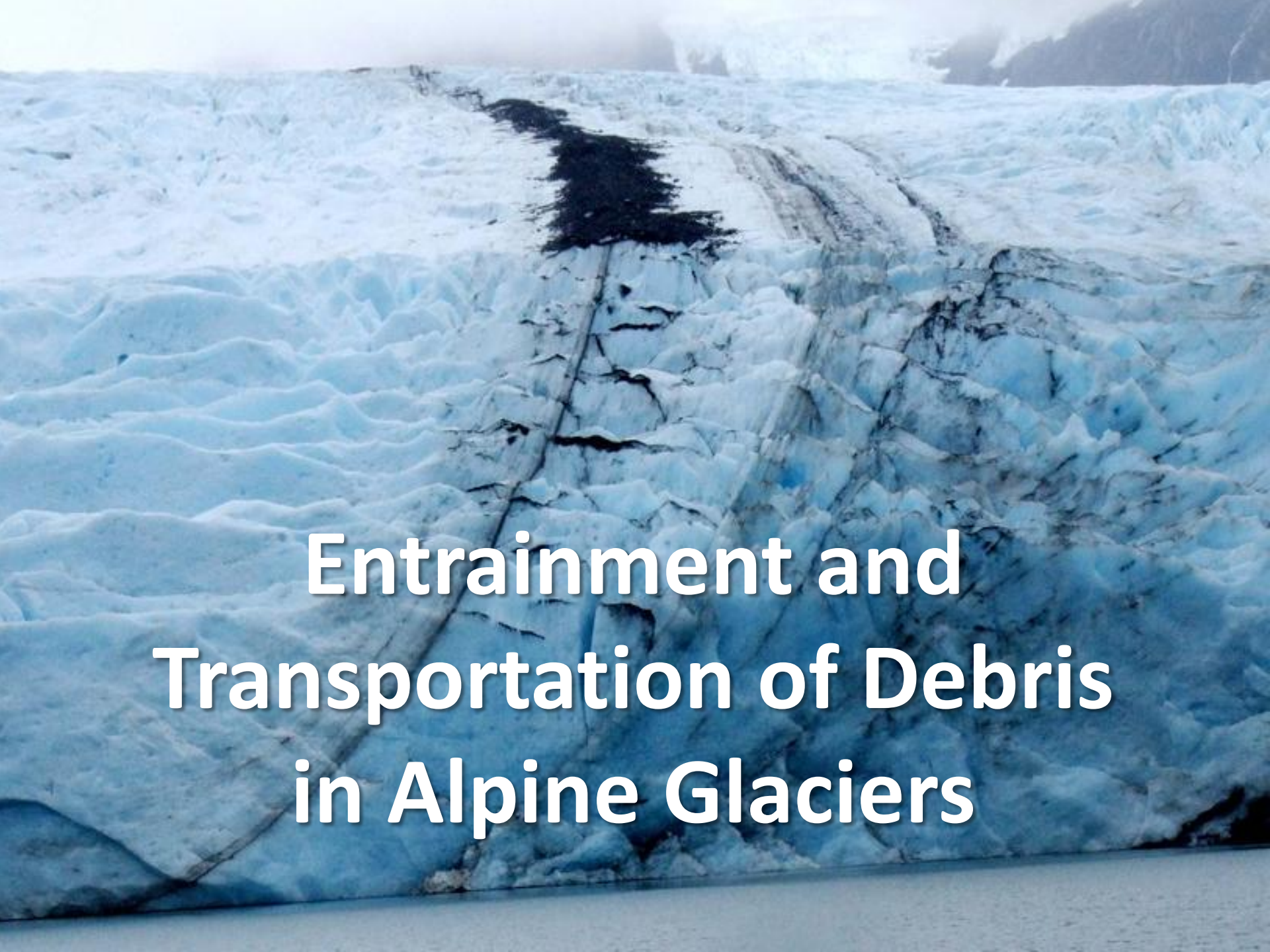
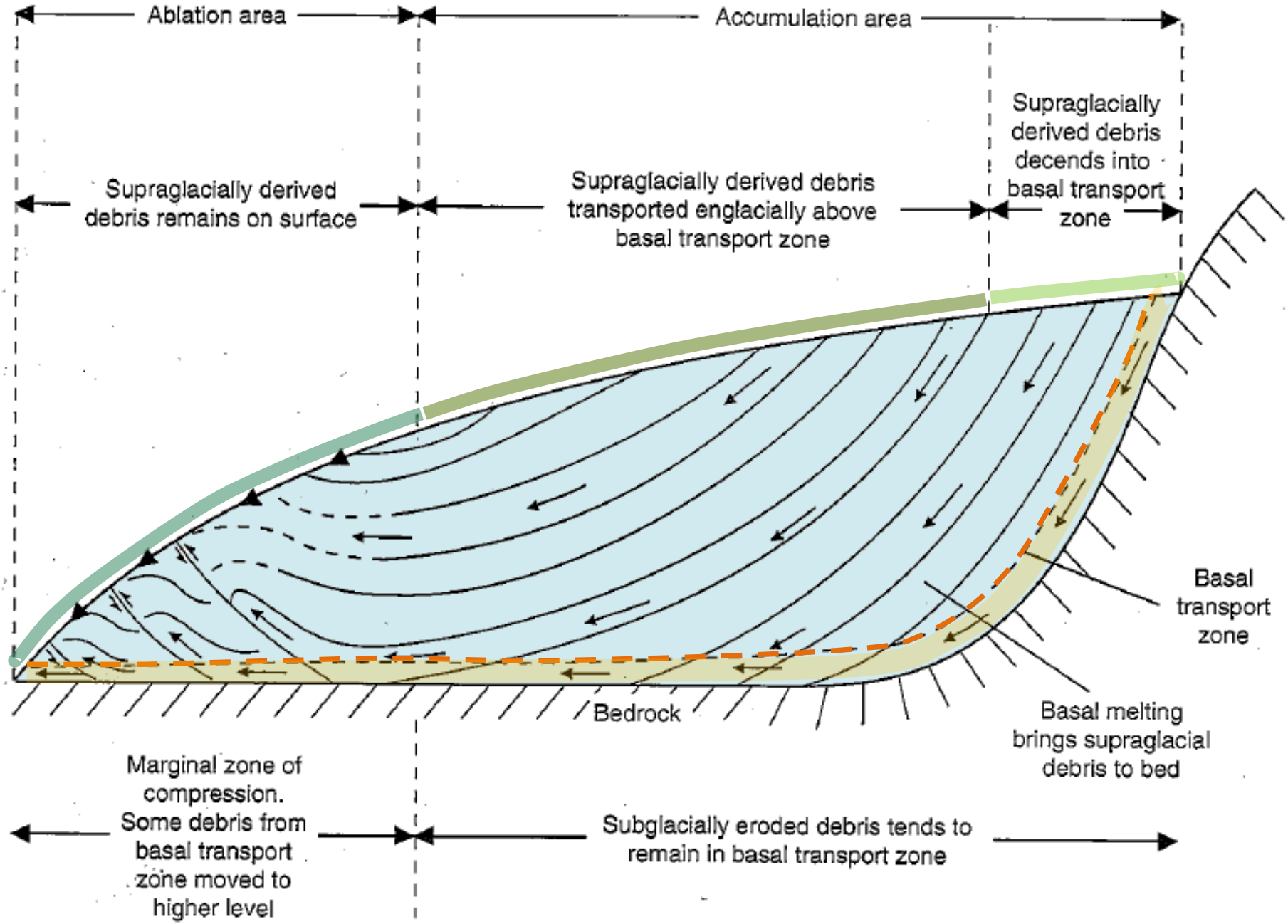


Entrainment and Transportation of Debris in Alpine Glaciers



Bennett and Glasser, 2009

Basal Debris Entrainment

- Regelation
- Entrainment associated with ice deformation (during development of foliation and during thrusting)
- Glaciohydraulic supercooling

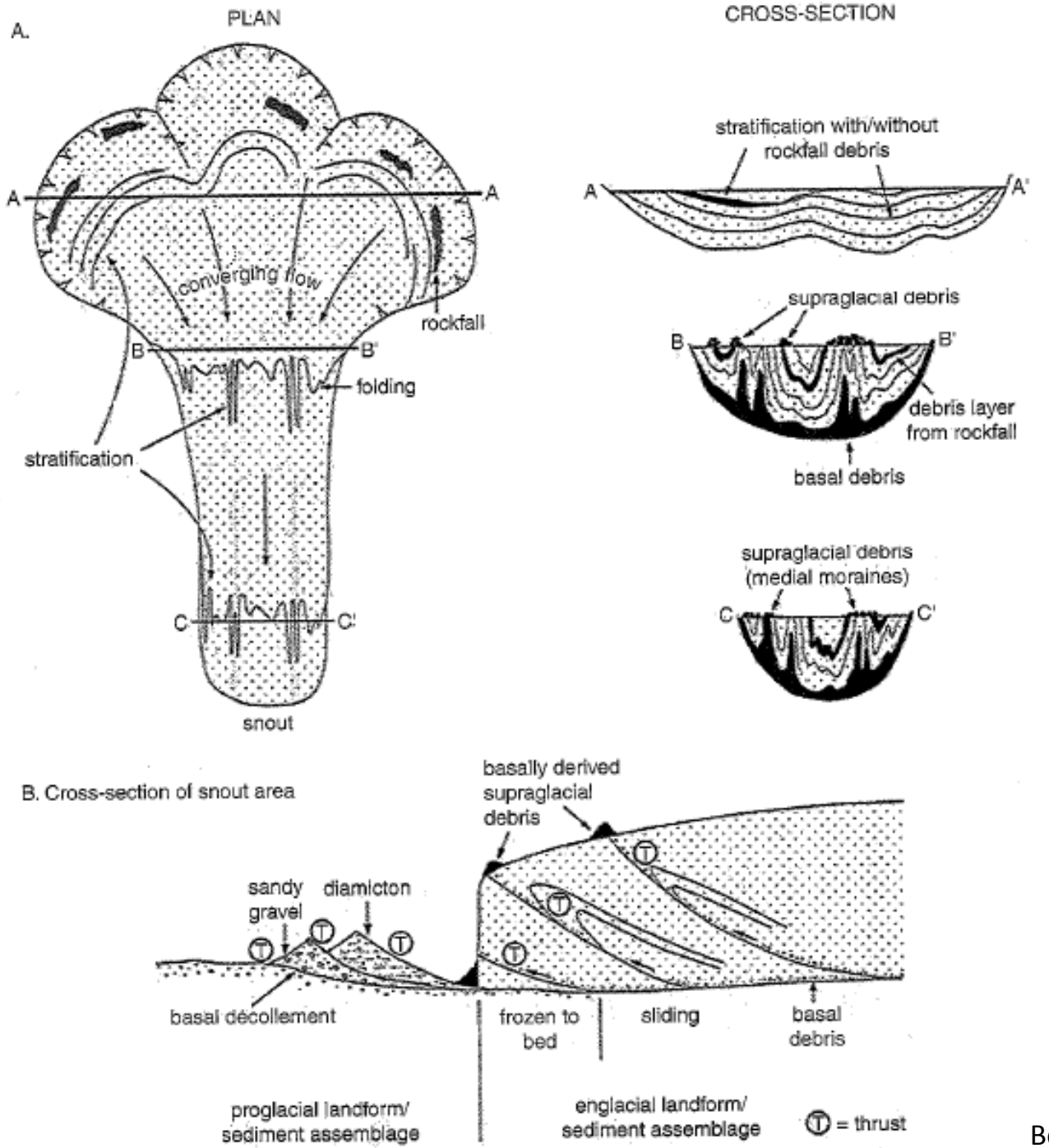
Basal Debris Transportation

- Derived either from the substrate by abrasion or quarrying, or from the surface and transported to the base by downward flow
- Zone of traction: debris is moved along the glacier bed (at the ice-bed interface) This material is “actively transported” and is subject to modification (crushing and abrasion) (Figure 7.7)
- Zone of suspension: debris is transported within the ice above the zone of traction (this material can develop a strong fabric of alignment of anisotropic grains)

Lamination versus Longitudinal Foliation

Nick

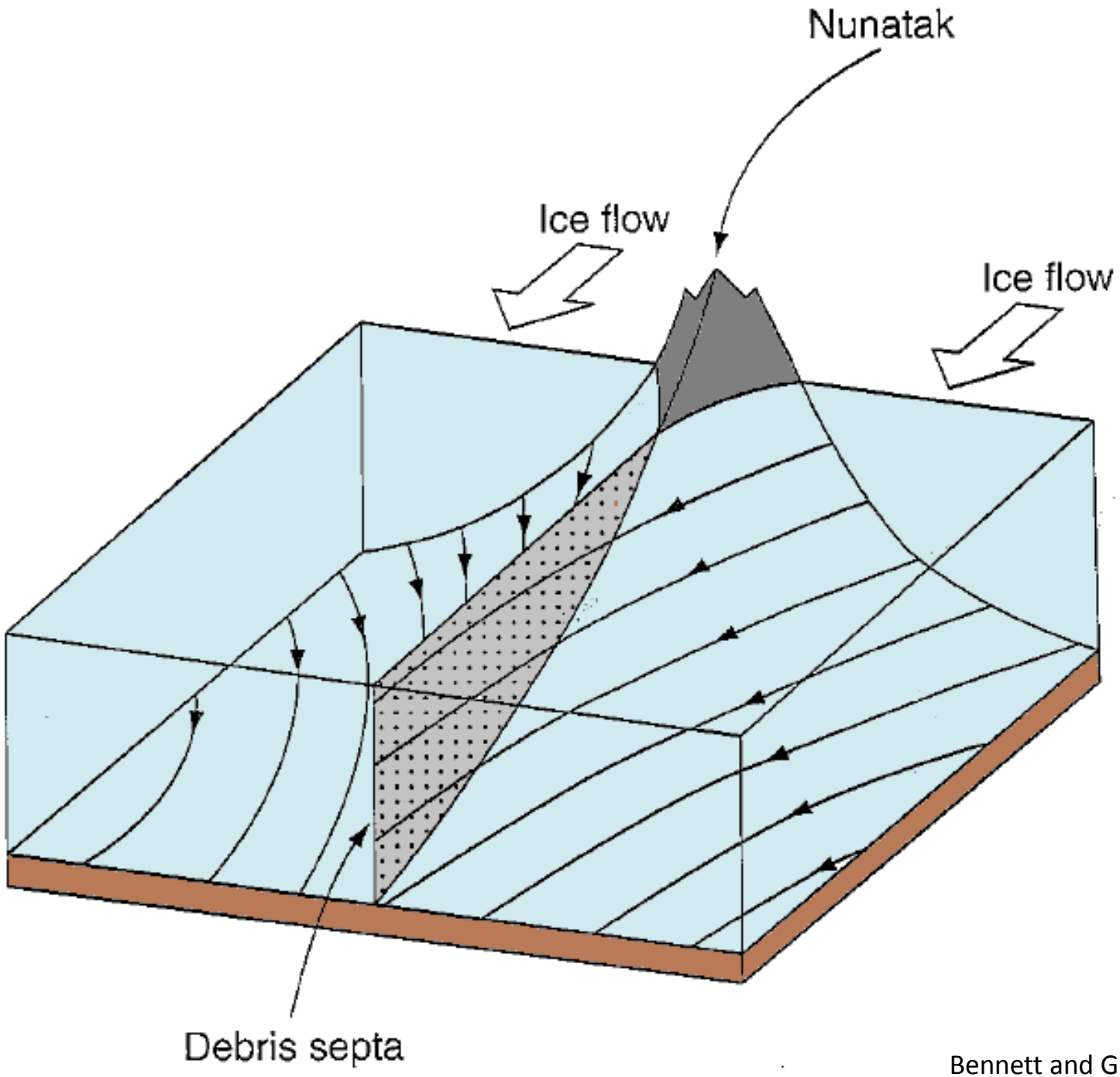
USGS



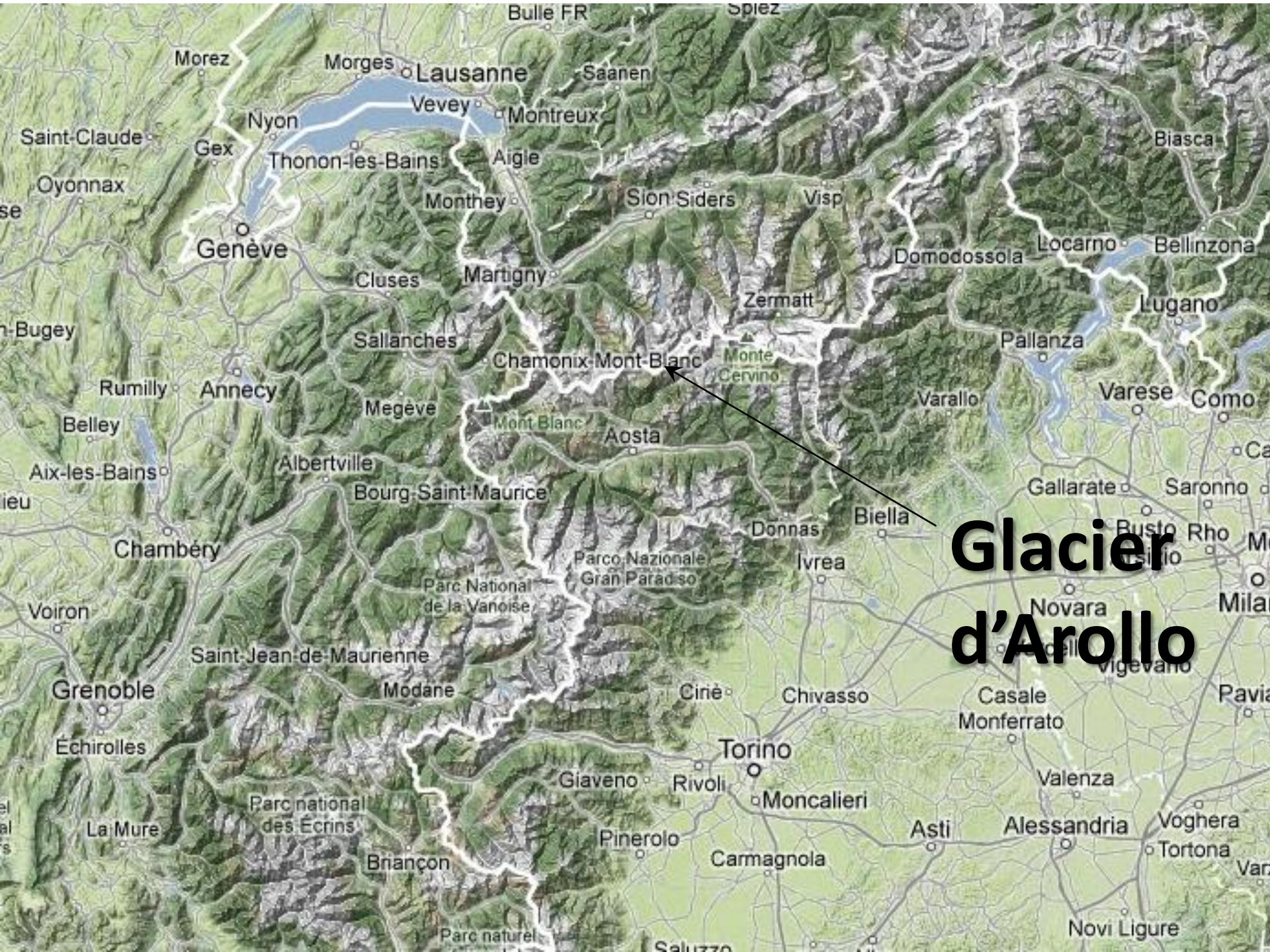
Bennett and Glasser, 2009

Medial Moraines

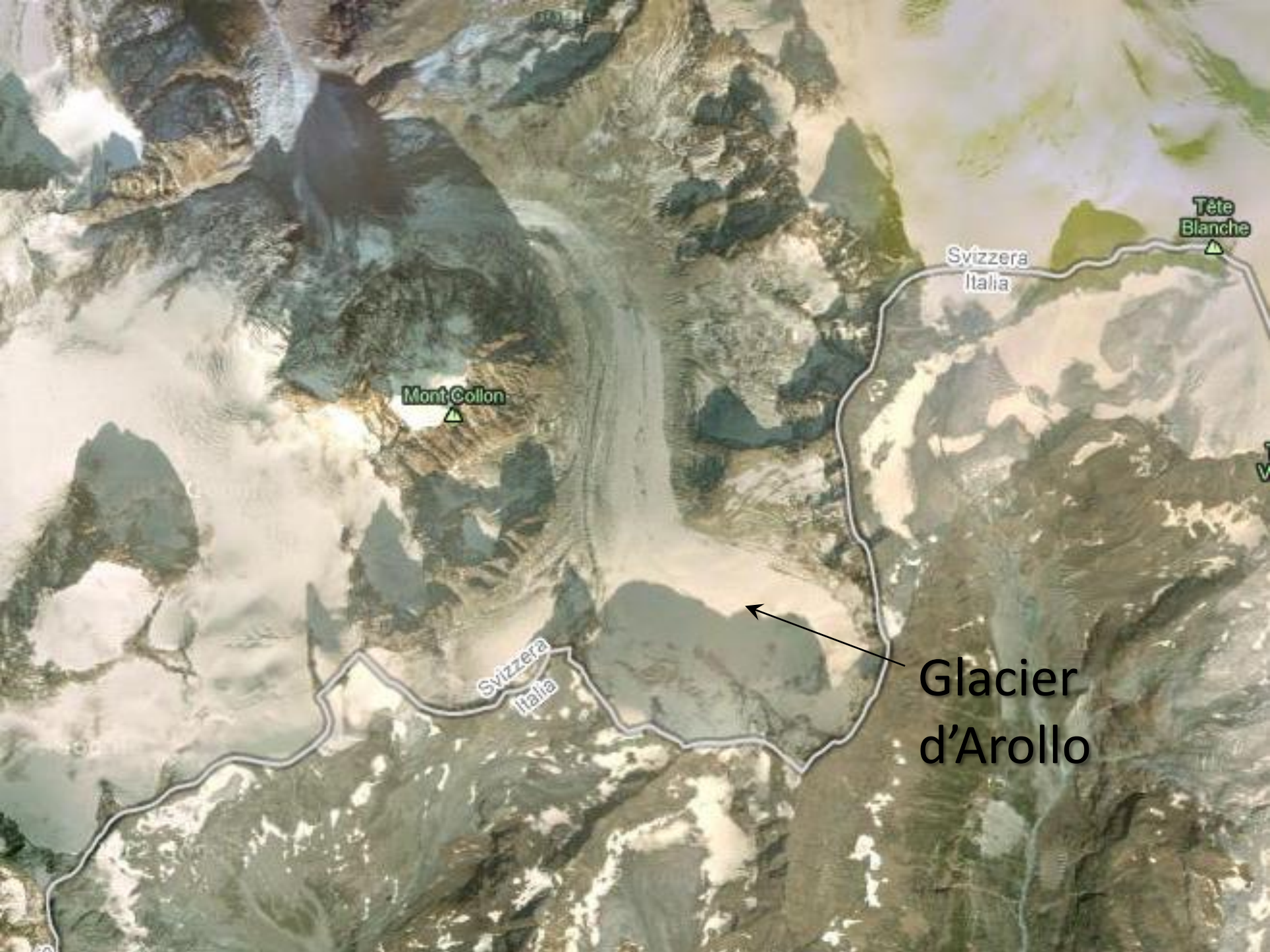
Denali National Park, Alaska

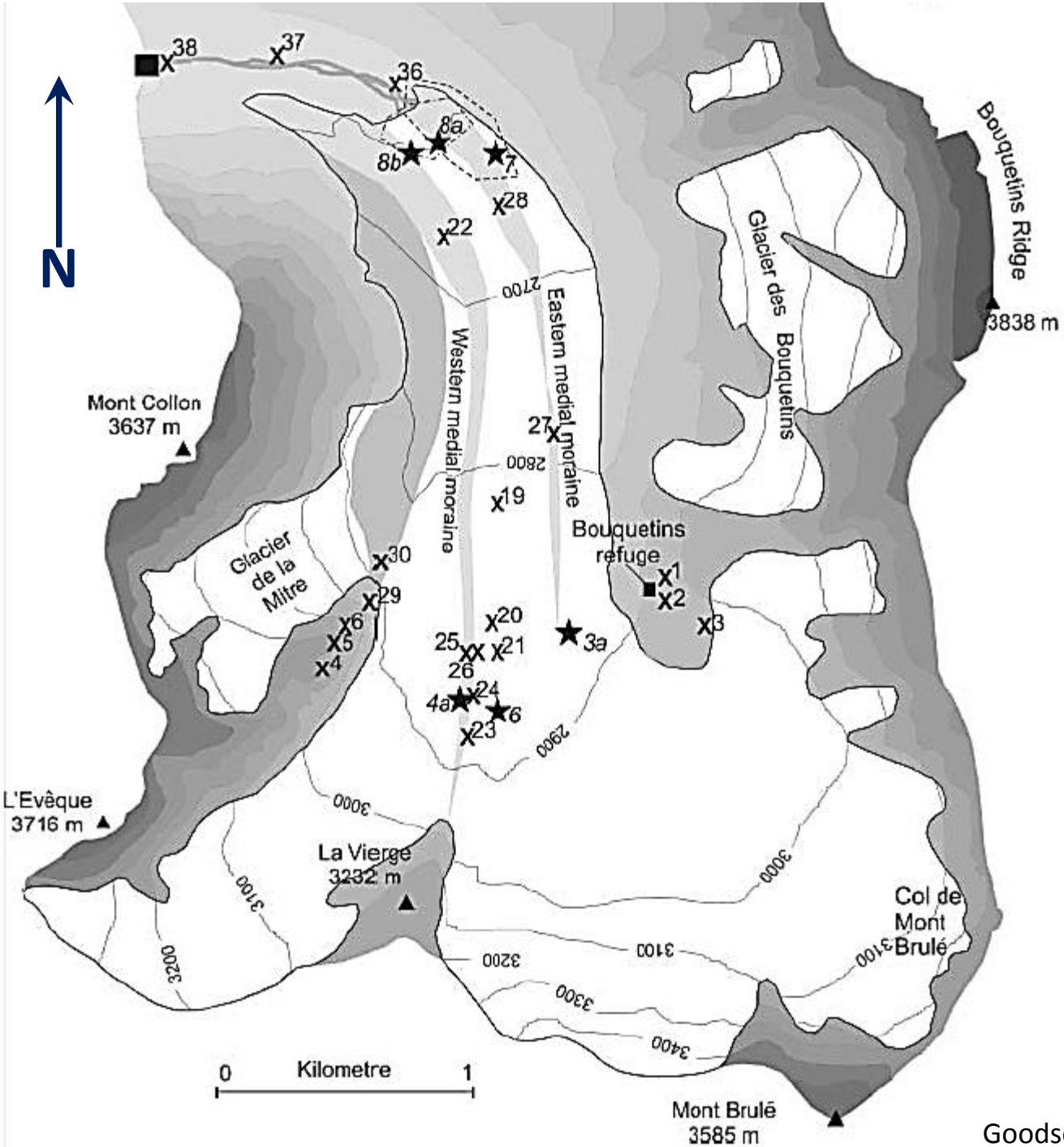


Bennett and Glasser, 2009

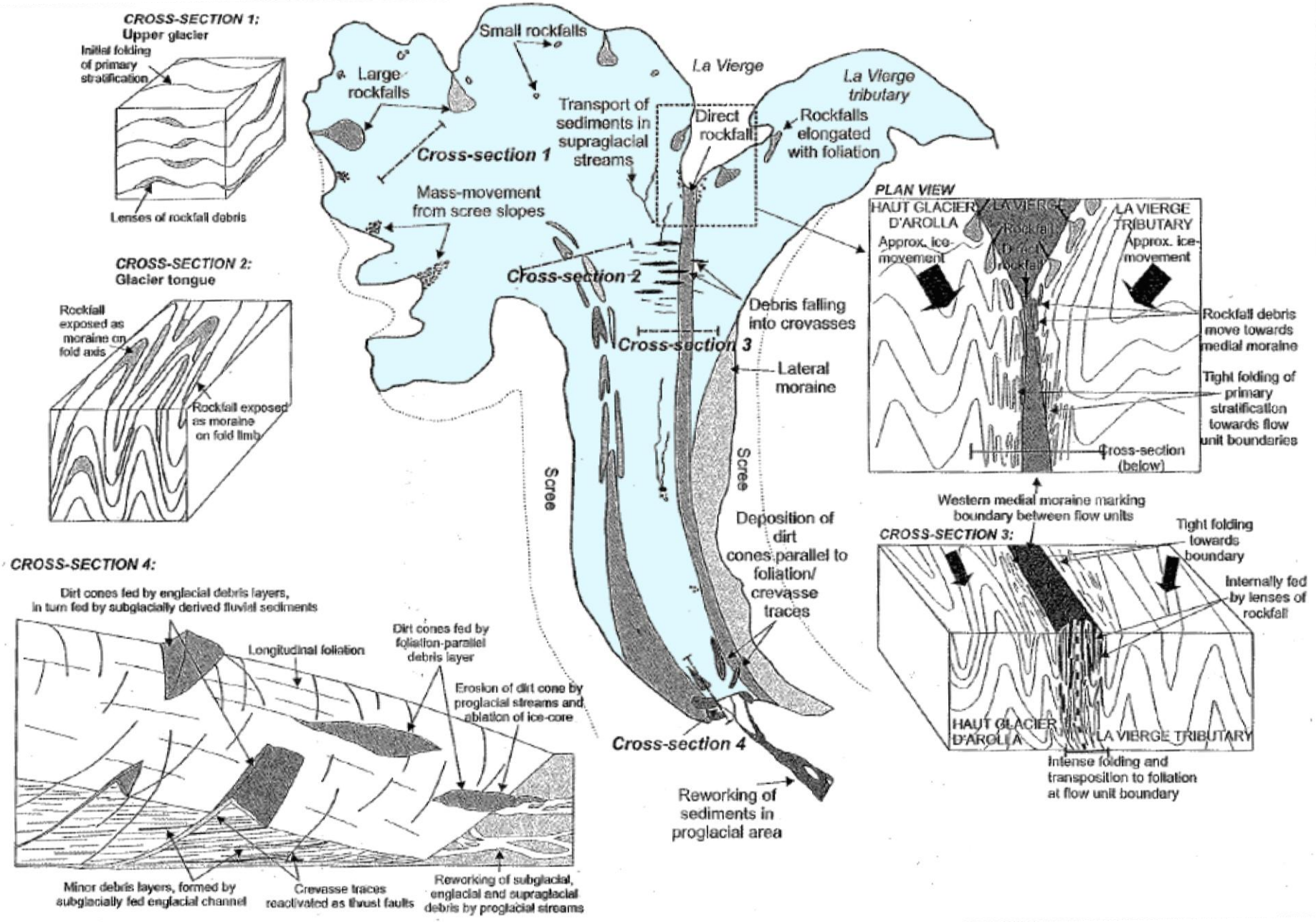

Glacier d'Arollo
Bulle FR
Spiez
Morez
Morges
Lausanne
Saanen
Vevey
Montreux
Nyon
Saint-Claude
Gex
Thonon-les-Bains
Aigle
Biasca
Oyonnax
Monthey
Sion
Siders
Visp
Genève
Locarno
Bellinzona
Domodossola
Cluses
Martigny
Zermatt
Lugano
Sallanches
Pallanza
Chamonix-Mont-Blanc
Monte Cervino
Rumilly
Annecy
Varallo
Varese
Como
Megève
Mont Blanc
Belley
Aosta
Albertville
Aix-les-Bains
Gallarate
Saronno
Bourg-Saint-Maurice
Biella
Donnas
Busto
Rho
Chambéry
Parco Nazionale Gran Paradiso
Ivrea
Parc National de la Vanoise
Novara
Voiron
Saint-Jean-de-Maurienne
Grenoble
Modane
Ciriè
Chivasso
Casale Monferrato
Pavia
Échirolles
Torino
Giaveno
Rivoli
Valenza
Moncalieri
Parc national des Écrins
La Mure
Asti
Alessandria
Voghera
Pinerolo
Tortona
Briançon
Carmagnola
Parc naturel
Novi Ligure


Glacier
d'Arollo
Mont Blanc
de Cheilon
Pigne
d'Arolla
Mont Collon
Tête
Blanche
Lac de
Mauvoisin
2 km
2 mi

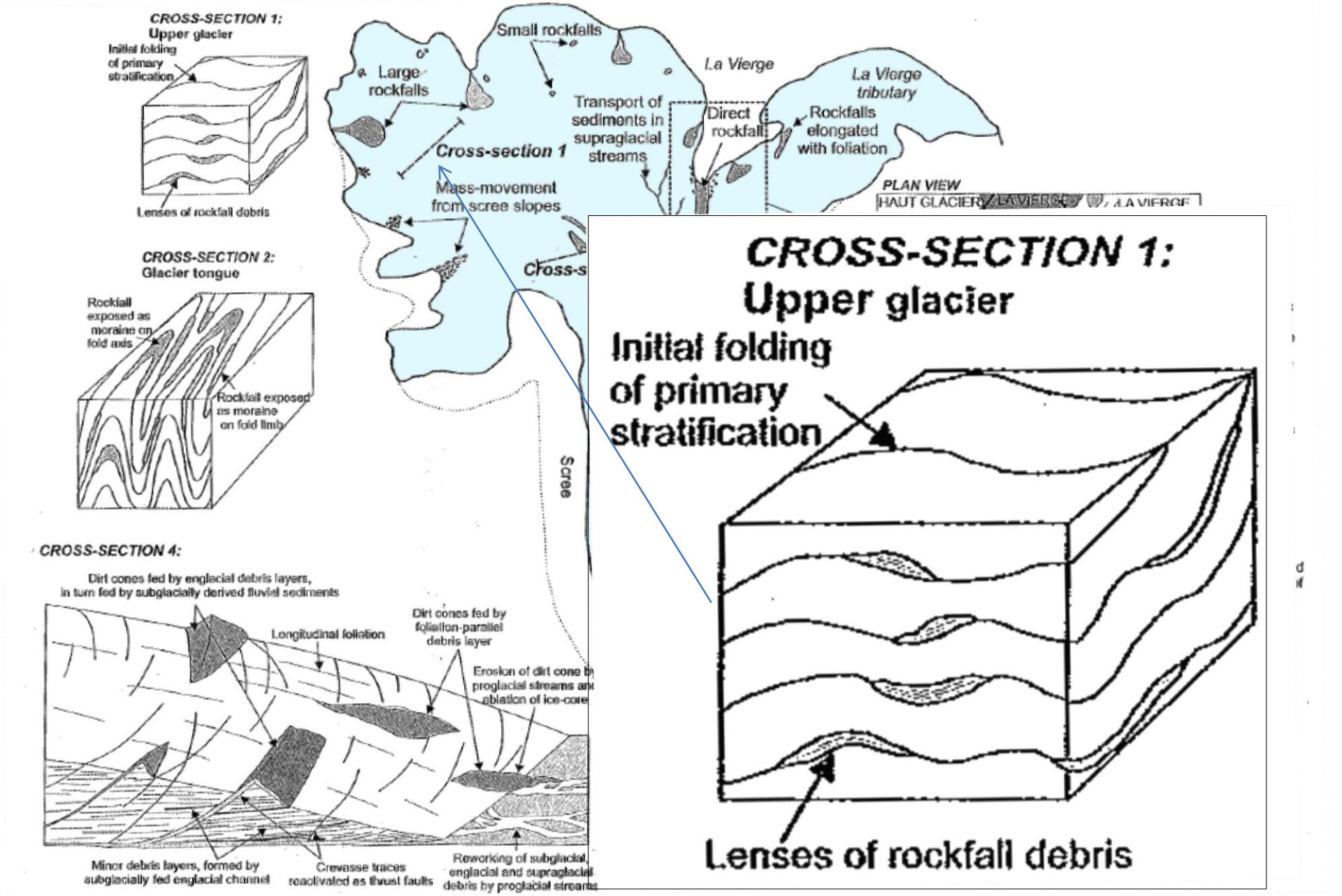

Tête Blanche
Svizzera
Italia
Mont Collon
Svizzera
Italia
Glacier d'Arollo



Goodsell et al., 2005



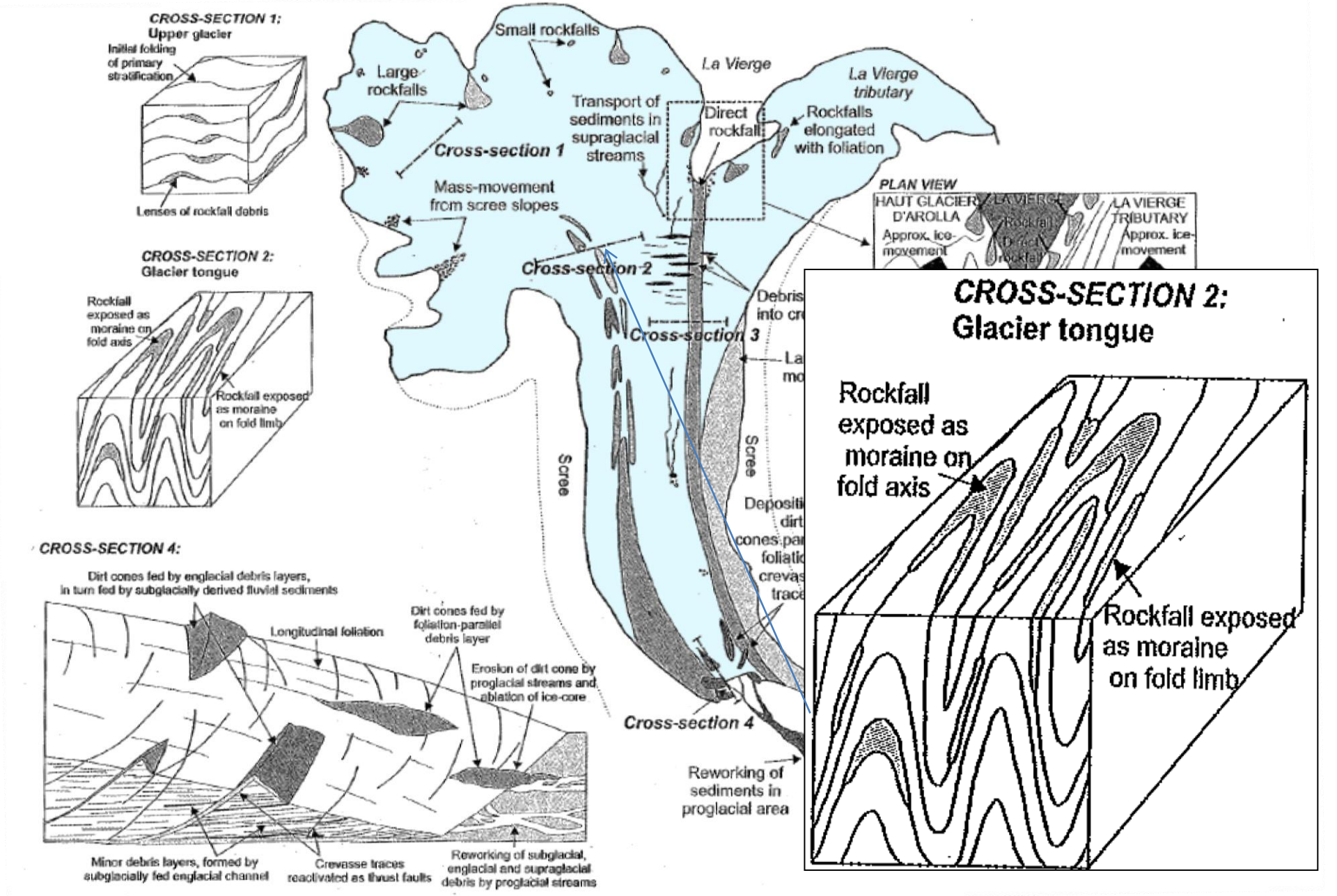
Goodsell et al., 2005



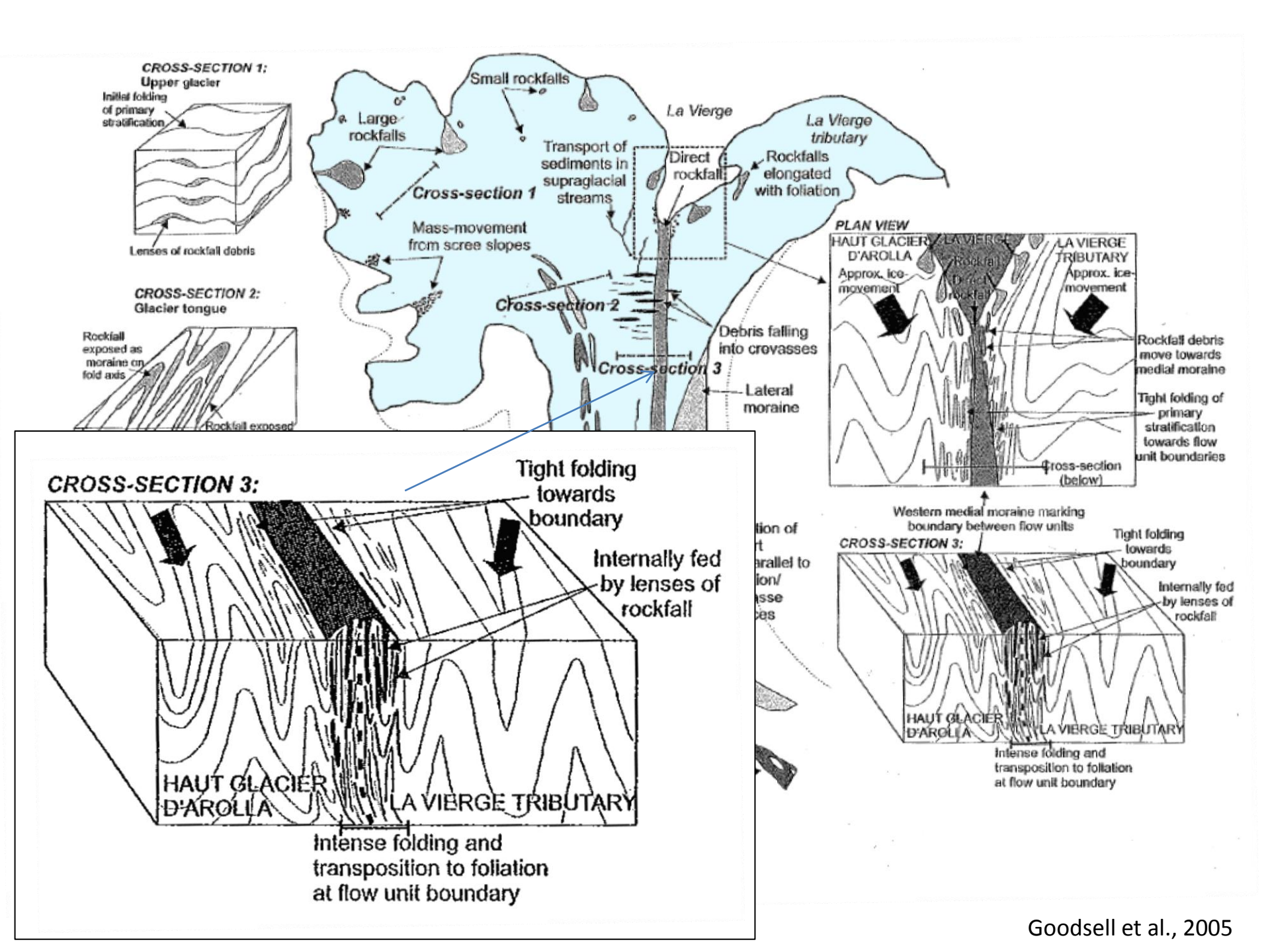
Goodsell et al., 2005


Doug

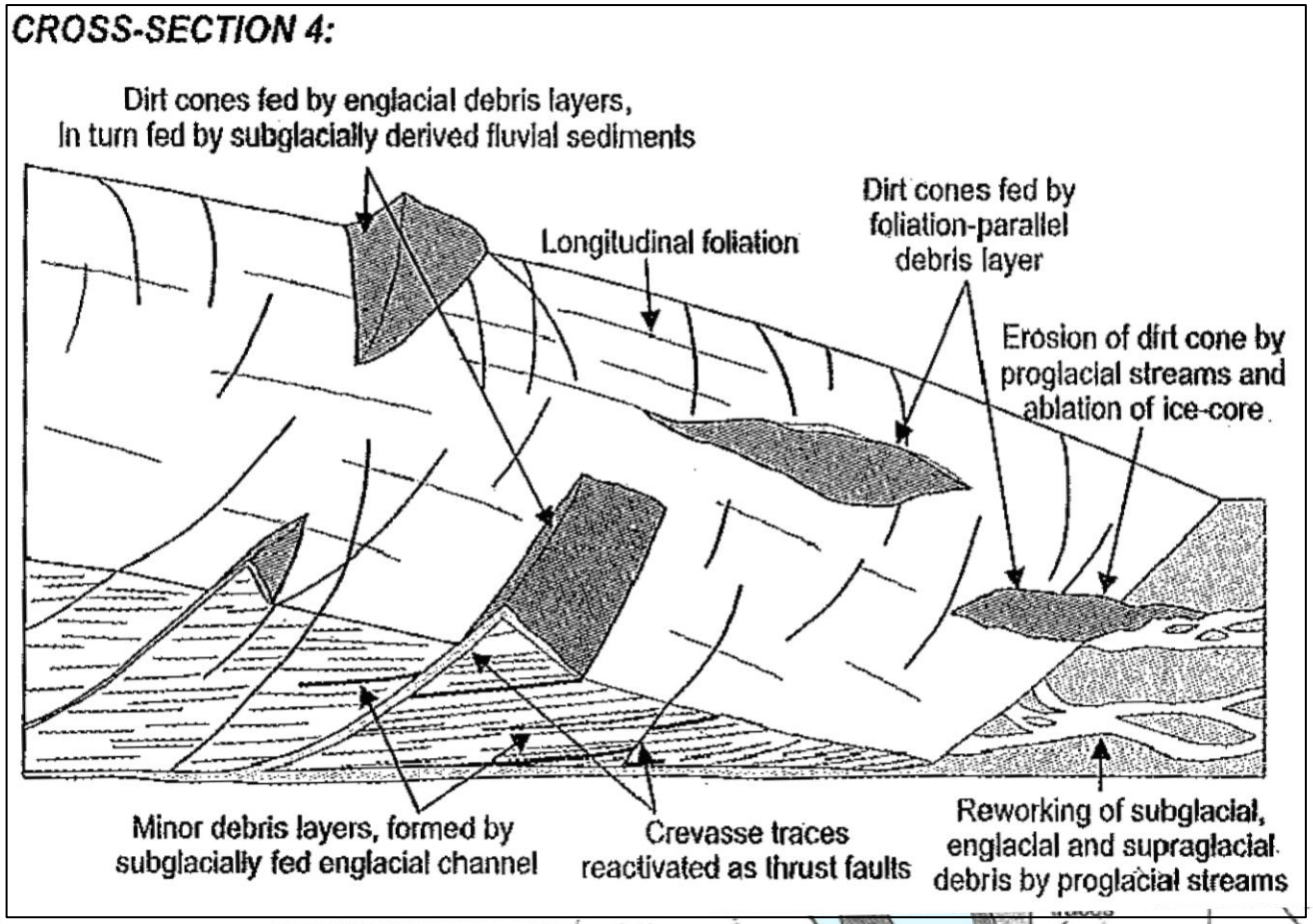
Nick

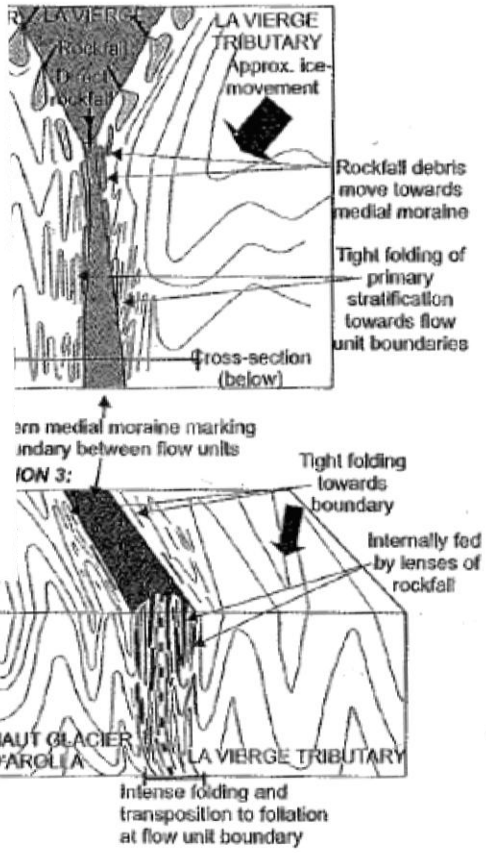


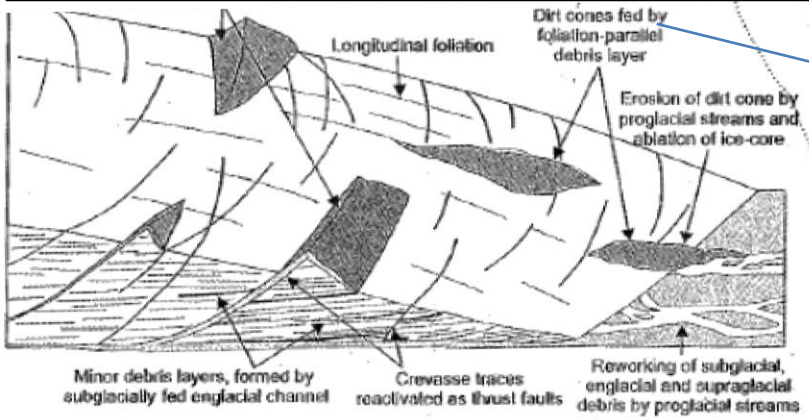
Goodsell et al., 2005

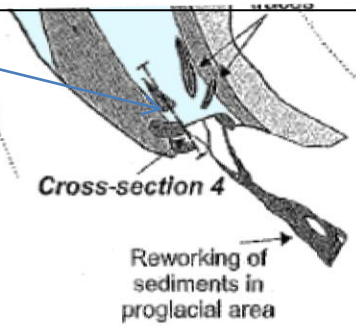


Goodsell et al., 2005

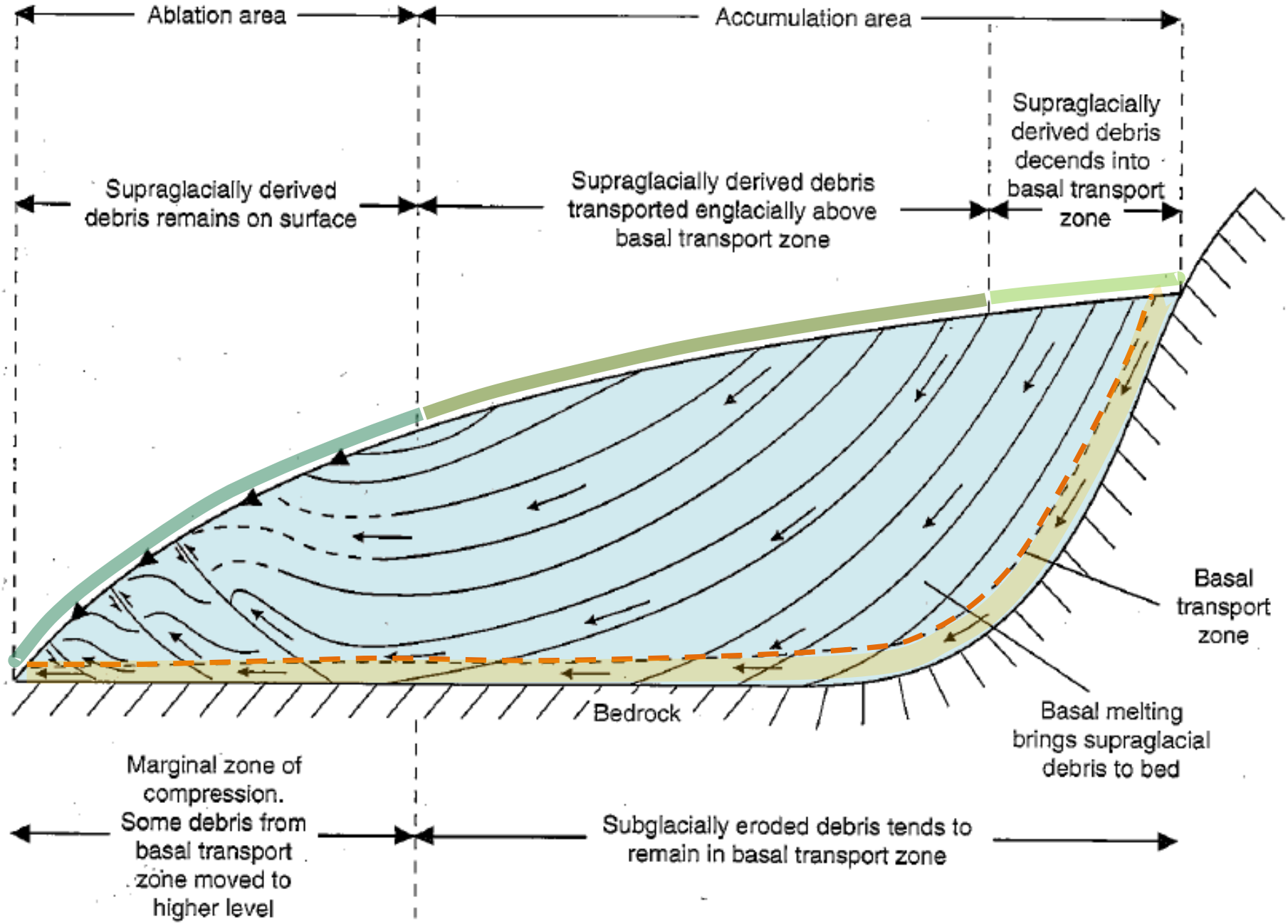








Goodsell et al., 2005



Bennett and Glasser, 2009