

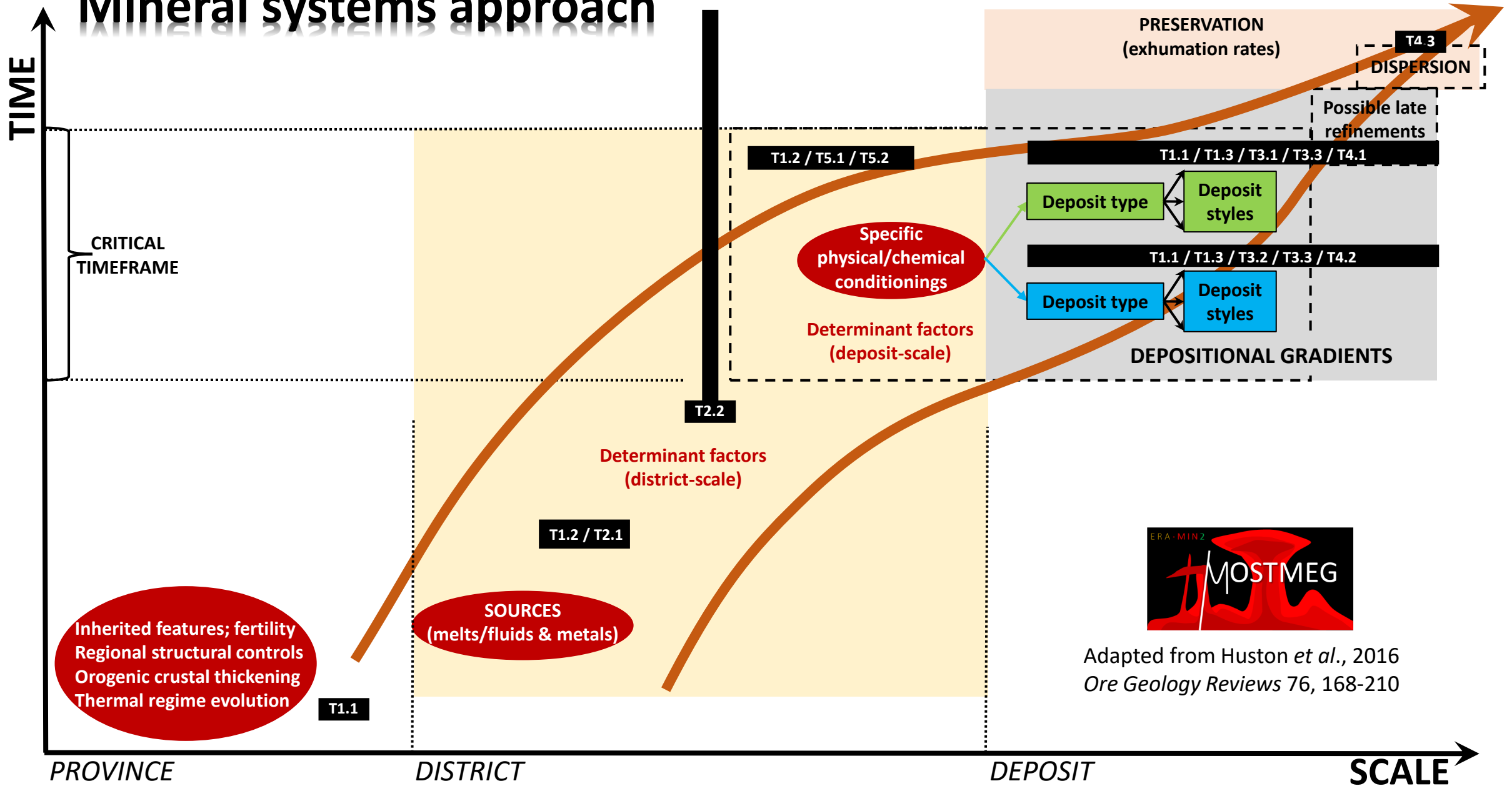


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<https://mostmeg.rd.ciencias.ulisboa.pt/>



D6.1 Targeting different granite-related mineralization types and styles

Mineral systems approach



Granite-related ore-forming systems in the G-P-A-S strip

SOURCES

ACTIVE PATHWAYS

TRAPS

MODIFICATIONS

CRITICAL FACTORS

Fertile magmas formation
(energy, protoliths nature,
fluxing components)

Extreme fractionation
of pluton-sized batches of
granite magma

Magma transport
(directing flow through the
crust and late separation of
evolved residual melts or
critical fluids)

**Cooling and rapid
crystallisation**
(chemical transport &
differentiation; metal
enrichment in residual
portions)

**Exhumation vs
preservation**

Granite-related ore-forming systems in the G-P-A-S strip

SOURCES

CRITICAL FACTORS



Crustal-melting

(variable degrees of partial melting that could involve the same protolith; mixing of melts generated in different crustal levels and P-T conditions)

Collisional features

Late events able to produce decompression melts

ACTIVE PATHWAYS

CRITICAL FACTORS



Crustal-scale shearing/faulting

(cycles of renewed rock permeability increasing)

TRAPS

CRITICAL FACTORS



Fractional crystallization, filter pressing or rapid diffusion of critical phases

High contents of fluxing agents (P, F, B)

Highly differentiated (and metal-fertile) batches

Supercritical fluids split-up.

Mixing with external fluid components

MODIFICATIONS

CRITICAL FACTORS



Supergene assemblages

Secondary (alluvial) accumulations

CONSTITUENT PROCESSES

Granite-related ore-forming systems in the G-P-A-S strip

SOURCES

CRITICAL FACTORS

CONSTITUENT
PROCESSES



Highly differentiated peraluminous γ s, ferroan leucogranites enriched in a wide range of incompatible elements

Compositional overprints displayed by contact metamorphism aureoles

ACTIVE PATHWAYS

CRITICAL FACTORS

CONSTITUENT
PROCESSES



Network of shear zones (connection domains of conjugate systems; evidence of multiple reactivation)

Networks of folding-related structural discontinuities

TRAPS

CRITICAL FACTORS

CONSTITUENT
PROCESSES



Distal and proximal swarms of aplite-pegmatite bodies

Compositionally and texturally zoned pegmatites.

Quartz-lode systems (density, internal connection, evidence of multiple infilling stages)

MODIFICATIONS

CRITICAL FACTORS

CONSTITUENT
PROCESSES



Topographic highs and ridges

Weathering vulnerability of critical mineral phases

Physical dispersion of heavy minerals

TARGETING

Granite-related ore-forming systems in the G-P-A-S strip

SOURCES



ACTIVE PATHWAYS



TRAPS



MODIFICATIONS



MAPPEABLE PROXIES

For granites:

- Mineral attributes
- Textural features
- Geochemical attributes
- Age

Fertility footprints:

- Mineral abundance and composition
- Geochemical ratios and indexes

Structural patterns:

- Density
- Connection
- Mineral infillings
- Age

Alteration pathways in country rocks:

- Mineral guides
- Geochemical guides
- Age

Mineral/Geochemical attributes

Alteration haloes:

- Mineral guides
- Geochemical guides

Heavy minerals in alluvial sediments:

- Classification
- Composition

Soil or stream sediment geochemistry