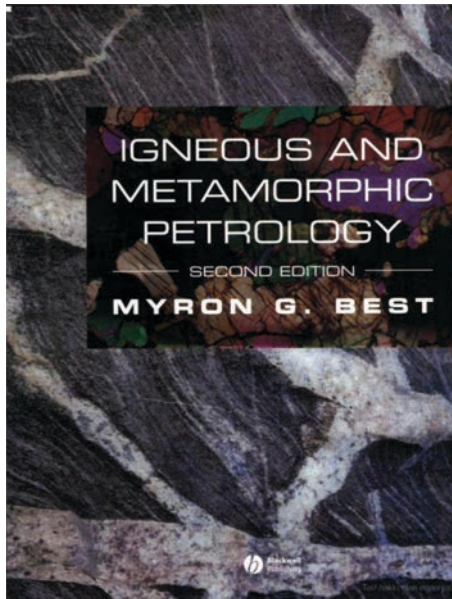


Corso di Geologia del Cristallino

Per info:

Email: luca.ziberna@units.it

Palazzina N, Via Weiss 8, 34128, Trieste



Libro di testo principale usato come riferimento:
Best, M.G. (2003). Igneous and Metamorphic
Petrology. 2nd ed. Blackwell Publishing. 729 pp.

Punti importanti

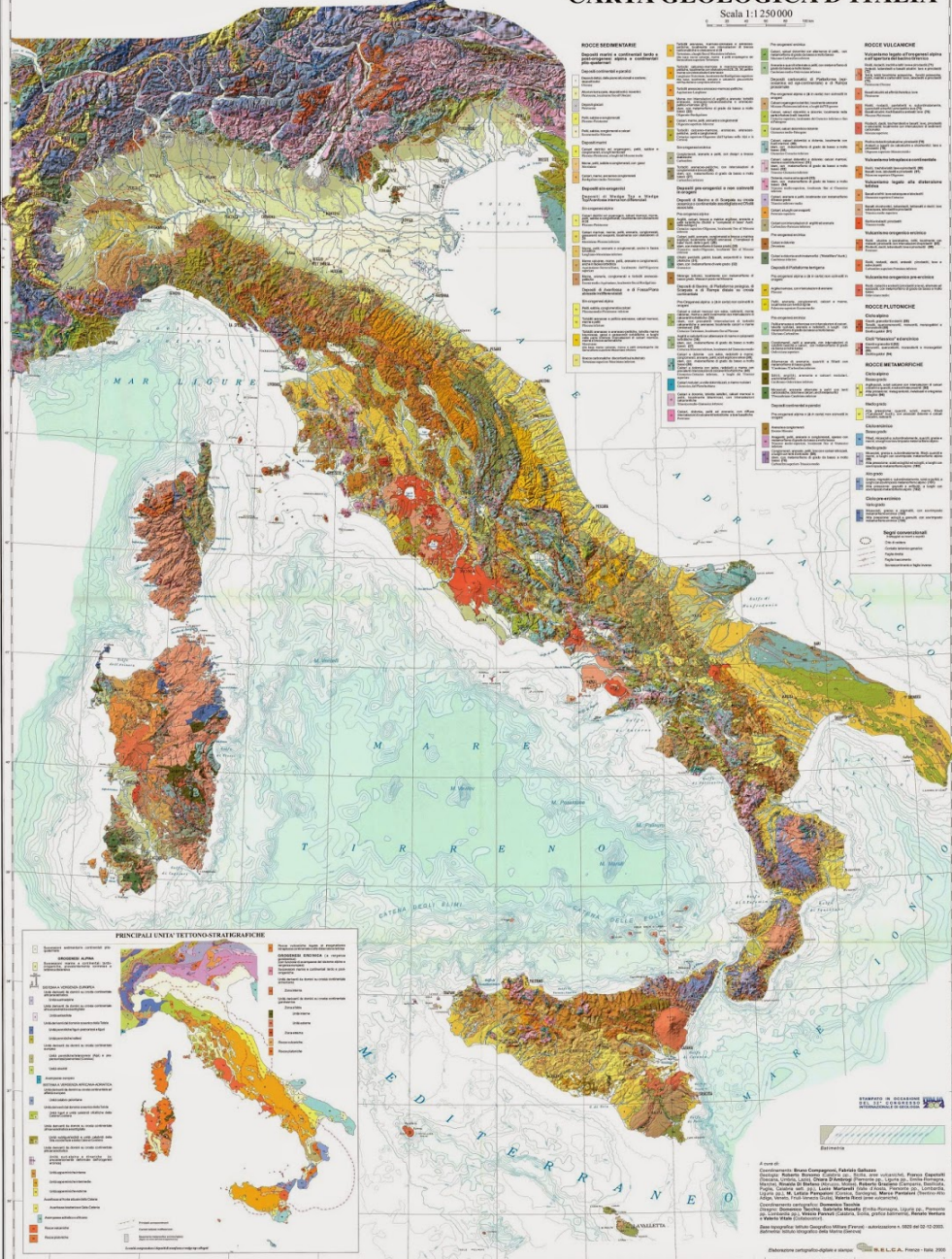
- Quanti studenti?
- Orari lezioni, aule, etc
- Background degli studenti
- Strutturazione generale del corso (lezioni frontali, laboratorio e escursioni)
- Giornate delle escursioni didattiche, costi, automezzi etc

Introduzione

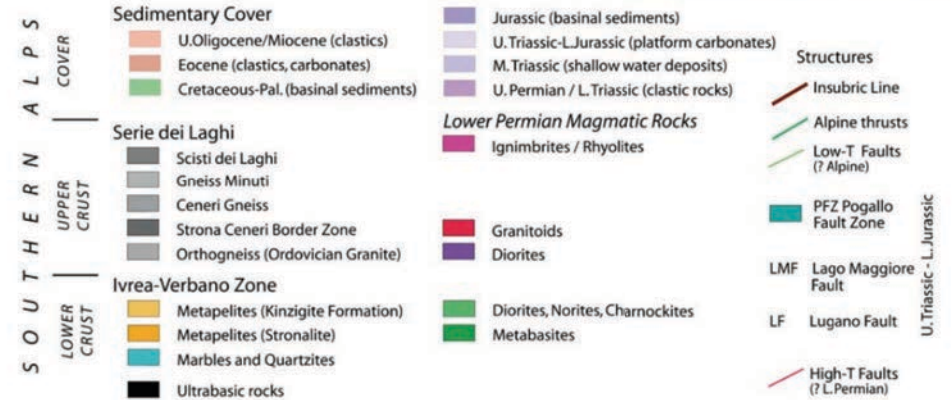
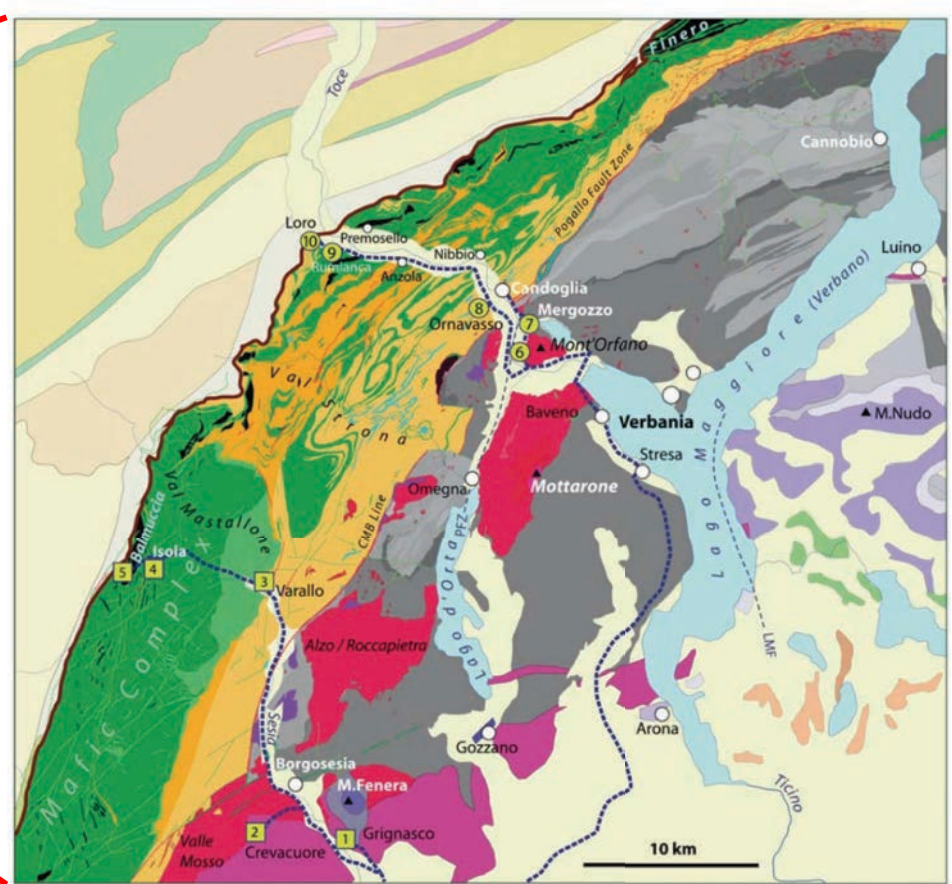
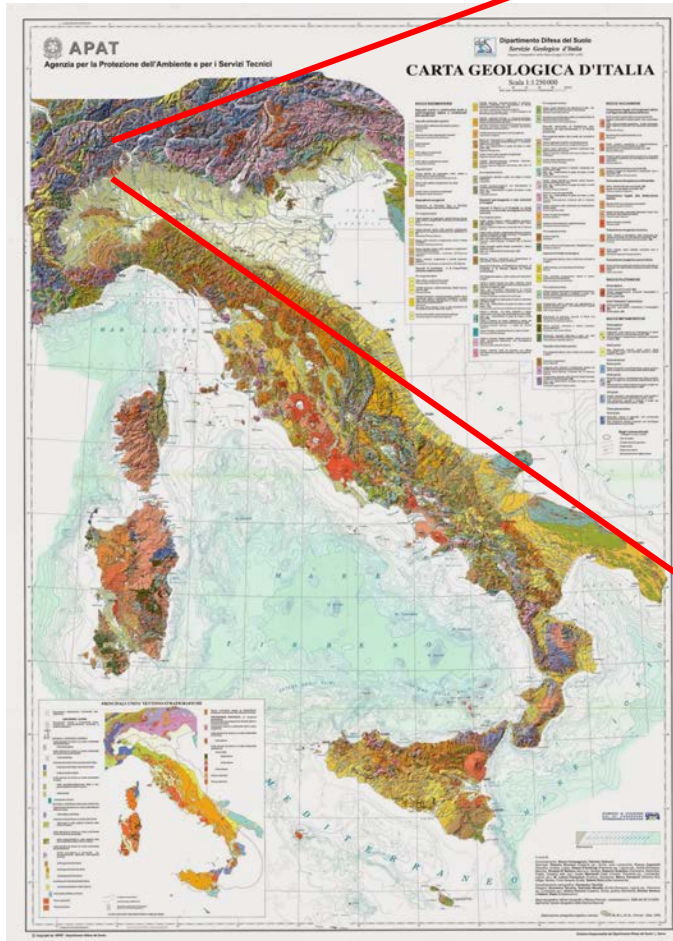
Perché è importante lo studio dei complessi magmatici e metamorfici?

CARTA GEOLOGICA D'ITALIA

Scala 1:1250000

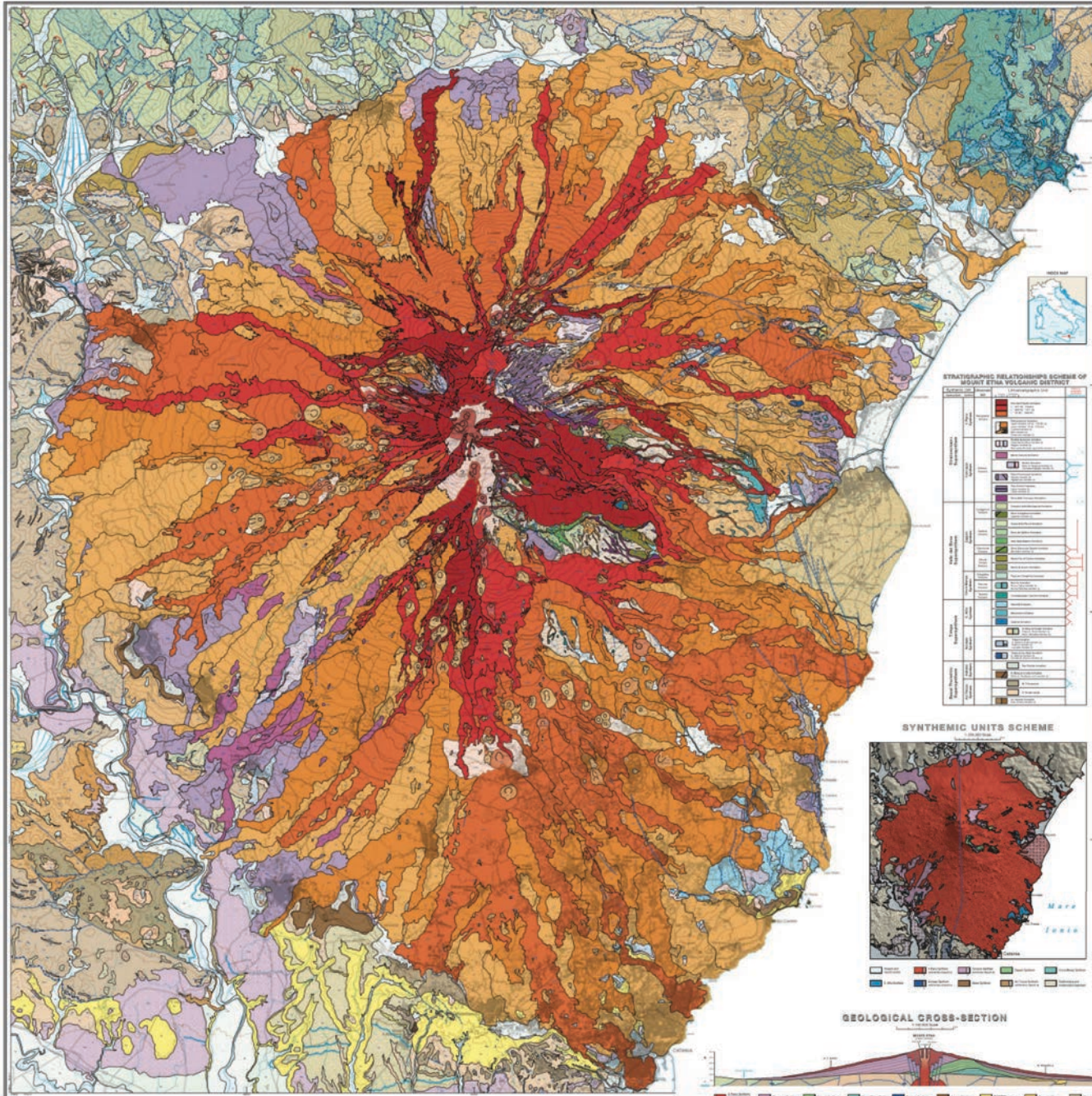


...per la caratterizzazione del territorio



Brack et al. (2010; Swiss Bull.)

Fig. 3: Geological map of the Massiccio dei Laghi west of Lago Maggiore [Ivrea-Verbano Zone and Serie dei Laghi; simplified after a compilation by T. James 2001]. The proposed field trip itineraries and stops are indicated: crustal section and mantle rocks in Valsesia (squares), upper and lower crustal rocks in Val d'Ossola (circles).



STRATIGRAPHIC RELATIONSHIPS SCHEME OF MOUNT ETNA VOLCANIC DISTRICT

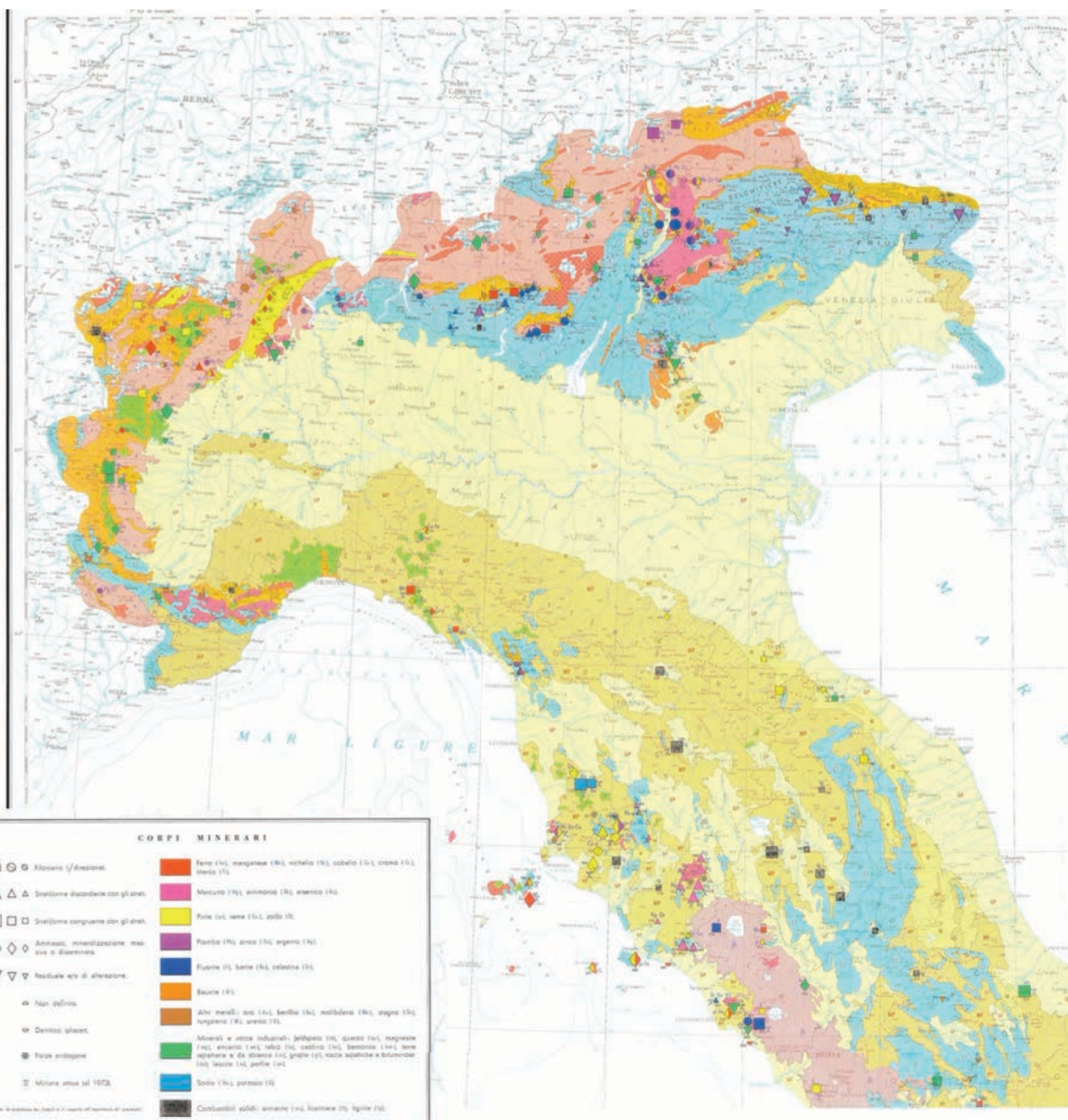
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SYNTHETIC UNITS SCHEME

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97	Light Green	Box with symbol
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99	Light Orange	Box with symbol
100	Light Red	Box with symbol

GEOLOGICAL CROSS-SECTION

...per la prospezione delle georisorse minerarie




SERVIZIO GEOLOGICO D'ITALIA
ORGANO CARTOGRAFICO DELLO STATO
CARTA MINERARIA D'ITALIA
 Scala 1:1.000.000
 ROMA 1973

COLLABORATORI: Istituti Minerali della Direzione Generale delle Miniere, Regioni, Enti Minerali Regionali, A. Ferraguzzi, I. Brigo, C. Basso, G. Casadio, G. Deoni, F. Di Colombaro, A. Jankovik, P. Natali, P. Orsattini, G. Pansa, P. Pigo, S. Rivo, I. Sabatini, G. Stampone, L. Vighi, S. Zuccheri, P. Zuffanti.
COORDINATORE: G. Stampone.
DISEGNO E CARTOGRAFIA: E. Cassi, M. Gori, A. Jasi.
DIRETTORE DEL SERVIZIO GEOLOGICO: A. Jankovik.

Pubblicata con il finanziamento dell'E.G.A.M.

ROCCE SEDIMENTARIE

GENOVINO-QUATERNARIO

- Oligocene - Pliocene - Pliocene. Depositi clastici alluvionali, lacustri, in luoghi inglobati, glaciali, fluviali. Depositi argillosi-sabbiosi-conglomeratici e calcarei-dolomiti, di Jacea marina.
- Miocene superiore. Depositi argillosi-sabbiosi, calcarei, gessosi e dolomitici ("formazione gessoso-solfurea").
- Miocene. Depositi calcarei-conglomeratici, argillosi, maronici, marini, talora anche foci e conglomerati d'Oligocene, di Jacea marina. Frequenti spessi di madrepore, talora depositi calcarei e calcareo-sabbiosi. Depositi lacustri in luoghi inglobati.
- Pliocene. Depositi marini, prevalentemente clastici, talora in Jacea di Fiume. Depositi calcarei-marini e maronico-argillosi, sabbiosi-marini e calcarei-clastici, di Jacea marina. Depositi concretionari in luoghi inglobati.

RECENTI

- Cretaceo - Giurassico - Triassico s.l. Depositi prevalentemente carboniferi di "parafiuma", calcari spessi (scleriti, marie e argille, dolomite talora con gessi) di Jacea marina. Depositi clastici granitici di Jacea continentale ("Venetiano" s.l.), p.p. di età postmiocenica.
- TRIAS ALPINO. Depositi calcarei, dolomitici talora con gessi, maronico-conglomeratici, di Jacea marina, associati a rocce eruttive.

PALEOZOICO

- PERMIANO - CARBONIFERO. Depositi clastici, prevalentemente arenaceo-conglomeratici, calcarei, marini ed evaporati, di Jacea marina. Depositi prevalentemente argillosi-marini talora con arenitici e clastici "volcanici" di Jacea continentale ("Venetiano" s.l.), p.p. di età triassica.
- DEVONIANO - SILURIANO. Depositi argillosi-marini, calcarei-argillosi ed arenacei, di Jacea marina.
- CAMBRIANO. Depositi arenacei, carboniferi ("Mafelino") e argillosi-marini, di Jacea marina.

ROCCE ERUTTIVE

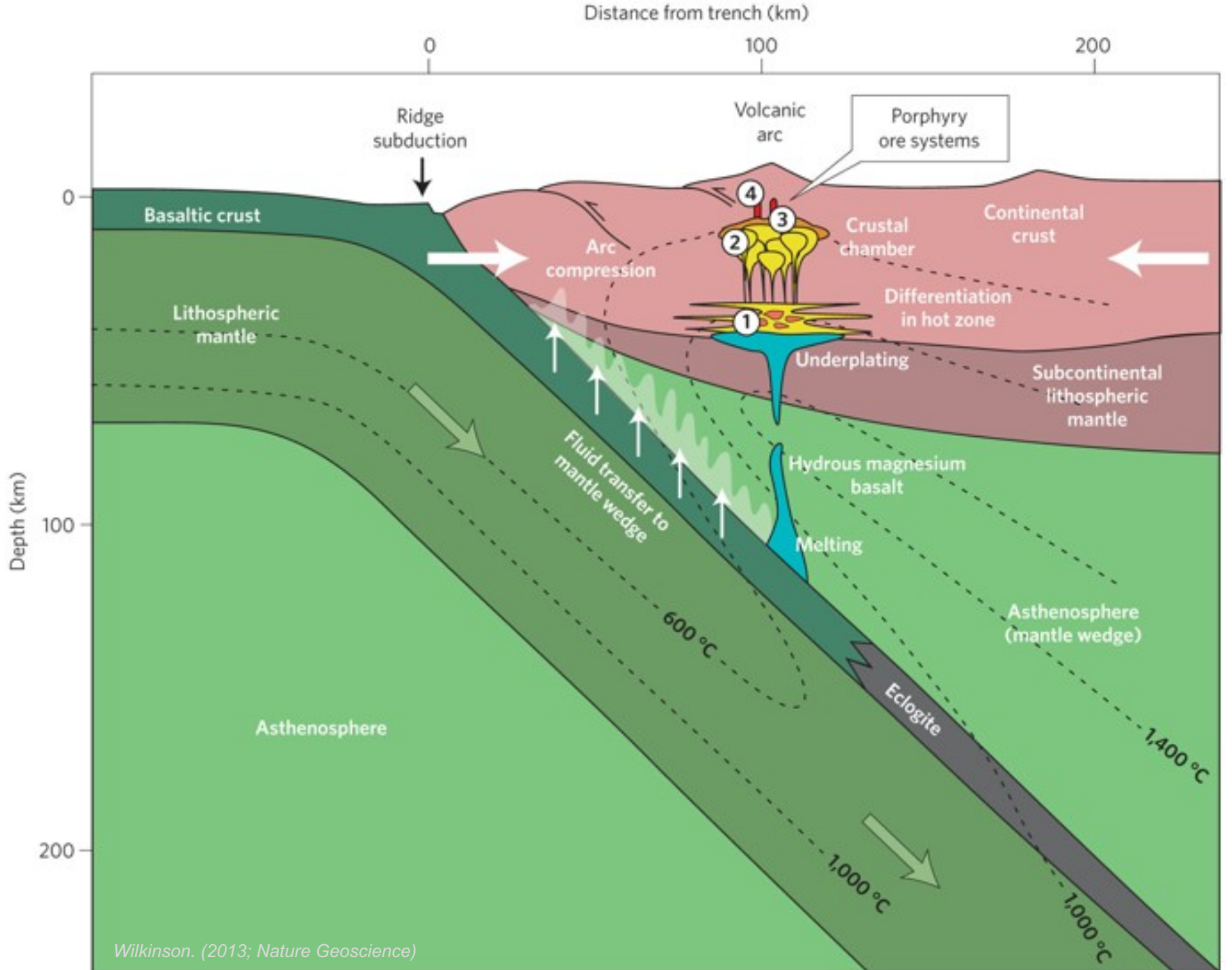
- Gneiss ed altre plutonici scisti d'Oligocene alpini.
- Gneiss ed altre plutonici scisti d'Oligocene emicline non più eruttivi.
- Vulcaniti scisti d'Oligocene alpini.
- Vulcaniti basiche d'Oligocene alpini.
- Vulcaniti di composizione varia d'Oligocene alpini.
- Rocce basiche ed ultrabasiche ("Ophiiti" e "Petro basali").
- Vulcaniti prevalentemente scisti d'Oligocene emicline.
- Vulcaniti basiche d'Oligocene emicline non più eruttivi.

ROCCE METAMORFICHE

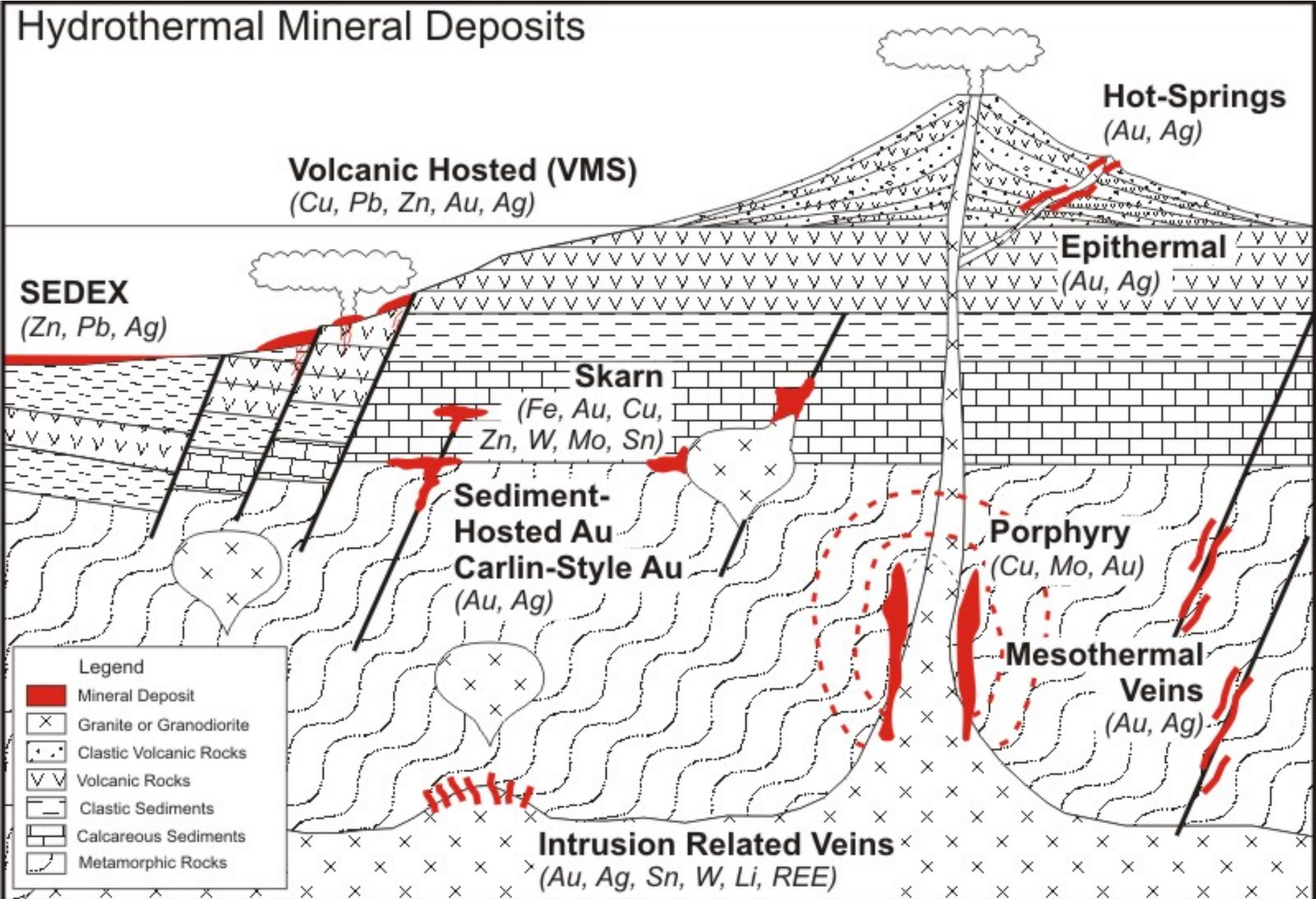
- Gneiss, micaeloni, filiti, quartziti.
- Calcareniti.
- Dolomi, kraigati, gneiss, ecc.

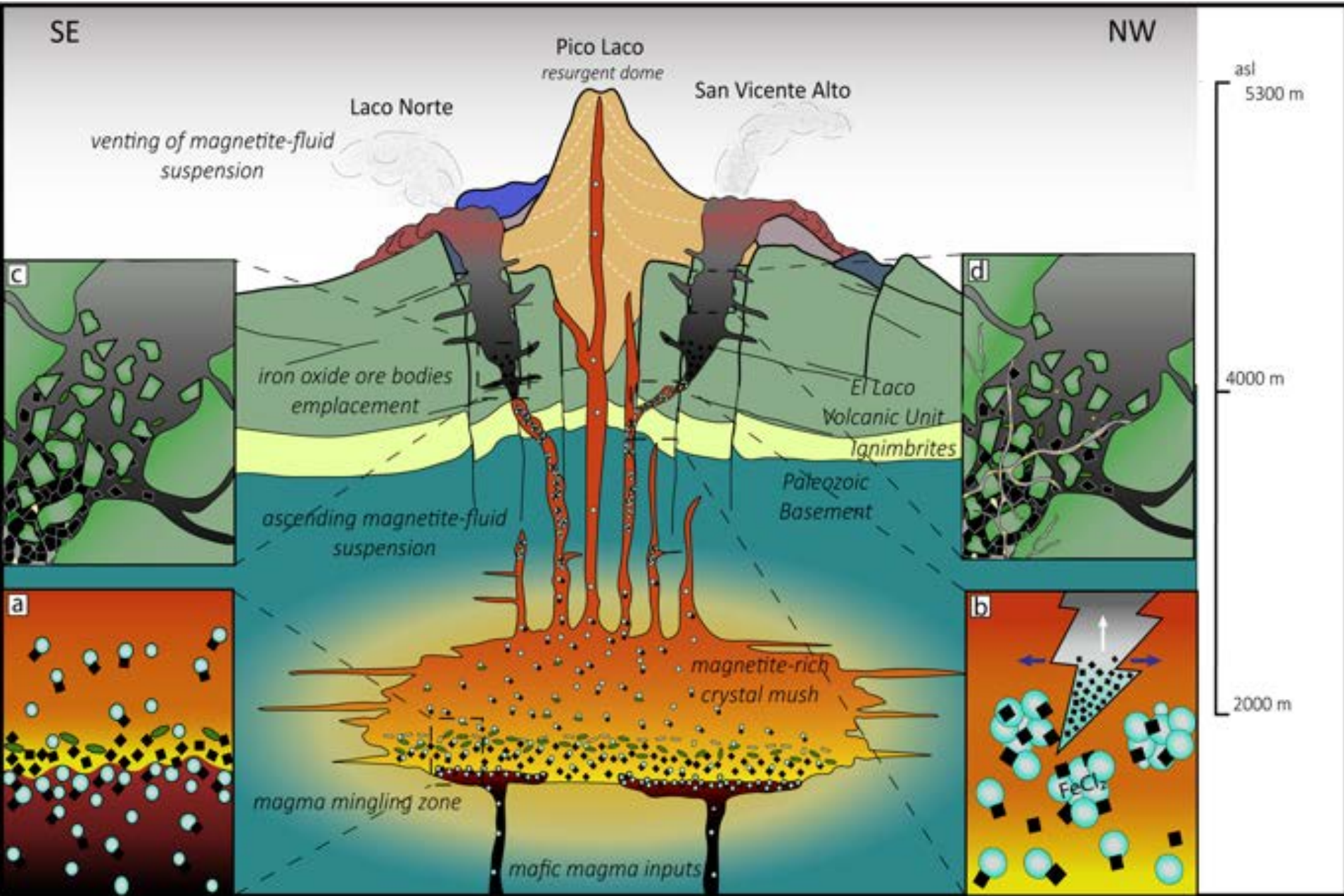
CORPI MINERARI

○ ○ ○ Filonari (A) / Anziani.	 Ferro (Fe), manganese (Mn), nichel (Ni), cobalto (Co), rame (Cu), stagno (Sn).
△ △ △ Sestione discordie con gli strati.	 Mercurio (Hg), antimonio (Sb), arsenico (As).
□ □ □ Sestione conqueve con gli strati.	 Piombo (Pb), zinco (Zn), stagno (Sn).
◇ ◇ ◇ Annessi, mineralizzazione massiva e disseminata.	 Rame (Cu), zinco (Zn), argento (Ag).
▽ ▽ ▽ Residuo scisti di alterazione.	 Fluoro (F), bario (Ba), cesonio (Cs).
● Non eruttivo.	 Bauxite (Al).
● Denudato primitivo.	 Altri metalli: oro (Au), berillio (Be), molibdeno (Mo), vanadio (V), tungsteno (W), uranio (U).
● Falce antipode.	 Molibdeno e altre idrati, tellurio (Te), quarzo (SiO ₂), magnesite (MgCO ₃), arsenico (As), talco (Mg ₃ (OH) ₂ (Si ₂ O ₅) ₂ (OH) ₂), bentonite (Al ₂ (OH) ₄ (Si ₂ O ₅) ₂ (OH) ₂), mica (KAl ₂ (OH) ₂ (Si ₂ O ₅) ₂ (OH) ₂), mica (KAl ₂ (OH) ₂ (Si ₂ O ₅) ₂ (OH) ₂), mica (KAl ₂ (OH) ₂ (Si ₂ O ₅) ₂ (OH) ₂).
● Minerale attivo dal 1972.	 Sodio (Na), potassio (K).
●	 Combustibili solidi: antracite (C), lignite (C), torbaccia (C), lignite (C).

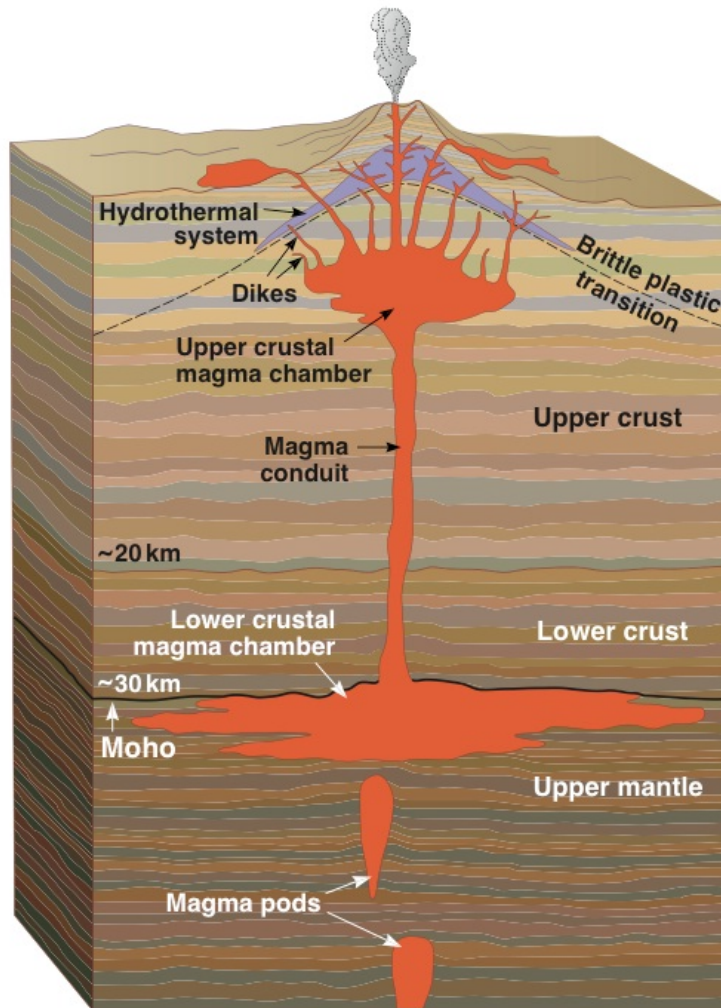


Hydrothermal Mineral Deposits



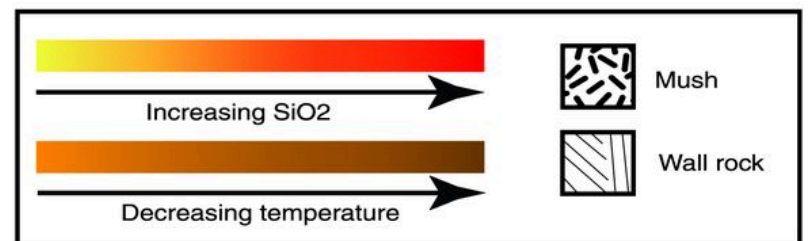
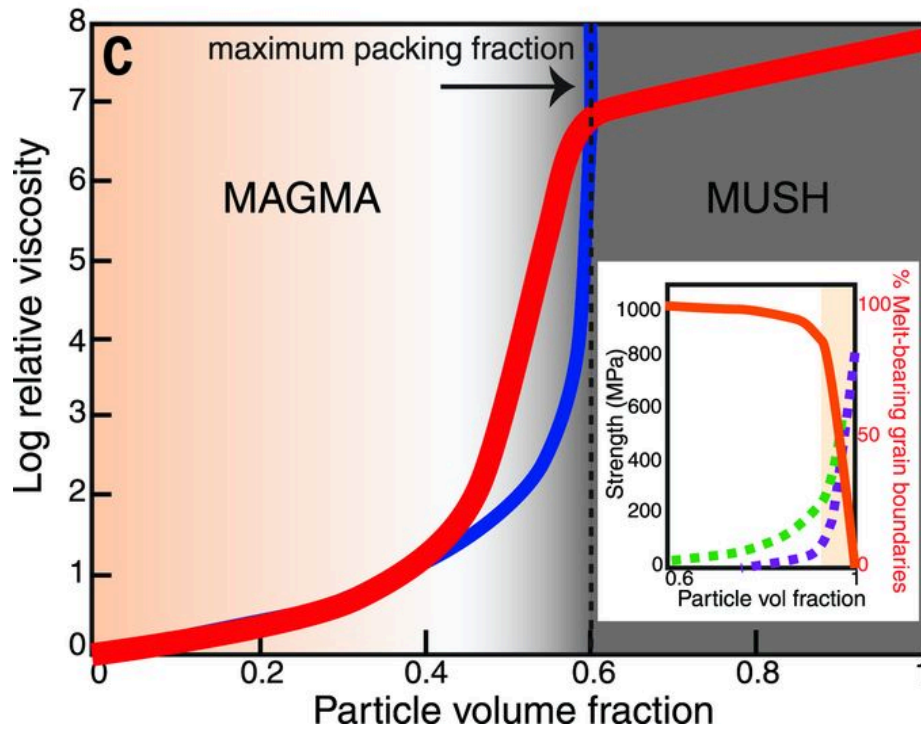
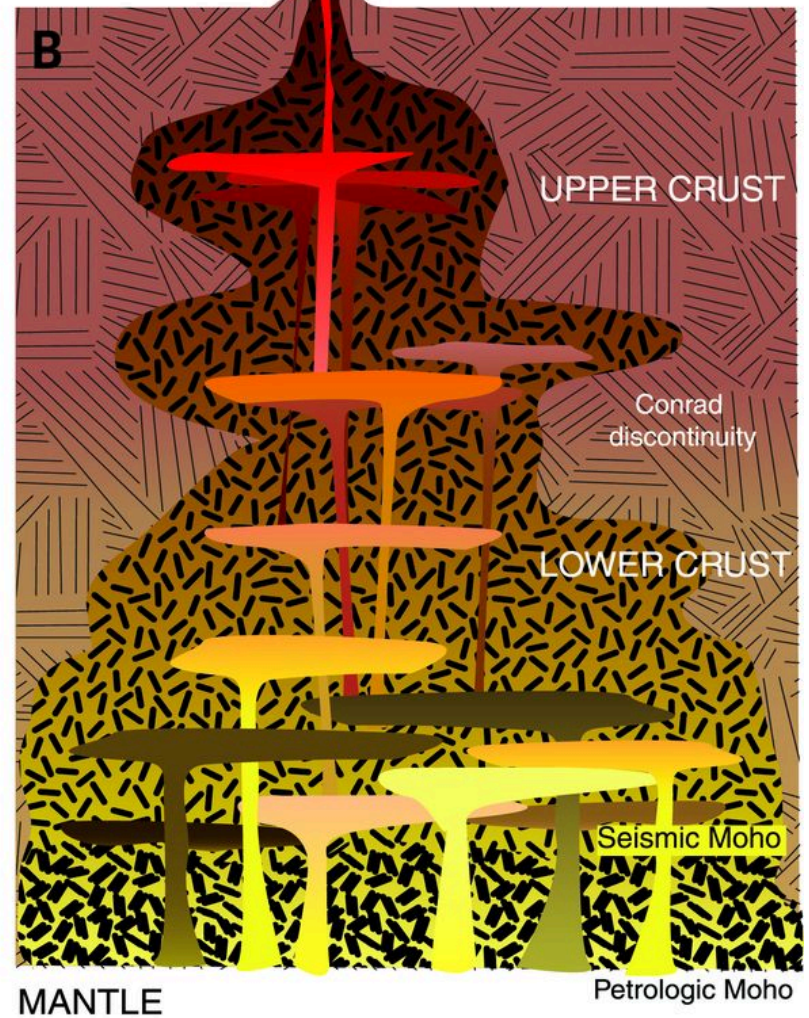
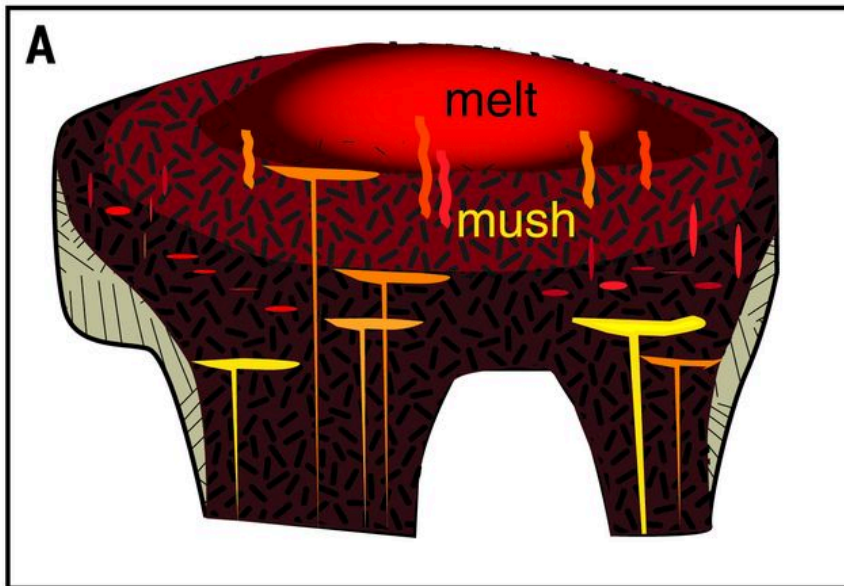


...per comprendere l'evoluzione dei sistemi magmatici e dei vulcani



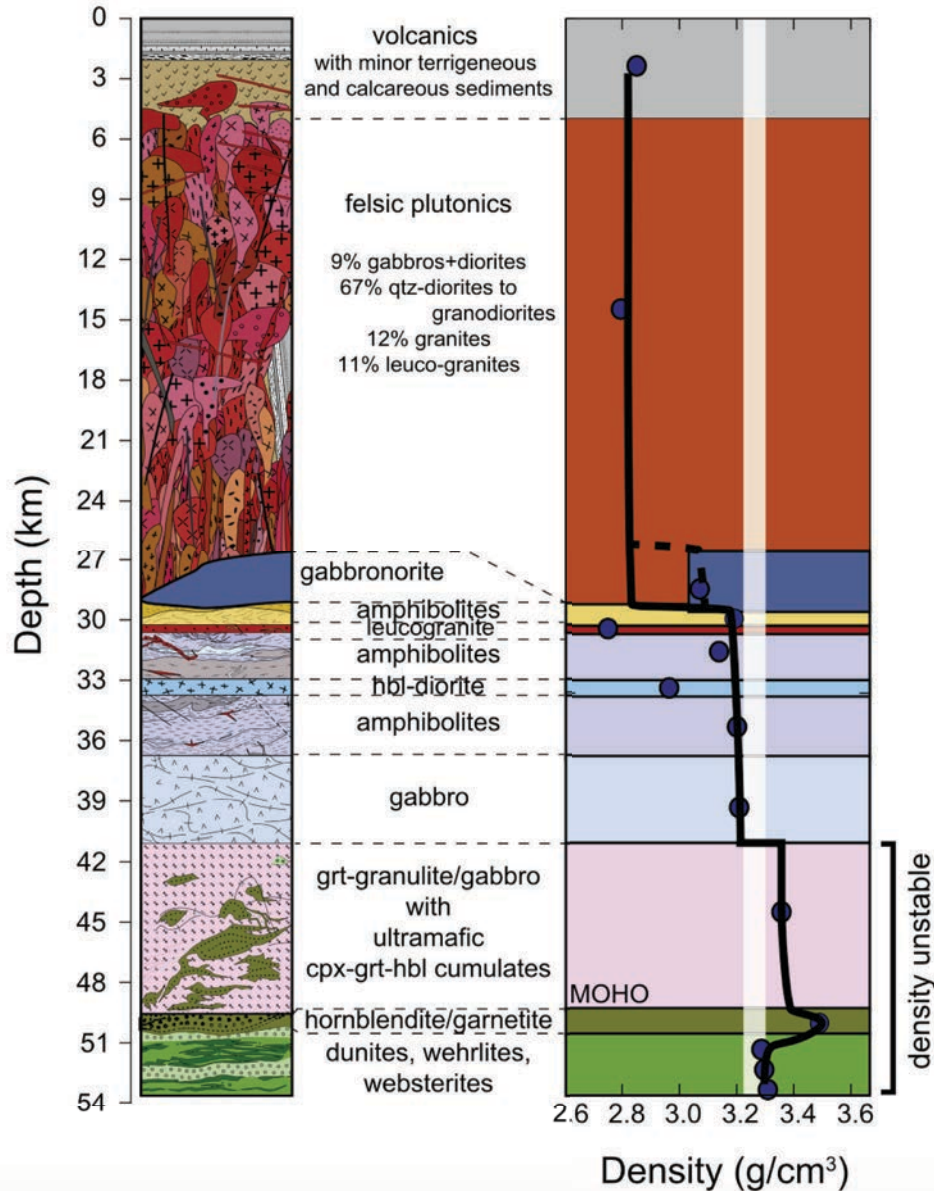
<https://magmamovesinfits.files.wordpress.com>

Magma ascension and storage at the base of the crust.





...per comprendere la natura e l'evoluzione del mantello e della crosta terrestre



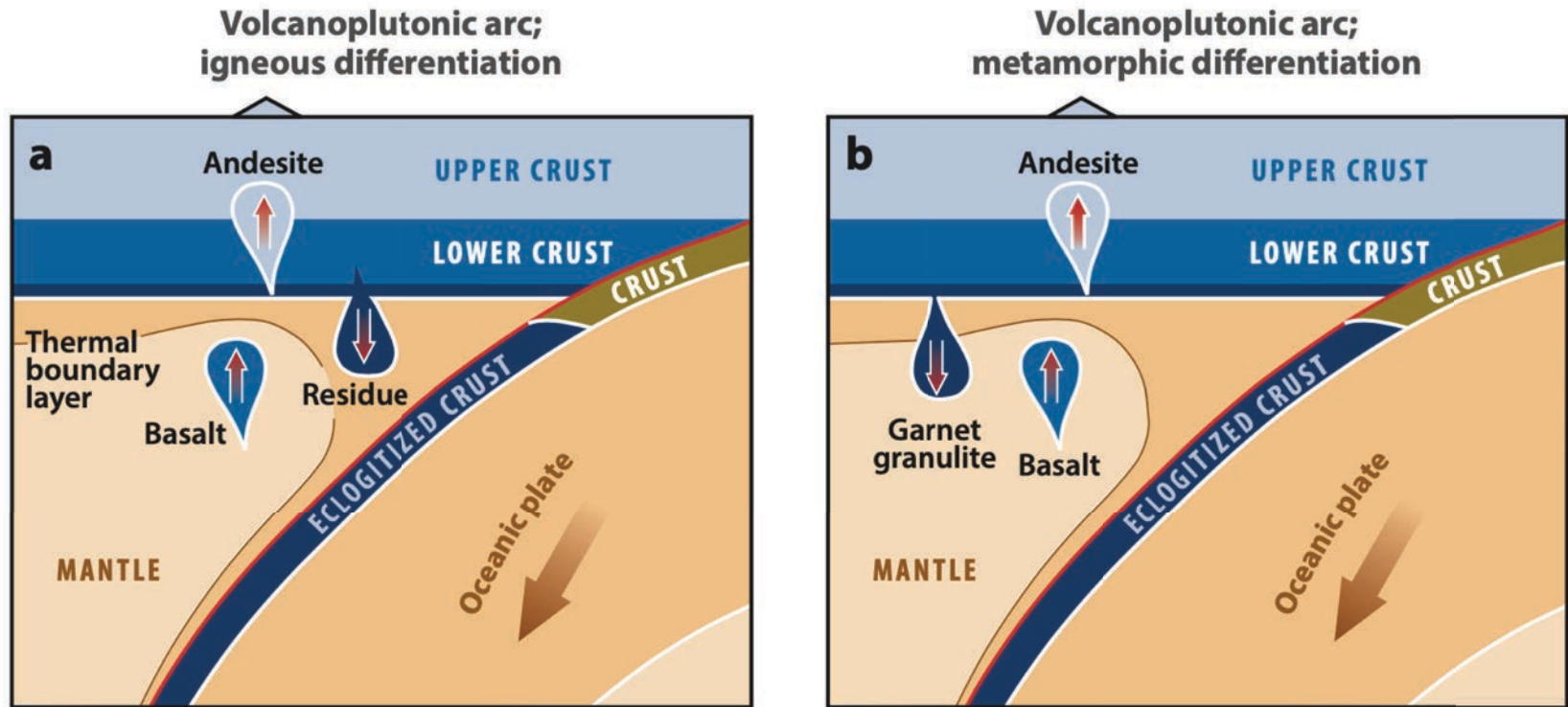
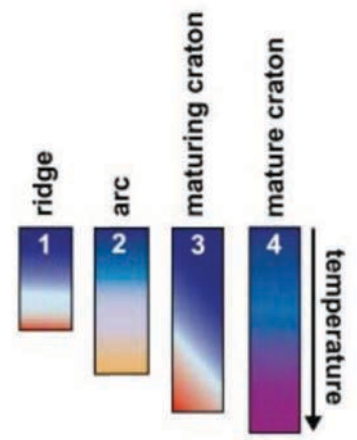
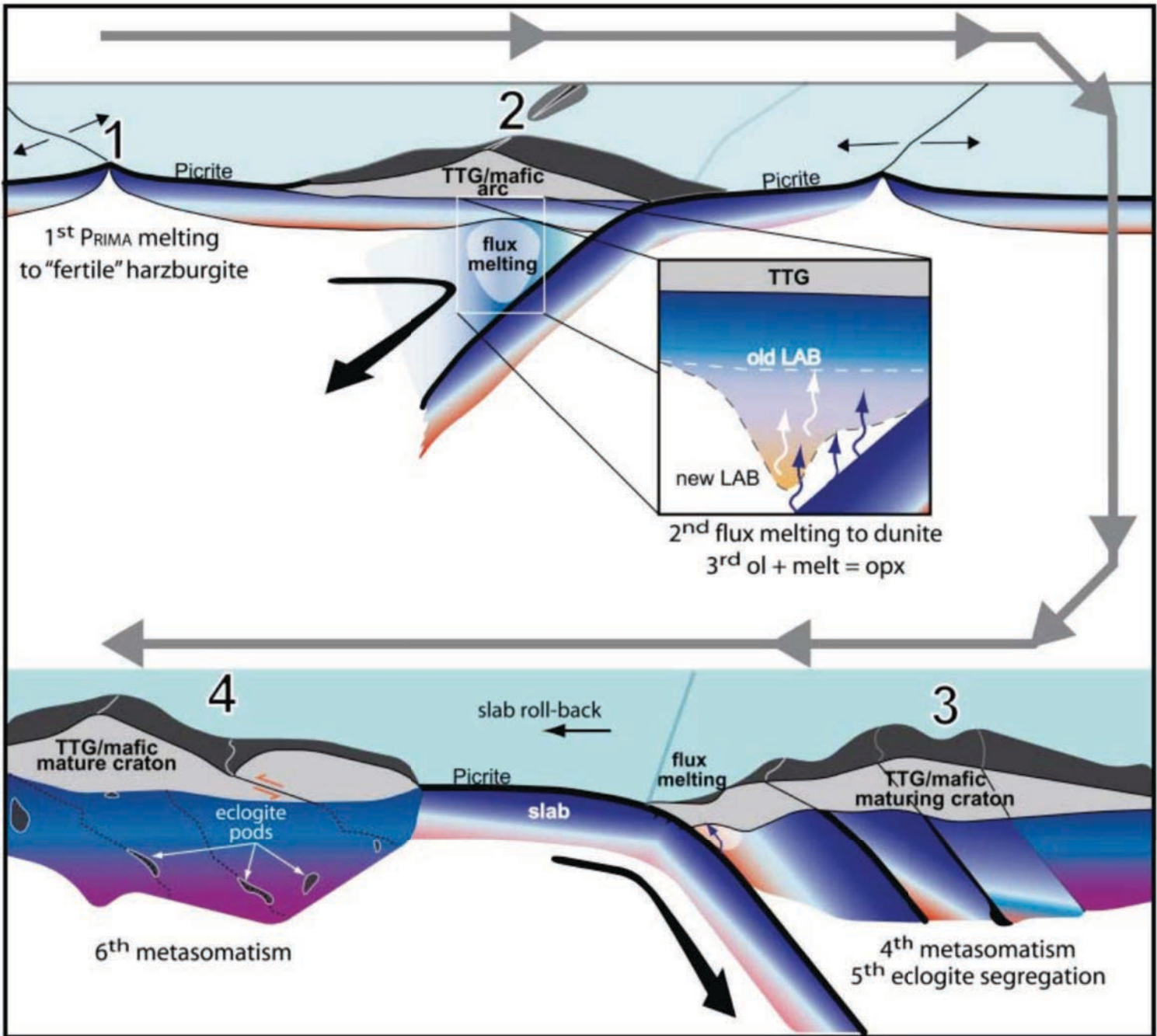


Figure 12

Long-term change in the composition of the continental crust has conventionally been viewed as the result of two major subduction factory processes. (a) Mantle-derived magma introduced into volcanoplutonic arcs differentiates into an andesitic fraction that is retained in the crust and an ultramafic cumulate that becomes part of the mantle (Arndt & Goldstein 1989). (b) Mafic rock at the base of a thick volcanoplutonic arc is converted into garnet granulite and sinks into the mantle (Herzberg et al. 1983).



LAB lithosphere-asthenosphere boundary

TTG trondjemite-tonalite granodiorite

Pearson & Wittig (2008; JGS)