Spasmodic deformation in the Southwest of the Gondwana boundary, Argentina

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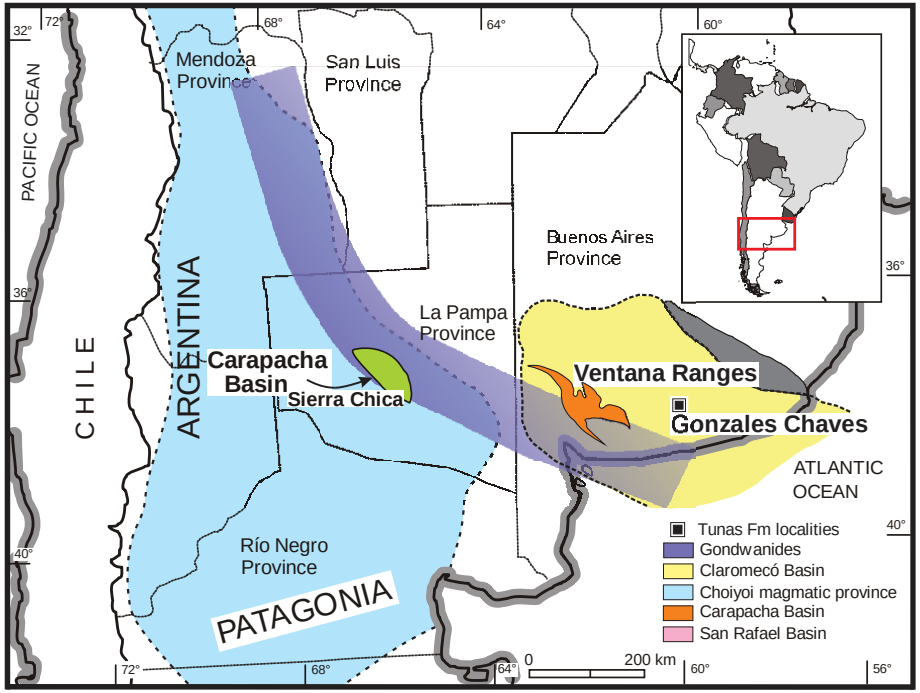
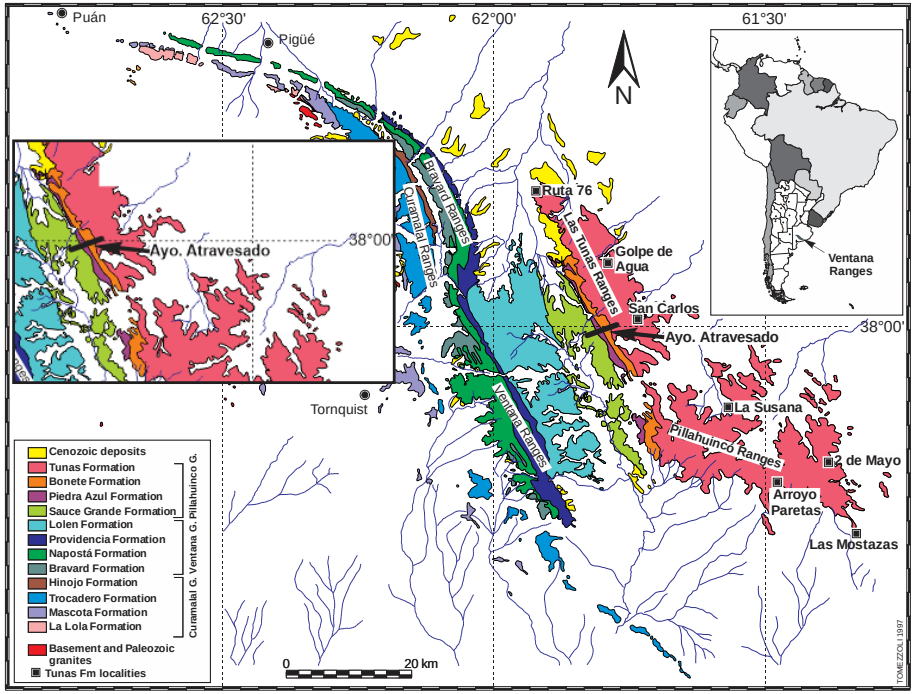
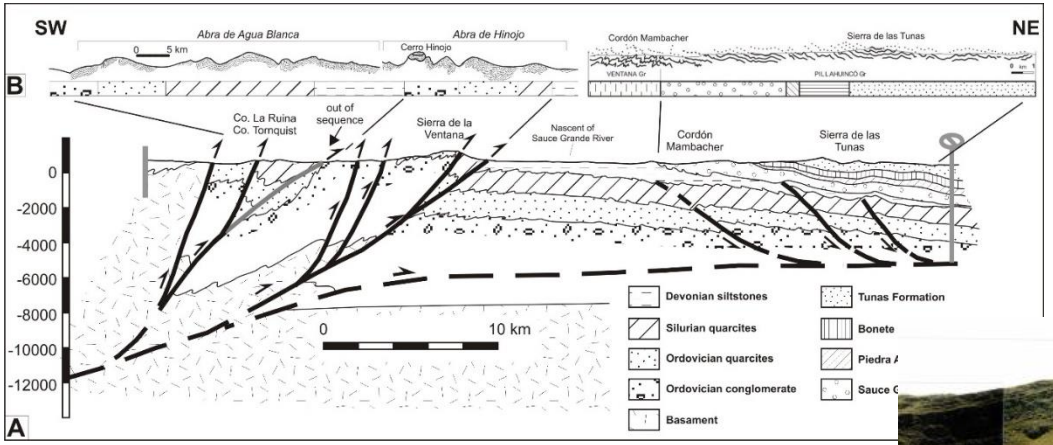
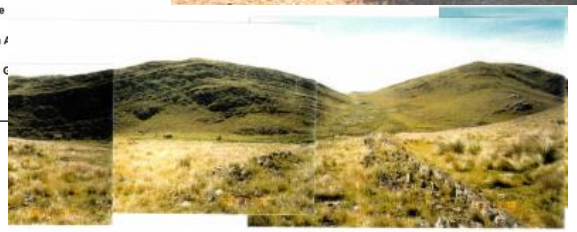
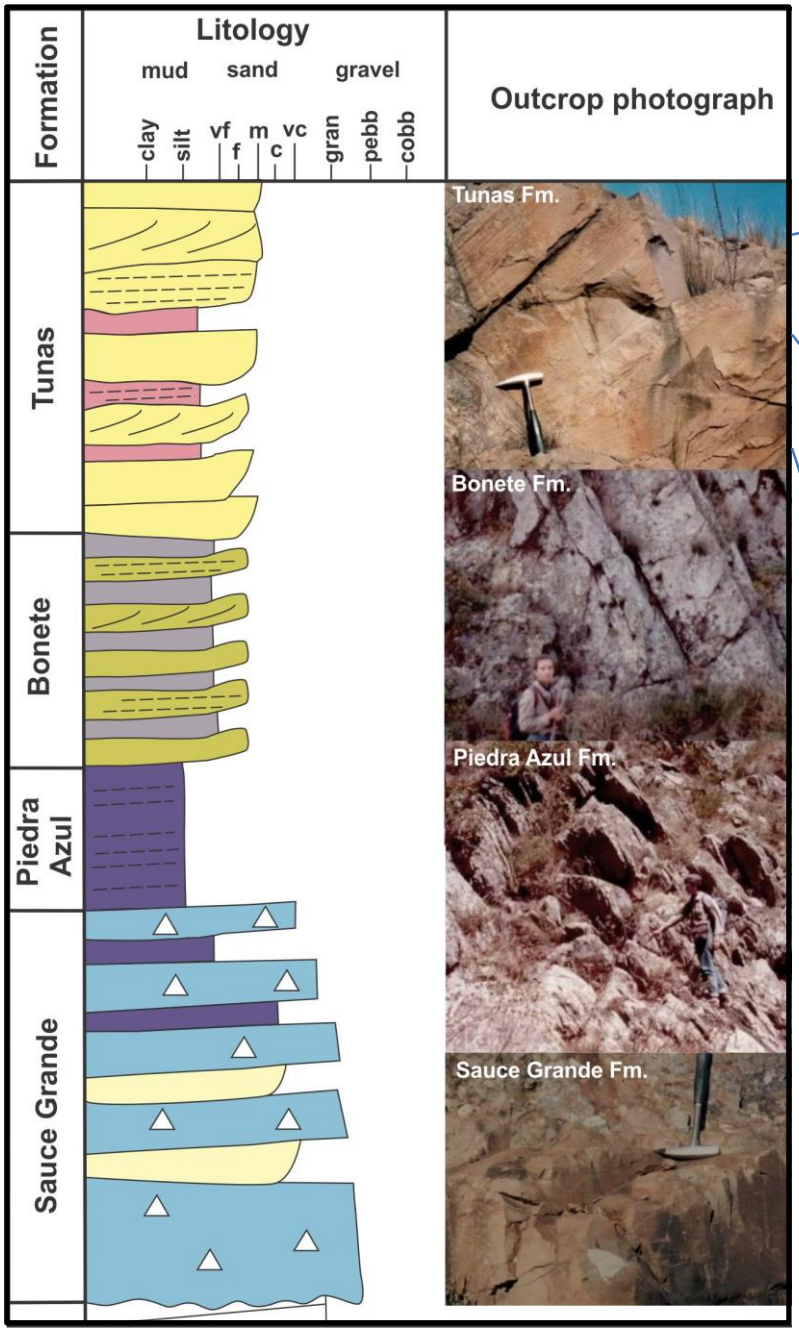
STUDY AREA


PACIFIC OCEAN
CHILE
ARGENTINA
Mendoza Province
San Luis Province
Buenos Aires Province
La Pampa Province
Río Negro Province
PATAGONIA
Carapacha Basin
Sierra Chica
Ventana Ranges
Gonzales Chaves
ATLANTIC OCEAN
Tunas Fm localities
Gondwanides
Claromecó Basin
Choiyoi magmatic province
Carapacha Basin
San Rafael Basin
0 200 km


Puán
Pigüé
Ayo. Atravesado
Tornquist
Ruta 76
Golpe de Agua
San Carlos
La Susana
Pillahuincó Ranges
9 de Mayo
Arroyo Paretas
Las Mostazas
Ventana Ranges
Cenozoic deposits
Tunas Formation
Bonete Formation
Piedra Azul Formation
Sauce Grande Formation
Lolen Formation
Providencia Formation
Napostá Formation
Bravard Formation
Hinojo Formation
Trocadero Formation
Mascota Formation
La Lola Formation
Cuenmalal G. Ventana G. Pillahuincó G.
Basement and Paleozoic granites
Tunas Fm localities
0 20 km


SW
NE
B
A
Abra de Agua Blanca
Abra de Hinojo
Cerro Hinojo
Cordón Mambacher
Sierra de las Tunas
Co. La Ruina
Co. Tornquist
out of sequence
Sierra de la Ventana
Nascent of Sauce Grande River
Cordón Mambacher
Sierra de las Tunas
0
-2000
-4000
-6000
-8000
-10000
-12000
0 10 km
Devonian siltstones
Silurian quarcites
Ordovician quarcites
Ordovician conglomerate
Basament
Tunas Formation
Bonete

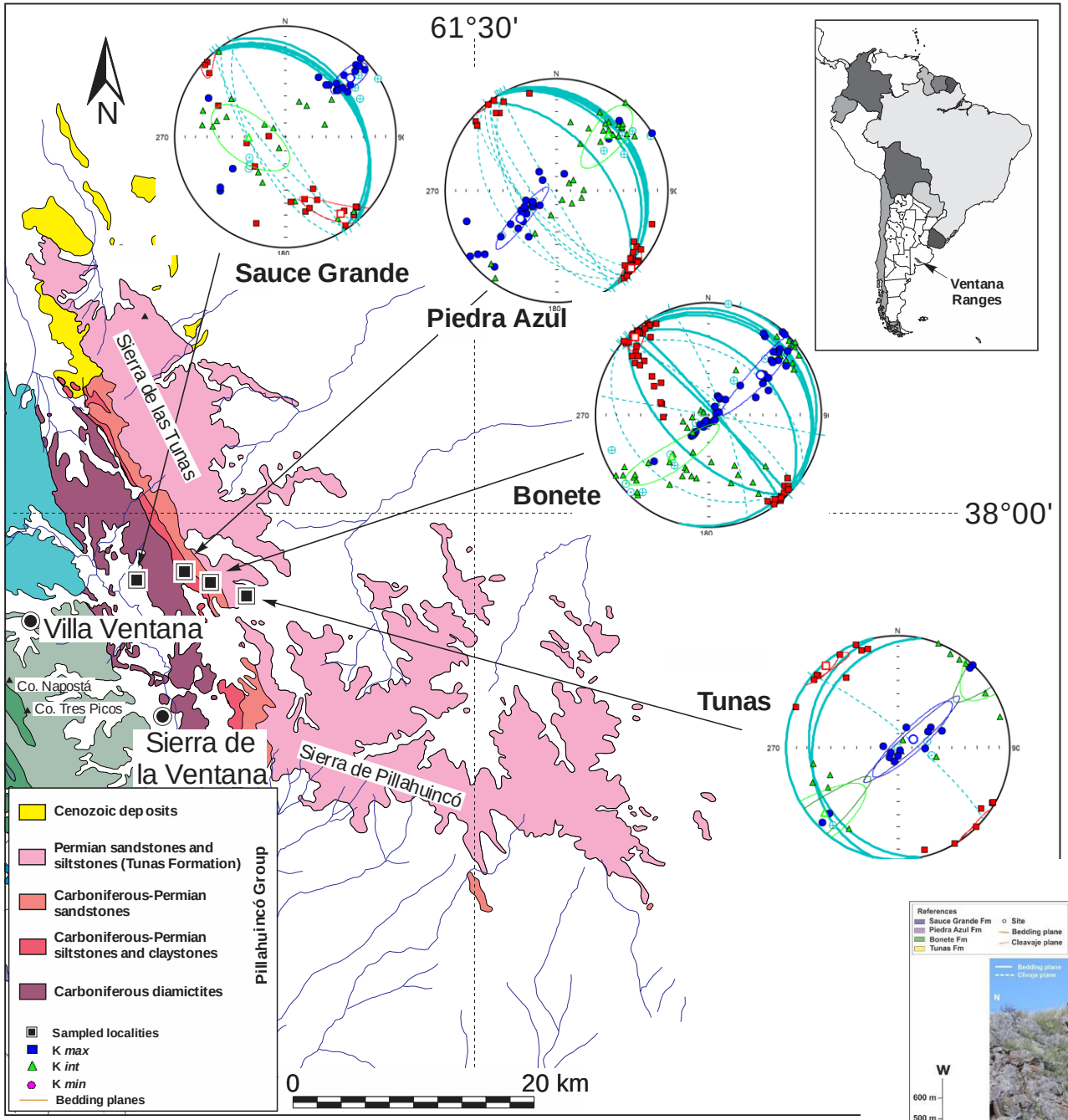


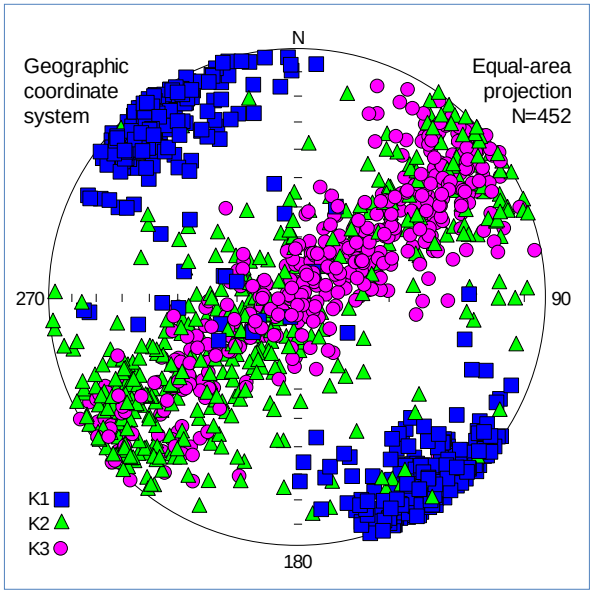


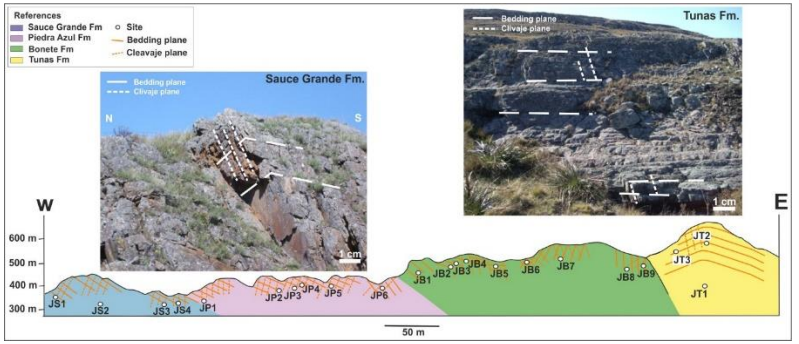
Top of the Tunas Formation

Base of the Tunas Formation

AMS on upper Carboniferous



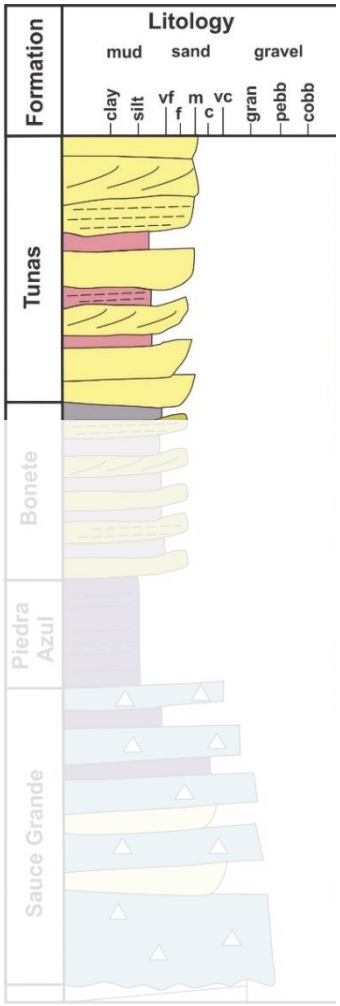


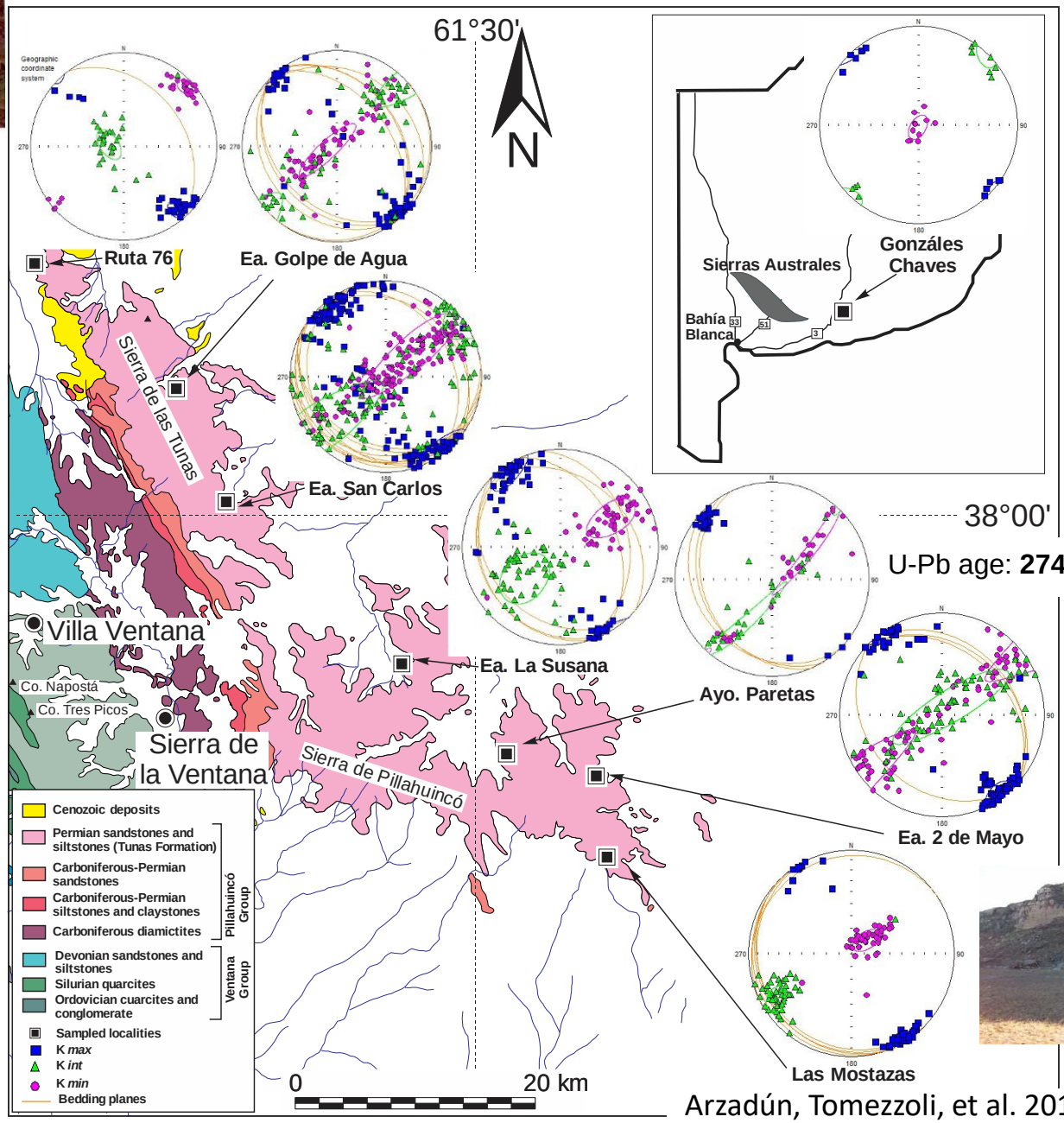


Arzadún, Tomezzoli, et al. 2021, Nature-Scientific Reports

AMS on Permian Tunas Formation

U/Pb age: **291.7 ± 2.9 Ma**
295.5 ± 8.0 Ma

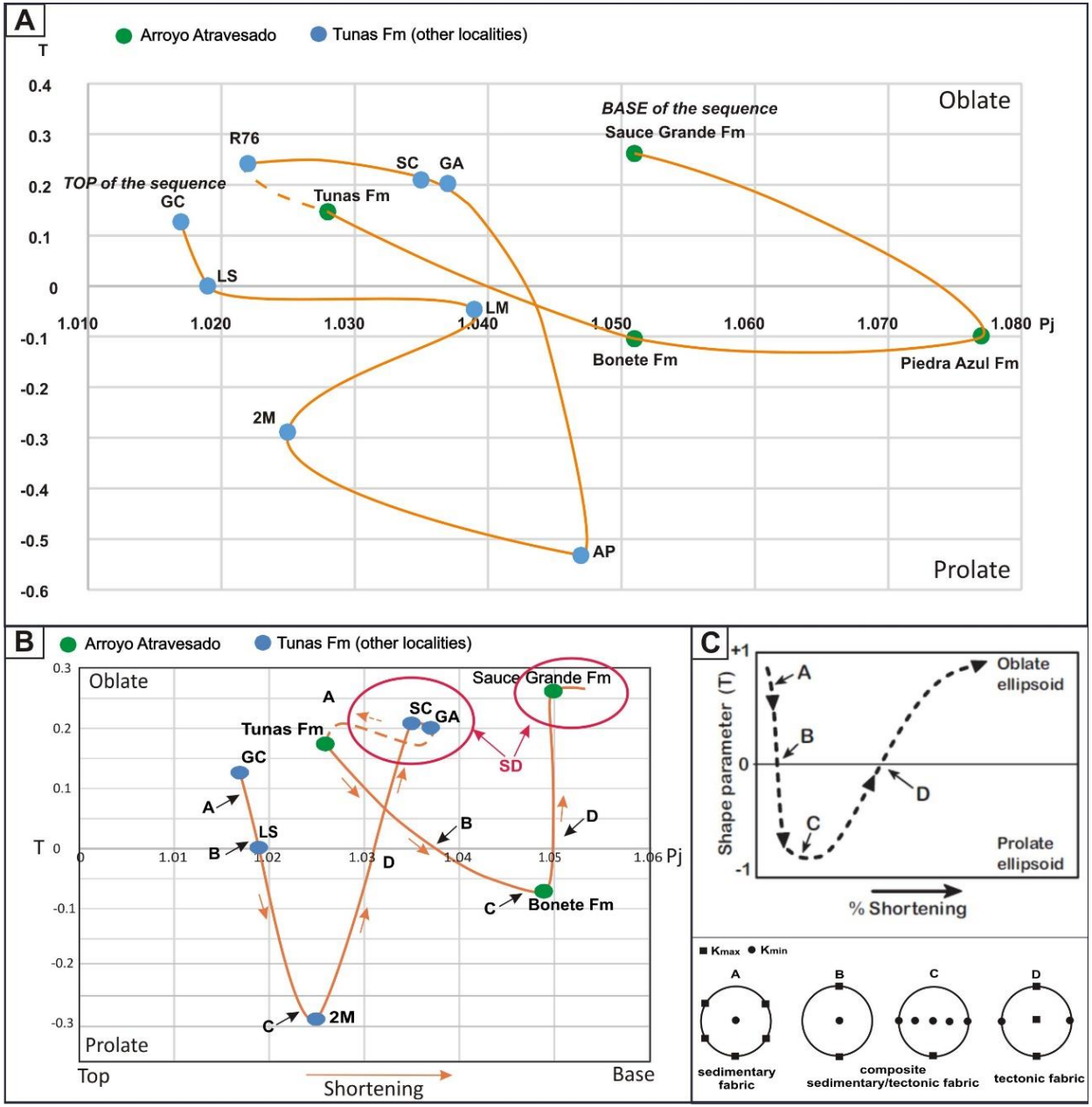




U-Pb age: **274±10 Ma**

Arzadún, Tomezzoli, et al. 2016, Tectonics

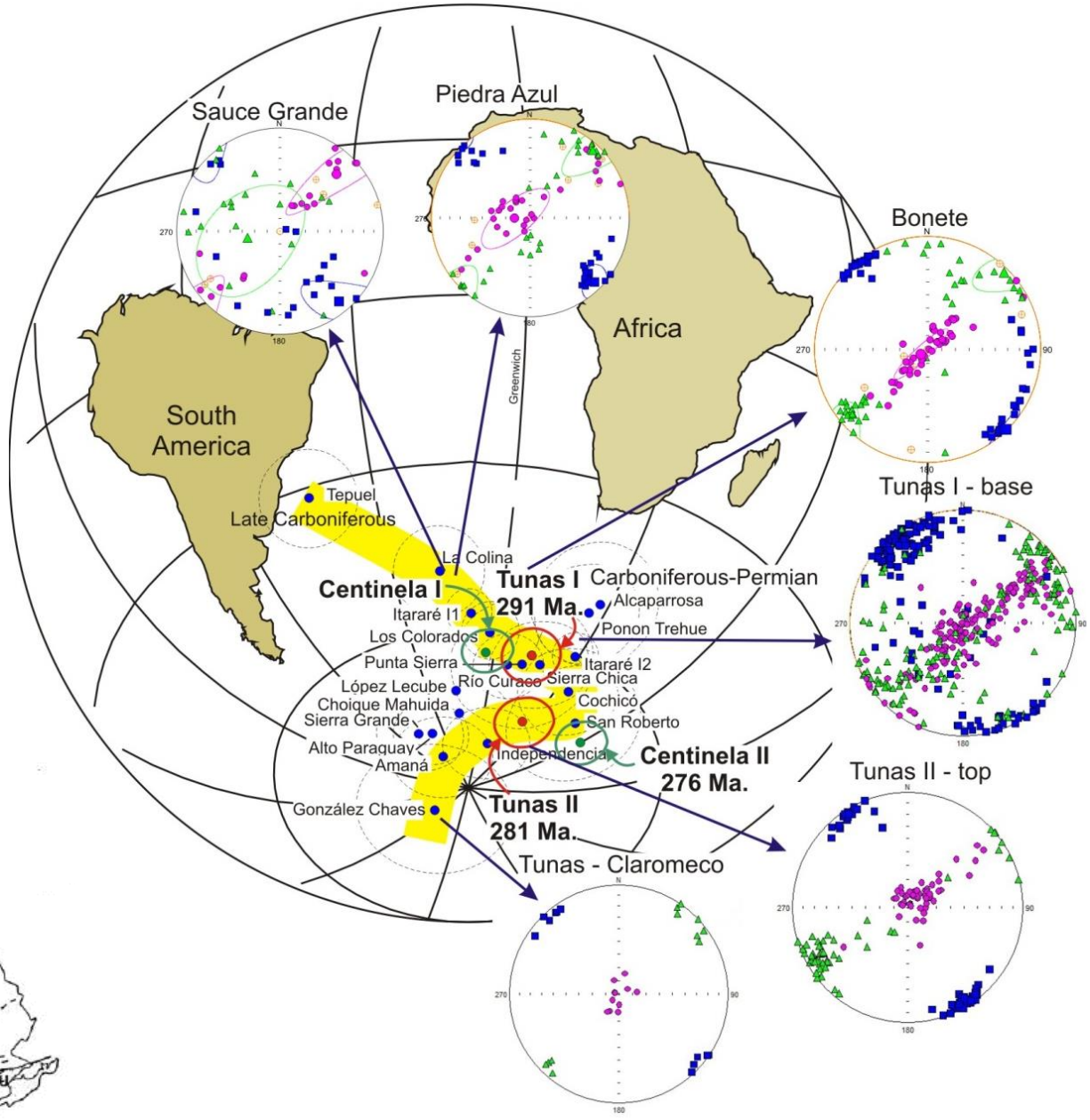
AMS parameters variation

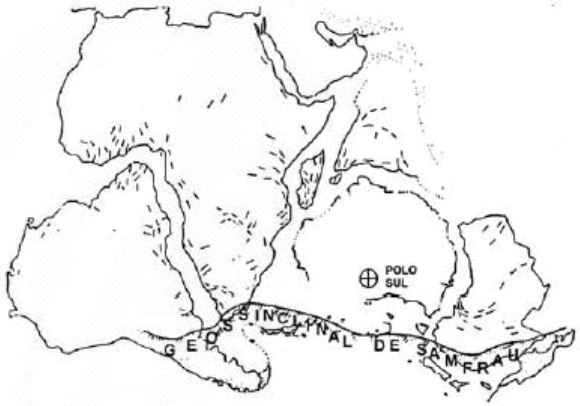


SD
Spasmodic deformation

Saint-Bezar et al., 2002; *Parés and van der Pluijm*, 2003; *Weil and Yonkee*, 2009

Apparent polar wander path of South America during the upper Paleozoic





CONCLUSIONS

- ✓ *Kmax axes remind in the NW-SE direction, parallel to the axes of the folds and Kmin is oriented SW-NE, indicating the direction of the regional shortening*
- ✓ *At the base of the sequence, **298 Ma,** Kmin lies in horizontal positions indicating a tectonic fabric. To youngers positions Kmin moves to vertical indicating a transition to sedimentary fabric*
- ✓ *Around **291 Ma** the Kmin axis grouped again in the horizontal, indicating a reactivation of the deformation. The compression acted spasmodically*
- ✓ *The reactivation of the deformation is the consequence of the latitudinal displacement of Gondwana (from the South) and Laurentia (from the North) continents towards the Equator to form Pangea*
- ✓ *This movement is reflected in the AMS data as in the cusps of the APWP of Gondwana for those times.*