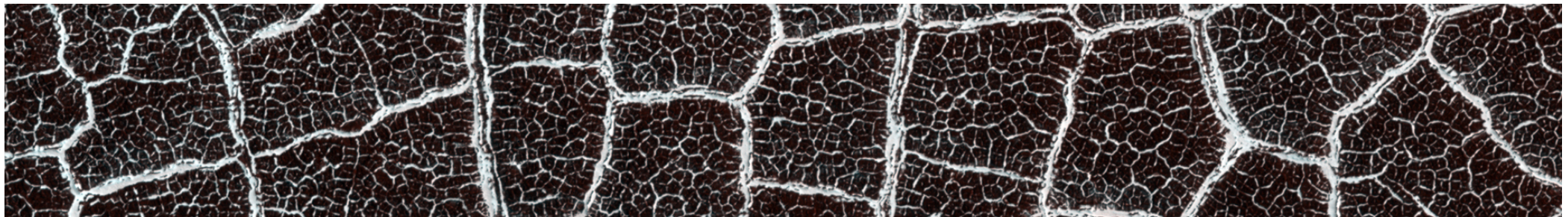


Docente  
Prof. Aldino Bondesan

# Morfologia periglaciale

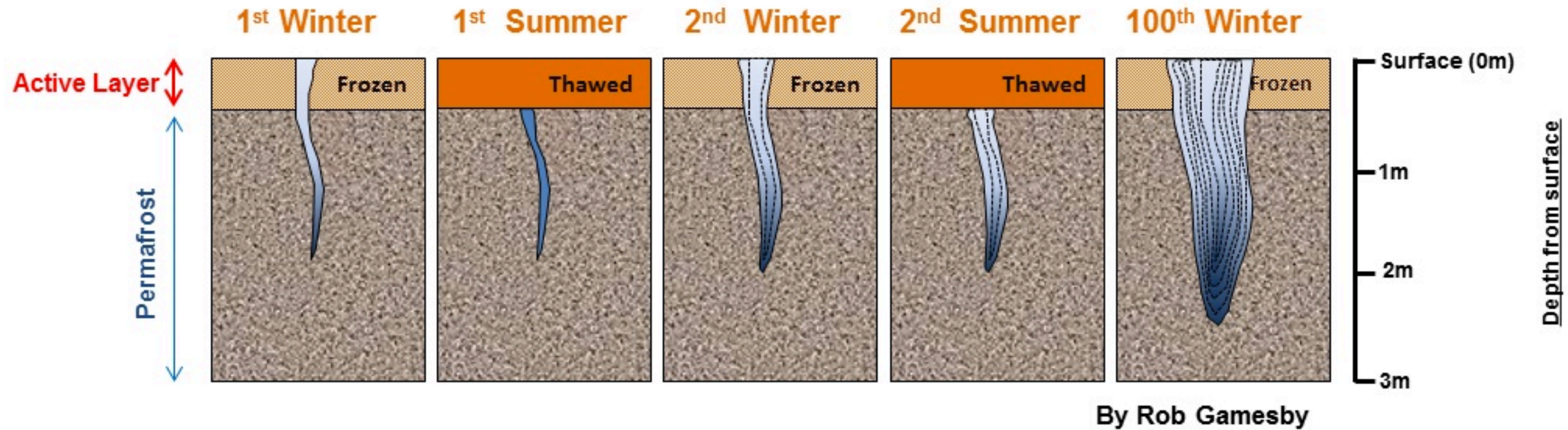
## Forme periglaciali

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# Fessure, cunei di ghiaccio e poligoni di tundra

## The formation of Ice wedges





Ice wedge  
isolato dal suolo  
che lo conteneva



Ice wedge

---

Cuneo di ghiaccio  
fossile  
*Ice wedge cast*

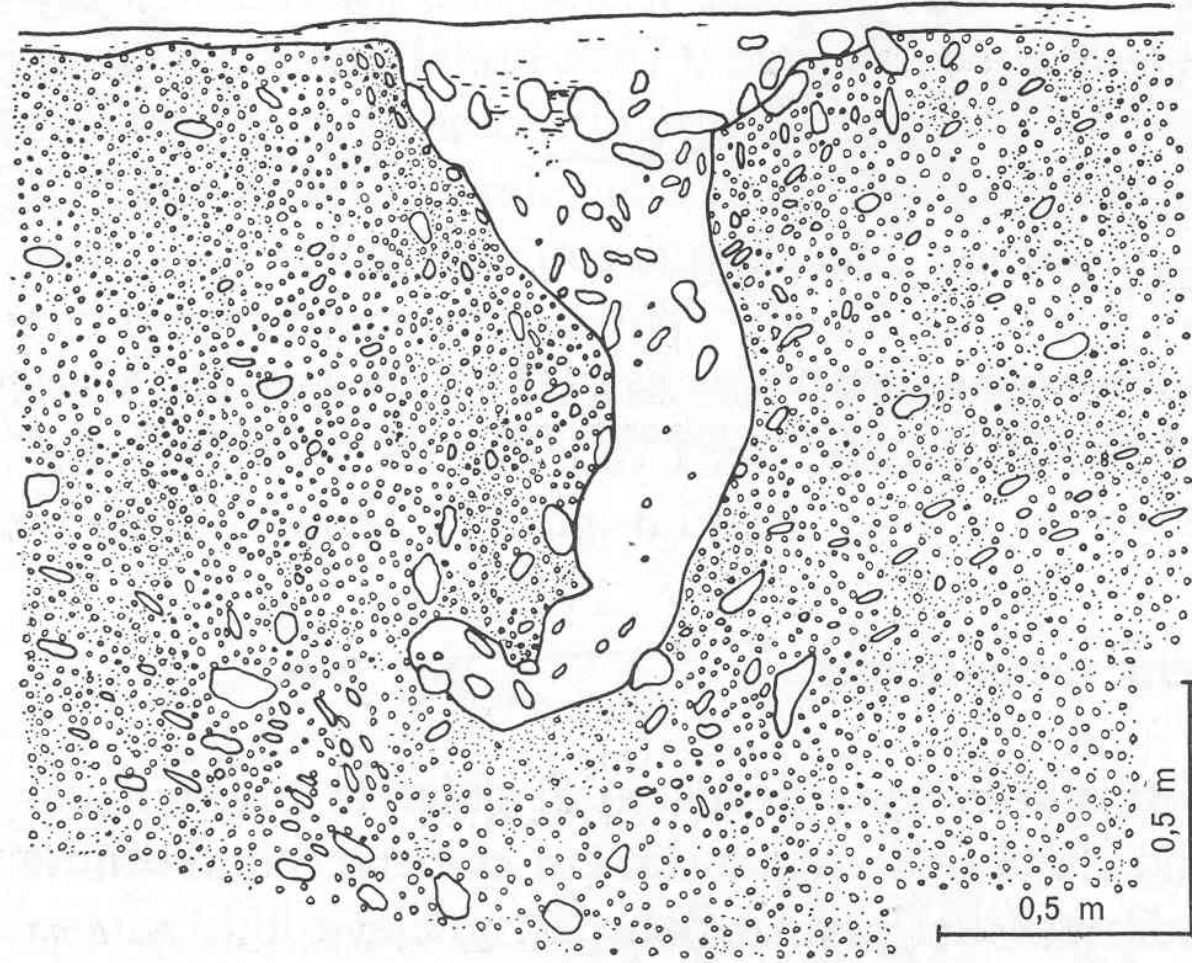


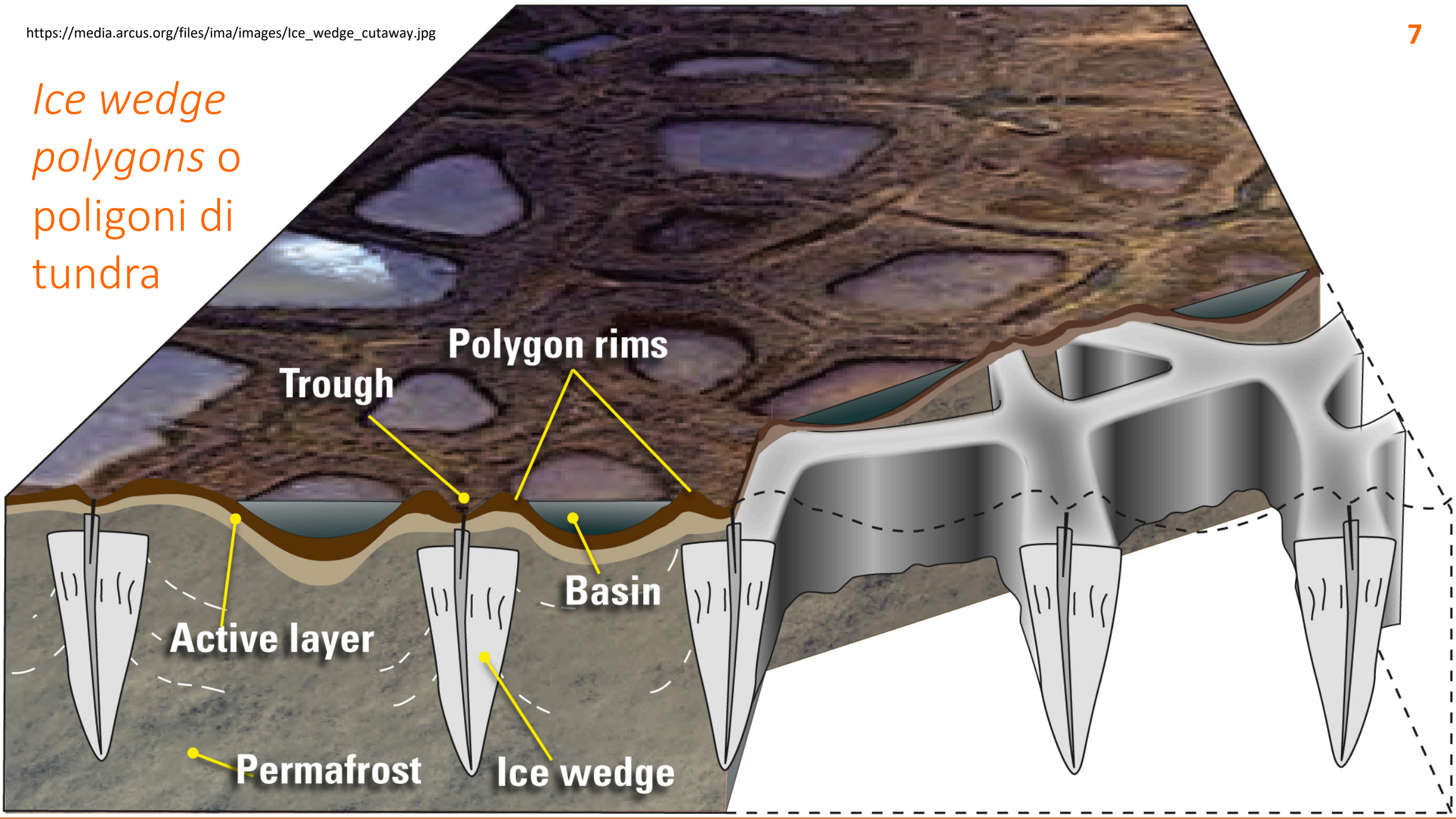
Fig. 11.3. Traccia (in sezione) di un antico *cuneo di ghiaccio* di età Wisconsin, in Alaska (secondo T.L. PÉWÉ, in *Permafrost int. Conference*, ridisegnato). Lo spazio del ghiaccio è occupato da detrito; la forma è conservata solo in parte.

Cuneo di ghiaccio  
fossile  
*Ice wedge cast*

Ice wedge pseudomorph in a Miocene  
gravel deposit, filled with loess, near  
Lorenziberg, Rhine-Hesse, Germany



*Ice wedge polygons o poligoni di tundra*



# Poligoni di tundra



<http://www.geol.umd.edu/~jmerck/geol100/lectures/36a.html>;



Laghi da  
poligoni di  
tundra



Polygonal lakes created by melting permafrost on Alaska's North Slope.

Credit: [NASA/JPL-Caltech](#)

# Pingo e Palsa

Collinette a cupola alte al max 10 m (palsa) e 50 m (pingo)



pingo



palsa

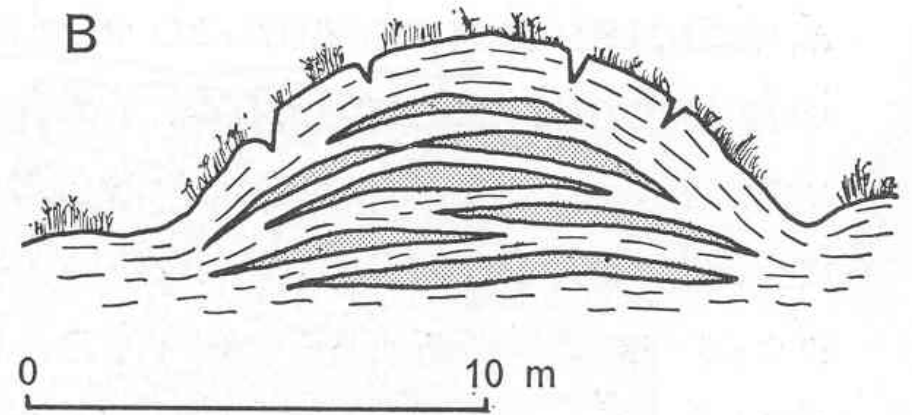
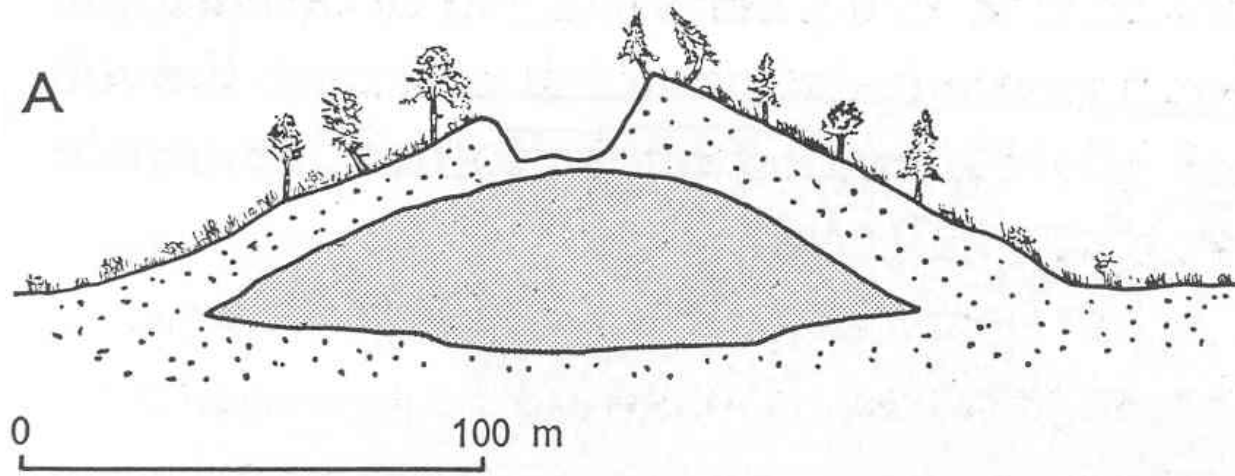
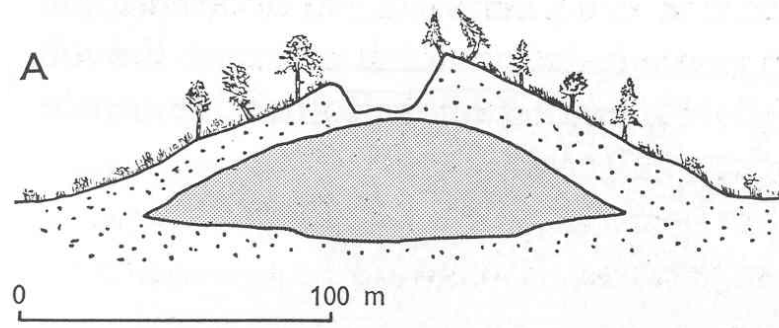


Fig. 11.4. Sezioni schematiche attraverso un *pingo* (A), e una *palsa* (B). Si notino le differenze nelle dimensioni e nei materiali (detrito minerale per il *pingo*, torba per la *palsa*). In grigio: lenti di ghiaccio.

# Pingo



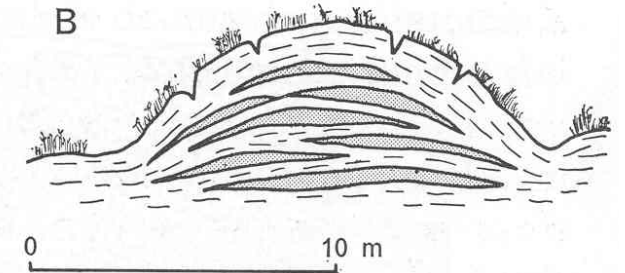
Terreni sabbiosi o siltosi, su permafrost

Nucleo lenticolare di ghiaccio

L'acqua proviene dal basso (per pressione idrostatica o criostatica)

Fino a 600 m diametro, alto fino a 70 m

# Palsa



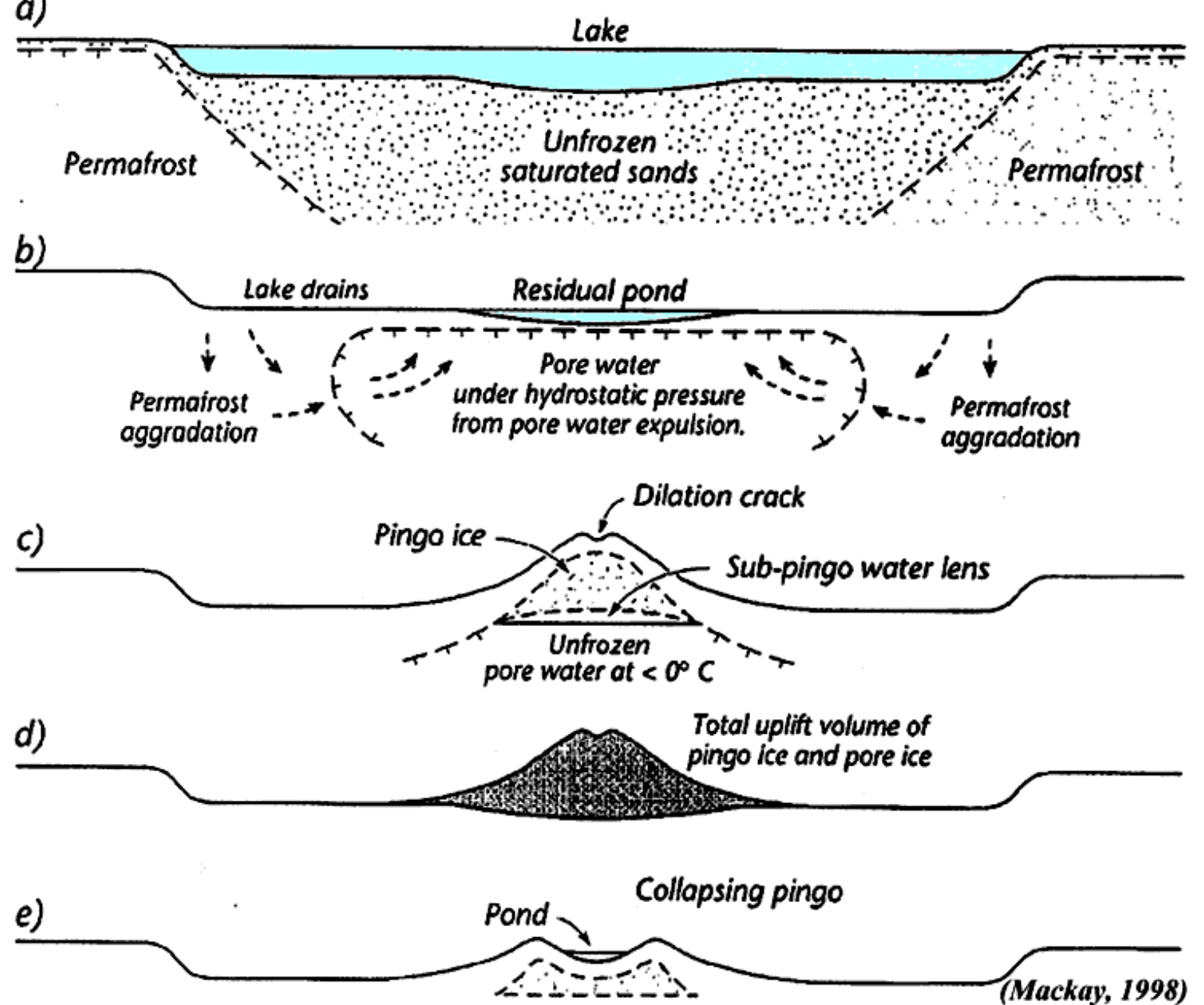
Torba

Lenti di ghiaccio da segregazione

Forme varie, tonde, allungate, creste, ecc.

Diametro fino a 10-30 m, altezza fino a 10 m

Formazione di  
un pingo a  
sistema  
chiuso  
(tipo  
Mackenzie)



# Pingo



Jim Guthrie, <http://tahoe-is-walking-on.blogspot.it/2010/08/conical-drilling-unit-kulluk-end-of-era.html>

# Pingo

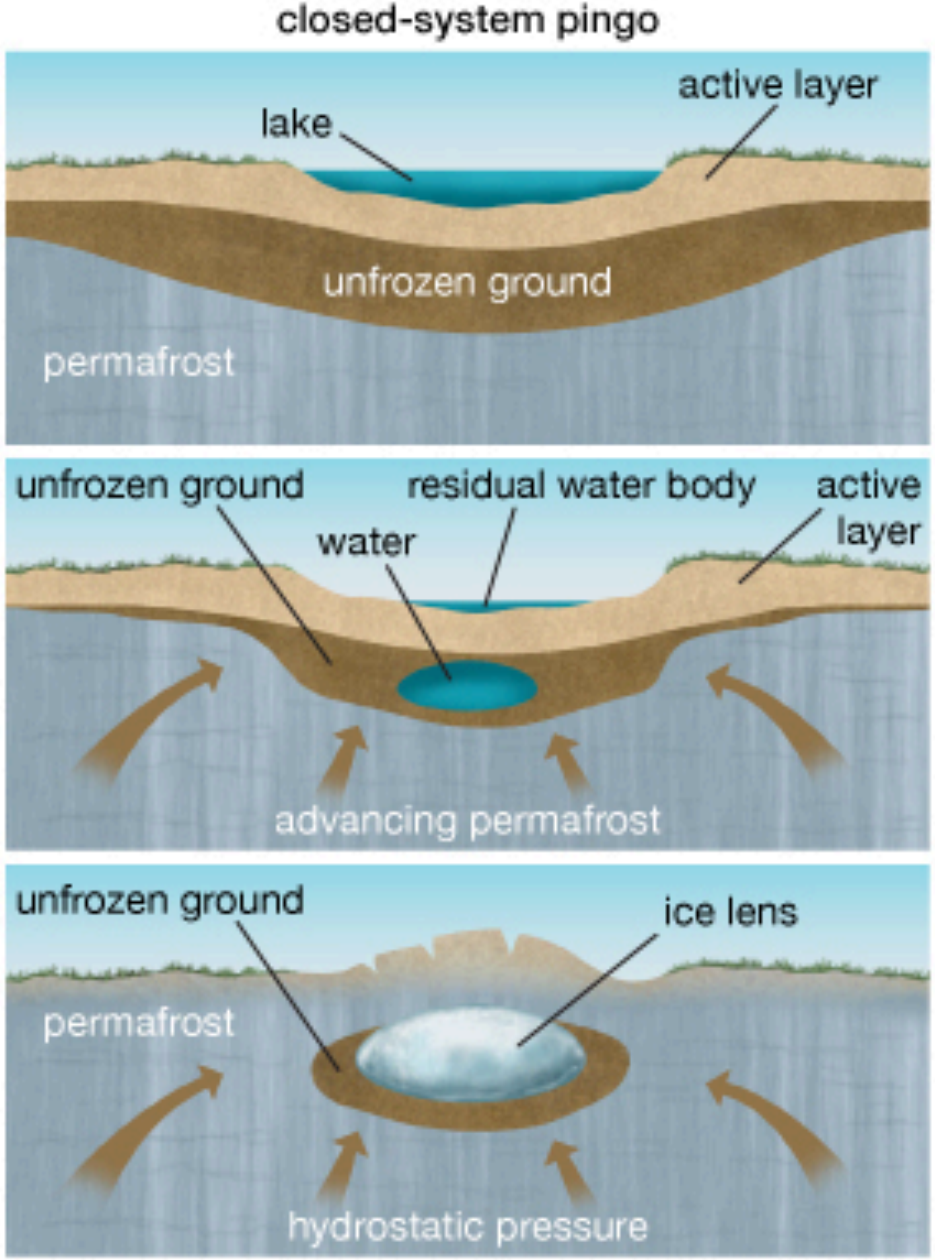
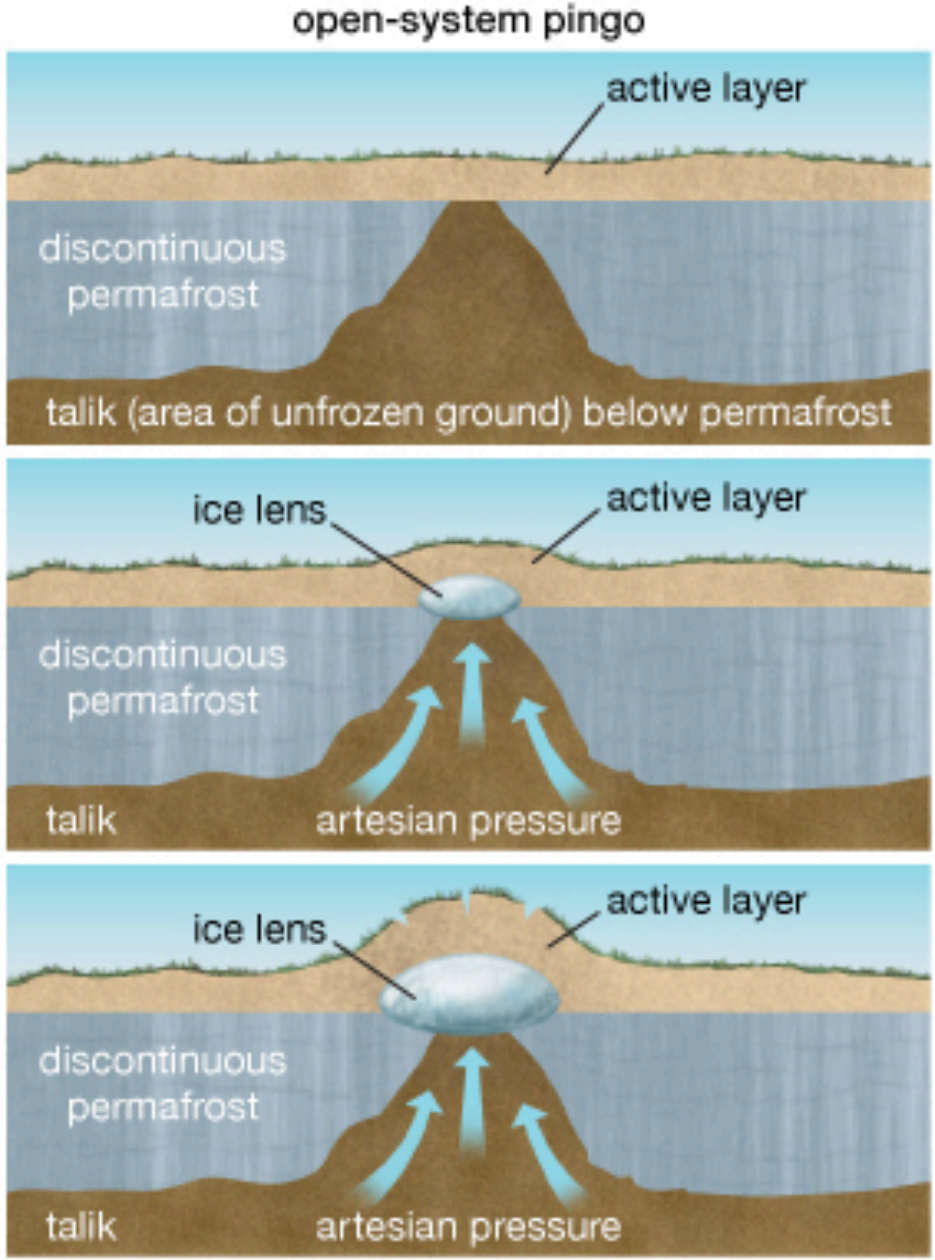


# Pingo

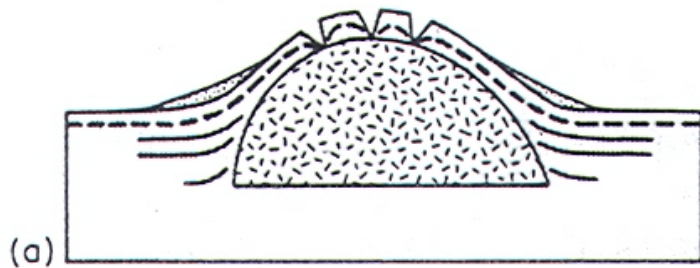




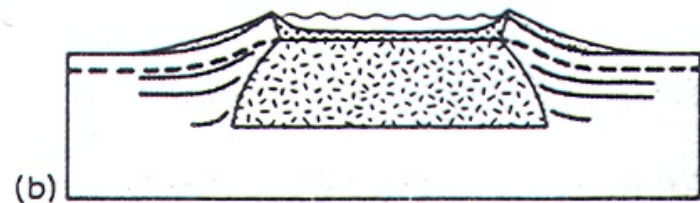
Pingo a sistema aperto (tipo groenlandese)



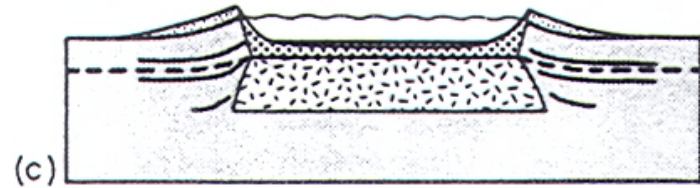
© Encyclopædia Britannica, Inc.



(a)



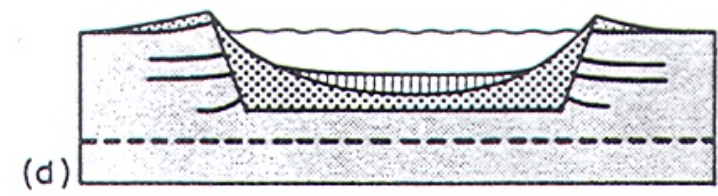
(b)



(c)

Evoluzione di un pingo che si trasforma in un lago di pingo.

Questo tipo di trasformazione interessa, in scala diversa, anche le palsa

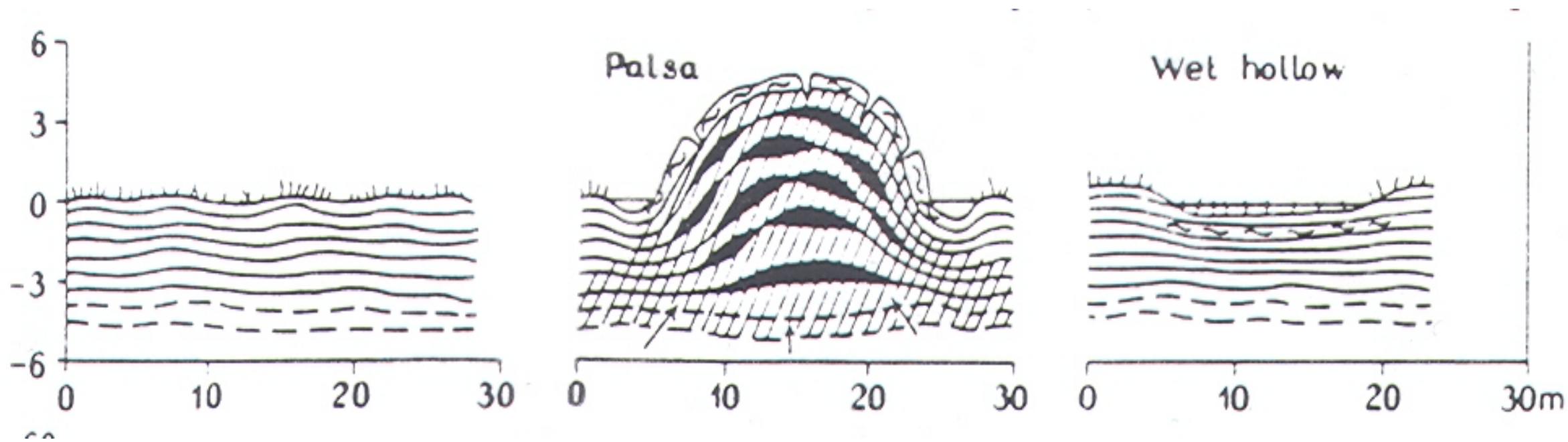


(d)



(e)

# Evoluzione di una palsa



Palsa



# Palsa



# Palsa



# Rock glaciers (ghiacciai di pietre)

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1. Hanno aspetto di colate
2. Prendono origine da falde detritiche o depositi morenici
3. Contengono ghiaccio di infiltrazione oppure ghiaccio morto (di ghiacciaio)
4. Hanno fronti ripide
5. Presentano rughe, lobi e archi in superficie

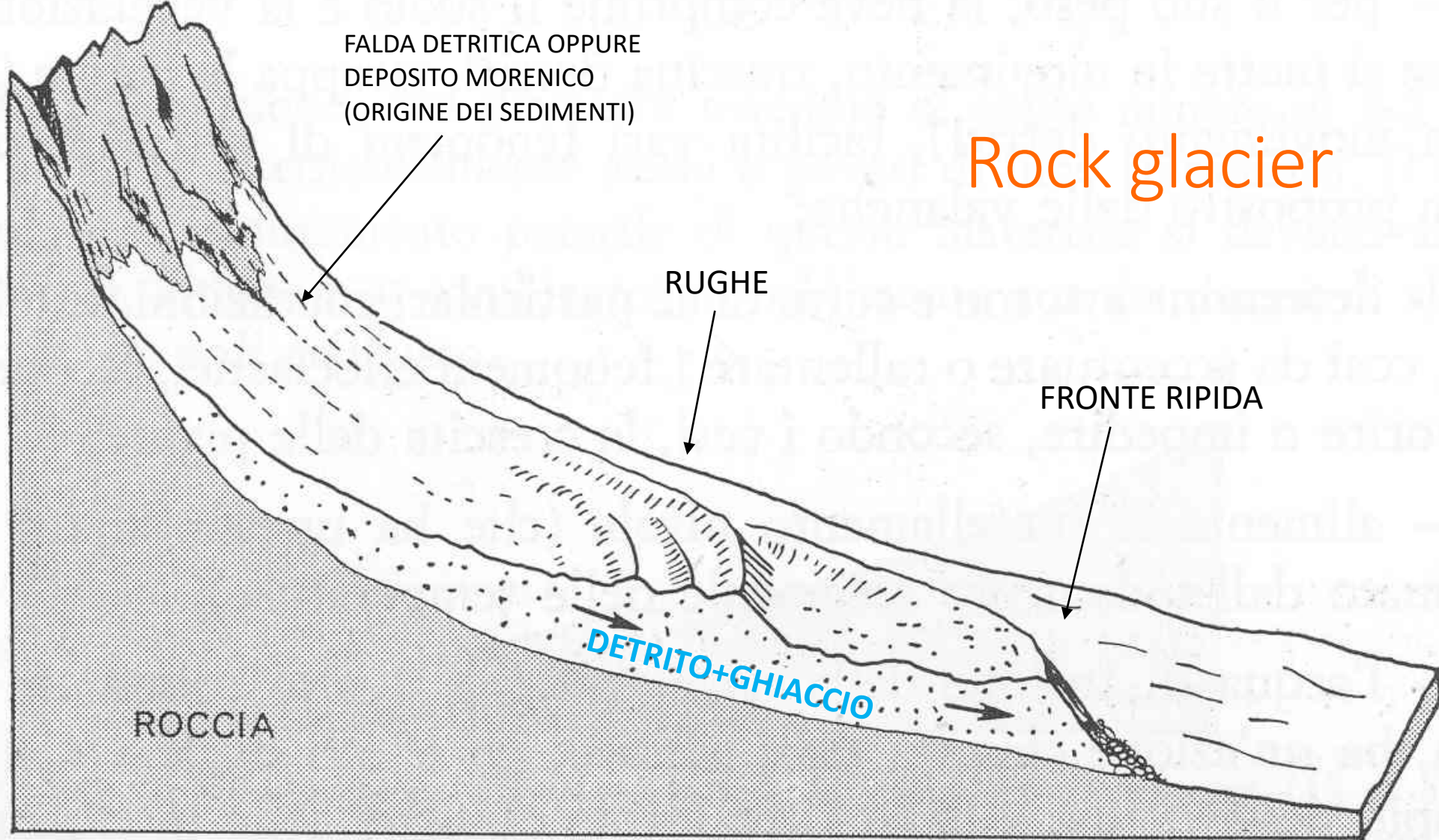


Fig. 11.7. Schema di un *rock glacier* (con sezione longitudinale).



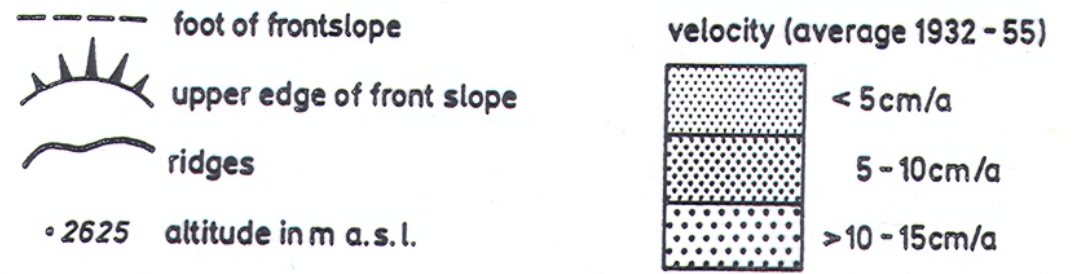
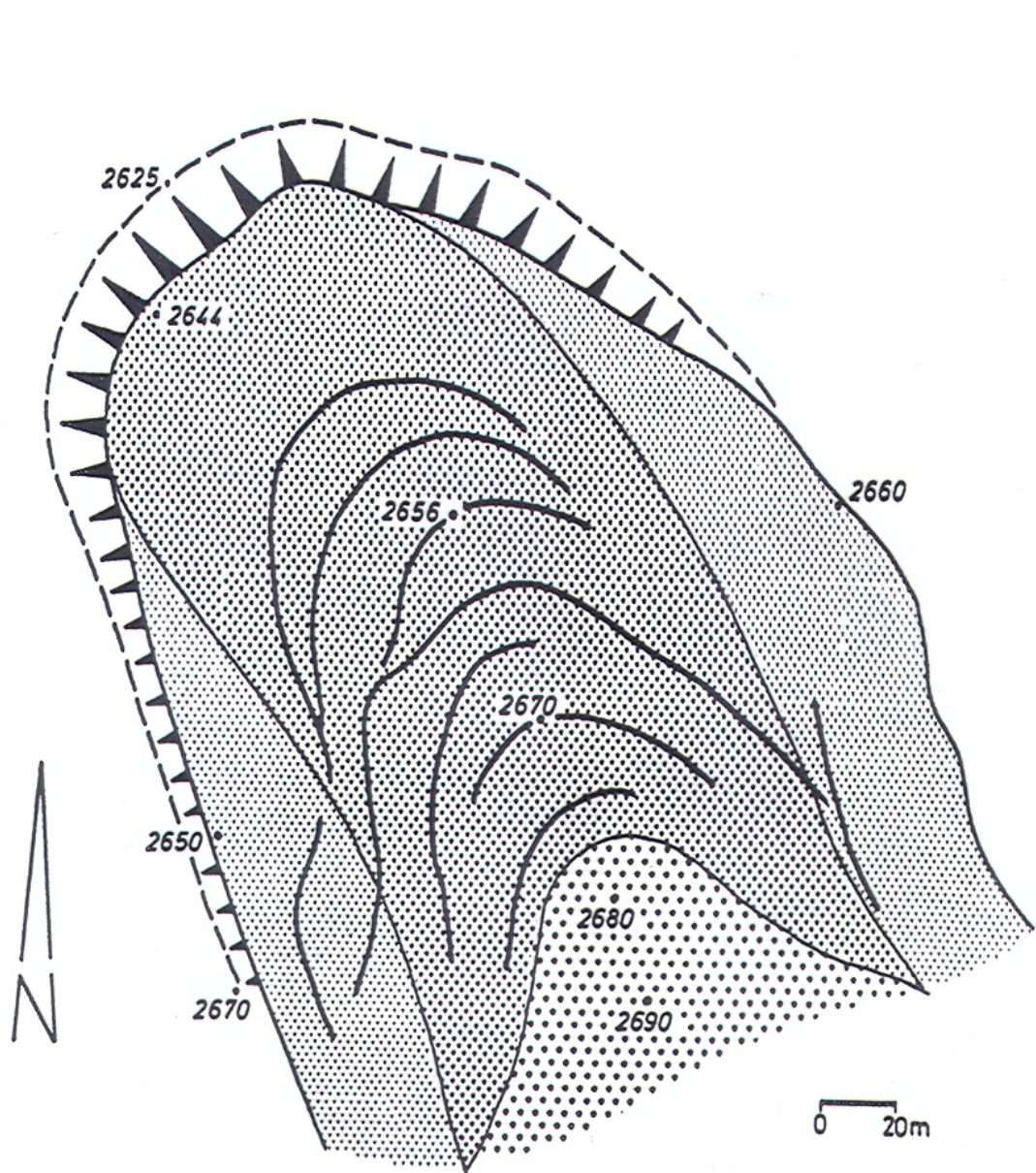


FIGURE 4.6 Geometry of movement zones of equal velocity for the Murtèl I rockglacier, Corvatsch, Upper Engadin, Swiss Alps. The velocity in each zone is expressed as an average for the period 1932-55 (23 years). The mean annual velocity of the rockglacier in this period was 7.1 cm (based on 49 values). In the following 16 years (1956-71), the velocity was remarkably lower, the annual average for all the 46 values falling to 3.2 cm. (cf. Barsch and Hell, 1975.)

## Rock glacier

# Rock glacier



Rock glacier del Monte Chugach, Alaska

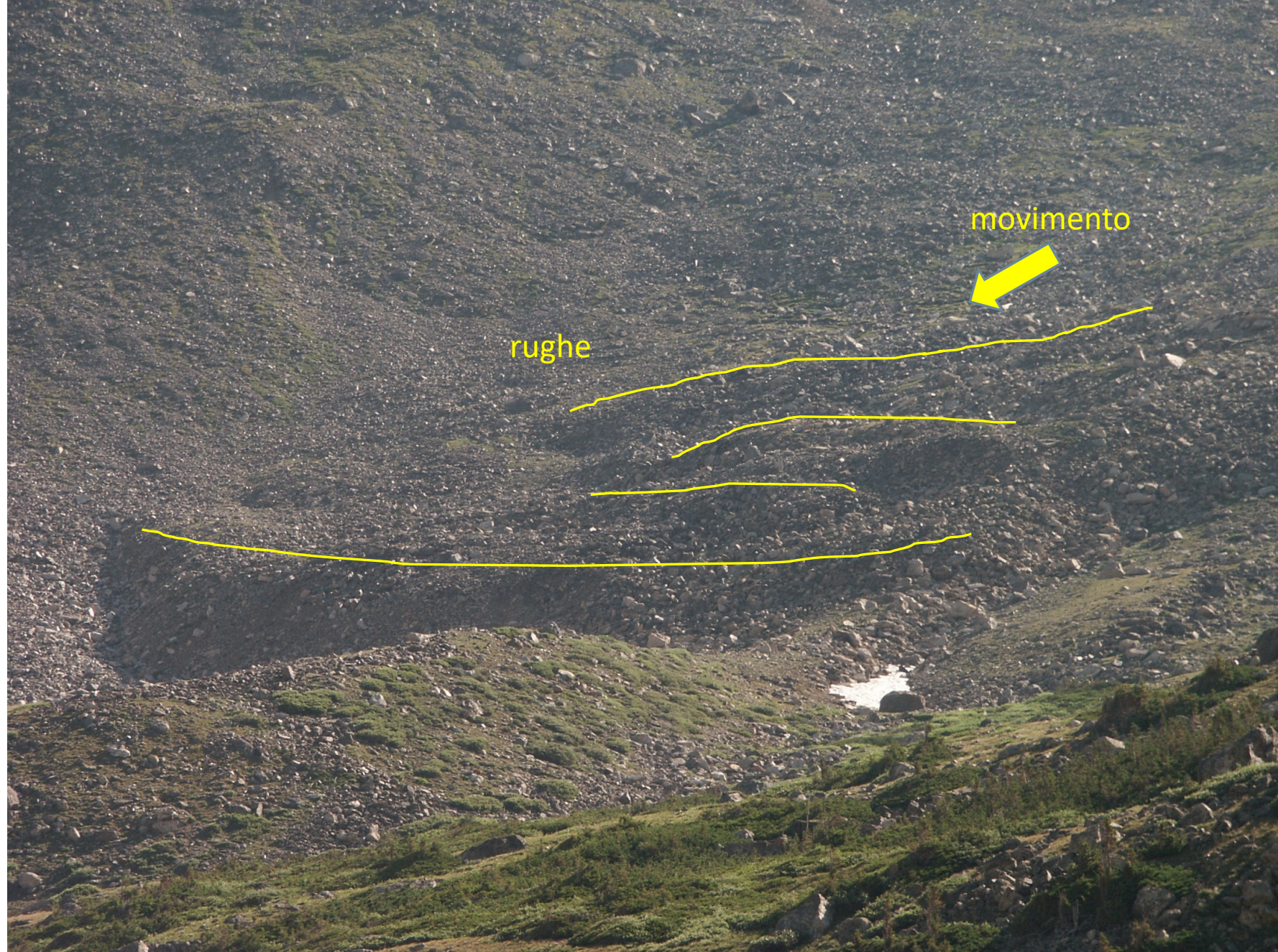
<http://en.wikipedia.org/wiki/Image:Glacierrock1.gif>



# Rock glacier



# Rock glacier



# Rock glacier



Fine

