

GPS measurement on Aletschgletscher

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1. Introduction

(1) What is GPS?

Measure position on the earth with satellite data.

(2) Why do we measure the position on Aletschgletscher?

To measure flow velocity of the glacier.

To measure position of other measurements.

(3) Goal of the measurement

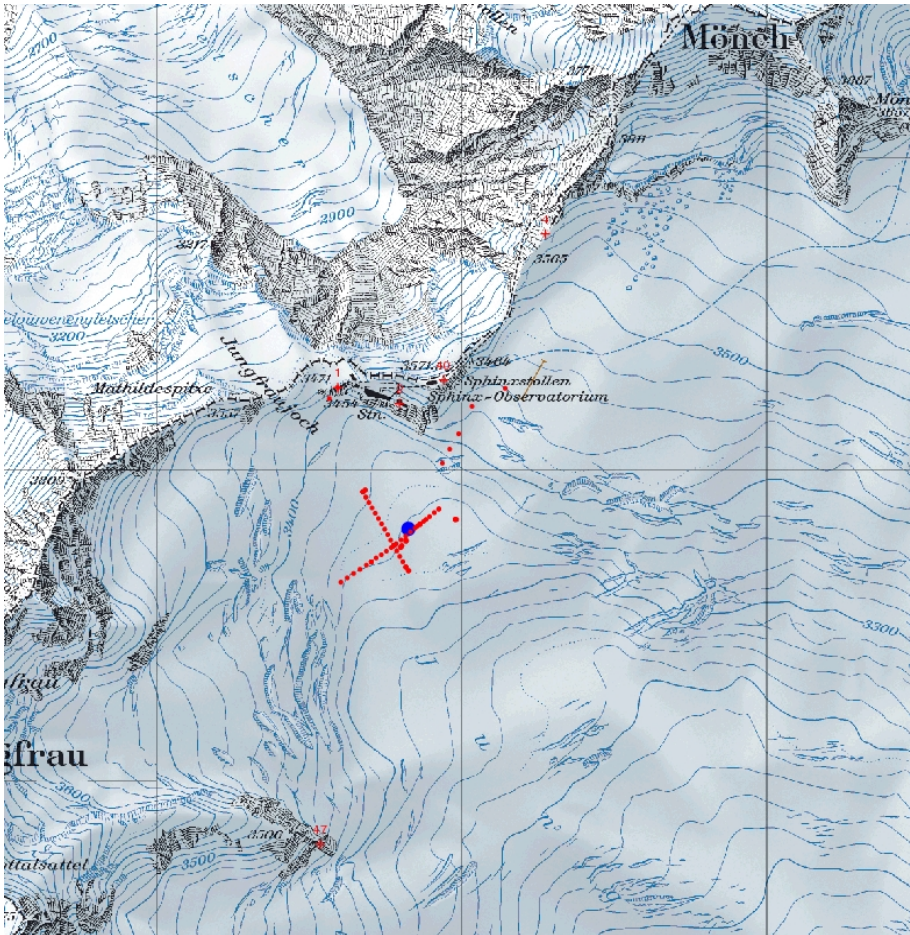
To measure annual flow velocity.

To measure glacier surface slope.

To measure stake positions of GPR survey.

2. Method and results

(1) Study Site



(2) Measurement methods

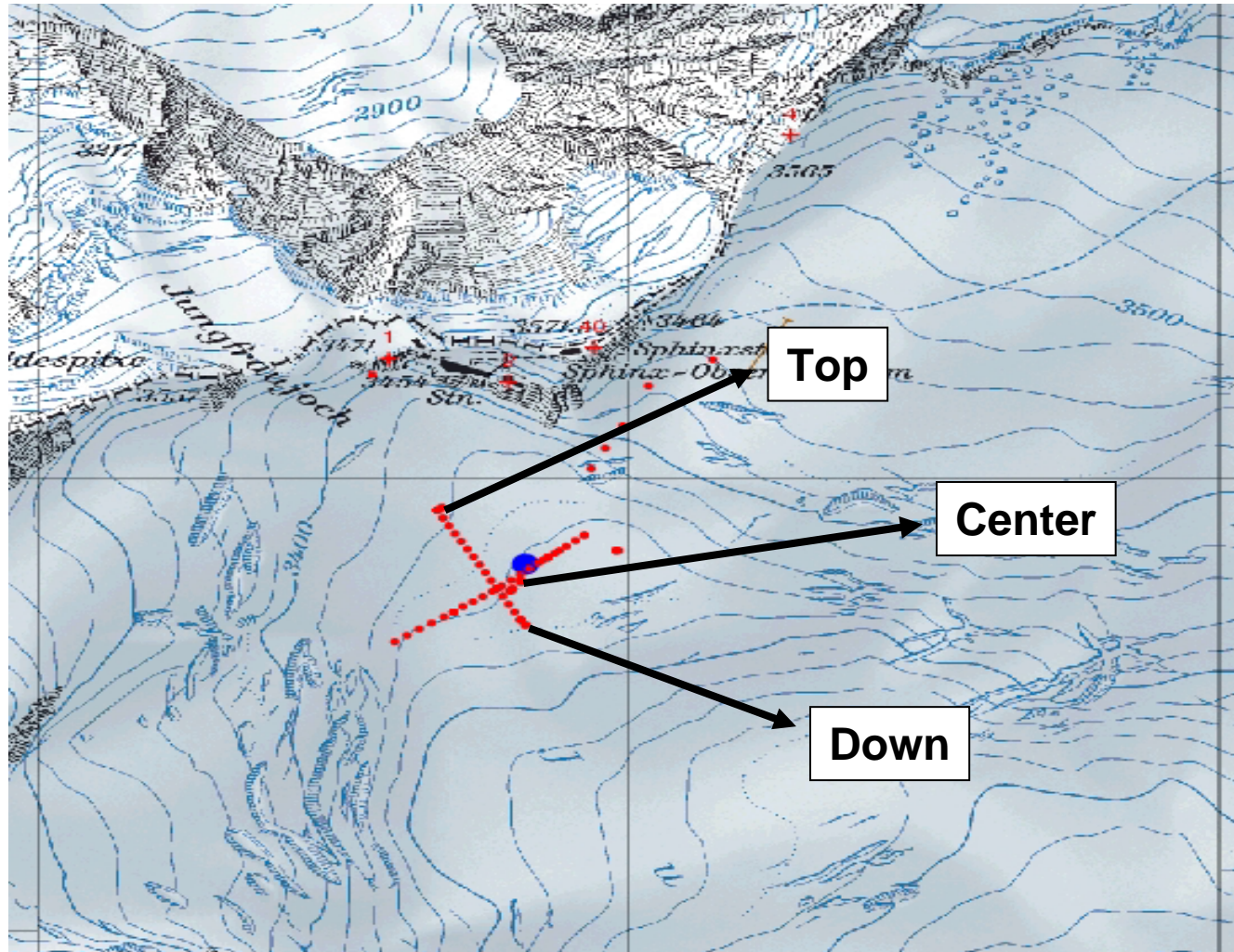
RTK (Real-Time Kinematic) positioning

- To measure position of other measurements.
- To measure glacier surface slope.

Static relative positioning

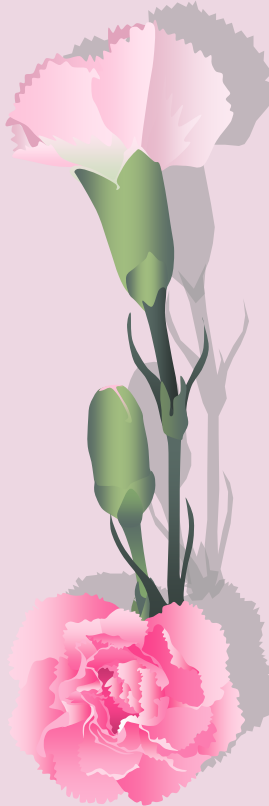
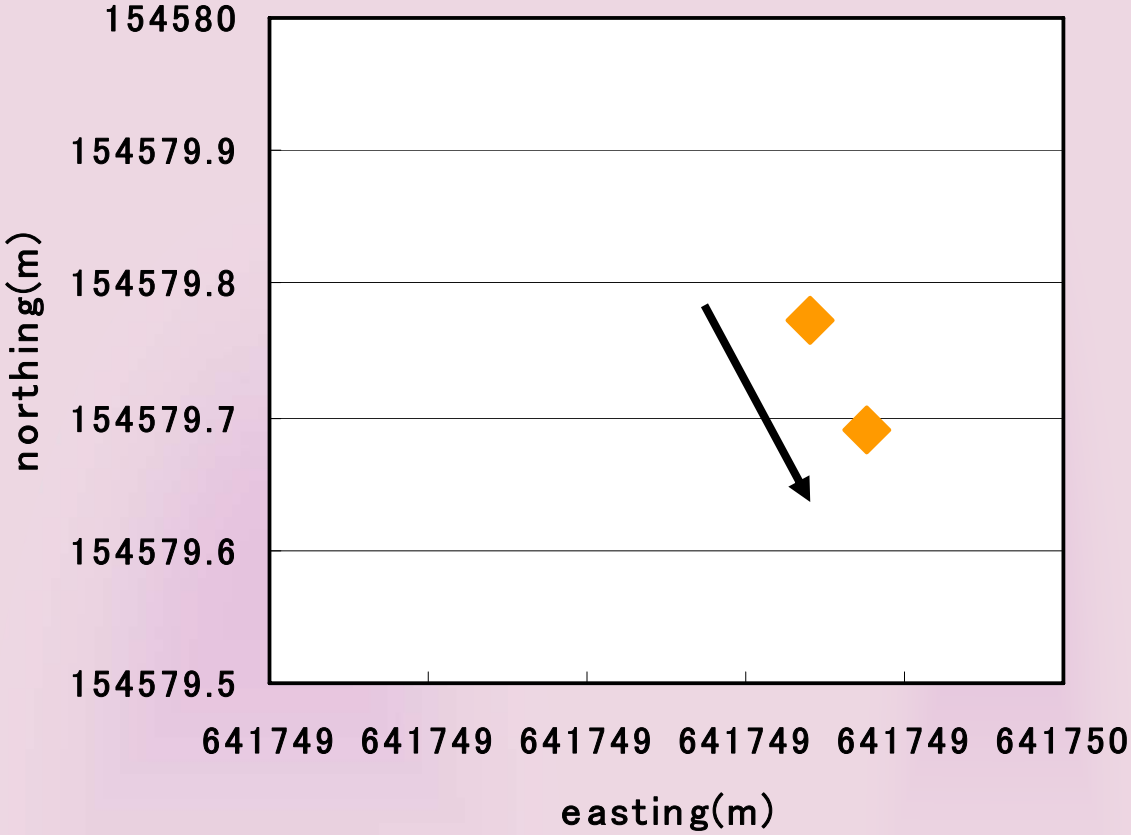
- To measure annual flow velocity.

3.Results



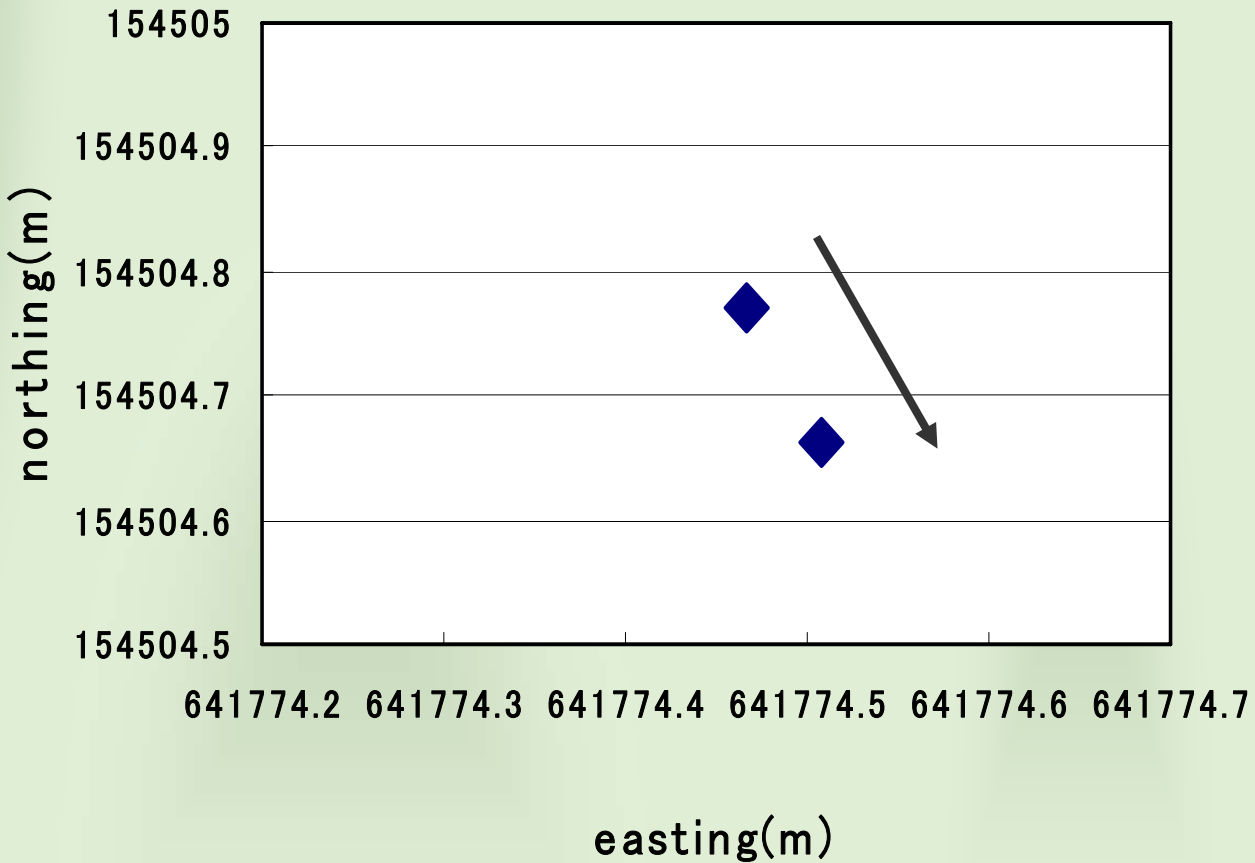
Flow direction (center)

center

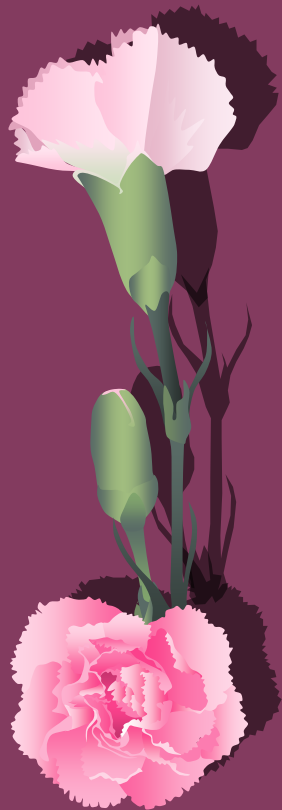
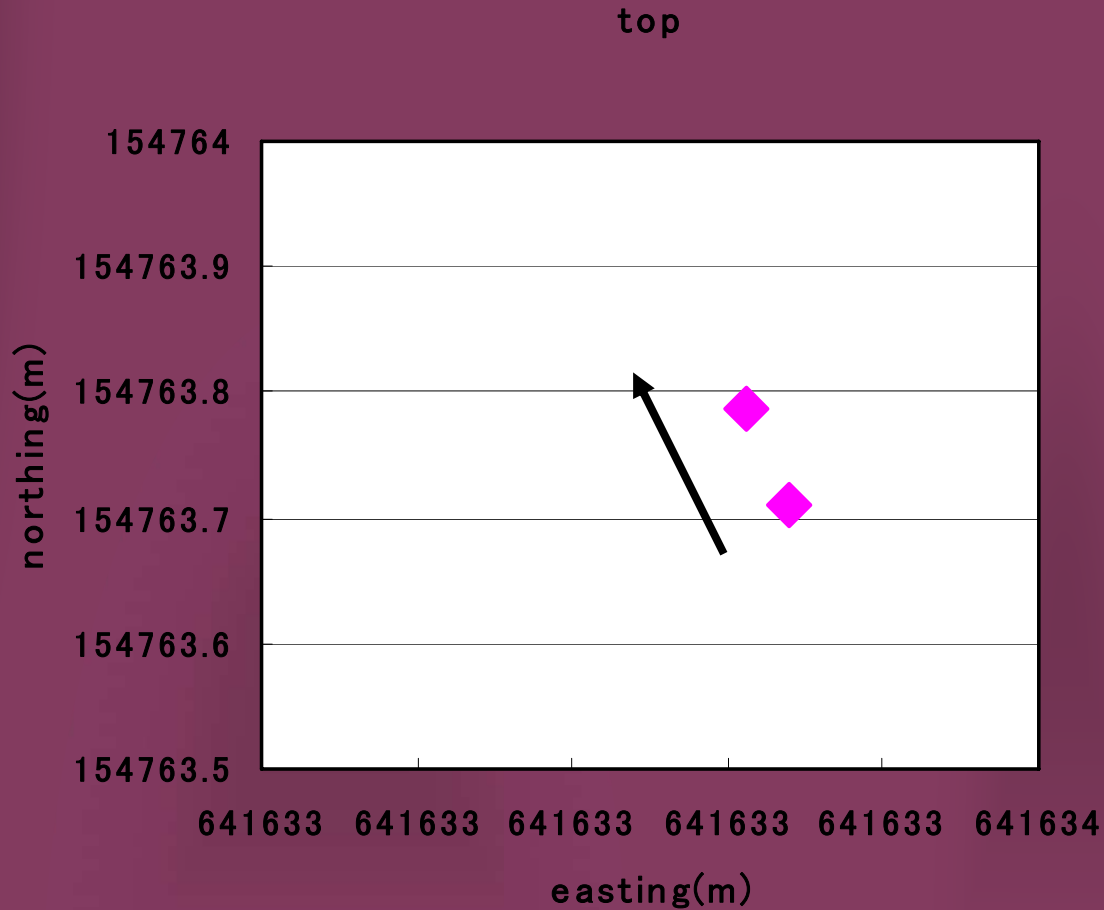


Flow direction (down)

down



Flow direction (Top)



Flow velocity

	easting	northing	altitude
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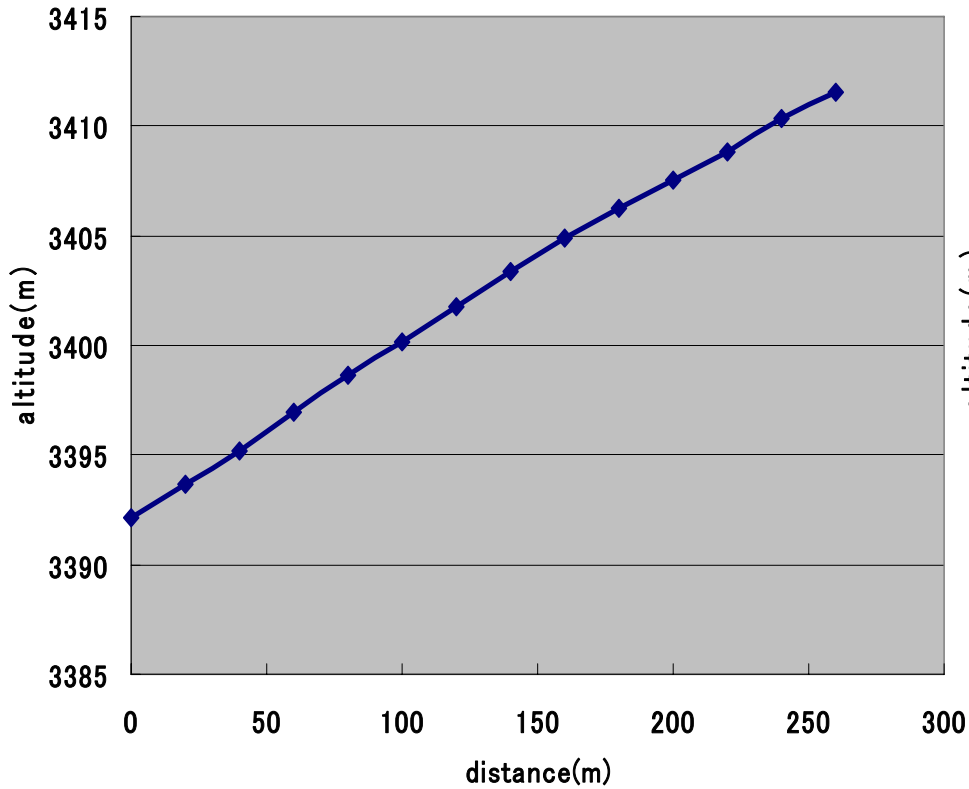
down1(m)	641774.46	154504.77	3388.24
down2(m)	641774.50	154504.66	3388.23
down1- down2(m)	-0.0429	0.1076	0.0163
velocity(m/y)	-17.32	43.45	6.58

center1(m)	641749.33	154579.77	3394.09
center2(m)	641749.37	154579.69	3394.07
center1- center2(m)	-0.0355	0.0826	0.0185
velocity(m/y)	-13.63	31.73	7.107

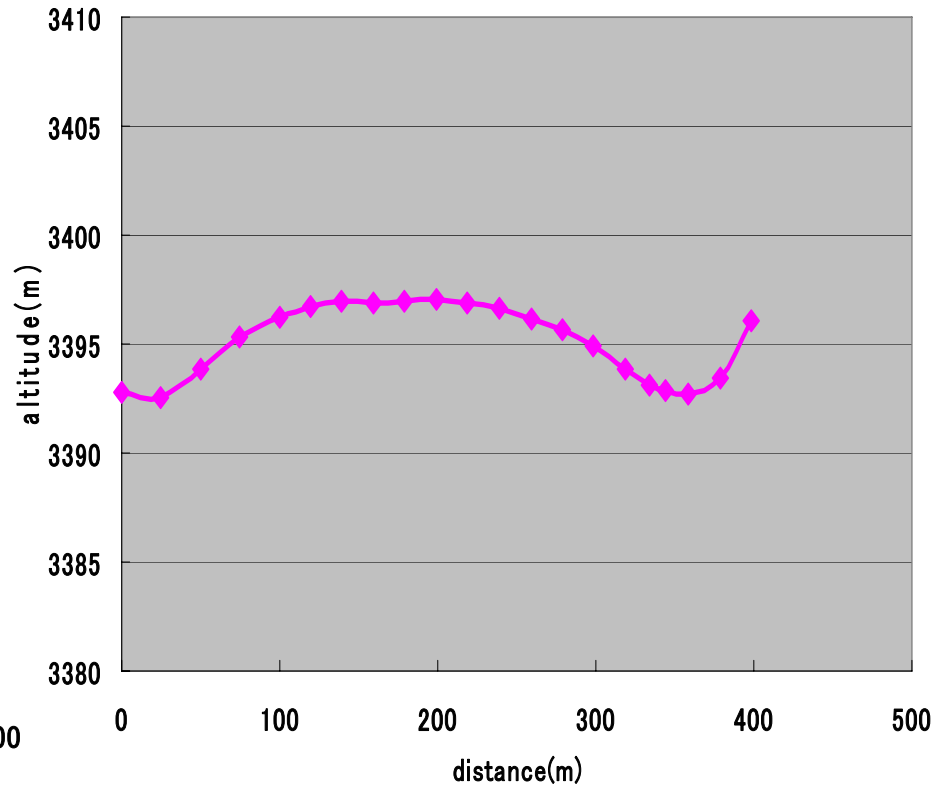
top1(m)	641633.33	154763.71	3409.09
top2(m)	641633.31	154763.7	3409.63
top1-top2(m)	0.0265	-0.0774	-0.5417
velocity(m/y)	11.02	-32.21	-225.42

Surface slope

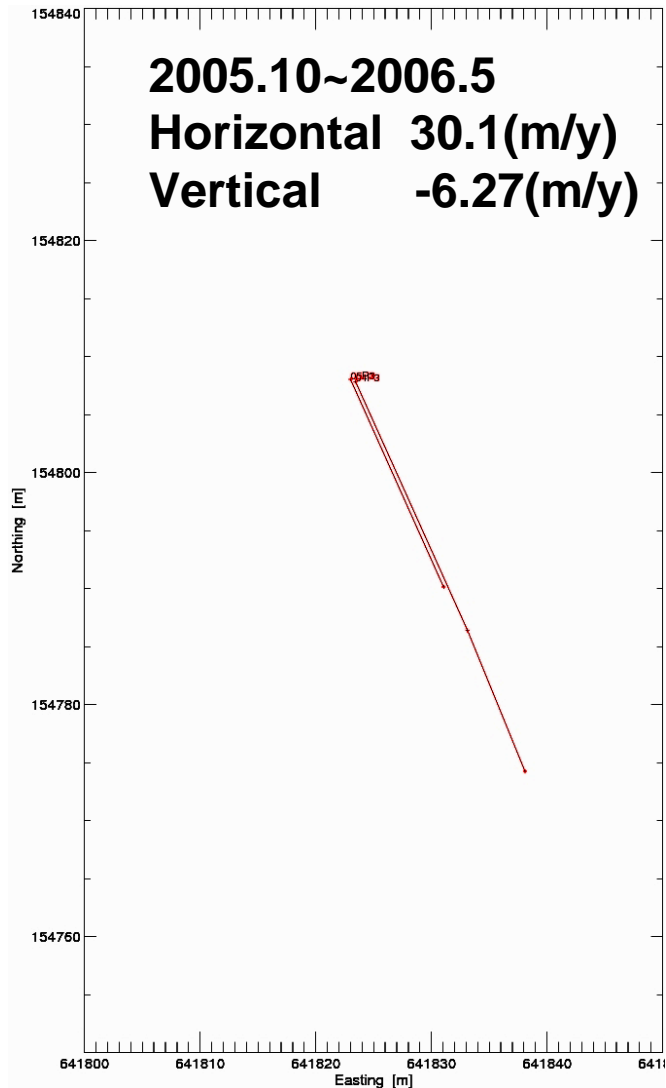
longitudinal profile



transverse profile



4. Discussion



This time results

Center

2006.5.17~2006.5.18

Horizontal 34.5m/y

Vertical -7.1(m/y)

Down

2006.5.17~2006.5.18

Horizontal 46.7m/y

Vertical -6.58(m/y)

5. Conclusion

To measure annual flow velocity.

- 34.5m/y(horizontal),and -7.1m/y(Vertical).

To measure glacier surface slope.

- 4.3°

To measure stake positions of GPR survey.

- 36 GPR stakes were measured.

