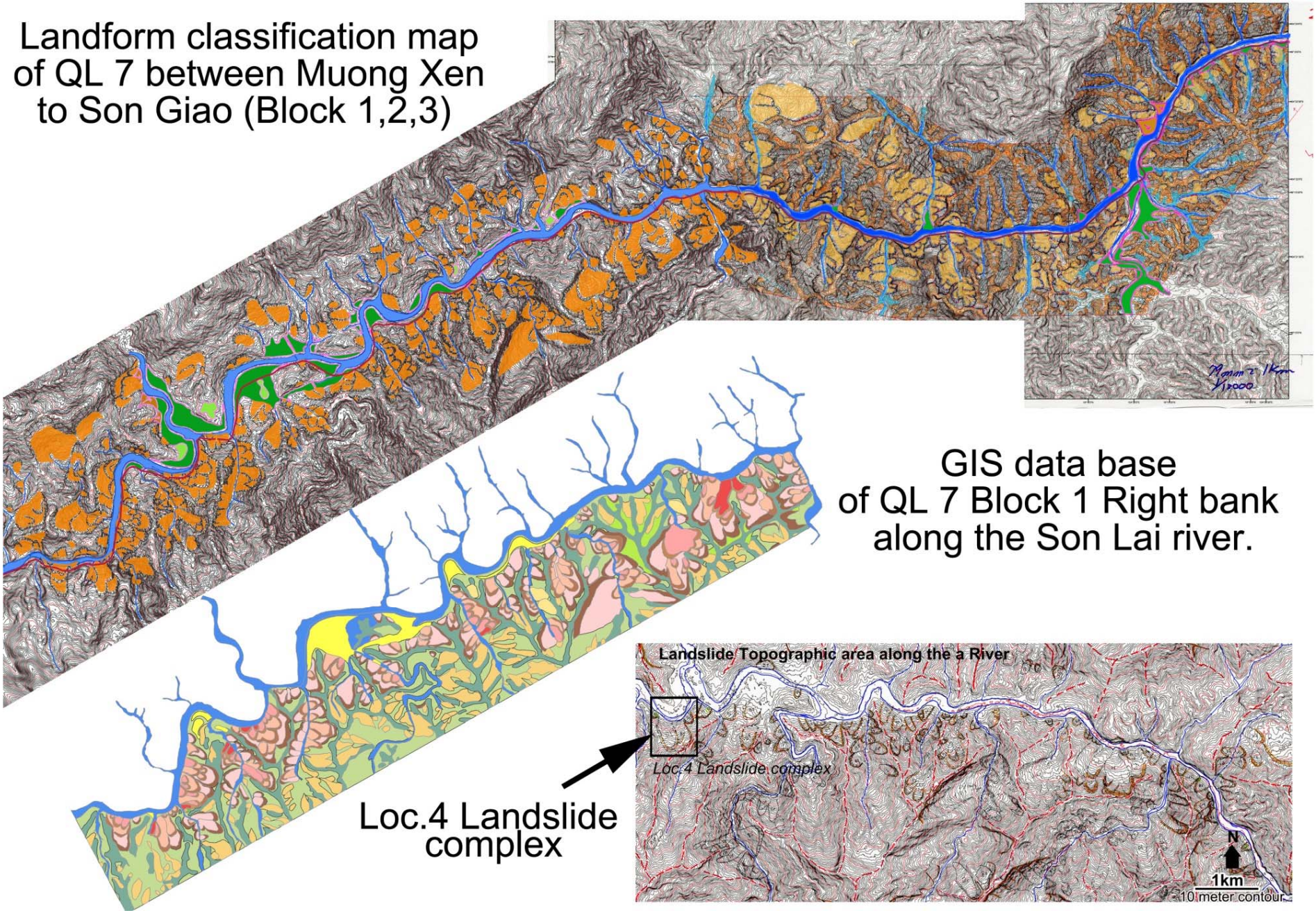
Detailed Scale Landslide Data Base on Route No.7

Landform classification map
of QL 7 between Muong Xen
to Son Giao (Block 1,2,3)



GIS data base
of QL 7 Block 1 Right bank
along the Son Lai river.

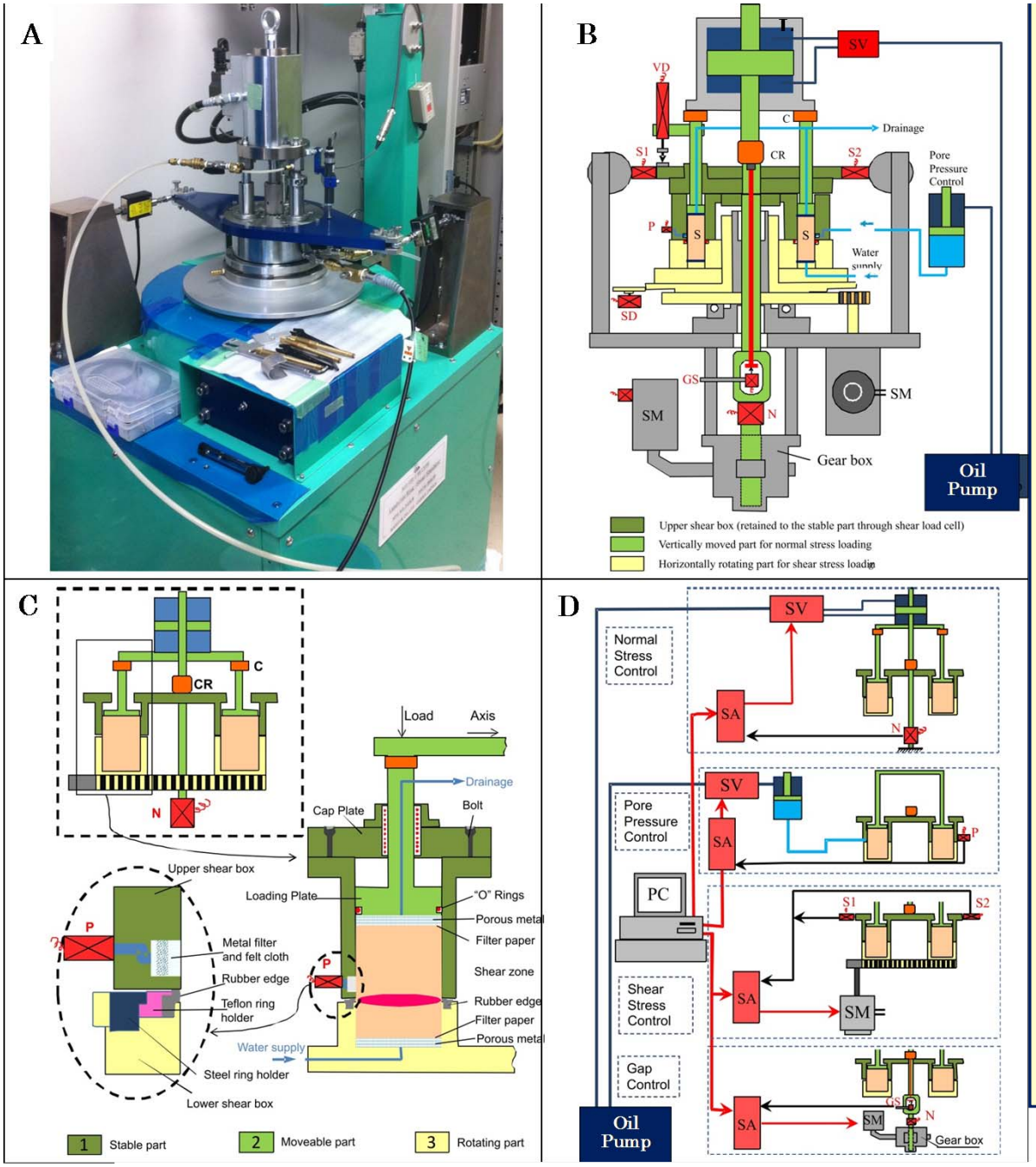
Loc.4 Landslide
complex

Main Outputs of WG3 Testing Group

1. A high-stress undrained dynamic-loading ring shear apparatus (ICL-2) was developed and applied to Vietnam (Simulating deep-seated landslides with 100-200 m in depth).

2. The initiation mechanism and the dynamics of post-failure motion of the targeted landslides was well studied.

3. Hazard assessment technology of the precursor stage of landslides was developed.



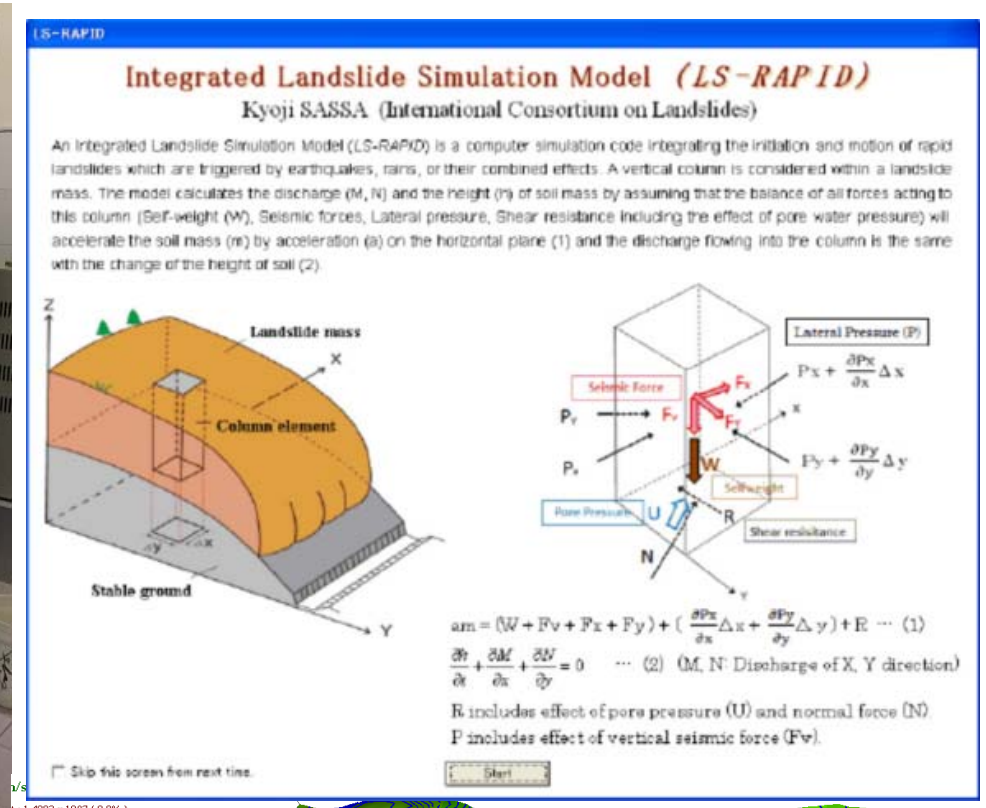
The latest version, ICL-2

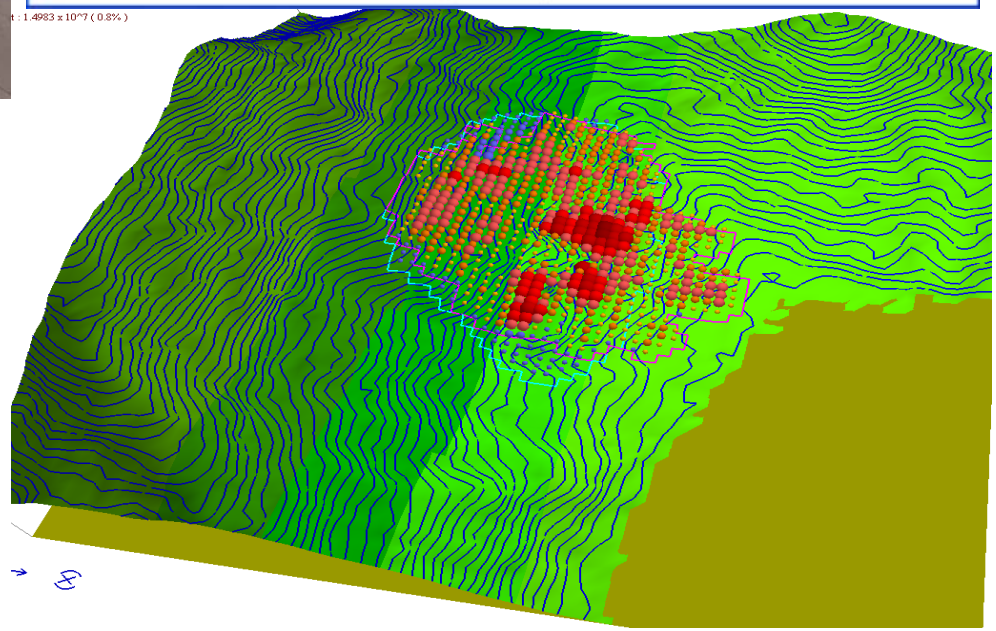
High-stress ring shear apparatus for large-scale landslides.
Maximum normal stress and undrained capacity is 3 MPa.

A: Photo of the main apparatus.
B: Mechanical structure
C: Close up view of the shear box and sealing.
D: Servo-control system for Normal stress, shear stress, pore pressure and gap.
Red arrow: control signal
Black arrow: feed-back signal
Blue line is for water control

The design and construction of RSA (ICL-2)

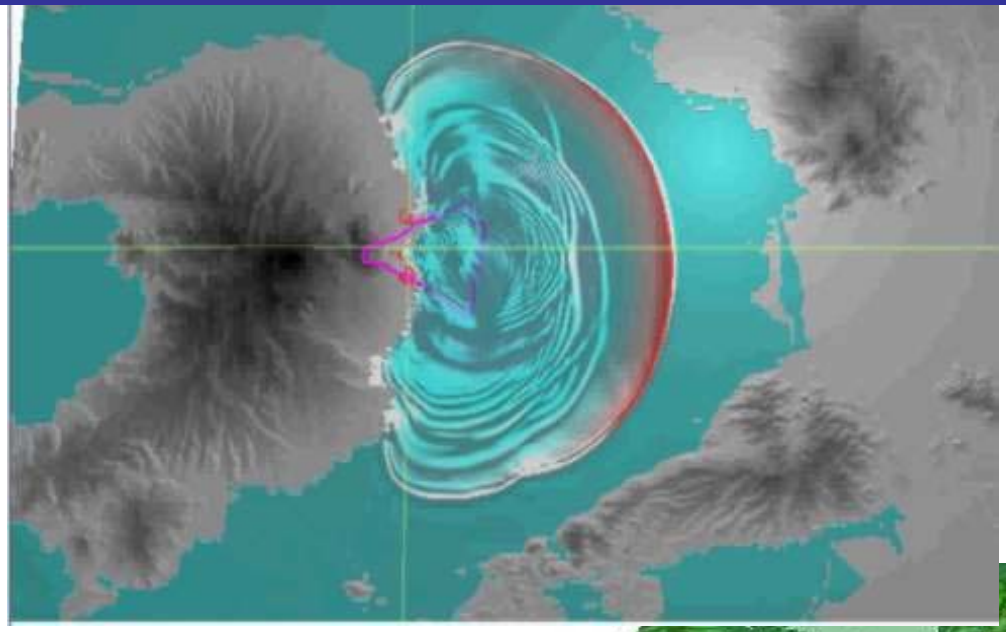
Ring shear apparatus (ICL2)

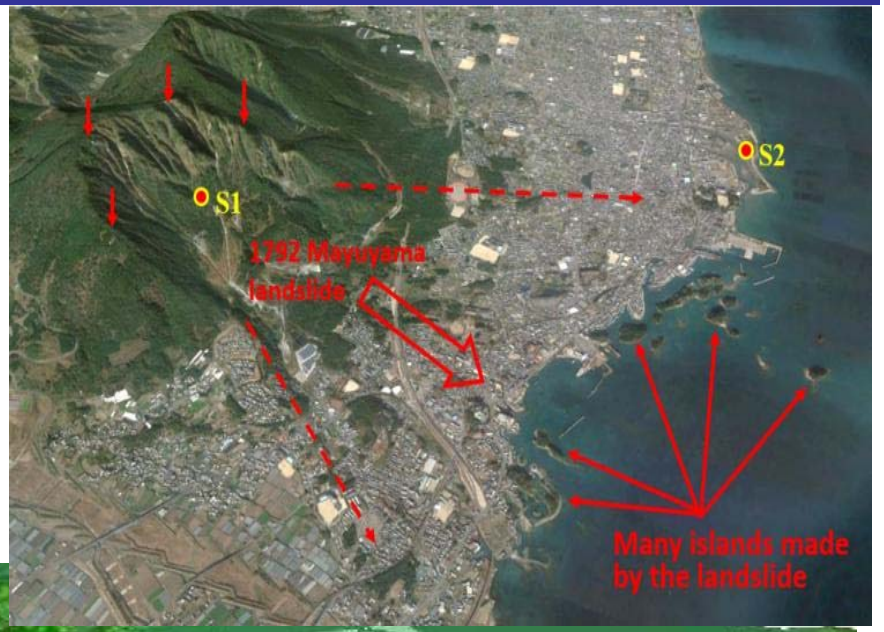




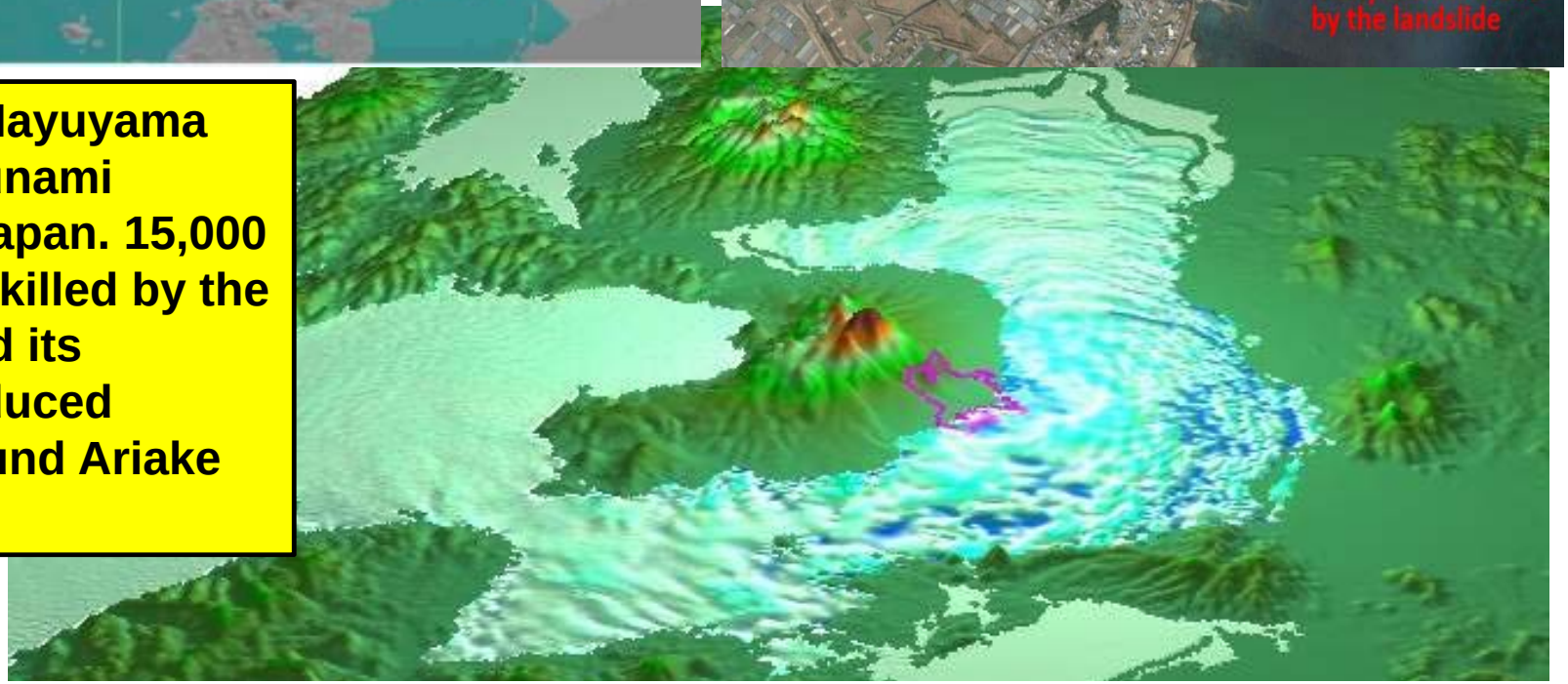
Simulating the Hai Van station landslide by LS-Rapid

Modeling of landslide-triggered tsunami for the 1792 Unzen Mayuyama case



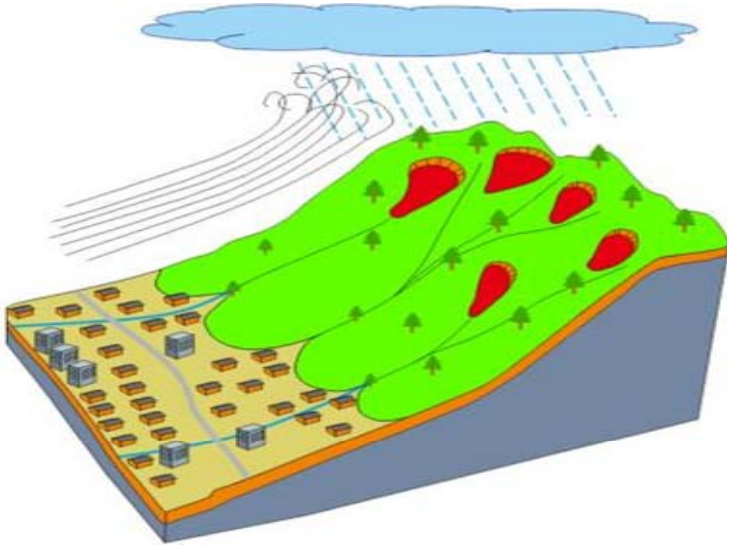


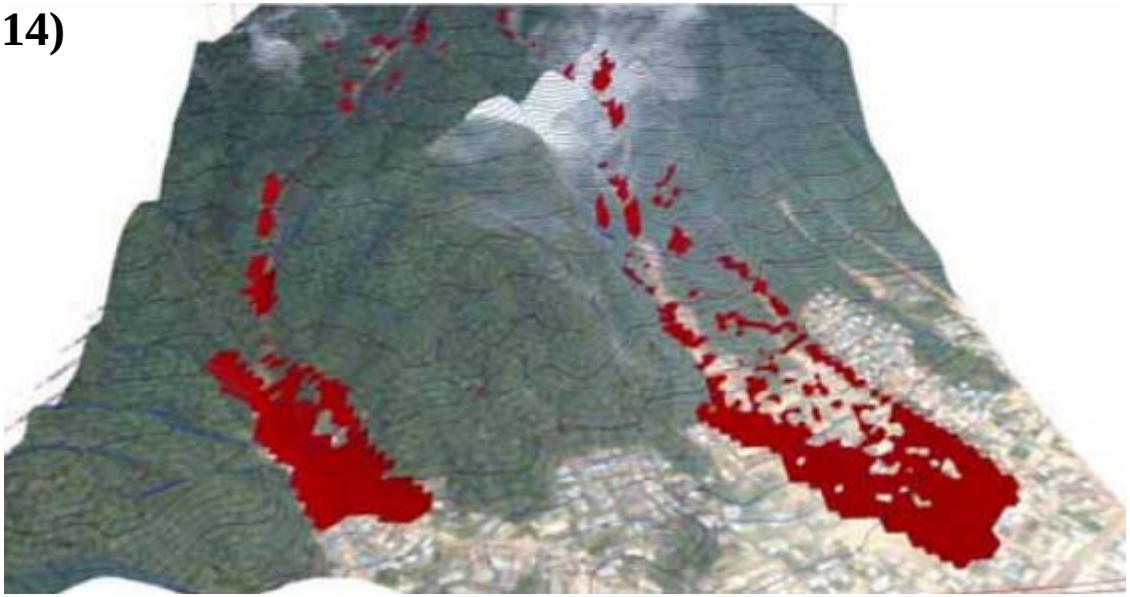
The Unzen-Mayuyama landslide-tsunami disaster in Japan. 15,000 people were killed by the landslide and its landslide-induced tsunami around Ariake Sea in 1792



Risk assessment for the 2014.8 Hiroshima landslide disaster

LS-RAPID simulation (Sassa et al., 2014)





Landslide simulation by LS-RAPID

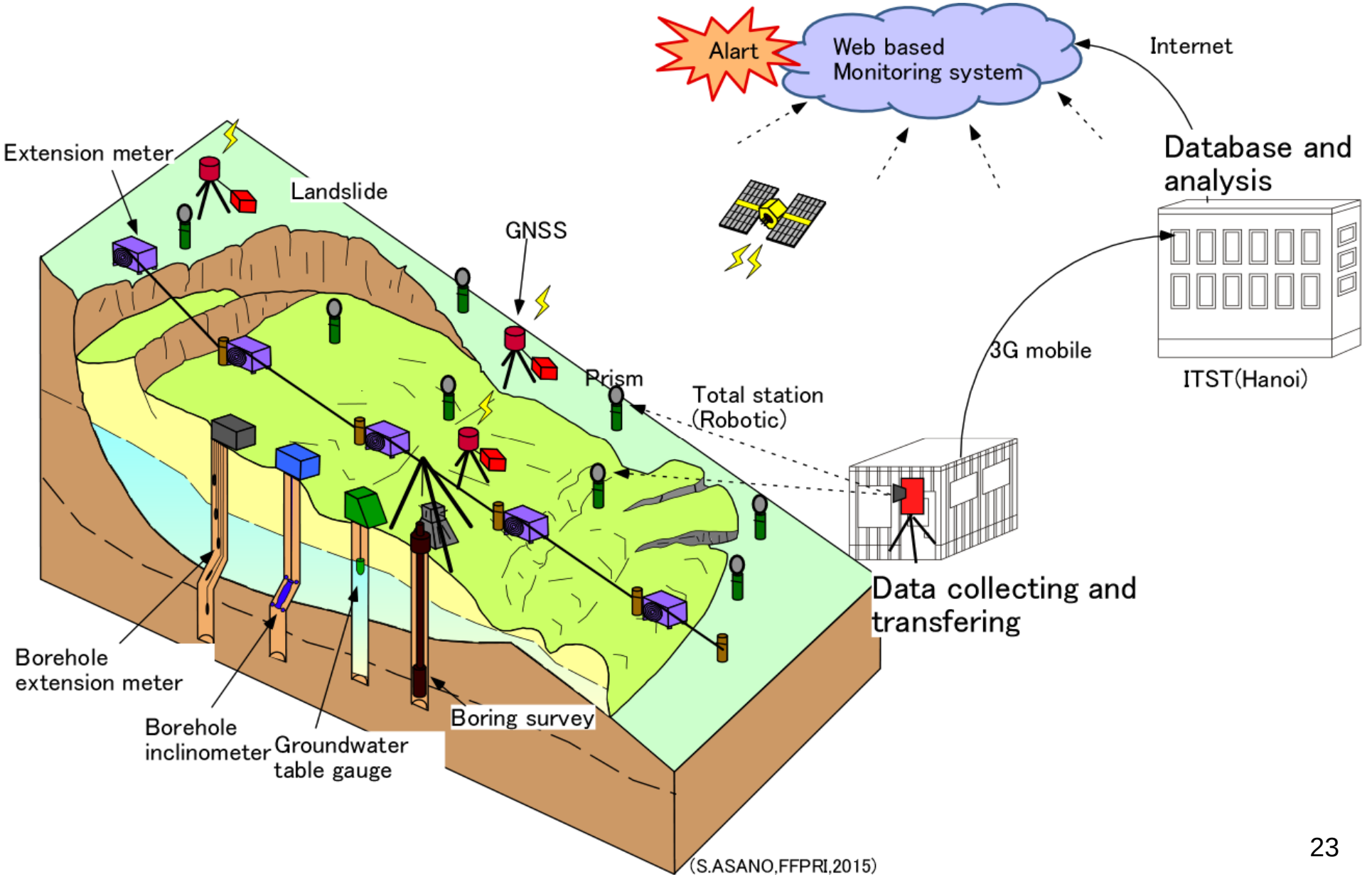
Photo courtesy by PASCO, Co., Ltd.

Airphoto interpretation by GSI

Main Outputs of WG4 Mornitoring Group

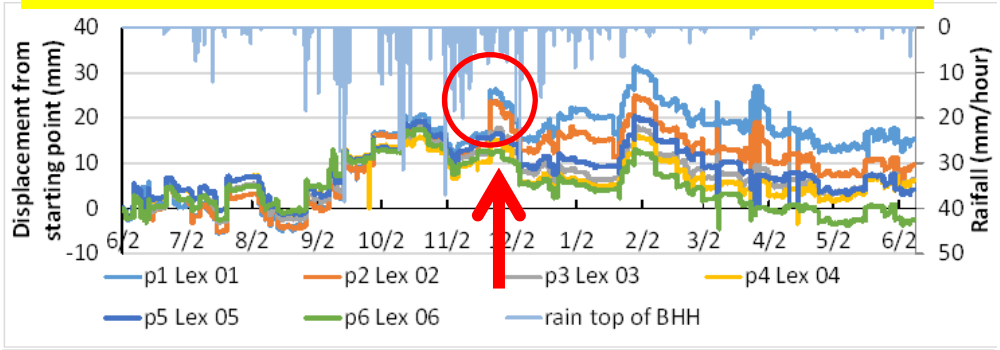
1. The web-based landslide monitoring system is developed for the Hai Van station landslide.
2. Equipments for landslide monitoring and early warning were installed at the Hai Van station landslide
3. A landslide flume model was developed and applied to the case study

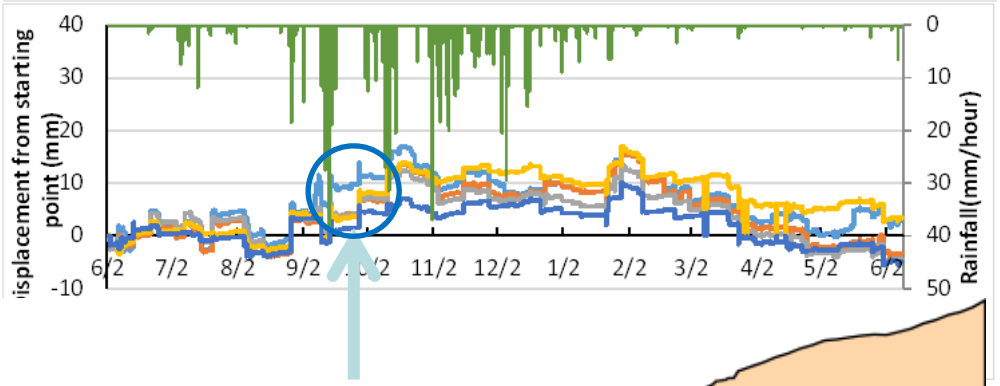
Monitoring and early warning system

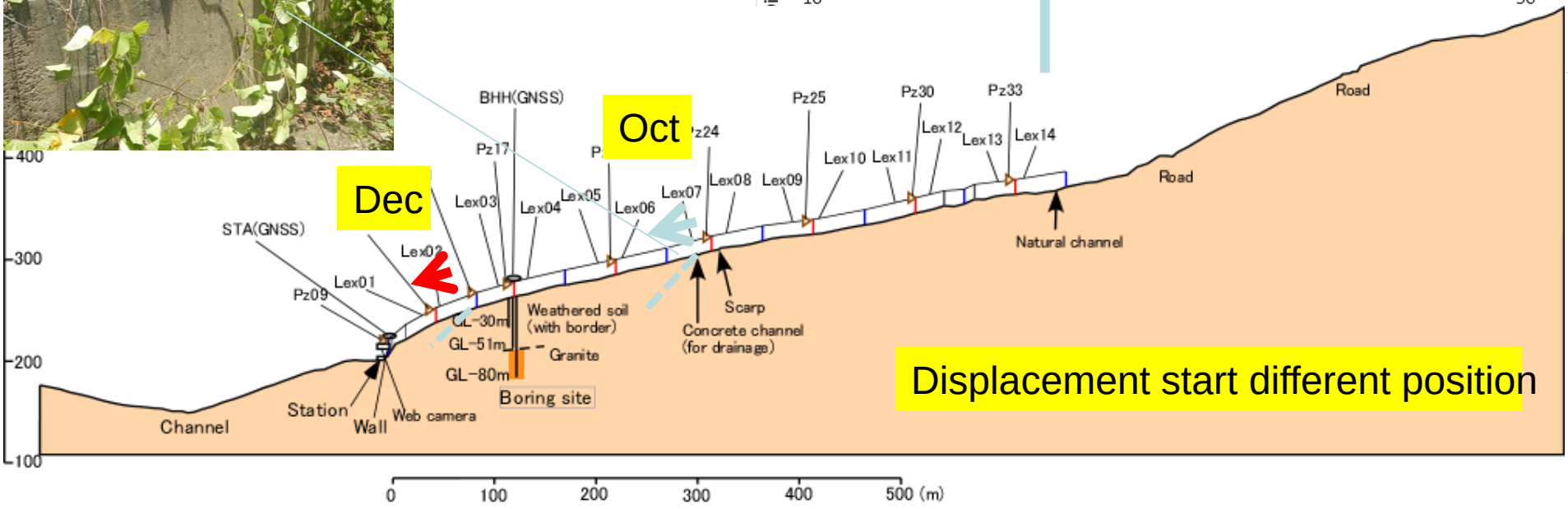


Slope displacement in long-span extensometer

Cumulative displace from upper position





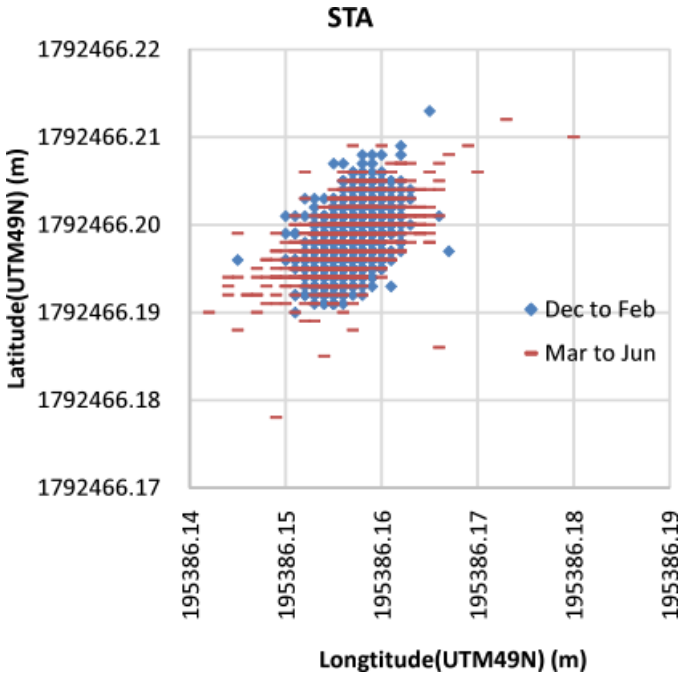


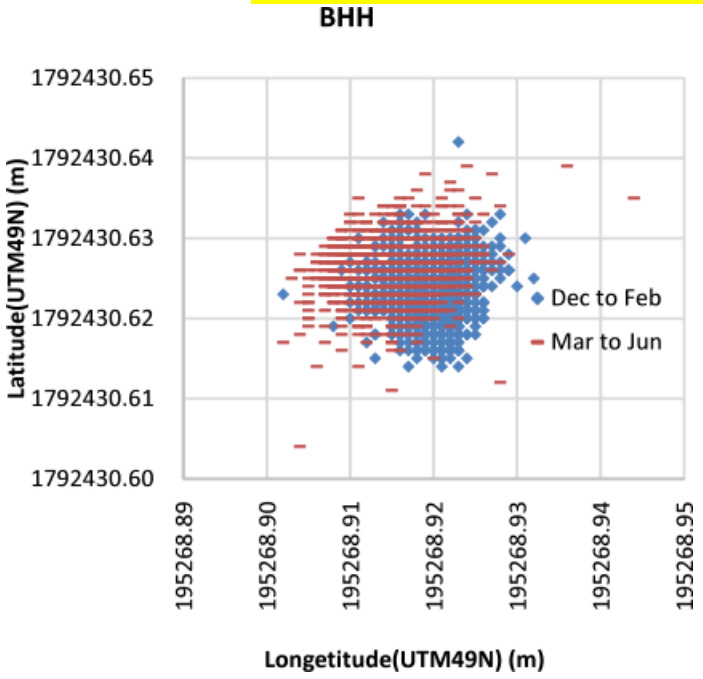
Displacement start different position

Displacement from GNSS since December 2015

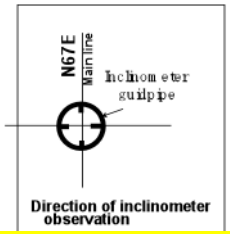
Baseline analyses

After rainy season, almost stable

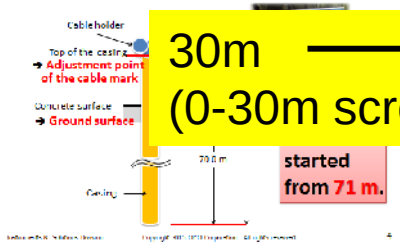




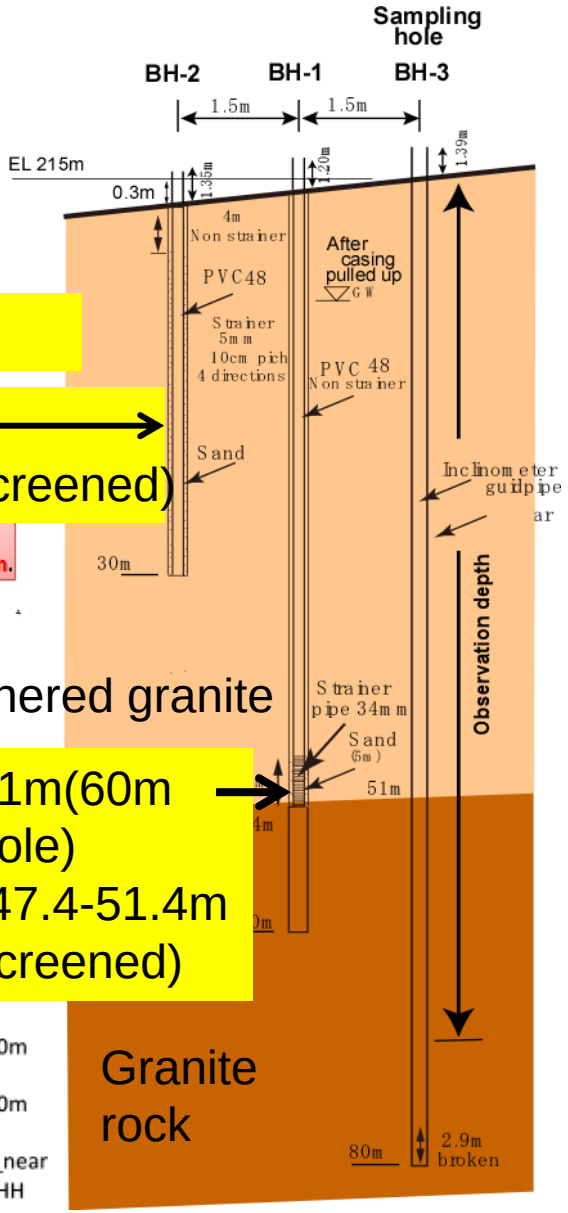
Groundwater table (Groundwater pressure gauge)



Groundwater table



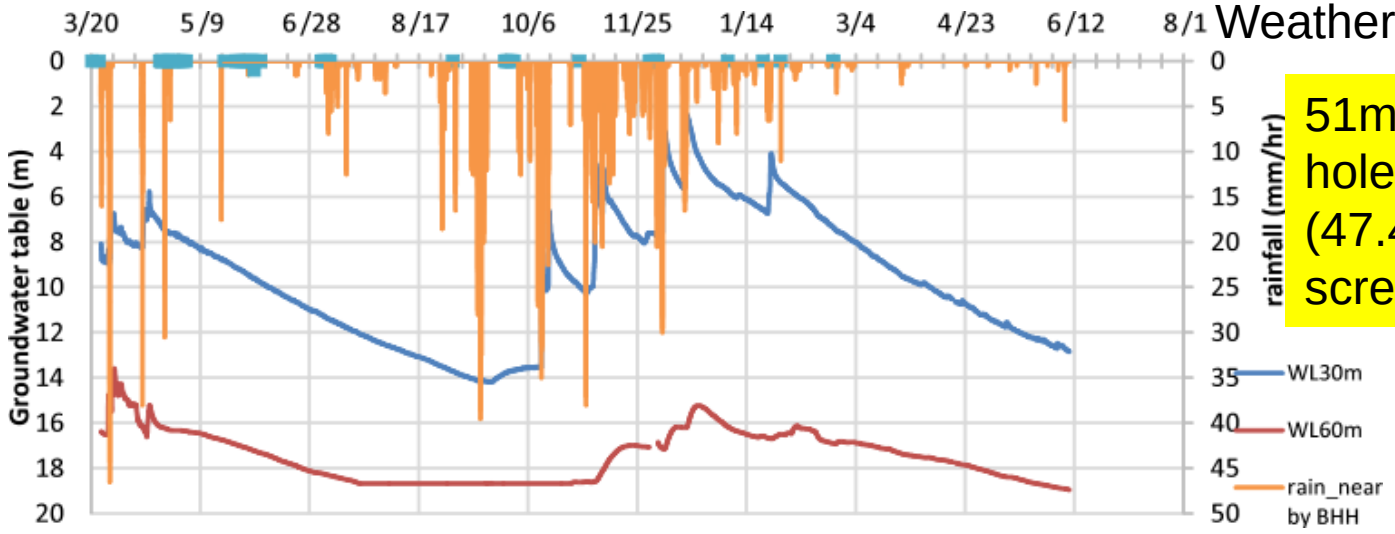
30m
(0-30m screened)



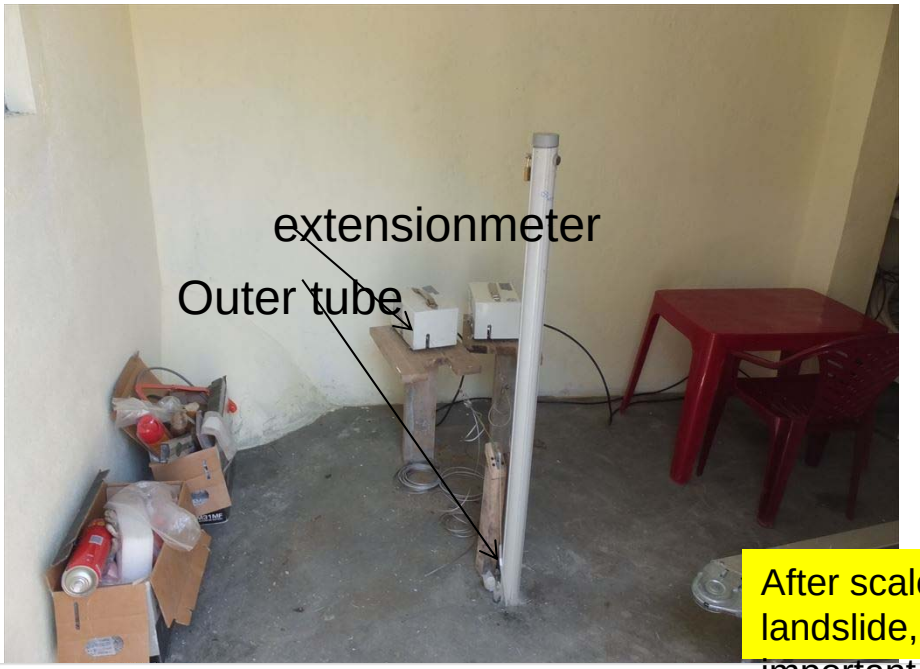
Weathered granite

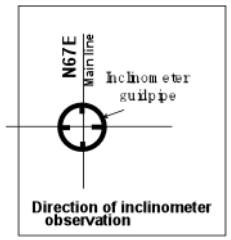
51m(60m hole)
(47.4-51.4m screened)

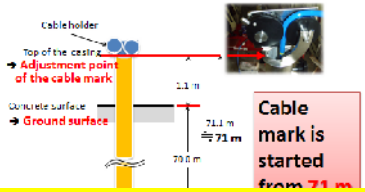
Granite rock



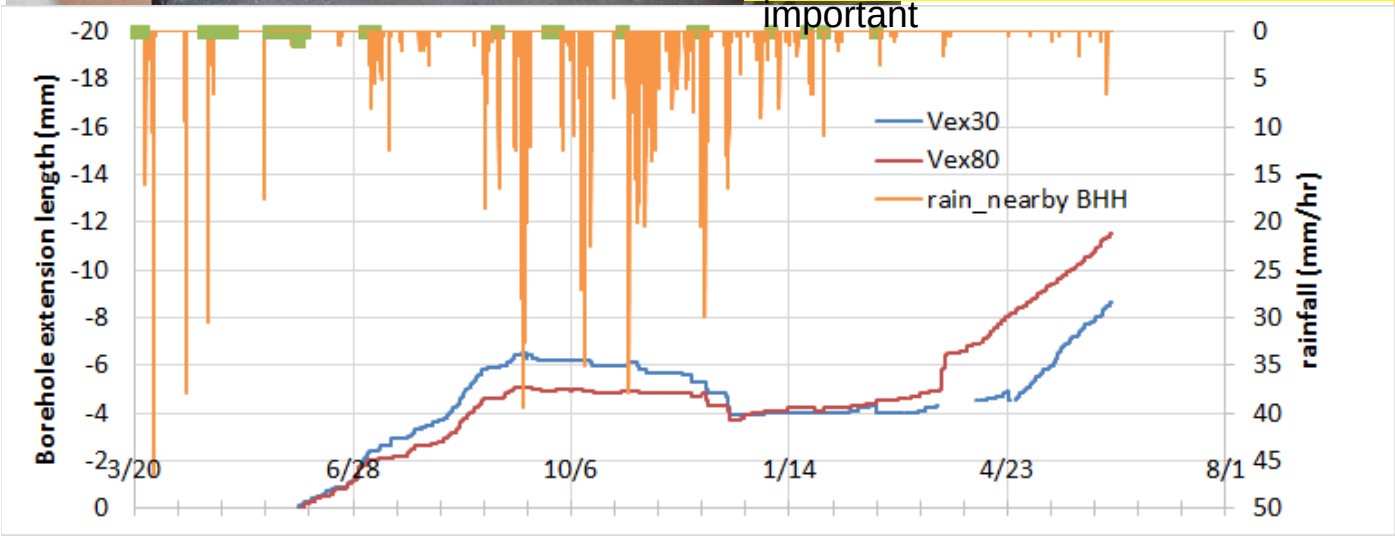
Underground displacement (Borehole extensionmeter)

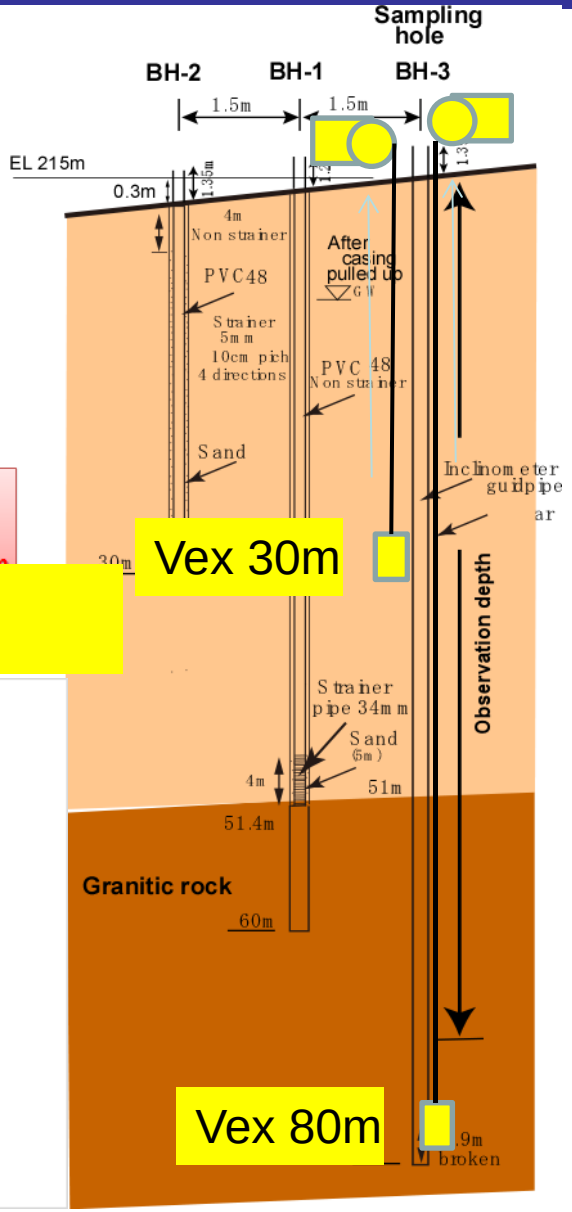




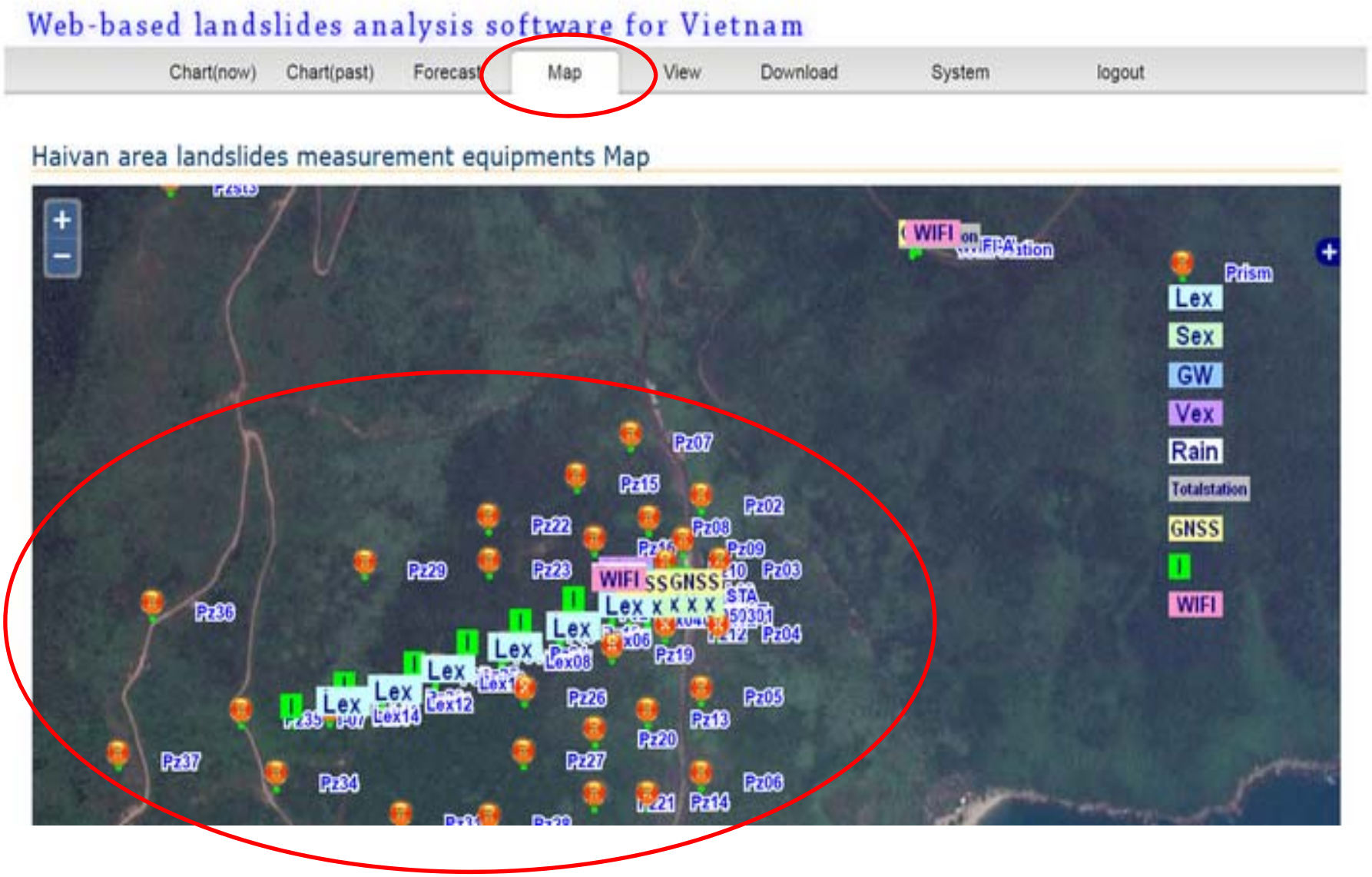


After scale out of inclinometer by landslide, Vex data will become important





“Map and Web observation”



Landslide flume

Crane system

Spraying system

Image monitoring system

Landslide experiment started in ITST from November 2015

A PhD Research at Kyoto University