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Earthquake Sequence at Stations of a Test, Sparse Network**

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Summary

The following arrival information is a supplement to Myers and Schultz (2000). Myers and Schultz (2000) demonstrate the improvement in sparse-network location that can be achieved by using travel-time corrections determined with a Bayesian Kriging algorithm (Schultz et al., 1998).

Precise, benchmark locations are provided by a local aftershock study of the 1991 Racha, Georgia earthquake sequence in the Caucasus Mountains (Fuenzalida et al., 1997). A test network is used to relocate the aftershocks with and without travel-time corrections. The test network is meant to represent a typical International Monitoring System configuration, with 6 stations at regional to near teleseismic distances (less than 30° from the epicenter). The following arrival-time data help to facilitate the reproduction of Myers and Schultz (2000).

The arrival picks were obtained from the International Seismic Center (ISC) (openly available) and a Lawrence Livermore National Laboratory (LLNL) analyst (Flori Ryall). Table 1 lists the arrivals in epic time (time since January 1, 1970). The author of the arrival pick is listed as either "flori" or "-," where "-" indicates ISC. Table 2 lists the hypocenter information determined in the local aftershock study of Fuenzalida et al. (1997), and Table 3 lists the station information for the Racha test network. Fields in all tables are described in the CSS3.0 database schema.

References

Fuenzalida, H., L. Rivera, H. Haessler, D. LeGrand, H. Philip, L. Dorbath, D. McCormack, S. Arefiev, C. Langer, and A. Cisternas (1997) Seismic source study of the Racha-Dzhava (Georgia) earthquake from aftershocks and broad-band teleseismic body-wave records: an example of active nappe tectonics, *Geophys. J. Int.*, v. **130**, 29-46

Myers, S.C. and C. A. Schultz, Improving sparse-network seismic location with Bayesian Kriging and teleseismically constrained calibration events, *Bull. Seism. Soc. Am.*, *In press*.

Schultz, C.A., S.C. Myers, J. Hipp, C. Young (1998). Nonstationary Bayesian kriging: a predictive technique to generate corrections for detection, location, and discrimination, *Bull. Seism. Soc. Am.*, **88**, 1275-1288.

Table 1

Racha Arrival-Time Picks

ORID	STA	IPHASE	TIME	AUTH
91119016	KVT	P	672916454.200	-
91119016	SVE	P	672916615.000	-
91119016	GAR	P	672916646.000	-
91119016	KHO	P	672916662.700	-
91119016	ARU	P	672916600.861	flori
91119041	KVT	P	672939011.300	-
91119041	SVE	P	672939175.000	-
91119041	ARU	P	672939161.463	flori
91119041	KHO	P	672939223.200	-
91119049	KAS	P	672945136.000	-
91119049	ARU	P	672945262.344	flori
91119049	SVE	P	672945276.000	-
91119049	KHO	P	672945324.000	-
91119056	KVT	P	672949929.700	-
91119056	ARU	P	672950073.380	flori
91119056	SVE	P	672950088.000	-
91119056	GAR	P	672950120.000	-
91119056	KHO	P	672950133.000	-
91119063	KVT	P	672956016.300	-
91119063	KAS	P	672956041.000	-
91119063	ARU	P	672956160.241	flori
91119063	KHO	P	672956220.000	-
91120026	KVT	P	673015572.100	-
91120026	KAS	P	673015595.400	-
91120026	ARU	P	673015720.557	flori
91120030	KVT	P	673024831.700	-
91120030	KAS	P	673024861.500	-
91120030	ARU	P	673024980.506	flori
91120030	GAR	P	673025025.700	-
91120036	KVT	P	673027743.700	-
91120036	ARU	P	673027894.622	flori
91120036	SVE	P	673027910.000	-
91120036	GAR	P	673027943.000	-
91120036	KHO	P	673027956.000	-
91121009	SVE	P	673069341.800	-
91121009	GAR	P	673069373.000	-
91121009	KHO	P	673069387.000	-
91121009	ARU	P	673069326.785	flori
91121040	KVT	P	673106774.600	-
91121040	SVE	P	673106936.000	-

91121040 ARU	P	673106922.547 flori
91121040 KHO	P	673106984.000 -
91121041 KVT	P	673108759.600 -
91121041 KHO	P	673108973.000 -
91121041 ARU	P	673108909.156 flori
91121054 SVE	P	673140198.000 -
91121054 GAR	P	673140230.100 -
91121054 ARU	P	673140183.847 flori
91121054 KHO	P	673140244.000 -
91123004 KVT	P	673251012.000 -
91123004 ARU	P	673251153.892 flori
91123004 KAS	P	673251024.800 -
91123004 GAR	P	673251200.000 -
91123004 KHO	P	673251214.000 -
91123025 KVT	P	673302062.500 -
91123025 KAS	P	673302084.800 -
91123025 SVE	P	673302229.000 -
91123025 GAR	P	673302262.000 -
91123025 KHO	P	673302279.000 -
91123025 ARU	P	673302212.902 flori
91134023 KAS	P	674213895.000 -
91134023 SVE	P	674214033.000 -
91134023 ARU	P	674214019.324 flori
91134023 GAR	P	674214067.000 -
91135030 KVT	P	674317814.500 -
91135030 ARU	P	674317966.062 flori
91135030 KAS	P	674317837.100 -
91135030 SVE	P	674317980.000 -
91135030 KHO	P	674318029.000 -
91135030 GAR	P	674318012.889 flori
91143012 KVT	P	674988177.000 -
91143012 ARU	P	674988331.673 flori
91143012 GAR	P	674988376.917 flori
91143012 KAS	P	674988201.000 -
91143012 SVE	P	674988343.000 -
91143012 KHO	P	674988391.000 -
91144013 KVT	P	675072059.400 -
91144013 KAS	P	675072083.000 -
91144013 GAR	P	675072253.973 flori
91144013 ARU	P	675072207.389 flori
91144013 SVE	P	675072223.000 -

Table 2
Racha Ground-Truth Locations

ORID	LAT	LON	DEPTH	TIME	JDATE
91119016	42.4220	43.6950	7.000	672916366.400	1991119
91119041	42.4530	43.5150	7.000	672938925.800	1991119
91119049	42.4510	43.5660	7.000	672945027.500	1991119
91119056	42.4560	43.9050	13.200	672949841.100	1991119
91119063	42.4350	43.8880	7.000	672955926.200	1991119
91120026	42.5240	43.5110	8.700	673015486.200	1991120
91120030	42.4370	43.8530	7.000	673024746.800	1991120
91120036	42.5290	43.3130	7.000	673027659.700	1991120
91121009	42.5600	43.4470	2.600	673069091.600	1991121
91121040	42.5510	43.4740	11.100	673106687.900	1991121
91121041	42.5710	43.3990	7.000	673108674.700	1991121
91121054	42.4350	43.9240	11.400	673139950.300	1991121
91123004	42.5130	43.3690	7.000	673250917.300	1991123
91123025	42.5840	43.2460	7.700	673301979.600	1991123
91134023	42.5190	43.5330	4.500	674213784.900	1991134
91135030	42.4930	43.3850	4.300	674317730.200	1991135
91143012	42.4810	43.2730	2.300	674988092.600	1991143
91144013	42.4100	43.6670	2.300	675071971.600	1991144

Table 3

Racha Site Information

STA	LAT	LON	ELEV(KM)
ARU	56.4000	58.6000	.0000
GAR	39.0000	70.3167	1.0000
KAS	41.3717	33.7667	.0000
KHO	37.4833	71.5333	1.0000
KVT	41.0806	36.0464	.0000
SVE	56.8100	60.6367	.0000