Andean Basins Virtual Research Symposium: Advances in the Geological Understanding of Fold-and-Thrust Belts of the Andes

Extended Abstract Form

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Organization Name: Instituto Geológico Minero y Metalúrgico

Presentation Name: **SUB-ANDEAN PROJECT: GEOLOGICAL MAPS TO PROMOTE INVESTMENT OPPORTUNITIES IN REMOTE AREAS OF THE PERUVIAN SUBANDEAN**

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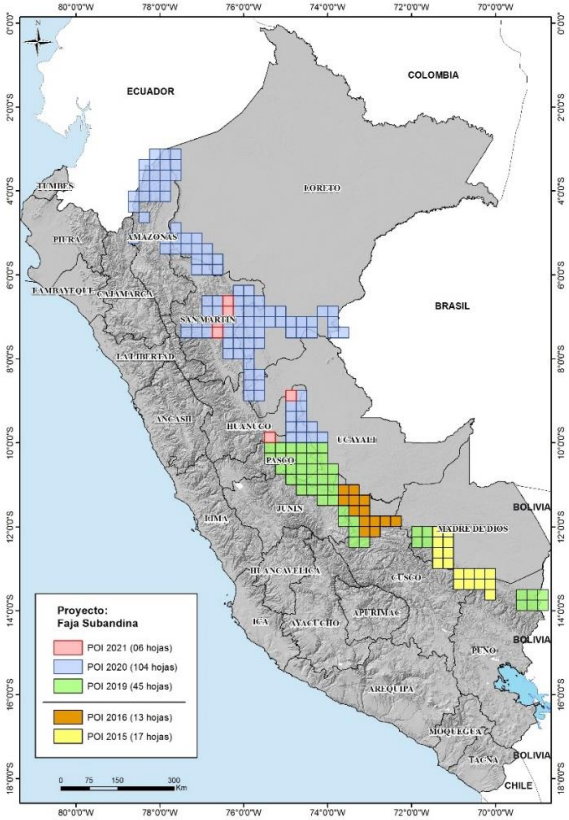
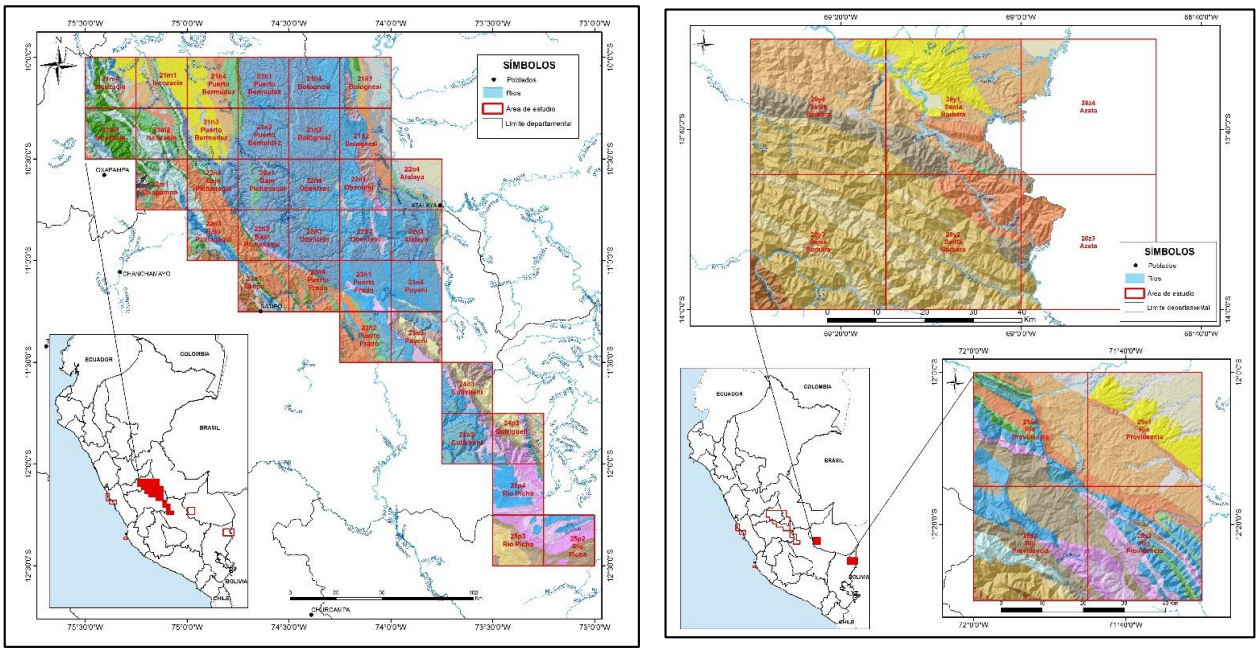
Extended abstract:

Since 2019 the Geological, Mining and Metallurgical Institute - INGEMMET has been developing the "Sub-Andean Project". This project aims to integrate geological surface information acquired by hydrocarbon companies since the last decade in their exploration activities (PERUPETRO - INGEMMET Technical Information Exchange Agreement) with studies of Geological National Chart in this part of the territory to provide timely and quality information with a high geological value of the different areas of the Sub-Andean. From 2019 to 2021, "Sub-Andean Project" will update 155 quadrants at a scale of 1: 50,000 and annual reports of the geological update. In 2019, 45 quadrants located in the high jungle of Madre de Dios, Ucayali and Ene / Pachitea were update. In 2020 are being updated 104 quadrants of the Huallaga and Santiago basins and for 2021, 06 quadrants and 05 geological maps at 1: 250,000 scale will programmed. As an important background to this project in 2015 were updated 17 sheets at scale 1: 50,000 located in Madre de Dios basin and in 2016 were updated 13 sheets belonging to Ucayali Sur basin. As part of the project carried out field campaigns to validate and improve the quality of the integrated geological information, geological maps are prepared, geological data positioned, the stratigraphy is



standardized and the main geological structures exposed in the called folded belts. The processing of all information collected is through an organized and standardized database processed in a GIS project in Geodatabase format.

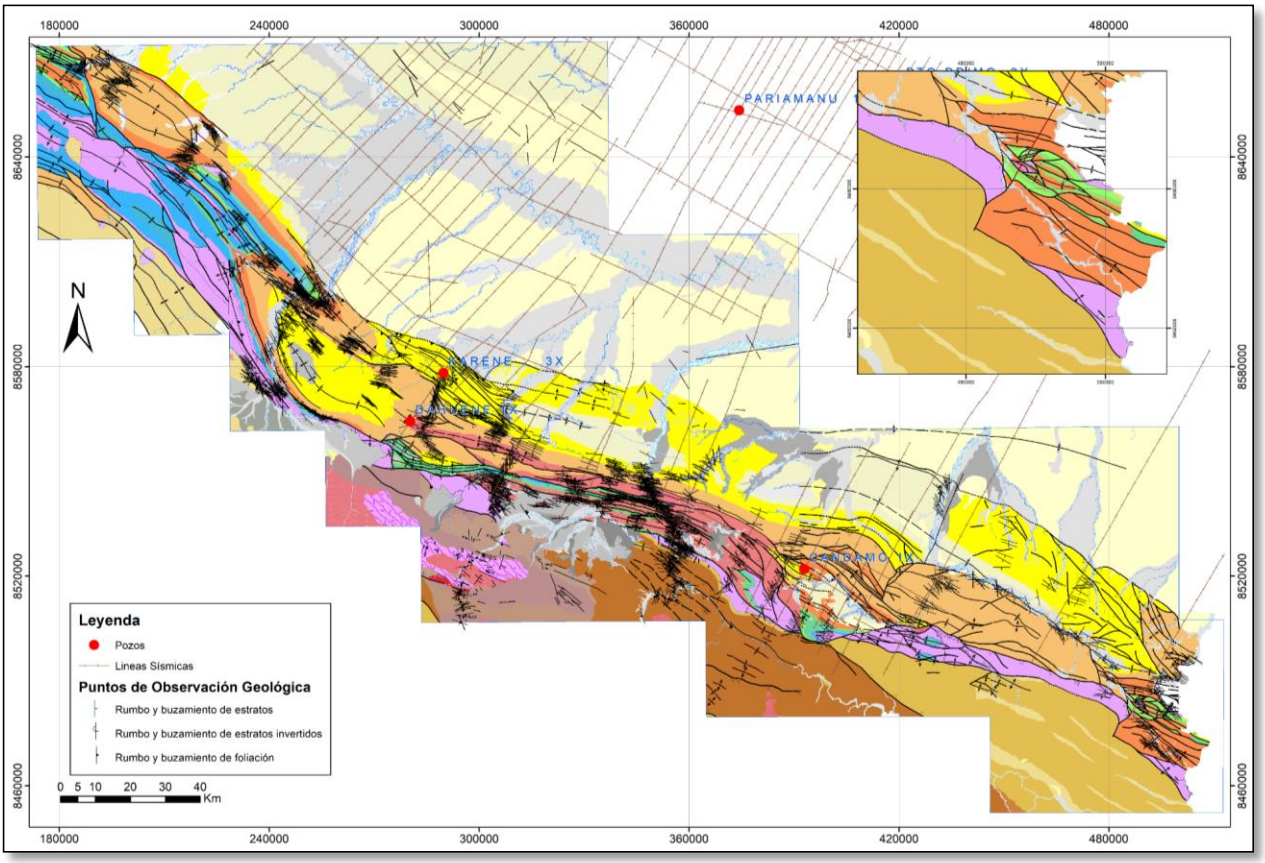


Left: Mosaic of the integration of the geology of the Ene and Ucayali Sur basins (western sector).
Right: Mosaic of the integration of the geology of the thrust and fold belt of the Madre de Dios basin.

WHY STUDY THE GEOLOGY OF THE SUB-ANDEAN? The current reality oil industry in the sub-Andean zone is that majority of the remaining oil or gas fields are associated with areas of high tectonic, stratigraphic complexity and are located in remote areas with very difficult access, because it the exploration and exploitation process has become especially difficult, expensive and high risk with a low success rate. Therefore is necessary to develop and implement new methodologies or improved study processes, to interconnect surface geology (updated geological maps) and subsoil geology (seismic and data from drilled wells) more effectively to reduce geological risk and lessen economic impact, making exploration and exploitation projects more attractive to investors.An example is Madre de Dios Folded Belt, one of the least explored of the sub-Andean basins, this despite the fact that biostratigraphic studies have confirmed a tectonic / stratigraphic evolution very similar to the gas basin of southern Ucayali, with excellent mother rocks of World class of Devonian, Carboniferous and Permian. Structurally, characterized by presenting numerous duplexes in Cretaceous / Cenozoic rocks, both on the surface and underground. A renewed exploration in the 90s corroborated a small non-commercial oil field in the foreland of Bolivian sector (Pando field) and a significant accumulation along the folded belt on the Peruvian side (Candamo field). The geological maps will provide information for multidisciplinary work models applied in geosciences, for the construction of structural models, reduction of risks during the search for profitable and economic deposits, as well as the search for new exploratory opportunities in the folded belt.

Left: Eolianites facies of the Ene Formation (Upper Permian) in the pongo de Mainique, Urubamba river.

Right: Sequence of sandstones and siltstones from the Cabanillas Group (Devonian) in the pongo de Mainique, Urubamba river.



Integrated geological map of the folded belt of Madre de Dios.