

# Two contrasting modes of continental break-up associated with the formation of the Paleo- and Neo-Tethys in Iran: Implications for petrological and geodynamic evolution at a regional scale

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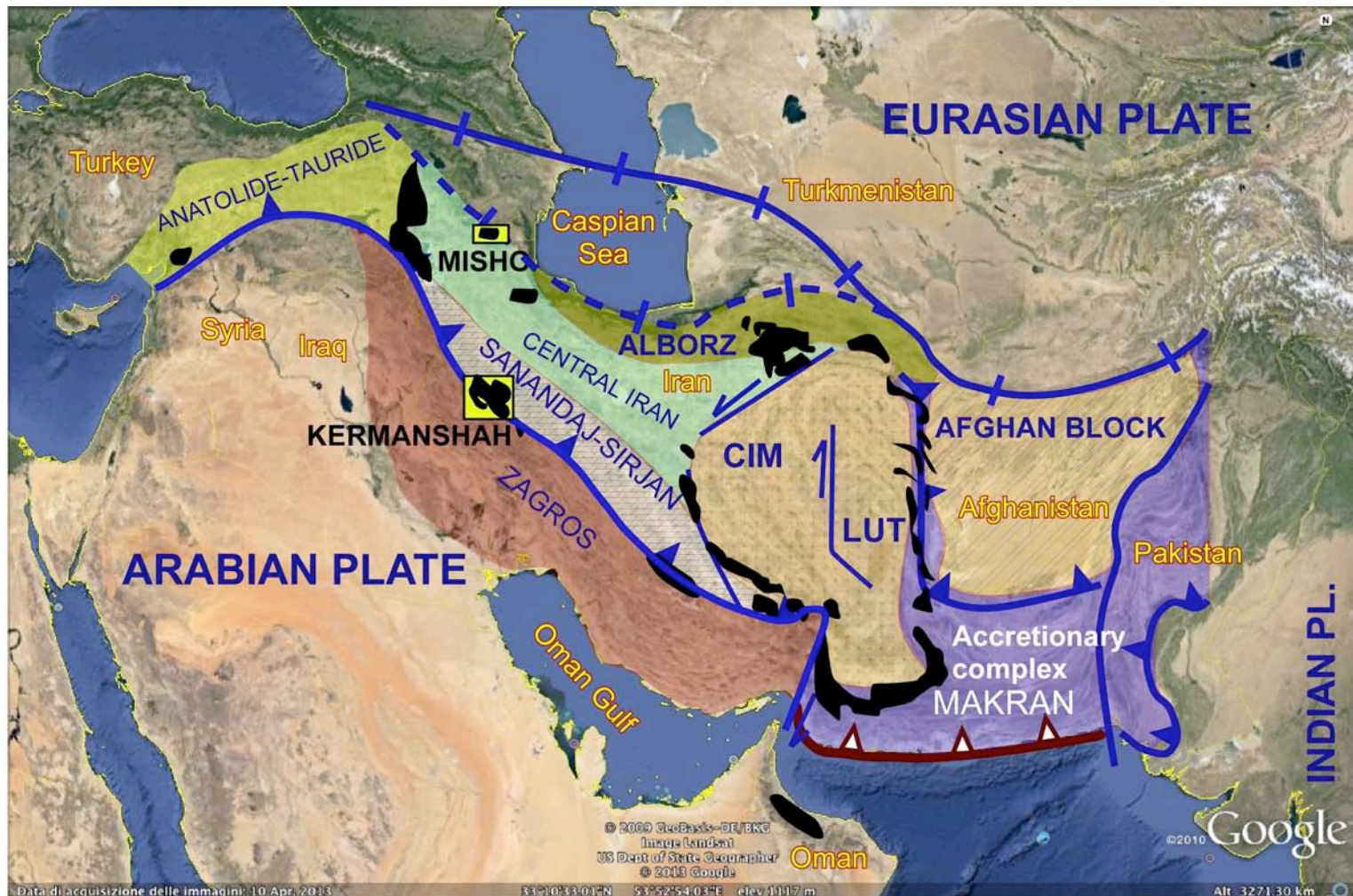
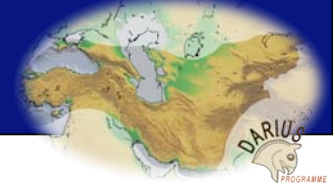
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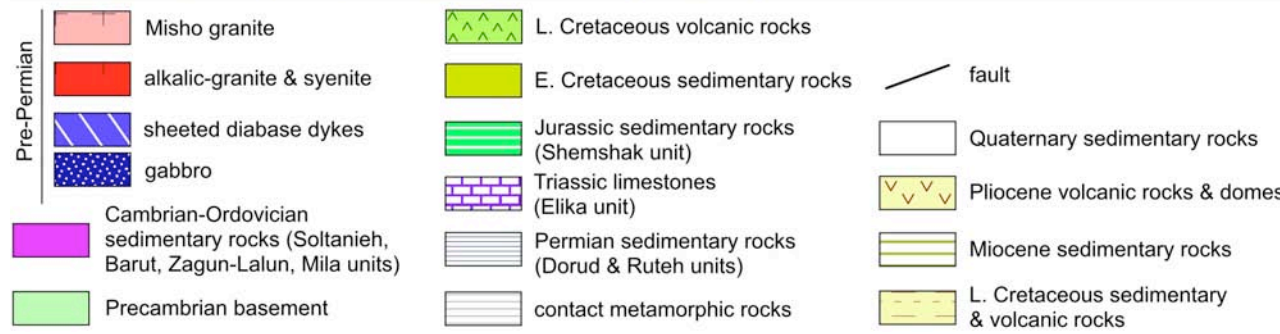
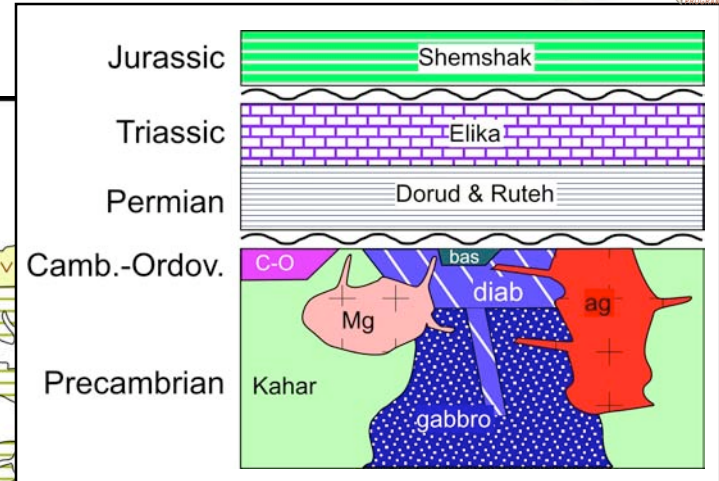
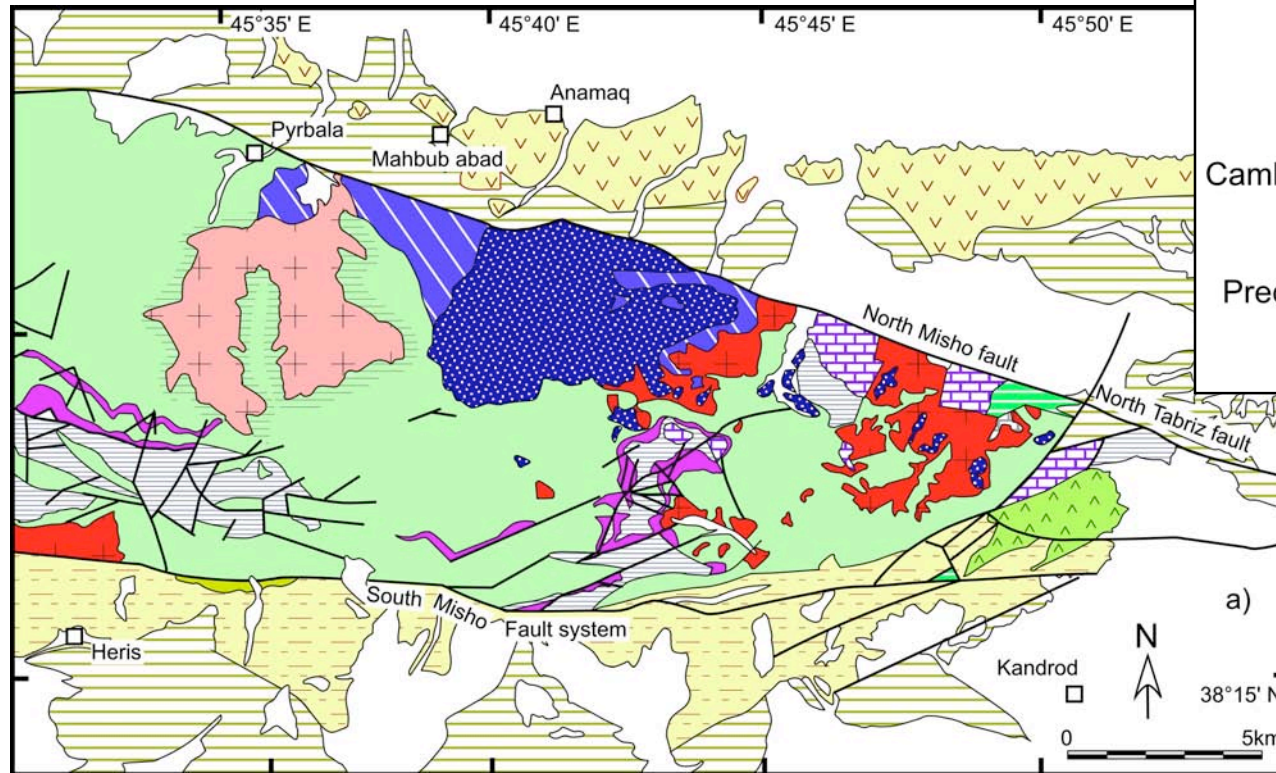
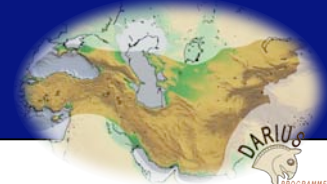
# Geology of Iran and surrounding areas and location of the study areas



—+— Paleotethys Suture    —▲— Neotethys Suture    —▲— Active Trench

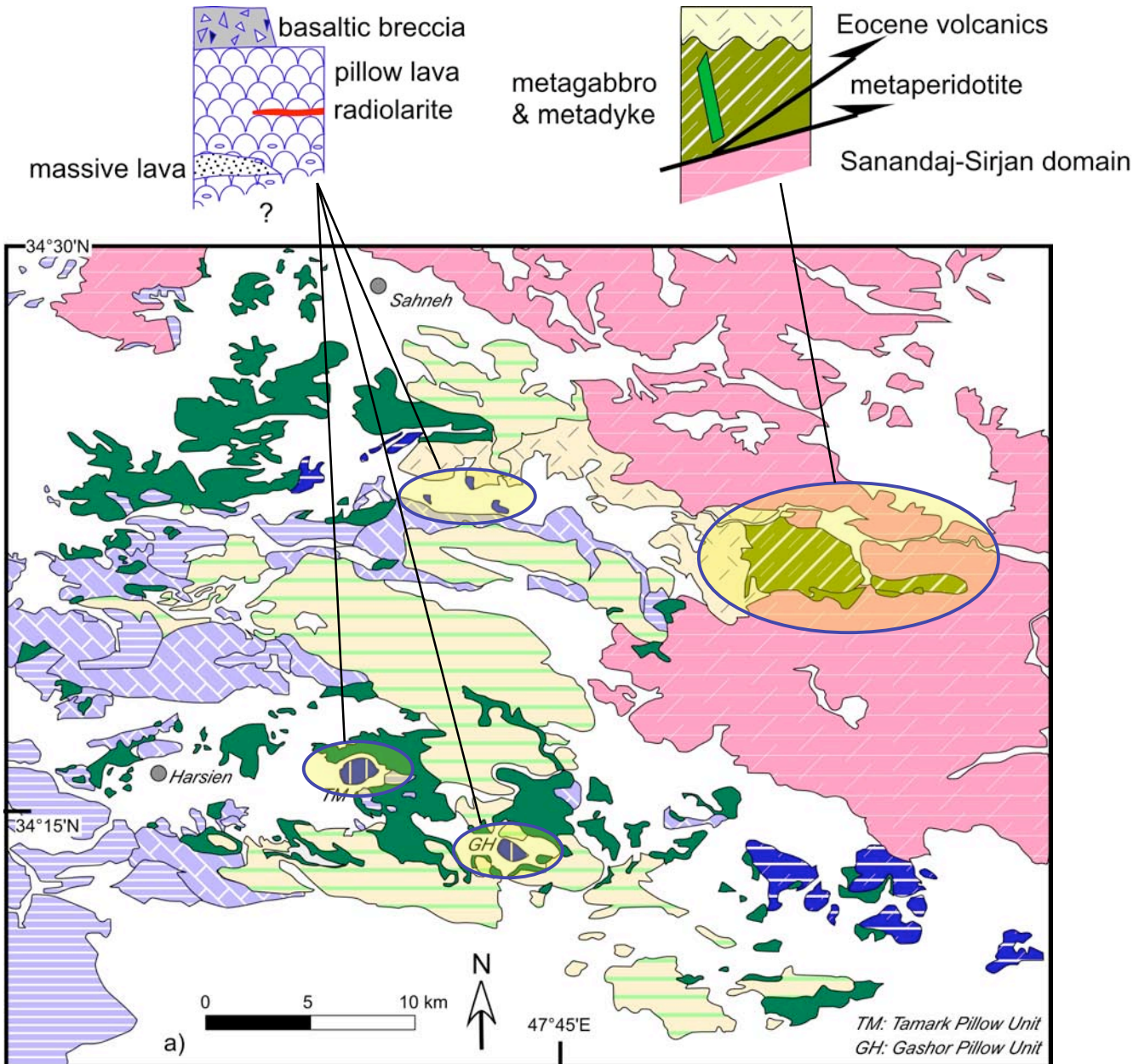
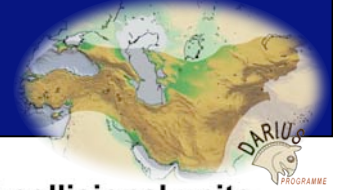


# Geology of the Misho mafic complex



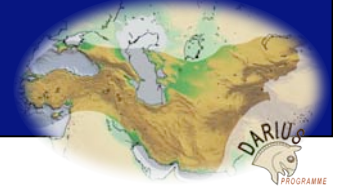


# The Geology of the Kermanshah area





# Geology of Iran and surrounding areas





## Aim of this Talk

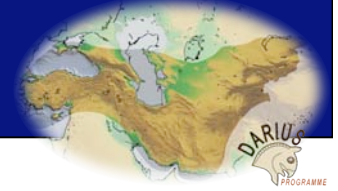


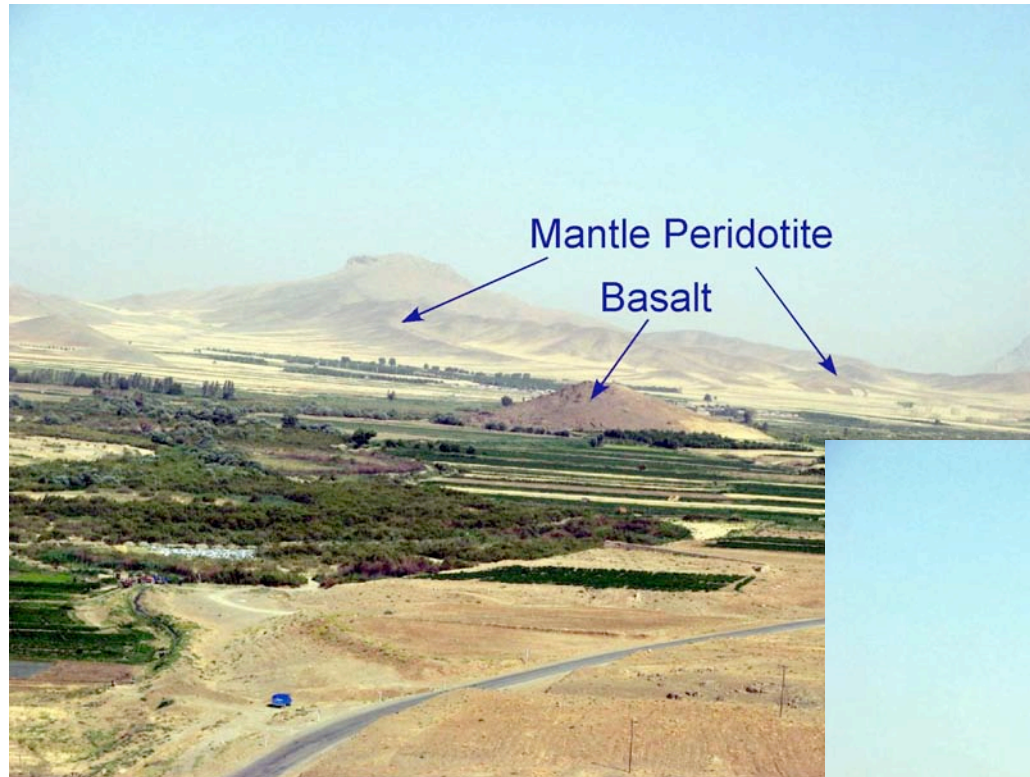
The Kermanshah ophiolites are assumed to represent the conjugate margin/oceanic sector of the Oman ophiolites and record all the magmatic & mantle rocks associated with the life of the ocean, from continental rift to oceanic consumption and continental collision.

The aim of this talk is to constraining the petrogenetic processes behind the onset of sea-floor spreading in the peri-Arabian/North Gondwana sector of the Neo-Tethys.

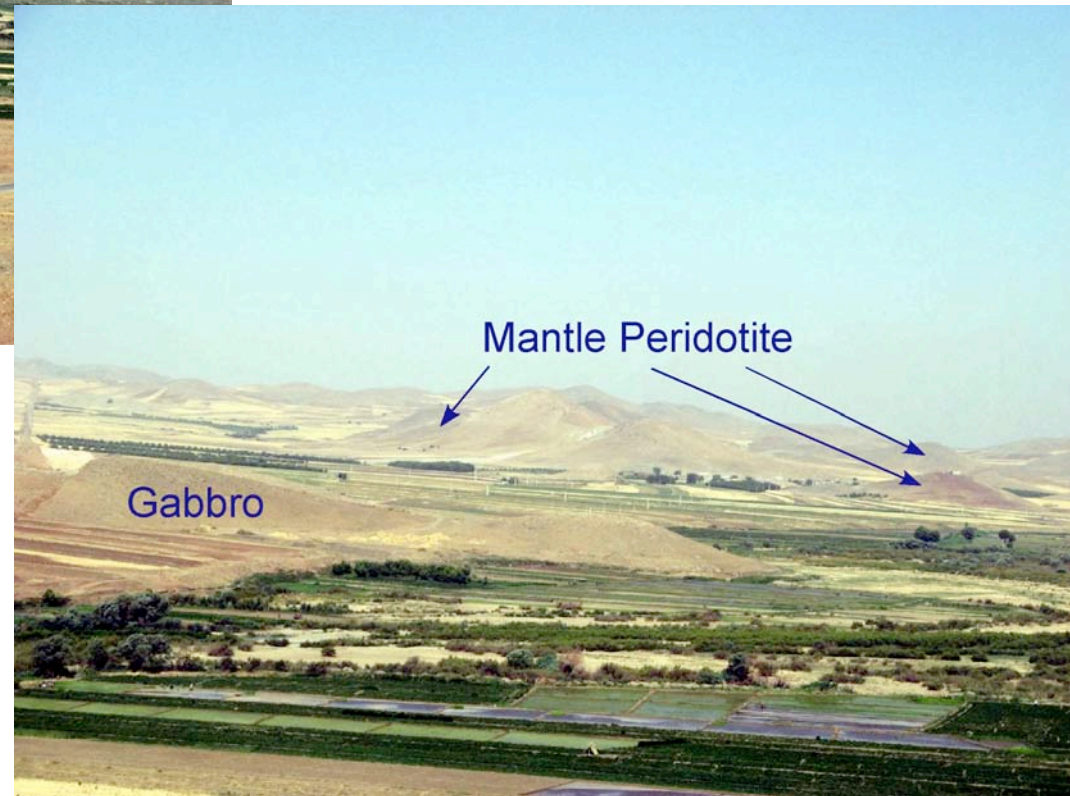


# Geology of Iran and surrounding areas





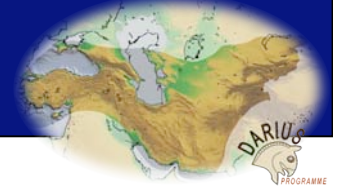
Ophiolites are represented by isolated blocks "emerging" from the Quaternary sedimentary cover







# Geology of Iran and surrounding areas





metagabbro



metagabbro



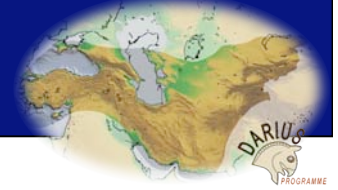
metagabbro



metalherzolite



# Geology of Iran and surrounding areas

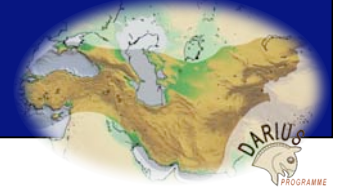




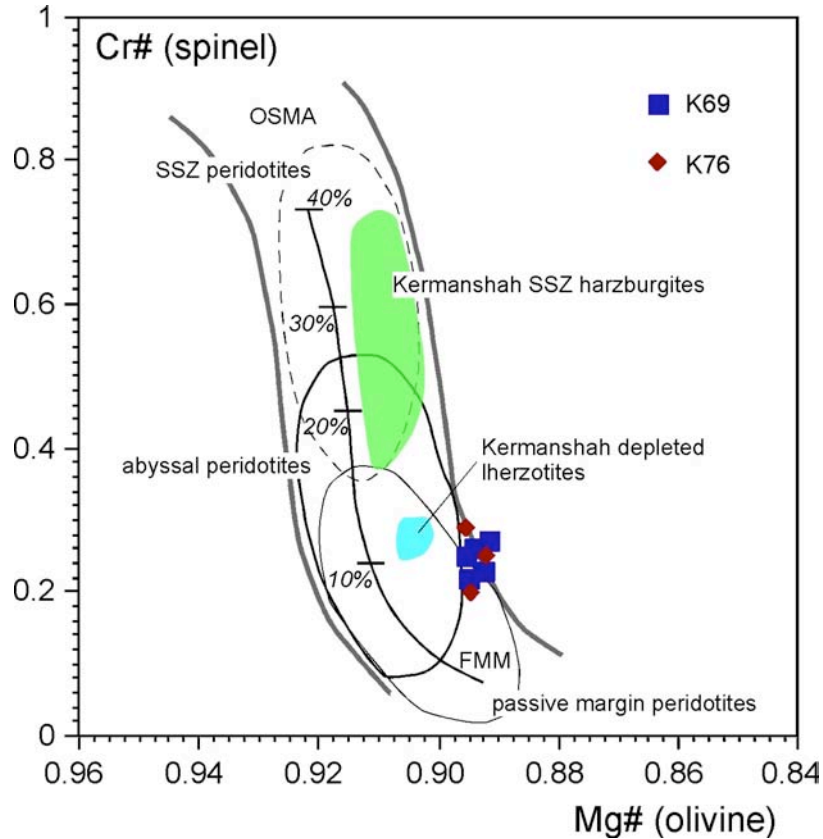
Pillow basalts are affected by ocean-floor metamorphism



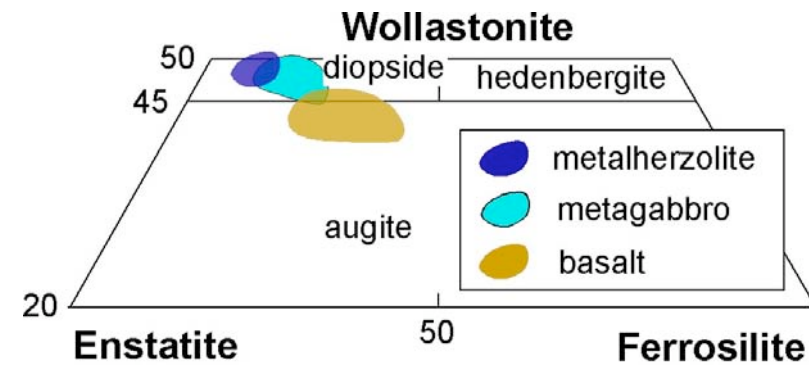
# Geology of Iran and surrounding areas



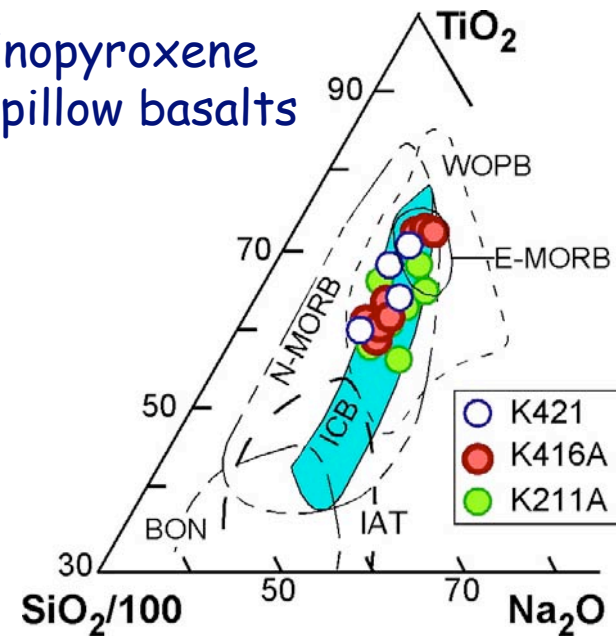
## Spinel in metalherzolites



## Clinopyroxene

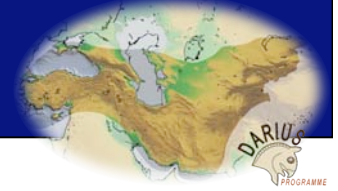


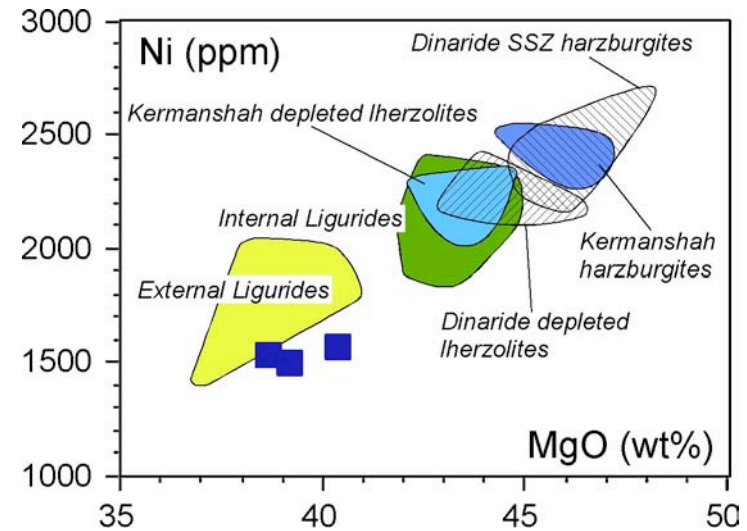
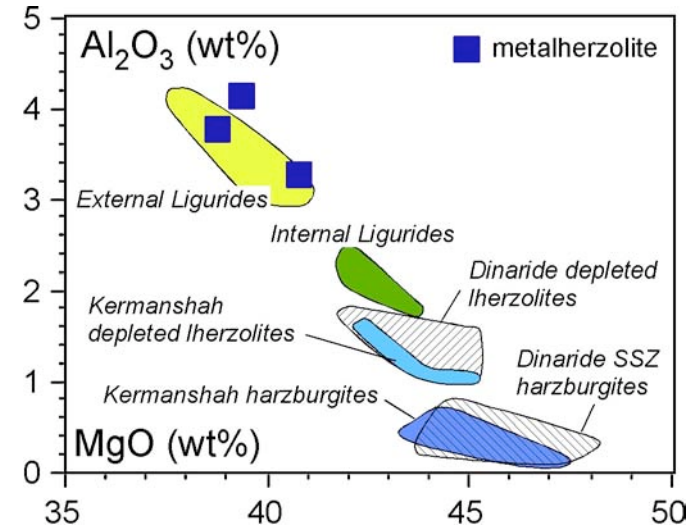
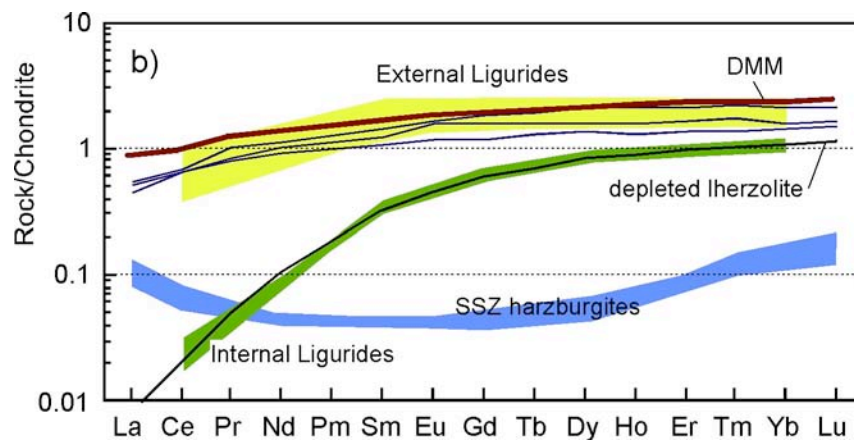
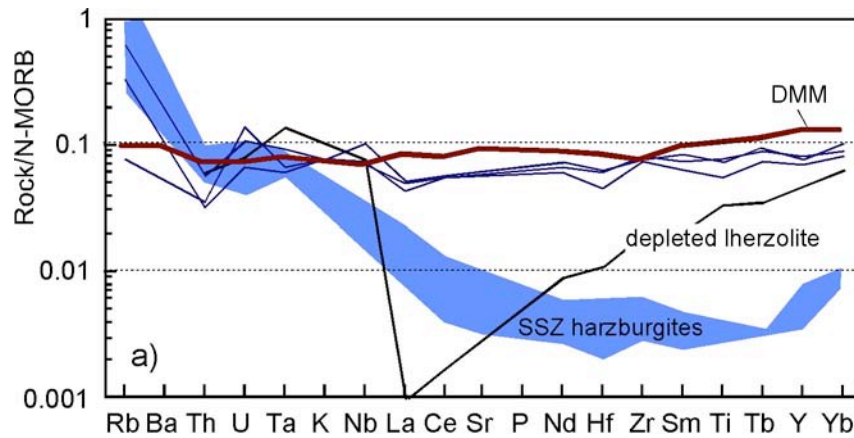
## Clinopyroxene in pillow basalts





# Geology of Iran and surrounding areas

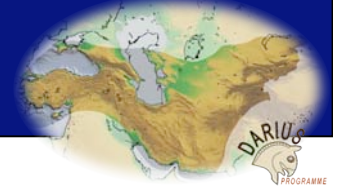




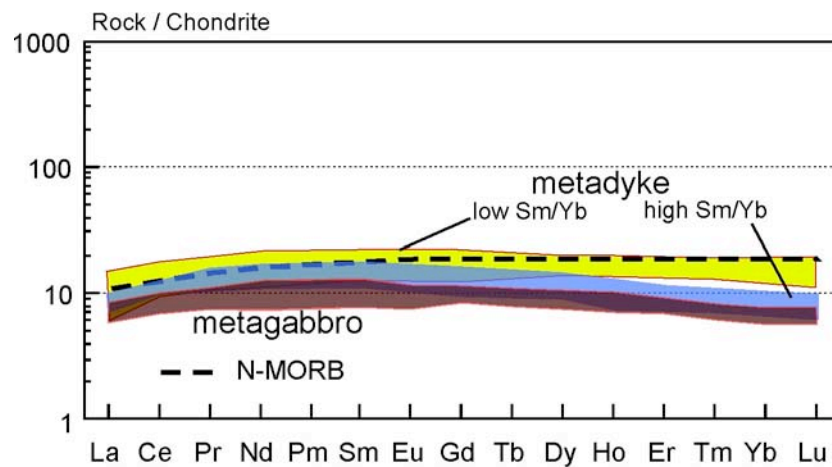
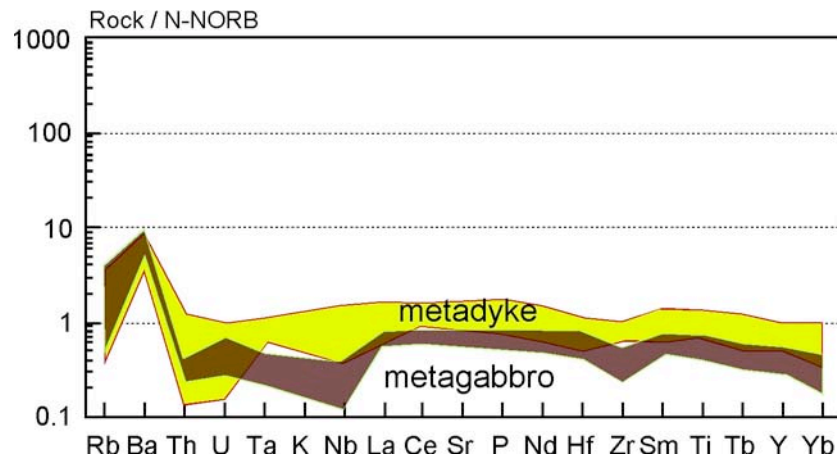




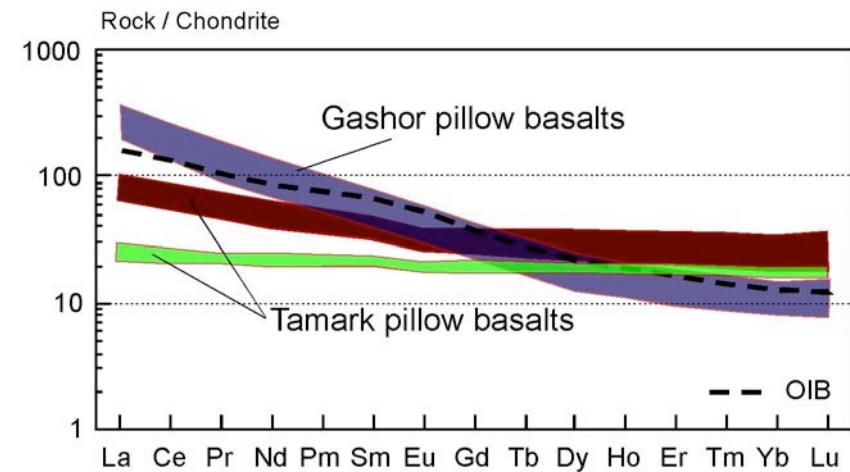
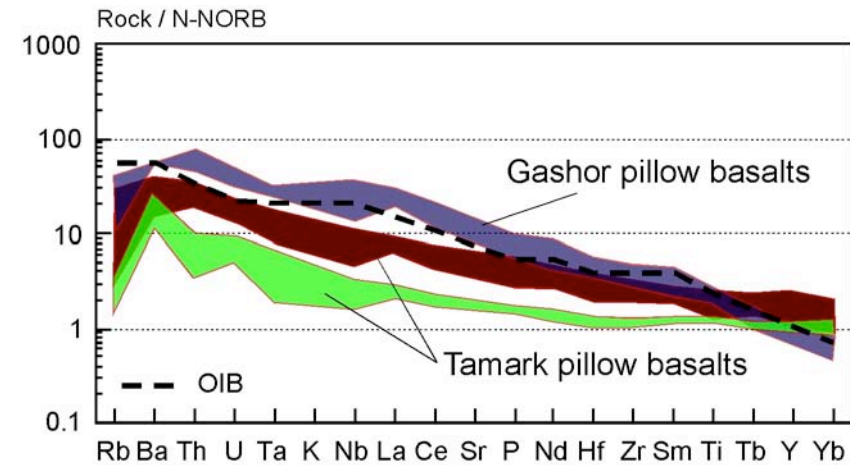
# Geology of Iran and surrounding areas



## Metagabbro Unit



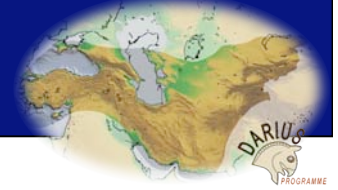
## Volcanic Units

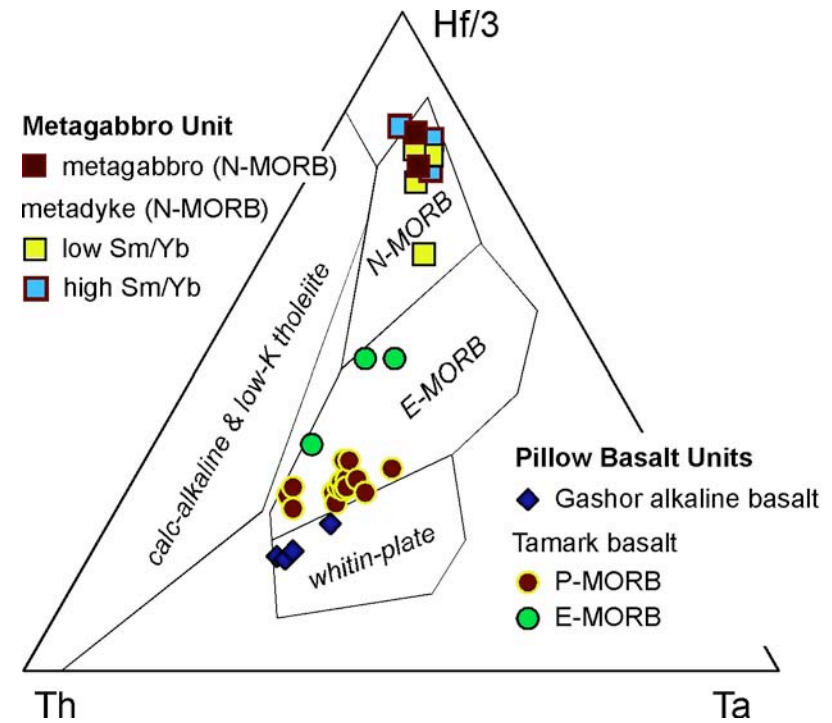
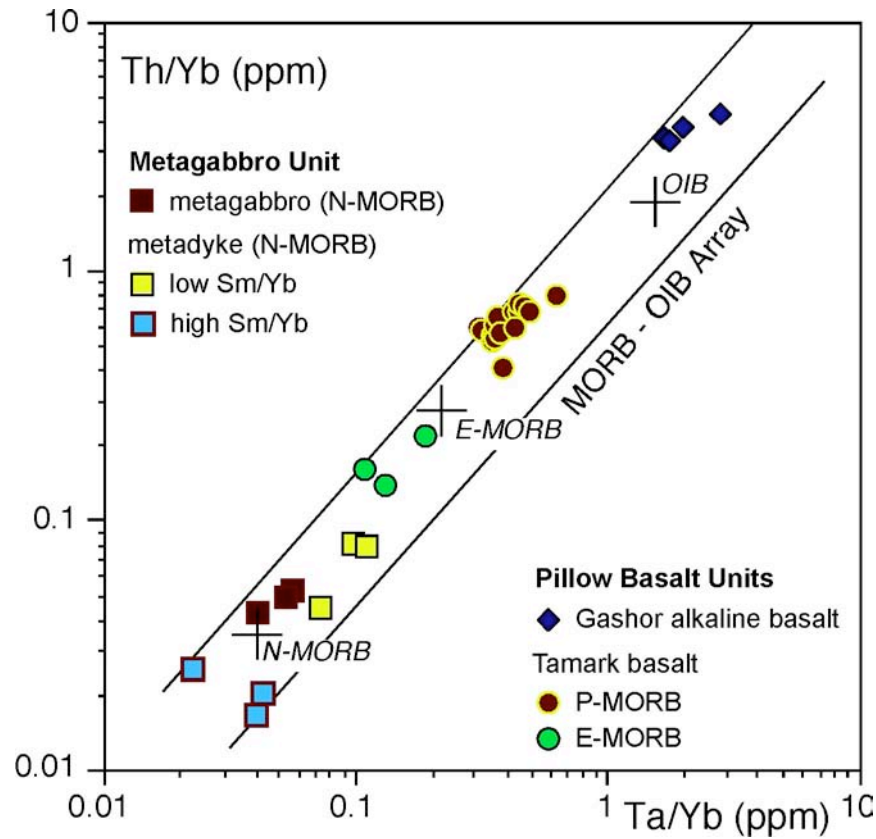


N-MORB, OIB, Chondrite compositions from Sun & McDonough (1989)



# Geology of Iran and surrounding areas

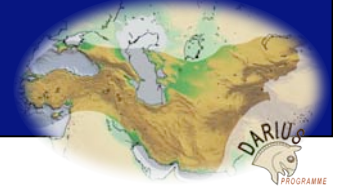


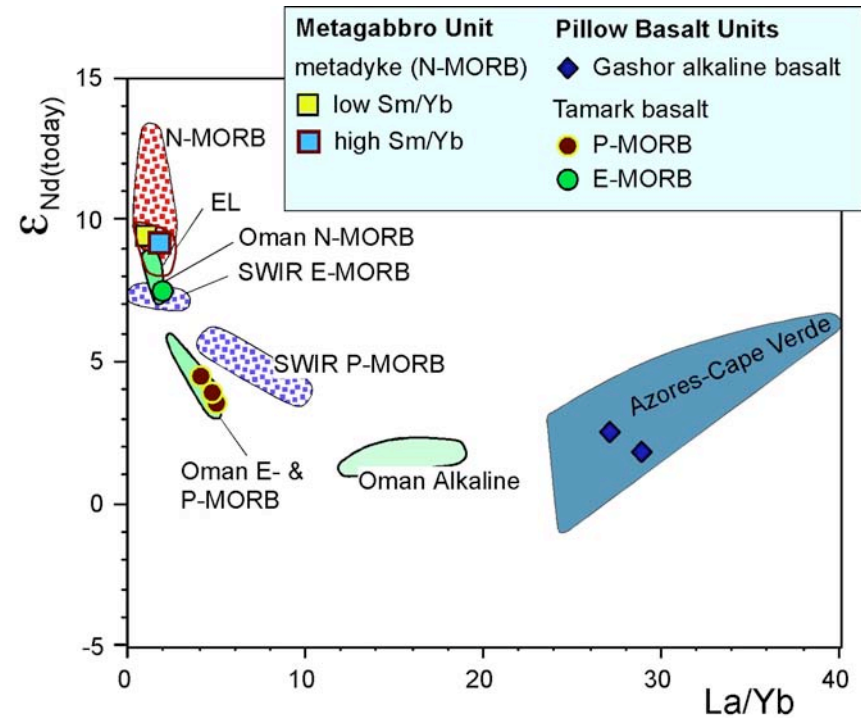
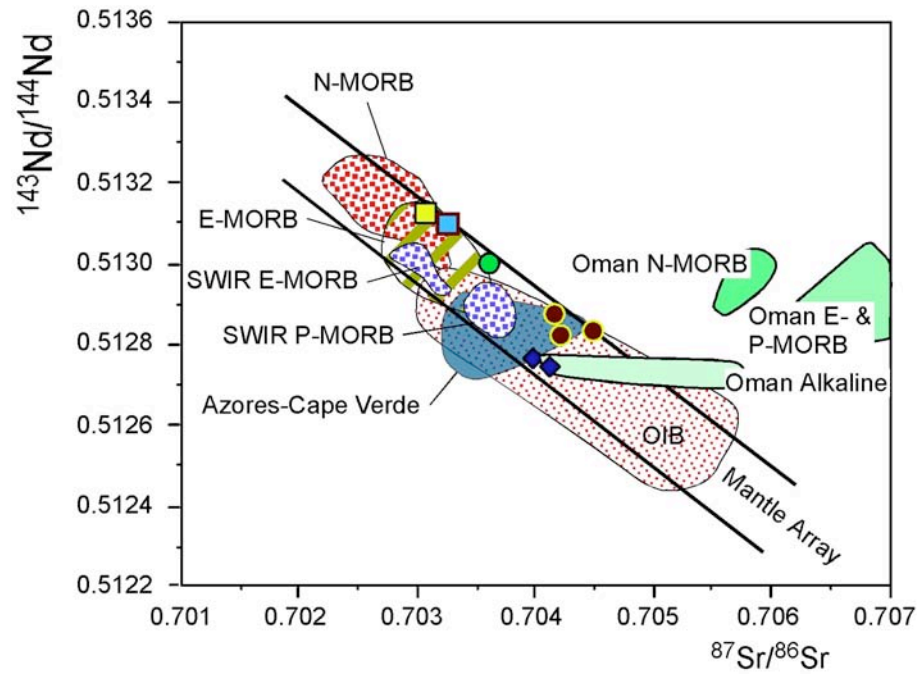


N-MORB, E-MORB, OIB compositions from Sun & McDonough (1989)



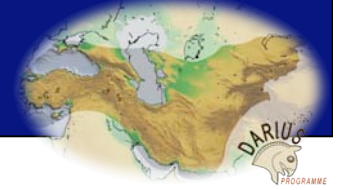
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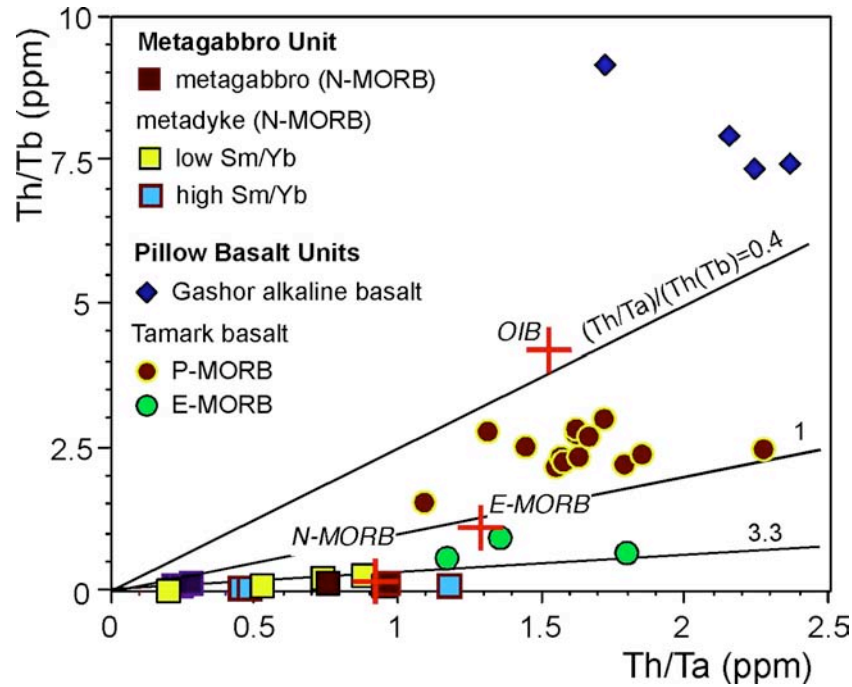






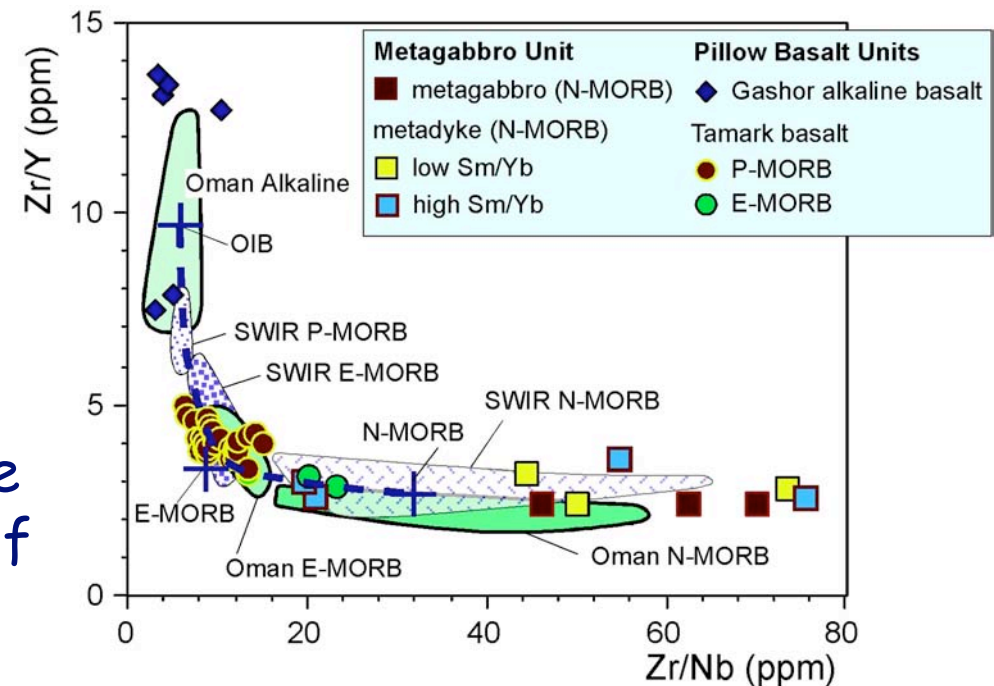
# Geology of Iran and surrounding areas





Distinct ratios vs. ratios of hygromagmatophile elements suggest different mantle source compositions

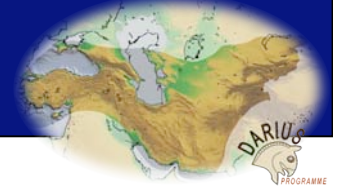
Ratios vs. ratios of incompatible elements depict the influence of a plume-type component

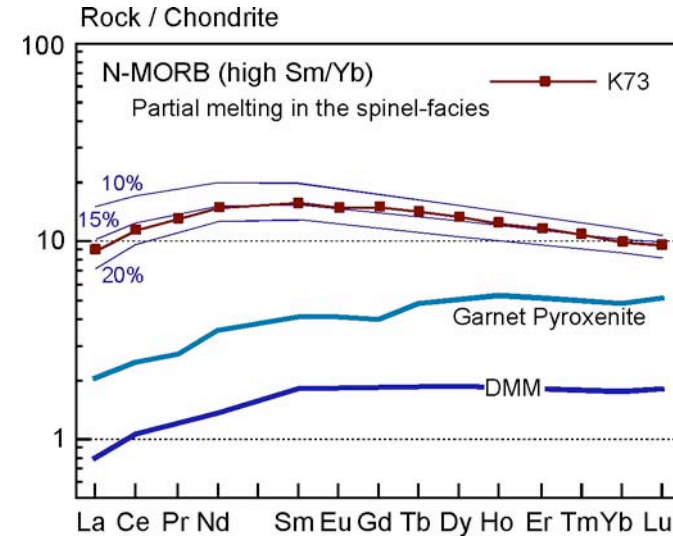
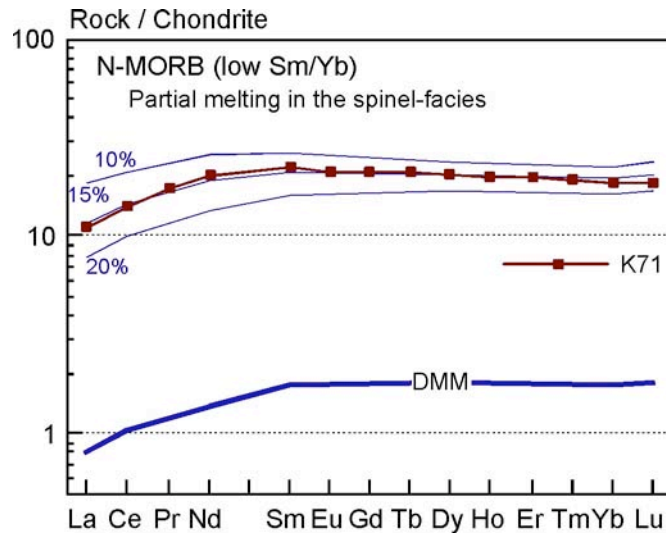






# Geology of Iran and surrounding areas





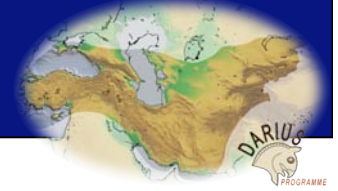
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Kd: McKenzie & O'Nions (1991) J. Petrol.

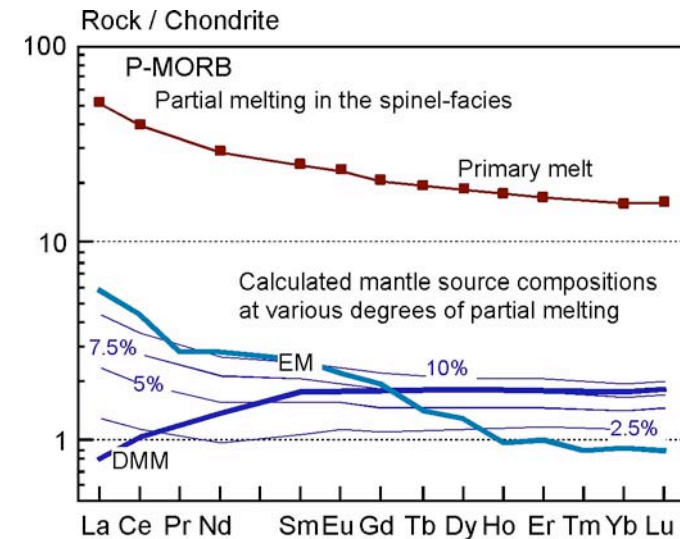
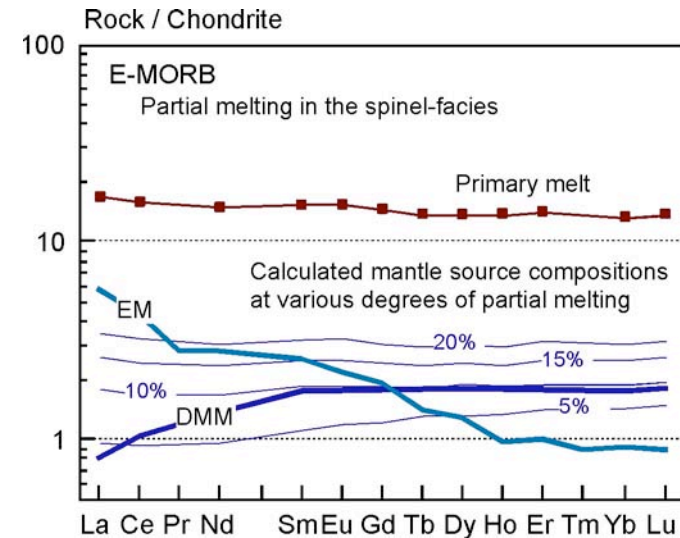
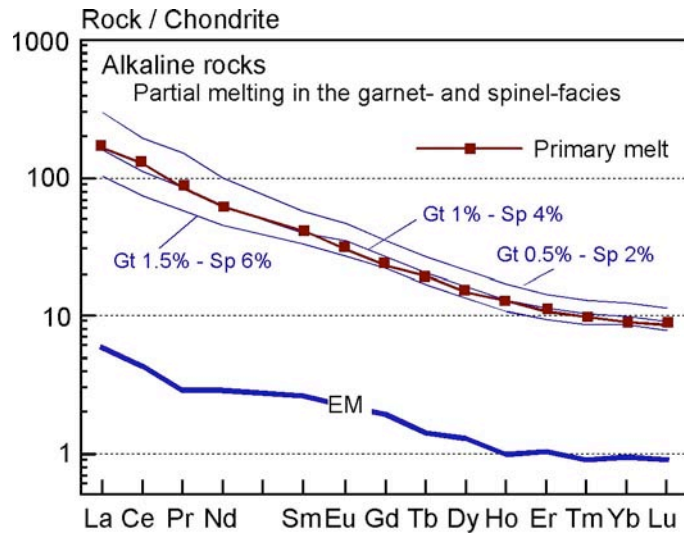
Source: DMM - Workman & Hart (2005) EPSL  
Gt-Px.te - Liu et al. (2005) EPSL  
Melting param.: Thirlwall et al. (1994) J. Petrol.  
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Kd: McKenzie & O'Nions (1991) J. Petrol.

N-MORB, E-MORB, OIB compositions from Sun & McDonough (1989)



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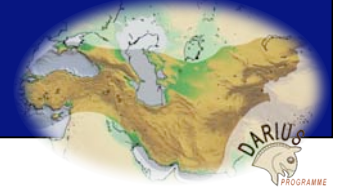


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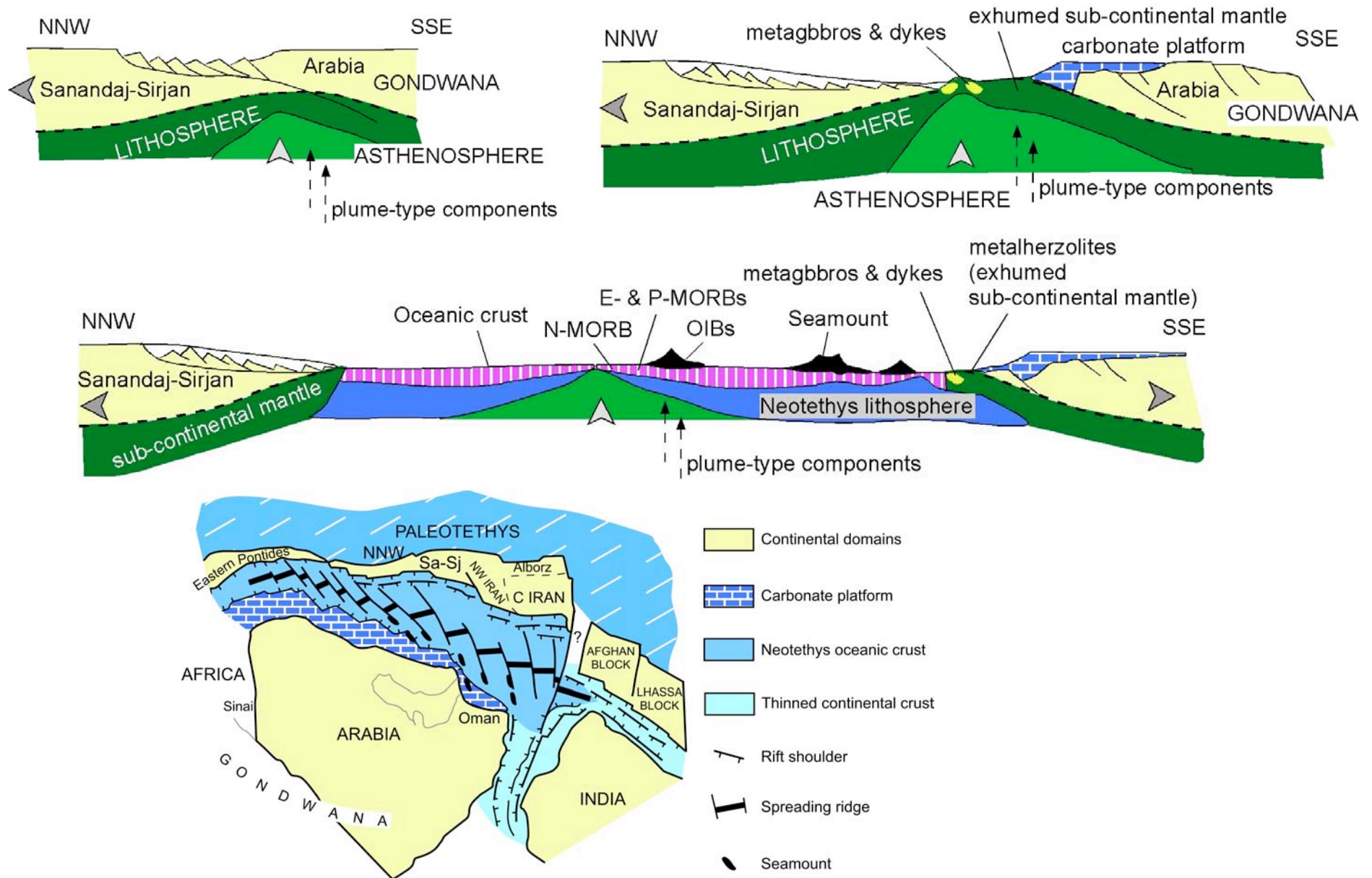
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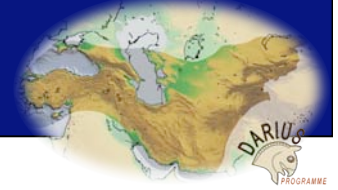


ROCK-TYPE	Suggested implications
METALHERZOLITES	Exumed sub-continental mantle
METAGABBRO & METADYKES	Magmatism at the continent-ocean transition zone
VOLCANIC UNITS	Plume-type and plume-influenced magmatism at the continent-ocean transition zone





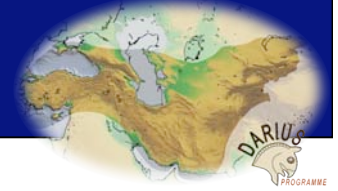
# Geology of Iran and surrounding areas





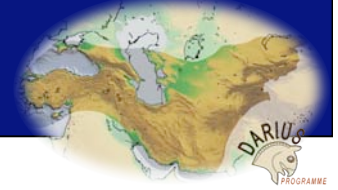


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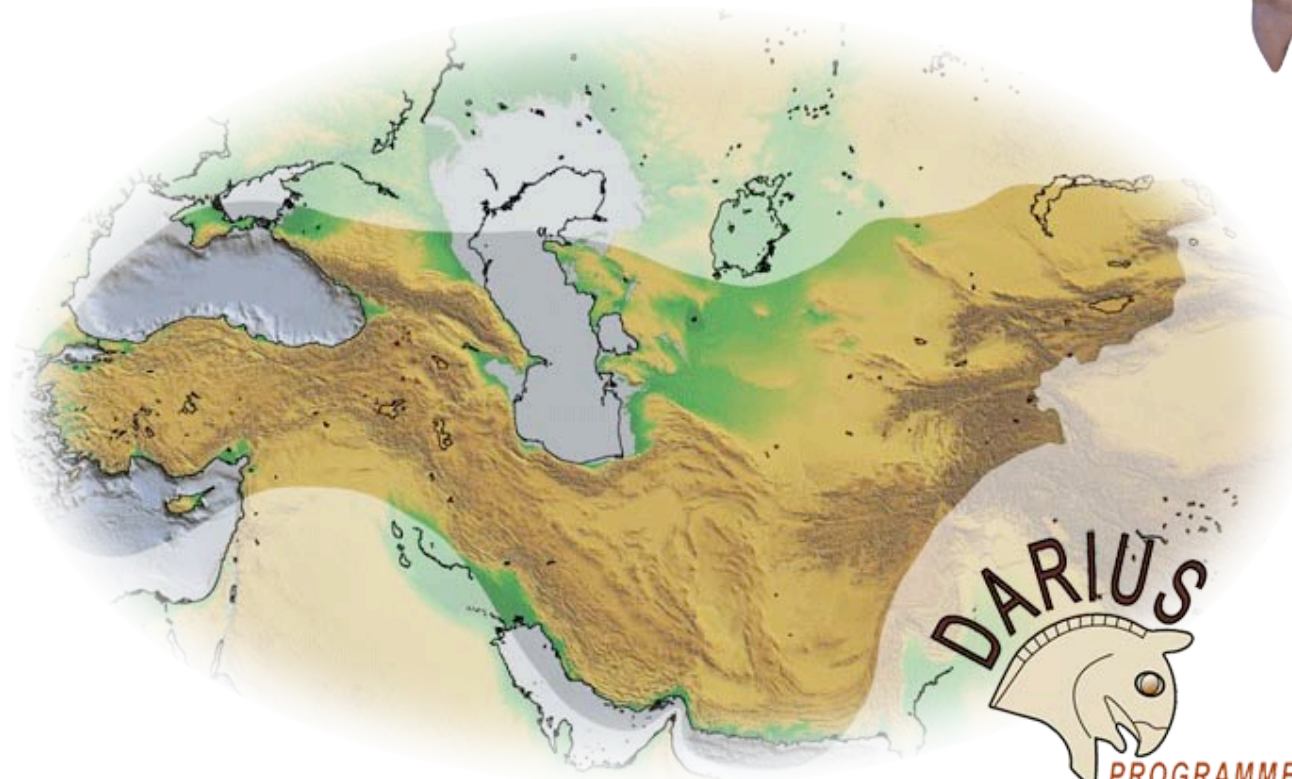


# Geology of Iran and surrounding areas





# Geology of Iran and surrounding areas



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PROGRAMME