Ryuzo Wakabayashi:
Avalanche problems and some research fruits in Japanese mountain forests

2900m

Elevation

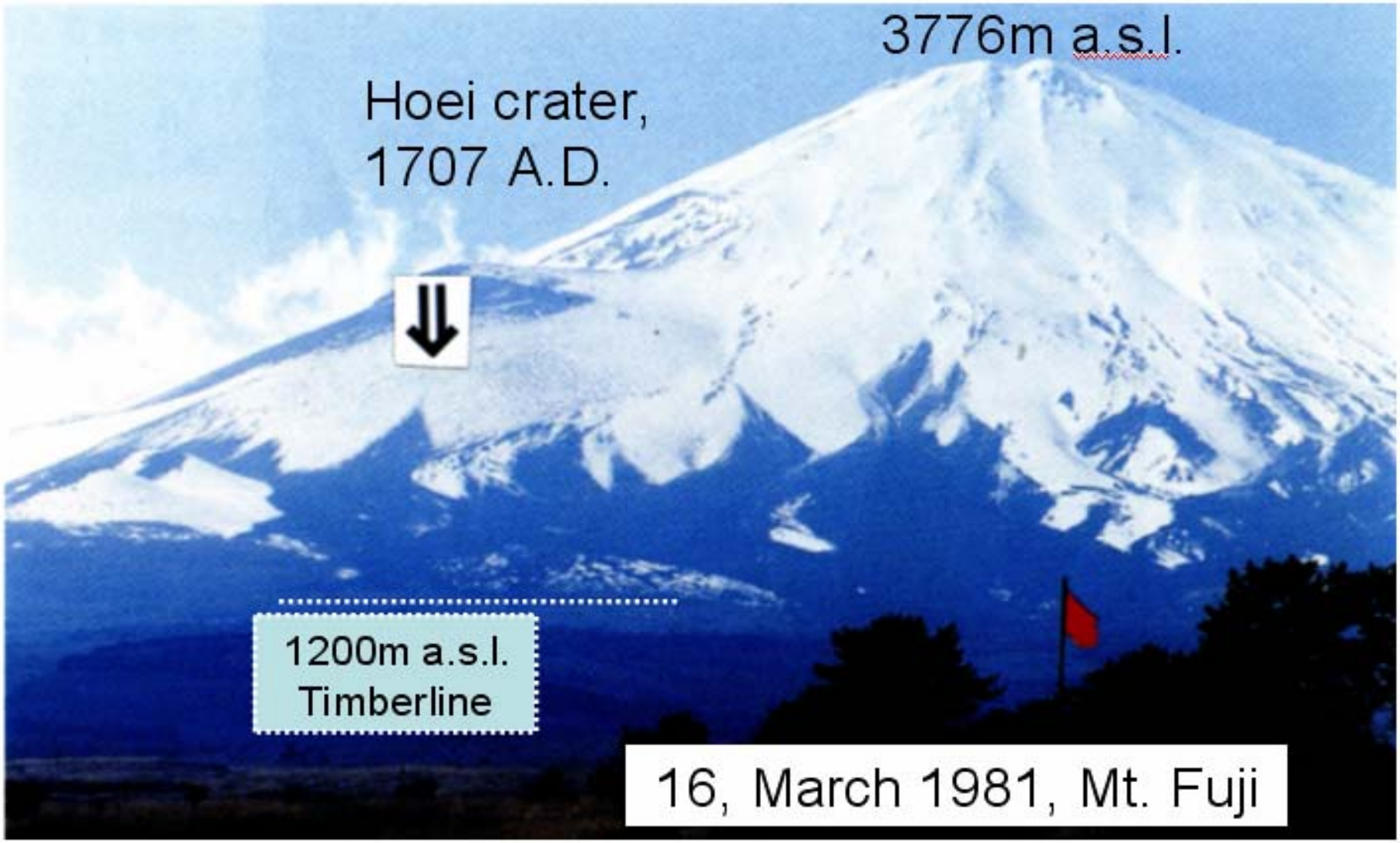
700m

- View from our institute, on 24, May 2007
  Hakuba Resort, 36°..′N

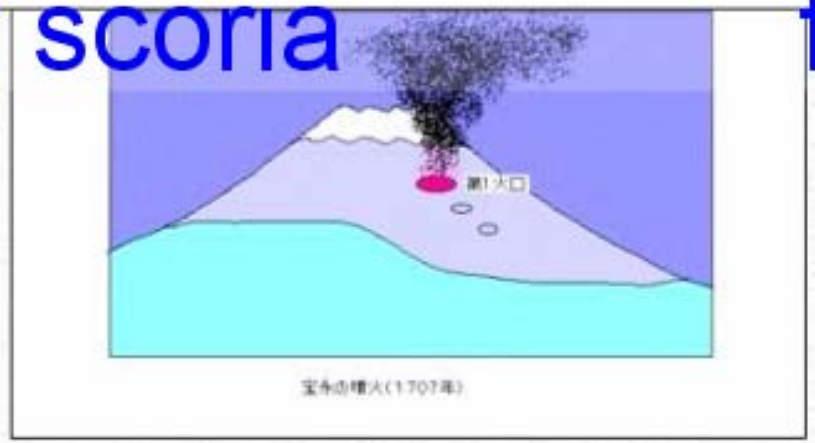
Benvinguda to Mt. Fuji

E-slope: slush-prone area

- Wide, saw-like starting area of slush avalanches due-to frozen scoria + heavy rain



Hoei eruption in 1707 brought thick layer of scoria fall onto E-slope

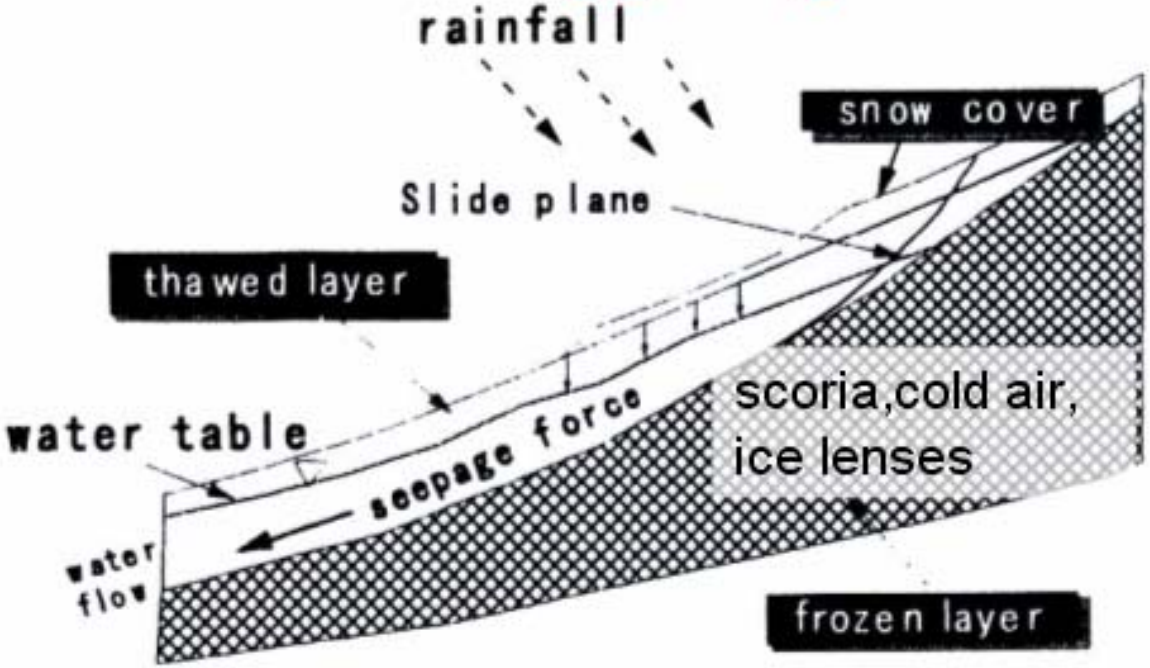


Scoria: Porous, dark brown or red

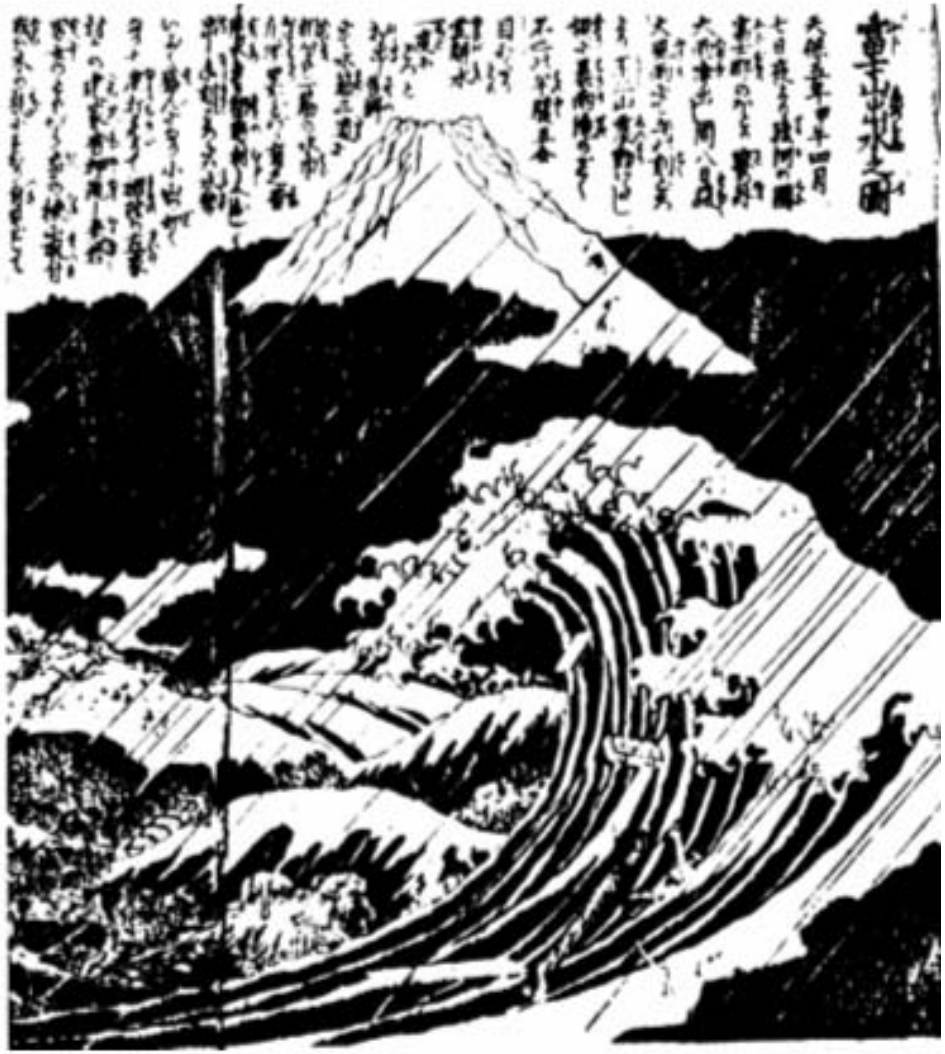
Water-saturated scoria layers are easy to freeze and become to seasonally-frozen ground.

Slush flow often caused disasters

Mechanism of slush avalanche triggering



A typical profile relevant to slush lahar triggering.



Extra news: Edo, May 1834

"Several villages perish by slush flood around Mt.Fuji"

E-slope of Mt. Fuji: The study field of slush avalanche

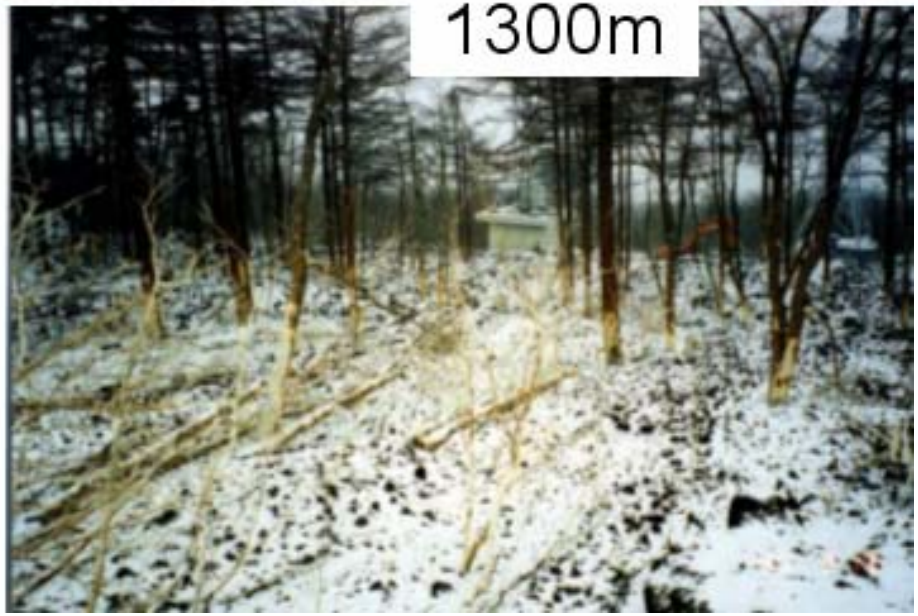
Start area of slush avalanche,
15°,22°inclination

Cabins were lost at the ski park

Debris of slush avalanche

E-Slope damage by slush avalanches of March 1995

1300m



Min. 1200m, drop of timberline

Scoria layer left from the melting debris (July 1995).

Scoria as heat insulator

Max. 15m-high deposition of snow-scoria mixture, kept snow for 4 years after the event of March 1995.

They left ca.2 m-thick scoria layer over there. (1500m a.s.l., E-slope)

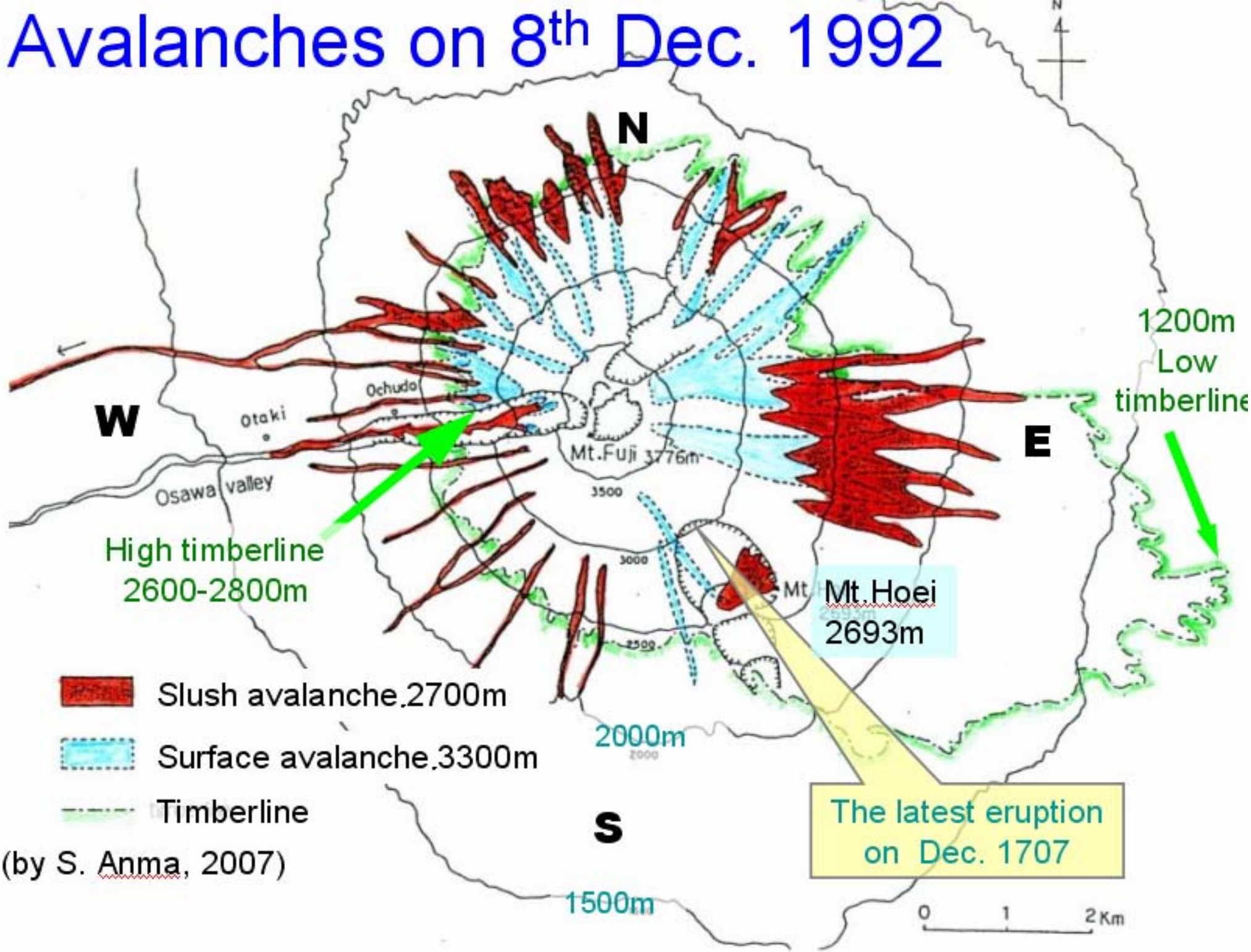
Avalanche defence works

New avalanche path, March 1995

Snow gallery

Deflection structures

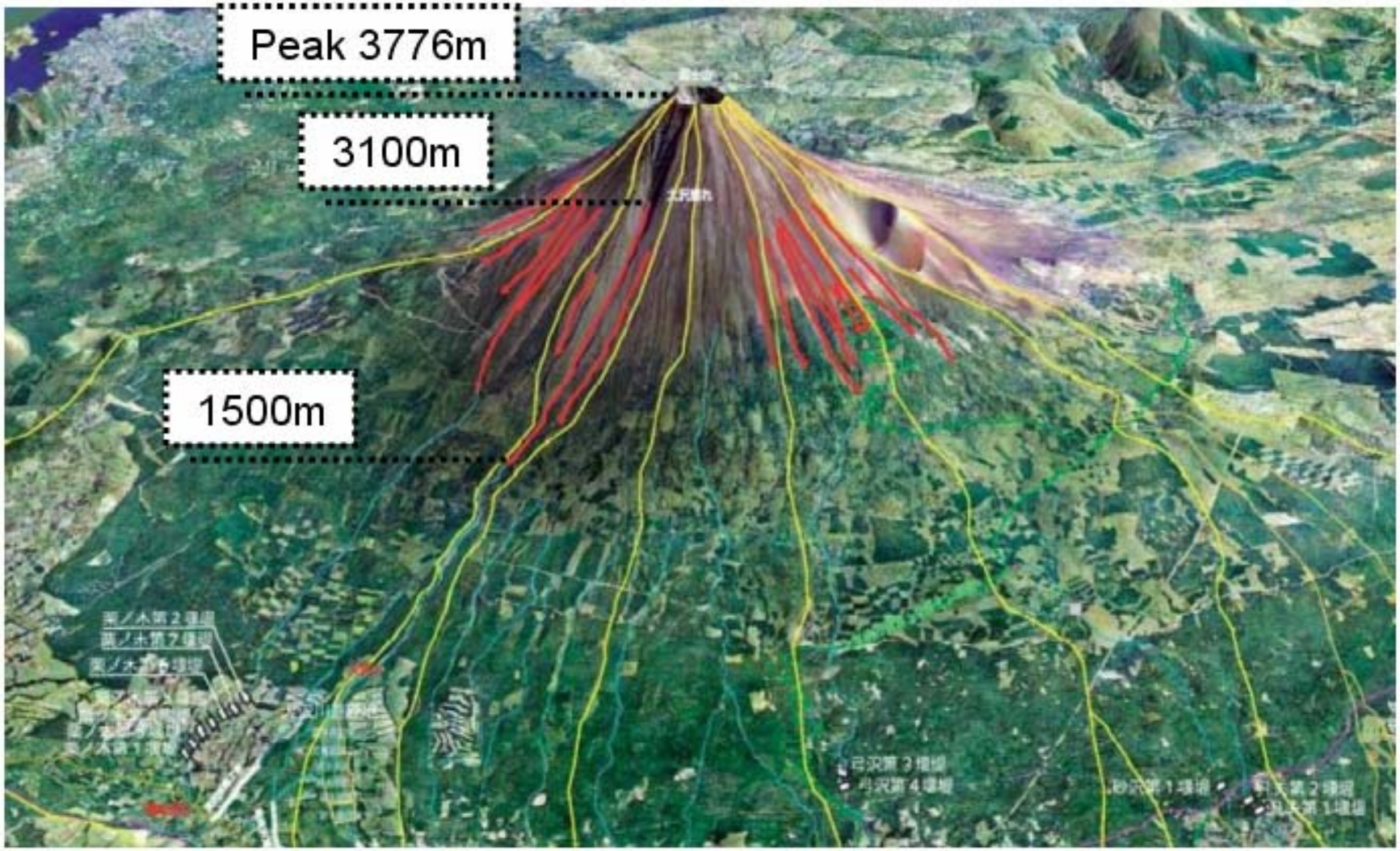
Avalanches on 8th Dec. 1992



(by S. Anma, 2007)

Slush avalanches on Mt. Fuji

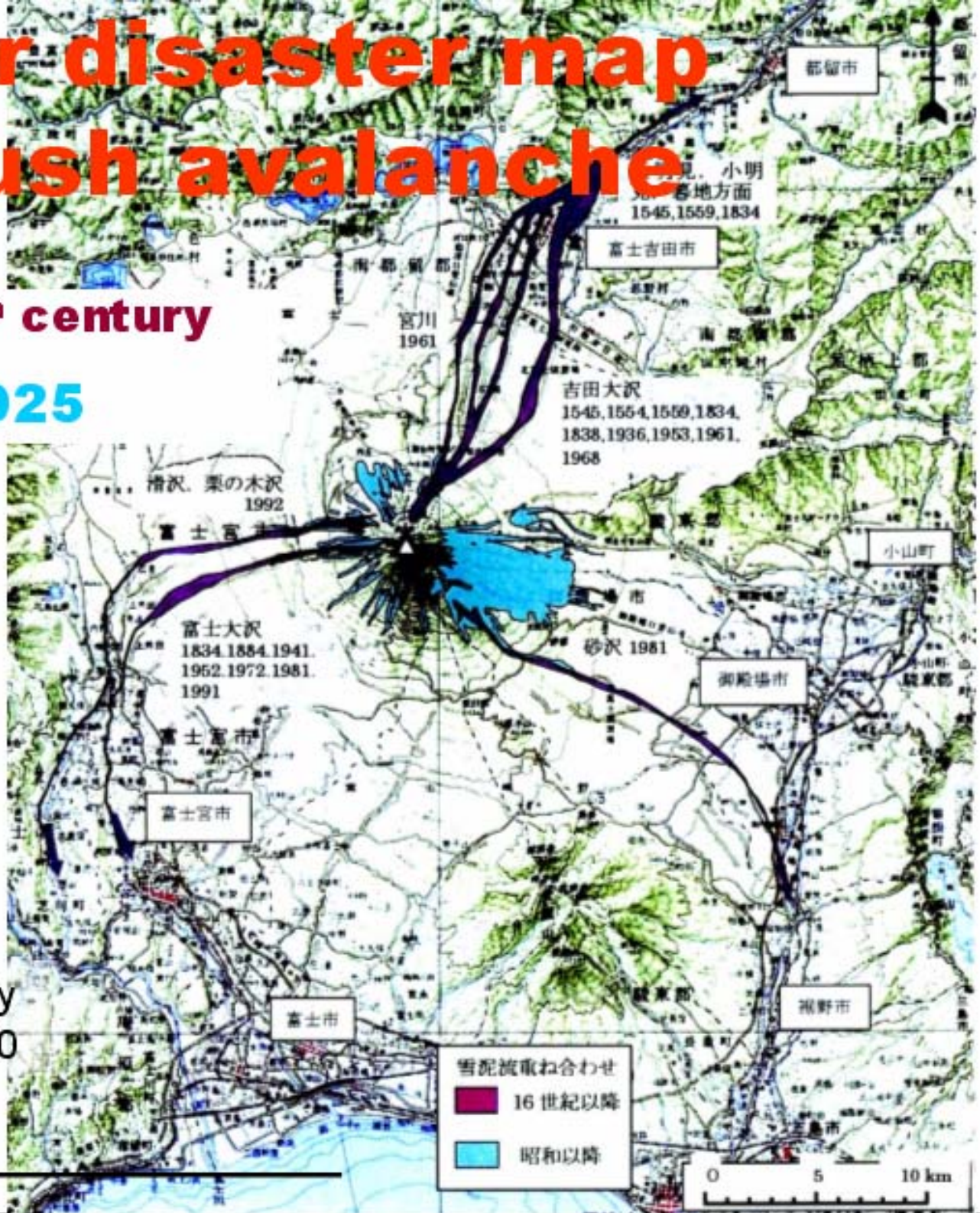
...March 2007 on S-W slopes



Destruction of road and forest etc.

- 29, March 2007 at S-slope Mt. Fuji

500-yr disaster map of slush avalanche



- After 16th century
- After 1925

Population

Fujinomiya City 126,000

Fuji City 243,000

Pacific

Fujiyoshida City 54,000

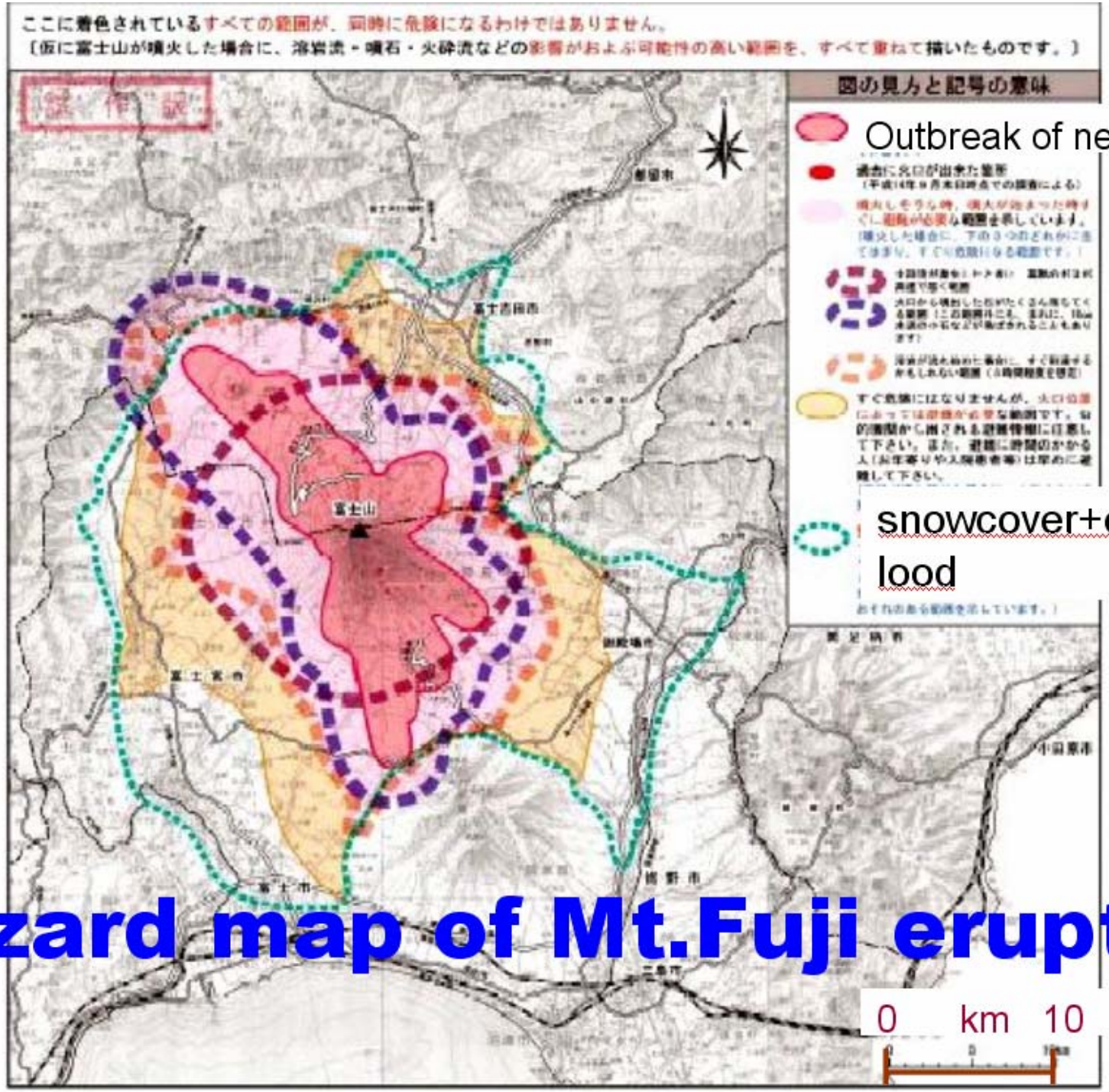
Koyama Town 21,000

3776m a.s.l.
35°21′N

Gotenba City 85,000

Susono City 53,000

Mishima City 111,000

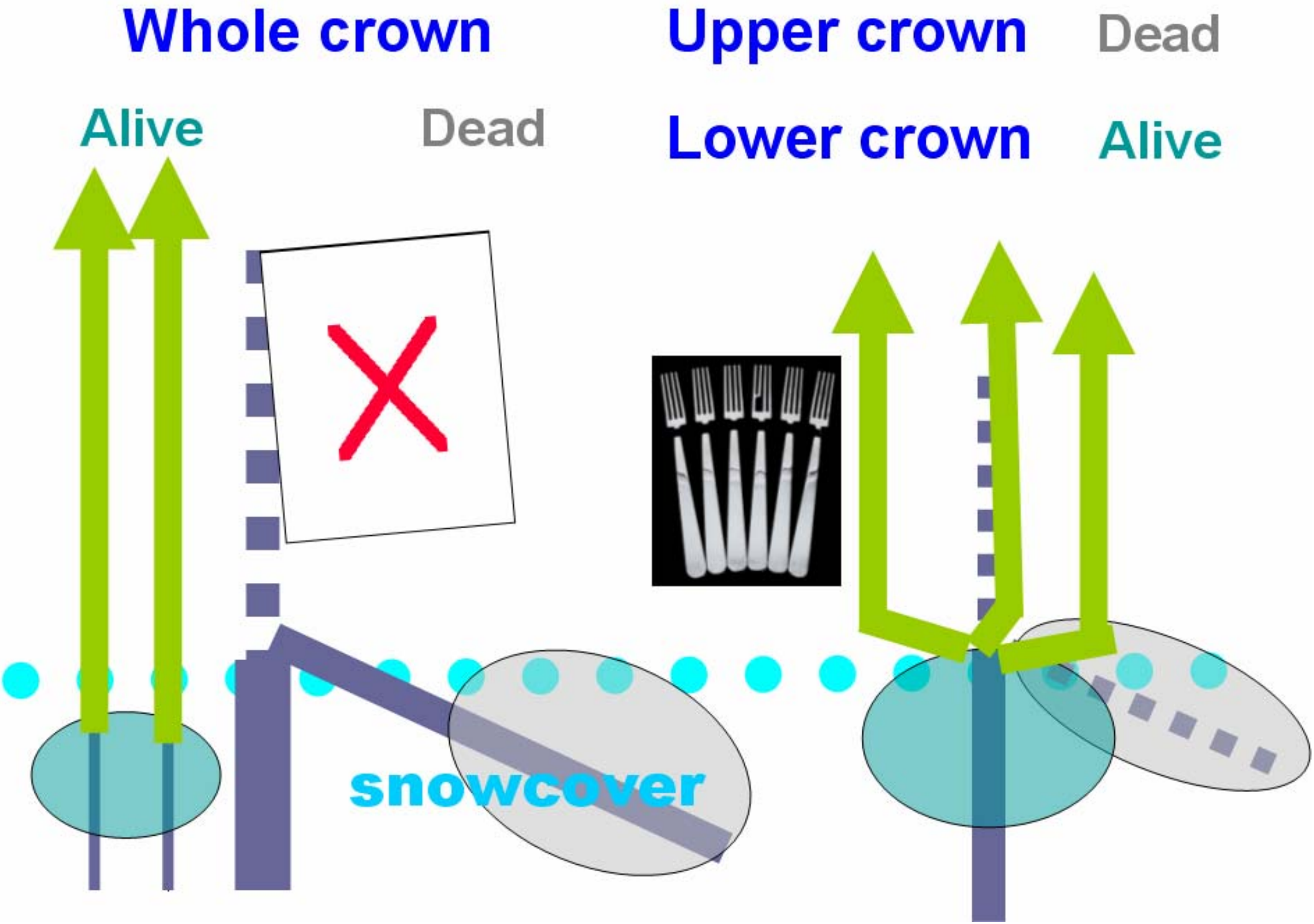


Hazard map of Mt.Fuji eruption

図３　溶岩流，火砕流，噴石，融雪時泥流などの危険区域を示す図．


Let's move to our table in Japan Alps!
JAPAN
Japanese Alps
Matsumoto
Tokyo
Nakasendo
Kyoto
Mt Fuji
Osaka

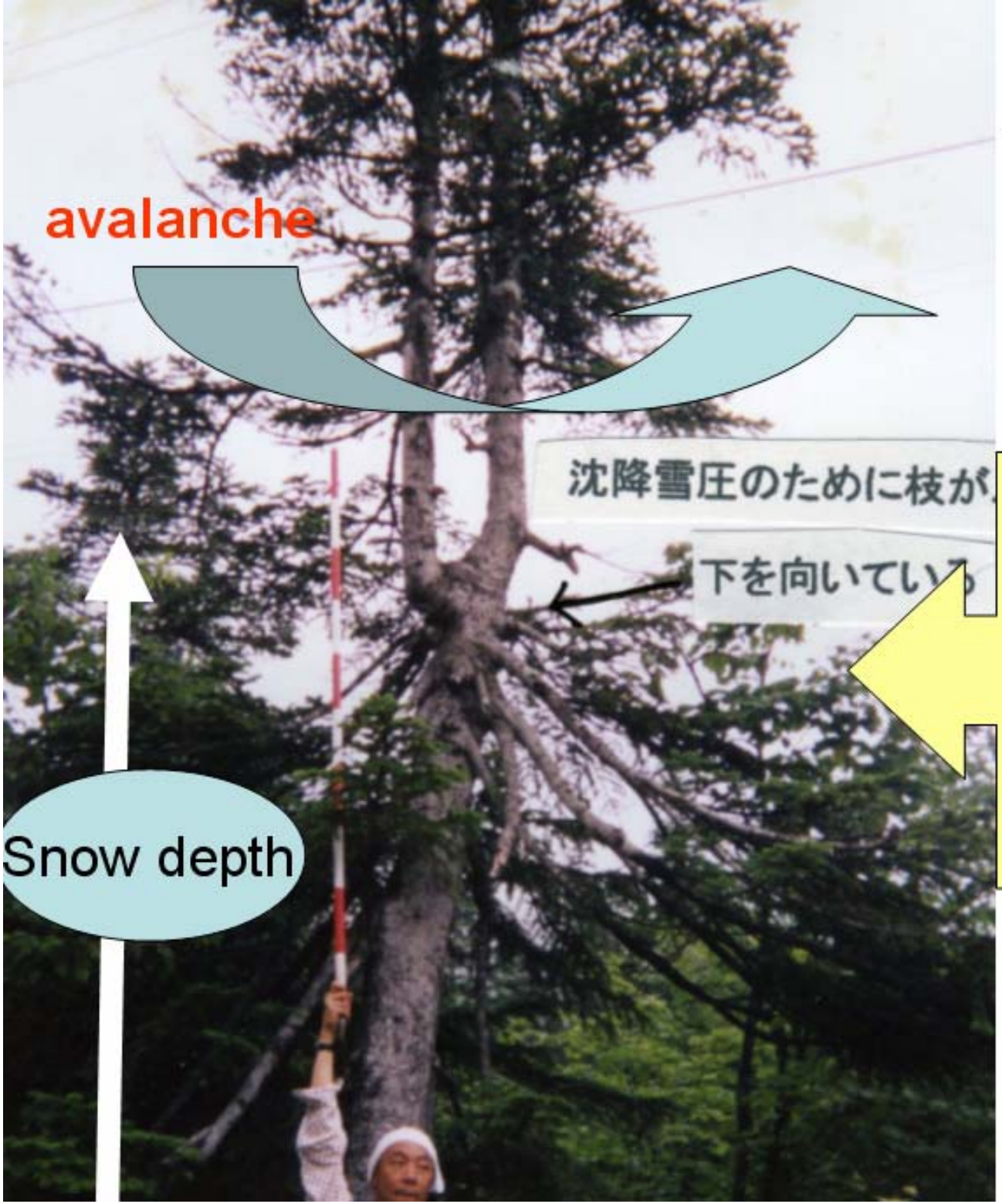
Knife	Fork-tree	Spoon
Flag-tree In windy area	In snowy and/or avalanche-prone area	Tall tree


Whole crown
Alive
Dead
Upper crown
Dead
Lower crown
Alive
snowcover

Fork-trees in avalanche runout zone

Wood chip made by the avalanche of Feb. 1996 at Tsugaike

Fork-tree lost his crown at the track

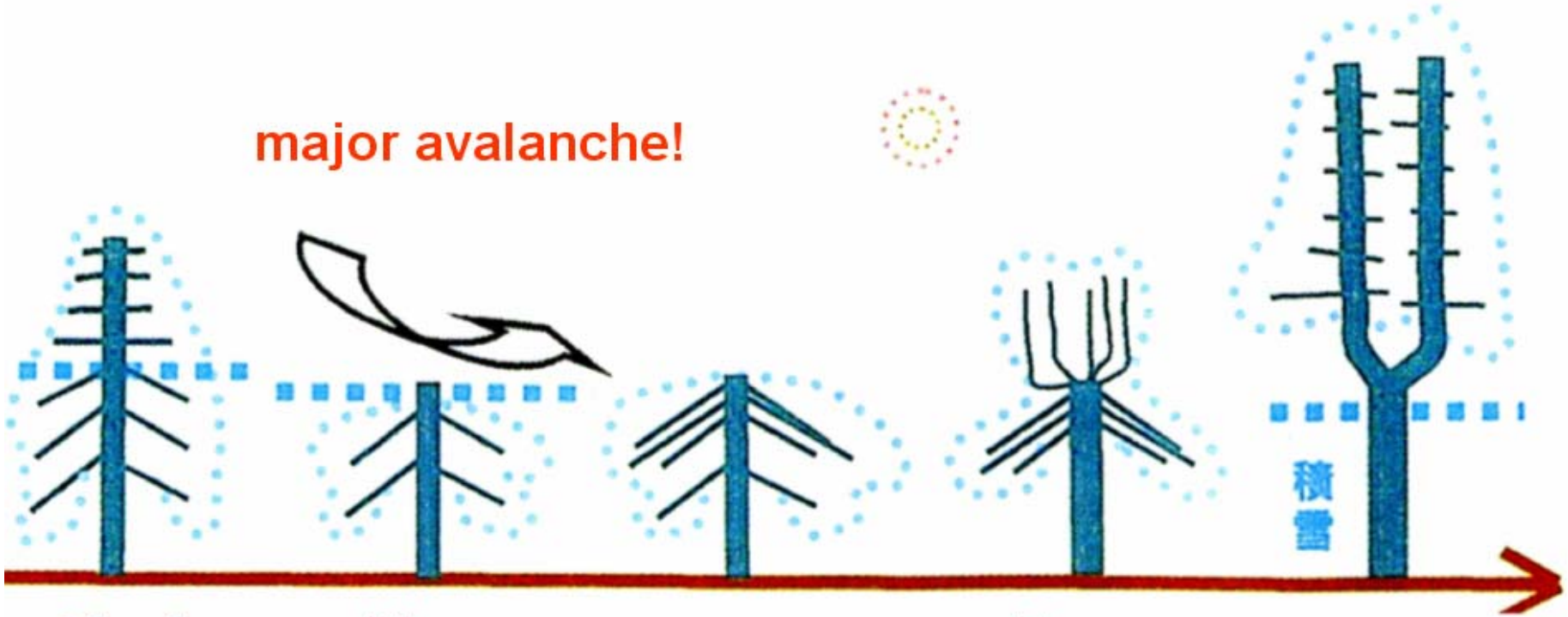


Abies mariesii

Maries fir

Dense,
down-bent branches
due-to settling
snow pressure

Process of fork-tree growth



Single trunk in heavy snow area

Many branches left alive in snowpack

Branches increase near the breakage height

New shoots grow upright

Fork stem protrude from snowpack

The forest of fork-fir adapt to avalanche world:

"*Wishing forest*"

Moltes gracies