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Post seismic Task Force operation after the Mw 7.8 Tocopilla earthquake in Northern Chile

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On 14th of November 2007 an Mw 7.7 thrust type subduction zone earthquake ruptured the segment of the seismogenic interface of the South American convergent margin between Mejillones Peninsula and Tocopilla in Northern Chile. This event represents the northern continuation of a series of subduction earthquakes, the former being the Mw 8.0 1995 Antofagasta earthquake. Both events start at the northern edge of their rupture planes propagating southward so that the 2007 Tocopilla event stops exactly where the 1995 Antofagasta event had started. This common segment boundary is very well documented by the first aftershocks of the recent Tocopilla event and the studies of the Antofagasta aftershocks. As a joint venture together with the IPG Paris and the Seismological Service of Chile, the German Task Force for Earthquakes (GTF) started with preparations for a rapid post seismic operation on the same day. The operation included a variety of methodologies and field observations, such as: (1) the deployment of a seismological network to register the aftershock activity, (2) a continuous GPS profile to monitor the post-seismic quasi static deformation field, (3) the installation of extensometers to elaborate the reactivation of fore-arc faults, (4) differential InSAR detection of coseismic and postseismic crustal deformation, (5) hydro-geological investigations at the El Tatio geyser field to study possible induced pressure perturbations within the geothermal reservoir due to the passage of the seismic waves. The seismological network consists of 20 short period and 5 strong motion stationsfocused on the southern part of the fault plane and the common segment boundary on Mejillones Peninsula. This arrangement is complementary to the 7 broad band stations of the Seismological Service of Chile and 5 broad band stations of

the IPG Paris. They are focused on the northern segment boundary between Tocopilla and Maria Elena where the largest damages have been observed. Here we present network details and first results of the collected data and model simulations derived from geodetic signals comparing them to seismological information.