



Geology and mineral resources in Madagascar: An overview

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Abstract:

Madagascar is composed of two main geological units: the Precambrian crystalline formations in the eastern part of the country, and the Phanerozoic, non-metamorphosed sedimentary formations in the west:

- The Precambrian is subdivided into Archean, medium to high-grade metamorphic rocks, and Proterozoic metasediments.
- Late Palaeozoic to Tertiary sediments, mainly marine in origin, cover the basement rocks in the west of the country.

The mineral resources in Madagascar comprise four kinds of potentials. 1. Mineralization associated with mafic/ultramafic rocks: Chromite, PGM and base metals. 2. Hydrothermal mineralization (late and post magmatic): Gold, REE in pegmatites, and precious and semi-precious stones in pegmatites. 3. Mineralization associated with major metamorphism: Iron and sapphire. 4. Super-gene mineralization: Laterite Nickel and bauxite.

About available data, two big projects are recently realized:

- The Japan International Cooperation Agency (JICA) has conducted the geological and geochemical surveys and the remote sensing data analysis in southern part of Madagascar.
- The geological maps and the data of mineral potential in Madagascar were revised by the World Bank through PGRM projects (Programme de Gouvernance des Ressources Minérales) for some parts of Madagascar. The geological, geophysical and geochemical surveys were carried out in 158 sheets of 1:100,000 scale topographic maps with the area of 222,500 km² in



one side, these survey areas cover mainly the region with the potential of mineral resources, such as Ni, Cr, Cu, Au, and Fe and so on. The PALSAR satellite images are effective to recognize the geological structure especially in the area where metamorphic rocks are distributed in another side. The PALSAR mosaic image covering throughout Madagascar was created by 251 scenes of the high resolution mode data.

Biography:

Rasoamalala Vololonirina is currently serving as a Lecturer researcher at University of Antananarivo, Majunga and Antsiranana - Madagascar. She takes a keen interest in research promotion, planning of mining services for the community and inculcating newer teaching methodologies for students. Since 2010 she worked as Director of Geology at the Ministry of Mines - Madagascar.

Publication of speakers:

1. Zhou, J. L., et al, Response to the Neoproterozoic mantle plume (s) on the western margin of Rodinia: Preliminary evidence from the Malagasy Shield., *Acta Petrologica Sinica* 30.11 (2014): 3366-3374.
2. Vololonirina, Rasoamalala, *The rare terrain of Ambatofinandrahana-Madagascar*, European University Editions, 2016.

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