Introducing Iranian Travertine Deposits in Terms of Geographical Location and Geological Conditions Case Studies on *Azarshahr* and *Mahallat* Areas

Department of Geology, Mahallat Branch,
Islamic Azad University, Mahallat, Iran,

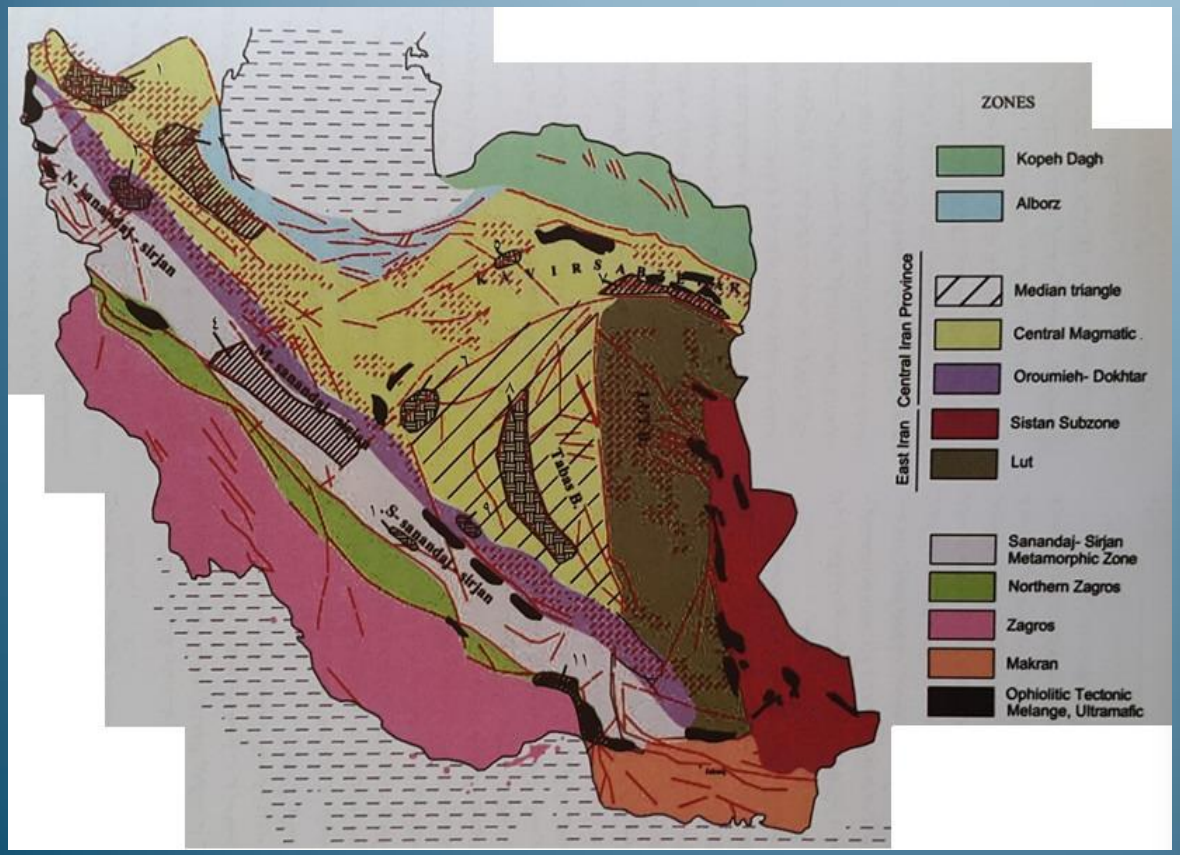
A major part of **Iranian Travertine reserves** is located along Iranian volcanic belt called **Urumieh – Dokhtar**. This belt extends in parallel with the Zagros mountain range in the form of a lengthy strip of 1700 kilometer long and an average width of 100 kilometer, having a trend of northwest to southeast, from Sahand and Sabalan volcanoes in Azerbaijan to Bazman and Taftan volcanoes in Baluchistan.

Due to existence of numerous volcanoes, hot springs, and young tectonic activities (Pliocene up to recent), this belt has been called **"Iranian overall Onyx and Travertine hot spring strip"**. In this belt, after Laramide orogeny phase, an intensive magma activity in the form of extrusive and intrusive happened which existed after Eocene in certain locations and it was gradually reduced. The large terraces of Travertine in different areas belong to the last stage of volcanic activity in this area. **This presentation tries to introduce two significant travertine areas in Iran with their famous quarries and their productions, one of which is located in the northwest (Azarshahr), and the other in the central (Mahallat) part of this volcanic belt which are universally known.**

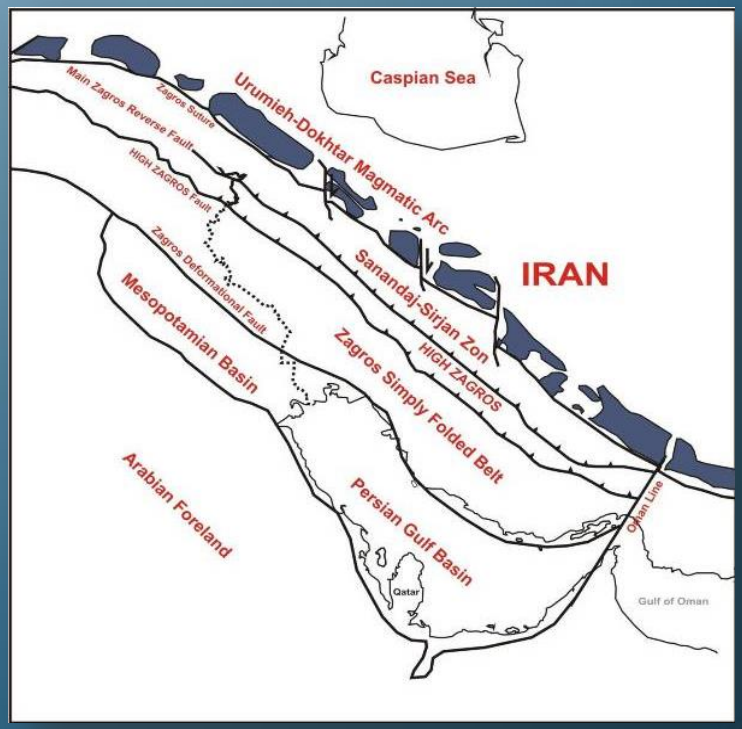
Azarshahr mineral zone is located in 40 kilometer to the southwest of Tabriz, within the western hillsides of the Sahand inactive volcano, and in the northwest of Urumieh-Dokhtar belt. **This zone is nationally and internationally well-known for the existence of unique Travertine colors in red, walnut, gray, and lemon.** At present, 48 Travertine quarries are operative within the East Azerbaijan province, among which the most famous ones are the red Travertine (in Sardarabad), walnut Travertine (in Kalvanaq and Nadinloo), and lemon and gray colors (in Dastjerd).

Mahallat city is located on the eastern hillside of the Zagros Mountains approx. 70 kilometers to the south-east of Arak city in the central (Markazi) province. Mahallat region is located in the center of Urumieh-Dokhtar volcanic belt. Embracing 83 Travertine mines, the central (Markazi) province presently produces 60 percent of Iran's total Travertine production. The most important active Travertine mines in this province are located in Mahallat region, among which the most well-known are; Atashkoo, Abbasabad, Hajiabad, and Darreh Bokhari. In this region, **unlike Azarshahr, a major part of Travertines are of cream, white, and beige colors.**

Iranian Structural Provinces

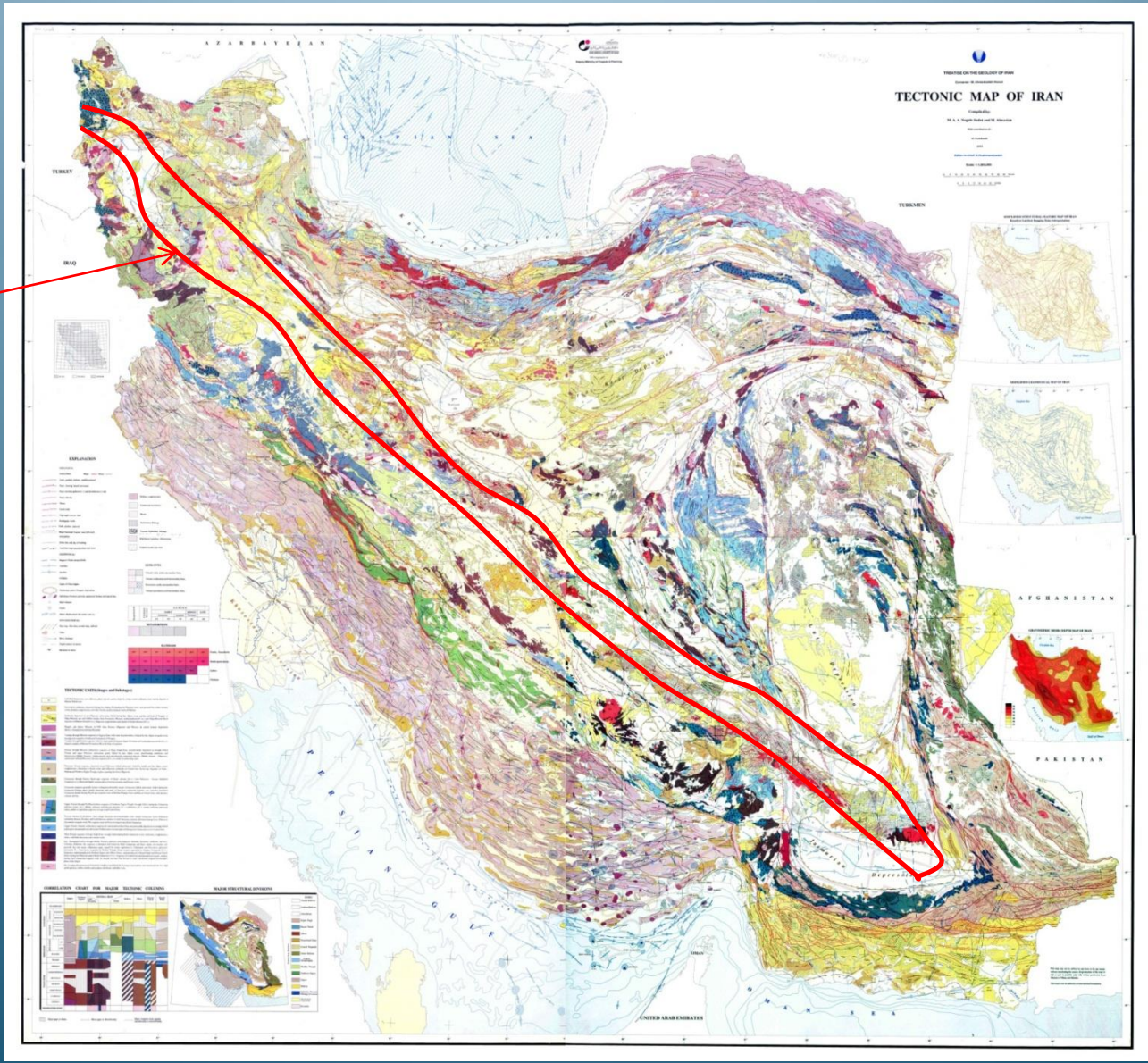


Location of Oroumieh –Dokhtar Belt in Iran

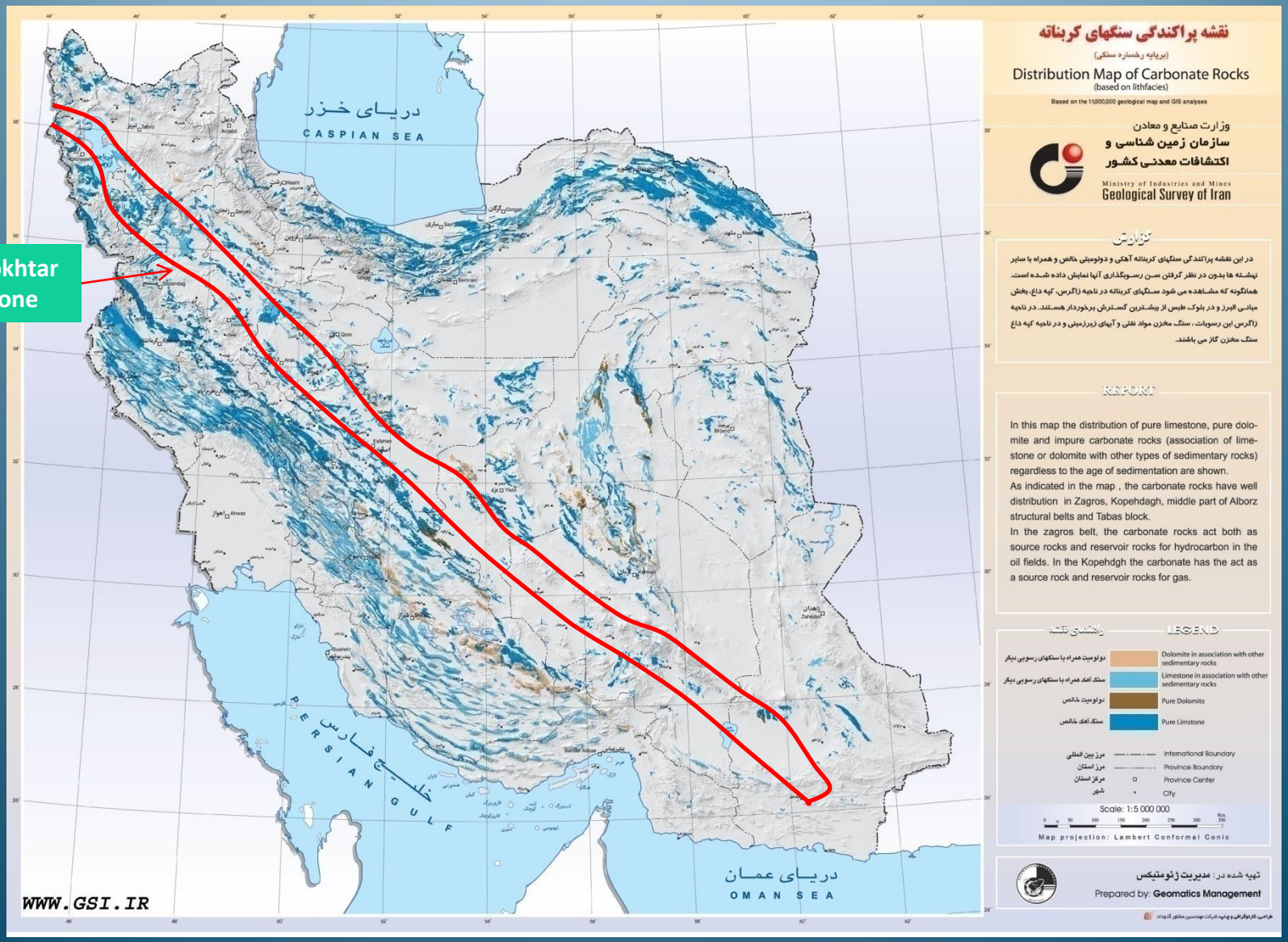


Geological Map of Iran

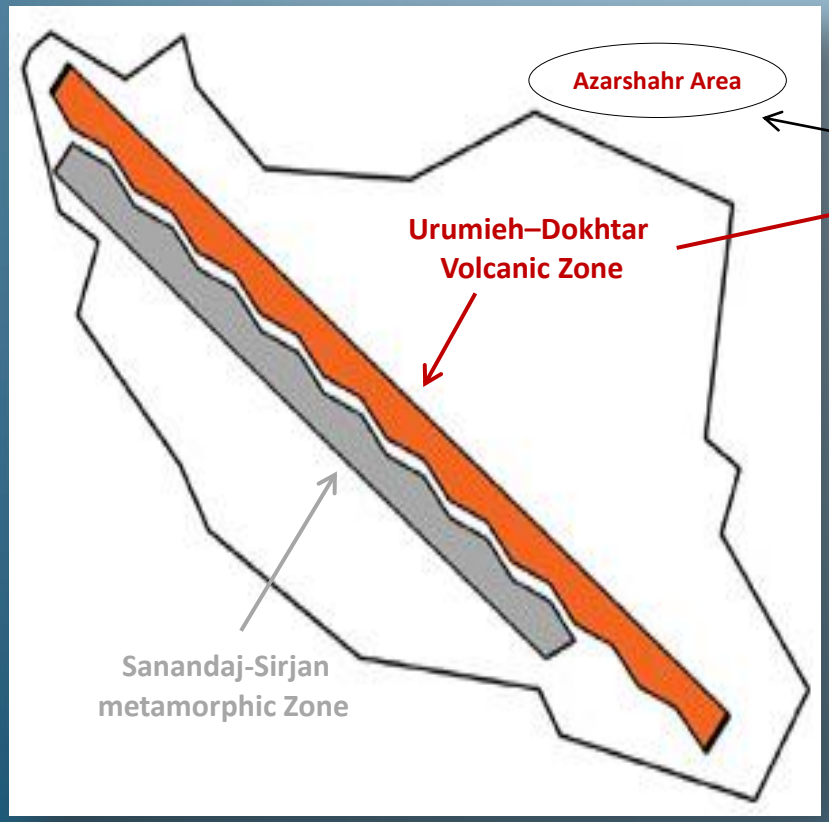
Urumieh–Dokhtar Volcanic Zone

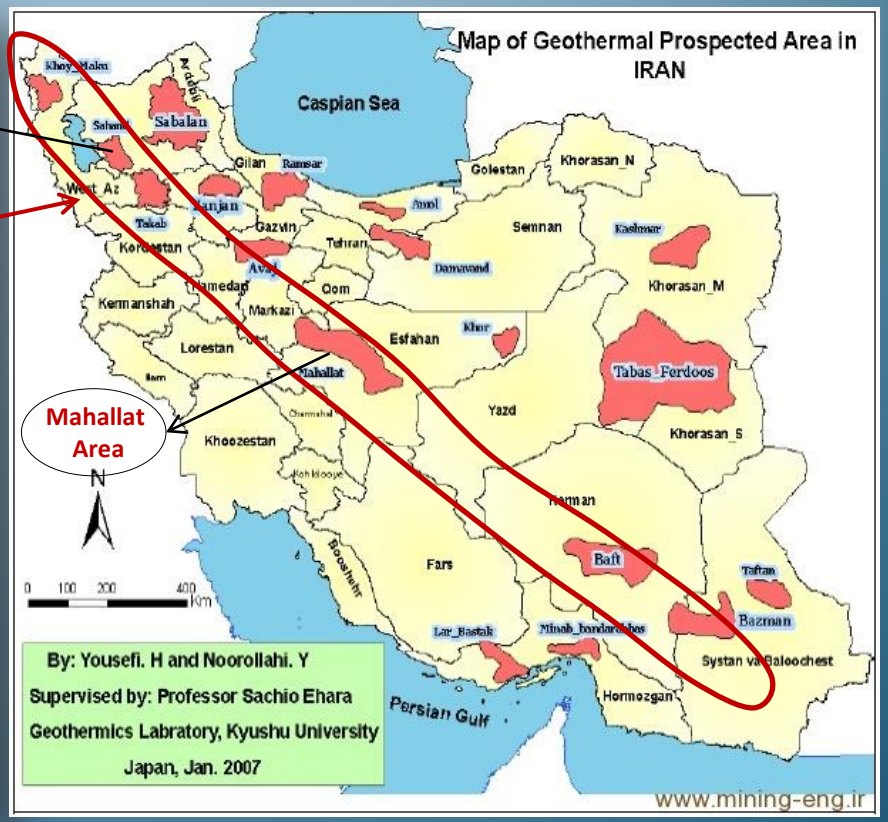


Distribution Map of Carbonate Rocks in Iran Based on Lithofacies



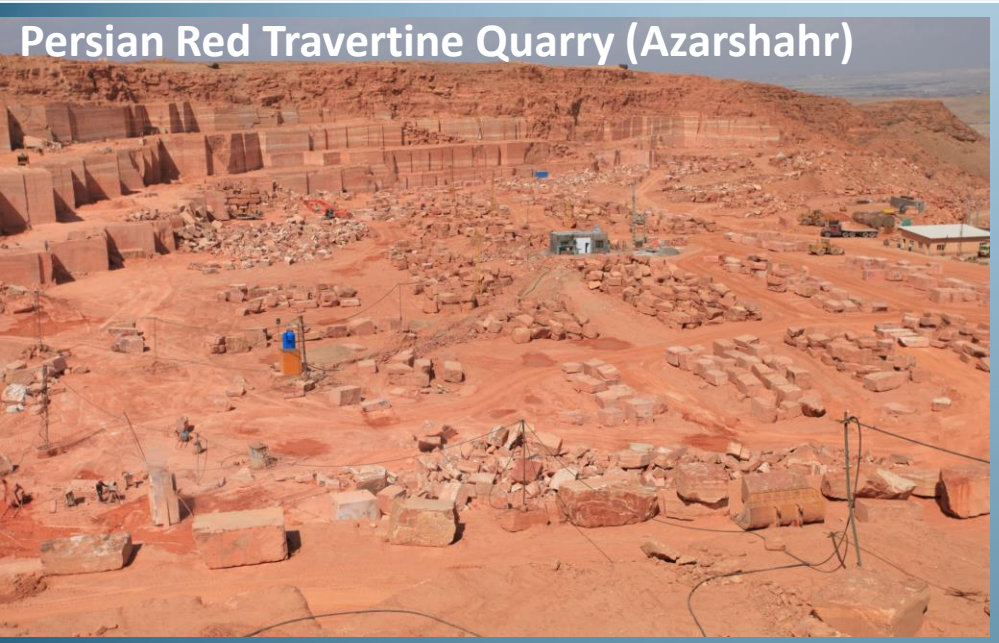
Simplified Location of *Urumieh –Dokhtar* Volcanic Zone in Iran and Geothermal Areas

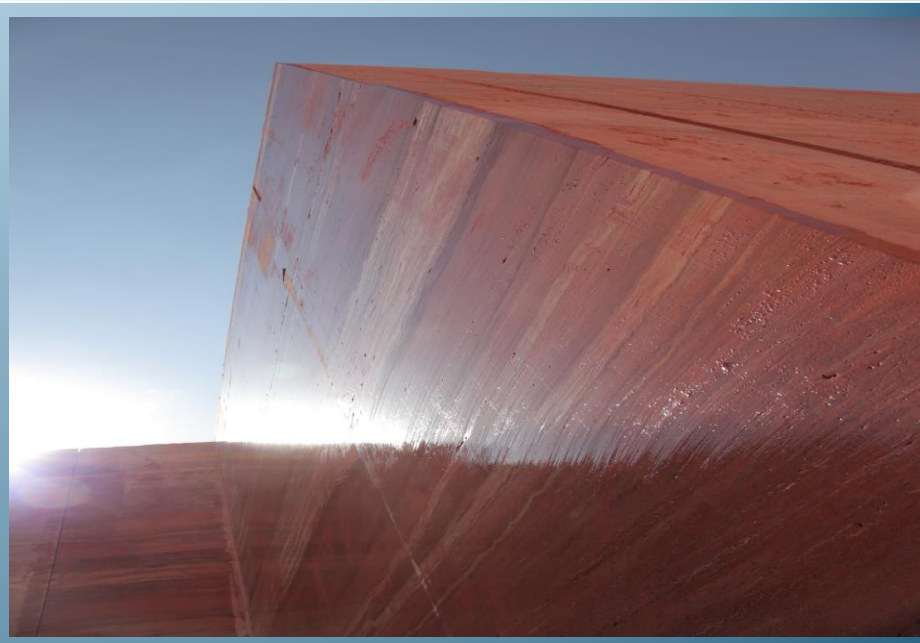


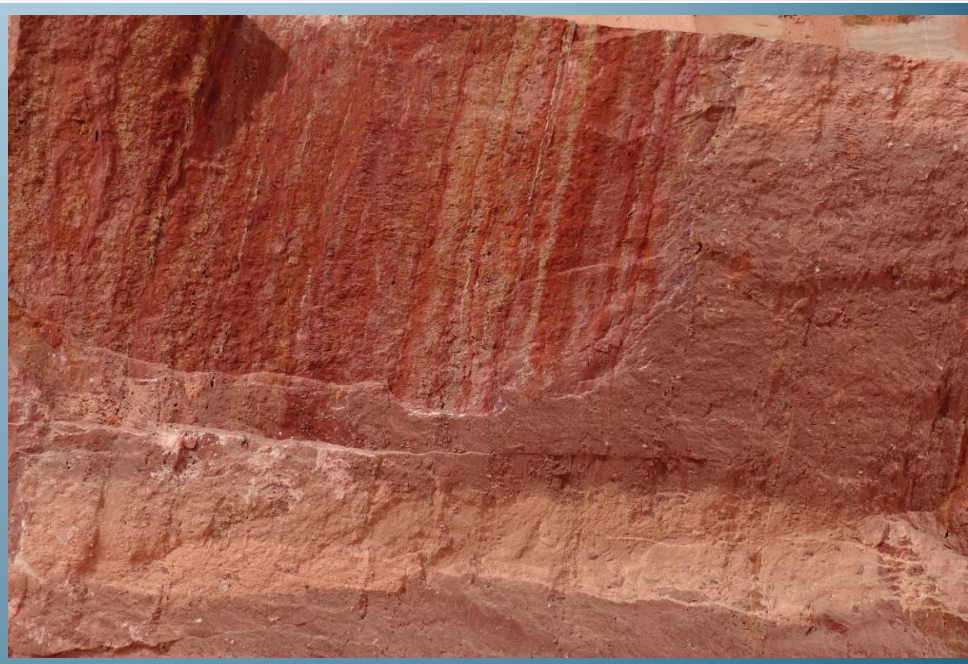


Coincidence between Urumieh –Dokhtar zone and geothermal areas in the south western half of Iran is well evident.

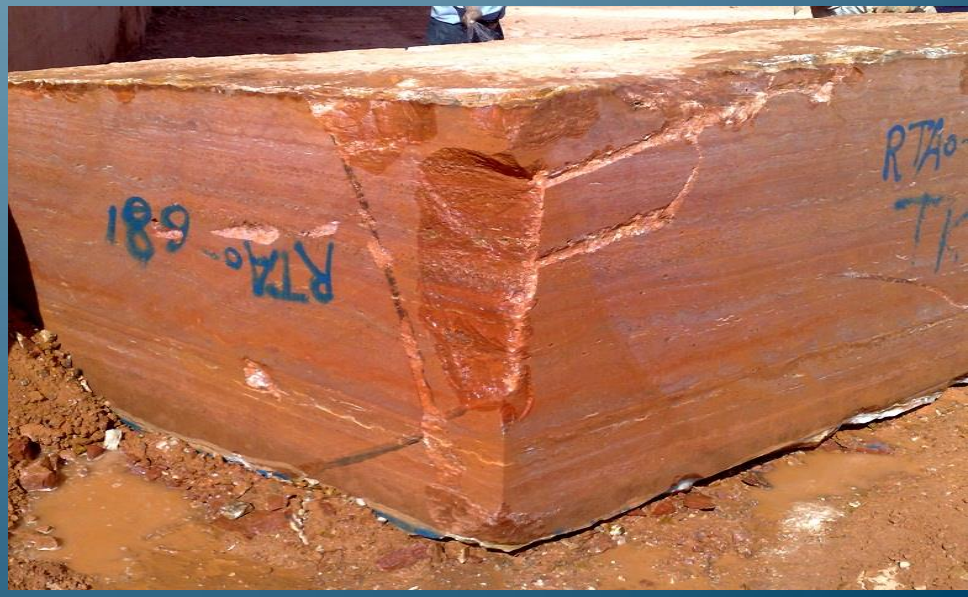
Persian Red Travertine Quarry (Azarshahr)







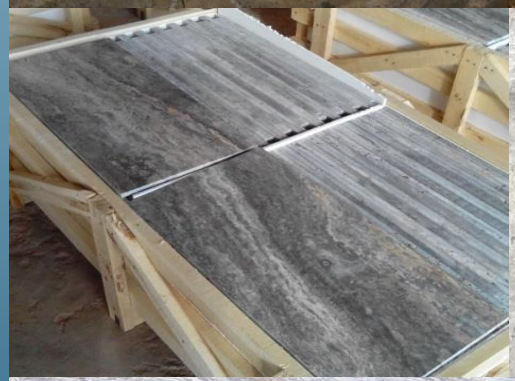
Persian Red Travertine Blocks(Azarshahr)



PHYSICAL ANALYSIS, Red Travertine	PHYSICAL ANALYSIS	RED TRAVERTINE
	WET COMPRESSIVE STRENGTH(WEIGHT KG/CM2)	238
	DRY COMPRESSIVES STRENGTH (WEIGHT KG/CM2)	506
	DENSITY	2.67
	WATER ABSORPTION %	2.49

CHEMICAL ANALYSIS, Red Tra.	CHEMICAL ANALYSIS	RED TRAVERTINE
	CAO	51.870%
	FE2 O3	1.853%
	MGO	-
	AL2 O3	0.061%
	SIO2	0.158%

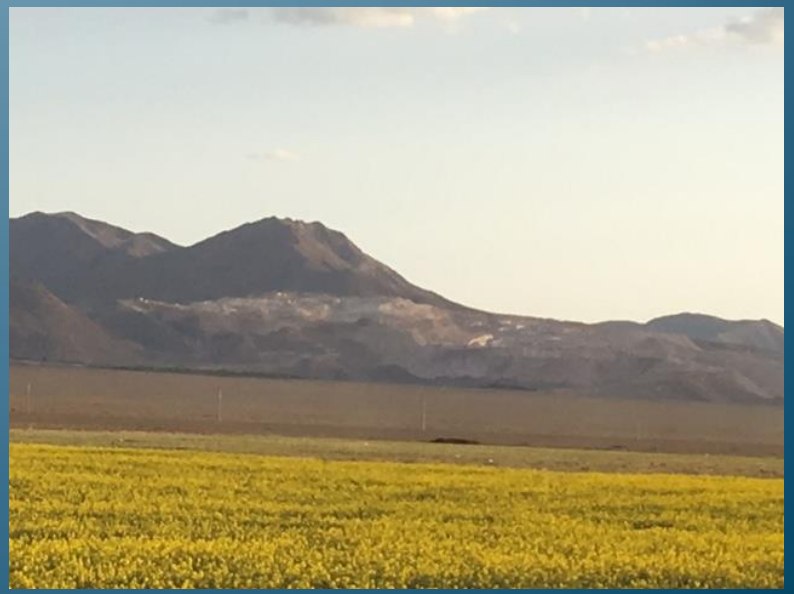
Silver (Gray) Travertine Quarry (Azarshar)



Walnut Travertine Quarry (Azarshar)

Lemon Travertine Quarry (Azarshar)

Four well-known Travertine Quarries (cream & white)in Mahallat Area

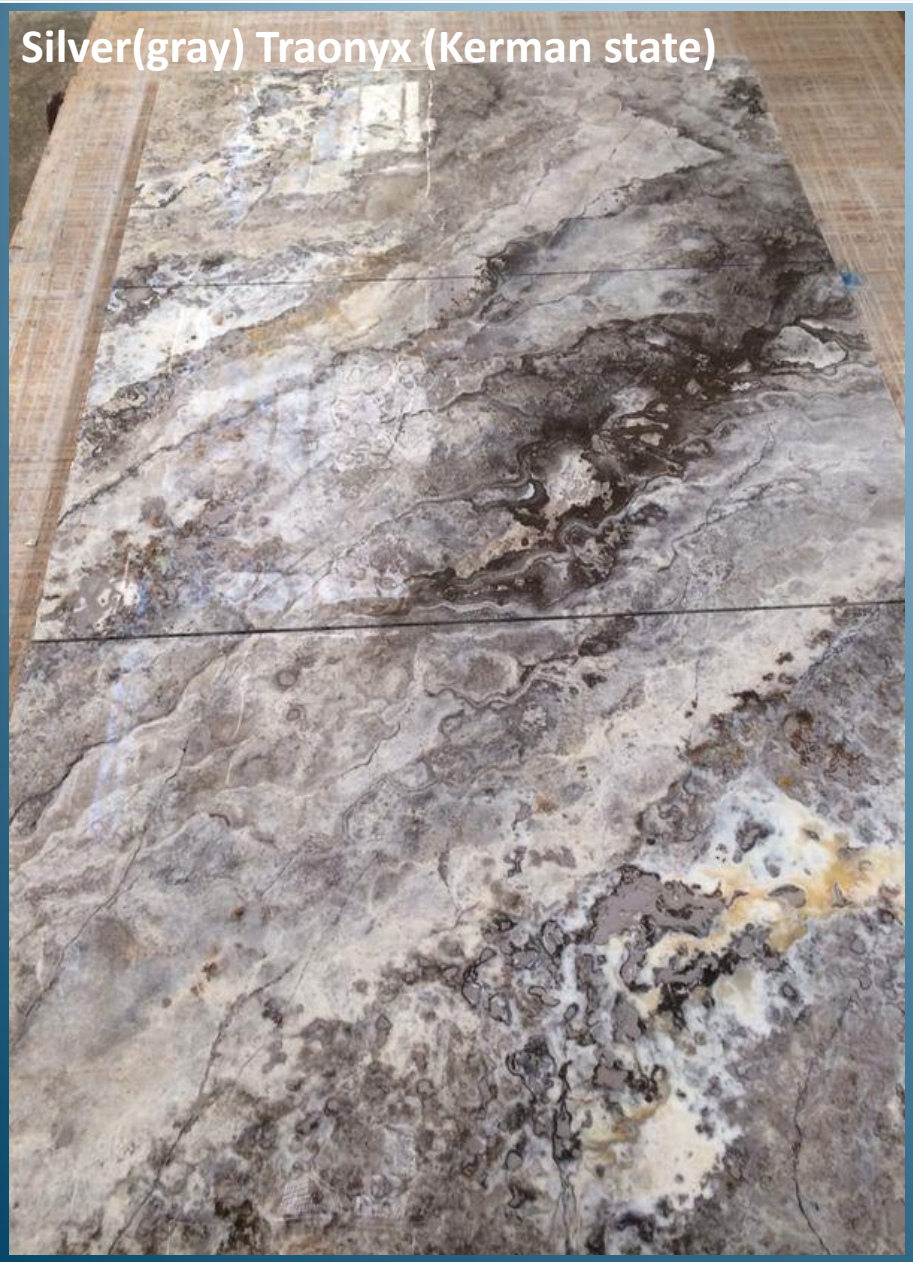


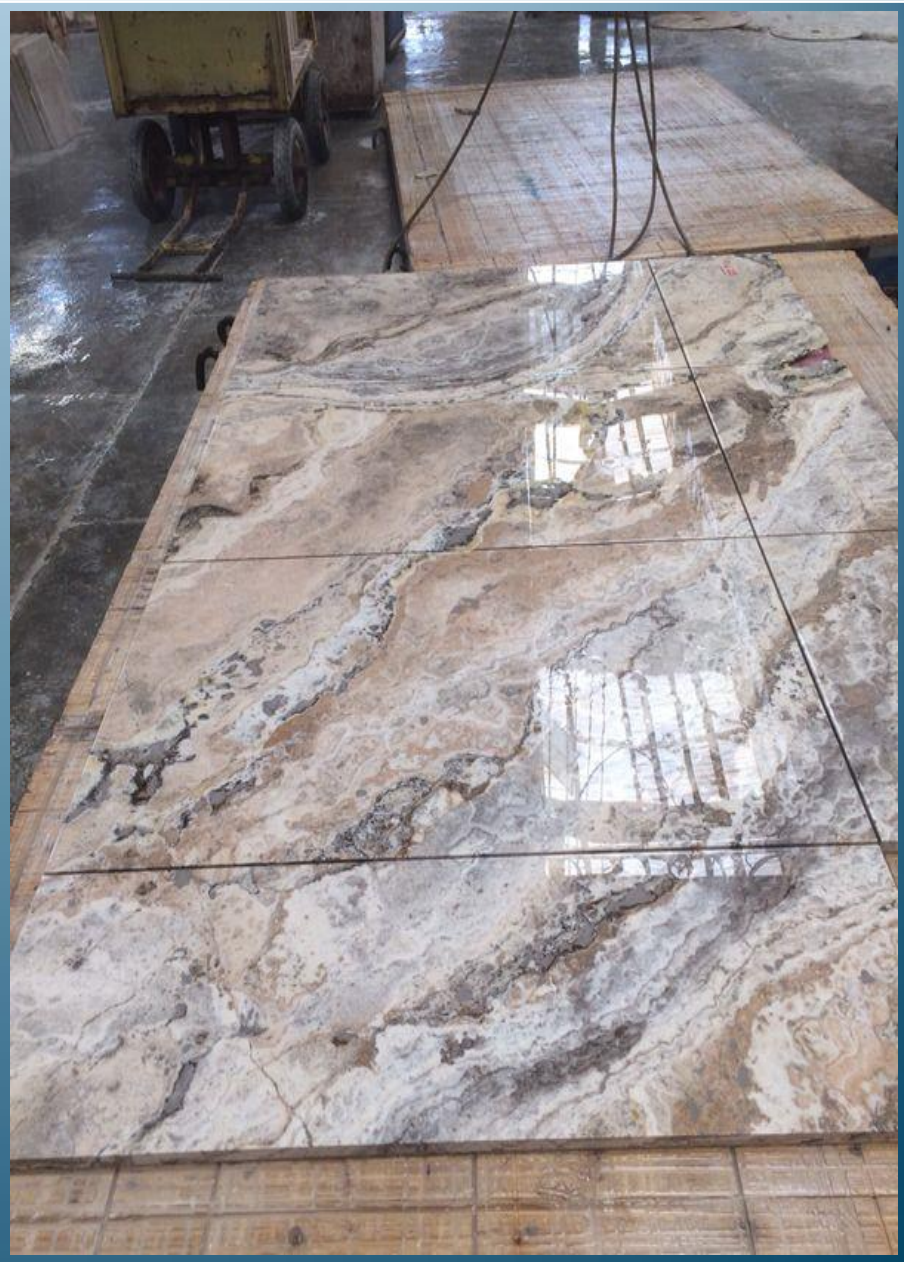

Hidden Travertine Quarry (Mahallat)


Silver(gray) Traonyx (Kerman state)


KOMATSU

Silver(gray) Traonyx (Kerman state)





Dr. Hamid Samari

Assistant Professor in Mahallat Azad University, Head of Geology Department

General Manager of Tana Mining & Minerals Department (Tana Group)