of co-operation are checked.

- DEMMIN is a large-scale facility of the German Aerospace Center (DLR/DFD). With this definition different legal framework conditions are connected. Therefore, at present all possibilities are checked, how the JECAM-team can be supported by DEMMIN.

Scientific Campaigns

Techs4Times

- Weekly monitoring of vegetation parameter (e.g. high, density)
- Test field DEMMIN (Calibration and validation site)
- 5 Wheat-; 4 Maize-fields (35…65 ha)
- Time: March – October

Use of Drones for Agriculture

- A substantial challenge of satellite remote sensing is the Up- and down-scaling problem between in-situ-data and remote sensing data.
- Drones flights for deriving vegetation cover data for calibration of satellite data. Platform: eBee with sensors
- RGB and multiSPEC Camera
- Number: 53 (49*multiSPEC; 4*RGB)
- Time: May – August

In-situ-**Campaigns** and Aerial Survey

Datum	in-situ (Plots)	SPAD	LAI-2000	SScan	B-Dichte	B-Höhe	ebee (Befliegungsflächen[10])
23.03.2015					-	x	
24.03.2015	6-12	X	x[1,2]	x	x	x	
25.03.2015	13-18	x	x[3]	x	-	-	
27.03.2015		-	x[4]	x	-	-	
28.03.2015		-	x[5]	x	-	-	
01.04.2015	1-5	X	x	x	x	x	
02.04.2015	10-12, 16-18	X	x[6]	x[6]	-	x	
08.04.2015	1-18	X	x	x	x	x	
29.04.2015	1-16	X	x	-	x	x	
06.05.2015	1-18	X	x	-	x	x	
12.05.2015	1-17	X	x	x	x	x	
21.05.2015							BH1,BH2
03.06.2015	1-9	X	x	x	-	x	
05.06.2015							BH1,BH2,SM,HH1,HH1,HH2
08.06.2015	28-32	X	-	-	-	x[7]	BH1,BH2,SM,HH1,HH2
10.06.2015	10-18, 19-27	X	x[8]	-	x	x[7]	SM,HH1,HH2,BH1,BH2
11.06.2015	10-18	-	-	x	-	-	
17.06.2015	1-9, 19-27	X	x	x	x	x	
29.06.2015	9-18	-	-	x	-	-	
01.07.2015	13-18	-	-	x	-	-	
02.07.2015	10-11,33,34,36	-	-	x	-	-	SM,HH2,HH1,BH_M,SB1_M,SB1_M,SB2_M,NT_M
03.07.2015							BH1,BH2,BH2
07.07.2015	1-9, 19-27	X	x	x	-	x	BH1,BH2,BH2,BH_M
09.07.2015							NT_M
15.07.2015	28-36	X	x	x	-	x	
22.07.2015	10-18	X	x[9]	-	-	x	
29.07.2015	1-9, 19-27	X	x	x	-	x	
07.08.2015							HH1,HH1,HH2,HH2,BH1,BH2,BH2,SM,SM
20.08.2015	19-36	X	x	x	-	x	
26.08.2015	19-36	X	x	x	-	x	
27.08.2015							BH1,BH2,BH2,SM_Fl1,SM_Fl1,SM_Fl2,HH1,HH2,SB1_M
16.09.2015	19-36	X	-	x		x	
29.09.2015	19-36	X		x			
15.10.2015	28-32,35-36	X		x			

Geographical location of fields for the campaign

Geographical position of wheat fields (green) and maize fields (yellow) in test site DEMMIN.

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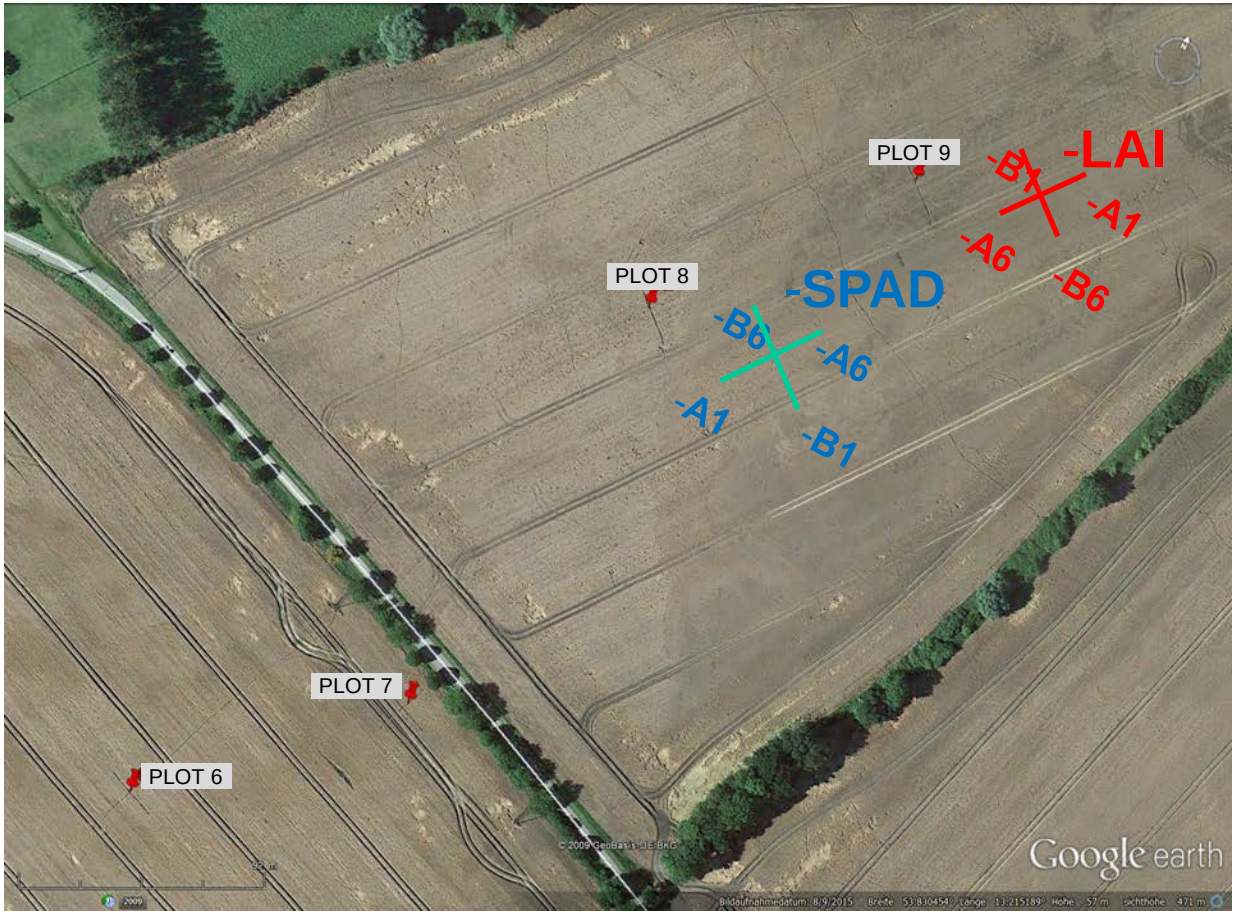
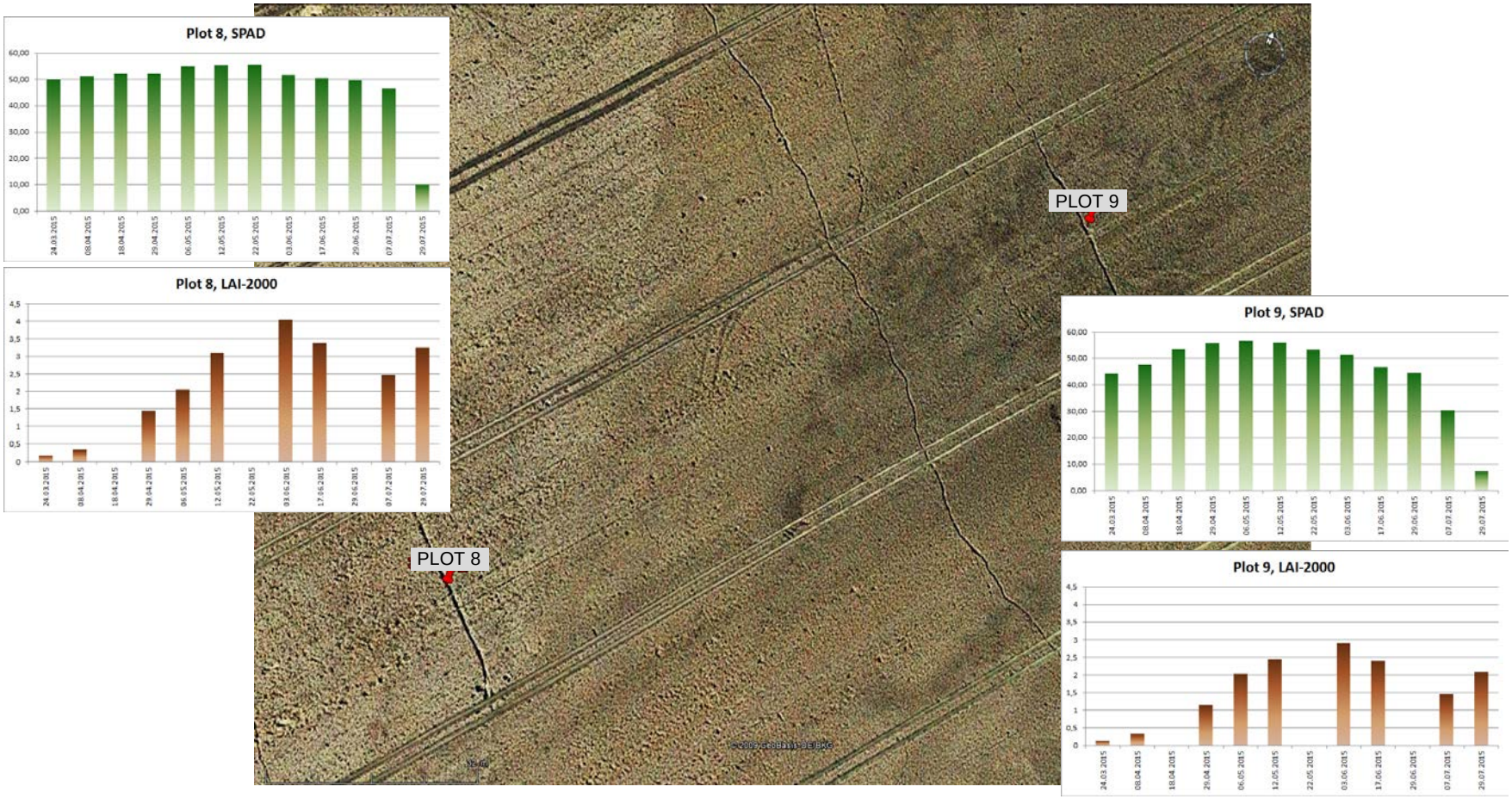
In-situ-Measurement Campaign

- Measurement of plant high by using a measurement board
- Measurement of plant density by using a rating frame
- SPAD-measurements for measuring leaf chlorophyll content; 120 error-free measurements per plot,
- LAI-2000-measurements for measuring LAI; 5 measurements per plot, in cases of faulty measurements and/or an insufficient number „more valid “measurements (SMP) repetition of the series of measurements
- Comparable measurements of LAI by using SunScan-sensor, 12 measurements per plot
- Measurements of global radiation and diffuse radiation for fPAR-assessing (Part of photosynthetic active radiation), 12 measurements per plot
- Photographic documentation of cloudiness during the measurement campaign (per field: 2 or 3 plots)

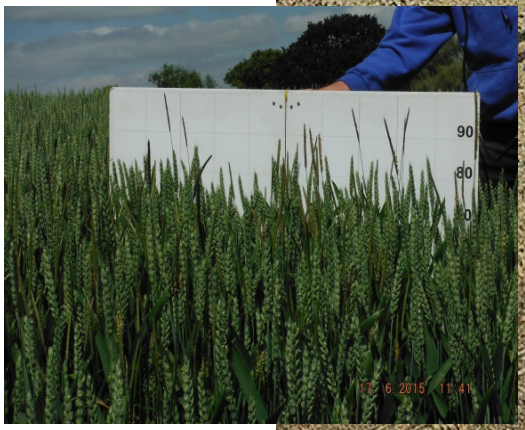
In-situ-Measurement Campaign

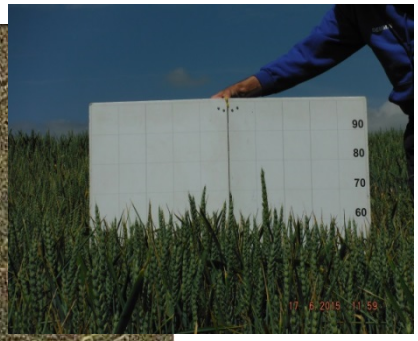


In-situ-Measurement Campaign – eBee



In-situ-Measurement Campaign – eBee





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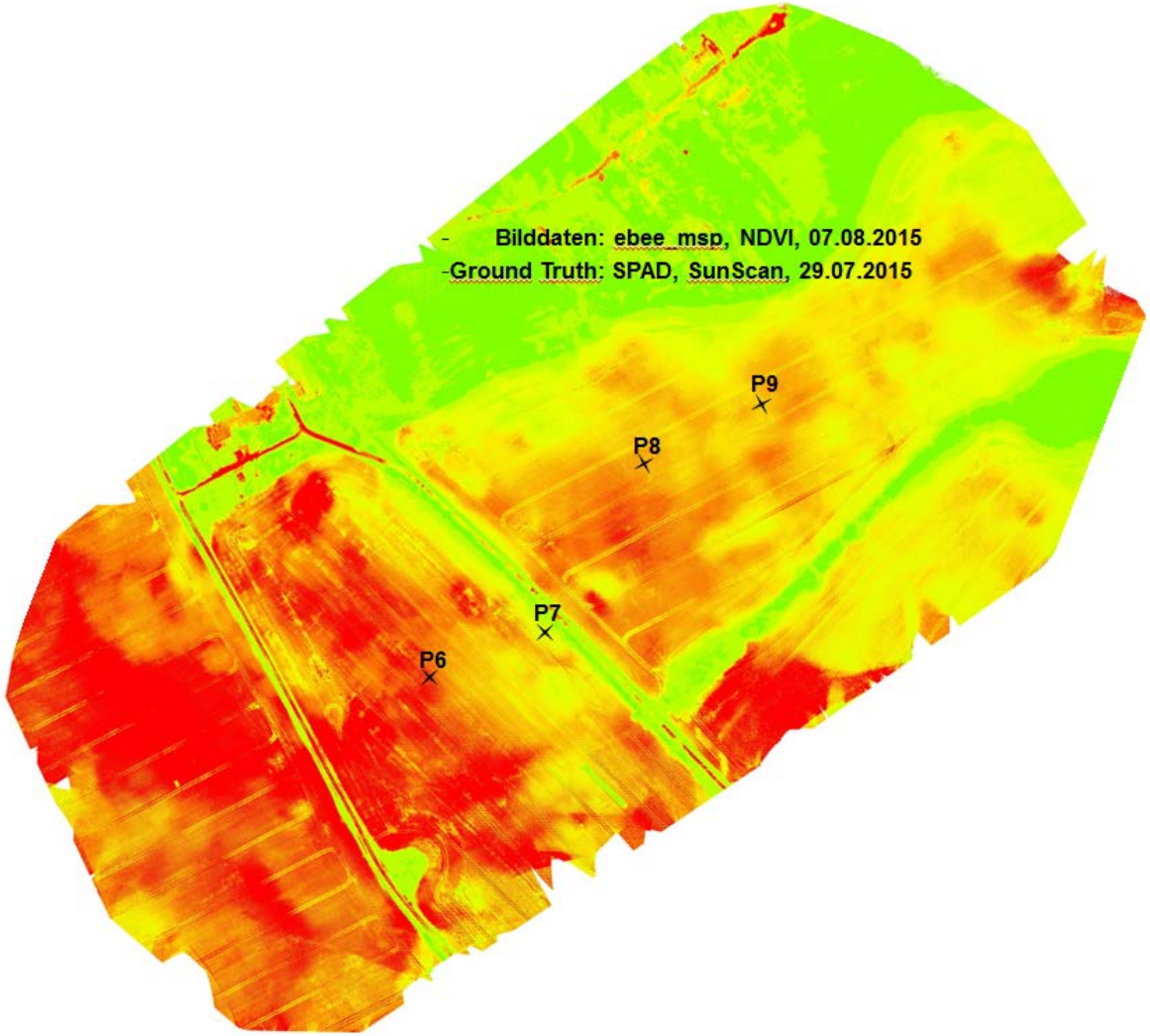

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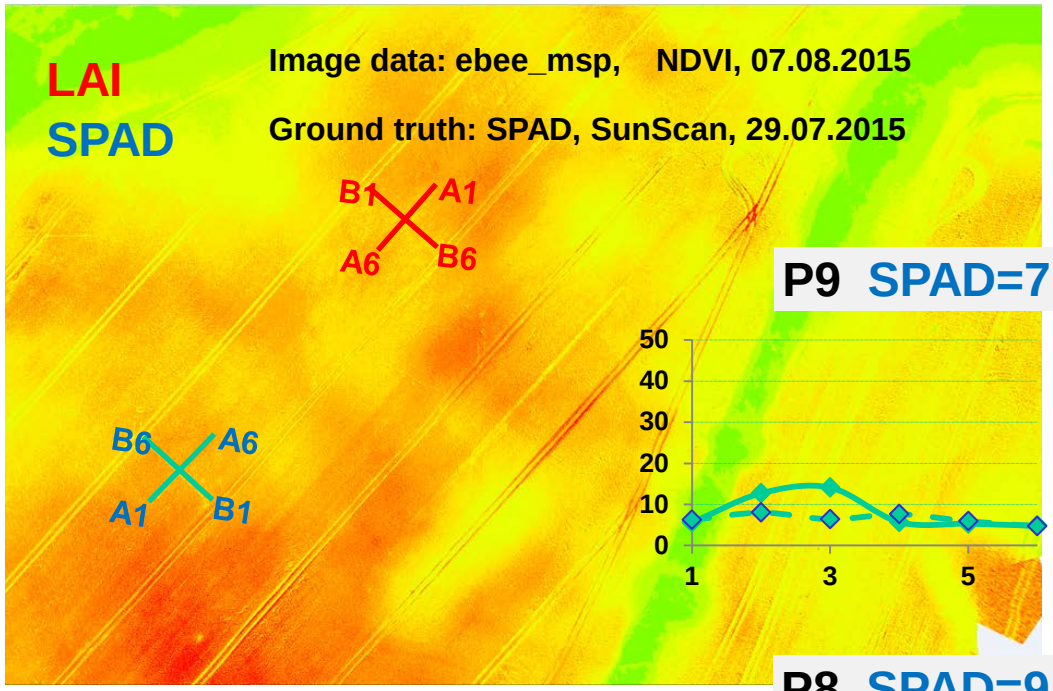
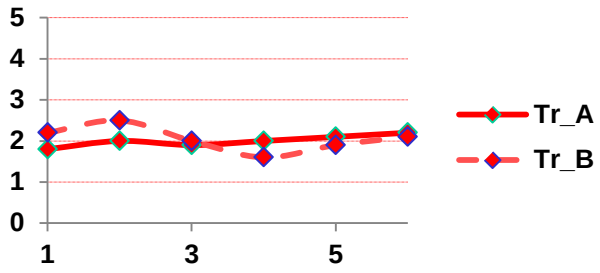
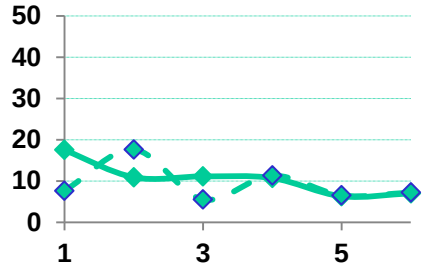


P9 SPAD=7,2

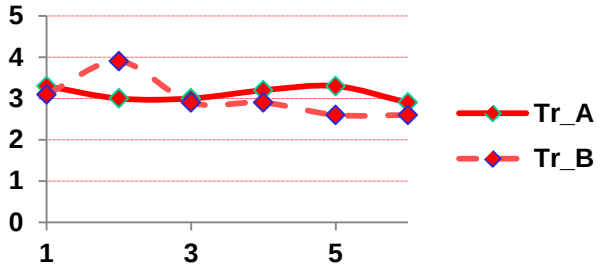
P9 LAI=2,0



P8 SPAD=9,9



P8 LAI=3,1



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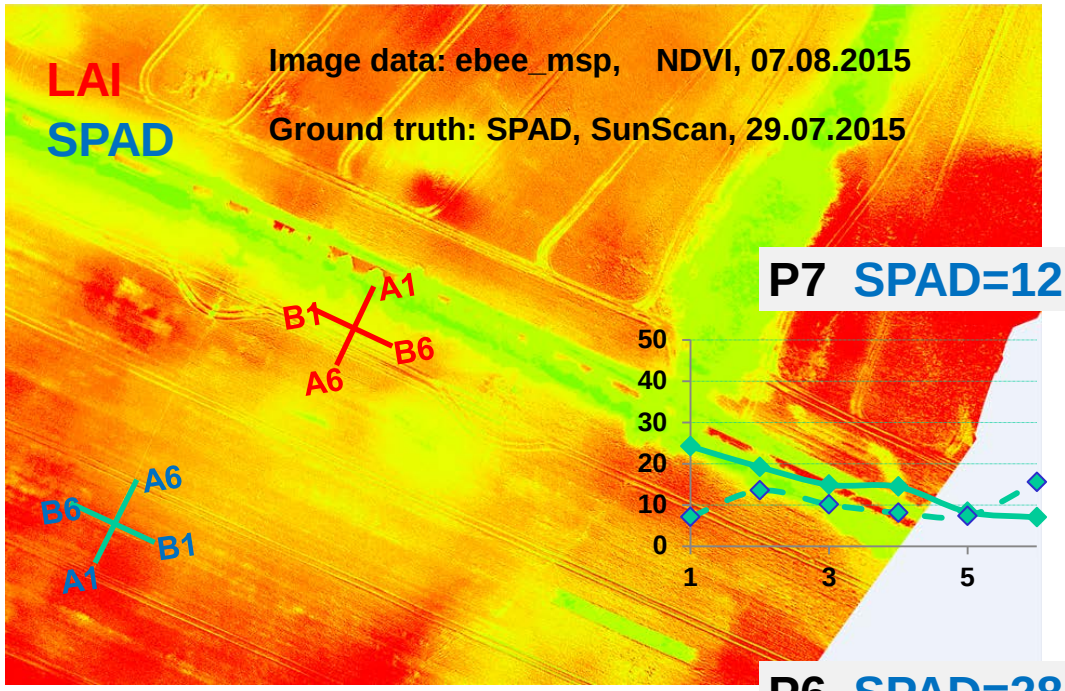
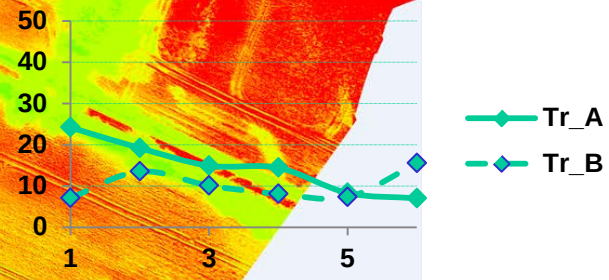
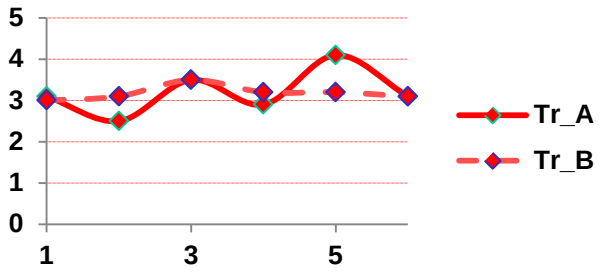


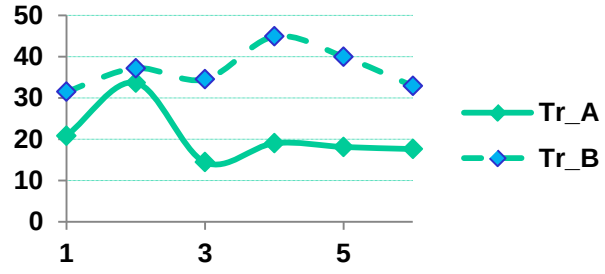
P7 SPAD=12,5



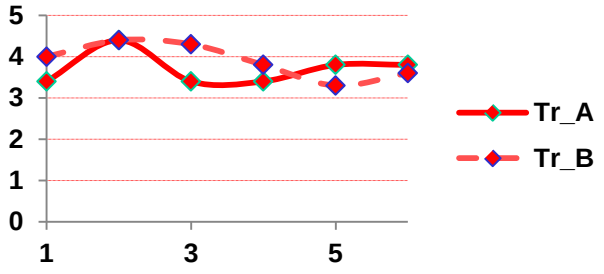
P7 LAI=3,2



P6 SPAD=28,7



P6 LAI=3,8



Contact

Dr. Erik Borg

German Aerospace Center (DLR) e.V.
Member of the Helmholtz Association
German Remote Sensing Data Center (DFD)
National Ground Segment

Kalkhorstweg 53
17235 Neustrelitz

Telephone:	03981/480-183
Telefax:	03981/480-299
E-mail:	erik.borg@dlr.de
Internet:	http://www.dlr.de/eoc/

Thank You for Your Attention!