

SEGMENTATION AND HORIZONTAL SLIP-RATE ESTIMATION OF THE EL TIGRE FAULT ZONE, SAN JUAN PROVINCE (ARGENTINA) FROM SPOT IMAGES ANALYSIS.

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INTRODUCTION

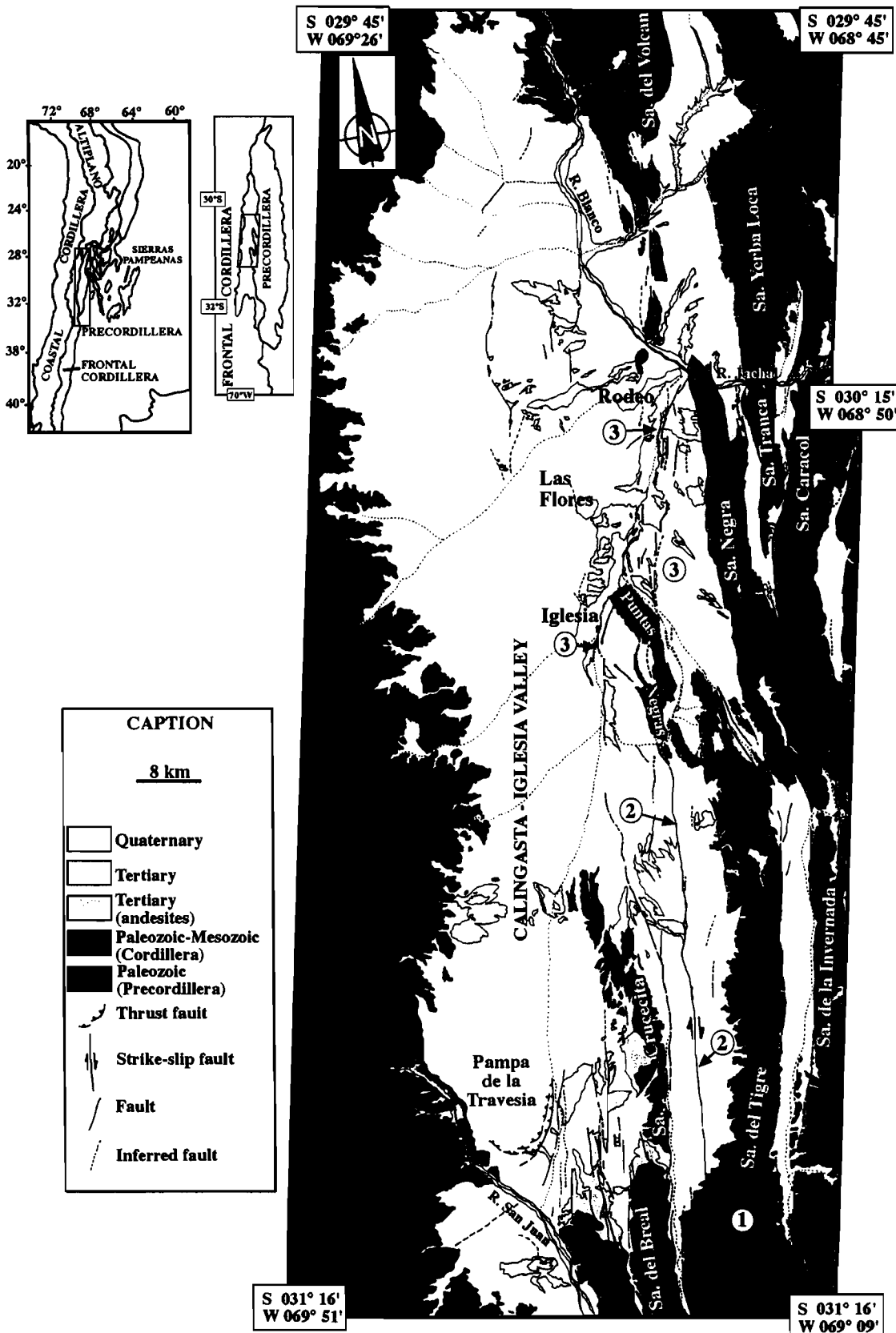
In the subduction areas associated with oblique convergence, relative plate motion should be partitioned between displacements along the subduction plane and parallel-to-the margin strike-slip deformation within the overriding plate. The Nazca/South American N76° convergence off Chile is strictly oblique and has to be mechanically accommodated by strike-slip (shear) deformation (Fitch, 1972; Jarrard, 1986; Sébrier and Bellier, 1993; Bellier and Sébrier, 1995; Ego et al., 1995) which could be localised, at about 30°-31°, along the El Tigre Fault (Bastias and Uliarte, 1988; Bastias et al., 1990). This N10°E-trending dextral fault is located on the eastern side of the intra-Andean Calingasta-Iglesia Valley (Armijo and Sébrier, 1991) (Fig.1). Geomorphologic analysis on SPOT images allow us to precisely characterize the fault geometry and to quantify the active deformation along the El Tigre Fault Zone.

Segmentation and Geometry of the El Tigre Fault Zone

The 120-km-long El Tigre Fault Zone, is subdivided, from South to North, into 26, 48 and 46 km-long main segments (Fig.1). Both Quaternary to recent geomorphologic features and stream channel offsets outstandingly agree with the apparent Present-day fault activity. According to previous studies (Bastias, 1990) this fault should have a 800 km long rupture length. Nevertheless, no evidence has been observed from the SPOT images analysis to justify such a rupture length. Indeed, the southern tip of the southernmost segment (#1 Fig.1) is characterized by a merging within the Precordilleran Paleozoic strata and, because of its very distributed surface deformation, the northernmost segment (#3 Fig.1) is interpreted as the northern termination of the El Tigre Fault Zone.

Late Quaternary horizontal displacement along the El Tigre Fault Zone

The high resolution (10 m a pixel) panchromatic SPOT images provide evidences of recent tectonic activity such as stream channel offsets within Quaternary fan deposits along the central segment (#2 Fig.1). These alluvial fans are composed by imbricated detritic fans which can be related to locally or regionally significant climatic pulses. The measured offsets range between 60 and 180 m. The larger offsets inside the fans are assumed to be the older because they are probably not as much rejuvenate by



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