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The Ilopango Tierra Blanca Joven (TBJ) eruption, El Salvador: volcano-stratigraphy of a major Holocene event of Central America and hazards implications

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The Ilopango caldera, a 11x17 km volcano-tectonic structure filled by an intracalderic lake, is located in El Salvador, and is one of the active volcanoes of the Central American Volcanic Arc, which in turn forms part of the Pacific Ring of Fire. Four large explosive eruptions were recognised during the last 36,000 years: TB4, TB3, TB2 and TBJ that correspond to the last phases of formation of the caldera. Pyroclastic and ash flows from these eruptions cover large areas of the central zone of the country, where it is located the capital San Salvador, a densely populated city and the most important economic centre of El Salvador.
The TBJ (Tierra Blanca Joven-Young White Earth) eruption occurred about 1500 years ago, between 430 and 535 AD, with an estimated emission volume of at least 80 km3 of magma. The TBJ eruptive products covered enormous areas that surpassed the present territory of El Salvador.
The TBJ unit, of dacitic composition, is characterised by a bright/white color. The eruptive sequence is made of several sub-units. Few cm of fallout deposits, found mainly close to the Ilopango caldera, represent the beginning of the eruption. Subsequently, dense and dilute PDCs of hydromagmatic and magmatic origin filled the depressions near the Ilopango lake with thicknesses of up to at least 70 m and reached distances of at least 40-50 km from the vent, covering completely what today is the actual city of San Salvador. Ash deposits of the last stage of the eruption were found along the whole El Salvador with significant thicknesses. Deposits related to this last phase were reported as well in Guatemala, Honduras, Nicaragua, Costa Rica and the Pacific Ocean. The TBJ eruption was one of the greatest Quaternary eruptions of Central America, where its large eruptive products, considerably affected the Mayan populations living in Salvadoran and near territories at that time. Therefore, a complete study of this eruption was carried out to help in the understanding its evolution and related hazards and posible future impact over the population of El Salvador and nearby countries.

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