

KINGDOM OF MOROCCO



المكتب الوطني للهيدروكاربورات و المعادن
OFFICE NATIONAL DES HYDROCARBURES ET DES MINES

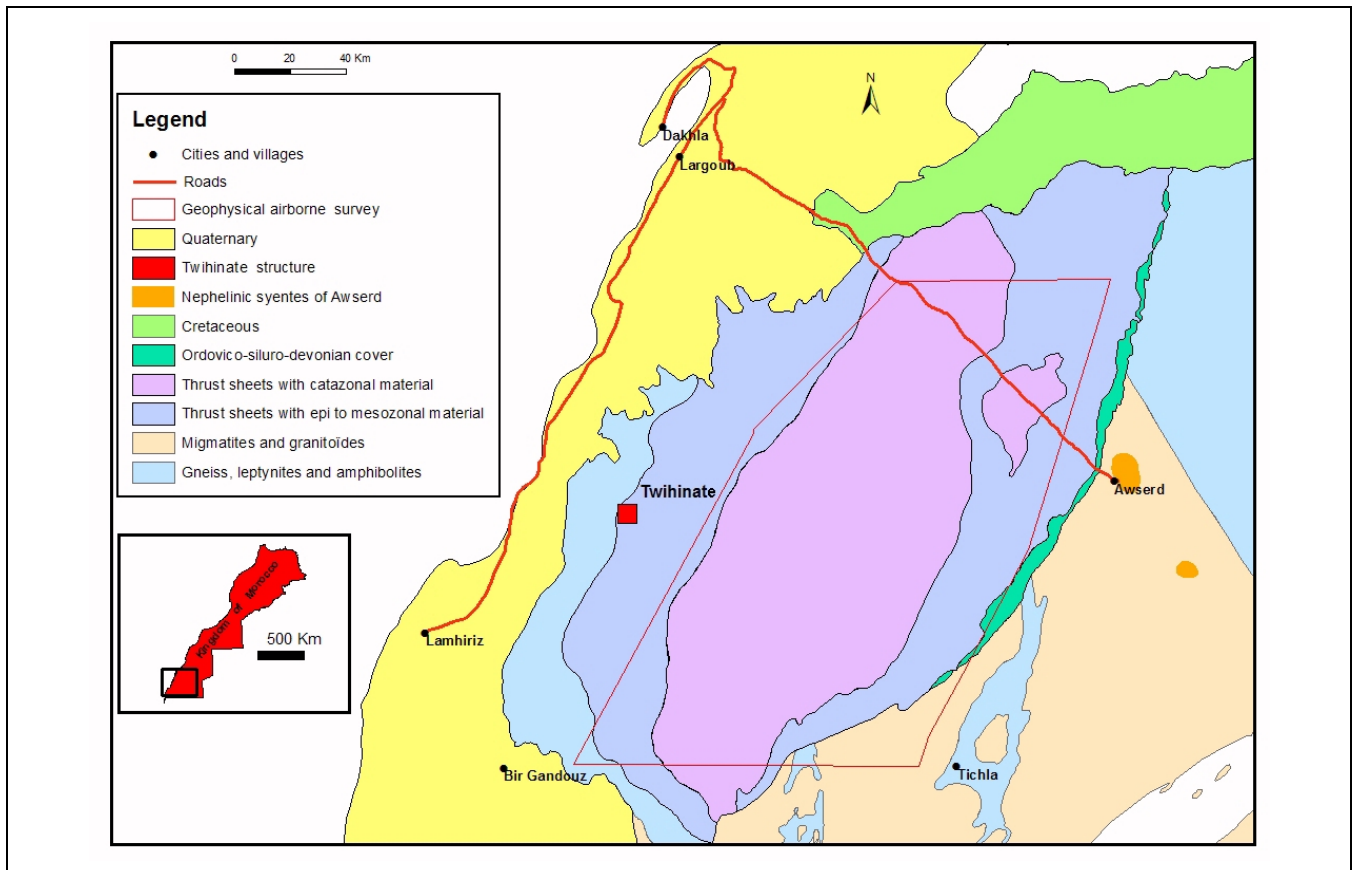
ANNULAR IRON OXIDES AND REE STRUCTURE OF TWIHINATE

KEY POINTS

- Volcanic Mega structure of vuggy silica, oxides of iron and carbonatites,
- Annular structure superimposed to a magnetic and radiometric anomaly
- High grade of REE, Niobium and Iron,
- Plurikilometric extent,,
- Objective susceptible to be a world class deposit for REE, Niobium and iron.

LOCATION AND INFRASTRUCTURE

The prospect of Twihinate is located to the South west of Dakhla. It is accessible from this city by 210km of asphalt road and 50km of carriageable track. The OnhyM logistical center (Lamhiriz) is situated at 130km from this prospect.



Location and general geological setting of Twihinate

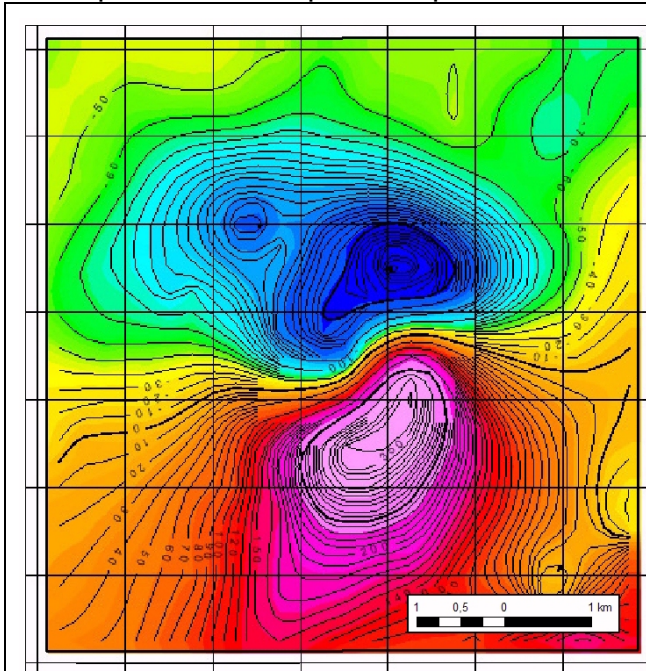
REGIONAL GEOLOGY

The Proterozoic formations of the sector are represented by two distinctive blocks:

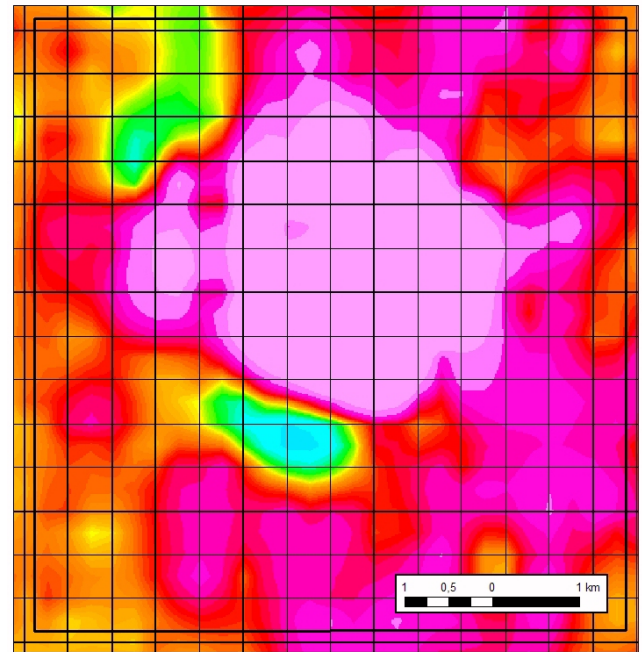
- An oriental Archean block stable and autochthonous being part of the West-African shield
- A western allochthone block, constituted by thrust sheets formed during the hercynian orogeny; the age of the formations of this block stretched out NNE-SSW is gradual between the Palaeozoic and the Archean.

LOCAL GEOLOGY

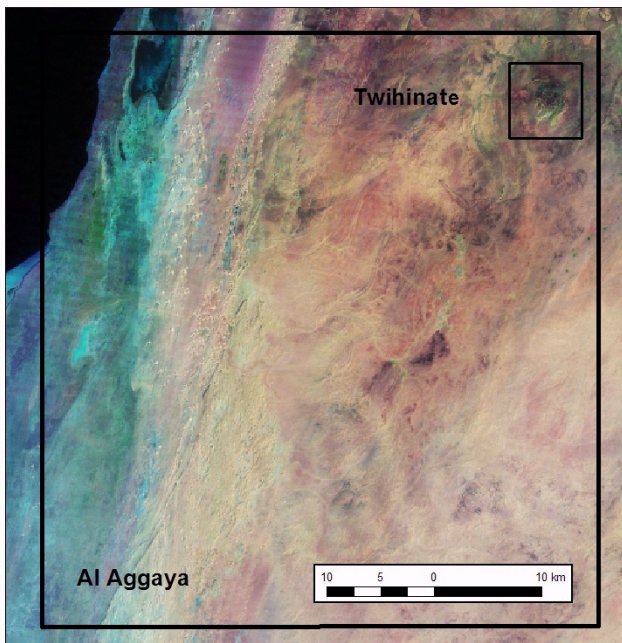
The annular structure of Twihinate is composed of vuggy silica breccia, iron oxides and carbonatites. The mineralization in Rare earths elements and Niobium has been identified IN 2007 as a result of the geological check of the N-S aeromagnetic anomaly of Twihinate, surimposed to an important spectrometric anomaly.



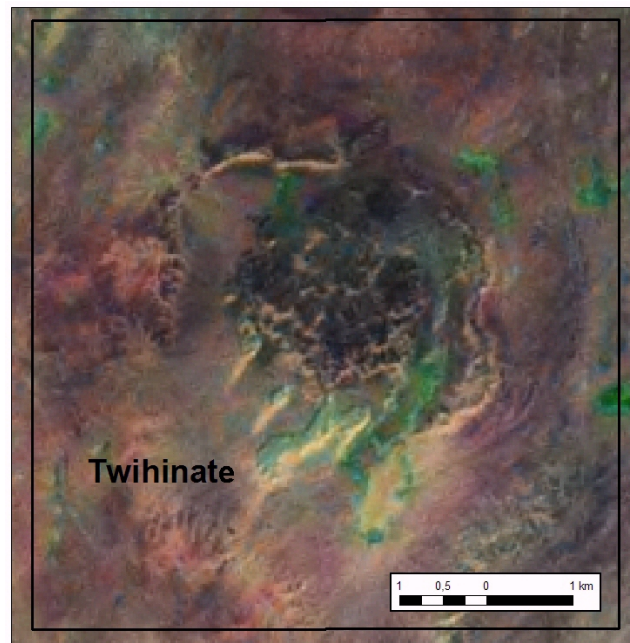
Aeromagnetic anomaly (AG11) of Twihinate



Radiometric anomaly of Twihinate



Landsat Image of Al Aggaya



Annular structure of Twihinate

On the Land sat image, this magnetic and radiometric anomaly appears as a dark annular zone.

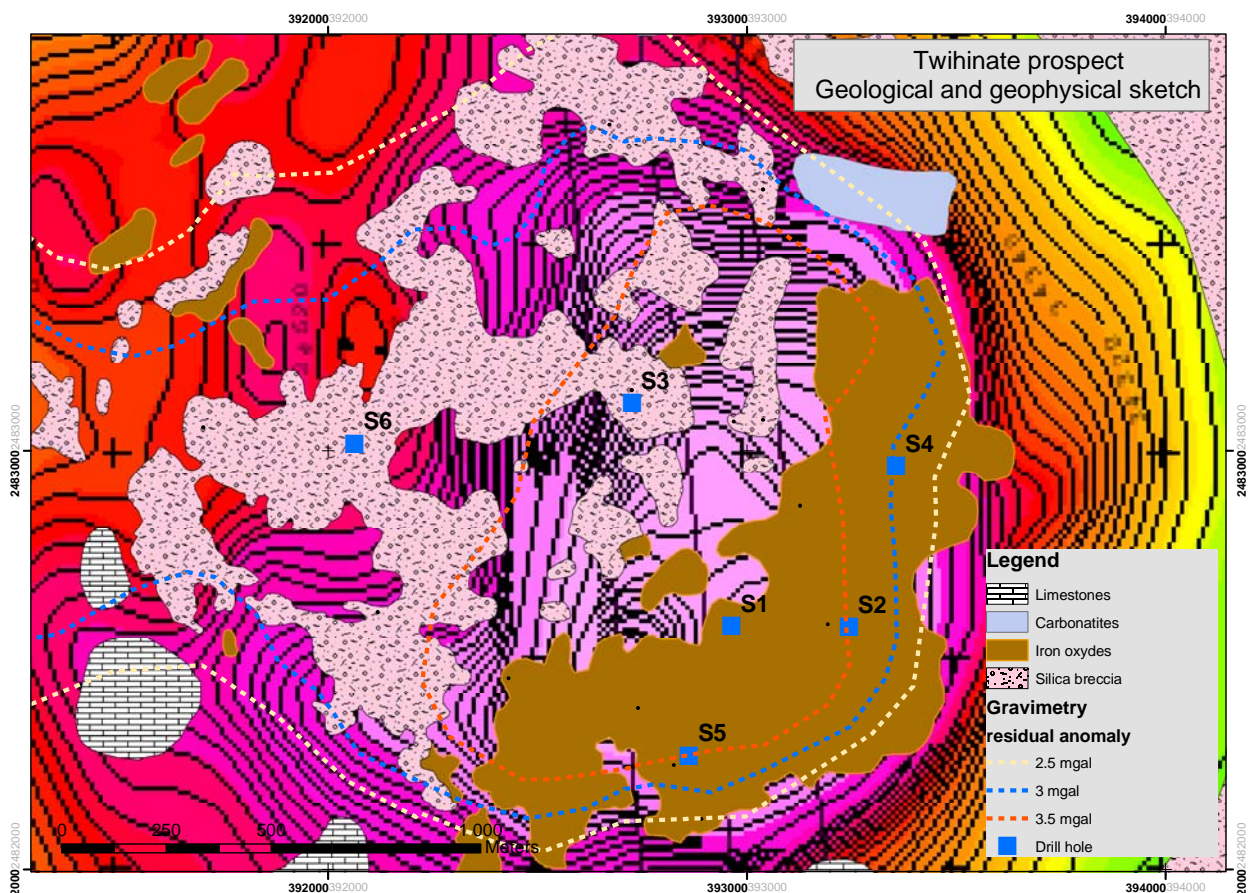
EXPLORATION WORKS AND RESULTS

Mining exploration has been undertaken by ONHYM, by the realization in 2002, of an airborne geophysical survey (magnetic and gamma ray spectrometry) on a surface of 20852 km². The acquisition and the interpretation of the magnetic and radiometric data permitted to establish different geophysical maps that gave a clear litho structural idea of the sector and served as a support for the geological controls undertaken in 2003.

The geological survey achieved in Twihinate shows a big annular structure of about 6km diameter in proterozoic gneiss. This volcanic structure includes a central main mass of 3km of diameter and a peripheral ring of 100 to 300m width. These two parts are separated by a large intermediate depression filled with recent deposits.

This magmatic complex is essentially composed of varied vuggy silica breccia, of iron oxides and two outcrops of carbonatites. The breccia forming the main mass and the peripheral ring are varied; they show important fluidal structures that justifies the magmatic and hydrothermal character of this formation.

Sol magnetic and gravimetric exploration realised in this area confirmed the importance and the continuity in depth of this mineralisation.



Outcrops are constituted mainly of very varied vuggy silica breccia, iron oxides and gray carbonatites.



Vuggy silica



Iron oxides



Carbonatites

MINERALIZATION

The results of ground chemical analyses show that the mean grade by profile of sampling reach 0,5%Nb₂O₅, The sum of Rare earths elements (La+Ce+Eu+Pr+Sm) is between 0,5 and 1,5% REE. The grade of total iron is between 50 and 60%. We have also recorded erratic value of gold (300 ppb).

Six drill holes totalising 836m are realised in the main mass, 4 on the iron oxides area and 2 on the breccia silica. The drill holes realised in the breccia area intersect between 10 and 20m of iron oxides, between 40 and 50m of breccia iron oxides and between 50 and 80m of carbonatites. The chemicals analyses of the first drill hole show 55% Fe₂O₃ and 0,3% Nb₂O₅ in 16,3m of iron oxides; 22% Fe₂O₃ and 0,24% Nb₂O₅ in 56m of the breccia iron oxides and 0,34% Nb₂O₅ in 77,8m of the carbonatites.

PERSPECTIVES

The perspectives and the potentialities of the sector are high:

- The importance of the area showing higher value on REE, niobium and iron oxides in the central mass and on the peripheral ring,
- The extension of the prospect of Twihinate under the quaternary cover and outside of the peripheral ring,
- Existence of other geophysical anomalies in the immediate vicinity of the annular structure of Twihinate.

Pour plus d'informations, veuillez contacter :

Mme Amina BENKHADRA

Directeur General

5, Avenue Moulay Hassan- BP 99 - Rabat, Maroc

Tel. : + 212 37 23 98 98 – Fax : + 212 37 70 94 11-

E-mail : benkhadra@onhym.com

Site web : www.onhym.com