A SOURCE OF SULPHUR AND CHLORINE FOR FORMATION OF LARGE SALT DEPOSITS ON THE SOUTHERN HIGHLANDS OF MARS. G.G. Kochemasov, IGEM of the Russian Academy of Sciences, 35 Staromonetny, 109017 Moscow, Russia, (kochem.36@mail.ru).

Several orbital and on land missions of the last about 20 years firmly established that a very characteristic feature of the southern highlands of Mars is very extensive development of salt deposits (along with hydrated silicates and zeolites). Usually light colored they all have another very important physical characteristics – a low density. And this is understandable from a physical point of view. In a rotating planet all its variously elevated tectonic blocks tend to equilibrate their angular momenta to diminish an energetic status of a body (tensions between blocks). In the martian case deeply subsided northern lowlands must be filled with denser material than the highly uplifted southern highlands to equilibrate their angular momenta. Indeed, dense Fe-basalts of the north are opposed by the lighter (by color and density) rocks. Among them are already found andesites (Pathfinder), dacites (MGS-THEMIS), alkaline rocks (Spirit), hydrated silicates and large amounts of salts. Orbital gravity mapping [7] clearly showed that the needed equilibration is nearly achieved. But it is also clear that thin upper veneer of light material is not enough to produce a significant fall of overall southern crust density. To understand the important flux of SO2 and Cl solutions making the vast salt covers one have to admit massive development of primary igneous SO2 and Cl bearing minerals at depth [1-6]. The best candidates are feldspathoids of alkaline rocks such as sodalite and nosean. So, if at Earth with its lower elevation range between continents and oceans (20 km) dense difference between andesites (an average continental crust composition) and tholeiites is satisfactory, for Mars with its higher elevation range (about 30 km) this difference must be higher: Fe-basalts of lowlands against syenites + salts of highlands. **Fig. 1** (PIA05485, MOC image of MGS, Meridiani Planum) shows that distribution of light salt rich deposits around and between craters on Meridiani Planum tend to follow some intersecting directions (N-S, NE, NW, W-E). These directions (well known planetary lineaments) control an arrangement of the craters draining SO2 and Cl rich liquids (solutions) from depths. **Fig. 2** (TRA_000873_1780) shows in a local scale that light salt rich deposits cover a wide area around Victoria Crater (800 m in diameter) and are seen under a thin eolian coat The Opportunity's heat shield impact crater also exposed light colored salt rich rocks under a thin dark eolian cover.

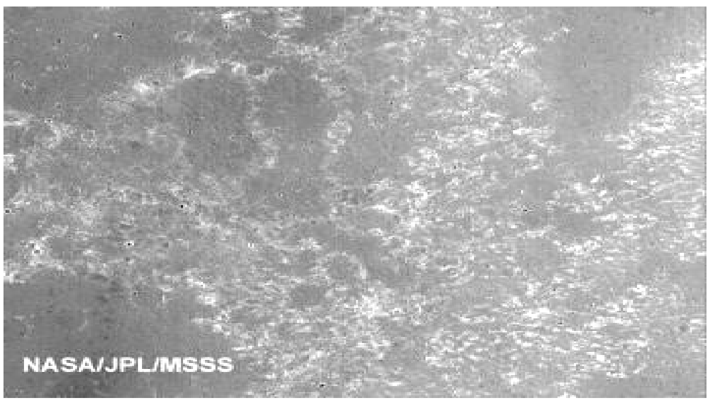

Fig. 1 Meridiani Planum

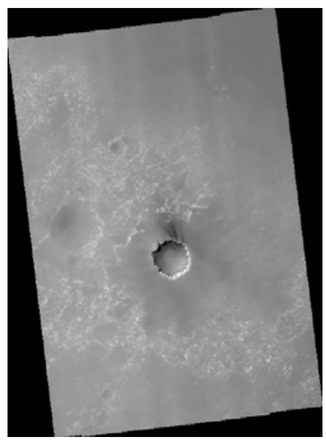

Fig. 2. Crater Victoria

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