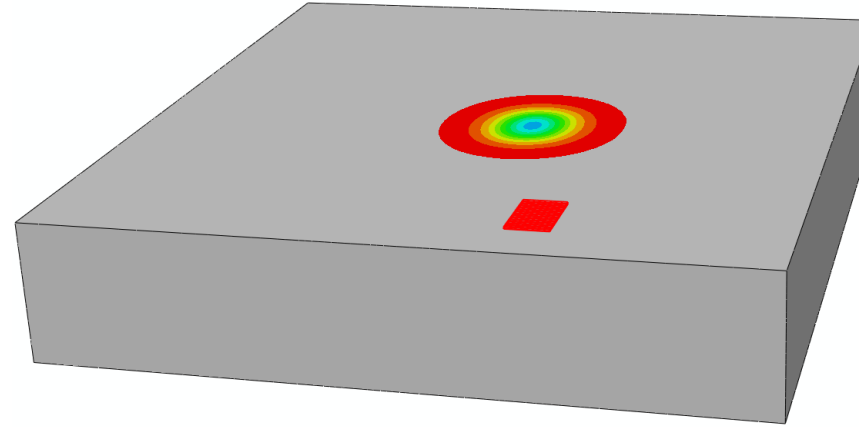
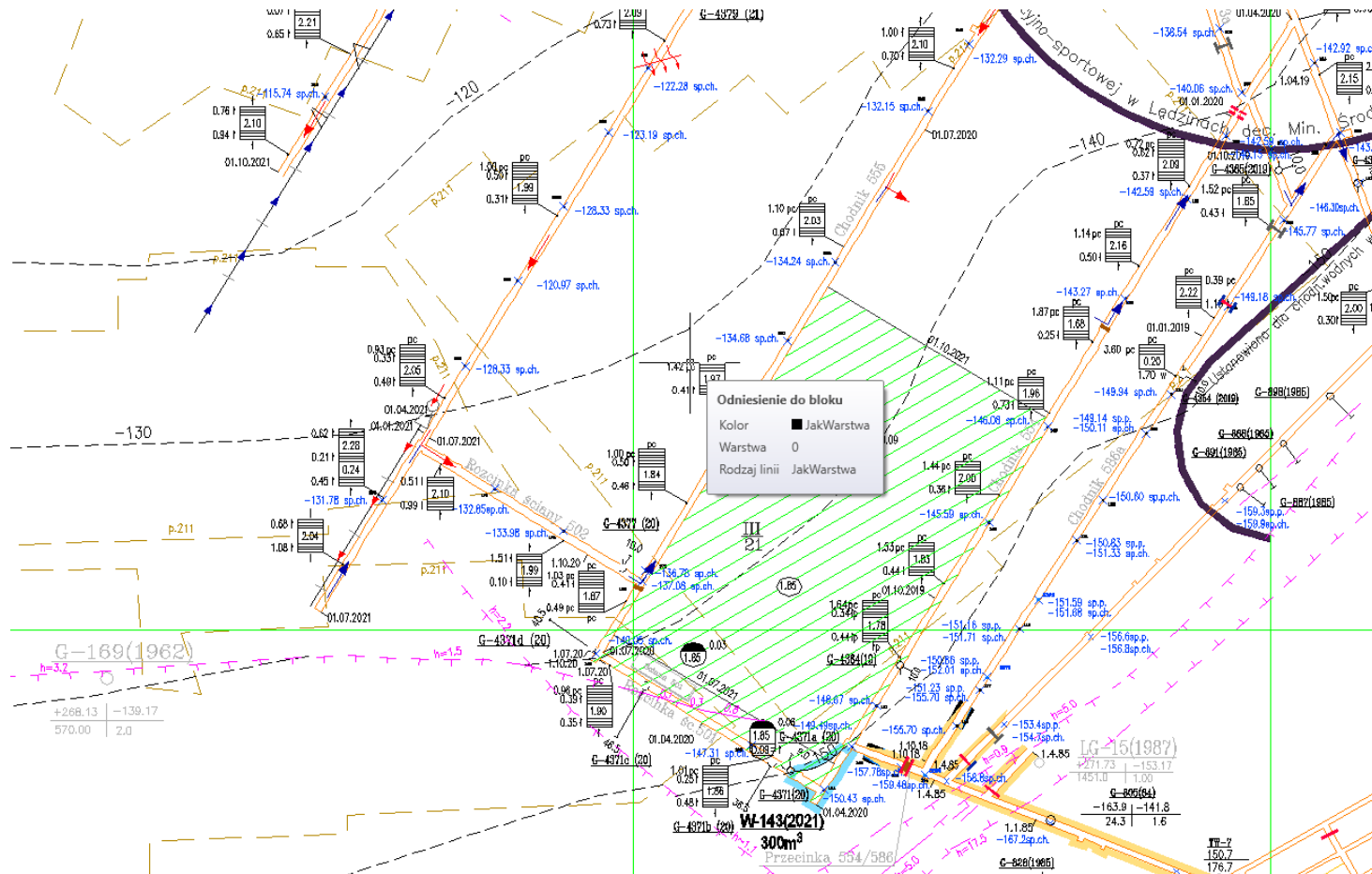




Monitoring Data Analysis and Modelling

RFCS i2MON - User Workshop (Dec 07, 2021)

The current mining situation in the Łędziny district.



Longwall panel start: 01.07.2021

Longwall panel width: 200m

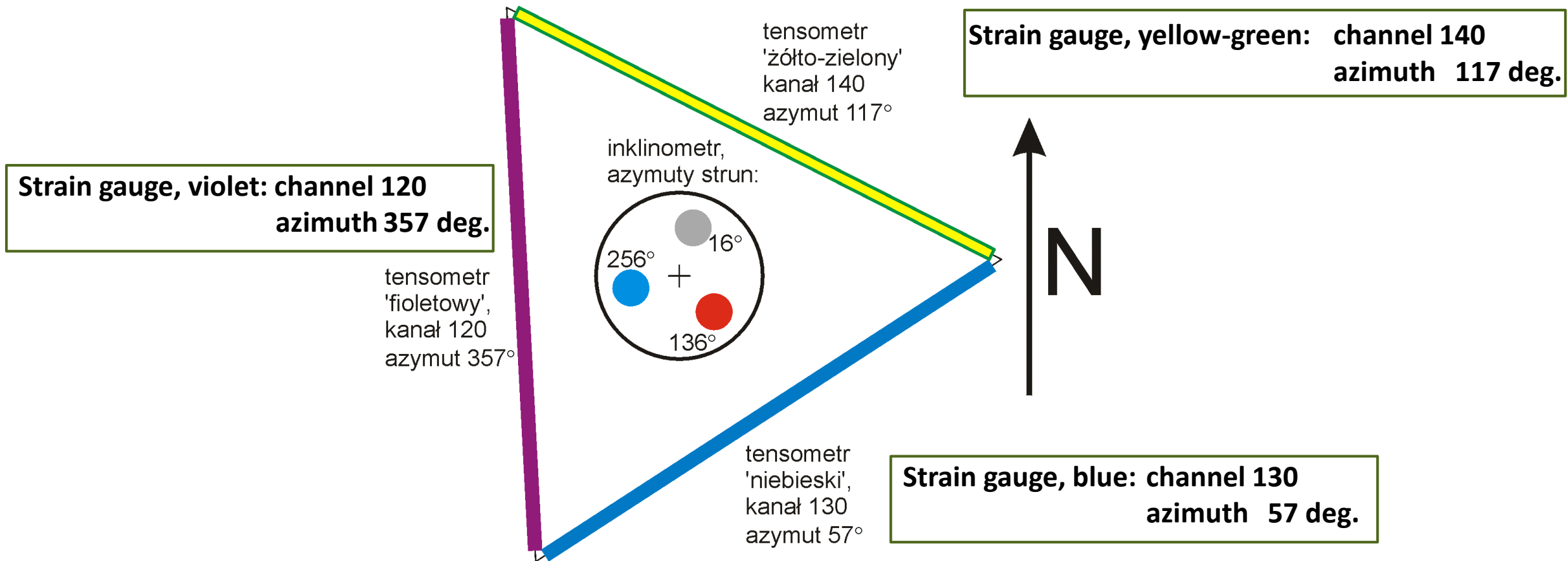
Longwall panel depth: 420-430m

Current longwall panel run: 340m
(at a day 01 Oktober 2021)

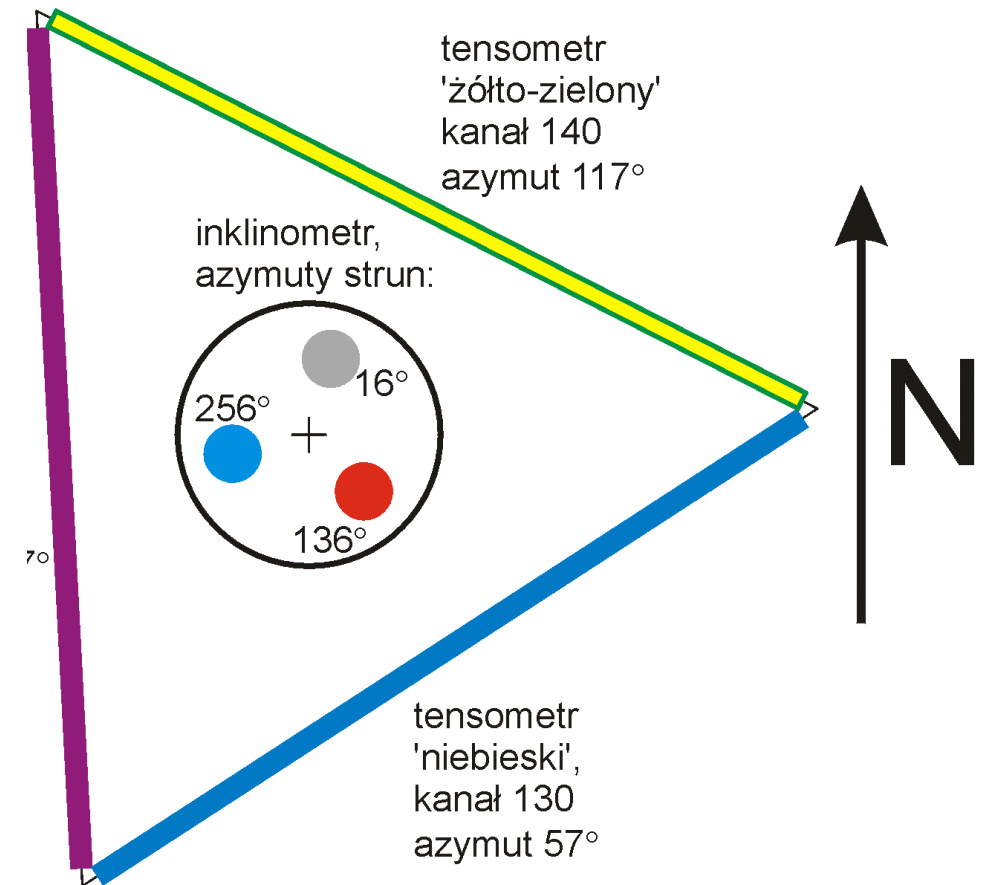
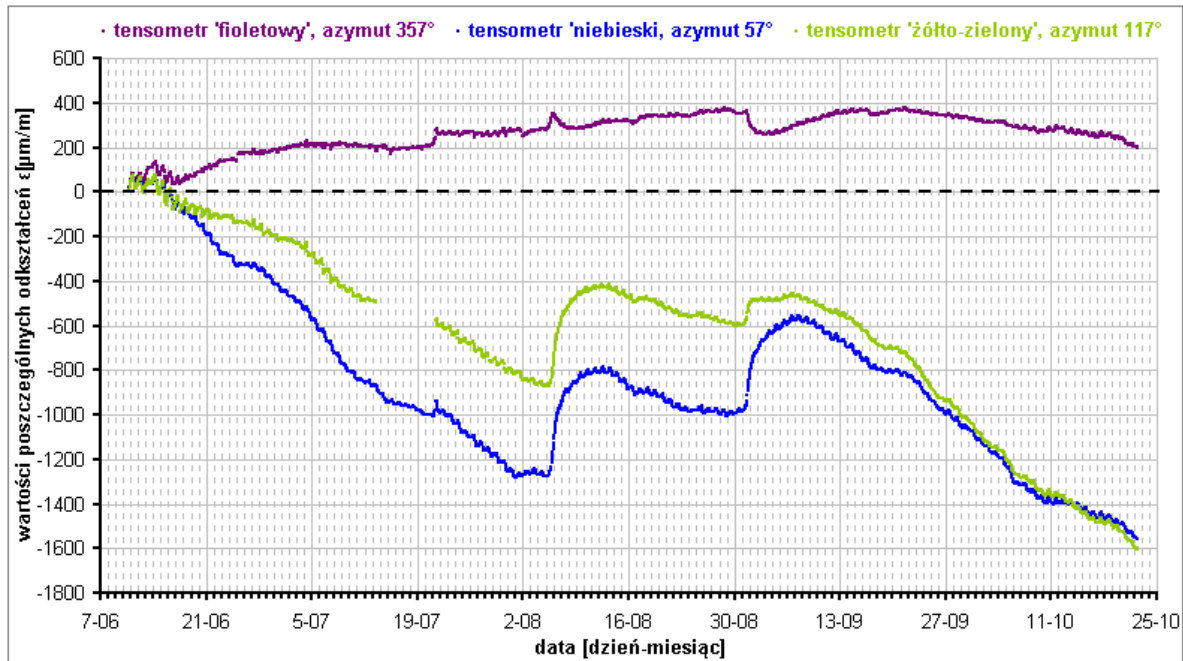
Measurments



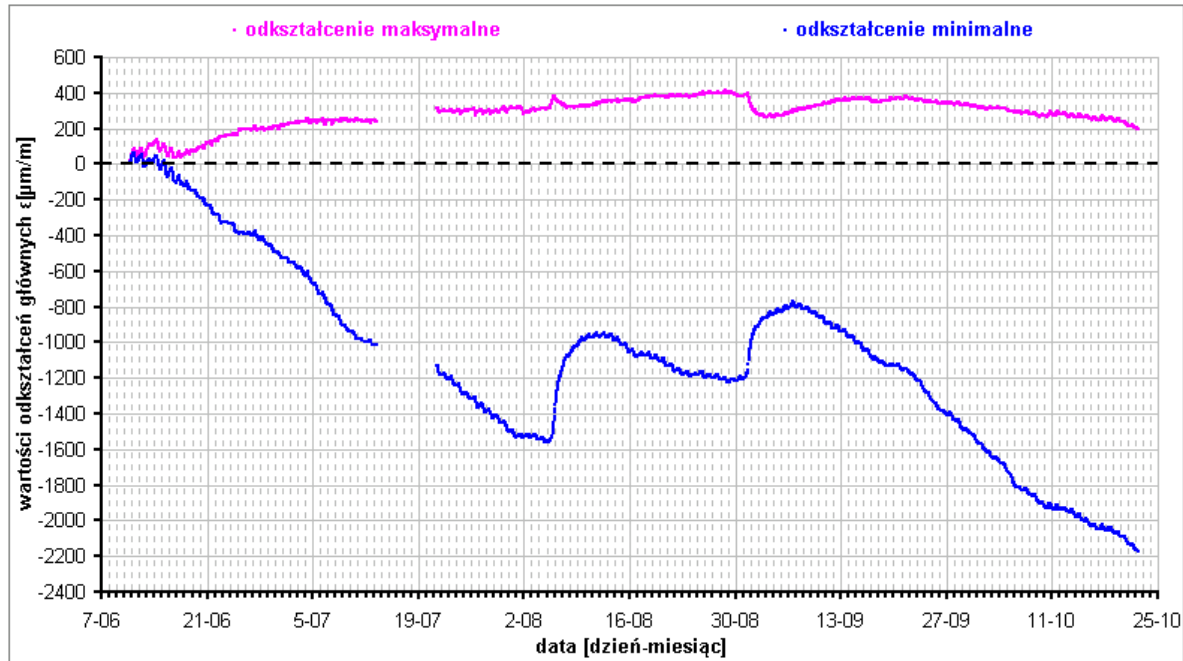
Measurments



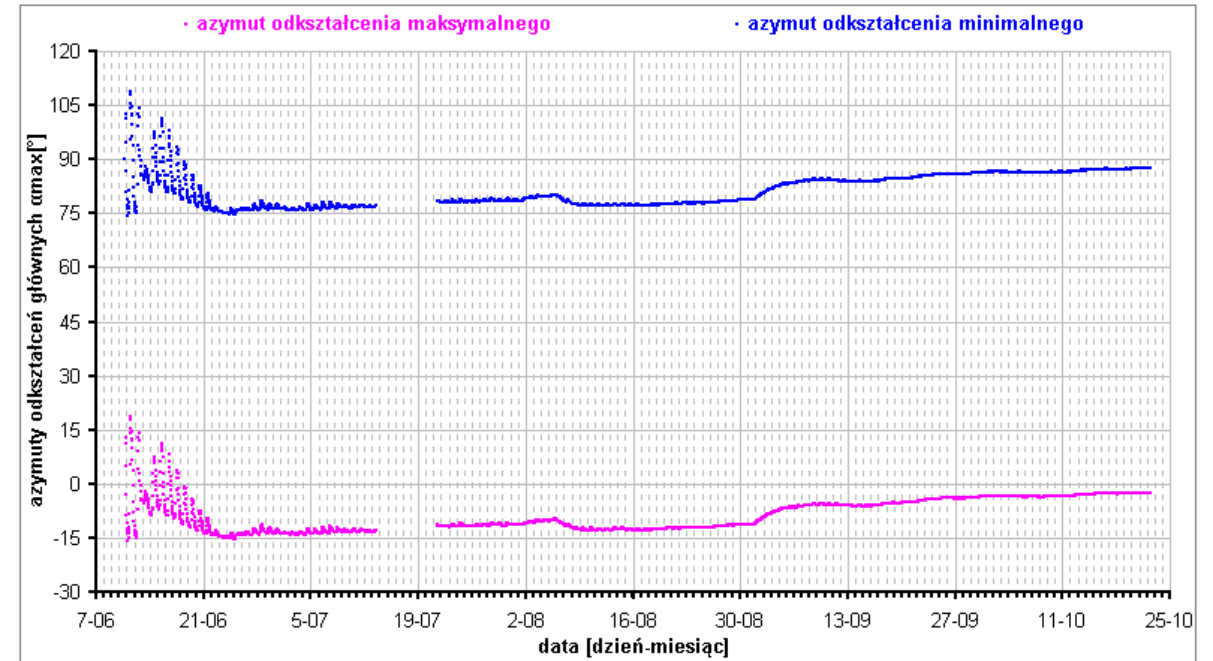
Measurments



Measurments

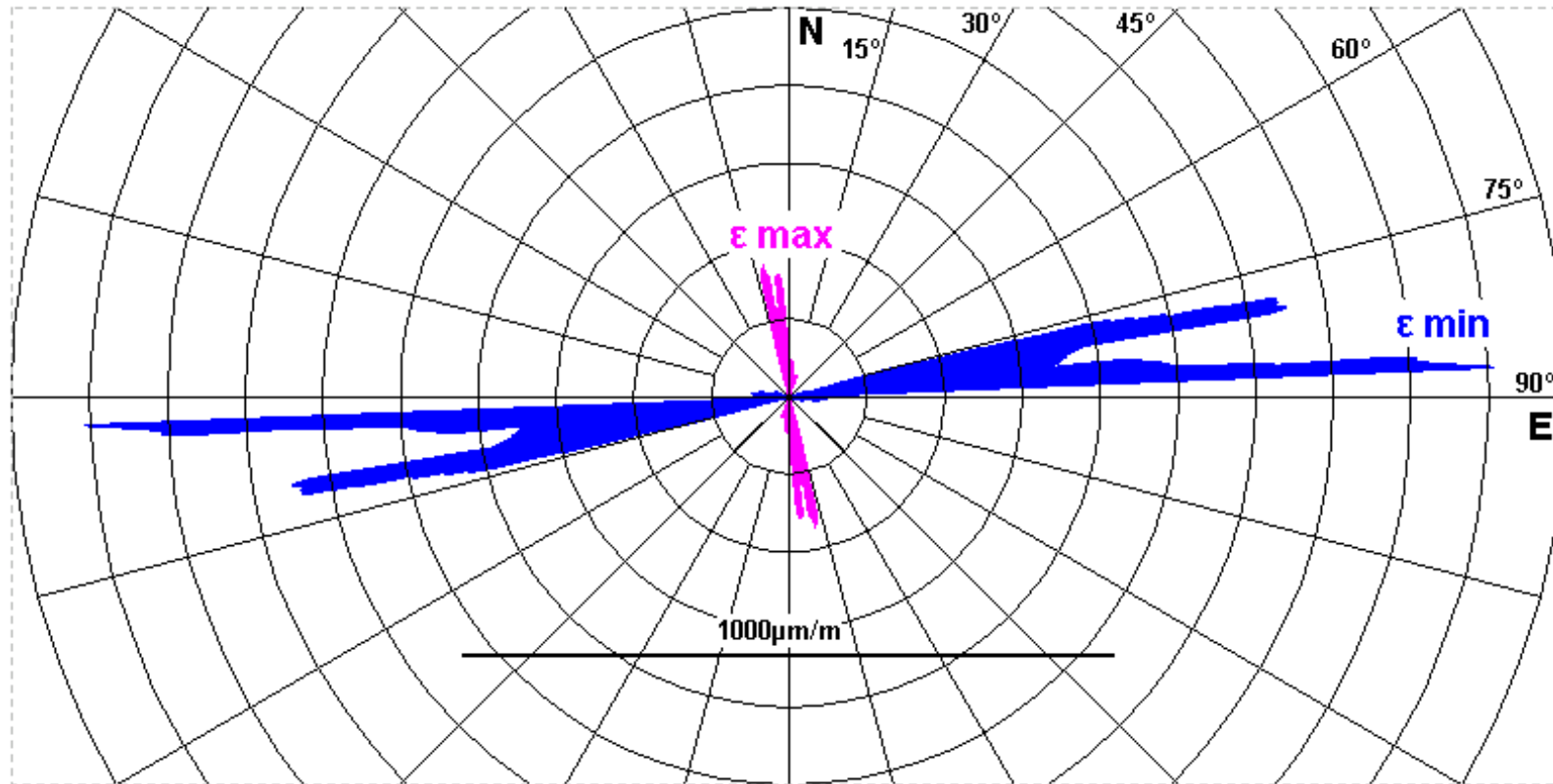


Values of the principal ground strain in the place of the rosette foundation



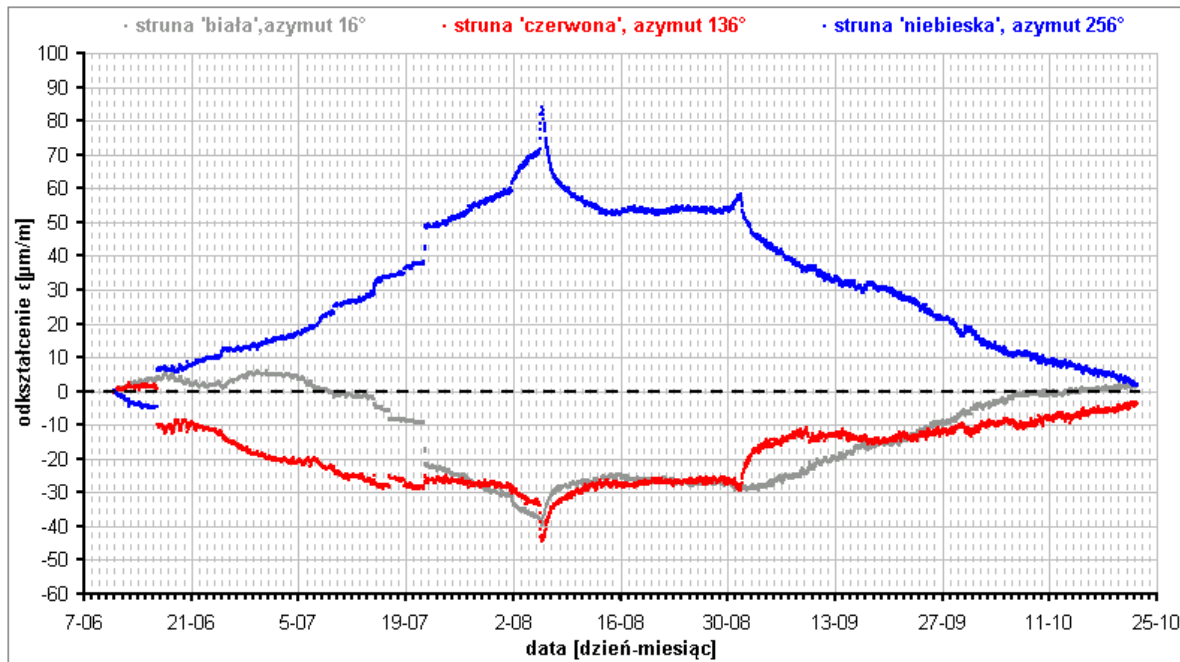
Principal strain azimuths

Measurments

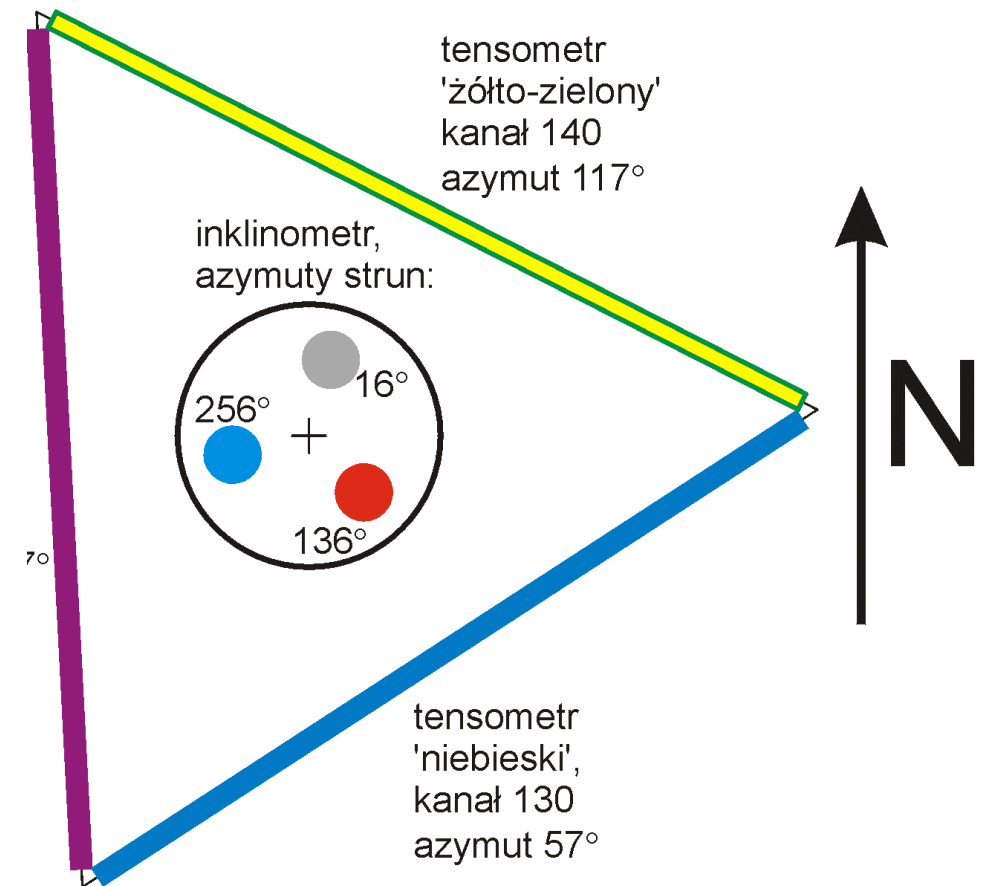


Development of principal strain in the polar coordinate system

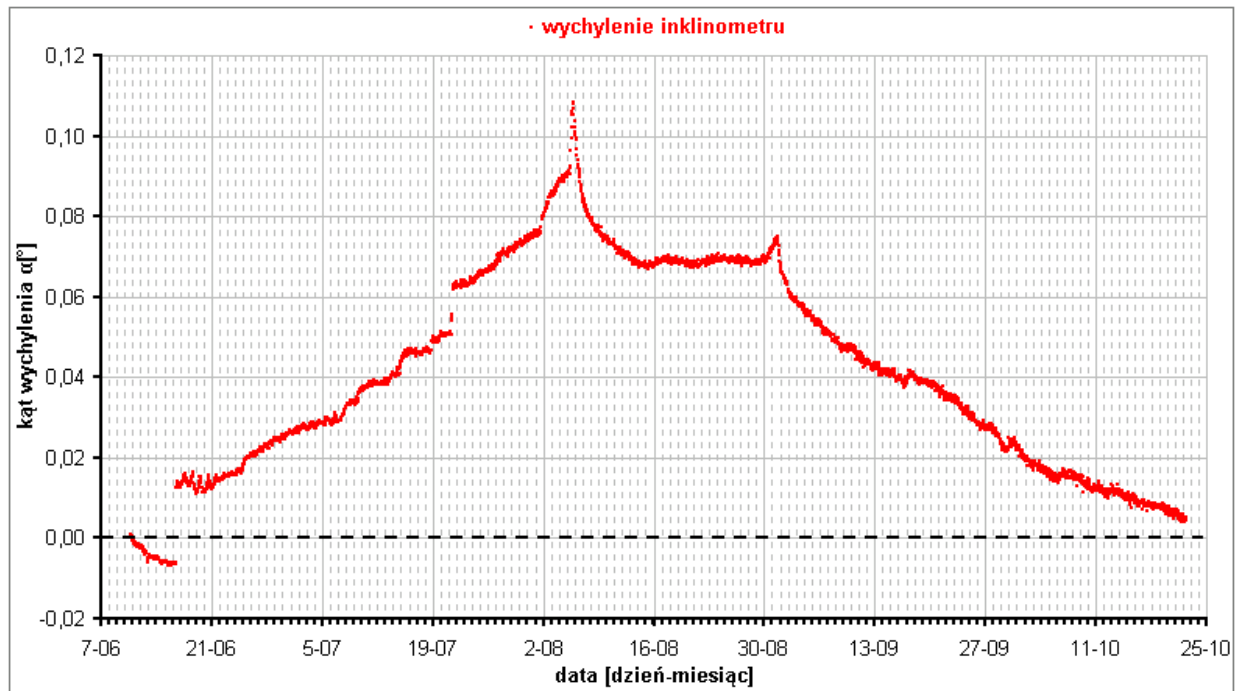
Measurments



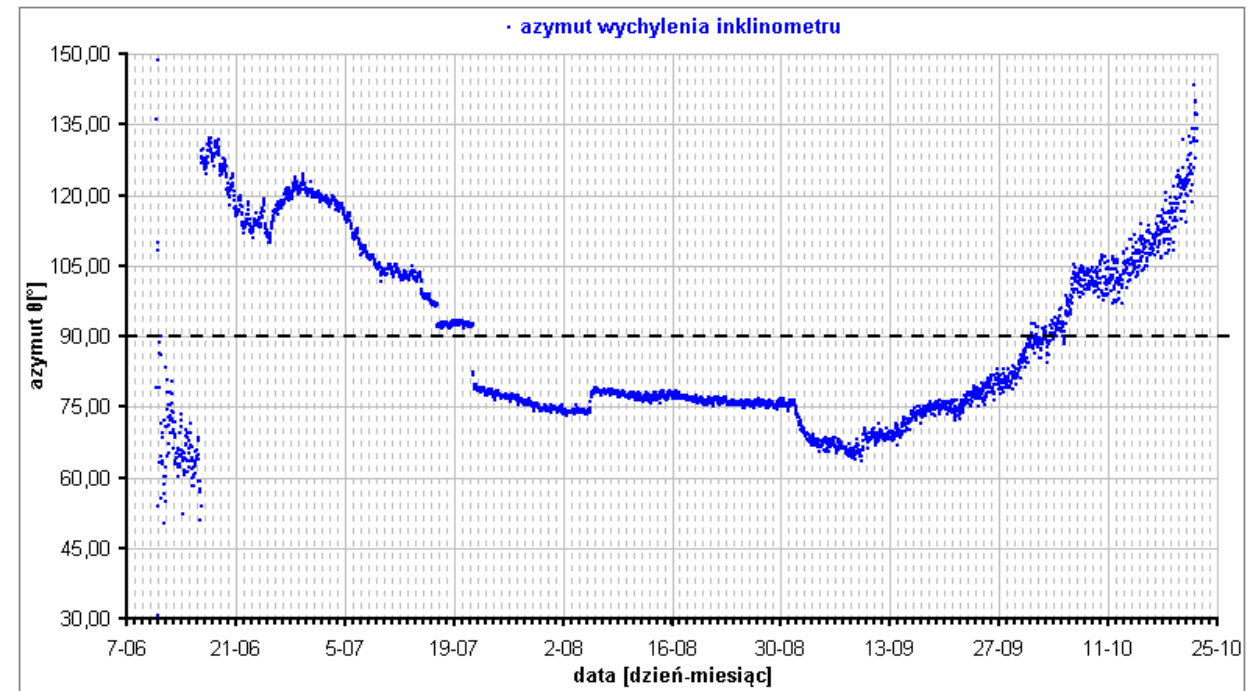
Deformation of individual inclinometer strings



Measurments

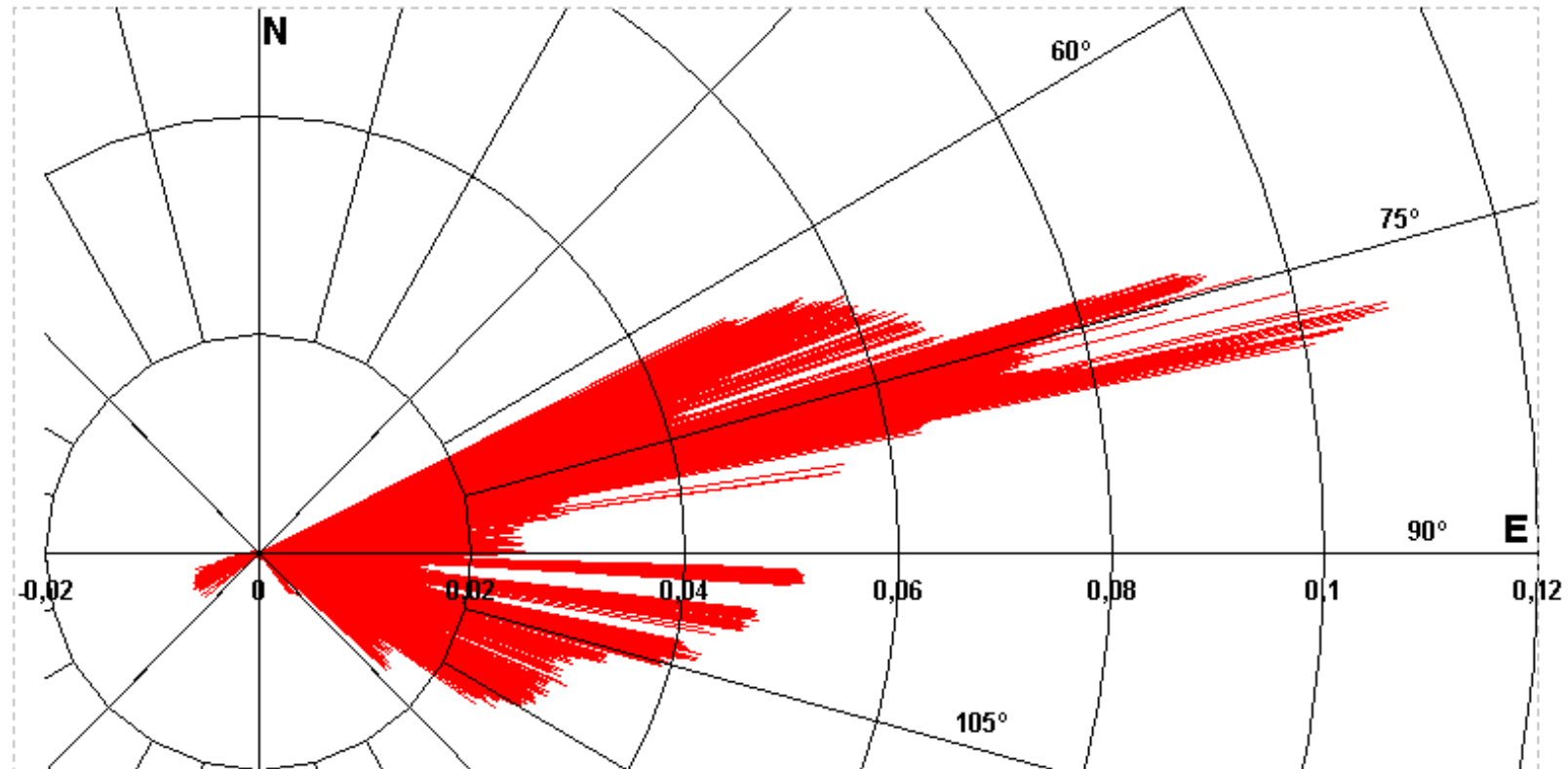


Changes in the inclinometer inclination angle



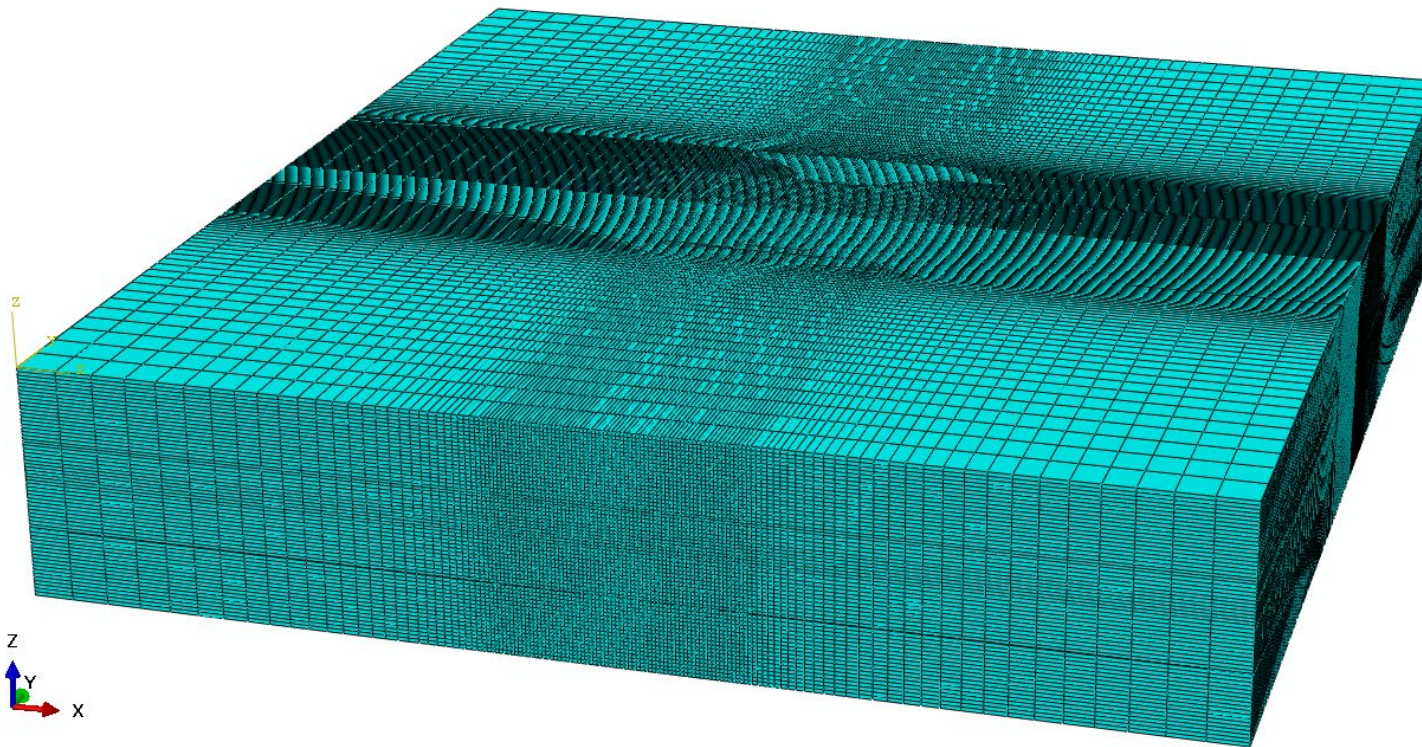
Changes in the azimuth of inclinometer inclination

Measurments



Changes in inclinometer inclination in the polar coordinate system

FEM



Model: 3000x3300x600m

1,185,597 elements in 3D stress

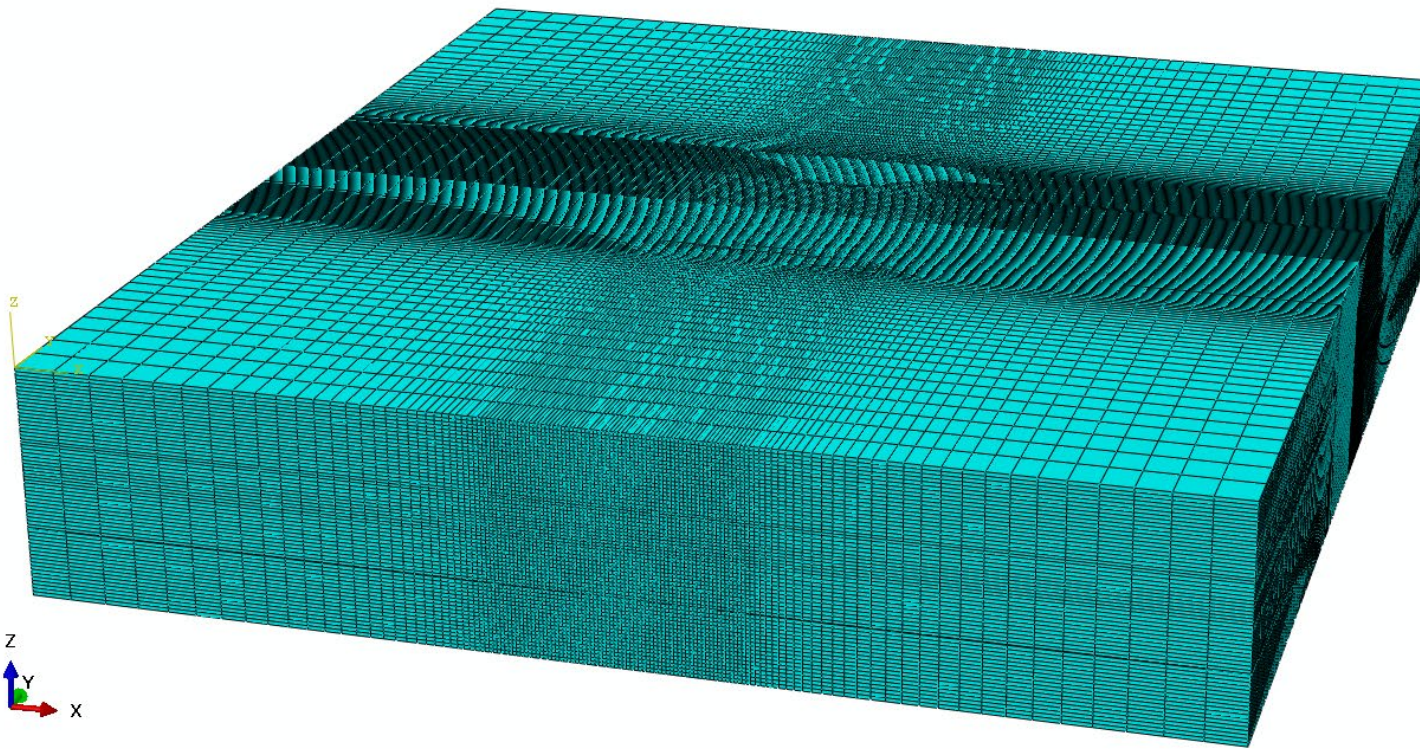
three longwall panels no.: 501, 502, 503

seam depth 215: 420m

geology model is based on the "15-Głęboka" borehole

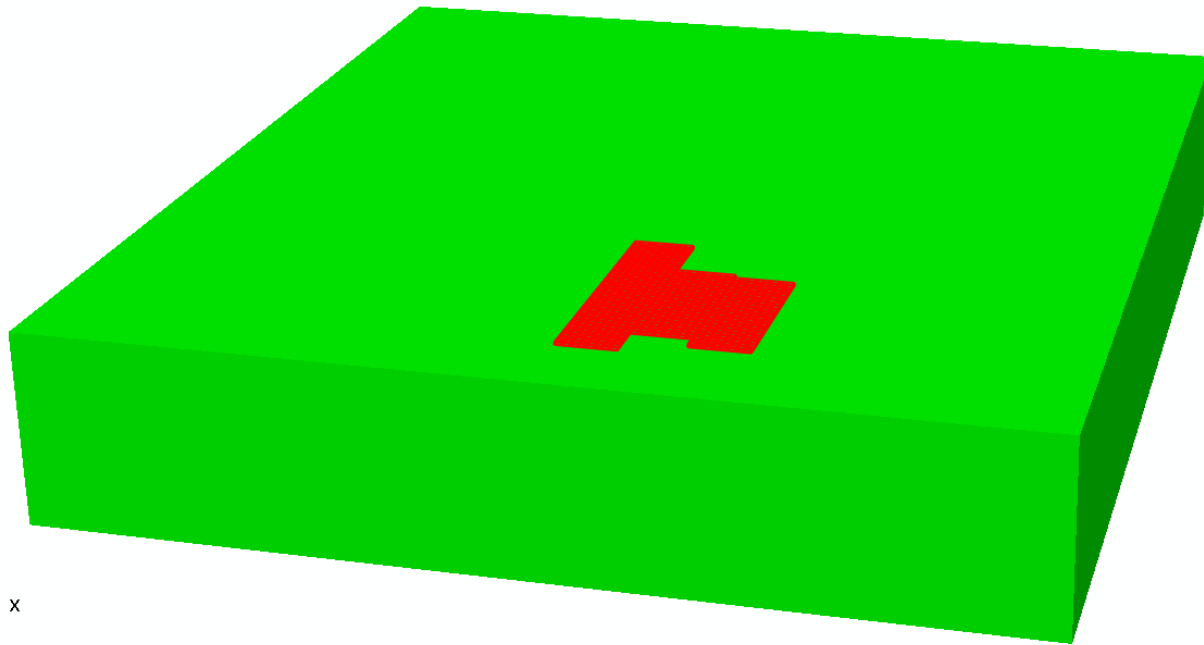
Analysis were made for 340m longwall panel 501 run

FEM



Lp	Layers	Floor [m]	Thickness [m]
1	Quaternary	10	10
2	Sandstone	185	175
3	Claystone	200	15
4	Sandstone	240	40
5	Claystone	275	35
6	Sandstone	300	25
7	Claystone	320	20
8	Sandstone	418	98
9	Coal	420	2
10	Sandstone	600	180

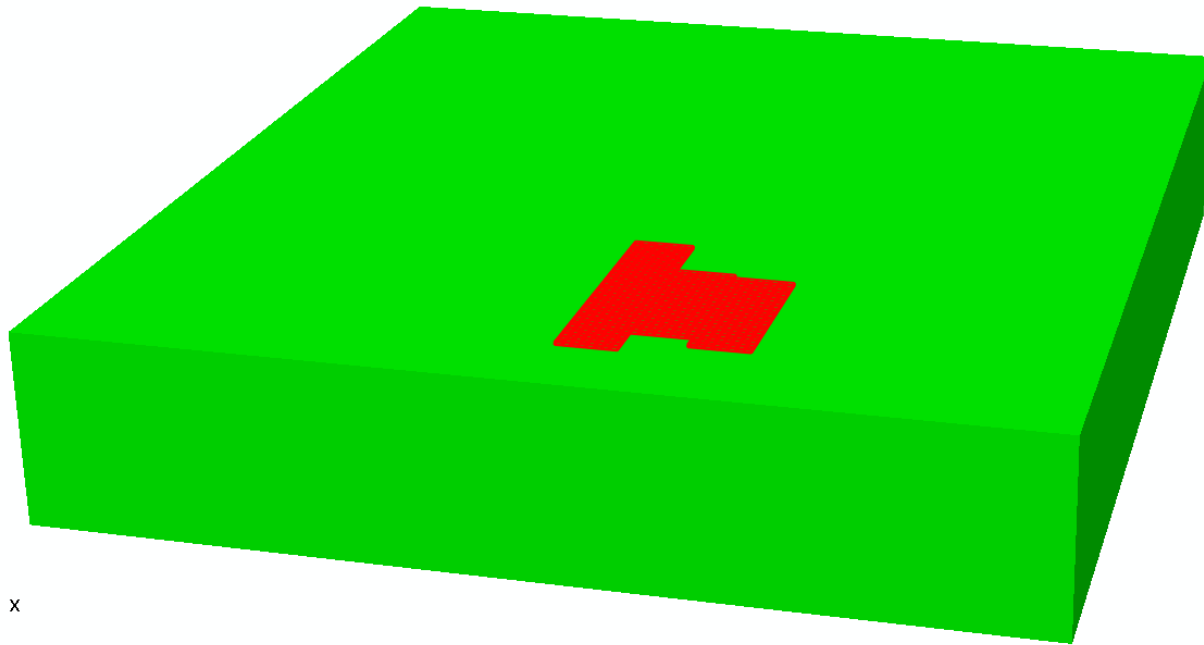
FEM



INITIAL

Layers	E1 [Pa]	E2 [Pa]	E3 [Pa]	G12 [Pa]	G13 [Pa]	G23 [Pa]
Quaternary	2.30E+08	2.30E+08	1.15E+09	1.00E+08	1.83E+08	1.83E+08
Sandstone	7.00E+08	7.00E+08	3.50E+09	3.04E+08	5.56E+08	5.56E+08
Claystone	5.80E+08	5.80E+08	2.90E+09	2.52E+08	4.60E+08	4.60E+08
Coal	3.26E+08	3.26E+08	1.63E+09	1.42E+08	2.59E+08	2.59E+08
Caved Zone	-	-	2.90E+08	-	-	-

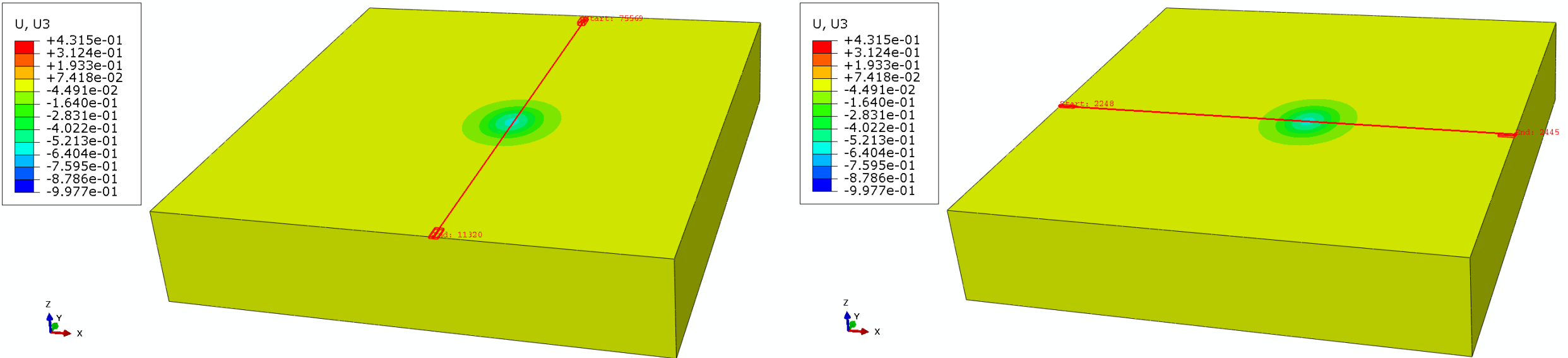
FEM



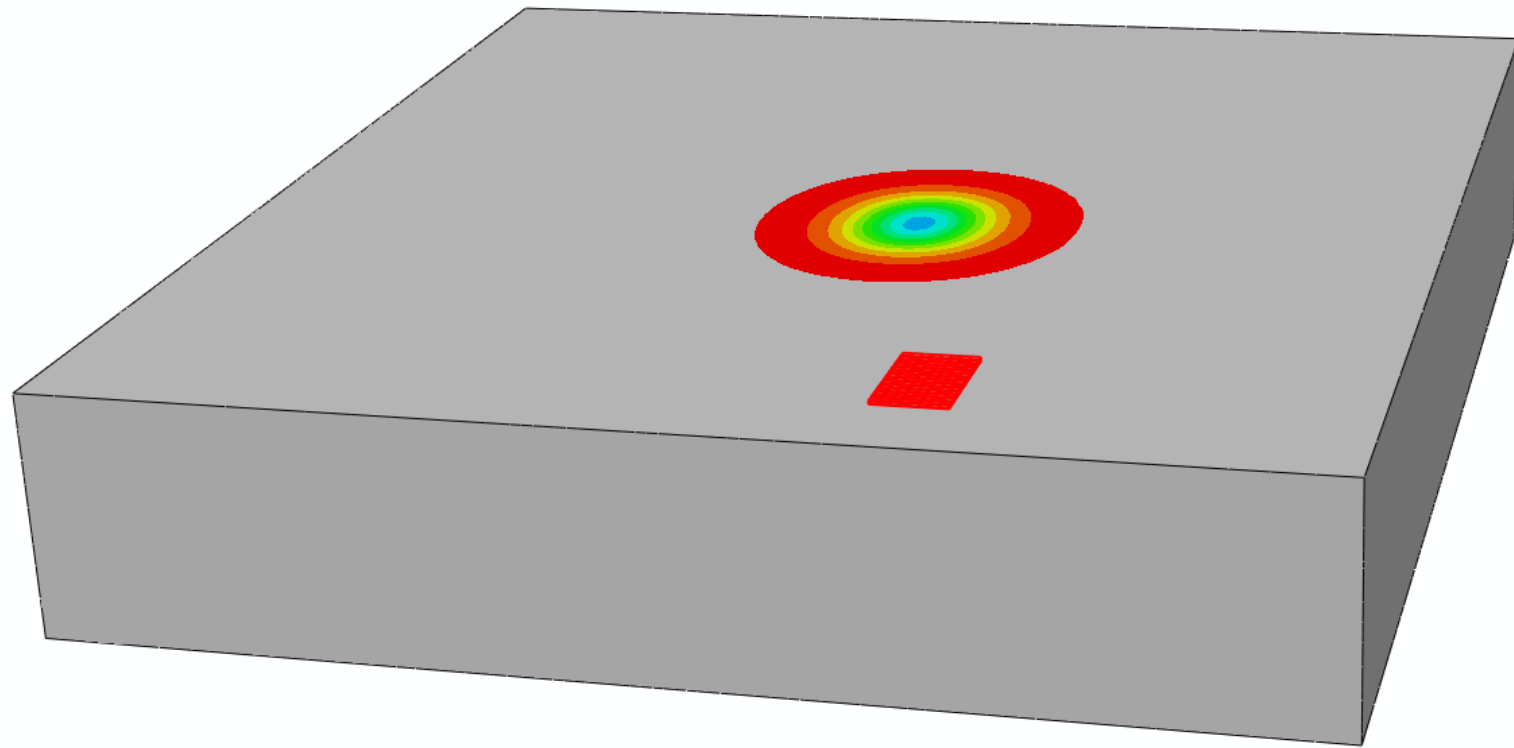
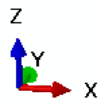
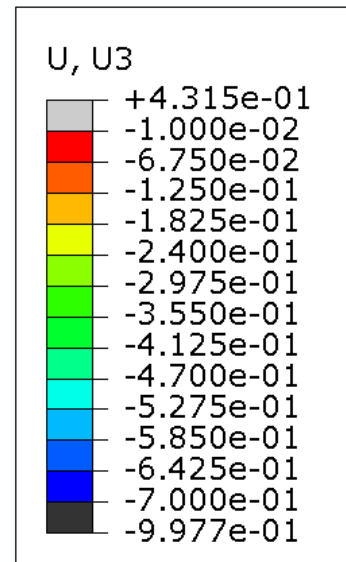
FINAL

Layers	E1 [Pa]	E2 [Pa]	E3 [Pa]	G12 [Pa]	G13 [Pa]	G23 [Pa]
Quaternary	6.42E+07	6.42E+07	7.29E+08	2.79E+07	5.76E+07	5.76E+07
Sandstone	1.95E+08	1.95E+08	2.22E+09	8.49E+07	1.75E+08	1.75E+08
Claystone	1.62E+08	1.62E+08	1.84E+09	7.03E+07	1.45E+08	1.45E+08
Coal	9.09E+07	9.09E+07	1.03E+09	3.95E+07	8.16E+07	8.16E+07
Caved Zone	-	-	1.84E+08	-	-	-

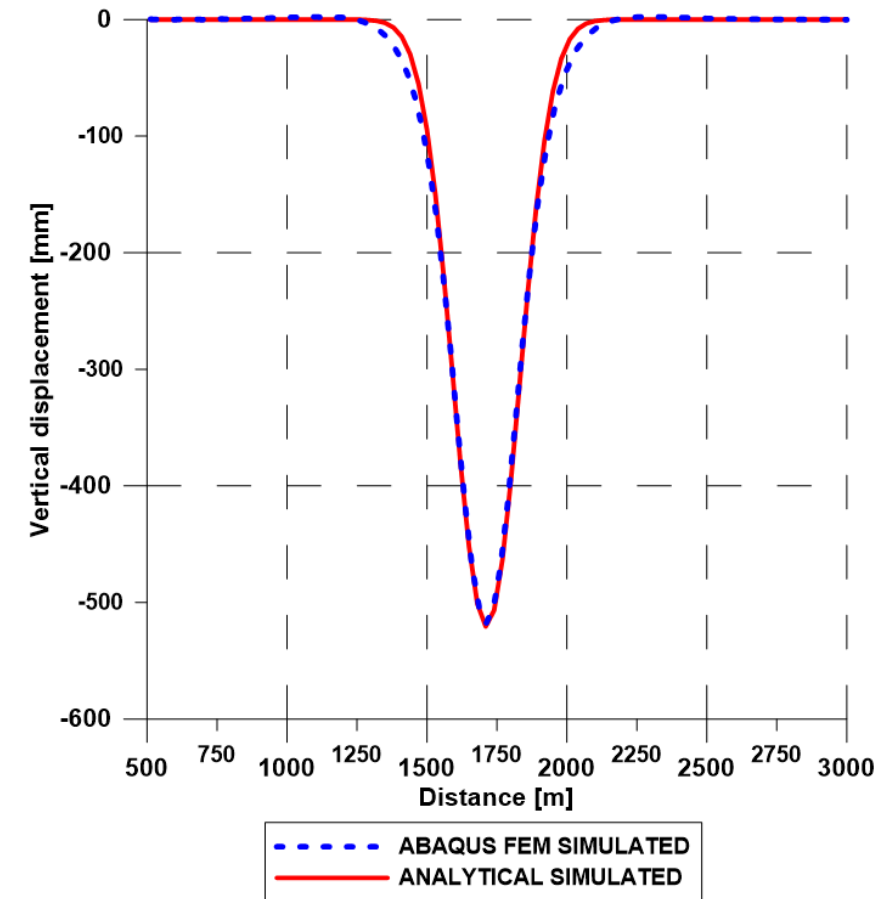
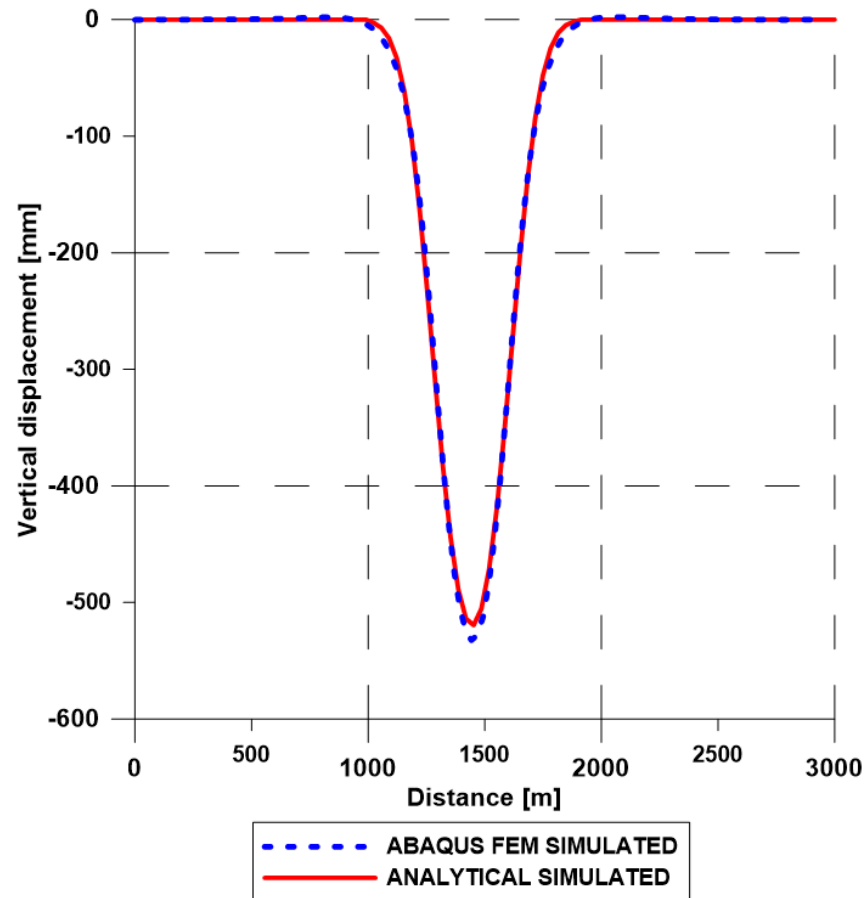
FEM



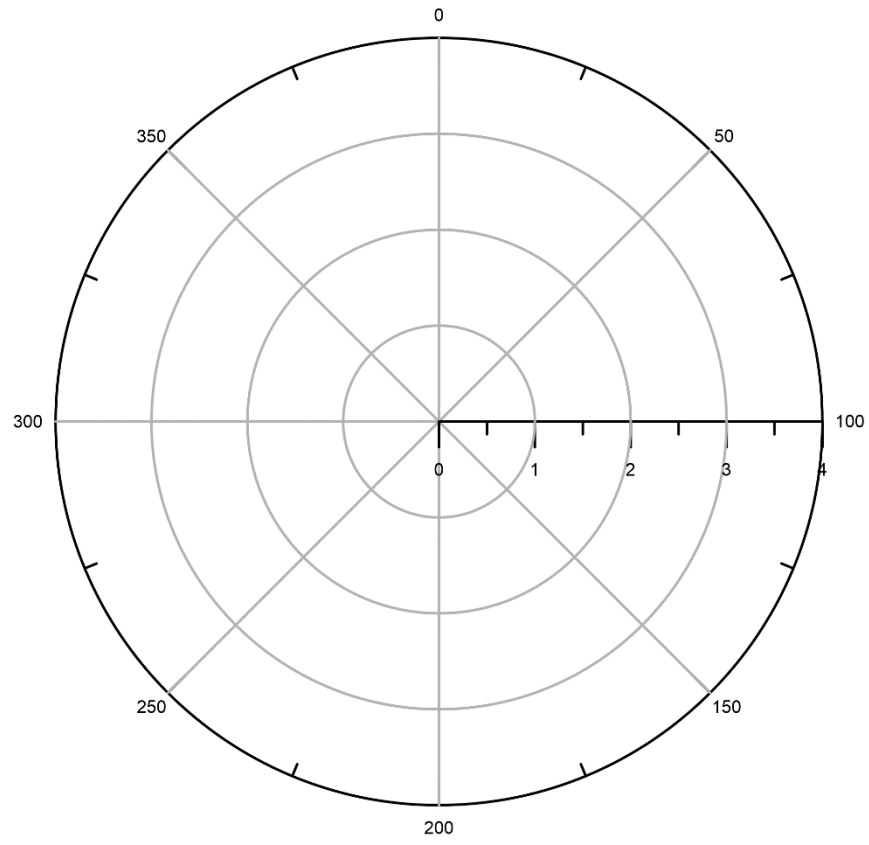
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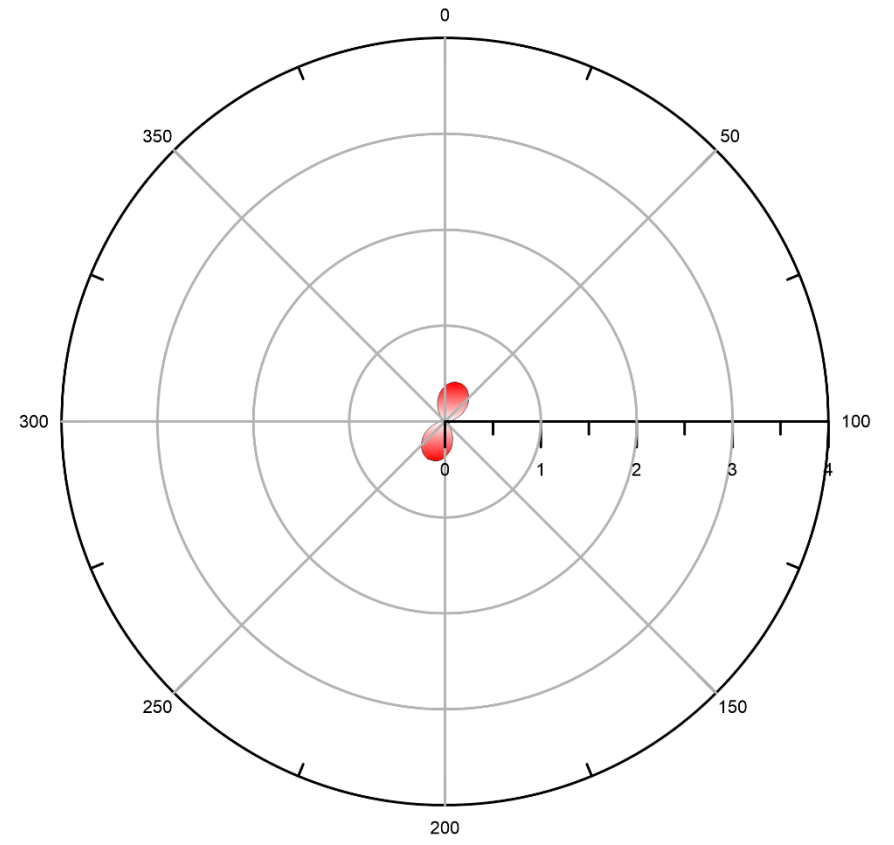
FEM



FEM

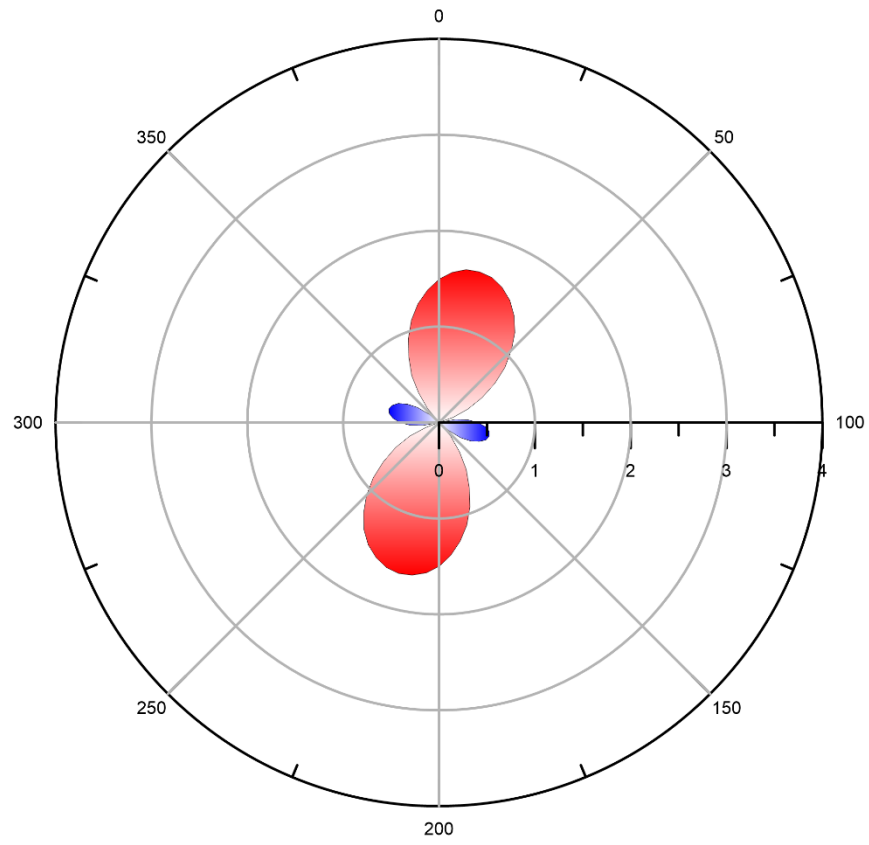


35m

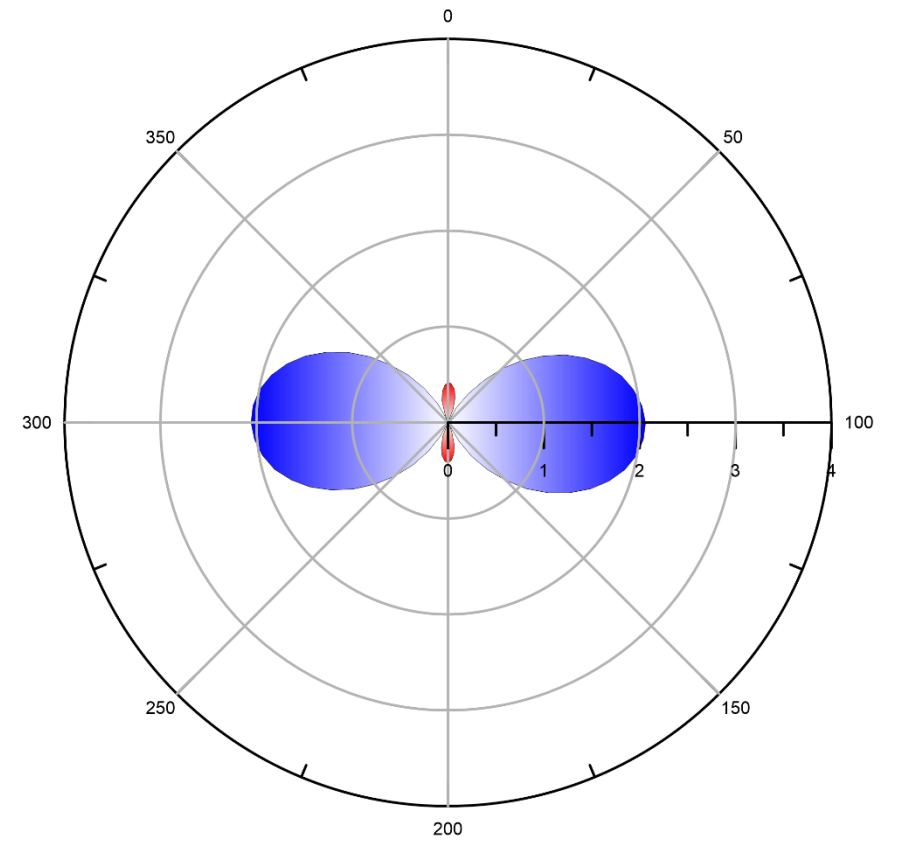


135m

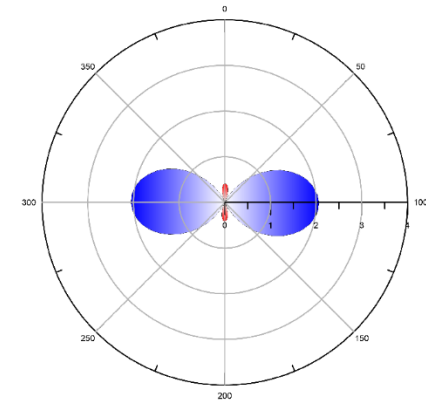
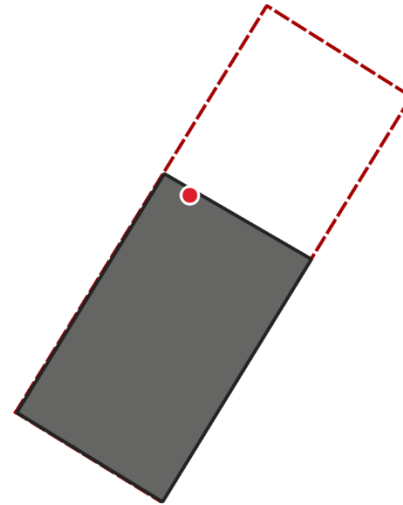
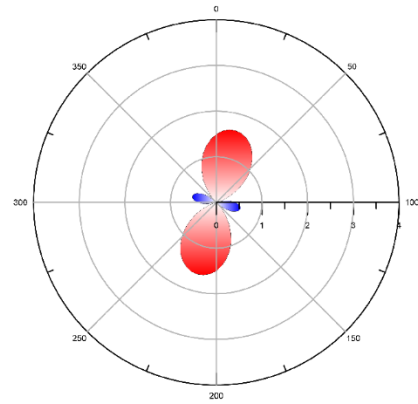
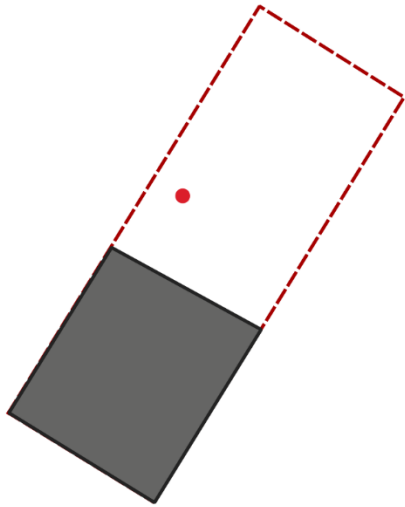
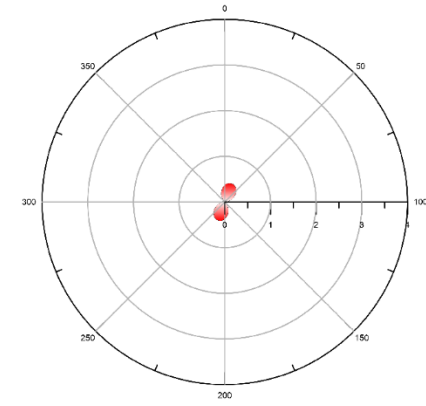
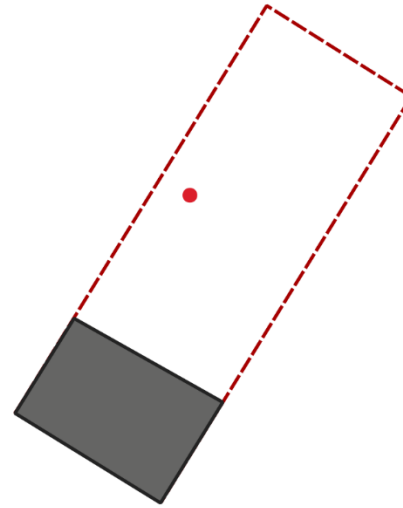
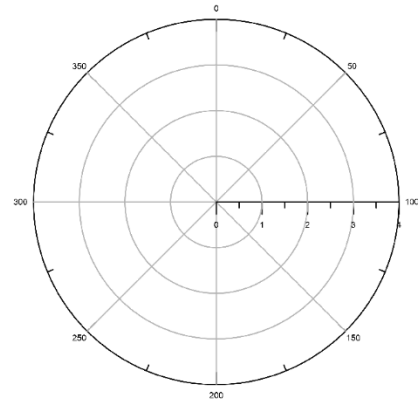
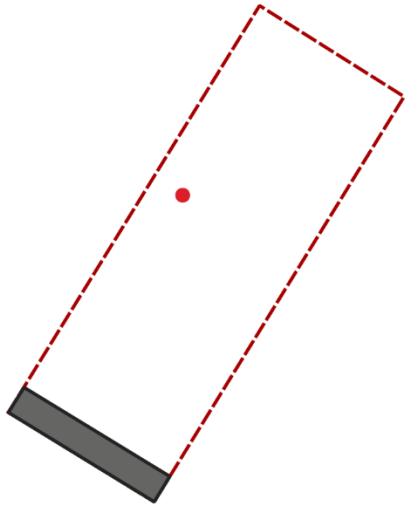
FEM



235m



335m



Thank you for your attention

